# A COMPARISON OF TWO PISGAH CERAMIC ASSEMBLAGES

by
David Gilbert Moore

A Thesis submitted to the faculty of The University of North Carolina at Chapel Hill in partial fulfillment of the requirements for the degree of Master of Arts in the Department of Anthropology.

Chapel Hill

1981

Approved by:

Advisor

Reader

Reader

## TABLE OF CONTENTS

## ACKNOWLEDGEMENTS

I would like to thank the Brunk family for enabling me to pursue a project that is always rewarding professionally and personally. I've been priviledged to share with them the hard work, the excitement of "the dig," and the pleasure of knowing good friends. My deepest appreciation goes to Bob, Jan, Ingrid, and Andrew Brunk.

I also wish to thank the friends who lent their time and energy for one day or one week to join me at the Brunk site excavation: Stan Bukowski, John DeWert, Paul Gardner, Hilary Popham, Robin Rhyne, Dan Simpkins and Trawick Ward. A special thanks is extended to Willy Israel for her help and boundless enthusiasm.

I would like to express my appreciation to my committee members, Dr. Donald Brockington and Dr. Carole Crumley for their willing advice and patient understanding.

I owe many thanks to my advisor, Dr. Joffre Coe, for his guidance and support, and I especially appreciate the support of the Research Laboratories of Anthropology which has contributed to this thesis project.

The completion of this thesis would not have been possible without the support of many other friends and colleagues. I am especially grateful to my fellow

RLA'ers, Paul Gardner, Paul Green, Billy Oliver, Dan Simpkins, Trawick Ward, and Jack Wilson for their support, occassional cajoling, and most importantly, their friendship.

I am also indebted to a special friend, Diantha Pinner, for typing a draft of this manuscript. Trawick Ward contributed Figure 2 from his dissertation and Jack Wilson taught me the intricacies of the keypunch machine. Their help is greatly appreciated.

Robin Rhyne helped with keypunching data cards and maintained a concerned watch over a tired and anxious graduate student. Her care and thoughtfulness will always be remembered.

I would also like to thank my family for their love and support and am grateful for the cherished memories.

Finally, this thesis is dedicated to the Under Toad, with apologies to Garp.

## LIST OF TABLES

## LIST OF ILLUSTRATIONS

# CHAPTER ONE

## Introduction

> The mouths of the pots are wide and the necks deeply constricted. The lip or rim exhibits a number of novel features. That of the larger specimen...is furnished on the upper edge with a deep channel, nearly one-half an inch wide, and more than one-fourth of an inch deep...Others have a peculiar thickening of the rim, a sort of collar being added to the outside... The ornamentation is in some respects novel...the whole exterior surface is embellished with a most elaborate ornamental design, which resembles the imprint of some woven fabric...The pattern consists of groups of parallel indented lines, arranged at right angles with one another...The outer surface of the triangular collar peculiar to many of the pots has been decorated with a herring-bone pattern, made by impressing a sharp implement.
> (Holmes 1884:440-441)

With these words characterizing vessels from Newport, Tennessee, William H. Holmes first described the ceramics now known as the Pisgah series (Holden 1966, Dickens 1970). The "novel" rim features and "elaborate ornamental design" (carved-paddle stamping in reality, not woven fabric) serve as the subjects of this study.

Pisgah ceramics are found throughout the Appalachian Summit region, including Western North Carolina, eastern Tennessee, southwestern Virginia, and northwestern South Carolina. The Cherokee Indians occupied this region in historic times but the relationship of the Pisgah ware to Cherokee culture remained clouded until the 1960's. As late as 1961 Pisgah pottery from the Chauga site, Oconee County, South Carolina, was termed "pseudo-Iroqois," based on similarities to Iroquoian pottery from the northeastern United States (Kelly and Neitzel 1961:36-37). In 1961, Joffre Coe described the Woodland ceramics of western North Carolina as a tradition including stamped wares. He also stated,

> Toward the end of this period the rims were thickened and collars were added. Incised and punctuated decorations were applied together with castellations and nodes...These characteristics appear on pottery that seems to be ancestral to that used by at least some of the historic Cherokee.
> (Coe 1961:59)

During the 1960's Coe directed the Cherokee Archeological Project to investigate the origins of the Cherokee Indians in western North Carolina. One of the results of the project was the first typological description of the Pisgah series (Holden 1966:72-77), and Roy Dickens' formulation of the Pisgah Phase (AD 1000 - AD 1450). Through the analysis of site locations, site structure (based on the Warren Silson site), mortuary practices and material culture, he was able to demonstrate convincingly that the Pisgah Phase represented an "in situ" cultural predecessor to the Cherokee (Dickens 1970, 1976).

Ceramic studies have been a focal point of research on Cherokee prehistory (Dickens 1970, 1976; Keel 1976; Egloff 1967). The present study attempts to extend this traditional focus as it examines the variability of Pisgah ceramics from two archaeological sites in Buncombe County, North Carolina: the Warren Wilson site (31Bn29), and the Brunk site (31Bn151) (see Figure 1). An attempt is made to discriminate the temporal significance of observed stylistic variation with respect to hypothesized early and late Pisgah subphases.

Dickens, in his extensive survey of Pisgah ceramics, recognized the ceramic tradition described by Coe above, and felt that stylistic continuities with the earlier Woodland ceramics, especially the use of complicated stamped surface finishes exhibited in the Pigeon and Connestee ceramics, typified an early Pisgah ceramic subphase (Dickens 1976:198). He characterized the early subphase by a preponderance of small element, rectilinear complicated stamped surface finish, a large percentage of thickened, everted rims, and the use of loop or strap handles. The late subphase emphasized surface finishes of large element rectilinear stamps and occasional curvilinear stamped designs, a relative absence of thickened, everted rims, and an increase in vessel size with corresponding increase in rim collar size (see Appendix A for brief Pisgah type description). Dickens placed the Warren Wilson site within the late Pisgah subphase dated to approximately 1250-1450 AD. The early subphase began about 1000 AD (Dickens 1976: 198).

Ceramic study as a chronological tool is the immediate interest of this study, but it is not the ultimate objective of the comparative approach employed. This study

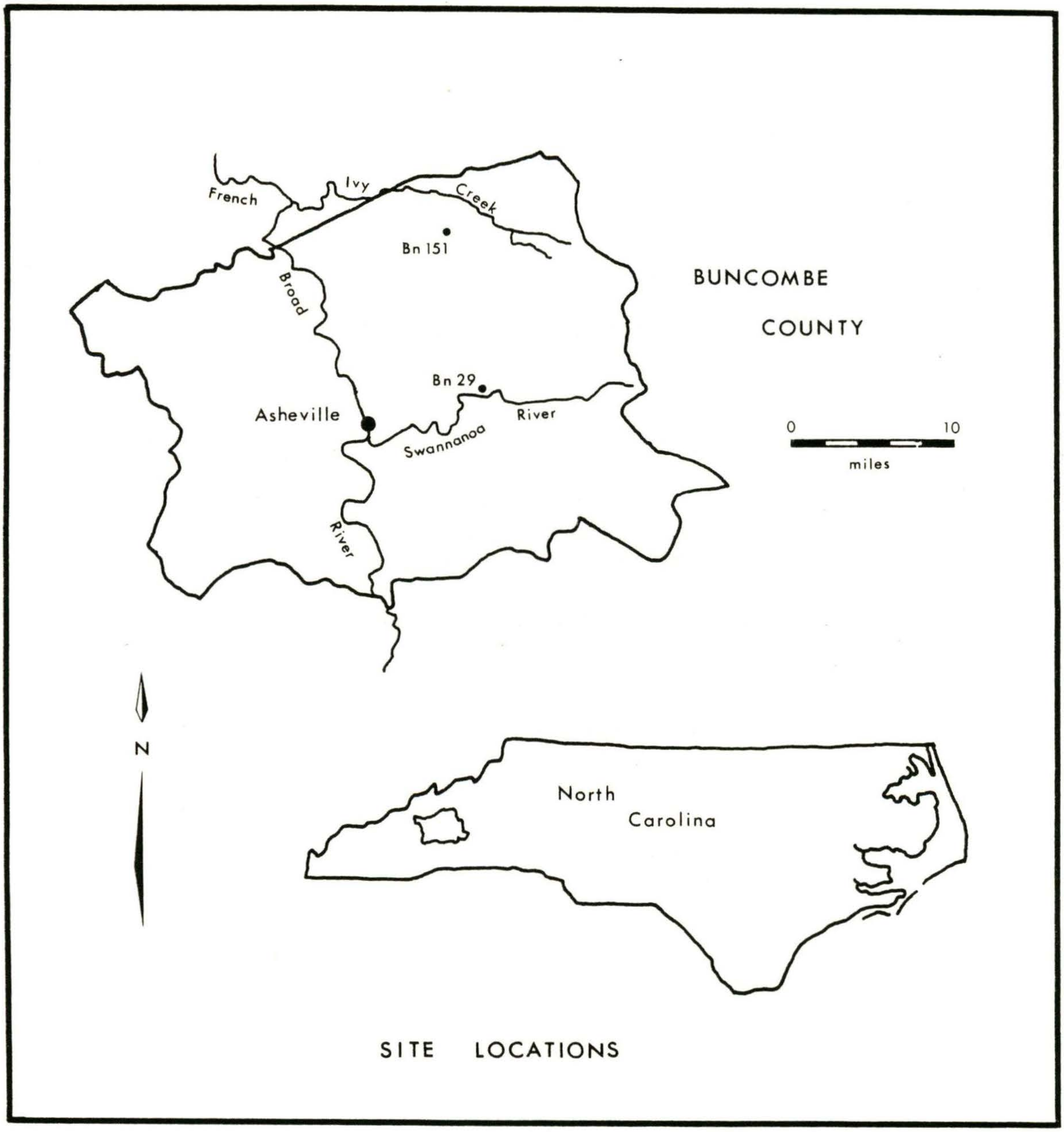

French
Ivy
Creek
Bn 151
Broad
BUNCOMBE
COUNTY
Bn 29
Asheville
River
Swannanoa
0
10
miles
River
N
North
Carolina
SITE LOCATIONS

FIGURE 1

is spawned within the more comprehensive context of settlement systems which includes issues such as site locations, subsistence patterns, and the relationships among the coeval sites of a particular culture. The Brunk and Warren Wilson sites represent sites assigned to the Pisgah culture or period for which Dickens posits a general settlement model which emphasizes site location on alluvial terraces, along stream valleys (Dickens 1976:18, 1978). The varied environment of the Appalachian Summit region supported a subsistence system consisting of agriculture, hunting, and foraging; each of equal importance (Dickens 1976:202-255). In terms of site locations Dickens states,

> Outside the bottomlands, occasional Pisgah sites have been found on old terraces, benches, and uplands. These nonriverine sites usually are represented by small (less than $200m^2$) scatters of sherds and lithic remains, or, in some instances, only lithic remains. There is almost no information on the internal organization of these sites, but it is generally assumed that they were temporary hunting or collecting camps. (1978:131)

The Brunk site is an example of a non-riverine Pisgah site. However, preliminary analysis of the excavations at the site suggests that the above description may be far too simplified. Though located at an elevation of 3100 feet above sea level at a distance greater than two miles from an alluvial flood plain, this small (approximately 1000 square meters) site resembles nothing so much as it does the Warren Wilson site, a typical alluvial valley Pisgah village. Although site size is small, the range of artifacts, the abundance of ceramics, and the evidence for a structure on the site suggest a somewhat more permanent settlement than a temporary campsite. Thus the combined aspects of location, size, and characteristics of the Brunk site diverge from the above model of Pisgah settlement.

The settlement model requires alterations with respect to the data from the Brunk site. One must question the nature of the relationship of the Brunk site to the better known alluvial valley sites and investigate the possible existence of other similar sites. This study represents the initial phase of research into these questions in order that future models will incorporate upland sites in a more meaningful manner.

To consider settlement systems one must necessarily consider site locations or settlement patterns, for which the underlying assumption is the contemporaneity of all sites within the system. Bruce Smith (1978:478) points out the numerous factors contributing to the difficult task of establishing site contemporaneity and observes that too often contemporaneity of sites is assumed within a cultural period. The ceramic analysis described herein attempts to establish a temporal reference for the Brunk site, or the relative degree of contemporaneity with other known Pisgah sites.

The Warren Wilson site is less than 15 miles from the Brunk site (see Figure 1). An assumption of the study is that the two sites are sufficiently close to be considered participants in a "local" Pisgah cultural system. The following working hypothesis is posed as a result of this assumption: if the Brunk site represents a functioning unit of the local Pisgah cultural pattern, the stylistic elements of the ceramic assemblage will be similar to those found at a contemporary local Pisgah site, i.e. the Warren Wilson site. If the sites are not coeval patterns of attributes, particularly those posited by Dickens, will appear differentially.

This hypothesis does not imply that ceramic variation results entirely from temporal change; the subject of ceramic variation is discussed in the following chapter. However, the ceramic assemblages from these two sites were selected primarily because each represents a short period of time (see discussion below). Thus if the assemblages differ in the composition of Dickens' temporal attributes, we may assume that time is an influence. If other patterns of attributes diverge between the two sites regardless of orientation of the temporal attributes, then the assemblages may reflect other cultural influences (perhaps related to the function of the Brunk site). If no appreciable differences are observed, we may assume that the sites are contemporaneous and participating in the same cultural systems.

## The Sites and Ceramic Sample Units

The Warren Wilson site (31Bn29) is a palisaded Pisgah village located on an alluvial terrace aside the Swannanoa River in Buncombe County, North Carolina. Through the cooperation of Warren Wilson College, students from The Research

Laboratories of Anthropology, University of North Carolina at Chapel Hill, have directed excavations of this stratified site since 1966, and nearly half of the approximate 3 acre site has been exposed at the Pisgah level (Dickens 1976, Ward 1980).

Figure 2 illustrates some of the major structural features of the site. There is clear evidence for more than 12 houses and a series of palisades. In addition, numerous features and more than 50 burials have been excavated. Plowing has disturbed the actual village surface; as a result, all postholes and features are truncated and the temporal sequence and association of particular features, houses and palisades are extremely difficult to determine. Dickens (1976:50-51) felt that the total assemblage of structure features supported a temporal sequence of shifting placement of houses and palisades and not necessarily a simple expansion of village size. However, Dickens has also stated that the palisades' arrangement represents seven successive enlargements of the village (Dickens 1978:127).

This temporal sequence provides a convenient assumption for the selection of sample units for the present study. The selection of features associated with different palisade lines provides samples which represent the remains of separate, limited-duration activities and are also separated temporally. Thus the samples are also examined for intrasite differences in the temporally sensitive attributes. Features 7 and 229 (see Figure 2) were selected for the

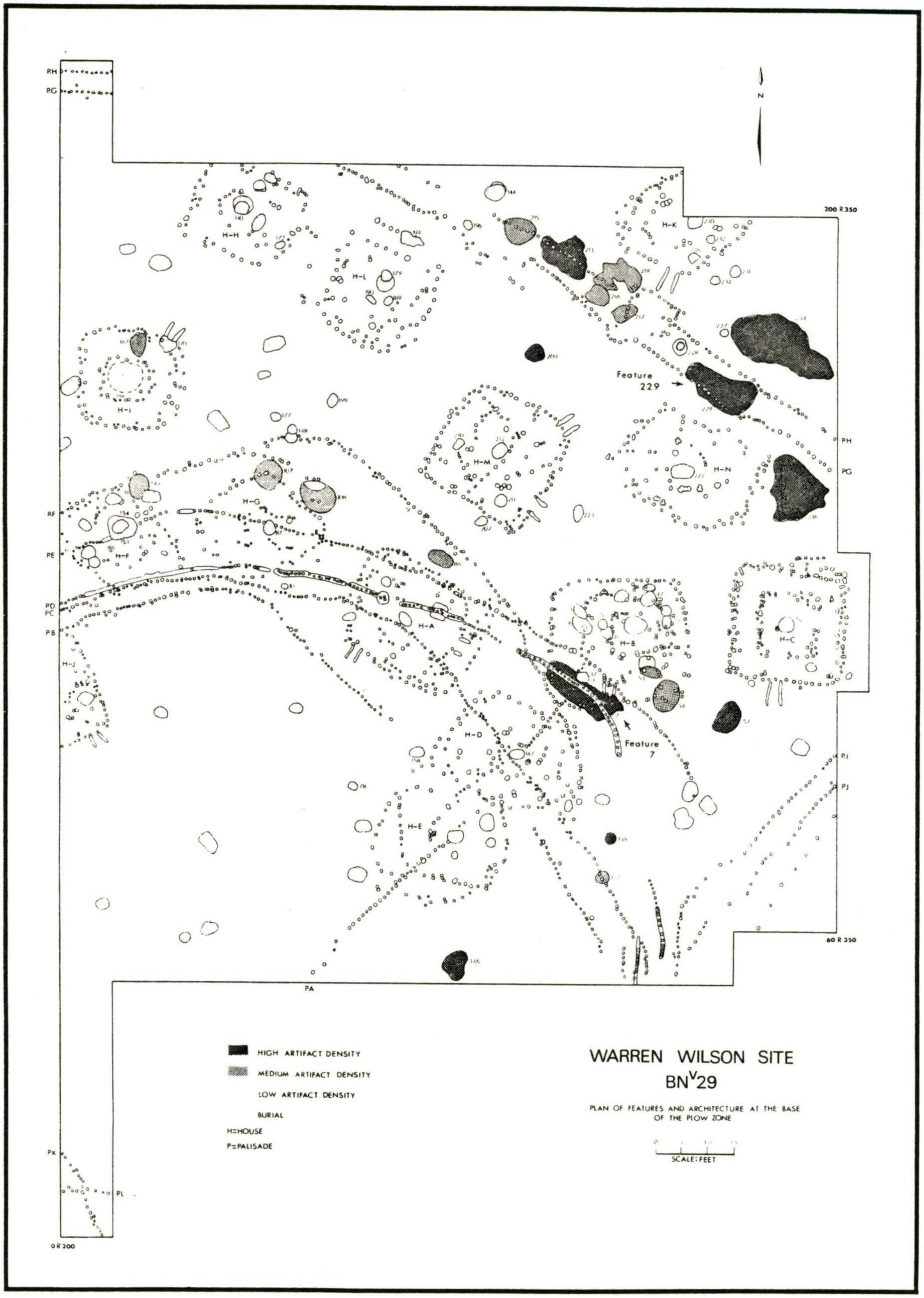

WARREN WILSON SITE
BN^v29
PLAN OF FEATURES AND ARCHITECTURE AT THE BASE OF THE PLOW ZONE
HIGH ARTIFACT DENSITY
MEDIUM ARTIFACT DENSITY
LOW ARTIFACT DENSITY
BURIAL
H=HOUSE
P=PALISADE
SCALE: FEET
Feature 229
Feature 7
H-A
H-B
H-C
H-D
H-E
H-F
H-G
H-H
H-I
H-J
H-K
H-L
H-M
H-N
PA
PB
PC
PD
PE
PF
PG
PH
PI
PJ
PK
PL
200 R 350
60 R 350
0 R 200

FIGURE 2

study since each has a large pottery component and is associated with a palisade line.

Feature 7 was an irregular depression over 17 feet long, 3 to 5 feet wide, and .5 feet at its greatest depth (Dickens 1970:173). Dickens suggests that the feature resulted from the construction of Palisade D (1970:173, 1976: 54) but Ward includes it in a roasting pit class of features (Ward 1980:106) and the latter interpretation is favored here. The feature fill is homogenous, containing a great deal of animal bone, charcoal, and approximately 1100 potsherds; however, it cannot be determined whether the fill is general village midden or the remains of a temporally discrete filling activity. Based on the intrusion of palisade trench D, this feature must predate the construction of Palisade D.

Feature 229 is located between Palisades G and H, and is intruded by Palisade G (following description based on Ward 1980:94-98). This large (13 feet by 6.3 feet) and relatively shallow (1 foot deep at maximum depth) pit contained a convoluted stratigraphy of six distinct zones. Zone 1, a dark humic soil, produced most of the ceramics (total: 1750 potsherds) and a large amount of animal bone. The feature functioned primarily as a roasting pit and secondarily as a dumping locus. Ward (1980:108) describes the feature as "...unique in that it contained dumping episodes from various areas of the site over a short period of time..." and also suggests that these episodes may represent a ceremonial village cleaning (Ward 1980:98).

The remains of the fill from the two Warren Wilson features possibly represent disposal behavior of a limited time span; the ceramics contained within each are assumed to be examples in current use by the village inhabitants. The features may be separated temporally as well: if the site grew successively larger, Feature 7, which is intruded by one of the earliest palisades, may be earlier than Feature 229, located near the site periphery and intruded by the latest palisade.

Two assemblages of ceramics from the Brunk site (31Bn151) are compared to the Warren Wilson features. As stated above, the Brunk site is an example of a small upland Pisgah site that does not conform to the usual model of temporary campsites. The site was brought to the author's attention in July, 1978, by Robert Brunk, the landowner. Limited excavation during the summers of 1979 and 1980 has revealed information regarding the site structure. The site occupies about half an acre of a relatively gentle slope at the head of a mountain cove. Sugar Creek, an intermittent stream flowing north to the Ivy Creek, runs within 50 yards of the site and two nearby springs are active today. It is from one of these springs, about 150 yards north of the site, that the first ceramic assemblages are gathered (Figure 3). The Brunk family recovered over 3000 potsherds from an area of approximately 200 square feet at the mouth of the spring. The pottery was found in a

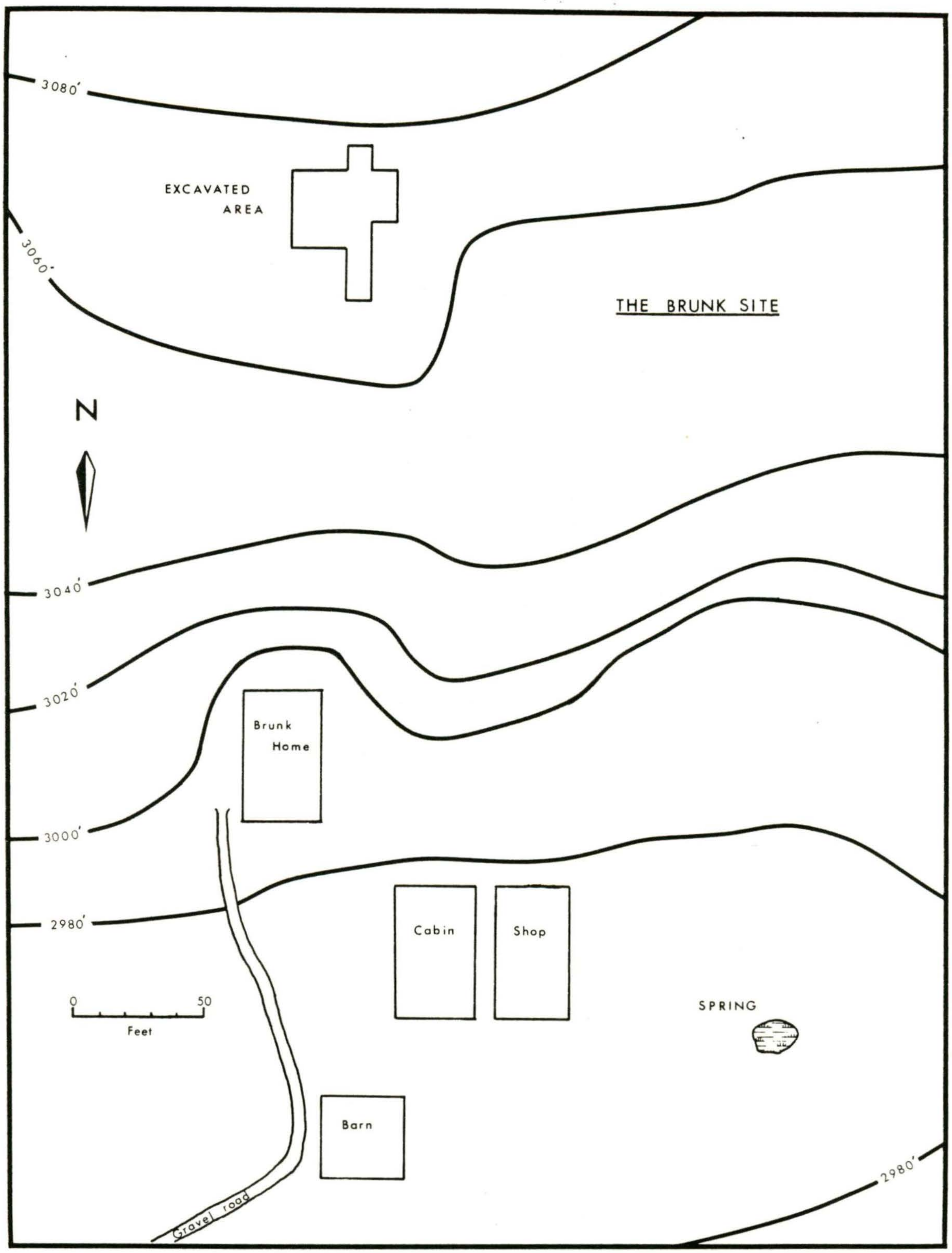

3080'
EXCAVATED AREA
3060'
THE BRUNK SITE
N
3040'
3020'
Brunk Home
3000'
2980'
Cabin
Shop
0
50
Feet
SPRING
Barn
Gravel road
2980'

FIGURE 3

layer of loose gravelly stone and silt, 3 to 10 centimeters thick, at a depth of 60 centimeters from the present ground surface. This ceramic zone overlays a dense clay from which no pottery has been recovered (Robert Brunk, personal communication). The remains of nearly 100 Pisgah vessels are represented in this assemblage and there can be little doubt that the spring location is associated in some way with the excavated site nearby, though the nature of the association is not certain.

The second sample unit consists of all potsherds collected during the 1979 summer excavation. Most of the sherds are found in the plowzone; however, a majority of the large body and rim sherds are recovered from Zone B, an original humus zone similar to a midden. Postholes and features occur within this soil zone, though no excavated posthole or feature contained more than several potsherds.

Figure 4 illustrates the site plan of numerous postholes, small pits, and a probable burial. At least one structure, similar in form to house structures reported at the Warren Wilson site (Dickens 1970, Ward 1980), is represented here. The posthole pattern is nearly square, with slightly rounded corners and walls approximately 20 feet in length. It may also have interior support posts. Within the house structure are two features containing the remains of hearths and an associated cluster of small pits.

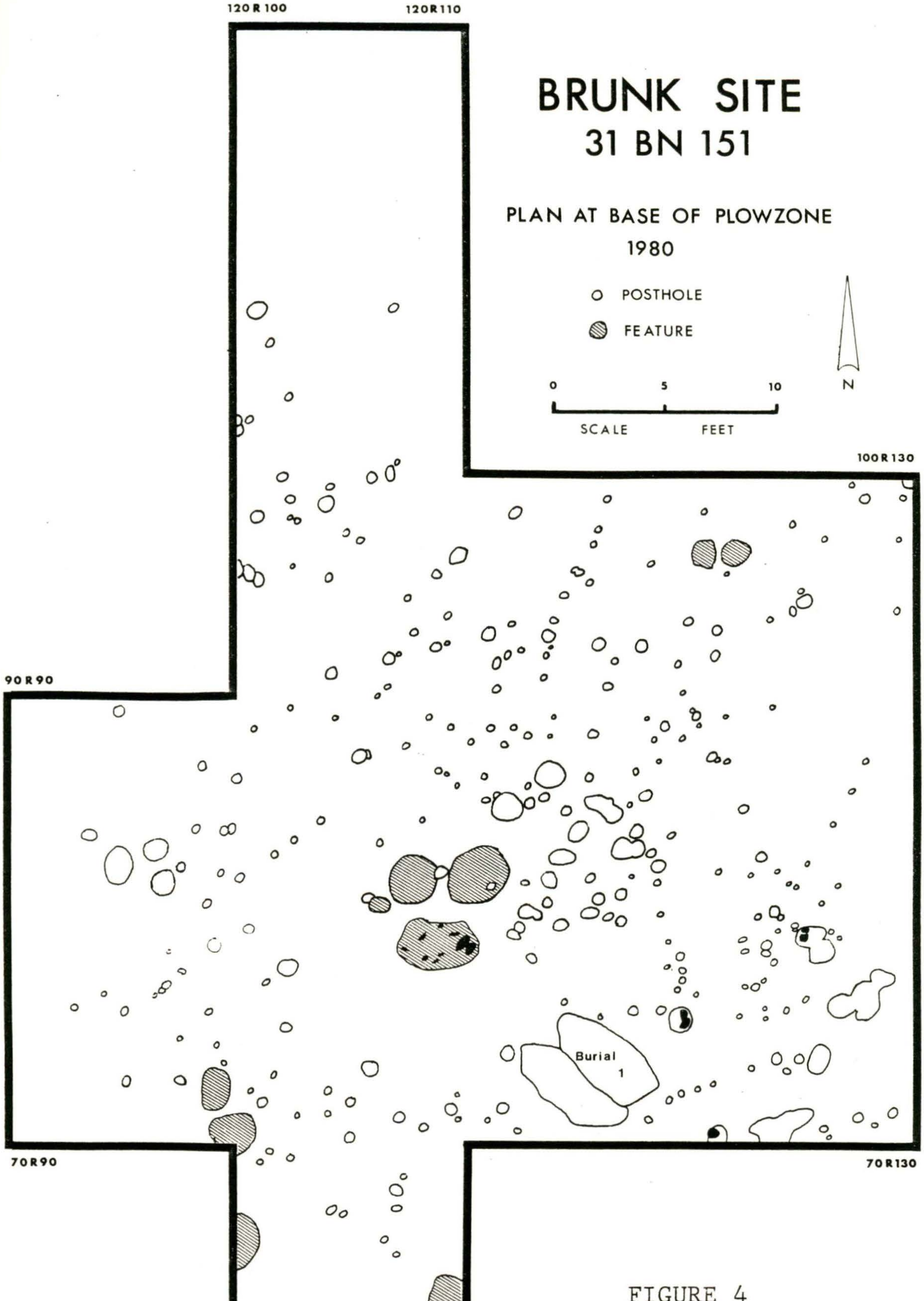

120 R 100
120 R 110
BRUNK SITE
31 BN 151
PLAN AT BASE OF PLOWZONE
1980
POSTHOLE
FEATURE
0
5
10
SCALE
FEET
N
100 R 130
90 R 90
Burial
1
70 R 90
70 R 130

FIGURE 4

The feature labeled Burial 1 contained no skeletal material but its form so resembles Pisgah burial pits at other sites to suggest that it was intended to be, if it did not in fact function as, a burial pit. Though the analysis of this feature is incomplete, a pH value of 6.2 was obtained (soil tested by the Agronomic Division of the North Carolina Department of Agriculture) for the subsoil in which the pit is dug. The highly acidic soil may have contributed to rapid and complete decomposition of any skeletal material.

The house structure and associated features, the high frequency of additional postholes, and abundant material remains all suggest a habitation more complex than a temporary campsite. No reliable interpretation of site function will be realized until excavation and analysis is complete; however, I have suggested that the site be designated a hamlet, to emphasize the small size without limiting its functional role (Moore 1980).

To complete the comparative approach in this study, it is assumed that the two assemblages are indeed associated and that the entire site represents an activity locus probably occupied for a shorter period of time than the Warren Wilson site. Thus the four sample units are all assumed to contain ceramics used during relatively short intervals at their respective sites.

This study utilizes each of the four sample units in an attribute analysis designed to reveal stylistic variation within the Pisgah type. The observed variation is examined to determine whether it is significant in terms of Dickens' stylistic temporal subphases. Any additional patterns of attribute distribution or co-occurence are also examined and finally the two sites are compared for overall diversity and similarity of the respective ceramic assemblages.

A brief discussion of the concepts and methods of typology, particularly as it concerns temporal variation, is presented in Chapter Two. Chapter Three describes the attribute analysis developed for this thesis, the results of which are presented in Chapter Four. The concluding chapter also assesses the potential for future use of this methodology and addresses the broader research issue of prehistoric settlement systems from which this study evolved.

# CHAPTER TWO

## Ceramic Typology and Chronology

Classification involves two mutually dependent processes: separating those things which are disimilar and joining those which are most similar. Archaeologists' classifications serve as a means of describing different phenomena and may be constructed to be as inclusive as entire cultures or as limited as artifact typologies. The nature of artifact types is of interest here and the topics emphasized in this section include the use, and the assumptions underlying the use, of "historical types" (Steward 1954:54; Rouse 1960:313; Ford 1956:43), or the use of ceramics as chronological markers. Seriation is also discussed as a temporal methodology. Finally, the issue of ceramic stylistic variation is briefly explored. The relationship between the practice of analytic methodologies and the assumptions which support them is seen as a primary determinant of the limits of interpretive exercises.

A type is described by Rouse (1939:11) as a pattern of artifact characteristics or a class of artifacts based on common attributes. Similarly, Spaulding (1953b:305) views the artifact type, "as a group of artifacts exhibiting a consistent assemblage of attributes whose combined properties give a characteristic pattern. Watson, LeBlanc, and Redman (1971:126) provide a suitably general definition as well, "...a group or cluster of objects more similar to each other with respect to two or more attributes than these objects are to other groups."

One's typological philosophy usually determines how one defines or applies the concept of type. The definitions above mention attribute associations and assemblages as type parameters. How one distinguishes and interprets the association will be a function of the typological philosophy one employs (Hill and Evans 1972; Rouse 1960; Brew 1946).

Epistemological differences arise over the interpretation of the relationship between behavior of the prehistoric craftsman and classification of his wares by archaeologists. Do types correspond to a cultural reality within which an artisan creates an artifact? Archaeologists remain divided on this question: to some, types are "real" and can be discovered. This view is strongly supported by Gifford, who states that ceramic types:

> ...represent the combining of a number of attributes into abstract conception which, when executed in clay by potters, are acceptable to them and a majority of others within their cultural configuration. Types are summations of individual or small social group variation consistent with boundries imposed by the interaction of individuals on a societal level...

> ...Pottery types are therefore representative of cultural phenomena. (1960:341)

Advocates of the type-variety method also explicitly state that their analytical types and varities, "...were realities within [the prehistoric] cultural configuration" (Smith, Willey and Gifford 1960:332).

Other archaeologists recognize a slightly different relationship between ceramic types and prehistoric cultures. They acknowledge that the prehistoric artisan's ideas and values control the specific form of ceramic variables (Ford 1954 b,c). The expression of ceramic variables within a community tends to cluster within limits or around a norm. The stylistic norm produced at a site, "...represents the concensus of community opinion as to the correct features for this particular kind of vessel" (Phillips, Ford, and Griffin 1951:62). Phillips, Ford, and Griffin (1951:63) argue, however, that the archaeologists' arbitrarily selected types, "cannot be expected to show any strong relationship to cultural 'reality'." It is further argued that ceramic complexes based on empirical types do not necessarily correlate to different cultures or culture phases (Ford 1938:263, 1954b:391).

Each of these viewpoints expresses an awareness of an idea or concept, held by the artisan, which influences the actual form of the artifact. Rouse (1939:19) defines a dichotomy between artifacts as concrete objects and temporal phenomena.

Ford (1938:260) points out that the logical approach to chronology exists in the study of changes in ceramic decorations as they occur through time. Since the relationship of time and change in artifacts may be observed through archaeological context, artifact typologies may then be created explicitly as a means of describing or delimiting archaeological time and space (Ford and Willey 1949: 40; Sears 1960).

Many of the assumptions involved in creating "historical" types parallel those mentioned in the discussion of the typological concept. Rouse's (1939) usage of types, for instance, was explicitly historical, linking types to particular groups of people. A type consisted of a separate stylistic pattern and the artisans of each particular group attempted to conform to the pattern of the group (Rouse 1939: 15). Possibly the definitive statement of the historical type assumptions is found in Krieger (1944) in which the expressed purpose of typology was "to provide an organizational tool which will enable the investigator to group specimens into bodies which have demonstrable historical meaning in terms of behavior patterns" (1944: 272). Types were to be defined "by a specific and cohesive combination of features . . . " (1944:277), which Krieger also expected to reflect those mechanical and aesthetic choices "which formed a structural pattern in the minds of the makers" (1944:278). Thus, types were inherently historically or temporally meaningful.

In some cases, the existence of the structural pattern or "mental template" was a moot point; the compelling assumption was one of purpose. "Types should be classes of materials which promise to be useful as tools in interpreting culture history" (Ford 1938:260). Similarly, the need to establish regional chronologies was viewed as paramount and prerequisite to other interests (Phillips, Ford and Griffin 1951:61).

The Pisgah ceramic types utilized in this study are historical, normative types. Indeed, the assumption of a temporal quality plus a cultural integrity is explicit in the definition of the Pisgah ceramic series (Dickens 1970:27). A ceramic series is composed of "pottery types which occur on the same ware and which are the product of a cultural group at a particular period of time" (Sears and Griffin 1950:1, quoted in Dickens 1970:27). Thus Pisgah ceramics are particularly useful for the study of the influence of time or chronology on ceramic styles and variation.

Having examined the temporal assumptions of historical types, I turn now to seriation, a method frequently used to establish ceramic chronologies. The seriation technique is a means of ordering comparable entities or units sequentially, such that the position of each unit reflects its similarity to other units (Marquardt 1978:258; cf. Cowgill 1972:381). Though often applied as a chronological tool (Ford 1962; Robinson 1951; Rouse 1967:306), seriation is, in fact, merely a descriptive technique; the significance of any formal ordering is to be inferred by the analyst (Dunnell 1970:305; Marquardt 1978:258).

In recent years, seriation has become increasingly refined especially in terms of the sophisticated mathematical analyses utilized (Whallon 1972:32), and a plethora of seriation techniques are available to the archaeologist. For the moment, however, I shall consider the practice of frequency seriation in some of its less sophisticated, but no less successful, forms. I shall also examine the underlying assumptions by which one may infer a temporal ordering of one's data.

Frequency seriation, whereby patterns of frequencies are ordered, normally is applied under assumptions similar to those necessary for the creation of historical types. Since the procedure requires the inference of temporal meaning, the objects studied must have some temporal significance: types are usually chosen for this purpose (Ford 1962:20; Brainard 1951:202-304; cf. Dunnell 1970).

Frequency seriation orders collections of data from separate units: sites, levels of stratigraphic excavation trenches (Phillips, Ford and Griffin 1951), grave lots (Petrie 1899) or other features. Most often matrices are employed in which type frequencies are recorded for each of the units represented, such that units may be compared in terms of the frequency patterns.

The two most commonly applied frequency seriation techniques are those of Ford (1962) and Brainard and

Robinson (Brainard 1951; Robinson 1951). Ford's 'graphical' seriation arranges the units, represented by the frequencies of types occurring in the unit, so that patterns of changes in type popularity through time appear (1962:42). The relative frequencies of the occurring types will constantly change as the popularity of each type increases to a peak then decreases until it is no longer represented. This pattern is repeated for each type but not necessarily at similar rates. Brainard and Robinson's method is slightly different. An "index of agreement" (Robinson 1951:294) is calculated based on the absolute values of the differences in type frequencies between each pair of units. The units are then ordered by arranging the indices within a matrix form in such a way that high indices cluster around the principle matrix diagonal.

Both of these methods derive their archaeological import from the strength of one assumption, that a "similarity of percentages of different types of pottery in use is evidence that the [collections] are close together in time" (Robinson 1951:293). Or, in other words, the frequency of types represents the relative popularity of those types in use at the particular time and place represented by the sample unit (Ford 1962:9). It should be obvious that such an assumption relies heavily on the historical validity of types discussed above, and that, in fact, an entire corpus of assumptions underlies the practice of seriation.

The related assumptions of seriation methodology and the use of normative types are clearly explicated in the Archaeological Survey in the Lower Mississippi Alluvial Valley, 1940-1947 (Phillips, Ford and Griffin 1951), a classic example of the use of the frequency seriation technique. The typological assumptions are based on the conception of constant and gradual change, an evolution, of pottery styles through time (pp. 62-63). In any prehistoric community several different pottery styles, each exhibiting a range of variation, will be in use at a particular time. Pottery styles are also distributed across geographical space, and evolve in regional traditions as well as through time; styles continually change as a function of space and time. Types, therefore, are created in an attempt to organize this "ceramic continuum" along the dimensions of variation, geographical area, and time (p. 63).

The ceramic continuum is the key to the effectiveness of seriation methods, it unites the physical expression of the artifact with the phenomenon of temporal and spatial changes of the artifact. The relationship is expressed through the use of popularity curves; when the relative popularity, i.e. frequency, of a type is graphed through time, a long, single-peak curve results (Phillips, Ford and Griffin 1951:220). Curves of other types will differ as a function of their particular duration of use or popularity. Composite popularity curves, representing all the types in use, will manifest a distinct pattern when a particular part of the study area is examined through time. In the "graphical" seriation procedure used by Phillips, Ford and Griffin, the sites are temporally ordered by creating a best fit of the respective curves to the overall pattern.

Certain conditions (Phillips, Ford and Griffin 1951: 223) should obtain in order that the distinct patterns of popularity curves may appear. These include a relatively stable and evenly distributed population participating in and sharing a single culture in the study area. Changes of that culture occur gradually and are of an internal origin rather than the result of migration or other factors. The collections of pottery utilized must represent short time spans, and it is assumed that most sites are occupied for short periods of time in relation to the entire chronology. Finally, the best patterns will occur when samples representing continuous sections of time are used.

The normative type and its cultural correlate, the ceramic continuum, thus represent predictable phenomena, given that the conditions of a stable local culture are met. Change is observable in the ceramic material and is a function of both time and geographic space.

These assumptions provide the methodological constraints for any seriation technique. Some of these assumptions have been criticized, including the basic concept of the nature of the curve of relative popularity of types (McNutt 1973). Additionally, the practical problems of ceramic collections themselves are cited:

whether the samples are representative of the unit or site (McNutt 1973); and whether the duration of time represented by the sample is sufficiently short (Dunnell 1970:311; Cowgill 1972:385). Despite certain attempts to standardize the bounds of seriation's assumptions it is also recognized that ideal methodological models are not necessarily directly applicable to real situations. This being the case, it is desirable to continue to develop seriation techniques that yield reliable results when applied to empirical data (Marquardt 1978:299).

Marquardt (1978:299) also makes the useful point that the most difficult task is that of "relating the ideal models and practical techniques to the systematic investigation of human behavior." The assumptions which are demonstrated to support the methodology are assumptions not merely about potsherds but also about the people and cultures that produced them. Is it possible to understand these assumptions in any other manner? This question is far too complex to address here, but its importance is clear and the following discussion of stylistic variation represents one approach to this issue.

## Stylistic Variation in Ceramics

If typology sometimes seems to be a swamp through which the archaeologist muddles, then stylistic variation is surely the quicksand in which he is lost. At the risk of losing my boots--or worse--I shall briefly examine the topic of stylistic variation particularly as it is related to the assumptions of normative archaeological practice. Other epistemological assumptions of culture generate an alternate view of variation which is also explored as a means of further interpreting ceramic data.

Ceramic variation, given the assumptions of normative types, is a function of temporal and spatial change or variation. Variation of a particular style at a particular time and place represents the degree of conformity between the norm, or mental template, for that style, and the expression of the norm by each artisan as it is exhibited in the pottery (Phillips, Ford and Griffin 1951:62; Ford 1954a:391). The analytic type then logically includes all possible variation, including any deviations from the community standards for a particular style. However, variation from the mental template also becomes a function of time as it persists or fades from popularity; either trend is reflected in the temporal dimension. Furthermore, the practice of seriation does not require identification of the factors of variability except that to be most successful, areal variation must be distinguished from temporal variation (see particularly Deetz and Dethlefsen 1965; Dunnell 1970). In practice, such a distinction is often difficult to make (Whallon 1968, Phillips, Ford and Griffin 1951:63). In fact, the arbitrary boundaries and the underlying assumptions of normative types preclude the consideration of any variation except temporal and spatial variation. This is not meant to be a criticisim of the normative type but is merely a corollary to its purpose as an historical indicator.

Variation and the patterning of attributes was one issue to which Ford and Spaulding addressed themselves in the early 1950's (see Ford 1952, 1954a, 1954b; Spaulding 1953, 1954). Spaulding (1953b:304) advocated the use of statistical techniques to identify nonrandom associations of artifact attributes. Any associations so identified should then serve as the basis of typological classification rather than arbitrarily and informally selected types. He viewed this process as a discovery of the combination of attributes (the expression of variation) favored by the artisan, not the classifier, and as such, were reliable measures of cultural behavior.

Ford (1954:391) in response, protested the use of statistical analysis of attribute patterning as absolutely useless in the study of culture history. Statistical analysis, he stated, " . . . will reveal the relative degree to which the people conformed to their set of ceramic styles at one time and place, but that is all it will do."

Without entering into the other aspects of this dispute, I would argue that each point of view is useful; historical types function well as chronological indicators (Sears 1960), and it is also clear that attributes or groups of related attributes may be useful for certain temporal investigations (Rouse 1960). However, Spaulding's view reflects a concern which seeks to understand variation in cultural terms rather than as a component of temporal dimensions always.

During the 1960's, archaeological theory underwent considerable revision in certain quarters, and to some archaeologists the normative view of culture did not sufficiently explain cultural processes or the variability of the material remains of the archaeological record. Binford (1965:205) argued that a better model of culture was one which viewed culture as a functioning system of many "causally relevant variables." The task of the archaeologist should no longer be to understand culture as only the spatial and temporal transmission of ideas (templates), but to "seek regular, statable, and predictive relationships between [the causative cultural factors]" (Binford 1965:205). One must, for instance, study ceramic variation to isolate and understand the causative cultural factors from which the variation resulted.

This theoretical orientation provided the impetus for a number of studies which argued that different aspects of prehistoric social organization could be inferred through analysis of stylistic variation in material remains:

> "If culturally conditioned behavioral patterning is responsible for artifactual patterning, then changes in the nature and extent of behavioral patterning might reasonably be expected to affect the attribute patterns seen in the resulting objects." (Deetz 1965:2)

Plog (1978) has reviewed several of the ceramic studies (Deetz 1965; Hill 1967; Longacre 1964; Whallon 1968) that are models of this approach. He points out that this approach to stylistic variation is dependent on a set of assumptions concerning the formation of the archaeological record, the means by which ceramic technology is transmitted and practiced, and the causes of variability in the distribution of stylistic elements (Plog 1978:144). A number of authors (Allen and Richardson 1971; Johnson 1972; Stanislawski 1969) question the validity and usefulness of the assumptions particularly the role of women and the social lineage and residence rules.

Plog (1978:157) also cautions that some of the applications and interpretations of the statistical techniques may be somewhat misleading, and finally suggests that the studies have not explained stylistic variation but merely assumed to know what the explanations were. Plog (1978:178) states:

> "at a time when archaeologists have increasingly recognized the complex nature of cultural systems, it is surprising and unfortunate that many of those studying ceramic designs have often assumed that design variability is not a complex phenomena and that it can be described and applied very easily."

The interpretation of ceramic stylistic variation is indeed difficult, and too often Plog's point is underscored as different researchers apply different values and meanings to similar techniques; the explanations generated in such a manner do not actually explain.

However, one is remiss to argue that variation may then be justifiably ignored. To do so obscures the dynamic nature of ceramics and culture (Brockington 1967:4). I suggest that stylistic variation does provide a potential source of information. While temporal control generally requires the use of standard typologies, the identification of patterns of variation within the chronology may lead to additional inferences.

This chapter emphasizes the assumptions involved in typical chronological problem solving. The point of the emphasis is that interpretation of one's data and methods is always necessary, even for techniques which "establish" chronologies. Thus one's assumptions ultimately reappear as a component of one's solution, i.e., the chronology, just as may happen when one attempts to explain variability in some dimension other than time and space. In the concluding chapter, I will illustrate how these considerations may be applied to the problem of Pisgah chronology.

# CHAPTER THREE

## Attribute Analysis: Methods and Results

Though the process of recording observations from ceramic potsherds may seem straightforward or mundane to some, certain individuals have been known to "hear" potsherds "speak," obviously garnering a clear and exciting advantage over most analysts (see Binford 1972:4-6, for a wistfully cynical description of this phenomenon). In fact, the struggle to perform the "correct" or "complete" ceramic analysis is an impossible task; there exists an infinity of ways in which a single potsherd may be observed and described. The challenge remains to design the appropriate means of analysis for one's data, based on one's research questions. The attribute analysis described in this study is one example of this continually demanding, and, on occasion, rewarding, process.

The problem studied here represents a combination of a traditional, normative typological exercise based on the assumptions of types as temporal markers, and a fine-scale attribute analysis identifying temporally significant attributes and measuring the degree of similarity between ceramic assemblages. The investigation is designed to broaden the chronological framework for the Pisgah phase, though other implications are also discussed in the final chapter.

I shall refer to the two methodologies as separate entities, but I should make clear that the respective procedures were simultaneous and not easily separable. Each relied on and was supported by the other. It was necessary to "recognize" the Pisgah types in order to create a sample for the attribute analysis, and it was necessary to know and evaluate a variety of attributes to identify the types. This relationship is, I think, implicit in the statements of Rouse (1960) and Sears (1960:325-327) regarding the analytical consideration for the use of types and modes (or attributes).

It is useful to extend this point to the specific scale of the study. Clarke (1968:155) is particularly accurate in pointing out that every artifact contains an infinity of attributes, and that it is necessary to select the attributes relevant to one's problem. A hierarchical arrangement of inessential, essential, and key attributes is also required:

> It is crucial to observe that the selection of attributes is to some extent arbitrary, that at least a preliminary analysis is needed to determine which are the essential and inessential attributes, and above all, that the key attributes cannot be accurately defined until after detailed analysis of the data. (Clarke 1968:155)

To prepare for the attribute analysis I examined a large sample of ceramics from the Warren Wilson site and surface collections from more than sixty sites in Buncombe County. This enabled me to become familiar with

PLATE I
Examples of Pisgah Series surface finish

A. Woven reed (or quill) and brushed surface.
B,C. Rectilinear complicated stamped, Design A.
D. Rectilinear complicated stamped, Design B-3.
E,F. Check-stamped.
G. Smoothed.
H. Curvilinear complicated stamped.
I. Rectilinear complicated stamped, Design B-2.
J. Rectilinear complicated stamped, Design C-1.

A-D from Brunk site, spring; E-J from Warren Wilson site, Feature 229.


PLATE I

PLATE II

Pisgah curvilinear complicated stamped, Design C.
Upper sherd exhibits "Qualla-like" rim.
Feature 229, Warren Wilson site.


PLATE II

a wide range of Pisgah ceramics as well as types from the Swannanoa, Pigeon, and Connestee ceramic series which occur in western North Carolina (Holden 1966, Keel 1976). I prepared the attribute analysis format during these preliminary investigations.

As mentioned earlier, Dickens hypothesized the temporal subphases on the basis of ceramic characteristics. Dickens noted the following distinctions between the two subphases (summarized from Dickens 1970, 1976):

Early Pisgah

1. Crushed quartz temper
2. Preponderance of the narrow form of Rectilinear Design A surface finish, usually present on,
3. Small jars with unmodified or thickened rims or short, thick collars
4. Small element check stamping as a minority surface finish
5. Loop handles

Late Pisgah

1. Rectilinear Design A is predominately the broad variety, nearly always applied to
2. Large, collared jars, or on small bowls with straight rims or inslanted rims
3. Rectilinear Design C more frequent
4. Curvilinear stamped surface finish
5. Lugs and appliqued strips
6. Incised decorations

Obviously these characteristics were investigated during the preliminary analysis. Through that analysis it was clear that most variation in Pisgah ceramics occurred in rim treatment and the accompanying decoration to vessel rims, collars, and lips. As a result of these considerations the final, "essential" attributes selected are primarily dimensions of stylistic components of vessel form and decoration.

The analysis form shown in Appendix B is the result of several attempts to describe in a manageable way the potential variation of Pisgah stylistic attributes. I conceive of the attributes as reflections of standards or customs (modes) which governed the behavior of the prehistoric artisan (Rouse 1960:313). Rouse states that these standards are passed on to members of the community through time and they may also spread across geographical space. Thus the occurance and relative frequencies of attributes change as a function of time (ignoring other factors), though rates of change are not necessarily equal. Given these assumptions, I planned to examine the frequency of types and attributes and to identify patterns of attribute association, especially associations with the hypothesized temporally significant attributes. However, for the purposes of this study the detail of attribute values designed into the analysis form actually created difficulties which hindered a useful comparison of patterns of attribute association. The scale of analysis was too fine for the size of the study sample; most categories ultimately included few members and the associations produced were not informative. This required regrouping or clustering of attribute values; for example, more than one hundred different observed collar decorations were recombined into twenty-six decorative motifs. Some problems were alleviated but, in general, the overall effectiveness of the study was limited by the small sample size.

Actual analysis of the pottery was quite time consuming, especially the numerous surface finish measurements required. Each attribute value was recorded on coding paper and all observations were then keypunched onto data cards. Table 1 describes the four sample units. The entire sample of 2003 sherds was used for type frequency data. Identical rimsherds from the same vessel were treated as one for the attribute analysis; thus all of the non-typological attribute analysis is done on a sample of 175 rimsherds from the Warren Wilson site and 205 rimsherds from the Brunk site.

The following is a brief description of the attributes, particularly the key attributes of rimform and decoration:

TEMPER

Temper characteristics are examples of the few non-stylistic attributes considered and are primarily of interest for comparative purposes. No crushed quartz temper was observed from either sample; both the Brunk site sample and the Warren Wilson sample were nearly 90% unmodified sand. Other tempering materials consisted of grit, feldspar, sand plus grit, and sand plus mica. Temper size comparisons are also similar with approximately 50% of the sample distributed in the coarse and larger categories.

TABLE 1

CERAMIC SAMPLE SIZE

| Sample Unit | Total # Sherds | Analyzed Sample | Rim Sherds* |
|---|---|---|---|
| Feature 7 | 1135 | 395 | 73 |
| Feature 229 | 1750 | 659 | 152 |
| Total Warren Wilson Site | 1995 | 1054 | 235 |
| Brunk Site Excavated | 1884 | 360 | 116 |
| Brunk Site, Spring | 2840 | 589 | 161 |
| Total Brunk Site | 4724 | 949 | 277 |

*With duplicate rimsherds subtracted, the sample size of rims used for attribute frequencies was reduced to:

Warren Wilson Site: 175
Brunk Site: 205

## PLATE III

Pisgah collared rims with punctated collar decoration. (Note narrow form of Design A, Rectilinear complicated stamped--rows C,E. Brunk site.)

## PLATE IV

Pisgah collared rims with incised triangular and oblique-angled designs. Brunk site.


PLATE III

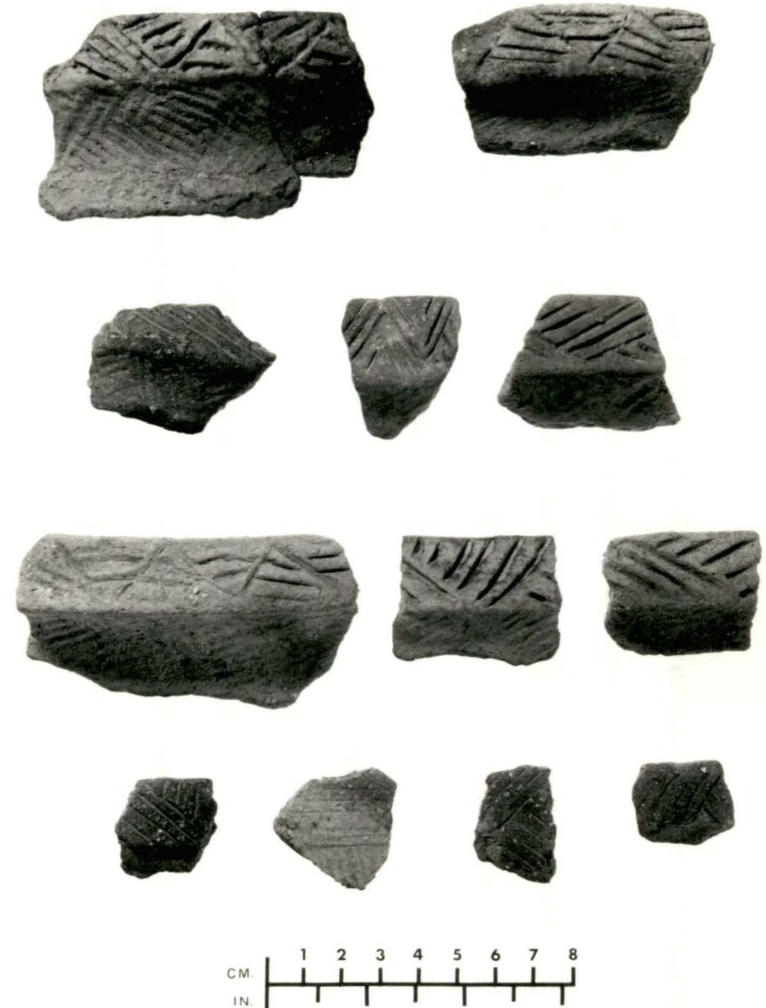



PLATE IV

SURFACE FINISH

Surface treatment of Pisgah vessels was primarily applied with carved wooden paddles, most often exhibiting patterns of 2 to 4 vertical grooves flanked by rows of horizontal grooves (Dickens 1970:28). Checked and curvilinear stamping also occurred in smaller numbers (For a complete list of surface treatments the reader is referred to Appendix B.). (See Plate I and Plate XIV).

Surface finish descriptions were applied according to Dickens' Pisgah Series type descriptions (1970:27-57), with minor additions. A second variety of rectilinear complicated Design C, in which the horizontal elements are acutely angled to the checked vertical elements, was identified from the Warren Wilson sample (Plate XIV, E). Feature 229 also included examples of a bold, sloppily executed curvilinear complicated stamped design, which is designated Curvilinear Design C (Plate II). The bold curvilinear design is similar to those displayed on Qualla ceramics (Joffre Coe, personal communication; cf. Egloff 1967:plate VI); the appearance of this design on a Pisgah collared vessel is an excellent example of "transitional" Pisgah pottery occuring during late Pisgah times (Dickens 1976:183).

Each potsherd was coded according to the variety of surface finish, (Rectilinear B-2, for example) to generate more potential intra-assemblage attribute associations. Tables 2-3 show that Rectilinear Design A

TABLE 2

PISGAH CERAMICS FROM THE WARREN WILSON SITE

| | Feature 7 | | Feature 229 | | Total | |
|---|---|---|---|---|---|---|
| Ceramic Type | No. | % | No. | % | No. | % |
| Rectilinear Complicated Stamped, | | | | | | |
| A narrow | 5 | 1.3 | 5 | 0.7 | 10 | 0.9 |
| A broad | 60 | 15.2 | 114 | 17.3 | 174 | 16.5 |
| B-1 | 93 | 23.5 | 149 | 22.6 | 242 | 23.0 |
| B-2 | 3 | 0.7 | 3 | 0.5 | 6 | 0.6 |
| B-3 | 10 | 2.5 | 16 | 2.4 | 26 | 2.5 |
| C-1 | 18 | 4.6 | 16 | 2.4 | 34 | 3.2 |
| C-2 | 2 | 0.5 | -- | | 2 | 0.2 |
| Curvilinear Complicated Stamped | | | | | | |
| A | -- | | 6 | 0.9 | 6 | 0.6 |
| C | -- | | 4 | 0.6 | 4 | 0.4 |
| Check Stamped, | | | | | | |
| regular | 30 | 7.6 | 38 | 5.8 | 68 | 6.4 |
| diamond | 10 | 2.5 | 68 | 10.3 | 78 | 7.4 |
| Plain, | | | | | | |
| rough | 1 | 0.3 | 1 | 0.2 | 2 | 0.2 |
| smoothed | 9 | 2.2 | 4 | 0.6 | 13 | 11.2 |
| Net impressed | 1 | 0.3 | 1 | | 2 | 0.2 |
| Cord marked | 1 | 0.3 | 3 | 0.5 | 4 | 0.4 |
| Smoothed Stamp | 14 | 3.5 | 19 | 2.9 | 33 | 3.1 |
| Unidentified curvilinear stamped | 1 | 0.3 | 5 | 0.7 | 6 | 0.6 |
| Unidentified rectilinear stamped | 120 | 30.4 | 182 | 27.6 | 302 | 28.6 |
| Unidentified | 17 | 4.3 | 25 | 3.8 | 42 | 4.0 |
| Total | 395 | 100.0 | 659 | 100.0 | 1054 | 100.0 |

TABLE 3

PISGAH CERAMICS FROM THE BRUNK SITE

| Ceramic Type | Spring No. | Spring % | Excavation No. | Excavation % | Total No. | Total % |
|---|---|---|---|---|---|---|
| Rectilinear Complicated Stamped, | | | | | | |
| A narrow | 100 | 17.0 | 76 | 21.1 | 176 | 18.5 |
| A broad | 148 | 25.1 | 29 | 8.0 | 177 | 18.7 |
| B-1 | 186 | 31.6 | 40 | 11.1 | 226 | 23.8 |
| B-2 | 1 | 0.2 | 1 | 0.3 | 2 | 0.2 |
| B-3 | 9 | 1.5 | 5 | 1.4 | 14 | 1.5 |
| C-1 | 12 | 2.0 | 4 | 1.1 | 16 | 1.7 |
| Check Stamped, | | | | | | |
| regular | 1 | 0.2 | 6 | 1.7 | 7 | 0.7 |
| diamond | 3 | 0.5 | 12 | 3.3 | 15 | 1.6 |
| Plain, rough | 7 | 1.2 | 15 | 4.2 | 22 | 2.3 |
| Woven reed (quill?) | 3 | 0.5 | -- | | 3 | 0.3 |
| Unidentified Rectangular Stamped | 102 | 17.3 | 114 | 31.7 | 216 | 22.8 |
| Unidentified | 17 | 2.9 | 58 | 16.1 | 75 | 7.9 |
| Totals | 589 | 100.0 | 360 | 100.0 | 949 | 100.0 |

(both varieties) and Rectilinear Design B-1 constitute 60% and 88% of the identified surface finishes in the Warren Wilson and Brunk samples respectively. Though the comparative frequency data are useful for inter-site comparisons, few meaningful intra-site correlations of attributes can be expected for the remainder of the poorly respresented varieties.

Related problems of sampling and recording procedures need also be mentioned at this point. The selection of body sherds larger than 1" for analysis was necessary to increase the chances of successfully identifying and measuring the design elements on surface finishes. A comparison with Dickens' reported data (1970) suggests that this procedure may have skewed the resultant frequencies.

Dickens reports the following frequencies of identified surface finish for Feature 7 at Warren Wilson (1970:36):

| | |
|---|---|
| Rectilinear Design A | - 64.5% |
| Rectilinear Design B | - 15.7% |
| Rectilinear Design C | - 4.9% |
| Curvilinear designs | - 1.3% |
| Check stamping | - 9.6% |
| Other | - 3.9% |

The frequencies are consistent with those computed for the entire sample of features Dickens analysed:

| | |
|---|---|
| Rectilinear Design A | - 73.9% |
| Rectilinear Design B | - 11.2% |
| Rectilinear Design C | - 1.5% |
| Curvilinear designs | - 1.4% |
| Check stamping | - 8.2% |

Other - 3.8%

By comparison, Table 2 reveals the frequencies computed in this study as:

Rectilinear Design A - 25.5%
Rectilinear Design B - 41.0%
Rectilinear Design C - 7.7%
Curvilinear designs - 0.3%
Check stamping - 15.5%
Other - 10.0%

These figures are relatively consistent with those computed for Feature 229 also. The discrepancies between the studies are most apparent for Rectilinear Design A and Rectilinear Design B; this caused concern since the relative frequency of the narrow variety of Rectilinear Design A is one of the temporally significant attributes of Pisgah ceramics. It is nearly impossible to mistake these stamped designs when the entire design is present, and I believe the source of the discrepancy lies in the sampling procedure. Whereas my sample consisted of the larger sherds, Dickens' figures included the entire sample of sherds from the features analysed. Thus it may be that the sample of sherds less than 1" (not analysed) contains an abundance of Rectilinear Design A compared to Rectilinear Design B. This example illustrates the difficulties one may encounter when comparing data from different studies, and a frequency seriation based on mixed data is clearly liable to this problem. However, since the same procedures obtained for each sample in the present study, I will assume that the calculated frequencies are representative of the total sample.

Midway through the project I became aware of another bias inherent in the surface finish analysis. The Unidentified Rectilinear Complicated category consists primarily of Design B examples which could not be discriminated at the variety level; the designs are difficult to separate unless the entire design element is present. Separate categories for Unidentified Design A and Unidentified Design B would have increased the sample of identified surface treatment at the design level, which we have seen is the more useful comparative level.

A comparison of Tables 2 and 3 reveals that intra-site surface finish frequencies are rather similar; inter-site frequencies, however, are relatively different. Notably, the Brunk collection contains a much larger percentage of the narrow form of Rectilinear Design A, a proposed trait of the early temporal subphase, and no examples of curvilinear designs, a late subphase characteristic. These data suggest a temporal separation between the sites which will be discussed further in the following chapter. It should also be noted here that the wide difference in check stamped frequencies is perhaps misleading as nearly 75% of the check stamped sherds from Warren Wilson are attributable to one vessel recovered from Feature 229.

The attributes numbered 6 through 19 required measurements of the individual elements of surface finish

TABLE 4

MEAN AND STANDARD DEVIATION OF SELECTED ATTRIBUTES
WARREN WILSON AND BRUNK SITES
RIM SHERD SAMPLE

| Attribute | Warren Wilson Site | | | Brunk Site | | |
|---|---|---|---|---|---|---|
| | # | Mean (mm) | Standard Dev. | # | Mean (mm) | Standard Dev. |
| 6. CHWD | 16 | 2.5 | 1.10 | 6 | 1.9 | 0.38 |
| 7. CHLN | 15 | 3.1 | 0.99 | 6 | 2.6 | 0.60 |
| 8. CHLD | 16 | 1.1 | 0.34 | 5 | 0.8 | 0.27 |
| 9. VTWDGR | 62 | 2.2 | 0.88 | 87 | 1.6 | 0.70 |
| 12. VTWDLD | 60 | 1.4 | 0.64 | 87 | 1.2 | 0.42 |
| 13. HWDGR | 85 | 1.7 | 0.77 | 178 | 1.3 | 0.57 |
| 14. HLGGR | 19 | 22.6 | 8.27 | 36 | 16.2 | 9.01 |
| 16. HWDLD | 85 | 1.3 | 0.44 | 118 | 1.2 | 0.44 |
| 22. CWT | 110 | 5.0 | 1.10 | 113 | 4.7 | 2.55 |
| 23. CWB | 104 | 8.4 | 1.51 | 95 | 9.6 | 2.09 |
| 24. CLN | 102 | 21.9 | 6.67 | 94 | 19.2 | 4.61 |
| 25. THWD | 3 | 10.3 | 4.16 | 20 | 11.7 | 5.04 |
| 26. UMWD | 60 | 4.8 | 1.66 | 58 | 5.9 | 2.33 |
| 27. VAREA | 155 | 14.0 | 8.04 | 139 | 12.1 | 5.71 |

designs and were made using metric calipers (Table 4). It is quite clear that the design elements employed on vessels at the Brunk site are generally smaller than those at the Warren Wilson site. The average difference is primarily related to the relative frequencies of the narrow form of Rectilinear Design A; however, the design elements on all surface finish types reflect the same difference.

Interior surface finishes also reflect some difference between assemblages: 86% of the Brunk sample had smoothed interiors as opposed to 45% at Warren Wilson; the remaining 55% were burnished. Burnishing was especially common on shallow bowls.

RIM FORM

The attributes associated with rim form are the most interesting and perhaps most critical attributes of Pisgah ceramics. Vessel form provides a reliable classificatory scheme, and Pisgah vessels are distinctive for their numerous expressions of form, most of which involve a modification of the rim by application of a collar or thickened lip.

Few whole, or nearly whole, vessels were represented in these samples. The rim profile was then the diagnostic feature of vessel form. A rim profile was drawn for each intact rimsherd using a molding tracing tool. A code number was assigned to the drawing, and subsequent drawings were compared and given separate numbers where necessary.

## PLATE V

Pisgah thickened rims from the Brunk site.

A. everted with decorated lip.
B. everted, plain lip.
C. straight.

## PLATE VI

Pisgah collared rims from the Brunk site.

A. Y Collar; note technique of collar application.
B,C. Constricted neck vessels with loop handles.
D. Small vessels; diameters less than 15 cm.

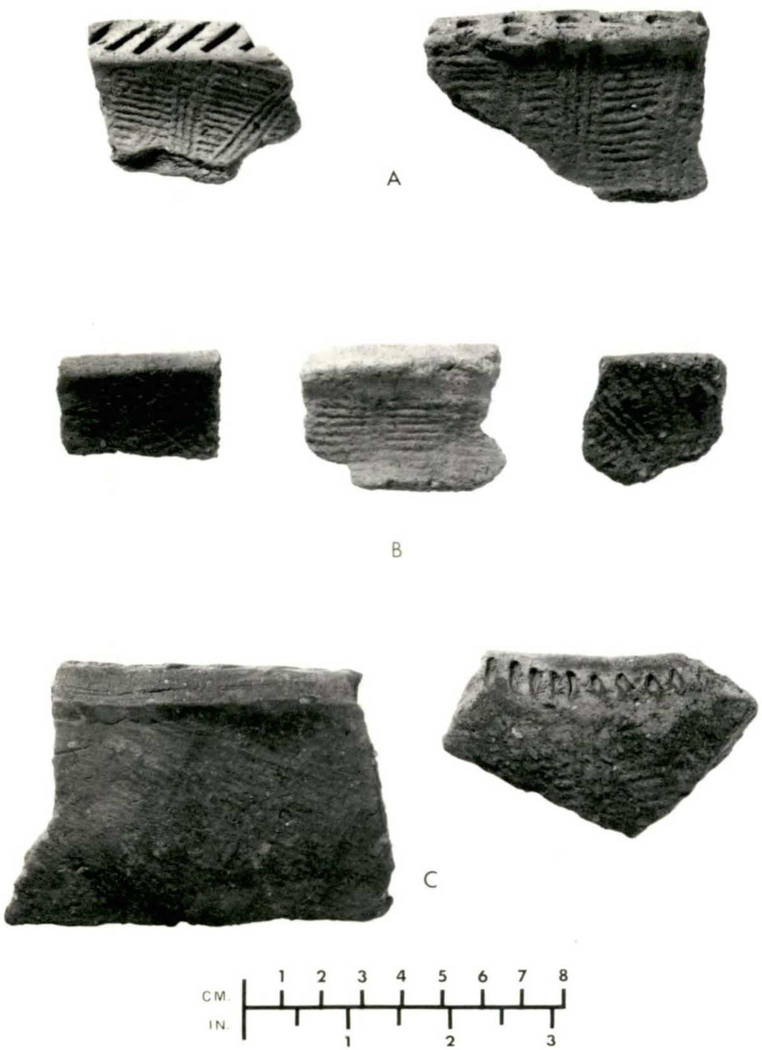



PLATE V

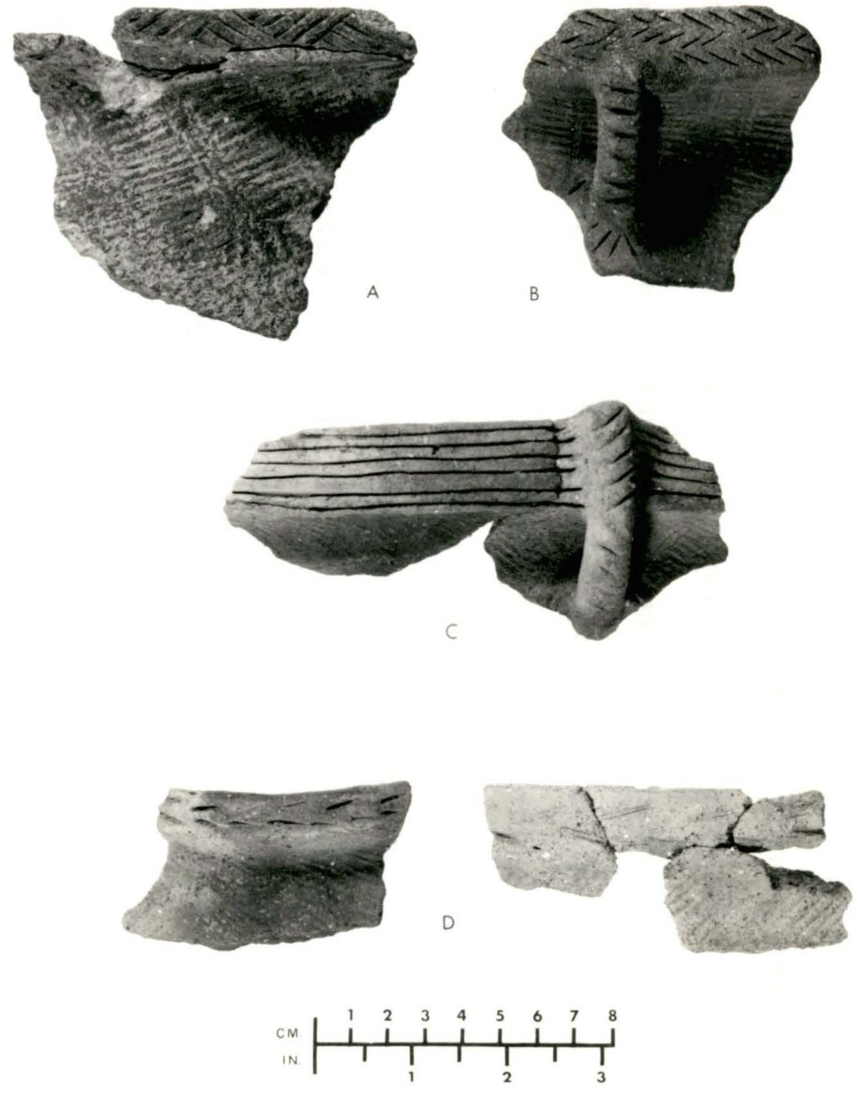



PLATE VI

Unlike most attribute lists one examines, the present analysis contains no specific category of lip form. I felt the exclusion was warranted because of the tremendous variation of the rim forms. The lip form was incorporated to a certain extent in the profile drawings, i.e. a rolled lip is clearly different from a square lip. However, it was possible to note different lip treatments on a single rimsherd, and I felt these characteristics were nearly insignificant compared to the rim configuration.

The numerous (more than 100) profile drawings were combined into 25 classes of rim forms to create comparative units. The classes were distinguished on the basis of form, size, and angle of the rim (and collar, if present), in a manner similar to Brockington (1967:25). The divisions are extremely difficult to make since the majority of Pisgah vessels exhibit variations of a single theme-the collared rim. Figures 5, 6, and 7 illustrate the classes of rim profiles and examples of the variation within the classes. In some cases it may be unclear as to why separations were made; for example, form classes I and K appear to be similar, as do L and O. I stress the point that the separation is, to a certain extent, arbitrary and was only necessary to enlarge the comparative units to help identify patterns of attribute association. The following is a brief description of the classes to aid the reader.

Six categories of rim forms are recognized: three

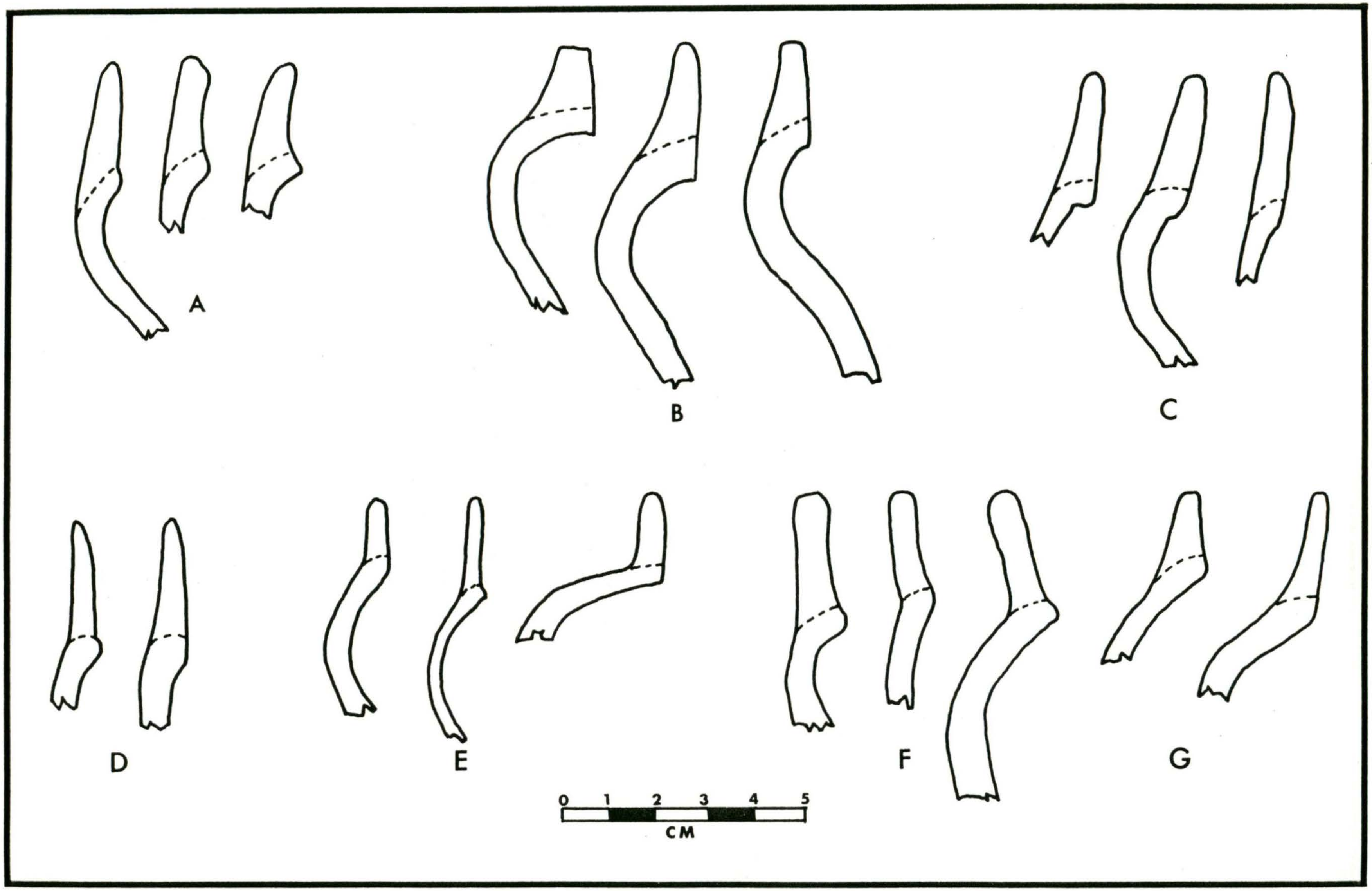



FIGURE 5 Pisgah rim profiles: upright collars (interiors to left)

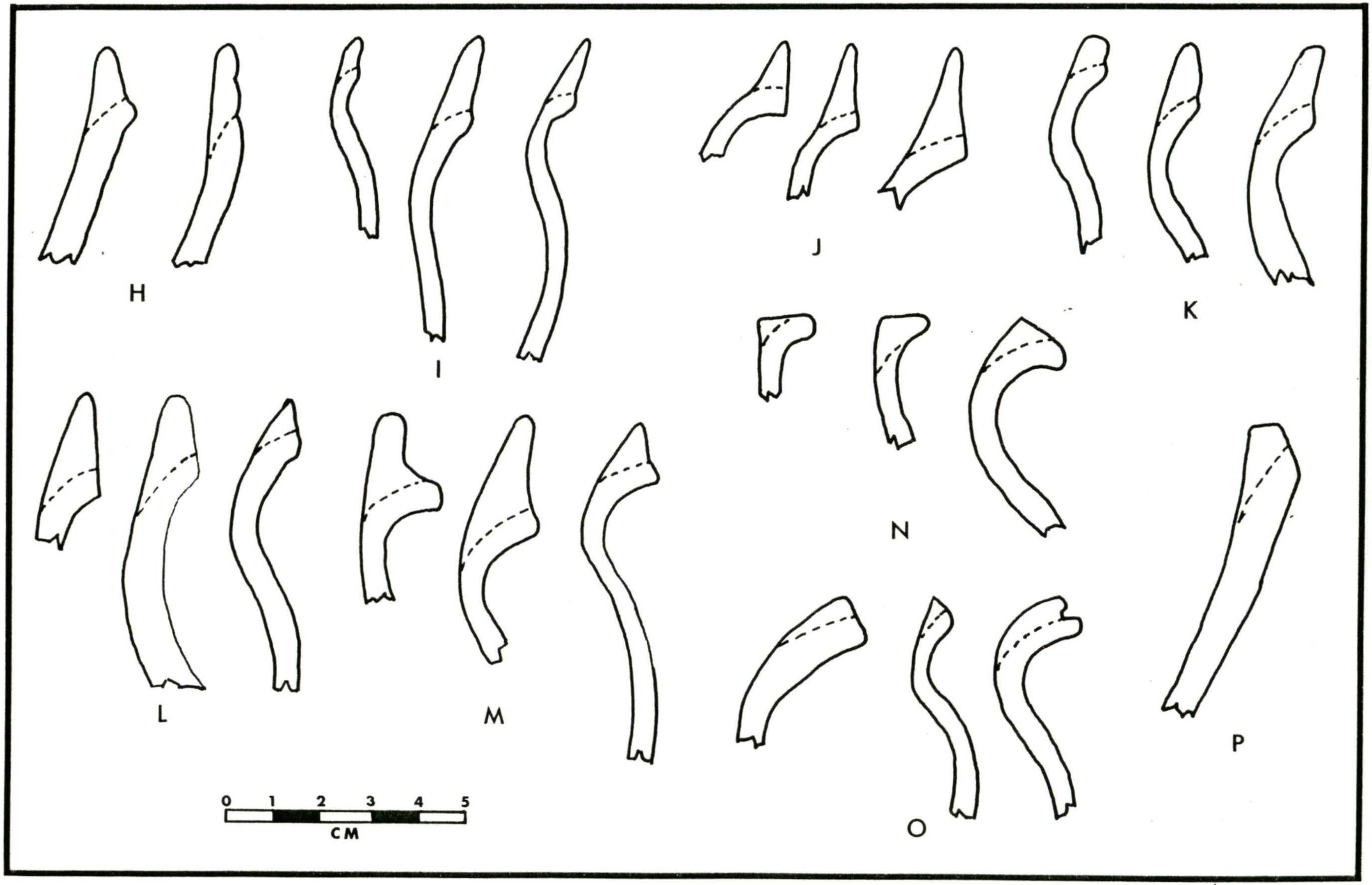



FIGURE 6 Pisgah rim profiles: H-M, Y collars; N-P, thickened rims (interiors to left)

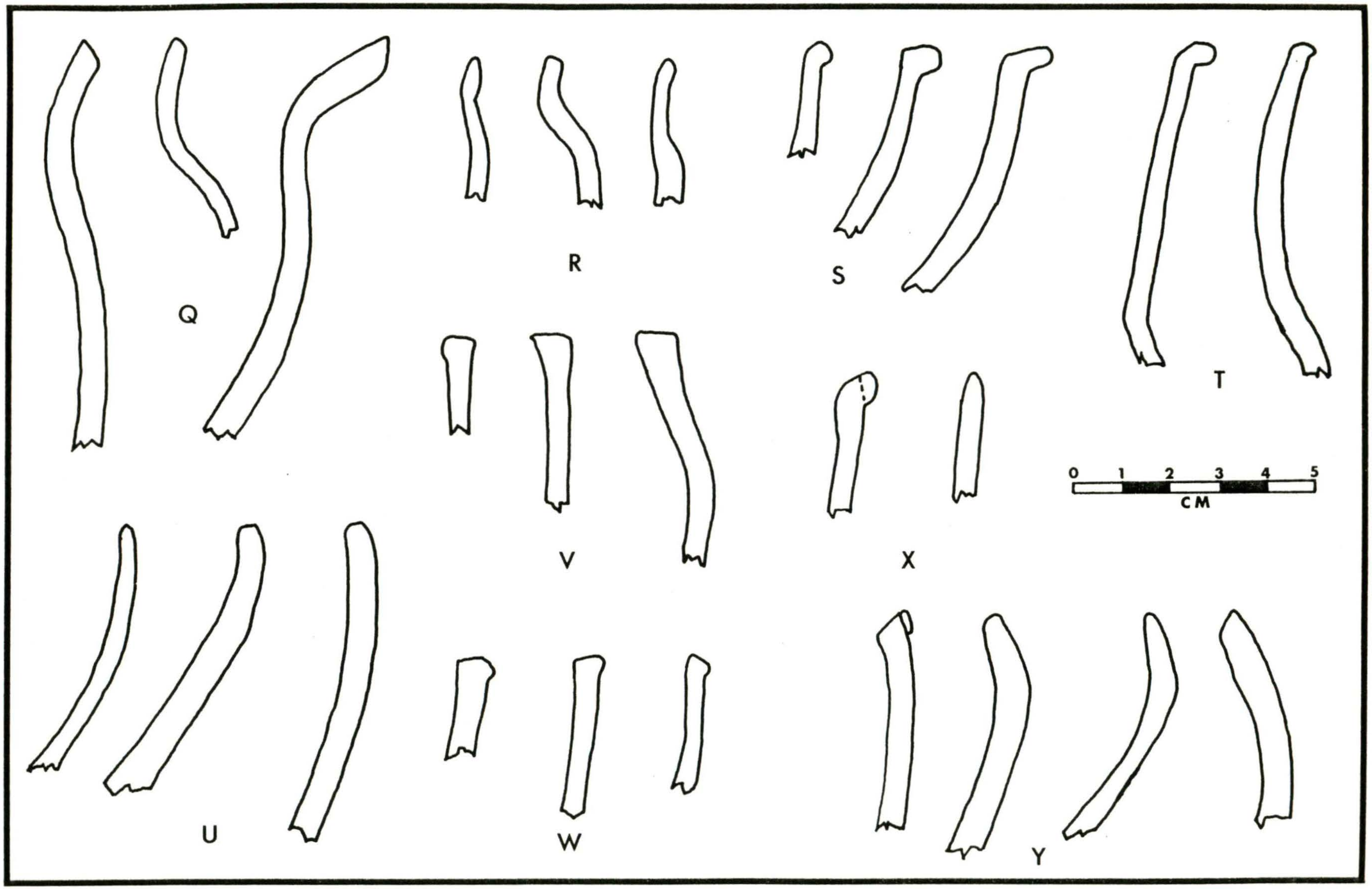



FIGURE 7 Pisgah rim profiles: unmodified rims; everted, Q-T; straight, U-X; inslanted, Y (interiors to left)

exhibiting thickened or collared rims and three with unmodified rims. I retained Dickens' form terms (1970: 48), i.e. everted-collared, everted-thickened, everted-unmodified, straight, and inslanted rims, but divided collared rims into two groups, upright collars and Y-shaped collars.

Upright collars are distinguished by their linear configuration and usually vertical collar face. Rim form classes A-G (Figure 5) represent examples of upright collars (Plate III, A-D). The Y collar forms, H-M (Figure 6), are less linear in profile and tend to display a collar face which is in effect an expanded lip (Plate II upper; Plate III, E). This is partly the result of the single everted curve away from the constricted neck; the upright collars from a double curve such that the back of the collar is usually concave. The ratio of the length of the collar face to the width of the collar base usually approaches 1:1 on the Y collar forms as opposed to 2:1 to 8:1 for the upright forms. Thus the overall impression of the Y collar is the collar theme expressed as an expanding lip rather than a distinct collar.

The thickened rim forms, N-P (Figure 6), are also seen as expressions of the same theme but clearly the result is an expanded lip rather than a collar (Plate V). The lip face may be nearly vertical and collar-like as in class O or nearly horizontal as in class N.

The reader may question whether the distinction between upright and Y collars is a real one. That a difference exists I do not doubt; the question might better be whether it is a useful distinction. I believe it is to the extent that variations of the collar practices are described in detail, and it allows further examination of attribute associations, particularly rim forms and decorations. Its utility is limited somewhat in the present study due to the small sample size; further work could establish different and perhaps more easily distinguishable classes. One must remain aware, however, that the collaring concept and practice revolve around one theme: vessel orifices are bounded by an enlarged surface upon which a multitude of decorations are applied. One should not expect to easily create analytical divisions of what was probably the expression of one basic idea. The Pisgah collar is an excellent example of a conceptual mode (Rouse 1960:313). Further discussion of Pisgah collared rims and the concept of style evolution is included in the following chapter.

The remaining rim form classes are unmodified though in some cases a small coil of clay is added to extend the lip or provide a decorated surface. Unmodified rim forms are everted (Figure 7, Q-T; Plate VII; Plate XIV), straight (Figure 7, U-X; Plate XVI), and inslanted (Figure 7, Y; Plate X, upper; Plate VIII).

The overall rim form frequencies are displayed in Table 5. The frequency data may tend to support an

TABLE 5

FREQUENCY OF ATTRIBUTE CLASS 'FORM' AT THE WARREN WILSON AND BRUNK SITES

(Rim Sherd Samples)

| Form | Brunk No | Brunk % | Warren Wilson No | Warren Wilson % |
|---|---|---|---|---|
| No Value | 42 | | 14 | |
| A | 18 | 11.0 | 13 | 8.2 |
| B | 4 | 2.5 | 9 | 5.7 |
| C | 1 | 0.6 | 34 | 21.4 |
| D | 4 | 2.5 | 13 | 8.2 |
| E | 11 | 6.8 | 1 | 0.6 |
| F | 3 | 1.8 | 3 | 1.9 |
| G | 2 | 1.2 | 1 | 0.6 |
| H | 1 | 0.6 | 2 | 1.2 |
| I | 8 | 4.9 | 8 | 5.0 |
| J | 8 | 4.9 | 1 | 0.6 |
| K | 7 | 4.3 | 5 | 2.5 |
| L | 12 | 7.4 | 6 | 3.8 |
| M | 10 | 6.1 | - | - |
| N | 4 | 2.5 | - | - |
| O | 7 | 4.3 | 3 | 1.9 |
| P | 1 | 0.6 | - | - |
| Q | 9 | 5.5 | - | - |
| R | 5 | 3.1 | 13 | 8.2 |
| S | 3 | 1.8 | 15 | 9.4 |
| T | - | - | 2 | 1.3 |
| U | 23 | 14.1 | 17 | 10.7 |
| V | 9 | 5.5 | - | - |
| W | 3 | 1.8 | - | - |
| X | 3 | 1.8 | 1 | 0.6 |
| Y | 7 | 4.3 | 13 | 8.2 |

Combined Class Frequencies

| | | | | |
|---|---|---|---|---|
| Collar Forms A-G | 43 | 26.4 | 74 | 46.3 |
| Y-Collar H-M | 46 | 28.2 | 22 | 13.8 |
| Thickened N-P | 12 | 7.4 | 3 | 1.9 |
| Everted-Unmod. Q-T | 17 | 10.4 | 30 | 18.7 |
| Straight Rim U-X | 38 | 23.3 | 18 | 11.2 |
| Inslanted Rim Y | 7 | 4.3 | 13 | 8.1 |
| | 163 | 100.0 | 160 | 100.0 |

PLATE VII

Pisgah jar with unmodified, everted rim.
Brunk site, spring.


PLATE VII

earlier assemblage at the Brunk site, as thickened rims are more numerous but not substantially so. In contrast, Dickens suggests that inslanted rims were introduced to the Ridge and Valley region after 1250 AD (Dickens, 1976: 209) and though the Brunk assemblage contains more than 4% inslanted rims, the Warren Wilson assemblage consists of nearly double that at 8.1%.

It is uncertain whether there is any temporal significance to the distribution of collar forms. However, the Y collar may represent a transitional form and would therefore have some temporal integrity. Unfortunately, this interpretation is made more complex since the Y form appears to be transitional from the thickened rim to the collar and, later, from the Pisgah collar to the Qualla rims with decorated fillets applied to the vessel exterior below the rim. Stepping further onto this limb, I would suggest that Forms I, J, and K will be found more often in the late transitional group, while forms L and M will predominate in an early transitional group. Further work with larger samples may be able to more adequately address this issue.

The relative frequencies of everted-unmodified and straight rims, though dissimilar, may reflect functional, not temporal, differences. Class S, for example, consists of shallow bowl vessels, a form which is quite common in the Warren Wilson collection (see Plate X, for example). These vessels often have finely burnished

PLATE VIII

Pisgah unmodified rims from large bowls. Feature 229, Warren Wilson site.

PLATE IX

Rim sherds from small, shallow bowls with scalloped and notched lips.  Note fitting sherds, bottom row; plain rim and applied, scalloped strip on same vessel.


PLATE VIII

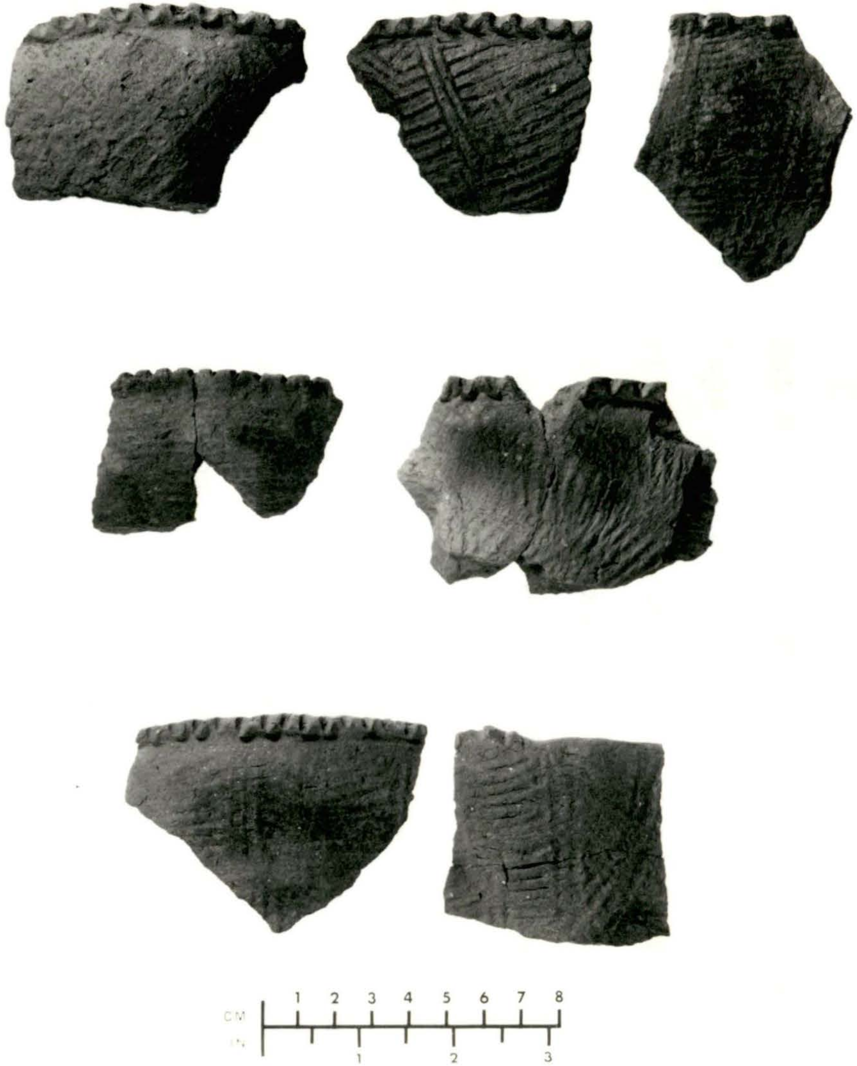



PLATE IX

interiors and lips that have been impressed to form extremely regular scallops (Plate IX). These vessels may have served in a functional role which occurred infrequently, if at all, at the Brunk site.

Attributes numbered 22 through 26 are metric measurements of rim and collar elements. Collar length (vertical length of the collar face) shows the most variation, and it too is consistent with an early temporal interpretation for the Brunk assemblage. While all four samples yielded collars from 4 mm to more than 30 mm in length, the majority of the Brunk collars were smaller as seen in the figures below:

| | |
|---|---|
| Brunk, excavated sample: | 76% of collars are between 13 and 22 mm |
| Brunk, spring: | 70% of collars are between 16 and 23 mm |
| Warren Wilson, Feature 7: | 59% of collars are between 16 and 30 mm |
| Warren Wilson, Feature 229: | 65% of collars are between 21 and 30 mm |

COLLAR and LIP DESIGN MOTIF

I adopted a commonly used graphic procedure to record the characteristic Pisgah collar and lip designs (cf. Deetz 1965:67 and Tuck 1971:Appendix) whereby a drawing was made and a number assigned to each different design. These drawings reflected differences in design technique in terms of overall style. That is, broad incised lines were distinguished from fine lines, and sharp, thin punctations were separated from round, flat, and angular punctations. Measurements of the design elements were also recorded.

This procedure suffered from the same sampling problems mentioned previously; the extent of described variation was too large for the sample size.

Classes of design motifs were created by joining varieties of the same decorative idea. This provided an adequate scale for frequency analysis but still was not appropriate for use with the attribute associations. Descriptions of the collar design motifs and lip design motifs (for uncollared vessels) appear in Appendix B and the frequencies appear in Tables 6 and 7.

The design motif frequencies are striking in the relative lack of variability in the Warren Wilson assemblage. Two and three element "herringbone" designs (CMOT K and L) appear on nearly 65% of collared rims from that assemblage (Plate XIII). Though these designs appear in the Brunk material, more total designs are expressed in more closely equal frequencies. The same pattern holds for lip decoration where the variation is much greater at the Brunk site.

Of particular note is the overwhelming difference in incised designs (CMOT B, C, R, S, T, LMOT A, I, K). Thirty-four examples occur in the Brunk sample and only two in the Warren Wilson sample. Dickens points out that oblique-angled, incised designs (CMOT R for example--see Plate IV) occurs as a consistent minority decoration in

TABLE 6

FREQUENCY OF ATTRIBUTE CLASS 'CMOT' (Collar Design Motif)

FROM WARREN WILSON AND BRUNK SITES

Rim Sherds

| | Warren Wilson | | Brunk | |
|---|---|---|---|---|
| CMOT* | No. | % | No. | % |
| B | — | | 5 | 4.6 |
| C | 1 | 0.9 | 5 | 4.6 |
| E | — | | 15 | 13.8 |
| F | — | | 2 | 1.8 |
| G | 1 | 0.9 | 10 | 9.2 |
| H | 16 | 13.8 | 8 | 7.3 |
| I | 9 | 7.7 | 10 | 9.2 |
| J | 1 | 0.9 | 2 | 1.8 |
| K | 19 | 16.4 | 15 | 13.8 |
| L | 54 | 46.5 | 14 | 12.8 |
| M | 10 | 8.6 | 3 | 2.8 |
| N | — | | 1 | 0.9 |
| Q | 2 | 1.7 | — | |
| R | — | | 12 | 11.0 |
| S | 1 | 0.9 | — | |
| T | — | | 6 | 5.5 |
| U | — | | 1 | 0.9 |
| V | 2 | 1.7 | — | |
| Total | 11 | 100.0 | 109 | 100.0 |

*Collar Design Motifs A,D,O,P, and W did not occur in samples. See Appendix B, 33. for explanation of symbols.

TABLE 7

FREQUENCY OF ATTRIBUTE CLASS 'LMOT' (Lip Design Motif)
FROM WARREN WILSON AND BRUNK SITES

| | Warren Wilson | | Brunk | |
|---|---|---|---|---|
| LMOT* | No. | % | No. | % |
| A | — | | 2 | 5.0 |
| B | — | | 1 | 2.5 |
| C | 1 | 2.7 | 11 | 27.5 |
| D | — | | 1 | 2.5 |
| E | — | | 6 | 15.0 |
| F | — | | 4 | 10.0 |
| G | 8 | 21.6 | 3 | 7.5 |
| H | 27 | 73.0 | 2 | 5.0 |
| I | 1 | 2.7 | 3 | 7.5 |
| J | — | | 1 | 2.5 |
| K | — | | 1 | 2.5 |
| L | — | | 1 | 2.5 |
| N | — | | 4 | 10.0 |
| Total | 37 | 100.0 | 40 | 100.0 |

*Lip Design Motif M did not occur in samples. See Appendix B, 32 for explanation of symbols.

PLATE X

Small, shallow bowl, (upper) and small jar (lower) from Feature 229, Warren Wilson site. (Shown full size.)

PLATE X

western North Carolina (1970:39). Whether this type of design has any temporal significance is uncertain; however, it also appears on Qualla ceramics where it is a common decorative form on cazuela bowls (Egloff 1967:Plate III).

Decoration was present on 100% of the Warren Wilson collars and all but two of the Brunk collars (Table 5). About 50% of the everted-unmodified and straight rims were decorated in both assemblages. Most often decoration occurred across the top of the lip (Plate XII, A and D).

Measurements of the design elements did not prove to be useful, reflecting more the technique of decoration, i.e. whether a fine or broad punctation occurred, and the size of lip or collar area available.

VESSEL APPENDAGES

Table 8 lists the types and locations of decorative appendages. The presence of appendages is generally too small to discuss except to note the three loop handles (Plate VI, B and C), characteristic traits for the early subphase, in the Brunk assemblage. Table 8 also lists the decorations applied to the appendages.

The attribute analysis described here produced a variety of frequency data. Chapter Four discusses what can usefully be done with this data.

TABLE 8

APPENDAGE FREQUENCIES

| Types and Location of Appendage | Warren Wilson # | Brunk # |
|---|---|---|
| 1. Appliqued strips on collars | 4 | 1 |
| 2. Node on exterior edge of lip | - | 7 |
| 3. Node on top of lip | - | 1 |
| 4. Node on collar face-vertical | 2 | 1 |
| 5. Loop handle | - | 3 |
| 6. Horizontal castellation on lip | 3 | - |
| 7. Vertical castellation on collar face | 14 | 11 |
| Totals | 23 | 24 |

APPENDAGE DECORATION FREQUENCIES

| | Warren Wilson # | Brunk # |
|---|---|---|
| 1. Single element punctation | 15 | 11 |
| 2. Combination element punctation | 4 | - |
| 3. Trail and jab | 1 | 2 |
| 4. Continuation of collar decoration | - | 2 |
| Totals | 20 | 15 |

PLATE XI

Pisgah collared rims from the Brunk site.

PLATE XII

Pisgah rims from the Brunk site.

A-D. Everted, unmodified rims.

E. Miniature collared vessel.

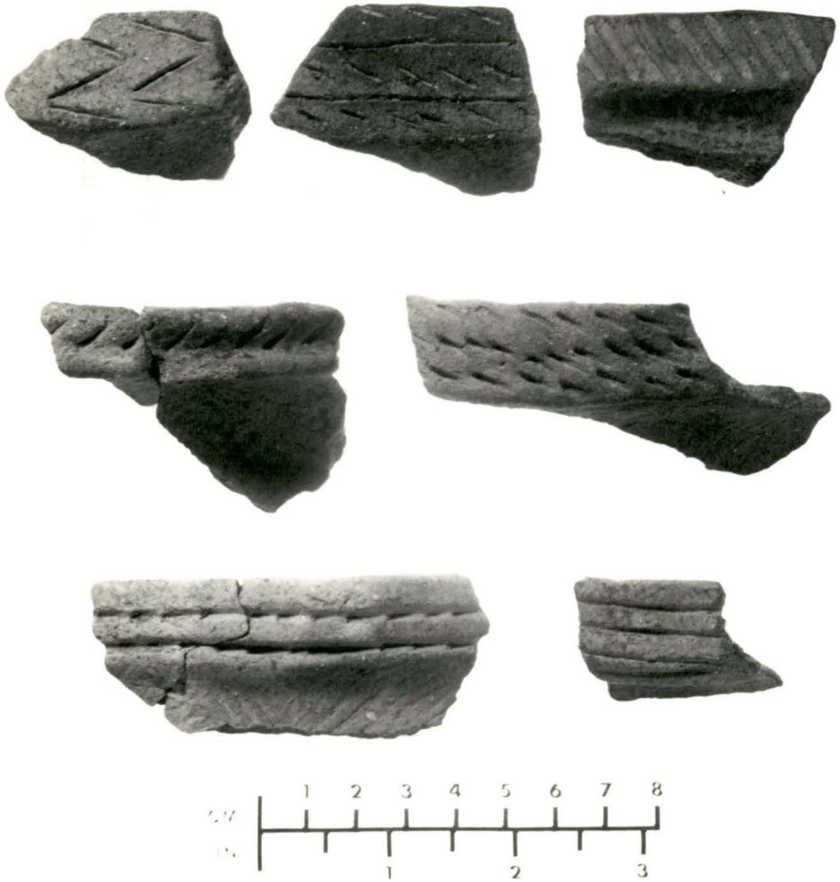



PLATE XI

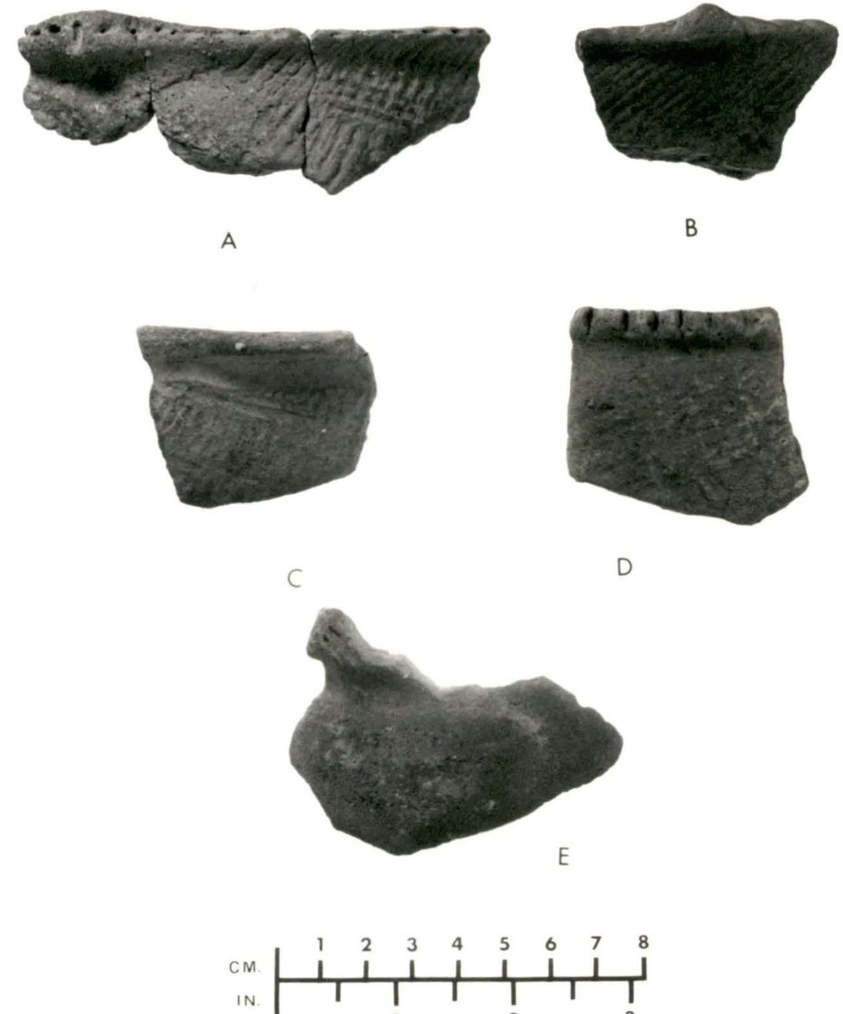



PLATE XII

CHAPTER FOUR

Discussion

The comparison of the Warren Wilson site ceramics and the Brunk site ceramics was performed with respect to three goals: to determine a temporal relationship between the respective sites based on Dicken's subphases, to identify attribute associations within each assemblage, and to assess the overall similarity of the assemblages.

One may approach the chronological problem in several ways, including seriation. Seriation is of limited value to this study since only two sites are involved; however, the principle may be accepted in order to demonstrate whether the sites are coeval (or temporally separated).

The study data were seriated first by type frequencies (Ford 1962), and second, by the Brainard and Robinson technique (Brainard 1951; Robinson 1951) utilizing indices of agreement. The type frequency seriation simply compared the percentages of identified types (derived from Table 2 and 3) from each site. As mentioned earlier, the frequency patterns differed primarily with respect to the narrow form of rectilinear design A, curvilinear designs, and check stamped types. It is not necessary to illustrate this example with a bar graph; the frequency pattern curves are not informative for two sites. However, given the assumptions of the procedure, a temporal separation of the sites could be suggested.

Another seriation procedure was performed using the Brainard and Robinson technique (Brainard 1951; Robinson 1951). In this example the original 4 sample units were treated as separate collections (Phillips, Ford and Griffin 1951) and ordered individually to take advantage of the original criteria of sample unit selections. There are two advantages to this procedure; each of the units is assumed to represent a more limited time span (this is more applicable to the Warren Wilson units than to the Brunk units) in relation to the chronological life span of the site and, the number of units to be ordered is now doubled.

Surface finish frequencies again provided the data for this procedure; the rectilinear design varieties of B and C were combined to form two types, and the curvilinear varieties were similarly combined in order to reduce the number of poorly represented types. An index of agreement for each pair of units was calculated by summing the absolute values of the differences in type frequencies, and subtracting that figure from 200. The matrix below represents the "best" ordering of the units following the Brainard and Robinson practice in which the highest values should be closest to the diagonal and whereby values should progressively increase, across the rows, to the 200 value, and then progressively decrease.

| | A. | B. | C. | D. |
|---|---|---|---|---|
| A. Feature 229 | 200 | 162 | 139 | 119 |
| B. Feature 7 | 162 | 200 | 145 | 125 |
| C. Brunk, spring | 139 | 145 | 200 | 132 |
| D. Brunk, excavation | 119 | 125 | 132 | 200 |

I do not argue that the correct chronological ordering of the four collections, from latest (Feature 229) to earliest (Brunk, excavation) is substantiated by this procedure. However, the example provides no evidence to suggest that a chronological separation between the two sites is unwarranted.

It is possible to perform seriations of attributes in addition to types but it should be clear from the attribute frequency data that these seriations would lead to basically the same interpretations of a separation between the sites. However, the attribute analysis provides a second approach with which one may investigate the temporal issue.

Each of the assemblages may be examined for those characteristics which Dicken's indicates are diagnostic features of the early and late subphases. The Brunk assemblage reflects several characteristic features of the early subphase. There is a clear pattern of occurrence of the narrow form of Rectilinear Design A surface finish (Table 3) and thickened rims (Table 5) in the Brunk collection. In addition, the average size of collars is smaller than that of the Warren Wilson Site. However, both sites show a similar range of vessel size indicated by vessel diameters, from as small as 8 centimeters to more than 40 centimeters. Small element check stamping is another early characteristic, but though the figures for check stamp element size (Table 4, attributes 6-8) are smaller for the Brunk material, the sample sizes are extremely small. Finally, the presence of loop handle appendages is an early subphase characteristic.

The Warren Wilson assemblage, in contrast, reflects predominately late subphase characteristics. The narrow form of Rectilinear Design A is only marginally represented (1.4%) in the sample, and curvilinear surface finishes appear on 2.3% of the sample as opposed to no examples from the Brunk site. The relative frequencies of Rectilinear Design C is only slightly higher in the Warren Wilson samples than the Brunk samples (4.8% to 2.4%) and, as such, it is difficult to ascribe any temporal significance of this trait reflected in these particular units. Inslanted rims, another late characteristic, are present on 8.1% of the Warren Wilson sample

PLATE XIII

Pisgah rims from the Warren Wilson site.
A. Collared rims with applied clay strips or nodes.
B. Examples of rim forms in which collar is only subtly present.

PLATE XIV

Unmodified, everted rims from Feature 229, Warren Wilson site.

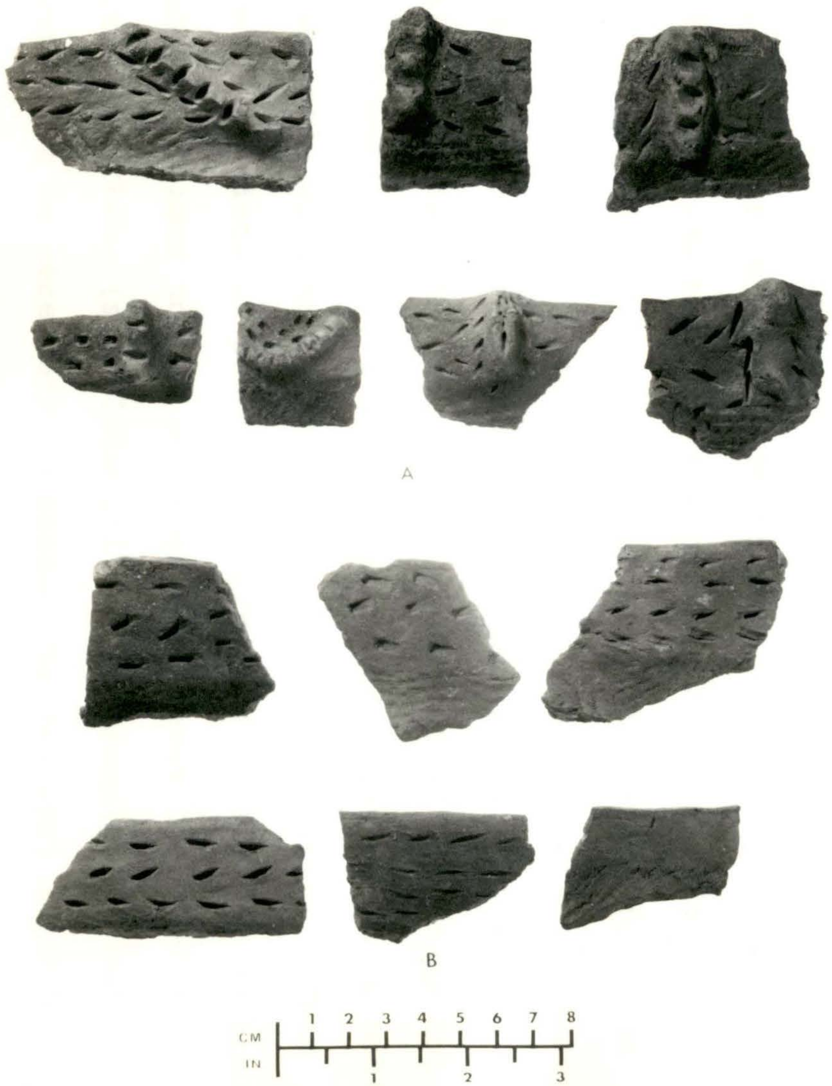



PLATE XIII


PLATE XIV

and on 4.3% of the Brunk sample; it is also difficult to determine how much consideration should be given this trait.

Another characteristic of the late subphase is the use of incised decorations. Including both lip and collar decoration the Brunk collection numbers 34 examples of incising, the Warren wilson collection only 2. Furthermore, the oblique, triangular patterns which Dicken's suggests are a late feature, are present on 15 rims (CMOT R, LMOT I) in the Brunk collection as opposed to 1 example from the Warren Wilson units.

The distribution of incised decorations is somewhat surprising. It is the only trait which contradicts the distribution of hypothesized subphase traits. Dickens notes that incised, oblique-angle patterns are occasionally present in western North Carolina collections (Dickens 1976: 178) and based on the prevalence of this design in the Brunk material (and in surface collections from the Ivy Creek area), I suggest that it reflects other factors in addition to the temporal considerations. It should also be noted that the collar design motif W, though not represented in the study sample units, does occur on subsequently excavated material from the Brunk site. This motif consists of punctations arranged in similar oblique-angled designs and, I believe, represents the same decorative theme (see Plate III, A for examples). More work will be necessary to assess the temporal significance of these decorative motifs.

The separation of attributes according to Dickens' proposed subphases is surprisingly clear: the Brunk assemblage exhibits a preponderance of early subphase characteristics while the Warren Wilson assemblage displays many characteristics of the late subphase. One should not expect an absolute distinction between the assemblages as it is quite natural for the variation in the ceramics to reflect a greater temporal span than was assumed for the purposes of this study.

One final distinction is noted. Several Warren Wilson vessels exemplify the late "transitional" Pisgah pottery, i.e., the style is nearly identical to historic Cherokee, Qualla pottery (Dickens (1976:209-210) has described the development of Qualla ceramics as "a merger of Pisgah and Lamar styles."). The curvilinear surface finishes illustrated in Plate II are decidedly "Qualla-like." In addition, the rim shown is a collared rim but the overall stylistic effect is nearly identical to that achieved by the application of a thin clay fillet below an unmodified rim, a common practice on Qualla vessels (Egloff 1967:37). Similarly, the vessel illustrated in Plate XIV, D exhibits a "Qualla-like" decorated node. The Brunk assemblages contain no examples of such transitional forms, thus reinforcing the impression of early and late subphase designations for the Brunk and Warren Wilson sites, respectively.

The analysis cited here is not intended to prove or disprove the existence of temporal subphases based on ceramic stylistic attributes. To argue that the sites are examples of two different subphases because of the relative frequencies of attributes is, in fact, a form of circular reasoning since the hypothesized subphases are themselves based on associations of the same attributes. However, it is significant that each of the collections appears to reflect one of the patterns of attribute associations. That the samples do not exhibit wider discrepancies is not important. I have discussed the concepts of the ceramic continuum and temporal variation, and we have seen that the degree of chronological separation will be greater as variation increases. It is not necessary nor is it possible to determine, at this point, exactly what temporal separation exists.

The study assemblages were also examined for intrasite attribute associations without reference to chronological considerations. As mentioned earlier, the analysis identified a wide range of variation of stylistic attributes; those attributes which reflect form and design rather than functional or physical properties (obviously, certain attributes may be related to functional and stylistic, or other combinations of factors). The extent of variation, however, made it difficult to evaluate the co-occurrence of stylistic attributes; too many attribute variables occurred less than 5 times and no meaningful correlations were possible.

Groups of attribute variables were clustered or combined to create larger classes (with more variation within a class). This procedure applied to rim profiles, and lip and collar decoration. These were clearly the most important or key attributes of stylistic variability and served as the focal point of the comparative study. The decorative attributes were relatively easy to group; collar and lip design motifs were easily distinguished and separated to form classes of similar designs. These provided effective comparative data given the relatively small samples.

Categorizing the rim profiles was a much greater challenge. The problem of rim variation is analogous to the difficulties of type variation, and they are both subject to the same underlying principle: variation of the norm, or mental template. As one identifies the distribution of a type through time and geographical space it is usually difficult to determine the point at which the type has changed enough that a new type should be described. Similarly, the practice of collaring or thickening the rim of a vessel represents an idea about the correct way in which vessel rims are defined. Variations of the central idea or theme are to be expected and it is also to be expected that differences between any two expressions of the theme may be either gross or subtle.

The rim profiles were joined into classes of rim forms in an attempt to create manageable comparative units which also display the range of variation present in the samples. The classes were established on the basis of several qualities: shape, angle of collar or rim to vessel neck, angle of collar face, the curve of the rim or collar interior surface, and overall stylistic design. These judgments were not objective; the rim profile drawings were compared, contrasted, and grouped several ways before the final alignment was settled. The rim form illustrations (Figures 5-7) show that the class divisions are often not distinct. The designation of the upright and Y forms of collars is another subjective judgment. However, the classes were created only for heuristic purposes, to provide useful comparative units. I believe they were successful in this purpose.

The attempt to identify patterns of attribute associations was only partially successful. Crosstabulations of the key attributes, surface finish, collar form, and lip and collar decoration, provided a relatively simple means by which associations are compared, but the small sample sizes warrant a cautious approach to any rigorous attempt to identify significant associations.

Small sample sizes also prevented meaningful comparisons of the intrasite sample units, the spring and excavation units from the Brunk site, and features 7 and 229 from the Warren Wilson site. As a consequence, intersite comparisons contributed more useful data and are emphasized in the following discussion. Tables 9 and 10 illustrate several of the two-way cross tabulations of attribute classes. I suggest that it is mose useful to examine patterns of associations since the numbers of members in most of the units is so small.

Two generalizations may be made from the cross tabulations. In each site assemblage, the overall distribution of attributes is relatively well dispersed. The diverse surface finish values are represented throughout the rim form and decorative classes. The same is true for the distribution of the rim form and decorative classes. However, one distinct cluster pattern occurs in the Warren Wilson assemblage, and is illustrated in Table 10.

The distribution of diagonally punctated collar design motifs K, L, and M is relatively restricted to rim form classes A-D. This is partially reflective of the lack of collar design motif diversity in the assemblage; the three diagonal motifs make up 73% of the total of collar motifs. The Brunk material exhibits a significantly different pattern in which collar design motifs K,L, and M make up approximately 29% of the total motifs, and where the six most numberous designs are required to total over 70%. This pattern may be an example of another temporal aspect of stylistic attributes whereby the range of decorative motifs is more restricted during the later subphase. However, it may also be a

TABLE 9

CROSSTABULATIONS OF SURFACE FINISH AND COLLAR DESIGN MOTIF

| | Collar Design Motif | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | B | C | E | G | H | I | J | K | L | M | Q | R | S | T | V | Total |
| **Warren Wilson Site** | | | | | | | | | | | | | | | | |
| Surface Finish | | | | | | | | | | | | | | | | |
| Rectilinear Stamped | | | | | | | | | | | | | | | | |
| A, narrow | | | | | 1 | | | | 1 | | | | | | | 2 |
| A, broad | | | | | 1 | | | 1 | 4 | 3 | | | 1 | | | 10 |
| B | | | | | 1 | | | 2 | 14 | | 1 | | | | | 18 |
| C | | 1 | | | 1 | | | 2 | | | | | | | | 4 |
| Check Stamped | | | | | 4 | | | 1 | 7 | | | | | | | 12 |
| Smoothed Stamped | | | | | 2 | | | 3 | 2 | | | | | | | 7 |
| Totals | | 1 | | | 10 | | | 9 | 28 | 3 | 1 | | 1 | | | 53 |
| **Brunk Site** | | | | | | | | | | | | | | | | |
| Surface Finish | | | | | | | | | | | | | | | | |
| Rectilinear Stamped | | | | | | | | | | | | | | | | |
| A, narrow | 2 | | 1 | 7 | 3 | 1 | 1 | 5 | 2 | | | 5 | | 1 | | 28 |
| A, broad | 2 | | 1 | | | | | | 5 | | | 1 | | | | 9 |
| B | | | 2 | | | 3 | | | | 1 | | | | | | 6 |
| C | | 1 | | | | | | | | | | | | 1 | | 2 |
| Check Stamped | | | 1 | | | | | | | | | | | | | 1 |
| Totals | 4 | 1 | 5 | 7 | 3 | 4 | 1 | 5 | 7 | 1 | | 6 | | 2 | | 46 |

TABLE 10

CROSSTABULATION OF RIM FORM CLASS AND COLLAR DESIGN MOTIF

Collar Design Motif

| | B | C | E | F | G | H | I | J | K | L | M | N | Q | R | S | T | U | V | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Warren Wilson Site Rim Form Class | | | | | | | | | | | | | | | | | | | |
| A | | | | | | 1 | | | 2 | 8 | | | 1 | | | | | | 12 |
| B | | | | | | 1 | 5 | | 3 | | | | | | | | | | 9 |
| C | | | | | | | 1 | | | 27 | 5 | | | | 1 | | | | 35 |
| D | | | | | | 1 | | | 1 | 8 | 1 | | | | | | | | 12 |
| E | | | | | | | | | | 1 | | | | | | | | | 1 |
| F | | | | | | 1 | | | | 1 | 1 | | | | | | | | 3 |
| G | | | | | | | | | | | | | 1 | | | | | | 1 |
| H | | | | | | 1 | | | 1 | | | | | | | | | | 2 |
| I | | | | | | 6 | | | | 1 | | | | | | | | | 7 |
| J | | | | | | 1 | | | | | | | | | | | | | 1 |
| K | | | | | 1 | | | | 3 | | | | | | | | | | 4 |
| L | 1 | | | | | | 1 | | 3 | 1 | | | | | | | | | 6 |
| R | | | | | | | | | 1 | | | | | | | | | | 1 |
| U | | | | | | 2 | 1 | | | 1 | | | | | | | | | 4 |
| Y | | | | | | | | | 4 | | | | | | | | | | 4 |
| Totals | 1 | | | | 1 | 14 | 8 | | 18 | 48 | 7 | | 2 | | 1 | | | | 102 |

TABLE 10 CONT'D

CROSSTABULATION OF RIM FORM CLASS AND COLLAR DESIGN MOTIF

Collar Design Motif

| | B | C | E | F | G | H | I | J | K | L | M | N | Q | R | S | T | U | V | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Brunk Site<br>Rim Form Class | | | | | | | | | | | | | | | | | | | |
| A | | | 5 | 1 | 2 | | 1 | | 4 | 3 | | | | | | 1 | | | 17 |
| B | | | | | 1 | | | | 1 | 2 | | | | | | | | | 4 |
| C | | | | | | | | | | 1 | | | | | | | | | 1 |
| D | | | | | | 1 | 1 | 1 | | | | 1 | | | | | | | 4 |
| E | 4 | | | | 3 | | | | | 2 | | | | 2 | | | | | 11 |
| F | | | | | 2 | | | | | | | | | 1 | | | | | 3 |
| G | | | | | | | | | | | | | | | | 1 | | | 1 |
| I | | 1 | 3 | | | | 2 | | | | 2 | | | | | | | | 8 |
| J | | | 2 | | | | | | 1 | 1 | | | | 1 | | | 1 | | 8 |
| K | | | 1 | | | 2 | 3 | | 1 | | | | | | | | | | 7 |
| L | | | 1 | | 1 | 2 | 1 | 1 | 5 | | | | | 1 | | | | | 12 |
| M | | 3 | 1 | | | | | | | 2 | | | | 1 | | 1 | | | 8 |
| N | | | 1 | | | | | | | | | | | | | | | | 1 |
| O | | | 1 | | | | | | | | | | | | | | | | 1 |
| Y | | | | | | 1 | | | | | | | | | | | | | 1 |
| Total | 4 | 4 | 15 | 1 | 10 | 7 | 8 | 2 | 12 | 11 | 2 | 1 | | 6 | | 3 | 1 | | 87 |

result of the small sample sizes and sampling error. More examination of additional Warren Wilson samples will be necessary to evaluate this view.

The final consideration of the similarity of the two assemblages seems best approached through the frequency data. Again, the samples lend themselves to a discussion of frequency patterns and I will point out those that appear to be potentially meaningful.

Rim form classes (Table 5) exhibit a large degree of inter-assemblage variation. Aside from those mentioned as temporal differences, there is also a major difference in the distribution of the collar classes. The Brunk assemblage collars are equally distributed between the upright and Y-collar forms while the Warren Wilson assemblage is 75% upright collar and 25% Y forms. The Brunk Y-collar group is especially represented by forms L and M and I have suggested that these may be transitional forms between thickened and collared forms. Analysis of more Pisgah sites would aid in determining whether these are also temporally transitional forms.

It should also be noted that nearly 50% of the total rim forms in the Warren Wilson collections are represented in classes A-D. These classes do correlate significantly with the collar motif classes K, L, and M, as described above, and, as such, represent one of the most significant inter-site patterns.

The diversity of rim form classes is generally

PLATE XV

Punctated rims from large Pisgah jars recovered from the Brunk site spring.

PLATE XVI

Sherds from Pisgah bowls. Brunk site spring.

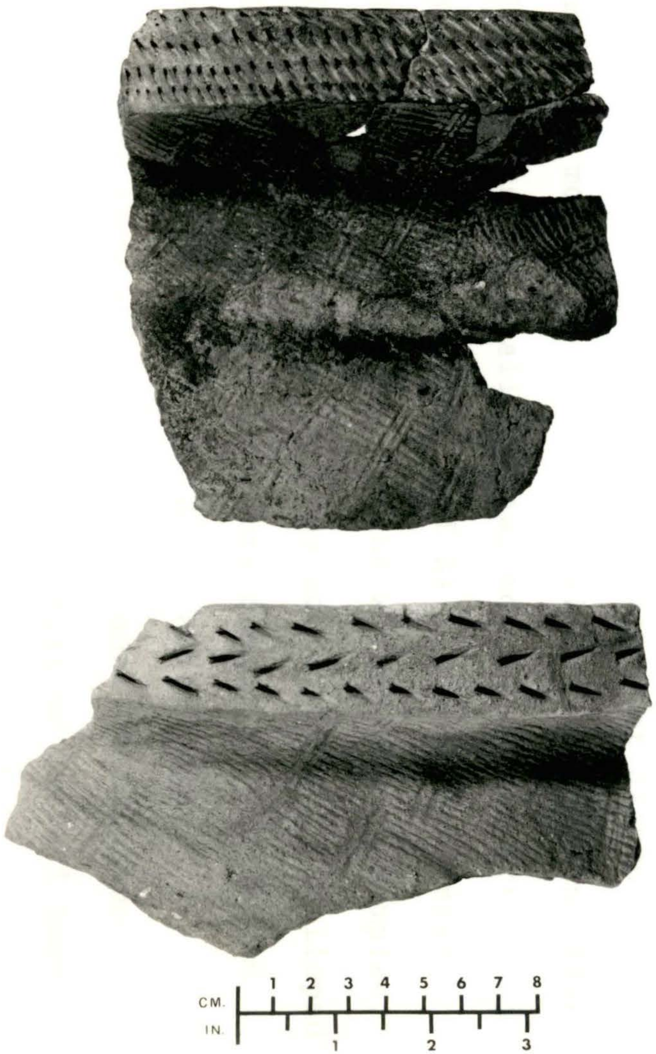



PLATE XV


PLATE XVI

greater for the Brunk assemblage, but this may represent a sampling problem. The nature of refuse disposal behavior determines the content of Pisgah features, and while I have assumed that each of the features is representative of the total site ceramic assemblage this may not be the case. The ceramics deposited in either feature might possible derive from functionally, spatially, or socially distinct systems within the village. I believe it would be useful to examine additional features to compare patterns of stylistic attributes and perhaps differentiate temporal, spatial or other patterns among them.

There are several striking inter-site comparisons to be made in terms of decorative attributes (Tables 6 and 7). Two patterns have already been mentioned, the overwhelming presence of incised decorations in the Brunk collections and the prodominance of diagonally punctated motifs in the Warren Wilson units. In addition, the use of trail and jab motifs is present on 18 examples (CMOT E, F, and LMOT B) in the Brunk assemblage and is not present in the Warren Wilson samples. Finally, the occurrence of shallow bowls with scalloped lip edges (LMOT H) is much more common in the Warren Wilson samples than in the Brunk assemblage.

Aside from a possible functional correlation of scalloped lips and well crafted shallow bowls I have no suggestions as to why these patterns occur. It may be that decorative motifs reflect social and functional as well as temporal factors, and thus cluster differently at individual sites. The explanation of these types of patterns will be extremely elusive; a great quantity of comparative studies may enable some inferences to be made in the future.

Few comments have been addressed to vessel form and while vessel form is clearly related to vessel function, a particular form reflects stylistic values as well. Several nearly complete vessels are represented in the study samples (Plates XVIII and XIX for example), but usually one must determine overall vessel shape from only a small sherd. Pisgah rims are fairly reliable indicators of vessel form; most of the rims represent wide mouth bowls or globular jars, and the extent of detail depends on the size of rim available to study.

Tables 11 and 12 illustrate the figures for the rim sherd samples expressed in terms of vessel form and surface finish. The attribute classes of rim form are described as either bowls or jars where it is possible to discriminate. In addition, the distribution of broad design groups (collar and lip motifs combined into general groups) is also shown for each group of rim forms and surface finishes. It should be clear that larger samples would facilitate more extensive inter-site comparison.

| Surface Finish | Collared Jars 'FORM' A-G | | | | | Y Collar Jars 'FORM' H-M | | | | | Thickened Rim 'FORM' N-O | | Everted Rim Jars 'FORM' Q,R,T | | | | Everted Rim Bowls 'FORM' S | | | Straight Rim Bowls 'FORM' U | | | | Inslanted Rim Bowls 'FORM' Y | | | Unident. 'FORM' | | Totals |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Design Groups | A | B | D | E | H | A | B | D | E | H | D | H | D | E | G | H | D | G | H | B | D | E | H | D | G | H | D | E | |
| Rectilinear A, narrow | | | | | | | | | | | | | | | | 1 | | | | | 1 | 1 | | | | | | | 3 |
| Rectilinear A, broad | 1 | | 7 | 1 | | | | 1 | | | | | | | | | 1 | 2 | 4 | | | | 1 | | | | | | 18 |
| Rectilinear B | 1 | | 14 | 1 | | | | 1 | | | | 1 | 2 | 1 | 3 | | | 3 | | | | | 3 | 1 | 2 | | | | 33 |
| Rectilinear C | | | | | | | 1 | 1 | 1 | | | | | | 1 | | | | | | | | | 1 | 1 | | | | 6 |
| Curvilinear | | | | | | 1 | | | | | | | | | | | | | | | | | | | | | | | 1 |
| Check | | | 8 | | | | | | 4 | | | | | | 1 | | | 1 | | 1 | | | | | 1 | | | | 16 |
| Other | | | 2 | | | | | | 2 | | | | 1 | | 1 | | | 2 | | | | | 3 | 3 | 1 | | | | 15 |
| Unidentified Surface Finish | 3 | | 8 | 27 | 2 | | | 6 | 3 | 1 | 1 | 1 | 2 | | 1 | 1 | 1 | 4 | | | | 2 | 3 | | 2 | 1 | 10 | 4 | 83 |
| Totals | 5 | | 39 | 29 | 2 | 1 | 1 | 9 | 10 | 1 | 1 | 2 | 6 | 1 | 7 | 2 | 2 | 12 | 4 | 1 | 1 | 3 | 10 | 5 | 7 | 1 | 10 | 4 | 175 |
| | 75 | | | | | 22 | | | | | 3 | | 15 | | | | 18 | | | 15 | | | | 13 | | | 14 | | |

Key to Design Groups: A, unique motifs; B, incised horizontal lines; C, trail and jab motifs; D, diagonal punctations; E, horizontal punctations; F, incised triangular motife; G, scalloped lip; H, no decorations

TABLE 11. Warren Wilson rim sherds; Vessel shape (rim 'FORM'), Decoration (Design Gruop), and Surface Finish

| Surface Finish | Collared Jars 'FORM' A-G | | | | | | Y Collared Jars 'FORM' H-M | | | | | | Thickened Rim Bowls and Jars 'FORM' N,O | | | | | | | Everted Rim Jars 'FORM' Q,R,T | | | | | Straight Rim Bowls and Jars 'FORM' V,W,X | | | | Everted Rim Bowls 'FORM' S | | Straight Rim Bowls 'FORM' U,P | | | | Inslanted Rim Bowls 'FORM' Y | | | Unidentified 'FORM' | | | | | | Totals |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Design Groups | B | C | D | E | F | H | A | B | C | D | E | F | A | B | C | D | E | F | H | A | D | E | G | H | A | D | E | H | F | G | A | D | E | H | A | E | H | B | C | D | E | F | H | |
| Rectilinear A, narrow | 2 | | 4 | 8 | 2 | 1 | | | | 4 | 5 | 3 | 1 | 1 | 2 | | 1 | | | | | 1 | | 1 | | 1 | 3 | 2 | 1 | | | | | 4 | | | 2 | | | | | 1 | 3 | 53 |
| Rectilinear A, broad | 2 | | 4 | | 1 | | | | 1 | 1 | | | | | | 1 | | 1 | | | | | | 1 | | 1 | | 1 | | | | | 1 | | | | | | | | | | | 15 |
| Rectilinear B | | 1 | | | | | | | 1 | | 2 | 3 | | | | | 1 | | 1 | 1 | 2 | | | 1 | | | | | | | | | | 4 | | | | | | 1 | | | 1 | 19 |
| Rectilinear C | | | | | | | | 1 | | | | 1 | | | | | | | | | | | | | | 1 | | | | | 1 | | | | | | | | | | | | | 4 |
| Check | | | | | | | | | | | | | 1 | | 1 | | | | | | | 1 | 1 | 1 | 1 | | | 1 | | | 1 | | | | | | | | | | | | | 8 |
| Other | | | | | | | | | | | | | | | | | | | | | | | | | 1 | | | 1 | | | | | | 2 | | | | | | | | | | 4 |
| Unidentified Surface Finish | | 5 | 6 | 5 | 2 | | 1 | 3 | 6 | 7 | 7 | | | | | | | | | | 1 | 1 | | 2 | | 2 | 2 | | | | | 1 | 1 | 9 | 1 | 1 | 3 | 3 | 1 | 8 | 3 | 8 | 13 | 102 |
| Totals | 5 | 6 | 14 | 13 | 5 | 1 | 1 | 4 | 8 | 14 | 15 | 4 | 2 | 1 | 3 | 1 | 2 | 1 | 1 | 1 | 3 | 3 | 1 | 6 | 2 | 5 | 2 | 6 | 2 | 1 | 2 | 1 | 2 | 19 | 1 | 1 | 5 | 3 | 1 | 9 | 3 | 9 | 17 | 205 |
| | 43 | | | | | | 46 | | | | | | 11 | | | | | | | 14 | | | | | 15 | | | | 3 | | 24 | | | | 7 | | | 42 | | | | | | |

Key to Design Group: A, unique motifs; B, incised horizontal lines; C, trail and jab motifs; D, diagonal punctations; E, horizontal punctations; F, incised triangular motifs; G, scalloped lip; H, no decoration.

TABLE 12. Brunk site rim sherds; vessel shape (rim 'FORM'), Decoration (Design Group), and surface finish.

PLATE XVII

Large Pisgah collared jars from Feature 7, Warren Wilson site.
(Upper sherd also appears in Dickens 1970 Plate XII and Dickens 1976, Plate 62.)


PLATE XVII

Various authors have utilized measures of similarity between sites as a means of testing hypotheses concerning the relationship of social organization and patterning of material culture. These measurements often take the form of similarity coefficients such as the Brainard and Robinson index (see Plog 1978 for discussion of the use of similarity coefficients). The numerical index may be inferred to reflect inter-site interaction (Plog 1975) or other statistical techniques may be used to provide a measure of inter-site diversity (Dickens 1979), or intra-site homogeneity (Whallon 1968). In each case, however, an inference must be made giving the numerical index some reference or meaning. Similarly, all of the methods are based on the assumptions governing the basic similarity matrix mentioned in the seriation dicussion. In effect, then, each of the techniques is dependent on the same principles which serve as parameters of typological variation. I agree wholeheartedly with Plog (1978:178) when he states, for example, "One should not simply calculate a similarity coefficient between design frequencies at two sites and assume that it measures interaction and nothing else." The caution may also be issued to other comparative indices as well.

Thus I see no need to quantify the similarity or dissimilarity of the study sites beyond the observations already made. In fact, one may argue from the original assumptions of this study that any variation of patterns between the two sites is merely temporal variation. Noting Plog's caution, I argue that other factors are likely to be reflected as well. I am particularly hesitant to attribute the observed inter-site variation totally to chronology since the Brunk site is so poorly understood in cultural terms. If it served as a functionally specific site it is likely that some ceramic characteristics reflect the fact.

For example, rim form class distribution data indicate that large bowls (storage bowls?) are relatively common at the Brunk site while smaller, shallow bowls with scalloped lips ('FORM' S, 'LMOT' H), so ubiquitous in the Warren Wilson samples, are nearly absent from the Brunk material. Does this reflect intrasite disposal patterns, sampling error (only two Warren Wilson features were examined) or perhaps functional tasks which differ significantly at the two sites? Further comparative analysis of features and additional site collections may be usefully directed at this and other similar interpretive efforts.

Though no attempt is made to quantify the overall inter-site variation, I would like to characterize the two assemblages in a more subjective manner. Each assemblage of ceramics, at the scale of analysis of this study, is nearly interchangeable with the other in most respects. Decorative motifs vary between them but rim form attributes reflect the most obvious and distinct contrasts.

Brunk site collared rims are generally heavy or thick and are clearly pronounced, often set above a deeply constricted vessel neck area. The Warren Wilson counterpart is often quite the opposite, displaying only a hint of a collar (Plate XIII, A, and especially, B) perched above a slightly constricted vessel neck. Indeed, it is often the decoration which defines the collar area more clearly than the form itself.

These are, of course, stereotype descriptions. However, they describe opposite ends of a ceramic tradition; a continuum of variation on the collared rim theme. Each assemblage contains a tremendous variety of rim forms and I do not mean to imply that the Brunk site contains no collars which resemble Warren Wilson collars. Actually, many of the collars would not be out of place in either assemblage. Yet, the descriptions offered above are valid in this investigator's experience, and based on the apparent temporal separation of the sites, this study also indicates that an evolution of collar form occurred during the Pisgah phase. From a beginning in which thickened rims and collars appear robust and pronounced, the Pisgah collared rim evolved into a more subtle form, some examples of which rely on decoration to suggest the collar form.

The collaring practice represents a cultural value, one which is particularly enduring. It is interesting to observe that some examples of unmodified rims from the Warren Wilson site are also decorated in such a way that a collar is suggested (compare the everted rim shown in Plate XIV, G and the inslanted rim from Plate X, upper). The concept, and style, represent an accepted cultural norm. Dickens (1976:209) previously described the transition from Pisgah to Qualla ceramics; it is clear that many Qualla rim characteristics are merely the final expressions of the collared rim concept. The evolution of form proceeded to a point at which the Qualla form is easily separated from Pisgah. The stylistic effect, however, recalls the original collaring concept.

The point is perhaps belabored here that attributes, as well as types, change through time, as expressions of the ceramic continuum or tradition. To conclude the discussion the interrelated aspects of stylistic attributes and chronology are examined within the context of a broader research issue—general settlement systems.

The hypothesis with which this study began stated that similar inter-site patterns of stylistic attributes reflects relative site contemporaneity. The results of the dual typological and attribute methodology indicate the null hypothesis is more applicable. Considerable inter-site variation of stylistic attributes occurs, and each assemblage appears to conform to the characteristics of separate temporal subphases. Unfortunately,

PLATE XVIII

Pisgah collared jar from Brunk site spring. (shown full size)

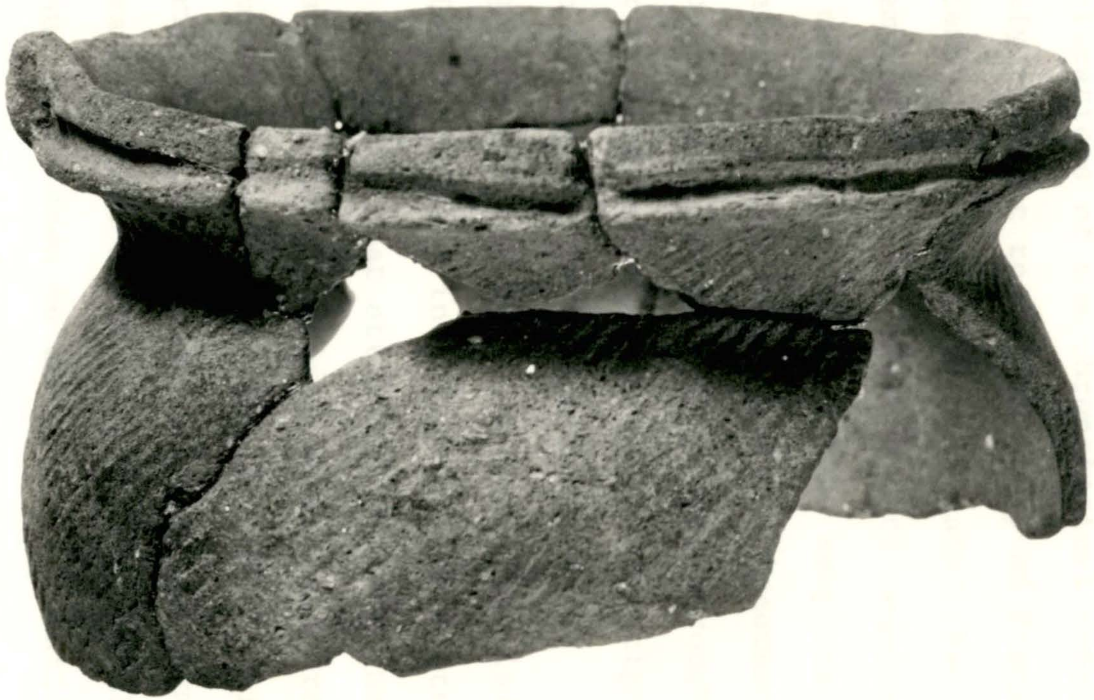


PLATE XVIII

it is not possible to determine an absolute length of time representing the temporal distance between the sites, particularly since aboriginal use of the sites may have been intermittent.

The implications of the chronological conclusions are especially relevant to future study of Pisgah settlement systems. Since it is demonstrated that Pisgah ceramic assemblages may be attributed to temporal subphases, one may compare early and late subphase sites. Sites may be analyzed for geographical placement to determine population movements or growth through time, and also for environmental settings to investigate the exploitation of specific micro-environments.

Although the present study was only partially successful in identifying intra-assemblage patterns of attributes, it appears that attribute patterns may reflect site specific functional or social factors as well. If large samples are available for analysis it is possible to correlate specific patterns of rim forms and collar decorations, for example, with individual sites. This technique could then be utilized to identify distribution patterns in individual geographic areas of environmental locales, within each subphase.

Until such a large comparative effort is undertaken, one may reasonably question the role of the Brunk site within the context of Pisgah settlement systems. Several points are offered.

First, the conclusion that the Brunk site is probably chronologically early among Pisgah sites may suggest that chronology is primarily responsible for its unusual location. However, I believe that other similar sites (of either subphase) will be located as similar environments are systematically surveyed. Thus, creating models of early Pisgah settlement patterns which overemphasize upland environments is probably as misleading at this point as models which overlook those environments.

Second, the study identifies certain patterns of attributes which may result from different patterns of vessel usage at the respective sites. One may argue that the Brunk site location results from its particular functional role. However, the opposite position may also apply: the wide range of ceramic attributes present suggests that multiple functions and usage occurred at the site.

Resolving these questions and determining the appropriate relationships remains the goal of future efforts, including the final excavation analysis. It should be obvious that all the interpretive factors mentioned above are interrelated. In the meantime, I believe that Pisgah settlement models must reflect the various interpretations of upland site locations. New models must also consider clusters of upland sites as well as iso-

PLATE XIX

Pisgah collared jar from Brunk site spring.
(Height of vessel is 25 cm.)

PLATE XIX

lated sites (several additional Pisgah sites have been located in the Sugar Creek Cove within one-half mile of the Brunk site). Clearly, models which fail to relate upland environments with the more familiar alluvial valley settlements limit our understanding of the complexities of the entire settlement system and the role of smaller sites in particular.

The dual typological and attribute analysis applied in this study successfully described and compared two sample assemblages. The ceramic analysis added support to the chronological division of the Pisgah phase with the evidence of inter-site ceramic variability. Unfortunately, the relatively small sample size limited the range and depth of the comparative approach but the potential for similar attribute studies is well demonstrated.

Wright (1965:100) has argued that the utility of typological analysis is overshadowed by that of attribute analysis. I would suggest instead that neither approach is practical in isolation; as indicated previously, the use of one usually requires the use of the other (often on an unconscious level). The goals of each may be different in that general chronological problems are amenable to typological solutions while comparative problems are sometimes best approached by attribute analysis. However, without the broad view of ceramic tradition and continuity provided by the typological concepts it is difficult to provide a context for attribute analysis. The present study represents a useful combination of the two approaches, and more importantly, provides many avenues for future investigations.

# APPENDIX A

## PISGAH SERIES TYPE DESCRIPTION
(Summarized from Dickens 1976:171-186)

Dickens (1976: 208) organized the series into four basic types--Pisgah Rectilinear Complicated Stamped, Pisgah Curvilinear Complicated Stamped, Pisgah Check Stamped, and Pisgah Plain--representing the most common surface finishes. The following characteristics apply to the series generally.

<u>Paste</u>:

Method of manufacture:

Thin strips coiled around a basal plate.

Temper:

Fine to coarse sand, with occasional inclusions. Mica flakes are usually present in North Carolina specimens. Crushed-quartz is occasionally present.

Texture:

Usually compact. Paste includes 20 to 40 percent temper particles.

Color:

Interior surface--usually gray to black, occasionally reddish orange due to high mineral content of paste.

Exterior surface--light gray, tan, buff. Firing clouds often present and color may vary on single sherd.

<u>Surface Finish</u>:

Interior:

Usually lightly smoothed to burnished.

Exterior:

Rectilinear stamping is the most common surface finish, occurring on 80 to 90 percent of North Carolina Pisgah sherds. Check stamping occurs on 8 to 10 percent, while curvilinear, complicated stamping and plain surfaces appear on 1 to 2 percent of Pisgah sherd. Other occasional finishes include woven-reed (or woven-quill) impressed, cord marked, and net impressed.

<u>Decoration</u>:

Rims and collars are usually decorated. Collared rims exhibit many variations of punctated designs, usually combinations of diagonal lines. Incised lines also occur. Thickened rims may also be decorated with simpler designs. Unmodified rims may also be notched or punctated across the vessel lip. Often an appliqued strip appears on the top exterior of the lip and is notched or scalloped. Inslanted rims may be undecorated, punctated, or incised with oblique-angled patterns.

Form:

Globular jars with everted rims. Vessel orifice diameters range from less than 10 cm. to more than 40 cm. Rims may be collared or thickened by the addition of a strip of clay around the top interior of the lip. Unmodified rims may be everted, straight or inslanted, and usually occur on wide-mouth bowls. Vessel bases are rounded to slightly pointed on jars, and rounded to nearly flattened on bowls.
Rims may be decorated with a variety of appendages, including appliqued strips, vertical lugs, handles and castellations.

# APPENDIX B

## ATTRIBUTE ANALYSIS FORM

| | Variable Name |
|---|---|
| 1. Sherd type | SHERD |
| 1. rim | |
| 2. body | |
| 3. rim plus body | |
| 4. rim fragment | |
| 2. Temper | TEMPER |
| 1. sand | |
| 2. crushed quartz | |
| 3. sand and crushed quartz | |
| 4. grit | |
| 3. Temper size | TSIZE |
| 1. large 2 mm | |
| 2. very coarse 1-2 mm | |
| 3. coarse 1/2-1 mm | |
| 4. medium 1/4-1/2 mm | |
| 5. fine 1/16-1/4 mm | |
| 4. Surface finish, exterior | SURFACE |

Rectilinear complicated stamped

1. Design A, narrow variety - Perpendicular vertical and horizontal grooves; horizontal grooves are less than 20 cm long (Plate III, C and E)
2. Design A, broad variety - Perpendicular vertical and horizontal grooves; horizontal grooves at least 20 cm long (Plate XVII, upper)
3. Design B, 1st variety - Parallel, oblique grooves flanking vertical grooves (Plate XIX)
4. Design B, 2nd variety - Flanking, oblique grooves converge at opposite angles with vertical grooves (Plate I, I)
5. Design B, 3rd variety - Converging pairs of oblique grooves crosscut horizontal grooves (Plate I, D)
6. Design C. 1st variety - Vertical and horizontal grooves cross to create checked vertical elements (Plate I, J)
7. Design C, 2nd variety - Horizontal grooves are obliquely angled to vertical checked elements (Plate XIV, E)

Curvilinear complicated stamped

8. Design A - Pairs of small concentric circle elements connected by straight grooves (Plate I, H)

Attribute Analysis Form

| | Variable Name |
|---|---|
| Curvilinear complicated stamped cont'd. | |
| 9. Design B - Coiled circular elements | |
| 10. Design C - Large, oval or teardrop shaped curvilinear pattern (Plate II) | |
| 5. Surface finish, interior | INT |
| 1. rough | |
| 2. smooth | |
| 3. burnished | |
| 6. Check stamp - width of groove | CHWD |
| 7. Check stamp - length of groove | CHLD |
| 8. Check stamp - width of land | CHLD |
| 9. Rectilinear stamp - width of vertical groove | VTWDGR |
| 10. " " - length of vertical groove | VTLGGR |
| 11. " " - number of vertical groove | VTNOGR |
| 12. " " - width of vertical land | VTWDLD |
| 13. " " - width of horizontal groove | HWDGR |
| 14. " " - length of " " | HLGGR |
| 15. " " - number of " " | HNOGR |
| 16. " " - width of horizontal land | HWDLD |
| 17. Curvilinear stamp - width of groove | CWDGR |
| 18. " " - width of land | CWDLD |
| 19. " " - diameter of circular element | CDI |
| 20. Sherd thickness | THICK |
| 21. Rim profile | RMPR |
| See figures 5-7 | |
| 22. Collared rim width, top | CWT |
| 23. " " " , bottom | CWB |
| 24. Collar length, vertical | CLN |
| 25. Thickened rim width (maximum) | THWD |
| 26. Unmodified rim width (maximum) | UMWD |
| 27. Vertical area of design | VAREA |
| 28. Length of design element | DELG |
| 29. Width of design element | DEWD |
| 30. Vessel rim diameter (cms) | VD |
| 31. Vessel rim length (cms) | VL |

32. Lip design motifs (for all uncollared rims)
    A. One or more continuously, incised lines
    B. One or more continuously, "trailed and jabbed" lines
    C. One or two rows of diagonally punctated lines
    D. Two or more diagonally punctated lines; herringbone pattern
    E. One or more rows of horizontally punctated lines

Attribute Analysis Form

32. Cont'd.
   F. Row of circular punctations
   G. Row vertical punctations
   H. Row of deep, blunt punctations forming a scalloped edge at base of punctations
   I. Incised lines arranged in triangular patterns
   J. Deep curvilinear incised lines
   K. One continuous incised line with curving punctations
   L. Two continuously incised lines with notches along one edge
   M. Pinched
   N. Smoothed

33. Collar design motifs CMOT

   A. Complicated stamped, identical to vessel surface finish

   B. Thin, continuous incised lines (1 to 6)

   C. Broad, continuous incised lines (1 to 3)

   D. Vertical punctations

   E. Continuous, horizontal 'trail and jab' lines

   F. Columns of vertical or diagonal 'trail and jab' lines

   G. Rows of diagonal punctations

   H. Rows of horizontal punctations, columns in line

   I. Irregular rows of horizontal punctations

   J. Two or more horizontal punctations, 1 diagonal punctation

   K. Herringbone pattern, two diagonal punctations

   L. Herringbone pattern, three diagonal punctations

   M. Herringbone pattern, four diagonal punctations

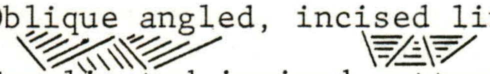
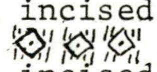
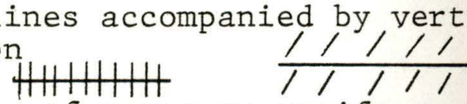
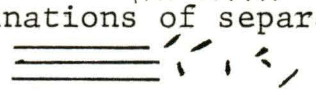
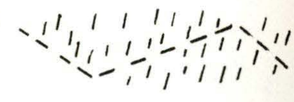
   N. Herringbone pattern, five diagonal punctations

   O. Rows of small, angular punctations

   P. Rows of evenly spaced round punctations

   Q. Rows of irregularly spaced round punctations.

Attribute Analysis Form

33. Cont'd.
    R. Oblique angled, incised lines - triangular forms
    
    S. Complicated incised patterns
    
    T. Horizontal, incised lines accompanied by vertical or diagonal punctation
    
    U. Eccentric combinations of separate motifs on a single collar
    
    V. Smoothed surface
    W. Triangular punctated patterns
    

34. Placement of Decoration LOC

    1. no decoration
    2. on collar face
    3. across top of lip
    4. below lip - vessel exterior
    5. across top of lip and below lip
    6. exterior edge of lip
    7. interior edge of lip
    8. along exterior edge of applied strip
    9. across upper half of thickened lip
    10. across lower half of thickened lip
    11. across face of thickened lip
    12. neck to lip - vessel exterior

35. Appendage and placement AP
    1. appliqued strips - short sections
    2. node on exterior edge of lip (several variations)
    3. node on top of lip
    4. node on collar face
    5. loop handle
    6. castellation on lip - horizontal
    7. castellation on collar face - vertical

36. Appendage decoration APDEC
    1. single element punctation
    2. combination element punctation
    3. trail and jab
    4. continuation of collar decoration

## BIBLIOGRAPHY

Allen, William and James Richardson III,
1971 The reconstruction of kinship from archaeological data: the concepts, the methods and the feasibility. American Antiquity 36:41-53.

Binford, Lewis R.
1965 Archaeological systematics and the study of cultural process. American Antiquity 31:203-210.

1972 An archaeological perspective. Seminar Press, New York.

Brainerd, George
1951 The place of chronological ordering in archaeological analysis. American Antiquity 16:301-313.

Brew, John O.
1946 The use and abuse of taxonomy. In Archaeology of Alkali Ridge, Southeastern Utah. Papers of the Peabody Museum of American Archaeology and Ethnology, Harvard University 21:44-66.

Brockington, Donald L.
1967 The ceramic history of Santa Rosa, Chiapas, Mexico. New World Archaeological Foundation, Paper 23, Provo.

Clarke, David L.
1968 Analytical archaeology. Methuen, London.

Coe, Joffre L.
1961 Cherokee archaeology. In "Symposium on Cherokee and Iroquois Culture," edited by John Gulick, pp. 55-60. Smithsonian Institution, Bureau of American Ethnology, Bulletin 180. Washington.

Cowgill, George L.
1972 Models, methods and techniques for seriation. In Models in archaeology, edited by David L. Clarke, pp. 381-424. Methuen, London.

Deetz, James
1965 The dynamics of stylistic change in Arikara ceramics. Illinois Studies in Anthropology, No. 4. University of Illinois Press, Urbana.

Deetz, James
1967 Invitation to archaeology. American Museum of Natural History, Garden City, New York.

Deetz, James and Edwin Dethlefsen
1965 The Doppler effect and archaeology: a consideration of the spatial aspects of seriation. Southwestern Journal of Anthropology 21:196-206.

Dickens, Roy S.
1970 The Pisgah culture and its place in the prehistory of the Southern Appalachians. Unpublished Ph.D. dissertation, Department of Anthropology, The University of North Carolina, Chapel Hill.

1976 Cherokee prehistory: The Pisgah phase in the Appalachian summit region. The University of Tennessee Press, Knoxville.

1978 Mississippian settlement patterns in the Appalachian summit area: the Pisgah and Qualla phases. In Mississippian settlement patterns, edited by Bruce Smith, pp. 115-139. Academic Press, New York.

1979 "Ceramic diversity as an indicator of cultural dynamics in the Woodland period." Paper delivered at the Thirty-sixth Annual Meeting of the Southeastern Archaeological Conference, Atlanta, Georgia. November 8, 1979.

Dunnell, Robert C.
1970 Seriation method and its evaluation. American Antiquity 35:305-319.

Egloff, Brian J.
1967 An analysis of ceramics from historic Cherokee towns. Unpublished Masters thesis, Department of Anthropology, The University of North Carolina, Chapel Hill.

Ford, James A.
1938 A chronological method applicable to the southeast. American Antiquity 3:260-264.

1952 Measurements of some prehistoric design developments in the southeastern states. Anthropological Papers of the American Museum of Natural History, Volume 44, Part 3. New York.

Ford, James A.

1954a Letter, Spaulding's review of Ford. <u>American Anthropologist</u> 56:109-114.

1954b Comment on A. C. Spaulding, "Statistical techniques for the discovery of artifact types." <u>American Antiquity</u> 19:390-391.

1954c On the concept of types. <u>American Anthropologist</u> 56:42-54.

1962 <u>A quantitative method for deriving cultural chronology</u>. <u>Pan American Union, Technical Manual 1</u>. Washington, D.C.

Ford, James A. and Gordon R. Willey

1949 Surface survey of the Viru Valley, Peru. <u>Anthropological Papers of the American Museum of Natural History, Volume 43, Part 1</u>. New York.

Gifford, J. C.

1960 The type-variety method of ceramic classification as an indicator of cultural phenomena. <u>American Antiquity</u> 25:241-247.

Hill, James N.

1970 Broken K Pueblo: prehistoric social organization in the Southwest. <u>University of Arizona, Anthropological Papers</u> 18.

Hill, James N. and Robert K. Evans

1972 A model for classification and typology. In <u>Models in archaeology</u>, edited by David L. Clarke, pp. 231-275.

Holden, Patricia

1966 <u>An archaeological survey of Transylvania County, North Carolina</u>. Unpublished MA. Thesis, Department of Anthropology, University of North Carolina, Chapel Hill.

Holmes, William H.

1884 Illustrated catalogue of a portion of the collections made by the Bureau of Ethnology during the field season of 1881. <u>Third Annual Report of the Bureau of Ethnology, 1881-82</u>, pp. 427-510. Washington, D.C.

Johnson, L.

1972 Problems in "avant garde" archaeology. <u>American Anthropologist</u> 74:366-377.

Keel, Bennie C.
1976 Cherokee archaeology. University of Tennessee Press, Knoxville.

Kelly, A. R. and R. S. Neitzel
1961 The Chauga site in Oconee County, South Carolina. University of Georgia Laboratory of Archaeology Series, Report No. 3. Athens.

Krieger, Alex D.
1944 The typological concept. American Antiquity 9:271-288.

Longacre, William
1970 Archaeology as anthropology: a case study. University of Arizona Anthropological Papers 17.

Marquardt, William H.
1978 Advances in archaeological seriation. In Advances in Archaeological Method and Theory, Volume 1, edited by Michael B. Schiffer, pp. 266-314. Academic Press, New York.

McNutt, Charles
1973 Validity of frequency seriation. American Antiquity 38:45-60.

Moore, David G.
1980 "Pisgah ceramic variation at the Brunk site and Warren Wilson site." Paper delivered at the Thirty-seventh Annual Metting of the Southeastern Archaeological Conference, New Orleans, Louisiana. November, 1980.

Petrie, Sir W. M. Flinders
1899 Sequences in prehistoric remains. Journal of the Royal Anthropological Institute of Great Britain and Ireland, Volume 29, pp. 295-301. London.

Phillips, Phillip
1958 Application of the Wheat-Gifford-Wasley taxonomy to eastern ceramics. American Antiquity 24:117-130.

Phillips, Phillip, James A. Ford and James B. Griffin
1951 Archaeological survey in the lower Mississippi alluvial valley, 1940-1947. Papers of the Peabody Museum of American Archaeology and Ethnology, Harvard University 25.

Plog, Steven
1975 Measurement of prehistoric interaction

between communities. In The Early Mesoamerican Village, edited by Kent V. Flannery, pp. 255-272. Academic Press, New York.

Plog, Steven
1978 Social interaction and stylistic similarity: a reanalysis. In Advances in archaeological method and theory, Volume 1, edited by Michael B. Schiffer, pp. 144-182. Academic Press, New York.

Robinson, W. S.
1951 A method for chronologically ordering archeaological deposits. American Antiquity 16: 293-301.

Rouse, Irving
1939 Prehistory in Haiti, a study in method. Yale University Publications in Anthropology, No. 21. New Haven.

1960 The classification of artifacts in archaeology. American Antiquity 25:313-323.

1967 Seriation in archaeology. In American historical anthropology: essays in honor of Leslie Spier, edited by C. L. Riley and Walter W. Taylor, pp. 153-195. Southern Illinois Univerisity Press, Carbondale.

Sears, William H.
1960 Taxonomic systems and eastern archaeology. American Antiquity 25:324-329.

Sears, William H. and James B. Griffin
1950 Fiber-tempered pottery of the southeast. In Prehistoric pottery of the Eastern United States, edited by James B. Griffin. Ceramic Repository of the Eastern United States, University of Michigan, Ann Arbor.

Smith, Bruce
1978 Mississippian settlement patterns. Academic Press, New York.

Smith, Robert E., Gordon R. Willey and James C. Gifford,
1960 The type-variety concept as a basis for the analysis of Maya pottery. American Antiquity 25:330-340.

Spaulding, Albert
1953a Review of "Measurements of some prehistoric design developments in the southeastern states," by J. A. Ford. American Anthropologist 55:588-591.

1953b Statistical techniques for the discovery of artifact types. American Antiquity 18: 305-313.

1954 Reply to Ford, "Comment on A. C. Spaulding, 'Statistical techniques for the discovery of artifact types.'" American Antiquity 19:391-393.

Stanislawski, M.
1969 Review of "Archaeology as anthropology: a case study." American Antiquity 38:117-121.

Steward, Julian H.
1954 Types of types. American Anthropologist 56:54-57.

Tuck, James A.
1971 Onondaga Iroquois prehistory, a study in settlement archaeology. Syracuse Univeristy Press, Syracuse, New York.

Ward, Trawick
1980 The spatial analysis of the plow zone artifact distributions from two village sites in North Carolina. Unpublished Ph.D. dissertation, Department of Anthropology, the University of North Carolina, Chapel Hill.

Watson, Patty Jo, Steven A. LeBlanc and Charles L Redman,
1971 Explanation in archaeology: an explicitly scientific approach. Columbia University, New York.

Whallon, Robert Jr.
1968 Investigations of late prehistoric social organization in New York State. In New perspectives in Archaeology, edited by S. R. Binford and L. R. Binford, pp. 223-244. Aldine, Chicago.

1972 A new approach to pottery typology. American Antiquity 37:13-33.

Wright, J. V.
1967 Type and attribute analysis: their application to Iroquois culture history. In Iroquois culture; history and prehistory, Proceedings of the 1965 Conference on Iroquois Research, edited by Elizabeth Tookes. University of the State of New York at Albany.