

INVESTIGATION OF LATE WOODLAND CULTURAL
CHANGES AT THE BRIDGEPORT
SITE (1JA574), ALABAMA

by

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A THESIS

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ABSTRACT

This thesis examines Late Woodland cultural changes in northeast Alabama at the Bridgeport site, 1JA574, specifically the switch from ceramic stylistic homogeneity and social consensus in the Middle Woodland (A.D. 100-400/500) to increased ceramic stylistic heterogeneity and social differentiation after the decline of the Hopewellian Interaction Sphere in the Late Woodland (A.D. 400/500-1000). A sample of 2,378 decorated ceramics from excavated unit strata and storage pit features were used to assess ceramic diversity based on David Braun's (1991) model of changing levels of social interaction in the Woodland Midwest. This research seeks to determine if the same trends can be identified in the Woodland Southeast. It is found that ceramic stylistic diversity and evenness increase over time, but ceramic stylistic intensity decreases over time, indicating a trend toward more social differentiation and heterarchy.

DEDICATION

This thesis is dedicated to everyone who helped me and guided me through the trials of creating this manuscript. In particular, my family and close friends who stood by me throughout this process.

LIST OF ABBREVIATIONS AND SYMBOLS

m	meter
cm	centimeter
AMSL	Above mean sea level
H_1	First-order diversity
D_1	Divergence from equiprobability
D_1 pct	Percentage of the degree of diversity
H_1 max	Maximum possible diversity
p	Probability associated with the occurrence under the null hypothesis of a value as extreme as or more extreme than the observed value
=	Equal to

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CHAPTER 1

INTRODUCTION

This thesis discusses the issue of a shift in interaction from the Middle Woodland to Late Woodland in northeast Alabama by using archaeological evidence from the Bridgeport site (1JA574) (Fig. 1). Archaeological evidence is used to determine if the Late Woodland period was a time of cultural change and decreased regional interactions in the Middle Tennessee River Valley. The artifacts and excavation records from the Bridgeport site on the Tennessee River in northeastern Alabama provide the basis for this investigation. The site spans the Middle Woodland (A.D. 100-400/500) through Late Woodland (A.D. 400/500-1000) periods, and is therefore an appropriate place to investigate changing interactions. A more accurate chronology was constructed for this site to identify Middle Woodland and Late Woodland components. The expectations of David Braun's model for Woodland changes in the Midwest are then tested at this site to see if the same trends in ceramic stylistic diversity and interaction can be identified in northeast Alabama.

The remainder of this chapter will discuss the structure of this thesis. Chapter 2 provides background concerning the concept of style and how ceramic style diversity can be used to uncover prehistoric interactions. I review archaeological theories that propose relationships between ceramic style and social interaction, specifically the role of pottery decoration as a form of information exchange that marks social distinctions and boundaries. I also discuss Braun's model of Woodland pottery decorative diversity. More specific research

on other Woodland sites in the Southeast is included to provide context for the Woodland artifacts.

Chapter 3 has two main objectives. The first is to discuss the context and archaeological investigations of the Bridgeport site. In this section, an overview of the collection will be provided. Most of the information is provided by one test excavation unit, two segments of a trench excavation, and the features. The second objective of Chapter Three is to develop the temporal sequence of the Bridgeport site. This will include a description of the stratigraphy and interpretive zones that were used to construct the chronology. To test the hypothesis, a more accurate chronology is required for this site so that Middle Woodland and Late Woodland levels and features can be identified.

Chapter 4 gives an overview of the ceramic chronology at the Bridgeport site. My methods for constructing a chronology include a frequency seriation of decorated pottery from a sample of excavated levels in the midden and the pit features, and a correlation of this relative chronology with an absolute chronology from radiocarbon dated samples. The diagnostic ceramic types for each excavation unit and feature are discussed and these types are then correlated with a specific time period.

Chapter 5 provides the results of the ceramic analysis of the pottery from the units and features. Measures of ceramic style diversity, intensity, and evenness at the Bridgeport site are the means to infer changing levels of interaction from the Middle to Late Woodland. Chapter 6 summarizes the main findings presented in this thesis, discusses the significance of the results, and offers directions for further research. The results of the thesis will be a more accurate site and regional chronology and an archaeological test of Braun's model for Woodland cultural changes.

CHAPTER 2
CERAMIC STYLE AND WOODLAND CULTURAL CHANGE:
THEORETICAL BACKGROUND AND
RESEARCH PROBLEM

My research attempts to look at how style can be used to investigate prehistoric interactions and cultural change, specifically in the Middle Woodland and Late Woodland Southeast. Archaeologist David Braun (1991) has proposed that increases in the diversity of pottery decoration within households and communities indicates the increased diversity of social interactions, while decreases in pottery decorative diversity signals lessening social marking and more consensual social interactions.

Braun (1991:383) identified a decrease in effort put into pottery decoration during the Late Woodland in Illinois, which he proposed signaled a decrease in the use of pottery as a marker of social distinctions and differences, but greater similarities in decorative practices over increasingly larger areas. A widespread style indicates greater communication between local or regional groups, while sharp boundaries in style on a local or regional scale can indicate various types of social tension and competition (Hegmon et al. 2000:218; Hodder 1979:446).

My research goal is to test the expectations of Braun's model with Woodland ceramic assemblages from the Bridgeport site to determine if these trends can be identified in the Middle Tennessee River Valley. In this chapter, a review of archaeological theories is made that proposes relationships between ceramic style and social interaction, specifically the role

of pottery decoration as a form of information exchange that marks social distinctions and boundaries. Next, I describe Braun's model of Woodland pottery decorative diversity. The Woodland prehistory of the Middle Tennessee River is summarized in order to show that this area is an appropriate place to use Braun's model. The Bridgeport site will be introduced as a means to apply Braun's model on a smaller scale and test these expectations at the site level.

Ceramic Style and Social Interaction

Pottery vessels are tools that were made to be used as containers for a variety of functions. Pottery is also a medium for stylistic elaboration (Braun 1983:107; Hally 1986:268). Style has numerous dimensions that have been identified by archaeologists. It has been defined as a particular way of doing something, such as decorating a pottery vessel or crafting a lithic tool (Hegmon 1992:517; 1998:265; Hodder 1990:45; Sackett 1977:370). Hodder specified that this way of doing requires the activities of thinking, feeling, and being (Hegmon 1992:518; Hodder 1990:45). According to James Sackett and others, style is thought to involve a choice among various alternatives (David et al. 1988:365; Hegmon 1992:518; Sackett 1977:370). Polly Wiessner (1990:106) proposed that style is a form of non-verbal communication that is achieved by doing something in a particular way in order to communicate information about relative identity (Hegmon 1992:518). Similarly, style has also been defined as a mode of communication, which can be used to signal group boundaries or microstyles (Braun 1991:378; Dietler and Herbich 1998:236, 241; Hegmon 1992:518; Hodder 1990:45). While, some (Plog 1983:126) doubt that style can be used to directly estimate levels of interaction intensity, they do not deny that stylistic similarities or differences can be used to identify particular regional or group membership. Sackett and Wiessner, among others, have identified different kinds of style that are interpreted on different scales and in varying contexts, including isochrestic variation which refers to the

subconscious or passive aspects of style (Hegmon 1992:522). Style is seen as a component of the particular material culture that can be interpreted as a diagnostic code (Hegmon 1992:518). Messages, however simple or complex, are transmitted stylistically through pottery. These messages differ depending on visibility and context, whether private or public (Hegmon 1992:531; Rice 1996:149).

For this research, style will be narrowly defined as decoration, as something added to objects through an extra investment, however great or small, in time and labor to express or communicate culturally relevant information. It is important to note that style or decoration may have many meanings or uses (Conkey and Hastorf 1990; DeBoer 1990:83; Rice 2005). Aside from style being multidimensional, style is also presented in various media, but stylistic variation in the media of pottery will be the focus of my research. Different cultural factors influence decorative and mechanical variations (Braun 1983:113; Rice 1996:143). The mechanical uses of pottery can either encourage or constrain the kinds of decoration placed on pottery and, therefore, the kinds of social information transmitted (Braun 1983:113; Schiffer and Skibo 1997). For example, the neck and shoulder portions of a cooking vessel may be decorated but the portion of the vessel to be placed in a fire or hot coals is left undecorated because it is typically not visible. Surface decoration may communicate information concerning the manufacturer or owner of the vessel or even the way in which the vessel was to be used (Hally 1986:276; Rice 1996:148).

This research seeks to identify the cultural changes that are conveyed stylistically in the context of Woodland pottery. The basic premise I wish to examine is the proposal by archaeologists that patterns of decorative variation and change provide evidence of social variation and change; therefore, prehistoric interaction can be investigated through style as a form of communication. Ceramic style is useful to archaeologists because pottery preserves

well, can be recovered easily, and it has the potential to reflect the cultural changes that affect a society (Arnold 1985:1; Braun 1991:360; Conkey 1990:13; David et al. 1988:366; Dietler and Herbich 1998:234). Style similarities are attributed to cultural contact or diffusion through trade, exchange, migration, or conquest; style differences may be the result of a lack of cultural contact and diffusion (Arnold 1985:1; Conkey 1990:13; David et al. 1988:366).

The question has to be asked: what does style communicate? Style, such as surface treatments on pottery, construction of technology, or personal adornment, can be manipulated to suggest different things in various contexts (David et al. 1986:365; Hegmon 1992:522; Rice 1996:149). Messages or meanings can be intentional in the construction or decoration of the item or added on at a later time. Ethnoarchaeology has identified some possible meanings encoded into stylistic variations though it is difficult to construct and support analogies between prehistoric and more modern cultures because we are not the intended receivers of such messages (DeBoer 1990:83; Plog 1990:63). These messages may be encoded onto material culture to communicate social identity, ethnicity, language distinctions, or more personal sentiments such as ownership or authorship (Conkey 1990:11; Costin 1998:3; DeBoer 1990:104; Hegmon 1998:276; Hole 1984:330; Kintigh 1985:37; Rice 1996:151; Wobst 1977). These messages can be exclusive to certain groups or regions, or they can cross-cut social and geographical boundaries. Artifact style may represent the expression of a “maker’s mind, of a world view, of a historical entity” (Conkey 1990:8; Costin 1998:3). Decorative patterns also can be used to reveal site level social organization as well as to estimate changes in larger regional social networks (Plog 1990:62). As social and political changes occur, style may be altered to express new ideas or represent changing allegiances. An identification of cultural change will be investigated through ceramic style in this research.

Martin Wobst proposed that style functions as an avenue of communication between individuals and groups in his information-exchange theory of style (Dietler and Herbich 1998: 247; Hegmon 1992:519; Kintigh 1985:37; Orton et al. 1993:227; Wobst 1977:321). Variations in material culture may be related to the involvement of artifacts in the processes of information exchange. More distinct stylistic attributes are thought to communicate more information than plain or unembellished artifacts. According to Wobst (1977) and Hegmon (1992:520), style was an expensive form of communication that was nonessential and took an extra investment of time and energy; therefore, style only would be used in certain contexts. Efficiency of craft production could be maximized by selectively applying decoration and other stylistic attributes to those areas of the item that could best communicate information.

Dietler and Herbich (1998; Hegmon 1992:521) argue the opposite, that decoration requires little effort and would be displayed in multiple ways to express different things such as political and social affiliations. They concur with Wobst that style is the part of variation that conveys information. The aspects of style that are most useful for information exchange are perpetuated (Dietler and Herbich 1992:521). In other words, if a stylistic attribute is successful at communicating information, it will be favored over other forms that are less successful in doing so. While DeBoer (1990) and others would say that stylistic variation is a passive reflection or a by-product of a cultural system or an individual, Wobst and Ian Hodder emphasize that style plays an active, symbolic role in society (Braun 1991:366; Hegmon 1992:522; Hodder 1990:25; Plog 1983:127; Wobst 1977:323). It is a social production that is created and manipulated by individuals or social actors for various social strategies. For example, clothing styles may signal individual and group status or affiliation.

One way style is used by archaeologists is to reveal how past societies communicated social and political relationships, especially how prehistoric peoples organized their

territories. These issues have been investigated by archaeologists to uncover how prehistoric humans created social boundaries and reinforced identity (Ashmore and Knapp 1999:3; Dietler and Herbich 1998:232; Green and Perlman 1985:3). Archaeological sites were places of human action and experience in which people adhered to a bounded area. When political tensions were high, style may have communicated distinct messages about territorial rights. Through territorial claims, humans were able to claim ownership over certain resources. Tension between groups tended to be minimal when individual groups stayed within their territorial limits or developed alliances with other groups for additional resources, such as lithic materials or wives. Group identities were probably reinforced through territorial claims (Ashmore and Knapp 1999:7). This process can be read in the archaeological record through the use of style to measure human interaction. As humans place artificial boundaries on the landscape, style can communicate these social boundaries and express the identity of specific groups (Blitz and Lorenz 2006:23; Dietler and Herbich 1998:232; Hegmon 1992:525). While archaeologists are unable to interpret the full range of meaning for styles, they can get at the general ways in which prehistoric peoples organized their lives and interactions with other people (Hegmon 1992:525).

Spatial distributions of similar styles suggest various scales of social integration (Arnold 1985:1; Conkey 1990:13; David et al. 1988:366; Green and Perlman 1985:6). Evidence of shared style suggests to archaeologists the exchange of goods and ideas between groups, while the decreased variety of decorative styles on household pottery serves as evidence of a breakdown in intercommunity interactions and changes in local social organization. Therefore, increases in pottery decoration diversity within a specific area indicate increased interaction, while decreases in stylistic variations signal a decrease in communication (Blitz and Lorenz 2006:23; Braun 1991:360, 367; Cobb 1991:176; Hegmon

1992:517). Through an investigation of ceramic stylistic similarity, ceramic style zones can be recognized, which suggests a shared or collective social identity (Blitz and Lorenz 2006:23). Ceramic style zones are defined by sites that exhibit a shared ceramic style produced by individuals who belonged to social groups that interacted on a regular basis (Blitz and Lorenz 2006:23). Stylistic patterns are the remnants of past exchanges, alliances, and even warfare. Style boundaries mark differences between large-scale zones (Braun 1983). These may denote distinctions between phases, traditions, or archaeological cultures that suggest different cultural histories. At a smaller spatial scale of households and communities within such style zones, the range of styles may be diverse or less diverse.

Braun's Model of Woodland Pottery Decorative Diversity

As noted above, there has been a lot of speculation concerning the relationship of stylistic variation to the interactions of past cultural systems. In a 1991 study, Braun asked the question of why household pottery was diversely decorated in one period (Middle Woodland), but less diversely decorated or not decorated in another period (Late Woodland). He focused on pottery as a medium of communication. Braun proposed that decoration proliferates in social settings where people are uncertain how to react or interact with each other, so more decorative diversity equals more social distinctions, while less decorative diversity equals fewer social distinctions or differences. Context of pottery use is important to this analysis. According to Braun (1991:361), household pottery is an important medium for social communication, and it is with such pottery that archaeologists can infer cultural changes in everyday life and on a larger social scale.

Braun (1991:377) measured decorative “effort” through several means, including the kinds and number of decorative techniques and designs. He is referring to nonessential decoration, such as stamping or incising, on domestic pottery vessels. Braun found more

decorative effort in his Middle Woodland samples and less decorative effort in his Late Woodland samples. Three measures of decorative effort were outlined by Braun (1991:363). The first way decorative effort was measured was through the number of levels of compositional detail present. For example, Braun would measure whether the decoration was restricted or if there were multiple layers of decoration. Woodland potters would sometimes use various decorative elements and combine several techniques on a single vessel. The second measure of decorative effort was assessed through the size or number of fields present. For example, Braun would measure and count the ways in which the surface of the vessel was divided and then decorated as separate fields of decoration. The third measure of decorative effort was the size or number of units of composition used to fill the decorative fields. For example, Braun would assess how compacted or sparse the decorative details or motifs were in the fields. Several potential factors are presented to explain decorative variation (Braun 1991:365). These include the mechanical conditions that affect the physical suitability of vessels as a decorative media. For example, Braun would take into the consideration the vessel's use-life since vessels that tend to be broken and replaced frequently in utilitarian contexts are less likely to have elaborate decoration. A vessel with an extended use-life used in ceremonial contexts, however, is more likely to be associated with more time investment put into the decoration of the vessel. The cultural conditions that affect the continuation of decorative practices from one generation to the next are also important to consider. Finally, social and symbolic conditions affecting whether a physically suitable medium will be employed for a decorative use are also necessary to take into account.

Braun (1991:381) chose to focus on overall designs on Woodland household pottery vessels rather than individual design elements. He noted two distinct patterns. First, differences in overall design were related to differences among microstyles. Braun (1991:378)

referred to microstyle zones as multi-village clusters where similar decorative preferences are evident. In other words, the fading of microstyle differences after A.D. 200 involved a decline in decorative differences at all levels of composition. Second, decorative diversity and average number, width, and internal complexity of decorative banding all changed. In Braun's study, Middle Woodland ceramics were decorated with more stamping elements than Late Woodland ceramics. Pottery dating between A.D. 1 and 200 exhibited up to seven bands of decorating. The arrangement of stamps varied greatly between bands and between vessels. Late Woodland vessels are characterized by bands of decoration on the lip and shoulder, but never on the body. Less variation is seen between bands, between vessels, and even from one locality to the next as time goes on. Therefore, late Woodland potters put in less decorative effort by utilizing fewer decorative elements. They also decreased decorative effort by combining decorative elements in increasingly less complex designs that occupied smaller portions of the vessels (Braun 1991:382).

Information regarding variation and change in social relations also can be derived from decorative change. Microstyle zones (i.e., smaller, localized ceramic style zones) and broader macrostyles (i.e., larger, regionalized ceramic style zones) have been identified in the Woodland period through an analysis of individual decorative elements on ceramic vessels. Braun (1991:378) uses local varieties of stamping, as well as the similar repertoire of stamping elements found throughout the Hopewellian region, to identify stamping pattern changes. Hopewell style stamping patterns entered the archaeological record around A.D. 100 and lasted until A.D. 400. Before the homogenizing effect of the Hopewellian culture, there was a multitude of different microstyles. The fading of microstyles around A.D. 200 suggests that the diversity of cultural interactions changed. The period between A.D. 100 and 400 was characterized by an increase in decorative effort. The result was a high number of

pottery designs that were shared over a large area. Resurgence in the use of individualized microstyles after A.D. 400 implies a decline in interaction and a decline in decorative effort. This decline probably conveys a breakdown in transmission of knowledge and skill and a decline in the social interaction between neighboring communities or on a larger scale. This breakdown leads to the formation of stylistic boundaries and different cultural histories. The smaller spatial scale of households and communities within a style zone, the range of styles may be diverse or less diverse. According to Braun, the less conflict and competition there is on a smaller spatial scale, such as households and communities within the same style zone, the less need there is to mark social distinctions and difference, thus less decorative effort. Conversely, more conflict, competition and social differences leads to the marking of differences. An increase in decorative diversity seems to follow this trend.

Other lines of evidence are presented by to support the occurrence of Woodland cultural changes. Braun (1991:384) examined the social relations and cultural changes of Middle Woodland and Late Woodland households and communities. The Middle Woodland is characterized by large domestic structures which likely indicate extended families residences. Hopewell interaction sphere exchanges brought about the extensive circulation of non-local goods as valued objects. In the Late Woodland, there was a reduction in burial variation and house size. Smaller houses probably served as the residences for nuclear families. During this time, there is also a marked decrease in the circulation of non-local goods.

Braun reviewed several possible explanations for the increased homogeneity of decoration in the Late Woodland but proposed that it may indicate “decreased variation in expressed social identities or an increased emphasis on similarities in social identities” (Braun 1991:386). So, heterogeneity in decoration indicates more social differentiation in

households and communities as seen in the Middle Woodland, while homogeneity in decoration suggests more social consensus in households and communities as seen in the Late Woodland (Braun 1985:132, Braun 1986:125). Widespread homogeneity and similarity in ceramic styles is often produced by interaction between groups and the movement of individuals between groups (Hegmon et al. 2000:219; Hodder 1979:446). Ceramic similarity was a way to express and symbolize social relationships (Hegmon et al. 2000:218; Hodder 1979:450).

Changes in stylistic variation can be explained by social isolation where social and economic tensions played a role in the setting (Hegmon 1992:528; Hodder 1979:450). Ceramics, along with other material culture, were used to mark social differentiation depending on social and cultural factors, including gender, age, status, kinship, language group distinctions, and various affiliations (Hegmon 1992:527; Hegmon et al. 2000:276; Hodder 1979:448). These types of competitive relationships lead to social distinctions between both societies as a whole and within societies. It seems that long-distance trade and cooperation in the Middle Woodland resulted in more interaction between groups, and therefore, more consensus between groups that resulted in similar ceramic styles. Based on increased warfare evident during the Late Woodland, a decrease in interaction between communities due to social tension seems to have resulted in ceramic style heterogeneity and social differentiation (Braun 1991:367).

While inferences can be made about prehistoric social organization from style, several caveats must be considered when attempting to use ceramic style to assess interactions between social groups. Styles or similar decoration types can crosscut social boundaries or it is possible that socially connected groups can have very different styles (Dietler and Herbich 1998:237, 524). Ceramic style may also be used as a means of

expressing a particular world view that is unrelated to social distinctions (Hegmon 1998:276). The focus on decoration alone is too narrow and other lines of evidence, such as temper technology, acquisition of lithic resources, changes in burial practices, variation in individual prestige, and average house-floor areas, should be examined to provide more support (Hegmon 1992:531; Dietler and Herbich 1998:237).

The Woodland Southeast

The Woodland is a cultural development in the American Southeast that spans between 1200 B. C. to A. D. 1000, divided into Early, Middle, and Late time periods (Anderson and Mainfort, 2002). For most of the Woodland period, village life was characterized by self-sufficient, politically autonomous communities. The Late Woodland Southeast experienced several cultural changes such as the intensification of food sources, increased evidence of group conflict, and the adoption of new technologies. With the onset of the Woodland, populations became more sedentary (Steponaitis 1986:384). The Middle Woodland period was a time of panregional interaction between populations through the Hopewellian Interaction Sphere. The Hopewellian Interaction Sphere was first defined by Joseph Caldwell (1964) to refer to the extensive trade network used across much of eastern North America during the Middle Woodland period. The Hopewellian or Hopewell Interaction Sphere was characterized by intense interregional communication in the Eastern Woodlands, in which the material goods resembled the Hopewell style (Gibbon 1998:371). Around A. D. 400, with the transition to the Late Woodland period, burial mound construction and long distance trade for exotic goods used in the associated mortuary practices ceased in most regions (Braun 1991:368; Griffin 1967:184; Nassaney and Cobb

1991:287; O'Brien et al. 1987:188; Steponaitis 1986:381, 384). Therefore, an important problem in Woodland archaeology is to develop models to explain this cultural change.

Culture Change in the Middle Woodland

The Middle Woodland period was a time when cultural ideas flourished through the extensive trade network of the Hopewellian Interaction Sphere that centered in present day Ohio and Illinois (Anderson and Mainfort 2002:11; Braun 1986:117; Caldwell and Hall 1964:138). The Hopewell phase in the North American midlands dates from A.D. 1 to 200. Two core areas of the Hopewell phase have been identified along the Mississippi and Illinois River valleys in western Illinois, and the Scioto and Miami Rivers in southern Ohio (Braun 1986:117). These major waterways exhibit the greatest concentration of Hopewellian activity, and it was through these rivers that ideas and goods were carried into other regions. Sites influenced by Hopewellian trade reveal a high degree of standardization in exchanged artifacts and local imitations. Mound sites in the south contributed raw materials such as various high quality cherts, greenstone, steatite, and local copper in return for goods from farther north, as evidenced by symbolic and stylistic influences seen on pottery and other artifacts (Cobb 1991:176; Gibbon 1998:373). Large conch shells also were carried through the Southeast from the Gulf Coast on their way to the Copena areas in the Midwest.

Cultural Change in the Late Woodland

A transition occurred around A.D. 400 to the Late Woodland period, which is characterized by decreases in burial mound construction and long distance trade for exotic goods. These decreases resulted from fewer interactions across broad regions. From A. D. 400 to 1000, many areas of the Southeast were characterized by population increase, less evidence of social ranking, a broadening of the diet to include more marginal foods such as shellfish, and a more intense reliance on agriculture. In a few regions, such as the Lower

Mississippi Valley, earlier Middle Woodland mound centers transitioned into the central place settlements of political territories (Anderson and Mainfort 2002:13; Steponaitis 1986:384). Many Late Woodland societies did not construct mound centers, however, and as a general trend, there is far less evidence for the exchange of exotic goods, foreign raw materials, and ideas (Cobb and Nassaney 1995:206; Nassaney 2000:720; O'Brien et al. 1987:180, 187; Steponaitis 1986:381, 384). Long distance trade did not collapse entirely; however, it did undergo substantial transformations. An overall decline in interregional interaction characterizes the Late Woodland.

During the Late Woodland period, an increase in population and site size are detectable in many regions by the greater number of sites and more extensive areas of habitation (Emerson et al. 2000:719; Nassaney 2000:719; Nassaney and Cobb 1991:296). Heavily populated residential settlements expanded into new geographic zones in larger river valleys and show thick accumulations of midden and pit features (Braun 1991:372). According to Anderson and Mainfort (2002:15), the interpretation of Late Woodland as a period of decline is inaccurate; rather, this was a time of change when communities became numerous and scattered (Braun 1991:372). This time period is characterized by increased local tensions and decreased regional interactions. Settlement patterns of this period suggest a fragmented sociopolitical landscape characterized by unstable political conditions and uneven development as well as a decrease in the spatial extent of alliances (Braun 1991:372; Emerson et al. 2000:720; Nassaney 2000:720; Nassaney and Cobb 1991:301). Territorial restrictions limited trade of ideas and materials (O'Brien et al. 1987:177, 183). The increased use of local resources led to elaborate resource-selection strategies. These societies began to rely on localized, broad spectrum resources such as rabbit, fish, turtle, and shellfish until the

adoption and intensification of maize agriculture (Emerson et al. 2000:717; Nassaney and Cobb 1991:288; Smith 1972:9).

Over-exploitation of environmental resources and differential access to resources produces stress that is reflected in the health of Late Woodland populations (Buikstra 1984:215, 229; Buikstra and Cook 1980; Goodman 1993; Kelly 1992:53; Paynter 1989:369; Peebles and Kus 1977). Additional examination of skeletal remains indicates that the adoption (intensification) of agriculture had a profound affect on health in the Southeast (Goodman 1993:285). Dietary shifts of the Late Woodland impacted human growth and development. Increased dental caries, periosteal reactions, and porotic hyperostosis are listed as the key signs of the effects of a sedentary, agricultural life (Nassaney and Cobb 1991:294).

Around 700 A.D., a major technological advancement in the form of the bow and arrow served as the weapon of choice for violent encounters and played a major role in culture change (Blitz 1988:123, 131; Nassaney 2000:720; Walthall 1980:105). Bow warfare did not disrupt exchange, bringing about the end of the Hopewell Interaction Sphere; rather, this technological innovation proved to be an efficient implement for subsistence economy and intergroup competition, which resulted from struggles for resource territory rights (Blitz 1988:133, 135-136). Demographic changes may have been brought about by the new possibilities of resource exploitation that the bow created (Blitz 1988:136).

Indications of a group's territory size, mobility, or access to stone for artifact production can be assessed through the distribution of lithic materials relative to their geologic sources (Kelly 1992:55). Therefore, archaeologists have identified increased use through time of local stone relative to nonlocal stone as an archaeological correlate for changing cultural patterns such as restricted territories (e.g., McAnany 2004:417). Nonlocal resources that were traded or moved over large distances during the Archaic through Middle

Woodland included copper, red ochre, marine shell, greenstone, crystalline quartz, galena, obsidian, mica, and various cherts (Braun 1986:117; Cobb 1991:176; Griffin 1967:184; Steponaitis 1986:381; Walthall et al. 1980:21). The Late Woodland shift is marked by a departure from trade of exotic materials such as copper, galena, mica, and Flint Ridge chert (Steponaitis 1986:384). If the local stone was of poor quality for tool production, circumscribed populations might be motivated to adopt technological innovations such as stone heat treatment that could add to the ease of manufacture and increase the quality of the material (e.g., “impact resistance, thermal shock resistance, and abrasion resistance”) (Schiffer and Skibo 1987:598, 607). To remain in prime locations, societies would rely on available resources in order to decrease their reliance on other societies and to maintain territorial rights and autonomy (Griffin 1967:186).

Middle and Late Woodland Periods in the Middle Tennessee River Valley

The expectations of Braun’s model need to be tested with additional studies to see if it is applicable to other regions beyond the Midwest. The Middle Tennessee River Valley is a good place to examine the Middle-to-Late Woodland culture change. Several of the cultural changes identified by Braun in his Middle Woodland and Late Woodland samples are seen in this region. The Copena archaeological culture was influenced by the Hopewellian Interaction Sphere in that they adopted a similar mortuary pattern (Knight 1990). An archaeological culture is a term used by anthropologists to refer to non-biological characteristics that are unique to a particular society (Renfrew and Bahn 2004:580). Copena

is seen as either an archaeological culture or a mortuary complex involving the interment of human remains with elaborate grave goods such as copper and galena. The Flint River culture is the expression of the changes occurring during the Late Woodland. Changes in stylistic variation during this transition can be explained by social isolation where social tensions started to play a role in the cultural setting of northeast Alabama. Based on Braun's model, there should be a decrease in pottery diversity and the creation of restricted microstyles.

Middle Woodland Copena Archaeological Culture

Coined from two common grave goods, copper and galena, the term *Copena* was used to refer to the culture of elaborate burial mound builders living in north Alabama and northwest Georgia, which date to A.D. 100 to 400/500 (Anderson and Mainfort 2002:517; DeJarnette 1952:117, 278; Walthall 1980:105, 116). In the Middle Tennessee Valley, evidence of Copena complexes is visible in at least 46 burial mounds and six caves (Walthall 1980:117; Walthall and Keel 1974:9). Related habitation sites and villages have also been identified.

The Middle Woodland and Hopewellian period in Alabama is marked by the introduction of new pottery types and the appearance of the Copena burial-ceremonial system (DeJarnette 1952:276). These developments suggest more interactions across broad regions. The pottery of this time was limestone tempered. Medium to medium large jars with wide mouths and moderately flaring rims were the common vessel forms (DeJarnette 1952:277). Decoration types include smoothed/plain, fabric marked, check stamped, simple stamped, complicated stamped, and incised (DeJarnette 1952:279).

Copena cultures built conical mounds from sand and clay along small streams (DeJarnette 1952). Burials were interred in these mounds with some local and some

elaborate, nonlocal grave goods. Copper grave goods include earspools, panpipes, bracelets, beads of drilled or rolled copper, breast plates, celts, and other ornaments. Additional grave goods include marine shell beads, mica fragments, obsidian, galena, leaf-shaped projectile points, massive spades of polished greenstone, polished greenstone celts, marine shell cups, pottery discoidals, anthropomorphic figurines, and smoking pipes of carved stone or pottery.

Late Woodland Flint River Archaeological Culture

Because many Middle and Late Woodland sites have been recorded in the Middle Tennessee River Valley, this region should be a good place for an archaeological evaluation of prehistoric interaction and cultural change. However, most investigations are older excavations, focused mainly on description (e.g., Webb and DeJarnette 1948; Webb and Wilder 1951). There have been few explanations of culture change for this period.

The Late Woodland Flint River culture in northeast Alabama occupied large, semipermanent riverbank settlements and upland camps (Nassaney 2000:719; Nassaney and Cobb 1991:298; Webb and DeJarnette 1948). Flint River culture emerged roughly A.D. 500 when fissioning occurred among the indigenous Woodland populations in the Tennessee Valley (Walthall 1980:131). Flint River is the Late Woodland culture present at the Bridgeport site (Futato and Solis 1983:86; Solis and Futato 1987:5). The Flint River culture represents large societies that practiced maize horticulture, collected mussels, fished, and hunted and gathered within their designated territories (Walthall 1980:134, 136). Previous investigators have suggested that there was a change in the use of lithic sources from Middle Woodland Copena culture to Late Woodland Flint River culture. Copena culture is thought to have used greater amounts of exotic, nonlocal stone, and minerals such as copper, galena, greenstone and graphite (Futato and Solis 1983:21). In contrast, Late Woodland Flint River culture used mostly local materials (Walthall 1980:134). Lithic materials local to northeast

Alabama include Bangor and Fort Payne chert, quartz, quartzite, clay, shale, and other minerals (Futato 1977: iii, 63, 64; Futato and Solis 1983:21, 40). Nonlocal lithic materials are said to be absent in Late Woodland levels at other sites in the surrounding area (Futato 1977:65).

There are other indications of local resource use in the Late Woodland period as expected with changing cultural patterns. Late Woodland Flint River occupations are often extensive shell middens that overlay Copena Middle Woodland occupations that lack thick shell deposits (Futato 1977:244; Walthall 1980:134). These local bivalves and gastropods that would have been easily collected by hand during the summer and fall as an important dietary supplement (Futato and Solis 1983:78, 84). Evidence of decreased health in the Woodland is seen in the skeletal populations of the region, including minor injuries, arthritis, and infections (Futato 1977:221). Unfortunately, the cultural chronology in the region is very general. Consequently, there have been few quantitative studies to measure these perceived changes.

Summary

Some of the same cultural characteristics in Middle Woodland and Late Woodland periods elsewhere are found in the Middle Tennessee Valley. This region, therefore, is a good place to apply Braun's model. Though there are several lines of evidence available to identify cultural changes in this region, ceramics will provide one line of evidence as a foundation for further research. A more in-depth look at the Bridgeport site is necessary to evaluate the cultural changes that were taking place on a localized, smaller scale. The site, as well as the methods used to build the site chronology and the resulting ceramic phases, will be discussed. Through this line of evidence, the ceramic decorative diversity at the Bridgeport site will allow for an interpretation of the changing interactions in the Woodland

Southeast. If the Late Woodland was a time of cultural change and decreased regional interactions, then I expect to see a decrease in ceramic stylistic effort and diversity over time as proposed in Braun's model of Woodland pottery decorative style.

CHAPTER 3
ARCHAEOLOGICAL CONTEXT:
THE BRIDGEPORT SITE

The expectations of Braun's model of Woodland pottery decorative diversity will be tested through the archaeological remains from the Bridgeport site. In this chapter I will examine the setting and history of the Bridgeport site in order to provide a regional and culture historical context for the study. Excavations and analysis done in the 1980s revealed that the site dates from the Middle Woodland up to the Historic period. The presence of Middle Woodland, late Middle Woodland, and Late Woodland components suggests that the cultural changes in the Middle Woodland and Late Woodland can be assessed at the Bridgeport site.

Cultural Context and Environmental Setting

The Bridgeport site (1JA574) is located in the Middle Tennessee River Valley in Jackson County, Alabama, the northeastern-most county in Alabama (Fig 1). As part of the Appalachian mountain chain, this region would have provided abundant mineral resources for prehistoric populations. The region contains igneous and metamorphic formations, which provided mica, slate, soapstone or steatite, greenstone, sandstone, quartzite, limestone, chert, chalcedony, and excellent pottery clay resources valued by Woodland peoples (DeJarnette 1952:272).

The Bridgeport site is on the Tennessee River floodplain, which is characterized by fine sandy loam (Futato and Solis 1987:1; Styer 1987:1). At an elevation of 620 ft AMSL,

the site is a series of knolls located throughout a field (Oakley 1987:1). The site dimensions are 120 x 90 m. The field where the site is located is bordered on the east by the Guntersville Reservoir.

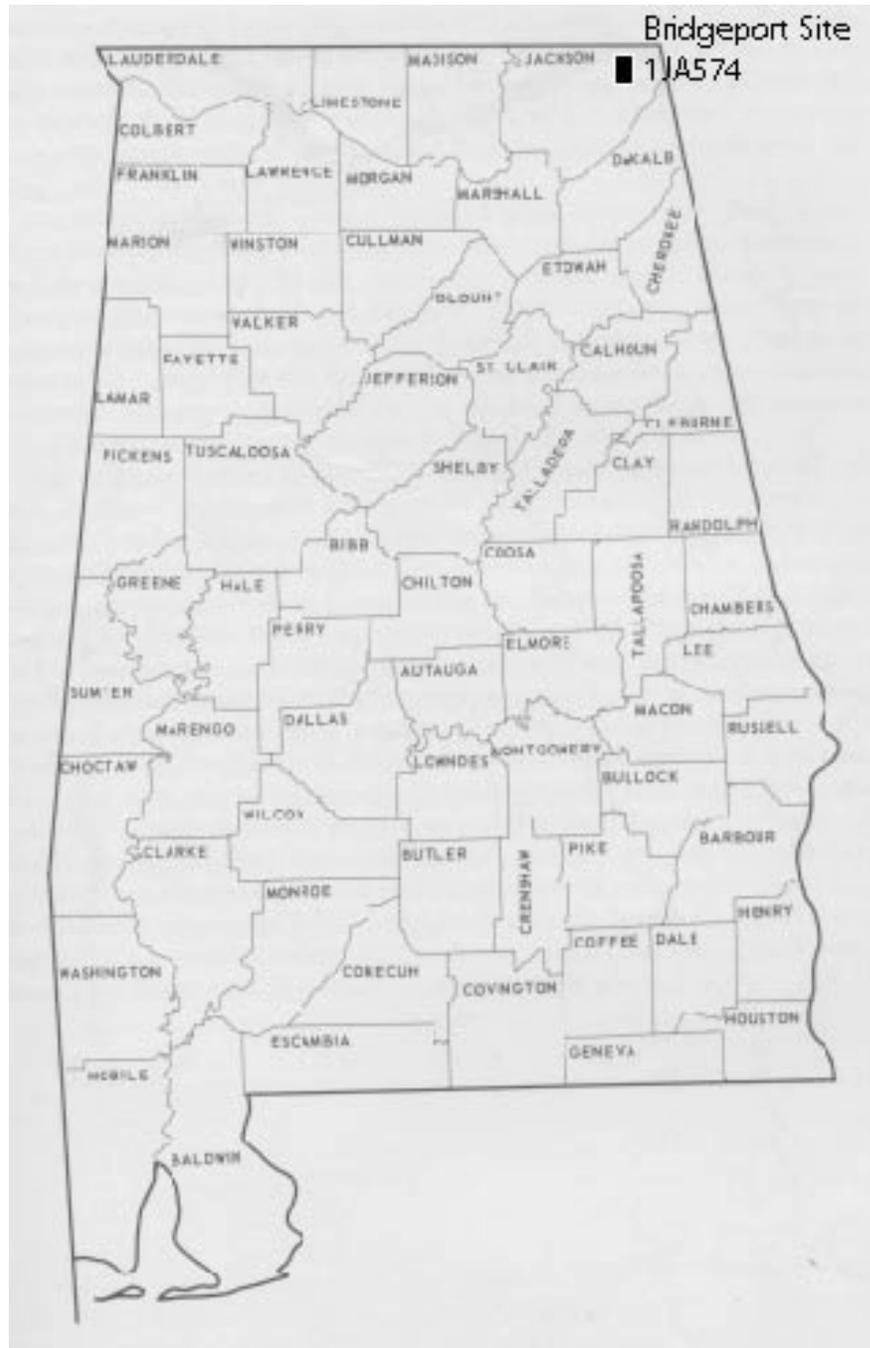


Fig. 1. Map of counties in the state of Alabama with the Bridgeport site indicated (adapted from Walthall 1980:17).

Archaeological Investigations at the Bridgeport Site (1JA574)

In 1986, Carlos Solis, University of Alabama, recorded the site with the Alabama State Site File. The site was named after the nearby city of Bridgeport, Alabama. The site was excavated in the summer of 1987 during a mitigation project by the University of Alabama Office of Archaeological Research. Dr. Vernon James Knight served as the Principal Investigator and led the excavations, which lasted from July 7 to August 27, 1987. The Alabama National Guard prepared the site by leveling the area and compacting the soil. A 1 x 1 m test unit was dug by Tim Mistovich to determine where trench excavations would be placed. On the north and south sides of this unit, excavations of 2 x 2 m test units dug by natural zones were begun on July 8. These units formed two trench excavations divided by the 1 x 1 m test unit (Fig. 2). The north portion contained four units and the south portion contained five units.

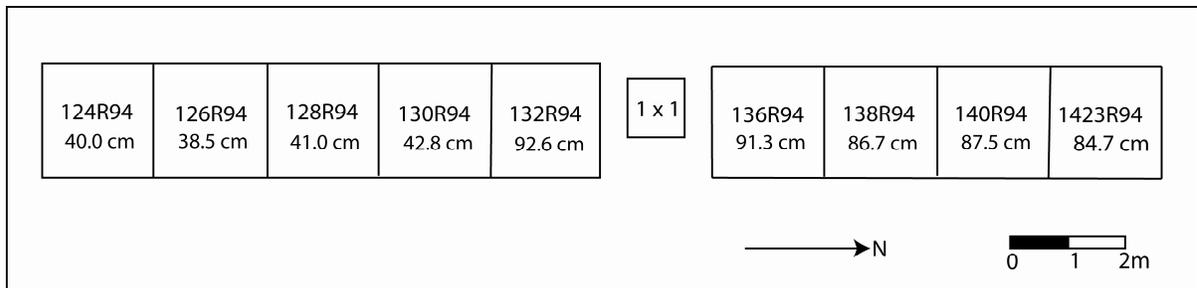


Fig. 2. Position and depth of test excavation units forming the north and south trenches.

The text excavations revealed a shell midden. The top layers were disturbed by plowing. Below the plowzone, occupation layers were intact. Based on the profile obtained by the trench excavations, the site was graded under the supervision of Dr. Knight. Ninety-three features, sixty of which were burial features, were excavated and pottery recovered was sorted into ceramic types and recorded on data sheets. Under the supervision of Dr. Knight, a preliminary seriation of pottery from the pit features was performed by Mike Kittrell

(Hendrickson 2001:25). However, this study was never published and it is not present in the site records.

A Masters thesis was written concerning the human remains recovered from the site (Hendrickson 2001:2). Hendrickson (2001:112) examined cranial and postcranial skeletal nonmetric traits between two of three circular mortuary groups at the Bridgeport site to determine if the individuals within the groups were genetically similar. Within these two burial groups, three concentrations were compared: a late Middle Woodland concentration and two late Woodland concentrations. Fifty-five of the 63 burials found at the site were examined in this study. In assessing the relatedness of these individuals, Hendrickson (2001:113) found significant results when she separated the sample population by sex. Males and women differed genetically through time, as expected, however, men did not differ significantly in spatial terms but females did. Hendrickson (2001:114) proposed one explanation that states that females were introduced from outside the village for exogamous unions with males who resided in the village as part of a patrilocal or virilocal post-marital residence pattern.

Based on the preliminary seriation, three small village occupations were revealed in the excavations. There is a Middle Woodland component (Copena), a late Middle Woodland component (unnamed), and a Late Woodland component (Flint River) (Hendrickson 2001:25; Knight 2007). The early Middle Woodland occupation dates to approximately 100 B.C. to A.D. 400. This occupation is marked by limestone tempered, fabric marked pottery, small circular flexed pole structures, at least two semicircular or arch-shaped structures, and several large cylindrical storage pits (Hendrickson 2001:25). A thick shell midden is associated with the south side of the site during this occupation. The late Middle Woodland occupation dates to roughly A.D. 400 to 600, which is characterized by a shift from fabric

marked to plain limestone tempered pottery. This occupation was situated to the east of the earlier occupation (Hendrickson 2001:25). A rectangular structure with internal roof supports was uncovered, which is associated with large, cylindrical storage pits that were later filled in with trash or used as burial pits. The Late Woodland occupation dates to A.D. 600 to 1000. Limestone tempered brushed is the predominant pottery decoration. The strata associated with this deposit was disturbed by plowing, and any evidence of structural features may have been destroyed (Hendrickson 2001:26). The previously mentioned midden accumulation in the southern portion of the site, which contained artifacts reflecting domestic goods, continued to be accrued during this occupation. A Mississippian occupation and a historic occupation were identified; however, these strata faced disturbance due to plowing and will not be discussed in this analysis. The historic intrusion of a Civil War Federal troop encampment did not disturb the prehistoric remains present (Hendrickson 2001:26; Knight 2007).

Superposition of Artifact Provenience Groups

Pottery used for this chronology was excavated from the two trench excavations to the north and south of the 1 x 1 m test unit. All units were utilized. Some levels were not used in the frequency seriation due to low sherd counts. The distinction of extra levels may be explained by differences in excavation techniques rather than any soil or artifact changes. These levels, however, are included in the zone frequency seriation because this method relied on a summary of the levels that were not affected by low counts or differences in excavation techniques. Ceramics from the trench units were placed into larger sets to create provenience groups, which are consistent with stratigraphic relationships. Some levels were

excavated arbitrarily, not based on soil differences, while other level distinctions were based on visible differences in soil color and texture. Each of these instances will be discussed in further detail below. The provenienced groups are summarized as follows:

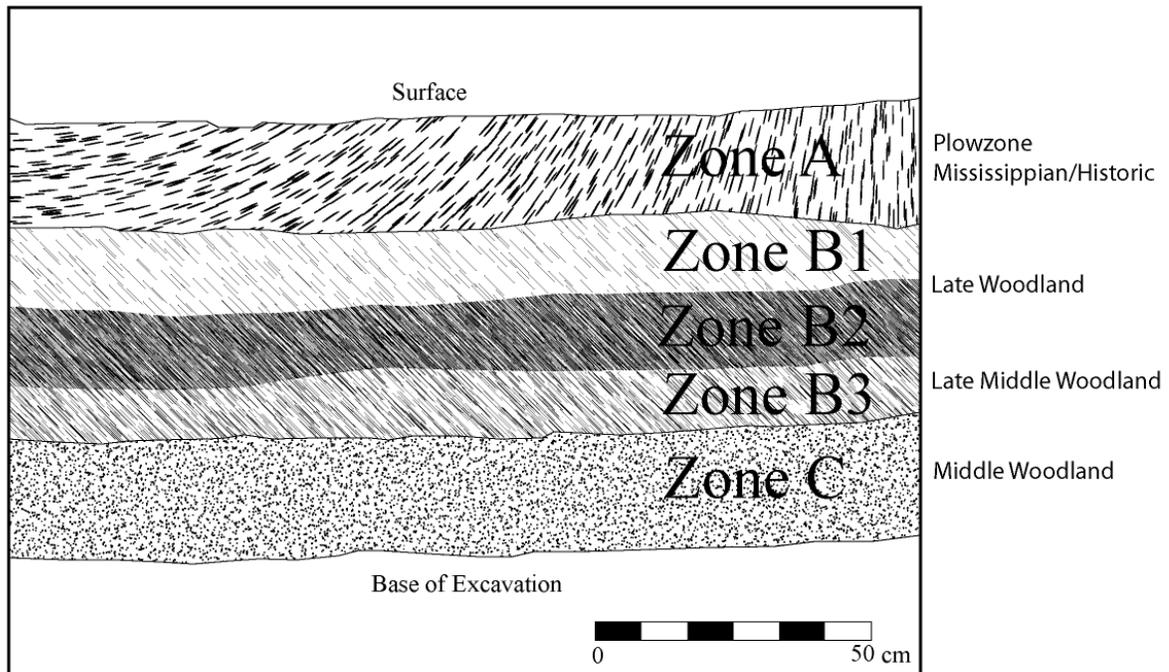


Fig. 3. Profile of 140R94 facing west, showing zones A, B1, B2, B3, and C.

Zone A Provenience Group

The subdivisions of this zone are arbitrarily defined based on the grader cuts, not by any visible distinctions (Fig. 3). This provenience group is from the upper levels of the trench excavation (unit field and catalog designations: 124R96, 126R96, 128R96, 130R96, and 132R96 in the southern portion of the trench; 136R94, 138R94, 138R94, 140R94, and 142R94 in the northern portion of the trench). It consists of the plowzone; which contains the Mississippian and Historic occupations. This zone was arbitrarily subdivided into four levels based on the grader cuts: A1:0-10cm, A2:10-20cm, A3:20-30cm, A4:30-37cm. A fifth level excavated in unit 140R96 (A5:40-50cm), was not utilized in the frequency seriation because

is consisted of only nine sherds. This level is represented in the Zone A frequency seriation because it can be informative when combined with the other levels from Zone A. Based on the disturbed nature of this stratum, these subdivisions are not informative.

Zone B Provenience Group

The subdivisions in this zone are based on visible differences in soil color and texture and are important for understanding site formation. This provenience group is from the middle levels of the trench excavation. It consists of three layers of shell midden: B1:40-55cm, B2:55-65cm, B3:65-70 cm (Fig. 3). B1 is a light shell midden (unit field and catalog designations: 124R96, 126R96, 128R96, 130R96, and 132R96 in the southern portion of the trench; 136R94, 138R94, 138R94, 140R94, and 142R94 in the northern portion of the trench). B2 is a dark midden with occasional shell (unit field and catalog designations: 132R96 in the southern portion of the trench; 136R94, 138R94, 138R94, 140R94, and 142R94 in the northern portion of the trench). B3 is a dense shell midden (unit field and catalog designations: 138R94, 140R94, and 142R94 in the northern portion of the trench). Another layer was identified (B4:64-74cm) in unit 132R96, which was not used in the frequency seriation due to inconsistencies with the other units. It is represented, however, in the Zone B frequency seriation.

Zone C Provenience Group

The subdivisions of this zone are arbitrarily defined based on the grader cuts, not by any visible distinctions. This provenience group is from the lowest levels of the trench excavation (Fig. 3). The divisions in this stratum are less important for understanding site formation because, like Zone A, the distinctions are based on arbitrary grader cuts: C1:70-80cm, C2:80-95cm. Zone C is a silty loam, earth midden (unit field and catalog designations: 132R94 in the southern portion of the trench; 136R94, 138R94, 138R94, 140R94, and 142R94 in the

northern portion of the trench). Another level (C3:88cm-sterile) was identified for unit 136R96, which was not used in the frequency seriation because of the small sample size of only one sherd. The final depth for 136R96 was not recorded. This level is represented in the Zone C frequency seriation because it can be informative when combined with the other levels from Zone C.

Summary

The Bridgeport site (1JA574) is a large shell midden site located in the Middle Tennessee River Valley. The site was surveyed and excavated in the 1980s, which revealed several occupations, including Middle Woodland, late Middle Woodland, and Late Woodland occupations. The Middle Woodland component, Copena, dates to approximately 100 B.C. to A.D. 400. The late Middle Woodland component, which is unnamed, dates to roughly A.D. 400 and 600. A Late Woodland component, Flint River, dates to A.D. 600 to 1000. Three strata were identified through the excavation of one 1 x 1 m test unit and nine 2 x 2 m hand excavation units. Stratum A is associated with the plowzone, which contains Historic and Mississippian occupation levels. Stratum B relates to Late Woodland (levels B1 and B2) and late Middle Woodland occupations (level B3). Stratum C refers to a Middle Woodland occupation (levels C1-C3). Based on the strata revealed by the excavation units, the remainder of the site was excavated primarily by grader cuts. Within the strata and excavation units, 93 features, consisting of burials, pit features, and post holes, were excavated. The ceramics from 15 pit features will be used in this research to assess Middle and Late Woodland interactions.

CHAPTER 4
CERAMIC CHRONOLOGY AT
THE BRIDGEPORT SITE

In order to apply Braun's model, an accurate chronology was needed for the Bridgeport site. Three chronology methods were used in my analysis: superposition of strata, seriation of ceramic types, and radiocarbon. The superposition of the strata in the trench units establishes the relative chronological order of the strata and the ceramic types they contain. A combination of units from the trench excavations and a selection of features were used in this analysis. First, the strata were analyzed to establish the chronological sequence of pottery through superposition. Second, a frequency seriation was performed on the ceramics from unit strata to reveal the changing frequencies of ceramic types over time. Next, a frequency seriation was performed on the ceramics from fifteen non-burial storage pit features to confirm the site sequence. Radiocarbon dates were then examined to fit non-storage pit features into this sequence and provide absolute dating.

Decorated pottery was analyzed because it is more sensitive to change over time and different pottery types can be used to gage the transition of pottery decoration between the Middle Woodland and Late Woodland. An attempt was made to seriate the plain pottery types based on temper type to see if temper type changed over time; however, there was not enough variation. The predominant temper type of pottery in the units and features was limestone tempering. The decorated pottery is composed of previously described limestone tempered ceramic types: Long Branch Fabric Marked, Wright Check Stamped, Bluff Creek

Simple Stamped, Pickwick Complicated Stamped, Flint River Cord Marked, Flint River Incised, and Flint River Brushed. Mississippi Plain (shell-tempered) was another pottery type found at this site that can be used to mark the Mississippian period; however, it is not included in this analysis.

Methods

I used the archaeological evidence from the Bridgeport site to determine if the Late Woodland period was a time of more inwardly focused societies in the Middle Tennessee River Valley of Alabama. My hypothesis is that if the Late Woodland was a time of cultural change and decreased regional interactions, then I expect to see a decrease in ceramic stylistic effort and diversity over time as proposed in Braun's model of Woodland pottery decorative style. I will assess whether Late Woodland assemblages have a significantly lower variety of pottery types in comparison to Middle Woodland assemblages. I will use the Shannon-Weiner Diversity Index to measure the ceramic stylistic diversity of the features and unit levels belonging to the Middle Woodland, late Middle Woodland, and the Late Woodland. The diversity index will be used to measure the evenness of the samples. The third measurement is the percentage of decorated sherds out of the total sherd count for the levels and features to assess the intensity of decoration. These measurements will then be used to address whether there is a significant statistical difference between the Middle Woodland, late Middle Woodland, and the Late Woodland samples. Mann-Whitney U and Kruskal-Wallis statistical tests will be used to measure the statistical significance of the differences between the samples

To test the hypothesis, a more accurate chronology was required to identify Middle and Late Woodland samples. I used the methods of stratigraphic superposition, frequency seriation, and radiocarbon dates to construct the chronology. I seriated both pit features and

unit levels as grouped by stratigraphy from the stratified deposits in the trenches. Frequency seriation is the chosen means to order the archaeological assemblages chronologically since it uses relative frequencies (i.e., percentages) of artifact types or other temporally sensitive attributes within an assemblage to reconstruct the order of these remains when other methods of relative dating, such as stratigraphy, are limited. This process is a straightforward way to reveal the original temporal sequence at a site by focusing on the temporal variation in the ceramic-type frequencies. Frequency seriation declined with the inception of radiocarbon dating; however, seriation has been revived as a more adequate method at “delivering a continuous, relative chronological sequence” (Smith and Neiman 2007: 48). The sample was limited to pit features and unit levels that contain decorated pottery since plain pottery sherds are “less sensitive instruments for measuring...change with the passage of time” (Phillips et al. 2003:220). I then correlated the ceramic type seriation with radiocarbon dates that were obtained from several of the features. Once the feature and level samples were assigned to a dated component, I then compared the frequencies and percentages of pottery types in component samples to establish if there are significant differences in these frequencies of decoration varieties signaling a shift in interaction.

Pottery sherd frequencies were recorded and then the data were entered into the SPSS statistical package and cross-checked for any data-entry errors. Requirements of the frequency seriation models were met by reducing the amount of variation in time by eliminating types that are known to be associated with significantly earlier and later periods. Seriation Marker 1.0 is a Visual basic front-end to Microsoft Excel v. 5.0 provided by Carl Lipo and Tim Hunt (Lipo 2001; Lipo et al. 1996), which was the frequency seriation package add-on to Microsoft Excel that was used to construct a more accurate regional-scale seriation.

Decorated Ceramic Types

Seven pottery types were used in this analysis, including Bluff Creek Simple Stamped, Flint River Brushed, Flint River Cord Marked, Flint River Incised, Long Branch Fabric Marked, Pickwick Complicated Stamped, and Wright Check Stamped. These types are defined below in alphabetical order. Plain pottery types were present; however, decorated pottery was used because it is more sensitive to change over time. The sample collection consisted of 2,378 sherds; 734 (30.9%) sherds from features and 1,644 (69.1%) sherds from unit levels. The counts for each decorated ceramic type and the percentage of that type out of the total decorated pottery sample (n=2,378) are provided below.

Bluff Creek Simple Stamped

n= 165 (6.9% of total decorated pottery sample)

Description. Bluff Creek Simple Stamped is characterized by stamped impressions

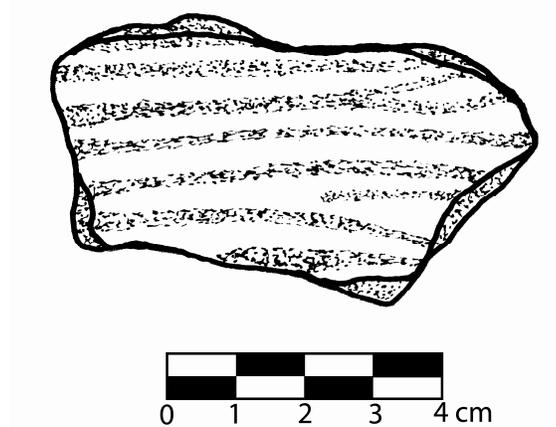


Fig. 4. Bluff Creek Simple Stamped decorated sherd.

done with a parallel lined paddle (Fig. 4). These designs occur from the lip to the base of wide mouthed jars. These lines are stamped parallel to the lip or slanted. Rims are slightly

flaring, and the neck is barely constricted. Lips are typically flattened and sometimes display oblique incisions or notching. Rim strips are occasionally added that bear obliquely stamped parallel lines. Vessel walls are relatively thin.

Documentation. Haag 1939, 1942; Heimlich 1952:18; Knight 1990:58.

Flint River Brushed

n= 1232 (51.2% of total decorated pottery sample)

Description. Flint River Brushed pottery features a roughened surface, which is brushed horizontally with a bundle of twigs (Fig. 5). These twigs are often brushed vertically on the necks and rims of the vessel and generally vertical on the base. Roughening occurs on the exterior and interior or on only one surface of the vessel. Some sherds were subsequently

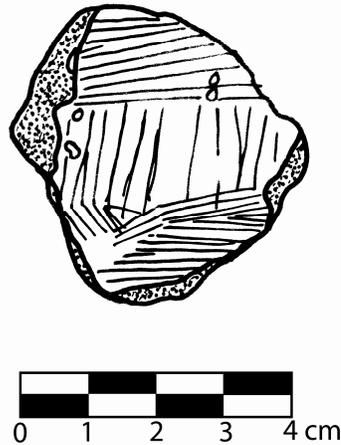


Fig. 5. Flint River Brushed decorated sherd.

smoothed, which resulted in an imperfect polish. This effect created a gradual gradation from the brushed type to the plain surface. Incising is sometimes applied on top of the brushing. Some vessels have been stamped on the exterior and brushed on the interior. The lips are frequently flattened. Common vessel forms are large conical based, deep bowls and jars.

Documentation. Heimlich 1952:20; Knight 1990:62.

Flint River Cord Marked

n= 20 (0.8% of total decorated pottery sample)

Description. Flint River Cord Marked pottery displays impressions of a cord wrapped paddle (Fig. 6). This decoration type occurs on vertical to flaring rimmed jars. Necks on these vessels are more constricted than on typical plain limestone tempered ware. Evidence of podal supports has been found, but no evidence of cord marking is found on deep or shallow bowl forms.

Documentation. Heimlich 1952:19; Knight 1990:55.

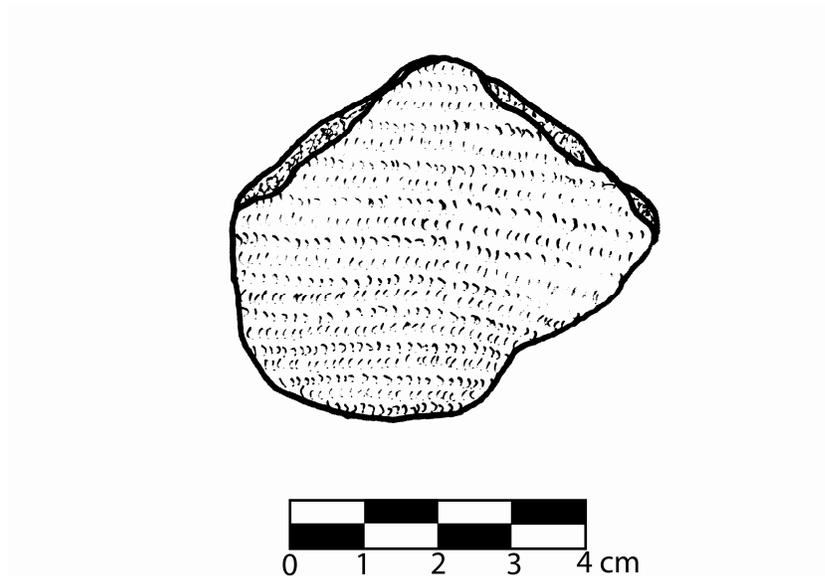


Fig. 6. Flint River Cord Marked decorated sherd.

Flint River Incised

n= 8 (0.3% of total decorated pottery sample)

Description. Flint River Incised pottery exhibits triangles of incised lines alternated with triangular areas of punctuations (Fig. 7). Examples of rectilinear patterns of incised parallel lines enclosing a line of punctuations have also been found. Some areas of punctuations are set off by curvilinear incised lines on round bodied bowl forms.

Documentation. Heimlich 1952:19.

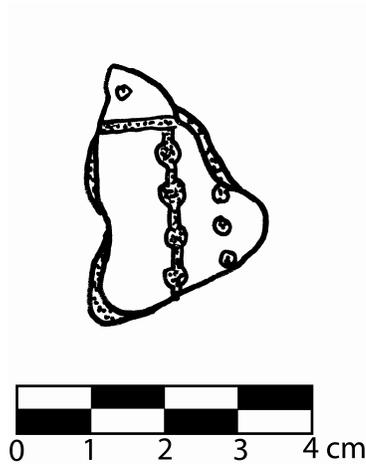


Fig. 7. Flint River Incised decorated sherd.

Long Branch Fabric Marked

n= 616 (25.6% of total decorated pottery sample)

Description. Long Branch Fabric Marked pottery was decorated through pressing plain plaited fabric and basketry on the surface (Fig. 8). The technique of coiling was used to manufacture small and thin-walled vessels with incurving or flaring rims. Bases of these vessels were rounded. Both thick loop handles and lug handles are associated with this vessel type. Crushed limestone particles less than 1.5 mm in diameter were used as temper. The limestone temper usually constitutes of 20 to 25 percent of the paste. It has a medium fine texture and a hardness of 2.0 to 2.5. The surface color is mottled dark gray to buff and the core color is typically darker. The surface finish was created by impressing with plain plaited fabric of a close fine weft and a wide heavy warp. A few instances of incised lines over the fabric marking have been identified. Rims on Long Branch Fabric Marked vessels can be straight, flaring, or constricted. The lip is typically rounded or flattened, and the exterior generally has an irregular overhanging. The body is characterized as a globular pot with a slight neck construction and a flaring rim. Vessel thickness ranges from 4-5 mm at the lip

and 6.55-10 mm at the wall. This decoration type is found throughout the Wheeler and Pickwick basins of northwestern Alabama and western Tennessee. It is considered part of the Long Branch pottery series in northwestern Alabama due to the shared characteristic of crushed limestone temper. It is preceded by the Wheeler Series of fiber-tempered types and is succeeded by the Mulberry Creek Series, which is clay-tempered.

Documentation. Haag 1939; Heimlich 1952:17; Knight 1990:64; Sears and Griffin 1950.

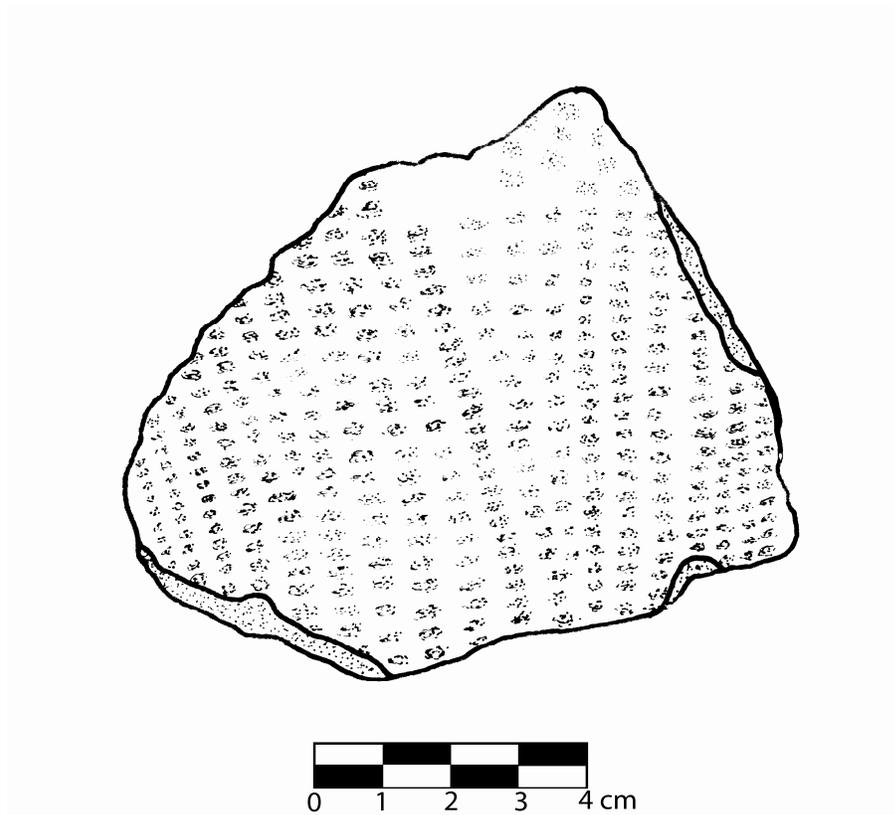


Fig. 8. Long Branch Fabric Marked decorated sherd.

Pickwick Complicated Stamped

n= 76 (3.2% of total decorated pottery sample)

Description. Pickwick Complicated Stamped pottery is highly developed and represented on specialized vessel forms. This decoration type is characterized by a wide

variety of stamped designs (Fig. 9). These include bold concentric circles that are heavily over stamped, concentric diamonds that are crisply executed, herringbone, and herringbone stamped on a wide rim fold only. The designs are related to Swift Creek Complicated Stamped designs from Georgia. Unstamped areas of the vessel are smoothed and occasionally burnished. Diamond shaped patterns are generally found on the neck and high rims of small globular jars with narrow folded back rim strips. The vessel body, however, is left plain. Rims are nearly vertical, and the lips are rounded or flattened. The rim strip width and the rim height are proportionate to the size of the vessel. Vessel walls are thin and range from 3 to 4 mm. The vessel forms are medium to large, deep conoidal vessels with a direct rim, and a slightly smaller, rounded base jar with a flared rim.

Documentation. Haag 1939; Heimlich 1952:19; Knight 1990:59.

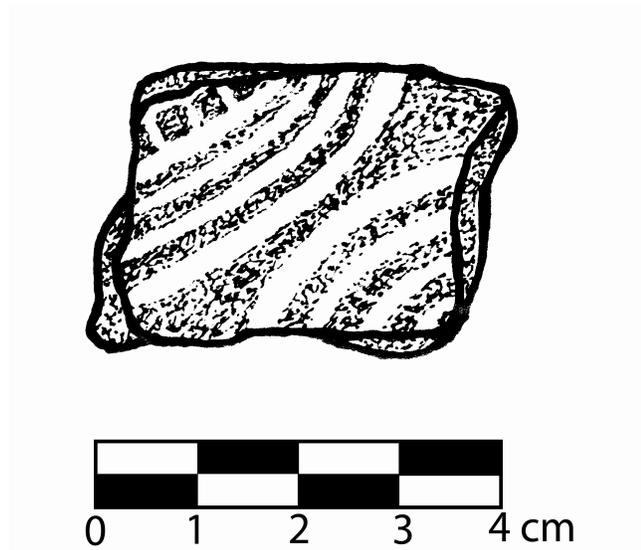


Fig. 9. Pickwick Complicated Stamped decorated sherd.

Wright Check Stamped

n= 289 (12.0% of total decorated pottery sample)

Description. Wright Check Stamped is characterized by a variety of sizes and shapes of check stamping (Fig. 10). The range of the grid size is from 1.5 to 8 mm. The finer grid

patterns are common, especially 4 to 5 mm. The grids are made up of square, rectangle, rhomboid, and rhombus shapes. Larger, rhombic check stamping usually occurs on wide mouthed, flaring rim jars. Other check stamped vessels are smaller, with vertical or flaring rims. Various rim and lip modifications are made to these vessels. These modifications include the addition of a check stamped rim strip, check stamping on the lip with a plain rim folded over, or check stamping on an unmodified flaring rim. Bases tend to be round, and tetrapodal supports and lug handles with check stamping are also common.

Documentation. Haag 1939, 1942; Heimlich 1952:17; Knight 1990:58.

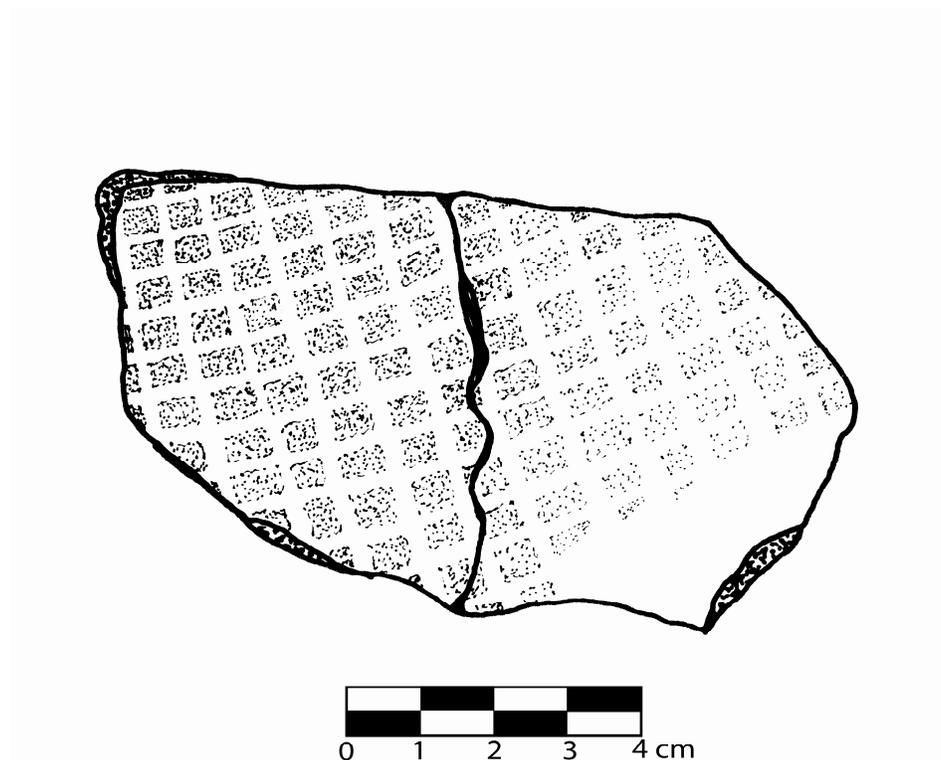


Fig. 10. Wright Check Stamped decorated sherd.

Summary of Unit Strata and Frequency Seriation

When the ceramic types are arranged from the oldest bottom portion of the trench to the top surface, several trends in ceramic change through time were identified based on changing frequencies of the decorated ceramic types. Long Branch Fabric Marked, Wright

Check Stamped, and Bluff Creek Simple Stamped declined in frequency over time, while Pickwick Complicated Stamped, Flint River Cord Marked, Flint River Incised, and Flint River Brushed increased in frequency over time. Table 1 provides a summary of the frequency and percentages of decorated pottery by strata for the units. Table 2 provides a more detailed look at the frequency and percentages of decorated pottery according to each level that was excavated in the units. Figure 11 presents the frequency seriation that was created using the decorated pottery from the units. Figure 12 displays a more detailed frequency seriation of decorated pottery in the units divided into levels.

Strata	Fabric Marked	Check Stamped	Simple Stamped	Complicated Stamped	Cord Marked	Incised	Brushed	Total
Zone A	65 (9.1%)	46 (6.4%)	52 (7.2%)	22 (3.1%)	3 (0.4%)	4 (0.6%)	526 (73.3%)	718 (100%)
Zone B	52 (6.1%)	59 (7.0%)	42 (5.0%)	23 (2.7%)	16 (1.9%)	4 (0.5%)	651 (76.9%)	847 (100%)
Zone C	55 (40.7%)	55 (40.7%)	20 (14.8%)	1 (0.8%)	1 (0.8%)	0 (0.0%)	3 (2.2%)	135 (100%)

Table 1: Summary of frequency and percentages of decorated pottery for units according to zones.

Strata	Fabric Marked	Check Stamped	Simple Stamped	Complicated Stamped	Cord Marked	Incised	Brushed	Total
A1	39 (18.0%)	27 (12.4%)	22 (10.1%)	7 (3.2%)	1 (0.5%)	1 (0.5%)	120 (55.3%)	217 (100%)
A2	15 (10.1%)	11 (7.4%)	7 (4.7%)	7 (4.7%)	0 (0.0%)	2 (1.4%)	106 (71.6%)	148 (100%)
A3	10 (5.5%)	6 (3.3%)	15 (8.3%)	3 (1.7%)	1 (0.6%)	0 (0.0%)	146 (80.7%)	181 (100%)
A4	1 (0.6%)	2 (1.2%)	7 (4.3%)	5 (3.1%)	1 (0.6%)	1 (0.6%)	146 (89.6%)	163 (100%)
B1	18 (4.4%)	10 (0.2%)	15 (3.6%)	10 (2.4%)	11 (2.7%)	1 (0.2%)	346 (84.2%)	411 (100%)
B2	11 (4.1%)	15 (5.6%)	10 (3.7%)	7 (2.6%)	5 (1.9%)	2 (0.7%)	220 (81.5%)	270 (100%)
B3	20 (13.6%)	24 (16.3%)	11 (7.5%)	6 (4.1%)	0 (0.0%)	1 (0.7%)	85 (57.8%)	147 (100%)
C1	41 (37.6%)	48 (44%)	17 (15.6%)	1 (0.9%)	0 (0.0%)	0 (0.0%)	2 (1.8%)	109 (100%)
C2	14 (53.8%)	7 (26.9%)	3 (11.5%)	0 (0.0%)	1 (3.8%)	0 (0.0%)	1 (3.8%)	26 (100%)

Table 2: Frequency and percentages of decorated pottery for units according to levels.

Strata	Fabric Marked	Check Stamped	Simple Stamped	Complicated Stamped	Cord Marked	Incised	Brushed
Zone A	□	□	□				▬
Zone B	□	□	□				▬
Zone C	▬	▬	□				

Figure 11: Frequency seriation of decorated pottery for units according to zones.

Strata	Fabric Marked	Check Stamped	Simple Stamped	Complicated Stamped	Cord Marked	Incised	Brushed
A1	▬	□	□				▬
A2	□	□	□	□			▬
A3	□		□				▬
A4			□				▬
B1							▬
B2		□					▬
B3	□	▬	□	□			▬
C1	▬	▬	▬			▬	
C2	▬	▬	□		□		

Figure 12: Frequency seriation of decorated pottery for units according to levels.

The earliest Woodland component at the site is represented by the Zone C stratum. This assemblage represents a time when limestone temper occurred in a high frequency and Long Branch Fabric Marked (40.7%), Wright Check Stamped (40.7%), and Bluff Creek Simple Stamped (14.8%) are the predominate types. The frequency of fabric marked pottery in C2 (53.8%) is lesser in comparison to C1 (37.6%); which marks a slight decrease in the popularity of this type over time. The frequencies of check stamped and simple stamped in C2 (26.9%, 11.5%) is greater in comparison to C1 (44.0%, 15.6%), which marks a slight increase in popularity over time. Small amounts of other pottery types are present in Zone C, which may be a result of disturbance or intrusion. This stratum represents a Middle Woodland occupation.

Zone B represents the next oldest component at the site. This assemblage represents a time when limestone temper continued to be important and Flint River Brushed (76.9%) is the predominate type (Table 1). Fabric marked (6.1%), check stamped (7.0%), and simple stamped (5.0%) are less common, but still present. An increase in Pickwick Complicated Stamped (2.7%), Flint River Cord Marked (1.9%), and Flint River Incised (0.5%) is seen in this stratum from Zone C. The differences in soil between the strata will be discussed separately for Zone B. The frequency of fabric marked pottery in B3 (13.6%) is greater in comparison to B2 (4.1%) and B1 (4.4%); which marks a continued decrease in the popularity over time. The frequency of check stamped in B3 (16.3%) is greater in comparison to B2 (5.6%) and B1 (0.2%), which marks a decrease in popularity from C1 over time. The frequency of simple stamped in B3 (7.5%) is greater in comparison to B2 (3.7%) and B1 (3.6%), which marks a decrease in popularity from C1 and over time. The frequency of complicated stamped in B3 (4.1%) is greater in comparison to B2 (2.6%) and B1 (2.4%), which marks an increase in popularity from C1 but a decrease over time after its popularity

peaks. The frequency of cord marked in B3 (0%) is lesser in comparison to B2 (1.9%) and B1 (2.7%), which marks an increase in popularity over time. The frequency of incised in B3 (0.7%) remains stable in comparison to B2 (0.7%) and is lesser in B1 (0.2%). The most marked increase is seen in Flint River Brushed. The frequency of brushed in B3 (57.8%) is lesser in comparison to B2 (81.5%) and B1 (84.2%), which indicates an increase in popularity over time and a very dramatic increase from C1 (1.8%). The data suggest that cord marked, incised, and brushed pottery denotes the beginning of a new component and the Late Woodland occupation in B1 and B2. In summary, stratum B3 represents a late Middle Woodland occupation and strata B1 and B2 represent a Middle Woodland occupation.

The most recent component at the site is represented by the Zone A stratum. This assemblage represents a time when sand and shell tempered pottery was introduced. Other pottery types included in this stratum are O'Neal Plain and Mississippian Plain, which were not analyzed due to low frequencies. While the frequencies are less useful due to the mixing of levels by plowing, a few trends are noticed. Because there is no benefit of discussing these levels separately, I will briefly discuss some informative frequencies. There is more representation of recently introduced pottery types, specifically Flint River Brushed (73.3%). This suggests that a portion of the Late Woodland occupation was plowed up along with the Mississippian and Historic components or that there was a minor occupation of the site late in prehistory. Small amounts of Middle Woodland and late Middle Woodland pottery are seen in Zone A. The representation of these early pottery types in later zones is due to mixing.

Features

The remainder of the materials analyzed for this research belongs to fifteen pit features that were excavated throughout the site after they were exposed by grader cuts (Fig. 13). Some materials and information for these features was probably lost due to disturbance by the grader blade. These fifteen features were selected based on a minimum sample size of ten decorated sherds and seems to have minimal root disturbance according to the field records. The sample was limited to non-burial storage pit features that contained the decorated pottery types used in the unit seriation. These pottery types include Long Branch Fabric Marked, Wright Check Stamped, Bluff Creek Simple Stamped, Pickwick Complicated Stamped, and Flint River Brushed. Flint River Cord Marked and Flint River Incised were not represented in the sample. Other features, including burials and post holes, were not included in the sample due to low pottery counts. The features are summarized as follows:

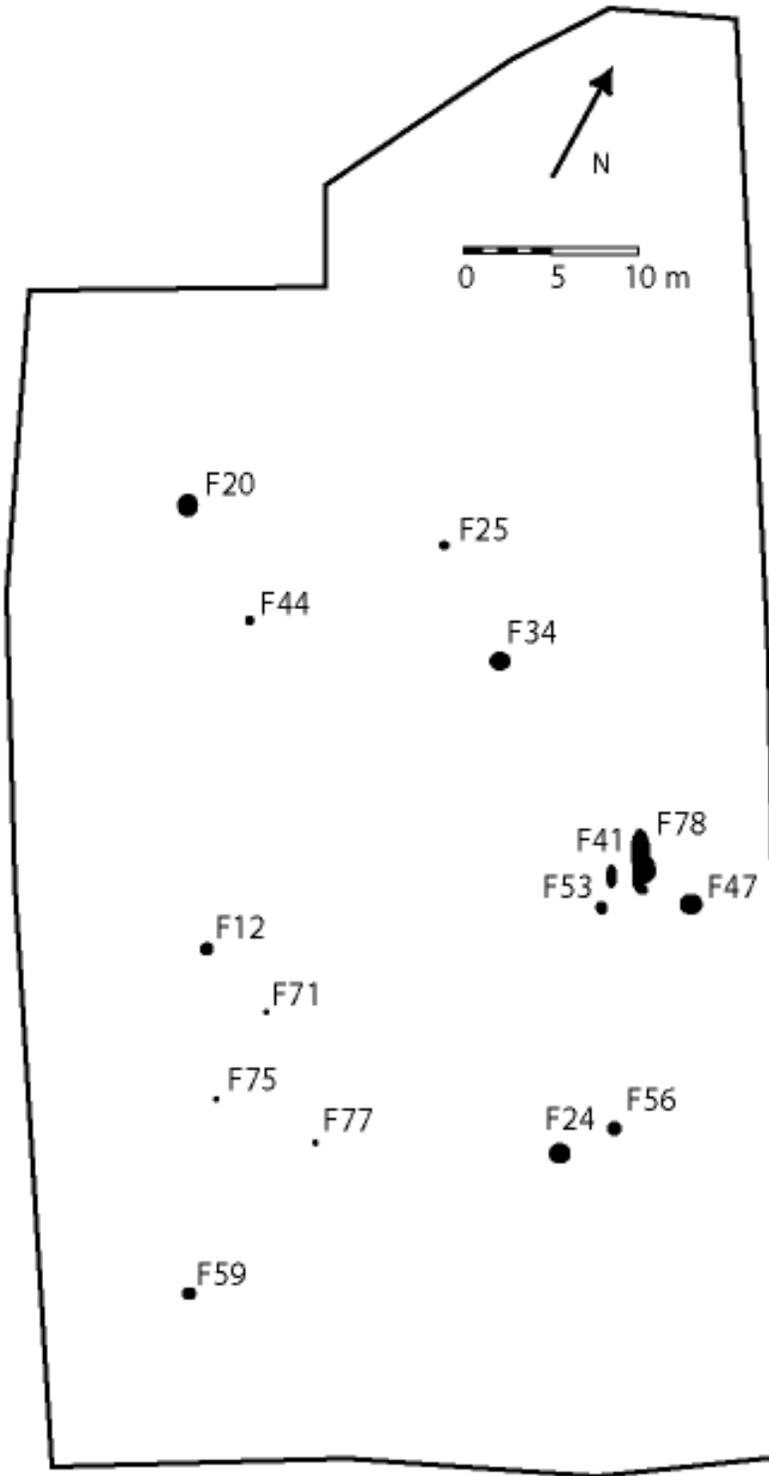


Fig. 13. Site map of 1JA574 showing the location of features within grader cuts.

Feature 12

Feature 12 (Grader Transect 1) was identified beneath the plowzone within grader cut 1. The top elevation was unknown and the dimensions were 81 cm by 86 cm with a depth of 43 cm. The feature was a conical-shaped pit with a flattened bottom, which consisted of a black to reddish brown silty loam. It contained both limestone and shell tempered ceramics, projectile points, fire cracked rock, charcoal, and bone. The feature was dated to the Middle Woodland because the dominant ceramic decoration type was Wright Check Stamped. The other two pottery types found in this sample are Long Branch Fabric Marked and Bluff Creek Simple Stamped, which are associated with the Middle Woodland.

Feature 20

Feature 20 (Grader Transect 1) was identified as a circular, trash-filled basin, which was intruded into by Feature 22. Due to grader and bucket action, only the final 15 cm of the pit were present. The dimensions were 141 cm by 106 cm. The fill included a variety of river mollusks, bone, charcoal, ceramics, and lithics. Feature 20 was assigned to the late Middle Woodland because the dominant pottery type is Pickwick Complicated Stamped.

Feature 24

Feature 24 (Grader Transect 1) was a large cylindrical, flat-bottomed, shell-filled storage pit with a diameter of 130 cm and a depth of 98 cm (Fig. 14). It was listed as a Middle Woodland feature and is the only feature within my sample on which radiocarbon tests were run. The sample, wood charcoal, revealed a date of 540-201 B.C. (2310 ± 60 B.P.). This pit was located in close proximity to several post holes. Feature 24 was designated as belonging to the Middle Woodland because Long Branch Fabric Marked is the predominant pottery type despite the occurrence of additional pottery types that would suggest a later date

for this feature. A root disturbance explains the inclusion of Pickwick Complicated Stamped pottery in this sample.

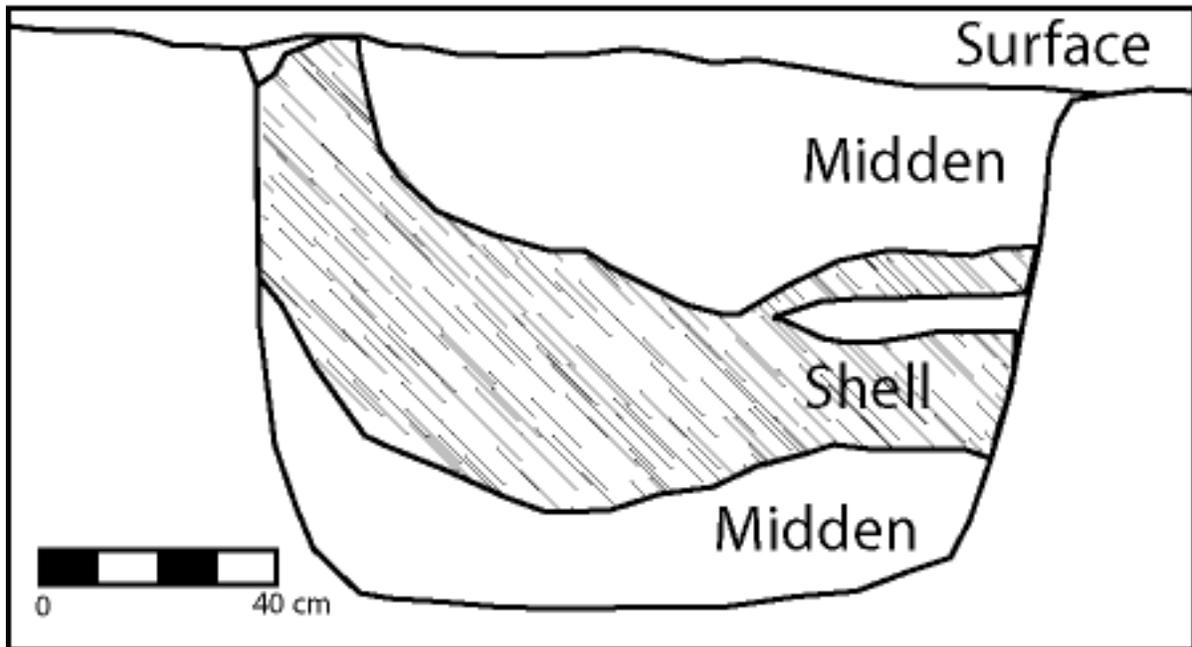


Fig.14. Feature 24 cross section looking east.

Feature 25

Feature 25 (Grader Transect 2) was located south of a house structure, about center of the structure's outer wall. The dimensions were 82 cm by 80 cm and the feature was 19 cm deep. Artifacts recovered include elk antler, limestone, dirt daubers nest with insect still intact inside the nest, ceramics, bone, charcoal, and fire cracked rock. Feature 25 was assigned to the Middle Woodland since Wright Check Stamped is the dominant pottery type. The presence of Long Branch Fabric Marked and Bluff Creek Simple Stamped also date this feature to the Middle Woodland.

Feature 34

Feature 34 (Grader Transect 2) was excavated to a depth of 21 cm. The circular pit was 126 cm by 116 cm and a post hole was recorded at the east end of the pit. Artifacts

include stamped pottery, daub, bone, flakes, and limestone. This feature was dated to the Middle Woodland based on the high frequency of Wright Check Stamped.

Feature 41

Feature 41 was recorded as a feature but later identified as a midden-filled tree root intrusion identified below the plowzone. The dimensions were 146 cm by 76 cm and the depth ranged from 20 to 38 cm. Artifacts include ceramics, shell, fire cracked rock, bone, hickory nut shells, and charcoal. Feature 41 was assigned to the Middle Woodland due to the high frequency of Long Branch Fabric Marked and Wright Check Stamped.

Feature 44

Feature 44 was recognized in the subsoil. The fill was a brown to dark brown silty clay with mussel shells. This feature is a probable tree tip-up, which was used as a refuse pit. Portions of an infant burial were recovered from the east end of the pit. The dimensions are 160 cm by 133 cm with a depth of approximately 30 cm. Feature 44 was designated as belonging to the Late Woodland since Flint River Brushed is the dominant pottery type.

Feature 47

Feature 47 was a shallow, basin-shaped pit with evidence of burning due to a fire-reddened base. The fill ranged from dark gray to light yellowish brown with abundant shell present. The dimensions were 130 cm by 131 cm and an approximate depth of 20 cm. This feature was dated to the Late Woodland based on the presence of Flint River Brushed.

Feature 53

Feature 53 was located at the bottom of the grader trench and the level of origin is unknown. The circular, shallow basin was 82 cm by 78 cm with an approximate depth of 30 cm. A tree root intruded into the bottom and sides. The bottom of the pit was flat and irregular due to the tree root disturbance. Ceramic decoration includes Long Branch Fabric

Marked and Wright Check Stamped. The fill ranged from a very dark gray sandy loam to dark yellowish brown clay and contained animal bone, shell, and charcoal. Lithics included three flaked limestone digging implements and one chopper. Feature 53 was dated to the Middle Woodland based on the presence of Long Branch Fabric Marked, Wright Check Stamped, and Bluff Creek Simple Stamped.

Feature 56

Feature 56 was a circular pit, 81 cm by 83.5 cm, recognized beneath the plowzone. The majority of the fill was loose, light, ashy loam in the southern portion of the pit with harder, more clayey fill in the northern corner. Fill colors ranged from a brown to yellowish red. A lens of shell interspersed with charred nut fragments was recovered in the lower 5 cm (sample taken). Projectile points include a Copena proximal and a Flint River Spike recovered from the lower 5 cm of the pit fill and from the northwest corner. The approximate depth was 23 cm. This feature was dated to the Late Woodland based on the inclusion of Flint River Brushed pottery.

Feature 59

Feature 59 was found at the southern-most end of the excavated area and the level of origin is unknown. This feature was a cylindrical, flat-bottomed storage pit. The deep basin-shaped pit was excavated to approximately 58 cm deep. The fill ranged from dark grey-brown sandy loam to dark yellowish-brown clay and contained animal bone, shell, and charcoal. Two shell lenses were observed in the cross-section. Feature 59 was assigned to the late Middle Woodland based on the presence of Pickwick Complicated Stamped pottery.

Feature 71

Feature 71 was located in the south end of grader cut 2 and the level of origin was the plow zone. The depth was recorded as 18 cm below the surface. The length was 84 cm and

the width was 72 cm. The fill included ceramics and flakes. Post Hole 172 was located in the southwest corner. Feature 71 was dated to the Middle Woodland since the dominant pottery type is Long Branch Fabric Marked.

Feature 75

Feature 75 was located in the northeast quadrant of grader cut 1. Dimensions of this feature are 125 cm by 110 cm. Feature 75 was an irregular, shell-filled pit. Most of the shell was found near the top and center. There was a high humus component as well as shell, ashy humus, and rocks within the fill that ranged from strong brown to dark brown. In the southern perimeter was an indication of an intrusion by another feature. A Bradley Spike projectile point was found on the surface. The feature was approximately 20 cm deep. This feature was dated to the late Middle Woodland since Pickwick Complicated Stamped is the dominant pottery type.

Feature 77

Feature 77 was recognized in the plowzone and located in the second grader cut. The depth was 28 cm below the surface and the dimensions were 70 cm by 70 cm. The fill within this small, circular, flat-bottomed pit contained a deer jawbone, other bone fragments, charcoal, shell, flakes, and fire cracked rocks. Feature 77 was designated as a Middle Woodland Feature since Wright Check Stamped was the dominant pottery type.

Feature 78

Feature 78 was recognized in the subsoil and the actual level of origin is unknown. The length was 4 m and width was 1 m 70 cm. The fill was highly organic and contained numerous ceramics, flakes, mussel shells, and large pieces of charcoal. The possible feature type is listed as stump hole or tree tip-up. This feature appeared to be a tree fall that left a large hole, possibly at the time of occupation. Large potsherds and one Gary-like projectile

point were found. There was also a large amount of shell present. A post hole was located in the southern portion. The approximate depth was 20 cm. The feature was dated to the Late Woodland based on the presence of Flint River Brushed pottery.

Summary of Features and Frequency Seriation

Table 3 provides the frequency and percentages of decorated pottery for the fifteen pit features. The pottery type names have been abbreviated in the table to include only the decoration distinction. Figure 15 shows the frequency distribution of decorated pottery for the features. Based on the ceramics in the feature sample, several trends in ceramic change through time were identified: Long Branch Fabric Marked, Wright Check Stamped fluctuated over time but there was a general decline and Bluff Creek Simple Stamped, Pickwick Complicated Stamped, and Flint River Brush increased (Table 4). Three distinctions were noticed in the frequency seriation for the unit strata and features. Zone C provenience group and eight features (F12, F24, F25, F34, F41, F53, F71, and F77) were recognized as Middle Woodland (Table 5). These features are associated with fabric marked (74.6%), check stamped (19.5%), and simple stamped (5.1%) pottery (Table 4). Part of Zone B provenience group (B3) and three features (F20, F59, and F75) were assigned to the late Middle Woodland (Table 5). Feature 75 was delineated as belonging to the late Middle Woodland through previous research. The other two features were included as late Middle Woodland based on similar frequencies of complicated stamped pottery and the absence of brushed pottery. These features are associated with a continued but decreased use of fabric marked (23.1%), check stamped (12.8%), and simple stamped (20.5%) pottery and the introduction and predominance of Pickwick Complicated Stamped (43.6%) (Table 4). The remainder of Zone B provenience group (B1 and B2) and four features (F44, F47, F56, and F78) were identified as belonging to the Late Woodland (Table 5). These features are associated with

the continued use of other pottery types but the introduction and predominance of Flint River Brushed (41.2%) (Table 4). The other pottery types include fabric marked (21.8%), check stamped (14.3%), simple stamped (12.6%), and complicated stamped (10.1%).

Frequency Seriation of Combined Units and Features

Unlike the unit levels, the pit features cannot be ordered by superposition. Therefore, the pit features needed to be integrated with the unit levels. The units and features were combined in order to create a master seriation (Fig. 16). As seen in the frequency seriation of combined units and features, the analysis of corresponding time periods between features and units is confirmed. Zone A is placed above Feature 44 to indicate that it is associated with the most recent component of the site. Zone B fits in with the Late Woodland features. Zone C fits in with the Middle Woodland features, though there are some outliers, such as complicated stamped, cord marked, and brushed pottery, which probably indicate some disturbance.

Feature Number	Fabric Marked	Check Stamped	Simple Stamped	Complicated Stamped	Brushed	Total
F44	3 (5.3%)	2 (3.5%)	3 (5.3%)	4 (7.0%)	45 (78.9%)	57 (100%)
F56	3 (23.1%)	4 (30.8%)	3 (23.1%)	1 (7.7%)	2 (15.4%)	13 (100%)
F47	11 (55%)	5 (25.0%)	1 (5.0%)	2 (10.0%)	1 (5.0%)	20 (100%)
F78	9 (31%)	6 (20.7%)	8 (27.6%)	5 (17.2%)	1 (3.4%)	29 (100%)
F75	1 (9.1%)	2 (18.2%)	2 (18.2%)	6 (54.5%)	0 (0.0%)	11 (100%)
F20	2 (18.2%)	1 (9.1%)	1 (9.1%)	7 (63.6%)	0 (0.0%)	11 (100%)
F59	6 (35.3%)	2 (11.8%)	5 (29.4%)	4 (23.5%)	0 (0.0%)	17 (100%)
F25	0 (0.0%)	2 (10.5%)	17 (89.5%)	0 (0.0%)	0 (0.0%)	19 (100%)
F53	10 (27.0%)	21 (56.8%)	6 (16.2%)	0 (0.0%)	0 (0.0%)	37 (100%)
F12	5 (50.0%)	4 (40.0%)	1 (10.0%)	0 (0.0%)	0 (0.0%)	10 (100%)
F41	6 (54.5%)	4 (36.4%)	1 (9.1%)	0 (0.0%)	0 (0.0%)	11(100%)
F24	353 (97.0%)	4 (1.1%)	3 (0.8%)	1 (0.3%)	3 (0.8%)	364 (100%)
F71	14 (82.4%)	3 (17.6%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	17 (100%)
F77	9 (30.0%)	21 (70.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	30 (100%)
F34	12 (20.0%)	48 (80.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	60 (100%)

Table 3: Frequency and percentages of decorated pottery for features.

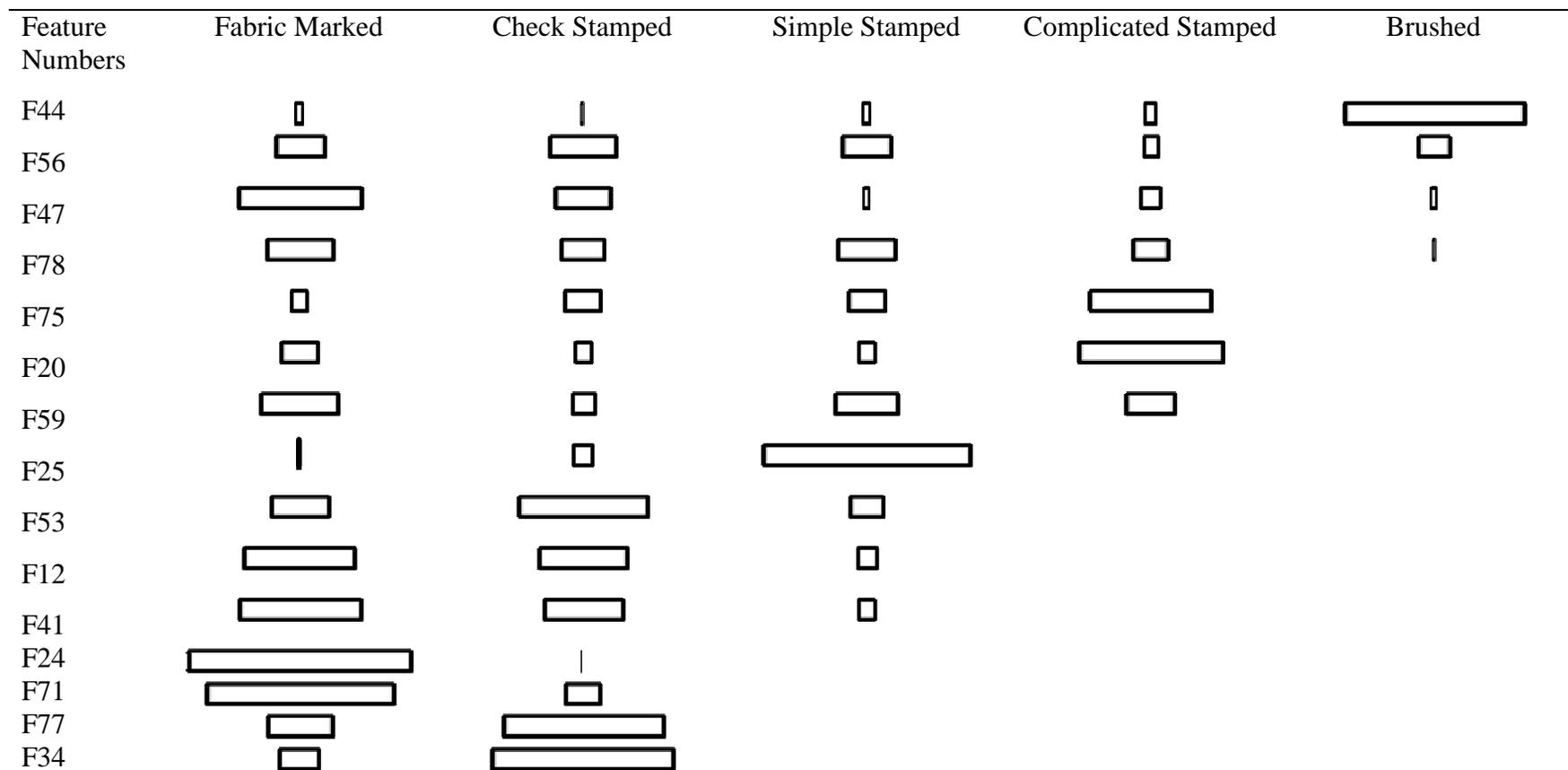


Figure 15: Frequency seriation of decorated pottery for features.

Time Period	Fabric Marked	Check Stamped	Simple Stamped	Complicated Stamped	Brushed	Total
Late Woodland	26 (21.8%)	17 (14.3%)	15 (12.6%)	12 (10.1%)	49 (41.2%)	119 (100%)
Late Middle Woodland	9 (23.1%)	5 (12.8%)	8 (20.5%)	17 (43.6%)	0 (0.0%)	39 (100%)
Middle Woodland	409 (74.6%)	107 (19.5%)	28 (5.1%)	1 (0.2%)	3 (0.5%)	548 (100%)

Table 4: Summary of frequency and percentages of decorated pottery for features by time period.

	Middle Woodland	Late Middle Woodland	Late Woodland	Total
Feature Numbers	F12	F20	F44	
	F24	F59	F47	
	F25	F75	F56	
	F34		F78	
	F41			
	F53			
	F71			
	F77			
Total	8 (53.3%)	3 (20.0%)	4 (26.7%)	15 (100%)

Table 5: Frequency and percentages of features by time period.

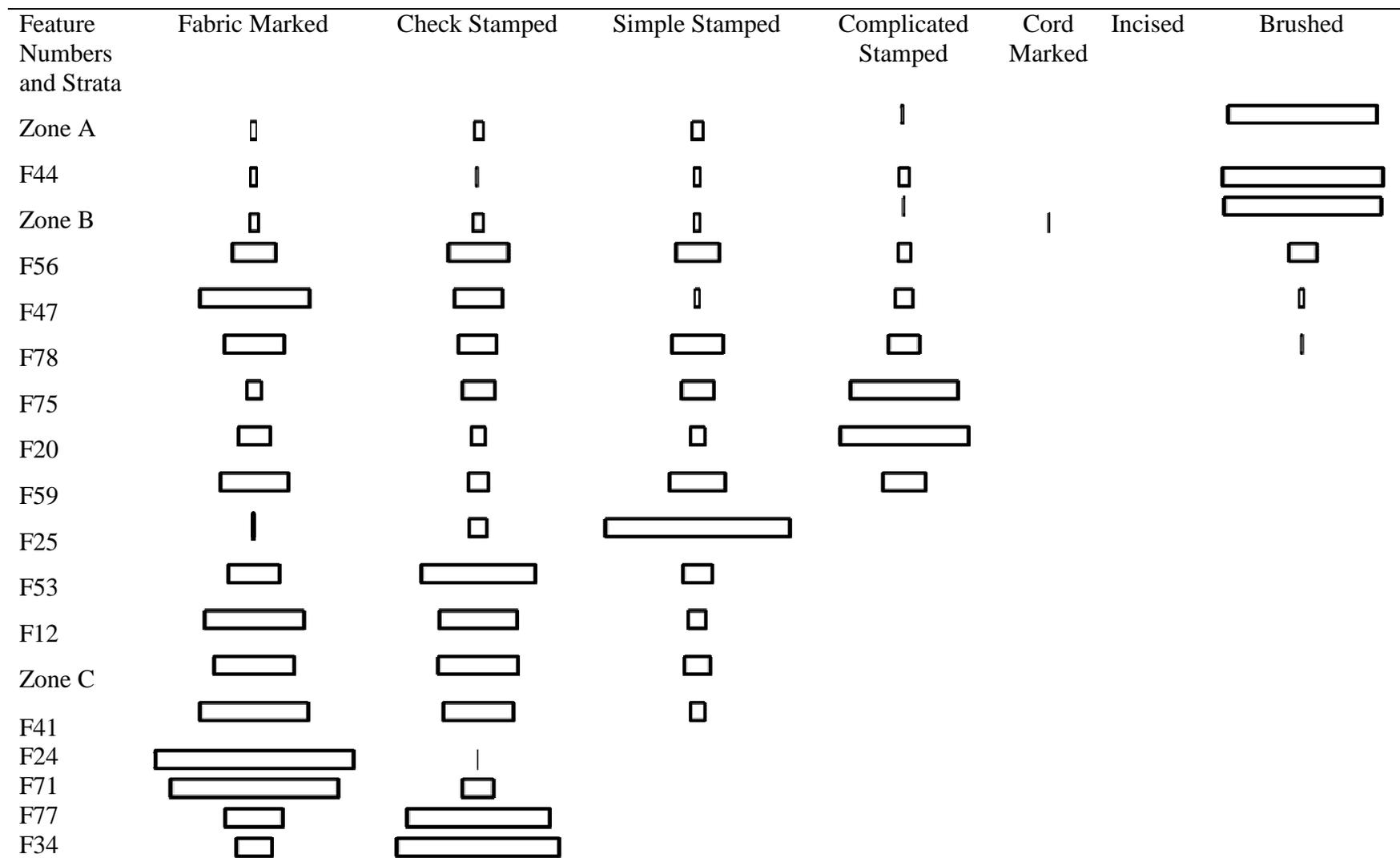


Figure 16: Combined frequency seriation of decorated pottery for features and unit strata.

Radiocarbon Dates

In the late 1980s, the Office of Archaeological Research submitted six radiocarbon samples from 1JA574 (Table 6). Unfortunately, only one of the radiocarbon dates applies to the provenance units chosen for seriation. A wood charcoal sample was analyzed from Feature 24 (27.0 gm), a large cylindrical, shell filled pit with a diameter of 130 cm and a depth of 98 cm. The sample was analyzed by BETA Analytic, Inc. (Beta-23931). The radiocarbon dates were calibrated using OxCal v4.1.1, provided by Bronk Ramsey (2009). The calibrated dates are based on the IntCal04 atmospheric curve (Reimer et al. 2004). The calibrated date range is 540-201 B.C. (2,310±60 B.P.) with a 93.7% probability. Charcoal samples were taken from all unit strata and features, which could be used for further analysis.

Feature	Type	Sample	Uncalibrated Date	Calibrated Date	Probability
F24	Storage pit	Wood charcoal	2310±60 BP	540-201 B.C.	93.7%
F63	Burial	Wood charcoal	1040±50 BP	A.D. 888-1051	86.5%
F73	Burial	Wood charcoal	1310±80 BP	A.D. 582-894	95.4%
F8A	Burial	Wood charcoal	1520±50 BP	A.D.428-634	95.4%
PH248	Post hole	Hickory shell	1450±50 BP	A.D.533-668	93.0%
FH115	Post hole	Hickory shell	1470±60 BP	A.D.505-661	82.7%

Table 6: Radiocarbon dates taken from 1JA574 samples.

The other radiocarbon dates were taken from feature and post hole samples. A wood charcoal sample was tested from Feature 63 (Burial 35). The sample revealed a calibrated date of A.D. 888-1051 (1040±50 B.P.). A wood charcoal sample was tested from Feature 73 (Burial 39). The sample revealed a calibrated date of A.D. 582-894 (1310±80 B.P.). A wood charcoal sample was tested from Feature 8A (Burial 16). The sample revealed a calibrated date of A.D. 428-634 (1520±50 B.P.). A hickory shell sample was tested from Post hole 248.

The sample revealed a calibrated date of A.D. 533-668 (1450±50 B.P.). A hickory shell sample was tested from Post hole 115. The sample revealed a calibrated date of A.D. 505-661 (1470±60 B.P.).

Summary of the Archaeological Sequence

Superposition and the frequency seriation of decorated ceramic types backed up by radiocarbon dates resulted in the delineation of three archaeological components through the ceramics at this site. Three components at this site have been identified: Bridgeport 1, Bridgeport 2, and Bridgeport 3.

Bridgeport 1

The first and earliest component is Bridgeport 1, which is attributed to the Middle Woodland Copena archaeological culture. Long Branch Fabric Marked, Wright Check Stamped, and Bluff Creek Simple Stamped are associated with Middle Woodland. These types were found in the earliest strata, Zone C.

Bridgeport 2

Bridgeport 2 is attributed to an unnamed late Middle Woodland culture. Pickwick Complicated Stamped is associated with late Middle Woodland and the Late Woodland, Zone B. Flint River Cord Marked, Flint River Incised, and Flint River Brushed are associated with Late Woodland, Zone B. The introduction of a new pottery type signifies a transition in time period or the *terminus post quem* (i.e., “date after which”) (Renfrew and Bahn 2004:135). By saying that a certain pottery type marks the *terminus post quem*, I simply mean that deposits that contain this particular type can be no earlier than the date which is associated with that type. The deposit can, however, be later than that date associated with the pottery type. Pickwick Complicated Stamped is the first seen in Zone B-3, so it can be

used as a marker for the late Middle Woodland. The provisional name proposed for this phase is *Bridgeport phase*.

Bridgeport 3

Bridgeport 3 is the latest component and is attributed to the Flint River Late Woodland culture. The Flint River types are found initially in Zone B-2 and continue into Zone B-1. In summary, Pickwick Complicated Stamped serves as a chronological marker for the late Middle Woodland and the Flint River types serve as markers for the Late Woodland. Based on this evidence, there were at least three prehistoric occupations revealed at this site.

CHAPTER 5
MEASURING CERAMIC STYLE DIVERSITY
AT THE BRIDGEPORT SITE

David Braun (1991) proposed that increases in the diversity of pottery decoration within households and communities indicate the increased diversity of social interactions and the expression of various social distinctions. It was proposed that decreases in pottery decorative diversity during the Late Woodland period signaled a decrease in the diversity of social interactions as well as lessening social marking and more consensual social interactions associated with the decline of the extensive trade networks of the Hopewellian Interaction Sphere (Braun 1991). The effort put into nonessential decoration was measured through the number of levels of compositional detail present, the size or number of fields present, and the size or number of units of composition used to fill the decorative fields. These measurements revealed more decorative effort in Braun's Middle Woodland samples and less decorative effort in his Late Woodland samples (Braun 1991:377). Braun's model will be applied to the ceramic sample from the Bridgeport site. Measurements of ceramic style diversity, evenness, and intensity will be used to examine changing interactions during the Middle and Late Woodland. These measures will be utilized to test the hypothesis that if the Late Woodland was a time of cultural change and decreased regional interactions, then I expect to see a decrease in ceramic stylistic effort and diversity over time.

Methods and Results

While Braun was able to measure the levels of compositional detail and various aspects of the decorative fields, that is not possible with the sample from the Bridgeport site due to the small size of the pottery sherds. Measures of ceramic diversity could focus on surface decoration, vessel shape, or temper composition. Methods that I chose had to be appropriate to pottery sherds because whole vessels were not recovered. Therefore, vessel shape was not an appropriate measurement. Temper composition was not an appropriate measurement because all Woodland sherds analyzed were limestone tempered. I chose surface decoration as an appropriate measure of ceramic style diversity. All of the pottery sherds from unit levels and features from the Bridgeport site were analyzed for nonessential surface finish or decoration. Decorated pottery or pottery with a distinct surface finish were used successfully to construct the ceramic chronology because they are more sensitive means to measure changes with the passage of time (Blitz and Lorenz 2006; Phillips et al. 2003:220); therefore, it seems appropriate to use decorated pottery to measure ceramic style diversity.

Rather than use Braun's measurements, I propose several variables to be measured instead, including Ceramic Stylistic Diversity, Ceramic Stylistic Evenness, and Ceramic Stylistic Intensity. Measurements for each of the variables were taken from ceramics belonging to Middle Woodland, late Middle Woodland, and Late Woodland features and strata. The first measurement, Ceramic Stylistic Diversity, was calculated using the Shannon-Weiner Diversity Index to assess how diverse the feature/unit samples are in terms of the amount of different pottery types present. In terms of behavioral implications, the amount of diversity indicates the quantity of social distinctions or differentiations that were being

expressed. A high diversity signifies proliferation of marked distinctions, including age, gender, and both local and regional group differentiations.

Once ceramic style diversity is measured, it is important to measure how evenly the pottery types are distributed through out the sample. The second measurement, Ceramic Stylistic Evenness, was calculated through the Shannon-Weiner Diversity index to assess how evenly distributed the ceramic types were in the feature/unit samples. If a single pottery type has a much higher count than the other types, then there were most likely a low number of groups which were important. In this instance, the society was probably characterized by social hierarchy. If each of the pottery types has an equal representation, then there were multiple groups simultaneously represented, which points to social heterarchy.

The diversity and evenness measurements focused on the proliferation of marked distinctions and the amount of peers present in the social situation, but an additional measurement was needed to assess how much effort was put into decorating pottery compared to simply producing plain pottery. The third measurement, Ceramic Stylistic Intensity, refers to the percentage of decorated sherds out of the total sherd count for the levels and features to assess the intensity of decoration or effort put into decorating pottery. Intensity signifies whether there was an increase in marking of social distinctions and competition.

First, a simple presence/absence chart was used to identify the diversity of common and rare pottery types for features and unit levels associated with the Middle Woodland, late Middle Woodland, and Late Woodland. The counts of the seven major pottery types were entered into the SPSS statistical package and cross-checked for any data-entry errors. These counts were then processed using the Shannon-Weiner Diversity Index to measure the ceramic stylistic diversity and evenness of the features and unit levels belonging to the

Middle Woodland, late Middle Woodland, and the Late Woodland. Measurements of the variables, Ceramic Style Diversity, Ceramic Style Intensity, and Ceramic Style Evenness, were entered into SPSS. These measurements were then used to address whether there was a significant statistical difference between the Middle Woodland, late Middle Woodland, and the Late Woodland samples. Mann-Whitney U and Kruskal-Wallis statistical tests were used to measure the statistical significance of the differences between the samples.

Ceramic Decorative Diversity

The decorative diversity within each strata level corresponding to a specific time period is measured to assess the amount of local and regional communication that was occurring at the site. More decorative diversity suggests increased communication and social interaction, while less decorative diversity indicates a more inwardly focused society and social consensus. Both common and rarer pottery types were included in the presence/absence analysis because I wish to measure decorative diversity to test my hypothesis, which states that more decoration equals more communication and social diversity or heterogeneity. These common and rare types include all of the following: Mulberry Creek Plain Smooth (MCPSM), Mulberry Creek Plain Scored (MCPSC), Long Branch Fabric Marked (LBFM), Wright Check Stamped (WCS), Bluff Creek Simple Stamped (BCSS), Pickwick Complicated Stamped (PCS), Pickwick Complicated Stamped Napier Motif (PCSN), Sauty Incised (SI), Flint River Cord Marked (FRCM), Cox Punctuated (CP), Flint River Incised (FRI), Flint River Brushed (FRB), Residual Incised (RI), Residual Punctuate (RP), Grit-Watts Bar Cord Marked (GWBCM), and Watts Bar Fabric Marked (WBFM).

A ceramic index was measured for the total number of pottery types per time period/phase (units/features). In Table 7 and 8, presence/absence was configured to show the

pottery types present in each unit level/feature. In each of the Middle Woodland strata (C1 and C2), 7 out of 16 pottery types were present. Eleven out of 16 pottery types were represented in the late Middle Woodland strata (B3). The most ceramic diversity is seen in Late Woodland strata B2 with 15 out of the 16 pottery types being represented. The Late Woodland stratum B1 has 11 of the 16 pottery types present. Both B2 and B3 unit levels have the second highest ceramic diversity.

Time	Late Woodland		Late Middle Woodland	Middle Woodland	
	B1	B2	B3	C1	C2
Strata Levels	B1	B2	B3	C1	C2
MCP (SM)	X	X	X	X	X
MCP (SC)	X	X	X	X	X
LBF	X	X	X	X	X
WCS	X	X	X	X	X
BCSS	X	X	X	X	X
PCS	X	X	X	X	
PCSN			X		
SI	X	X			
FRCM	X	X			X
CP		X			
FRI	X	X	X		
FRB	X	X	X	X	X
RI	X	X	X		
RP		X			
GWBCM		X	X		
WBFM		X			
Ceramic Diversity	11/16	15/16	11/16	7/16	7/16

Table 7: Presence/absence of decorated pottery types as a measure of ceramic diversity for unit levels.

Time	Features	MCP(SM)	MCP(SC)	LBF	WCS	BCSS	PCS	SI	FRCM	FRB	RI	FMCKBO	Types
Late	44	X	X	X	X	X	X			X	X		8/11
Woodland	47	X	X	X	X	X	X			X			7/11
	56	X	X	X	X	X	X			X			7/11
	78	X	X	X	X	X	X	X		X			8/11
Late Middle	20	X	X	X	X	X	X						6/11
Woodland	59	X	X	X	X	X	X		X		X		8/11
	75	X	X	X	X	X	X				X		7/11
Middle	12	X		X	X	X							4/11
Woodland	24	X	X	X	X	X	X			X		X	8/11
	25	X			X	X							3/11
	34	X		X	X						X		4/11
	41	X	X	X	X	X							5/11
	53	X		X	X	X					X		5/11
	71	X	X	X	X								4/11
	77	X	X	X	X								4/11

Table 8: Presence/absence of decorated pottery types as a measure of ceramic diversity for features.

As for the features, I decided to calculate the average ceramic diversity for each of the time periods. This was accomplished by adding up the total number of pottery types that are found in each of the features belonging to a particular time period. Then, I divide this total by the number of features that belong to that time period, which gives an average diversity. This diversity average will then be used to compare the ceramic stylistic diversity of the Middle, late Middle, and Late Woodland features.

There are eight features belonging to the Middle Woodland, which have a combined ceramic diversity of 37 pottery types. The Middle Woodland features have an average diversity of 4.6 ($37/8$). Therefore, the Middle Woodland features have a ceramic diversity of 4.6 out of 11 pottery types. There are three features belonging to the late Middle Woodland, which have a combined ceramic diversity of 21 pottery types. The average diversity of the late Middle Woodland features is 7 ($21/3$). The late Middle Woodland features have the second highest ceramic diversity with 7 out of 11 types being represented. There are four features belonging to the Late Woodland, which have a combined ceramic diversity of 30 pottery types. The Late Woodland features have the most ceramic diversity with an average diversity of 7.5 ($30/4$). The average ceramic diversity for the Late Woodland features is 7.5 out of 11 pottery types. In general, this indicates that there is more ceramic diversity in the more recent strata, which is associated with the Late Woodland and a high diversity in the late Middle Woodland.

Shannon-Weiner Diversity Index

The Shannon-Weiner Diversity Index was used to measure the diversity of the Bridgeport sample (Magurran 1988; Shannon 1948; Weaver and Shannon 1949). The diversity index is commonly used to assess the diversity of species in an ecosystem. It also can be used to assess the diversity of different kinds of samples. Seven decorated ceramic

types were used in this analysis to measure ceramic stylistic diversity and evenness. These types are: Long Branch Fabric Marked, Wright Check Stamped, Bluff Creek Simple Stamped, Pickwick Complicated Stamped, Flint River Incised, Flint River Cord Marked, and Flint River Brushed. Table 9 presents the results from the Shannon-Weiner Diversity Index for the decorated ceramics.

	Middle Woodland	Late Middle Woodland	Late Woodland
Decorated Types	6 (of 7)	7	7
Individuals	683	206	800
H_1	1.24	2.20	1.31
H_1 max	2.81	2.81	2.81
D_1	1.57	0.61	1.49
D_1 pct	55.87	21.78	53.02
Evenness	44.13	78.22	46.77

Table 9. Shannon-Weiner Diversity Index.

The value, H_1 , refers to first-order diversity or the actual diversity of the sample. The value, D_1 , refers to the divergence from equiprobability. The value, D_1 pct, refers to the percentage of the degree of diversity. This value is calculated by dividing the D_1 value by the H_1 max. The resulting percentage indicates whether there is a substantial divergence from the equiprobability within the sample. A D_1 pct value of 50% or higher indicates a substantial divergence from the equiprobability. The value, H_1 max, refers to the maximum possible diversity. There is a high degree of diversity present in the sample when the D_1 value is low. The designation of high and low is fairly arbitrary. The distinction is made primarily by comparing the D_1 values to see which one is higher and lower. A low D_1 value means that the H_1 value is close to being in a state of equiprobability. On the other hand, a high D_1 value means that the sample is not very diverse. This occurs when the H_1 value is relatively small

compared to the H_1 max value. In other words, the sample substantially diverges from the equiprobability. In the unit and feature samples, there are a total of seven decorated ceramic types represented. A lower diversity can result from a high count of one or a few decorated ceramic types. An evenness value of 100 refers to samples that have evenly distributed sherd counts. I will consider evenness values of 50 or below as relatively uneven.

Results. The ceramic sample from Middle Woodland units and features contained a total of 683 sherds, which belonged to six of the seven decorated types. The counts for decorated ceramic types are relatively uneven at a value of 44. The first-order diversity measure of the Middle Woodland sample is 1.24 ($H_1=1.24$) and the maximum possible diversity is 2.81 ($H_1 \text{ max}=2.81$). The difference between these two measurements, or the divergence from equiprobability, is 1.57 ($D_1=1.57$), which means that the sample is relatively near a state of equiprobability. This suggests that the sample is fairly diverse.

The ceramic sample from late Middle Woodland units and features contained a total of 206 sherds, which consisted of all seven decorated types. The evenness value for the late Middle Woodland sample is relatively high at a value of 78, which means the sample is evenly distributed. The first-order diversity measure of the late Middle Woodland sample is 2.20 ($H_1=2.20$) and the maximum possible diversity is 2.81 ($H_1 \text{ max}=2.81$). The difference between these two measurements is 0.61 ($D_1=0.61$), which suggests that the sample is highly diverse and very close to a state of equiprobability.

The ceramic sample from Late Woodland units and features contained a total of 800 sherds, which consisted of all seven decorated types. Similar to the Middle Woodland sample, the counts for decorated ceramic types are relatively uneven at a value of 46. The first-order diversity measure of the Late Woodland sample is 1.31 ($H_1=1.31$) and the

maximum possible diversity is 2.81 ($H_1 \text{ max}=2.81$). The difference between these two measurements is 1.49 ($D_1=1.49$), which suggests that the sample is fairly diverse and relatively near a state of equiprobability.

The Middle Woodland and Late Woodland samples have the lowest diversity. The Middle Woodland sample has the lowest diversity measure. The D_1 value for the Middle Woodland sample is 55% of the $H_1 \text{ max}$ value ($D_1 \text{ pct}=55.87$), which is a substantial divergence. The D_1 value for the Late Woodland has the next lowest D_1 value at 53% of the $H_1 \text{ max}$ ($D_1 \text{ pct}=53.02$), which is also a substantial divergence from the equiprobability. The late Middle Woodland sample has the highest diversity with a D_1 value that is only 21% of the $H_1 \text{ max}$ ($D_1 \text{ pct}=21.73$). This suggests that the late Middle Woodland sample does not have a substantial divergence from the equiprobability. This is even more significant considering that the late Middle Woodland sample is much smaller than the Middle and Late Woodland Samples.

In summary, the Middle Woodland sample is the most uneven sample and has a lower diversity than the other samples. It seems that the Middle Woodland was a time of consensus when people were not trying to express individual or small group identities. Rather, they may have replicated the stylistic decorations that were part of the Hopewellian trade network and assimilated to other cultures. The Late Woodland and especially the late Middle Woodland seem to be a time of social marking and proliferation of ceramic decoration. Individuals may have been expressing new types of cultural interactions. While the Late Woodland may have been a politically tense period in time, the exchange of ideas appears to have continued and even increased.

Ceramic Style Intensity

The intensity of investment into decorating pottery was measured by calculating the percentage of decorated sherds out of the total amount of sherds present. Table 10 shows the total number of decorated sherds divided into features and units, their combined count, and the total count of decorated and undecorated sherds for each time period. These counts were used to calculate the percentage of decorated sherds for each time period. The intensity of decorated sherds was measured by taking the percentage of decorated ceramic sherds from the total sherd count for each time period. The percentage of decorated sherds in the Middle Woodland is 33%. The percentage of decorated sherds in the late Middle Woodland is 6%. The Late Woodland percentage of decorated sherds is 12%. The Middle Woodland has the highest intensity of decorated ceramics, which indicates that these people were more concerned with decorative ceramic techniques. The Late Woodland has the second highest effort in decorating ceramics. The late Middle Woodland has the lowest percentage of decorated sherds.

Time Period	Total Decorated Sherds in Features	Total Decorated Sherds in Units	Total Decorated Sherds	Total Sherd Count	Percentage of Decorated Sherds
Middle Woodland	548	135	683	2045	0.33
Late Middle Woodland	40	166	206	3314	0.06
Late Woodland	119	681	800	6553	0.12

Table 10. Measure of Ceramic Style Intensity.

Comparing this information to the Shannon-Weiner Diversity Index, it seems that even though the Middle Woodland was a time of lower decorated ceramic diversity, these

individuals were producing more decorated sherds compared to plain sherds. This suggests increased regional consensual interaction and marking at home community. The late Middle Woodland was identified by the Shannon-Weiner Diversity Index as being the most diverse in terms of decorated ceramic types; however, the amount of decorated sherds only represents 6% of the total sample. Though there is little effort placed in decorated sherds, there was a great deal of diversity in these sherds. This demonstrates significant competitive regional interaction but consensus within community. Twelve percent of the Late Woodland sample is comprised of decorated sherds. This suggests that the Late Woodland people preferred to produce plain pottery and were not as concerned with diverse decorative finishing techniques, which is associated with continued competitive regional interaction.

Mann-Whitney U and Kruskal-Wallis

The features and unit levels were used to run statistical tests on the ceramic style intensity, ceramic style diversity, and ceramic style evenness of the samples (Table 11). It was necessary to run non-parametric tests because the data does not conform to a normal distribution and the sample size is small ($n=21$). Nine Mann-Whitney U statistical tests were run on the variables, Ceramic Style Intensity, Ceramic Style Diversity, and Ceramic Style Evenness, to see if the medians for the samples belonging to different time periods were significantly different.

Middle Woodland and Late Middle Woodland. Mann-Whitney U statistical tests were run on the variables Ceramic Style Intensity, Ceramic Style Diversity, and Ceramic Style Evenness to see if the medians for Middle Woodland and late Middle Woodland samples were significantly different. There is a significant difference between the medians of the Middle Woodland and late Middle Woodland sample for the Ceramic Style Intensity variable ($p=0$). The Middle Woodland median (median=0.14) for Ceramic Style Intensity is

significantly lower than the late Middle Woodland median (median=1.01). There is a significant difference between the medians of the Middle Woodland and late Middle Woodland sample for the Ceramic Style Diversity variable ($p=0.01$). The Middle Woodland median (1.41) for Ceramic Style Diversity is significantly higher than the late Middle Woodland median (0.39). There is a significant difference between the medians of the Middle Woodland and late Middle Woodland sample for the Ceramic Style Evenness variable ($p=0.01$). The Middle Woodland median (49.85) for Ceramic Style Intensity is significantly higher than the late Middle Woodland median (-0.27). The medians of the Ceramic Style Intensity, Ceramic Style Diversity, and Ceramic Style Evenness for the Middle Woodland and late Middle Woodland are significantly different.

Middle Woodland and Late Woodland. Mann-Whitney U statistical tests were run on the variables Ceramic Style Intensity, Ceramic Style Diversity, and Ceramic Style Evenness to see if the medians for Middle Woodland and Late Woodland samples were significantly different. There is a significant difference between the medians of the Middle Woodland and Late Woodland sample for the Ceramic Style Intensity variable ($p=0.02$). The Middle Woodland median (median=0.14) for Ceramic Style Intensity is significantly higher than the Late Woodland median (median=-0.29). There is no significant difference between the medians of the Middle Woodland and Late Woodland sample for the Ceramic Style Diversity variable ($p=0.05$). The Middle Woodland median (median=1.41) for Ceramic Style Intensity is not significantly higher than the Late Woodland median (median=-0.59). There is no significant difference between the medians of the Middle Woodland and Late Woodland sample for the Ceramic Style Evenness variable ($p=0.10$). The Middle Woodland median (median=49.85) for Ceramic Style Intensity is not significantly higher than the Late Woodland median (median=-0.64).

Time Period	Feature/Level	Ceramic Style Intensity	Ceramic Style Diversity	Ceramic Style Evenness
Late Woodland	44	0.24	1.65	41.14
	47	0.22	1.07	61.94
	56	0.11	0.61	78.35
	78	0.14	0.70	75.21
	B1	0.12	1.80	35.72
	B2	0.10	1.68	40.33
Middle Woodland	20	0.09	1.32	53.11
	59	0.04	0.70	75.08
	75	0.06	1.12	60.05
	B3	0.07	0.66	74.33
Middle Woodland	B4	0.04	1.37	51.04
	12	0.25	1.45	48.48
	24	0.58	2.55	8.97
	25	0.49	2.32	17.29
	34	0.57	2.09	25.72
	41	0.18	2.81	47.10
	53	0.33	1.41	49.85
	71	0.63	2.14	23.95
77	0.40	1.93	31.39	
Middle Woodland	C1	0.14	1.17	58.34
	C2	0.13	1.10	60.97

Table 11: Measures of ceramic style intensity, diversity, and evenness.

The median of the Ceramic Style Intensity for the Middle Woodland and Late Woodland is significantly different, but the medians of the Ceramic Style Diversity and Ceramic Style Evenness for these two time periods are not significantly different. The Bonferroni correction, which will be utilized later with the Kruskal-Wallis test, only affected one significance level. When the Mann-Whitney significant level for Ceramic Style Intensity was multiplied by the number of pair-wise comparisons (3), the test changed from being significant to not significant ($p=0.05$). Therefore, there is no significant difference between the medians for the Middle Woodland and Late Woodland for the Ceramic Style Intensity variable when the Bonferroni correction is applied.

Late Middle Woodland and Late Woodland. Mann-Whitney U statistical tests were run on the variables Ceramic Style Intensity, Ceramic Style Diversity, and Ceramic Style Evenness to see if the medians for late Middle Woodland and Late Woodland samples were significantly different. There is a significant difference between the medians of the late Middle Woodland and Late Woodland sample for the Ceramic Style Intensity variable ($p=0.01$). The late Middle Woodland median (median=1.01) for Ceramic Style Intensity is significantly higher than the Late Woodland median (median=-0.29). There is no significant difference between the medians of the late Middle Woodland and Late Woodland sample for the Ceramic Style Diversity variable ($p=0.52$). The late Middle Woodland median (median=0.39) for Ceramic Style Intensity is not significantly higher than the Late Woodland median (median=-0.59). There is no significant difference between the medians of the late Middle Woodland and Late Woodland sample for the Ceramic Style Evenness variable ($p=0.72$). The late Middle Woodland median (median=-0.27) for Ceramic Style Intensity is not significantly higher than the Late Woodland median (median=-0.64). The median of the Ceramic Style Intensity for the late Middle Woodland and Late Woodland is significantly different, but the medians of the Ceramic Style Diversity and Ceramic Style Evenness for these two time periods are not significantly different. With the Bonferroni correction, the significance levels remain unchanged.

Kruskal-Wallis

Kruskal-Wallis tests were run on the variables Ceramic Style Intensity, Ceramic Style Diversity, and Ceramic Style Evenness to see if there was a significant difference between the Middle Woodland, late Middle Woodland, and Late Woodland samples. The test results show there is a significant difference between the samples from each time period for each variable. There is a significant statistical difference between the Ceramic Style Intensity

between the Middle Woodland, late Middle Woodland, and Late Woodland samples ($p=0$). There is a significant statistical difference between the Ceramic Style Diversity between the Middle Woodland, late Middle Woodland, and Late Woodland samples ($p=0.02$). There is a significant statistical difference between the Ceramic Style Evenness between the Middle Woodland, late Middle Woodland, and Late Woodland samples ($p=0.04$).

The Mann-Whitney U tests were used to assess where the significant differences in the sample can be identified. The Bonferroni correction was run on the previous Mann-Whitney U tests in order to control the p-value. This is done by multiplying the significance level of each Mann-Whitney U test by the number of pair-wise comparisons which in this case is three. The three pair-wise comparisons are Middle Woodland to Late Woodland, Middle Woodland to late Middle Woodland, and late Middle Woodland to Late Woodland. This allows me to identify where the significant differences are in these samples. There is a significant difference between the Middle Woodland and late Middle Woodland samples for all three variables, which are Ceramic Style Intensity, Diversity, and Evenness. There is a significant difference between the Ceramic Style Intensity between the late Middle Woodland and the Late Woodland samples. While the Ceramic Style Intensity between the Middle Woodland and Late Woodland sample was no longer significant by a slight amount after the Bonferroni correction was applied, it may be assumed that this may also be a point where the samples are substantially different.

Cultural Activity at the Bridgeport Site

According to Braun's work in the American Bottom, it was hypothesized that the Late Woodland populations at the Bridgeport site would face less outward influences due to the decline of long distance trade networks, resulting in less decorative diversity and more social consensus over time. Analysis of ceramic style diversity at the Bridgeport site

suggests different cultural dynamics in North Alabama compared to the American Bottom. The Kruskal-Wallis statistical test showed that there is a significant statistical difference between the variables, Ceramic Style Diversity, Ceramic Style Evenness, and Ceramic Style Intensity, per time period. This suggests that the northern Alabama region experienced different cultural dynamics throughout the Woodland period.

The Middle Woodland sample has low diversity and evenness measurements and a high intensity measurement. This demonstrates that the Middle Woodland was a time of social hierarchy that was characterized by a consensus regarding local and regional interactions, which is most likely associated with the influence of the Hopewellian Interaction Sphere. While this was a time of social consensus, people were putting more effort into marking their pottery to express their association or affiliation with the broader regional interactions. The late Middle Woodland sample has a high diversity and evenness but a low intensity measurement. These measurements suggest that there was a proliferation of marked distinctions and social differentiation between multiple competing groups. This marked the transition to more social heterarchy. The Late Woodland sample falls somewhat in the middle with average measurements for diversity, evenness, and intensity. These measurements point to the Late Woodland as being a time of social heterarchy after the decline of the interaction sphere. Some groups may have started to emerge as more powerful or prestigious, but no one group was significantly more dominant. Increased intensity of pottery decoration from the late Middle Woodland to the Late Woodland suggests that more effort was put into marking social distinctions and competition.

Patterns found in the American Bottom, therefore, are not seen at the Bridgeport site. It is clear, however, that there were cultural changes occurring at this site, and probably throughout northeast Alabama, during the Woodland period that resulted from a trend toward

ceramic heterogeneity and social differentiation. These changes may be better assessed through other means, such as an examination of the changing lithic materials present and an expansion of the study to include other sites with Middle Woodland, late Middle Woodland, and Late Woodland components.

CHAPTER 6
CONCLUSION: CHANGING WOODLAND INTERACTIONS
IN NORTHEAST ALABAMA

At the start of the thesis, I presented David Braun's (1991) model which measured variation in the social interactions with variation in ceramic style diversity during the Woodland period in the Midwest. The expectations of this model were applied to a ceramic sample from the Bridgeport site to see if the same trends Braun noticed in his Woodland samples from the Midwest matched the trends seen during the Woodland period of northeast Alabama. Based on archaeologists' understanding of the patterns previously identified for these time periods, we can expect to see a decrease in ceramic stylistic diversity over time due to increased social consensus in the Late Woodland due to the decline of the Hopewellian Interaction Sphere and the associated trade networks.

The ceramic sample from the Bridgeport site, 1JA574, was used to assess the expectations of Braun's model. First, I addressed the issue of using ceramic decorative style to investigate how past societies expressed culturally relevant information through pottery decoration. Secondly, I presented an overview of Braun's study and how it could be applied in the Woodland Southeast. I revealed that some of the same cultural trends in the Middle and Late Woodland periods in the Midwest and elsewhere are found in the Middle Tennessee Valley. Next, the archaeological context of the Bridgeport site was provided. A more accurate chronology was created to identify Middle and Late Woodland samples through an analysis of unit strata superposition, a frequency seriation of decorated pottery in storage pit

features, and radiocarbon dates. Three components at this site were identified, including Bridgeport 1, Bridgeport 2, and Bridgeport 3. Bridgeport 1 is attributed to the Middle Woodland Copena archaeological culture. Bridgeport 2 is attributed to an unnamed late Middle Woodland culture, which is marked by the introduction of Pickwick Complicated Stamped pottery. The provisional name, Bridgeport phase, was used to refer to this component. Bridgeport 3 is attributed to the Flint River Late Woodland culture.

The Middle Woodland, late Middle Woodland, and Late Woodland samples were used to measure changing levels of ceramic style intensity, diversity, and evenness at the Bridgeport site. The Middle Woodland was a time of social hierarchy that was characterized by a consensus regarding local and regional interactions, which is most likely associated with the influence of the Hopewellian Interaction Sphere. While this was a time of social consensus, people were putting more effort into marking their pottery to express their association or affiliation with the broader regional interactions. The late Middle Woodland was a period characterized by proliferation of marked distinctions, social differentiation between multiple competing groups, and social heterarchy. The Late Woodland was a time of social heterarchy after the decline of the interaction sphere in which groups may have started to emerge as more powerful or prestigious, but no one group was significantly more dominant. More effort was put into marking social distinctions and competition during this period.

Several reasons can be proposed for the differences seen in the Woodland samples from the Southeast as compared to Braun's Woodland samples. With this trend toward marking distinctions between several competing groups in the late Middle and Late Woodland, the Pickwick Complicated Stamped and Flint River pottery types were likely introduced to help mark these new distinctions. Outside influences may have continued to

influence these people, and ideas may have been brought in through marriage practices, which compliments Hendrickson's (2001:114) proposal that females were introduced from outside the village for exogamous unions with males who resided in the village. Female marriage partners may have influenced culture at the Bridgeport in several possible ways (Hegmon et al. 2000:218). One possibility is that recently married females may have retained the style of their homeland and even transferred it to other females at the Bridgeport site, which could explain the introduction of the Pickwick Complicated Stamped and Flint River pottery types. On the other hand, the introduction of these new types does not have to be explained simply by the appearance of outside females. It is always possible that females brought into the community as marriage partners may have carried knowledge of the pottery type with them, shared their knowledge of pottery decoration with the females already residing in the community, and then the pottery types were adopted solely to express new social distinctions in the late Middle and Late Woodland.

Another possibility is that the newly married females adopted the style of their new community in order to better fit in. The development of the new pottery types arose not based on marriage practices but based on social conditions. In this case, the new pottery types introduced or created in the late Middle and Late Woodland would result from the need to mark social distinctions related to tension caused by the decline of trade networks and a loss of regional cooperation, not because of marriage practices. Based on what we know of the historical trajectory of the Late Woodland in North Alabama, the third explanation, regarding an in situ development, is most plausible since political and economic tensions probably led to a decline in social consensus and the adoption of new forms of marking social differentiation. Regional reorganizations, such as the events occurring around A.D. 600, are

commonly associated with dramatic changes in pottery and other forms of material culture, not marriage practices (Hegmon et al. 2000:224).

The introduction of the Flint River types suggest that there was a focus on more localized interactions, though we do not know how localized, and an expression of social differentiation. There appears to be continued interactions between regions for alliance and marriage purposes despite the decline in long distance trade networks. The ceramic analysis indicates that, though life changed, markers of that previous life were not completely eradicated.

In summary, Braun's model may still stand-that decreases in stylistic diversity may indicate social consensus as well as limited communication and interaction; however, the Late Woodland does not seem to be a time of decreased interaction, but rather a time of social differentiation, as indicated by the increased ceramic stylistic diversity over time. Ceramic analysis should be approached by several lines of evidence. Flint River types may have communicated some sort of social identity that may have been recognized by outsiders; however, there is no way to support this assumption without an investigation into broader ceramic patterning in other regions. Ultimately, it may be difficult to rely so heavily on ceramic evidence without bringing in other lines of evidence, such as studies dealing with the skeletal population at the site (Hendrickson 2001:114), in order to assess prehistoric interactions. Though the ceramic analysis was necessary to construct the chronology and gauge some of the interactions, it provides an incomplete picture. An analysis of lithic materials at the Bridgeport site may be another possible link to investigating Woodland interactions.

It is assumed that cultural interactions increased during the Late Woodland, but these interactions are distinctively different than the interactions that occurred in the Middle

Woodland. For further research, I would suggest that other ceramic variables be measured to assess the types of technological changes that could influence ceramic stylistic diversity. I propose that other archaeological materials, such as lithics, be investigated to further investigate the types and trajectory of interactions during the Woodland in northeast Alabama. Finally, it is suggested that the research from the Bridgeport site be compared to surrounding sites in order to determine the spatial patterns and to further support the temporal patterns seen in the Woodland Southeast.

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