Inscribing Interaction:
Middle Woodland Monumentality in the Appalachian Summit, 100 BC – AD 400

by

Alice P. Wright

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Doctoral Committee:

Assistant Professor Robin A. Beck, Chair
Professor Joyce Marcus
Associate Professor Michael Witgen
Professor Henry T. Wright

For Rita and the Legend

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After compiling nine chapters, five appendices, and a slew of references, I thought I'd be ready to step away from the keyboard. But then, I realized there was one last piece of the dissertation puzzle to get on the page before this project could be complete: the acknowledgements. In fact, I've been looking forward to writing my acknowledgements since I began this sometimes challenging, always entertaining project in 2010. The handful of pages to follow are an opportunity to relive this journey, and to thank those who contributed to different steps along the way.

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TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

LIST OF APPENDICES

CHAPTER 1

INTERACTION AND MONUMENTALITY IN EASTERN WOODLANDS ARCHAEOLOGY

Yet, surely, no archaeologist would stop at saying that the tool kits, coprolites, and ceremonial wands found at a given site are all equally held together by "culture"; he would want to know just what kinds of relations obtained among these elements. If he found an Iroquois site on the Niagara frontier mostly stocked with artifacts of European manufacture, he would not stop at saying that these artifacts were evidence of contact between cultures; he would surely be interested in identifying the circumstances that could account for the distribution of artifacts at that site…Thus the culture concept is no panacea – it is, if anything, but a starting point of inquiry. Its value is methodological: "look for connections!" But it still takes work and thought to discover what these connections may be and, indeed, if any connections exist.

- Eric R. Wolf, "Culture: Panacea or Problem?" (1984:394)

It is not necessarily a simple matter to get from one place to another in the Appalachian Summit. Even today, when roads are (usually) paved and four-wheel-drive enables much off-road travel, the most rugged landscape east of the Mississippi River often dictates round-about routes over high mountains, through dense forest, and along winding rivers (Figure 1.1). In the American imagination, the seeming inaccessibility of the southern Appalachian countryside has insulated its inhabitants from the passage of time and the march of progress, and has produced a regionally distinctive, supposedly "backward" culture. However, historical, sociological, ethnographic research in the region has demonstrated that so-called hillbillies and backwoods folks, though culturally distinctive, have continually engaged with material and ideological discourses with other "cultures" at multiple scales, from the local "holler" to the national stage (e.g., Billings, Norman, and Ledford 2000; Hsiung 1997; Shapiro 1986).

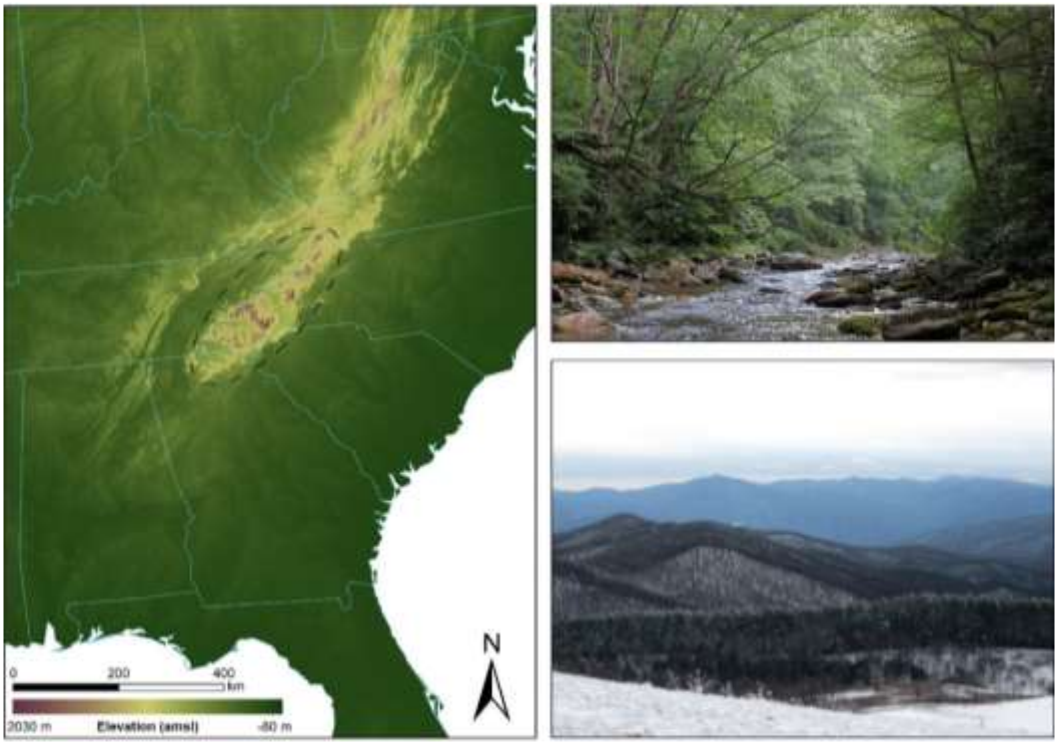


Figure 1.1. Map of the Appalachian Summit; East Fork of the Pigeon River, Haywood County, NC (top right); and mountains of Haywood County (bottom right).

Historic (i.e., post-European contact) and present-day Appalachian communities thus draw attention to a dualistic theme that, at least implicitly, has defined the last century of American anthropology. On the one hand, certain constellations of social, linguistic, political, economic, and ideological institutions and their material manifestations articulate in such a way that we can identify and target for study not only individual cultures, but also the differences between them. On the other hand, it is clear that no culture – past or present – has ever existed in total isolation from other cultures (Cusick 1998; Eriksen 1993; Gosden 2004; Lesser 1961; Wolf 1982, 1984). Importantly, and in contrast to a logic rooted in biological metaphors, such interactions do not necessarily involve cultural cross-pollination, or eventually lead to overall cultural homogeneity. Cultural differences can, in fact, become more pronounced as a result of interaction, as culture-bearers seek to define themselves in relation to the "other" through processes of alterity (Sassaman 2011). In short, cross-cultural interactions are part and parcel of the formation, persistence, and transformation of cultural identities through time. From this perspective, assuming an isomorphic relationship between physical remoteness and cultural isolation effectively relegates the people who live in these places to the sidelines of history: i.e., in the absence of cross-cultural interactions, they could not contribute to active historical processes related to the formation of identities and assertions of difference. Fortunately, as mentioned above, ongoing research on the recent history of southern Appalachia and its people have challenged this problematic assumption.

This dissertation seeks to extend these conceptual inroads into the deeper Appalachian past, where concepts of geographic and cultural marginality remain thoroughly entwined. For example, according to a thirty-year-old synthesis of archaeological research in the Appalachian Summit, the region "generally was considered to have been something of a cultural backwater in prehistoric times" (Purrington 1983:83). More recently, in an volume including more than 20 papers on Appalachian archaeology, not a single author discussed political, economic, or ideological connections between ancient Appalachian communities and the societies around them (Sullivan and Prezzano 2001:328). While the editors are certainly correct in attributing this pattern, at least in part, to the sub-regional specialization of Appalachian archaeologists (i.e., between the Southeast and Northeast United States), I suggest that a broader issue may be at work – namely, an underestimation of the role of inter-cultural contact in the processual histories of pre-Columbian peoples, both in and beyond the Appalachian Mountains (see also Nassaney and Sassaman 1995; Sassaman 2010a; Sassaman and Holly 2011).

Figure 1.2. Modern setting of the Garden Creek site, looking west. Middle Woodland component outlined in yellow. Inset shows site location in the greater Appalachian Summit.

To confront this long-standing bias, I present an in-depth archaeological case study of pre-Columbian interaction and its historical consequences in the Appalachian Summit ca. 300 BC – AD 600. My focus is the Garden Creek site (31Hw2, 31Hw3, 31Hw8) in western North Carolina, where the appearance of the region's earliest known earthen monuments correspond – in space and in time – with diverse material signatures of inter-regional connections and exchange of ideas and goods (Figure 1.2). Following Wolf (quoted above), my goal is to "not stop at saying these artifacts were evidence of contact between cultures;" instead, I am "interested in identifying the circumstances that could account for the distribution of artifacts [and, in this instance, monuments] at that site." Put another way, I approach the site's multiple, locally unprecedented forms of monumental architecture as a window onto historical processes of interaction, collectively materialized or inscribed on the Appalachian Summit landscape, and thus amenable to inferential, analogically informed analysis by anthropological archaeologists.

To elaborate this analytical approach, I now turn to situating the present study within the history of archaeological research on pre-Columbian interaction, and within a broader anthropological discourse regarding culture contact and processual change. I also introduce perspectives on the relationship between monumental architecture, social memory, and historical (or archaeological) reconstruction (sensu Connerton 1989), which ground my investigation of the archaeological record at the Garden Creek site. From here, I move from general to specific with a summary of the Middle Woodland period in eastern North America. I concentrate particularly on the macroregional interaction spheres that are relevant to this study and the ways that previous researchers have interpreted them. Having thus delineated the cultural contexts of interest, I then propose several scenarios for and dimensions of cross-cultural interaction that are plausible for the Appalachian Summit Middle Woodland, and describe the ways in which new lines of evidence generated by this study might support or refute them. This chapter ends with a brief outline of the remainder of this volume, hinting at how it "takes work and thought to discover what…connections exist" (Wolf, quoted above) between people in and beyond the Appalachian Summit during the Middle Woodland period.

Theorizing Interaction in American Archaeology

The idea that North America witnessed significant cross-cultural interactions before 1492 has waxed and waned during the last century. The early decades of American archaeology (ca. 1910

– 1950) took broad-scale interaction as a given. An adherence to a normative view of culture, which lumped shared behaviors and beliefs (and their material correlates) together with individual sociopolitical units, facilitated the development of broad-brush culture histories, in which cross-cultural similarities were necessarily attributed to some form of interaction, especially diffusion, acculturation, or migration (Trigger 1989; Willey et al. 1956). In many respects, subsequent scholarship demonstrated that many of these ideas "lacked explanatory power, suffered from a simplistic view of culture, or failed to survive under…empirical scrutiny" (Nassaney and Sassaman 1995:xxi). Some of these issues were tackled head-on with the rise of processual archaeology in the 1960s. By prioritizing the role of the environment in shaping human social systems, some environmental determinists tended to focus their investigations on geographically and ecologically discrete localities, and evidence for cultural change was attributed to processes of *in situ* evolution [though there were important exceptions by processualists like Flannery (1972) who considered multiple scales of analysis]. A concomitant shift in North American archaeological practice, characterized by increasingly localized and technically specialized research and contract projects (Nassaney and Sassaman 1995: xxii-xxiii), also contributed to models for social organization and transformation that emphasized local dynamics, instead of extra-local interactions.

While one version of processualism productively spearheaded a scientifically rigorous and broadly comparative "anthropological" archaeology (Binford 1962), it did so by reducing explanation to adaptation, and undermining the significance of historical, macro-scalar interaction to processes of culture change. This, in turn, relegated pre-literate societies to the so-called "savage slot" – an arena of investigation predicated on Otherness, relative to the Western gaze (Cobb 2005). The implication was that the social, political, and economic trajectories of the modern world have been shaped by regional, continental, and global interactions, but the histories of non-literate, pre-modern peoples, including those of pre-Columbian North America, were derived from responses to ecological conditions and transformations. The former history left room for agency, society, and revolution; the latter was limited to simplistic dynamics of cause and effect and the all-too-simplistic belief in environmental determinism. In reality, however, "the time before modernity was no less historical in process if we allow that ancient people were no more isolated and localized in their existence as those of modernity, and that they were just as capable of affecting the direction and pace of change through actions, such as migration, coalescence, and resistance, that are so familiar to modern historical process" (Cobb 2005: 13).

Fortunately, since the mid-1990s, archaeologists working in eastern North America (and other regions) have explicitly sought to reconcile the positions of culture history and processualism, taking the best of both schools of thought and extending their explanatory reach using an increasingly well-documented archaeological record. Variably called processualism-plus (Hegmon 2003) or historical processualism (Pauketat 2001a), these approaches draw on theories of practice and structure (e.g., Bourdieu 1977; Giddens 1984; Ortner 1984) to examine "how history is made through situated human action, and how the experiences of living emerge as structure (materially and ideologically) that inflects the course of history" (Sassaman 2010: xvi). Importantly, "situated human action" encompasses a variety of on-the-ground experiences, from ecologically based subsistence strategies to socially grounded systems of affiliation and exclusion, leaving ample explanatory room for the implicit prime-movers of environmental determinists perspectives (i.e., climate, natural resources, etc.) and culture histories (i.e., social interactions).

Processes of Cross-Cultural Interaction

Interregional connections were pervasive across the Middle Woodland Midwest and Southeast, but as indicated above, these interactions did not necessarily contribute to broad cultural homogeneity. The eastern subcontinent was instead populated by myriad cultural expressions that archaeologists have spent a century or more defining and describing on the basis on their material remains. Of course, "cultures" do not construct themselves – people construct cultures (and vice versa). Furthermore, the people behind this construction are, in fact, a diversity of *peoples* representing different factions defined by age, gender, kinship, status, occupation, etc. (Brumfiel 1992). Theories of structure (Giddens 1984) and practice (Bourdieu 1977) offer useful perspectives on how these various – sometime complementary, sometimes conflicting – interests produce a unified "something" that anthropologists and archaeologists refer to as "culture." Schortman and Urban (1998:109) provide a useful summary:

> Cultures…are not homogeneous systems whose members partake in the same goals, norms, and understandings to equal degrees. What participants in a culture have in common is the shared experience of living within and manipulating the same shared structured distribution of resources…By accepting those structures and operating within their parameters, actors perpetuate both, and so pass the arrangements onto succeeding generations.

By this logic, individuals are neither unrestrained agents nor cogs in a structural machine. Rather, "Because individuals and groups reproduce the conditions of their own existence, history is not merely a passage of events and people but a continual negotiation and transformation of the relations of production and exchange" (Cobb 1991:173)

For cultures to change, then, individuals must have opportunities to creatively manipulate experiences; these opportunities occur when structural resources, either material or ideological, are in flux. Sewell's theory of events directly tackles this process (2005; see also Beck et al. 2007; Bolender 2010). For Sewell, social structures (or, in the present terminology, cultures), consist of schemas and resources. Schemas are "generalizable procedures applied to the enactment/reproduction of social life" (2005:131). Because schemas are transposable (141), they can be deployed in a variety of contexts. However, the feasibility of transposing schemas is constrained and enabled by the availability of resources – actual/material factors that are simultaneously polysemic and unpredictable (132-133; 141-142). When the array of available resources changes, individuals can creatively implement existing schemas. In this regard, "Change is always immanent but never inevitable, founded on the ambitions and imaginative abilities, however well hidden they may be at times, of individuals" (Scott 1985, cited in Schortman and Urban 1998:109).

Culture contact or cross-cultural interactions – terms that I use interchangeably and define broadly as "a continuum of human social and geographical relationships that involve 'outsiders' and that induce change and adjustment" (Cusick 1998:4) – always have the potential to affect resource arrays. As novel materials, ideas, and people are introduced into a given society, existing structural schemas must make novel accommodations; at the same time, existing schemas fundamentally influence the ways that people approach these new resources. Combined, these dynamics salvage Giddens's concept of the duality of structure (Sewell 2005: 136), in that "duality refers not only to the recursive qualities of structure and practice but to the constitution of structures themselves…they simultaneously articulate virtual schemas and material resources, each of which validates and actualizes the other" (Beck et al. 2007:834).

Sahlins's historical anthropological study of culture contact in Polynesia (e.g., 1981, 1985, 1995) is perhaps the most thoroughly documented explication of this dynamic process, outlining the "structure of conjuncture" between indigenous Pacific Islanders and European colonial interests in the 18th and 19th centuries (1981; 1985; 1995). For instance, he attributes enthusiastic reception and subsequent killing of Captain Cook by native Hawaiians to the existing mythic-political structures of Hawaiian power and kingship. Specifically, the timing of Cook's arrival corresponded with the moment in the Hawaiian annual ritual cycle in which the god Lono was thought to return and reinvigorate society. In keeping with this seeming realization of myth, the Hawaiian Islanders responded worshipfully, offering material and sexual sacrifices that fit within their broader cultural conception of the ancestral relationship between humanity and the divine. However, Cook's efforts to parlay these ritual offerings into economic exchanges and trade (not to mention his crew's introduction of venereal disease to the indigenous population) represented a significant deviation from the structural relationships anticipated by local groups. On the one hand, by killing him only months after his first arrival in Kealakekua Bay, the Hawaiians were performing their assigned roles according to mythic history: "The killing of Captain Cool was not premeditated by the Hawaiians. But neither was it an accident, structurally speaking" (1981:24). On the other hand, by acting out this relationship (and others, e.g., the chief/commoner relationship) in this cross-cultural context, replete with novel objects, ideas, and opportunities (notably, for women), the historical courses of these relationships were fundamentally altered. "Organized by received categories of Hawaiian culture, the advent of Europeans nevertheless gave new functional significance to those categories" (43).

As Sahlins's Hawaiian research demonstrates, in order to identify and interrogate eventful transformation related to culture contact, it is first necessary to map out a detailed historical record of local traditions and episodes of interaction. In non-textual, archaeological contexts, this task represents a particular challenge. Lacking written historical accounts, archaeologists must pursue lines of evidence in the material world, and interpret those lines of evidence using comparative analogies and/or the direct historical approach (Stahl 1993; Wylie 1982, 2000, 2002). For the present study, my analyses and interpretations focus on one particular category of material evidence: namely, the monumental built environment. As discussed briefly below (and elaborated in Chapter 4), these material remains offer a compelling record of historical events and social change with the potential to elucidate past processes of interaction.

Marking Landscapes, Making History

As defined by anthropological archaeologists, monuments are enduring architectural constructions that are built and used by a group larger than a single household (Adler and Wilshusen 1990), at a scale exceeding what was needed for practical function (Trigger 1990), and of a sufficiently high quality to inscribe social relationships on the landscape (Thompson and Andrus 2011). Although monuments have long provided an archaeological signpost for institutionalized social hierarchies (e.g., Childe 1950; Renfrew 1973; but see Marcus 2003 for critical appraisal), recent research shows that groups lacking formal hierarchies also erected monuments as territorial markers (e.g., Buikstra and Charles 1999; Chapman 1995), burial precincts (e.g., Claassen 2010; Sherratt 1990; Thompson and Turck 2009), and loci for inter- and intra-community interaction and aggregation (e.g., Adler 2002; Bernardini 2004; D. Troy Case and Carr 2008; Dancey and Pacheco 1997; DeBoer and Blitz 1991; Dillehay 1990; 2007; Howey 2012; Renfrew 2001; Sassaman 2010). Whatever their intended or perceived "function," such monuments are "culturally constructed *places*, enduring features of the landscape that actively express ideology, elicit memory and help constitute social identity" (Knapp 2009:47).

In recent years, some scholars have begun to explore in greater detail the relationships between monuments and social memory (e.g., Alcock 2002; Rubertone 2008; Van Dyke and Alcock 2003; Wallis 2008). Following Connerton (1989) and Rowlands (1993), monuments can be viewed as *inscribed* memory practices, "characterized by repetition and public access" and "manifested in materially visible commemorative activities" (Van Dyke and Alcock 2003:4). The temporal scale social memories implicated by the construction of monuments varies (Gosden and Lock 1998); for instance, individual burial monuments highlight the recent, ancestral past (e.g., chapters in Chesson 2001), whereas so-called cosmograms reference the mythologized past through the memorialization of creation stories and other fundamental bases of cultural logic (e.g., Demel and Hall 1998; Knight 2007). At both of these time scales, however, the construction of social memory through monumentality can serve several purposes (sometimes simultaneously; see Alonso 1988): it can (1) "naturalize or legitimate authority;" (2) "create and support a sense of individual and community identity; and/or (3) be "employed in the service of resistance" (Van Dyke and Alcock 2003:3). As discussed about, each of these dynamics – especially the construction of identities through the naturalization or foregrounding of difference – are intimately tied to processes of cross-cultural interaction. Thus, the monumentalization of social memories in the built environment also potentially represents the monumentalization of histories of interaction. In this fashion, the landscape is inscribed with social meaning (sensu Wilson and David 2002) that is not only shaped by an episode or episodes of culture contact, but also serves to shape the long term reuse and reoccupation of certain places and, in turn, the ongoing unfolding of historical trajectories.

All that said, for the present investigation of a roughly 2000-year-old case study with no directly associated written record, we must temper our expectations for accessing social memories in an emic sense from archaeological monuments (Van Dyke and Alcock 2003:7). Connerton's (1989:13; emphasis in original) assessment of this challenge as it applies to historians is equally – if not more – applicable to archaeologists:

> We need to distinguish *social memory* from a more specific practice of that is best termed the activity of *historical reconstruction*. Knowledge of all human activities in the past is possible only through a knowledge of their traces. Whether it is the bones buried in Roman fortifications, or a pile of stones that is all that remains of a Norman tower, or a word in a Greek inscription whose use or form reveals some custom, or a narrative written by the witness of some scene, what the historian deals with are traces: that is to say the marks, perceptible to the senses, which some phenomenon, in itself inaccessible, has left behind.

In other words, with reference to the purported goals of the present study, inferring processes of interaction from the construction of past monuments does not necessarily represent the elucidation of pre-Columbian social memory, but rather the reconstruction of a "prehistoric" history and an account of the events that probably contributed to dynamic processes of social continuity and change. This is *not* to say that Middle Woodland monuments like those discussed in the pages that follow were not materializations of Middle Woodland (i.e., emic) social memories; by analogy to better documented cases, they almost certainly were. While the archaeological data presented in the chapters that follow is simply of insufficient resolution to confidently address this issue. Nevertheless, monuments *do* inscribe a record of interaction on the landscape; by untangling this record and situating it in time, archaeologists have the opportunity to undertake historical reconstructions that have, to date, remained under-examined in pre-Columbian contexts.

The remainder of this volume is dedicated to this task. To begin, in the next section, I offer an overview of existing research on the Middle Woodland period in eastern North America, focusing especially on the role of interregional interactions and the ways that they materialize through the built environment and exotic artifacts. These efforts introduce several possible scenarios for culture contact, very few of which have been investigated outside the American Midwest, the "core" of the period's most extensive interaction sphere. Using these perspectives as a starting point, and supplementing them with insights from comparative case studies, I differentiate between three forms of culture contact that may have occurred around the BC/AD transition in the Appalachian Summit and may relate to the emergence of monumental architecture in at this seeming geographic periphery. I also enumerate my archaeological expectations for these scenarios, which I then evaluate against the material record of the Garden Creek site in Chapters 4-8. Drawing on multiple lines of evidence, most of which derive from the monumental built environment, I am able to trace an historical narrative of Middle Woodland culture contact in the Appalachian Summit.

Macroscalar Interaction in the Middle Woodland Period

Exact dates for the Middle Woodland period in eastern North American vary slightly from subregion to subregion, but generally speaking, it began in the final few centuries BC and continued until AD 500 or 600. In large part, this ambiguity is due to the fact that any given (i.e., localized) Middle Woodland record is only subtly different from the Early and Late Woodland Periods that bracket it. Even suites of ritual practice and material culture that were once viewed as a firm basis for subdividing the greater Woodland period are now known to have operated simultaneously rather than sequentially, demanding revisions to local Woodland trajectories and critical investigations of the processes by which such material correlates emerged over time and across space (e.g., Clay 2002, 2005).

Despite these challenges, many decades of archaeological research have given us a good idea of what sorts of societies occupied the Eastern Woodlands ca. 300 BC – AD 600. To the extent that we can generalize across the eastern subcontinent, Middle Woodland peoples typify what anthropological archaeologists refer to as middle range societies. Reliant on a subsistence regime that included hunting, gathering, and low-levels of plant cultivation, it is likely that most of these communities practiced seasonal sedentism or, in some cases, lived in small, semi-permanent villages. These settlements were probably comprised of a few dozen to a hundred individuals, among whom there is little archaeological evidence for institutionalized or inherited social inequalities. Rather, their social organization was likely based on situational leadership (Fowles 2002) and sequential hierarchies (Johnson 1982), in which talented individuals would "take charge" of certain issues on an as-needed basis. These socio-political relationships appear to have been closely tied to activities in the ritual sphere, which, in turn, emphasized integration within the community, between the community and the world around them, and renewal of that relationship and of the world itself (Byers 2011). The most elaborate expressions of Middle Woodland ceremonialism are referred to as Hopewell, a material and ideological phenomenon that flourished across the rolling landscape of southern Ohio, and extended, to varying degrees, across the greater Eastern Woodlands from about 100 BC to AD 400 (Figure 1.3). From an archaeological perspective, Hopewell appears to have involved three related spheres of ceremonial practice: (1) the construction of massive earthen monuments; (2) the prescribed burial of the dead in these monumental contexts; and (3) the accumulation of sacred objects with diverse motifs and iconography.

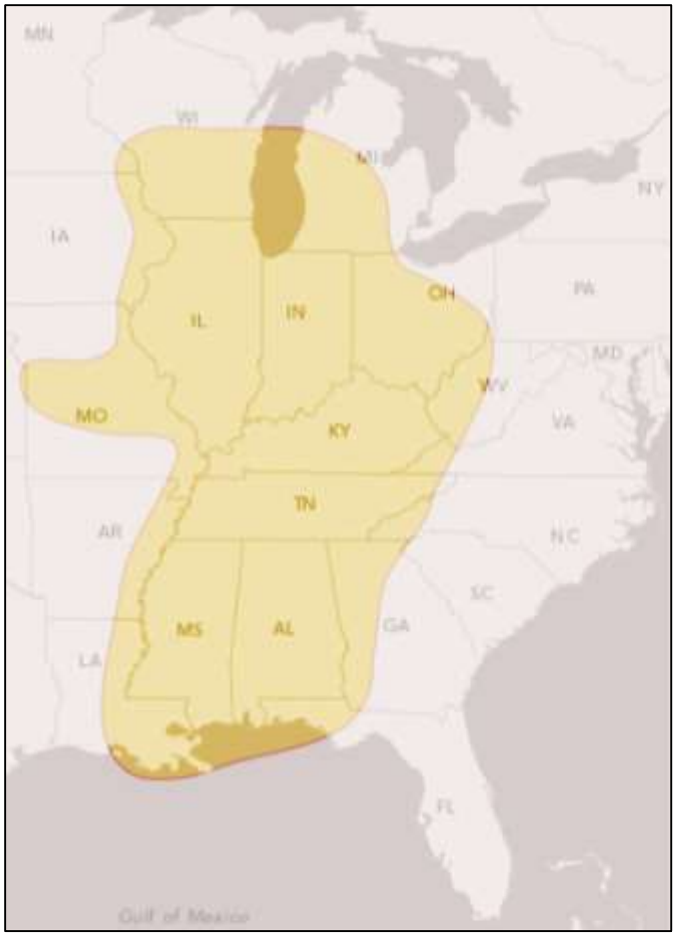


Figure 1.3. Maximal geographic extent of Hopewell, ca. 100 BC – AD 400 (after Charles, Van Nest, and Buikstra 2004; base map from ESRI.)

Interregional Hopewell: The View from the Core

The density of Hopewellian[1] monuments in Ohio is remarkable by any archaeological standard, and even more so when one considers that the societies responsible for them consisted of essentially egalitarian hunters-gatherers-gardeners (compare to Childe 1950; Renfrew 1973; Trigger 1990). According to a recent inventory, more than 280 individual mounds and more than 50 discrete earthworks have been identified at 52 sites across the Muskingum, Scioto, and Little and Great Miami River drainages (D Troy Case and Carr 2008) (Figure 1.4). Given the summary nature of many 19th century site surveys and, more importantly, the intensity of subsequent agricultural and

[1] In this volume, "Hopewell" is a noun referring to the interaction network and its expression in Ohio (or, in some cases, to the Hopewell site). "Hopewellian" is an adjective used to describe aspects of material culture that relate to this wider phenomenon, whether found in the so-called core or periphery.

residential development in the region, it is likely that these numbers significantly underestimate the total number of earthen monuments attributable to the Hopewell episode. Even at known sites, remote sensing has revealed previously undocumented enclosures that may have been obscured by recent degradation or ancient site modifications (Burks and Cook 2011:680–681).

Figure 1.4. Location of 52 Hopewellian ceremonial sites with monumental earthworks in Ohio (after Case and Carr 2008:344; base map from Wikimedia Commons.)

At these sites – especially at the mounds – Ohio Hopewell people carried out a particular suite of mortuary practices that frequently involved cremation and interment with immense hoards of finely crafted artifacts. As an example, consider the following excerpts from Moorehead's report on the Hopewell site (1922): "While no one has as yet counted the multitudinous objects in the Field Museum collection, it is estimated that there are about two thousand one hundred copper ear ornaments or busks in storage" (116); "An inspection of the obsidian implements from the Hopewell group…indicates that there are 262 blades, knives, spearheads, etc., together with a great number of fragments" (131-132); "Mention has already been made of the great find of mica in Mound 17. There was so much of it that when it was packed for shipment it filled two barrels" (142); "It would be interesting to know the exact number of pearls recovered from the Hopewell mounds. They have never been counted, but I estimate the number at over a hundred thousand' (143-145); "About four hundred bears' claw were found principally in the altars. About five hundred cut and perforated bear incisors were originally placed in the various mounds" (151). Similarly massive caches were recorded during the early, large-scale excavations of other Hopewellian sites, notably Mound City (Mills 1922; Squier and Davis 1848), Tremper (Mills 1916), and Seip (Shetrone and Greenman 1931).

Although these archaeological signatures are overwhelmingly concentrated in the greater Ohio River Valley, each of the three major dimensions of Hopewell – its monuments, mortuary record, and material culture – attest to extra-local social interactions. For instance, in an assessment of the manpower that went into constructing Hopewellian tripartite earthworks (2004), Bernardini proposed that laborers were likely mustered from catchment areas that extended more than 100 km from the Scioto Valley, where these monuments are concentrated. Beehr's (2011) recent study of human remains from Mound 25 at the Hopewell site points to even more distant connections: through strontium isotope analyses, she demonstrated the presence of non-local immigrants among the burial population, who may have originated as far away as Minnesota. Unquestionably, however, the majority of research on interregional Hopewell relies on exotic artifact assemblages (Seeman 1979). Over the years, a combination of logical inferences based on geography and increasingly precise sourcing methods have pinpointed the far-flung sources of numerous Hopewellian materials, including copper from the Great Lakes and Southern Appalachians (Bernardini and Carr 2006; Ehrhardt 2009; Goad 1979), silver from southern Ontario (Spence and Fryer 2006), marine shell from Florida's Gulf Coast (Goad 1978), meteoritic iron from Kansas or the Southeast (Carr and Sears 1985), galena from southeastern Missouri (Walthall 1981), mica and crystal quartz from the Blue Ridge Mountains (Wright and Loveland 2014; see also Chapter 6), pipestone from Illinois and Minnesota (Emerson et al. 2013), and perhaps most dramatically, obsidian from the Rocky Mountains in Wyoming and Idaho (Griffin 1965; Hughes 2006).

What sorts of social dynamics could have generated this exceptionally exotic material record of ceremonialism in southern Ohio? In addressing this issue, scholars working in Ohio-proper have tended to emphasize Hopewell as an exclusively local florescence of social and ceremonial lifeways, often involving complementary spheres of domestic and ritual activity (e.g., Dancey and Pacheco 1997; Greber 1996; Greber 1997; Prufer 1964; Smith 1992). Carr has drawn on comparative ethnography to elaborate on these ideas and propose a number of mechanisms by which Ohio Hopewell people may have procured and amassed such diverse assemblages for deployment in local contexts (2006). Depending on the raw material or artifact type in question, he has suggested that they may have arrived in Ohio ceremonial deposits as the result of vision/power questing; pilgrimage to powerful natural places of ceremonial centers; travels by curers or medicine persons; journeys to a center of learning; buying religious prerogatives; elite valuables exchange; spirit adoption; or intermarriage. Most recently, Beck and Brown (2012) have described the Hopewell's Mound 25 in terms of a "religious complex," defined by Oyuela-Caycedo as "the system of shared cosmological views that are expressed in low statistical variation in the religious material artifacts and religious architecture" (2001:6), although they are careful to note that, at a broader geographic scale, the Hopewell religious movement likely comprised considerable variability.

Other interpretations of the Hopewell archaeological record draw not only on the Ohio record, but also on complementary datasets from elsewhere in the Eastern Woodlands. At sites throughout the Southeast, Northeast, and Midwest, archaeologists have recovered typically small but significant assemblages of finished artifacts and raw materials in distinctive contexts that attest to some sort of involvement with Hopewell ceremonialism. Referred to as "interregional Hopewell" – the "cultural practices (especially social and ritual), and their material-symbolic representations that are generally similar and were shared among two or more Middle Woodland traditions across the midcontinent" (Carr 2006:53) – this subcontinental pattern has been attributed to a mortuary cult (Prufer 1964), an hierarchical exchange network (Struever and Houart 1972), a form of social organization with an attendant symbolic communication system (Seeman 1995), relationships among peer polities (Braun 1986), and a suite of ecological adaptations (Dancey 1996). Generally speaking, even as these models appear to be interregional in scope, they tend to emphasize the Ohio-side of the interregional Hopewell equation; by this, I mean they were better suited to explaining how exotic artifacts became concentrated in Ohio, or how Ohio Hopewell people stimulated ceremonialism in other regions, than to seriously examining how groups across the Eastern Woodlands became involved with the broader Hopewell phenomenon. In some ways, this "top down" approach, to Middle Woodland interaction is a result of the longer history of Hopewell research in Ohio, and the concentration of Hopewellian monuments and material in that state. As I hope to demonstrate in this study, however, this position is no longer tenable. In the American Southeast in particular, more than 30 years of research has called attention to evidence for dynamic interactions with Hopewell peoples and to the existence of contemporaneous, intra-regional (i.e., intra-Southeast) interaction spheres that demand inclusion in discussions of interregional culture contact during the Middle Woodland period.

Like many histories of American archaeology, the history of Hopewellian research outside Ohio began with discussions about diffusion. Willey and colleagues (1956:21-22) provide an early example. They tentatively proposed that the spread of Hopewell to the American Southeast constituted a type of interregional culture contact – specifically, "fusion with dominance of the intruded trait-unit in the aspect of culture involved." By this oblique statement, they meant that Hopewellian trait-units ["an object modified or transported by human agency, a stylistic of technological feature or complex, or a characteristic archaeological association" (8)] intruded into Southeastern cultures, where they came to dominate certain realms of activity (presumably, the ritual sphere), ultimately overshadowing the local manifestations of ritual activities that were carried out before the introduction of the relevant trait-unit(s). For Willey et al., the fact that this and other forms of culture contact entailed "face to face meeting of individuals of the cultures involved" (24) was taken as a straightforward given, which would seem to offer a springboard for considerations of themes reminiscent of intentional hybridity and Third Space. Unfortunately, this point is not elaborated in scenarios involving the transmission of trait-units. Caldwell's (1964) diffusionist framework granted even less agency to individuals in the interregional spread of Hopewell. Although he defines the Hopewell Interaction Sphere as "embracing a number of distinct societies and separate cultures…in mortuary-religious matters but not, primarily, at least, in other departments of culture," he does not explore the "exact nature of the connections established among these societies (137-138).

By the 1970s, sufficient fieldwork had been conducted at Middle Woodland sites throughout the Southeast to permit more nuanced examinations of local Hopewellian manifestations. Building on Caldwell,[2] for example, Seeman (1979) distinguished among eight different regional traditions with Hopewellian associations, including the Scioto tradition in the greater Ohio River drainage, and Southern Appalachian tradition, which broadly conformed to the Tennessee River drainage and the upper reaches of the Chattahoochee River drainage (Figure 1.5). That same year, the publication of papers from the seminal Hopewell Chillicothe conference brought to light numerous instances of Hopewell-style materials and rituals at Southeastern sites, from the copper-rich Middle Woodland graves at Tunacunnhee in Georgia (Jefferies 1979; see also Jefferies 1976; Jefferies 2006), to the

[2] Caldwell's earlier formulation for regional traditions included Havana, Crab Orchard, Adena-Scioto, Northeastern, Southern Appalachian, and Gulf (Caldwell 1964:138).

Hopewell-related Copena mortuary complex in northern Alabama (Walthall 1979; see also Beck 1995; Goad 1980; Jennings 1946; Walthall 1973), to the distinctively Hopewellian ceramics motifs called Marksville in the Lower Mississippi Valley (Toth 1979; see also Jones and Kuttruff 1998; McGimsey 2010; Toth 1988).

Figure 1.5. Seeman's map of major regional traditions affiliated with Hopewell (1979:260).

Of special relevance to my study, the Chillicothe volume also included a report on the relationship between Ohio Adena-Hopewell and contemporaneous traditions in the southern Appalachian Mountains (Chapman and Keel 1979). Using data primarily from Garden Creek Mound No. 2 in North Carolina[3] and the McMahan Mound and Icehouse Bottom site in Tennessee, Chapman and Keel argued that the Hopewellian connection to southern Appalachia related to the presence of rich and accessible mica deposits in the region. Although the distribution of western

[3] In fact, Keel first published his report on Garden Creek Mound No. 2 three years earlier (Keel 1976). Since this site is the focus of the chapters that follow, I have excluded it from this abbreviated history of investigations in favor of more detailed coverage in Chapter 3.

North Carolina ceramics in eastern Tennessee was interpreted as the result of east-to-west movement along overland trails (which may have ultimately reached the Midwest), the authors do not explicitly characterize the nature of Hopewellian interaction in the region. One senses, however, that more agency was afforded to Midwestern Hopewell people than to local societies; while Appalachian resources were "exploited to varying degrees by the elite centers to the north," implicitly passive local traditions merely displayed a "thin veneer of midwestern influence" (161). Elsewhere, Keel (1976) suggested that this relationship was founded on trade, though he did not specify its particular mechanism (e.g., direct procurement, down-the-line transmission, etc.).

Referencing some of these and other sites, Walthall (1985) formulated a slightly different model for Hopewellian interaction in the southern Appalachians. On the basis of multiple (though rather patchy) lines of data, Walthall infers that these sites hosted (1) congregations of large, diverse groups of people, for (2) ritual feasts, (3) processing and interring of the dead, and (4) the redistribution of food and exotic materials and artifacts, all of which occurred according to (5) a prescribed ritual schedule (i.e., not on an *ad hoc* basis) (258). Because these five patterns also characterize Ohio Hopewell ceremonial centers, Walthall concludes that the Southern Appalachian sites in question represent similar, albeit much smaller, "microceremonial centers" or "ceremonial encampments" (261). His primary interpretation – that ceremonial encampments "were actually visited, and briefly occupied, by Ohio Hopewell trading parties during their quests for exotic raw materials" (261) – is generally in line with, if more detailed than, Chapman and Keel's model for Appalachian-Hopewell interaction involving the movement (and agency) of Ohio Hopewell peoples. However, Walthall goes one step further: "these visits may have been reciprocated by South Appalachian groups who made pilgrimages northward to participate in the ritual activities conducted and the massive Ohio ceremonial center" (261). Unfortunately, this intriguing idea was not elaborated upon by Walthall, or to my knowledge, by other archaeologists for nearly three decades.

For better or worse, comprehensive studies of Southeastern Hopewell waned throughout the 1990s and early 2000s. Instead, many southeastern archaeologists turned their attention to two networks of inter-cultural contact concentrated in the Southeast, both of which emerge as Ohio Hopewell begins to decline, and persist until the advent of the Late Woodland period. The first of these is the Swift Creek Interaction Sphere, which minimally comprised a system of ceramic exchange and mound building encompassing the Atlantic Slope of Georgia and Florida and the Gulf Coastal Plain (Stephenson, Bense, and Snow 2002; Wallis 2011; Williams and Elliott 1998). Interestingly, Swift Creek interaction appears to have had at least some connection to Hopewell, in so far as Swift Creek pottery has been recovered from earthwork sites in the Ohio Valley (e.g., Ruby 1997; Ruby and Shriner 2006).

The second, for lack of a better term, is referred to as the Kolomoki pattern (Figure 1.6). Defined by Knight (1990, 2001), this term refers to a type of Middle Woodland site with evidence of permanent or semi-permanent habitation and platform mound architecture. These mounds, in turn, are defined by a number of characteristics (Knight 1990:170–171): irregular scatters of postholes (attributable to scaffolding behavior; see Knight 2001:319) and pits; a lack of clear summit structures; extraordinarily large postholes, some with insertion and/or extraction ramps; burned areas and hearths on mound summits; multi-stage construction using multicolored fills; and the presence of exotic artifacts and special ceramics, which sometimes allude to Hopewellian connections. From these remains, Knight and others (e.g., Jefferies 1994; Lindauer and Blitz 1997) have argued that these sites and their monuments were loci of intra- and inter-community integration revolving around feasts, gift-giving, and world renewal ceremonies (Hall 1997).

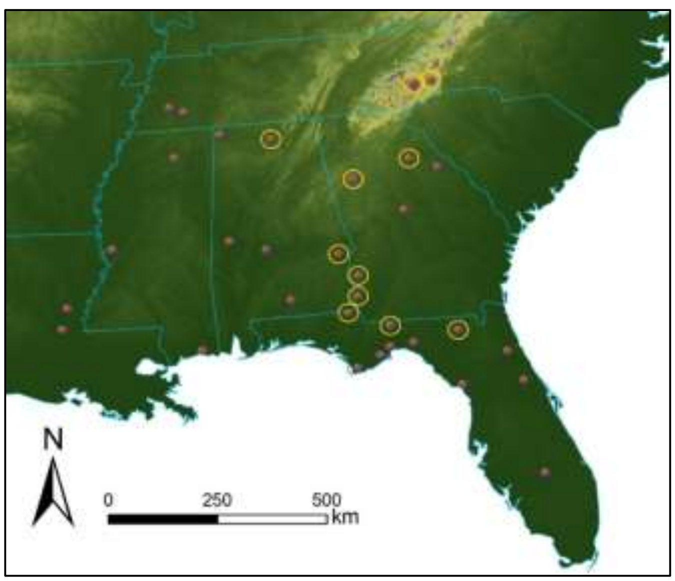


Figure 1.6. Middle Woodland (ca. AD 100-700) mounds in the Southeast (after Knight 2001); points circled in yellow represent Kolomoki pattern mounds.

As mentioned above, sites that fall within the Swift Creek Interaction Sphere or that conform to the Kolomoki pattern often also include material signatures of involvement with the wider Hopewell phenomenon. In some cases, the relationship between people in the Southeast and Hopewellian material culture is explained in political economic terms of aggrandizement, building on

Helms's (1988) thesis that the exotic materials and knowledge can be used to harness power (see also Seeman 1995). As Anderson explained, "by being major players in the Hopewellian world, the principals at these [southeastern] centers could have been perceived as having esoteric knowledge…and this, plus their control over desirable wealth items, may have inspired people to their service over wide areas and at the same time led to their sanctification" (Anderson 1998:287). One correlate of this framework has been the identification of gateway centers for interregional exchange along likely transportation corridors between the Southeast and Midwest (Keith 2013; Ruby and Shriner 2006). These latter perspectives comprise the current "state of the field" regarding interaction in and beyond the Middle Woodland Southeast.

Interactive Peripheries: Scenarios and Expectations

While the location, extent, and organization of the Hopewell, Swift Creek, and Kolomoki pattern interaction spheres varied considerably, they all have something to do with monumentality and exotic material culture. These dimensions of interaction are particularly relevant in the Appalachian Summit; as I discuss further in Chapters 2 and 3, monuments and non-local materials first appear in the region during the Middle Woodland period, when interregional contact appears to have been rampant throughout eastern North America. However, the mere association of such novel architecture and objects – both of which imply novels sorts in local social, political, and economic relationships – with an nebulous "interaction sphere" does not move us much closer to a rich historical narrative of cross-cultural contact. In order to critically evaluate the role of culture contact in pre-Columbian cultural transformations, we must ask what sorts of on-the-ground practices might have been involved with these interactions, and how these practices might these have contributed to the emergence of monumental architecture and interregional material transactions. How, too, might we be able to differentiate between these possibilities using archaeological data? By synthesizing numerous cross-cultural studies of interaction, monumentality, and exchange in non-hierarchical societies, I have identified three scenarios for cross-cultural interaction as well as their material correlates, against which the data presented in this case study can be evaluated. Before defining these scenarios, however, it must be noted that they are not mutually exclusive; in fact, multiple forms of interaction may have been occurring simultaneously, or perhaps more likely, sequentially (Wright 2014). Detailing and untangling this potentially dynamic history of interaction in the Appalachian Summit Middle Woodland represents a major goals of my study.

Scenario 1: Multi-Community Assembly

In several archaeologically documented cases, the novel appearance of monuments and non-local artifacts among a middle range society appear to derive from face-to-face social, material, or ideological encounters fostered by the aggregation of people from different, non-local communities – defined here as supra-household groups whose members are regularly, if not permanently, together and whose common identity is expressed in shared material practices (Yaeger and Canuto 2000:5–6). *Multi-community assembly* may have occurred at certain Hopewellian earthworks in Ohio that served "sustainable" populations rather than localized residential or symbolic communities (Carr 2008:103; see also Fie 2006), as well as at the Late Archaic Poverty Point complex in Louisiana (Kidder 2011; Sassaman 2005, 2010; Sassaman and Heckenberger 2004). Based on the concentration of assemblages of "nonlocal materials and objects at sites in the greater Poverty Point region, many of which were not necessary for sustaining the local economy," Sassaman has described this iconic Lower Mississippi Valley site as "an act of plurality, the confluence of multiple streams of history," where people from across the greater Southeast gathered for ceremonial purposes (2005: 336). Recent geoarchaeological analyses support this assertion, indicating that the construction of Poverty Point's Mound A – the second largest pre-Columbian mound in the United States – occurred over the course of a single season, and would have required the participation of up to 9000 people (Kidder et al. 2009). This number far exceeds expectations of the local population size as well as familiar expectations of hunter-gatherer social organization, and demands that we consider how and why far-flung people came together to build enormous mounds, exchange and cache exotic artifacts, and engage in potentially novel encounters with others.

Because multi-community assembly involves the occupation of monumental sites by non-local peoples, this form of interaction is archaeologically visible, among other ways, in the remains of daily practices reflecting non-local traditions (Lightfoot, Martinez, and Schiff 1998). Similarly, more specialized practices, such as the production of craft objects or ceramics, may exhibit diverse technological styles (Dobres 1999; Dobres 2009; Lechtman 1977; Lemonnier 1989) attributable to members of different communities of practice (Minar and Crown 2001; Wright 2013) congregating at a single site. Assuming such activities were carried out on-site, exotic artifact assemblages may include not only finished products (which may have been obtained through trade or exchange), but also production debris, as non-local community members may have brought certain materials with them in raw or partially-fashioned states to complete in a special setting (i.e., during ceremonial aggregations; for examples, see Jefferies 2006; Renfrew 2001; Spielmann 2004). The congregation of multiple communities in a single location would also entail the creation of a fairly large site, at least relative to everyday habitations or ritual sites that hosted single communities, and the monuments therein likely would have required the energies of a fairly large labor contingent. Finally, at the macro-scale, one would expect broad interregional similarities in ceremonial architecture and materials in contexts of multi-community assembly, as far flung communities participated – perhaps to varying degrees – in the same suite of ritual practice.

Scenario 2: Deliberate Extra-Local Acquisition

While multi-community assembly pre-supposes the aggregation of large contingents of different cultural groups, a local emergence of monumentality and the appearance of exotic material culture can alternatively derive from interactions involving only certain individuals from different communities. I refer to these cases as interactions involving *deliberate extra-local acquisition*. This concept largely derives from the seminal work of Mary Helms (see also above), who outlined the ways in which esoteric knowledge and exotic or foreign experience are used to reinforce power of assert ritual authority (1988). In archaeological contexts, researchers have suggested that ritual specialists may have sought and secured such knowledge, materialized in exotic materials and goods, and in turn used their power/sacred qualities to implement new ritual practice, such as the construction of monuments. Interestingly, the cases for which deliberate extra-local acquisition is most frequently invoked are the same as those presumably indicative of multi-community assembly: Poverty Point (Gibson 2007, representing a minority view) and Scioto Hopewell. This latter example is perhaps best encapsulated by Griffin's influential "one-shot hypothesis," which suggested that a group of Ohio Hopewell individuals made a single epic journey to Obsidian Cliff, Wyoming, where they obtained hundreds of pounds of obsidian for subsequent crafting and interment at midwestern monumental sites (see also DeBoer 2004 for an elaboration of this theory, as it relates to mountain goats and Hopewellian iconography). Carr has recently suggested that such a journey is a likely candidate as a power-seeking vision quest because "dualities – which preoccupied the Hopewell – abounded naturally" in the Yellowstone region (e.g., hot/cold pools of water, black/light reflective obsidian outcrops) and the volcanic geology of the geyser basin may have represented lower worlds and axis mundi to midwestern visitors (Carr 2006:583) . A similar case can be made for the procurement of copper in the Lake Superior basin (Carr 2006:584) and, as I have argued elsewhere, for mica procurement in the Appalachian Summit (Wright 2012).

The expected material correlates of deliberate extra-local acquisition differ from those of multi-community assembly in several ways. Perhaps most significantly, evidence for extra-local connections at a particular site would likely not only be more limited in overall scale and distribution, but also comprise almost entirely of finished objects or isolated raw material finds. Such forms may have served as social salient tokens of esoteric knowledge and authority for individuals who secured them, without requiring further manipulation through on-site crafting. The absence of non-local *people* on-site would negate both the specialized crafting of these materials, and the appearance of non-local technological styles; rather, most artifacts (e.g., pottery, chipped stone tools) would mostly be attributed to local resources and local communities of practices. The social ramifications of deliberate extra-local acquisitions may not produce sites or monuments as large as those made necessary and possible by multi-community assembly, but they may entail emerging social inequalities and their attendant archaeological signatures. As certain individuals gained prestige through their long-distance connections, their lives may have begun to differ materially (e.g., in quantity/quality of artifacts available, size/organization of architecture occupied, etc.) from the rest of their community. Furthermore, such differences may have played out in performances, such as in competitive feasts – ad hoc, large-scale food production/consumption events that involved labor intensive foods, rare resources, and exotic goods (Potter 2000). These shifts may be attributable to a transformation of existing cultural power structures following the introduction of a new resource – specifically, materialized knowledge of the foreign.

Scenario 3: Material or Information Exchange

The final form of interaction that I consider in this volume *is information or material exchange*. While this model closely resembles early formulations of diffusion, it suggests several ways by which ideas or materials may move among and between people and, in turn, over space, including limited inter-personal contacts and down-the-line transmission/trade/gifting (Hegmon et al. 2000). Such mechanisms of material exchange have been used (with admittedly limited success) to explain the vast distribution of non-local raw materials associated with Hopewell (i.e., Brose and Greber 1979; Caldwell 1964; Struever and Houart 1972). Meanwhile, information exchange has been proposed to explain the construction of megaliths by Mesolithic foragers in northwest Europe. There, indigenous communities began to build megalithic monuments only after they were exposed to cereal agriculture and village-based community organization of neighboring farmers (Bradley 1998; Scarre 2002a, 2002b). As they adopted Neolithic technologies, megaliths provided "village surrogates" to organize community identities and labor pools (Sherratt 1990; for cross-cultural examples of village surrogates see Adler and Wilshusen 1990; Bernardini 2004; Buikstra and Charles 1999). In short, though there is scant evidence that the earliest Neolithic monuments involved face-to-face aggregations of different communities, certain ideas appear to have been transmitted across space over time, contributing to significant changes to the social landscape.

Given the comparatively low intensity of material or information exchange, its archaeological signatures are more subtle that those of multi-community assembly and deliberate extra-local acquisition. Exotic artifacts are expected to occur in very low densities, and to be more or less evenly distributed across different site contexts; in other words, they are not limited to a few aggrandizing individuals, deliberately acquiring indicators of extra-local knowledge. In turn, monuments, where they appear, may exhibit locally unique characteristics (i.e., architectural style and local preferences, or architectural grammar, see Chapter 8). This pattern would suggest that even as the social and ceremonial *role* emerged in a given locality, perhaps through diffuse exchanges, the exact *design* of the monument may reflect the comparatively stronger influence of local traditions. In this regard, hypothetical material and information exchange underscores a critical caveat to all of these scenarios – namely, the necessity of not underestimating the agency of *local* peoples and the influence of their own cultural structures on the shape and scope interregional, intercultural interactions.

Caveat: The Role of Local Traditions

Rather than lump local groups in a purely "passive periphery" (Stein 2002), an historical processual approach to interaction, such as that presented in this study, demands the recognition of local resources and structures in generating unprecedented material and cultural conditions. In fact, while each of the above scenarios pre-supposes a relationship between the appearance of monuments and culture contact, other cases document how early monumental architecture in egalitarian societies emerged from existing local traditions, defined here as "practice[s] brought from the past into the present" (Pauketat 2001:2). The theories of practice (Bourdieu 1977; Ortner 1984) and structuration (Giddens 1984) cited above contend that people constantly produce and reproduce traditions through practice, but that each instantiation of a practice is a novel episode that might deviate from past instantiations with unintended consequences (Dietler and Herbich 1998;

Joyce and Lopiparo 2005; Pauketat 2001b). It follows that some early monuments represent non-radical modifications of traditional practices. Put another way, early monuments are not viewed as a radical departure from the existing architectural or technological regimes of a particular community, nor the necessary result of unprecedented social circumstances. Rather, they represent an elaboration of long-standing, local traditions, which, over time, could have reverberating effects on social relationships and activities.

This trajectory has been invoked to explain continuity in certain activities across pre-monumental and monumental contexts in Formative Honduras (Joyce 2004), developmental relationships among quotidian food refuse deposits and possible monumental concentrations of feasting debris at Late Archaic shell rings in the Southeastern U.S. (Thompson and Andrus 2011), and architectural similarities among residential structures and long mounds in Neolithic northwestern Europe (Bradley 2003; Child 1949; Hodder 1984, 1990). Specifically, for this latter example, Bradley has suggested that the abandoned long houses would naturally decay to form low mounds, instilling in communities an association between abandonment/death of the house's occupants and mounds (1998b). Eventually, this association could be materialized through the purposeful construction of long mounds as monuments to mark the location of the dead. In this and similar cases, local traditions made archaeologically detectable contributions to early monuments: shared construction techniques and architectural grammar among monumental and pre/non-monumental structures, and continuity in ritual or other activities before and after monument construction.

By explicitly considering the role of local traditions in Middle Woodland interaction, the present study stands in contrast to extant "top-down" approaches to Hopewellian interaction which emphasize the agency of ritual practitioners and congregations in the Ohio core, at the expense of communities and ritual participants at the so-called peripheries. Instead, like most current research on historic/colonial episodes of cross-cultural interaction (see Chapter 9), I view these connections as proverbial two-way streets, in which encounters have the potential to mutually affect (or be resisted by) all participants. If the profound power imbalances that characterized most colonial encounters did not facilitate unidirectional acculturation, then we certainly should not expect such a pattern in the Eastern Woodlands roughly 1500-2000 years ago, when, in fact, we have little evidence for pronounced inequalities within or between social groups. In this study, the directionality, intensity, and response to interregional interactions are not givens, but open questions, and their ultimate answers stand to contribute to a deeply historical discourse (sensu Shryock and

Smail 2012) on the nature of culture contact in myriad contexts worldwide.

Outline of the Volume

My central questions in this study concern how the histories of pre-Columbian peoples shaped and were shaped by diverse forms of culture contact. To that end, I offer a detailed case study of the Garden Creek site in western North Carolina's Appalachian Summit, and use it as a springboard to examine (1) the sorts of relationships that obtained among and between Southeastern and Midwestern peoples during the Middle Woodland period, and (2) the ways in which such relationships contributed to culture making at the local scale. Specifically, I aim to distinguish among these scenarios described above through an examination of the site's built environment, recognizing that multiple processes may have been at work sequentially or even at the same time. To accomplish this at the intra-site level, I compare contexts that (1) pre-date and appear concomitantly with monument construction/use and (2) occur in monumental contexts and in non-monumental contexts at Garden Creek. At the interregional level, I compare my findings from Garden Creek to those of contemporaneous monumental sites across the Eastern Woodlands in order to evaluate cross-cultural commonalities and divergences. By and large, I focus my analyses on different aspects of the built environment and their associated material culture assemblages, in order to determine when monumental and non-monumental components of the site were occupied, where certain activities took place, and how these patterns reflect extra-local or local traditions and influences – in short, to reconstruct the Middle Woodland history of interactions at the Garden Creek site from monumental inscriptions on the landscape.

The next two chapters expand the goal of this introduction; they provide the background necessary for to understand the research at hand. Chapter 2 introduces readers to the historical geography of the Appalachian Summit, including its physiography, ecology, and known Archaic and Woodland period culture history. By tracing several thousand years of material evidence across diverse terrain, I aim to provide a picture of the cultural traditions that became involved with Middle Woodland interaction sphere, and to convey my sense that the Summit was – perhaps counter-intuitively – primed for such interactions on account of its physical and social landscape. From there, Chapter 3 zeroes in on the small pocket of the Summit that is the focus of my project – the Pigeon River drainage and the Garden Creek site. I describe the history of landholding and antiquarian activities at the site, as they dramatically affected the shape of this research. I also describe the field methods employed at the site, both in Keel's excavations of Garden Creek Mound No. 2 in the 1960s, and my own survey and excavation at the site in 2011 and 2012.

The next several chapters present the results of recent fieldwork and analyses of extant collections from Mound No. 2 and of newly generated materials. While this section is organized according to different aspects of the built environment, I discuss different aspects of material culture as I go, in order that these assemblages may be considered in their appropriate spatial and temporal contexts. Chapter 4 provides a theoretical overview of a "life history" approach to the built environment and introduces the analytical strategies I used to examine the monumental and non-monumental components of the site, including radiometric dating and Bayesian modeling; calculating the energetics of monument construction; and tracing histories of practice associated with archaeological features. Chapter 5 applies these strategies to Mound No. 2, while Chapter 6 does so for the site's recently discovered earthwork enclosures. Chapter 7 then assesses the non-monumental portions of the site, drawing largely on the results of multi-method geophysical survey as well as targeted excavations of several off-mound/off-earthwork features.

In Chapter 8, we zoom back out to the macroscale in order to consider Garden Creek in comparative perspective. I draw on theories of architectural grammar (Connolly 1998; Lewis, Stout, and Wesson 1998), I compare (1) Mound No. 2 to Kolomoki pattern platform mounds in the Southeast; (2) Enclosures No. 1 and No 2 to Adena-Hopewell small geometric enclosures in the Midwest. Hypothetically speaking, substantial inter-site congruencies would support an association between the monuments and interaction and suggest fairly intense inter-personal/inter-community connections (Greber 2006:104), while unique architectural features in the Garden Creek monuments may reflect the impact of local traditions on a pan-regional phenomenon. I also try to determine if the off-monument occupation at Garden Creek better fits the village model as expected for the Kolomoki pattern, the vacant ceremonial center model as expected for Ohio Hopewell, or something else entirely. My conclusions in this chapter, which rely largely on data presented in Chapters 5-7, allow me to propose what sorts of interaction (i.e., which of the above scenarios) took place at Garden Creek throughout the Middle Woodland period. I present this historical narrative at the beginning of Chapter 9. To close, I consider these patterns in a temporally comparative perspective, and assess the goodness-of-fit between this narrative and different forms of hybridity in order to present a nuanced interpretation of structural continuity and transformation at this pre-Columbian periphery.

CHAPTER 2

A LANDSCAPE OF INTERACTIONS: THE APPALACHIAN SUMMIT

Stretching from central Alabama to southeastern Canada, the Appalachian Mountain range encompasses not only a vast portion of the American Eastern Woodlands, but also remarkable climatic, ecological, and geological diversity. These conditions, generated by the region's heterogeneous physiography, have fostered equally diverse human adaptations for at least 16,000 years (Adovasio and Page 2003). Archaeological research in the region suggests that ancient Appalachian lifeways involved particular forms of social and economic organization that are common to highland peoples around the world.

First synthesized by cultural ecologists in the 1970s and 80s (Beaver and Purrington 1984; Brush 1977; Fedele 1984; Guillet et al. 1983; Orlove and Guillet 1985; Rhoades and Thompson 1975), such interrelated characteristics include intra-regional cultural diversity, marginality relative to surrounding regions, persistence of local traditions and resistance to change, and the profound influence of environmental and physiographic setting on human activity. As noted by Lynn Sullivan and Susan Prezzano (2001:323)), "In and of themselves, these themes are not unique to mountainous country, but as a constellation, they characterize research issues that reflect a specific highland orientation."

In fact, I would go a step further, and suggest that it is not merely the combination of these traits, but the seeming counter-intuitiveness of their co-occurrence that serves to define mountain cultures. On the one hand, highland landscapes appear to encourage economic and social adaptations specific to localized, geomorphologically distinctive environments and, by extension, cultural isolation and insulation from innovation and change. On the other hand, the patchiness and desirability of certain resources and the mobility afforded by overland trails and dendritic waterways have the potential to stimulate intra- and inter-regional interactions of varying intensity and regularity (Brush 1976). With that in mind, it becomes clear that deterministic models in which the environment causes social behavior are insufficient to explain the histories of human occupation in mountain settings like the Appalachians. Rather, accounting for the diverse cultural adaptations of highland peoples to their surroundings requires a thorough consideration of the recursive relationships between upland environments and the social, economic, and ideological traditions that served to define social identities and precipitate interactions among them. Viewed diachronically, such a project can clarify the region's mutually constituting trajectories of continuity and change in cultural institutions and the natural world – in short, its historical geography (Sauer 1941).

In this chapter, I examine these linkages between indigenous Southern Appalachian communities – generally defined as "ever-emergent social institution that generates and is generated by supra-household interactions that are structured and synchronized by a set of places within a particular span of time" (Yaeger and Canuto 2000:5) – and their surrounding environment in an attempt to outline the historical geography of the Paleoindian, Archaic, and Woodland periods. To set the scene for archaeological interpretation, I first describe the natural landscape and resources of the Southern Appalachians. This region consists of the southern half of the Blue Ridge province as defined by the U. S. Geological Survey, and includes present-day western North Carolina, eastern Tennessee, northwestern Georgia, northeastern Alabama, northwestern South Carolina, and southwestern Virginia. Within this large physiographic region, cultural anthropologists (e.g., Kroeber 1939) and archaeologists (Dickens 1976; Keel 1976) have defined the Appalachian Summit culture area, essentially limited to the high peaks and corresponding valleys between the Eastern Continental Divide and the North Carolina-Tennessee border area (see Figure 1.1). Although the Summit is the geographic focus of this volume, extant archaeological evidence (discussed below) indicates that a robust account of pre-Columbian cultural trajectories in the region necessitates a consideration of adaptations, processes, and interactions that took place across the greater Southern Appalachians.

The second half of this chapter utilizes existing archaeological data to describe the myriad ways that humans mapped their lives onto and, in the process, transformed the Southern Appalachian environment. Rather than rehash the region's culture history using a chronological framework, I have elected to organize this discussion topically. By presenting diachronic evidence for the development of particular (though undeniably interrelated) aspects of ancient Southern Appalachian lifeways, such as subsistence, settlement patterns, community organization, ritual, and so on, it is possible to identify the emergence and persistence of certain local traditions that served as a backdrop for and certainly had an effect on novel practices and processes observed during the Middle Woodland period at the Garden Creek site.

My overview focuses on the pre-Mississippian occupation of the Southern Appalachians, from about 9500 BC to AD 1000. During this time, before the adoption of corn agriculture in the region, indigenous communities subsisted largely on seasonally available plants, game, and mast, and obtained raw materials necessary for tool and craft production from predictable but dispersed localities. Under these conditions, the mountains' inhabitants established a settlement pattern that varied with the seasons and frequently undertook logistical expeditions to secure particular material resources. These strategies necessitated the use of a geographically extensive area and, in turn, encouraged far-reaching interactions between people and the environment, and between different groups of people. In the final part of this chapter, I propose that these interactions constituted not only a unique social landscape in the pre-Mississippian Southern Appalachians, but also a deeply rooted tradition of inter-community contact and exchange that facilitated Appalachian communities' eventual participation in inter-regional interaction networks during the Middle Woodland period. Forming alliances was one of the keys that led to change and innovation.

Regional Environmental Setting

The Southern Blue Ridge physiographic province extends southwest from the Roanoke River in Virginia to northern Georgia, and includes several ranges of mountains that lie between the Piedmont province to the east and Valley and Ridge province to the west (Fenneman 1938). Formed through tectonic uplift around 470 million years ago, subsequent erosion blunted mountain peaks and created the rugged landscape that is apparent today (Thornbury 1965), with elevations ranging from 1200-3000 feet above mean sea level (amsl) on valley floors to 6684 feet amsl at Mt. Mitchell, North Carolina, North America's highest mountain east of the Mississippi River. Several other peaks exceeding 6000 feet amsl and many more exceeding 5000 feet amsl can be found in a subset of the Southern Blue Ridge known as the Appalachian Summit, which, as mentioned above, encompasses the westernmost 10,000 km^2 of North Carolina as well as a 40 km-wide strip of Tennessee immediately across the state line (Wetmore 2002).

The topography of the Appalachian Summit consists of a variety of upland landforms (Table 2.1) and dendritic systems of streams and rivers that have historically carved and presently dissect the mountainous terrain. Depending on the location of their headwaters relative to the Eastern

Continental Divide, which runs roughly southwest to northeast from present day Cashiers, North Carolina to Linville, North Carolina, these drainages either flow eastward toward the Atlantic (i.e., the Chattanooga-Whitewater-Toxaway, Broad, Catawba, and Yadkin drainages) or west/northwest into the Tennessee River (i.e., the Hiwassee-Valley, Little Tennessee-Tuckasegee, Pigeon, French Broad, Nolichucky-Toe-Cane, and Watauga drainages) or the Ohio River (i.e., the New drainage). For the Summit's pre-Columbian inhabitants, these waterways provided a primary means of travel, and in turn, communication and interaction. Overland routes likely provided inter-drainage (and inter-regional) travel and contact, via gaps between mountains that linked neighboring valleys and stretches of ridgeline that offered more-or-less level ground for journeys on (Purrington 1983). Nevertheless, archaeologically observable differences in material culture between east- and west-flowing watersheds (e.g., eastern Burke and western Qualla ceramics during the late prehistoric period) suggest that communities that occupied the same major drainage engaged more intensively with each other than with groups occupying different drainages (Purrington 1983). For that reason, I focus the rest of my discussion of Southern Appalachian historical geography on the western Tennessee-Ohio River drainages.

The stream systems of the western Appalachian Summit move from high elevation headwaters to lower valleys, where they join rivers that cross cut narrow floodplains, steep-sided gorges, or broad basins. Between these river bottoms, the steepness of much of the terrain presents a challenge to human settlement and mobility, but coves, saddles, foot- and toeslopes, rockshelters, and upland flats and stream valleys provide ample level ground suitable for occupation (S. Ashcraft, personal communication 2013). In general, these landforms are fairly discrete, being bounded by steep mountainsides; relatively small in areal extent; and patchily dispersed across the greater Appalachian Summit. Nevertheless, there is archaeological evidence for pre-Mississippian occupation in each of these distinctive topographic settings, as well as in lower elevation river valleys (Keel 1976:5). As I discuss in greater detail below, these data likely resulted from pre-agricultural land use strategies grounded in seasonal sedentism and logistical foraging. Given sufficient contemporaneity, topographically diverse sites may be attributable to a single community, whose members occupied distinctive structural poses in both physical and social space depending on the time of year, particular resource needs, ritual obligations, etc.

Landform	*Definition*
Basin	A low area in the earth's crust, of tectonic origin, in which sediments have accumulated
Cove	A walled and rounded or cirque-like opening at the head of a small steep valley
Footslope	The concave surface at the base of a hillslope, comprising a transition zone between upslope sites of erosion and transport and downslope sites of deposition (i.e., toeslope)
Gap	A sharp break or opening in a mountain ridge, or a short pass through a mountain range
Intermontane valley	Hilly and rolling terrain between the edge of the floodplain and the mountain slope, primarily developed by stream erosion
Ridge	A long, narrow elevation of the land surface, usually sharply crested with steep sides and forming an extended upland between valleys
Saddle	A low point on a ridge, generally a divide between the heads of streams flowing in opposite directions)
Spur	A lower elevation ridge that projects sharply from the crest or side of a hill or mountain
Summit	The highest position of a hillslope profile with a nearly level (planar or only slightly convex) surface
Toeslope	The gently inclined surface at the base of a hillslope that grades to valley or closed-depression floors; the first rise from the floodplain to the adjacent upland
Upland flat	High elevation surface that is smooth and or horizontal, and that lacks any significant curvature, slope, elevations, or depressions

Table 2.1. Landforms of the Appalachian Summit important to human occupation (Hawley and Parsons 1980).

Climate

On account of its elevation, the modern climate of the Appalachian Summit is virtually unique in the Southeastern United States. In general, the mountains are dramatically cooler than lower elevation areas at similar latitudes, experiencing, on average, 170-180 frost free days per year, though especially high elevations may experience three weeks less than this (Keel 1976). Summers tend to be mild (68-74 degrees Fahrenheit on average) and winters cold (36-42 degrees Fahrenheit on average) (Purrington 1983), and throughout the year, temperatures fluctuate more than 20 degrees from day to night (State Climate Office of North Carolina 2014). Temperature varies according to intra-regional elevation differences as well, resulting in substantial amounts of winter snow accumulation on high summits relative to lower slopes and valleys.

Rainfall and other weather patterns are affected by other localized topographic factors, which in turn produce a complex mosaic of ecological microenvironments. For example, the movement of moist, southerly winds over the mountains in Macon County, North Carolina yield more than 90 inches (229 cm) of rain per year – a figure that contrasts starkly with the average 37 inches (94 cm) per year that fall on the Asheville Basin a mere 50 miles (80.5 km) to the north (State Climate Office of North Carolina 2014). At least some of this rainfall takes the form of torrential storms, which can lead to flooding and related damage. Most recently, such devastation occurred in September 2004, when Hurricanes Frances and Ivan unleashed a 500-year flood on the Pigeon River in Canton – immediately adjacent to the Garden Creek site (Barnes 2013).

The extent to which this modern climatic regime approximates those of the more distant past has been the subject of recent research in the archaeological sciences. Fossil pollen and charcoal dating to the early Holocene from Cliff Palace Pond in eastern Kentucky documents a shift from cool-temperate, boreal trees to mixed mesophytic species around 7300 BP, signaling the emergence of a warm-temperate, humid climate, with less extreme seasonal temperature changes and local increases in precipitation (Delcourt et al. 1998). In a general sense, similar conditions persist in the greater Southern Appalachians today, although Wurster and Patterson (2001) note that this pattern may obscure significant climatic variability. Their study of stable oxygen isotopes in freshwater drum (*Aplodinotus grunniens*) sagittal otoliths recovered from Eastman Rockshelter in eastern Tennessee indicated that, overall, maximum summer temperatures declined slightly from 5.5 to 1.0-0.3 kya, but that relatively warmer periods occurred around 2.9, 1.7-1.6, and 1.2-1.0 kya.

At an even finer resolution, considerable variability has also been observed for rainfall. Using tree-ring chronologies from bald cypresses (*Taxodium distichum*) in swamps along the Atlantic Coast, Stahle and Cleveland (1992) demonstrated that rainfall in North Carolina, South Carolina, and Georgia has exhibited high interannual variability as well as decade-long dry or wet regimes (relative to mean rainfall amounts) for at least the last 1000 years. All told, these datasets support a characterization of the ancient Southern Appalachian climate as generally similar to today's, with the important caveat that modest fluctuations in temperature or rainfall may have occurred at multiple tempos, affecting local ecology and anthropogenic responses.

Plant and Animal Resources

Thanks to its geological age and heterogeneous elevation, topography, and soils, there is more plant diversity in the Appalachian Summit than in any other area of comparable size in North America (Black 2001). Plant biologists have identified several distinctive forest types in the region that roughly correspond with different elevations and landform types (Purrington 1983; Whittaker 1956). Northern hardwood species, including fraser fir, balsam fir, and spruce, dominate high elevations (above 5000 feet amsl), whereas mesic oak-chestnut forests characterize lower ones. Pine trees are common where soils are shallow, such as along ridges of steep slopes, whereas colluvial deposits near the bases of mountains and riparian bottom lands host chestnut, chestnut oak, black walnut, butternut, honey locust, red maple, yellow poplar, buckeye, river birch, sycamore, water oak, elm, ironwood, and hickory. Mountain forest composition also depends on aspect, which affects moisture and sunlight availability. South- and west-facing slopes (as well as dry north and east facing slopes) support chestnut, a variety of oak species, and hickories, with lower frequencies of scarlet oak, tulip poplar, red maple, black locust, dogwood, and sourwood. So-called "cove" hardwood forests, consisting of chestnut, yellow poplar, basswood, white and northern red oaks, black birch, red and sugar maple, white ash, hemlock, and black locusts, characterize wetter north- and east-facing slopes. Of course, the heterogeneous distribution of tree species across the mountains is matched by similarly distinctive understory shrub and herbaceous plant populations (McNab et al. 1999). As I will discuss in greater detail below, these diverse plant communities represented important resources for pre-Mississippian communities (e.g., mast for food; wood for construction material; herbs for medicine), but their seasonal, localized distribution required strategic exploitation through certain forms of settlement, mobility, and social organization.

Before the drastic ecosystemic changes rendered by tree blight, logging, and 18th – 21st century human incursion (Yarnell 1998), the forests of the Appalachian Summit also supported numerous animal species that sustained indigenous human populations (Holden 1966; Keel 1976; Purrington 1983). On land, white-tailed deer, black bear, gray wolf, bobcat, cottontail rabbit, raccoon, squirrel, fox, beaver, skunk, opossum, snakes, turtles, and now locally extinct elk and bison were sources of food, hides, furs, and bone for tools. Turkey, grouse, and passenger pigeon were hunted as food (Purrington 1983), whereas a variety of year-round and seasonal bird species were more plausibly hunted for decorative feathers (Keel 1976). Although there is little evidence for shellfishing in the region (Holden 1966), mountain streams and rivers were exploited for trout, perch, bass, pike, sturgeon, and catfish before they were subject to modern pollution. Like plants, many of these animals favored certain mountain habitats that are discontinuously distributed across space and through time (e.g., seasonally), necessitating careful scheduling and movement by those human groups who aimed to exploit them.

Geological Resources

The ancient geology of the Appalachian Summit yields several categories of resources relevant to human lifeways: lithic raw materials for the production of chipped and ground stone tools, clays for pottery manufacture, and minerals for use in local ceremonies and/or extra-local exchange. Like plants and animals, these materials are, to greater or lesser degrees, patchily distributed across the mountains and thus demand the movement of people to and between them in order to harness their resources. In western North Carolina, quartz (including crystal quartz), quartzite, diorite, schists, and gneisses were commonly used, locally available lithic raw materials, but cherts were only available in eastern Tennessee (Keel 1976:5). Moreover, because these sources are downstream from sites in western North Carolina, it is not likely that chert would have been available in the form of river cobbles.

In contrast to high quality raw material for chipped stone tools, clay is abundantly available across the Appalachian Summit. Beginning in the Early Woodland period, native potters utilized these resources to manufacture pottery vessels for cooking and storage – a tradition which developed over nearly 3000 years and persists today among the Cherokee (Fariello 2011). Historical sources attest to the suitability of mountain clays for pottery making during these later periods. In the 1760s, for example, Henry Timberlake visited Cherokee Overhill Towns and observed their residents "have two sorts of clay, red and white, with both which they make excellent vessels…[that] will stand the greatest heat" quoted in (King 2007). In another description of Cherokee pottery, James Adair (1775) wrote, "Their lands abound with proper clay." Later ethnographic work documented that Cherokee potters were very selective in obtaining clay (and temper) from particular locations, but these sources were near their homesteads, where they fashioned the clay into jars and pots (Fariello 2011; Harrington 1909, 1922; Wright 2013). In short, it seems safe to assume that sufficient raw materials existed locally in the Appalachian Summit to allow for the local manufacture of high-quality pottery by the communities who lived there.

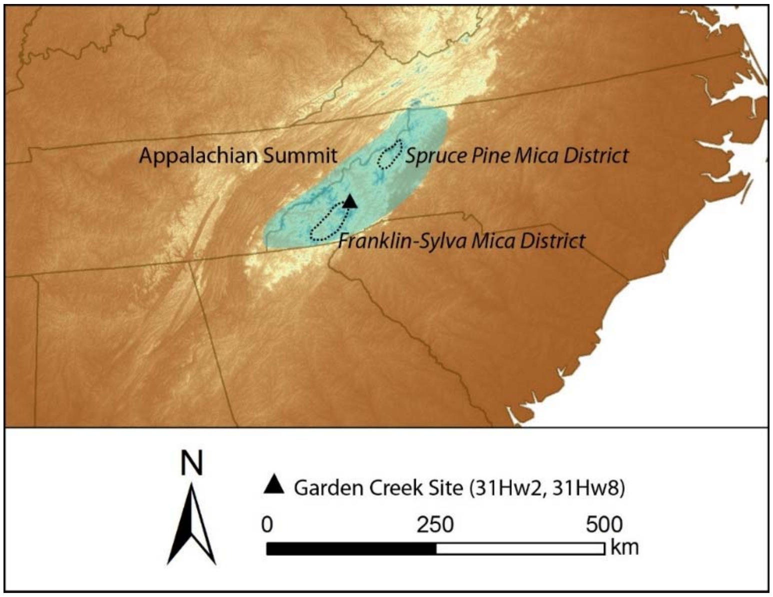


Figure 2.1. Principal mica deposits of the western Appalachian Summit.

Finally, a summary of geological resources in the Appalachian Summit would not be complete without a consideration of mica – a resource that appears to not only have been used locally, but also exchanged with groups living in more distant regions, including the participants of the Hopewell Interaction Sphere. The term "mica" encompasses a group of hydrous aluminum silicate minerals, including muscovite (white mica), biotite (black mica), and phlogopite (amber mica), all of which are composed of six-sided crystals with perfect basal cleavage that facilitate their separation into thin sheets (Lesure and Shirley 1968311-312). Muscovite [$H_2KAl_2(SiO_4)_3$] is the most common form of mica in the Appalachian Summit, and is light colored or translucent, ranging from yellowish or brownish white to red/yellow/greenish-brown and green.

Muscovite forms in granite, pegmatite, gneiss, and schist bands, and primarily outcrops in three broad localities in the Southern Appalachians: the Shelby district on the eastern side of the continental divide, and the Spruce Pine and Franklin-Sylva districts on the western side, of most interest here (Broadhurst and Hash 1953) (Figure 2.1), although resource assessments related to 20th-century industrial mica-mining further specify 26 particular districts (Table 2.2).

State	*District*	*Counties*	*# Known Historic Mines*	*Quality*
North Carolina	Sandy Ridge	Stokes, Rockingham	13	Fair
	Jefferson-Boone	Ashe, Watauga	70	Fair
	Wilkes	Wilkes, Ashe, Caldwell, Watauga	45	Fair
	Spruce Pine	Avery, Mitchell, Yancey	714	Good
	Woodlawn	McDowell	12	Poor
	Oak Hill	Caldwell, Yadkin, Wilkes	11	Good
	Hiddenite	Alexander	9	Good
	Shelby-Hickory	Rutherford, Burke, Cleveland, Gaston, Lincoln	30	Good
	Buncombe	Buncombe, McDowell, Madison, Yancey	90	Fair
	Bryson City	Swain	150	Poor
	Franklin-Sylva	Haywood, Jackson, Macon, Clay	433	Good
	Cashiers	Jackson, Transylvania	60	Good
	Zirconia	Polk and Henderson	Unknown	Unknown
South Carolina	Anderson-Greenville	Anderson, Greenville	50	Poor
	Walhalla-Pickens	Pickens, Oconee	24	Poor
	Iva	Anderson	20	Poor
Georgia	Rabun	Rabun	15	Poor
	Clarksville	Habersham, White	25	Poor
	North Georgia	Towns, Union, Lumpkin, Fannin	60	Poor
	Pickens-Cherokee	Pickens, Cherokee	35	Unknown
Alabama	Pinetucky	Clay, Cleburne. Randolph	100	Fair
	Pyriton	Clay	50	Fair
	Lineville	Clay	10	Fair
	Rockford	Coosa	14	Fair
	Clanton	Coosa, Chilton	6	Fair
	Dadeville	Dadeville, Tallapoosa	25	Fair

Table 2.2. Historic mica mining districts in the Southern Appalachians (compiled from Lesure and Shirley 1968: 316-325).

The Spruce Pine deposit in Yancey, Mitchell, and Avery counties consists of 650 km^2 of micaceous pegmatites, through which muscovite outcrops in workable surface or near-surface veins of high-quality crystals amenable to both aboriginal mining and intensive industrial mining from the mid-1800s through the mid-1900s (Olson 1944; Richardson 2008). To the southwest, the Franklin-Sylva district comprises a 22.5 km-wide micaceous pegmatite belt that runs 72.4 km southwest to northeast through Macon, Jackson, and Haywood counties (Chapman and Keel 1979:161). Here, muscovite outcrops in sporadic clusters (Olson 1944), which may have presented a challenge to mining operations, particularly relative to the accessible veins of the Spruce Pine district (Richardson 2008). Similarly, even though it is the most extensive mica deposit in western North Carolina at 1800 km^2, the Shelby district consists of unpredictable and patchily distributed muscovite outcrops that are seldom visible at the surface (Richardson 2008). These characteristics inhibited large-scale mica mining in the historic period and, plausibly, mining activities before European contact. Importantly, although the western North Carolina mica deposits are among the largest and most productive in the Eastern Woodlands (Lesure 1968), several other localities throughout the southern Appalachians were mined in the 19th and 20th centuries, so it is possible that they were mined in the deeper past as well.

Historical Landscapes of the Appalachian Summit

As hinted at above, the physical environment and ecology of the Appalachian Summit present both opportunities and challenges to the people who have lived there. Throughout the Holocene, human populations have adapted to and been shaped by these conditions, and in the process, they have affected and shaped the environment. The relationships that emerge from the interactions between and among people and their environment constitute a *landscape* (Ashmore and Knapp 1999; Wright and Henry 2013). Landscapes emerge from and are affected by myriad anthropogenic processes, "including subsistence, economic, social, political, and religious undertakings" (Fennell 2011:1); the ways in which these processes change or remain stable through time thus comprise the historical landscape – a topic uniquely suited to archaeological research.

Investigations of historical landscapes usually operate on broad spatial and temporal scales, so the adoption of such a perspective here – in a study of a particular site (Garden Creek) at a particular historical moment (the emergence of monumental architecture) – requires some explanation. First, pre-agricultural subsistence strategies, which held sway in the Appalachian Summit until at least AD 1000 (Whyte 2003), encouraged spatially extensive occupation and use of the natural environment by pre-Mississippian populations. In other words, the relations that inhered between the Southern Appalachian environment and its human inhabitants during the Paleoindian, Archaic, and Woodland periods resulted in a "landscape in motion" (*sensu* Dillehay 2007:153), consisting of diverse resource loci, a variety of residential encampments, memorial places, ceremonial spaces, and the overland trails and river systems that connected them. Thus, a single site like Garden Creek represents only certain aspects of inter-related patterns of settlement, mobility, and social organization; in isolation, it cannot be expected to yield a comprehensive view of past social processes, and its role in such processes cannot be accurately understood without reference to the wider Appalachian Summit.

Similarly, in the temporal dimension, the significance of the "emergence" of something like monumental architecture is virtually impossible to grasp in the absence of historical context. By definition, the novelty of a given phenomenon is only recognizable in comparison to what came before. Of particular importance to this project is an historical approach to the local landscape; that approach encourages an exploration of past practices that contributed to monumentality's so-called unprecedented appearance. Before isolating the ways in which long-standing local traditions and extra-local interactions fueled this process, one must establish what these local traditions were. In the following sections, I examine a number of these locally "traditional" aspects of life over a 10,500 year period beginning with the earliest human occupation of the Appalachian Summit (Table 2.3).

Dates	***Period***	***Phase (western North Carolina)***
AD 1450 – 1838	Protohistoric/Contact	Qualla
AD 1100 – 1450	Mississippian	Pisgah
AD 800 – 1100	Late Woodland	Cane Creek (?) (AD 800 – 1100)
300 BC – AD 800	Middle Woodland	Pigeon (300 BC – AD 200) Connestee (AD 200 – 800)
1000 – 300 BC	Early Woodland	Swannanoa (1000 – 300 BC)
3000 – 1000 BC	Late Archaic	Savannah River (3000 – 1000 BC) Otarre (1500 – 1000 BC)
6000 – 3000 BC	Middle Archaic	Stanley (6000 – 5000 BC) Morrow Mountain (5000 – 4000 BC) Guilford (4000 – 3000 BC)
8000 – 6000 BC	Early Archaic	Palmer (8000 – 7000 BC) Kirk (7000 – 6000 BC)
9500 – 8000 BC	Paleoindian	~

Table 2.3. Cultural chronology of the Appalachian Summit.

First, it is worth briefly discussing the material culture datasets that archaeologists have used to identify ancient human occupation in the region and to assign it to specific temporal phases. For the most part, the first 8500 years of Appalachian Summit occupation are defined archaeologically on the basis of lithic assemblages. Although the material culture of the region's Paleoindian period (9500 – 8000 BC) is limited to a handful of isolated fluted and semi-lanceolate projectile points

(Purrington 1983), the subsequent Archaic periods exhibit much more diversity. In assemblages dating from 8000 – 1000 BC, archaeologists have identified pitted hammerstones, bifaces and unifaces of varying size and use (e.g., knives, scrapers, drills), and groundstone manos, grinding slabs, and celts (Chapman 1985a; Keel 1976; Kimball 1996). Projectile point morphology is variable, and has been used to subdivide the Archaic into constituent sub-periods (summarized from Purrington 1983:107–110). During the Early Archaic (8000-6000 BC), Appalachian Summit inhabitants used side- and corner-notched and (near the end of this period) bifurcate points; the Palmer phase includes Palmer, Kirk, and Big Sandy I types, while the later LeCroy phase includes MacCorkle, St. Albans, LeCroy, and Kanawha types; the vast majority of these points were made on non-local raw materials from Tennessee. In contrast, Stanley, Morrow Mountain, and Guilford points --- which define the Summit's Middle Archaic phases (6000 – 3000 BC) --- are made almost entirely on local vein quartz. By the Late Archaic (3000 – 1000 BC), large, mostly quartzite Savannah River and Otarre points with broad blades and straight became the dominant projectile point type. In addition to these stone tools, Late Archaic assemblages sometimes include soapstone vessel fragments, presumably used for processing, cooking, or storing food, as well as gorgets, elbow pipes, net weights, and grooved axes (Keel 1976:231).

As with much of the rest of the Eastern Woodlands, the appearance of pottery vessels signals the beginning of the Woodland period in the Appalachian Summit. Throughout this period, distinctive ceramic types, based largely on temper and surface treatment, characterize the eastern and western portions of the Summit. The Early Woodland (1000 – 300 BC), for example, is characterized by Swannanoa ceramics in western North Carolina, and by Watts Bar and Long Branch ceramics in eastern Tennessee. Swannanoa pottery consists of thick-walled bowls and conoidal jars, often cord-marked or fabric-impressed and tempered with coarse sand or crushed quartz (Keel 1976:260–266). Watts Bar ceramics are very similar to Swannanoa, whereas Long Branch ceramics are more frequently fabric-impressed and characterized by limestone temper (Hollenbach and Yerka 2011). Long Branch and other limestone-tempered ceramic types, including Wright check-stamped, Candy Creek cord-marked, Mulberry Creek plain, persist to define Middle Woodland phases in eastern Tennessee (i.e., the Early Middle Woodland Patrick phase, 200 BC – AD 350; and the Late Middle Woodland Icehouse Bottom phase, AD 350 – 600 (Hollenbach and Yerka 2011). Meanwhile, the same period in western North Carolina is subdivided into the Early Middle Woodland Pigeon phase (300 BC – AD 200) and the Late Middle Woodland Connestee phase (AD 200 – 600). Pigeon ceramics, most often exhibiting check-stamped or plain exterior surfaces and sometimes highly polished interior surfaces, are tempered with crushed quartz and shaped into hemispherical bowls, shouldered jars with slightly flaring rims, and flat-bottomed, tetrapodal jars (Keel 1976:227). Connestee ceramics are also characterized by these vessel forms, but they are thinner-walled and tempered with fine sand, with brushed, simple-stamped, and plain surface treatments (247-255). Sherds of this type are regularly identified in eastern Tennessee as well as in western North Carolina, indicating some form of interaction or exchange among potters across the mountains during the Late Middle Woodland (Wright 2013).

Middle Woodland stone tool assemblages also vary chronologically and geographically. In western North Carolina, Early Middle Woodland stemmed (i.e., Swannanoa, Plott) and triangular (i.e., Transylvania) projectile point types precede Late Middle Woodland triangular types (i.e., Garden Creek, Pigeon, Connestee, Haywood) (Purrington 1983:104). A similar trajectory is apparent in eastern Tennessee. Stemmed and large triangular points (i.e., Ebenezer, MacFarland) characterize the Early Middle Woodland; smaller, triangular points (i.e., Camp Creek, Greeneville, Nolichucky, Connestee, Bradley Spike) are typical for the Late Middle Woodland (Hollenbach and Yerka 2011). Although soapstone use declines sharply between the Late Archaic and Early Woodland in both western North Carolina and eastern Tennessee (Keel 1976:230), each sub-region has yielded ground stone tools (e.g., pestles, abraders, manos, celts, axes); bone tools (e.g., awls); hammerstones, choppers, and scrapers; tubular and biconical pipes; weights for atlatls and fishing nets; red and yellow ochre; and objects for personal adornment (e.g., bar and tabular gorgets, plummets, and pendants) (Davis 1990; Keel 1976; Wetmore 2002).

Combined, these datasets and their distribution across the landscape provide varied lines of evidence from which archaeologists can infer a variety of past behaviors and practices. In the sections that follow, I summarize how particular sorts of materials remains persisted or changed through time as they relate to particular realms of ancient activity.

Subsistence Economy

From the earliest human occupation of the Appalachian Summit and surrounding areas until approximately AD 1000, local subsistence strategies were based on the exploitation of wild resources. Available paleobotanical and faunal evidence indicates that the wide range of wild plant and animal species incorporated into pre-Mississippian diets remained remarkably consistent through time. Although the Paleoindian record for the Summit is sparse, perhaps due to post-

Pleistocene hydrological changes that resulted in site burial or destruction (Sherwood et al. 2004), isolated fluted point finds (Anderson et al. 2010; Purrington 1983) and comparative data from the greater Southeast (Anderson 1995) have been marshaled to argue that local groups hunted megafauna before 8800 BC. Ward and Davis (1999:46) have even suggested that late-Pleistocene big game hunting may have been especially viable in the mountains, where cooler temperatures may have provided a refugium for soon-to-be extinct species. That said, the hard evidence from the Southern Appalachians indicates that local Paleoindians practiced more generalized foraging (Chapman 1985a; Hollenbach 2009; Purrington 1983:107; Walker 2007). For example, the Late Paleoindian strata at Dust Cave in northern Alabama included the carbonized remains of hackberry, chenopod, stargrass, possible grape seeds, and hickory, walnut, acorn, and hazelnut shells, as well as the remains of birds (especially waterfowl), aquatic species like muskrat, swamp rabbit, and pond turtles, and terrestrial mammals like white-tailed deer, turkey, squirrel, and box turtle (Walker et al. 2001).

This pattern of diverse resource exploitation persisted through the Early and Middle Archaic. Nuts remained a dietary staple – primarily hickory and acorn, but also walnuts, chestnuts, hazelnuts, and beechnuts (Hollenbach and Yerka 2011). In the Lower Tennessee River Valley (Chapman and Shea 1981), at least, the list of gathered wild plants expanded to include sumac, maygrass, knotweed, pokeweed, and blackberry/raspberry, some of which may have been processed using manos and grinding stones (Chapman 1977:125). Extant faunal evidence suggests an emphasis on terrestrial game, with the continued exploitation of white-tailed deer, turkey, and squirrel, and the addition of black bear, raccoon, and opossum (Chapman 1985b:43–46), although the appearance of net-weights at some Middle Archaic sites suggests that fishing was another persistent food procurement strategy.

Increased reliance on aquatic resources is evidenced in the Late Archaic by a shift in site locations to floodplains of rivers and large streams (see below; Ward and Davis 1999:71). Despite poor bone preservation at many of these sites, large numbers of projectile points and hide-working and butchering tools demonstrate that terrestrial species also contributed to Late Archaic diets. While there is little evidence that the role of nut mast diminished during this period, paleobotanical data from the Appalachian Summit – complemented by research across the greater Eastern Woodlands – indicate that the Late Archaic foragers were beginning to cultivate and, in some cases, domesticate certain plant species. By 1500 BC, squash, gourd, sunflower, chenopod, maygrass, little barley, erect knotweed, and giant ragweed were grown in small-scale gardens in the Midwest and

Southeast (Gremillion 1996; Smith and Cowan n.d.; Yarnell and Black 1985), and in eastern Tennessee specifically, chenopod, maygrass, knotweed, and weedy plant species associated with disturbed soils (i.e., gardens) are recovered more frequently during the Late Archaic than in preceding periods (Chapman and Shea 1981). The only unequivocally domesticated specimen from a Late Archaic site in the region is sunflower, from the Higgs site in Tennessee (Brewer 1973).

Early Woodland assemblages from eastern Tennessee attest to the increasing role of garden crops, including sunflower, sumpweed, amaranth, chenopod, in local subsistence, although these do not rival the importance of hickory, walnut, and acorn mast nor eliminate the foraging of wild fruits (Brewer 1973; Chapman and Shea 1981; Crites 1998; Knott 1981). In contrast, the Early Woodland paleobotanical record from western North Carolina shows "little, if any, reliance on horticulture" (Purrington 1983:133). For example, plant remains from Swannanoa phase features from the Warren Wilson site (31BN29) included hickory, walnut, acorns, but no cultigens (Simpkins 1984). Similar continuity with Archaic foraging strategies can be gleaned from Early Woodland faunal assemblages from across the Appalachian Summit; these include white-tailed deer, elk, bear, raccoon, squirrel, rabbit, mountain lion, bobcat, beaver, duck, turkey, turkey vulture, aquatic and box turtles, snakes, frogs/toads, several fish species, gastropods, mussels (Bogan 1982:41; Bogan and Bogan 1985; Charles III 1973; Lafferty 1981; Parmalee 1973; Schroedl 1978).

Overall, this pattern holds through the Middle Woodland period in both eastern Tennessee and western North Carolina. Appalachian Summit communities subsisted on diverse species of game, large quantities of nut mast, wild plants, and native cultigens (Bogan and Bogan 1985; Cridlebaugh 1981; Schroedl 1978; Wetmore 2002; Wetmore, Robinson, and Moore 2000). The only subsistence change of note is the appearance of maize in Middle Woodland contexts at Icehouse Bottom, which may speak more to particular ritual practices than to the generalized diet of the period (Fritz 1993:56; Johannessen 1993:74–75; Scarry 1993:90). Maize does not become a staple in Appalachian Summit diets until the Pisgah phase, at which point more intensive farming comes to shape local subsistence practices.

Mobility and Settlement

Complementing the more or less direct evidence provided by faunal and paleobotanical assemblages, survey data indicate that Paleoindian, Archaic, and Woodland inhabitants of the Appalachian Summit exploited diverse, patchily distributed natural resources in their quest for food and other important materials. Evidence of varying degrees of mobility, seasonal sedentism, and logistical foraging bear witness to more than 10,000 years of extensive landscape use that demanded social within and among essentially local (i.e., Appalachian Summit) communities, which, as I argue below, likely rendered a crucial backdrop for more far-flung interactions that appear to have arisen during the Middle Woodland.

Archaeologists have interpreted the available data for Paleoindian occupation of the Appalachian Summit – i.e., isolated fluted points made mostly on local raw materials – as evidence for "territorially restricted mobility" (Gardner 1974). In this scenario, Paleoindian basecamps were located near stone outcrops, while most hunting took place in adjacent uplands. This latter point is supported, at least in the Balsam Range of Tennessee by a greater frequency of projectile points at high elevations than at low ones (White 1976, cited in Purrington 1983)).

By the Early Archaic, this pattern appears to have comprehensively shaped settlement at a regional scale – small campsites, presumably for hunting, dominated the uplands of western North Carolina, while larger basecamps became established in eastern Tennessee, near lithic raw material sources that, in general, are of higher quality than those available in the eastern Summit (Purrington 1983). In Great Smoky Mountain National Park, for example, the few Early Archaic projectile points identified during survey were made on non-local cherts, which Bass (1977) attributed to limited activity sites produced by visiting hunters from eastern Tennessee. Short-term occupation by Tennessee hunters has also been argued for the Early Archaic Mitchell Branch site in Yancey County, North Carolina, where the lithic assemblage is dominated by non-local chert and fine-grained quartz. In contrast, however, surveys in North Carolina's Watauga and Transylvania Counties (Holden 1966; Purrington 1983) yielded chipped stone artifacts made not only from non-local materials, such as eastern Tennessee cherts and rhyolite from Mount Rogers in southwestern Virginia, but also from local, relatively lower quality quartz. Purrington (1983:113) argued that the near exhaustion of these latter tools indicates the presence of a resident, though highly mobile, population.

Meanwhile, the Early Archaic record from eastern Tennessee documents a very different settlement pattern, characterized by large, repeatedly occupied residential basecamps. These sites, including Icehouse Bottom, Bacon Farm, and Rose Island in the Tellico Reservoir (Chapman 1985b), were located on the crests of river terraces with access to a wide range of habitats. Their semi-permanence is indicated by the presence of prepared clay hearths (Sherwood and Chapman 2005), and their seasonal occupation may have related to the seasonal availability of local nut mast

(Chapman 1975, 1977). Presumably, the inhabitants of these basecamps moved between these sites and smaller field camps in the uplands, including those of western North Carolina, on a logistical basis (sensu Binford 1980) where the remains of hunting, butchering, hide-working, and wood-working activities have been identified (Ward and Davis 1999:69).

For presently unspecified reasons, such large sites adjacent to or on the flood plains became scarce during the Middle Archaic; rather, dispersed campsites typified the period. In western North Carolina, such locales are equally distributed between uplands, coves, and valleys (Purrington 1983). Moreover, "the lack of significant differences in activity sets between sites implies that all physiographic zones of the Great Smokies were exploited similarly" (Bass 1977:109). A dramatic increase in Morrow Mountain phase artifacts recovered on survey implies that utilization of the region was greater at this time than during preceding periods, even if it was widely dispersed and, based on lithic raw material, involved less movement between western North Carolina and eastern Tennessee (Bass 1977).

With the possible exception of the Watauga Valley (Purrington 1983), this trend toward small, scattered campsites reversed during the Late Archaic. Although high-elevation hunting camps and a few cove, upland bench, and upper valley activity areas have been identified, most Late Archaic sites in western North Carolina are located on the floodplains of large river valleys, close to usable quartzite veins and outcrops (Bass 1977). There, inhabitants engaged in food-processing activities, as evidenced by the presence of soapstone cooking or storage vessels, grinding slabs, and butchering debris, as well as in the working of bone, stone, and wood (Purrington 1983). The location of these sites, as well as later Late Archaic sites in eastern Tennessee, near rivers and important lithic outcrops has been inferred to signify an increasing reliance on immediately available resources and, in turn, more tightly bounded territories (Bass 1977:69; Ward and Davis 1999:71).

In general, this settlement pattern persisted and intensified into the Early Woodland period (Purrington 1983:182). In southwestern North Carolina, sites near or on floodplain, such as Warren Wilson, Tuckasegee, and Garden Creek, include Swannanoa phase features (discussed in greater detail below) indicative of relatively stable basecamps. Similar sites may have been buried in the Great Smoky Mountain National Park and Watauga Valley survey areas (Ward and Davis 1999:145), though these areas also bear witness to apparently logistical use of uplands for short term hunting and collecting (Bass 1977; Purrington 1983). Additionally, Purrington (1983) noted a three-fold increase in rockshelter use during the Late Archaic in the Watauga Valley, as well as the presence of ceramic sites in the uplands, presumably indicative of some degree of prolonged habitation there.

Based on these data, it may be that Late Archaic communities in western North Carolina practiced logistical hunting and foraging as well as seasonal residential mobility, involving cold-season relocation to sheltered upland areas or rockshelters. Evidence from eastern Tennessee also attests to intensified, seasonal, riverside basecamps, such as Camp Creek (Lewis and Kneberg 1957; Wetmore 2002), Martin Farm and Bacon Bend (Salo 1969), Patrick (Schroedl 1978), and Phipps Bend (Lafferty 1981). At a minimum, these sites were occupied in the spring, summer, and early fall, given seasonality measures apparent in mussel, fish, and mast assemblages (Lafferty 1981:518–525; Davis 1990:229), while upland locales were exploited ephemerally and/or during the winter.

By the Middle Woodland period, it appears that upland sites beyond the main river and stream valleys became the focus of specialized task groups, rather than seasonally mobile residential units, at least in western North Carolina (Purrington 1983:134; see also Bass 1977; Wetmore, Robinson, and Moore 2000). That said, Keel (1976:229) noted that "sites producing typical [early Middle Woodland] Pigeon series ceramics occur… are found on all topographic forms. This distribution indicates that a broad range of exploitative activities was necessary to provide subsistence for the people of this culture." Similarly, during the early Middle Woodland Patrick/Candy Creek phases in eastern Tennessee, river terraces were the site of both large and small base camps, while logistical activities took place on slopes or in the uplands (Davis 1990:230–233). The subsequent Icehouse Bottom phase in eastern Tennessee and Connestee phase in western North Carolina saw the majority of sites move to the main river valleys (Davis 1990:234; Wetmore, Robinson, and Moore 2000), though limited logistical activity persisted in the uplands and certain bottomland locales. While this late Middle Woodland concentration of sites on floodplains has sometimes been attributed to increasing reliance on horticulture (Purrington 1983:139), based on contemporary data from other parts of the Eastern Woodlands, there is little to suggest that such practices played a major role in Middle Woodland subsistence in the Appalachian Summit. Rather, "Such settlement stability should not be unexpected when we recall that the mountains and their valleys are a rich naturally diverse environment where several microenvironments can be exploited by moving only a short distance vertically, i.e., up or down the mountainside" (Keel 1976:226).

Community Organization

As mentioned above, I follow Yaeger and Canuto (2000:5) in defining a community as an "ever-emergent social institution that generates and is generated by supra-household interactions that are structured and synchronized by a set of places within a particular span of time." The emphasis on place in this concept is critical, because regular co-presence (though not necessarily co-residence) allows for "the repeated, meaningful interaction needed to create and maintain a community" (6). The scale and intensity of co-presence among hunter-gatherer communities, like those of the pre-Mississippian Appalachian Summit, vary considerably across multiple dimensions of mobility and sedentism (Kelly 1992). Using data recovered from multi-site archaeological surveys and intra-site excavations, archaeologists can evaluate these dimensions (e.g., the causes, timing, distances, and group sizes involved in individual mobility, group residential mobility, territorial shifts, and migration) and infer related demographic, sociopolitical, and cultural changes that affect community organization (Kelly 1992:57–59; Price and Brown 1985).

From a regional, multi-site perspective, Binford's (1980) distinction between foragers and collectors is perhaps the most oft-cited example of this approach. Foragers, he argued, practice frequent residential mobility (i.e., movement of the entire community from place to place) to accommodate encounter-based hunting and gathering, often in environments with evenly distributed resources of limited local abundance. The co-presence of community members (i.e., the togetherness of family members) is not necessarily ensured by the wholesale mobility of residential groups; rather, seasonal or stochastic scarcity in resources may require the dispersal of some individuals across wider areas and enable the entire community to assemble only in times and places of plenty (6-7). Under these conditions, foraging settlement generates archaeological signatures including numerous, small, seasonally specific base camps with evidence of food processing, tool production, and other activities. Although a few briefly occupied locations, such as resource encounter and procurement sites, also undergo occupation by foragers, they are nearly invisible given common survey methodologies (9-10).

At the other end of the spectrum, Binford defined collectors as hunter-gatherers who "supply themselves with specific resources through specially organized task groups" (10). Logistical mobility, in which resources are moved to people (15), not only facilitates the establishment of larger, more permanent basecamps in which the bulk of a community can maintain consistent co-residence, but it also requires the embrasure of activity specialization for resource procurement and processing. Most common in highly seasonal environments with patchy resources, collector strategies are archaeologically identifiable in settlement pattern data that include large base camps, as well as field camps ("a temporary operational center of a task group"), stations ("sites where special-purpose task groups are localized in information gathering"), and caches (temporary field storage) (11-12).

The occupation of sizable basecamps not only has important implications for the organization of the people who lived there, but also for the archaeologists who aim to study that organization. In the most general terms, the amount of time they can co-reside in one basecamp through logistical foraging encourages several processes with the potential to foster greater intra-community inequality (Kelly 1991; Price and Brown 1985). Population densities rise (Keeley 1988), the importance of food storage increases (Binford 1980), labor becomes more specialized according to skill and/or to social categories like gender (Hayden et al. 1986), territorial alliances form to ensure access to localized resources (Charles and Buikstra 1983). At the intra-site level, archaeological evidence for these changes includes the appearance of storage pits and vessels, spatial segregation of different activities, privatization of space and materials through the construction of houses and other facilities, and so-called alliance building strategies in the form of feasting remains, items of trade and exchange, or communal building efforts (e.g., Kent 1987; Kroll and Price 1991).

With this background, it is possible to examine settlement pattern and site excavation data from the pre-Mississippian Appalachian Summit with an eye towards community organization. For the Paleoindian period, no data besides isolated finds are available to discern settlement pattern and community organization, though Paleoindian big-game hunting strategies (which, admittedly, may have played a negligible roll in Appalachian subsistence) may have fostered high residential mobility and irregular assembly or aggregation among community members. A similar strategy, with "a very generalized subsistence system with whole, presumably small, social units (primarily extended families?) making unspecialized and perhaps nonseasonal use of a wide range of habitats" (Purrington 1983:125) has also been suggested for the Middle Archaic.

Interestingly, this pattern is temporally interrupted by the Early Archaic, at which time there is evidence for semi-permanent settlements in eastern Tennessee (Chapman 1985a) and special purpose logistical campsites in western North Carolina (Bass 1977). It is possible that large swaths of the Summit, encompassing land on both sides of the state line, comprised the territory or resource base of single communities, the members of which were regularly present at sites like Icehouse Bottom, Bacon Farm, and Rose Island (Chapman 1973:13:; 1975; 1977; Ward and Davis 1999:69). The internal organization of these sites can further inform discussions of Early Archaic community organization. At Icehouse Bottom, for example, Chapman (1973:13:) identified the remains of small structures and associated hearths along a terrace of the Little Tennessee River, plausibly indicative of the assembly of household groups that, together, comprised the local community even as they delineated their habitation areas into discrete units. Though occupying separate structures, these community members likely engaged in similar, plausibly shared activities, including procuring chert from local sources, and processing food at one of many prepared clay surfaces scattered across the occupation (Sherwood and Chapman 2005).

Settlement patterns attributable to a collector strategy of hunting and gathering arise again during the Late Archaic, but this time, special-purpose logistical sites as well as residential base camps existed in both the eastern and western Appalachian Summit, a line of evidence that may indicate that the logistical range or territory size of any single community had been reduced. In the Tellico Reservoir, for example, Chapman (Chapman 1985b:51–53) identified rock-filled fire pits along the first terraces above the floodplain, indicative of single-family occupations, as well as more permanent, multi-family habitation sites. One of these latter sites is the Iddins site on the Little Tennessee River (Chapman and Shea 1981; Davis 1990), which contained a dense line of hearths along the river terrace, each consisting of a pit or basin with fire-cracks of heat-spalled river cobbles. The Higgs site (McCollough and Faulkner 1973) further down the Tennessee River also witnessed more formalized occupation, this time in the form of a square, single-post structure. Survey data from Great Smoky Mountain National Park in western North Carolina complement the excavated record of east Tennessee. There, Bass (1977:77) inferred "activity- or season-specific segmentation of the Late Archaic population [in which] larger populations on the floodplain area seasonally dispers[ed] to the upper valley and coves and benches." Indeed, further northeast, along the Swannanoa River in Buncombe County, North Carolina, the Warren Wilson site includes several rock-filled pit hearths dating to the Late Archaic, reminiscent of those attributed to the semi-permanent, multi-family Iddins site. A lack of major storage facilities as a buffer against cold season lean times at these and other sites argue against year-round occupation, but it nevertheless appears that increasing numbers of people were frequently co-present at certain sites during the Late Archaic. These circumstances likely involved increasing task specialization and novel means of mitigating conflict among co-resident community members.

Occupations of semi-permanent residential basecamps intensified through the Early and Middle Woodland periods. At Warren Wilson, for instance, Swannanoa phase hearths were considerably larger than their Late Archaic predecessors (up to five feet in diameter) and subjected to repeated use, based on the presence of multiple layers of tightly packed fire-cracked and fire-clouded rocks (Ward and Davis 1999:143). Given their size, it may that these hearths served larger sub-sets of the community than earlier hearths – perhaps extended rather than nuclear families, or gender, age, or specialty-based task groups. Warren Wilson, as well as several eastern Tennessee sites (Davis 1990; Lafferty 1981; Wetmore 2002), also featured scatters of postholes, minimally representing an increased investment in processing facilities (e.g., smoking and drying racks, screens, etc.) and possibly the adoption of more substantial forms of architecture (e.g., McCollough and Faulkner 1973). Additionally, Early Woodland deposits contain the earliest evidence of storage in the Appalachian Summit, in the form of storage pits at sites like Phipps Bend (Lafferty 1981), and of substantial middens and refuse deposits, probably generated through the regular co-residence of numerous community members.

Similarly intensive residential occupations on the floodplains of the Appalachian Summit dating the Middle Woodland period have sometimes been attributed to the adoption of horticultural practices (e.g., Purrington 1983). However, extant subsistence data (discussed above) point towards continued foraging of diverse resources that likely entailed both logistical and some limited residential mobility (Davis 1990). Posthole data from presumed occupation areas at Garden Creek (Keel 1976:220), California Creek (31Md60) (Shumate et al. 1998), and Ela (31Sw5) (Wetmore 1996) appear represent warm weather structures, given their lack of wattle-and-daub wall remains and the absence of interior hearths. Furthermore, the circular structures that Wetmore (1996:223-224) identified at Ela include small (less than 8 m in diameter) and large (greater than 8 m in diameter) size classes; she suggested that the latter may have served as "multifamily Connestee dwelling or… council or townhouses." Other features typical of Middle Woodland basecamps include dense associations of hearths, shallow charcoal filled basins, large shallow pits with fire-cracked rock and burnt limestone, cobble pavements, refuse filled pits, deep storage pits, and indecipherable posthole scatters (Benyshek et al. 2010; Chapman 1975; Hollenbach and Yerka 2011; Keel 1976; Schroedl 1978; Wetmore 1996).

Considered together, these data provide ample evidence for repeated, long-lasting (if not permanent) occupations comprising the aggregation of multiple family groups, for a variety of cooperative subsistence-related and other activities. Such aggregation doubtlessly precipitated the development of certain intra-community, supra-familial social institutions that allowed members to co-exist despite reduced mobility (i.e., reduced opportunity to "vote with your feet") while simultaneously promoting increased specialization. That said, the archaeological record described above provides little evidence of an "incipient stage of development of formalized status differences" (Purrington 1983:140-141); efforts to demonstrate otherwise, such as Collins' (1977) investigations at the Macon County Industrial Park Site, have proven equivocal at best (Purrington 1983). Nevertheless, Middle Woodland hunter-gatherer-gardeners *do* appear to have been articulated into larger, more formalized communities than had previously existed in the Appalachian Summit. While the mechanisms for such articulation remain imperfectly understood, suffice it to say for the moment that no extant data exist that would support a formulation of a ranked, hierarchical society for the Middle Woodland Appalachian Summit. This scenario requires fresh interpretations of the Middle Woodland monumentality as a set of ritual or ceremonial practices tied to the integration of and between communities; they did so in the absence of entrenched social inequalities.

Extra-Local Exchange and Interaction

As members of these foraging Appalachian Summit communities fostered social relationships among themselves through regular assembly and co-residence, they also interacted with other people outside the probably fluid boundaries of these local constituencies. Given the mobility of Appalachian Summit inhabitants and those of neighboring regions during the pre-Mississippian era, such interaction should come as no surprise. Numerous ethnoarchaeological and archaeological studies of foraging communities have demonstrated that these groups maintain ties of varying intensities across varying distances, for a variety of reasons, from subsistence risk buffering and creating a mating network and viable biological population, to more generalized information exchange related to material or ideological resources. The cross-cultural regularity of these behaviors suggests that similar mechanisms were likely working in the pre-Mississippian Appalachian Summit, though certain lines of evidence also point towards interaction grounded in ceremonialism rather than risk management, as the record at Garden Creek (discussed later) demonstrates.

For the most part, archaeologists have measured the presence of interaction with non-local groups in the Appalachian Summit through the identification of artifacts of non-local origins or styles. In that vein, Purrington (1983) interpreted shifts in stone tool raw material during the Archaic as evidence of locally distinctive populations. During the Early Archaic, he argued, western North Carolina hosted both resident and visiting populations, because stone tools were made of both local and non-local materials. In contrast, the virtual exclusion of non-local stone during the Middle Archaic signals a drop in the presence of non-local visitors, and presumably, of locals' interaction with them. Although the use of local lithic material continued into the Late Archaic, the identification of soapstone vessel fragments at sites such as Iddins and Apple Barn in eastern

Tennessee (Wells 2006) and Warren Wilson in western North Carolina (Keel 1976) suggest that local populations may have been interacting with groups further afield. This material culture category, though more-or-less locally available in western North Carolina, northern Georgia, and east-central Alabama, moved extensively across the American Southeast during the Late Archaic. In fact, Wells (2006, cited in Hollenbach and Yerka 2011) claims that "the Tennessee valley – and its inhabitants – may have played an important role in transporting vessels within the Poverty Point exchange network." A single line of evidence pointing toward similarly extensive trade networks has also been identified at the Ravensford Tract in Swain County, North Carolina: fragments of a Stallings fiber-tempered vessel, mostly likely from the coastal plain or piedmont of Georgia (Keel 2007:9).

The wholesale addition of ceramics – whose raw materials and stylistic attributes can be used to trace exchange and other inter-regional relationships – to the Woodland archaeological record allows for more nuanced inferences regarding extra-local interaction. For example, stylistic similarities have been identified not only between Early Woodland Swannanoa pottery from western North Carolina and Watts Bar pottery from eastern Tennessee, but also between these wares and Kellogg ceramics from northern Georgia and Vinette pottery from eastern New York. While Ward and Davis (1999:146) maintain that "this innovation did not appear in isolation but was part of a technological revolution of regional scope," the means by which early pottery emerged and spread almost certainly required some on-the-ground contact among groups across the Eastern Woodlands, especially considering the similarities in decorative techniques and certain technological attributes. With regard to other forms of material culture with wide geographic distribution, Keel (1976:230) has also undermined the role of inter-personal interactions: "Contacts with the Adena Culture of the Ohio Valley seem to be lacking during the Swannanoa period or the later Pigeon phase. To be sure, the tubular pipes recovered at Warren Wilson and some gorget forms found at a number of sites may resemble artifacts found at Adena sites, but I believe these represent generalized Early Woodland concepts rather than unique Adena ideas." However, this does little to explain how "generalized Early Woodland concepts" came to be shared in the first place; in my mind, some form of contemporary down-the-line or face-to-face interaction is required to provide such an explanation.

For the Middle Woodland period, archaeologists have been more generous in attributing shared ceramic attributes to pervasive inter-regional interaction. The appearance of distinctive paddle stamped surface treatments first during the Pigeon and Connestee phases has been cited as evidence of stylistic influence from the Georgia piedmont (Keel 1976:229). In fact, Keel (1976:228) suggested such decorative similarities among ceramic assemblages from eastern Tennessee, western North Carolina, and northern Georgia resulted from an "interaction sphere" encompassing the entire Appalachian Summit and stretching (at least slightly) beyond it to the south. While cross-mountain linkages are demonstrated by the presence of sand-tempered Connestee ceramics in eastern Tennessee and, to a lesser degree, limestone-tempered Candy Creek ceramics in western North Carolina (Wright 2013), southern connections are further bolstered by the identification of Swift Creek and Napier pottery, produced in Georgia, at sites like Icehouse Bottom, Patrick, Candy Creek, Ocoee, Garden Creek, and Ela (Elliott 1998). Additionally, the emergence of platform mound architecture during the Connestee phase, discussed in greater detail below, indicates that stronger ties linked the Appalachian Summit to the greater Southeast during the Middle Woodland period than during any preceding era.

The Connestee phase also witnessed an increase in interactions with the Midwest, as evidenced by material culture associated with the Hopewell Interaction Sphere found at a handful of sites in the Summit. As summarized in Chapter 1, these Hopewellian assemblages are typically small in quantity, and include ceramics produced in southern Ohio or using surface treatments most common in that region (e.g., rocker-stamping), bladelets made of local and non-local raw materials (e.g., Flint Ridge chalcedony), sheet mica fragments, anthropomorphic figurines, cut deer mandibles, and small copper objects. Although such materials were identified in non-monumental contexts at Icehouse Bottom, their recovery from Garden Creek Mound No. 2 and Biltmore Mound suggests that they played a role in ceremonial activities at these sites. The evidence, such that it was before recent research at the Garden Creek site, has been aligned to argue for the multiple extra-local interaction scenarios: Chapman and Keel's (1979) traveling Hopewell hypothesis and Walthall's (1985) ceremonial congregation model (see Chapter 1). No matter what framework is used to demystify Appalachian Summit Hopewell, it is important to note that some of the Hopewell assemblages described above are, for the most part, fairly late – both in the regional Middle Woodland chronology and relative to the florescence of classic Hopewell in Ohio (Anderson 2013). If these dates hold, then any interpretation of interaction between these regions must address how and why Hopewell material culture appears or persists in the Appalachian Summit at the tail end of – or even after – the Midwestern Hopewell episode.

Ceremonialism and Monumentality

As with extra-local interaction, archaeologically visible evidence of ceremonial activities in the Appalachian Summit increases dramatically during the Middle Woodland period. The simultaneous intensification of interaction and ceremonialism is most apparent at the region's few (though certainly not singular) monumental sites, including conical mounds and rock graves/cairns identified by early surveyors in the Little Tennessee River Valley (Davis 1990: 235, 237), the Kittrell burial mound (40LD1830) near Icehouse Bottom (Hollenbach and Yerka 2011), the Biltmore Mound (31BN174) (Kimball, Whyte, and Crites 2010, 2013), and, of course, Garden Creek Mound No. 2 (Keel 1976). Leaving a discussion of Garden Creek's monumental architecture to Chapters 5 and 6, comparative data, particularly from Biltmore, reveal important aspects of Middle Woodland ceremonialism and monumentality and hint at the ways in which such practices shaped the local social landscape while mediating both intra- and inter-regional interactions.

The Biltmore Mound, recently the subject of multi-phase excavations by Appalachian State University (summarized below from Keel, Whyte, and Crites 2010, 2013), is a sub-rectangular, multi-stage Middle Woodland platform mound that by-and-large conforms to the Kolomoki pattern of mound architecture defined by Knight (Knight 1990, 2001; see Chapter 1). As such, it is possible and appropriate to consider its construction sequence and associated assemblages as the remains of various integrative activities and rituals (sensu Lindauer and Blitz 1997). The mound, originally two meters tall and more than 30 m in diameter, resulted from several construction episodes that doubtlessly required some planning and concerted, communal labor effort. Briefly, three fired, prepared floors comprising the mound's basal strata overlaid a 50 cm-thick pre-mound midden. These were then capped by at least four zones of distinctively colored mound-fill, with varying concentrations of charcoal and cultural remains. These strata were flanked at their outermost extent by a seven meter wide ditch with several zones of artifact-rich fill.

Despite the identification of several dozen postholes in and around the mound, none aligned to form the outlines expected for Woodland-period roofed structures or houses. With that in mind, some of the posts likely represent the remains of scaffolds, drying racks, and other expedient features involved in cyclical, communal activities like feasts – a common pattern at Kolomoki pattern sites. Others, however, were filled with sand (following post removal) and appear to conform to the shape of a ditch which surrounds the mound. Kimball, Whyte, and Crites (2010:47) suggest that these "could represent an open structure of a 'screen' for ritualized demarcation of the ceremonial space of the mound." Another post, in the center of the mound's summit, is notably massive: 50-cm in diameter, and at its base, 1.2-m below the current ground surface. The authors liken this find to similarly large "pageant poles" and "busk poles" known from other Southeastern sites, perhaps representing a cosmic axis mundi with significance to shamanistic activities and worldviews (2010:48).

Diverse material culture assemblages from Biltmore also implicate ceremonial activities during the site's Middle Woodland occupation. First, certain artifact classes – mica cutouts, copper objects, crystals, shaped antler tines, and gorgets – have also been recovered from contemporaneous sites in nearby regions where there is limited or no evidence for domestic or residential occupation, including Hopewell earthworks and Kolomoki pattern mounds. The ritual significance of mica, in particularly, is bolstered locally by the association of cut sheet mica with a Middle Woodland burial at the Macon County Industrial Park site (Collins 1977). Second, Biltmore has yielded pigments and bone awls, gar scales, and turkey spurs that may have been used as tattooing needles or scratchers (46). These plausibly provide indirect evidence of body modification practices, which held not only socio-political but also religious significance in the pre-Columbian Eastern Woodlands (Deter-Wolf and Díaz-Granados 2013). Third, and intriguingly, certain faunal remains, including shaped?? black bear, red wolf, gray wolf, and dog mandibles, a black bear baculum, beaver and woodchuck incisors, and bobcat, fox, and raccoon jaws, a red-tailed hawk talon, and a red-shouldered hawk tarsometatarsus, may constitute "power parts" of animals with significance in Hopewell ritual. Drawing on Carr and Case's study of the material correlates of leadership in Ohio Hopewell (Carr and Case 2006:193–213), Kimball and colleagues (54-55) asserted, "It is not difficult to envision these items as part of ritual paraphernalia, which when combined with bear or wolf hides constituted ritual costumes of classic shamans." Moreover, many of these specimens were broken and/or burned prior to their deposition, suggesting that they may have been ritually "killed" in the course of ritual activities. Finally, Biltmore's uniquely well-preserved faunal assemblage indicates that feasts likely accompanied shamanic or other ritual activities at the site. Though high-yield butchery units and rare species are lacking, the assemblage's monumental context and remarkable density suggest "intensive, periodic feasting rather than gradual accumulation or redeposition of domestic surface refuse from the habitation area of the site" (55).

These multiple, conventionally agreed-upon lines of evidence for ritual activities at the Biltmore Mound have encouraged additional speculation regarding the ceremonial significance of the site within the larger Appalachian Summit cultural landscape. Of potential significance is the placement of the mound on a line between Mount Mitchell, the highest peak in the eastern United States, and Mount Pisgah, the second highest peak in the Asheville Basin rim (Kimball, Whyte, and

Crites 2013). In addition, the authors have recently inferred several possible astronomical alignments between site features and certain natural features in and around the Asheville Basin. They determined, for instance, that a line between the southwestern corner of the mound and the large ritual post in the mound center would have lined up with the sunrise over Mount Mitchell on the summer solstice in AD 590. Interestingly, few of the peaks, gorges, and other features for which the authors proposed alignments with Biltmore are visible from the site itself. If such alignments really were incorporated into the design of the site, then those who planned and executed its construction must have had intimate and extensive knowledge of the local topography and environment. This is certainly to be expected, considering that similar knowledge was critical to livelihoods grounded in seasonal mobility and the exploitation of rich but dispersed natural resources.

In sum, then, the archaeological evidence from Biltmore (and, as will be discussed shortly, at Garden Creek) serves to synthesize a variety of the cultural patterns associated with pre-Mississippian occupation of the Appalachian Summit. As in earlier periods, the inhabitants of (or visitors to) Biltmore consumed a variety of wild, locally available plant and animal species, made and used pottery styles that appear to have an extended history of local development (Keel 1976; Kimball personal communication 2012), and aggregated at least on a seasonal basis to affirm intra-community ties through shared participation and aggregation or co-residence. What stands out as unique about these Middle Woodland site, however, at least in comparison with earlier Appalachian Summit prehistory, is the presence of monumental architecture and large quantities of non-local artifacts, particularly artifacts with Midwestern provenance. In this regard, then, it would appear that a complete understanding of the social dynamics that characterized the Middle Woodland period must account not only for the persistence and development of local Appalachian traditions and the increased effects of extra-local influences, but also for the ways in which nonlocal and local people and goods interacted with each other, perhaps generating a social experience greater than the sum of its parts.

Chapter Summary

Drawing on survey and excavation data from several decade of research in east Tennessee and western North Carolina, several diachronic patterns of continuity and change can be observed in the pre-Mississippian Appalachian Summit. From the Paleoindian through Woodland periods, the region's inhabitants practiced varying degrees of settlement mobility as they targeted a variety of abundant but patchily distributed plant, animal, and geological resources. Although the sizes of some of these settlements and evidence for more complex intra-group social configurations increase through time, there is no indication that permanent residents comprised the full spectrum of Appalachian Summit community organization before AD 1000. Rather, whether through long-distance travels to procure resources or encounters made possible by logistical or residential mobility strategies, pre-Mississippian Appalachian peoples likely experienced interactions with a variety of groups, at a variety of scales. In fact, one might characterize a pre-Mississippian "tradition of interaction" that formed a critical part of the cultural matrix of these societies.

Even so, as mentioned above, the Middle Woodland period *does* appear to have witnessed some sorts of interaction and innovation that were qualitatively different from experiences of intra- and inter-community contact among Appalachian Summit foragers. Geochemically and stylistically non-local artifacts appear in greater quantities at this time than in any other preceding period, and monumental architecture is erected for the first time. Having now placed these novel phenomena in regional and historical perspective, the rest of this case study seeks to clarify the connections between extra-local interactions, monumental architecture, and local traditions by using the Garden Creek site of North Carolina.

CHAPTER 3

ARCHAEOLOGICAL INVESTIGATIONS AT GARDEN CREEK, 1886-2012

For more than a century, the Garden Creek site has received intermittent attention of historians, antiquarians, and archaeologists. These investigations provide an important springboard for tackling new questions about diachronic changes in social and ceremonial structures related to cross-cultural interactions and monumentality. Moreover, the past several decades of investigation at the Garden Creek site proper have been complemented by extensive archaeological survey within the greater Appalachian Summit, including intensive horizontal excavations at several nearby sites, and a substantial number of smaller-scale projects mostly conducted in the course of cultural resource management (as introduced in Chapter 2). These datasets serve to place Garden Creek in its local context and to orient it in both space and time, relative to other social processes observed in the pre-Columbian Appalachian Summit.

Having addressed some of these intra-regional issues in Chapter 2, I shift my focus in the following chapters to the Garden Creek site itself as a particular locus of past activities with the potential to illuminate the dynamics of the broader social milieu, at the site level and inter-regional scales. Before exploring these themes, however, I must introduce what we think we know about Garden Creek from previous research, and outline the general methodology of the most recent phase of investigations there; these have yielded critical new information for interpreting the site's position within a local historical trajectory as well as its relationships with extra-local spheres of interaction.

Geographic Background: The Pigeon River Confluence Area

Even though Garden Creek is named for a small tributary, the major waterway associated with the Garden Creek site is the Pigeon River, which itself is a tributary of the French Broad and, in turn, Tennessee Rivers. The Pigeon originates in the high peaks of present day southern Haywood County, and flows generally northward into Tennessee. In fact, roughly three-quarters of its watershed is confined to Haywood County, the eastern and western boundaries of which also serve to separate the upper French Broad and Little Tennessee drainages, respectively. In many respects, the geomorphological and ecological attributes of the Pigeon River drainage are typical of the Appalachian Summit more broadly. The entire suite of Southern Appalachian landforms (see Table 2.1) can be found in this area, and several peaks near the Pigeon River headwaters approach 2000 m in elevation. The plant and animal resources supported by this variety of settings is presumed to be similarly diverse, and was likely extensively traveled over and exploited by indigenous inhabitants. For example, the east and west branches of the Pigeon River, which converge about 3.5 river-miles (5.6 km) upstream from Garden Creek (Figure 3.1), would have provided canoe-navigable access of higher elevation hunting grounds or other resources, including crystal quartz and mica outcrops (Scott Ashcraft, personal communication).

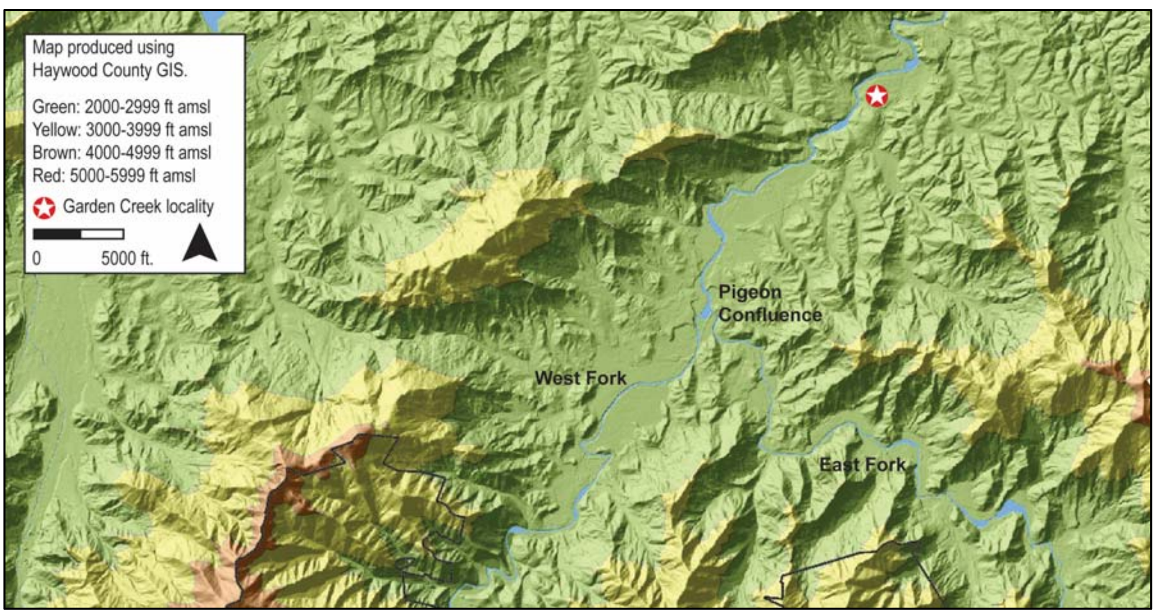


Figure 3.1. The Pigeon River confluence area, Haywood County, NC.

The exact landform on which the Garden Creek site rests is a small floodplain and intermontane terrace located between the Pigeon River and Garden Creek, at approximately 800 m above sea level (Figure 3.2). Elevation is lowest immediately adjacent to these waterways, particularly near their confluence, but the southwestern portion of the landform (of most interest to this study) comprises a gently sloping terrace that does not appear to be flooded even under catastrophic conditions (Bob Cathey, personal communication).

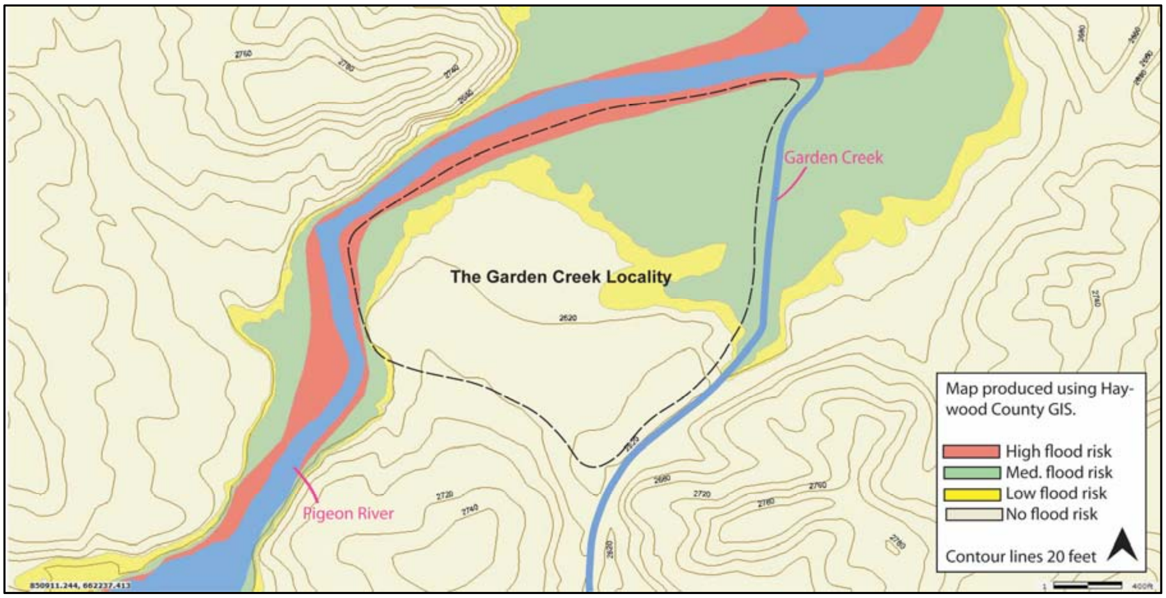


Figure 3.2. The Garden Creek locality, with 2004 flood assessment zones.

This fact is especially important when considering the likelihood of subsurface preservation at Garden Creek. As best we can tell, the modern day land surface of the southwestern part of the landform closely approximates what it was during the Middle Woodland period; there is no reason to expect that alluvial deposits would cap archaeological deposits (and indeed, we found no evidence of this in excavation). Similarly, although steep-sided mountains exist to the northwest and southeast of the Garden Creek terrace, in both cases, the landforms are separated by bodies of water (the Pigeon River and Garden Creek, respectively) that would have insulated the archaeological locality from colluvial deposits. Under these circumstances, it is likely that historic and modern activities greatly affected evidence of prehistoric occupation of the site, particularly those that occurred on or near the natural ground surface. It is thus necessary to identify the historic activities that occurred on the landform and surmise the effect they had on the archaeological record before attempting to interpret the significance of these remains. At Garden Creek, these activities include not only agricultural practices, but also several amateur and professional archaeological projects.

Landholding History and Museum Expeditions, 1800-1919

Although the Spaniards first explored the Appalachian Summit in the sixteenth century AD (Beck 1997; Hudson 2005), the most mountainous regions of North Carolina deflected sustained European occupation until the mid-1700s. Drawn by lucrative trading opportunities with the indigenous Cherokee, early white settlers were thin on the ground. However, as their numbers grew, so did their encroachment on Cherokee lands, resulting in several boundary modifications between colonial and Indian territories, mounting discontent, and eventually, outbreaks of violence coincident with the French and Indian War and the American Revolution (Hatley 1993).

By the 1830s, displacement of the Cherokee and other southeastern tribes became the official policy of the United States government, and many Native communities were removed from their ancestral lands and forced to move west along the Trail of Tears (Ehle 1988). Through considerable determination and a series of shrewd land deals, some Cherokee remained in North Carolina, in the more remote pockets of Jackson and Swain Counties, while others were eventually able to return to the mountains from Oklahoma (Finger 1991). The descendants of these individuals now comprise the Eastern Band of Cherokee Indians.

As the Cherokees were pushed across the Blue Ridge, their ancestral territory increasingly was ceded to European-American settlement. Among the earliest post-Revolution homesteaders in Haywood (then Buncombe) County was the family of Henry Plott. In 1880, they moved to west from Cabarrus County, North Carolina, across the Eastern Continental Divide to the banks of the Pigeon River just upstream from present day Canton (Allen 1935). They made a first attempt at farming on the banks of at what is now known to archaeologists as the Garden Creek locality. A few generations later, Pingree Plott, his wife Charity Osborne, and their six children established a more lasting foothold on the banks of Garden Creek site in 1867; their white clapboard farmhouse still stands there today (Coltman 2004). Under the Plott family, then, from the early 1800's until the farm was sold for residential development the 1950s, the Garden Creek site was subjected to regular plowing, though one long-time resident recalls that even late in this agricultural history, the plowing was accomplished with a horse-drawn plow instead of a potentially more destructive mechanized plow (Joe Worley, personal communication).

Despite his plowing regime, Pingree Plott managed to protect portions of the Garden Creek site from what amounted to looting activities in the late 19th century (though see Coe 1983:163–164). At this time, antiquarians Mann S. Valentine and his sons were mounting expeditions to southwestern North Carolina to collect artifacts for their museum in Richmond, Virginia. With the help of local residents, they removed artifacts and, in some cases, human remains from the Peachtree Mound (31Ce1), the Jasper Allen Mound (in Jackson County), the Kituwha Mound (31Sw2), the Nununyi Mound (31Sw3), the Birdtown Mound (31Sw6), the Cullowhee Mound (31Jk2), the Carr Mound (in Swain County), the Wells Mound (in Haywood County), and one of the mounds at Garden Creek (31Hw2) (Steere 2011). Although notes related to these explorations were recorded and later curated by the Research Laboratories of Archaeology at UNC, they stand as a testament to the destruction wrought by the Valentines' digging, and only mention the "relics" deemed worthy of museum display (Keel 1976:72–73).

Pingree Plott refused to allow the Valentine expedition, then consisting of Valentine himself and local enthusiasts Mr. and Mrs. A. J. Osborne, to open what would become known as Garden Creek Mounds 1 and 3, insisting that they "'Let the dead rest'" (Valentine n.d. A:133, cited in Keel 1976:74). Unfortunately, the owner of Garden Creek Mound No. 2, then known as the Smathers Mound, had no such scruples. In January 1880, Mr. and Mrs. Osborne and Mr. and Mrs. Smathers dug two deep holes into the mound. They encountered shell and bone beads, a bear's tooth, two bone pins, a quartz plummet, an incised bone tablet, cut mica fragments, charcoal, a "large stone weight with concave center" (probably a chunky stone), and the remains of three individuals (Valentine n.d. B:130, cited in Keel 1976:73). Subsequently, systematic excavations at Garden Creek Mound No. 2 revealed the spatial extent of this antiquarian undertaking: the Valentine pits, one near the western edge of the mound and the other directly through its center. The first measured around 6 x 4.5 m and 1 m deep, and the center pit measured 1 x 1.5 m and 0.5 m deep. Undoubtedly, these disturbances exacerbated the damage already being done to the mound by plowing; by 1915, "the only remaining evidence of the existence of this mound [was] a slight elevation" (Heye 1919).

Soon after, the Valentines were implicated in the purchase of fraudulent soapstone artifacts and abandoned their explorations in western North Carolina (Ward and Davis 1999:7), at which point the Garden Creek site became a data point in a much less invasive research program. In the 1880s, Cyrus Thomas of the Smithsonian Institution commissioned John W. Emmert and James Mooney to record the location of mounds in western North Carolina, and in the process, generate evidence to refute the Moundbuilder myth popular at the time (Steere 2011; Ward and Davis 1999). Although written results of these efforts are fairly meager, amounting to a county-by-county list of mounds and their approximate locations (Thomas 1887, 1891, 1894), Mooney provided Thomas with a set of annotated 1886 U.S.G.S. 30' series quad maps, on which he marked the locations of mounds and other important sites identified in the course of his fieldwork with the Cherokee. Now stabilized, scanned, and made available online by the Smithsonian Institution, the North Carolina-Tennessee Asheville Sheet includes the first accurate map and location of at least two of the mounds at Garden Creek (Figure 3.3).

Except for a brief visit by National Park Service surveyor and historian Hiram S. Wilburn, during which he photographed Mound No. 1 (Steere 2011), the Garden Creek site went unvisited by the archaeological community for the next 25 years. In 1915, George G. Heye returned to Plott Farms to excavate Garden Creek Mound No. 3 for the Museum of the American Indian-Heye Foundation. At the time, this mound was conical in shape, around 60 feet (18 m) in diameter and 13 feet (4 m) tall (Heye 1919:37). By excavating a trench from one side of the mound to the other, Heye was able to observe the mounds complex stratigraphy, which included (from top to bottom) a stratum of black loam, followed by a layer of river cobbles overtop a mantle of rock slabs, which in turn covered a pile of yellow sediment (Heye 1919:38). Keel later drew parallels between this stratigraphic profile and those of Garden Creek Mound No. 1 and the Peachtree Mound to argue that Mound No. 3 comprised an earthlodge and overlying ceremonial deposits, and therefore dated to the Pisgah Phase (Keel 1976:70).

Heye himself was less specific as to the mound's date, since, his work at the site pre-dated the definition of prehistoric Appalachian Summit phases by more than fifty years. He tentatively identified the seven burials encountered during excavation as "Cherokee," on account of their relatively shallow locations above the substantial rock slab mantle. He further proposed that Mound No. 3, along with Mound No. 2, served to mark the edges of a playing field for the Cherokee ballgame, perhaps associated by the Cherokee town of Kanuga, which was originally located just upstream at the fork of the Pigeon and was named for a comb or other implement used to scratch ball players (Mooney 1900, cited in Heye 1919).

In contrast to these interpretations, Roy S. Dickens (1976), whose excavations at the Warren Wilson site (31Bn29) and Garden Creek Mound No. 1 (31Hw1) provided the foundations for longstanding views of Pisgah, argued that the construction of Mound No. 3 pre-dated this relatively late phase. I am inclined to agree with Dickens for several reasons. First, although the inventory is far from complete, many of the artifacts recovered from mound fill and features are diagnostic of the Middle Woodland period, in particular the "knob like legs" (Heye 1919:41) attributable to Pigeon and Connestee tetrapod vessels. The admittedly "high-graded" (Keel 1976:70) assemblage of curated materials is also dominated by Middle Woodland materials, including Connestee (n=95) and

Pigeon (n=22) sherds, comprising 81% of the extant ceramic assemblage; non-local Swift Creek Complicated Stamped, Napier Stamped, and Mulberry Creek sherds, attributable to the Middle Woodland in Georgia (Swift Creek and Napier) and Tennessee (Mulberry Creek); and several objects often associated with Middle Woodland ceremonial interaction spheres like Hopewell, such as polished galena nodules and sheet copper (Keel 1976:71). The prevalence of mica in 9 of the 17 sub-mound pits that Heye excavated further supports a Middle Woodland attribution (Heye 1919:38). Finally, Mound No. 3 occupies the same half of the Garden Creek landform as at least three other Middle Woodland monuments (i.e., mounds and earthworks) and is quite a distance from later occupation areas; this relative proximity may indicate contemporaneity.

Figure 3.3. Part of James Mooney's annotated USGS map from the 1880s; two mounds at Garden Creek circled at bottom left.

In the course of mound excavations, Heye made several other observations about the Garden Creek locality that merit consideration, particularly in light of more recent survey and testing. For example, he notes (1919:36-37):

> Near these mounds, and extending along the bank of the river for a distance of more than a quarter of a mile, is a stretch of ground the surface of which is six feet below

> the elevation of the land from which the mound rises, and which, owing to its sheltered position, would be been an ideal site for a camp. This plain is now flooded during spring freshets, and its earth is intermixed with sand, but every season many potsherds and stone implements are uncovered by the plow. The surface from the ridge of the mound to this low land is covered thickly with similar fragmentary artifacts.

Heye's commentary is the first published indication that the Garden Creek site included occupation areas in addition to earthen mounds, and the only observation of its kind made while the land in question was under cultivation. Subsequent field work at the site postdates extensive plowing and the establishment of residential lawns, and as a result, assessment of the occupation areas using surface artifact finds has been necessarily limited. However, geophysical survey techniques and limited shovel testing have been employed recently to evaluate the presence and extent of Heye's hypothetical campsite on the lower flood plain.

Forty-five years elapsed between Heye's excavation of Garden Creek Mound No. 3 and subsequent archaeological research. For much of that time, the site underwent continued plowing and farming, but in the mid-1950s, the Plotts sold most of their property for residential development. The first houses of what would become Plott Farm neighborhood were built in 1958 (one directly on top of the deflated remains of Mound No. 3). In 1965, Mr. Clarence Cathey began erecting a house closer to the river, and was using the deflated remains of Mound No. 2 as dirt fill for construction. Hearing of this destruction, Bennie Keel, then a field director for the University of North Carolina's Cherokee Project, contacted Cathey and "requested permission, which Mr. Cathey kindly gave, to investigate the remaining portion of the mound" (Keel 1976:74). Thus began the first modern, systematic investigation of the Garden Creek site, a project that generated many of the materials analyzed in this study.

The Cherokee Project and Mound No. 2, 1965-1966

In the early 1960s, under the direction of Dr. Joffre Coe, archaeologists from the University of North Carolina Research Laboratories of Anthropology (now Archaeology, and RLA from here) undertook pedestrian survey across nine counties in southwestern North Carolina, resulting in the identification of 1500 prehistoric sites, 600 of which were surface collected (Keel 1976). These efforts represented the first stages the Cherokee Project, a decades' long research program that sought "to define Cherokee culture at the contact period and see whence it came" (Coe 1983:170).

Armed with the results of these surveys, Coe obtained funding from the National Science Foundation in 1965 to conduct large scale excavations at three localities in western North Carolina: Coweeta Creek (31Ma34), Warren Wilson (31Bn29), and Garden Creek (31Hw1, 2, 3, 7, & 8). Subsequent studies of materials from some of these sites form the bulk of published research on Appalachian Summit archaeology (e.g., Dickens 1976; Keel 1976; Moore 2002; Rodning 2002, 2009a, 2009b; Rodning and VanDerwarker 2002).

At Garden Creek, two spatially discrete components were the focus of excavations (Figure 3.4, after Keel 1976). Near the confluence of the Pigeon River and Garden Creek, Garden Creek Mound No. 1 (31Hw1) had survived until the 1960s with relatively little disturbance besides plowing. Excavations on and around this low rise revealed a series of Pisgah phase earthlodges capped with layers of cobbles and soil and three Pisgah phase houses in the adjacent occupation area (31HW7) (Dickens 1976); the single radiocarbon assay from this Pisgah component dated to AD 1435 ± 85.

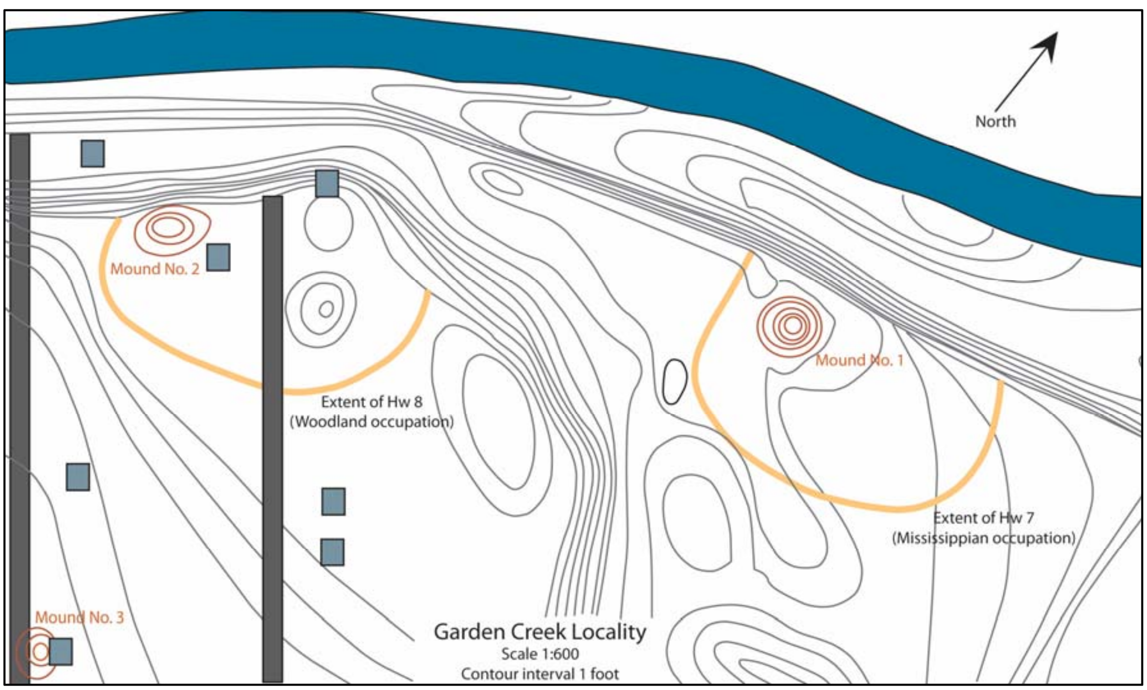


Figure 3.4. Middle Woodland and Mississippian components at Garden Creek.

Approximately 350 m further upstream, Garden Creek Mound No. 2 (31Hw2) was considerably worse condition, after 150 years of plowing, the Valentines' probing, and partial bulldozing. With that in mind, the results of Bennie Keel's 1965-1966 excavations there are especially remarkable. He and his crew excavated all that remained of Mound No. 2 to the subsoil, revealing two episodes of mound construction atop a pre-mound midden and occupation (Keel 1976:74-75). Keel used a broad, horizontal excavation strategy to uncover the full extent of each of these strata across a 45-x-85-foot block, and produced detailed maps of the many postholes and features observed across these surfaces. Horizontal and vertical provenience were maintained by excavating in 5 x 5' units in natural levels or, where these were difficult to demarcate, in arbitrary 0.2 ft.-thick levels. All deposits were screened through 1/2 inch mesh. Moreover, 8 burials and 54 features were excavated individually and water screened through window mesh, ensuring thorough recovery. All materials collected during this process, including charcoal from most features and many other excavation loci, were packaged and labeled according to this provenience information, and are presently curated at RLA.

For his dissertation, later published in the seminal volume *Cherokee Archaeology* (Keel 1976), Keel undertook preliminary analyses of these data and, in the process, put Garden Creek on the proverbial map of Eastern Woodlands archaeology. First, of particular importance to western North Carolina archaeology, he was able to use the stratified deposits of Mound No. 2 to build a relative ceramic chronology for the Appalachian Summit Early and Middle Woodland periods, consisting of (in order from oldest to most recent) the Swannanoa, Pigeon, and Connestee Series. Temper material was the principal attribute used to define this ceramic sequence; similar surface treatments and vessel forms characterized all series, though sometimes in different proportions. A fourth series, Pisgah, which had been defined in temporally later contexts at other sites (e.g., Warren Wilson), was observed almost exclusively in the plowzone above and burials within Mound No. 2, indicating that these interments were intrusive into the overall construction (Keel 1976: Tables 13, 16). Keel's study of the ceramics' superimposed distribution effectively demonstrated that Garden Creek Mound No. 2 was erected during the Middle Woodland period. This conclusion was more or less supported by the single radiocarbon date obtained by Keel for the site: 805 AD ± 85, from a pit in the secondary level of mound construction that necessarily postdated earlier mound building and midden generating activities (Keel 1976:86).

The mere recognition that Garden Creek Mound No. 2 – which Keel asserted to be "clearly a platform for the foundation of some type(s) of structure" (Keel 1976:153) – dated to the Middle Woodland period was ground-breaking, since cultural historic formulations at that time regarded platform mound construction as characteristic of and restricted to the later Mississippian period. In addition, Keel's research at Mound No. 2 provided some of the earliest and strongest evidence for

Hopewell interaction linking people in the Midwest to those in the Appalachian Summit (Keel 1976:102). Such evidence included a variety of non-local ceramic types; ceramic figurine fragments; prismatic blades made from Ohio Flint Ridge chalcedony and gray and black Ridge and Valley cherts from Tennessee; polyhedral cores; cut mica; copper beads, sheets, and pins; and a cut deer mandible. Since the Garden Creek excavations, apparently Hopewellian material culture has also been identified at other sites in the Southern Appalachians, perhaps most notably at Icehouse Bottom in east Tennessee (Chapman 1973), Tunacunnhee (Jefferies 1976), and Leake (Keith 2010, 2013) in northern Georgia, and Biltmore Mound in western North Carolina (Kimball, Whyte, and Crites 2010, 2013). Combined with the evidence from Garden Creek, these findings bolster arguments (e.g., Chapman and Keel 1979; Walthall 1985) for some sort of connection between the Ohio Valley and the Southern Appalachians in the early centuries AD.

In addition to the work on Mound No. 2 proper, Keel and his crew tried to determine if an occupation surrounded the mound and how extensive it was. Although the existence of houses and lawns severely limited their ability to conduct pedestrian survey, they opportunistically assessed the distribution of artifacts in garden plots, roadside ditches, and construction areas around the main excavation block. Using these data, Keel approximated the extent of the surrounding occupation (31HW8) – then viewed as a village, presumably by analogy to the pattern observed around Garden Creek Mound No. 1 – in his 1976 site map (Figure 3.4). Almost immediately following Keel's fieldwork, this area underwent further residential development as new homes were built, driveways paved, and lawns established. By and large, the so-called Middle Woodland village at Garden Creek was presumed at best inaccessible, at worst entirely destroyed, before the most recent phase of research was initiated there in 2010.

Garden Creek Archaeological Project, 2010-2012: Field Methods

Since the Cherokee Project ended in the 1970s, most (though not all, e.g., recent excavations at the Biltmore Mound and village) archaeological investigations in the Appalachian Summit have been conducted in the course of cultural resource management, by contract archaeology firms, the US Forest Service, or the North Carolina Office of State Archaeology, often in consultation or collaboration with the Tribal Historic Preservation Office of the Eastern Band of Cherokee Indians. In many cases, the need for salvage and mitigation favors exhaustive reporting at the expense of innovative considerations of the particular anthropological processes that led to the formation of the western North Carolina archeological record. Furthermore, because many of these reports exist only in the unpublished gray literature, their results are rarely synthesized, so robust interpretations of synchronic and diachronic variability in the Appalachian Summit are limited (though see Steere 2011 and other reports on the Cherokee Mounds and Towns Project for a recent notable exception). The situation is particularly apparent for the Appalachian Summit Middle Woodland. Drawing on Keel's observations at Garden Creek, archaeological research on this period, at least from the late 1970s to the early 2000s, concentrated on the presence or absence Pigeon and Connestee ceramics and the recognition of Hopewellian material culture. Occasionally (e.g., Bass 1977; Benyshek et al. 2010; Boyd Jr. 1986; Davis 1990; Chapman 1973:13:; Schroedl 1978; Wetmore 1996), the remains of Middle Woodland occupations were identified during survey or salvage excavations, but these results were seldom integrated with other data sets to allow for theorizing about social organization, landscapes, and interactions.

With this background, the Garden Creek Archaeological Project (GCAP) was initiated in 2010 with the overarching goal of contextualizing unprecedented Middle Woodland monumentality and evidence for Hopewellian interaction at Garden Creek within the local social landscape. The large, well-provenienced collections from Keel's 1965-1966 excavations provided an incomparable starting point for analysis. Keel's work on these materials left considerable room for further examination and interpretation, particularly regarding the spatial distribution of artifacts and features across mound and sub-mound surfaces as well as more subtle variability among the ceramics.

To complement this reanalysis, I planned to undertake field investigations of non-mound components at Garden Creek – assuming, of course, there was anything left under the modern neighborhood. Preliminary visits with local residents were encouraging. Bob Cathey – son of Clarence Cathey, with whom Bennie Keel collaborated – still lived on the site, and was able to produce a basket full of ground and chipped stones and Middle Woodland ceramics found while cultivating his garden, which is near the 1966 excavation block. His neighbor, Mr. Joe Worley, recounted how he discovered a large "fire ring" and associated ceramics several feet below the ground surface while excavating his basement/garage (the depth of which probably resulted from earlier grading for house construction). Mr. Will Warren, who lived one house further up the street and maintained an enthusiastic interest in local archaeology, produced a handful of quartz and chert flakes that he recovered while landscaping about 40 m south of the original location of Mound No. 2.

More generally, when seen on the ground, the site did not appear to have been as catastrophically affected by modern development as one would suppose, given the history of home construction in the area. Several houses and associated driveways, septic systems, electric lines, and flower gardens had been built or installed over the site, but many open yards and even hayfields remained where subsurface features might still exist intact below the plowzone. Most importantly, local residents, particularly the Cathey, Worley, and Warren families, were enthusiastic about the prospect of archaeological research in their backyards, and were not opposed to the idea of excavation units in their lawns. While the residential setting certainly presented challenges for this research, the project's results demonstrate the viability of archaeological investigations in relatively developed areas in which prehistoric remains are seemingly deflated or destroyed. Moreover, regular and intensive interactions with the neighbors of Plott Farm drew attention to locals' interest in archaeological history, provided an outlet for conversations about archaeological preservation and stewardship, and hinted at a long term "life history" of this particular landscape and people's relationship to the past through place.

Geophysical Survey Methods

For ethical, logistical, and theoretical reasons, geophysical prospection is increasingly conducted by Southeastern archaeologists as an irreplaceable component of field research. Non-invasive geophysical techniques allow for the simultaneous identification, investigation, and preservation of subsurface deposits at spatial scales that are almost always beyond the scope of traditional and inherently destructive excavation strategies. The variously extensive and intensive views of archaeological sites generated through geophysical surveys can be engaged to tackle particular anthropological research questions. In particular, archaeological geophysics is well suited to examining issues surrounding the built environment, including variation in construction and use of space at site-specific and regional scales (Horsley, Wright, and Barrier 2014; Kvamme 2003; Thompson et al. 2011).

At Garden Creek, magnetic susceptibility, magnetometry, and ground penetrating radar (GPR) were systematically used (1) to map the extent and intensity of prehistoric occupation at Garden Creek; and (2) to identify archaeological anomalies for targeted ground truthing through excavation. The results of ground truthing would, in turn, enable classification and characterization of un-excavated geophysical anomalies identified during survey and could be used to evaluate variability in site use and organization across space and time. Below, I discuss the principles behind and methodological strategies applied for each of these techniques individually, but it is important to keep in mind that it is the *combination* of these techniques, which produce complementary results at different scales and resolutions, that allows for robust interpretations of archaeological record using geophysical data (Clay 2001; Henry 2011).

Before describing these various techniques in greater detail (expanded upon in Appendix A), a brief note on the organization of data collection is merited. Except for the magnetic susceptibility reconnaissance, all geophysical survey excavation associated with GCAP was tied to a single site grid that, for logistical reasons, roughly corresponded with the paved roads that cross cut the site. Although this grid did not align with true north or with the Keel's grid from the 1960s, we were easily able to identify the outlines of his 1966 excavation block with geophysical techniques, thus providing a critical spatial link between the Cherokee Project data sets and newly identified materials. A datum point, arbitrarily labeled E190 N1090, was set with cement in a drainage ditch at the edge of a county-owned lot near the westernmost bend in the Pigeon River, and remains at the site today. Using a total station, several backsights were established in this parcel, as was a baseline running up the road along N1090. As needed, the grid was expanded, largely in the directions of grid-north and grid-east. Because of trees, houses, mailboxes, and other obstructions, this often required moving the total station between established points, in which case we ensured < 2 cm accuracy of measurements to backsights.

Magnetometer survey began at the N1090 baseline and expanded in all directions, covering as much open area of the site as possible in the course of two survey seasons. Subsequent ground penetrating radar transects were also collected along the grid, but focused on a more discrete area roughly bisected by the N1220 line. Excavation units were placed over magnetic anomalies in such a way as to conform to the grid. The coordinates of grid squares that would overlie selected anomalies were identified in the magnetometer data using ArcGIS; these coordinates were then located in the field with the total station, and subsequently double checked by manual triangulation.

<u>Magnetometry</u>

Once described as "nature's gift to archaeology" (Kvamme, Johnson, and Haley 2006:205), magnetometry provides an efficient and comparatively inexpensive means of mapping – in two dimensions – subsurface archaeological deposits at high resolutions and over large areas. This passive remote sensing technique entails the use of highly sensitive instruments to measure the distortions in the Earth's own magnetic field caused by buried features (Gaffney and Gater 2003). If collected using spatial controls (e.g., a grid system, described above), these data can be mapped to display the size, shape, and intensity of non-natural, often archaeological anomalies. Magnetometry works because most soils naturally contain iron oxides, which obtain varying degrees of magnetization, which can be distinguished from distinct the Earth's magnetic field, as a result of anthropogenic processes.

Two types of magnetization are especially relevant to archaeological magnetometer survey. The first, thermoremnance, results from heating (Aspinall, Gaffney, and Schmidt 2009:21–22). Normally, iron oxides in a material are oriented randomly, but when they are heated sufficiently (i.e., past their Curie point temperature, which varies by material), their existing orientations are "wiped clean." As the material cools, the iron oxides become consistently aligned with the natural magnetic field of the Earth at the time of cooling. As a result, the once-heated material obtains a distinctive magnetic signature that significantly contrasts the randomly magnetized iron oxides in surrounding, unheated earth. Thermoremnant magnetization is critical for identifying kilns, hearths, earth ovens, and burned surfaces during magnetometer survey. For example, magnetometer survey was able to locate the footprints and structural remains of several houses at the Berry Site in western North Carolina because these features possessed high thermoremnant magnetism, resulting from the catastrophic burning of Fort San Juan in 1568 (Beck, Moore, and Rodning 2006).

Whether or not they are heated, all earthen materials have magnetic susceptibility, or an ability to become temporarily magnetized, which comprises the second important measure of variability for magnetometer survey. Although magnetic susceptibility can be directly quantified using other techniques (see below), magnetometer-derived measurements of this variable rely on the relative difference in the magnetic susceptibility of the topsoil and the subsoil. In general, top soil has higher or more enhanced magnetic susceptibility than subsoil as the result of a variety of human-induced processes. As summarized by Aspinall, Gaffney, and Schmidt (2006:24-25), such influences include: fires on the ground surface (Tite and Mullins 1971); discard of magnetic materials like pottery (Weston 2002); concentrations of organic waste that attract bacteria whose presence can convert iron oxides into increasingly magnetic forms (Linford 2004); decaying wooden posts that support magtenotactic bacteria (Fassbinder and Stanjek 1993). However it is enhanced, the high susceptibility of the topsoil relative to the subsoil provides a means for identifying "negative" features. Pits, pit structures, large postholes, ditches and other features that are surrounded by subsoil but are filled (naturally or anthropogenically) by topsoil produce magnetic contrasts detectable by the magnetometer.

Given its capability of detecting both burned and negative features, magnetometry survey at Garden Creek had the potential to map the full range of features expected for a Middle Woodland site in the Appalachian Summit, assuming that these remains were not completely destroyed by modern activity or obscured by modern materials like iron, the extreme magnetism of which negates the identification of a more subtle archaeological materials. Moreover, a map produced through a spatially controlled survey would (and did) indicate the on-the-ground locations of magnetic anomalies for ground-truthing.

Following well-established magnetometer survey methodology, a Bartington single-axis magnetic field gradiometer was used to survey approximately 4.5 ha at Garden Creek in February 2011 and an additional 2.5 ha in February 2012. Data were collected in 0.5 m transects in 30 m grid squares across the northwestern portion of the site where Middle Woodland occupation was thought to be densest, based on Keel's 1976 map. The resulting data (Figure 3.5, in which processing was limited to clipping to within 30 nT, minor sensor-destriping, and interpolation) are a mix of modern and archaeological signatures.

For the most part, I will leave the latter for a more focused discussion of the monuments and occupation at the site (Chapters 6 and 7), but two points are worth making here. First, the neighborhood itself has affected subsurface deposits at the site in a localized fashion. Intrusions into the site include house foundations, numerous septic fields, old driveways, etc., all of which we mapped and managed to avoid excavating. Second, plowing at the site, even though it largely ceased several decades ago, has affected sub-surface deposits (Figure 3.6). For example, the converging lines in the northeastern portion of the survey area are the result of plowing regimes, and much of the "noise" apparent in open survey areas reflects the spread of magnetic materials – which may once have been archaeological features – by the plow. Interpretations of archaeological anomalies thus relied not only on ground-truthing, but on our ability to filter out and adapt to the site's recent modifications. These efforts are examined most thoroughly in Chapter 7.

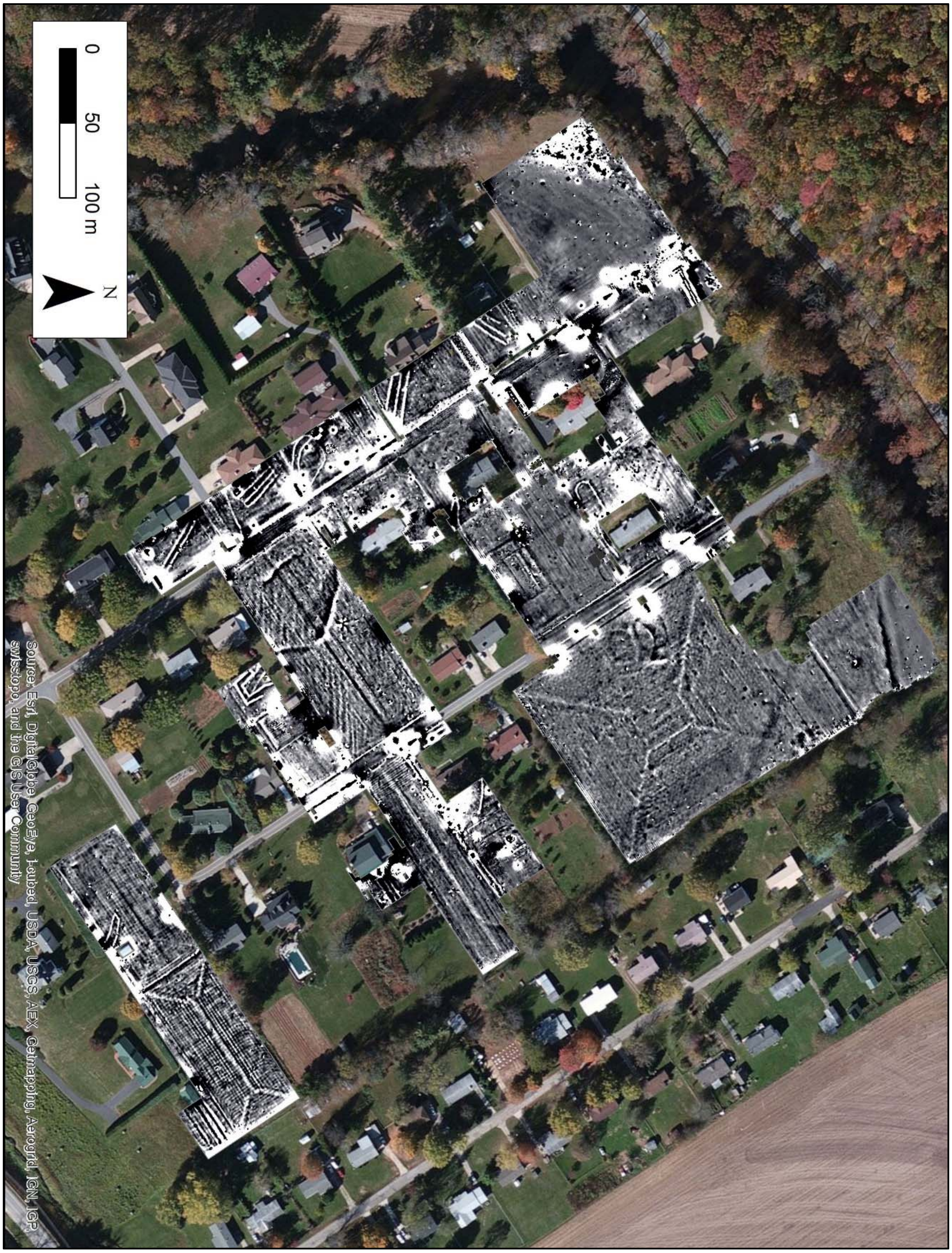


Figure 3.5. Results of the Phase 1 and 2 magnetometer surveys at Garden Creek, plotted from -10 nT (white) to +10 nT (black).

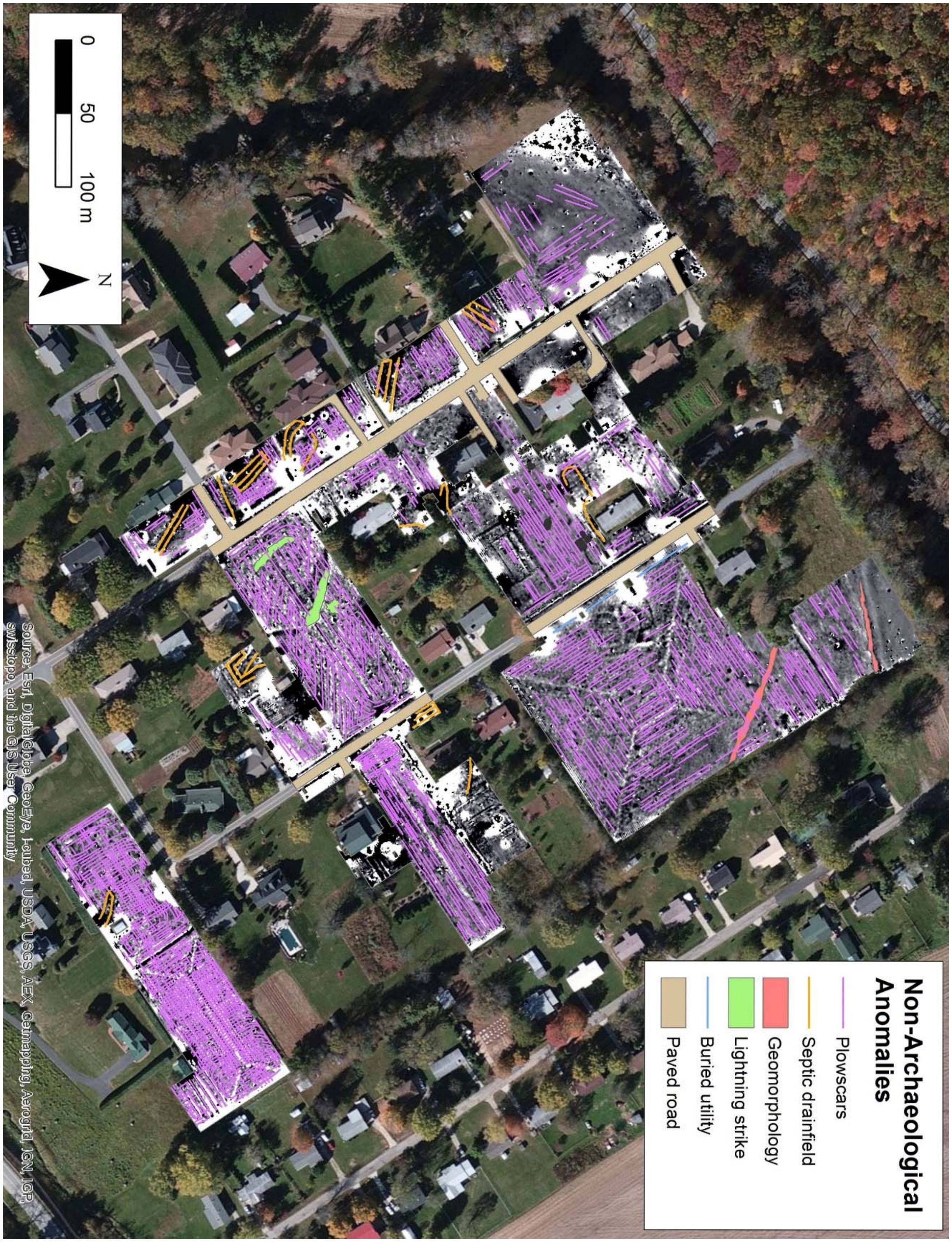


Figure 3.6. Non-archaeological anomalies detected through magnetometry.

Magnetic Susceptibility

Magnetometry is not the only way to measure the magnetic susceptibility of subsurface deposits. Another methods involves the use of a magnetic susceptibility meter (hereafter, MS meter), which generates its own active magnetic field to identify non-naturally-occurring magnetic enhancement caused by burning or other anthropogenic activity. Generally speaking, surveys using MS meters produce much coarser results that those that utilize gradiometers. While the latter collects more or less continuous data across horizontal space, an MS meter collects a reading on a point-by-point basis. Furthermore, the strength of its magnetic field only allows for measurements of magnetic enhancement in the top soil it is typically not strong enough to locate deeper archaeological deposits.

That said, MS meter survey provides an invaluable complement to other geophysical survey methods, insofar as it permits an assessment of magnetic – presumably anthropogenic – enhancement of plowzone sediments. Because plowing churns up archaeological features, and in the process, introduces highly magnetic materials into the plowzone. Thus, areas with more or more intense archaeological features will, when plowed, have higher MS readings than areas with fewer or less intense features. While an MS meter does not yield a map of discrete archaeological features, it does show areas of relative magnetic enhancement, permitting the definition of site boundaries and the identification of particularly intense activity – patterns that are difficult to isolate using gradiometer results alone, which compress "noisy" plowzone and sub-plowzone magnetic signatures.

At Garden Creek, MS survey was carries out using a Bartington MS2B susceptibility meter and field coil were used to collect measurements of the topsoil at 5 m intervals located using a handheld GPS. Data were collected at every 5m interval in the presumed central portion of the site between and around Mounds No. 2 and 3. To maximize horizontal coverage, data collection toward the edges of the terrace landform followed transects placed roughly every 30 m. As with our other geophysical results, thorough discussion will follow in Chapter 7. At present, suffice it to say that conspicuous differences were noted in the MS readings across the site, and these differences do not conform to variation in soil type or underlying geology. Without ground-truthing, it is impossible to say for certain if these signatures are the result of anthropogenic activity during the Middle Woodland, but they do provide one of several lines of evidence for inferring occupation at Garden Creek.

Ground Penetrating Radar

While MS survey provided a coarse, albeit valuable, source of geophysical data, other portions of the site merited higher resolution geophysical datasets. In one case, we sought to clearer view of certain anomalies detected by the magnetometer – a task for which ground penetrating radar was ideally suited. As Conyers summarized (2010:177), GPR:

> transmits radar pulses into the ground and records the elapsed time from when they are sent, reflected from buried materials, and received back at the surface…That elapsed time can then be converted to depth, and specific depth levels in the ground can be mapped individually, producing three-dimensional layered images and maps of cultural materials.

The types of surfaces produce radar reflections can vary widely, and are highly dependent on the background geology. Any boundary between subsurface materials – from buried soil horizons, to subsurface archaeological features, to the water table – can produce a reflection. This is because different materials (i.e., on either side of that boundary) have different values of relative dielectric permittivity, defined as "the ability of a materials to store a charge from an applied electromagnetic field and then transmit that energy" (Conyers 2004).

When a radar pulse encounters one such boundary, it is not reflected wholesale back to the transmitter. Rather, as the time elapsed to that reflection is recorded, the pulse continues to penetrate the sub-surface, bouncing off all reflections up to the depth possible with a certain instrument (in most archaeological cases, <2 m below surface). Thus, GPR is capable of mapping subsurface boundaries not only in horizontal space, but also in a vertical dimension. In a comparatively less processed form, GPR survey results in vertical profile maps that indicate the depths (corresponding with a certain length of time) at which the radar pulses are reflected. These profiles can be combined to produce "time slices" – horizontal views of contiguous reflections at certain depths. The three-dimensional mapping capacities of GPR survey were especially important at Garden Creek, where we sought to glimpse anomalies beneath the visually impenetrable magnetic signature of the plowzone. Because GPR data take considerably longer to collect and process than magnetometer data, we limited the GPR survey area to just over 1 ha, in area that (1) included linear anomalies in sub-rectangular shapes that proved to be earthen enclosures; and (2) was partially obscured by highly magnetic material in the plowzone, plausibly indicative of relatively intense activities having occurred in the area, and possibly still partially intact below the plowzone.

In practice at Garden Creek, the boundaries that produced reflections with the GPR were the interfaces between features cut into the subsoil and the surrounding sandy clay matrix (Figure 3.8). There was no indication in the GPR results, or, for that matter, in excavation, that any strata remained intact between the base of the plowzone and the top of the subsoil, with the exception of a highly bioturbated, discontinuous layer of midden only encountered in limited areas of sub-plowzone exposure. As expected given the landform's flooding regime, there was nothing left intact for us to identify at the level of the prehistoric ground surface. However, as elaborated in Chapters 6 and 7, several features, including small geometric enclosure ditches and a likely fourth mound, were unequivocally identified using this technique, though they had never been noted at the ground surface or in previous archaeological investigations.

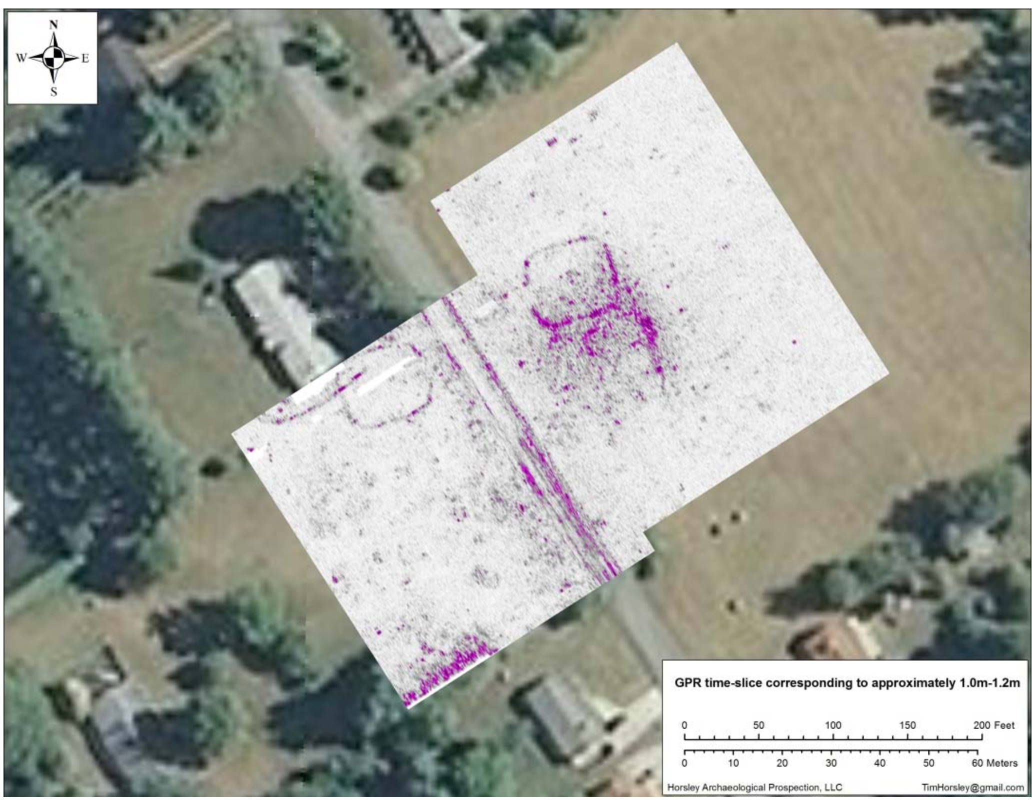


Figure 3.7. GPR timeslices from 0.9 ha area at Garden Creek, corresponding with depths 0.8-1.0 m and 1.0-1.2 m below surface.

<u>Shovel Testing</u>

Thanks to the extent and variety of geophysical methods employed by GCAP, shovel testing did not have to be undertaken as means to initially locate a site, its boundaries, or its features. Rather, it was carried out for pragmatic reasons (i.e., to demonstrate to local residents early on that we could "leave no trace" of our digging) and to test the reliability of our magnetometer survey results.

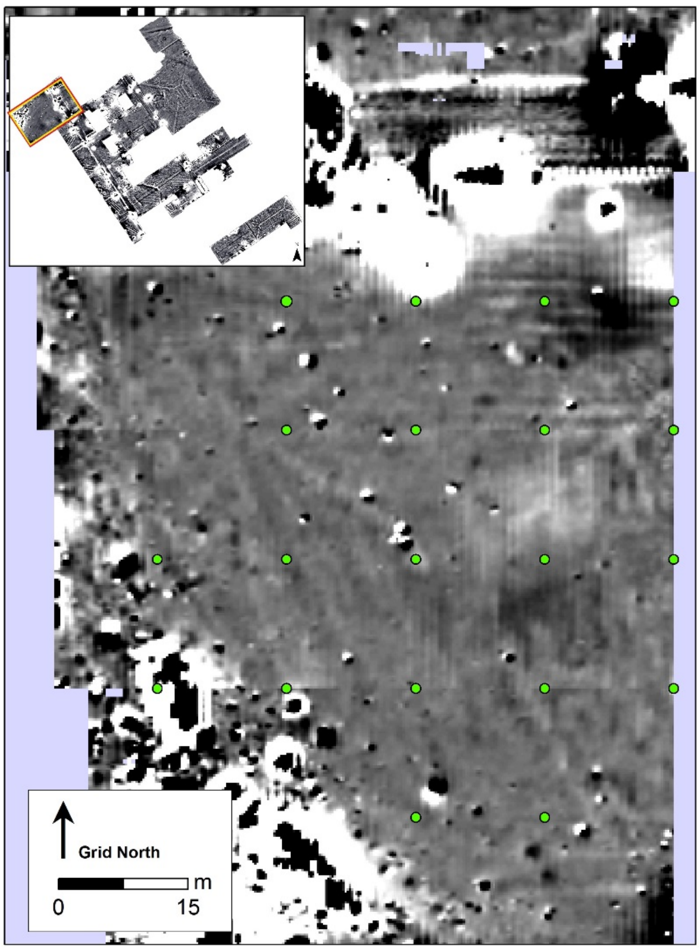


Figure 3.8. Location of shovel test pits across the Waters Point Lot.

In total, 20 individual shovel test pits (STPs) were dug every 15 m across the Waters Point Lot, the lowest terrace/floodplain on the Garden Creek landform, adjacent to a major bend in the Pigeon River (Figure 3.9). Stratigraphic changes in soil color and texture were recorded for each

STP; for the most part, these consisted of subtle changes from loamy topsoil to increasingly large grained sand. With one exception (STP E130 N1045), each STP reached subsoil or a layer of gravel and river cobbles between 45 and 55 cmbs. Most of the artifacts recovered from were historic (e.g., nails, glass shards), although the top soil of STP E190 R1060 did include several sherds.

These efforts supported the validity of the gradiometer survey results, insofar as they did not reveal any intact archaeological deposits in areas lacking magnetic anomalies. This pattern also agrees with the results of the MS survey, which recorded very low magnetism along this lowest terrace. Unfortunately, it is not possible to determine if this dearth of archaeological materials represents a true lack of prehistoric occupation or the deflation of occupation debris by intensive flooding and subsequent stabilization efforts.

Block Excavations

Two factors dictated the placement of our excavation units: the presence of a plausibly archaeological magnetic anomalies and landowner permission. Happily, the properties of Mr. Will Warren and Mrs. Mitzi Robinson, as well as the county-owned Waters Point Lot, met both of these requirements. Moreover, the former two properties nearly abutted the original location of Mound No. 2, and thus had the potential to clarify off-mound activities closely associated with this monument. Guided by the gradiometer survey results, I selected several anomalies across these areas to target through carefully controlled excavation. During the first major field season (May-August 2011) my aim was to excavate deposits associated with *different* types of magnetic anomalies, in the hopes that characterizing this variability would allow for the tentative identification of similar features on the basis of their magnetic signatures. Informed by these findings, subsequent fieldwork continued to follow this protocol and, in some instances, focused on additional excavations of large, known anomalies in order to retrieve particular types of data (e.g., micromorphological samples).

In total, GCAP opened 64 m^2 across 12 non-contiguous units (Figure 3.10 and 3.11). All units were aligned to the site grid established during geophysical survey and were placed over magnetic anomalies detected by the magnetometer. Most often, units were located in such a way that they would bisect the anomaly under investigation. When combined with the plan maps generated by the magnetometer, this strategy yielded horizontal and vertical views of archaeological features, allowed for systematic data recovery from a known percentage of the feature, and minimized our impact on landowners' yards and lawns. In general, unit excavation followed a multi-step process. First, the sod overlying the unit was removed with a sharp digging fork, usually 50 cm^2 blocks that were, on average, about 5cm thick. Sod was not screened, in order that we might use it to cap backfilled units in our effort to leave no trace. Next, excavators removed the plowzone. Early on, we excavated the plowzone in arbitrary levels with shovels and trowels, both as a means to teach excavation methods to inexperienced project members and to carefully identify differences in plowing in different areas of the site (which, thanks to early parceling of the property, underwent different sorts of plowing regimes). In subsequent units, the plowzone was removed by shovel in one natural level, often followed by a shallow, troweled "clean scrape" level before we photographed the top of undisturbed archaeological deposits.

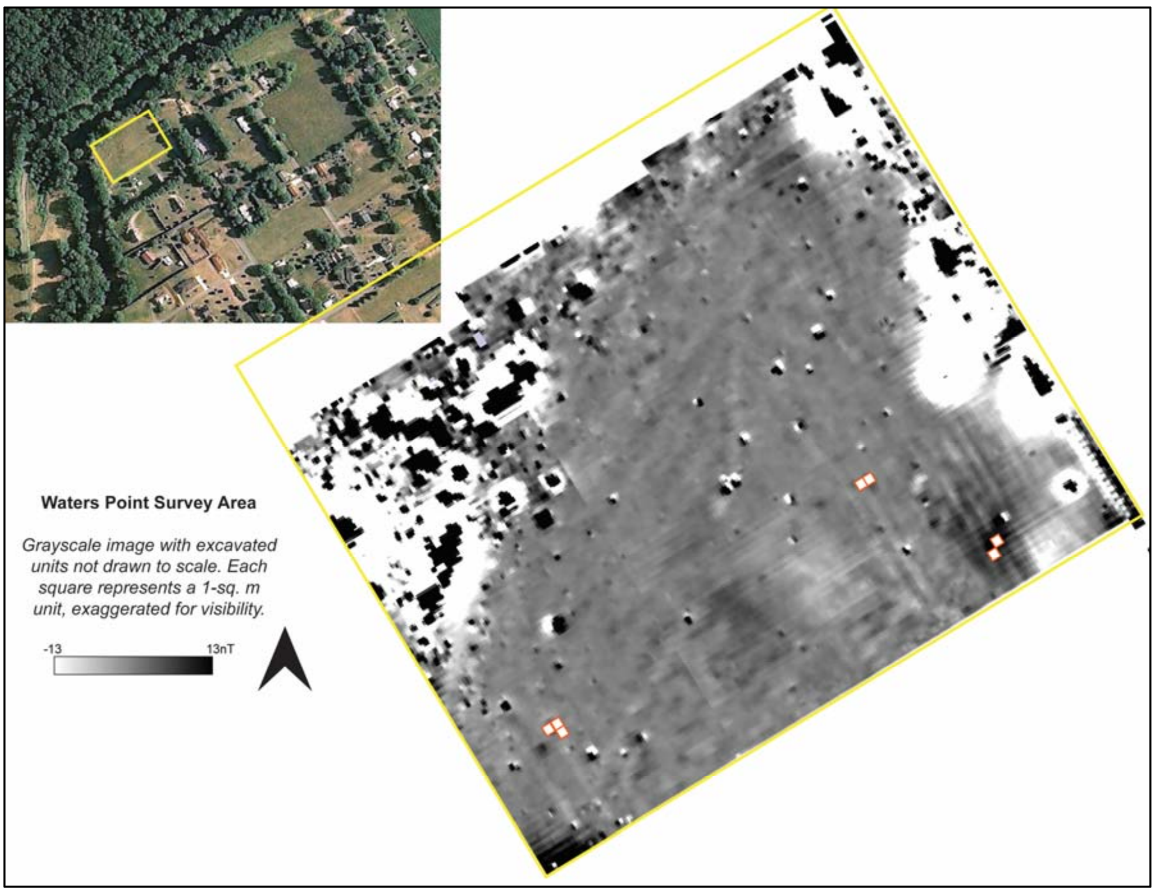


Figure 3.9. Location of excavated units in Waters Point Lot.

Given the plowing and post-depositional history of the occupied terrace (described above), undisturbed archaeological deposits in almost every unit consisted of features that were dug into the subsoil: postholes, pits, pit-hearths, and ditches. After mapping the tops of these units, these features became the focus of excavation, with the exception of Unit 11 (discussed in Chapter 7).

Those exposed portions of features were excavated in arbitrary or natural levels, depending on the visibility of changes in fill material and the thickness of different zones of fill. Where features extended across multiple 1x1m squares, those portions in different squares were excavated separately. In some cases, this produced a partial feature profile that we could follow in the horizontal excavation of adjacent units; in others, this ensured that we would capture depositional variability across horizontal space in exceptionally large features (e.g., the enclosure ditch). Postholes were bisected to confirm that they were archaeological, and their fill was removed as a single context. Each of these contexts – whether a singular posthole a natural zone of fill of a single feature within a 1 x 1 m square, or an arbitrary level of fill of a singular feature within a 1 x 1 m square – was assigned a unique field specimen (FS) number. Each FS received a field form, on which excavators soil characteristics, elevations, artifacts, and other variables, and artifact bag(s).

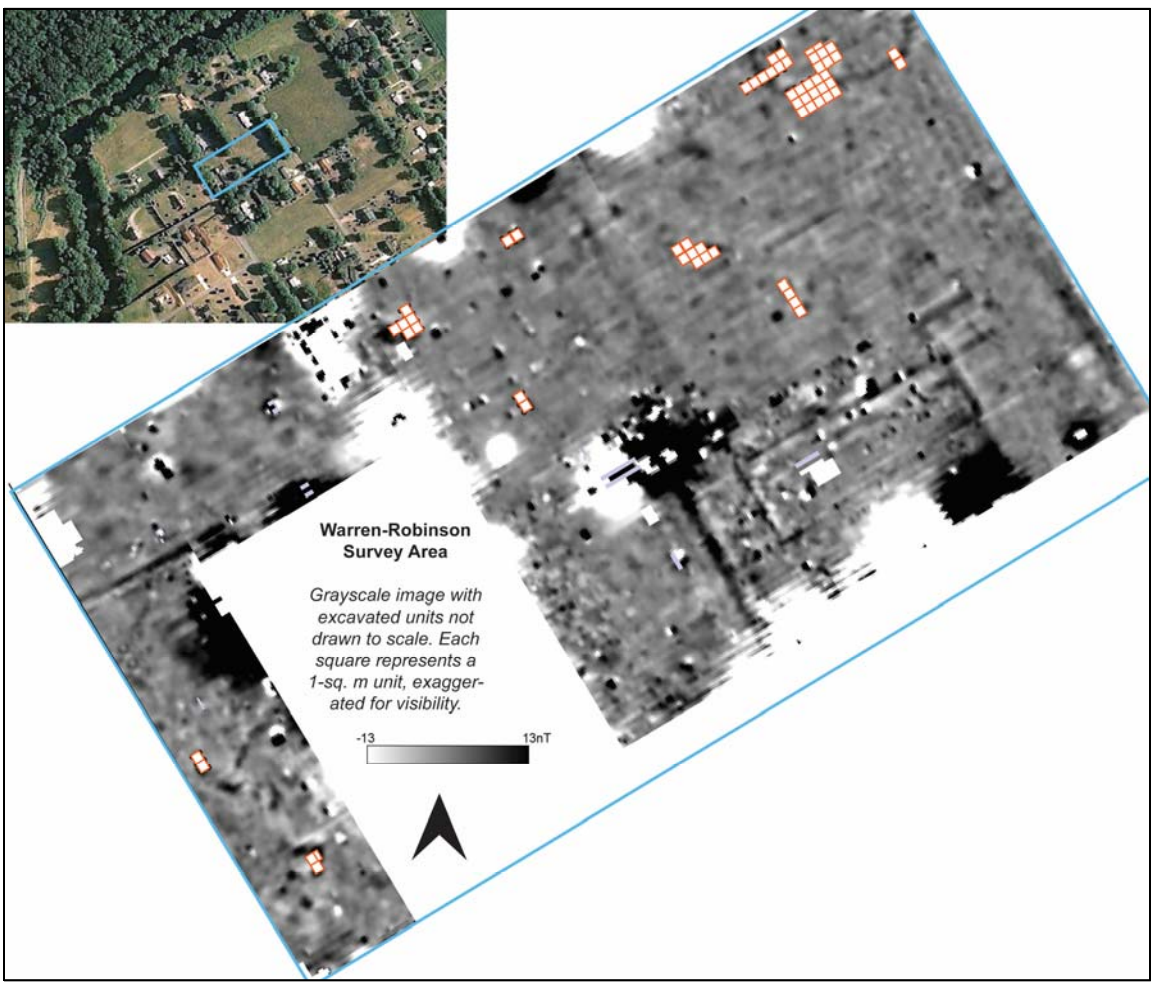


Figure 3.10. Location of excavated units in Warren-Robinson Lots.

Using this methodology, GCAP identified in horizontal exposure at least 28 distinct features over 20 weeks of excavation (including rock-filled postholes, but not including more typical postholes). In Chapters 6 and 7, I present the excavation results and interpretations of these deposits according to their spatial associations and constituent assemblages. First, however, in Chapter 4, I must introduce the theoretical perspectives and analytical strategies that informed these interpretations, with a particular emphasis on the inferential potential of the archaeological built environment.

CHAPTER 4

LIFE HISTORIES OF PLACE: THEORETICAL & ANALYTICAL BACKGROUND

In 2002, the North Carolina Department of Cultural Resources installed an historical marker at the intersection of Highway 110 and Plott Drive, about two miles south of Canton. It reads, "Garden Creek. Cherokee villages and mounds 1/3 mile west. A key site for archaeologists. Occupied from 8000 B.C. to 1600s A.D." For present day passersby, this sign is the only indication that this small terrace along the Pigeon River was once a locus of pre-Columbian monument construction, ritual activity, and occupation. As discussed in the previous chapter, two centuries of agricultural activity and residential development have either destroyed or rendered invisible the site's surface archaeological record.

Archaeologically minded observers, however, can still find traces of Garden Creek's monumental (and, for that matter, non-monumental) built environment below the plowzone and in old maps and field notes. Five earthen monuments have been identified on the western half of the Garden Creek landform, where Middle Woodland occupation appears to have been concentrated (Figure 4.1). These include three mounds and two earthworks:

- Mound No. 2, a multi-stage platform mound entirely excavated in 1965-1966 by the University of North Carolina's Cherokee Project.
- Mound No. 3, a conical burial mound excavated by the Heye Foundation in 1915. This mound has been attributed to the Middle Woodland period (Dickens 1976) and the Pisgah phase (Keel 1976). Without having studied the Mound No. 3 materials, I am inclined to assign it to the late Middle Woodland period, based on its location on the landform and

stratigraphic similarity to Hamilton phase mounds in east Tennessee (Lewis and Kneberg 1946; Ben Steere, personal communication).

- Mound No. 4, a low rise newly identified as a human-made mound through geophysical survey by the Garden Creek Archaeological Project in 2012. This mound overlies/postdates Enclosure No. 2, but more precise dating is impossible without subsurface data.
- Enclosure No. 1, a sub-rectangular ditch, detected through magnetometry and ground penetrating radar, and partially excavated in 2011 and 2012.
- Enclosure No. 2, another sub-rectangular ditch detected through magnetometry and ground penetrating radar.

Of these, Mound No. 2 and Enclosure No. 1 are by far the most intensively documented. Because of their distinctive morphologies and the fact that they are represented by different sorts of field and laboratory data, I examine them individually in Chapters 5 and 6, respectively. Then, in Chapter 7, I tackle the remains of the non-monumental occupation of the site, which were identified through geophysical survey and targeted excavation. At a theoretical level, however, my approach to all of these contexts is the same. It is grounded in the idea that each of these elements of the built environment encompasses a "life history" of monumentality or occupation, and that together, they comprise the Middle Woodland "life history" of Garden Creek. The remainder of this chapter briefly outlines the aims of a life history or biographical approach to places and monuments as it has been deployed by other scholars studying the archaeological built environment. I then present the methodological techniques that I used to assess the life histories of the monuments and non-monumental occupation at Garden Creek: (1) AMS dating and Bayesian statistical modeling to precisely locate these histories in time; (2) for the monuments, construction energetics analysis to understand the labor involved in the initiation/cessation of the monumental life histories; and (3) stratigraphic and horizontal analyses of archaeological features to trace histories of practice directly associated with and surrounding the monuments.

The patterns that emerge from these analyses provide a springboard for comparison to other Middle Woodland monumental sites across Eastern North America, particularly the pre-Mississippian platform mound sites of the Deep South and the small geometric enclosure sites of the Ohio Valley. For the monuments, pronounced interregional commonalities in architectural grammar and site organization are interpreted as evidence for long-distance social and ideological interactions (see Chapter 1), though the directionality of such interactions appears to have changed over time. The occupation, meanwhile, speaks to local traditions of habitation, mobility, gathering, and community. Combined, these interpretations contribute to the life history of Garden Creek's Middle Woodland component as a whole, highlight the role of culture contact in effecting local, historical changes in the Middle Woodland Appalachian Summit, and offer a dataset through which we can begin to explore hybridity in pre-Columbian North America.

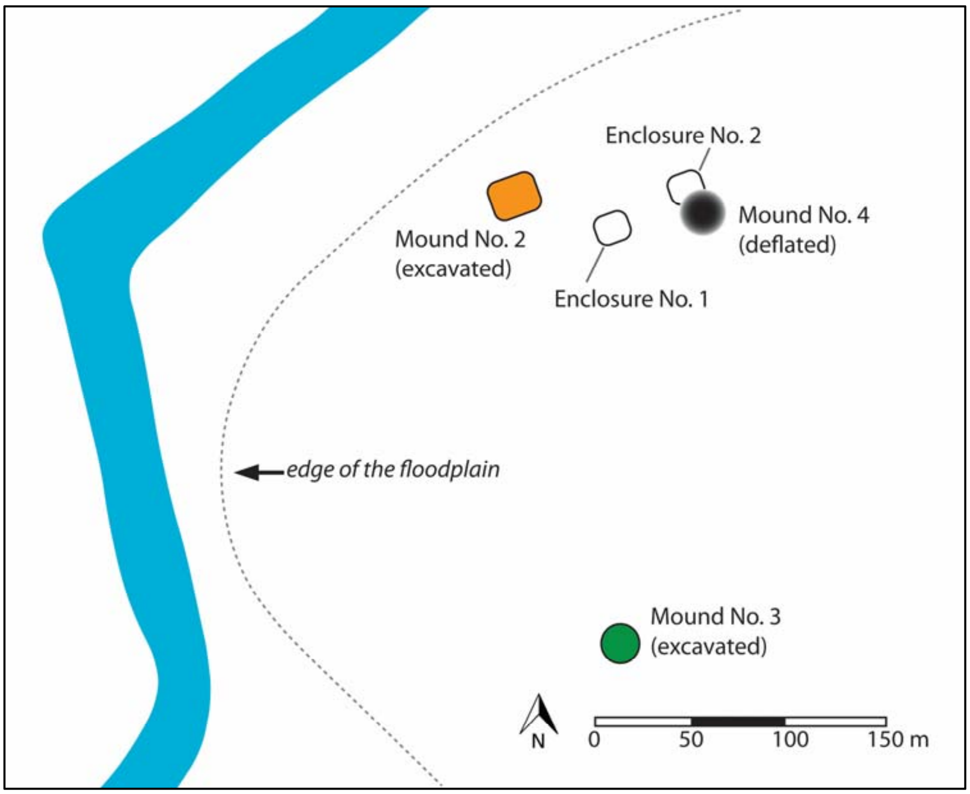


Figure 4.1. Middle Woodland monuments at Garden Creek, roughly to scale.

Biographical Approaches to Places and Monuments

For descriptive continuity, I adopt a biographical approach (Appadurai 1986; Holtorf 1998; Kopytoff 1986) in my discussions of both types of monuments and the surrounding occupation area at Garden Creek. Following Wendy Ashmore's programmatic definition of the life history of place, I focus on "evidence for human recognition, use, and modification of a particular position, locality, or area over the full time span of its existence" (2002:1178). With regard to the built environment, such life histories refer to the processes by which architecture is "built, occupied, maintained, modified, partly of wholly dismantled, or allowed to fall to ruin." Because "these diverse acts can carry profound, potent social and symbolic meaning," tracing these processes and their inferred cultural significance through time makes possible the identification of continuity and change in ancient practices and, by extension, in ancient social structures.

Two related concepts in landscape archaeology speak to the interpretive potential of diachronic examinations of geographical focal points like monumental sites. First, the idea of "persistent place" refers a locus of repeated anthropogenic activities that "represent the conjunction of particular human behaviors on a particular landscape (Schlanger 1992:97; see also Moore and Thompson 2012; Thompson 2010). While the persistence of some places is attributable to their natural suitability for certain functional requirements (e.g., proximity to fertile soils, raw materials, etc.), persistent places can also emerge where the remains of earlier human activities play a major role in "attracting reuse and reoccupation and structuring the activities associated with... various occupations" (Schlanger 1992:97). Along similar lines, Southeastern archaeologists have also addressed continuity in landscapes and the built environment through the concept of "emplacement," defined as "the set of practices by which a community attaches itself to a particular place through formal settlement plans, architecture, burials, and other material additions to the landscape" (Rodning 2009:629; see also Cobb 2005). However, whereas the idea of persistent place implicitly assigns agency to particular locations (i.e., the *place* attracts ongoing use or occupation), emplacement addresses the ways in which people actively create and re-create places to instill cultural continuity. For example, Chris Rodning recently made a compelling case for emplacement among Cherokee communities in western North Carolina, who dealt with geopolitical instability resulting from European incursions by building and rebuilding public townhouses in the same place over many generations and by interring their dead inside these structures (2009).

As initially theorized, ideas about persistent place and emplacement emphasize diachronic continuity in place and architecture, and archaeologists investigating such phenomena have tended to examine sites or buildings that were consistently re-used, in a consistent fashion. However, as Cornelius Holtorf has argued, "investigating [monuments'] life histories is to ask how they have been transformed over time and, in turn, transformed the landscapes within which they were situated." (2008:412). In other words, places can be persistent and emplacement may be at work even if there is a drastic shift in the sorts of activities carried out in a particular location, indicating changes in, resistance to, or rejection of existing social structures (e.g., Cobb and King 2005;

Thompson 2009, 2010). Identifying the extent to which the life history of a place or, more specifically, of a monument, approximates either of these scenarios has the potential to illuminate if and how in situ traditions or novel influences contributed to architectural and related social transformations – a major theoretical concern of the current project (see Chapter 1).

In this regard, Victor Thompson and Tom Pluckhahn's recent definition of "*persistent monumental places*" is especially salient (Thompson and Pluckhahn 2012:50):

> Such places are locations where the actions and processes of monumentalization takes [sic] place incrementally over extended time frames relative to other sites in a given region. In other words, the practices that tie people to such places…operated at a large scale and required labor coordination beyond the household level. These are not simply sites where monuments are constructed, but rather also place where people continually return to alter, expand, and reinvent the built environment.

As we shall see, Garden Creek constitutes just such a persistent monumental place, with an archaeological record suggestive of reuse and reinvention over time.

Igor Kopytoff listed several questions for guiding investigations of object biographies that are easily adapted studying a monument's biography and, in turn, the life history of a persistent monumental place: "Where does the [monument] come from and who made it?...What are the recognized 'ages' or periods in the [monument's] 'life', and what are the cultural markers for them? How does the [monument's] use change with its age, and what happens to it when it reaches the end of its usefulness?" (1986:66). By prioritizing the material record as the subject of inquiry, these questions are tailor made for archaeological investigation. However, it is important to recognize that the answers to such questions are only anthropologically compelling insofar as they illuminate not only the life histories of monuments, but also the lives and histories of people.

Numerous ethnographic studies highlight the social, historical, and spiritual significance of important places to diverse American Indian groups, perhaps most famously Keith Basso's *Wisdom Sits in Places* (1996), which explored how geographic place-names of the Western Apache were inextricably linked to daily practice and historical identity. In North American archaeology, similar discourses have become especially well developed in the Southwest (Fowles 2010), and increasingly characterize landscape research in the Eastern Woodlands. For example, returning to the built environment of the contact era Cherokee, Rodning stressed that "These towns were communities of people, first and foremost, rather than specific points on the landscape" and that "Public structures known of townhouses were symbolic manifestations of Cherokee towns, they were architectural landmarks, and they were settings for the practice of Cherokee public life" (2009:627). In order to ensure that a life history of a built environment can speak to an anthropological history of a people, I employ a multi-pronged approach for temporally and socially contextualizing Garden Creek's monuments and non-monumental activity areas. First, using AMS dating and, in the case of stratified contexts, Bayesian statistical modeling, I construct chronologies for the built environment that are far more precise than dating according to archaeological phases. Second, specifically for the monuments, I employ ethnoarchaeologically derived measures for the energy required for earth moving projects to estimate the labor that went into mound and enclosure construction. These estimates can then be used to suggest how much time it would have taken for a group of a certain size to build these monuments, further pinpointing their life histories in time. Third, in monumental and non-monumental contexts, I adopt a social stratigraphic approach (sensu McAnany and Hodder 2009) to trace the histories of practice implicated by diverse features and their constituent assemblages. The results of these analyses can then be re-combined at multiple scales to narrate not only the life histories of particular monuments and occupation areas, but also the Middle Woodland life history of the Garden Creek site as a whole. Moreover, detailed records of these contexts provide a springboard for comparison to contemporaneous contexts across the Eastern Woodlands and, in turn, the identification of the material consequences of interregional interaction during the Middle Woodland period.

Pinpointing Histories: Absolute Dates and Bayesian Modeling

Conceptually, the break between history and prehistory is often defined by the respective presence or absence of a written historical record, so in practice, the history/prehistory divide in North American archaeology corresponds with time before/time after the arrival of Europeans in the New World. As Eric Wolf (1982) argued more than three decades ago, this perspective effectively characterizes non-European societies as "people without history," when in fact, oral traditions and material records demonstrate the longevity and dynamic complexities of pre-colonial and colonized peoples around the world. Still, for Westerners accustomed to seeing histories outlined in days, months, and years, the comparatively coarse timescales of the so-called prehistoric era – consisting of periods and phases and measured by ceramic or lithic typologies – can impede recognition of historical events even as they underscore the trajectories of longer-term historical processes. Even traditional absolute dating methods often fall short of the temporal precision of the written word, providing date ranges between several decades and several centuries.

On the one hand, an archaeological perspective on long term processes of socio-cultural change represent the discipline's unique contribution to anthropology and to the social sciences in general. On the other hand, the ability to complement this perspective with narratives of prehistory that capture shorter-term processes and events stands to flesh out our understanding of pre-colonial cultural formations and bridge the gap between history and prehistory (sensu Lightfoot 1995; see also Beck et al. 2007). To that end, this project employs Bayesian modeling of radiometric dates as a means to create tighter chronological records of Garden Creek's monuments than would be possible using traditional dating methods.

Generally speaking, radiocarbon dates measure the amount of time that has elapsed since an organism died, based on the amount of radioactive carbon that is left in the sample at the moment of its analysis. This calculation is based on the rate of decay of certain carbon isotopes. However, because the amount of 14 C in the atmosphere is not constant, conventional radiocarbon ages (i.e., total number of years since the organism died) must be calibrated to reflect diachronic variability in the rate of radiocarbon decay. Calibration datasets are assembled using dendrochronology and other independent dating techniques, and they are statistically applied to conventional radiocarbon ages to produce a more accurate, if potentially less precise, range of calendric dates for a given sample (Stuiver, Reimer, and Reimer 2005). For instance, a conventional radiocarbon age from North America of 1771 +- 38 years BP (i.e., date range of 74 conventional radio carbon years) is calibrated to A.D. 240-410 (i.e., a date range of 170 calendric years) (see Chapter 5 for more discussion of this and other dates associated with Mound No. 2).

To remedy this relative imprecision, archaeologists have recently begun to employ Bayesian modeling in the statistical calculations of radiocarbon dates. Briefly, Bayesian modeling quantifiably and systematically incorporates prior knowledge in the statistical calculation of the absolute dates (Bayliss 2009; Bronk Ramsey 2009; Schilling 2010). In the case of Garden Creek's monuments, stratigraphic positioning comprised the *a priori* knowledge brought to bear on radiocarbon dates. What this means is that I first determined the relative stratigraphic order of radiocarbon samples from Enclosure No. 1, Mound No. 2, and the non-monumental GCAP Feature 1. I then entered the conventional ages of these samples into a calibration model that took into account the relative dates implicated by the stratigraphy. Formulated in this fashion, the model effectively clipped sigmas that are often overestimated by standard calibration, producing a more precise chronology overall.

In this study, I used OxCal Version 4.2.2 (Bronk Ramsey 2013) and the Int. Cal 9 calibration curve to calculate chronologies for the construction of Mound No. 2 and the infilling of Enclosure No. 1. *A priori* stratigraphic parameters were based on Harris matrices constructed for each context, which are described in more detail in the following chapters. Because all samples were wood charcoal, most modeled calibrated dates still included age range of several decades, but as a whole, the resulting chronologies are remarkably more precise than earlier temporal labels applied to the site (i.e., a "Connestee phase" platform mound dating to AD 200 – 600 or later). As a result, it is possible to reconstruct the life histories of the monuments and of the site as a whole that can in turn be used to evaluate and trace the culture contact scenarios outlined in Chapter 1.

Bracketing Monumental Histories with Labor Estimates

While monumental architecture varies considerably across time and space, all such construction efforts, by definition, require the coordination of labor drawn from a greater number of individuals than can be accounted for in a single household group (Adler and Wilshusen 1990:133; Rosenwig and Burger 2012:7). For many decades, the relationship between coordinated group labor and monumental architecture encouraged archaeologists to view the latter as a signpost for social complexity in the form of hierarchies or institutionalized social inequalities capable of coercing the investment of many individuals in a building project (Childe 1950; DeMarrais, Castillo, and Early 1996; Earle 1997; Kolb et al. 1994; Peebles and Kus 1977; Renfrew 1973). Bruce Trigger clearly articulates this view in his thermodynamic explanation for monumental architecture (1990). Since, he argues, "the scale and elaboration [of monumental architecture] exceed the requirements of any practical function the building is intended to perform" (119), their construction represents the conspicuous consumption of non-utilitarian energy and a "compelling demonstration of power" (125) by leaders who coordinate and execute such efforts.

However, more recent archaeological research, especially in the Americas, has called into question the association of monuments with permanent hierarchical social relationships, citing a lack of other indicators of institutionalized inequality, such as signs of inherited status in mortuary assemblages or evidence of differential control of subsistence surpluses, in contexts exhibiting early examples of monumentality (e.g., Bernardini 2004; Buikstra and Charles 1999; Case and Carr 2008;

Dancey and Pacheco 1997; DeBoer and Blitz 1991; Dillehay 1990; Howey 2006, 2012; Kidder 2011; Randall 2011; Sassaman 2004, 2010; Thompson and Pluckhahn 2010; Thompson and Turck 2009). Rather than viewing monumentality as a correlate of necessarily hierarchical social dynamics, these studies tend to consider early mounds and earthworks as a more flexible "medium of discursive practice that structured the trajectory and pace of culture change" (Sassaman and Randall 2012:53).

Still, even if the relationships that organized and enabled monumental construction projects were not grounded in institutionalized (i.e., vertical, simultaneous) hierarchies, they *were* grounded in communal action that certainly required some coordination, perhaps in the form of situational leadership derived from heterarchical or sequentially hierarchical entities (Crumley 1979, 1995; Johnson 1982). To begin to determine the nature and scope of these relationships, it is important to consider the quantity and quality of work that went toward monumental architecture. Here, I have grounded just such a consideration in comparative assessments of the energetic and engineering requirements of monuments.

As originally defined by Elliot Abrams (199, paraphrased by Bernardini 2004:338), energetics analysis involves "the quantification of manual construction event in terms of the number of people involved, the duration of the project, the area from which participants were drawn, etc." In archaeological application, the independent variables involved in these calculations include the size of construction projects (e.g., mound volume), the distance between the construction and the source location of building materials (e.g., particular sediments or soils), and measures of individual labor investments that would have contributed to different stages of the construction project. These latter values are often measured in time – specifically, hours of work of a single individual, or person-hours – and are derived from ethnographic research. For example, by observing a communal building project in Uxmal, Mexico, Charles Erasmus (1965) identified how long it took a single person to excavate and transport a certain volume of earthen fill, as well as the length of a single work day and the approximate number of work days per year that a single individual may devote to such a project. In the analysis to follow in Chapter 5 and 6, I utilize these values, summarized in Table 4.1, to approximate the amount of raw labor that monumental construction at Garden Creek would have entailed and, in turn, to determine how many laborers would have been necessary to fulfill this labor requirement given different lengths of construction time. Similar approaches have proven instructive in Middle Woodland contexts, such as Wesley Bernardini's study of labor energetics for Ohio Hopewell embankments (2004), which revealed that the relatively quick construction of these monuments would have required the labor of more individuals than likely existed within the catchment area of a single, local community.

Excavation of earth with digging stick	1.9 person-hours/cubic m of earth
Transportation of a cubic meter of earth	0.32 person-hours/10 m of transport
**Length of work day **	5 hours
Number of work days devoted to construction	25-50 days/years

Table 4.1. Ethnographically derived independent variables for energetics analysis, summarized from Bernardini (2004).

It is important to note that calculations of the energy involved in monument construction using the values described above systematically underestimate the total amount of labor involved in a building project. First, they only represent the costs of excavating and transporting a certain amount of earth across a certain distance, leaving out other "raw" labor costs associated with piling or tamping down earth, not to mention the labor of individuals who supported but did not directly contribute to earthmoving efforts by securing shelter, providing food, etc. (Bernardini 2004:345). Moreover, they do not account for more specialized labor involved in the design and engineering of earthen architecture.

Recognizing this latter deficiency in research on earthen architecture in the American Southeast, Sarah Sherwood and Tristram Kidder (2011) have argued for more careful investigation of monument stratigraphy in order to discern specific building techniques that may have required specialized engineering knowledge related to the physical properties of soils and sediments. In mounds at Poverty Point, Shiloh, and Cahokia, they identified a variety of construction techniques indicative of different sorts of specialized labor, such as variegated or homogenized fill, zoned fill, soil and sod blocks, and prepared veneers. While all of these construction methods involved a certain amount of raw labor, their successful execution relied on more than sheer numbers of laborers to "basket-load" fill. For instance, the use of zoned fill – juxtaposed layers of dark and light, potentially more and less permeable materials – would have improved moisture balance, acting "to increase slope strength and reduce sheer stress" (78). Similarly, sod and soil blocks – intact sections of earth with or without surface soils attached, respectively – appear to have been specifically used to reinforce the steep mound slopes, to prevent erosion, or, in the case of soil blocks, to produce a stable mound core that was not as susceptible to compaction or settling as basket-loaded fill (74-77).

The point to take away from these and other examples is that the selection and configuration of earthen materials used in monument construction was not random, but rather carefully executed using specialized geotechnical expertise (74).

Methodologically speaking, identifying specialized building techniques such as these demands a macroscopic and microscopic geoarchaeological approaches. The former entails "field observation focusing on lithostratigraphic characteristics and sedimentary structures;" the latter consists of "micromorphological analysis of mound strata and potential source materials" (Sherwood and Kidder 2011:73). While careful stratigraphic mapping has long been part of standard archaeological practice in the Southeast, micromorphological techniques have only recently been applied to monumental deposits in the region. By subjecting intact stratigraphic samples to microscopic analysis, micromorphology provides a high-resolution view of both the matrix constituents and the depositional and post-depositional processes that affected anthropogenic strata (Courty, Goldberg, and Macphail 1989). At Garden Creek, such samples were generated from in-filled sediments from Enclosure No. 1 and GCAP Features 1 and 26, but not from Mound No. 2, the excavation of which pre-dated the application of micromorphological approaches (at least in the Southeast). However, in-person and recorded field observations, photographs, and detailed profile maps are available from both of these monumental contexts at the site, allowing at least for basic macroscopic assessments of engineering strategies employed in monument construction.

Fleshing Out History with Social Stratigraphy

While the construction of the Garden Creek monuments can and should be viewed as significant, ritualized processes in and of themselves (Sherwood and Kidder 2011), the terms "platform mound" and "earthwork enclosure" imply that their relevance and use did not end when the last sod block or basket load of fill was put in place. A *platform* mound provides a raised surface for the establishment of special buildings or the staged performance of certain activities, and an earthwork *enclosure* bounds space and activities that occurred within its margins. In other words, at the same time that we cannot assume that an earthen monument was erected to serve a purpose only in its final form" (Kidder 2011:104), with reference to Poverty Point), we can neither ignore that these mounds and earthworks were meant as platforms to support *something*, or enclosures to surround *something*. But what, in the case of Garden Creek specifically, might those "somethings" have been? Moreover, what sorts of things happened around the monuments in the adjacent occupation areas? To answer these questions, I focus on a variety of features as my unit of analysis, and examine them through the lens of social stratigraphy and histories of practice.

The recognition and interpretation of archeological features has formed an integral part of archaeological field investigations in the Southeast for more than 80 years. Perhaps most well-known for its contributions to ceramic seriation and culture history construction, New Deal era archaeology was also notable for expansive excavation strategies that exposed archaeological features across broad horizontal areas and in long profile walls (Johnson 1993; Lyon 1996). Beneath the plowzone at sites across the Southeast, WPA and TVA archaeologists were able to identify disturbances in the soil representing discrete human activities in the past, including postholes, hearths, artifact clusters, pits, and burials. Complementing these well-established field methods, archaeologists today are tackling features using new interpretive frameworks. Chief among these is the treatment of features as stratigraphy. Geoarchaeologists in particular have been adamant in pointing out that "features are fundamentally deposits" (Homsey and Capo 2006:238; see also Courty, Goldberg, and Macphail 1989; Sherwood 2001), consisting of anthropogenic fill sediments and a variety of inclusions, from ceramic and lithic artifacts to plant and animal remains. As such, they can and have been theorized and analyzed in stratigraphic terms. An explicit consideration of the formation and fill of features has the potential to elucidate not only the practical function of features, but the social significance of the practices that generated them (Berggren 2009).

McAnany and Hodder (2009) have developed a practiced-based approach to stratigraphy in general that can be usefully applied to archaeological features in particular (see also Berggren 2009). They suggest that a stratigraphic layer not be viewed as "a passive container of temporally sensitive artifacts but as a physical medium for the performance of social practice" (7). This perspective, glossed as "social stratigraphy," emphasizes the techniques by which strata are formed (namely depositing/adding, cutting/subtracting, and relocation) and the on-the-ground processes that occurred in the past and relate certain strata to other strata, such as raising, scouring, continuing inhabitation, and avoiding (8-9). From here, they argue that a careful, multiscalar consideration of such techniques and practices can make available a number of possible interpretations of the broader social phenomena at work, in particular those related to social memory – from remembrance and renewal to subversion and forgetting (10; Mills and Walker 2008).

As a whole, the social stratigraphy framework has considerable theoretical appeal for tackling the life histories of monuments and places more generally. For one thing, it provides a necessary compliment to what McAnany and Hodder term "object-oriented" approaches to stratigraphy, particularly the study of formation processes derived from the analysis of artifact biographies, re-use, and disposal (Schiffer 1987). Instead, social stratigraphy calls attention to practices at the place "where landscapes and artefacts [sic] meet" (McAnany and Hodder 2009:2). Furthermore, the authors maintain that archaeological traces at this scale are especially compatible with "the tempo and duration of human construction events" (9). In other words, stratigraphic deposits – including features – encode evidence of episodic practices that can be straightforwardly linked to on-the-ground human experiences; this correspondence makes social stratigraphy an especially useful lens for practice-based interpretations of the archaeological record. Last but not least, the social stratigraphy framework is more inclusive than the concept of "structured deposition" (Richards and Thomas 1984), which does consider formal patterns in depositional contexts, but almost exclusively with regard to ritual practices (Pollard 2008; Bruck 1999). Those layers comprising a social stratigraphy, in contrast, may be the result of a variety of domestic, economic, ceremonial, or other practices, and thus may be able to speak to a greater variety of social structures in the past.

Still, there remain significant challenges to the social stratigraphy approach, perhaps the most notable of which is interpretive equifinality. Several of the stratigraphic contexts that are anecdotally explored by McAnany and Hodder appear equally well explained (or not) by diverse interpretations. For example, the layers of painted-over murals at Catalhoyuk are variously viewed as a process of entombment and, in turn, continuity and remembrance; or as a process of erasure, suggesting "a break in with the past, perhaps the charting of a new course, but…also protection and regeneration" (McAnany and Hodder 2009:16). As several discussants of their original paper noted, more thorough examinations of the local context is necessary before specific interpretations of remembering vs. forgetting (among others) are put forward. In Asa Berggren's words (2009:24), "Radically different social processes… may result in the same material results. We have to know enough of the people we are trying to understand to decide what social principles were at play in each case."

Recently in the Southeast, Pauketat and Alt's (2005) study of agency in a postmold demonstrated the interpretive richness that is possible when the local context of a certain stratigraphic practices thoroughly investigates. By examining the "*chaînes opératoires* of post hole digging, post preparation, and post setting" at Cahokia and nearby sites from around AD 1050-1100, they were able to propose a shift from a repertoire of pre-Mississippian building practices, involving periodic reconstructions of single-post structures by communal groups, to classically Mississippian wall-trench construction, which possibly entailed the organized labor of work crews. This shift in post-related practices and the time-transgressive manner in which it spread throughout the greater Cahokia vicinity is interpreted as evidence for pervasive structural changes in the organization of labor and society related to the emergence of Cahokia as a political-administrative center. In short, they explore a history or genealogy of a practice (what McAnany and Hodder call a "process") among of a particular stratigraphic unit/feature class – the so-called "lowly postmold" – as a window onto pervasive processes of structural social change (see also Mills 2009).

Though Middle Woodland period archaeology in the Appalachian Summit is not nearly as intensively documented as the archaeology of Mississippianization in the American Bottom, robust datasets exist for tracing histories of practice and, in turn, change and continuity in social structures at Garden Creek. Unquestionably, such data are richest in contexts associated with Mound No. 2, thanks to the amount of horizontal area exposed and the presence of stratified mound and pre-mound deposits. Comparatively limited excavations of and inside Enclosure No. 2, meanwhile, offer a more circumscribed but nevertheless informative view of activities associated with that monument. Finally, recent geophysical survey has provided an extensive view of activities in the Garden Creek non-monumental occupation area, though only a few ground-truthed contexts have been examined stratigraphically or through artifact analysis. In the chapters that follow, I describe the macro-stratigraphy, morphology, constituent assemblages, and spatial and temporal associations of mound, enclosure, and non-monumental features. In the case of Mound No. 2, I also present a methodology for identifying and descriptions single-post structures from the clouds of postholes that Keel and his crew identified across sequential surfaces associated with Mound No. 2. Armed with this information, I infer the functions of different feature classes and of specific features, and examine what certain constellations of features at particular historical moments (e.g., below the mound; on the primary summit of the mound; in the fill of the enclosure; etc.) can tell us about the way these monumental and non-monumental spaces were used at these times.

CHAPTER 5

THE PLATFORM MOUND

When Garden Creek Mound No. 2 was investigated in the 1960s, two findings emerged to challenge existing ideas about the archaeology of the Appalachian Summit and, arguably, the greater Southeast. First, Keel determined that this monument dated to the late Middle Woodland Connestee phase (ca. AD 200 – 600, if not later). This dating was significant because Mound No. 2 was a platform mound, a type of earthen architecture that had previously been associated with Mississippian cultures, in which they are thought to have served as elevated foundations for chiefly residences or exclusive/restricted-access temples, and thus served to reinforce hierarchical social and political relationships that appear to have characterized Mississippian societies.

The identification of a much earlier platform mound at Garden Creek forced archaeologists to consider whether this form of architecture signaled hierarchy in Middle Woodland society, or whether platform mounds had uses besides supporting chiefs' houses and temples, in which case the one-to-one relationship between platform mounds and political hierarchies would require revision. In the years since the original dating of Mound No. 2, similar Middle Woodland platform mounds have been identified elsewhere in the Southeast and data from these sites support the idea that Middle Woodland platform mounds were not loci of institutionalized socio-political inequalities, but rather integrative ceremonies, rituals, and activities (Lindauer and Blitz 1997).

The Cherokee Project's other notable discovery at Mound No. 2 was the identification of a handful of artifacts and exotic raw materials suggestive of some sort of Hopewellian influence in the Appalachian Summit. This finding came to light at the same time that other Southeastern archaeologists were encountering Hopewellian material culture at Middle Woodland sites in Georgia (Jefferies 1976, 1979; Smith 1979), Tennessee (Butler 1979; Chapman 1973), Alabama (Walthall 1973, 1979), Mississippi (Jenkins 1979), and Louisiana (Toth 1974, 1979). Much of this information was presented at the 1978 Chillicothe Conference on Hopewell archaeology, which James B. Griffin in later years referred to as "the revolt of the South" (Pacheco 1996:vi). Whereas the preceding century of research on Hopewell had focused on the earthwork sites of southern Ohio and western Illinois, by the 1970s, sufficient data had been collected to justify the inclusion of a much greater portion of the Eastern Woodlands in discussions about Hopewell. That said, characterizing the nature of Southeastern Hopewell eluded the original conference goers and continues to be a slippery topic today; this study stands to shed some light on the matter, at least in the Appalachian Summit.

These three related aspects of Mound No. 2 – its Middle Woodland age, its platform shape, and its association with Hopewellian material culture – received the bulk of analytical attention in the initial report of the site (Keel 1976) and in later publications that cited the mound as an example of a wider pattern of Middle Woodland activity in the Southeast (Chapman and Keel 1979; Knight 1990, 2001; Walthall 1985). Keel's excavation of all that remained of the mound in 1965 produced numerous datasets that have been under-studied.

This chapter focuses on some of those materials to contextualize the well-known aspects of Mound No. 2 in time and to expand our knowledge of the activities associated with the mound. The data in the pages that follow were assembled during six weeks of collections work at the University of North Carolina's Research Laboratories of Archaeology in Chapel Hill, where all Cherokee Project materials except those that have been repatriated under NAGPRA are curated.

My analyses focused on the ceramic assemblage from the mound and from surface collections of the vicinity, and on the maps and notes that detailed the nature and spatial organization of artifacts, features, and architectural deposits as they were encountered in the field. I also was able to run a suite of eight AMS dates on charcoal samples recovered from the mound during Keel's excavations. Combined, the resulting data provide a detailed life history of Mound No. 2, which I outline below by (1) providing a Harris Matrix of the Mound No. 2 deposits; (2) building a chronology for these deposits using AMS dates and Bayesian modeling; (3) estimating the labor required for mound construction; and (4) describing histories of practice associated with mound deposits as evidenced in features and single-post structures.

Deposits and Surfaces of Mound No. 2

In his report of Mound No. 2, Keel isolated four surfaces under or on Mound No. 2: the interface of the subsoil and overlying deposits (i.e., midden or plowzone); the top of the pre-mound midden; the top of the first episode of mound construction, also called the primary mound; and the interface of the second episode of mound construction fill, also called the secondary mound, and the plowzone. Maps of these contexts give the impression that these surfaces were contiguous and that the depicted features and postholes all correspond to the same natural stratigraphic level (Figure 5.1). In fact, field observations of the zones of fill and the general midden matrix were apparently straightforward. In Keel's words (1976:75, 78), "The distinctive appearance of each of the major construction stages of the mound made it quite easy to excavate the mound in the reverse order of its construction. The only difficulties we encountered in the stratigraphic peeling of the site were along the eroded and disturbed margins of the mound where plowing had caused a great amount of soil mixing." Under these conditions, Keel labeled each feature according to one of three stratigraphic contexts: the pre-mound midden layer (n=22), the primary mound (n=11), or the secondary mound (n=9).

Maps and notes from the field, however, present a more complicated picture. My reanalysis of these documents suggests that the interpretive challenges that Keel and crew encountered in the "stratigraphic peeling of the site" were perhaps more extensive than initially acknowledged. First, the bulldozer cut that initially called attention to the mound and affected nearly half of the mound's areal exposure removed much of the second stage of mound construction and, in some places, the uppermost layers of the first stage of mound construction. As a result, there are portions of the site in which features cannot be assigned a layer of stratigraphic origin. Similarly, because the plowzone truncated the top of the second stage of mound construction, it was not possible to identify whether features that intruded into the secondary mound from the base of the plowzone originated at the summit of the secondary mound or at an even higher surface that was now destroyed. Plowing also obscured the origins of features in areas that were not covered by substantial mound fill deposits. Conservatively, I would estimate that at least 20% of the excavation block, especially its northern portion where many features were concentrated, was characterized by mixed-up sediments above the subsoil, making it difficult to ascertain, at least in plan view, if features were capped by or intruded into the pre-mound midden or later mound slump deposits. On the one hand, these conditions sometimes preclude straightforward connections between individual features and the three archaeological strata that Keel identified. On the other hand, by paying closer attention to recorded elevations, profile drawings, and other unpublished records on file at UNC-RLA, it was possible to associate certain features with specific mound and sub-mound strata.

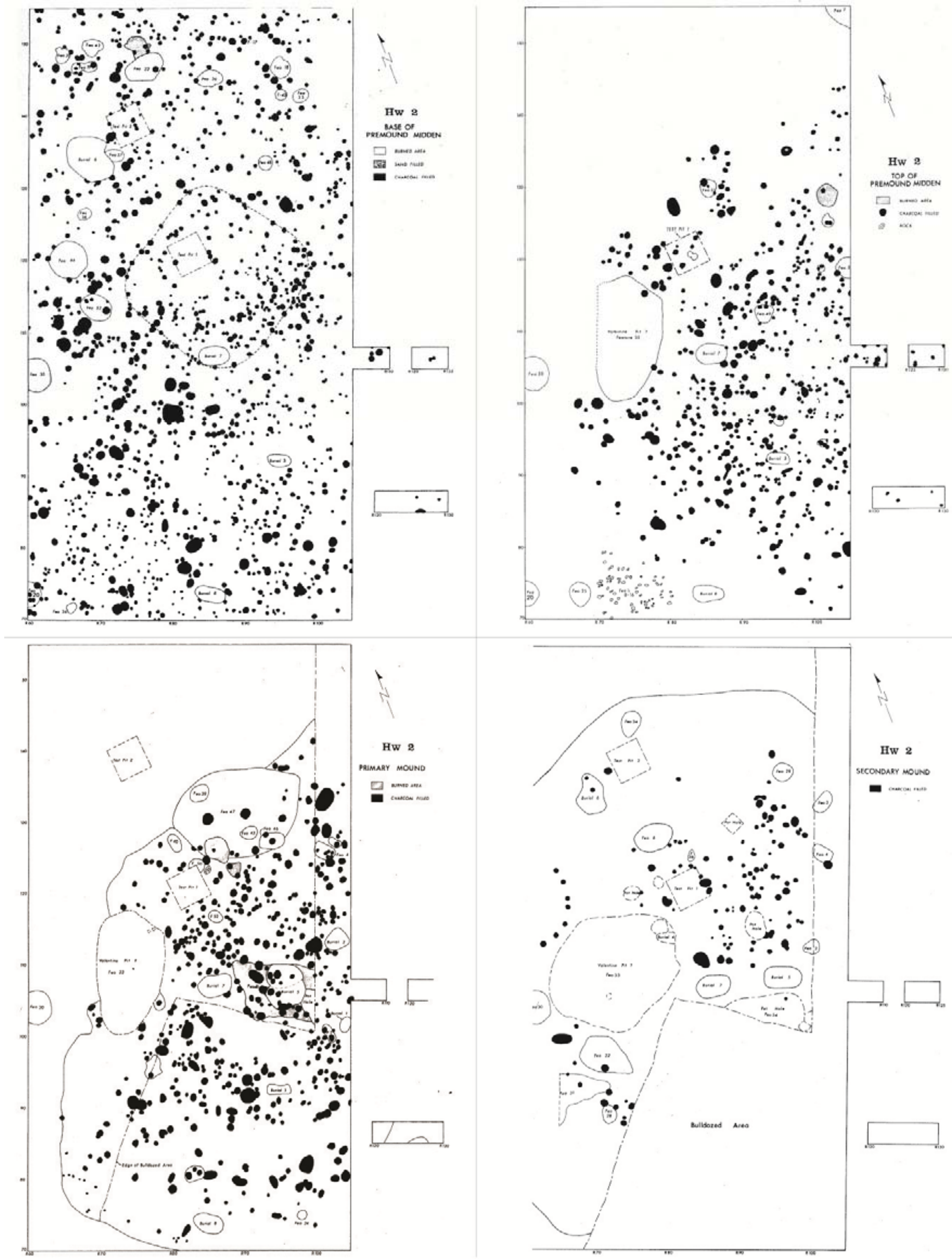


Figure 5.1. Maps of four surfaces identified during the 1966 excavation of Mound No. 2, as drawn in *Cherokee Archaeology* (Keel 1976).

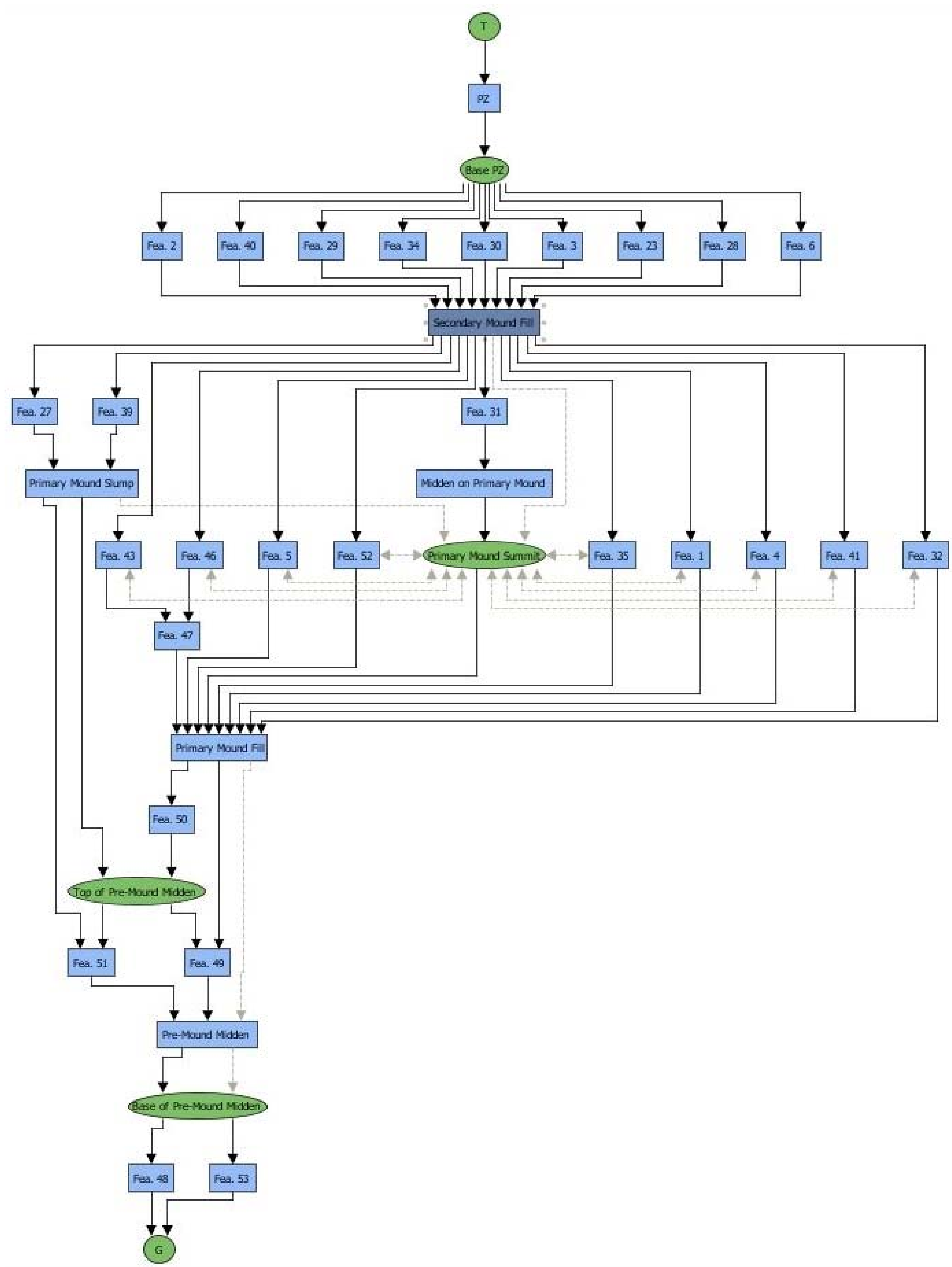


Figure 5.2. Harris matrix showing relationships of features in stratigraphic Sets 1-8, encompassing the most intact archaeology in the 1966 excavation block; green surfaces roughly correspond with strata identified and mapped by Keel (1976).

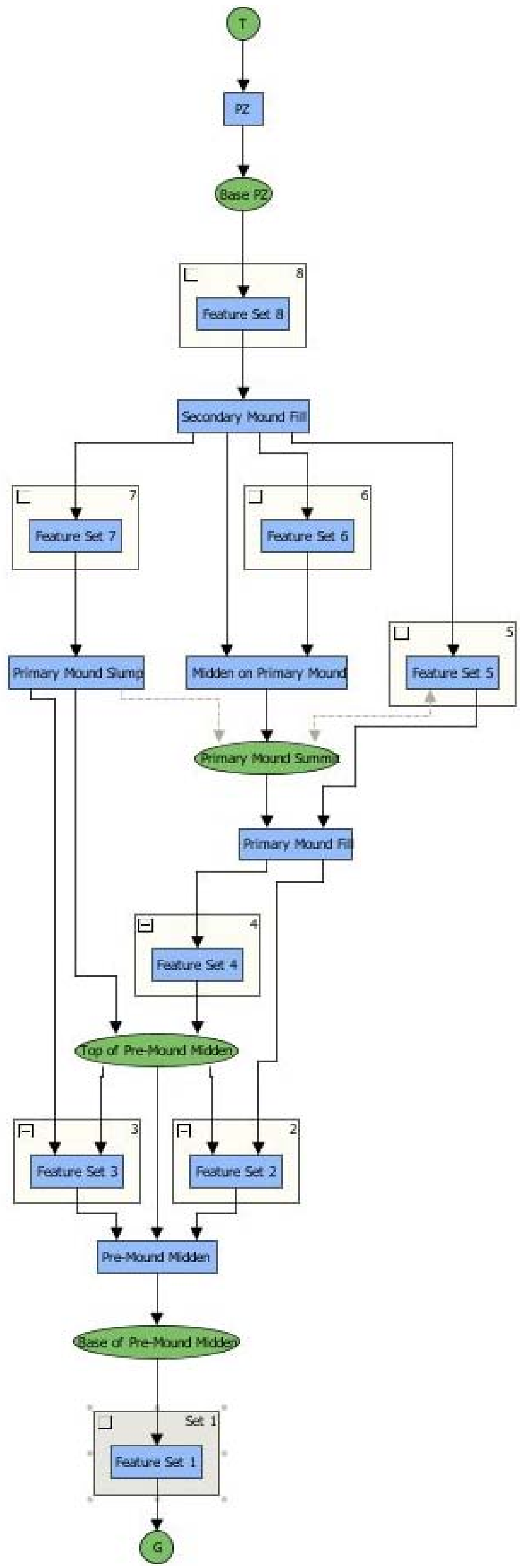


Figure 5.3. Simplified Harris matrix showing relationships of Feature Sets 1-8.

Using these materials, I have reassessed the stratigraphic order of the 54 features Keel and his crew identified in the 1966 field season (Keel 1976:82, Table 8). Of these, two (Features 33 and 54) were large pits that resulted from the Valentine Museum excavations, one (Feature 19) was later deemed the remains of a tree stump, and nine (Features 8-16), though originally interpreted as scattered surface hearths, more likely represent mound construction materials along the southwestern edge of the mound itself (according to field notes on file at UNC-RLA, hereafter Keel 1966). The present re-analysis focuses on the remaining 42 features, all of which Keel attributed to the Woodland period according to their artifact assemblages and, to a lesser extent, their stratigraphic relationships.

Rather than three strata identified by Keel, these more recent efforts differentiated 10 distinct stratigraphic layers, many of which can be ordered chronologically, and all of which are associated with particular sets of features (Table 5.1; Figures 5.2 and 5.3). Generally speaking, the central portion of the excavation block included many more strata (Sets 1-8) than the northern and southeastern portions (Sets 9-10), where mound fill zones tapered off and became indistinguishable from the midden sediments that overlay the subsoil. In fact, the inability to distinguish between slump and midden in these areas means that it is next to impossible to chronologically relate many of these features to the mound deposits on the basis of stratigraphy alone (though some may be relatively dated using ceramics, or in a few cases, have been radiometrically dated). Fortunately, these features are the only ones whose stratigraphic attributions were rendered less precise (though, on the basis of the present data, more accurate) by this re-analysis.

In the central, most stratified portion of the excavation block, the earliest features (Set 1) were excavated into the subsoil and were subsequently covered by an artifact-rich layer of dark brownish-black clayey loam that constituted a pre/sub-mound midden. Two features (Sets 2 and 3) originated in this midden and were respectively capped by the first stage of mound construction or by the slump of the first stage of mound construction and one feature (Set 4) "was used prior to the completion of M.S. [mound stage] 1, but after it was begun… this feature should give [a] date of mound stage 1 construction" (Keel 1966). Once this first stage of mound construction was completed, several features were excavated into the summit of the primary mound (Set 5) or into a midden on top of this summit (Set 6), only to be sealed by fill used in the second episode of mound construction. Features in Set 7 were also capped by the secondary mound, but they were excavated into the slump of the primary mound, and therefore might postdate the formalized use of the summit. Several features (Set 8) were then created following this second episode of mound construction, but historic and modern disturbances make it difficult to confidently assign them a *terminus ante quem*. Generally appearing under the base of the plowzone and secondary mound deposits[1], it is impossible to say whether or not these features originated at the summit of the secondary mound or at some unknown surface that overlay the secondary summit and is now destroyed.

Set	Stratigraphic Description	Included Features
10	In midden/slump, capped by plowzone	7, 17, 18, 20, 22, 24, 25, 36, 44
9	In subsoil, capped by midden/slump	21, 26, 37, 38, 42, 45
8	In M.S. 2, capped by plowzone	2, 3, 6, 23,28, 29, 30, 34, 40
7	In M.S. 1 slump, capped by M.S. 2	27, 39
6	In midden on top of M.S. 1, capped by M.S. 2	31
5	In summit of M.S. 1, capped by M.S. 2	1, 4, 5, 32, 35, 41, 43, 46, 47, 52
4	In and capped by fill of M.S. 1	50
3	In pre-mound midden, capped by M.S. 1 slump	51
2	In pre-mound midden, capped by M.S. 1	49
1	In subsoil, capped by pre-mound midden	48, 53

Table 5.1. Stratigraphic associations of archaeological features under, on, or immediately around Garden Creek Mound No. 2, excavated in 1965-1966. Bold line separates those sets of features immediately within the mound deposits from those at the margins of the mound itself.

Beyond the margins of the primary mound proper, several features were identified that were capped by or excavated into more ambiguous sediments. Generally speaking, in the northwest corner and western edge of the excavation block, the earth between the base of the plowzone and the top of the subsoil could not be distinguished as pre-mound midden or as later mound slump. Features capped by this deposit (Set 9) could therefore be some of the earliest excavated (contemporaneous with Set 1), or they may simply predate mound slumping. Similarly, although features excavated into this deposit (Set 10) certainly postdate the creation of the pre-mound

[1] Field records note that the features that I include in Set 8 were excavated into the secondary mound or into the slump of the secondary mound. However, horizontally speaking, these features occur within the area demarcated by the secondary mound edge. Therefore, I interpret this stratum in these areas as the original secondary mound, not as slump. Associations with secondary mound slump deposits are more likely for features in Sets 9 and 10.

midden, they may have any number of temporal relationships with adjacent (but not over/under-lying) construction episodes if the surrounding sediment is pre-mound midden, or they may entirely postdate the mound building sequence if it is mound slump. Given this uncertainly, features is Sets 9 and 10 are examined separately from stratified Sets 1-8, and are only included in diachronic interpretations where independent means of dating are available. However, they are useful for comparisons across horizontal space, such as those among mound summit surfaces, off-mound surfaces, and sub-mound surfaces.

Dating Mound No. 2

As mentioned above, an important element of my reanalysis of the Mound No. 2 materials was obtaining new dates on old materials in order to track the monument's life history through time. In total, eight new dates were run on wood charcoal from eight different features in Mound No. 2 (Table 5.2). These samples were selected from four different features sets that were associated with one of three deposits – the pre-mound midden, the primary mound, and the secondary mound (note that in some cases, I assigned a different stratigraphic context than Keel, based on my reanalysis). Generally speaking, by sampling these stratified contexts, I sought to evaluate the duration and tempo of the entire life history of the monument. I also dated several features on the summit of the primary mound to better date activities occurring across the most intact monumental summit at the site.

Each sample was run at the all at the University of Arizona-NSF accelerator Mass Spectrometry Laboratory. The radiocarbon age of each date was then individually calibrated in OxCal Version 4.2.2 (Bronk Ramsey 2013) using the Int.Cal 9 calibration curve (Reimer et al. 2009); the results are presented in the fifth column of Table 5.3. Even in this relatively raw form, the overlap in dates is considerable, providing a strong indicator that the pre-mound use of the Mound No. 2 vicinity and the subsequent construction of Mound No. 2 occurred during the Connestee phase, as Keel predicted – maximally cal. A.D. 76 – 537 at the two-sigma range. These results can be further refined through Bayesian modeling, which, as discussed in the previous chapter, incorporates *a priori* stratigraphic information during the statistical calculations of the calibrated dates.

Sample No.	**Fea. No.**	**Type**	**Set**	**Keel's stratigraphic context**	**Revised stratigraphic context**
GC1966.04 (AA100830)	40	Basin	8	Primary mound	Secondary mound
GC1966.02 (AA100828)	18	Cobble hearth	10	Pre-mound midden	Primary mound
GC1966.01 (AA100827)	5	Cobble hearth	5	Pre-mound midden	Primary mound
GC1966.03 (AA100829)	32	Simple hearth	5	Secondary mound	Primary mound
GC1966.05 (AA100831)	41	Burned floor	5	Primary mound	Primary mound
GC1966.06 (AA100832)	43	Cobble hearth	5	Primary mound	Primary mound
GC1966.08 (AA100834)	45	Mica-lined pit	9	Pre-mound midden	Pre-mound midden
GC1966.07 (AA100833)	44	Cobble hearth	10	Pre-mound midden	Unknown

Table 5.2. Context of radiocarbon samples from Mound No. 2.

Sample No.	Fea. No.	Revised stratigraphic context	^{14}C age B.P.	Individually calib. date (2-sigma)	Modeled calib. date (2-sigma)
GC1966.04 (AA100830)	40	Secondary mound	1,765 ± 38	cal A.D. 137 – 382	cal A.D. 262 – 387
GC1966.02 (AA100828)	18	Primary mound	1,760 ± 38	cal A.D. 139 – 385	cal A.D. 211 – 334
GC1966.01 (AA100827)	5	Primary mound	1,771 ± 38	cal A.D. 240 – 410	cal A.D. 294 – 341
GC1966.03 (AA100829)	32	Primary mound	1,799 ± 38	cal A.D. 126 – 337	cal A.D. 184 – 331
GC1966.05 (AA100831)	41	Primary mound	1,700 ± 43	cal A.D. 240 – 425	cal A.D. 235 – 360
GC1966.06 (AA100832)	43	Primary mound	1,638 ± 38	cal A.D. 265 – 537	cal A.D. 249 – 329
GC1966.08 (AA100834)	45	Pre-mound midden	1,839 ± 38	cal A.D. 76 – 312	cal A.D. 128 – 317
GC1966.07 (AA100833)	44	Context unclear	1,765 ± 37	cal A.D. 137 – 382	Not modeled

Table 5.3. Dates from Mound No. 2.

For the present model, a three-stage sequence was postulated, beginning with the pre-mound midden, followed by the primary mound, and ending with the secondary mound (Sample No. GC1966.07 could not be confidently assigned to any of these strata, since it was recovered from either midden or mound slump). Because no stratigraphic relationships could be inferred from the features on the primary mound, they are attributed here to a single phase of mound summit use; although their intra-context contemporaneity should not be assumed, it is clear from the stratigraphy that all must post-date the midden and pre-date the secondary mound. That said, it is important to keep in mind that neither these strata nor their features are being dated directly, but rather pieces of wood contained in those features whose radiocarbon ages may not correspond precisely with the age of the feature (e.g., the "old wood" problem). Therefore, these results (shown in Figure 5.4, and summarized in the sixth column of Table 5.3) should be considered a step in an increasingly precise reckoning of time at Garden Creek, but certainly not the last word.

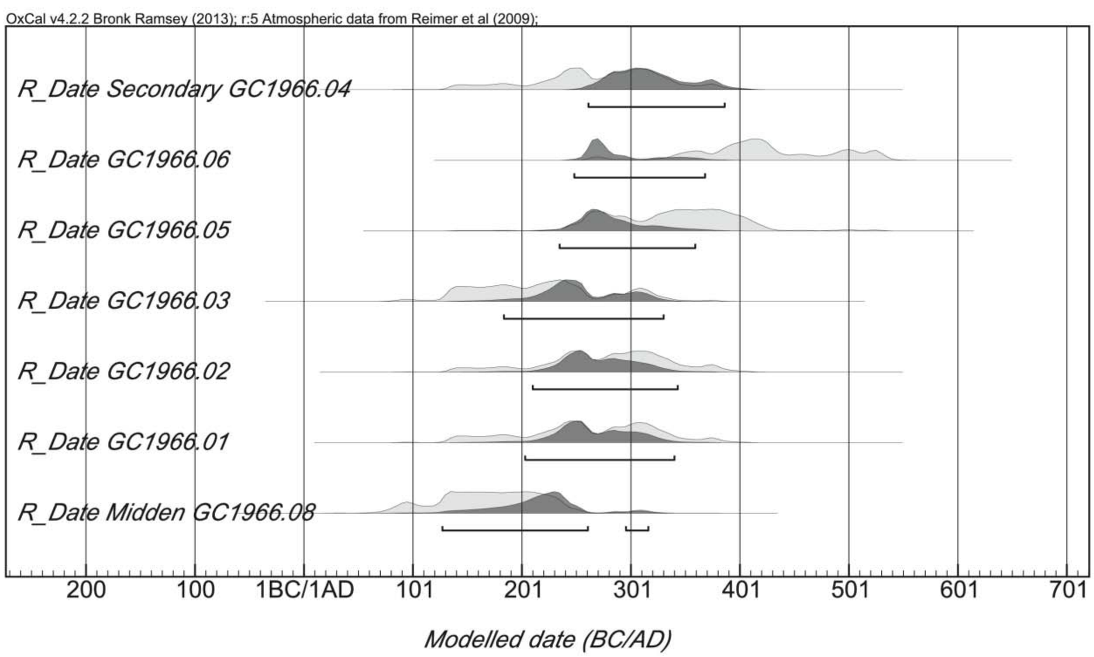


Figure 5.4. Calibrated AMS dates from Mound No. 2. Light gray areas indicate probable range of date when calibrated individually; dark gray areas indicate probable range of date when calibrated in the Bayesian model. Brackets demarcate 2-sigma range of modeled date.

In all cases, the modeled 2-sigma range is lower than that yielded by independent calibration of the dates. The integrity of this model is supported by the fact that six of the seven modeled dates had good statistical agreement with the *a priori* parameters (A-values > 60%). The only exception was GC1966.06, with a low A-value of 25.4%. Both Keel (in the field) and I (on the basis of maps, notes, etc.) agree that the stratigraphic position of Feature 43 (on the top of the primary mound) is secure, so it may be that the sample selected to date this feature is somehow out of context.

Interestingly, these new modeled dates attest to an earlier and more compressed history of Garden Creek Mound No. 2 than previously assumed, based on relative dating methods and the single extant date. The single date from the pre-mound midden (individually calibrated or modeled) supports the inference that features and artifacts in this context date to the late Pigeon or early Connestee phase, likely the second or third centuries A.D. It would appear that both mound building episodes occurred shortly thereafter.

The earliest and latest modeled dates for the features in the primary mound are cal A.D. 184 and cal A.D. 360, respectively, indicating a maximum of less than 200 years of primary mound summit use in the early Connestee phase. At a 1-sigma error range, this period of summit activity is reduced to a mere century between cal A.D. 217 and cal A.D. 315. The general accuracy of these dates is bolstered by the single modeled calibrated date from the top of the secondary mound (cal A.D. 262 – 387 at 2-sigma, cal A.D. 274 – 320 at 1-sigma) that effectively provides a *terminus ante quem* for primary summit use. Additional dates will be needed from the secondary summit to fully understand the duration of its use. However, if it was used for the same amount of time as the primary summit, then it is likely that it was a locus for activity mostly, if not exclusively, during the Connestee phase – an attribution that is especially important given the dating of other monuments and artifacts at the site and of other Middle Woodland platform mounds in the Southeast.

The Energetics of Mound Building

The dating of Mound No. 2 began with an attribution to the Connestee phase – a period thought to have lasted at least 400 years (though maybe longer, since the late Woodland period in North Carolina remains ambiguous). Now, thanks to AMS dating and Bayesian modeling, we know that there is a strong likelihood that the pre-mound midden was laid down at the very beginning of this phase, that the primary mound was erected during the third century A.D., and that the secondary mound was built shortly thereafter. We have shifted from a monumental life history measures in centuries-long phases to one that can specify the particular century when the mound was in action. Still, a century is a far cry from the generational or even finer-grained scales of human experience. To explore the mound's life history at this level, at least hypothetically, I now turn to a consideration of the labor that would have been required to build it, given certain temporal restraints. Here, I combine descriptive data about the stratigraphy of the Mound No. 2 deposits with the ethnoarchaeologically derived estimates for expended labor energetics outlined in Chapter 4; the results are summarized in Table 5.4.

	Stage 1	Stage 2	Stages 1 and 2
Fill description	Yellow clay	Brown, dark gray clayey loam	n/a
Fill volume	116.1 m^3	151.8-232.2 m^3	267.9-348.3 m^3
Distance to fill source	92 m	132 m	n/a
PH* to excavate	220.6	299.4-441.2	520.0-661.8
PH to transport	341.8	641.2-980.8	983.0-1322.6
PH total	562.4	940.6-1422.0	1503.0-1984.4

Table 5.4. Raw energetics of Mound No. 2 construction.

The first episode of construction of Garden Creek Mound No. 2 measured 40-x-60 feet (12.2-x-18.3 m) in horizontal extent, and 1.7 feet (0.52 m) thick. Thus, the total volume of earth – in this case, yellow clay fill – moved for the primary mound was approximately 116.1 m^3, calculated by multiplying this episode's length by width by thickness. Though Keel offers few specifics on the fill matrix, its color and clayey-ness are consistent with the subsoil observed in areas up to 60 m away from the mound; in other words, it would appear that the fill dirt was mined in the immediate vicinity of mound construction. Although plowing likely would have obliterated obvious evidence of borrow pits, it is possible that some of the clay used for the mound came from excavations of the earthwork enclosure ditches, for which there is no unequivocal evidence of an associated embankment. However, given the volume of the ditch and the timing of its construction (discussed in Chapter 6), this scenario is quite unlikely. Another possibility is that a low-lying area east of Mound No. 4 may be the remains of a borrow pit, though this hypothesis is, to date, untested. Lacking clear-cut data, I calculated a plausible transport distance for the clay used for primary mound by averaging the distance between the approximate center of the platform mound and (1) the center of Enclosure No. 1, 54 m; (2) the center of Enclosure No. 2, 89 m; and (3) the approximate center of the depression east of Mound No. 4, 132 m. The resulting transport distance was 92 m.

Using Erasmus's values for the labor involved in earth excavation and transport, described previously, the primary mound required at least 562.39 person hours of labor – 220.59 hours for excavation, and 341.8 hours for transport. This estimate is, in my mind, fairly conservative, given the extreme compactness, hardness, and heaviness of the clay subsoil used in mound construction; moreover, it does not account for time spent planning the layout of the mound or placing and compacting the fill once it had been moved. Still, given a five-hour work day, the mound would have taken a single person 113 days to construct; five people 22.5 days to construct; or 100 people 1.1 days to construct. Put another way, assuming there were 25-50 workdays per year, the mound could have been built in a single year by 3-6 people. Assuming (as others have argued; e.g., Knight 2001) that Garden Creek was at least periodically visited by a community (or communities) of seasonally sedentary foragers, each of which plausibly consisted of several families, then it seems perfectly reasonable that building the primary mound constituted a single, prolonged event that was collectively undertaken over the course of several weeks (perhaps the length of a seasonal occupation). The AMS dates indicate that this platform, once completed, was used not only by the builders, but possibly also by a few subsequent generations.

The second episode of platform mound construction at Garden Creek requires some additional extrapolation before energetics analysis is possible, on account of its vertical truncation by plowing and horizontal truncation by bulldozer. Keel conservatively approximated that the secondary mound measured 80 x 60 feet (24.4 x 18.3 m) horizontally. The maximum thickness of intact (sub-plowzone) secondary mound fill was 1.1 feet (0.34 m); because this would have been a flat-topped mound, this value is assumed to represent an absolute minimum thickness for this level of fill. Over this intact fill, Keel encountered 0.6 feet (18 cm) of plowed soil, so the mound, as he encountered it, totaled 3.4 feet high above the underlying midden. This value was much smaller than the heights of 7-9 feet and 13-18 feet recorded by the Osbornes and Heye, respectively (see Chapter 3). Keel surmised that these divergent measurements were attributable to subsequent episodes of mound construction associated with the mound's intrusive Pisgah phase burials, which had been destroyed in the years between these early excavations and the Cherokee project. I am in agreement with this assessment. I thus suggest that a conservative estimate of the volume of the secondary mound fill should include the plowzone as well as the intact mound fill, yielding a maximum possible thickness of 1.7 feet (52 cm). Under these conditions, the total volume of the secondary episode of platform mound construction at Garden Creek can be estimated between 151.8-232.2 m^3, which would have required 299.4-441.18 person hours to excavate.

In contrast to the primary episode of mound construction, the secondary fill was mixed dark brown and gray clayey loam, similar to the pre-mound midden. If, indeed, midden was transported to yield the second stage of the mound, then its most likely place of origin is the possible borrow depression east of Mound No. 4 – again, 132 meters from the location of the mound. Therefore, the person hours required to move 151.8-232.2 cubic meters of midden 132 meters would require 641.2-980.8 person hours. The total person hours to excavate and transport the building material for the second episode of mound construction, then, ranges from 940.6-1422 person hours, depending on whether or not the plowzone is included in the volume of this secondary mound. Again, assuming a five hour workday, this effort would have taken a single person 189-285 days to construct, five people 38-57 days to construct, or 100 people 2-3 days to construct. To build the mound in a single year of 25-50 work days would require 4-8 people (for the smaller mound volume estimate) or 6-11 people (for the larger mound volume estimate). As with the primary mound, it is conceivable that this construction stage could have been completed by members of an aggregate community over the course of a single season, after which the mound surface could be used for several generations. In neither case is there reason to assume that mound building (note –*not* mound use) was a project and a process, at least based on labor requirements.

Without micromorphology samples, assessments of geotechnical engineering at Mound No. 2 are more problematic than assessments of its energetic requirement. That said, Keel's descriptions of mound fill and stratigraphy offer one clue as to the builders' engineering strategies. With regard to the primary episode of mound building, thin streaks of dark soil interspersed with the yellow clay were near the bottom of the mound. Keel surmised (1976:78), "It is probable that when the clay was dug to erect the mound, the upper part of the clay bed would have been stained by the overlying top soil. This stained clay would have been the first soil to be placed down in the raising of the mound. Thus, it seems reasonable to assume there dark bands were the result of reverse stratigraphy." To my mind, this process sounds quite a bit like cutting and placing sodblocks (described above). The secondary mound, in contrast, was described as having been erected through basket loading (1976:85), suggesting that energy, rather than engineering, were emphasized in its construction.

Histories of Practice Under and On Mound No. 2

To sum up what has been pieced together of Mound No. 2's life history so far, the results of construction energetics analysis support the idea that each mound stage could have been built fairly quickly and deliberately, while the mound surfaces may have been in use for several decades following each construction episode. But what was actually happening on these mound summits, and what activities took place in this particular spot on the landscape before Mound No. 2 was erected? To answer these questions, I now turn to the *use*-life history of the Mound No. 2 deposits, as represented by a variety of feature contexts.

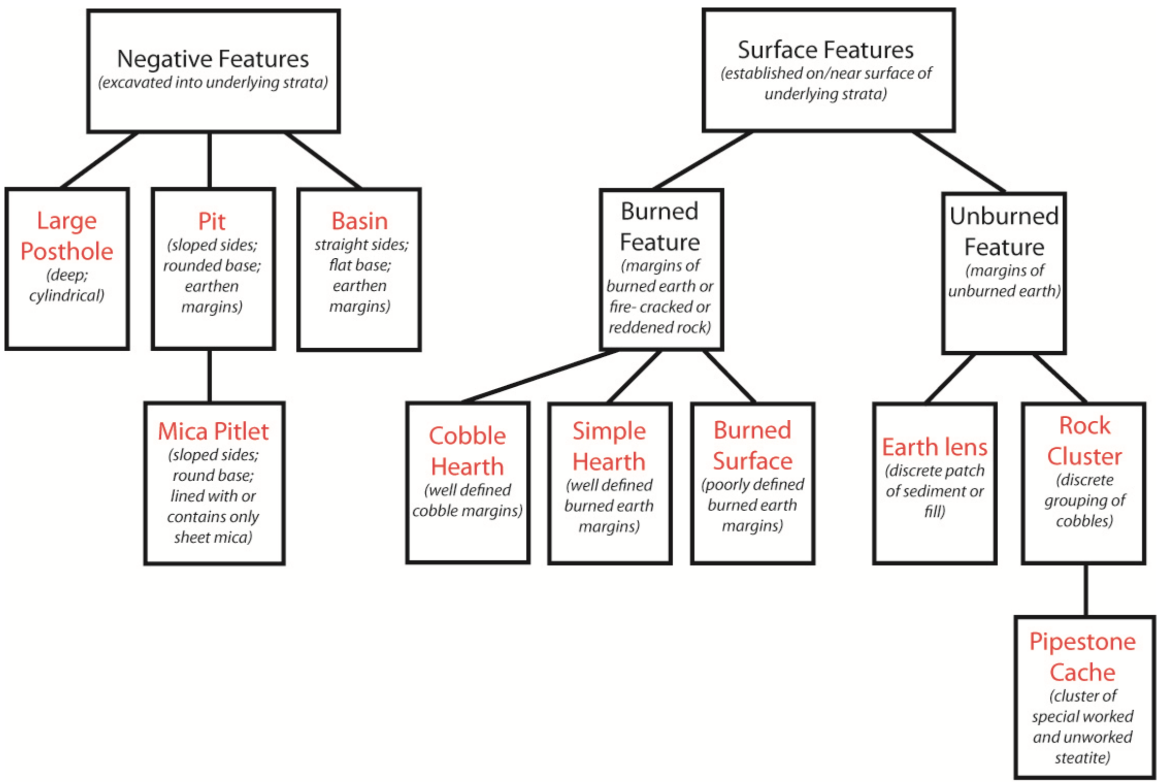


Figure 5.5. Feature typology for Garden Creek Mound No. 2. Feature classes in red represent categories that are actually used to label features; feature classes in black are heuristic categories to distinguish among groups of features in a general way.

Report of Stratified Feature Sets

When all of these feature sets (discussed above) are taken into account, it is apparent that the 1966 excavation block captured a wide variety of feature classes. The feature typology above (Figure 5.5) is based primarily on features' morphology (e.g., shape; nature of feature margins), and secondarily, where relevant, on constituent artifact assemblages. Both of these attributes are presumed to speak to a feature's function and the role it played in mound-related practices.

Grounded by this typology, the following pages present comparable data from each of the 42 Middle Woodland features associated with Mound No. 2. These quantitative and qualitative descriptions are then used to make statistical comparisons within and across spatial and temporal contexts. Finally, I discuss histories of architectural practice as implied by single-post structures identified among Mound No. 2's clouds of postholes. Combined with the dates and energetic estimates described above, this information provides a baseline history of the monument that can be compared to the records of other Middle Woodland platform mounds.

Two cobble hearths are unequivocally the earliest deposits in the 1966 excavation block – Feature Set 1. They were excavated into the subsoil and subsequently capped by the pre-mound midden (Figures 5.6, 5.7). Feature 48 was fairly small, with a surface area of 0.299 m2 and an approximate volume of 0.031 m3. Besides charcoal and cobbles, it contained few artifacts – just 3 body sherds weighing 18.7 g. All sherds were tempered with fine sand, conforming to Connestee ceramic attributes, and their surface treatments (plain, simple stamped, and check stamped) suggest that they represent 3 different vessels[2]. Feature 53 included a wider inventory of artifacts: 22 fine or coarse sand tempered body sherds weighing 93.9 g and exhibiting five surface treatments (brushed, check stamped, cord marked, plain, and simple stamped), presumably representing at least 5 vessels; 5 stone flakes; 2 fragments of animal bone; and charcoal and burned clay. Measuring 1.132 m^2 in surface area and 0.152 m^3 in approximate volume, this was one of the three largest cobble hearths identified during the 1966 season. Lacking C14 dates, it is most likely that, given their ceramics, these features date to the Connestee phase.

The only feature in Set 2 was Feature 49, a basin that was excavated into the pre-mound midden and was capped by the first episode of mound construction (Figure 5.6). As shown in Figure 5.5, the feature typology adopted here distinguished between basins (relatively shallow, flat-bottomed, straight-sided negative features; see definitions in Figure 5.5) and pits (deeper, round-bottom, slope-sided negative features), though both feature types were filled by anthropogenic sediments and variable quantities of artifacts. In this case, Feature 49 measured 0.470 m^2 in surface area and 0.016 m^3 in approximate volume. In addition to 1 stone flake and 12 fragments of animal bone, it contained 16 coarse and fine sand tempered sherds weighing 46 g. Only two surface treatments (cord marked and simple stamped) were observed, minimally indicative of the remains of 2 vessels. Based on the 1 rim sherd in this assemblage, one vessel was a thin walled, cord marked bowl (orifice diameter = 13 cm).

[2] See ceramic appendix for discussion of MNV and vessel form determination.

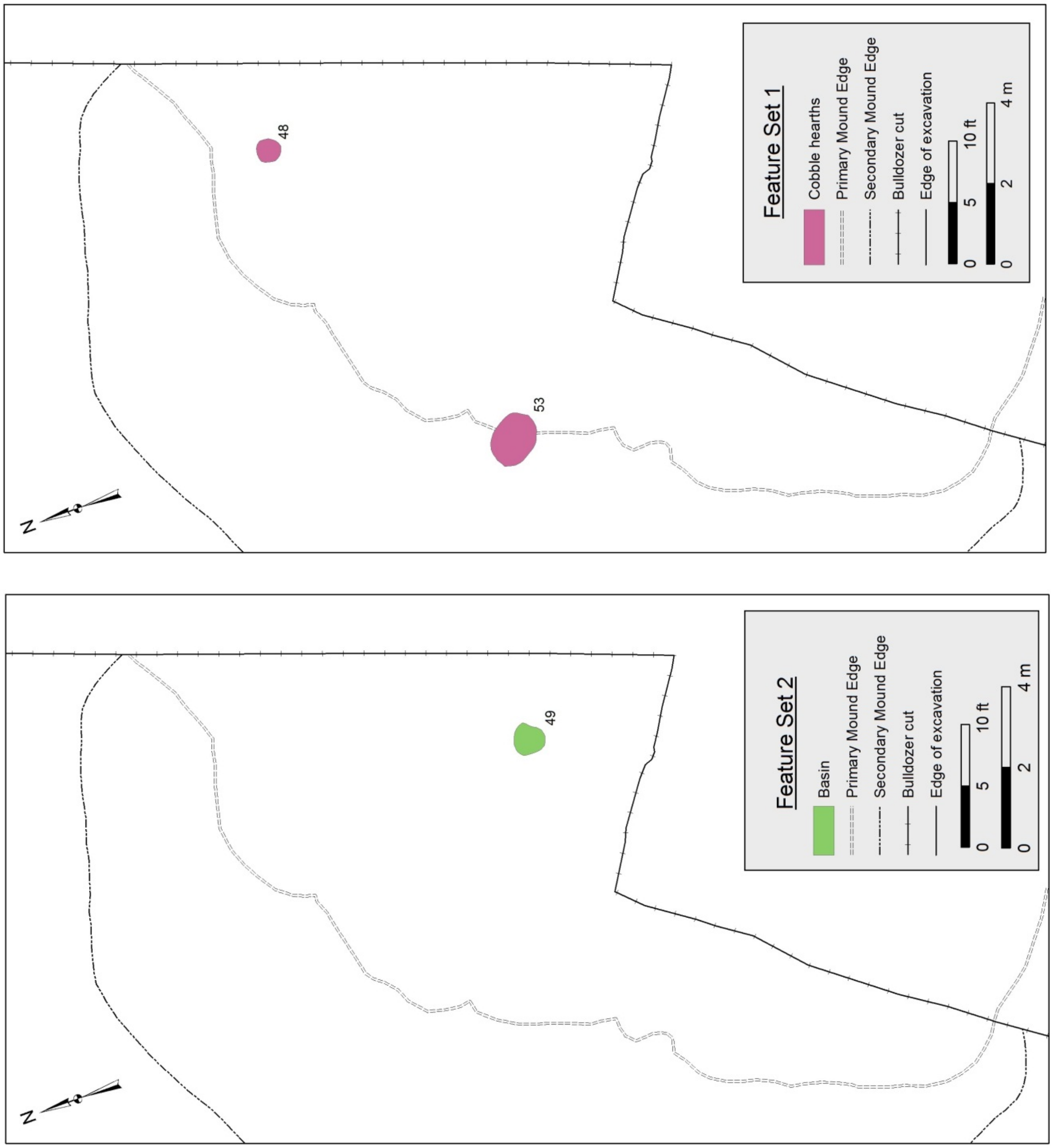


Figure 5.6. Feature Sets 1 and 2, capped by or excavated directly into the pre-mound midden, respectively.

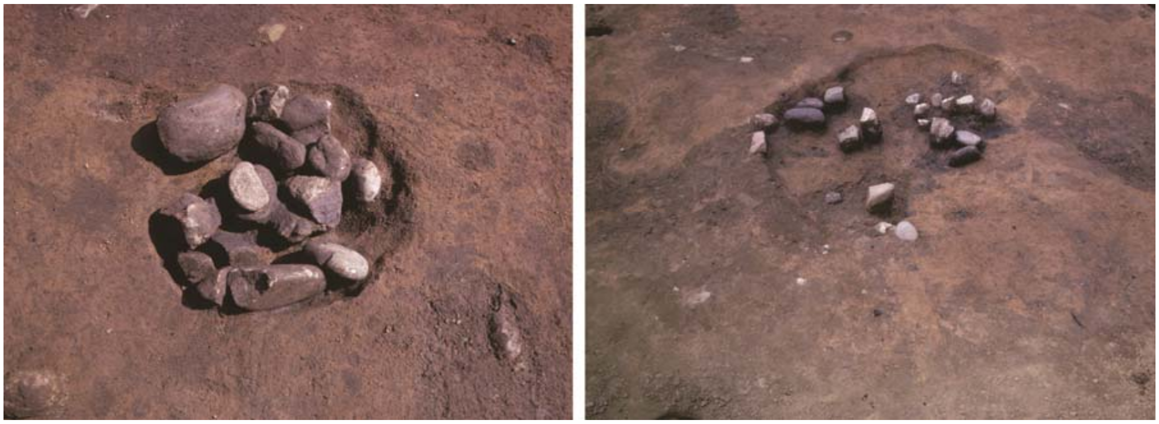


Figure 5.7. Feature 48 (left) and 53 (right) cobble hearths, not to scale. Photographs by B. Keel, courtesy of UNC-RLA.

Feature Set 3 also consisted of a single feature. Feature 51 was a cobble hearth placed on top of the pre-mound midden and eventually covered by the slump of the first episode of mound construction (Figure 5.8). In location and overall extent, it was very similar to Feature 48, with a surface area of 0.398 m^2 and an approximate volume of 0.051 m^3. It included 30 body sherds weighing 165.9 g. Most were coarse and fine sand-tempered ceramics, exhibiting brushed, cord marked, plain, simple stamped surfaces typical of local Middle Woodland ceramics.

However, 2 sherds were rectilinear complicated stamped and one was tempered with limestone. Both of these attributes appear to have been exotic to western North Carolina, perhaps representing non-local wares from north Georgia and east Tennessee, respectively. If so, they suggest material exchange across the greater Southern Appalachians in the early centuries AD. Regardless, on the basis of unique combinations of surface treatments and tempers, the Feature 51 contained at least 6 vessels. The single rim sherd represents a plain, thick walled jar or bowl (orifice diameter unknown).

Feature 50, the only feature located in the fill of the primary mound, was a simple hearth measuring 0.236 m^2 in surface area and 0.066 m^3 in approximate volume (Figure 5.8). Though it lacked fire reddened or cracked rocks, this burned feature included charcoal, 2 fragments of animal bone, and 1 sand tempered, cord marked body sherd weighing 8.8 g, placing this feature and the construction of the primary mound in the late Middle Woodland Connestee Phase.

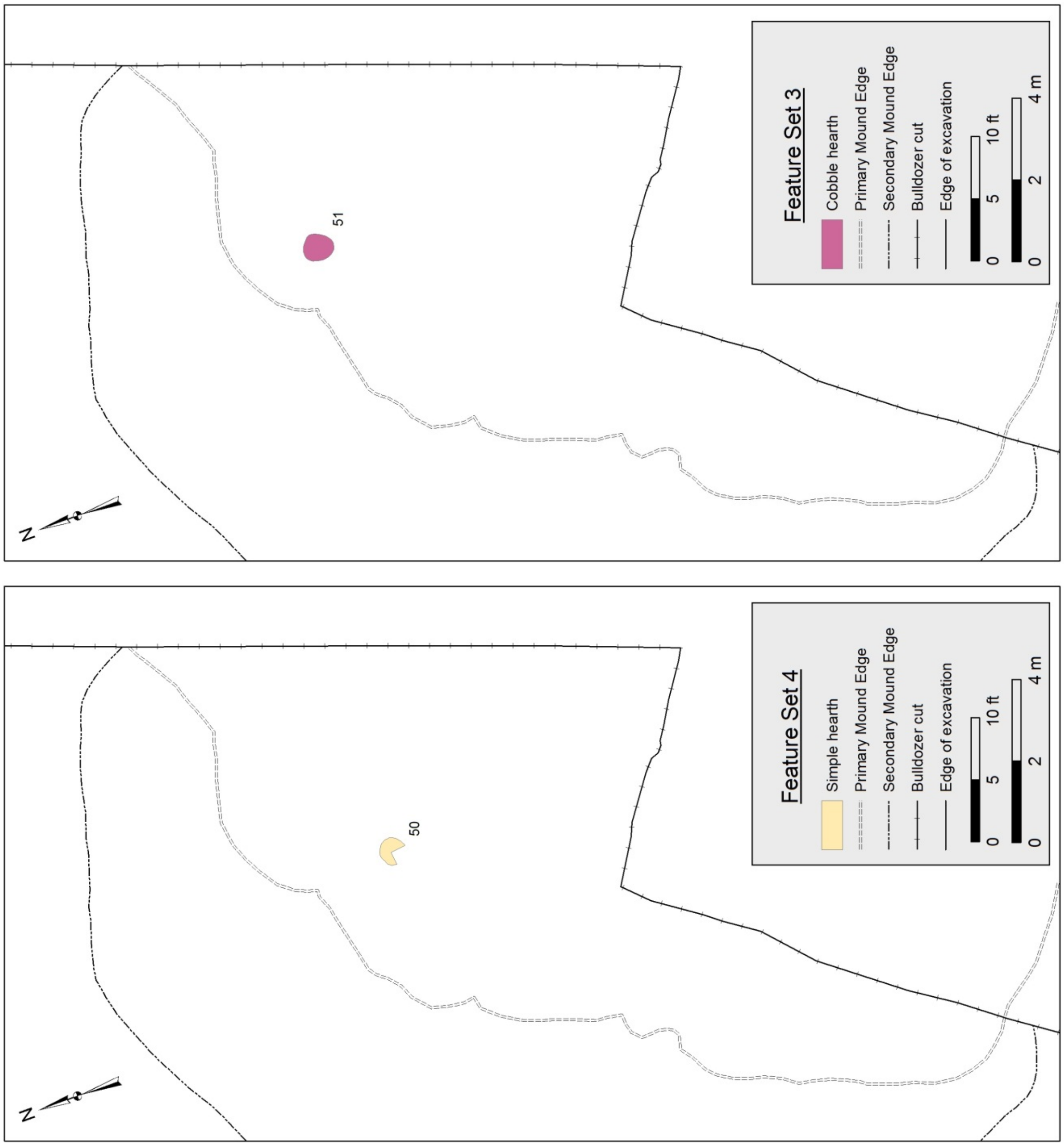


Figure 5.8. Feature Sets 3 and 4, in fill or slump of Mound Stage 1, respectively.

Feature Set 5 (Figure 5.9) was associated with the summit of the first episode of mound construction, and it included more features than any other clearly stratified feature set. Distributed across the exposed, relatively undisturbed central portion of the excavation block, this set also was notable for the variety of feature types it contains, only some of which are present in earlier deposits.

Features 1 and 32 were simple surface hearths. Feature 1 was similar to the earlier simple hearth (Feature 50), measuring 0.260 m^2 in surface area and 0.020 m^3 in approximate volume. It included 4 animal bone fragments, 3 body sherds, and 1 rim sherd. Tempered with crushed quartz and exhibiting cord marked and plain surface treatments, these sherds represent at least two vessels, one of which was a thin walled, plain jar/bowl (orifice diameter unknown). Their quartz temper suggests an affinity with the early Middle Woodland Pigeon series, though Keel (1976:82, Table 8) attributed the feature to the Connestee phase.

Feature 32 is a much larger simple hearth that contained many more artifacts. Covering 2.654 m^2 and encompassing 0.425 m^3 of material in approximate volume, it is described in field notes (1966) as "a hard red burned area… [that] appears to be a hearth. Two patches of red burned clay were over the ashy fill…This feature was associated with an M.S. [Mound Stage] 1 structure." Though no post alignments (see below) were identified in direct association with Feature 32, it is interesting to note that this feature contained many more artifacts than did other simple hearths at the site: 26 flakes, a piece of steatite, a piece of graphite, large amounts of charcoal and burned clay, and 87 potsherds weighing 496.1 g. Keel (1976:89) noted that this ceramic assemblage included sherds "belonging to several series, the latest being Connestee," as well as "a large portion of a Connestee brushed vessel." A modeled calibrated radiocarbon date of 184 – 331 AD (two-sigma) supports this association with the Connestee phase. Although these ceramic artifacts were not located during reanalysis and could not be further analyzed, the relatively large amount of pottery in this feature, combined with the presence of chipped stone and minerals that could be used for pigments or as burnishing stones, suggests that a variety of activities occurred around this hearth, whether or not they were subsumed by a structure.

Like earlier strata, the summit of the primary mound also supported cobble hearths. Feature 5, a cobble hearth with a halo of reddened (i.e., burned) sediment, was partially truncated by the east edge of the excavation block; its exposed area, which I would approximate was 70% of the entire feature, measured 0.426 m^2 in surface area and 0.048 m^3 in approximate volume. It contained 12 sherds weighing 34.0 g, which exhibited coarse and fine sand and crushed quartz tempers and plain, brushed, cord marked, check stamped, and simple stamped surface treatments – all attributes associated with the Middle Woodland Pigeon and Connestee series. The single rim sherd in this assemblage was a thin walled, plain bowl (orifice diameter = 13 cm), contributing to a minimum vessel count of 6 vessels based on unique combinations of tempers and surface treatments. The only other artifacts associated with Feature 5 were 3 lithic flakes and wood charcoal, which produced a modeled calibrated radiocarbon date of A.D. 294 – 341 (two sigma).

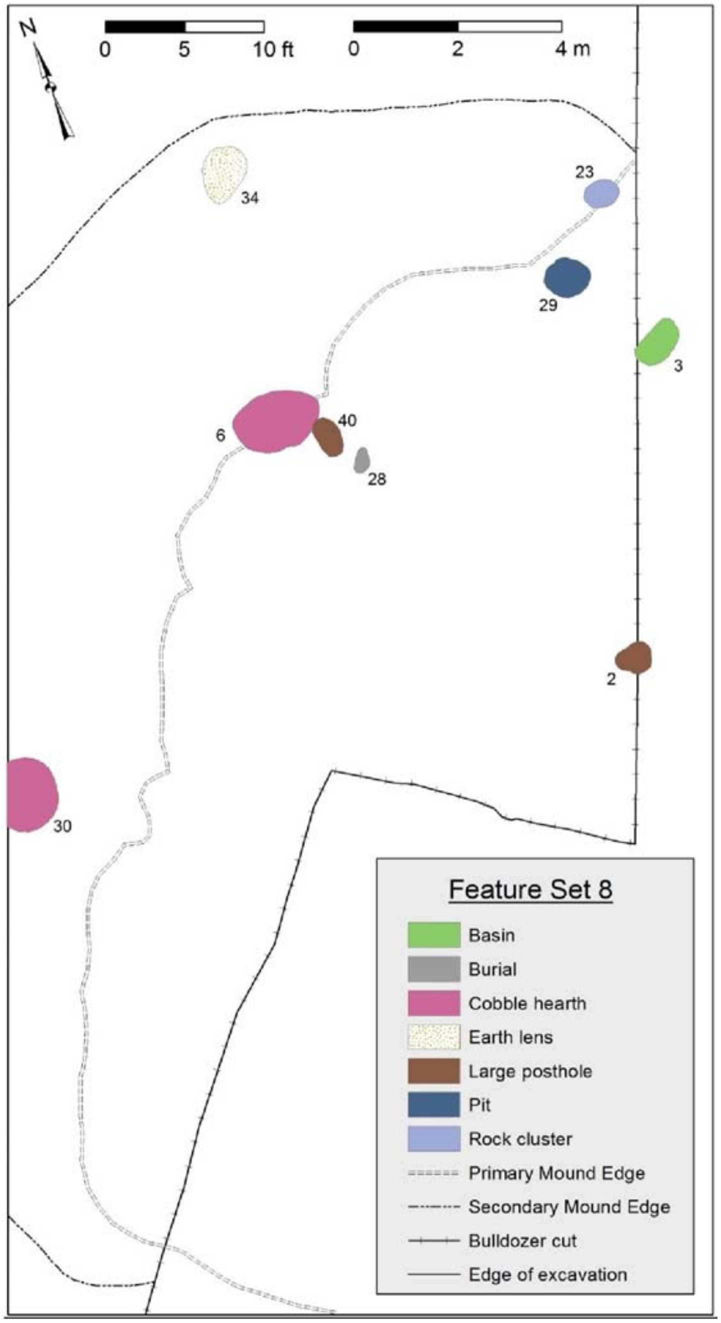


Figure 5.9. Feature Set 5, on the summit of Mound Stage 1.

The summit's other cobble hearth, Feature 43 (Figure 5.10), had a surface area of 0.306 m^2 and an approximate volume of 0.078 m^3, and contained three times as many ceramics as Feature 5. All 36 sherds from this feature (251.4 g) were tempered with coarse or fine sand, and most of them had brushed surfaces, though sherds with cord marked, fabric marked, plain, and eroded surfaces were also present. These plausibly represent at least 6 vessels. There were 2 rims in the assemblage:

the first from a thick walled, cord marked jar/bowl (orifice diameter unknown), the second from a thick walled, plain jar (orifice diameter = 19 cm). Like Feature 5, Feature 43 also included chipped stone flakes (n=4) and charcoal; the latter yielded a modeled calibrated radiocarbon date of A.D. 249 – 329 (two sigma).

Figure 5.10. Feature 43 cobble hearth; no scale available. Photograph by B. Keel, courtesy of UNC-RLA.

The last type of feature on the primary mound summit that had a precedent in earlier deposits was Feature 46, an oval-shaped basin immediately southeast of Feature 43. It measured 0.650 m^2 in surface area and 0.204 m^3 in approximate volume. No artifacts were recovered from the fill of this feature, and as a result, its interpretive potential is fairly limited.

Features 43 and 46 were the only two features in Mound No. 2 that directly overlapped another feature within the same strata/feature set – in this case, Feature 47, a massive (16.54 m^2 in area, 3.027 m^3 in approximate volume) lens of earth at the northern edge of the primary mound. According to field notes, the feature was "initially… interpreted as a large amorphous pit which had a number of intrusive pit and features" but was later determined to be "fill placed against the slope of mound stage" – in other words, part of the matrix of mound construction fill, rather than the remains of activities occurring on the mound summit. Given its size, it is no surprise that Feature 47 contained many artifacts: 549 sherds weighing 3143.9 g, 53 chipped stone flakes, 1 stone blade, 2 chipped stone tools, 26 animal bone fragments, 1 steatite vessel lug, 2 stone abraders or polishers, mica, charcoal, and burned clay. However, these materials have little bearing on the interpretation of mound summit, or perhaps even mound-related activities, because they could have been collected from elsewhere on the site for use in mound construction.

In addition to the features already discussed, Set 5 also included features that were not observed in earlier deposits, such as two pits labeled Feature 4 and Feature 52. Distinguished from basins by their greater depths, sloped sides, and rounded bottoms, the amount of cultural material in these pits does not differ significantly from the amounts found in most basins. Measuring 0.509 m^2 in surface area and 0.287 m^3 in volume, Feature 4 contained charcoal, 1 lithic flake, and 19 sherds weighing 103.7 g. Most of the sherds were tempered with coarse or fine sand, through a few were tempered with crushed quartz (n=3), and 1 was tempered with limestone, indicating non-local manufacture (probably in east Tennessee). Surface treatments in this assemblage include brushed, check stamped, cord marked, fabric marked, and plain, resulting in a minimum vessel count of 5. Though no rims were present, 1 pode (foot) was recovered, indicating the presence of a footed (e.g., tetrapodal) vessel.

Feature 52 was about half of the size of Feature 4, with a surface area of 0.245 m^2 and an approximate volume of 0.114 m^3. In addition to 6 stone flakes and 12 animal bones, it contained 22 coarse and fine sand-tempered sherds weighing 135.4 g and exhibiting brushed, check stamped, cord marked, simple stamped, and plain, surface treatments. These body sherds likely represent 5 vessels, including 1 thin walled, simple stamped bowl (orifice diameter = 17 cm). The turtle shell carapace that is attributed to this feature in RLA's accession catalog, which may have been the remains of a shell cup or rattle, is actually associated with a large posthole into which Feature 52 intruded, and is thus not included in the present inventory.

While pits like Features 4 and 52 are not entirely unique to the primary mound (another, Feature 29, is located in the slump of the secondary mound; see below), the last two features on the summit of the primary mound are only found on this surface. Feature 35 (Figure 5.11) was "a ceremonial cache of seven chlorite schist cobbles, of which three were cut and pecked" (Keel 1976:85). According to field notes, the "nice tight wad" of cobbles was not in a pit, but rested on the surface of the mound (Keel 1966). Their conspicuous location on the mound summit and lack of systematic working lend support to Keel's interpretation of a ritual offering, rather than the remains of active crafting related to pipe production.

Figure 5.11. Feature 35 pipestone cache in situ, and close-up. For scale, the unit was approximately 5-x-5 feet. Photographs by B. Keel, courtesy of UNC-RLA.

In a slightly more indirect fashion, Feature 41 (Figure 5.12) also points to some sort of special, possibly ceremonial activity occurring on the summit of the primary mound. As Keel wrote in his field notes (1966), "This is one of the most important features of the site. This portion of Mound Stage 1 shows evidence of a very hot and extensive fire. Portions of the floor are filled with ash and charcoal, some bones and a few sherds. This feature is interpreted as a 'temple' floor, the cultural debris from fill and occupation and the ash and charcoal from the fire that consumed the temple." At the time of Keel's excavation, however, the amount of disturbance to the area around Feature 41 and the dense cloud of postholes that surrounded it obscured the "details of this building" (Keel 1976: 78); after the site had been damaged by the bulldozer, all that remained of the floor was a 2.654 m^2 patch of burned earth and ash, with an approximate volume of 0.425 m^3.

Figure 5.12. Feature 41 burned surface during excavation (left; for scale) and portion of surface close-up (right). Photographs by B. Keel, courtesy of UNC-RLA.

In spite of Keel's confidence in the presence of a mound summit structure, subsequent interpretations of the site have undermined its existence (Knight 1990, 2001; Lindauer and Blitz 1997). Making reference to Middle Woodland platform mounds in general, including the primary summit of Garden Creek Mound No. 2, Knight (2001: 319) has gone so far as to argue that, "Conspicuously absent are posthole alignments or configurations that would indicate the presence of roofed architecture." However, as demonstrated by the posthole analysis discussed below, Feature 41 was surrounded by a series of postholes that conform to the general expectations of a single-post, roofed structure. Moreover, it seems likely that this structure was bifurcated by a partition, which, based on comparison to contemporary ritual structures in the Eastern Woodlands, may have served to organize the interior of this building for ritual purposes (for further discussion, see Chapter 8). Interestingly, very few artifacts were recovered from Feature 41 – just 14 fragments of animal bone and 8 coarse and fine sand tempered plain and brushed potsherds (28.2 g) that likely represent 2 vessels. Rim sherds from can be attributed to 1 plain, thin walled jar/bowl (orifice diameter unknown) and 1 brushed, thin walled bowl (orifice diameter =12). This sparse assemblage may have resulted from the cleaning of the building before it was destroyed by fire, which in turn suggests that its burning was deliberate. As Keel hinted, it may have been ritually destroyed before the construction of the secondary mound – a variation on the theme of the dismantling a sub-mound structure before the construction of the primary mound (discussed further below). If so, this event happened between cal A.D. 235 and 360, based on a modeled calibrated radiocarbon date (two sigma).

Only one feature in Set 6 originated in the thin midden that covered portions of the primary mound summit (Figure 5.13), post-dating some of activities that took place on the surface of this low platform. Like Feature 47 in Set 5, Feature 31 is a lens of earth that seems most attributable to the ongoing construction or, perhaps more accurately, maintenance of the original platform. Measuring 2.349 m^2 in surface area and 0.136 m^3 in approximate volume, this thin (maximally 5.8 cm thick) deposit of yellow clay included no artifacts, charcoal, or burned clay. Without associated archaeological materials, interpretive possibilities for this feature are limited, but minimally, it may represent small episode of earth moving to maintain or modify the surface of the primary summit, which in turn is indicative of some form of protracted use of this surface, rather than a singular, "one-and-done" occupation.

As is often the case with earthen platforms, anthropogenic activity and exposure to elements appears to have led to slumping of the sediments used for mound construction (McGimsey and

Wiant 1984; Schilling 2010). As these sediments were displaced from where they were set during construction, they formed new surfaces on which activities occurred. Presumably, such activities took place during hiatuses in formalized mound use, after one summit surface fell into disuse but before another formal summit had been created.

Figure 5.13. Feature Sets 6 and 7, in the midden on top of and the slump resulting from the primary episode of mound construction, respectively.

Feature Set 7 (Figure 5.13) consists of those features that originated in the slump of the primary episode of mound construction, and that are capped by the second episode of mound construction. In other words, they fall between the two documented episodes of formalized mound summit use that are included within Keel's excavation block. Both of the features in this context – Features 27 and 39 – are cobble hearths (Figure 5.14).

Though similar in surface area (0.570 m^2 and 0.477 m^2, respectively), Feature 27 is slightly thicker than Feature 39, yielding a larger approximate volume (0.097 m^3 compared to 0.053 m^3). Besides 2 stone flakes in Feature 27, assemblages for these features are limited to pottery: 33 sherds weighing 342.7 g in Feature 27, and 15 sherds weighing 72.8 g in Feature 39. All but one sherd from these contexts were tempered with coarse or fine sand, and exhibited brushed, cord marked, plain, or check stamped surfaces, conforming to traits of the late Middle Woodland Connestee series. A single plain body sherd from Feature 39 was tempered with limestone, and may have been produced non-locally, in east Tennessee. Based on unique temper-surface treatment combinations, Feature 27 minimally contained 4 vessels, including 1 plain, thin walled bowl (orifice diameter = 15 cm). Feature 39, meanwhile, contained at least 3 vessels, including 1 plain, thin walled jar (orifice diameter = 21).

Figure 5.14. Features 27 (left) and 39 (right) cobble hearths, relatively to scale. Photographs by B. Keel, courtesy of UNC-RLA.

The features included in Set 8 (Figure 5.15) were identified at the interface of the plowzone and the uppermost intact layers of mound fill, which are the result of a second episode of construction overtop and surrounding the original primary mound. As mentioned above, because the tops of these features and the summit of the secondary mound were destroyed by the plowzone, it is impossible to say with certainty that all these features originated at the same surface. It may be that Mound No. 2 once included additional stages of mound construction. Based on historically recorded mound heights and the depth of Pisgah phase burials that intruded into the intact deposits, Keel (1976:86) hypothesized that additional mound construction stages were added during the Mississippian Pisgah phase, so that the mound in its final form would have been 7 – 9 ft tall. With the possible exception of Feature 28 (discussed below), however, artifacts and dates associated with features in Set 8 correspond with the Connestee phase, so for the present analysis, they are viewed as elements of mound-top activities during the Woodland period.

Like the summit of the primary mound, this later mound-top deposit was characterized by many types of features – some of which had a precedent in underlying deposits, and others that had not been observed before the construction of Mound Stage 2. Beginning with the former group, there were two relatively large cobble hearths associated with the secondary mound. Feature 30, located at and truncated by the western edge of the excavation block, encompassed 0.929 m^2 in surface area and 0.272 m^3 in approximate volume; these measurements account for about 80% of the total feature. This feature was notable for its relatively rich artifact assemblage, including charcoal, burned clay, 106 potsherds weighting 436.3 g, 10 lithic flakes, 2 bone fragments, 2 gorgets, and 5 clay figurine fragments. All sherds were tempered with fine or coarse sand, suggesting manufacture during the late Middle Woodland period. This assemblage included 10 rim sherds representing at least 6 vessels (as many as 7 are represented by unique temper/surface treatment combinations): 2 thin walled, cord marked bowls (orifice diameters = 9 cm and 15 cm); 2 thin walled, plain bowls (orifice diameters = 10 cm and 15 cm); 1 thin, brushed jar (orifice diameter = 19 cm); and 1 thin, plain jar (with an orifice diameter greater than 25 cm). The presence of large and small vessels (jars and bowls) in this feature may indicate that this feature was associated with cooking and serving food in communal contexts; food may have been prepared or served in the large jars, and then distributed to individuals or small groups in smaller bowls. This interpretation is bolstered by the seemingly ceremonial artifacts, such as the gorgets and the figurine fragments that were also recovered from this feature. Across the excavation block, excavators identified a cluster of rocks labeled Feature 23. According to field notes, this may be another cobble hearth, though there was no charcoal or burned earth associated with the feature. Measuring 0.295 m^2 in surface area and 0.014 m^3 in approximate volume, the only artifacts in Feature 23 were three fine sand tempered, simple stamped body sherds (29.6 g), likely from the same vessel.

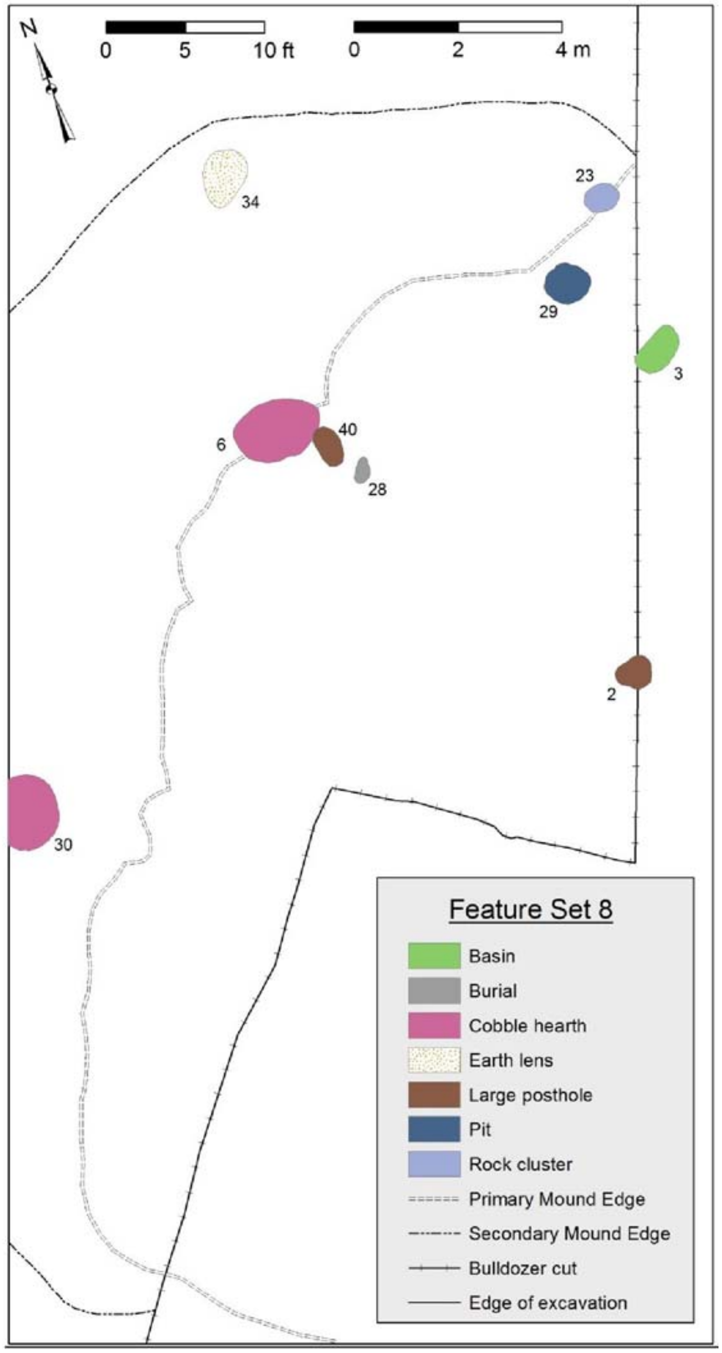


Figure 5.15. Feature Set 8, in fill of the secondary episode of mound construction and truncated by the plowzone.

The final cobble hearth associated with the secondary mound, Feature 6 (Figure 5.16), was larger than Features 23 and 30, with a surface area of 1.561 m^2 and an approximate volume of 0.372 m^3. However, it contained far fewer artifacts than the latter: charcoal, 4 stone flakes and, and 8 sherds weighing 20.6 g. These body sherds were tempered with coarse or fine sand and, in one instance, crushed quartz, and they exhibited cord marked, plain, fabric marked, simple (or perhaps complicated; see below) stamped surface treatments. Keel (1976: 88) assigned one of these sherds to Georgia's Swift Creek complicated stamp type; this may suggest non-local manufacture, though it is possible that the paddles used to make this sort of pottery were traded to western North Carolina from Georgia, allowing such surface treatments to be utilized locally. Keel also identified a limestone-tempered sherd from Feature 6 that would seem to indicate non-local manufacture in east Tennessee, but that sherd was not identified during reanalysis. All told, these sherds represent at least 4 vessels, based on unique temper/surface treatment combinations.

In Figure 5.16, Feature 6 is shown next to Feature 28, a small cluster of bones that Keel (1976: 86) categorized as a small pit that "contained the usual matrix of dark earth mixed with debris;" meanwhile, field notes describe it as a "bone pile…tight cluster of animal bones found on the floor of M.S. [mound stage] 2." Like other faunal remains at the site, these bones were highly degraded, which presumably precluded species identification on the basis of cursory field observations. Subsequent laboratory analysis by Thomas Whyte provided these missing data, and interestingly, revealed that the bones in Feature 28 are human remains (Whyte, personal communication). The eight burials previous excavated and identified in Garden Creek Mound No. 2 are thought to be intrusive to the Middle Woodland mound deposits and associated with the later Pisgah phase (Keel 1976: 89; Rodning and Moore 2010: 89). Interestingly, all six graves that were not disturbed by earlier excavations or bulldozing were full body, flexed inhumations, indicative of a mortuary program very different from that represented by the Feature 28 "bone pile." Without any associated material culture, it is impossible to say whether this burial is another mode of mortuary ceremonialism practiced during the Pisgah phase at Garden Creek, or if it dates to another period entirely, and is perhaps contemporaneous with Middle Woodland mound building.

Although it is not visible in Figure 5.16, the remains of a massive posthole, designated Feature 40, occupied the space between Features 6 and 28. Field notes and drawing depict a posthole stain measuring about 30 cm in diameter and, remarkably, extending 150.9 cm below the base of the plowzone where it was first encountered. The posthole surrounded by an oval shaped pit measuring about 60-x-90 cm, which likely served as an entrance trench for the post itself. Feature 40 contained numerous artifacts, including 12 stone flakes, 3 animal bone fragments, 2 chipped stone tools, mica fragments, charcoal, and 118 sherds weighing 568.6 g. Re-analysis of these sherds identified both coarse and fine sand tempers (though Keel also noted 4 limestone tempered sherds that could not be re-located), with brushed, cord marked, simple stamped, and plain surface treatments. The 7 rims in this assemblage represent at least 4 vessels: 1 thick walled, brushed vessel with a non-restricted orifice (diameter unknown; possibly bowl or jar); 2 thick walled, cord marked bowls (orifice diameters = 11 cm, 15 cm); and 1 thin walled, plain bowl (orifice diameter = 11cm). An additional simple stamped vessel is represented only by body sherds; however, it is possible that the total of 8 vessels underestimates the actual number of vessels in this assemblage. All that said, the utility of these artifacts for inferring the function or role of Feature 40 on the summit of the secondary mound is questionable. On the one hand, it is possible that these materials fell into or were used indiscriminately to fill the hole that was left by the massive post after it was removed. On the other hand, it may be that they were purposefully included in the matrix, as has been documented in the postholes associated with Enclosure No. 1 and other Woodland sites in the Southeast (Kassabaum and Nelson 2012). Whatever the case, charcoal from Feature 40 corresponds with the infilling of the posthole and has been dated to cal. A.D. 262-387 (modeled, two sigma).

Figure 5.16. Features 6 cobble hearth (at right) and 28 "bone pile"/burial (at left). Photograph by B. Keel, courtesy of UNC-RLA.

Another large posthole, Feature 2, was located nearer to the center of the secondary mound. Though this post appears to have lacked an entrance trench, the hole into which the post was inserted measured about 60 cm in diameter and extended more than 70 cm below the base of the plowzone. Like Feature 40, some artifacts were present in the fill, including 10 flakes, 1 anvil stone, mica, charcoal and 16 potsherds weighting 55.7 g total. Interestingly, most of the sherds (which represent at least 6 vessels, according to temper/surface treatment combinations) were tempered with crushed quartz (n=12, compared to 4 sand tempered sherds), showing an affinity with the Pigeon series, which presumably pre-dates the use of the secondary mound summit during the Connestee phase. This suggests that the posthole was deliberately re-filled with sediments gathered from other portions of the site where activities had taken place during the early Middle Woodland; in other words, the fill cannot be attributed to incidental infilling with materials resulting from activities that were contemporary with this mound surface.

Returning, now, to the northeastern edge of the secondary mound, Feature 3 is a shallow basin measuring 0.505 m^2 in surface area and 0.080 m^3 in approximate area. The only materials in the fill were charcoal and 21 potsherds weighing 100.6 g total. All but two of these sherds were tempered with coarse or fine sand (the exceptions were tempered with crushed quartz) and exhibited brushed, check-, simple-, and rectilinear complicated stamped, cord marked, and plain surface treatments. Altogether, they represent at least 6 vessels. Two of these vessels are also represented by rim sherds: the first is a thick walled, cord marked bowl (orifice diameter = 11 cm), and the second is a thin walled, plain jar or bowl (orifice diameter unknown).

Feature 29 is about 3 m north of this basin, and though it is only slightly deeper, its round (as opposed to flat) bottom marks it as a different feature type. It measures 0.356 m^2 in surface area and 0.068 m^3 in approximate volume. Unfortunately, no artifacts were recovered from the fill, rendering further interpretation impossible.

Like the pit, basin, and cobble hearths discussed above, Feature 34, at the northern edge of the secondary mound, is a type of feature that appears to have some precedent in earlier deposits. An earth lens that "may possibly be a basket load [of fill]" (Keel 1966), it measured 0.712 m^2 in surface area and 0.065 m^3 in approximate volume and contained 13 flakes and 39 sherds, weighing 231.9 g. All of the ceramic artifacts were coarse and fine sand tempered body sherds, with brushed, cord marked, fabric marked, plain, and simple stamped surfaces, indicative of at least 5 Connestee series vessels. Because this feature most likely represents construction material, these artifacts have low utility for inferring mound top activities, although the mere existence of Feature 34 suggests that the builders of Mound No. 2 undertook the ongoing maintenance of this monument even after the bulk of the fill was laid down (see also Feature 31, above).

Whereas Feature Sets 1-8 have relatively clear stratigraphic relationships, the effects of plowing and bulldozing and the challenge of distinguishing midden from mound fill (the latter of which probably consisted of displaced midden deposits) necessitate the separate consideration of

Feature Sets 9 and 10 (Figure 5.17). At the edges of the mound deposits where these features are concentrated, the stratigraphy (from top to bottom) consisted of (1) the plowzone; (2) a layer of dark, artifact rich matrix; and (3) the subsoil. In these contexts, it is possible to relatively date those features dug into the subsoil and capped by the midden-like matrix (Set 9) as earlier than those that were dug into this matrix and truncated by the plowzone (Set 10).

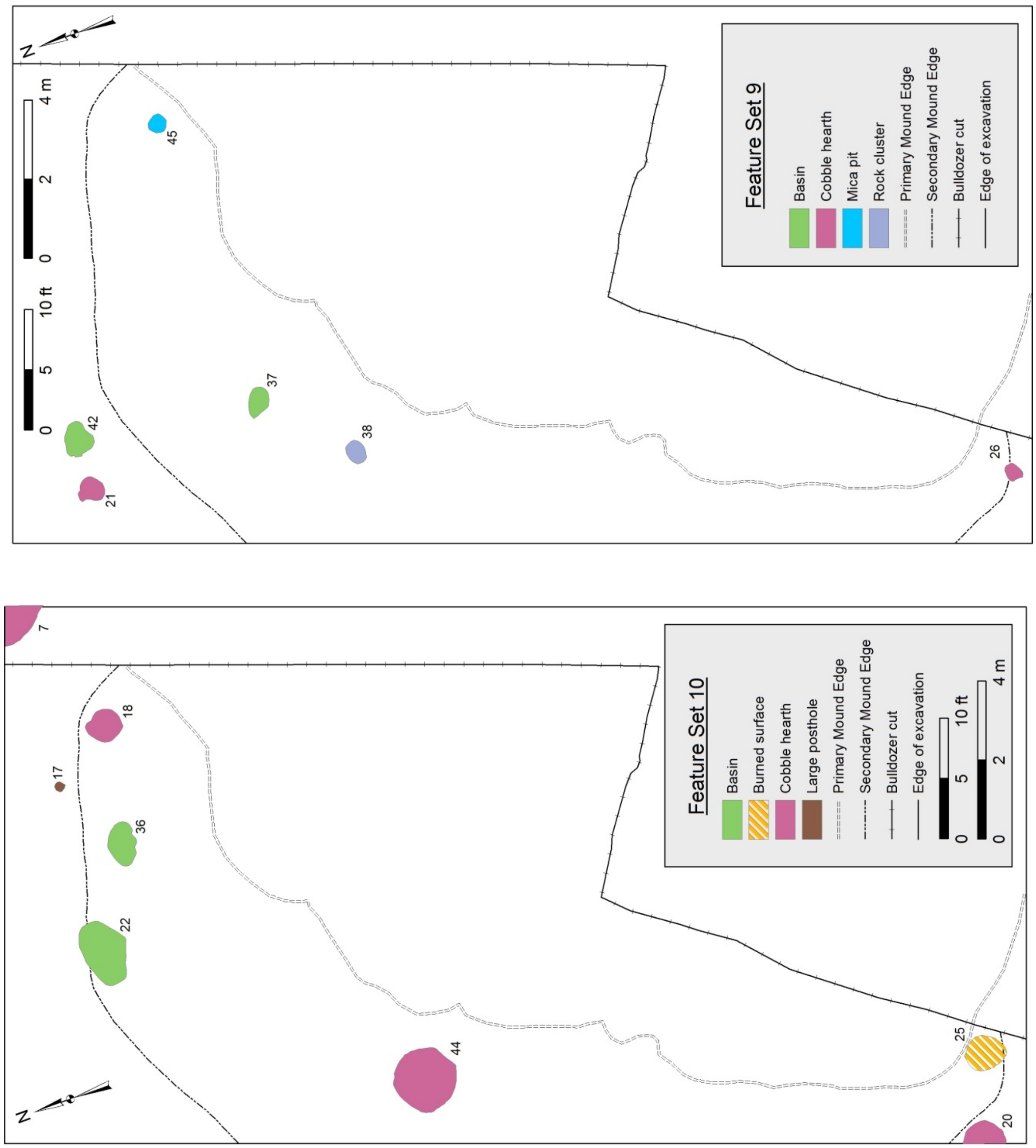


Figure 5.17. Feature Sets 9 and 10, in fill the subsoil and capped by midden or slump deposits, and 10, in the midden or slump deposits and truncated by the plowzone.

What is not possible is a stratigraphic determination of these features' temporal relationship with features in mound-proper deposits. As mentioned previously, if the dark matrix is pre-mound midden, then Sets 9 and 10 might be some of the earliest sets in the total sequence. If, conversely, this matrix represents the slump of mound itself, then Set 10 at least would include some of the sequence's latest deposits. Given this ambiguity, the last feature sets are considered only relative to each other; the only exceptions to this are those features that have been dated radiometrically or through diagnostic artifacts.

Set 9 is the earlier of these two problematic groups, and consist of six features that were dug into the subsoil and subsequently capped by midden or slump. Features 21 and 26 are cobble hearths, while Feature 38 is a cluster of rocks that may, like Feature 23 (above), have also been a cobble hearth, though there is no evidence of fire associated with it. Besides general measurements, including a surface area of 0.230 m^2 and an approximate area of 0.010 m^3, little more can be said about Feature 38, which lacks any sort of artifact assemblage. This is also the case for Feature 21, which measured 0.320 m^2 in surface area and 0.021 m^3 in approximate volume; it did include charcoal, bolstering its classification as a cobble hearth, but no other artifacts. The situation is only slightly improved for Feature 26. With a surface area of 0.144 m^2 and an approximate volume of 0.030 m^3, it contained 5 sherds weighing 146.6 g. Tempered with coarse sand and exhibiting cord marked and brushed surfaces, these body sherds, representative of 2 vessels, point to a Connestee phase attribution for this feature.

The two basins in this feature set are also characterized by small assemblages. Feature 37, measuring 0.302 m^2 in surface area and 0.046 m^3 in approximate area, included mica, charcoal, and 15 sherds weighing 59.9 g total. These sherds were coarse or fine sand tempered with brushed, stamped, and plain surfaces. At least 4 vessels are represented by unique temper/surface treatment combinations. The two rim sherds in the assemblage can be attributed to an indeterminately stamped, thin walled jar (orifice diameter = 19 cm) and a cord marked, thin walled bowl (orifice diameter = 12). Though the results of recent ceramic attribute analysis did not involve series-level classification, Keel (1986: 101) noted that Feature 37 "contained only Swannanoa series ceramics, which suggested that it was one of the oldest features encountered." Given Swannanoa phase dates (1000 – 300 B.C.), Feature 37 is thus considered to predate mound building as well as the pre-mound midden, and for interpretive purposes (below), it can be lumped with Feature Set 1. Unfortunately, the Feature 42 basin, with a surface area of 0.480 m^2 and an approximate volume of 0.054 m^3, contained no ceramics for dating. Its assemblage consisted of a single lithic flake and animal bone fragment. The most interesting feature in Set 9 was Feature 45, located at the western edge of the excavation block (Figure 5.18). Fairly small (surface area = 0.169 m^2; approximate volume = 0.018 m^3), this circular pit was lined with sheet mica, as can be seen in Figure 5.16. Though none of these pieces showed obvious evidence of having been worked (Keel 1976: 145), their deposition was deliberate, and appears to mirror some of the activities that took place in and around the earthwork enclosure (see below, Feature GCAP-25); this similarity to a feature associated with a Pigeon phase monument would seem to bolster Keel's assigning of Feature 45 to the Pigeon phase. In addition to mica, this pit included 7 lithic flakes, 1 lithic blade, and 4 body sherds that weighed 26.0 g total. These were tempered with coarse and fine sand, had plain and brushed surfaces, and represent at least two vessels. Charcoal from this feature yielded a modeled calibrated date of A.D. 128-317 (two-sigma), placing it squarely at the Pigeon-Connestee transition.

Figure 5.18. Sheet muscovite lining the edges of excavated Feature 45 mica pit. Photographs by B. Keel, courtesy of UNC-RLA.

The final feature set associated with Mound No. 2 consists of 9 features that were located near the edges of the mound-proper deposits and were truncated by the plowzone (Set 10; Figure 5.17). Four of these are cobble hearths that roughly follow the edge of the mound, in an arc from the excavation block's southwest to northeast corners. The southernmost hearth, Feature 20 (Figure 5.19), is bisected by the western edge of the excavation; approximately 75% of the original feature measured 0.478 m^2 in surface area and 0.048 m^3 in approximate volume. It included 10 stone flakes, 1 blade, and 83 coarse sand tempered potsherds weighing 413.8 g. This assemblage exhibited a variety of surface treatments: brushed; check, simple, and indeterminately stamped; cord marked; fabric marked; and plain. Its 5 rim sherds represent at least 3 vessels (of 6 total vessels, according to surface treatment/temper combinations): a thick walled, cord marked jar (orifice diameter = 22 cm); a thin walled, indeterminately stamped bowl (orifice diameter = 10 cm); and a plain, thick walled bowl (orifice diameter = 14.5 cm).

Figure 5.19. Top of Feature 20 cobble hearth, facing west. Photographs by B. Keel, courtesy of UNC-RLA.

Feature 44 (Figure 5.20) is not only the largest cobble hearth in Set 10, but also the largest cobble hearth identified during the Mound No. 2 excavations, measuring 1.981 m^2 in surface area and 0.888 m^3 in approximate volume. Given its size, it is not surprising that Feature 44 included numerous artifacts. In addition to charcoal and burned clay, it contained 30 stone flakes, 2 chipped stone tools, a gorget, 12 animal bone fragments, and 199 sherds weighing 1170.2 g total. Almost all of the ceramics were tempered with fine or coarse sand, though one plain body sherd was tempered with limestone and may have originated in east Tennessee. The remaining sherds exhibited brushed, cord marked, check- and simple stamped, and plain surface treatments. At least eight bowls and jars are represented by the rim sherds in this assemblage, as summarized in Table 5.5 (though given the quantity of sherds, this likely underestimates the total number of vessels). Though Keel assigned most of these sherds (n=136; 1976: 97) to the Early Woodland Swannanoa series, a calibrated AMS date of A.D. 137 – 382 (two sigma) places this feature at the tail end of the Middle Woodland Pigeon – Connestee transition.

Figure 5.20. Feature 44 cobble hearth in full excavation block (with people for approximate scale) and close up (inset). Photographs by B. Keel, courtesy of UNC-RLA.

Vessel No.	*Type*	*Surface treatment*	*Orifice diameter*
1	Thin walled jar	Brushed	22 cm
2	Thin walled jar	Plain	22 cm
3	Thick walled jar	Plain	26 cm
4	Thin walled bowl	Simple stamped	16 cm
5	Thick walled bowl	Plain	11 cm
6	Thick walled jar or bowl	Cord marked	Unknown
7	Thick walled jar or bowl	Simple stamped	Unknown
8	Thin walled jar or bowl	Check stamped	Unknown

Table 5.5. Ceramic vessels (MNV = 8) in Feature 44 cobble hearth.

The last two cobble hearths in Set 10 are located in the northeast corner of the excavation block. Feature 18 (Figure 5.21) measured 0.562 m^2 in surface area and 0.057 m^3 in approximate volume, while the exposed portion of Feature 7 (perhaps 30% of the entire hearth) measured 0.658 m^2 in surface area and 0.147 m^3 in approximate volume.). From Feature 18, Keel recovered 30 lithic flakes, 11 animal bone fragments, a gorget, a Haywood triangular projectile point, charcoal, and 94 coarse sand tempered and 2 fine sand tempered sherds weighing 571.4 g total. This ceramic assemblage included the typical mix of brushed, check-, rectilinear, and simple stamped, cord- and fabric-marked, and plain surface treatments. The three rim sherds most likely represent one thick walled plain and one thin walled plain bowls (orifice diameters = 16 cm and 11 cm, respectively). In comparison, Feature 7 yielded fewer artifacts: 3 lithic flakes, 1 gorget, 1 unclassified projectile point, charcoal, and 13 coarse and fine sand tempered body sherds weighing 46.7 g and exhibiting brushed, plain, and simple- or rectilinear stamped surface treatments. According to Keel's classification, the ceramics from both features represent a mix of Swannanoa, Pigeon, and Connestee series materials, and charcoal from Feature 18 yielded a calibrated date of A.D. 139-385 (two sigma; further refined to A.D. 216 – 326; see Chapter 4).

Figure 5.21. Feature 18 cobble hearth in midden/slump north of Mound No. 2. Photographs by B. Keel, courtesy of UNC-RLA.

Near Features 7 and 18, Keel identified Feature 17, a circular stain measuring 58 cm in diameter and 26.8 cm deep – another massive posthole. According to field notes, the edges of the feature were burned red, though the hole for the post proper appeared to be intrusive to this discrete burned area. Some artifacts were found in this feature, including 1 lithic flake, 11 animal bone fragments, and 25 potsherds weighing 134.1 g, though as with other posthole features, it is likely that these materials and their surrounding matrix were gathered from somewhere to fill in the hole once the post was removed, and thus have little to do wish post-related activities. Nevertheless, this assemblage minimally includes fragments of 6 vessels, tempered with coarse or fine sand, crushed quartz, and in one case limestone, and cord-marked, check-stamped, and plain surface treatments.

Two basins, Features 22 and 36, were also located at northern edge of the secondary mound. The former, measuring 1.448 m^2 in surface area and 0.185 m^3 in approximate volume, contained no artifacts. In contrast, the latter yielded mica, charcoal, burned clay, 6 lithic flakes, 5 animal bone fragments, and 99 potsherds weighing 1189.5 g total, even though it was the smaller of the two basins (surface area = 0.606 m^2; approximate volume = 0.157 m^3). All of these sherds were tempered with fine or coarse sand, and their surfaces were, for the most part, brushed or cord marked, though a few were check stamped, simple stamped, or plain. The 7 rim sherds found in this basin represent at least 4 vessels (of 7 vessels total represented by temper/surface treatment combinations), including 2 thick walled, brushed jars (orifice diameters = 24, and greater than 25), 1 thin walled, cord marked jar/bowl (orifice diameter unknown), and one cord marked bowl or jar (orifice diameter and wall thickness indeterminate).

The last feature in Set 10 is Feature 25, a burned area near the southwest corner of the primary and secondary episodes of mound construction that measures 0.969 m^2 in surface area and 0.191 m^3 in approximate volume. Though field notes on the feature are limited, it did contain 4 lithic flakes and 4 potsherds, which proved sufficient for Keel to assign it to the Swannanoa phase. These body sherds were cord-marked and tempered with coarse sand, and though no rims were found in associate with this feature, it seems likely based on the existing sherds' attributes that they all belong to the same vessel.

Though not exactly stratigraphically associated with Set 10 (and thus not included in the map in Figure 5.17), the only feature left to discuss from Mound No. 2 is Feature 24, a cobble hearth located at the western edge of the excavation block. Like those features in Set 10, it was excavated into earth that may have been midden or mound slump, but unlike them, its top was truncated by a looters pit instead of the plowzone, and was also heavily disturbed by the bulldozer. As a result, its stratigraphic relationships are especially difficult to pin down. Regardless, it measured 0.132 m^2 in surface area and 0.041 m^3 in approximate volume, and contained only charcoal, burned clay, and 2 lithic flakes.

When categorized according to their vertical and horizontal relationships, the feature sets described above provide robust data set for tracking histories of practice over time and space. Perhaps most obviously, it is possible to compare features along a temporal axis, i.e., those features that pre-date the mound, those associated with the primary episode of mound construction, and those associated with the secondary stage of mound construction. In addition, it is possible to compare features along a spatial axis, i.e., those features immediately under, on, or in the mound itself, and those features that immediately surround the mound but do not exactly correspond with the location of its ultimate construction.

Both of these axes bear examination because the precise location of Mound No. 2 may have been a significant location even before it was monumentalized. True, the appearance of the mound itself represents a substantial change in the long-term use of this place by its occupants, but by more thoroughly considering the history of activities that pre-date or are contemporaneous with the mound, or that spatially do or do not correspond exactly with the location of the mound, the nature of the social changes associated with unprecedented monument construction during the Middle Woodland may become clearer.

Temporal Comparisons

Of the 42 features discussed above, the stratigraphic or absolute dating of 25 features was deemed sufficient to allow for diachronic comparisons across three surfaces: the summit of the primary mound (Feature Sets 5 and 6, except Feature 47 construction fill), the summit of the secondary mound (Feature Set 8), and unequivocally pre-mound deposits (Feature Sets 1, 2, 3, and carbon-dated Features 37 and 45). For the purposes of these comparisons, each of these surfaces is conceived of as a living floor, comprising of more-or-less contemporaneous activities associated with pre-mound or mound summit occupations. The following discussion considers comparisons of various feature attributes across these surfaces that are thought to correspond with particular sorts or extents of activity in the past, largely using "common sense" rather than ethnographic analogy as the middle range approach.

As a starting point, we can compare feature type diversity through time. Assuming that different types of features were used to different ends (e.g., pits and basins may have been used to store or dispose of different materials in different ways; cobble hearths and simple hearths may respectively represent high-investment and expedient cooking practices, etc.), a measure of feature type diversity for a given surface should positively correlate with the diversity of activities that took place on that surface. As shown in Figure 5.22, the primary and secondary mound summits have a much greater variety of feature types than the pre-mound deposits, indicating that activities on the mound were more variable than activities that preceded mound building.

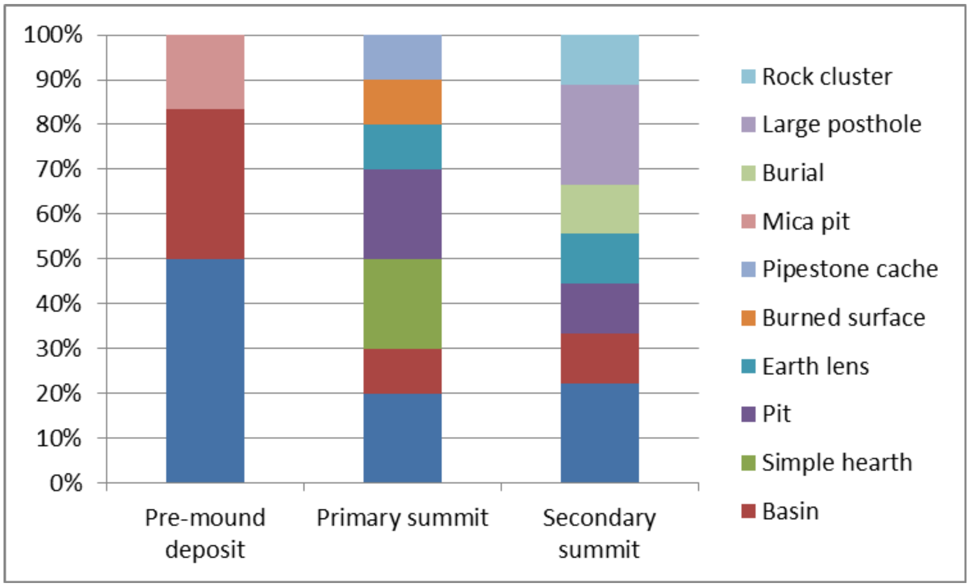


Figure 5.22. Relative amounts of feature types across pre-mound and mound summit surfaces.

Cobble hearths and basins occur on all surfaces, so presumably, cooking food, generating heat with fires, and establishing shallow repositories to store, process, or dispose of relatively small amounts of materials took place throughout the life history of Mound No. 2. These storage/processing/disposal activities appear to have intensified once the mound was built, given the appearance of deeper pits on the primary and secondary mound summits. Earth lens also show up for the first time in these contexts – unsurprising, considering that they likely representing mound construction or mound structure maintenance activities. Other features only occur on one surface. For example, the simple hearths on the primary mound summit (Feature 1 and 32) suggest that some sort of cooking or heating took place on this surface that might have differed from those activities represented by cobble hearths. The latter not only represent a greater investment of energy (i.e., the collecting and arranging of cobbles in addition to fuel), but they also may have provided surfaces or supports for cooking certain sorts of food using certain sorts of tools (e.g., pots). Simple hearths, in contrast, appear to be more expedient features, perhaps designed for shorter-term use or for a distinctive purpose (perhaps for smoking meat?).

The remaining single-surface feature occurrences likely reflect changes in the sorts of ritual practices that corresponded with different moments in the mound's life history. Before it was erected, a pit lined with mica (Feature 45) was dug into the subsoil of the site. Given the apparent ritual significance of mica artifacts in other contexts at Garden Creek and throughout the Eastern Woodlands, this plausibly represents some ritually significant activity, perhaps some sort of site dedication. The pipestone cache (Feature 35) on the summit of the primary mound may be another sort of dedication, albeit with another raw material. Meanwhile, the burned surface (Feature 41) on the primary mound summit might be the remains of a structure that was deliberately (ritually?) destroyed before the second episode of mound building; I discuss this interpretation, and its likely precedent in pre-mound deposits, in the next section on postholes. Finally, rituals involving large posts – perhaps as an axis mundi or celestial marker (Kimball, Whyte, and Crites 2010) – appear to be limited to the secondary mound, as represented by Feature 2 and 40. Human burial (Feature 28) occurs in association with this summit, though it is also possible that this feature is intrusive from a later period (see above).

Another sort of activity that occurs only late in the mound building sequence (at least as represented by this diachronic dataset) is the deposition of potentially ritually charged artifacts. Only one of these 25 features – a cobble hearth (Feature 30) – included figurine and gorget fragments, artifacts that are commonly associated with ritual feasting and gift-giving, and it was located on the secondary mound summit. Mica, the other recorded artifact type that is plausibly associated with ritual, was found in four features: the two large postholes on the secondary summit, and the small mica pit and a basin in the pre-mound deposit.

Complementing these qualitative comparisons, certain quantitative attributes can also illuminate similarities and difference in mound-related activities through time. First, assuming that larger features correspond with larger-scale activities, or perhaps even accommodated larger numbers of people (and vice versa), differences in feature sizes across occupation surfaces may be considered a likely proxy measure for changes in the scale of activities associated with Mound No. 2. Interestingly, such differences are minimal in this dataset. The mean sizes of all features, measured in surface area and approximate volume, do not differ significantly between surfaces, though the primary mound summit and secondary summits have a few more large outliers than the pre-mound deposits (Figure 5.23). Turning to those feature types that occur on all three surfaces (though in quantities too small to permit statistical comparison), the two cobble hearths on the secondary mound summit are notably larger (in area and approximate volume), than most pre-mound and primary summit cobble hearths (n=5), while the basins on the secondary and, especially, the primary summits (n=1 each) are larger than those in the pre-mound deposit (n=2). In short, there appears to be some tendency for an increase in feature size over time that corresponds with mound construction, suggesting that mound-top activities involved more investment and possibly more people than pre-mound activities.

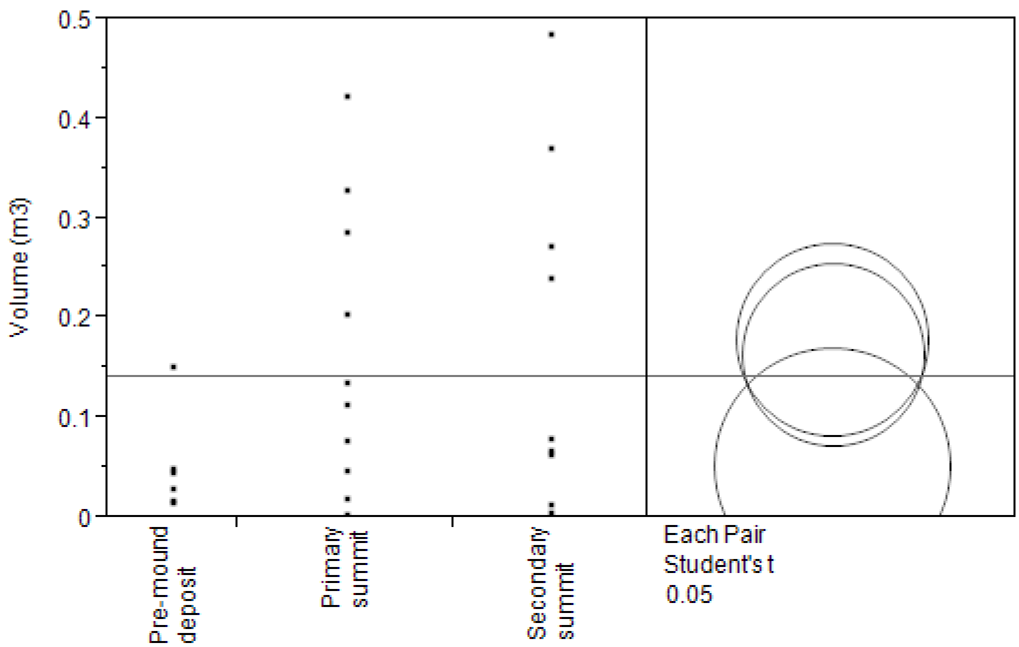


Figure 5.23. Distribution and comparison of means of approximate feature volume (all p-values > 0.1).

The amount of pottery associated with each surface may also be an indication of the relative intensity of activities taking place there (more pottery = more activity). To make this comparison, I calculated the total mass of pottery for each surface, and divided those values by the sum approximate volume of all features in that level. Interestingly, while features in the primary and secondary mound summits yielded 0.67 and 0.9 kg of pottery per cubic meter respectively, features in the pre-mound deposits included considerably more ceramics, about 1.3 kg per cubic meter. At the outset, this might seem to contradict patterns of increasing size features and scales of activities through time, as observed above, but it may be that the relatively low density of pottery on the mound summits is a result of cleaning these surfaces and disposing of refuse elsewhere, as might be expected for a ritual precinct. This possibility finds support in the fact that both of the mound summits included features that were entirely empty of artifacts.

To summarize then, comparing features across a temporal axis suggests that activities that took in direct association with or in the immediate vicinity of Mound No. 2 were not static. While some activities are documented throughout the occupation, a greater variety of activities took place once the mound was built. Moreover, these activities could have involved more materials or involved larger numbers of people than those that pre-dated the mound. Ritual activities intensified once the mound was built (i.e., more ritual features and objects), though it is worth noting that those rituals that occurred on the secondary summit do not appear to be the same as those identified on the primary summit. Furthermore, the presence of the small mica pit in the pre-mound deposit suggests that this locality was of ritual significance even before mound-related earthmoving resulted in formal changes to the built environment.

Spatial Comparisons

After removing from consideration those features that most likely represent the remains of mound construction proper (i.e., earth lenses), 39 features remained for an analysis of similarities and differences in the activities that occurred, on the one hand, in the exact spot where Mound No. 2 was constructed (on, under, or in it), and, on the other hand, in the areas that closely surrounded the mound. As discussed above, there are some differences in activities even within this first set of "mound-proper" features. However, if this "persistent place" was somehow set apart as culturally or ritually significant, it might be that other differences inhered between these features and those that were close to but not isomorphic with the mound. This theme is further explored in Chapter 7 using feature data from the presumed Middle Woodland occupation area at Garden Creek, which represents an even greater spatial distinction than that considered here.

Within the total sample of 39 features, 13 were located around the mound and 26 were located under, on, or in the mound. At first glance, it appears that there is greater feature diversity in the latter, where 10 features types were identified, than the former, where only 5 feature types were identified. However, this may be a product of disparate sample sizes; if these raw data are converted to indices of feature types/total number of features, the values for the mound and off-mound sets are identical (.385). The presence of basins and cobble hearths in all contexts suggests that many of the same activities were taking place regardless of spatial association with the mound. However, with the exception on one large posthole (Feature 17), there is little evidence for features with specifically ritual functions in the off-mound area. More features that fit this bill, such as the possible burned summit structure, the small mica pit, the pipestone cache, and two large potholes, exist on or immediately under the mound itself.

That said, potentially ritually significant artifacts were located more often in off-mound areas than in mound proper contexts. In the latter group, three cobble hearths (Features 7, 18, and 44) included gorget fragments. Only on cobble hearth directly associated with the mound (Feature 30) included a gorget fragment; this feature and one other cobble hearth (mound-proper Feature 27) also included figurine fragments. That this pattern is observed despite the smaller quantity of off-mound features lends it at least slightly more significance. In contrast, only one of the five features that included mica was located in the off-mound areas. It is worth noting here, too, that mica does not co-occur with other artifacts of presumed ritual significance (figurines and gorgets); it may be that these represent the remains of qualitatively different sorts of ritual practice that are differentially associated with the mound or its surroundings.

Patterns in the relative sizes of features in mound and off-mound areas were more equivocal. No significant difference was detected in mean area or approximate volume of features in these contexts, or in the mean areas and volumes of well represented features types (i.e., cobble hearths and basins). Generally speaking then, features in these areas were likely used for the same scale of activities, or for similarly sized groups of people. This inference, however, is not directly borne out by the ceramic data. Following the same methodology described above, the density of pottery in features off the mound (2.0 kg/m^3) was more than double the density of pottery in features on, under, or in the mound (0.88 g/m^3). I suggest that this pattern results from the proscribed cleaning of mound-proper contexts, which in turn may be an indication that space directly associated with the mound was more actively maintained for ritual purposes than were areas immediately surrounding it.

These patterns, though subtle, provide some indication that the use-life of Mound No. 2 involved not only changes in practices through time, but also differences in practice across space. The precise location of the mound was set apart as a locus of ritual activities that resulted in diverse and unique feature contexts and assemblages that were not documented in other areas (see Chapter 7 for further discussion). In short, at least when viewed from the perspective of feature contexts, the persistence of this place appears to be tied to its ritual significance as much as to more functional considerations.

Mound No. 2 Posthole Analysis and Single-Post Structures

The preceding discussion using features as units of analysis demonstrated similarities and differences in the use – ritual or otherwise – of the Mound No. 2 locality over time and space. As with many archaeological studies however, small sample sizes were a challenge to the interpretive potential of this data set. Fortunately, another dataset exists in the field notes and maps from the

Cherokee Project excavation of Mound No. 2 that has the potential to further elucidate the life history of this early monument.

Without a doubt, the type of feature that Keel and his team encountered most frequently during the 1966 season was the lowly posthole. Across approximately 350 m^2, they identified 2427 post holes: 113 in the truncated remains of the secondary mound; 484 on the summit of the primary mound; 564 in the pre-mound midden; and 1296 intruding into and only recognized at the level of the underlying subsoil. Only 29 of these could be attributed to a structure during the excavations (Figure 5.24). These postholes, located at the base of the pre-mound midden, were uniquely filled with coarse white sand in their bottom two-thirds, and dark-colored midden soil in their upper one-thirds. As described by Keel (1976:95):

> It appeared that this structure was removed and the holes filled with sand in one continuous operation, perhaps to clear the area for the construction of the primary mound. Some of the postholes contained Connestee phase ceramics and, therefore, place the removal of the house at least as late as that period… The posthole pattern measures 20 x 19.5 feet [5.9-x-6.1 m]. An alignment of three postholes in the southeastern corner of the building may indicate a wind screen or portico. No hearth was located within the margin of the structure, but two… Connestee phase rock-filled pit hearths were found on the west side of the pattern.

As I have argued elsewhere (Wright 2013), the presence of Structure 1 below Mound No. 2 is significant for two major reasons. It demonstrates that the Garden Creek site was occupied before the construction of the platform mound, and that this occupation was substantial enough to yield a fairly large building. Whatever the function of Structure 1 (to be addressed momentarily), it represents a greater investment in architecture than might be expected for a short-term base camp, though it may have accommodated fewer people than some residential structures of the period. Approximating 36 m^2, the footprint of Structure 1 is noticeably smaller than the average areas of circular, presumably residential buildings at the Ela site (31Sw5) (58.65 m^2, n =18), and of rectangular buildings at the Macon County airport site (46.82 m^2, n =27).

Figure 5.24. Base of Garden Creek Mound No. 2 (1966 excavations); constituent postholes of Structure 1 marked with white paper plates. Looking southwest.

The relatively small size of Structure 1 may relate to the second aspect of its significance: it appears to have served some special, possibly ceremonial purpose, which may have involved only a limited number of ritual practitioners (i.e., a group smaller than a typical residential unit). This inference is bolstered by the uniquely in-filled postholes that led to the identification of Structure 1. By dismantling the building and filling the resulting postholes with white sand, the inhabitants of Garden Creek may have been performing an act of ritual closure (a termination ritual), signaling the end of the structure's use life and the containment of potentially powerful ritual energies associated with it. Similar ritual closure activities are fairly well acknowledged in the Americas (Heitman 2007), and are increasingly being recognized in the Southeast. For example, at the Late Woodland Feltus site in Mississippi, large posts were filled with clean clays, ash, and the remains of bear, which the excavators interpret as a series of ceremonies related to spiritual journeys between this world and the other world (Kassabaum and Nelson 2012). If one of these posts indeed represented an "axis mundi" between worlds, then it stands to reason that such a charged passageway would need to be secured when the relevant ceremony was completed.

Structure 1 thus provides intriguing evidence that the location of Mound No. 2 at Garden Creek hosted ceremonial activities that predate the emergence of platform mound architecture, corroborating some of the evidence from the diachronic feature analysis discussed above. Furthermore, that the platform mound was later placed directly over Structure 1 suggests that this monument could not be built just anywhere. The history of Structure 1 construction and dismantling, the intensive activity that produced a thick pre-mound midden, and multiple stages of mound construction and use indicate that the Garden Creek locality was truly a persistent place. But for the present discussion, it is worth remembering that the posts that comprise Structure 1 comprise less than one percent of the total number of posts revealed in the horizontal excavations of the Cherokee Project. What might the remaining 4291 posts be able to tell us about the built environment associated with Mound No. 2, including its pre-mound and summit contexts?

With these questions in mind, I developed a set of methods to test for the presence or absence of single-post structures in the three intact cultural strata mapped in the 1960s – the summit of the primary mound, the pre-mound midden, and the base of midden/top of subsoil. Using published plan maps (Keel 1976) and unpublished profile drawings and descriptions of individual postholes, it was possible to assign several attributes to postholes that could then be sorted, according to parameters derived from Structure 1, to tease out possible structural outlines that had previously been undetected. For every posthole in the excavation block, the area of its horizontal cross-section was calculated in ArcGIS. However, posthole depth and shape (e.g., round-bottomed, flat-bottomed, pointed-bottomed) were only available to assign to 1038 postholes; fill characteristics, (e.g., presence of charcoal, rock, sand) were only noted for a small minority of postholes.

Depending on the availability of posthole depth information in particular, my exact methods for discerning possible structure outlines varied slightly across and between different strata. Lacking information regarding fill characteristics for most postholes, posthole area and depth were the primary attributes used to separate out postholes representative of buildings. My strategy for isolating such remains involved iteratively selecting groups of postholes whose areas and/or depths approximated the known range of areas of depths observed in the Structure 1 postholes (Table 5.6).

Summary Statistics	Area (cm^2)	Depth (cm)
Maximum	613	51
Minimum	191	13
Mean	340	38
Standard deviation	98	8
Sample size	25	24

Table 5.6. Summary metric statistics for postholes in Structure 1.

For every mapped level, the first step in this analysis was the elimination of all postholes with areas less than 191 cm^2 or greater from 613 cm^2 from consideration – i.e., those postholes with areas outside the range of posthole areas observed in Structure 1. Although this attempt at "noise reduction" may have excluded outlier postholes from structural outlines, it is probable that the smallest postholes represent the remains of temporary or expedient constructions, such as drying racks or scaffolds, instead of formal structures, and that the largest postholes represent singular features of possible ritual importance. Next, for those postholes with areas 191 - 613 cm^2 that also had depths noted, I selected several iterations of posts encompassing a 16 cm range in depth (e.g., 1 - 16 cm, 2 - 17 cm, 3 - 17 cm, up to 56 - 71 cm); this range value was determined by doubling the standard deviation of post measurements observed in Structure 1. As with the selection method of posthole areas, this technique might have missed especially deep or shallow posts in a given structure, but it should have captured the majority of structural posts, if they existed. To mitigate this issue, I chose to display some of these iterative selections simultaneously, thereby assessing if variable depth patterns, such as deeper posts in the middle of walls (as had been observed at the Macon County Airport Site; Tasha Benyshek personal communication), were apparent in posthole alignments.

Unfortunately, a comparative lack of posthole depth measurements, at least among contiguous posthole clusters, rendered this method unfeasible in the southeastern half of the subsoil level and the entire top of the pre-mound midden and the summit of the primary mound. In these contexts, following the elimination of postholes with areas less than 191 cm^2 or greater from 613 cm^2, the remaining samples were iteratively selected according to their areas, in ranges of 200 cm^2 (approximately double the standard deviation of posthole areas observed in Structure 1), at intervals of 50 cm^2 (191 - 391 cm^2, 241-441 cm^2, 291 - 441 cm^2, etc., to 441 - 613 cm^2). While ranges based on the doubled standard deviation were successful in reducing noise, it is assumed that alignments will still be more difficult to discern when based on a single data set (i.e., areas) than when based on multiple datasets (i.e., area and depth); indeed, the results emphasize this point.

Despite these challenges, this methodology successfully located several intriguing posthole patterns under and on Garden Creek Mound No. 2 that had previously gone unrecognized. I would argue, however, that the alignments identified are not necessarily all the alignments that exist in these contexts. Because the parameters used to sort the metric attributes of posts were derived from Structure 1, this strategy was only capable of finding the remains of structures similar to Structure 1, at least with respect to post area and post depth. Moreover, because circular Connestee phase structures are difficult to identify even in the midst of excavation (Tasha Benyshek, personal communication), I only sought to discern linear alignments and rectangular/sub-rectangular structures – even though it is certainly plausible that circular structures did once exist in these locations.

<u>Base of Pre-Mound Midden</u>

Keel's original subsoil plan map (1976:99) includes 1297 total postholes. Depth measurements exist for 663 of these, concentrated in the northwestern portion of the excavation unit (Figure 5.25). This analysis of both of these attributes, where it was possible, led to the identification of at least five additional structures under Garden Creek Mound No. 2 (Figures 5.26, 5.27). The coarser analytical strategy, which focused only on posthole diameters, allowed not only for the clarification of one of these structures, but also the tentative identification of alignments and voids among postholes in the southeastern portion of the excavation block which may represent the remains of additional two architectural structures.

Structure 2 is the newly identified structure about which I am most confident. It consists of 20 postholes that demarcate a nearly complete rectangle measuring 4-x-3.4 m, with a noticeable gap only in the northeast corner. Interestingly, posts in the center of the east and west walls are deeper than posts near the corners, a pattern that was also apparent in posthole alignments at the Macon County Airport site. The only feature found inside the structure was a basin (Feature 37) that included Early Woodland Swannanoa pottery, but it is unclear if the structure postdates or is contemporaneous with this pit.

Structure 2 overlaps Structure 5, a roughly rectangular arrangement of 18 posts at the northern end of the excavation block measuring 3.7-x-4.3 m. Noticeable gaps in the pattern occur in the western wall and northeastern corner. A basin (Feature 22) is mapped in the middle of the structure but is probably intrusive from later levels, while a burned area near the northern corner of the structure likely represents a discrete, if unknown, activity. It is unclear, on the basis of current evidence, whether Structure 2 of Structure 5 appeared first.

Similar chronological ambiguity characterizes the other four structures (including Structure 1), which overlap each other to varying degrees. Structure 3 consists of 44 postholes and measures approximately 8.8-x-7.2 m. There are obvious linear arrangements of posts for the north, south, and east walls, but the west well is less well defined, having been discerned from posthole area data alone, rather than a combination of posthole area and depth. A small cobble hearth (Feature 48) was identified at the subsoil inside Structure 3's northeast corner, and though its exact temporal relationship with the building cannot be specified, it was determined to be one of the earliest sub-mound features (part of Feature Set 1), so they may be contemporaneous.

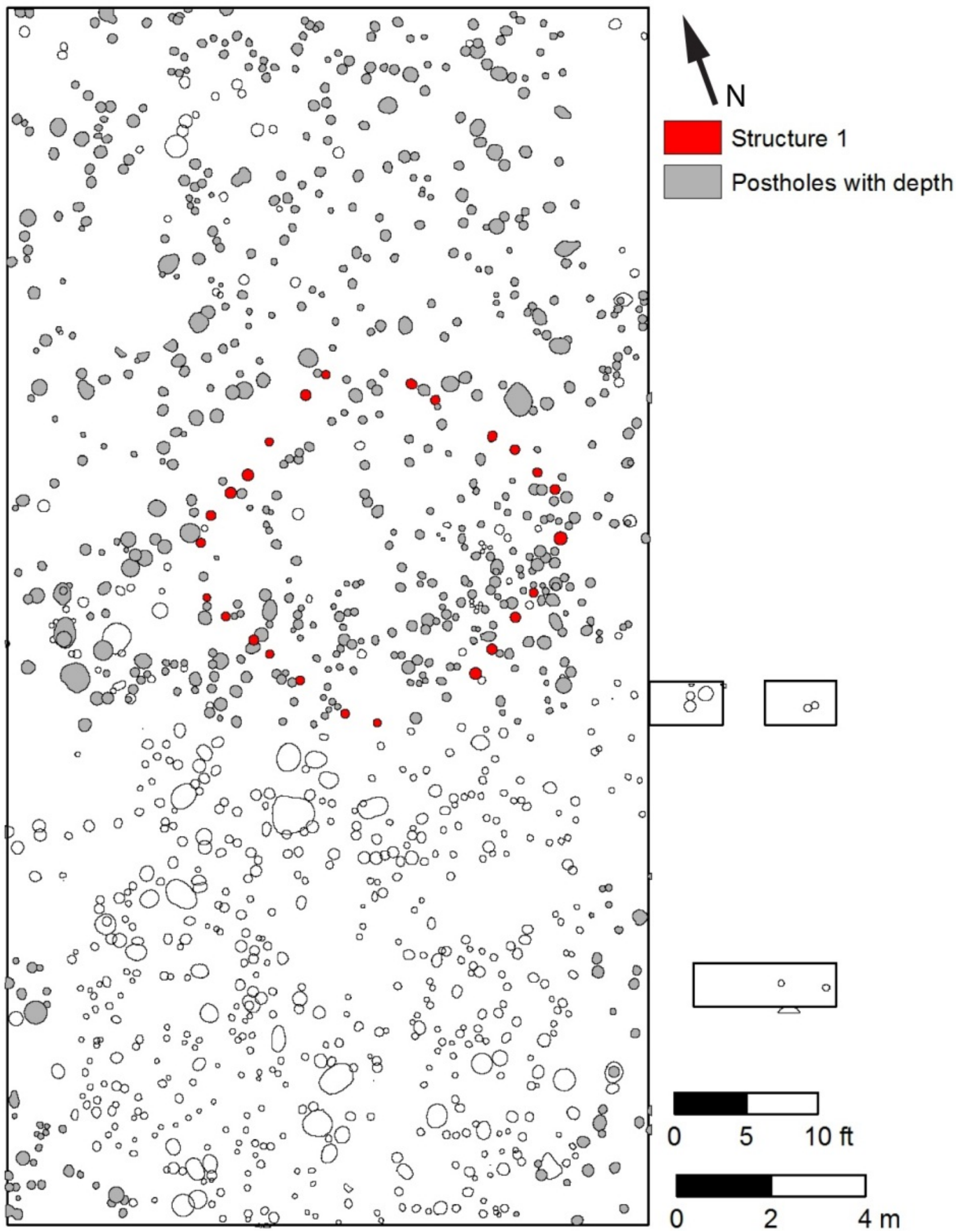


Figure 5.25. Posthole scatter at the top of the subsoil below Garden Creek Mound No. 2. Unpublished field notes included depth measurements only for the gray postholes.

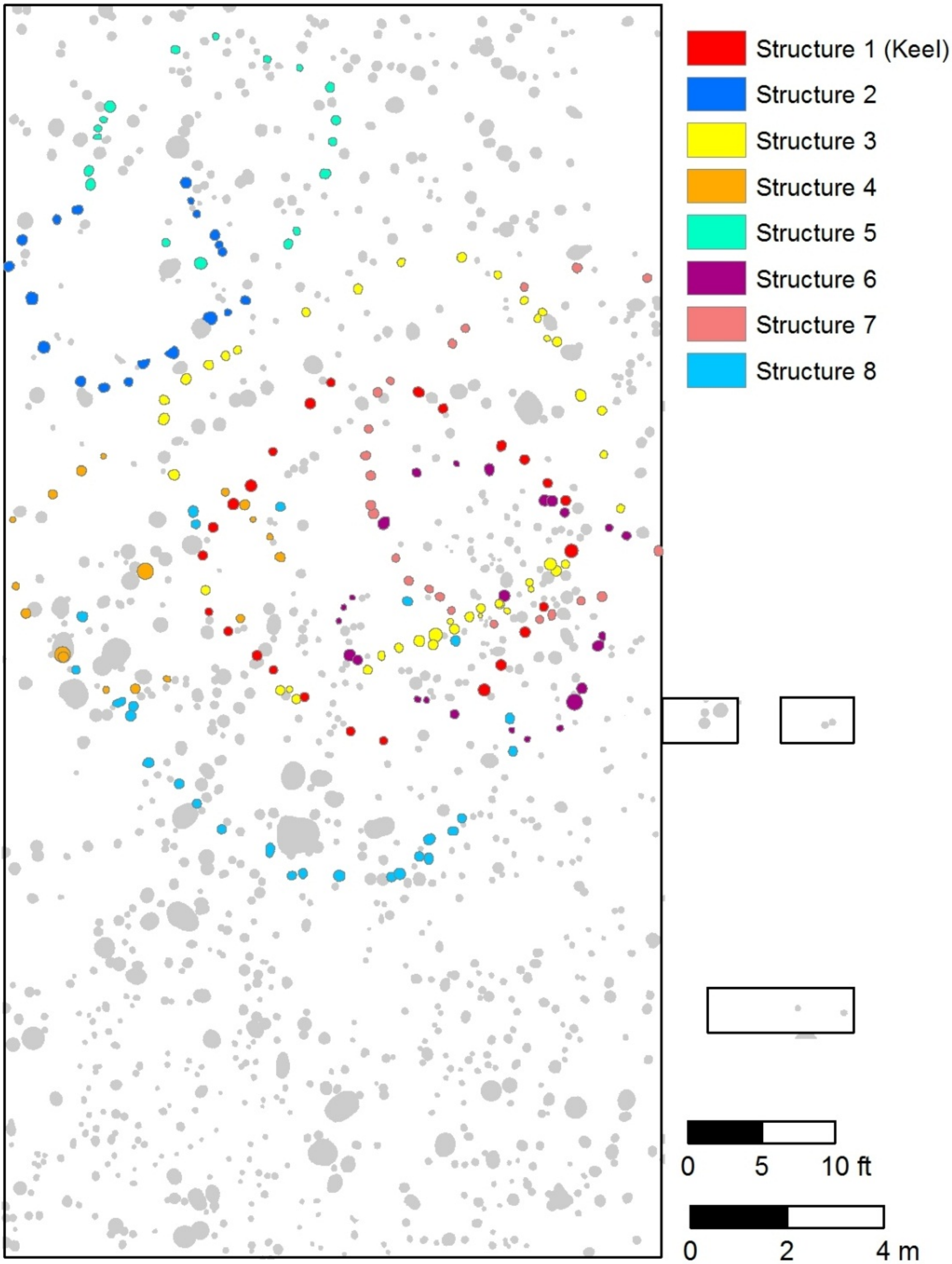


Figure 5.26. Newly identified structures in subsoil-level below Mound No. 2.

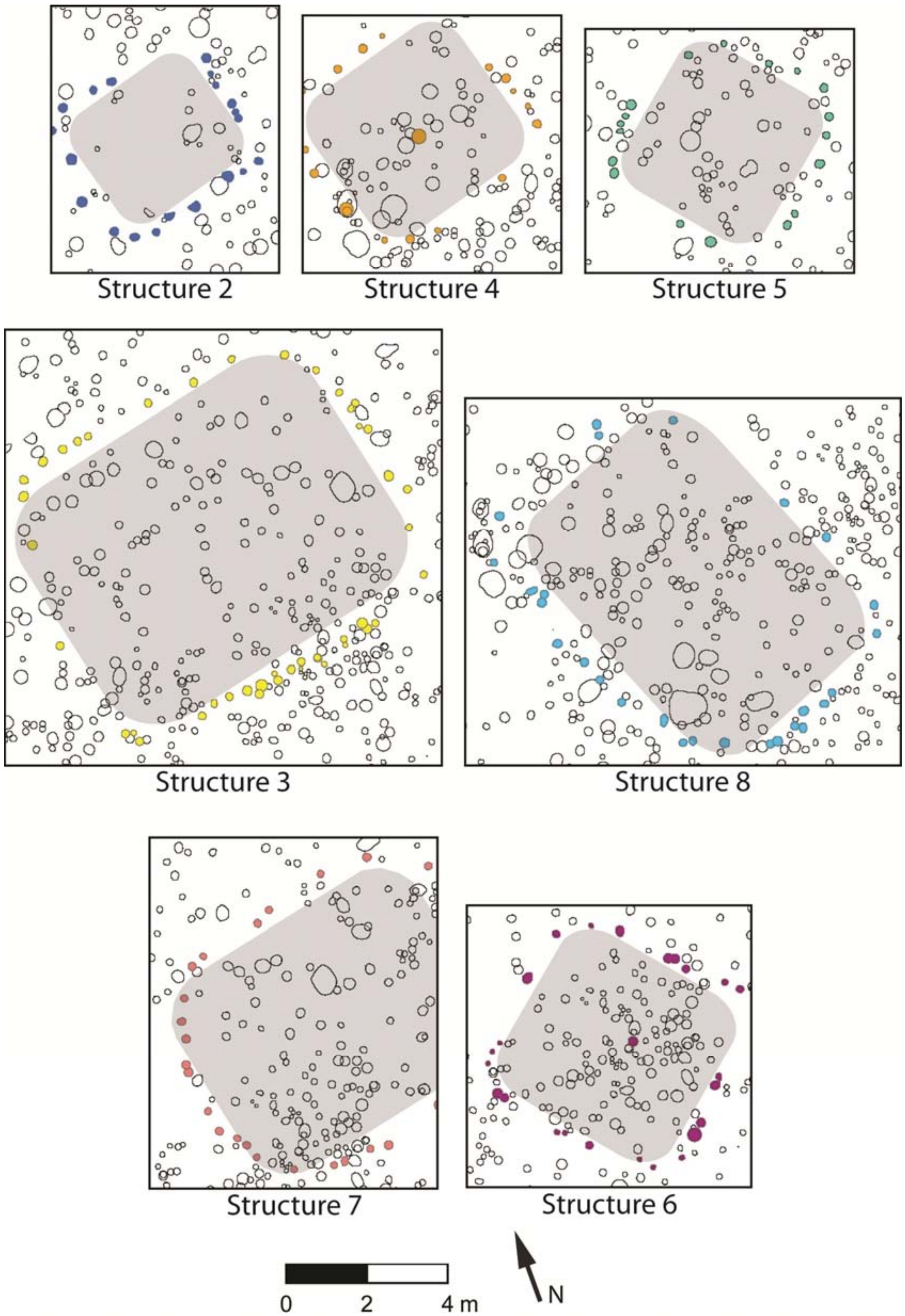


Figure 5.27. Close-ups of posthole alignments for newly identified structures. Structures 2-6 were identified on the basis of posthole area and depth. Structures 7 and 8 were identified on the basis of posthole area alone.

Immediately west of Structure 3, Structure 4 is another rectangular structure, notably lacking a northeastern corner. It includes 18 posts and measures 4.6 m per side. Like Structure 2 and structures from the Macon County Airport Site, Structure 4 has especially deep posts in the middle of at least two walls. Additionally, Structure 4 is one of two structures at Garden Creek that appears to be associated with a central support post. Two cobble hearths (Features 44 and 53) were identified within the margins of Structure 4, but their large size relative to the footprint of the structure suggests that they were not in use while this building was standing.

Returning to the eastern half of the excavation block, 25 postholes align to form Structure 6, which measures approximate 4.3-x-4.9 m. Although there are noticeable gaps between postholes in the eastern corner, opposing walls are remarkably parallel, lending credence to the identification of this structure. No features appear within the margins of this pattern, but like Structure 3, there is a central support post associated with this alignment.

Whereas Structures 2-6 were identified using a combination of posthole area and depth, the postholes comprising Structure 7 and 8 lacked depth measurements. These alignments were recognized by the second iterative selection method described above, based solely on ranges of posthole areas. In practice, more so than the depth-based selection method, this technique relied on the recognition of areas of the plan map that conspicuously lacked postholes within a given area subset, perhaps representing the relatively post-free interior of a structure.

Structure 7 consists of 23 postholes with areas ranging from 195 cm^2 - 366 cm^2. Together, these postholes form a sub-rectangular alignment measuring approximately 6-x-12 m. The northern and western walls are traceable in their entirety, but the southeastern corner and most of the eastern wall do not fall within the excavation block. Twenty of these posts included depth measurements, which ranged from 5.1 cm to 45.7 cm (mean 21.3 cm; median 16.5 cm; standard deviation 12.6 cm). At best, only twelve of these postholes co-occur within the 16 cm range of depths (again, double the standard deviation of posthole depths observed in Structure 1) used to isolate Structures 2 - 6, negating the identification of this alignment using depth data. Still, the total range of depths in Structure 7 (40.6 cm) closely approximates the total range of depths in Structure 1 (38 cm), increasing the likelihood that this alignment represents a structural outline. The only feature that is spatially associated with Structure 7 is a small cobble hearth (Feature 49) that intersects the northern wall of the structure. Because none of Structure 7's postholes intrude into this feature, and because the feature appears where a post would be likely given the overall spacing between posts in this alignment, it is possible that the hearth was constructed overtop of and thus obliterated an existing posthole. If so, this feature would postdate the construction and deconstruction of Structure 7.

The identification of Structure 8 relies entirely on posthole areas, as only seven of its 27 postholes included depth measurements. With posthole areas ranging from 272 cm^2 - 472 cm^2, Structure 8 would appear to be more substantial than Structure 7, and also slightly larger, measuring 6-x-14 m. Its sub-rectangular outline is fairly complete, although inter-post spacing is greater in the northern and eastern walls than in the southern and western walls. One cobble hearth occurs (Feature 53) immediately within the northwestern margin of this alignment0. Again, though the temporal or functional relationships between these elements cannot be determined exactly, the fact that Feature 53 is part of the very early Feature Set 1 increases the likelihood that it is contemporaneous with this (stratigraphically) early structure.

Given the instances of overlapping among some of these posthole alignments, it stands to reason that not all of these structures could have existed simultaneously. However, similarities in the orientations of some structures might indicate that subsequent building episodes may have been subject to similar architectural design prescriptions. Structures 2, 3, 4, and 7 are oriented so that the middles of their walls each face 13-15° west of north, south of west, east of south, and north of east (Figure 5.28). While Structure 2 may have been contemporaneous with these other three structures, overlaps between Structure 3 and Structures 4 and 7 strongly indicate that at least some of these were not present simultaneously.

Structures 1, 5, 6, and 8 display a slightly less consistent, but still suggestive, pattern (Figure 5.29). The first three of these are rotated slightly, so that their corners -- not the middles of their walls -- more-or-less align with a cardinal direction (3-13° east of north, south of east, west of south, and north of east). Although the rectangular shape of Structure 8 precludes an identical orientation, a line bisecting this alignment from north to south nearly matches similar dimensions of Structure 1: 13 and 12° east of north, respectively. As with the first cluster of structures, only one of these (Structure 5) does not overlap with others, bolstering the idea that at least some of these buildings were erected sequentially.

Intriguingly, these distinctive architectural orientations are not limited to sub-mound posthole alignments. Although difficult to distinguish after decades of plowing, the edge of Mound No. 2 present in the excavation block includes a corner that is approximately aligned with due west. Assuming the mound was originally rectangular or square in outline, it may be that this earth monument shares an orientation with Structures 1, 5, and 6, in which case the latter buildings might represent an early expression of architectural grammar principles ultimately applied to the monumental built environment.

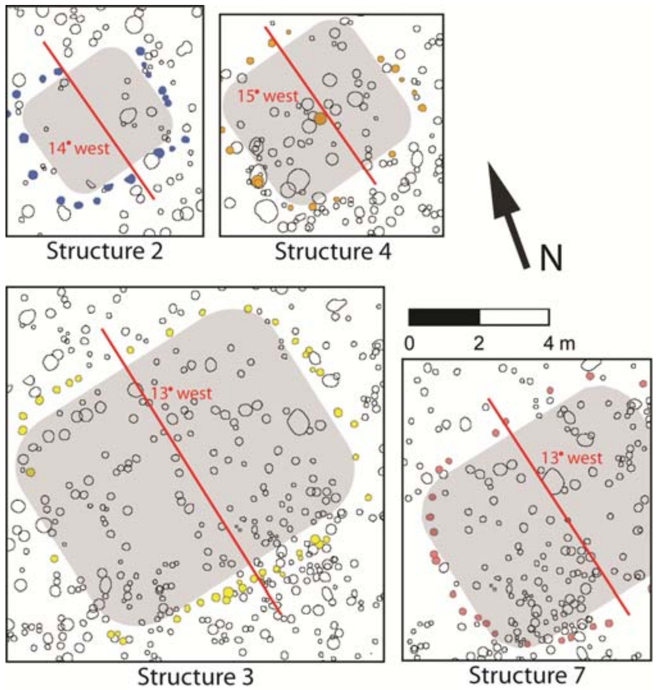


Figure 5.28. Orientation of Structures 2, 3, 4, and 7, with the middles of northernmost walls aligning 13-15° west of north.

That the mound and some sub-mound structures may have shared certain aspects of architectural grammar should not overshadow the fundamental differences regarding the use of space implied by the identification of seven additional structures at the level of the subsoil underneath Mound No. 2.

Unlike Structure 1, none of the newly recognized structures building shows evidence of ritualistic dismantling and termination. This raises the possibility that Structures 2 - 8 represent non-ritual, plausibly domestic houses. Moreover, the palimpsest of post alignments indicates repeated use of the Garden Creek locality ostensibly for domestic occupation, perhaps by groups of seasonally sedentary foragers. While communal activities and possibly ceremonies probably took place during such aggregations and served to establish and reinforce relationships among otherwise autonomous foraging units, they do not appear, on the basis of sub-mound architectural data, to have necessarily involved the same dynamics as later occupations. In order to flesh out the full extent of some of these differences, and, if possible, to trace the transition in these architectural practices through time, it is now necessary to conduct similar analyses of posthole scatters on the remaining two intact horizontal surfaces: the top of the sub-mound midden, which more immediately pre-dates mound construction than the sub-soil surface, and the top of the primary mound. Though these analyses are limited by a relative lack of detail in posthole attributes, compared to the sub-mound scatters, they nevertheless suggest intriguing diachronic patterns and changes in architectural design and ritual practice at Garden Creek.

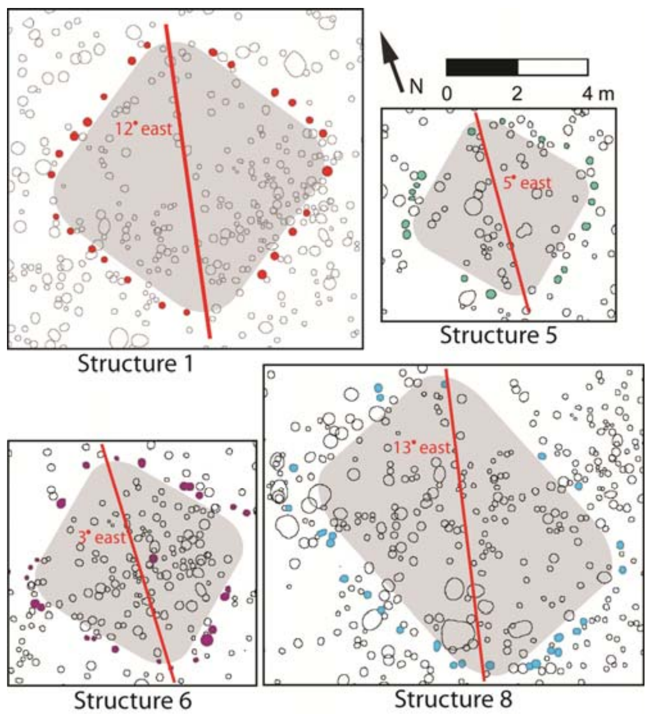


Figure 5.29. Orientation of Structures 1, 5, 6, and 8, with northern corners aligned 3-13° east of north.

Top of Pre-Mound Midden

Unlike the top of the subsoil, the top of the pre-mound midden was only preserved below levels of mound fill that conformed to the footprint of Mound No. 2; any midden that extended beyond this area was at least partially incorporated into the plowzone. Furthermore, the southern portion of the excavation block was disturbed by the bulldozing activities that precipitated Keel's excavation. As a result, the area of intact surface for top of the pre-mound midden was not as extensive as that of the underlying level, and in turn, fewer postholes were available for analysis. In total, Keel identified 534 postholes associated in this context, and recorded depth measurements for 204 of these, concentrated in the northeastern portion of the excavation block (Figure 5.30).

While the stratigraphic context of the postholes north of the bulldozer cut can be confidently assigned to the surface of the midden, the disturbance to the midden south of this cut means that these postholes were not mapped at the surface at which they originated, but rather some at some unspecifiable depth below their real tops. It is impossible to assert with certainty that these postholes originated at the same level. In fact, because this deposit is a midden, it may be that these posts originated at many different levels, representing a palimpsest of architectural activity through time. Lacking the sort of precise elevation data that would be necessary to tease out internal stratigraphy within the midden, the following posthole analysis assumes that all posts are stratigraphically associated, and moreover, does not involve posthole sorting according to depth, in case these values are measurements of postholes truncated by post-depositional disturbances. With that in mind, the posthole alignments identified through this analysis should be taken with a grain of salt, and await further testing using additional (presently unavailable) lines of evidence.

By sorting postholes according to cross-sectional areas, alignments representing two sub-rectangular structures were tentatively identified in association with the pre-mound midden (Figure 5.31). Structure 9 consists of 23 postholes with cross-sectional areas ranging from 246 cm^2 to 436 cm^2. Measuring 4.8-x-3.5 m, this alignment was made visible not only by the linear arrangement of posts demarcated its edges, but also by the conspicuous absence of posts with similar cross-sectional areas within its margins – a pattern which was also noted for Structure 10, and for areas possible associated with structures on the summit on the primary mound. No features were identified within or near the Structure 9 posthole alignment, but its northern corner nearly overlaps with the southwestern corner of Structure 10. Like Structures 1, 5, 6, and 8 in the underlying stratum, the corners of Structure 9 appear to be aligned approximately with cardinal directions; the northernmost and southernmost corners of Structure 9 fall within 2° of a north-south axis (Figure 5.32).

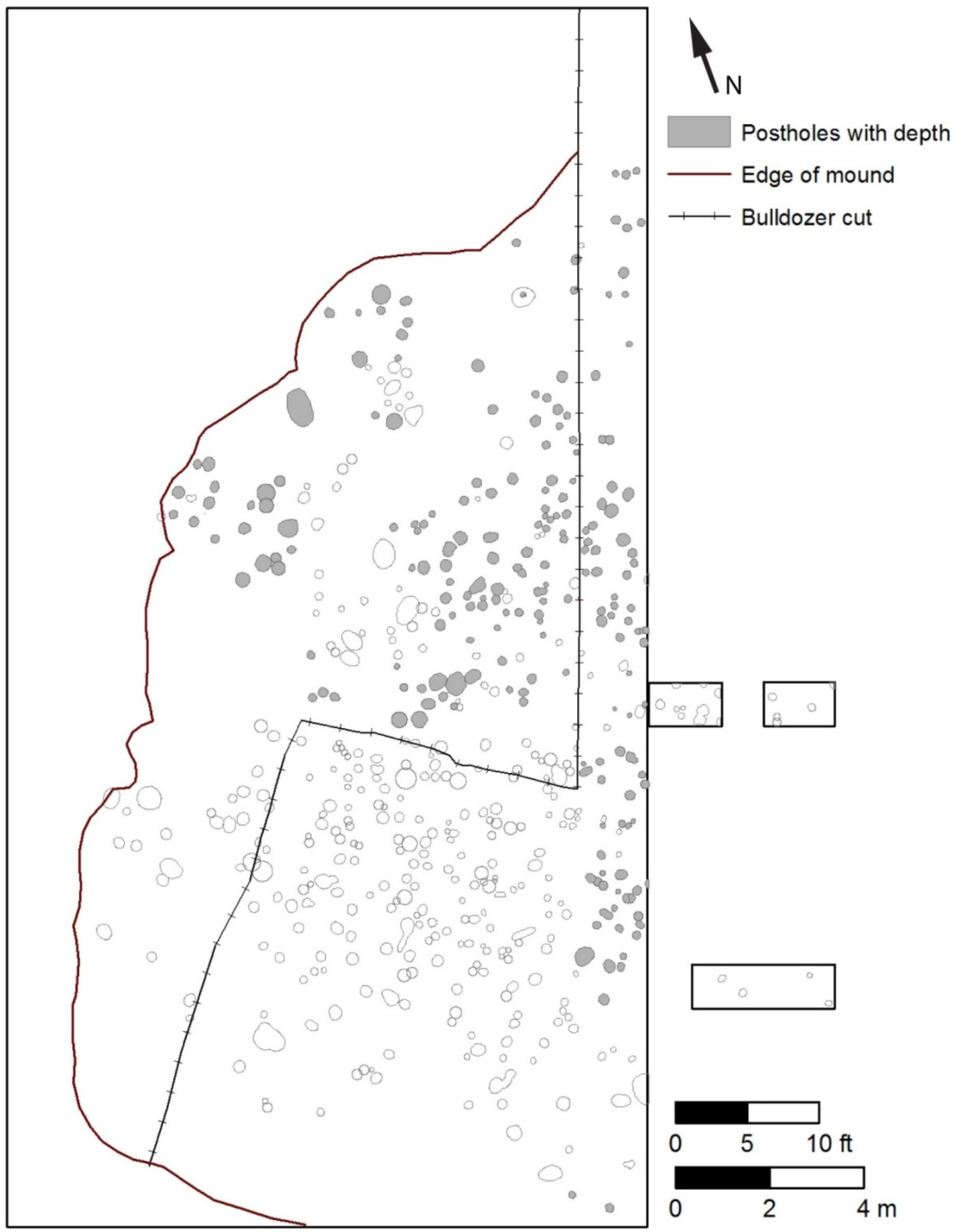


Figure 5.30. Posthole scatter associated with the top of the pre-mound midden below Mound No. 2. Unpublished field notes included depth measurements only for the gray postholes, concentrated in the top half of the map.

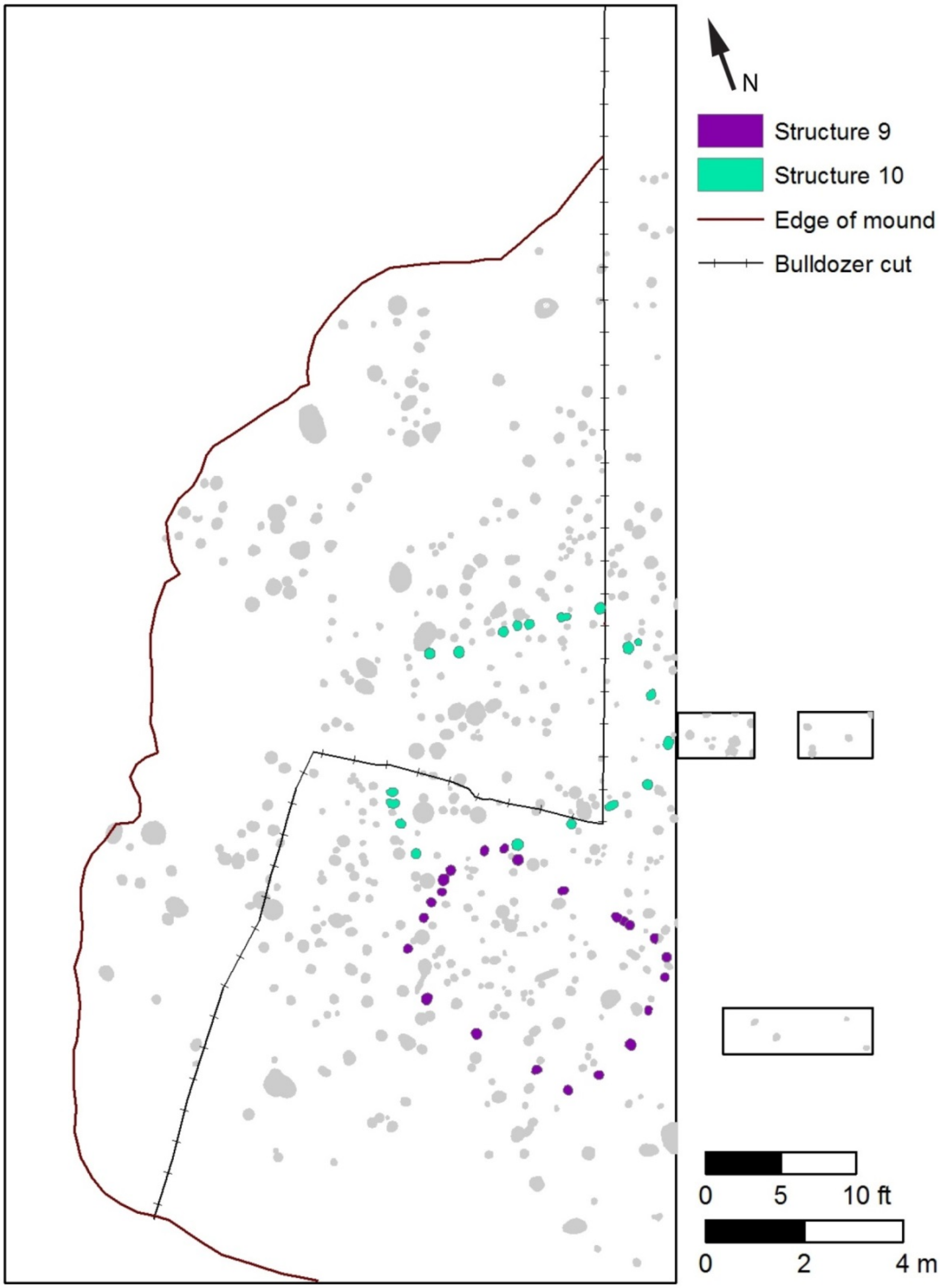


Figure 5.31. Newly identified structures in midden-level below Mound No. 2.

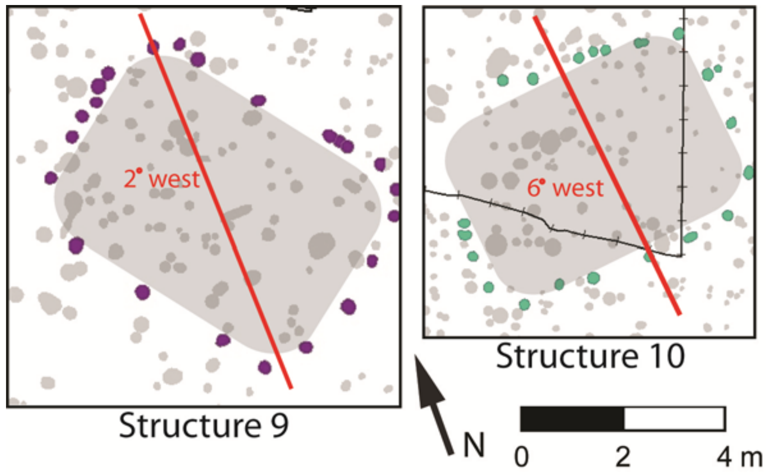


Figure 5.32. Orientation of Structures 9 and 10, approximating those of Structures 1, 5, 6, and 8, and Structures 2, 3, 4, and 7, respectively.

Structure 10 sits immediately northeast of Structure 9. It includes 21 postholes, ranging from 166 to 438 cm2 in diameter, arranged in a sub-rectangular alignment measuring 5.7-x-4.2 m. Again, this pattern was made especially apparent by the comparative lack of similarly sized postholes within its margins. Structure 10 does not share an alignment with Structure 9, but approaches the alignments of Structures 2, 3, 4, and 7: lines bisecting the structure through the middle of its walls are within 6° of the cardinal directions (Feature 5.30). The only feature spatially associated with Structure 10 is a basin (Feature 49) along the northern wall; however, because one of Structure 10's postholes intrudes into it, the basin likely predates the construction of this building.

While neither of these buildings can or should be accepted as straightforwardly as those from the subsoil (especially Structures 2 through 6), the possibility of their existence highlights several important points. First, it would appear that at least some of the activity that immediately predated mound construction continued to involve the construction of formal buildings, as observed in earlier deposits. The presence of formal architecture represents a more substantial commitment to the modification of this place on the landscape than the expedient assembly of drying racks, lean-tos, etc. – the presumed behavioral correlate of posthole scatters associated with other Middle Woodland platform mounds (Knight 2001). That is not to say that the latter constructions did not exist; they almost certainly did, simply in the form of formal structures. As I discuss further below, the mound itself may represent the formal architecture with which the remains of later activities are associated; if so, these small structures (plausibly smaller than most domestic buildings in the region at this time) may be a precursor of the formalized ritual architecture eventually embodied in the monumental built environment.

Second, in addition to potentially prefacing the formalization of ceremonial space through moundbuilding, Structures 9 and 10 also share certain characteristics with earlier structures, suggesting that some aspects of an architectural canon were diachronically persistent. In overall size and shape, these later buildings comfortably fall within the range of those observed at the subsoil (of course, other shapes such as circular structures were purposefully not sought out -- but neither were any of these immediately obvious during analysis. They also conform the the two distinctive patterns of orientation observed at the subsoil level: one with corners oriented along a north-south axis, the other with the middles of walls facing the cardinal directions. While the significance of these orientations is not known at present, that Middle Woodland architects subscribed to them over time indicates the persistence of a potentially important dimension of ritual architectural grammar. If and how this pattern and others were transformed by the advent of moundbuilding at the site now necessitates a consideration of the last intact horizontal surface excavated by Keel: the summit of the primary mound.

Primary Mound Summit

With 484 postholes, 172 of which included depth measurements, the summit of the primary mound was the most challenging of the three intact surfaces from which to tease out possible structural posthole alignments. In fact, posthole sorts based on similarities in cross-sectional areas only led to the tentative identification of one structure (Figure 5.33). Measuring 6.8-x-6.2 m, this sub-rectangular structure consisted of 20 postholes, ranging from 392-606 cm^2 in diameter. This pattern was made clearer by a relative lack of similarly sized postholes inside its margins, with the notable exception of a rough line of posts bisecting the structure from southeast to northwest. If these postholes represent architectural elements that were in use simultaneously, it is possible that this structure was divded by a partition of some sort.

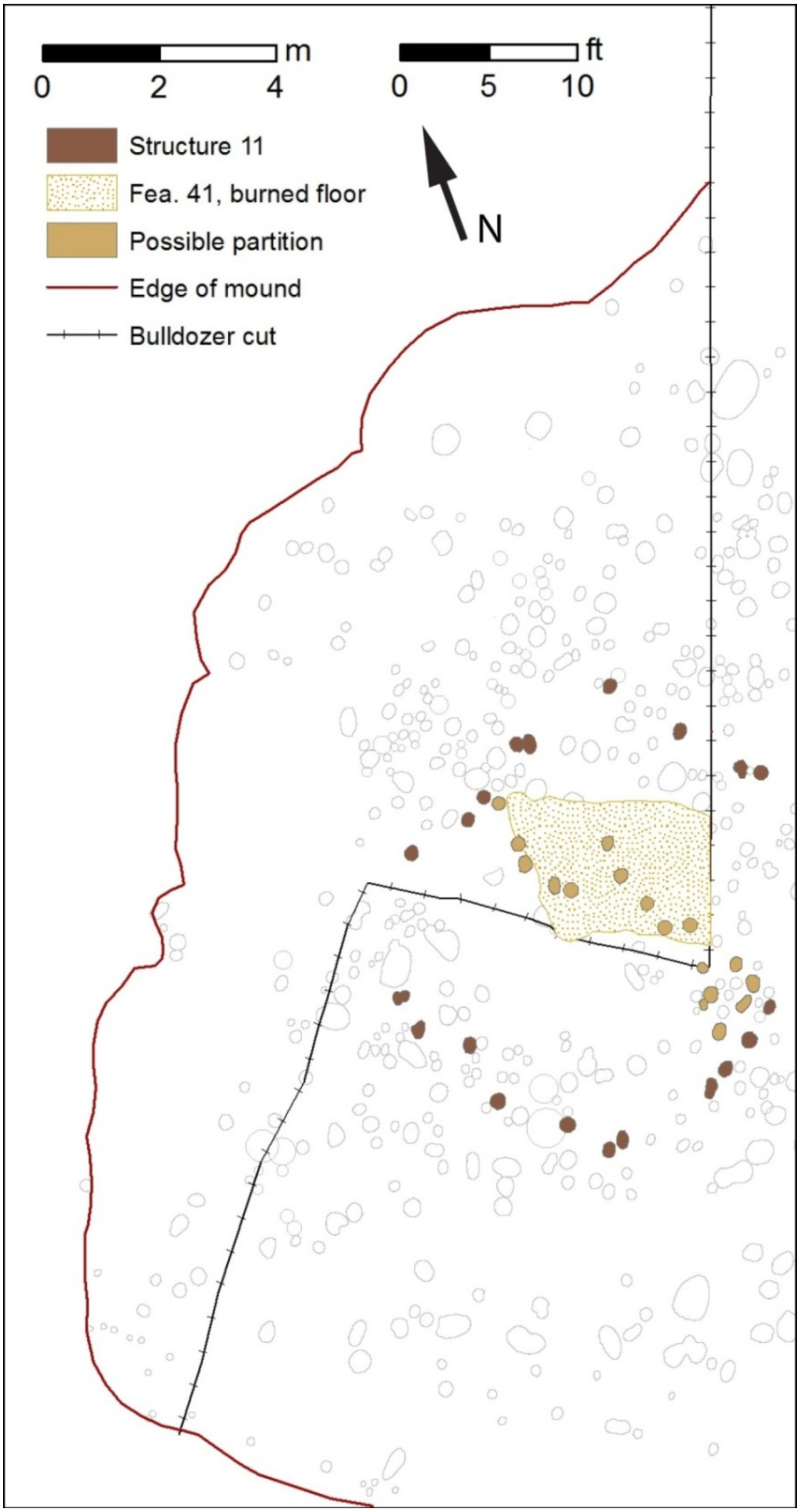


Figure 5.33. Structure 11, with burned surface (Feature 41) and possible partition.

In addition to a simple hearth (Feature 1) near the southern end of this proposed partition, Structure 11 also encompasses a burned feature that Keel attributed to a mound-top structure: Interestingly, eastern side of the this proposed partition, Keel observed Feature 41, a burned surface that he identified as the floor of a structure (see above). Supposing that this posthole alignment is, in fact, the remains of an architectural building, there are tantalizing similarities between Structure 11 and previous buildings associated with Mound No. 2. In size, shape, and orientation, Structure 11 is remarkably similar to Structure 1, the plausibly special-purpose building identifed at the level of the subsoil that consisted of postholes filled with white sand, which I attribute to ritual termination activities (Figure 5.34).

Post Patterns Through Time

Considered together, the 11 single-post structures identified across three horizontal levels associated with the pre-mound and primary summit strata at Mound No. 2 provide evidence for continuity and change in architectural practices at Garden Creek. Generally speaking, quantitatively more structures were observed below the mound than on top of it – a pattern that is plausibly related to differences in the function of that location before and after mound construction, as well as to the fact that the subsoil level constitutes a palimpsest of multiple occupation episodes. The former point can be further elucidated through a diachronic analysis of features across these levels, discussed below. Turning now to the attributes of individual structures, it is possible to trace additional patterns of continuity and change. For example, the distribution of footprint areas for the 11 structures assessed here revealed three size modes: small structures (Structures 2, 4, 5, 6, 9, 10); medium structures (Structures 1 and 11); and large structures (Structures 3, 7, and 8). Interestingly, the largest and smallest structures in the sample are from the subsoil level; subsequent levels contain only small structures, as at the top of the midden, or medium structures, as on the summit of the primary mound. This indicates not only a greater potential diversity in structure functions before mound construction than after mound construction, but also a greater diversity in the numbers of individuals that could be accommodated in structures in earlier levels. Using Cook's (1972:16) rule of thumb that each of the first six individuals in a structure require 25 ft^2 (2.3 m^2), with each dditional person requiring 100 ft^2 (9.3 m^2), some structures at the level of the subsoil could have only fit six individuals, while others could accommodate up to thirteen. It may be that these larger buildings were precursors of collective ritual space eventually materialized in the relatively larger mound summits.

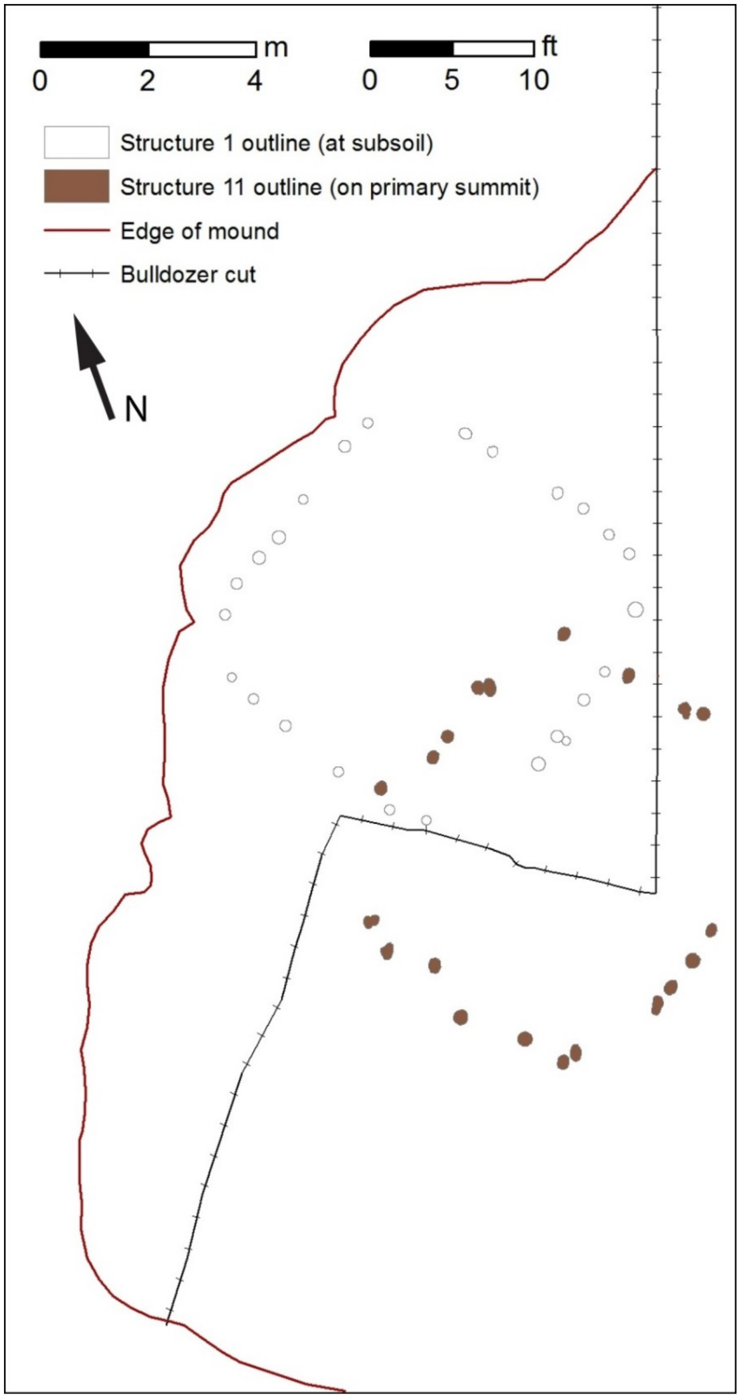


Figure 5.34. Outlines of Structures 1 and 11, for comparison.

Another measure possible to calculate for all structures was relative substantialness (Table 5.7). Following the logic that larger postholes accomodated larger posts, creating a relatively more substantial structure and representing a relatively greater investment of labor for cutting down, transporting, and erecting these posts, I compared the distribution of the structures' consituent postholes' cross-sectional areas. For Structures 1 through 6, which were identified primarily on the bases of similar depths, this first required that I define a sample of postholes from each structure based on the same range of posthole areas used to define Structures 7-11 (i.e., a range of 200 cm2, based on twice the standard deviation posthole area observed in Structure 1. In each of these six cases, I eliminated postholes who areas fell outside a range defined as 100 cm2 greater and less than the average posthole area for a given structure. A comparison of the resulting posthole area means of each structure revealed several interesting patterns.

Structure	*Context*	*Mean posthole area (cm^2)*	*Standard deviation (cm^2)*	*N*
1	Subsoil	325.646	49.735	18
2	Subsoil	342.928	54.270	12
3	Subsoil	265.842	45.685	61
4	Subsoil	304.497	46.148	9
5	Subsoil	258.466	52.870	10
6	Subsoil	266.617	43.923	7
7	Subsoil	266.075	48.120	23
8	Subsoil	337.953	53.045	27
9	Midden	312.853	57.860	23
10	Midden	351.175	63.842	21
11	Primary summit	502.607	56.037	20

Figure 5.7. Mean area of posthole crosssections for Structures 1 – 11.

First, three modes of structures could be isolated in terms of their constituent postholes' cross-sectional areas: small post structures (Structures 3, 5, 6, and 7), medium post structures (Structures 1, 2, 4, 8, 9, and 10), and large post structures (Structure 11). While both small and medium post structures are present at the level of the subsoil, the top of the pre-mound midden only includes medium post structures, and the summit of the primary mound only includes a large post structure. This pattern suggests that architectural single-post architectural structures were becoming more substantial over time, seemingly mirroring the increased investment in the built environment at this location indicated by the advent of platform mound construction. Perhaps counter-intutively, the substantialness of a building does not appear to correlate with the size of the building. Structure 11, for example, was by for the most substantial, but its footprint was only medium-sized. Moreover, at the level of the subsoil, two of the three largest structures (3 and 7) consists of postholes whose cross-sectional areas are among the smallest of all 11 structures associated with the mound. In other words, the largest structures may, in fact, have been among the least substantial. One reason for this might be that these structures were meant for more temporary use than more substantial and, incidentally, later structures. That none of the large structures at the level of the subsoil could have been in use simulateneously suggests that this location was used repeatedly – and not necessarily for long at any given time – for a similar purpose. As time went on, however, more substantial buildings were constructed with larger posts; though they would have accommodated fewer people than earlier buildings, they may have been made to survive longer and to have a more lasting presence on the landscape – argument which can also be made for the adoption of mound building practices in general.

In the face of all of this change, certain elements of architectural design appear to have persisted from pre-mound through mound summit occupations of this space. Each of the eleven structures associated with Mound No. 2 share one of two orientations: either the middle of their walls approximately face a cardinal direction (rotated 6-15 degrees west of north), or their corners approximately face a cardinal direction (rotated 2 degress west to 13 degrees east of north). Structures of both orientations exist at the level of the subsoil and the top of the premound midden; the only structure currently identified at the summit of the primary mound follows the latter alignment. Though the significance of these orientations (to astronomical alignments, geograhpic features, etc.) is unknown, their remarkable consistency through time indiactes that there was a prescribed tradition and meaning behind them, possibly tied to ritual activities. In addition, though the sorting technique used here did not assess the presence or absence of non-rectilinear structures among the posthole scatters, it is worth noting that such building shapes continued to be in use through at least the early life history of the mound.

Chapter Summary

The archaeological record of Garden Creek Mound No. 2 offers an unparalleled opportunity to trace the ways in which an early earthen monument was used in the American Southeast. Similar Middle Woodland platform mounds have rarely been subjected to extensive testing, and to my knowledge, none of these investigations have yielded as comprehensive a record of activity that both pre-dates and coincides with the advent of platform mound architecture. To take advantage of this rich data set, I have endeavored in this chapter to trace histories of practice associated with Mound No. 2 at the scale of lived human experience. To that end, archaeological features and structures (in the form of post alignments) served as unit of analysis for temporal and spatial comparison. These efforts highlighted the protracted history of occupation of Mound No. 2, and its probable role as a persistent place in the Pigeon River drainage during the Middle Woodland period. While multiple lines of evidence for ritual activity were most apparent with the mound itself, especially its summit, certain features and architectural arrangements suggest that certain ritual activities or rules were in place before the first basket loads of earth were placed to create the mound.

The results of these intra-site comparisons provide considerable fodder for comparison to contemporaneous platform mound across the Southeast. These matters are the subject of Chapter 8, and have the potential to elucidate interregional connections involved in the widespread emergence of platform mound ceremonialism during the Middle Woodland. Before that, though, it is necessary to apply a similar life history approach to the recently identified earthwork enclosures at Garden Creek. Though the available dataset here is much smaller than that of Mound No. 2, recent fieldwork did identify and recover several features within the enclosure and inside the ditch itself. These can begin to shed light on the use life of these regionally unprecedented monuments, and in turn, be used to clarify interregional connections of their own.

CHAPTER 6

THE ENCLOSURES

Thanks to intrepid early surveyors and archaeologists and, in a few cases, happy accidents of preservation, archaeologists know a fair amount about the geometric earthworks that dotted the Ohio Valley landscape during the Middle Woodland period. Their density in this region is spectacular, and though variable in size and configuration, most appear to have been built according to shared architectural principles that many archaeologists interpret as the materialization of a shared cosmology (e.g., Brown 2013). In contrast, research on Middle Woodland earthworks in the Southeast has been more limited. While several Middle Woodland sites in the Southeast feature embankments and/or ditches around their perimeters (e.g., Boudreaux 2013; Keith 2010; Pluckhahn 2003:53–56; Yerka 2010), few of these earthworks are discrete (i.e., "stand-alone") or precisely geometric in shape (but see Thompson and Pluckhahn 2012; Thunen 1998). In most cases, these enclosures are interpreted as a means of demarcating ceremonial space in a general sense, but possible social and symbolic import of their own morphology or artifactual associations is rarely considered (Boudreaux's recent study of the late Middle Woodland/early Late Woodland Jackson Landing site on the Mississippi Gulf Coast is an important exception). At least in part, archaeologists' ability to tackle these issues have been hampered by low sample sizes of Southeastern enclosures, especially in comparison to the Ohio Valley enclosure dataset.

Fortunately, new field methodologies have the potential to increase the sample of Southeastern enclosures, and possibly to map out architectural similarities not only within the Southeast or sub-regions therein, but also between the Southeast and the Hopewellian Midwest. The following chapter takes a critical first step in this process by discussing the most exciting discoveries of the Garden Creek Archaeological Project: two previously unidentified geometric ditch enclosures dating to the early Middle Woodland Pigeon phase. Following a brief description of the enclosures based on geophysical survey data, I present the results of the partial excavation of one of these monuments (Enclosure No. 1), which was completed over two field seasons in 2011and 2012. Adopting the analytical approaches discussed in Chapter 4, I then use (1) Bayesian methods to precisely date the enclosure, (2) comparative energetic measures to propose the labor required for the enclosures' construction, and (3) field and laboratory observations to elucidate the activities associated with excavated features immediately associated with the monument. The results of these analyses provide crucial data points for comparison to other Middle Woodland small geometric enclosures, which, in turn, permits an assessment of the role of interregional interaction in the emergence of this form of monumentality in the Appalachian Summit. These latter topics are explored in depth alongside other interregional comparisons in Chapter 8.

Enclosures in Horizontal and Vertical Perspective

As discussed in Chapter 3, we employed three complementary geophysical techniques to measure subsurface geophysical variability and to identify anomalies indicative of past human activity at Garden Creek. Given the state of the modern day landscape, each technique had its own pros and cons, but together, they provided a comprehensive view of a larger portion of the site than could have been efficiently revealed using traditional methods (e.g., shovel test survey, random sample excavation, etc.) (see also Clay 2001). The results of our magnetometer and ground penetrating radar surveys are most relevant at present, as they generated the best views of the enclosures (for a discussion of magnetic susceptibility results, see Chapter 7).

During the initial magnetometer survey at Garden Creek in March 2011, two aspects of the site quickly became clear. First, modern iron and intensive plowing dramatically effected the visibility of small and subtle magnetic anomalies (Horsley, Wright, and Barrier 2014; see further discussion in Chapter 7). However, especially large or intense anomalies were detectable, which brought us to our second observation: there were more earthen monuments at the site than we had anticipated, based on previous research. Specifically, just east of the original location of Mound No. 2, we identified two linear features with highly magnetic signatures relative to the surrounding subsoil, each in the shape of a rectangle with rounded corners (Figure 6.1). As I elaborate below, in plan view, these anomalies resemble small geometric enclosures common to Midwestern Adena and Hopewell, particularly the so-called "squircles" (Anderson 2013; Burks 2010; Burks and Cook 2011). As a result, these features were labeled Garden Creek Enclosures No. 1 and No. 2 (the western and eastern enclosures, respectively).

Figure 6.1. Close-up of enclosures as seen in magnetometer survey results plotted from -10 nT (white) to +10 nT (black). Red outlines highlight the enclosures; blue outlines show areas of GPR survey (Area 1/Enclosure No. 1 at bottom, Area 2/Enclosure No. 2 at top).

Unfortunately, a telephone pole, a mailbox, and a house adjacent to these features obscured major portions of their magnetic signatures. In addition, considerable plowing over the eastern enclosure distorted its magnetometer-derived signature, since this machine essentially collapses all subsurface data (i.e., from all depths below surface) into a single two-dimensional image. To work around these issues, we re-surveyed the area containing these enclosures (just under 1 ha) using ground penetrating radar (GPR) (Horsley and Wright 2013). Figures 6.2 and 6.3 show the time slices that resulted from this survey, which combine reflections recorded along horizontal transects in order to show subsurface anomalies across the survey area at different depths below surface. Among other things, these time slices demonstrate that a low topographic rise, now in the middle of a hay field, is in fact a fourth anthropogenic mound at Garden Creek (see Appendix 1).

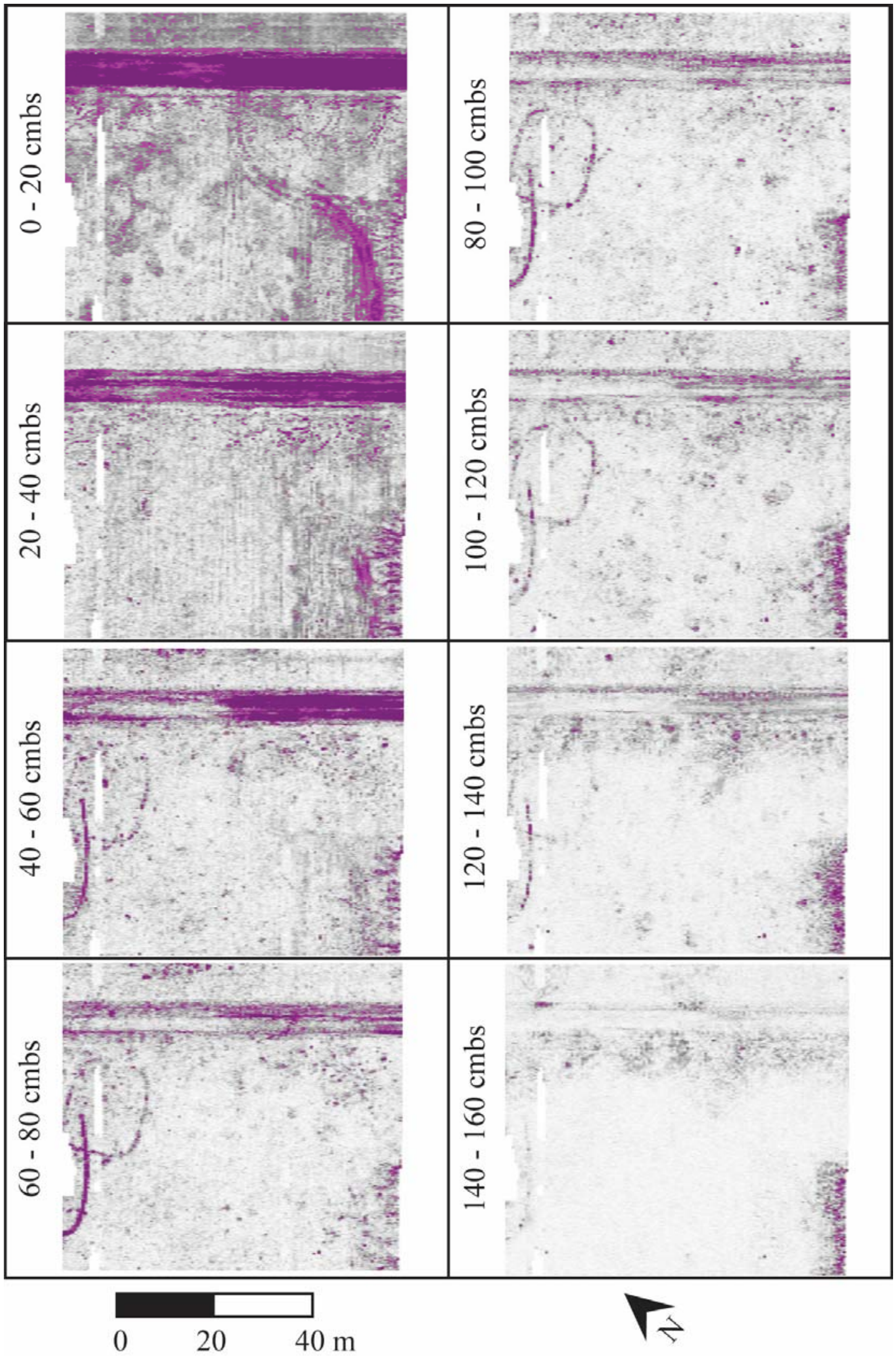


Figure 6.2. GPR timeslices of survey area 1, showing Enclosure No. 1 (eastern enclosure). GPR data processing: dewow, background removal, and gain correction.

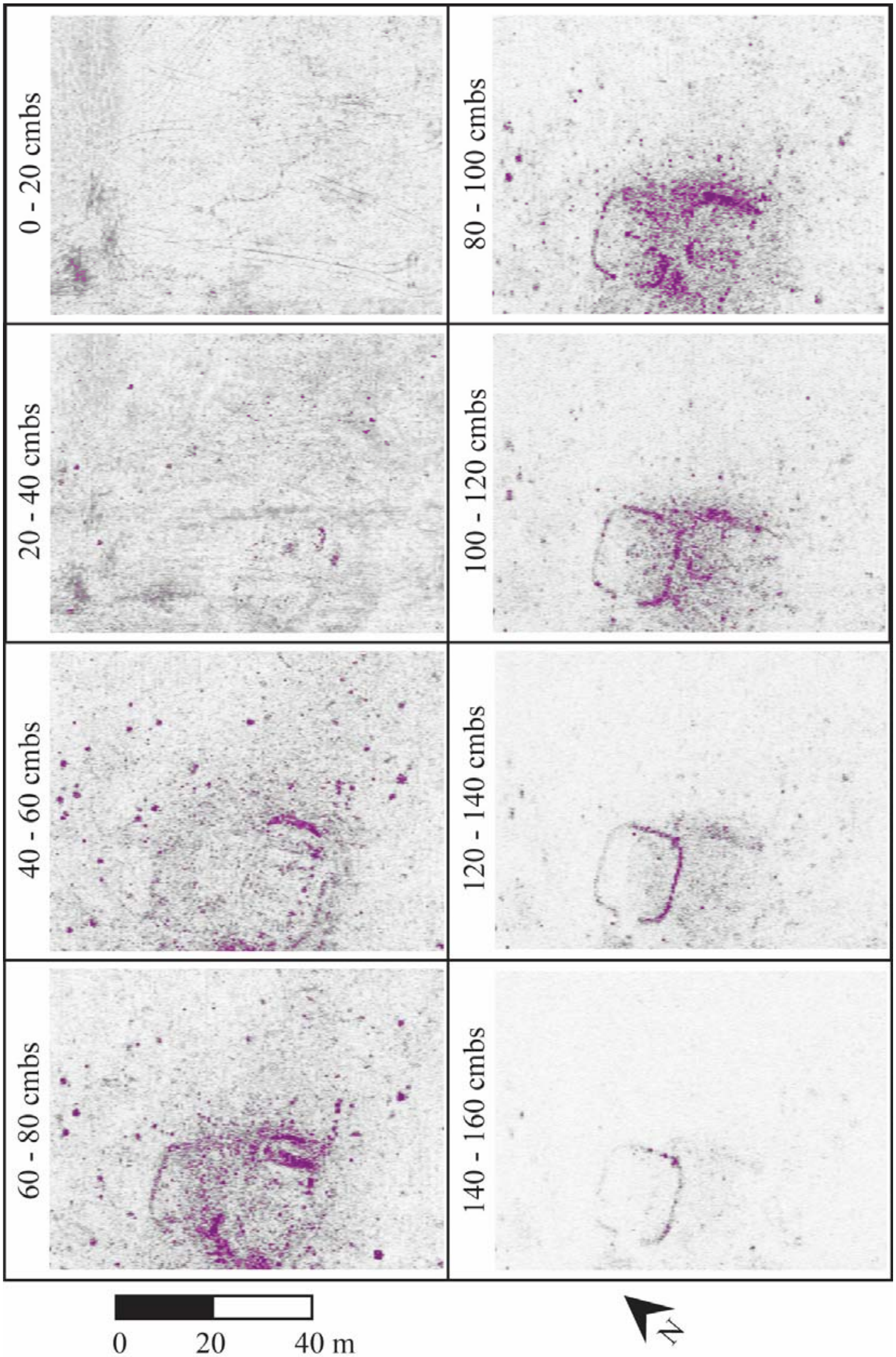


Figure 6.3. GPR timeslices of survey area 2, showing Enclosure No. 2 (western enclosure) and Mound No. 4. GPR data processing: dewow, background removal, gain correction.

Enclosures No. 1 and No. 2 are clarified by the GPR data, which show complete, sub-plowzone outlines of each anomaly. Both enclosures measure about 18 m southwest-to-northeast and 16 m northwest-to-southeast, and the outline of each is broken by an opening or "gateway" that measures about 4 m wide. Although the earthworks are slightly offset, their gateways generally face in the direction of the opposite enclosure, opening on the northeastern wall of Enclosure No. 1 and the southwestern wall of Enclosure No. 2. Moreover, the enclosures share the same orientation, approximately 20˚ west of magnetic north, suggesting a purposeful layout that perhaps references some presently undetermined geographic or celestial alignment. The GPR results also indicate that these anomalies were ditches that extended 1.0-1.2 m below the original ground surface.

Figure 6.4. Horizontal exposure of Enclosure No. 1, Unit 8: (A) Base of plowzone. (B) Base of first zone of fill, rock filled postholes. (C) Base of second zone of fill, rock filled postholes. (D) Base of third zone of fill, bottom of ditch. Looking grid-east/magnetic-southeast

Partial excavation of Enclosure No. 1 confirmed these interpretations. In a 5 by 3 m horizontal excavation block (Unit 8) and two 1 m wide profile trenches (Units 6 and 12), the anomaly was revealed to be a steep-sided ditch with a flat bottom (Figure 6.4). In profile, the shape of the ditch was generally trapezoidal, measuring 1.55 m wide at the top (below the plowzone) and 80 cm wide at its base. In prehistory, the entirety of the sub-plowzone ditch was originally excavated into very dense sandy clay subsoil, but it was eventually filled in with three distinct zones of sediment (Figures 6.5, 6.6). The earliest, bottom-most zone of ditch fill consisted of relatively non-compact clayey soil in bands of strong brown and dark gray. The next episode of infilling was a homogeneous layer of re-deposited subsoil that appeared bright yellow in contrast with the zone of fill above it. This last, uppermost zone of fill consisted of dark brown, organically rich sediment with relatively high densities of charcoal. Although precise specification of the tempo of these infilling episodes awaits micromorphological analysis, it should be noted that no macroscopic evidence of soil formation was noted at any of the interfaces between zones of fill.

Figure 6.5. Excavated profiles of Enclosure No. 1 ditch (not to scale); approximate locations of units shown at right; all profiles labeled according to grid north.

The different zones of ditch fill included varying amounts of artifacts, with artifact densities increasing through time (stratigraphically). This assemblage will be considered in more detail below; at present, it is important to note that, in contrast to many of the Mound No. 2 contexts, these fills do not appear to have been dominated by Connestee phase pottery. The Enclosure No. 1 ceramic assemblage was classified according to attributes instead of typologies, but temper type can be used as proxy for each series (coarse sand for the Early Woodland Swannanoa phase, crushed quartz for the Pigeon phase, and fine sand for the Connestee phase). Viewed thusly, it is clear that that all deposits include notable quantities of Early Woodland/early Middle Woodland ceramics. Excluding a small quantity of sherds with non-local tempers, the bottom zone of ditch fill contained 25% Swannanoa sherds, 37.5% Pigeon sherds, and 37.5% Connestee sherds (N=40). The middle zone contained 14% Swannanoa sherds, 48% Pigeon sherds, and 38% Connestee sherds (N=145). The top zone, finally, contained 23% Swannanoa sherds, 27% Pigeon sherds, and 50% Connestee sherds, (N=284). These proportions may be attributable to the mixing of materials from different periods if the fill materials were re-deposited in the ditch from elsewhere on the site. Such redeposition seems unlikely, however, given the large quantities of sizable fragments of sheet mica in the upper fill zones, further discussed below. If this material was re-deposited, then the fragmentation of this delicate material would likely have been much greater. Rather than re-deposition, then, I suggest that the apparent intermingling of different ceramic series is symptomatic of difficulties in disentangling the relationships between Woodland phases on the basis of ceramics alone (see Chapter 2).

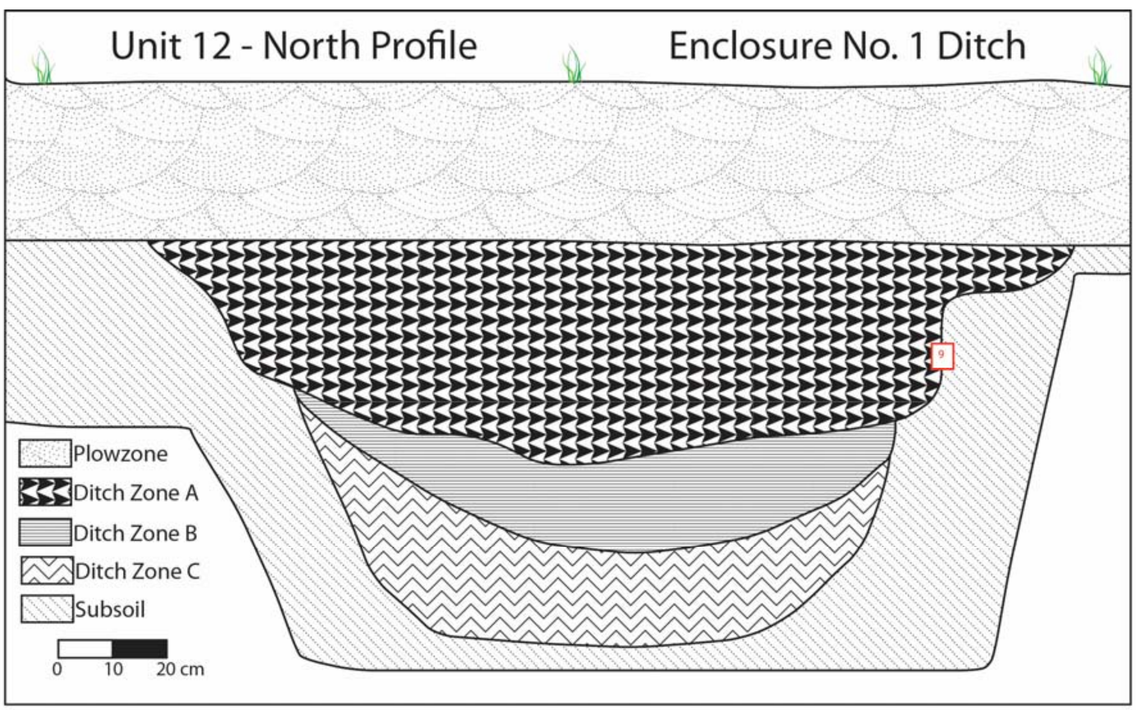


Figure 6.6. Schematic profile of Enclosure No. 1, showing three episodes of ditch fill.

Interestingly, the life history of Enclosure No. 1 did not end with the infilling of the ditch. Once it was entirely filled in, the outline of Enclosure No. 1 continued to be marked by a series of posts that ranged from 12 to 23 cm in diameter and followed the outline of the original ditch (Figure 6.7). Eventually, these posts were removed and the resulting postholes were filled with tightly packed river cobbles and, in some cases, a few fragments of pottery, charcoal, and mica. These features were encountered during excavation as discrete columns of rock, beginning at the base of the plowzone and extending though the top, middle, and sometimes bottom zones of ditch fill. In total, 6 rock-filled postholes were identified across a 5-meter-long exposure of the ditch, spaced at 80-centimeter intervals. Additional rock-filled postholes were identified in separate 1-m profile trenches, suggesting that this alignment continued around the entire enclosure. To my knowledge, Enclosure No. 1 and Garden Creek is the only Middle Woodland small geometric enclosure to receive such post-infilling treatment.

Figure 6.7. Rock filled posthole alignment at the base of the first zone of ditch fill.

Dating Enclosure No. 1

Four AMS dates were obtained on wood charcoal recovered from the excavation of Enclosure No. 1. A single contaminated date was recovered from near the base of the plowzone, but in situ samples were successfully obtained from the bottom of the ditch, the middle of the ditch fill, a piece of charcoal nestled among the cobbles of one of the rock filled postholes that intruded into all zones of ditch fill, providing a *terminus ante quem* for the ditch's erasure. As discussed in the Chapter 4, these dates were calibrated both independently and using Bayesian modeling using stratigraphic information as *a priori* knowledge. Again, it presently impossible to say with certainty whether there was any time lag between the deposition of different zones of ditch fill. In other words, we do not have any *a priori* reason to conclude that these deposits were laid down in immediate succession, or that there were temporal gaps between the deposition of one zone of fill and the next. As a result, the dates from the bottom and middle zones of fill are modeled as a single phase. In contrast, we do know that there was a gap between the deposition of these fills and the deposition of the rocks, charcoal, and sediment in the postholes. Before Sample GC2011.04 entered the record, the ditch was not only "erased" with another zone of fill, but a post had been erected in its place, stood for some unknown period of time, and was then removed. This date, then, is not temporally associated with the preceding phase and is modeled as the later date in the sequence following the phase defined by dates GC2011.01 and GC2011.02. The plausibility of this model is supported by good statistical agreement (A>60%) for all samples. The results are listed in Table 6.1, and displayed graphically in Figure 6.8.

Sample No.	*Context Description*	*^{14}C age B.P.*	*Individual date (2-sigma)*	*Modeled date (2-sigma)*	*Modeled date (1-sigms)*
GC2011.04 (AA99141)	Rock filled posthole	1952 ± 40	41 cal B.C. – cal A.D. 128	cal A.D. 24 – 135	cal A.D. 60 – 126
GC1966.02 (AA99139)	Middle of ditch fill	1911 ± 40	cal A.D. 5 – 215	cal A.D. 9 – 124	cal A.D. 29 – 107
GC1966.01 (AA99138)	Base of ditch fill	1919 ± 46	36 cal B.C. – cal A.D. 217	cal A.D. 4 – 125	cal A.D. 29 – 108
GC2011.03 (AA99140)	Base of plowzone	411 ± 38	cal A.D.1570 - 1630	n/a	n/a

Table 6.1. Dates from Enclosure No. 1, calibrated using OxCal Version 4.2.2 (Bronk Ramsey 2013) and Int.Cal 9 calibration curve (Reimer et al. 2009).

The dates obtained from Garden Creek Enclosure No. 1 all cluster in the latter half of the early Middle Woodland Pigeon phase. The tightness of this clustering is especially apparent in the results of the modeled sequence. At the 2-sigma level, the infilling of the ditch, the emplacement and dismantling of the post alignment, and the infilling of the postholes appears to have maximally taken 130 years; at the 1-sigma level, the duration of these activities is further reduced to 80 years, beginning by cal A.D. 29 and ending by cal A.D. 108. These findings corroborate the patterns observed in the ditch fill ceramic assemblage with its large proportions of coarse sand and crushed quartz pottery ostensibly associated with the Swannanoa and Pigeon phases.

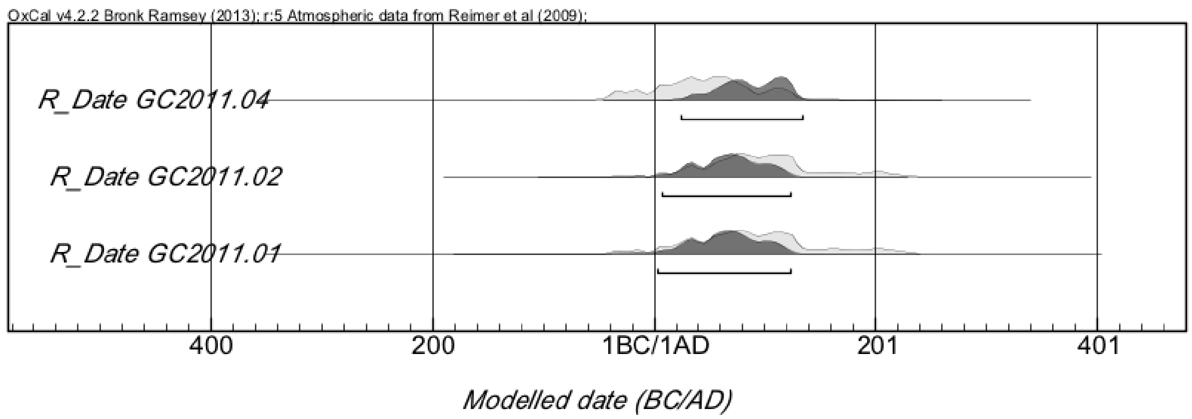


Figure 6.8. Calibrated AMS dates from Enclosure No. 1. Light gray areas indicate probable range of date as calibrated individually; dark gray areas indicate probable range of date as calibrated in the Bayesian model. Brackets demarcate 2-sigma range of modeled date.

At present, we lack a stratigraphic context that corresponds with the time when the ditch was initially constructed and left open, so it is not possible to say how much time elapsed between these initial events and the ditch's infilling. However, the absence of evidence for soil formation at the base of the ditch suggests that its infilling may have followed quickly on the heels of its original excavation. We also lack excavation data from Enclosure No. 2, directly across from Enclosure No. 1, precluding any chronological assessment of this feature on the basis of artifacts, stratigraphy, or absolute dates. For the present, however, their identical footprints, orientations, and alignments to each other strongly suggest that they were part of a single architectural design plan, and are thus contemporaneous.

The Energetics of Enclosure Construction

To summarize the evidence presented so far, the previously unidentified enclosures at Garden Creek represent carefully designed and executed elements of the site's monumental built environment. Their conspicuously similar dimensions and layout suggest that they were constructed according to the same principles, probably at the same time. Moreover, both enclosure areas encompass a complex a sequence of construction, deconstruction, and reconstruction activities – from the digging and infilling to the ditches, to the emplacement of posts and anthropogenic deposition of river cobbles in Enclosure No. 1[1], to the erection of Garden Creek Mound No. 4 partially over Enclosure No. 2 – indicative of protracted history of monumentality in these locations.

Using the data discussed above, it is possible to use the methods described in Chapter 4 to elucidate the energy involved in the construction of the enclosure. However, there are a few important caveats. For example, it is not clear whether either ditch enclosure was originally associated with an embankment; no evidence of an embankment was detected through geophysical survey or excavation, but post-depositional disturbance and plowing may have destroyed all traces of them. While most Ohio Hopewell enclosures involve both a ditch and an associated embankment, in which soil excavated from the ditch presumably contributed to the construction of the adjacent embankment, it is possible that the Garden Creek enclosures never had an embankment, and thus represents a regionally distinctive form of earthwork (see Chapter 8). In that latter case, the material from the ditch may have gone toward the construction of Garden Creek Mound No. 2 (and possibly, to Mounds 3 and 4). Given this ambiguity, the following energetic analysis considers several different scenarios for the construction of the enclosures that variably incorporate data related to other episodes of mound construction at the site.

The first step toward calculating the labor required to construct the earthwork ditches involves a calculation of monument volume – here, the volume of earth removed to create the earthwork ditches. In profile, the more-or-less trapezoidal ditch of Enclosure 1 appears as the reverse of the earthen embankments analyzed by Bernardini (2004), so I adapted his formula for embankment volume to calculate ditch volume for Enclosure No. 1 and Enclosure No. 2, using measurement derived from excavation and GPR survey. Here, Bernardini's value for the top of the embankment (short parallel side of the trapezoid) is replaced by the bottom of the ditch, while the value for the bottom of the embankment (long parallel side of the trapezoid) is replaced by the top of the ditch, approximated by tracing the upward trajectory of the sides of the ditch to the top of the plowzone, presumably the ground surface at the time of initial enclosure construction (Figure 6.9).

Importantly, the total energetic cost of earth moving involved throughout the life history of these monuments includes not only the excavation of the ditch, but also the excavation of the same quantity of material to re-fill the ditch. Under these circumstances, the excavation costs for ditch

[1] And possible in Enclosure No. 2; although this ditch was not excavated, GPR results indicated several anomalies within the Enclosure No. 2 ditch that might be large, rock-filled postholes.

volume must be doubled to reflect both stages of construction. The resulting formula for the total amount of earth moved in the excavation and refilling of *one of* the ditches is thus: $V = 2 * [\frac{1}{2} * h * (b^1 + b^2) * l$. Given a bottom width of 0.8 m, a top width of 1.8 m, a height (based on excavations) of 1.02 m, and a length of a single ditch of 64 m (excluding the gateway), the volume of earth excavated from and later filling in a single ditch amounts to 169.73 m^3; for both ditches, assuming identical measurements, this amount totals 339.46 m^3. Utilizing Erasmus's observed value of 1.9 person hours to excavate a cubic meter of earth, 178.66 person hours would have been necessary to excavate and subsequently refill the ditches of Enclosures No. 1 and No. 2.

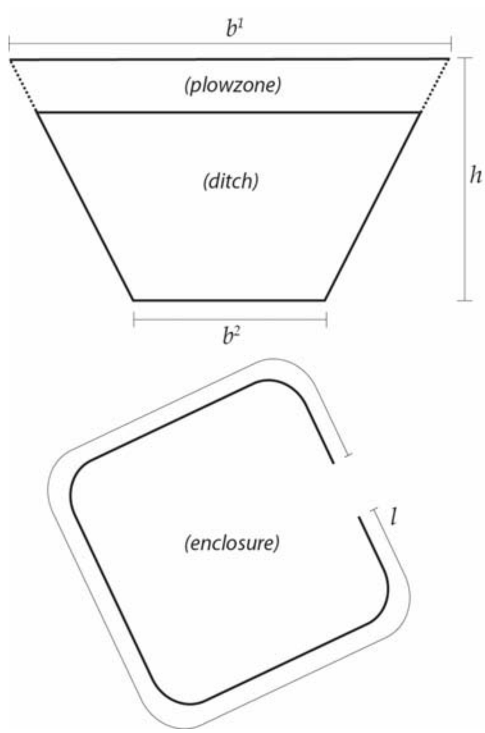


Figure 6.9. Schematic of variables used in ditch volume calculation.

Transport costs represent a major challenge in this analysis, since it is not clear where the earth excavated during ditch creation was taken, nor where the earth used to fill the ditch was obtained. At present, two scenarios may account for the earth removed by ditch digging: either it was utilized for an embankment immediately adjacent to the ditch at a net zero transportation cost, or it formed part of the construction materials for moundbuilding. Given the non-contemporaneous dates obtained from Enclosure No. 1 and Mound No. 2, it is unlikely that material excavated from this ditch contributed to platform mound construction. Similarly, the stratigraphic relationship between Mound No. 4 and Enclosure No. 2, in which the former overlies/postdates the latter, means that the ditch soils could not have contributed to this mound. While it is possible that they could have been used to erect Mound No. 3, this scenario is difficult to evaluate using extant descriptive data and relative dates, just as it is impossible to determine that these sediments went toward an adjacent, now destroyed embankment. Lacking any solid evidence, for this analysis, I utilize a transport cost of 0 for moving the dirt out of the ditch; this value either accurately represents costs associated with embankment construction, or underestimated costs associated with the construction of Mound No. 3. As for the earth for ditch infilling, the necessary sediment may have come from an immediately adjacent embankment, resulting in a non-existent transport cost, or from somewhere else on site. Given the intactness of sheet mica and some ceramic artifacts in this fill, however, it is likely that these materials were not transported far from their place of primary deposition. Rather than risk drastically overestimating transport costs, then, they have been categorically assigned to zero for all of the following calculations, with the understanding that they underestimate costs.

A series of energetic investments were involved in the emplacement and removal of posts demarcating (presumably) both ditches. To account for these costs, I added (1) the cost of excavating an original posthole; (2) the cost of obtaining a post; (3) the cost of transporting river cobbles to fill an empty posthole after post removal; and multiplied this value by the estimated total number of posts in Enclosures No. 1 and No. 2. This last value was determined by dividing the total length of both enclosures (minus the gateways) by 0.8 m, the approximate distances between the centers of two adjacent postholes, resulting in 160 possible postholes. The cost of excavating the postholes was determined by averaging the volumes of earth removed from the five excavated rock-filled postholes whose diameters and depths were known (Table 6.2); this value was incorporated into a formula for cylinder volume ($V = \pi r^2 * h$, where cylinder height equaled posthole depth), resulting in an average of 0.024 m^3 of earth removed per posthole. Using Erasmus's value for the time necessary to excavate earth with a digging stick (1.9 person hours/1 m^3), each post would have necessitated 0.046 person hours of digging.

The cost of obtaining a single post was limited to an approximation of the time it would take to cut down a tree of a given diameter using a stone axe; it did not account for variability in tree species (which are unknown), different felling techniques (e.g., girdling, burning), or transport of felled trees to the enclosure (because source locations of the trees are unknown). Using data experimental data collected by Mathieu and Meyer (1997), it was determined that the average time it would take to cut down a tree (either softwood or hardwood) measuring 15-25 cm in diameter with a stone axe was 24.36 minutes, or 0.41 person-hours per post.

Fea.#	**Diameter (cm)**	**Depth (cm)**	**Volume (cm^3)**	**Volume (m^3)**
14	23	83.5	34692.22	0.035
15	23	78	32407.10	0.032
17	20	73	22933.63	0.023
18	19	73	20697.60	0.021
19	12	77	8708.50	0.009
Average	***19.4 cm***	***76.9 cm***	***23887.81 cm^3***	***0.024 m^3***

Table 6.2. Individual and average measurements for excavated rock-filled postholes.

Finally, to approximate cost to transport the river cobbles to the enclosure for filling the holes left by removing the posts, I calculated the distance between the enclosures and Pigeon River, the nearest body of water likely to have provided the cobbles, by averaging the shortest, straight-line paths between the middle of Enclosure No. 1 and the riverbank (200 m) and the middle of Enclosure No. 2 and the riverbank (160 m) – yielding a final aggregate measure of 180 m. Lacking an exact analogy for the transport time of rocks, I used Erasmus's figure of 0.32 person hours to move one cubic meter of earth across 10 m, assuming that the volume of earth removed for each posthole would roughly approximate the volume of cobbles tightly packed within it. Assuming that each posthole contained 0.024 m^3 of cobbles, and that these cobbles needed to be transported 180 m, then the average time it would have taken to move cobbles to fill a single post would have been 0.14 person hours.

Thus, the total energetic cost associated with a single post – comprising digging the posthole (0.046 person hours), felling a tree to serve as a post (0.41 person hours), and transporting river cobbles to fill the posthole after post removal (0.14 person hours) – would be 0.596 person hours. To account for 160 posts associated with Enclosures No. 1 and No. 2, this process would have necessitated 95.36 person hours. Certainly, this value underestimates the labor costs associated with these post features, as it does not consider transportation of excavated posthole fill away from the enclosure, transportation, tamping down, and removal or posts, or collection of cobbles.

By combining the energetic costs of excavating and refilling both ditches with the energetic costs of digging 160 postholes, felling 160 trees, and filling 160 postholes with river cobbles, we can approximate that the protracted life histories of Enclosures No. 1 and No. 2 minimally required 274.02 person hours. Given a five hour work day, and 25-50 work days per year, this entire trajectory could have been completed in a single year by two people. The same task could be accomplished in a shorter time by more, but still by relatively few individuals. Viewed alongside the AMS dates from Enclosure No. 1 (above), it seems that the entire enclosure creation/erasure process was short lived, perhaps conducted in the course of a single, or perhaps a series of two or three, seasonal aggregations.

Total Monumental Labor Investment at Garden Creek

Returning briefly to the preceding chapter, we can now combine energetic estimates from Mound No. 2 and Enclosure No. 1 in order to approximate the types and amount of labor needed to build these three major elements of Garden Creek's Middle Woodland built environment. The total number of person-hours necessary for the construction events related to these monuments – the building of primary and secondary platform mounds, the digging and infilling of the ditch, and the series of activities that resulted in the rock-filled postholes – ranges from 1777.02 to 2258.42. For several reasons, these values must be viewed as absolutely minimum labor investments in the Garden Creek monuments. First, as mentioned above, transportation costs for removing earth from and refilling the ditch were left at zero, even though it may be that those materials were taken to/originated from locations other than an adjacent embankment. Second, and more intuitively, I suspect that Erasmus's value for the amount of time it took a person to excavate a square meter of earth with a digging stick underestimates the time needed to do so at the Garden Creek site. The sandy clay subsoil that had to be removed to create the ditch, and that appears to form the bulk of the primary episode of mound construction, is sticky and dense, and anecdotally, it often took an excavator nearly 2 hours to move a cubic meter using a metal shovel. Third, these values do not include estimates for the labor required to erect Mounds No. 3 and No. 4 at the site, which may be broadly contemporaneous with the more carefully investigated monuments.

Still, even if these deficiencies were accounted for, I think it is reasonable to conclude that the total labor requirements of the Garden Creek monuments are dwarfed those for contemporaneous sites where similar labor assessments have been made. For example, Bernardini's evaluation of the labor necessary for the construction of tripartite earthen embankments at five major Hopewell sites in Ohio yielded the following figures (2004:341): 418,200 person hours at

Baum; 494,700 person hours at Seip; 488,600 person hours at Liberty; 351,100 person hours at Works East; and 471,200 person hours at Frankfort. Of course, as these sites are some of the largest complex earthen enclosures in North America – orders of magnitude more extensive than Garden Creek (Figure 6.10) – this relative difference is not surprising. It is important, however, to consider what this difference might mean in terms of the labor pools mustered for these varied projects. Using an ethnographically derived value of plausible Hopewell population density of 0.5 person/km^2, Bernardini concluded that theses earthworks were not the product of labor by single, autonomous populations living close to them. Rather, the labor catchments responsible for these earthworks would either have needed to overlap considerably, or to extend up to 150 km away from the sites.

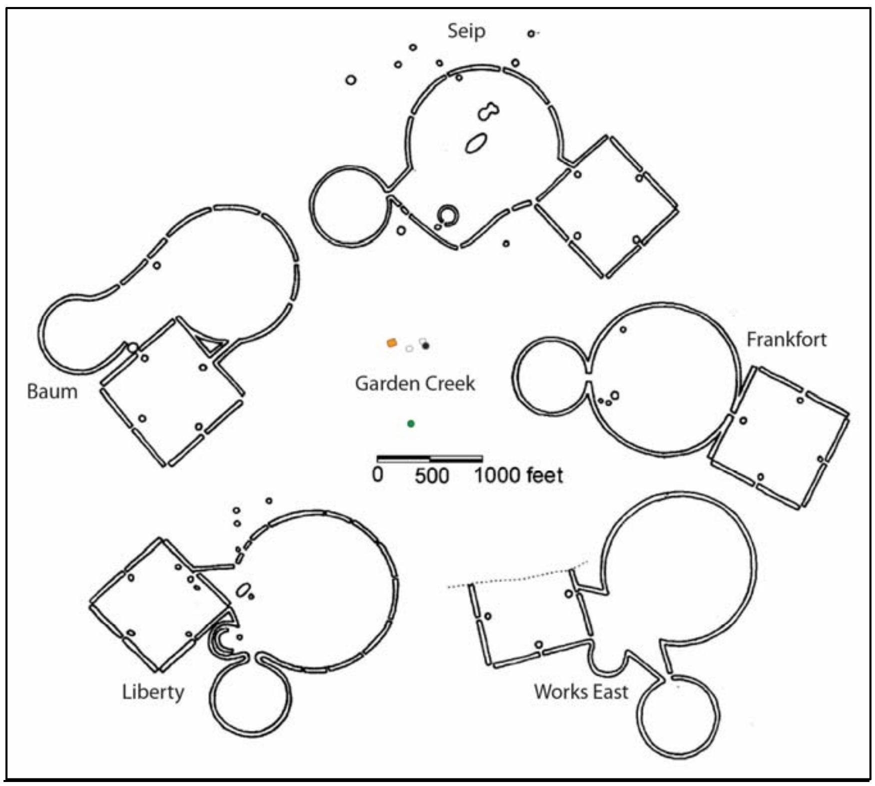


Figure 6.10. Relative sizes of Garden Creek five major Ohio Hopewell embankments. North varies between sites. (Modified from Bernardini 2004:337.)

The emerging picture of labor organization at Garden Creek is quite different. Given a five-hour work day, and an average of 37.5 work-days per year (derived from the noted range of 25-50 work days per year), it would have taken only 10-12 people to erect Mound No. 2 and Enclosures

No. 1 and No. 2 in a single year. Assuming that every laborer was supported by/supported other community members – for example, a spouse, a child, and a grandparent – then the total population from which this labor pool might be drawn might have amounted to no more than 50-100 individuals. Using Bernardini's a population density of 0.5 person/km^2, the Garden Creek labor catchment could conceivably range from 100-200 km^2. The Pigeon River drainage – which, like other Appalachian Summit watersheds, appears to have bounded seasonal mobility rounds and, to some extent, social entities (see Chapter 2) – would more than account for this area (it conforms generally to the boundaries of present day Haywood County, which 1437 km^2). Thus, based on their labor requirements, it would appear that the monuments at Garden Creek *can be* (but are not necessarily) wholly attributable to the action and investment of a local constituency. While this almost certainly differs from the situation apparent at Seip, Baum, Liberty, Frankfort, and Works East, it may in fact approximate the labor requirements of comparatively smaller – and much more common – Middle Woodland mounds and enclosures.

Features In and Around Enclosure No. 1

Compared to the record from Mound No. 2, Garden Creek's enclosures and their immediately associated archaeological contexts comprise a much smaller dataset. Although geophysical techniques allowed for the mapping of each enclosure in its entirety, only about 10% of the Enclosure No. 1 ditch was targeted for excavation, and a mere 10 square meters of area was excavated inside the enclosure. Whereas Keel and colleagues tackled the complete record of the intact platform mound in the 1960s, GCAP only managed to scratch the surface of the newly discovered monumental contexts at Garden Creek. That said, excavations in and around the Enclosure 1 ditch are useful for defining some of the activities that took place in its vicinity, and for preliminarily interpreting geophysical anomalies across the Garden Creek site that were not ground truthed. Below, I first describe the artifacts and features recovered among the ditch fill sediments, combining data from Units 6, 8, and 12. I then summarize findings from excavated features immediately within the ditch and inside the enclosure in Units 6 and 8. While the magnetometer and GPR located many other anomalies in close spatial association with Enclosures No. 1 and No. 2, the necessary coarseness of their interpretation is ill suited to tracing histories of practice through social stratigraphy; therefore, I leave a brief descriptions of these contexts to the broader discussion of geophysical survey results in Chapter 7.

For the most part, the ditch was characterized by broad deposits of three distinct zone of ditch fill described above. However, a one discrete feature was discovered among these strata that shed some light on the history of ditch infilling and subsequent use of the enclosure area once the ditch was eradiated. Feature 21 (Figure 6.11) comprised semi-circular a cluster of rocks and a charcoal concentration that was slightly higher than the surrounding sediment, as well as several potsherds that were possible to conjoin to form a partial quartz tempered, indeterminately stamped vessel; because the feature continued into the west wall of Unit 8, it is possible that more of the vessel was present though it was not excavated. The feature also yielded three pieces of chipped stone debitage (one black chert proximal flake, and two pieces of crystal quartz angular shatter), several pieces of fire cracked rock, and more than 40 g of burned clay. The observable portion of the feature measured 45 cm by 36 cm horizontally, and maximally 20 cm deep. It appeared at approximately 90 cm below the ground surface, within the deepest and earliest zone of ditch fill, and it ended at the base of this zone/the top of sterile subsoil; this location suggests that the feature was contemporaneous with or immediately preceded the deposition of the first layer of ditch fill.

Figure 6.11. Top of Feature 21.

The shape and context of Feature 21 support the preliminary interpretation that it represents a singular load of material used to fill the ditch. Interestingly, it serves to emphasize by contrast the relative homogeneity of the rest of the first zone of ditch fill. Lenses of dark gray and strong brown (seemingly yellow) fill are interspersed throughout this stratum, but with the exception of Feature

21, artifact densities are low and it is difficult to identify a discrete episode of fill dumping. The presence of fire cracked rock and burned clay is reminiscent of hearth deposits observed elsewhere at the site, so it may be that these materials are the sweepings of a hearth or another sort of burned feature that were contributed to the overall infilling project. Although its location in the earthwork ditch seems potentially significant, nothing else about Feature 21 hints at some form of "structured deposition" (sensu Garrow 2012); additional excavation of the ditch is necessary before such patterns might be recognized.

Besides the rock filled postholes discussed previously, Feature 21 was the only discrete feature identified *within* the fill of the ditch. However, in Unit 8, GCAP excavators noted two possible features that intruded into the filled-in ditch, although time constraints allowed only for their mapping, not their excavation. Feature 22 began at the base of the plowzone; its eastern edge intruded on the western edge of the ditch, while its western edge extended into the western wall of Unit 8. In the western profile of the excavated ditch, Feature 22 appeared as a roughly flat bottomed pit with a depth of about 30 cm below the base of the plowzone. The only artifact that was unequivocally recovered from the pit – the fill of which was dark gray and flecked with charcoal – was a grit tempered Pisgah phase potsherd, suggesting that this feature postdates the enclosure proper by several centuries. Feature 23 is even more ambiguous. Noted in the eastern wall of the ditch, it seems likely that this feature, though tentatively identified as a pit in the field, is actually a rodent burrow on account of its odd shape.

GCAP excavators encountered four additional features associated with the enclosure in Unit 6, which cross-cut the ditch (grid-southwest corner at E249 N1200), and Unit 9, which was placed just inside the ditch at the eastern edge of the enclosed space (grid-southwest corner at E250 N1208) (Figures 6.12, 6.13). As was the case with all of the units excavated in 2011-2012, little to no intact archaeological deposits were identified between the base of the plow zone and the top of the subsoil, although a thin lens (>2 cm thick) of midden sediment with low densities of artifacts was tentatively identified in the northern portion of Unit 6. Thus, most of what we know about activities that took place inside the enclosure comes from features' morphology and assemblages. Importantly, with the exception of Feature 8, there was no horizontal overlap between these features and the ditch itself, meaning that the identification of chronological relationships among these features relies on dating through radiocarbon assays or relative ceramic cross dating.

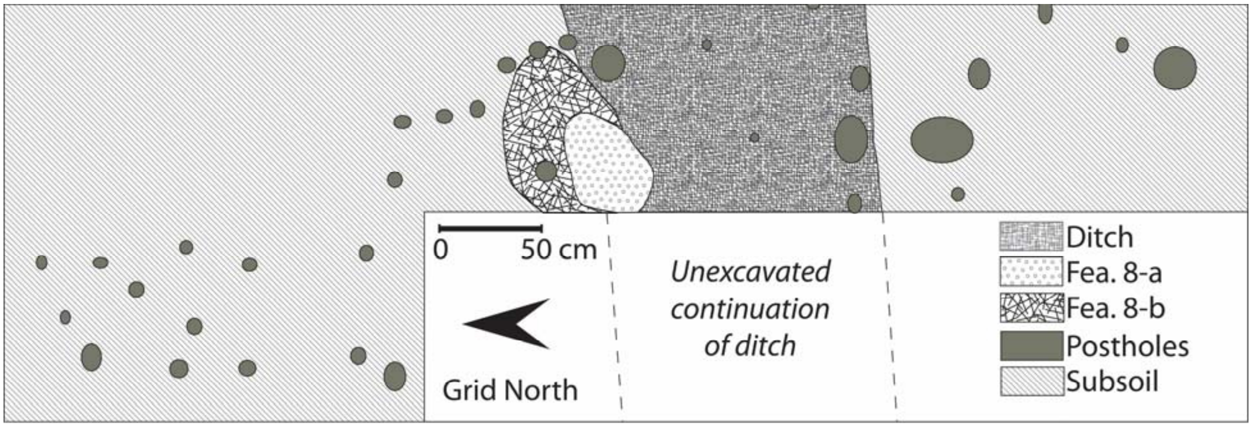


Figure 6.12. Unit 6 at base of plowzone.

Given its unique stratigraphic positioning relative to the ditch, we can begin our discussion of enclosure activities with Feature 8, which actually postdates the apparent end of the ditch's monumental life history. Feature 8 is a roughly elliptical cobble hearth that was placed into/on top of the final stage of ditch fill, on the side of the ditch that bordered the interior of the enclosure. The area in which fire cracked rocks, fire reddened cobbles, and charcoal was concentrated (Feature 8-a) measured about 50 cm by 30 cm, while the area of burned soil that surrounded it (Feature 8-b) measured about 80 cm by 50 cm. Thirty sherds were recovered from Feature 8, some of which could be cross fit and thus probably are in primary depositional context. Most were check stamped, though plain, simple stamped, and indeterminately stamped sherds were also present. The assemblage was evenly split between sand tempered and crushed quartz tempered sherds. Based on temper variability and rim morphology, it seems likely that the three rim sherds from this feature represent three different vessels, including one quartz tempered, check stamped thin walled jar (orifice diameter = 25 cm); one large quartz tempered, indeterminately stamped pot (orifice diameter = 20 cm), and one thick walled, sand tempered, and indeterminately stamped and shaped vessel.

In addition to ceramics, Feature 8 also yielded 14 pieces of chipped stone debitage. The assemblage consisted of chert and quartz flake fragments and angular shatter; only one flake of crystal quartz was identified. Two pieces of light gray angular quartz shatter exhibited heat spalling, but it is not clear if this resulted from purposeful heat treatment during flint knapping or merely to proximity to fire once the flakes were deposited in the hearth. Miscellaneous artifacts associated with the hearth included several pieces of FCR, burned clay, a possible groundstone cobble, and 0.2 g of sheet mica fragments. Less than 0.1 g of macrobotanical remains were recovered through flotation, though bramble, maygrass, and chenopod seed and walnut and hickory nutshell fragments were present. While there is nothing especially remarkable about this hearth's assemblage, it was useful for obtaining a *terminus ante quem* for the infilling of the ditch. In keeping with the mixture of crushed quartz and sand tempered sherds in this context, charcoal from Feature 8 was dated to cal A.D. 74 – 254 (2-sigma level; sample no. AA101159, 1843 B.P. ± 39). Based on complementary dates from the ditch fill and its intrusive rock filled postholes (discussed above), it appears that the hearth was in use just after the infilling of the enclosure ditch.

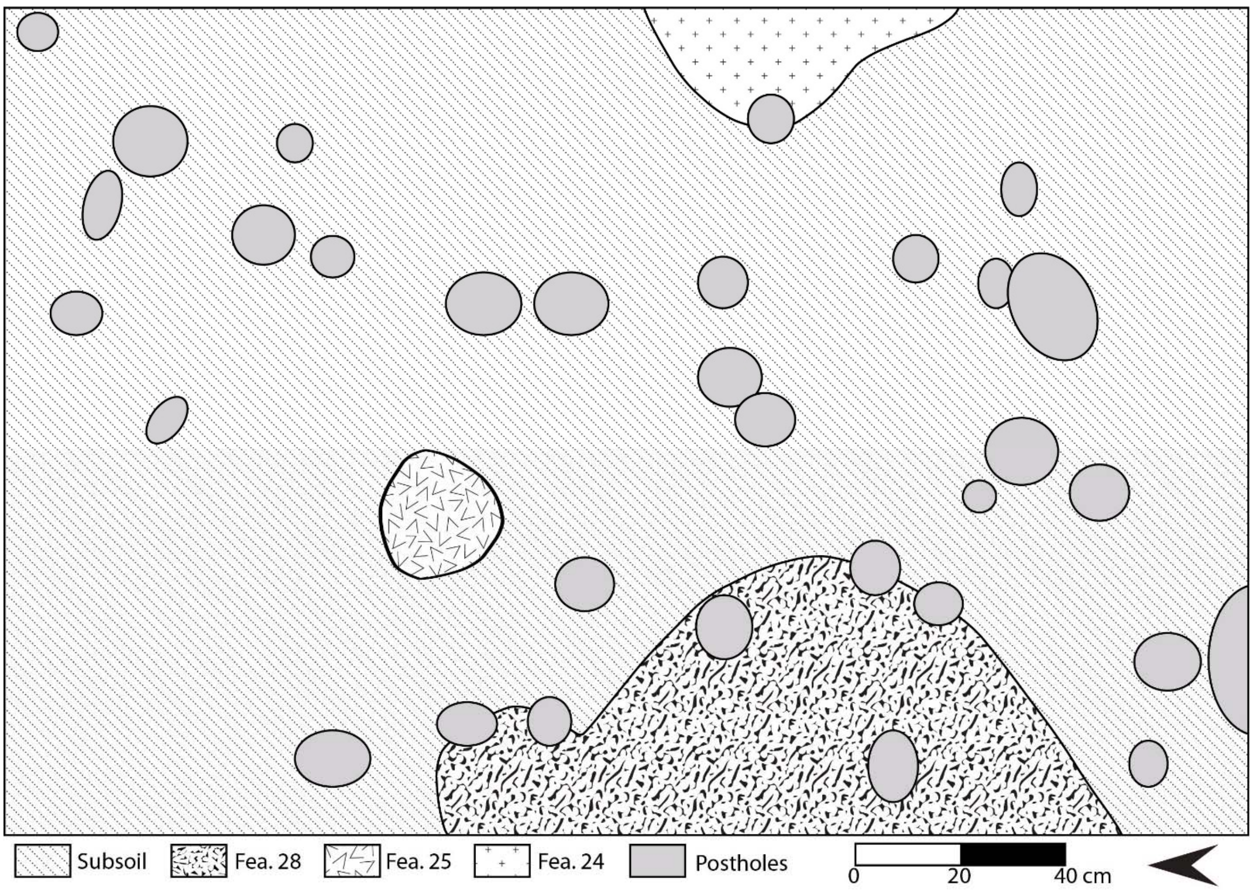


Figure 6.13. Unit 9 at base of plowzone.

The remaining three features from inside the enclosure were located in Unit 9 (Figure 6.13). Feature 24 was bisected by the eastern wall of the unit, so that only a portion of it was exposed and excavated. It consisted of a shallow, mostly flat bottomed pit that measured less than 10 cm deep on average, 63 cm north-south, and 33 cm east-west (albeit in partial exposure). The pit was filled with a dark brown (10YR3/3) sandy clay loam, with charcoal and burned clay inclusions. Several sand tempered, probably Connestee phase body sherds were noted in the soil sample collected for flotation, though they were not subjected to further analysis, and only one piece of light gray angular shatter was identified. While a tiny piece of bone was also recovered in the field, no additional remains were recovered through flotation.

About 1 m west of Feature 24 was another pit labeled Feature 28.This much larger, round pit measured 150 cm north-south by at least 120 cm east-west (the unit was expanded a further 50 cm west in order to capture the majority of this feature). As shown in profile (Figure 6.14), Feature 28 consisted of two zones of fill: a top zone of very dark brown (7.5YR2.5/3) "middeny" clay loam with heavy charcoal flecking, and a bottom zone of brown-strong brown (7.5YR4/4-7.5YR4/6) mottled non-compacted clay loam with little charcoal. Where these zones were not separated by an intrusive rodent burrow, the edge between them was smooth and abrupt. This, combined with the fact that the top zone had a smaller areal footprint than the bottom zone, suggests that the pit was first entirely filled in with the clay loam fill, which was then partially excavated and re-filled with the more midden-like material.

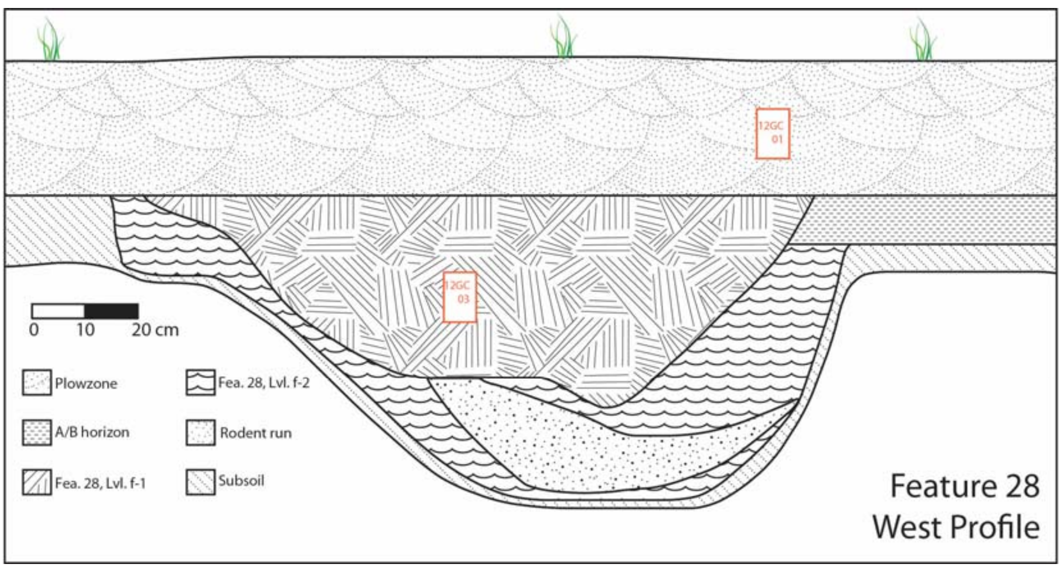


Figure 6.14. Feature 28, west profile.

Both zones of fill yielded friable bone fragments, FCR, a few pieces of chert and crystal quartz debitage (n=5), and numerous ceramics, but the top zone yielded greater quantities than the lower one. A total of 67 sherds were recovered from this feature, including a rim sherd representing a plain, fine sand tempered, thin walled bowl or jar (orifice diameter indeterminate). The remaining body sherds were tempered with coarse sand (n=15), crushed quartz (n=27), fine sand (n=14), grit (n=9), and limestone (n=1), and exhibited brushed, plain, and check-, simple-, rectilinear-, and indeterminate-stamped surface treatments. The mixing of these ostensibly chronologically significant temper types suggests that this context represents a secondary deposit of materials that are not all contemporaneous with the enclosure. Interestingly, a radiocarbon date on a piece of charcoal from this feature yielded a date of cal. 49 B.C. – A.D. 125 (GCAP sample no. GCAP2011.12, AA101161; 1970 ± 40 B.P.).

The final last feature encountered inside the enclosure in Unit 9 was a very small, oval shaped pit, measuring 34 cm by 12 cm across and extending no more than 12 cm below the base of the plowzone. Despite its small size, Feature 25 was remarkable for the amount of sheet mica it contained, most of which appear to have been arranged vertically or near vertically. It was the excavators' impression that this was the highest density of mica encountered during the 2011-2012 seasons at Garden Creek. Although charcoal, small ceramic fragments, and FCR were included in the soil sample taken for flotation, these heavy fraction artifacts have not yet undergone analysis. Light fraction material from the feature, however, included acorn, hickory, grade, and pitch. At present, it is not possible to say how old this feature is based on artifactual evidence, stratigraphic relationships, or absolute dating. However, it does bear at least some resemblance to the small mica lined pit located below Mound No. 2, so it might also date to the Pigeon-Connestee phase transition.

Finally, as shown in Figures 6.12 and 6.13, both Units 6 and 9 featured numerous postholes, which in turn exhibited no obvious alignments or associations. These postholes varied in cross-sectional area, depth and fill characteristics, but any robust interpretation of their functional significance must wait until additional horizontal area is exposed.

Consumption and Crafting: Assemblage-Level Histories of Practice

What the ditch lacked in discrete features it made up for with artifact assemblages – a critical component of social stratigraphy (see Chapter 4) – that were distinct from others observed at Garden Creek. Here, I focus on four categories of material culture: ceramics; macrobotanical remains; and mica and chipped stone crafting debris. To varying degrees, these assemblages highlight distinctive histories of practice associated with Garden Creek enclosures, which in turn suggest intriguing extra-local connections, particularly to the Hopewellian Midwest.

As mentioned above, the ceramic assemblage from the ditch was dominated by Pigeon phase pottery (Figure 6.15). Alongside relevant AMS dates, this indicates that the ditch was filled in (and, in turn, initially constructed) before Mound No. 2 was erected and before many surrounding off-monument activities took place (see Chapter 7). The ditch ceramics are useful for more than relative dating, however. By calculating the minimum number of vessels from fill contexts and using the form-function typology outlined in Appendix 3, it is possible to pinpoint the sort of pottery associated with ditch infilling and to critically assess assumptions about on-site feasting practices. Across all excavated units, 12 rim sherds were recovered from the top zone of ditch fill, 5 from the middle zone, and 4 from the bottom zone. Minimally, these sherds represent 8 vessels from the top zone and 4 each from the middle and bottom zones. Additional surface treatments among body sherds in these contexts point to a higher MNV than determined from the rim sherds only, but the latter provides a comparable if low-quantity measure from comparing across stratigraphic deposits.

Figure 6.15. Typical Pigeon check-stamped sherd from the ditch; exterior surface on left, interior surface on right.

The four vessels from the bottom, earliest fill zone include a check stamped pot of unknown size (orifice diameter indeterminate) and two indeterminately stamped and one simple stamped thin walled bowls (orifice diameters = 8, 12, and 17 cm respectively.) All vessels represented by these rims were tempered with coarse sand. Moving along, the middle zone of fill included one small, plain pot tempered with coarse sand (orifice diameter = 8 cm); one check stamped, thin walled bowl tempered with crushed quartz (orifice diameter = 16 cm); and two thin walled jars. The first of these was check stamped, tempered with fine sand, and had an orifice diameter of 20 cm; the second was indeterminately stamped, tempered with coarse sand, and had an orifice diameter of 25 cm. Finally, the ceramic assemblage from the top zone of fill consisted entirely of jars and bowls, including: two plain, one brushed, and one check stamped sand tempered, thin walled bowls (orifice diameters = 5, 11, 13, 9 cm respectively); a plain, crushed quartz tempered, thick walled jar or bowl (orifice diameter indeterminate); a check stamped, crushed quartz tempered, thin wall jar or bowl (orifice diameter indeterminate); a plain, crushed quartz tempered thick-walled jar (orifice diameter 18 cm); and a plain, collared, crushed quartz tempered, thick walled bowl (orifice diameter 17 cm).

Where do these figures leave us? First, considering that approximately the same volume of sediment comprised each zone of fill, there is a definite increase in the amount of pottery deposited through time between the first two and final stages of ditch fill. This suggests that whatever activities produced the final fill materials either involved more people or were carried out over a longer period of time than those that yielded the first two zones of fill. Since fills' geomorphology and absolute dates indicate fairly rapid deposition across all fill zones, it seems more likely that the activities surrounding the ditch's final erasure were especially intensive, rather than prolonged. Interestingly, excluding those vessels that cannot be assigned a particular form, there is a no notable shift in the types of vessels found in the different zones of fill. Assuming the orientation of rim profiles (i.e., everted/straight/unrestricted vs. inverted/restricted) can be linked to functional categories of serving vs. cooking, then the majority of the assemblage appears to represent food consumption, rather than preparation. With the exception of one pot in each of the two earlier zones of fill, all vessels counted here are for communal or individual food serving. The increase of bowls relative to jars in the final zone of ditch fill may be another indicator that more people were involved in the food consumption activities implicated by this assemblage than those represented in earlier fill deposits. All told, the lack of cooking pots is one line of evidence pointing away from food preparation, which one might expect in a so-called domestic deposit, and toward food presentation and consumption, which one might expect to result from a communal feast. Until larger samples are generated, however, this interpretation is tentative at best.

Macrobotanical Remains

A total of 163 liters of sediment was floated from the zones of ditch fill encountered in Unit 8, subdivided among 4 samples from the top zone, 5 from the middle zone, and 3 from the bottom zone. These contexts yielded 1770.54 g of heavy fraction material (from 6 samples) and 39.51 g. of light fraction material (from 11 samples). The interpretive potential of this assemblage is best realized by comparing macrobotanical assemblages across excavated contexts, an undertaking left to Chapter 7. For now, suffice it to say that the ditch's macrobotanical assemblage was dominated by nuts (hickory, acorn, walnut, and hazel), but that it also yielded starchy and oily seeds (chenopod, amaranth, maygrass, little barley and ragweed), domesticated crops (maize kernel, squash), fruit (bramble, grape), and several miscellaneous species (copperleaf, bedstraw, wood sorrel, purslane, pinecone, pitch grass family, and unidentified seeds, bark, and cones). With the exception of little barley and maygrass, all of these plants point to a summer/late summer/fall occupation.

Crafting Debris

As mentioned in Chapter 1, one of the diagnostic elements of the Hopewell phenomenon is an incredible array of finely crafted items. However, the cumulative nature of the archaeological record means that we are often left inferring entire systems of craft production and exchange on the basis of finished products alone. For instance, from the finished artifacts themselves, we know that many of these items were made from raw materials that originated far from the Ohio Hopewell core, and that their manufacture often required remarkable technical expertise. Moreover, their distinctive iconography and depositional contexts suggest that they were ideologically significant, perhaps referencing shamanic or shaman-like belief systems (Carr and Case 2006). These patterns have been cited as indirect evidence of specialized, ritualized craft production (e.g., Spielmann 2002, 2008, 2009; Spielmann and Livingood 2005) and of a variety of scenarios for raw material procurement and exchange (summarized in Carr 2006). Meanwhile, direct evidence of Hopewellian craft production – "the raw materials, debris, tools, and facilities associated with production" (Costin 1991:19) – is rather limited and sometimes overstated. At best, these data include intriguing but anecdotal finds, such as copper nodules at the GE Mound (Seeman 1995) or partially worked copper and copper working tools in graves at the Hopewell site (Schroeder and Ruhl 1968). Just as often, however, seemingly direct evidence of Hopewell craft production does not stand up to critical scrutiny. For example, the cache of obsidian flakes below Mound 11 at the Hopewell site has been shown to lack the sort of debitage that would have resulted from biface production (Coon 2009:57), and the oft-cited remains of craft workshops at Seip have been invalidated through a reanalysis of field notes and materials excavated in the 1970s (Greber 2009).

The only artifact category for which archaeologists seem to have considerable direct *and* indirect evidence of craft production is mica, and the mica assemblage from Garden Creek Mound No. 2 stands to supplement this record. In Ohio, this delicate raw material was cut into a variety of shapes and interred massive ritual deposits; small pieces of mica were also used to decorate the clothing of Hopewell ritual practitioners (Greber and Ruhl 1989); and mica disks were likely an essential component of these practitioners' shamanic tool kits (Carr and Case 2006). Unlike other exotic raw materials that comprise Hopewellian assemblages, fragments of mica are regularly encountered at earthwork and non-earthwork sites, so its manufacture has been interpreted as minimally challenging and diffusely distributed across ritual and domestic contexts (Spielmann 2009). As such, mica is the only material dimension of Hopewell ceremonialism that appears to have crossed into the quotidian realm of everyday life.

Mica is also unique among Hopewell raw materials in that evidence for its crafting has been identified outside the greater Ohio Valley (e.g., Jones, Penton, and Tesar 1998; Keith 2010). To date, this pattern has bolstered the idea that mica crafting was widely dispersed and, by extension, less restricted to ceremonial contexts or ritual specialists than the production of other Hopewell sacred objects. The data from Garden Creek's Enclosure No. 1 demands that we interrogate this framework, insofar as they indicate that mica crafting was highly ritualized under certain conditions – i.e., when it was conducted near the natural sources of that raw material (as discussed in Chapter 2). This argument also seems to apply to evidence for crystal quartz knapping at the site. Specifically, the Garden Creek data fulfill the criteria outlined by Raymond Baby and Suzanne Langlois (1979:18) for Hopewell craft workshops, including: (1) the localized presence of certain raw materials; (2) distinctive lithic assemblage, with a high percentage of modified flakes and bladelets; (3) unique arrangements of associated features and their contents; and (4) a spatial relationship between the crafting area and a ceremonial precinct.

Throughout the upper zones of ditch fill in Enclosure No. 1, we encountered small to medium sized pieces of sheet mica that generally measured 10 – 20 mm thick (e.g., Figure 6.16). Many of these sheets were oriented with their flat sides parallel to the surface of the zones of fill, suggesting that the mica was placed or tossed into the ditch as it was being filled. Its fragmentary form does not appear to be the result of post-depositional breakage, but rather its condition upon entering the archaeological record. Moreover, the relatively large size of many of these fragments, some of which measure 8-11 cm long, is a strong indication that this is the primary context of mica deposition; if these materials were originally discarded elsewhere and secondarily relocated to provide ditch fill, one might expect a lower incidence of large mica sheets. It thus follows that the activities that produced these mica fragments took place in the immediate vicinity of the enclosure.

Figure 6.16. Cut sheet mica fragment from Enclosure No. 1 ditch.

No sheet of mica recovered from the ditch exhibited an obvious geometric, zoomorphic, or anthropomorphic shape, but macroscopic and low-magnification observations indicated that several fragments had cut edges. Although mica's crystalline structure lends itself to linear breakage patterns, sharp curved or beveled edges are much more parsimoniously explained as a result of human manipulation. It therefore seems likely that that pieces of sheet mica found in the ditch represent the bi-products of mica cut-out production – the excess material removed from a larger sheet for the creation of a geometric shape or effigy.

Given the extremely friable nature of this material, it is difficult to quantify the total amount of mica recovered from the excavated portion of Enclosure 1 (which amounted to approximately 12% of the full extent of the ditch). In terms of surface area, I estimate that at least 100 cm^2 of sheet mica were recovered from each 1 by 1 m gridded unit of the topmost zones of fill. This amounted to 9.19 milligrams of mica per liter of fill in the ditch. While this figure sounds quite small, it dwarfs the amount of mica recovered from most other recently excavated contexts excavated at Garden Creek, most of which yielded no mica at all (Figure 6.17). The possible exception to this pattern is Feature 25, a tiny pit identified inside Enclosure 1. Measuring 34 cm long, 12 cm wide, and 12 cm deep below the plowzone, it contained several vertically-oriented sheet mica fragments, yielding a density of 2.9 mg of mica per liter pit fill. This density and arrangement suggests that Feature 25 may represent cached or stored mica. If these were pieces awaiting further processing by craft producers, the resulting cut outs must have been fairly small, perhaps for use as clothing decoration rather than effigy cut outs.

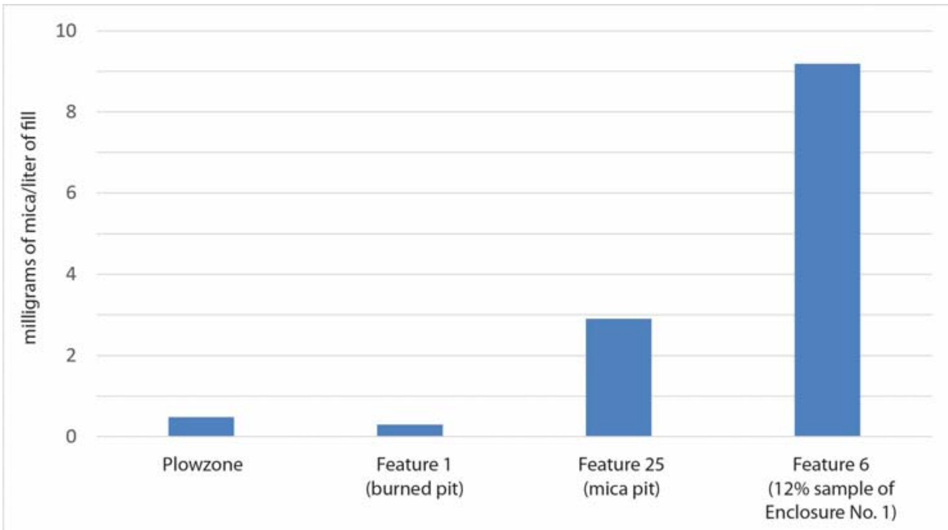


Figure 6.17. Density of mica (mg/l) in different features at Garden Creek.

Whereas most of the interpretations of the mica assemblage described above relied on qualitative observations and summary measurements, the chipped stone debitage assemblage could be analyzed more systematically using extant methods and functional typologies. Flake length, width, and thickness were measured and recorded for each of these piece of debitage recovered in 2011 and 2012. Flake termination, striking platform type, amount of cortex, and number of dorsal flake scars were assessed macroscopically, using Andrefsky (2005) for comparison. To assess lithic reduction activities, each piece of debitage was assigned to a flake category based on the presence of clear ventral/dorsal surfaces and a bulb of percussion. Relative frequencies of flake types were then compared to relative frequencies of different reduction activities described by Sullivan and Rozen (1985:763), including non-intensive core reduction, intensive core reduction, and tool manufacture. Differences in color, texture, and sheen were used to preliminarily distinguish among raw materials.

Saving a discussion of lithic reduction activities for Chapter 7, the important pattern to note here is a difference in raw material types between feature classes (Figure 6.18). On the one hand, fired pits, refuse pits, and middens all had similar distributions of raw material types, with the majority of each assemblage consisting of chert (mostly black or gray Knox chert from Tennessee). Depending on the category of feature in question, chert comprised 61 – 83% of the total debitage assemblages, whereas the amounts of crystal quartz were negligible, ranging from 0 – 9% of the assemblages. The debitage recovered from the fill of the Enclosure 1 ditch was quite different: out of 118 pieces of debitage, 45 pieces were made of crystal quartz (38% of the assemblage), while 40 were made of chert (34% of the assemblage). This striking pattern suggests that the flint knapping activities that contributed to the ditch fill were distinct from those carried out elsewhere at the site, possibly involving the production of crystal quartz bifaces.

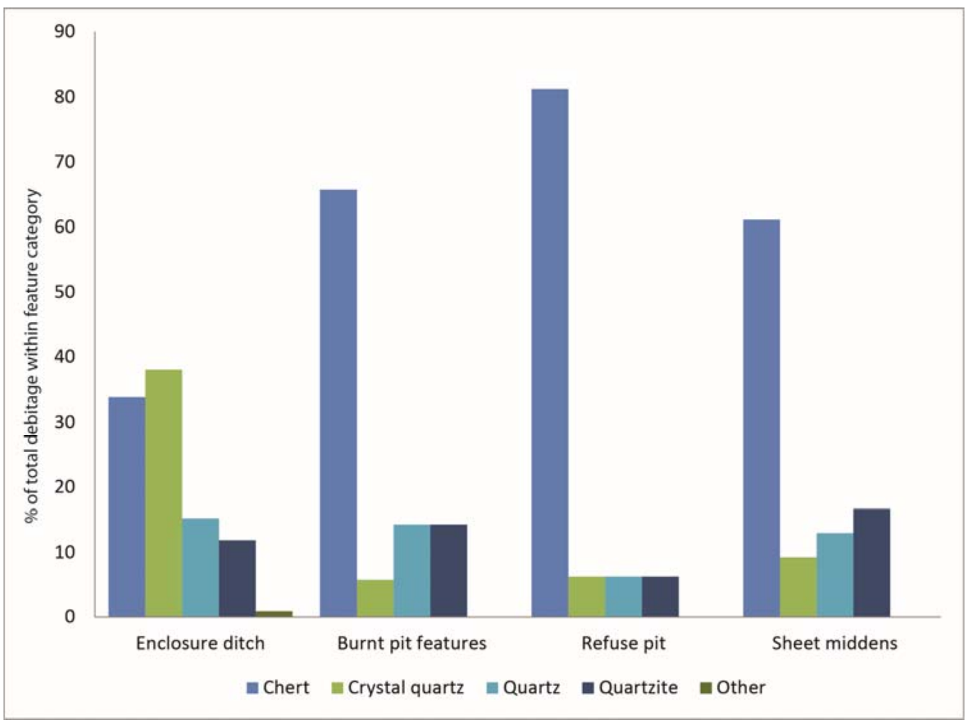


Figure 6.18. Lithic raw materials in different classes of features at Garden Creek.

Taken together, the sheet mica and crystal quartz assemblages from Enclosure No. 1 at Garden Creek meet the criteria for the remains of Hopewellian craft production as outlined by Baby and Langlois (see above). Relative to the rest of the site, both mica and crystal quartz are highly localized in the fill of the ditch. The ditch fill itself constitutes a "unique arrangement" of deposits that appear to derive from activities that took place inside or immediately adjacent to the enclosure. Finally, there is a direct spatial relationship between the locus of craft activities and a Hopewellian ceremonial precinct – in this case, a small geometric enclosure. Given the early Middle Woodland date of this monument, its similarity to contemporaneous structures in the Ohio Valley (see Chapter 8), and the presence of raw materials known to have been circulated through the Hopewell Interaction Sphere, these data from Garden Creek comprise especially strong evidence for ritualized craft production in and for Hopewellian ritual contexts.

Chapter Summary

The archaeological record of the enclosures at Garden Creek offer some of the most compelling evidence for intensive Hopewellian interaction not only in the Appalachian Summit, but also in the greater American Southeast. As I elaborate further in Chapter 8, the ritual architectural design of the enclosures reflect many of the same principles apparent among contemporaneous monuments in the Ohio Valley. Moreover, the mica and crystal quartz debitage assemblages from Enclosure No. 1 are the likely by-products of ritualized craft production associated with Hopewellian forms of ceremonialism. These latter findings complement and contrast two aspects of our current understanding of craft production in and beyond the Hopewell core. First, the large assemblage of mica debitage at Garden Creek resembles the pattern of large-scale mica cut-out production observed at several earthwork sites in Ohio (summarized in Spielmann 2009:184-185); they do *not* conform to expectations for the comparatively unrestricted, household-based mica crafting documented at Middle Woodland hamlets. Second, the entire record of Hopewellian ceremonialism at Garden Creek – including the enclosures themselves and the debris of mica and crystal quartz artifact manufacture – challenges prevailing perspectives on the organization of Hopewellian craft production. Based on "the large quantities of exotic materials found at Ohio Hopewell sites, the scarcity of population in many of the source areas, and the lack of evidence for down-the-line exchange between the sources and southern Ohio" (Spielmann 2009:181), Hopewell crafting has often been identified as an Ohio-specific process, in which exotic raw materials were directly procured by Ohio Hopewell people fashioned into sacred objects exclusively in the Ohio Hopewell core (almost exclusively at earthwork sites).

How, then, can we account for not only the existence of Hopewellian craft production at the Appalachian Summit periphery, but also the explicit ritualization of mica craft production, which, in other contexts, appears to have been to "available to the 'general public'" (Spielmann 2009:185)? I propose that both of these issues relate to Garden Creek's proximity to natural outcrops of both mica and crystal quartz (see Chapter 2). Building arguments set forth by Mary Helms (1988, 1993), most Hopewell scholars agree that much of social value attributed to Hopewellian craft objects derives from the exotic provenance of their raw materials. By this logic, certain places are viewed (from an emic perspective) as uniquely powerful or cosmologically significant – "home to powerful supernatural beings or, more generally…full with energy" (Carr 2006:582). In turn, materials or objects acquired in these locations are thought to be similarly imbued with power (Bradley 2000), not to mention other spiritually salient qualities suggestive of transformation (i.e., light/dark, shiny/dull) or a shaman's ability "to see within, through, and beyond" the visible world (Carr and Case 2006:201; see also Gell 1992). To date, this line of reasoning has found support in diverse exotic artifact assemblages in the Hopewell core. The Garden Creek data provide a compelling complement to this record: if tokens from distant places received ritual treatment (i.e., masterful crafting, ceremonial deposition, etc.), then it stands to reason that these far-flung source regions may have been the site of additional ritual elaboration, such as monumental earthwork construction.

The organization of these interrelated processes – raw material procurement, craft production, and monumentality – is imperfectly understood. One possibility derives from the existing notion that Ohio Hopewell ritual practitioners moved widely to obtain exotic raw materials in the course of vision quests, pilgrimages, or other interregional travels (Carr 2006). In this case, they may have encountered local communities (*contra* Spielmann 2009, quoted above), from whom they may have required permission to obtain potent raw materials. In return, the visitors from Ohio may have shared ritual knowledge necessary to erect Hopewellian earthwork enclosures and to manufacture mica cut-outs and crystal quartz objects according to Hopewellian ritual prescriptions, so that activities could be carried out largely – if not entirely – by a local constituency. This latter inference is based on the fact that Garden Creek was occupied by local people before it became a locus of Hopewellian activities (Keel 1976), and the fact that the early Middle Woodland ceramic assemblage from the site consists almost exclusively of local wares, presumably made and used by local people (Wright 2013; see above). In fact, the production of these mica and crystal quartz craft items in the Appalachian Summit may have lent them even more ritual power than that afforded by the exoticness of the raw material alone, "as goods from distant places are 'imbued with the extraordinary or cosmological powers of the…peoples whence they are derived' (Helms 1992:188)" (Spielmann and Livingood 2005:157).

Alternatively, it is possible that Appalachian Summit people produced cut mica and crystal quartz objects as offerings made at the end of a pilgrimage to a major ceremonial earthwork center in the Hopewell core. A pilgrimage scenario is not without precedent in the Hopewell record: as mentioned above, the Pinson site in Tennessee, for example, has yielded ceramic artifacts made on local clays but exhibiting non-local styles, suggesting the periodic assembly of non-local peoples (Mainfort 2013), while the Mann site in Indiana included a large assemblage of Connestee pottery from the Appalachian Summit, presumably transported there by pilgrims from that region (Ruby and Shriner 2006). Admittedly, this scenario lacks a clear vision of how these mountain communities would have become intensively involved in Ohio Hopewell ceremonialism, which was concentrated hundreds of kilometers to the north. It may be worth considering if and how John Stein and Stephen Lekson's (1992) concept of a "big idea" that encompassed ritual practice across the American Southwest even as it was centered on geographically isolated Chaco Canyon might apply to the Hopewell phenomenon.

Whichever if these (or other) scenarios withstand empirical scrutiny, it is important to acknowledge that, in terms of minimal labor requirements, early Middle Woodland monument building and crafting at Garden Creek did not necessarily entail the involvement of large groups of people. The energetic analysis above highlights that it would have only taken the raw labor a few individuals to dig, fill, and demarcate the earthwork ditches over a short period of time, though admittedly, this analysis does not consider the specialized knowledge that was likely required to build a monument that met specific ritual prescriptions. Unlike major Ohio Valley Hopewell sites, the execution of ritual practice at Garden Creek may have only drawn on local communities, even as the motivation or inspiration for such practice originated from further afield. To better understand who was involved in these activities and what they were doing when they weren't digging ditches, building mounds, cutting mica, and knapping crystal quartz, the next chapter presents data from Garden Creek's off-monument occupation areas, and explores how changes in that occupation through time correspond with changing modes of monumentality throughout the Middle Woodland period.

CHAPTER 7

THE OCCUPATION

When the Garden Creek Archaeological Project was conceived in late 2010, my major goal was to examine the nature and extent of the site's off-mound occupation as a means of providing the community context for unprecedented mound construction and Hopewellian interaction in the Appalachian Summit. As described in Chapter 3, Keel characterized this portion of the site, labeled 31Hw8, as a Middle Woodland village, based on ceramics recovered during opportunistic surface collections from roadside ditches, garden plots, and flower beds (1976:71).

Little did I know when we undertook magnetometry survey in February 2011, that I would discover the small geometric enclosures that so strongly signal Hopewell connections (see Chapter 6). While this new evidence for monumentality became the main target of subsequent fieldwork, the results of extensive geophysical prospection and targeted groundtruthing nevertheless provided considerable new data amenable to the elucidation of non-monumental, presumably habitation, components at Garden Creek.

These data and their interpretations are the focus of the present chapter. First, I present the results of multiple methods of geophysical survey across the site. In order of increasing resolution of sub-surface deposits, these include magnetic susceptibility, magnetometry, and ground penetrating radar (the science behind these techniques is described in Chapter 3; the specifics of their application to Garden Creek are described in Appendix 1). I then discuss targeted excavations aimed at groundtruthing several anomalies detected geophysically. Combined, the results of these efforts allow for a preliminary description of the non-monumental occupation of Garden Creek's entire Middle Woodland component. These patterns are compared to contemporaneous occupation areas identified at Kolomoki-pattern mound sites in the Southeast and Hopewell earthworks in Ohio, in order to assess if and how the relationship between monuments and habitation at Garden Creek reflect settlement and ceremonial strategies reflected elsewhere in the Eastern Woodlands. Combined with comparative, interregional considerations of other aspects of the built environment, these data form the foundation for assessments of the relationships between local traditions, macro-scalar interaction spheres, and social change in the Middle Woodland Appalachian Summit.

Site-Wide Organization: Geophysical Inferences

The modern-day landscape of the Garden Creek site proved to be a significant challenge to the collection and interpretation of geophysical survey results, but one that could be effectively met by combining multiple, complementary geophysical techniques. As introduced in Chapter 3, the most extensive method employed by GCAP was magnetometer survey across 7 ha comprising the majority of the site's Middle Woodland component (i.e., focusing on lawns and open field areas not occupied by houses and other obstructions). Across much of this area, the effects of deep, intense plowing produced considerable magnetic "noise" that precluded the clear identification of discrete magnetic anomalies indicative of archaeological features (see Figure 3.6). That said, this "noise" itself is a fairly good indicator of anthropogenic activity in certain areas, since it is caused by the incorporation of magnetic, presumably archaeological materials into the topsoil through plowing. This inference is supported not only by the results of magnetic susceptibility survey (see below), but also by shovel testing in the Waters Point Lot (see Chapter 3). Intensive plowing there did not render the magnetometer results especially noisy; there were little to no subsurface archaeological deposits to incorporate into the plowzone.

Figures 7.1-7.4 show magnetic anomalies whose magnetic intensity and relatively clear boundaries permitted their identification in spite of plow-generated noise. Variability among these attributes, in turn, permitted the classification of these anomalies (according to increasing intensity) as weak anthropogenic fill, strong midden fill, strongly burned deposits, and intensely burned deposits; precise methods for interpreting the data based on this variability are provided in Appendix A. In addition, these interpretations were informed by targeted groundtruthing and constant feedback between traditional archaeological and geophysical datasets (Horsley, Wright, and Barrier 2014).

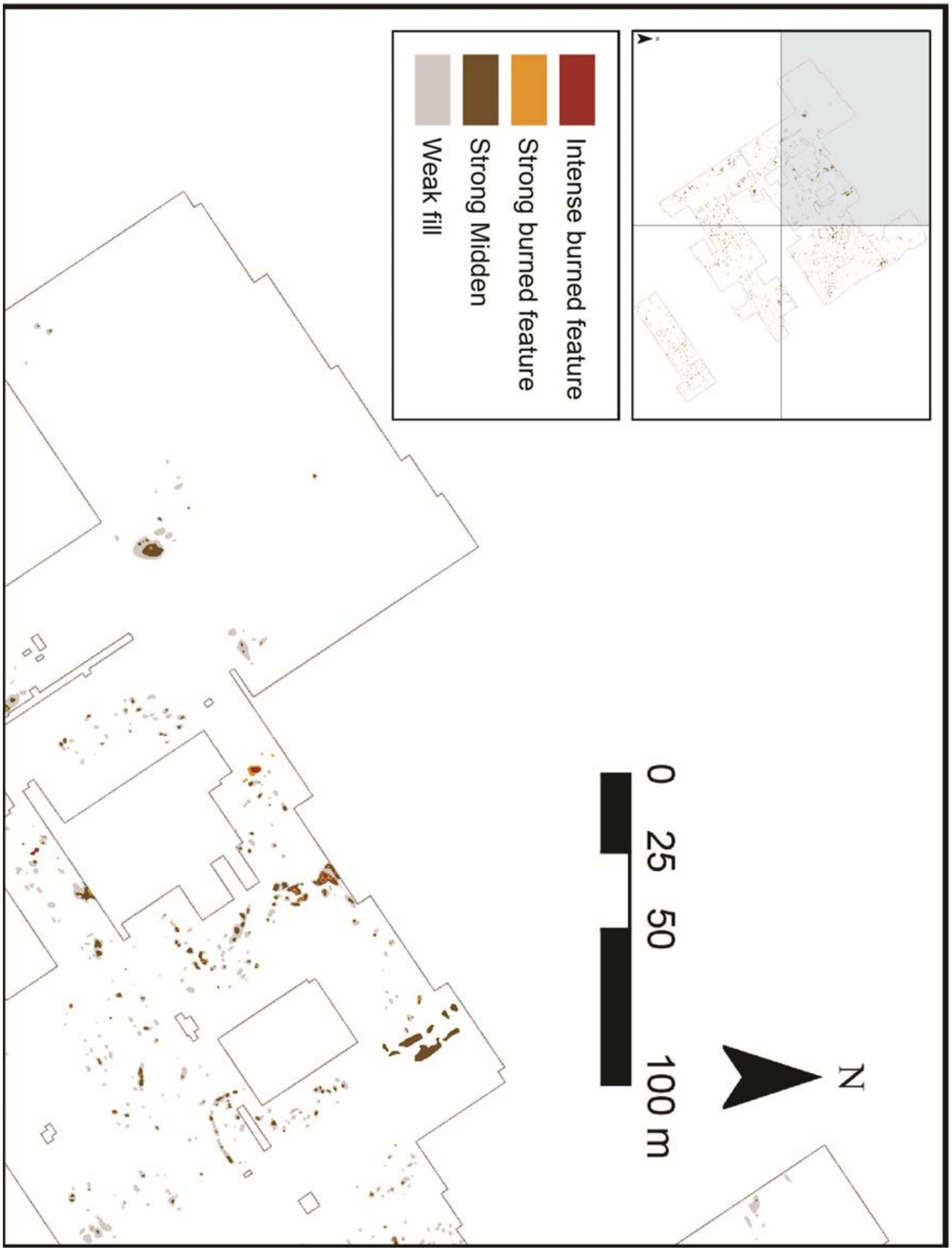


Figure 7.1. Magnetic anomalies in northwest survey quadrant.

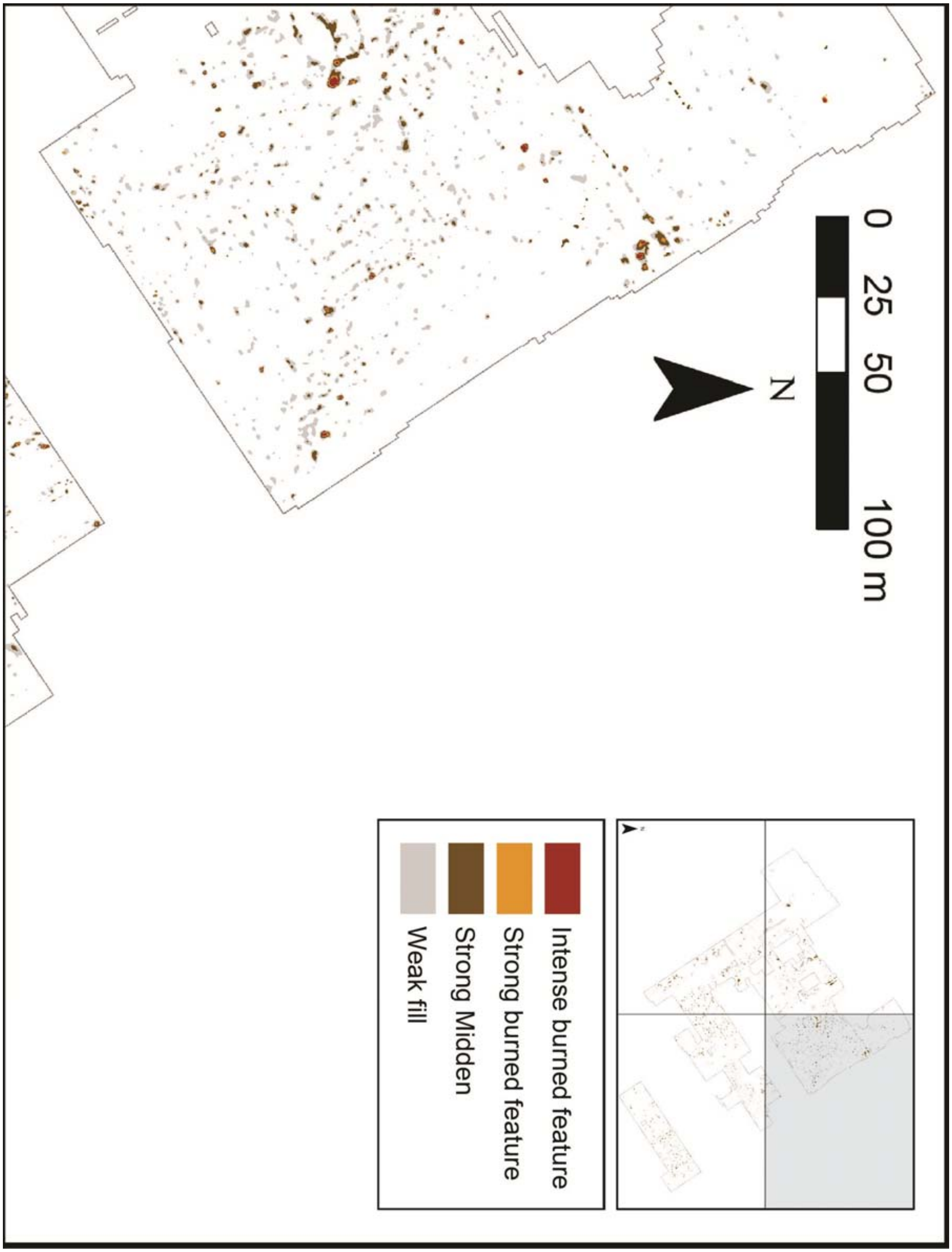


Figure 7.2. Magnetic anomalies in northeast survey quadrant.

Figure 7.3. Magnetic anomalies in southeast survey quadrant.

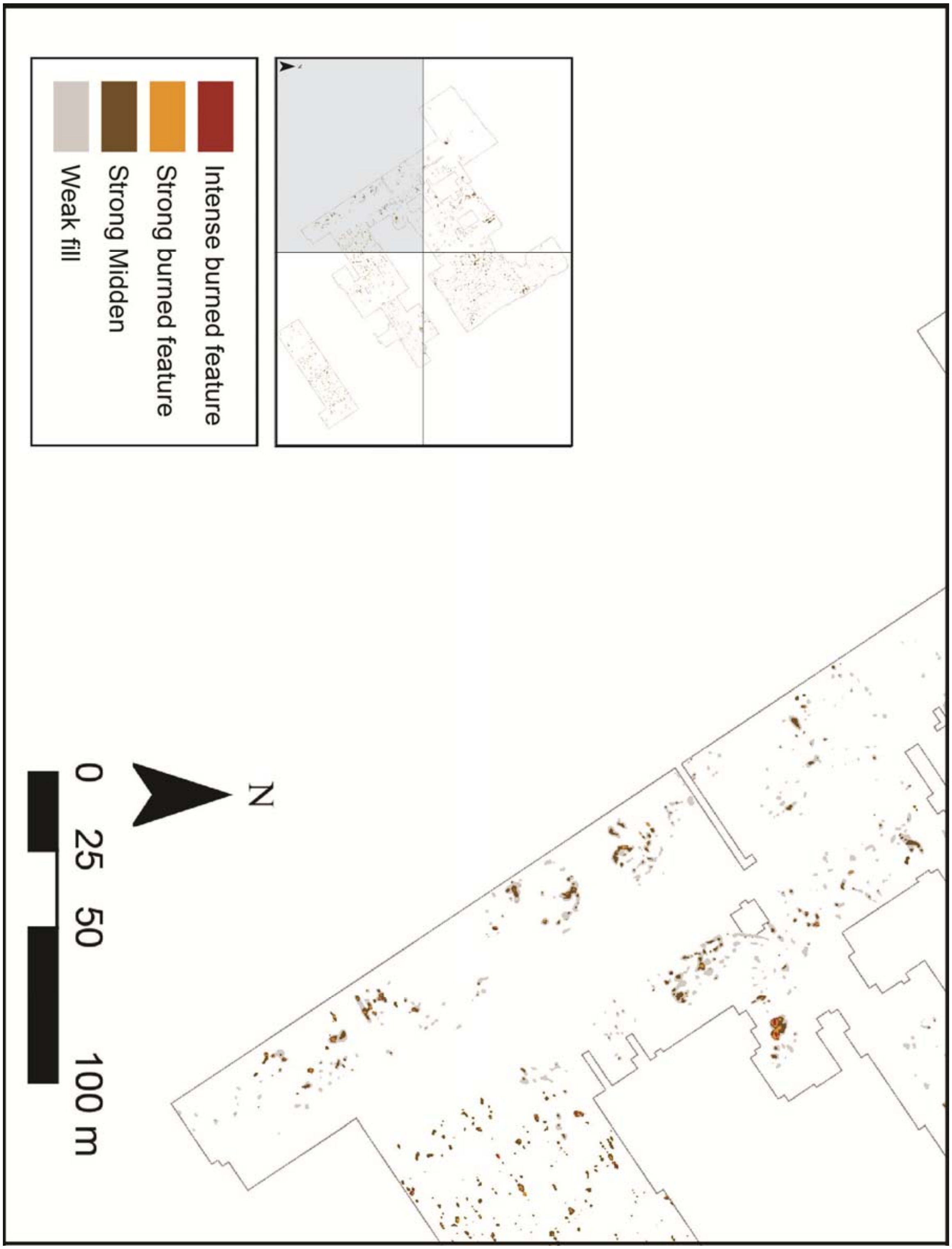


Figure 7.4. Magnetic anomalies in southwest survey quadrant.

The spatial patterning of most of these anomalies corresponds with the linear, perpendicular orientation of plow scars running roughly northwest-southeast and southwest-northeast across the survey area. This is especially apparent across three large fields currently used for growing hay, including the area encompassing and extending east away from Enclosure No. 2 (Figure 7.2), field oriented southwest-northeast through the middle of the Garden Creek landform (Figure 7.3, top-center; Figure 7.4, bottom-center), and the comparatively set-apart field at the extreme southeast portion of the survey area (Figure 7.3). It is unlikely that this pattern represents any prehistoric spatial organization of features. Rather, it is the result of a single or a few features being disturbed and dragged out by plowing, which means that the number of "individual" anomalies inferred from the magnetometer results in these areas is probably much greater than the actual number of "individual" archaeological features that constitute the site's prehistoric record. That said, the areal extent of the spread of these features – particularly those with evidence of burning – suggests that it is not attributable to a single-use hearth, roasting pit, or house fire, but to several spatially discrete burning activities and/or to multiple burning episodes.

This inference is supported by the results of the magnetic susceptibility (MS) survey (Figure 7.5). Enhanced MS readings (as high as 300×10^{-5} SI) immediately north of Enclosure No. 2 and in the latter two fields mentioned above suggest that these were areas of relatively high activity, perhaps consisting of small features, single-post structures, and dispersed midden that were too subtle to be detected using this method, or using magnetometry given the intensity of plowing. These high values do not correspond to known variations in geology of soil type, and although there are observable differences between gardens, lawns, and hayfields, differences in land use do not explain the overall trend. That said, without groundtruthing, it is impossible to say if these signatures are the result of anthropogenic activity, or if they are contemporaneous with Garden Creek's monuments. Other intriguing patterns to emerge from the MS survey include: (1) an area of relatively lower readings in an southwest-northeast trending area between Mounds No. 2 and No. 3, which might be attributable to less intensive plowing or to lower levels of past anthropogenic activity, and perhaps a formal plaza; and (2) very low readings on the low terrace adjacent to the Pigeon River in the northwest, and along Garden Creek in the southeast. These latter values likely indicate the lack of anthropogenic activity in these locations, and in turn, the boundaries of the Middle Woodland component.

While the results of the surveys discussed thus far only permit general inferences and are inhibited by the intensity of on-site plowing, other anomalies detected through magnetometry are open to slightly greater interpretation. In some cases, magnetic anomalies were sufficiently strong or sharp that they stood out among the plow-induced noise, and did not conform to the linear patterns created by plowing. Until these features are groundtruthed, their characterization must remain tentative, though they certainly offer much more information about the site's archaeological deposits than surface-level observations. Because the fields immediately surrounding Enclosures No. 1 and No. 2 were investigated using comparatively high-resolution ground penetrating radar, I will limit the present discussion to conspicuous magnetic anomalies in the southern quadrants of Garden Creek's Middle Woodland component.

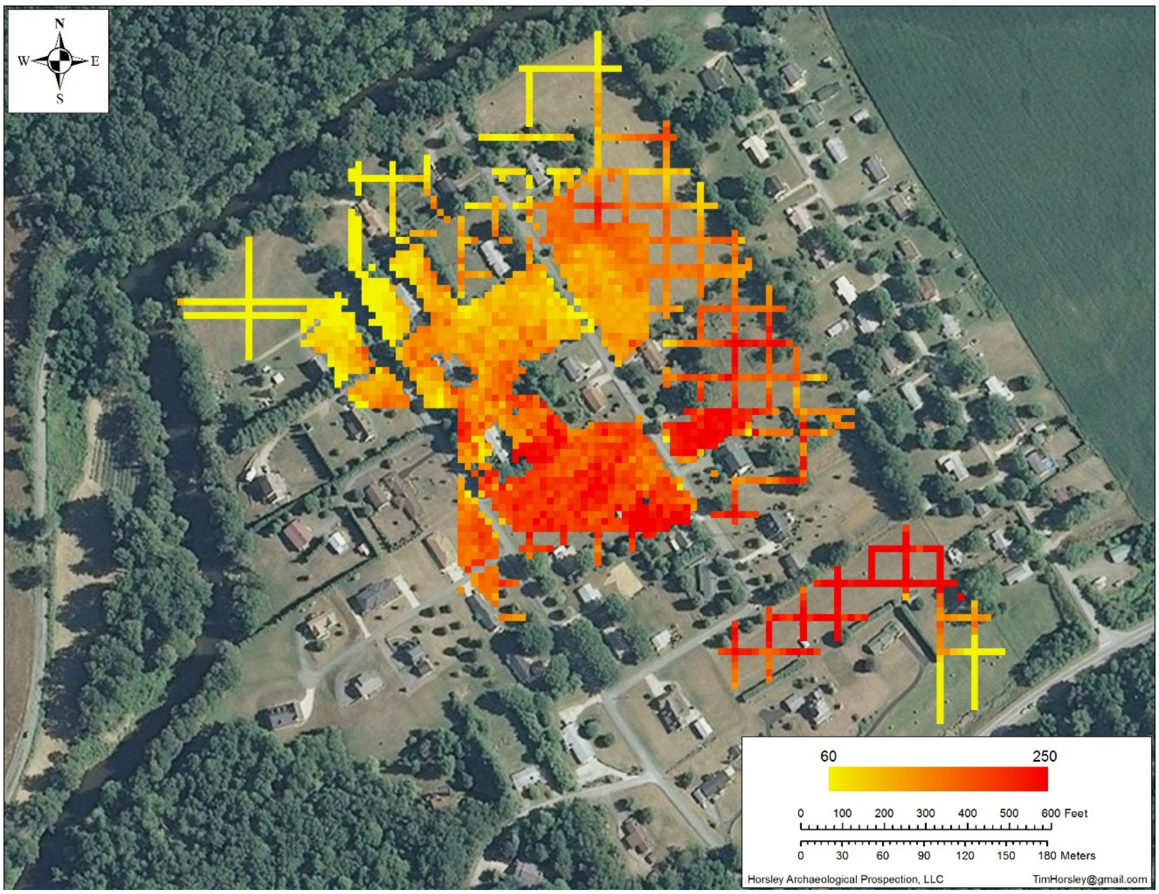


Figure 7.5. Result of magnetic susceptibility (MS) survey.

For example, at the western edge of the southwestern quadrant (Figure 7.4), there are several clusters of anomalies that do not follow linear plowing patterns. The southernmost cluster is a circular alignment of weakly magnetic fill, enclosing an area with a diameter of about 17 m, interspersed with more magnetic signatures indicative of midden accumulation and burning activities. Although its shape is comparatively more irregular, its horizontal extent and magnetic signature are reminiscent of ditch enclosures identified in the northeastern portion of the survey area. A similar circular ditch was identified at the Cullowhee Valley School site in Jackson County, where it was categorized as a Late Woodland (A.D. 700 – 900) earthlodge foundation (Moore 1992).

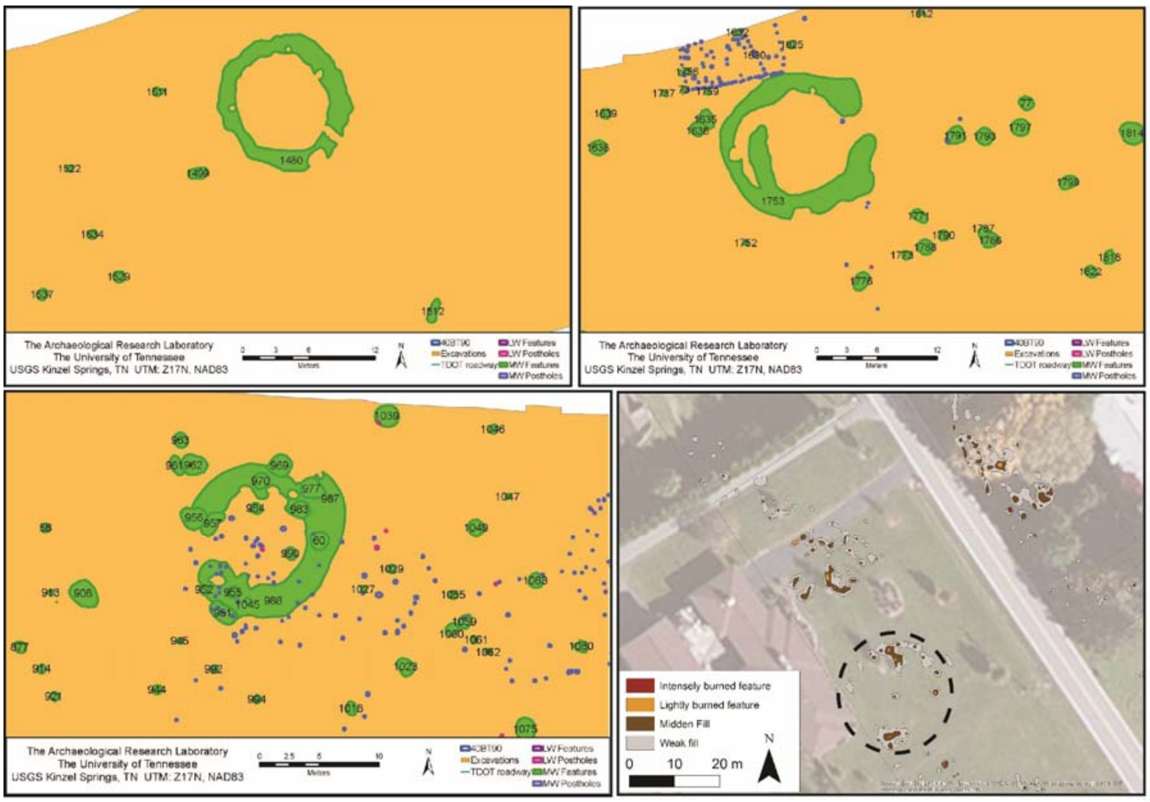


Figure 7.6. Middle Woodland circular ditch features at 40Bt90 (Yerka and Hollenbach 2011), and possible circle ditch feature at Garden Creek (bottom right, outlined).

Others have more recently been mapped at site 40Bt90 in Tuckaleechee Cove in southeast Tennessee (Figure 7.6). There, "the current working hypothesis is that they represent a ditch of sorts, with the dirt excavated from them piled in the center to create a low mound, so subtle that they were eventually unrecognizable on the landscape and plowed out of existence. After they were dug, the ditches…filled with debris associated with the Middle Woodland occupation" (Yerka and Hollenbach 2011:161). In all cases, these features were associated with fairly dense concentrations of additional features, such as pits and hearths. At Garden Creek, these may be represented magnetically by the clusters of midden and burned features directly north and northeast (i.e., across the road; see Figure 7.6) of the tentatively identified circular ditch feature.

Along the northeastern edges of the survey area, there are other magnetic anomalies of note, including a concentration of burned features at the northern boundary of the southeast quadrant (Figure 7.3) and the northeastern boundary of the northeast quadrant (Figure 7.2). It is difficult to say, on the basis of geophysical survey alone, whether these anomalies represent the remains of several discrete burned features (e.g., hearths, earth ovens) in close proximity to each other, or the scattered remains of one or a few larger burning activities (e.g., an incinerated structure). Groundtruthing will also be necessary before any contemporaneity between such features and excavated contexts at Garden Creek can be assessed. At present, all that is clear is that, across a 7 ha survey area, only about a half dozen anomalies were sufficiently intense to be visible among the noise caused by plowing and other modern activity. Provisionally, this suggests that most other features at the site (which were likely present, based on the MS survey results), had a lighter impact on surrounding natural deposits. This may be attributable to small size (horizontally and vertically) and/or to relatively low amounts of anthropogenic material in their fill. This latter possibility would run counter to expectations for long-term occupation of the site, which presumably would have produced richer middens and feature fills. In short, based on the magnetometer survey results, it does appear that a few locations across the Garden Creek landform did support especially intensive anthropogenic activity in the past; however, the majority of the off-mound area appears to have had a lower impact, possibly attributable to seasonal or eventful occupation of the site, rather than long term, permanent settlement.

Interestingly, the results of a smaller scale, 1 ha ground penetrating radar (GPR) survey immediately over and around Enclosures No. 1 and No. 2 paint a slightly different picture. Many more discrete anomalies were visible using this method than magnetometry, since GPR maps variability in vertical and horizontal space, rather than collapsing all variability into two dimensions (see Chapter 3). Figure 7.7 shows the interpretation of both of these methods combined; in addition to the burned and filled features identified through magnetometry, here we can also see basins, pits, trenches, and perhaps even large postholes that remain at least partially intact below the plowzone (see also Figure 7.8, 7.9). It is immediately apparent that there is a much higher density of features in the northeastern GPR survey block than in the southwestern block. Some of this pattern is attributable to a number of features identified in the sediments comprising the newly identified Mound No. 4, immediately south of and partially overlapping Enclosure No. 2. While it is clear that Mound No. 4 overlays, and thus postdates Enclosure No. 2, a lack of permission for subsurface testing in this lot precludes any more specific temporal attribution. Besides the features directly associated with this new mound, the northeast block also includes numerous features to the north of Enclosure No. 2. The feature density identifiable using GPR corresponds well with the MS survey results (see Figure 7.7 inset): MS readings are highest in at the northern corner of the GPR survey area, and lowest across the southwestern block, where the GPR detected fewer anomalies.

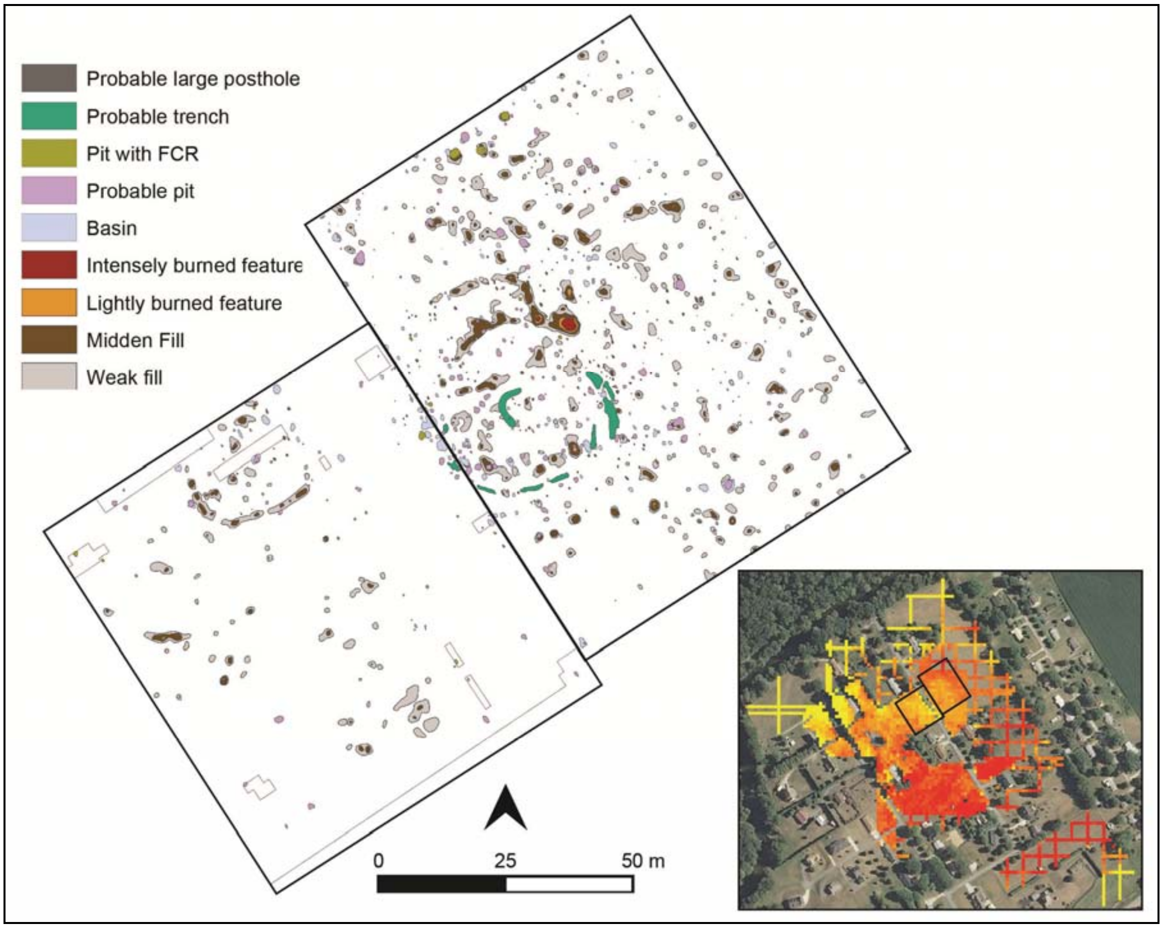
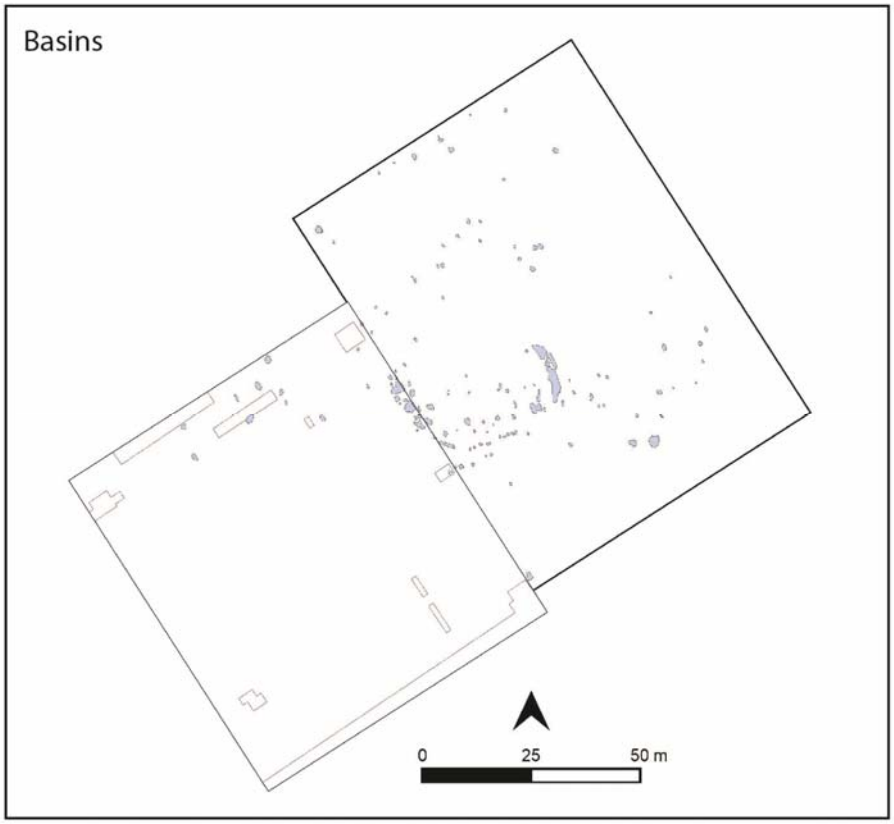


Figure 7.7. Combined, interpreted results of magnetometer and GPR surveys; inset shows placement of GPR survey blocks of MS survey result.

When the GPR results are sorted according to feature type, a few additional spatial patterns can be detected, though – as always – their interpretation is limited without excavation data to confirm their archaeological integrity and temporal associations. Basins or shallow pits (Figure 7.8, top) are spatially associated with the Mound No. 4, whereas deeper pits (Figure 7.8, bottom) and pits with fire cracked rock (Figure 7.9, top) – which required more effort to create and maintain and thus serve as a proxy for more intensive activities – appear with greater frequency in off-mound areas.



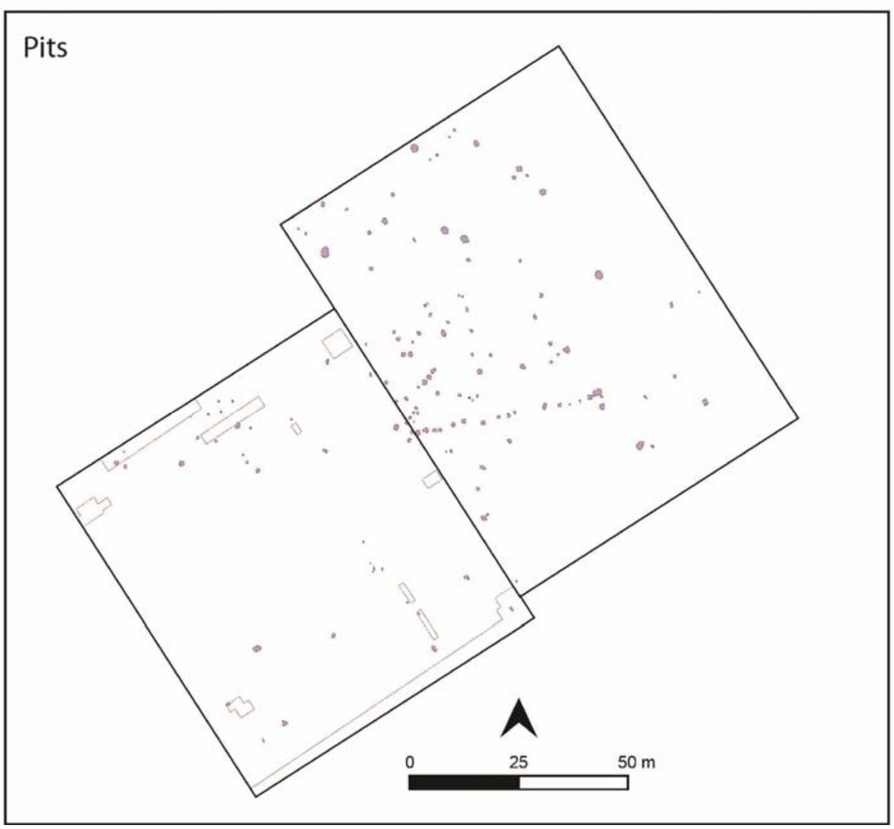
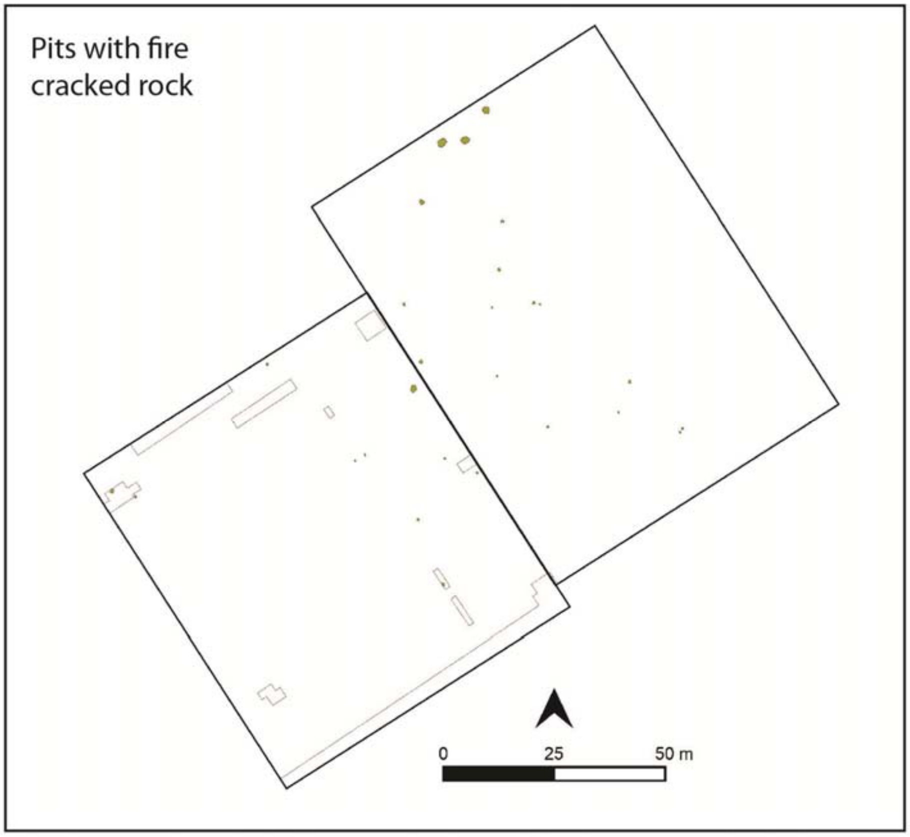


Figure 7.8. Basin (top) and pit (bottom) features inferred from GPR results.



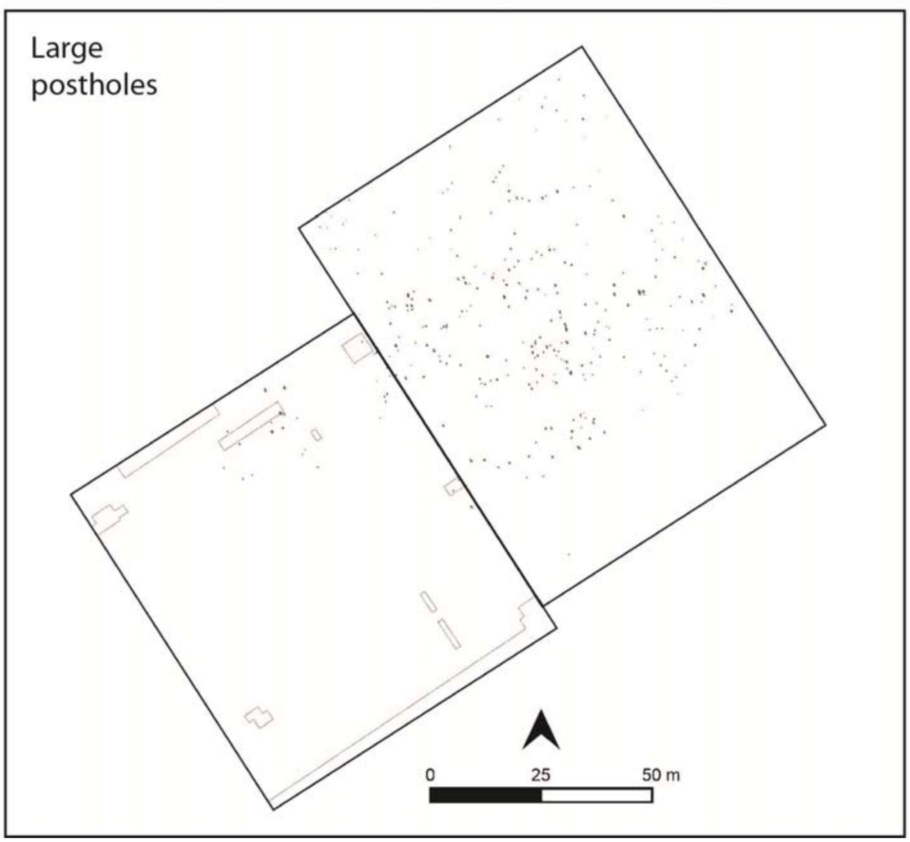


Figure 7.9. Pits with FCR (top) and postholes (bottom) inferred from GPR results.

At the northern edge of the survey area, there are several quite large pits with fire-cracked rock; if these deposits are the remains of in situ activities, and not redeposited fill, then this area may have witnessed intensive cooking activities involving massive hearths, roasting pits, or earth ovens. There are also several deep pits in this area, which may have served a variety of purposes throughout their use lives, from food preparation to storage to refuse collection. Perhaps more intriguingly, there is a conspicuous alignment of at least 17 very large pits, ranging from 45 to 180 cm in diameter, running east-west through the center of the survey area. Again, without groundtruthing of any kind, it is not clear exactly how these pits were used, but their alignment does suggest deliberate decisions regarding the organization of space around the site's Middle Woodland monuments. In contrast, it is impossible to confidently isolate any clear alignments among the large postholes detected by GPR (Figure 7.9, bottom). Until additional data are available, these features can be tentatively interpreted in the same way that Keel (1976) and Knight (1990, 2001) have interpreted dense posthole scatters associated with Garden Creek Mound No. 2 and other Middle Woodland platform mounds: namely, as the result of multiple, temporary structures erected, dismantled, and rebuilt throughout the site's occupation.

In the next chapter, I elaborate on the possible significance of these myriad patterns, insofar as they represent prior practices and occupation types in and beyond the Appalachian Summit Middle Woodland. For now, several overarching, albeit preliminary, conclusions can be drawn from the multiple geophysical survey techniques applied at Garden Creek. First, and perhaps surprisingly, the geophysical survey demonstrated that despite the intensive modern-day occupation of the Garden Creek landform, numerous archaeological deposits exist within or remain intact below the plowzone. This finding not only has important implications for ongoing efforts to preserve the Garden Creek site, but also suggests that other southeastern sites long presumed to be destroyed by recent development may still include sectors that remain intact and they will constitute viable archaeological datasets (Wright and Horsley in prep). In addition, the results of extensive magnetometer and MS survey indicate that spread of archaeological materials across the western half of the Garden Creek landform – presumably the locus of Middle Woodland occupation – is much larger than initially suggested by Keel (see Figure 3.4). Bounded by low MS readings at the northwest and southeast corners of the survey area, it now seems likely that archaeological deposits extend across at least 15 ha; in comparison, Keel's map of 31Hw8 encompasses roughly 2.5 ha. Certainly, the contemporaneity of these deposits remains an open question. And yet, if only a portion of them date to the Middle Woodland period, this would still represent one of the largest known pre-

Columbian occupations in the Appalachian Summit, much less one inhabited by pre-agricultural foragers.

The geophysical survey results also indicate that not all archaeological deposits across the site are created equal. While some areas show not only high MS value but also high densities of discrete features, others are much quieter, and appear to have undergone relatively less anthropogenic modification. This is especially intriguing in the area southwest of Enclosure No. 1, which roughly corresponds with the area demarcated by Mounds No. 2, 3, and now 4. The evidence detected here for low levels of activity may indicate that this portion of the site served as a plaza, a type of architecturally delimited open space that, especially in later periods, played a major role in structuring ritual and communal activities (Kidder 2004). While this portion of the site is relatively "quiet", deep plowing over much of the landform precludes conclusive interpretations of just how intensive occupation debris is in "noisier" areas. As mentioned above, while certain lots produced high MS values, discrete magnetic anomalies are few and far between, which may be an indication that archaeological features are small or filled with sediments minimally magnetic anthropogenic sediments. Where individual features are visible, obvious spatial patterning that might suggest deliberate or long lasting organization of habitation is not forthcoming, with the possible exception of the pit alignment detected with GPR. Combined, based on these site-wide observations, I hypothesize that the Middle Woodland occupation was not a village (as proposed by Keel), defined by permanent, localized habitation, but rather a locus of intermittent (perhaps seasonal or eventful) occupation by individuals whose communities were at least seasonally mobile. To test this hypothesis, the remainder of the chapter presents the results of off-monument excavations at Garden Creek, while a portion of the next chapter fleshes out thee interpretations in light of comparative data from other Middle Woodland occupation sites.

Report of Off-Monument Excavations

In addition to four units placed over and immediately inside and outside the ditch of Enclosure No. 1 (see Chapter 6), ten units were excavated in off-monument contexts. The placement of eight units was determined not only to be likely archaeological features, as indicated by the location of promising magnetic anomalies, but also by the permission of present-day landowners. Testing focused on the county-owned Waters Point Lot immediately adjacent to the

Pigeon River (Figure 7.10), and the Warren-Robinson Lots south and east of Mound No. 2 (Figure 7.11).

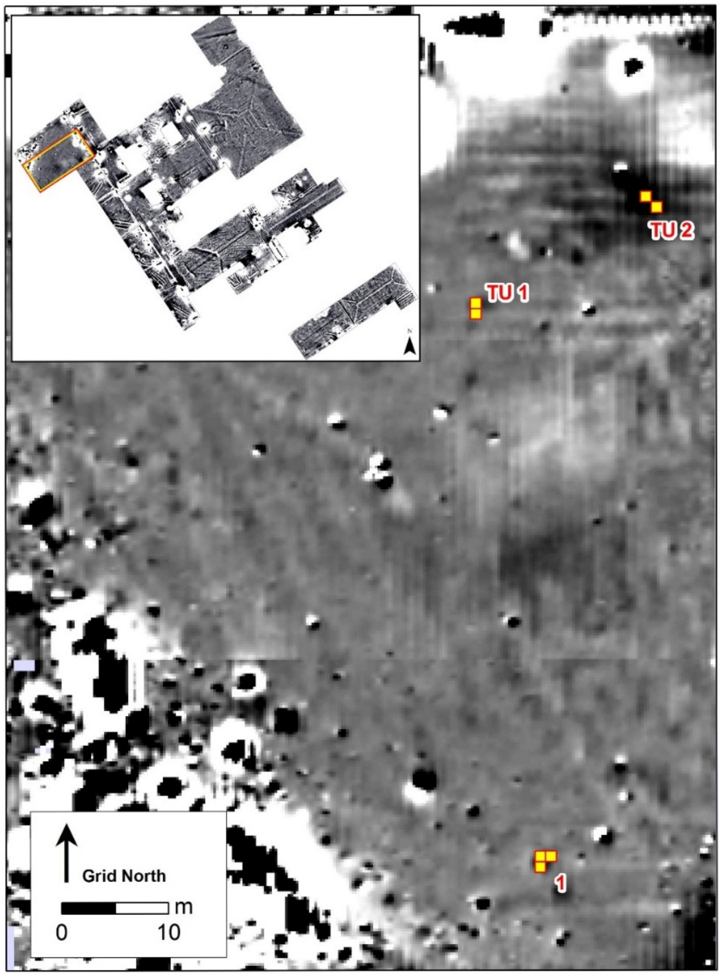


Figure 7.10. Units excavated in the Waters Point Lot (TU = Test Unit).

With that in mind, our off-monument excavation data are not randomly sampled and major portions of the site where archaeological deposits may be substantial (e.g., the area north of Enclosure No. 2 or south of the possible plaza) remain to be investigated. Nevertheless, extant excavation results from 31Hw8 offer a first glimpse at the sorts of activities that took place around Garden Creek's Middle Woodland mounds and enclosures, permit the basic identification of non-excavated anomalies as particular feature types through comparison, and enable broad inter-regional comparisons to non-monumental occupations at other sites in the Southern Appalachians across the Eastern Woodlands (see Chapter 8). To set up these avenues of interpretation, the following sections present the results of excavations in ten discrete off-monument units, numbered according to the order in which they were excavated.

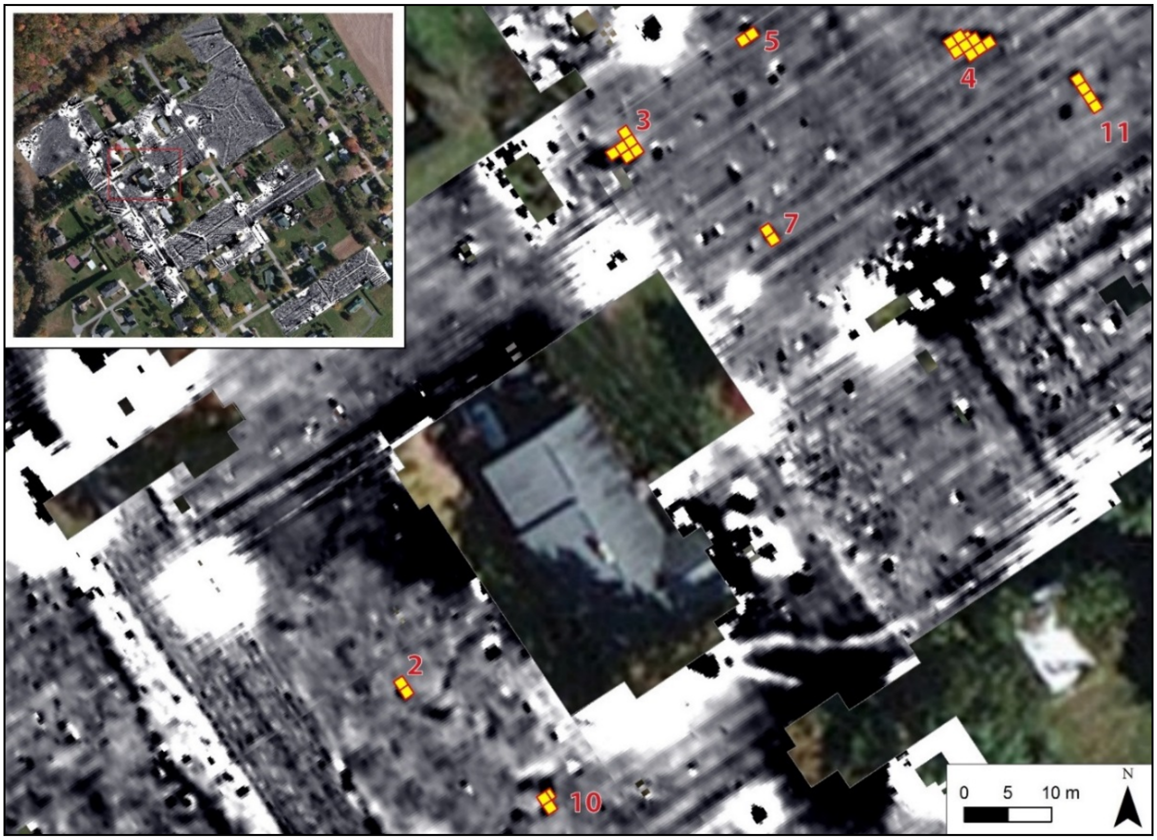


Figure 7.11. Units excavated in the Warren-Robinson Lots south of Mound No. 2.

Test Units and Unit 1

Situated on the lowest terrace of the Garden Creek landform, two test units and Unit 1 were targeted for excavation for two reasons. First, they were placed in such a way as to encompass discrete, magnetic anomalies identified during geophysical survey and provisionally characterized as weak fill or stronger midden. Overall, the area surrounding these features revealed a low density of magnetic anomalies. We initially hypothesized that this pattern signified, at best, low occupation intensity at this edge of the site or, less optimistically, considerable post-depositional deflation of archaeological deposits resulting from catastrophic floods and subsequent earth moving to stabilize the terrace. In spite of this possibility, our second reason for excavating here was inescapable: this portion of the site, labeled the Water Point lot is owned by the county, and in the early days of the project, it was the only area where we had unambiguous permission to excavate. Thus, our goals with the Unit 1 and test unit excavations not only involved groundtruthing intriguing magnetic anomalies, but also demonstrating to local residents that our excavation strategies were targeted and small-scale, and that there would be no trace of them after backfilling. With regard to this latter goal, excavations at in the Waters Point lot were successful; however, they did not yield intact, prehistoric archaeological deposits.

Test Units 1 and 2 each involved the excavation of 2 square meters. The southwest corner[1] of Test Unit 1 was located at E167 N182, in order to clip the eastern half of a round anomaly identified during magnetometer survey. Below a roughly 25 cm-deep plowzone, a layer of mottled (7.5YR4/6, 7.5YR4/3) sandy loam was exposed above coarse, sterile sands that began at 33 cm below the ground surface. Only a handful of artifacts were recovered from this unit, including degraded fire cracked rock, flaking debris made of chert and quartzite, and a few incidental potsherds. Slightly to the northwest, Test Unit 2 encompassed two 1-x-1 m units, with southwest corners at E183 N1073 and E184 N 1072, respectively. Placed in the center of a broad magnetic anomaly, presumably representing a discrete midden deposit, these units uncovered more clayey (rather than sandy) sediments than Test Unit 1. The dark brown (7.5YR2.5/3), sandy clay loam topsoil in this instance was quite thick, extended to about 35 cm below the ground surface. From the base of this stratum to 45 cm below surface, more mottled sediments appeared (7.5YR2.5/3, 7.5YR4/6); these, in turn, overlaid homogeneous sandy clay subsoil. The upper two strata exhibited some light charcoal flecking and yielded a few artifacts, including some quartzite debitage and a couple of potsherds. The results of the test unit excavations indicate that archaeological deposits in these locations are not intact. While both units were placed over distinctive anomalies, neither exposed clear feature boundaries, suggesting that the magnetometer was detecting relatively high concentrations of midden deposit that had been incorporated into the plowzone. However, based on the low density of artifacts recovered from these units, it does not appear that this midden was especially rich in anthropogenic debris; that may be the result of low intensity occupation of this area, or perhaps deflation by flooding of this low-lying terrace.

The final unit excavated in the Waters Point Lot was Unit 1 (southwest corner at E173 N1010), the results of which were rather different than the test unit excavations. Across three square meters, Unit 1 included three distinct strata. The uppermost stratum extended from ground level to approximately 30 cm below the surface and consisted of brown (10YR4/3), loosely compacted,

[1] In this section, all directions are made with references to the site grid, not to true cardinal directions.

sandy loam plowzone, which yielded low densities of ceramics, chipped stone tools and debitage, and FCR. Below this, the second stratum consisted of a dark yellowish-brown (10YR4/6), more compacted sandy loam. While excavators did document one cord-marked sherd and a few flakes here, it is most likely that these artifacts originated in the plow scars visible at the top of this stratum, which resembles the sterile subsoil identified in Test Unit 1. A third and final level, recognized between 40 and 52 cm below surface, was an uneven surface of cobbles, ranging in size from approximately 5-25 cm in diameter. Based on the results of nearby shovel tests (see Chapter 3, Appendix B), it seems likely that this surface represents an ancient river bed that extended across the lowermost portion of the modern Pigeon River floodplain. Interestingly, some of these cobbles were fire-reddened, and the sandy sediment between them appeared burned with small charcoal inclusions. The area of fire-reddening conformed to the circular anomaly detected by the magnetometer. Given the lack of artifacts associated with this and the overlying level, I hypothesize that this feature (and some similar anomalies) may have resulted from a tree that burned there. The roots likely depressed the cobbles in this localized area as they grew; subsequently, they could have reddened the cobbles and charred the surrounding sediments as they burned. In short, despite this distinctive stratigraphy, the Unit 1 excavations support the major conclusion of the test unit excavations – i.e., that little to no intact prehistoric archaeology exists today on the Waters Point Lot.

Unit 2

Moving northeast into the Warren-Robinson Lot, Unit 2 encompassed two square meters with a southwestern corner at E282 N1108. It was positioned to capture the northern half of a round anomaly whose magnetic signature suggested strongly burned midden fill. The plowzone in this unit (a compacted clay loam, 5YR3/4 reddish brown) was shallow compared to most of the rest of the site, extending only to about 23 cm below the ground surface. This pattern was also encountered in Unit 10 and a series of cores placed nearby; in all likelihood, it was created in the course of grading this yard for the adjacent house. That said, the subsoil visible at the base of the plowzone in the vicinity also differed from the subsoil noted in other units, being much rockier in texture and redder in appearance.

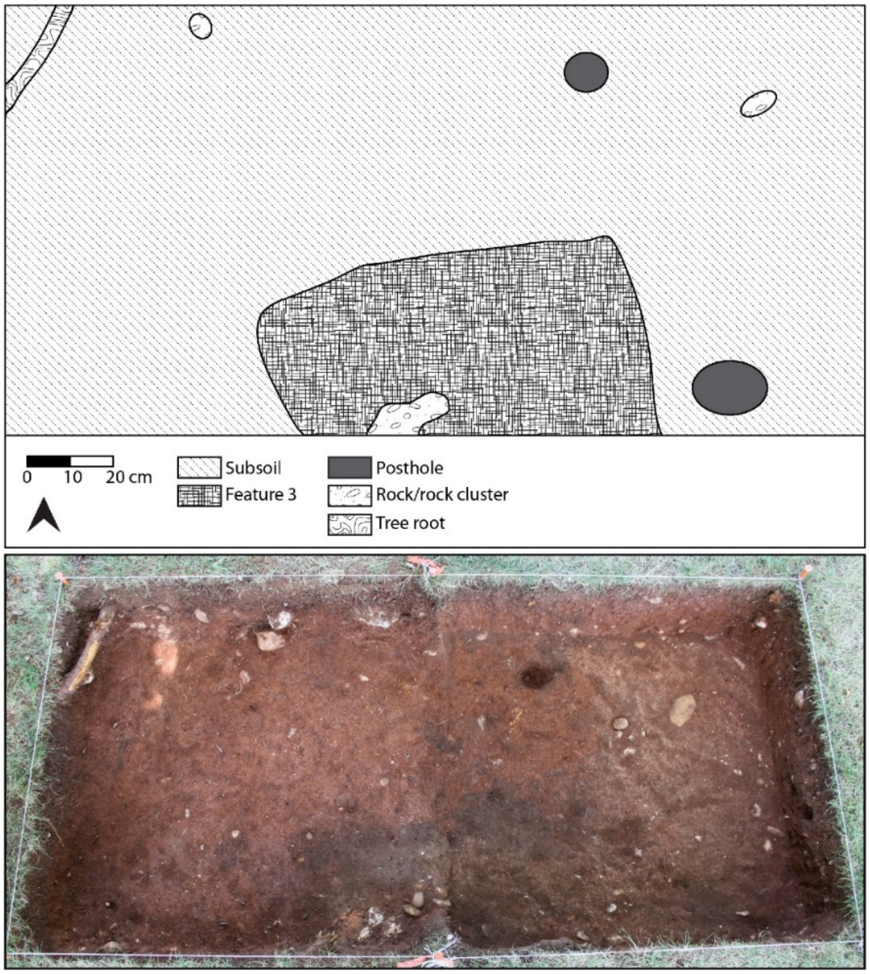


Figure 7.12. Unit 2 at base of the plowzone.

At the base of the plowzone, a semi-circular, dark brown (7.5YR3/3), charcoal-flecked stain is clearly visible in the southern half of Unit 2 (Figure 7.12). This matches precisely with the half of the anomaly identified through magnetometry. The exposed portion of this feature, labeled Feature 3, was excavated as a single context. In addition, several small round stains were tentatively identified as postholes at this level; subsequent excavation confirmed that two were legitimate though shallow, measuring only 6-8 cm deep below the base of the plowzone.

The fill of Feature 3 was noticeably darker and slightly looser than the surrounding subsoil, though it only extended 20-25 cm below the base of the plowzone (except at its northern edge, where it was disturbed by a rodent burrow). Interestingly, the western portion of the base of Feature 3 appeared to have been burned in situ, essentially creating a discontinuous fired clay surface from the naturally occurring clay subsoil. In total, approximately 60 liters of Feature 3 fill was excavated, yielding very few artifacts: three plain body sherds tempered with fine sand, and two pieces of burned clay, presumably from the fired earth bottom of the pit. This paucity of artifacts suggests that the basin was emptied before it was abandoned and left to fill over time.

Unit 3

About 60 m northwest of Unit 2 and considerably closer to location where Mound No. 2 once stood, Unit 3 targeted another round, albeit larger, anomaly detected during magnetometer survey and indicative of strong midden deposits. By the end of excavations, this unit covered six square meters; the southwest corner of the southernmost 1x1 m square was located at E252 N1152. From the beginning, this unit differed from Unit 2, insofar as its plowzone was deeper, extending to about 30 cm below ground surface, loamier, and brown in color (10YR4/3). It (and strata below it) was also crosscut by numerous roots belonging to an adjacent cherry tree, which ultimately prevented us from extending the unit to the east.

As shown in Figure 7.13, the removal of the plowzone in Unit 3 exposed two super-imposed pit features. Unfortunately, because the presence of the larger underlying pit was not initially recognized (only the smaller, overlying pit corresponded with a magnetic anomaly), and different 1x1 m squares were excavated at different times. As a result, the plan views and descriptions represent the re-combination of information recovered sequentially, and there are no top-down photos of the entire unit at the base of plowzone, etc. Unit profiles were essential for clarifying the stratigraphic relationships of these pits, labeled Feature 1A and 1B (the upper and lower pits, respectively). Rather than discuss them in the order in which they were discovered (given the challenges noted above), I will do so in the order in which they were created and filled.

Feature 1B was the earlier and larger pit in Unit 3. Although it was not exposed in its entirety, its shape and partial dimensions were determinable: it was rectangular with rounded corners, and measured nearly 2 m wide by at least 2.4 m long. The sides of the pit were nearly vertical at the top before sloping to a flat bottom, which was 70-75 cm below the ground surface (including 25-28 cm of overlying plowzone). The edges of the pit are recognizable by a thick band of "crunchy," dark reddish brown (5YR3/4) clay at the base of the plowzone. This burned layer, which is labeled in the profile drawings as Zone 2, does not seem to be a clay lining, but rather the result of in situ burning (Figures 7.14). The argument for in situ burning is strengthened by the fact that the bottom of Feature 1B, where exposed, was entirely covered with a layer of charcoal ranging from 5 to 10 cm in thickness; this layer is referred to as Zone 1. Some ash was present, buy no fire cracked rocks were noted.

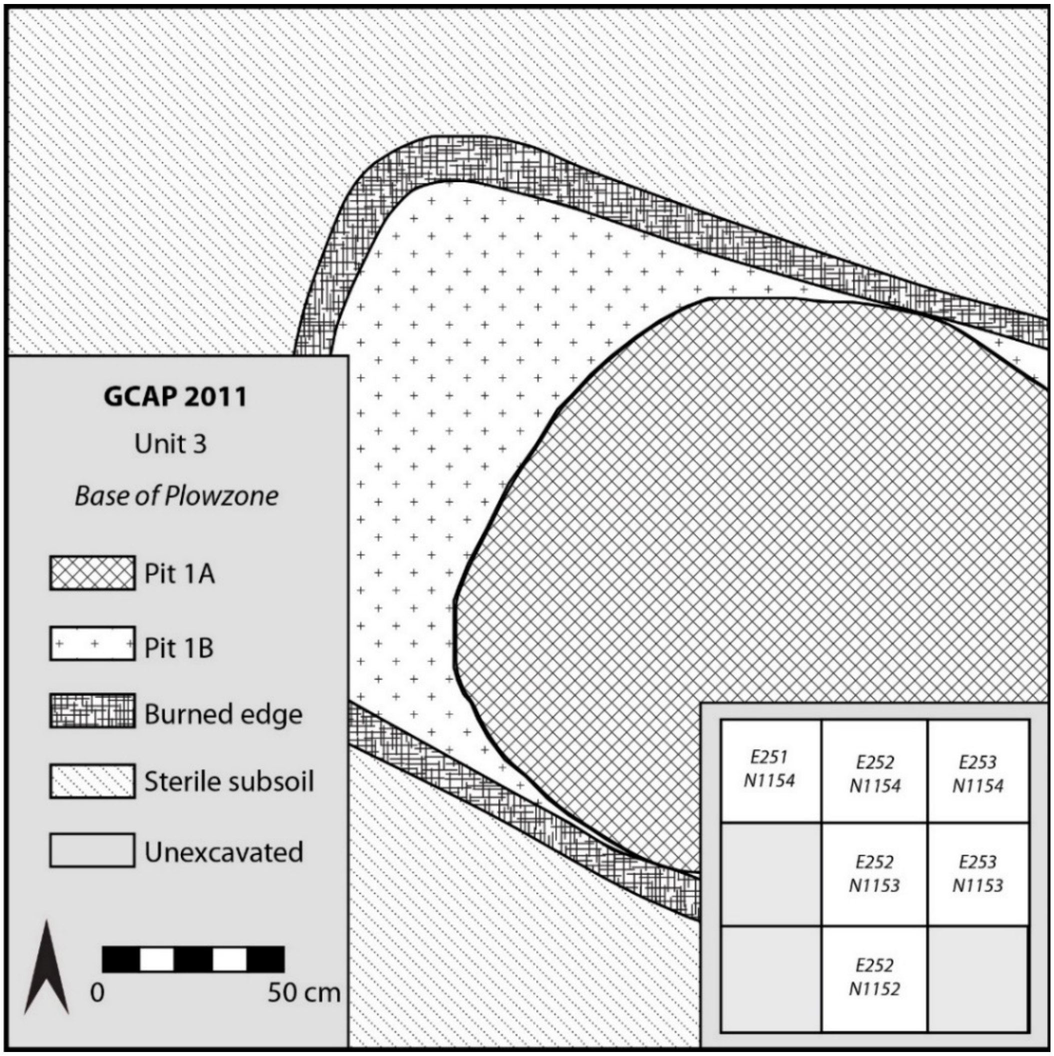


Figure 7.13. Composite view of Unit 3 at the base of the plowzone.

Above the charcoal layer, the strong brown (7.5YR4/6) sandy clay loam fill of Feature 1B (Zone 3) was macroscopically homogeneous, flecked here and there with charcoal and small pieces of burned earth. Without this flecking, it is easy to mistake this fill for subsoil. Considering its volume, very few artifacts came from the three zones of Feature 1B: 16 fine and coarse sand tempered potsherds with plain, brushed, or variably stamped surfaces, 7 pieces of mostly chert debitage; chunks of burned clay; 5 small fragments of fire cracked rock; and interestingly, a small fragment of sheet mica and a broken bladelet possibly made of Flint Ridge chalcedony (Figure 7.15).

The plant remains from zone three included bramble, chenopod, chenopod/amaranth, grass, pitch, and 10 unidentifiable seeds.

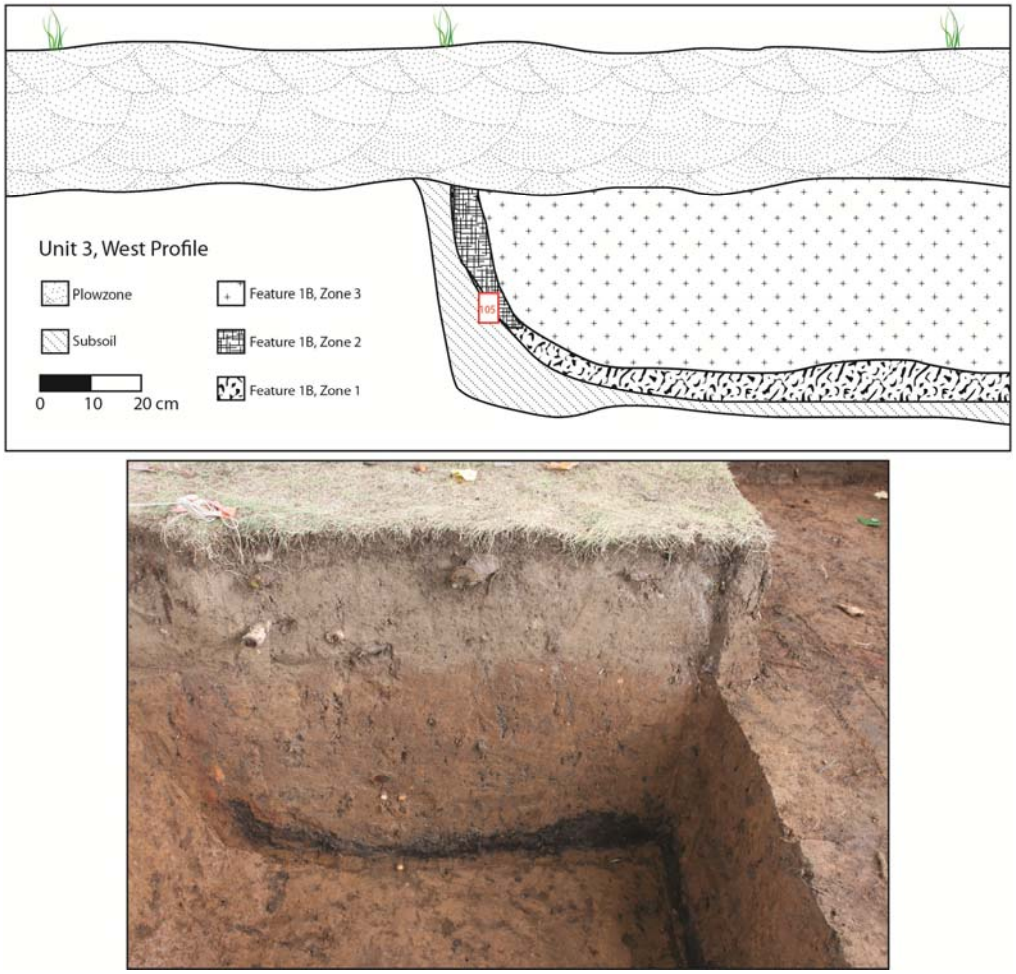


Figure 7.14. West profile of Unit 3, showing cross-section of Feature 1B and location of micromorphology sample 105. Drawing and photo roughly to scale.

Feature 1A was created once Feature 1B was entirely filled in, so that the former intruded into the latter's fill. The later pit was circular in plan-view, with a maximum diameter of about 1.8 m. Its horizontal shape corresponds well with the circular anomaly detected in this location during magnetometer survey. At its deepest, Feature 1A extended about 60 cm below the ground surface (including 25-28 cm of plowzone). The fill of this pit consisted of two slightly distinguishable zones, although the edge between them is not sharp. It should be noted that the fill of this pit was crosscut by several large tree roots and rodent runs, which obscure the intact strata in profile view (Figure

7.16). There were also two small (ca. 20 cm diameter, 10-15 cm deep) pits that intruded into Feature 1A and were filled with topsoil, which may be more recent in origin.

Figure 7.15. Fragment of Flint Ridge chalcedony bladelet from Feature 1B.

The lower zone of fill in Feature 1A (Zone 4) was a dark brown (7.4YR3/4) clayey loam, with large flecks of burned earth and high concentrations of charcoal compared to the fill of Feature 1B and the upper zone of fill of Feature 1A. This zone yielded 31 brushed, plain, and variably stamped potsherds tempered with coarse or fine sand or crushed quartz; 24 pieces of chert, quartz, quartzite, and crystal quartz debitage; and several small pieces of burned clay and fire cracked rock. In turn, the upper zone of fill in Feature 1A (Zone 5) was also a dark brown (10YR3/4) clayey loam, flecked with smaller pieces of burned earth and charcoal. Zone 5 tended to extend to 45-50 cm below ground surface, meaning that Zone 4 was about 10 cm thick. Six fine or coarse tempered, plan and variable stamped sherds were recovered from Zone 5, as well as 5 pieces chert, quartz, crystal quartz, or quartzite debitage, and a few fragments of burned clay and fire cracked rock. The only identifiable, non-charcoal plant remains recovered from either zone of Feature 1A were hickory.

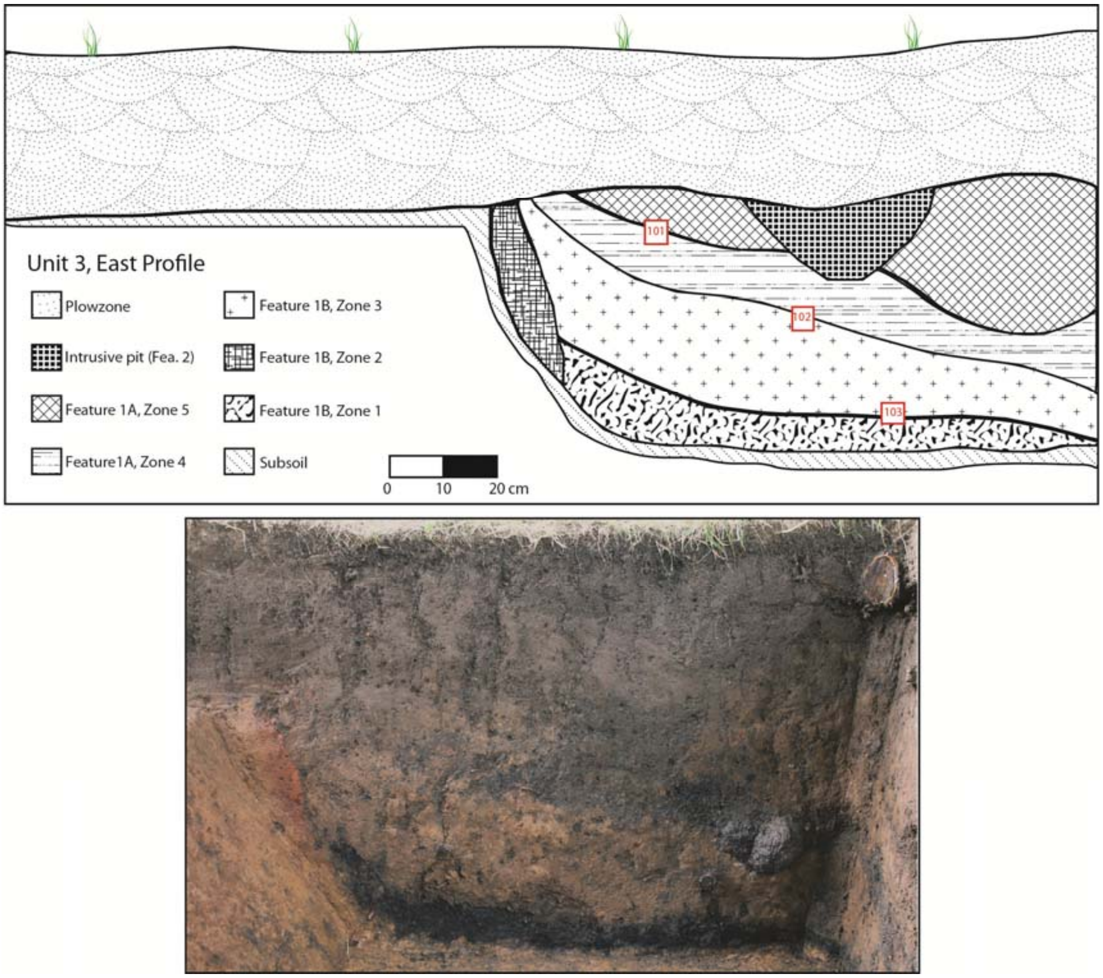


Figure 7.16. East profile of Unit 3, including location of micromorphology samples 101-103. Photo and drawing roughly to scale.

This sequence of pit digging and infilling is complicated slightly by a small exposure of a profile corresponding roughly with the center line of Feature 1A (Figure 7.17), referred to here as the "Midwest Profile." It does not include Zone 4, presumably because it does not extend deep enough, but instead shows a layer of red burned soil (4a) extending nearly to the base of the plowzone, apparently demarcating the edge of Feature 1A. A similar, vertically-oriented burned layer was noted in the excavation of Feature 1A in 1x1 units E252 N1153 and E252 N1152 (see Figure 7.13, above). Although it was not nearly as thick or obvious as the burned edge of Feature 1B, it may be that it was also produced by some in situ burning.

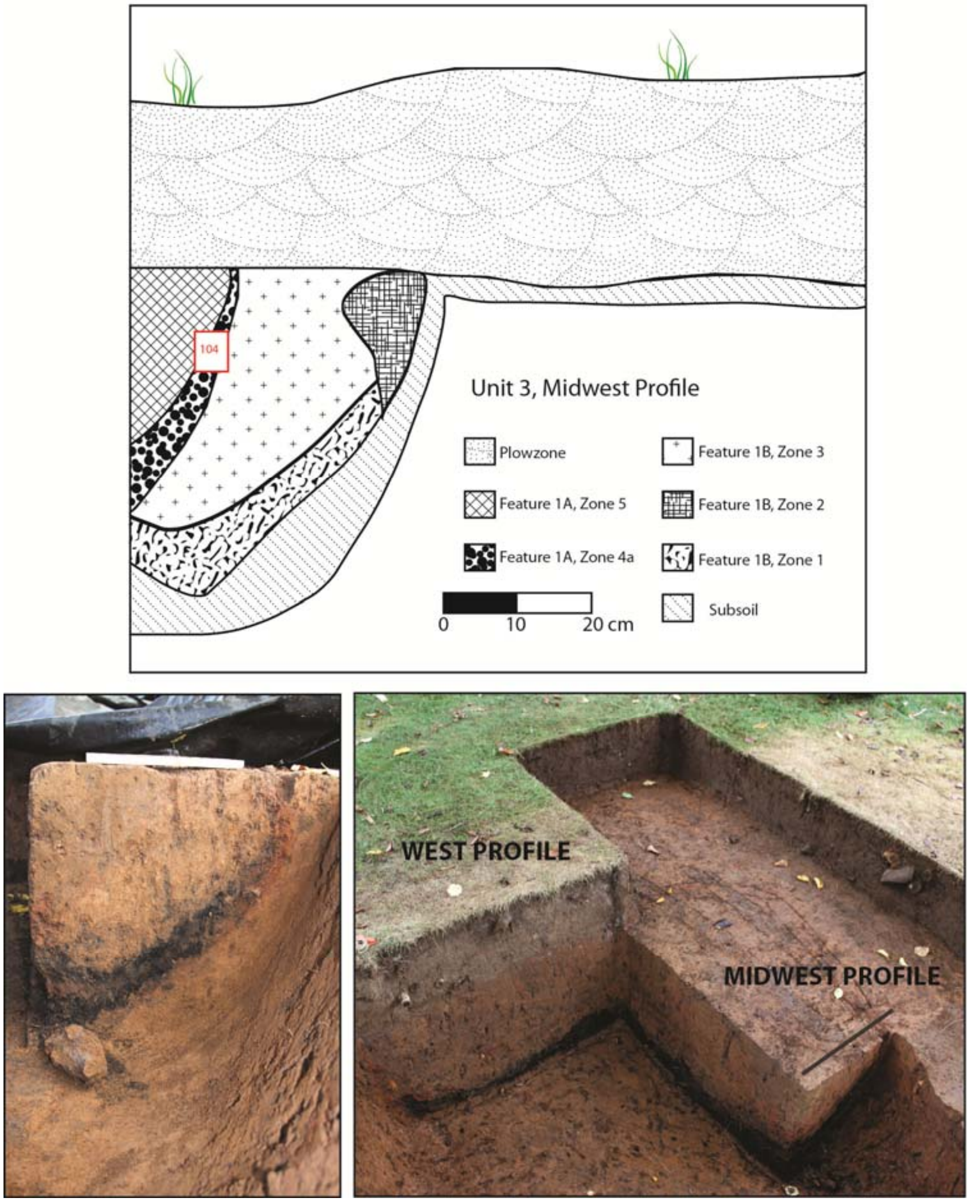


Figure 7.17. Midwest profile of Unit 3, showing location of micromorphology sample 104. Drawing and left photo are roughly to scale; right photo shows profile location.

The stratification of fill zones in Features 1A and 1B permitted the use of Bayesian modeling to obtain a refined chronology for feature use and infilling. Intensive dating of this picture was deemed worthwhile because this feature constitutes some of the best potential evidence for feasting at Garden Creek (see below). Assuming feasting was an essential aspect of aggregation at ceremonialism at the site, precisely tracking its occurrence through time stood to substantially clarifying our understanding of on-site activity and occupation. Charcoal samples from both pits' fill and bases were dated and modeled according to this simple sequence, from earliest to latest: charcoal base of Pit 1B; fill of Pit 1B; base of Pit 1A; fill of Pit 1A. The integrity of the model finds support in good statistical agreement with these *a priori* parameters (all A-values > 60%). As with previous Bayesian applications (see Chapters 5, 6), this technique clipped the sigmas of the raw calibrated dates, producing a much more precise history of infilling and related activities.

Sample Number	Feature Description	^{14}C age BP	Modeled date, 2-sigma	Modeled date, 1-sigma
AA1001157	Feature 1b (base)	1797 ± 39	cal AD 150-324	cal AD 210-311
AA1001156	Feature 1B (fill)	1753 ± 39	cal AD 215-334	cal AD 236-299
AA1001155	Feature 1A (base)	1730 ± 39	cal AD 236-346	cal AD 251-314
AA1001154	Feature 1A (fill)	1773 ± 39	cal AD 243-378	cal AD 275-337

Table 7.1. Modeled, calibrated dates from Features 1A and 1B.

As shown in Table 7.1, the use of Feature 1 postdates the infilling of the Enclosure, but corresponds well with the beginning of platform mound construction at Garden Creek. It seems likely that all activities related to this feature – including its designated function and subsequent infilling – occurred in the third or fourth centuries AD. The considerable overlap in these dates prevents any meaningful temporal distinction between the use and infilling of Features 1A and 1B, so at present, their relative vertical positions are the strongest evidence for their sequential use.

Unit 4

Unit 4 encompassed the only features excavated during the 2011-2012 field seasons that likely postdated the Middle Woodland occupation of Garden Creek. Located with its southwest corner at E261 N1184, this unit exposed a long, shallow depression filled with midden, as well as several adjacent postholes (Figures 7.18, 7.19). To expose these features, 8 square meters of approximately 30 cm deep plowzone were excavated. In plan view, Feature 4 almost resembles the ditch of Enclosure No. 1, but by referring to the magnetometer results, it is clear that it was, at most, about 6 m long from southwest to northeast. Furthermore, single-context excavation of this feature revealed a much shallower, much less complicated stratigraphy than the ditch.

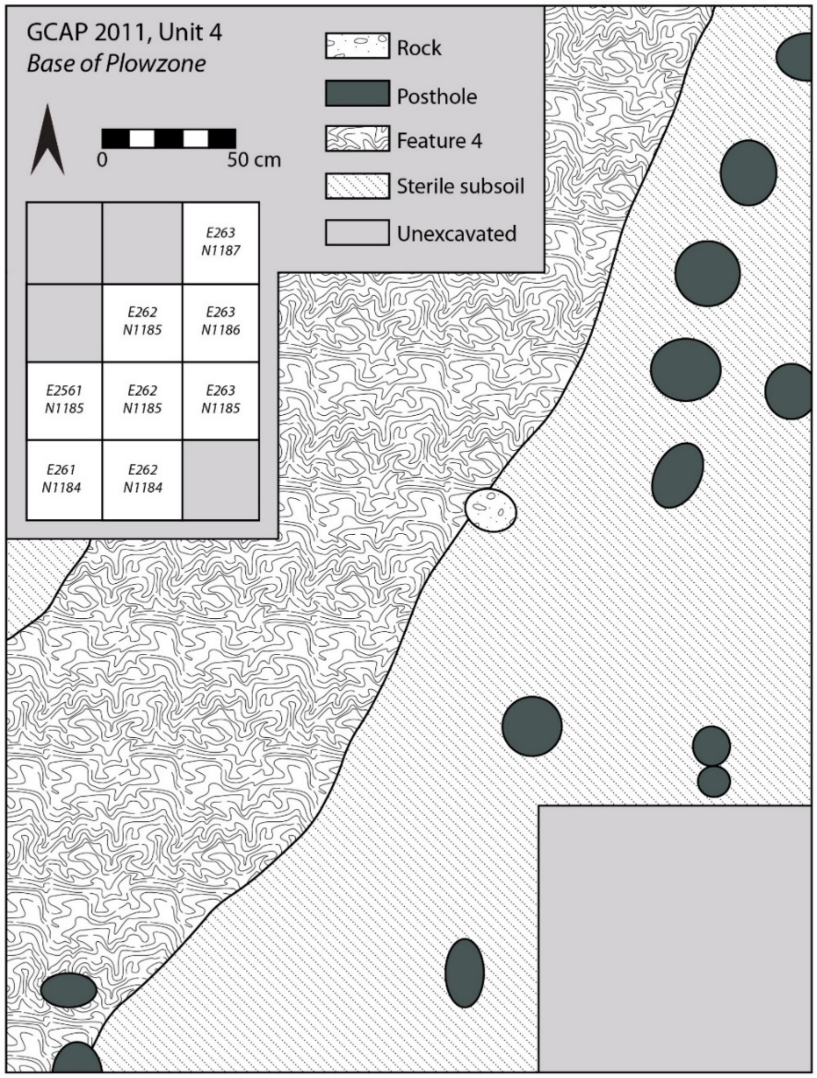


Figure 7.18. Unit 4 at the base of the plowzone.

The fill of Feature 4 was very dark grayish brown (10YR3/2) clay loam, and extended about 20 cm below the base of the plow zone to a relatively flat bottom. It yielded 61 potsherds, 6 pieces of chert and quartzite, debitage, a few pieces of fire-cracked rock and burned clay, and one possible ground stone. However, Feature 4 was unique among the contexts excavated in 2011-2012 in that it contained some preserved animal bone. Unfortunately, the vast majority of this material consisted of very small, extremely friable fragments that eluded extensive analysis. Given the general acidity of the sediment at Garden Creek, the relative preservation of bone in Feature 4 is one indication that it may not be as old as other features in the occupation area, where bone had more time to decay. This hypothesis is also supported by its macrobotanical assemblage. In addition to acorn and hickory, Feature 4 yielded tobacco, squash, and maize (1 cupule, 32 kernels). In these quantities, this last species in particular is much more likely to be associated with the post-A.D. 1000 Pisgah phase than with the Middle Woodland period. In fact, a charcoal sample from this feature yielded a calibrated radiocarbon date of A.D. 1320- 1449 (2-sigma; at 1-sigma, A.D. 1405-1440).

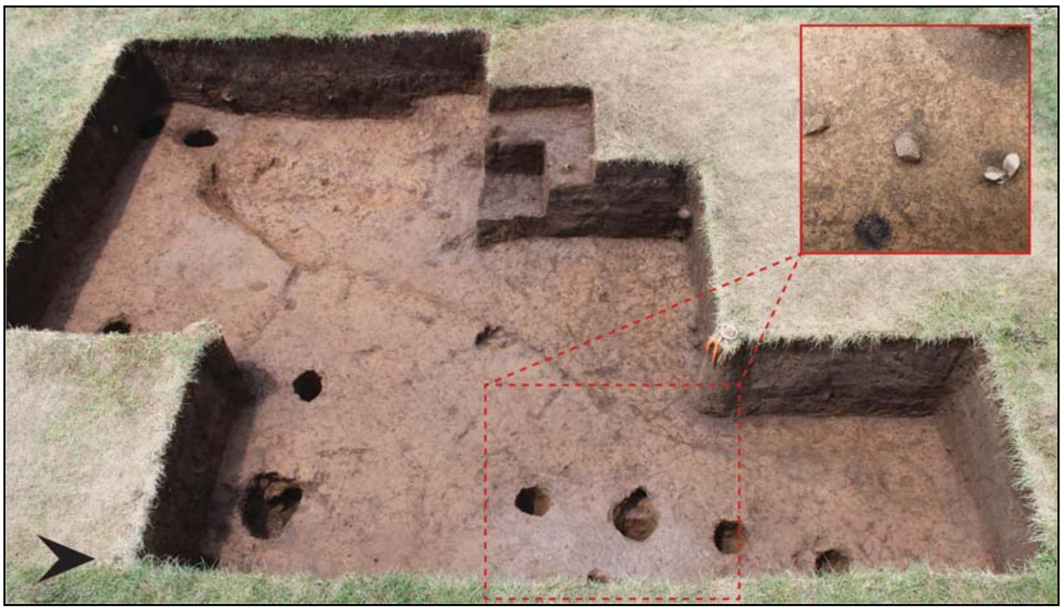


Figure 7.19. Unit 4, excavated to subsoil. Inset shows burned, rock-filled postholes.

While Unit 4 was dominated by Feature 4, it also included a dozen postholes. Several of these, concentrated in the grid-northeast portion of the unit, appeared to be in alignment with each other, and possible with the eastern edge of Feature 4 itself (Figure 7.19 inset). These postholes were also notable in that they were filled with rocks – not as tightly or as deeply as the rock-filled posthole associated with the ditch of Enclosure No. 1, but conspicuously nonetheless. At present, without additional horizontal exposure, it is not clear if these postholes represent the remains of an enclosed building. Their relatively large size does seem to indicate some intended longevity to the structure, even if it was ultimately dismantled (through burning or post removal). For now, these postholes and presumed structural associations are at least helpful for interpreting Feature 4; as elaborated below, I classify it as a large basin, filled with midden and refuse produced by nearby – perhaps domestic – activity.

Unit 5

Unit 5, a 2 square meter unit placed between Unit 3 and the location of Keel's unit over Mound No. 2 (southwest corner E250 N1168), revealed the eastern half of a round magnetic anomaly indicative of midden and some burning (Figure 7.20)

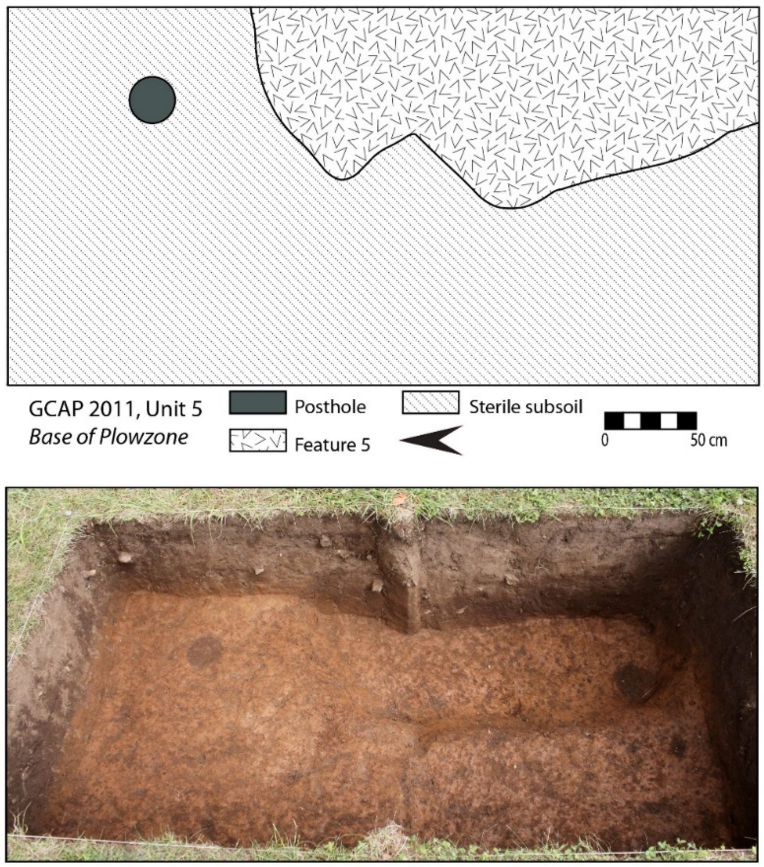


Figure 7.20. Unit 5 at base of plowzone (top) and base of Feature 5 (bottom).

Below the 30 cm deep plowzone, Feature 5 was visible as a very dark brown (7.5YR2.5/2), semi-circular, loamy stain. This fill extended only 22 cm to a flat bottom. It yielded 1 piece of chert debitage, a few pieces of fire cracked rock and burned clay, and 8 potsherds. Its macrobotanical assemblage included hickory, amaranth, a maize cupule, and several miscellaneous species. Given this low density of artifacts and its relative shallowness, it appears that Feature 5 was left empty and was filled in incidentally over time. As with most units in the occupation area, a couple of postholes were mapped in this unit, but the limited horizontal exposure dictated by the neighborhood setting precluded chasing any alignments.

Unit 7

Located with its southwest corner at E266 N1160, the placement of Unit 7 was selected in order to ground truth a roughly 1 m diameter, round magnetic anomaly. As with most other portions of the site, the plowzone across these 2 m2 extended to about 30 cm below the ground surface; however, this particular deposit yielded absolutely no artifacts. At the base of the plowzone, Feature 7 was identified as a red (10YR3/3), irregularly shaped, hardened burned clay surface with a small amount of associated charcoal (Figure 7.21, top). The only artifacts associated with this feature were a few small pieces of fire cracked rock. The burned clay extended 10-15 cm into the subsoil from the base of the plowzone, where it terminated at a rather lumpy base (Figure 7.21, bottom). Given the dearth of artifacts from this feature and its irregular shape, it is difficult to assign it a known function, though some intra-site comparison has some potential in this case (see below).

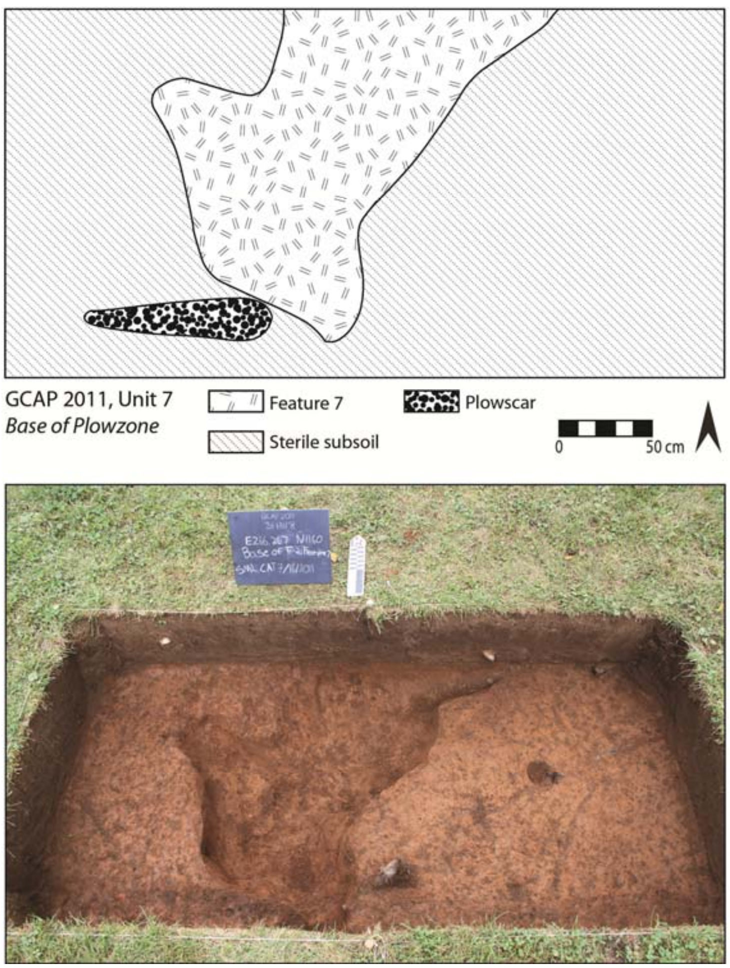


Figure 7.21. Unit 7 at base of plowzone (top) and base of Feature 7 (bottom).

Unit 10

Unit 10 was one of four units excavated in the 2012 field season. Located with its southwest corner at E298.4 N1114.15, groundtruthing here was undertaken in order to better characterize the numerous round, presumably pit-like anomalies identified in this relatively under-plowed area, especially in light of the ambiguous results generated from the Unit 1 excavation in 2011. By covering 2.5 square meters, Unit 7 managed to clip the edges of two magnetic anomalies within a larger cluster of at least four anomalies arranged in a roughly circular pattern. The plowzone over this unit was shallow, extending from 22-24 cm below the ground surface. Two features were identified at the base of the plowzone, in agreement with the magnetometer results (Figure 7.22).

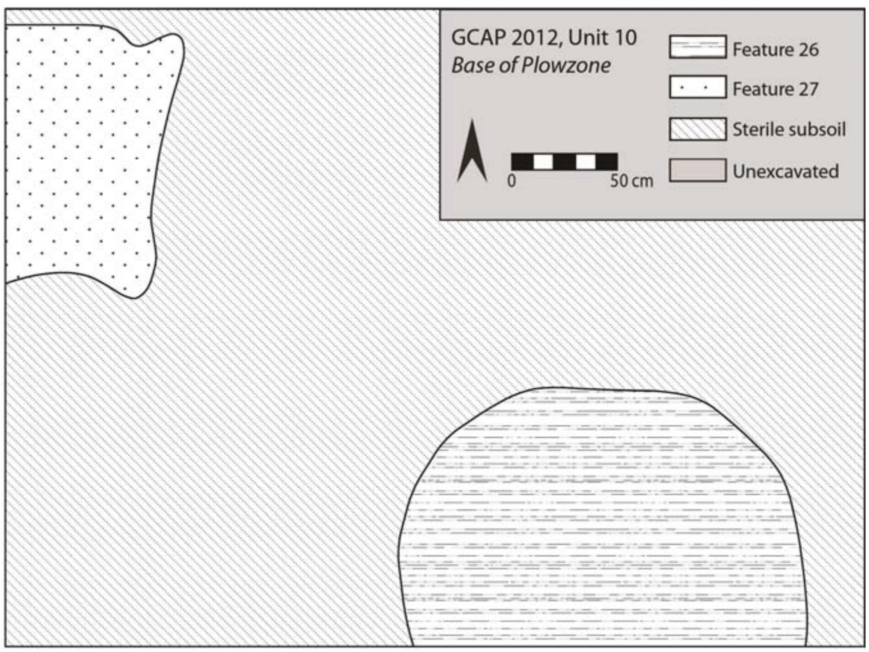


Figure 7.22. Unit 10 at base of plowzone, showing tops of Features 26 and 27.

Based on these geophysical data, about 60% of Feature 26 was exposed in the southeastern portion of the unit. At the base of the plowzone, it appeared as a dark brown (7.5YR3/4) area of clay loam, though upon excavation the upper layers of this fill including some mottling with yellower sediments in its eastern half (Figure 7.23). This zone extended down nearly vertical pit walls to 44 cm below the base of the plowzone, constituting a fairly large pit. However, the density of artifacts in this fill was low. It yielded 1 piece of quartz debitage and 9 sherds tempered with crushed quartz, coarse sand, or fine sand, and exhibiting plain, cord marked, check stamped, and eroded exterior surface treatments. A piece of charcoal from this feature was radiocarbon dated to

Most of the flat base of this zone of fill exposed sterile clay subsoil. However, in the middle of the feature and extending into the grid-south wall of the unit, another deposit was identified. Consisting of dark brown (7.5YR3/4) loam, this round sub-feature extended an additional 7 cm into the subsoil; it yielded no artifacts. Interestingly, the grid-eastern side of this zone was bordered by a 5-10 cm thick layer of pure yellow clay (7.5YR4/6) that matched the subsoil identified in other portion of the site, but not in the immediate vicinity (where the rocky clay subsoil was redder; 5YR4/6). These latter deposits may represent a posthole that includes not only incidental fill (the same fill as the main pit above), but also clay used to stabilize the post before it was removed.

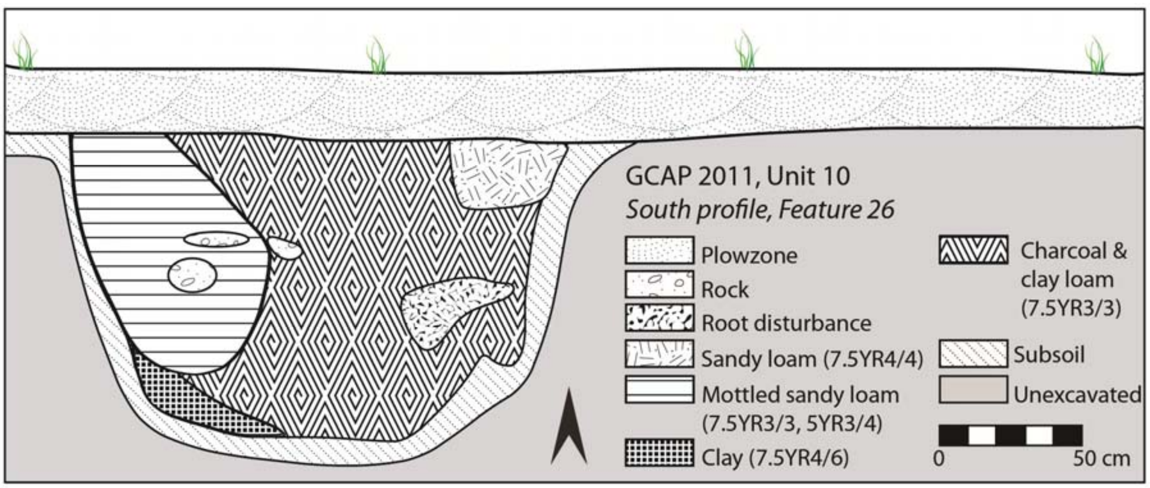


Figure 7.23. Profile of Feature 26, Unit 10 south wall.

A second feature was identified across the unit, extended east from the western wall. At the base of the plowzone, Feature 27 was characterized as a dark reddish brown (5YR3/4) sandy clay loam, and in fact, this sediment persisted to the rounded base of the feature, 72 cm below the ground surface (Figure 7.24). No artifacts were recovered from this single zone of fill. Besides feature shape, the only characteristic of Feature 27 that may hint at its function was a slight textural difference along the its southern and western edges, which, based on findings in other units, may represent some in situ burning activity.

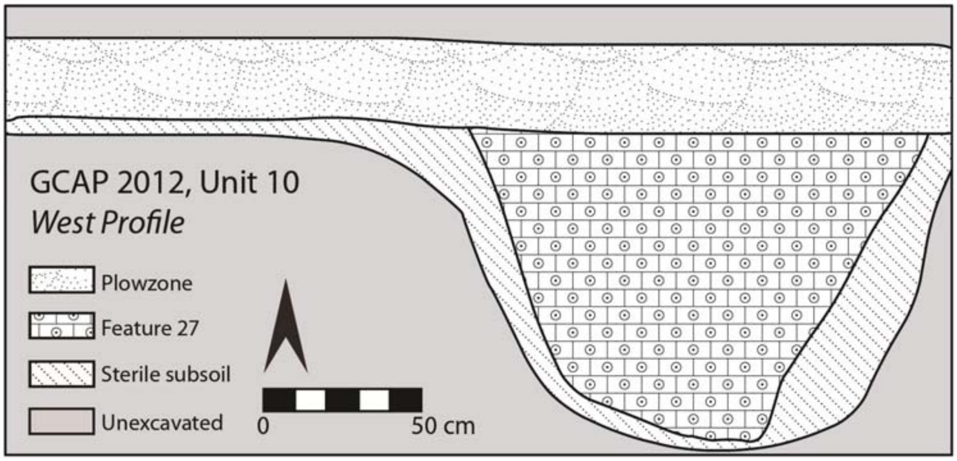


Figure 7.24. Profile of Feature 27, Unit 10 west wall.

Unit 11

The final off-monument unit excavated in 2012 was a 4-x-1 m trench with a southwest corner at E270.5 N1192. It was positioned across two, oblong magnetic anomalies suggestive of strong and weak midden deposits that, in turn, were also associated with GPR reflections between 40 and 80 cm below surface. These tops of features represented by these anomalies were clearly visible at the base of the plowzone at the western end and approaching the eastern end of the trench (Figure 7.25). The former, Feature 28, included the corner of a round, dark brown (7.5YR2.5/2) clay loam; the latter, Feature 29, was a slightly lighter (7.4YR3/4), siltier clay loam. Both of these features were bordered by mottled (7.5YR3/4, 7.5YR2.5/1), charcoal-flecked clay loam. This attribute, combined with the size and shape of these features, suggested that they may be burials (Bennie Keel, personal communication). Although no Connestee phase burials from the Appalachian Summit have been published,[2] and we thus lack comparative cases that would aid in the recognition of such features, we elected not to conduct any subsurface-plowzone testing on these features. They were mapped and photographed, and acknowledged by a visiting volunteer from the Eastern Band of Cherokee Indians, before the unit was backfilled.

[2] At least one Connestee phase burial was identified at excavated at the Macon County Industrial Park site in the 1990s, but the sensitivity of these remains have precluded their publication.

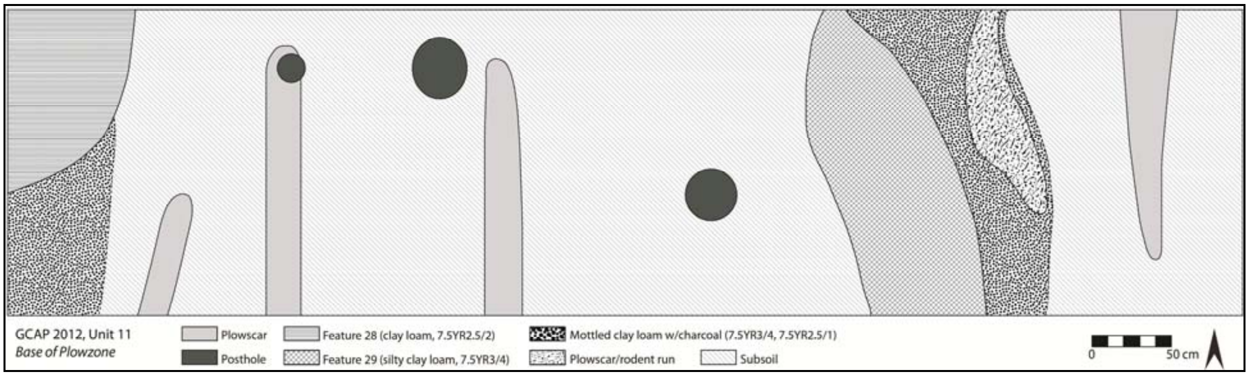


Figure 7.25. Unit 11 at base of plowzone, showing tops of Features 28 and 29.

Feature Morphology and Function

Excluding individual postholes, the off-monument excavations at Garden Creek exposed 10 discrete features that provide a first glimpse of the sorts of activities that were conducted at the site alongside – but not in immediate spatial association with – the Middle Woodland platform mound and enclosures. My analysis of off-monument features began using the same morphology-derived feature typology that was developed for Mound No. 2's features (Figure 5.5). Because plowing destroyed the original off-mound ground surface, all excavated off-monument features are negative features. This is not to say that the off-monument Middle Woodland occupation originally included no surface features, but that we are unlikely to recover intact surface features in the currently available archaeological record.

Within the category of negative features, it is possible to distinguish among a greater range of variability than in the mound, due in part to differences in available records, and in part to real differences in the sorts of features that were constructed and used in mound and off-mound contexts. Although the small sample of off-mound features at Garden Creek impedes rigorous modal classification based on particular metric attributes (as carried out by Bardolph 2014), they can be further subdivided according to the presence and absence of evidence for in situ burning, an attribute with likely functional significance (Figure 7.26). Another way this classification scheme differs from that of mound features is that the current categories are not further refined by considering constituent artifact assemblages. In contrast to surface features like hearths and house floors, the artifacts recovered from negative pits and basin are often the result of incidental erosion or the collection of refuse from diverse contexts (Bardolph 2014; Deboer 1988), and are thus less useful for assessing all aspects of their likely complex use lives (Koldehoff 2002:43).

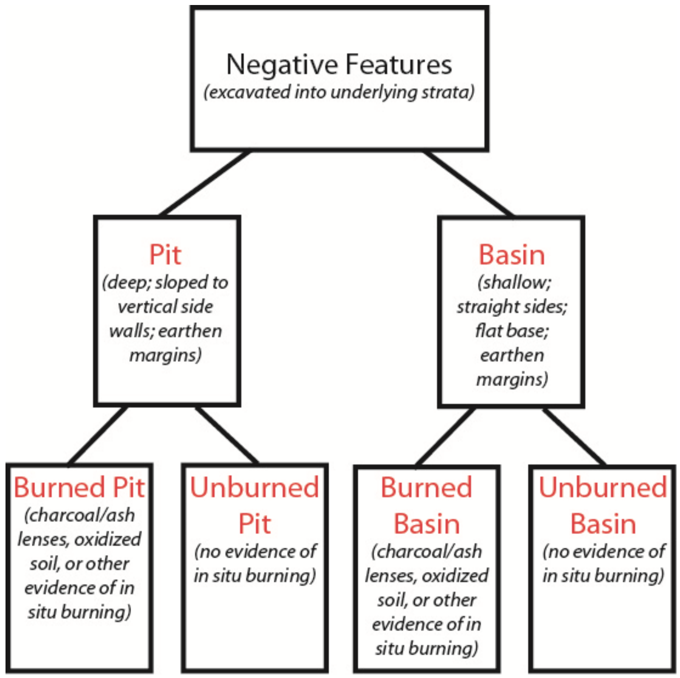


Figure 7.26. Morphological classification of off-monument features.

The morphological classification of off-monument features at Garden Creek shows considerable variability, particularly given the fairly small sample size. A glance at the depth of the eight excavated features reveals a bimodal distribution between pits (60-95 cm deep below the ground surface) and basins (15-22 cm deep below the ground surface).[3] The former group consists of Features 1A, 1B, 26, and 27; of these, Features 1A and 1B have evidence of in situ burning, in the form of heavily oxidized walls and, in Feature 1B, an intact layer of burned wood and other materials. Meanwhile, Features 3, 4, 5, and 7 meet the criteria for basins. Features 3 and 7 show evidence of in situ burning; Features 4 and 5 do not. Since they were not excavated, features in Unit 11 were not classified as pits or basins.

This classification is a springboard for identifying feature function and off-monument activities at Garden Creek. However, "Determination of pit [or basin] function is more problematic

[3] The morphology (e.g., depth, volume) off all off-monument features at Garden Creek have been impacted by plowing; it is assumed that those effects are fairly consistent across excavated units, permitting relative comparisons between features.

than determination of pit [or basin] morphology. Morphology and function are related, but the former does not always determine the latter" (Holt 1996:63). Bardolph (2014:80-82) has recently confronted this challenge in the Late Prehistoric Central Illinois River Valley, subdividing morphological variability into three functional categories: (1) multipurpose food processing pits, characterized by basin shapes and a lack of evidence for in situ burning, and presumably used for food related activities that did not require heating (e.g., threshing, leaching, grinding); (2) cooking pits, characterized by oxidized soil and high densities of fire cracked rock; and (3) storage pits, characterized by high depth and volume measurements and small orifice area-to-pit volume ratios. My own classification of off-monument features takes several cues from Bardolph's typology, but also employs comparative data from Middle Woodland sites in the greater Southern Appalachians in order to obtain a more contextually specific understanding of possible feature function.

Features 26 and 27, as unburned deep pits, conform most closely to expectations for a storage pit. As these and most other features were only partially excavated, precise determination of volume is difficult to assess, but the depth-to-diameter ratios of both Features 26 and 27 (2.16 and 1, respectively) exceed the minimum ratio for storage pits at historic Cherokee settlements (0.4; Schroedl 1983, cited in Deboer 1988:4). Small (1-inch diameter) core samples taken from several nearby anomalies can be tentatively attributed to similar pit features, not filled with sediments with a few prehistoric artifacts. Following DeBoer (1988), the presence of multiple storage pits at Garden Creek is a marker of seasonal settlement abandonment; that said, the presence of visible, above-ground storage facilities, which would be expected if a site was occupied year-round, is difficult to assess using currently available data. It is similarly unclear how these features would have functioned for long-term storage, given the surrounding clay subsoil would have impeded necessary drainage, although this question may be addressed with future experimental studies. As for what was stored in these pits, there is little direct evidence available from excavated contexts at Garden Creek; however, research at contemporary Southern Appalachian sites like Smokemont (31Sw393) and Townsend (40Bt89, 90, 91, 94) suggest that they would have originally contained hickory nuts, chestnuts, and acorns (Purcell 2013; Yerka and Hollenbach 2011).

It may be that Feature 5, categorized here as an unburned basin, was also a pit used for storing nuts or other foodstuffs. Though shallower than Features 26 and 27 below the base of the plowzone, its original depth below ground surface was about 30 cm greater, substantially increasing its total volume. Alternatively, Feature 5 may represent a "multi-purpose" food processing pit as described by Bardolph (above), or perhaps some facility related to ceramic or lithic manufacture, as has been proposed for basin features at the Middle Woodland Hardin Bridge site in northern Georgia (Windham, Espenshade, and Coco 2008).

Considering its massive horizontal dimensions, a similar functional assessment is not forthcoming for Garden Creek's other excavated, unburned basin, Feature 4. The irregular outline and expansive extent of this shallow basin suggest that it may be a naturally occurring depression along the site's surface. If the original ground surface was undulating, and more recent agricultural activity spread and leveled top soil deposits, than it is possible that low-lying areas would be capped and, to some extent, preserved below the subsoil. The fill of this feature included a higher density of artifacts than other negative features at the site, suggesting that it was deliberately a locus of midden or refuse accumulation, while other pits and basins filled in incidentally over time (i.e., they were never converted to refuse pits). Assuming the partial posthole alignment adjacent to Feature 4 represents a house structure, the fill of the feature may consist of related domestic debris. Importantly, as mentioned above and discussed further below, this is the only feature excavated by GCAP that appears to post-date the Middle Woodland occupation of the site. The conspicuous contrast between the rich, late-prehistoric midden of Feature 4 and the relative emptiness of Middle Woodland features suggest that the earlier occupation may have been less intensive (i.e., seasonal, special-purpose occupation) than the later one (i.e., permanent, village occupation). Although a time-dependent preservation bias can at least partially account for the relatively high density of faunal remains in Feature 4, its density of ceramic artifacts demands a more anthropogenic explanation.

Two functional possibilities exist for the two excavated burned basins, Feature 3 and 7. The most likely explanation is that they are all that is left of surface-level hearth features that have been almost entirely destroyed by plowing. Whether or not such features originally contained cobbles, they presumably heated the ground on which they rested sufficiently to oxidize underlying clay subsoil. If agricultural activity swept away the fire cracked rocks, ash, and charcoal comprising the upper portions of such features, a burned clay layer at the base of the plowzone may be all that remains. Another possibility is that these features were used in processing plant foods. In Middle and Late Archaic components at Dust Cave and Icehouse Bottom, burned clay surfaces, sometimes impressed with textiles or netting, may have functioned as griddles for processing nuts or seeds (Sherwood and Chapman 2005). However, unlike these Archaic examples, the burned clay basins at Garden Creek did not involve the selection, transport, and placement of clay onto lithologically distinct strata, so at present, they can be most parsimoniously characterized as the limited remains of surface-level cooking hearths.

Burned pit Features 1A and 1B also point to cooking activities. Both display evidence of in situ burning, in the form of oxidized edges, high concentrations of charcoal, and in the case of Feature 1B, an entire layer of burned wood and plant materials. Neither Feature 1A or 1B contained notable quantities of fire cracked rock, but this may be a result of complex feature use-lives: "for example, rocks may have been moved from a cooking feature (e.g., earth oven) for use elsewhere (e.g., to line a storage pit), and ultimately be discarded in a refuse pit" (Bardolph 2014:80). The presence of large but delicate pieces of intact wood charcoal at the base of Feature 1B indicate that, unlike the fills of other features, this represents the remains of in situ activity. For instance, these features may be earth ovens, which were "first heated by building a fire in a pit, then placing…rocks on the fire. When the fire went out, the rocks remained very hot, and the food could be cooked by placing it on the hot rocks and covering the pit" (Jefferies 2013:123).

Particularly in the case of Feature 1B, its massive size and precise shape are a potential indicator that large-scale, perhaps specialized cooking activities were carried out here. Its unique dimensions are made clear by comparison. Published reports of similar earth ovens describe features measuring 60-x-60 cm across and about 85 cm deep (at Hardin Bridge; Windham, Espenshade, and Coco 2008), and 130-x-150 cm across at 45 cm deep (at Leake; Keith 2010); Feature 1B, in turn, measured at least 200-x-240 cm across and extended 75 cm below the ground surface. Lacking preserved animal remains, enormous earth ovens are perhaps the best evidence available at Garden Creek for communal feasting activities. The placement of these features in relatively close proximity to Mound No. 2 (approximately 50 m to the north), which itself has been argued to relate to communal feasts (Knight 2001), strengthens this argument. Moreover, the sequential use of this location for large-scale cooking, as indicated by the stratification of Features 1A and 1B, may be an indication of the eventful reuse of cooking facilities of activity areas in accordance with seasonal or ritually-prescribed aggregation.

In sum, the morphological characteristics of off-monument features at Garden Creek permit a preliminary characterization of the sorts of activities that took place around the Middle Woodland platform mound and earthworks. By and large, cooking appears to have been a major emphasis; 4 of 8 excavated features – the probable hearth remains and earth ovens – clearly represent food-related activities, perhaps at a scale commensurate with communal feasting. Two or three other features, meanwhile, are most likely storage pits, though they were thoroughly emptied before they were filled in with sediment and a few incidental artifacts. To further elucidate these off-monument activities, I now turn to the Middle Woodland artifacts recovered from the occupation area.

Off-Monument Assemblages

With the exception of the basal layers of Features 1A and 1B, it is unlikely that any of the contents excavated from the off-monument pit and basin features at Garden Creek represent the remains of in situ activity. Rather, these materials, as well as those in the overlying plowzone, are a mixture of residues from activities occurring in the general vicinity during, or in some cases after, the Middle Woodland occupation of the site. With that in mind, my analysis of off-monument assemblages lumped all ceramic and lithic artifacts and macrobotanical remains from all excavated Middle Woodland features (i.e., all but Feature 4). To increase sample sizes, I also included artifacts recovered from the plowzone overlying these features, based on the assumption that it included some artifacts from the features of interest. By including the plowzone, the 21 square meters of excavation over the Middle Woodland off-mound occupation encompassed 9564 liters of screened sediment; for comparison, 3180 liters were excavated in Unit 4, while 13,676 liters were excavated from in and around the Enclosure No. 1 ditch, in Units 6, 8, and 9.

Pottery

Of the 3651 ceramic artifacts recovered from Garden Creek in 2011 and 2012, only 544 came from off-monument features and plowzone deposits. The majority of these (n=323) were tempered with fine sand, supporting a Connestee phase attribution. The remaining sherds were tempered with coarse sand (n=109), crushed quartz (n=99), and grit (n=13); importantly, no tempers (or, for that matter, surface treatments) indicative of non-local manufactures were recovered. Surface treatments varied, although the exterior surfaces of 240 sherds were either eroded such that their stamping was indeterminate. When these categories are excluded, 57% of the remaining ceramic assemblage had plain surfaces (n=174), 14% were check stamped (n=44), 10% were cord marked, and brushed, rectilinear stamped, and simple stamped sherds each comprised 5-6% (n= 16, 20, and 18, respectively). This pattern contrasts sharply with the presumably contemporaneous ceramic assemblage from Mound No. 2, which exhibited a much more equal representation of plain, cord marked, check stamped, and brushed exterior surfaces (22%, 23%, 27%, and 19%, respectively). This pattern may point to a tendency to use relatively more decorated ceramic vessel in monumental contexts than in off-monument contexts, which in turn suggests that the mound may have been the locus of specialized activities like ritual feasting (Mills 2007).

Only 21 sherds from off-monument areas were rims. Because the majority of excavated contexts from off-monument areas consists of mixed fill, it is possible that some sherds are fragments of the same vessel, even if they are spatially separated across horizontal space or between vertical strata. This presents a challenge to calculating a minimum number of vessels. Thus, the rim data presented here are based on the raw number of rims of sufficient size to permit rim-specific analysis. Assuming that broadly similar post-depositional processes affected all off-monument deposits, the overall number of rims likely overestimates the total number of vessels represented in these assemblages, but relative, intra-assemblage comparisons are nevertheless possible. Six of the 21 available rim sherds exhibited distinctive Pisgah series collars, and are attributable to the same fairly ephemeral Pisgah-phase occupation that produced the Feature 4 midden deposit. Of the remaining rims, all of which were tempered with crushed quartz (i.e., Pigeon series) or fine sand (i.e., Connestee series), four were too small or eroded to determine vessel type, while the others were fragments of thin walled jars (n=2) or bowls (n=2), thick walled bowls (n=2), bowl/jars of indeterminate orifice diameter (n=2), and a large pot (n=1). Orifice diameters ranged from 9 cm to 24 cm (mean =16.14, median = 16) (Table 7.2).

#	Rim Profile	Orifice Dia. (cm)	Thickness (cm)	Temper	Ext. Surface	Vessel Form
1	everted	14	0.5	crsh. quartz	plain	thin walled bowl
2	everted	15	0.7	crsh. quartz	rect. stamped	thin walled bowl
3	everted	21	0.4	fine sand	plain	thin walled jar
4	everted	24	0.5	fine sand	plain	thin walled jar
5	everted	ind.	0.6	fine sand	cord marked	thin walled bowl/jar
6	everted	ind.	0.5	fine sand	eroded	thin walled bowl/jar
7	everted	ind.	0.7	fine sand	plain	jar/bowl
8	straight	16	0.6	crsh. quartz	rect. stamped	thin walled bowl
9	straight	9	0.7	crsh. quartz	plain	thick walled bowl
10	straight	ind.	0.9	fine sand	plain	thick walled bowl/jar
11	inverted	14	0.7	fine sand	plain	large pot
12	ind.	ind.	0.8	fine sand	ind.	ind.
13	ind.	ind.	0.8	fine sand	plain	ind.
14	ind.	ind.	0.7	fine sand	rect. stamped	ind.
15	ind.	ind.	0.7	crsh. quartz	cord marked	ind.

**ind. = indeterminate; crsh. quartz = crushed quartz; rect. stamped = rectilinear stamped.*

Table 7.2. Connestee and Pigeon rims from off-monument deposits.

These figures fall at the low end of the range of Connestee and Pigeon phase vessel sizes estimated by Keel (1976:250, 259), which largely derive from his analysis of the ceramic assemblage from Garden Creek Mound No. 2. While small off-monument sample sizes negate any firm conclusions, this pattern may indicate that cooking activities occurring in these areas involved smaller scale production and consumption than the mound-proper area, where communal feasting events may have taken place. The off-mound occupation, then, may have consisted of several households, families, or other corporate groups who sheltered and fed themselves, even as they participated in community-scale events associated with the monuments.

Lithics

The lithic assemblage from Middle Woodland, off-monument excavation areas at Garden Creek included debitage, utilized flakes and flake tools, and projectile points. Generally speaking, the quantity of lithic material from these units amounts to about a quarter of the entire lithic assemblage recovered by GCAP: 25% of the debitage, 23% of the projectile points, and 21% of the flake tools. However, the off-monument excavation areas of interest (i.e., excluding Unit 4) comprise 58% of the total volume excavated during the 2011-2012 excavation seasons. I attribute the disparity in the proportion of lithic finds and excavated volumes to "real" differences in activity areas across space and through time, as well as to post-depositional circumstances. For one thing, the relatively large quantity of lithic artifacts in the Enclosure No. 1 ditch likely represent in the spatially circumscribed evidence for craft production activities not conducted elsewhere on the site (see Chapter 6). Second, it seems likely that the relatively large quantity of chipped stone from Unit 4 represent the remains of Mississippian period activities and occupation, which probably involved more permanent settlement and intensive midden formation that the earlier Middle Woodland occupation. Finally, the depth of the ditch and other features in Units 6, 8, and 9 rendered their fills at least partially protected from plowing, which would have displaced some of their artifacts to the surface and made them available to casual collecting. In contrast, half of the off-monument features were quite shallow, and consequently much more deflated by post-depositional activity.

The debitage from the Middle Woodland occupation area consisted of 278 pieces of angular shatter (n=127), flake shatter (n=80), and proximal flakes (n=71) (following Andrefsky 2005; see Appendix 5). According to Sullivan and Rozen's (1985) typological framework, this assemblage can also be subdivided into four functionally significant categories: debris (n=127), flake fragments (n=80), complete flakes (n=61), and broken flakes (n=10). This classification system also considers the presence of cores and retouched pieces; the off-monument units yielded no cores, but 4 utilized flakes. As discussed in Appendix 5, thee relative frequency of artifacts in these categories can be compared to relative frequencies of different reduction activities described by Sullivan and Rozen (1985:763), including non-intensive core reduction, intensive core reduction, and tool manufacture.

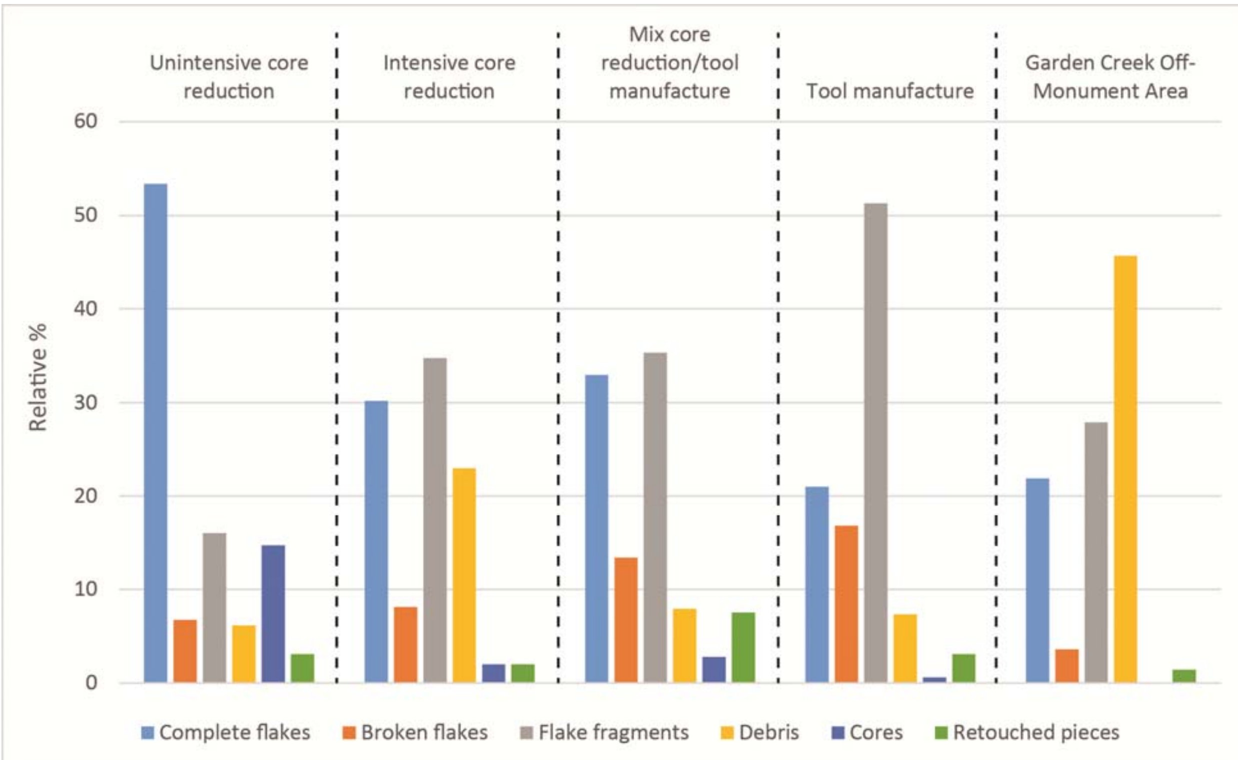


Figure 7.27. Relative frequency of debitage types by functional activity, from Sullivan and Rozen 1985 and Garden Creek off-monument area.

As shown in Figure 7.27, the amount of debris recovered from these contexts at Garden Creek dwarfs the amount and debris that Sullivan and Rozen associate with different sorts of core production and tool manufacture. That said, the relative amounts of complete flakes, broken flakes, and flake fragments at Garden Creek approximate the relative percentages of those categories for intensive core reduction and a mix of intensive core reduction and tool manufacture. The case for intensive core reduction is strengthened by the fact that most of the debris at Garden Creek was angular shatter. Cursory examination suggests that this assemblage largely resulted from bipolar reduction, which would have been an intensive technique for exhausting the functional utility of available lithic raw materials. Interestingly, the relative frequency of debitage types in the off-monument occupation at Garden Creek varies by raw material type, and specifically, the local availability of lithic raw materials (Figure 7.28). Debitage made of locally available raw materials is dominated by debris; this may indicate a preference for bipolar reduction of quartz and quartzite. In contrast, the relative percentages of debitage categories made of non-local chert (mostly Knox chert from Tennessee) are more balanced, and closely approximate the values exhibited by Sullivan and Rozen's "intensive core reduction" functional class. Generally speaking, these lines of evidence point to fairly exhaustive use of local and non-local raw materials in the off-mound occupation at Garden Creek; however people were occupying the site, they do not appear to have done so by bringing large amounts of lithic raw material to work with. This conclusion is not expected if (1) the communities at Garden Creek practiced some form of regularly mobility, providing them access to lithic outcrops; and/or (2) if the site was occupied on a non-permanent basis, perhaps for particular events associated with communal gatherings at the mound and earthworks.

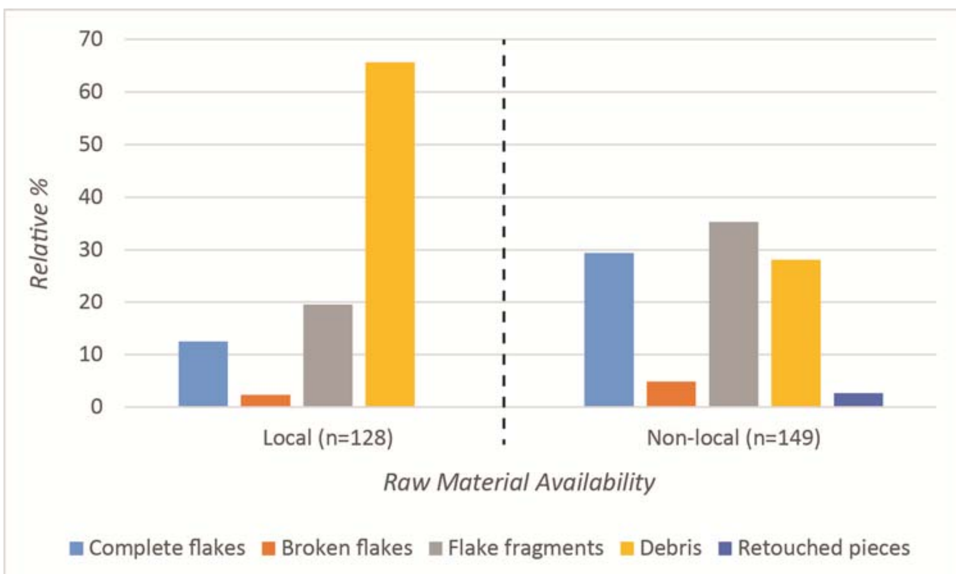


Figure 7.28. Relative frequency of debitage types by material availability.

Very few formal stone tools were recovered from the off-monument occupation area. In addition to the utilized flakes mentioned above, the only other flake tools in this assemblage were a small unifacial scraper and the blade fragment from Unit 3, mentioned above. The three projectile points from these contexts included two Middle Woodland chert points (one Haywood triangular and one Connestee triangular) and one probably Late Archaic triangular chert point with its base broken off. Despite this small quantity, these points do appear to be a good representation of the total projectile point assemblage generated by GCAP, which also included Connestee triangular points (n=4), Haywood triangular points (n=1), and Late Archaic points (n=3, including 2 Bradley spike points), as well as one Late Woodland/Mississippian pentagonal corner-notched point and three unidentifiable point fragments (Figure 7.29).

Figure 7.29. Representative projectile points from Garden Creek. Clockwise from top-left: Late Archaic; unknown; Pentagonal; Haywood triangular; Connestee triangular.

Similar correspondence is apparent in the flake tool assemblages from Middle Woodland off-monument units (n=6) and Unit 4 (n=8): both are dominated by utilized flakes, comprising 60% and 75% of their assemblages, respectively. The latter also yielded a single unmodified blade. The

12 identifiable tools from the Enclosure No. 1 units present s slightly different picture; only half were utilized blades, while the remainder included a scraper, a drill, 2 unmodified blades, and 2 utilized blades. While the small sample sizes certainly merit caution, this pattern may be at least provisionally interpreted as evidence that activities occurring in and around Enclosure No. 1 – i.e., mica and crystal quartz craft production – were unique relative to other on site activities. Few firm conclusions can be drawn about activities in these latter areas based on the lithic assemblage alone, although as I elaborate in the next chapter, the overall lack of expedient tools is a strike against this occupation serving as a permanent village settlement (Cowan 2006).

Macrobotanical Remains

Though small, the macrobotanical assemblage (processed and analyzed as described in Appendix 6) from Garden Creek offers important clues to the nature and timing of the site's occupation. The entire assemblage under consideration here comes from flotation samples processed and analyzed at UNC-RLA by Dr. Margie Scarry and students following the 2011-2012 field seasons. These samples, in turn, originated from sub-plowzone feature contexts: 59.5 liters of fill came from Middle Woodland, off-monument features; 54.5 liters from Pisgah phase Feature 4; and 163 liters from the Enclosure No. 1 ditch and from immediately associated features (i.e., a hearth, refuse pit, and mica pit inside the enclosure). Overall, the identifiable plant species from Middle Woodland features indicate that the site was most intensive occupied in the late summer/fall, although a few plants suggest some spring/early summer/summer occupation as well.

Some differences become apparent, however, when comparisons are made between monument and off-monument context. In addition to yielding a higher number of plant remains than off-monument features, presumably in large part because of the greater volume sampled, the diversity of plant remains in the ditch and associated features was also relatively high (Table 7.3). Many species overlapped between these contexts, but among the Middle Woodland features, hazel, maygrass, ragweed, squash, grape, and several miscellaneous species were unique to the Enclosure No. 1 vicinity. Besides sampling bias (which admittedly may have played a role) one explanation for this pattern may (or may not) be a difference in the sorts of foodstuffs processed and consumed in monumental and off-monumental areas. For example, in a study of the macrobotanical remains from the Walling site, Scarry suggested high edible plant diversity as possible evidence for feasting. However, a similarly diverse pattern at Kolomoki has been described as "simply a product of a mixed economy (Pluckhahn, Compton, and Bonhage-Freund 2010:274). Vanderwarker and colleagues have also noted that pre-Columbian feasting in the Southeast may have involved larger quantities of the same types of foods that were eaten on a day-to-day basis, rather than any particularly unique or special purpose plants or animals. In short, the evidence macrobotanical evidence from the Garden Creek enclosure area is intriguing, but until we can better enumerate our macrobotanical expectations of feasting deposits during the Middle Woodland, their interpretive potential is limited.

Plant Type	Middle Woodland Off-Monument	Enclosure Ditch & Associated Features
Nuts	Hickory Acorn Walnut	Hickory Acorn Walnut Hazel
Starchy and oily seeds	Chenopod Chenopod/amaranth Amaranth	Chenopod Amaranth Maygrass Ragweed
Crops	Maize (cupule)	Maize (kernel) Squash
Fruit	Bramble	Bramble Grape
Miscellaneous	Catchfly Pinecone Spurge Pitch Carnation family Grass family Sedge family Un-ID seeds	Copperleaf Bedstraw Wood sorrel Purslane Pinecone Pitch Grass family Un-ID seed, bark, cone

Table 7.3. Macrobotanical remains from Middle Woodland off-monument features.

A more straight forward distinction can be pinpointed between these Middle Woodland contexts discussed above and the plant assemblage from Feature 4. The latter included not only acorn, hickory, grass, pitch, and unidentified seeds, but also squash, tobacco, a maize cupule, and 32 maize kernels. This comparatively more horticultural assemblage is not unexpected for a midden dating to the 14th or 15th centuries A.D. While maize is known in very small quantities from some Middle Woodland sites (including Middle Woodland contexts at Garden Creek, see above), it was not heavily adopted in the Appalachian Summit until the Pisgah phase; its presence in large quantities in Feature 4 make it difficult to assign this fill to any earlier period.

Chapter Summary

Using multiple lines of evidence, this chapter has sought to shed light on the long-acknowledged but poorly understood non-monumental component at Garden Creek. For better or worse, in keeping with an enduring tendency of archaeologists to focus on mounds and other monuments, we have long known about the site's mounds, and we have recently investigated its geometric earthwork enclosures. But what happened around these earthen edifices? Who and how many people lived there, and where did they come from? Did they live there permanently, or were they gathering there from time to time? What were they up to when they off the mound or outside the enclosure? How do activities that took in occupation areas and monumental spaces relate to each other? This chapter can by no means offer a definitive answer to these questions, but it can propose some preliminary conclusions, as well as directions for future research.

At the largest and coarsest spatial scale, the results of geophysical survey indicate the horizontal extent of Middle Woodland occupation at Garden Creek may be much larger than previous investigators have surmised. Subsurface archaeological deposits extend across some 15 ha surrounding the mound and earthworks, potentially comprising one of the largest known sites in the pre-Columbian Appalachian Summit. However, as best we can tell on the basis of MS, magnetometer, and GPR survey, these archaeological deposits are discontinuous. Some areas, such as that around Enclosure No. 2, show dense clusters of geophysical anomalies, with the caveat that some of these may be the result of disturbances to singular archaeological features. Other areas, such as a potential plaza between Mounds No. 2 and 3, produced many fewer anomalies, signaling comparatively less human landscape modification. Still other areas, particularly south of the mounds, produced remarkably high MS values, indicating that these areas may have supported fairly intense – though, at this point, un-confirmed and un-dated – occupation. Where individual anomalies are visible, no immediately apparent spatial organization could be detected, beyond the general clustering of features around, over, and under Enclosure No. 1 and Mound No. 4.

The excavation of several off-monument anomalies revealed the presence of several features, many of which are likely residues of food processing, consumption, and storage. The size of some of these features suggest that they may have been used in fairly large/communal-scale activities, while others appear to be commensurate with food-related activities conducted among families, households, or other small corporate groups. The lack of clear spatial organization among these features, combined with the fact that neither they nor the overlying plowzone yielded especially large quantities of artifacts, suggest to me that these are not the remains of an established, permanent village occupation, which presumably would have produced a much denser midden. Rather, it seems more likely that people were gathering here for particular events probably associated with the construction of the mounds and earthworks and their use in certain ritual cycles.

Macrobotanical data indicate that such gatherings may have taken place in the late summer/early fall, but the potential for storing and using nuts long after harvest, as well as the minority presence of late spring/early summer/summer plants means that such events may have occurred throughout the warmer months of the year in general. Based on extant analyses, there is no evidence in the form of ceramic technological styles that anyone other than local communities contributed to the off-monument assemblage. Similarly, the lithic assemblage reflects patterns of local and non-local (i.e., east Tennessee) raw material procurement that were practiced by local Appalachian Summit communities for centuries before the occupation of Garden Creek (see Chapter 2). A few differences were noted between the ceramic and lithic assemblages from the mound, enclosures, and off-monument areas, such as the presence of larger vessels with special surface treatments in Mound No. 2, and the concentration of crystal quartz debitage in the Enclosure No. 1 ditch. These findings bolster the idea that special (possibly ritual) activities, like feasting and craft production were occurring at and immediately around the monuments, whereas the more general vicinity hosted the activities of everyday life, albeit on a temporary/eventful basis.

With the exception of Unit 4, which dated to the Pisgah phase, radiocarbon dates and artifact assemblages from tested off-mound occupation areas reflect occupation during the late Pigeon phase and early Connestee phase, roughly cal A.D. 150-378 (2-sigma modeled; see Table 7.1). These dates overlap with obtained from samples recovered under and on top of Garden Creek Mound No. 2, which maximally range from cal A.D. 128-387 (2-sigma modeled; see Table 5.3). Thus, temporally speaking, the excavated data from off-monument areas at Garden Creek are contemporaneous with the construction and use of Garden Creek Mound No. 2. No off-monument dates overlapped with the slightly earlier infilling of the Enclosure No. 1 ditch; at present, it is unclear if this pattern resulted entirely from sampling, or if the off-monument area was indeed un-occupied during the Pigeon phase.

Certainly, these issues can be resolved through future excavations of other off-monument areas of the site, especially at the estimated edges of the occupation area and immediately around Enclosure No. 2 and Mound No. 4. Such efforts could not only further characterize the nature of activities in the off-monument occupation area, but also determine their timing. Additional radiocarbon dates could confirm or deny the contemporaneity of different archaeological contexts at the site, and the potential recovery of faunal remains, which to date have been poorly represented at Garden Creek, but have been known to preserve in some unique feature contexts at nearby sites like Biltmore (Kimball, Whyte, and Crites 2010), could aid in the determination of seasonality. Extant ceramic collections, meanwhile, could be further examined to reveal subtle technological stylistic differences indicative of different ceramics communities of practice (Wright 2013), and the lithic debitage may be further analyzed to assess the role of bipolar reduction, and its implications for resource procurement and mobility. For now, however, we can draw the following preliminary conclusions about the Middle Woodland occupation at Garden Creek: between cal A.D. 150-400, the landform was extensively but intermittently occupied by members of local, Appalachian Summit communities. These gatherings occurred in the warm months of the year, and appear to have been associated with platform mound construction and use. The activities that took place away from the mound appear to have focused on the needs (i.e., foodways) of individual families or households, while those that took place near or on top of the mounds may reflect larger scale communal feasting and ceremonialism. In the next chapter, I consider these patterns in comparison to other Middle Woodland occupations in the Appalachian Summit, and in comparison to occupation areas directly associated with Kolomoki-pattern mounds in the Southeast and small geometric enclosures in the Midwest, in order to better understand how the Garden Creek occupation reflects local traditions and extra-local interactions.

CHAPTER 8

COMPARING GARDEN CREEK AND ITS CONTEMPORARIES

So far, the bulk of this study has focused squarely on the Appalachian Summit Middle Woodland (Chapter 2), and specifically, on the Garden Creek site (Chapters 3, 5-7). An examination of existing collections, geophysical survey and targeted excavations, and analyses of the resulting assemblages have revealed an archaeological record of monumentality and occupation representative of a complex, site-specific life history. However, this localized material record is also a potential testimony to broader historical developments that subsumed major portions of eastern North America during the Middle Woodland period, from the Hopewell Interaction Sphere to ceremonial/ or exchange networks extending across the southern piedmont and coastal plain. In Chapter 6, I argued that mica and crystal quartz debris associated with Enclosure No. 1 point to more intensive relationships between the Appalachian Summit and the Ohio Hopewell Core than have previously been recognized.

The specific scenarios that might account for the presence of ritualized, Hopewellian craft production at Garden Creek are not known, but they may have involved on-site ritual coordination by visitors from the Hopewell core or travel by Appalachian individuals to the Ohio Valley, where they would have made mica and crystal quartz offerings and obtained ritual knowledge necessary to conduct Hopewellian rituals back home. To better examine these possibilities, as well as to consider the links between the Appalachian Summit and the greater Southeast, this chapter explicitly examines interregional patterns in the Middle Woodland built environment. My focus on this dataset, which includes not only monumental architecture but also the remains of off-monument occupations, complements existing perspectives on Middle Woodland interaction that most often emphasize similarities and differences in portable material culture assemblages.

My interregional comparisons of the built environment draw heavily on the concept of architectural grammar, summarized as the rules that govern the design and association of elements within the built environment and its surroundings (Connolly 1998). In their study of the architectural grammar of Mississippian towns, R. Barry Lewis, Charles Stout, and Cameron Wesson (1998:4) unpacked the linguistic analogy implied by this definition:

> Just as language is imposed order on selected sounds, the grammar of human construction and appropriation is ordered by design intents, functional limits, and contexts. Like language, which takes as elements those vocalizations that can be readily recognized and generated by humans, architecture arranged such elements as visual images, colors, shapes, materials, textures, and motives in terms that are culturally meaningful and interactive with the environment.

Thus, by identifying recurrent patterns of architectural design across spatial or temporal dimensions, archaeologists have an indirect means of delineating economic, political, social, or cosmological complexes of cultural connection or meaning (Lewis, Stout, and Wesson 1998:2-3). As these authors argue for Mississippian societies, and as I suggest for the Middle Woodland period, such architectural canons and their associated meanings can be executed and experienced among culturally and linguistically diverse communities when they are firmly grounded in ritual behaviors and constructed following a ritualized order. That said, architectural expressions may also be shaped by functional concerns and historical contingencies playing out at smaller geographic scales, resulting in subtle but potentially significant deviations from widely shared architectural principles. In this regard, architectural grammar analysis is well suited to assessing the relative contributions of extra-local interactions and local traditions to the built environment, especially when that built environment includes monumental constructions whose design and use was almost certainly ritually prescribed.

For analytical purposes, most aspects of architectural grammar can be subdivided into two categories. The first category of attributes are relevant to space syntax (Hillier and Hanson 1984), or the "delimitation of social units…which permits particular relationships of accessibility and visibility among these units, creating probable movement and encounter patterns" among those who inhabit, visit, or use a certain space (Fisher 2009:440). Such attributes include a space's geometric characteristics (size, shape, and by extension its capacity), its walls or boundaries, and its entrances and accessibility (Fisher 2009; Rapoport 1982). Meanwhile, the second category of attributes focuses less on architectural typology and topography and more on architectural meaning and symbolism. In the case of earthen monuments, for example, these include the types and association of architectural elements, the textures and colors of construction materials, architectural alignments with astronomical or geographic referents, etc. As discussed below, patterns among such attributes require interpretation using ethnographic analogies, rather than a straightforward comparison of the areas of mound summits, the width of enclosure gateways, etc. Despite this methodological distinction, these attribute sets provide complementary views of the sorts of human relationships that are inherent in the monumental built environment, addressing the dynamics and both "*space*, the physicality of a context…[and] *place*, the socially constructed and meaningful context of human interaction and experience" (Fisher 2009:442).

Whether materialized by monument morphology, building material, or associated artifact assemblages, the co-occurrence of certain spatial or symbolic components of architectural ritual grammar across time or space implies some sort of connection between the groups who designed and erected these monuments. For the purposes of my discussion of monumental architectural grammar (below), I refer to these shared characteristics as "monumental memes," with a greater emphasis on the colloquial implications of the term rather than its scholarly implications. As defined by Richard Dawkins (1976), memes are units of cultural transmission that are analogous to genes in that they are subject to Darwinian processes of natural selection as they are spread through imitation. For some, "the meme-gene analogy…is…ideologically appealing; on the one hand, it holds out the tantalizing prospect of a universal theory of cultural evolution; on the other, it evades genetic determinism by offering a parallel cultural process with interests of its own" (Jeffreys 2000:227). However, critiques of mimetic approaches to culture have been extensive (e.g., Atran 2001; Henrich, Boyd, and Richerson 2008). Several scholars have pointed out that the theory lacks a "plausible model of replication" (Jeffreys 2000: 235), since cultural transmission through imitation is a chancy proposition at best, and rarely (if ever) involves discrete units that can be understood without some context (Heinrich et al. 2008: 121).

Therefore, this chapter does not make reference to the Darwinian implications of mimetic theory and instead emphasizes that certain ideas, practices, etc. nevertheless are communicated and transmitted through imitation and modification. It is here that I find the analogy of the internet meme more useful. Most internet memes are humorous combinations of photos, video, and text (e.g., misspelled captions of photos of cats; tongue-in-cheek revisions of text and photos in motivational posters, etc.) that spread among internet users through a variety of web-based communication platforms (email, blogs, social networking sites, search engines, etc.). Often, certain aspects of the internet meme will be modified, though the spirit of the joke remains the same, at least for a certain length of time; for example, one picture might get a variety of captions, or one caption might be applied to a variety of pictures.

This brief description highlights three aspects of internet memes that make it a useful analogy for shared aspects of ritual architectural grammar. First, internet memes (as well as memes in the Dawkinsian sense), are spread through communication. As I elaborate below, several different forms of communication or mechanisms of interaction might be implicated by the spread of monumental memes, depending on their distribution and their consistency across time and space. Second, internet memes (perhaps more obviously than heavily theorized meme concepts) often involve some modification that does not, at least in the short term, affect the recognizability of the meme, and that may even serve to perpetuate the meme or joke at hand. In other words, the reproduction of internet memes involves both replication, recombination, and alteration – processes that may also characterize the dispersal of monumental memes. Third, internet memes (rather unlike Dawkinsian memes, at least as applied by some scholars; e.g., Blackmore 1999) are impossible to comprehend as discrete entities, with no reference to contextualizing cultural dynamics. For the joke behind an internet meme to make sense, the producers and consumers of the meme must share, to a certain extent, cultural frameworks for understanding the subjects of the relevant photos or videos, not the mention the same language deployed in captions or other text. Similarly, a certain monumental meme will only be adopted and enacted if it makes sense within a wider cultural milieu, which in itself may be inferred archaeologically through patterns of association between a variety of architectural and artifactual remains. Key, shared principles of ideology and cosmology create a milieu in which emulation, borrowing, and copying are expected.

Certainly, by eschewing overt references to Darwinian cultural evolution, the internet meme analogy described above provides less of a robust theoretical framework than an entry point into the study of widely shared, though potentially variable and necessarily contextualized, dimensions of the Middle Woodland archaeological record. To explore the utility of the concept, I apply it to my interregional comparisons of two types of Middle Woodland monuments documented at Garden Creek: small geometric enclosures and platform mounds. Different patterns of variability in monumental memes specific to these monument categories indicate that different forms of interaction between the Appalachian Summit and the Hopewellian Midwest, on the one hand, and Kolomoki-pattern sites in the Southeast, on the other. These inferences are provisionally bolstered by comparative consideration of the occupation area at Garden Creek as it relates diachronically to the site's monumental components. Combined with the material culture evidence presented in earlier chapters, this synthetic analysis of architectural grammar at and beyond Garden Creek will allow for a thorough, diachronic account of Middle Woodland culture contact in the Appalachian Summit, with implications for our understanding of pre-Columbian hybridity.

Midwestern Comparisons: Adena-Hopewell Small Geometric Enclosures

A cursory examination of the architecture of Enclosure No. 1 (presented in Chapter 6) underscores its remarkable similarity to a category of monuments common in the Ohio Valley glossed here as small geometric enclosures. Sometimes referred to as the Mt. Horeb tradition (Byers 2004; DeBoer 1997) or Adena sacred circles (Webb and Snow 1945), these earthworks are much smaller than the massive ditches and embankments that serve to demarcate monumental sites around the Scioto-Paint Creek confluence, and as a result, they have likely suffered far greater damage from erosion and plowing. Nevertheless, they are noted with some frequency on early maps of the greater Ohio Valley (Rafinesque 1820; Squier and Davis 1848), both in association with and away from larger earthwork complexes. Though historically associated with the Early Woodland period and the Adena complex, "It is now recognized that the Mt. Horeb tradition not only largely defines the later Early Woodland period but also extends into the Middle Woodland in limited parts of this region [the Central Ohio Valley], terminating around A.D. 250" (Byers 2004:28–29).

Small geometric enclosures consist of several architectural elements or "morphemes" (sensu Moore 1996:13) that can be identified, measured, and compared between monuments. Connolly (1998; Connolly and Lepper 2004), for example, has identified several architectural morphemes at Fort Ancient that are equally applicable to other smaller enclosures, including geometric shape, gateway placement, alignments, spatial relationships with other architectural components of a site, and placement in the wider landscape. Architectural morphemes have also been identified at lower elevation earthen enclosures in the Ohio Valley. In many cases, they are the same as those proposed for hilltop enclosures (e.g., G. Wright 1990), though some attributes appear to be unique to structures located on river or stream terraces. For example, many of this latter type are precisely geometric, and can be sub-classified as circular or rectilinear in plan-view, or as complex combinations of multiple geometric forms. Martin Byers (2004: 25-26) makes a further distinction based on the presence and location of a ditch in association with an embankment: whether a continuous ditch surrounds the embankment (an SL-profile), the embankment surrounds a continuous ditch (an SR-profile), or no continuous ditch exists at all (a K-profile). It has also been suggested that certain architectural morphemes at geometric enclosures may be related to the colors and inter-relationships of different building materials (discussed below), or to the types, colors, and placements of artifacts (Buikstra, Charles, and Rakita 1998) or the remains of activities (e.g., fire; (Greber 2006) associated with these monuments.

Using published and unpublished literature from the Middle Ohio Valley, Richard Jefferies, George Milner, and Edward Henry (2013:103–104) recently identified 259 of these geometric enclosures. By focusing on several of the morphemes discussed above, they extrapolated the general characteristics of this type of monument. Ranging from 0.01 to 1.35 ha in the amount of space enclosed, most of the earthworks in their sample were circular, though arcs, ovals, and rectangles were also present. Openings or gateways in the earthworks were also common – usually one opening per enclosure, most often facing east. Finally, 21.7% of circular embankments were observed to enclose mounds, the sizes of which varied considerably from small piles of earth to the massive Conus of Marietta, Ohio.

For this chapter, I aimed to expand these authors' original study not only by examining more morphemes, but also by expanding their survey universe southward, in order to encompass the Appalachian Summit and the enclosures at Garden Creek. I assembled a database of known small geometric enclosures across the greater Ohio River Valley using site maps and descriptions produced by Squier and Davis in the early 1800s (1848) and published excavation and geophysical survey data (Blazier, Freter, and Abrams 2005; Burks 2014; Fenton and Jeffries 1991; Hemmings 1984; Henry 2011; Jefferies, Milner, and Henry 2013; Webb 1941). In keeping with previous inventories (Byers 2004; Jefferies et al. 2013; G. Wright 1990), I distinguish the present category of monuments under investigation – *small* enclosures – from their much larger counterparts, and for standardization's sake, I limit my analysis to earthworks that measure less than 100 m in diameter. The sample used here is by no means a comprehensive list of small geometric enclosures in the region; if nothing else, there are certainly many more such earthworks that remain to be discovered via geophysical survey. Nevertheless, the present database serves as a useful starting point for comparing the enclosures at Garden Creek to their midwestern counterparts. To the extent that was possible given the sources available, 16 different attributes (several of which are included in Table 8.1) were recorded for each enclosure included in the sample, relating to different aspects of the enclosures' size, shape, orientation, associations with artifacts and other monuments, etc. With only a few exceptions (Henry 2011; Webb 1941; Fenton and Jefferies 1991), most of these small enclosures have not been targeted for excavation, or if they were, stratigraphic data were rarely recorded to modern standards. Lacking better data, my comparative discussion of the stratigraphy of the Garden Creek enclosures is thus limited to a few general observations with reference to large, more extensively investigated earthworks in southern Ohio.

As others have noted (Jefferies et al. 2013), most small geometric enclosures included in the published literature are circular in plan-view. Of the 89 Ohio Valley enclosures in the current sample, 67 were circles, 12 were small circles connected to straight-line embankments, 2 were quatrefoils, 5 were rectangles with rounded corners (squircles), 2 were ellipses, and 1 combined circular and rectangular attributes (i.e., a circular embankment around a square ditch). So, while there certainly would have been an Ohio Valley precedent for "squircular" earthworks like those at Garden Creek, these were a decided minority. However, it is worth noting that additional geophysical prospection over presumably circular enclosures may reveal that at least some of them were originally sub-rectangular in shape (e.g., Jefferies et al. 2013). In fact, several recently identified "squircles" in the Ohio Valley bear a striking resemblance to those at Garden Creek (Figure 8.1).

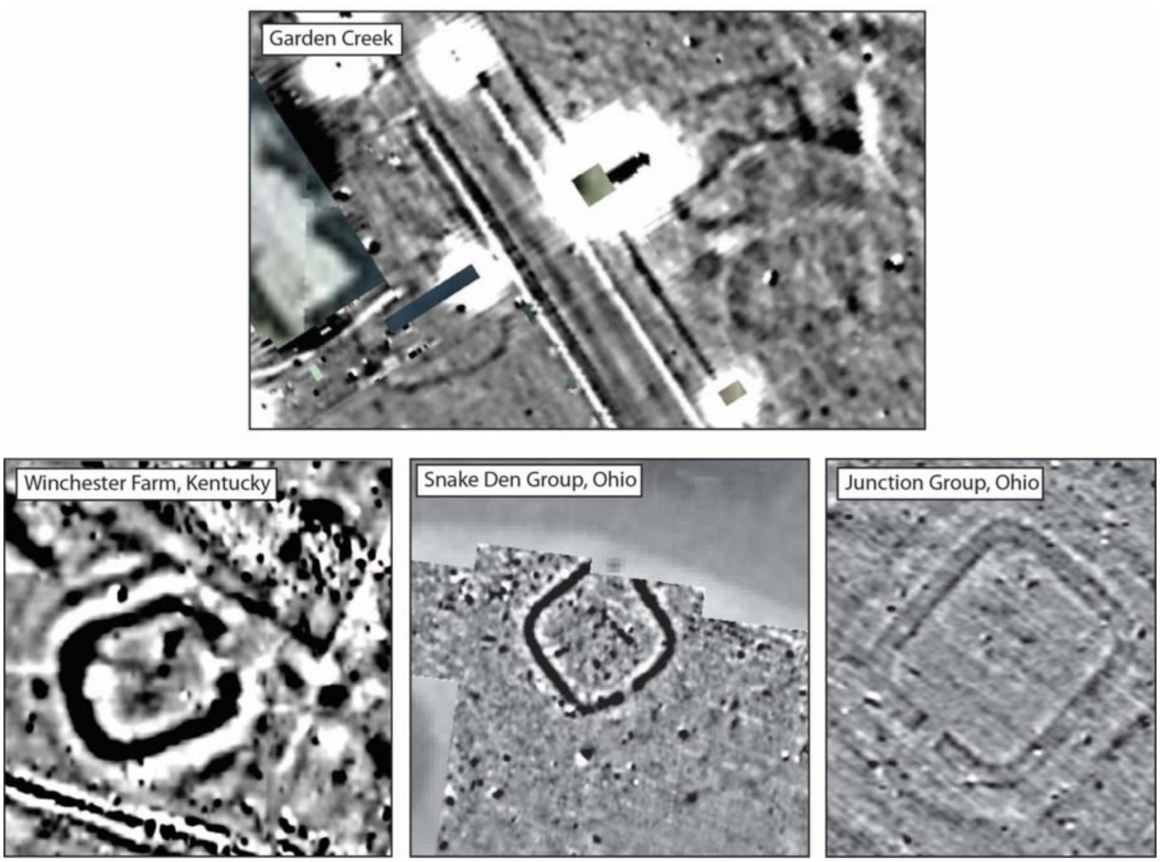


Figure 8.1. "Squircles" in the Appalachian Summit (top) and the Middle Ohio Valley (bottom) (Jefferies, Milner, and Henry 2013, left; Burks 2014, center; Burks 2006, right).

Enclosure	State	Topo. location	Shape	Diam (m)	Area (m²)	Embank -ment?	Emb. Width (m)	Ditch?	Ditch location	Ditch depth (m)	Gateway?	Gateway direction (N=0)	Gateway width (m)	Mounds?
Garden Creek-1	NC	terrace	squircle	19x17	230	no	0	yes	n/a	1.2	yes	45	4	Yes
Garden Creek-2	NC	terrace	squircle	19x17	230	no	0	yes	n/a	-	yes	225	4	yes
Mt. Horeb	KY	terrace	circle	32	804	yes	14	yes	interior	-	yes	270	10	yes
Winchester Farm	KY	terrace	squircle	38x35	725	yes		yes	interior	-	yes	45	10	yes
Lebus Circle	KY	floodplain	circle	84	4072	yes	8	yes	interior	2	yes	90	10	-
Camargo (15Mm30)	KY	terrace	circle	50	1850	yes	-	yes	interior	0.5	yes	90	-	yes
Camargo (15Mm31)	KY	terrace	square	45	380	yes	-	-	-	-	-	-	-	yes
High Bank-1	OH	terrace	circle	76	3058	yes	-	yes	interior	-	yes	200	5	no
High Bank-2	OH	terrace	circle plus	91	4070	yes	-	yes	interior	-	yes	215	12	no
High Bank-3	OH	terrace	circle plus	91	4070	yes	-	yes	interior	-	yes	315	24	no
High Bank-4	OH	terrace	circle plus	91	4070	yes	-	yes	interior	-	yes	125	10	no
High Bank-SC1	OH	terrace	circle	22	163	yes	-	no	-	-	no	-	-	no
High Bank-SC2	OH	terrace	circle	19	113	yes	-	no	-	-	no	-	-	no
High Bank-SC3	OH	terrace	circle plus	24	452	yes	-	no	-	-	no	-	-	no
High Bank-SC4	OH	terrace	circle	15	72	yes	-	no	-	-	no	-	-	no
High Bank-SC5	OH	terrace	circle	15	72	yes	-	no	-	-	no	-	-	no
High Bank-SC6	OH	terrace	circle	15	72	yes	-	no	-	-	no	-	-	no
High Bank-SC7	OH	terrace	circle	15	72	yes	-	no	-	-	no	-	-	no
High Bank-SC8	OH	terrace	circle	15	72	yes	-	no	-	-	no	-	-	no
High Bank-SC9	OH	terrace	circle	15	72	yes	-	no	-	-	no	-	-	no

Table 8.1. Enclosures and selected architectural morphemes used in comparative analysis.

Enclosure	State	Topo. location	Shape	Diam (m)	Area (m^2)	Embank -ment?	Emb. Width (m)	Ditch?	Ditch location	Ditch depth (m)	Gateway?	Gateway direction (N=0)	Gateway width (m)	Mounds?
Hopeton-1	OH	terrace	circle	61	1855	yes	-	yes	interior	1	yes	225	5	no
Hopeton-2	OH	terrace	circle	76	2547	yes	12	yes	both	1	yes	250	5	no
Hopeton-3	OH	upland	circle	108	6681	yes	-	yes	interior	-	yes	340	9	no
Hopeton-4	OH	terrace	circle	91	4489	yes	-	no	-	-	yes	85	5	no
Hopeton-5	OH	terrace	circle plus	38	573	yes	-	no	-	-	yes	135	5	no
HopetonSC-1	OH	upland	circle	27	281	yes	-	no	-	-	no	-	-	-
Cedar Bank-1	OH	terrace	circle	76	2208	yes	-	yes	both	-	yes	180	9	yes
Mound City-1	OH	terrace	circle	76	2252	yes	-	yes	interior	-	yes	100	5	no
Mound City-SC1	OH	terrace	circle	28	91	yes	-	no	-	-	no	-	-	-
Liberty-SC1	OH	terrace	circle	19	123	yes	-	no	-	-	no	-	-	-
Seip-1	OH	terrace	circle	76	2827	yes	-	no	-	-	yes	250	10	no
Junction-1	OH	terrace	circle	64	951	yes	4.6	yes	interior	-	yes	60	5	no
Junction-2	OH	terrace	circle	64	951	yes	4.6	yes	interior	-	yes	80	5	no
Junction-3	OH	terrace	quatref oil	37	415	yes	4.6	yes	interior	-	yes	70	3	no
Junction-4	OH	terrace	circle	37	279	yes	4.6	yes	interior	-	yes	15	3	no
Junction-5	OH	terrace	squircle	28	400	yes	4.6	yes	interior	-	yes	10	3	no
Junction-6	OH	terrace	squircle	76	2430	yes	4.6	yes	interior	-	yes	180	5	no
Blackwater-1	OH	terrace	circle	46	467	yes	-	yes	interior	-	yes	315	4	no
Blackwater-2	OH	terrace	circle	31	314	yes	-	yes	interior	-	yes	165	4	no
Blackwater-3	OH	terrace	circle	18	117	yes	-	yes	interior	-	yes	180	3	no
Dunlaps Works-1	OH	terrace	circle plus	76	3217	yes	-	no	-	-	yes	200	12	yes
Dunlaps Works-1	OH	terrace	circle	24	181	yes	-	yes	interior	-	yes	75	5	yes
The Plains-1	OH	terrace	circle	63	314			yes	interior	-	-	-	-	-
The Plains-2 (A)	OH	terrace	circle	64	1232	yes	-	yes	interior	1.8	yes	-	-	-
The Plains-3 (B)	OH	terrace	circle	46	-	-	-	yes	interior	-	yes	-	-	-
The Plains-4 (C)	OH	terrace	circle	40	-	-	-	yes	interior	-	yes	-	-	-

Table 8.1. Enclosures and selected architectural morphemes used in comparative analysis (con't).

Enclosure	State	Topo. location	Shape	Diam (m)	Area (m²)	Embank -ment?	Emb. Width (m)	Ditch?	Ditch location	Ditch depth (m)	Gateway?	Gateway direction (N=0)	Gateway width (m)	Mounds?
The Plains-5 (D)	OH	terrace	circle	34	-	-	-	yes	interior	-	yes	-	-	-
The Plains-6 (E)	OH	terrace	circle	34	-	-	-	yes	interior	-	yes	-	-	-
The Plains-7 (F)	OH	terrace	circle	40	-	-	-	yes	interior	-	yes	-	-	-
The Plains-8 (H)	OH	terrace	circle	40	-	-	-	yes	interior	-	yes	-	-	-
The Plains-9	OH	terrace	circle	-	-	-	-	-	-	-	-	-	-	-
Seal-1	OH	terrace	square and circle	91	1444	yes	18	yes	interior	0.9	yes	90	6	no
Seal-2	OH	terrace	circle plus	30	318	yes	-	yes	interior	-	yes	290	5	no
Seal-3	OH	terrace	ellipse	58x31	329	yes	-	yes	interior	-	yes	180	5	no
Seal-4	OH	terrace	quatref oil	71x56	1297	yes	-	no	-	-	no	-	-	-
Newark-1	OH	terrace	circle plus	89	1195	yes	-	both	interior	-	yes	180	16	no
Newark-2	OH	terrace	circle	62	1195	yes	-	no	-	-	yes	80	8	no
Newark-3	OH	terrace	circle	94	2341	yes	-	both	interior	-	yes	60	16	no
Newark-4	OH	terrace	circle	94	2341	yes	-	both	interior	-	yes	115	16	yes
Newark-5	OH	terrace	circle plus	94	2341	yes	-	both	interior	-	yes	35	8	no
Newark-SC1	OH	terrace	circle	40	585	yes	-	no	-	-	no	-	-	-
Newark-SC2	OH	terrace	circle	40	585	yes	-	no	-	-	no	-	-	-
Newark-SC3	OH	terrace	circle	47	585	yes	-	no	-	-	no	-	-	-
Newark-SC4	OH	terrace	circle	40	585	yes	-	no	-	-	no	-	-	-
Newark-SC5	OH	terrace	circle	40	585	yes	-	no	-	-	no	-	-	-
Newark-SC6	OH	terrace	circle	40	585	yes	-	no	-	-	no	-	-	-
Newark-SC7	OH	terrace	circle	47	585	yes	-	no	-	-	no	-	-	-
Newark-SC8	OH	terrace	circle	47	585	yes	-	no	-	-	no	-	-	-
Marietta-1	Oh	terrace	circle	65	-	yes	-	yes	interior	-	yes	315	19	yes
PortsmouthA -1	OH	upland	squircle	31x34	567	yes	-	yes	interior	1.8	yes	70	10	no

Table 8.1. Enclosures and selected architectural morphemes used in comparative analysis (con't).

Enclosure	State	Topo. location	Shape	Diam (m)	Area (m²)	Embank -ment?	Emb. Width (m)	Ditch?	Ditch location	Ditch depth (m)	Gateway?	Gateway direction (N=0)	Gateway width (m)	Mounds?
PortsmouthA -SC1	OH	terrace	circle	34	410	yes	-	no	-	-	no	-	-	-
PortsmouthB -1	OH	terrace	circle	61	1662	yes	-	no	-	-	yes	180	7	no
PortsmouthB -2	OH	terrace	circle	46	730	yes	-	no	-	-	yes	90	7	no
PortsmouthB -3	OH	terrace	circle	53	1140	yes	-	no	-	-	yes	90	7	no
PortsmouthB -3	OH	terrace	circle	38	560	yes	-	no	-	-	yes	0	7	no
PortsmouthB -SC1	OH	terrace	circle	23	182	yes	-	no	-	-	no	-	-	no
PortsmouthD -1	KY	terrace	circle	44	591	yes	9	yes	interior	1.8	yes	180	-	no
Worthington-1	OH	terrace	circle	38	208	yes	-	yes	interior	-	yes	45	5.5	no
Worthington-2	OH	terrace	circle	43	380	yes		yes	interior	-	yes	-	-	no
Bourneville	OH	terrace	circle	62	2124	yes	-	no	-	-	yes	90	5	no
Butler-1	OH	terrace	ellipse	33x48	716	yes	-	no	-	-	yes	115	-	no
Hill-1	OH	upland	circle	76	2333	yes	-	no	-	-	yes	90	-	no
Hill-2	OH	upland	circle	76	2333	yes	-	no	-	-	yes	270	-	no
Hill-3	OH	upland	circle	46	707	yes	-	no	-	-	yes	15	-	no
Chillicothe-1	OH	terrace	circle	76	2076	yes	-	yes	interior	-	yes	180	5	no
Chillicothe-2	OH	terrace	circle	76	2076	yes	-	yes	interior	-	yes	90	5	no
Chillicothe-3	OH	terrace	circle	76	2076	yes	-	yes	interior	-	yes	90	5	no
Chillicothe-4	OH	terrace	circle	76	2076	yes	-	yes	interior	-	yes	90	5	no
Bainbridge-2	OH	terrace	circle plus	61	2376	yes	-	no	-	-	yes	160	14	no
Mount Sterling	KY	terrace	circle	107	4852	yes	-	yes	interior	1.2	yes	90	6	no
Rock Mill-1	OH	upland	circle plus	64	1385	yes	-	yes	interior	-	yes	45	5	no
Rock Mill-2	OH	upland	circle plus	38	830	yes	-	yes	interior	-	yes	90	25	no
Grave Creek	WV	terrace	circle	88	6082	no	0	yes	n/a	1.5	yes	180	unknown	yes

Table 8.1. Enclosures and selected architectural morphemes used in comparative analysis (con't).

This sort of research may also clarify the accuracy of the presence or absence of ditches or embankments associated with these enclosures. At present, 38 sites have been identified as having an embankment but no ditch (K-profile), 49 with both an embankment and a ditch (in which 47 included an interior ditch, SR-profile; and 2 included ditches inside and outside the embankment), and just one with a ditch but no embankment. In their present condition, the Garden Creek enclosures appear to reflect this last pattern, though as mentioned in Chapter 6, it is possible that embankments were originally associated with the ditches and have since been destroyed.

Although the variation in shape precludes straightforward comparison of horizontal length, width, or diameter measurements, it is possible to compare the sizes of the areas surrounded by embankments and/or ditches across different enclosures. Maps or accounts of 77 earthworks were sufficient to ascertain values for these areas (enclosures that surround conical mounds, rather than flat platforms, were also excluded). These areas ranged from 72-4489 m^2 (median = 725 m^2; mean = 1262 m^2). With each encompassing about 230 m^2 (inside the ditch), the Garden Creek enclosures fall at the smaller end of this range, but certainly not outside the realm of possibility.

It was possible to identify gateways for 35 earthworks in this sample. Although it is commonly assumed (e.g., Squier and Davis 1848: 48) that most of these gateways face east, I found a much more variable distribution, in which 15 face east, 3 north, 9 south, 1 west, 11 northeast, 6 northwest, and 7 each southeast and southwest. Facing southwest and northeast, the gateways of the Garden Creek enclosures thus conform to two fairly common patterns apparent in the Ohio Valley. In addition, while sample sizes do not allow for rigorous tests of statistical significance, it does appear that for the 35 enclosures for which gateway directions and interior enclosed area values are both known, that enclosures with gateways facing northeast, at least, tend to be smaller than enclosures with gateways facing other directions (northeast median = 725 m^2; northeast mean = 1056 m^2). Thus, it may be that this combination of attributes together (small size and northeast-facing gateway) represents a specific form of earthen architecture that was practiced in both the Ohio Valley and in the Appalachian Summit.

From a more anecdotal perspective, it is interesting that certain stratigraphic patterns in Garden Creek Enclosure No. 1, particularly the use of contrasting yellow and dark fill, have been identified in other contexts in the Ohio Valley. The earth used to erect some of the largest Ohio Hopewell embankments appears to have been selected with considerable precision, plausibly for ritual reasons. Using early excavation records and reports on more recent investigations, N'omi Greber (2006: 88-91) has identified several examples of relatively simple (e.g., Mound City, Anderson, and Spruce Hill) and more complex stratigraphy (e.g., Hopeton, High Bank, and Newark) in embankment walls, including in the latter case, a juxtaposition of "two colors from the Hopewell palette of red, black, yellow, and white follow[ing] design choices similar to those seen in other types of structural remains and in the design and deposition of portable artifacts" (90). Similar research at Hopeton (Lynott 2004:6; see also Dempsey 2010) has led Lynott to suggest that these patterns not only involved decisions based on engineering principles, but also "related to the Hopewell people's efforts to manage the spirit world."

In sum, it would seem that the Garden Creek enclosures are architecturally similar in many regards to small geometric enclosures in the Ohio Hopewell heartland. Their small sizes and sub-rectangular shapes are uncommon but not without precedent in the Ohio Valley. The orientations of their gateways, meanwhile, conform to relatively more typical midwestern patterns. In addition, the use of distinctively colored ditch fills at Garden Creek might reflect similar geotechnic priorities of Ohio Hopewell people, perhaps with reference to particular cosmological myths. While the meaning of these patterns and their potential cosmological referents are difficult to access from currently available archaeological data, it is plausible that these traits constitute "monumental memes" as described above – rules for the appropriate construction of a small geometric enclosure that would ensure its ritual efficacy.

All that said, not everything about the Garden Creek enclosures corresponds with the architecture or material culture of midwestern Hopewell – perhaps most strikingly, the infilling of the ditch and the alignment of large posts that went in its place. None of the (admittedly, very few) small geometric enclosure ditches that have been excavated in the Ohio Valley show evidence of quick and intentional infilling like that observed at Garden Creek Enclosure No. 1. Neither do any of these Ohio Valley examples offer an extended life history involving the replacement of a ditch with an alignment of large posts. However, a similar row of massive postholes has recently been identified in the remains of a Middle Woodland ditch the Biltmore site, less than 20 miles east of Garden Creek as the crow flies (Kimball, Whyte, and Crites 2010, 2013). There, the ditch served to surround a platform mound rather than define an enclosure. Moreover, the postholes that intruded into it were not filled with rocks, but they were uniquely filled with yellow sand (similar to Structure 1 below Garden Creek Mound No. 2). In short, rather than indicate a shared monumental tradition with the Ohio Valley, these aspects of Garden Creek Enclosure No. 1 may be variations on a theme of uniquely Appalachian ritual architecture. How these patterns inflect at different points throughout Garden Creek's life history have important implications for the wider history of interregional interactions in the Appalachian Summit during the Middle Woodland period, which I examine in greater detail in Chapter 9.

Southeastern Comparisons: Middle Woodland Platform Mounds

In the 1960s, the identification of platform mounds in the Southeast dating to the Middle Woodland period challenged existing culture historical trait lists that presumed an isomorphic relationship between platform mounds, Mississippian cultures, and hierarchical sociopolitical organization (Jefferies 1994:71; Mainfort 2013:85–86). By the late 1990s, however, the role that these early platform mounds played in Middle Woodland communities remained enigmatic (Lindauer and Blitz 1997:173). If platforms elevated some activities or individuals, and thus permitted intra-community separation, differentiation, and appropriation of power, how were they created and utilized Woodland societies exhibiting little evidence of institutionalized social inequality? Knight (1990, 2001) remains the only scholar to have explicitly targeted this issue at the macroscale.[1] As introduced in Chapter 1, he argued that a certain subset of Middle Woodland platform mounds – called the Kolomoki pattern – served as loci of intra- and inter-community feasts and gift-giving. These activities would have promoted integration and alliance even as they inevitably benefited certain communities and individuals more than others.

Garden Creek was one of five sites that served to define the Kolomoki pattern as a constellation of traits indicative of "intermittent, repetitive activity involving manipulation of exotic artifacts, caching of goods in small pits, food preparation and consumption, frequent scaffolding of objects unknown, and monumental display of poles. All of this occurred on low, earthen stages, periodically renewed and connected symbolically to world renewal" (Knight 2001:321). Specifically, these traits include (1) dense posthole scatters; (2) evidence of large post emplacement (large postholes, insertion/extraction ramps, extraction pits); (3) small pits; (4) surface hearths; (5) middens; (6) exotic or special ceramics; and (7) proximity to a village occupation. However, with the possible exception of evidence for large posts, none of these traits is uniquely associated with platform mounds during the Middle Woodland period. Pits, hearths, special ceramics, posthole scatters, and occupation areas have a Woodland (if not earlier) precedent across the Southeast, while

[1] Jefferies (1994) has synthesized regional data on Middle Woodland platform mounds, but he emphasizes their variability, rather than their potential relationship to a unitary social process. Other scholars have presented interpretations on specific Middle Woodland platform mound sites (e.g., Mainfort 2013; Milanich et al. 1997; Pluckhahn 2003)

contemporary platform mounds are much more limited in distribution. Viewed thusly, the emergence of platform mound architecture at a particular site may be viewed as an "unintended consequence" of elaborating existing traditional practice – in other words, it may represent local social evolutionary developments – i.e. specific evolution rather than general evolution (Joyce 2004; see also Chapter 1). And yet, as characterized by Knight, these early platform mounds *do* seem to emerge roughly simultaneously across a wide swath of the Southeast, and they *do* share certain archaeological signatures that can be interpreted as evidence for similar sorts of activity. To determine if these congruencies are examples of parallel evolution the coincidental products of independent but converging trajectories of social evolution, or if they resulted from interaction between groups and the dissemination of novel forms of social and architectural practice, I have undertaken an attribute-based comparison known Middle Woodland platform mounds in the Southeast, including so-called Kolomoki pattern mounds.

My analysis began with the Knight's list of "truncated mounds in the eastern United States, 100 B.C. – 700 A.D." (2001: 315), which I revised according to more recent archaeological findings. In the years since Knight's study, some mounds on this original list, like the Graveline mound (Blitz and Downs 2010), have been attributed to later periods, while others, like the Biltmore mound (Kimball, Whyte, and Crites 2010, 2013), have been identified and reported. For sites that included more than one platform mound, I listed each mound individually, resulting in a total of 33 Middle Woodland platform mounds. For each mound, I recorded shape, basal area, and number and type of associated non-platform earthen monuments. Other attributes were recorded opportunistically, as the quality and availability of excavation reports allowed; these included summit area and visibility; number and colors of Middle Woodland construction stages; presence of an associated occupation; presence of Middle Woodland burials; types of exotic and local artifacts of potential ritual significance; and summary absolute dates. These data are presented in Table. 8.2.

Platform Mound	State	Shape	Foot-print (m^2)	Summit (m2)	MW stages	Fill colors	Occu-pation	Other monuments	MW Burials	Exotic ritual artifacts	Local ritual artifacts	Dates	References
Shorter	AL	rect.	2600	-	2		yes	none	0	-	-		Sheldon 2001: 62; Blitz and Lorenz 2002: 44-46)
Walling	AL	rect.	2037	1548	3	brown, red, yellow	yes	burial mound	0	no	yes	AD 100 - 350	Knight 1990
Block-Sterns	FL	circular	285	-	several (6+?)	brown, red, yellow	yes	burial mound, unknown mound	17	yes	yes	AD 600-600	Jones, Penton, Tesar 1998; dates from Ashley and Wallis 2006
Hall	FL	circular	263	-	-	black, "light" sand	-	causeway	12	yes	yes	AD 300-900	Moore 1902:282-304)
Yent	FL	rect.	736	-	-	-	-	none	74	yes	yes	AD 150-650	Moore 1902:267-274
Aucilla River	FL	circular	314	-	2	black, unspecified	yes	none	69	yes	yes	AD 400-750	Moore 1902: 327-330; Moore 1918; dates from Milanich 1996
McKeithen Mound A	FL	rect.	1302	-	4	brown, gray, yellow	yes	none	0	yes	no	AD 350-475	Milanich et al. 1997:91-119
McKeithen Mound B	FL	rect.	147	-	1	brown, tan	yes	none	1	yes	yes	AD 350-475	Milanich et al. 1997:91-119
McKeithen Mound C	FL	circular	194	-	1	brown	yes	none	36	no	yes	AD 350-475	Milanich et al. 1997:91-119
Crystal River Mound A	FL	rect.	1693	496	2	-	yes	burial mound, shell mound	-	-	-	AD 300-600	Pluckhahn et al. 2010; Pluckhahn and Thompson 2009
Crystal River Mound H	FL	rect.	1825	440	-	-	yes	burial mound, shell mound	-	-	-	AD 300-600	Pluckhahn et al. 2010; Pluckhahn and Thompson 2009
Murphy Island	FL	circular	1810	32	1	pink	-	unknown mound	48	yes	yes	-	Moore 1986
Annawakee Creek	GA	circular	83.54	-	3	yellow*	-	none	0	yes	no	AD 600-800	Dickens 1975

Table 8.2. Platform mounds and selected architectural morphemes used in comparative analysis.

Platform Mound	State	Shape	Foot-print (m²)	Summit (m2)	MW stages	Fill colors	Occu-pation	Other monuments	MW Burials	Exotic ritual artifacts	Local ritual artifacts	Dates	References
Swift Creek	GA	circular	2827	-	3	brown, "light" fill	-	none	0	no	no	AD 500-700	Jefferies 1994
Cold Springs Mound A	GA	circular	1964		5	brown, orange, yellow	yes*	none	0	no	No	AD 290-445	Jefferies 1994
Cold Springs Mound B	GA	circular	1257	-	-	-	yes*	none	1	yes	-	AD 290-445	Jefferies 1994
Mandeville Mound A	GA	rect.	3796	1008	4	black, brown, red, yellow*	yes	conical mound	0	yes	-	AD 1-900	Kellar et al. 1962, Smith 1979
Kolomoki Mound A	GA	rect.	6039	-	-	red, white	yes	conical mound	-	-	-	AD 450-555	Pluckhahn 2003
Troyville	LA	rect.	4186	-	2	brown, red		9 smaller platforms	0	yes	No	100 BC - AD 700	Walker 1936
Marksville	LA	circular	7088	-	2	-	no	conical mound, irregular mound	0	-	-	50 BC - AD 350	McGimsey 2010
Ingomar Mound 14	MS	rect.	-	1000	3	brown, gray, red, yellow	yes	conical mound	-	-	-	200 BC	Rafferty 1987
GCM2	NC	rect.	446.52	-	2	brown, yellow8	yes*	burial mound, enclosure	0	yes	yes	AD 180-360	Keel 1976
Biltmore	NC	rect.	900	-	7	brown, gray olive, tan	yes	none	0	yes	yes	AD 300-600	Kimball, Whyte, and Crites 2010
Pinson - Ozier	TN	rect.	5110	1116	8	brown, gray, yellow	yes	embankment, conical mound	0	yes	No	AD 128-383	Mainfort 2013
Pinson - Mound 15	TN	rect.	2500	-	-	-	yes	embankment, conical mound	-	-	-	AD 1-300	Mainfort 2013
Pinson - Sauls/9	TN	rect.	100000	-	-	-	yes	embankment, conical mound	-	-	-	AD 1-300	Mainfort 2013
Pinson Mound 10	TN	teardrop	2440	-	3	brown, gray, yellow	yes	embankment, conical mound	0	yes	No	AD 128-421	Mainfort 2013

Table 8.2. Platform mounds and selected architectural morphemes used in comparative analysis (con't).

Platform Mound	State	Shape	Foot-print (m^2)	Summit (m2)	MW stages	Fill colors	Occu-pation	Other monuments	MW Burials	Exotic ritual artifacts	Local ritual artifacts	Dates	References
Pinson Mound 29	TN	rect.	2499	-	2	brown, yellow	yes	embankment, conical mound	0	no	No	AD 1-300	Mainfort 2013
Pinson Mound 28	TN	rect.	4489	-	-	-	yes	embankment, conical mound	-	-	-	AD 1-300	Mainfort 2013
Johnston Mound 4	TN	rect.	3600	900	-	-	yes	conical mound	-	-	-	100-0 BC	Kwas and Mainfort 1986
Johnston Mound 5	TN	rect.	2021	486	-	-	yes	conical mound	-	-	-	100-0 BC	
Leake Mound A	GA	rect.	2025	-	-	-	yes	conical mound	-	-	-	AD 180-544	Keith 2010:460, Rudolph and Rudolph
Leake Mound C	GA	circular	410	-	-	-	yes	conical mound	-	-	-	-	Keith 2010

Table 8.2. Platform mounds and selected architectural morphemes used in comparative analysis (con't).

Perhaps the most functionally significant variable considered was the presence or absence of Middle Woodland burials: of the mounds that have been excavated such that this attribute may be confidently assessed, 8 contained human remains contemporary with mound construction. As repositories of the dead, these mounds were functionally distinct from other Middle Woodland platform mounds, which appear to have been used as stages for different sort of ceremonies, perhaps related to the materialization of cosmologies related to world renewal (Knight 2001). In all likelihood, both of these monumentalized suites of practice were underwritten by the same symbolic systems, and they may reflect complementary ritual concerns. For example, some sites feature platform mounds with and without human interments that may have functioned together as separate elements of a single mortuary program. This argument is made especially explicit at the McKeithen site, where Milanich (1997) inferred the conduct of charnel activities on some mound summits and subsequent burial in other mounds. Armed with a smaller dataset, Jefferies suggested the same scenario for the Cold Springs Site (1994). In fact, until we determine the age of Garden Creek Mound No. 4 and whether or not it includes Middle Woodland burials, we cannot rule out the possibility that a similar situation played out at Garden Creek. For the present study, I eliminated platform mounds with Middle Woodland burials from exploratory statistical analyses aimed to assess variability in platform mounds used for other purposes, such as feasting, gift-giving, or ceremonial performance.

The 25 platform mounds that lack Middle Woodland burials occur over a fairly wide swath of the southeast, although the exclusion of platform mounds with burials means that this distribution is slightly different than that mapped in earlier studies of these Middle Woodland monuments. More than half of the platform mounds are in Georgia or Tennessee, but in the latter, they are associated with only two sites. Thus, the distribution of *sites* with Middle Woodland platform mounds is more or less evenly distributed across most southeastern states (two each in Alabama, Florida, Louisiana, North Carolina, and Tennessee, and one in Mississippi), with a true concentration in western Georgia, where 6 different sites with Middle Woodland platform mounds have been identified.

Because only 14 mounds within this 25-mound sample have been subjected to excavation, only attributes that can be compared across the entire sample are shape and basal area. Excluding the unique teardrop-shaped Mound 10 at the Pinson site, all mounds were rectangular (including square-shaped; n=19) or circular (n=5), although it should be noted that erosion, plowing, and other post-depositional processes may have affected the original shape of these monuments. The mounds' basal areas varied more widely, ranging from 350 to 100,000 square meters. The mound with this highest basal area is Sauls Mound at the Pinson site, one of the largest mounds known in pre-Columbian North America, and it substantially skews the distribution of this variable across the total dataset. When it is excluded, three modes of basal area are identifiable: small mounds less than 1400 square meters (n=5), medium mounds between 1600 and 4900 meters square (n=11), and large mounds between 3500 and 7100 square meters (n=8). Because mound size is an indicator of not only the labor force required for its construction, but also of the size of the group/audience it was meant to accommodate once built, this measurement may indicate differences in the role and elaboration of mound-related ceremonialism across the Southeast. The lower Mississippi Valley tended to very sizable platform mounds, including all but two of the large mounds from the total sample, the average size of which was 4675 square meters. Mounds were considerably smaller in the east; with the exception of Kolomoki's massive Mound A and Mandeville's Mound A, no mound in Georgia, Florida, Alabama, or North Carolina had a footprint greater than 3000 square meters. This pattern suggests that "western" mounds, as well as the two large Georgia mounds mentioned above, supported larger groups of performers and/or hosted larger audiences than their "eastern" counterparts. Even if the sorts of activities conducted on the monuments were similar, their scales appear to have differed markedly, and justify an additional typological subdivision within Middle Woodland platform mounds based on geography.

In the eastern sector of the Southeast, we are thus left with 14 platform mounds, although differences in the extent to which they have been excavated and reported present a challenge to systematic comparisons. All of these mounds are associated with a contemporary habitation area, although these are variably characterized as permanent villages or temporary occupation sites (see below). All of the 10 mounds that have been excavated or cored show multiple construction stages, often with multi-colored fills; interestingly, three mounds – Garden Creek Mound No. 2, Annawakee Creek, and Mandeville Mound A – were each initiated with a core platform of yellow clay, the structural (i.e., engineering) or symbolic significance of which is unknown but potentially significant. Mimicking the interpretation of earthwork stratigraphy (above), the presence of juxtaposed light and dark soils across horizontal space (in the form of multi-colored loaded fills) and vertical space (in the form of stratified zones of fill) in at Middle Woodland mounds have been interpreted as references to widespread American Indian cosmologies (e.g., Buikstra, Charles, and Rakita 1998; Sherwood and Kidder 2011; Van Nest 2006; Van Nest et al. 2001). Without going into too much detail, the multi-colored fills are thought to reflect the idea of a tripartite universe, consisting of the circular disk of This World, sandwiched between the sky vault of the Upper World and below-ground/below-water Under World (Buikstra and Charles 1999; Charles, Van Nest, and Buikstra 2004). The use of sod for mound building, in turn, may allude to Earth Diver myths, which typically describe an animal retrieving deep sea mud and bringing it to the water's surface to create land (Charles, Van Nest, and Buikstra 2004; Sunderhaus and Blosser 2006; Van Nest 2006). Thus, by employing these construction materials, moundbuilders in the Illinois Valley, for example, ensured that their mounds "did not just *represent* the cosmos; the very act of building it… *re-enacted* cosmological creation" (Charles, Van Nest, and Buikstra 2004:59). It may be that analogous mythologies were materialized in the carefully patterned construction of Kolomoki-pattern mounds, including Garden Creek Mound No. 2.

Slightly more than half (n=8) of these platform mounds were associated with other monuments at the same site, including conical mounds, demonstrated burial mounds, and enclosures. The pairing of platform and conical/burial mounds in several instances lends support to the idea (mentioned above) that certain constellations of monuments were involved in singular or related ceremonial practices, perhaps related to mortuary rites. Exotic artifacts, some apparently related to Hopewell corpus, were recovered in or near several of these platform mounds; in fact, some of the largest assemblages of Hopewellian material culture in the Southeast were recovered at Crystal River and Mandeville, while Leake has recently been described as a possible gateway centers linking southeastern and midwestern exchange networks during the Middle Woodland period. That said, most of these mounds for which dates are available appear to have been built and used after the heyday of Ohio Hopewell. Four mounds (Garden Creek Mound No. 2, Leake Mound A, Mandeville Mound A, and Walling) produced dates as early as the second century AD. The rest yielded dates ranging from AD 300-800, i.e., after the waning of the Hopewell in the Midwest. Anderson (Anderson 2013) has noted this chronological disconnect, which becomes especially significant insofar as Hopewell has historically, if implicitly, been invoked as a catalyst for platform mound monumentality in the Southeast.

With the exception of Florida's Block-Sterns mound, which included more than a dozen Middle Woodland burials, all the mounds that Knight subsumed within the Kolomoki pattern fall within the eastern subset of Middle Woodland platform mounds without burials, comprising more than half (n=8) of that category. Two of these, however, and Mandeville Mound A and Kolomoki Mound A, large mounds that, as mentioned above, were likely used for a larger scale of activities than other Middle Woodland platforms in Georgia and adjacent states. Of the mounds not originally classified as Kolomoki pattern sites, most (two mounds each at Leake and Crystal River) have been insufficiently excavated or reported to allow for an assessment of the presence/absence/extent of the Kolomoki pattern traits mentioned above, although two mounds that have come to light in recent years (Biltmore and Swift Creek) do appear to fit the bill. However, as mentioned above, this "bill" includes traits that are just as parsimoniously attributable to the elaboration of in situ practices as to intensive long-distance contacts extended across what are now five states. The former interpretation is supported by the fact that few exotic ceramics or other artifacts that might suggest intensive contact between southeastern groups have been recovered at these sites. Table 8.3 shows the distribution of classifiable local and non-local ceramics at those mounds in the sample that have been excavated and published.[2]

Site	**# total ceramics**	**% local ceramics**	**% non-local ceramics**	**Non-local types**	**Source**
Walling	2081	99.95	.05	Marksville incised (LMV)	Knight 1990
McKeithen*	25	80	20	Unspecified, but likely from Florida	Milanich et al. 1997
Biltmore	10000	97.9	~0.1	Candy Creek (TN), Chillicothe (OH), Swift Creek (GA)	Kimball, Whyte, and Crites 2010:50
Garden Creek	4835	95.9	4.1	Candy Creek (TN), Chillicothe (OH), Swift Creek (GA)	Kimball, Whyte, and Crites 2010:50

** Assemblage at McKeithen represents number of vessels. All others represent number of sherds.*

Table 8.3. Local and non-local ceramics from Middle Woodland platform mounds.

With the exception of McKeithen's Mound A, which was classified according to minimum number of vessels and likely inflates the number of non-local vessels relative to local ones, only a tiny proportion of these sites' ceramic assemblages originated in exotic locales. The comparatively high percentage of non-local sherds at Garden Creek (4.1%) is artificially inflated; because Keel included all non-local sherds in his original analysis, but not all local sherds, "they show a much higher frequency than they warrant" (1976:116). Moreover, several of the Garden Creek sherds that were originally categorized as Ohio Hopewell types have since been demonstrated to be of local manufacture (Stoltman 1999). Considered together, the low frequency of exotic ceramics at these

[2] Some mounds have been excavated, but detailed accounts of the resulting ceramic assemblages are not published (e.g., Annawakee Creek, Swift Creek, Cold Springs). Other sites, like Kolomoki, Crystal River, and Leake, have produced large, well-documented ceramics assemblages, but these did not clearly originate in the monumental contexts of interest. Lacking clear spatial or temporal associations, they were not considered here.

sites is more indicative of a few incidental exchanges rather than sustained trade relationships or other forms of interaction that might result in high levels of ceramic diversity, such as pilgrimage (as proposed for Pinson Mounds, Mainfort 2013:232–233).

In sum, this analysis revises and refines the Kolomoki pattern as a generalizable mode of Middle Woodland monumentality. As a whole, the Middle Woodland platform mound phenomenon is considerably less widespread than that of small geometric enclosures; the number of mounds that may justifiably be collectively labeled "the Kolomoki pattern" is smaller still. Within this category, no two mounds are exactly alike, and certain archaeologically accessible aspects of their architectural grammar, such as monument size, vary widely. While patterns of summit utilization, such as those identified by Knight (2001), are broadly similar among the handful of mounds that have been excavated, there is little about these material remains that distinguish them from pre-existing, off-mound activities in the localities where these mounds were eventually erected, negating the necessity of intensive inter-locality as a means of conveying shared rules about the appropriate use of mounds. Significantly, of the small Middle Woodland platform mounds in the eastern-Southeast that have been sufficiently excavated to permit horizontal descriptions of mound summits (i.e., McKeithen Mound A, Walling, Cold Springs Mound A, Swift Creek, Block Sterns, Biltmore, and Garden Creek), *only* Biltmore and Garden Creek show any indication burned structure floors (see Chapter 5; Kimball, Whyte, and Crites 2010:45). If these remains indicate prescribed ritual closure events, these activities – like the emplacement of large posts in ditches – may represent the evolution of ceremonial practices specific to the Appalachian Summit.

Village or Vacant Ceremonial Center?

The preceding discussion highlights geographic variability in the distribution of different types of monuments during the greater Middle Woodland period. The Midwest – specifically, the central Ohio Valley – witnessed the construction of many dozen embankments and ditches, forming enclosures both large and small. Conversely, the Southeast – specifically, a sub-region stretching from the mountains and foothills of North Carolina, Alabama, and Georgia south toward Florida's Gulf coast – became the locus of platform mound architecture, glossed above at the Kolomoki pattern. It is worth noting that, according to conventional archaeological wisdom, monumental sites in these regions also appear to have differed with regard to the ways they were (or were not) occupied by a resident population.

In the central Ohio Valley, the most popular view is that domestic settlement took place *away from* monumental enclosures sites, where habitation debris is often argued to be conspicuously absent (Dancey and Pacheco 1997; Pacheco 1996; Prufer 1964, 1964; Prufer and McKenzie 1965). Rather, the groups who built Hopewellian enclosures and conducted ceremonies therein are thought to have lived in dispersed hamlets or farmsteads scattered across the landscape. Recent studies have called into question one of the tenets of this model: namely, the presumed one- or a few-to-one relationship between hamlets and earthwork centers. Bernardini's (2004) previously mentioned energetic analysis of five tripartite earthworks at the Scioto-Paint Creek confluence demonstrated that their construction would have required more people than can have been reasonably expected to have lived in nearby hamlets. On a more theoretical level, Carr (2008) has proposed that different scales of community, from the residential to the local symbolic to the sustainable, were differentially involved in the construction of certain earthworks, whereas Byers (2011) has suggested that these monuments were not associated with any single community at all, but rather with sodalities that pulled in members from across the south-central Ohio landscape. There has also been some debate regarding the permanency of Hopewellian settlements away from the earthworks. Fieldwork at Middle Woodland habitation sites in Ohio have revealed only a few clear structures, discrete activity areas, or thick middens (e.g. Pacheco, Burks, and Wymer 2005) suggesting to some archaeologists that many of these sites were only occupied intermittently, perhaps repeatedly (Yerkes 2002; but see Pacheco 2010). Despite the controversy, a "mobile Hopewell" scenario would be perfectly in keeping with our current understanding of the relationship between residential and ceremonial dimensions of a society with flexible, tribal social organization (Fowles 2002): "An elaborate ceremonial complex may have been necessary to bind the small mobile populations that still sought wild foods to meet most of their subsistence needs" (Yerkes 2006:52-53, citing Hall 1997).

Southeastern platform mounds, in contrast, seem to co-occur with fairly substantial midden deposits and other sorts of domestic debris, such that most of these sites are viewed as a paired mound (or mounds) and permanent village. This pattern has not been nearly as heavily theorized as the vacant ceremonial center/dispersed hamlet model in Ohio. Rather, the straightforwardness granted to the mound-village pairing in the Southeast appears to derive from the deep seated cultural historical tendency to associate the widespread adoption of pottery during the Woodland period with the onset of sedentary village life. Although these apparent villages do not appear to have relied on farming, small population sizes and natural resource abundance in many southeastern sub-regions would have presumably made it *possible* for stable, long-term settlements to have existed during the Middle Woodland period, though certainly not *necessary*. Whether these mound-adjacent occupations were "villages" (a term often reserved for farming communities) or essentially permanent base camps (a term referencing the logistically mobile resource procurement strategy of foraging communities) is, for the present argument, more semantic than substantive.

However, based on rarely cited as well as emerging evidence, it seems possible that the contrast in the presence of habitation debris at Ohio Hopewell geometric enclosures and Kolomoki pattern platform mounds may be overstated. For example, by culling very early site reports (referred to by the author as "debitage items"), Griffin (1996) identified tentative evidence for residential occupation at 13 monumental earthwork sites in Ohio. Allowing for differences in antiquarian and archaeological site reporting, these accounts do not seem that different from documented evidence of Middle Woodlands villages or base camps associated with platform mounds at Walling (Knight 1990), Cold Springs (Fish and Jefferies 1986), or Kolomoki (Pluckhahn 2003). Furthermore, to my knowledge, every geophysical survey that has been conducted at Hopewell enclosures in Ohio in recent years has identified numerous anomalies that may be indicative of some sort of occupation (e.g., Burks 2014). Although it is impossible to reject the vacant ceremonial center model outright without groundtruthing and dating more of these features, it increasingly seems as though Hopewell ceremonial centers may have hosted a wider range of activity than our currently favored models might suggest.

But, assuming these tentatively identified remains are the result of Middle Woodland occupation, what sort of occupation are we dealing with: an established village? The permanent residences of ritual caretakers? Intermittent habitation associated with cyclical ritual activity or pilgrimage? Lacking extensive off-mound/off-earthwork excavation data in Ohio, that is very difficult to say. Fortunately, we are better positioned to address this issue in the Southeast, where at least a few sites with Middle Woodland platform mounds have undergone thorough testing in off-mound areas. By comparing these data to multiple lines of evidence related to mobility and sedentism (summarized in Kelly 1992) – including artifact and feature density, the presence and organization of structures and activity areas (e.g., Kent 1991), the seasonality profile of plant and animal remains (e.g., Thompson and Andrus 2011), and the raw material composition and tool type constituency of lithic assemblages (e.g., Andrefsky 1994; Bamforth 1991; Cowan 2006) – it should be possible to minimally characterize these occupation areas as the remains of permanent habitation or as materials associated with smaller scale, temporary, and/or intermittent activity.

Take Kolomoki, for example. While the massive Middle Woodland platform mound there has not been systematically investigated, off-mound portions of the site have recently been subjected to both geophysical survey and sub-surface archaeological testing (Pluckhahn 2003). These efforts revealed posthole scatters (perhaps representative of summer houses), hearth, pits, and a semi-subterranean structure that has been interpreted as winter sleeping quarters. Combined with the site's plant remains, which indicate spring through fall occupation, these data suggest that some people were living at Kolomoki year-round. Furthermore, some portions of the site had very high densities of artifacts, up to 556 sherds and 1352 lithic artifacts recovered per excavated square meter; other areas yielded fewer materials but more unusual ceramics. The former "support the argument that Kolomoki was permanently and intensively settled," whereas the latter may have "been used less for domestic occupation than for specialized – probably ritually related – purposes" (Pluckhahn 2003:144).

Off-mound occupation areas have also been well documented at the Cold Springs site (Fish and Jefferies 1986), which includes a much smaller platform mound and thus appears to be better representative of the misleadingly labeled Kolomoki pattern. Surface collection, backhoe trenching, and excavation revealed numerous postholes likely representative of both structures and of processing facilities like scaffolds and drying racks, as well as two "dish-shaped," semi-subterranean structures. By extrapolating these data across the entire site, taking into account sampling biases, the authors' estimate that a maximum of 12 structures existed at Cold Springs throughout the Middle Woodland Cartersville and Swift Creek phases, suggesting that the site was "a small hamlet of scattered structures although the widespread and abundant surface scatter of artifacts might have suggested a denser sort of occupation" (Fish and Jefferies 1986:68). The authors go on to propose that "the labor to construct the mounds and the population to participate in their use must have been drawn from the surrounding area" (72), implying that some of the occupation at Cold Springs was temporary, and associated with mound-related ceremonial practice.

Based on these examples, the nature of Middle Woodland occupation at platform mound sites in the Southeast appears to have varied from intensive, essentially permanent inhabitation by large groups, to considerably more modest occupation that may have only taken place intermittently. Allowing for the small sample size, the two examples discussed above reveal a correlation between the scale of monumentality and the scale of occupation – the site with bigger mounds was associated with more intensive habitation debris. The relative size of Garden Creek Mound No. 2 itself suggests that its associated occupation would fall at the small/less intensive end of this continuum.

In fact, the available data generated in off-monument areas by the Garden Creek Archaeological Project bear this out. Although several postholes were mapped in these areas, their overall density was fairly low. Confident conclusions regarding the presence of post-structures at the site muse await broader horizontal excavations, but at present, there is little evidence for them. Neither did we identify any semi-subterranean structures; presumably, if these existed, they should have produced a sufficient magnetic signature to have been identified using geophysical techniques (e.g., Horsley, Wright, and Barrier 2014). Available macrobotanical remains point to a predominantly summer-fall occupation, but unfortunately, off-monument faunal assemblages were too small to address issues of seasonality. On the whole, artifact density was quite low, particularly relative to intensively occupied areas at Kolomoki; the off-monument units at Garden Creek yielded only a mere 31 sherds and 16 lithic artifacts per square meter, the latter of which seem to represent a biface/core-based lithic industry that is often associated with mobile populations (Cowan 2006). All that said, however, no units were excavated in areas south of Mound No. 2 that produced very high magnetic susceptibility readings; it may be that these areas were occupied more intensively that those locations closer to the mound.

On the basis of presently available data, it appears that the occupation area at Garden Creek does not constitute a permanent village or residentially stable base camp, though it was originally labeled as such by Keel. Instead, its archaeological remains are more in line with expectations for an intermittent occupation like that identified at Cold Springs. However, according to available radiocarbon dates and relative ceramic dating, this light occupation is only associated with the site's Connestee phase component, i.e., with the platform mound. None of the sampled off-monument features corresponded with the early Middle Woodland Pigeon phase or with the small geometric enclosures that date to that period. In other words, while off-monument occupation was light at the time of mound construction and use, it was apparently non-existent during the time of enclosure construction and use. In this regard, the Hopewellian monuments at Garden Creek appear to be associated with a Hopewellian sort of occupation, insofar as the concept of the vacant ceremonial center in Ohio holds water. While both episodes of monumentality thus appear to have involved actions on behalf of people not living full time at Garden Creek, the enclosure-associated occupation (or lack thereof) provisionally reflects a settlement pattern reminiscent of Ohio Valley Hopewell, and the mound-associated occupation conforms to settlement patterns identified at small Kolomoki-pattern platform mounds in the Southeast.

Chapter Summary

Viewed comparatively, the built environment at Garden Creek is a testament to interregional interactions of varying intensities as well as the persistence and elaboration of local traditions. The record of earthmoving associated with Enclosure No. 1 points toward a sharing a ritual architectural knowledge, or monumental memes, between people in the Appalachian Summit and the Ohio Valley. In contrast, fewer ritual prescriptions appear to have governed the construction or use of Middle Woodland, Kolomoki-pattern platform mounds in the Southeast; rather, the archaeological records associated with these monuments, including Garden Creek Mound No. 2, can be more parsimoniously attributed to the elaboration of local traditions (sensu Joyce 2004), perhaps partially shaped by low intensity interregional interactions and/or by broadly shared cosmological principles. These patterns are bolstered by the different sorts of portable material culture associated with these monuments. While Kolomoki-pattern mounds like Mound No. 2 contain only a handful of exotic artifacts and ceramics, Enclosure No. 1 at Garden Creek was full of crafting debris that is plausibly attributed to Hopewellian ceremonialism and exchange. Finally, Garden Creek's off-monument vacancy at the time of enclosure construction and use, and its low-intensity, intermittent occupation at the time of platform mound building and use, resemble the types of settlement often attributed to Ohio Hopewell enclosures and Kolomoki-pattern mounds, respectively. Combined, these patterns indicate a temporal shift in the direction of Middle Woodland interaction in the Appalachian Summit from the Ohio Valley during the late Pigeon phase, toward the Southeastern piedmont and gulf coastal plain during the Connestee phase.

At the same time, Garden Creek's archaeological record also speaks to the in situ evolution of localized ritual traditions. The infilling of the ditch, the enclosure's demarcation with large posts, the subsequent removal of these posts and infilling of their postholes, and the burning and potential ritual closure of mound summit structures are all without precedent among Ohio Hopewell enclosures and Kolomoki pattern platform mounds – with the important exception of the Biltmore Mound. The unique association of these features with Appalachian Summit sites suggests that they may represent the remains of ceremonial practices derived from a local traditional substrate. At Garden Creek proper, certain aspects of architectural grammar, such as identical orientations among pre-mound and mound-summit structures (see Chapter 5), also implicate the persistence of local traditions.

In short, the relationship between monumentality, interaction, and tradition at Garden Creek was a complicated one. In the next chapter, I situate these patterns in time, with explicit reference to the scenarios for emergent monumentality enumerated in Chapter 1, fleshing out the history of the site as it was inscribed on the landscape. This narrative, in turn, provides a springboard for the elucidation of Middle Woodland culture contact using perspectives derived from post-colonial theory, thus moving us a step closer to bridging the divide between prehistory and history, and freeing pre-Columbian archaeological records from the confines of the "savage slot."

CHAPTER 9

MONUMENTALIZING PRE-COLUMBIAN CULTURE CONTACT IN THE APPALACHIAN SUMMIT

For the Eastern Band of Cherokee Indians, whose ancestors populated the pre-Columbian Appalachian Summit and contributed to the archaeological record at Garden Creek,[1] earthen monuments are critical touchstones of both genealogical and mythical histories (sensu Gosden and Lock 1998). Since the Qualla phase (beginning ca. A.D. 1300; Rodning 2008) if not earlier, mounds monumentalized the location of Cherokee townhouses in such a way that they were "symbolic manifestations of Cherokee towns, they were architectural landmarks, and they were setting for the practice of Cherokee public life" (Rodning 2009:627; see also Rodning 2002; 2010). Even as they grounded lived Cherokee experience, mounds also figured as central elements in Cherokee myths and oral traditions. For example, a ceremonial "constant fire" is thought to be burning in the Kituwah mound, which in turn is considered the Cherokee "mother town" to which all Cherokee trace their origins (Mooney 1900; Riggs 1997; Riggs and Shumate 2003). Another story, "The Removed Townhouses" (Mooney 1900:335–336), recounts the ascension of a townhouse and mound to a mountaintop where spirits and immortal people are "happy forever" (335), underscoring an important connection between communal architecture, the surrounding Appalachian landscape, and Cherokee mythic history (Rodning 2011:3–4).

The mounds and other monuments of the Appalachian Summit Middle Woodland period are necessarily less contextualized by myths and living traditions than their late pre-historic

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[1] For many years, researchers favored models of long-term, in situ Cherokee cultural development (Dickens 1979). More recently, archaeologists have argued that Cherokee ethnogenesis occurred through interactions between Appalachian Summit and northern Georgia populations (Moore 1986; Riggs and Rodning 2002; Ward and Davis 1999; Whyte 2003). However, supposing the emergence of the historic Cherokee involved extra-local interaction does not negate the role of extant Appalachian Summit communities in this process (e.g., Rodning 2008): "roots of Cherokee culture in the mountains run deep" (Rodning 2011:8).

counterparts. Certainly, important social and cultural changes took place during the centuries that separate the construction and use of these early monuments and the articulation of relevant myths and traditions in the recent past or ethnographic present. While the extension of particular myths about and symbolic readings of mounds to the Middle Woodland period may be an overextension of the direct historical approach, the centrality of mounds in Cherokee culture is a good indication that earthen monuments were equally significant to ancestral Cherokee identities and histories. This project has sought to elucidate one such history using diverse archaeological methods and interpretive frameworks. Recognizing the challenge of inferring emic histories or memories from the deeply pre-historic archaeological record (Van Dyke and Alcock 2003), I have focused on how monuments at the Garden Creek site inscribe an etic history of interregional interaction and the elaboration of local traditions across the Blue Ridge landscape. Clearly delineating these events (sensu Sahlins 1981; Sewell 2005) is a necessary first step toward grasping the multi-dimensional structural transformations that comprise the deep history of monumentality, culture contact, and identity in and beyond the pre-Columbian Appalachian Summit.

In this conclusion, drawing on the data presented in Chapters 5-8, I outline this history in chronological order, tracing the emergence of different sorts of monuments and related practices at Garden Creek from ca. 100 B.C. to A.D. 500. The resulting narrative highlights that not all interregional interactions during the Middle Woodland period were created equal, and that the agency and traditions of local people were instrumental to the ways in which interregional contacts were pursued, maintained, or dissolved over time. These findings permit a critical assessment of existing models for Middle Woodland interaction in the Appalachian Summit, including the different scenarios for the emergence of monumentality outlined in Chapter 1, and suggest future avenues of research to clarify these dynamics at multiple scales. Moreover, this newly documented history of interactions and tradition at Garden Creek present an opportunity to explore the utility of other interpretive frameworks for understanding culture contact and change in the pre-Columbian Eastern Woodlands. Drawing on recent research largely focused on colonial and post-colonial contexts, I propose that we may productively view the archaeological record at Garden Creek through the lens of hybridity. Though not entirely unproblematic, this move stands to forge important links between historical and archaeological research across the historic/prehistoric divide (Lightfoot 1995; Matthews 2007; Pauketat 2001; Taylor 2008), and to thus contribute to a dismantling of the pre-Columbian "savage slot" (Cobb 2005).

Assessing Scenarios of Middle Woodland Culture Contact

As discussed in the introduction to this volume, archaeologists working on middle-range societies around the world have postulated different mechanisms that would encourage people to begin transforming their landscapes through the construction of monumental architecture. Briefly, the scenarios of most interest to this study include:

(1) Multi-community assembly, defined as face-to-face social, material, or ideological encounters fostered by the aggregation of people from different communities;
(2) Deliberate extra-local acquisition, defined as the active procurement of foreign knowledge and experience by certain individuals to reinforce power and authority;
(3) Material and/or information exchange, defined as relatively less direct inter-personal contact and exchange, such as down-the-line transmission/gifting/trading;
(4) Elaboration of local traditions, in which existing practices change subtly over time, producing unintended consequences such as monumental architecture.

In the Appalachian Summit, two specific models have emerged that reference the emergence of monumentality during the Middle Woodland period and the relationship of this process to interregional interaction. The first (Chapman and Keel 1979) postulates that Midwestern Hopewell people maintained interests in western North Carolina on account on the availability of mica in the Blue Ridge Mountains, which they would have sought through direct procurement or exchange. In this view, such interactions produced a "thin veneer" of Hopewellian influence over local Appalachian Summit Middle Woodland traditions. Of the general scenarios above, this model best approximates material or information exchange. Meanwhile, the second model (Walthall 1985) presupposes multi-community assembly, and suggests that ritual specialists and other representatives from the Ohio Hopewell core came together with Southern Appalachian communities at "ceremonial encampments" for trade, ritual feasts, and mortuary ceremonies.

The newly documented archaeological record from the Middle Woodland component at Garden Creek allows for the critical evaluation of these models. Below, I consider three distinct phases of monumentality at the Garden Creek site, in relative chronological order. After summarizing the lines of evidence presented in earlier chapters, I propose which of the above scenarios is best supported by the available data. The resulting narrative of interaction episodes and resulting monumental expressions is a testament to the dynamism of Middle Woodland culture contact in the Appalachian Summit.

Late Pigeon Phase, ca. 100 B.C. – A.D. 1

Following low intensity use of the Garden Creek site during the Archaic and Early Woodland periods (Keel 1976:153), early Middle Woodland peoples excavated two ditches (and perhaps erected two associated embankments) to create Enclosures No. 1 and No. 2. Importantly, there monuments have no local precedent. There is, however, a strong architectural resemblance between these features and small geometric enclosures in the Ohio Valley that date to the late centuries B.C. or early centuries A.D. The ditch features appear to be associated with the ritualized crafting of cut mica and crystal quartz artifacts – both of which are known to have been especially significant to Ohio Hopewell ceremonial practice. Other material culture associated with this ditch, especially ceramics, point more-or-less exclusively to local material culture traditions, rather than interaction or influence from other regions or foreign communities of practice. Beyond the area immediately adjacent to or within the enclosure, evidence for late Pigeon phase occupation at Garden Creek is slim, though several areas with highly suggestive geophysical signatures remain to be ground truthed and dated. However, if future investigations support the existing data – i.e., the lack of an off-monument occupation associated with the enclosures – than the nature of late Pigeon phase settlement at Garden Creek more closely resembles the "vacant ceremonial centers" of Ohio Hopewell than the "mound-village" pairs associated with Middle Woodland platform mounds in the Southeast.

The architectural grammar of the Garden Creek enclosures suggests stronger ritual ties between the Appalachian Summit and the Ohio Valley than have previously been acknowledged. Assuming these enclosures constitute a form of ritual architecture, it stands to reason that there was a formally prescribed method for their design, construction, and appropriate use. The remarkable morphological similarities between the locally unprecedented enclosures at Garden Creek and their counterparts in the Adena-Hopewell core suggest that they were built according to the same specific prescriptions, which presumably required dissemination through face-to-face contact, possibly through ritual specialists. It is difficult to explain this interregional architectural pattern as the result of trickle-down diffusion from the Ohio Valley to the Appalachian Summit.

The remains of cut mica and crystal quartz craft production associated with Enclosure No. 1 also point to ritual connections with the Hopewell core, though in some ways, this assemblage raises more questions than answers. On the one hand, the local availability of these raw materials, the relative ease with which they can be manipulated, and the local provenance of the associated ceramic assemblage offer no indication that craft production at Garden Creek was undertaken by anyone outside the local community. On the other hand, the utter lack of finished cut mica effigies or crystal quartz bifaces at Garden Creek suggests that these artifacts were produced for purely non-local, possibly Hopewellian consumption. Did traveling Hopewellian ritual practitioners visit the Appalachian Summit, share their architectural prerogatives, and encourage the production of craft objects for export to and use in Ohio? Or, did ceremonial leaders from the Appalachian Summit coordinate the production of mica and crystal quartz offerings, to be carried via pilgrimage to massive Ohio Hopewell ceremonial centers, where they could receive instruction regarding ritual activities and architecture to convey back to the mountains? Chris Carr (2006:579-580) hints at both of these and similar possibilities in his contextual approach to interregional Hopewell (e.g., vision and power questing; pilgrimage to powerful natural places or ceremonial centers; long-distance buying and selling of ceremonial rites), and though a bit removed in time and space, similar pilgrimage scenarios have recently been proposed for the Late Archaic Poverty Point site (Arco et al. 2011). In either case, what remains to be more thoroughly investigated is how or why individuals in the Appalachian Summit acceded to participation in Hopewell ceremonialism at all, as crafters or as pilgrims.

In sum, the earliest evidence of monumentality at Garden Creek is best explained as the result deliberate extra-local acquisition *and/or* multi-community assembly, although the latter seems unlikely to have occurred in the Appalachian Summit during the late Pigeon phase. One possibility is that Appalachian people deliberately sought exotic knowledge (i.e., the know-how to design/erect ritual enclosures) in the Ohio Valley, where they participated in multi-community assemblies at major Hopewell ceremonial centers (a few of which, incidentally, contain large quantities of Appalachian Summit style pottery; Ruby and Shriner 2006). An alternative or additional mechanism may have involved travel by Ohio Hopewell people to the Appalachian Summit, deliberately seeking exotic artifacts like mica and crystal quartz and conveying ritual knowledge to local people they encountered on their journey. In either case, these scenarios presuppose more intentional and ritually mediated form of interaction than is implied by models for more diffuse material or information exchange.

While the initial ditch excavation by Middle Woodland people has not been securely dated, its construction necessarily preceded its infilling, which we now know to have occurred during the first century A.D. This infilling appears to have been rapid, perhaps occurring shortly after the original excavation of the ditch and the production of cut mica and crystal quartz artifacts for Hopewellian exchange, as indicated by the large amount of mica and crystal quartz debitage in the fill. While these infilling efforts could have effectively erased any trace of the ditch, the enclosure itself continued to be marked after by a line of large posts that followed the outline of the original ditch. By the early 100s A.D., however, these had been removed and the holes they left behind were deliberately filled with river cobbles and small artifacts. At this point, the monumental "squircles" at Garden Creek would have been rendered invisible. That said, it is unlikely that the location of the earthworks was truly forgotten. Rather, reflecting a cross-culturally identified pattern, their invisible presence may have played a role in subsequent occupation and moundbuilding at the site: "Sites were built on sites; landscapes were occupied and reoccupied time and again. Rarely was this a meaningless or innocent reuse. Like us, past people observed and interpreted traces of more distant pasts to serve the needs and interests of their present lives" (Van Dyke and Alcock 2003:1).

Although it is unclear exactly how Appalachian Summit people contributed to Ohio Hopewell and to Hopewell-style ritual at Garden Creek (see above), the infilling of Enclosure No. 1 offers a tantalizing suggestion that such interregional relationships ended abruptly. It may be that infilling of the ditch was simply part of the ceremonial life cycle of the monument, and that it was carried out according to the same ritual architectural prescriptions as its initial construction (i.e., a form of ritual closure or a termination event; see Chapter 5). It is also possible that the effective erasure of the ditch represents resistance to or rejection of Hopewellian ceremonialism by the local inhabitants at Garden Creek, and in turn, a moment of "culture making" (sensu Sassaman 2010[2]) in the Appalachian Summit. This scenario finds some support in the emplacement of posts in the now-filled ditch, their subsequent removal, and the filling of the resulting postholes with a unique matrix. Similarly distinctive post setting, removing, and posthole filling has been noted at both Structure 1 below Mound No. 2 (mentioned above), and around the Middle Woodland Biltmore Mound, located less than 30 km east of Garden Creek (Kimball, Whyte, and Crites 2010, 2013). In these

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[2] "[H]istory is defined as *the ongoing process of making culture through social interactions*" (Sassaman 2010:5; emphasis in original).

remains, we may have recovered evidence for a uniquely Appalachian form of Middle Woodland monumentality. If so, its assertion immediately following seemingly intensively involvement with Hopewellian interaction and ceremonialism merits further examination.

Connestee Phase, ca. A.D. 125 – 400

By the onset of the Connestee phase, monumental activity had shifted slightly to the west of the Pigeon phase enclosures. There, fairly intensive occupation produced a number of features, structures, and a sub-mound midden deposit around A.D. 125 – 200. Initial construction of the overlying platform mound resulted in a primary summit that was in use for less than a century, most likely during the AD 200s. Shortly thereafter, the secondary mound was built on top; its summit used through the late AD 300s. Both episodes of mound construction are associated with a few pieces of Hopewellian material culture, but lack the sorts of evidence of Hopewellian craft production noted at Enclosure No. 1. What happened immediately after the second episode of mound construction is less certain, though additional stages cannot be ruled out (Keel 1976:86). While Mound No. 2 was in use, the surrounding landform appears to have supported some sort of human occupation, although the density of features and artifacts from excavated contexts are too low to infer the presence of a permanent village. Whether or not this interpretation will be supported by future testing of geophysical anomalies remains to be seen. Dates from excavated off-monument features range from the mid-2nd century A.D. through the late 4th century A.D. (calibrated, modeled, 2-sigma), except for one Mississippian-era feature dating to AD 1320 – 1450 (calibrated, 2-sigma).

The interregional connections suggested by the archaeological record of Mound No. 2 are quite different from those apparent in the site's Pigeon phase enclosures. Architecturally speaking, Garden Creek Mound No. 2 is best understood as a Kolomoki-pattern platform mound (Knight 1990, 2001), and the associated ceramic assemblage, though dominated by local pottery, did include a few pieces of pottery from adjacent southeastern areas. However, Mound No. 2 and other Middle Woodland platform mounds in the Southeast do not appear to be governed by a strict architectural grammar like that observed among Adena-Hopewell small geometric enclosures. Rather, Garden Creek Mound No. 2 appears to be a variation on a very general monumental theme, as well as an elaboration of practices that had been executed in the Appalachian Summit for many of the preceding centuries. In contrast to the enclosures, it does not seem likely that adoption of platform mound architecture across the eastern Southeast would have required formal interaction between far-flung ritual practitioners. If, as others have argued (Knight 2001; Lindauer and Blitz 1997), these mounds served as loci for community integration activities, it may be more likely that this mode of monumentality and associated practices spread through more social (as opposed to purely ritual) means. For instance, Carr's assessment that "intermarriage at the scale of neighboring groups could have been a significant factor in the down-the-line spread of Hopewellian practices and ideas" may be just as applicable to the Kolomoki pattern in the Southeast.

How, then, can we account for the copper, Flint Ridge chalcedony, ceramic figurines, and other Hopewellian artifacts recovered from the mound? Given the small quantity of this assemblage as a whole, the lack of associated craft production debris, and complementary lines of evidence for small-scale feasting activities at other Kolomoki pattern mounds, the current interpretation of these objects as exotic tokens signaling the possession of esoteric knowledge and as gifts distributed in communal ceremonies remains viable at Garden Creek. It is possible, in this instance, that Hopewell artifacts associated with Mound No. 2 were used as heirlooms, objects whose geographic *and* temporal foreignness may have been acted both as symbols of esoteric knowledge and as sources of social power (Lillios 1999).

Post-Colonial Perspectives on Pre-Columbian Processes

In the archaeological remains of monuments and associated occupation at the Garden Creek site, we are thus able to discern a complex history of cross-cultural ritual interaction and the evolution of local traditions during the Middle Woodland period. These remains constitute inscriptions on the landscape, and though the emic memories associated with these places remain elusive from a 21st century vantage, the etic history that they record is unambiguously amenable to historical processual interpretation (see Chapter 1). Armed with a detailed narrative of episodes of culture contact and local response in the Appalachian Summit Middle Woodland, we can begin to investigate broadly generalizable processes that have served to shape histories in diverse geographic and temporal contexts, on both sides of the pre-historic/historic divide. Specifically, processes that are most often examined in colonial and post-colonial contexts – such as diaspora, coalescence, and ethnogenesis (Sassaman 2010:5) – can be explored in pre-/non-colonial settings, permitting a tracing of "deep histories" (sensu Shryock and Smail 2012) of social interaction and culture change.

Since the quincentennial, historical archaeologists in North America (and elsewhere, e.g., Gosden 2004; Stahl 2002) have contributed to this wide discourse on culture contact and transformation. Importantly, these scholars frequently – and appropriately – distinguish between culture contact and colonialism (Paynter 2000; Silliman 2005), emphasizing how that latter entails long term entanglements and severe power imbalances that are not necessarily implicated by the more general category of culture contact [i.e., in cases of "egalitarian interaction systems"(Schortman and Urban 1998:110–111), or "symmetrical interaction" (Alexander 1998)]. Silliman also points out that uncritically characterizing colonialism as culture contact "privileges predefined and almost essentialized cultural traits over creative, creolized, or novel cultural products" (2005:56). Certainly, early approaches to cultural contact (colonial or otherwise) were guilty of this tendency, contributing to the backlash against diffusion and the veritable abandonment of culture contact as a subject of investigation during the heyday of processual archaeology (see Chapter 1). However, by locating "creative, creolized, or novel cultural products" solely in colonial instances of culture contact, we undermine the potential role that cross-cultural interactions played in pre-colonial histories. In other words, we run the risk of relegating pre-Columbian peoples to the "'back of history'…existing and persisting outside the flow of historical change…distinctive, separable, bounded, and isolated – one people, one society, one culture" (Wolf 1984:394).

In recent years, several archaeologists have confronted this challenge by exploring the utility of the post-colonial concept of "hybridity" in pre-historic case studies (e.g., Ackerman 2012; Alt 2006; Card 2013; Kapchan and Strong 1999; Mabardi 2000; Pauketat and Alt 2004; Stockhammer 2012; Young 1995). Perhaps unsurprisingly, this move has met with some ambivalence. While some theorists would argue that the term "hybridity" has less baggage than other concepts that refer to cultural interaction (Liebmann 2013), the linguistic and contextual roots of hybridity render it just as problematic as acculturation, syncretism, or creolization. The term's derivation from biological and botanical cross-breeding implies both negative and positive connotations (i.e., impurity/ contamination versus enrichment/hardiness) (Ackerman 2012:1–2; Young 1995:16). To varying degrees, these metaphors have reverberated through post-colonial formulations of hybridity, which emerged in the 1980s, notably in the works of Bhabha (1994), Bakhtin (1981), and Said (1978, 1993). As Ackerman (2012:11–12) recently summarized, theses scholars "were concerned with the problems of representing 'the Other'… they argue that since no culture has been left untouched by the global circulation of people, artefacts, signs and information, culture these days is hybrid *per se*, constituting a locale of conflict between identity and difference." Because pre-modern cultures are, like all cultures, also implicated in cross-cultural interactions, it stands to reason that they, too, experienced a form of hybridity. In Bhabha's words (1990:211), "All forms of culture are continually in a process of hybridity."

Herein lies an intellectual hurdle – the reason why Thomas (1996:9) has claimed that "hybridity is almost a good idea, but not quite." Since all cultures are in contact with other cultures (which we know to be true), and cross-cultural contact produces hybridity, from an anthropological perspective, what *isn't* hybridity? If everything we purport to study constitutes hybridity, than the concept is far too general to have much analytical utility (Maran 2012:62). Furthermore, if hybridity is commonplace, how can we account for its transformative potential (Werbner 1997:1), when, for instance, cross-cultural encounters and entanglements produce novel articulations of resources arrays and structural schemas (sensu Sewell 2005)?

These challenges have encouraged some cultural theorists differentiate between multiple types of hybridity – specifically, following Bakhtin (1981), between *organic* and *intentional hybridity.* [3] Organic hybridity describes "the unintentional, unconscious, everyday mixing and fusing of diverse cultural elements" (Ackerman 2012:12). In contrast, intentional hybridity "refers to situations in which cultural forms coming from the outside are employed by social actors to distance themselves from other groups within a given society [and]…represents a challenge to social order and identities" (Maran 2012:62, citing Werbner 1997). Put another way, "organic hybridity…tends towards fusion" while "intentional hybridity…enables contestory activity, a politicized setting of cultural differences against each other in a dialogical mode" (Ackerman 2012:13).

In my mind, the archaeological record at Garden Creek has the greatest potential to address intentional hybridity, and in particular, the ways in intentional hybridity is created and creative at seeming cultural peripheries[4] -- which, as alluded to in Chapters 1 and 2, are often associated with geographic peripheries. Frontiers, borders, and edges have received considerable attention in recent years as scholars have confronted and revised top-down frameworks for cultural exchange, especially world systems models (Hall, Kardulias, and Chase-Dunn 2011; Stein 2002). Whereas these latter perspectives on peripheries characterize interaction as unidirectional, approaches deriving from

[3] Other archaeologists studying hybridity (e.g., Alt 2006) have drawn on Bhabha's explicitly political formulation that pre-supposes dramatic power imbalances and domination, but when investigating pre-Columbian hybridity, power dynamics should be an open question, rather than a given.

[4] There are certainly issues with using the term periphery here, as world-systems theory's applicability to the Middle Woodland is suspect at best. However, the terms core/periphery are so engrained in the literature on Hopewell that their total abandonment is also problematic. Here, I use "periphery" in the same sense that Naum (2010:101) defines borderlands: "an intermediate landscape…where two or more groups come into contact with each other… and where the space between them grows intimate."

postcolonial theories view such interactions as a two-way street, amenable to negotiation and hybridization (e.g., Jordan 2009; Naum 2010). In this regard, liminal zones like peripheries can be conceptualized as Third Spaces, a concept coined by Bhabha to encapsulate "a realm of inventions and conventions, initiated and maintained by day-to-day situations and encounters… a space of translation and construction of a political object that is new, neither one nor the other" (summarized by Naum 2010:106).

To ground these high-level theoretical concepts in real-world terms, Burke (2009:79–94) has defined four general ways that hybridity may manifest at a cultural periphery: acceptance, rejection, segregation, and adaptation. The first two of these responses are fairly straightforward, involving the adoption of or resistance to novel material or immaterial resources introduced from the outside. In contexts of segregation, only certain realms of culture incorporate newly introduced elements or forms, while others remain "uncontaminated." Finally, adaptation "entails a double movement of decontexualization and re-contextualization, whereby an item is lifted out of its original setting and modified to fit its new environment" (Ackerman 2012:21). Though quite general, this quadripartite breakdown of hybridity at peripheries is highly amenable to cross-cultural analysis, in much the same way that Sassaman's historical "processes" are (see above).

Returning, now, to the diachronic record of monumentality and occupation at Garden Creek, I suggest that we might identify each of his Burke's four expressions of hybridity. The earliest construction of the small geometric enclosures may be an instance of *acceptance*, in which Hopewellian ideas and practices became incorporated into the Appalachian Summit ritual sphere. If the infilling of Enclosure No. 1 was not a prescribed stage of the monument's ritual cycle, then it may be construed as the *rejection* of outside influence and resources, and the assertion of local ritual traditions. By the Connestee phase, however, this rejection may have been tempered slightly, as Hopewellian material culture underwent *adaptation* to feasting and ritual practices associated with Mound No. 2. Importantly, *segregation* appear to have defined each of these interactions to a certain degree, insofar as hybridization appears to have had the greatest effect on ritual spheres of activity, while subsistence, settlement, and overall social organization continued to be based in long-standing, Appalachian Summit traditions and their local developmental trajectories. Admittedly, describing the Middle Woodland record of Garden Creek using terminology specific to hybridity does not dramatically affect its interpretation, as described in the preceding section. My goal in deploying this concept is not, at present, to further illuminate the inscribed history of interaction at Garden Creek, but rather to frame this case study in terms amenable to cross-cultural, deeply historical comparison.

The Historical Landscape at Garden Creek

Although beyond the scope of this project, it is worth noting that the history of the Garden Creek site does not end with the cessation of platform mound use during the late Connestee phase. Several hundred years later, during the Pisgah phase indigenous people returned to the site. On the lower terrace of the Garden Creek landform, they established an apparently permanent village occupation, built a series of communal earth lodges (Figure 9.1), and, in the process, erected another earthen mound (Dickens 1976).

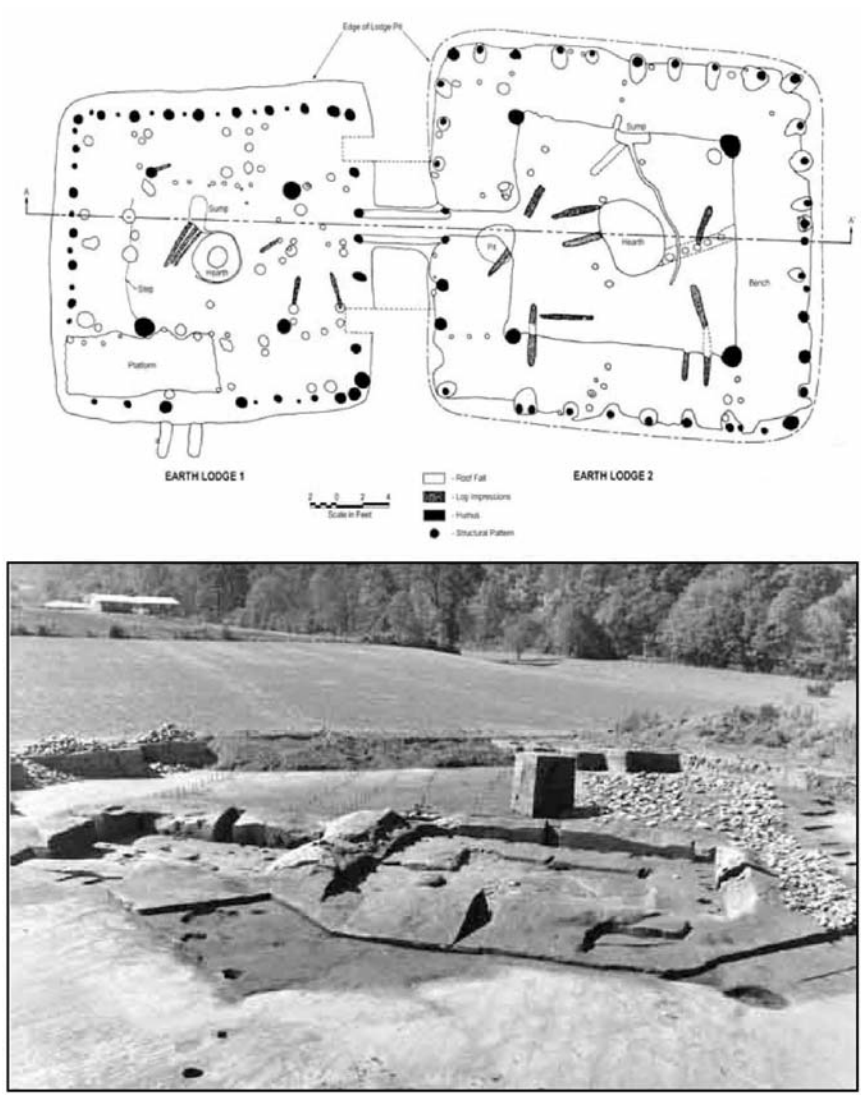

Figure 9.1. Plan map and photo of Pisgah phase earth lodges and Garden Creek Mound No. 1 (31Hw1), courtesy of UNC-RLA (Dickens 1979).

Even as they made their living several hundred meters away from the earlier Middle Woodland component, the Pisgah-phase inhabitants of Garden Creek returned to the earlier platform mound (and perhaps to Mounds No. 3 and 4 as well) to inter some of their deceased community members in what was even then an ancient monument (Rodning and Moore 2010). This practice underscores the profound significance of monuments to the long term histories and memories of Native peoples in the Appalachian Summit (see also Mann 2005). As I have turned to the monumental archaeological record at Garden Creek to infer histories of interaction for this study, pre-Columbian communities in the Appalachian Summit turned to them as repositories of identity, memory, and emic history.

Today, 21st century residents in the Plott Farm neighborhood encounter this same history whenever the scratch the surface of their lawns and gardens. Most long-time residents possess "boxes of relics," with flakes, projectile points, potsherds, and other artifacts recovered when they tilled their vegetable gardens, dug holes for new fence posts, or moved earth to install an in-ground pool. While these "relics" may have, at one time, shed light on the ancient histories of the Garden Creek site, their removal from in situ archaeological contexts presents a challenge to archaeologists seeking to trace prehistoric social processes. This, of course, only exacerbates the existing challenges inherent in pre-Columbian research, which rarely has opportunities to take advantage of written historical documentation.

In this regard, the inscription of pre-historic histories on the landscape are essential to archaeological interpretation. Despite dramatic post-depositional damage the Garden Creek's Middle Woodland component, the geophysical and traditional archaeological investigations presented in this volume demonstrate the persistence of a material record detailing both extra-local influences and local practice. Certainly, inscribed landscapes like Garden Creek offer only a piece of the total histories of pre-Columbian communities; future research on representations, objects, and genealogies of practices (sensu Alt 2011; Van Dyke and Alcock 2003) stand to make important contributions to this larger project. Nevertheless, the insights gleaned from the present archaeological study of Garden Creek's Middle Woodland monuments demand substantial revisions too many existing perspectives on the Hopewell Interaction Sphere specifically, and on pre-Columbian culture contact and perceived cultural-geographic peripheries in general. In turn, these revised narratives may benefit from critical comparison to culture contact in other times and places, using broadly applicable terminology derived from colonial and post-colonial theories of interaction, identity, and hybridity. As demonstrated in this conclusion, this latter stage of research is clearly in its infancy, but I would suggest that its potential for contributing the breakdown of the pre-Columbian "savage slot" is clear. At present, this volume offers a detailed account of exactly *what* happened at the Garden Creek site from ca. 100 B.C. to A.D. 400 (Wright and Henry 2013:11) Future research and theoretical consideration stands to clarify *how* and *why* these processes unfolded, not only in the Appalachian Summit Middle Woodland, but also in similar episodes of interaction accessible through written histories and the material record.

APPENDICES

APPENDIX A

NOTES ON GEOPHYSICAL SURVEYS CONDUCTED BETWEEN 2011-2012 AT THE GARDEN CREEK SITE (31HW8), HAYWOOD CO., NORTH CAROLINA

By Timothy J. Horsley, Ph.D.

Adjunct Assistant Professor, Department of Anthropology, Northern Illinois University

Horsley Archaeological Prospection, LLC

Introduction

A multi-staged geophysical investigation has been undertaken at the Garden Creek site in 2011 and 2012. Despite the high potential for modern interference and disturbances associated with the modern community that currently occupies the site, it was hoped that non-invasive geophysical methods could be employed to locate and map buried archaeological features in the fields and yards in and around the houses. Previous investigations, including excavations in 1965-6 by Keel (1976), have revealed a concentration of features and deposits that suggest a village site, and it was decided to begin with a high resolution magnetometer survey to test this method in the open areas in 2011. Following the success of this survey in detecting a range of subsurface features, in 2012, select areas were resurveyed using ground-penetrating radar to better understand vertical relationships between features and to obtain data in places where the magnetometer results were adversely affected by modern iron. The magnetometer survey was also expanded, and supplemented by a magnetic susceptibility survey to attempt to define the extent of past human activity at the site. Integrating the results with coring and excavation data has both aided interpretation of the geophysical data, and demonstrated the suitability of this approach for archaeological evaluation in a challenging environment where it might have been assumed they had little potential.

These technical notes are provided to support the geophysical results and interpretations presented in this volume. A full background to the Garden Creek site and its archaeological significance, as well as more a detailed discussion of the implications of the geophysical results, may be found in the preceding chapters.

Site conditions

The Garden Creek site is located in the Blue Ridge Province of the Appalachian Highlands, centered on 331900E, 3931600N (UTM coordinates, zone 17S), or latitude 35.5140, longitude -82.8536. It is situated on a floodplain and terrace that is bounded to the north and west by the Pigeon River, and the smaller Garden Creek to the east and west. The bedrock underlying the southern portion of the site is described as the Ashe Metamorphic Suite, a mixed assemblage of clastic sediments and mafic volcanic rocks. At this location, the dominant rock type is schist, with interlayers of gneisses and metagraywackes also present (Merschat & Weiner, 1988). Such a heterogeneous parent material will possess variable magnetic properties that can be expected to produce a range of detectable magnetic anomalies, although the impact of these geological anomalies will be reduced by deeper overburden of surficial material and soil. The northern portion of the site is underlain by the Richard Russell Formation, principally a biotite gneiss with interlayers of metagraywacke and amphibolite (*Ibid*., 1988). As with the Ashe schist,

The soils under the site are generally deep (>2m), well drained clay loams and sandy loams (see Table 1). The Dillsboro loam / Dillsboro Urbanland Complex are the predominant soil types present, with some Rosman fine sandy loam along the northern and northwestern edges of the survey area, and Braddock clay loam in the southern and southeastern portions. A small area of the poorly drained Cullowhee-Nikwasi complex is present in the far southeastern corner of the survey along the Garden Creek floodplain, but this soil is atypical for the site. These soils are expected to be ideal for magnetic survey methods as their deep, stone-free profiles should reduce any natural geological anomalies described above. The well drained nature of these soils may also make them appropriate for GPR survey, although the presence of clay may significantly attenuate the signal and limit the effect depth of investigation.

Soil	Name	Typical profile	Drainage	Soil depth	Parent material
BkC2	Braddock clay loam, eroded	0.00-0.28m: clay loam 0.28-1.45m: clay 1.45-2.00m: loam	Well drained	>2m	Old alluvium
BoD2	Braddock clay loam, eroded, stony	0.00-0.28m: clay loam 0.28-1.45m: clay 1.45-2.00m: loam	Well drained	>2m	Old alluvium
CxA	Cullowhee-Nikwasi complex	Cullowhee: 0.00-0.33m: fine sandy loam 0.33-0.58m: loamy sand 0.58-0.89m: loamy sand 0.89-2.00m: Extremely gravelly sand Nikwasi: 0.00-0.20m: fine sandy loam 0.20-0.66m: fine sandy loam 0.66-2.00m: extremely gravelly coarse sand	Somewhat poorly drained Very poorly drained	1-2m	Loamy alluvium over sandy and gravelly alluvium
DsB	Dillsboro Loam	0.00-0.25m: loam 0.25-0.38m: clay 0.38-1.09m: sandy clay loam 1.09-2.20m: cobbly sandy clay loam	Well drained	>2m	Old alluvium and/or old colluvium derived from igneous and metamorphic rock
DuC	Dillsboro Urban land complex	0.00-0.25m: loam 0.25-0.38m: clay 0.38-1.09m: sandy clay loam 1.09-2.20m: cobbly sandy clay loam	Well drained	>2m	Old alluvium and/or old colluvium derived from igneous and metamorphic rock
RoA	Rosman fine sandy loam	0.00-0.25m: loam 0.25-1.50m: fine sandy loam 1.50-2.00m: fine sandy loam	Well drained	>2m	Loamy and sandy alluvium

Table 1. Soils underlying the Garden Creek site. (After USDA-NRCS 2012).

While much of the survey area lies under modern houses and yards, open hayfields and a mown area of public land provide better conditions for geophysical survey. The presence of modern structures and associated utilities is expected to produce intense ferrous responses in the magnetometer data, potentially swamping more subtle anomalies of archaeological origin. Buildings, trees, fences, etc. will present obstacles to geophysical survey, thereby slowing down the rate of survey with any method. Such an environment is therefore somewhat challenging for these techniques, but given the restrictions on where excavation units may be placed, these non-invasive methods are uniquely placed to investigate the subsurface at Garden Creek.

Geophysical Prospection Methods

Geophysical methods include a range of non-destructive techniques for detecting subsurface disturbances associated with buried remains. It is important to note that these techniques do not detect the features themselves, but rather physical variations – or *anomalies* – that require interpretation. For a buried feature to be detected there must therefore be some degree of physical contrast between it and the natural soil and subsoil that surrounds it; if no such contrast exists, that feature will be effectively be invisible. It should also be noted that different subsurface situations may give rise to very similar, if not identical, above-ground geophysical anomalies. The interpretation of such results therefore requires experience working with shallow geophysical data, and familiarity with archaeological and natural features and deposits. Interpretation may also draw on excavation and other archaeological evidence that can aid in the identification of specific feature types, materials and depths. Only through investigation using more intrusive methods can datable artifacts and material be obtained, and causative features be determined.

Many archaeological features exhibit physical contrasts to natural soils and sediments, either through the addition of foreign material into the soil (e.g. building materials such as bricks and rocks), or by altering the soils and subsoils (e.g. conversion of magnetic properties through heating, or the silting up of cut features such as pits and ditches). A selection of geophysical techniques is available for archaeological prospection, including magnetometry and ground-penetrating radar (GPR). Each method measures a different physical property and therefore a particular method or combination of methods may be chosen that will be best suited to the conditions at a given site.

Magnetometry

Magnetometry is currently the most rapid geophysical method and can detect a broad range of both prehistoric and historic archaeological features on account of contrasts in magnetic susceptibility (MS) and/or the presence of a permanent magnetization. MS the ability of a material to become magnetized when placed in a magnetic field; in soils, this is related to the naturally occurring iron minerals present. These minerals can be converted to more magnetic forms through many anthropogenic activities, such as heating and the decomposition of organic material. In addition to pits, ditches, larger postholes, and many burnt remains, it is often possible to identify areas of occupation using a magnetometer by through their increased 'noise' levels. Heating soils to high temperature can cause a strong, permanent magnetization to be retained, such that kilns and furnaces can be detected, as well as accumulations of brick and tile. Historic sites are therefore usually more easily identified on account of the higher concentration of magnetic material in the form of brick, tile and ceramics, in addition to iron objects, although it is impossible to distinguish between iron metal from modern or historic activities.

Due to the speed with which measurements can be made, this method is well suited to characterize magnetic anomalies over large areas at high resolution. For more information on this technique, see Aspinall *et al.* (2008), Clark (1990: 64-98), Gaffney and Gater (2003: 36-42) and Kvamme (2006).

Magnetic susceptibility

As described above, archaeological features may be detected on account of a contrast in magnetic susceptibility (MS) between these feature and the natural soils and sediments around it. Unlike a magnetometer which measures the effect of such contrasts on the local geomagnetic field, an MS survey provides a direct measure of this property. General anthropogenic activity associated with occupation, e.g. burning and trash disposal, is known to locally increase the magnetic susceptibility of the soil, such that many archaeological features exhibit a susceptibility enhancement relative to the surrounding natural soil. Due to plowing and bioturbation, topsoil MS may therefore become enhanced in the vicinity of an archaeological site, and a topsoil MS survey can help map the extent of former occupation areas. Since only the top *c.*10cm of soil is measured during such a survey it is not usually possible to detect features below this depth, and a relatively coarse data collection interval (e.g. 5-10m) is sufficient to determine the presence and extent of a site. Further information on this technique with field and laboratory methods for measurement may be found in Dalan (2006, 161-203); Dearing (1999); Gaffney and Gater (2003: 44-46).

Ground-penetrating radar

GPR is a relatively new addition to the geophysical archaeologist's toolkit, being greatly enhanced by dedicated computer software for processing and display, as well as a better understanding of the types of environments where this method can be applied successfully. In contrast to magnetometry, GPR has the potential to provide information on the depth of subsurface remains by recording energy reflections from sub-horizontal features (such as cultural layers, soil horizons); vertical features (e.g. trenches, foundations); and discrete bodies (such as rocks and boulders). Where conditions allow different features to be resolved it can be possible to identify vertical relationships between them. Since the energy reflections occur where there is a change in the velocity of the emitted GPR energy, such as between different materials, soil textures, or water content, it may not be possible to detect features where there is a gradual transition or no contrast from one material to another.

One of the most useful aspect of this method for archaeological investigations is the ability to produce *amplitude time-slices* – horizontal plans that correspond to different depths below the ground surface that more closely resemble archaeological plans. When used in combination with the individual radar profiles, interpretations can be produced for different depth ranges, thereby helping to understand vertical relationships between features and deposits.

Further information on this technique may be found in Conyers (2004; 2006), Gaffney & Gater (2003: 47-51, 74-76), and Goodman *et al.* (1995).

Methodology at Garden Creek in 2011

Based on the site conditions and nature of the expected cultural remains, it was decided to conduct an initial survey using a magnetometer. While the potential for modern ferrous interference was acknowledged, magnetometry was chosen as the most efficient method for investigating the three open areas available for survey: the area of public land to the northeast, and two hay fields. Some modern disturbance was expected, especially close to the river where flood-destroyed houses were known to have been present until recently.

For ease in relocating geophysical anomalies of interest, a survey grid was established using a total station instrument. A baseline was set up along the western side of Plott Drive to allow a grid of 30m squares to be set out as required.

Once a grid was established across the areas of interest, the magnetometer survey was undertaken using a Bartington *Grad601-2* dual fluxgate gradiometer. Data were collected within each 30m grid square at a sample interval of 0.125m along traverses spaced 0.5m apart. Each line was walked in opposite directions, in the so-called zig-zag fashion. Before and during the course of the survey the electronic and mechanical setup of the instrument was adjusted to correct for electronic drift and variations in coil orientation. The magnetometer was set to a recording sensitivity of 0.1nT.

Magnetometer data were downloaded using *ArcheoSurveyor* for initial treatment and processing. For these data sets, treatment was restricted to *clipping* of the data to reduce the influence of extreme readings, followed by *sensor destripe* to reduce or remove any striping in the data due to sensor mismatch (see Horsley and Wilbourn 2009). In some instances it was necessary to apply a stronger zero mean destriping algorithm to correct for this. Finally, the data were *interpolated* once in the y-direction, resulting in a resolution of 0.25m x 0.125m; this produces a smoother appearance and aids the identification and interpretation of anomalies.

The magnetometer survey was conducted between March 21 -26, 2011. During this time ground and weather conditions were conducive to geophysical survey, and a total of around 4.4 hectares were investigated.

Aims of the 2011 survey

The primary aim of these geophysical surveys was to identify and map intact subsurface archaeological features associated with the Middle Woodland occupation at Garden Creek. It was hoped that the results could be used to focus subsequent investigations using more intrusive methods.

Specific objectives included:

- To investigate areas around Mound No. 2 to help situate this monument in its cultural landscape;
- To detect additional buried remains associated with the village site and help define its extent;
- To investigate a potential new mound in the hayfield to the northeast of Garden Lane;
- To assess the suitability of magnetometry for archaeological investigations in this environment.

Results of the 2011 Magnetometer Survey

The results of the 2011 surveys were extremely informative. Data collection began in the open field to the northeast, by Pigeon River. Despite some intense ferrous anomalies in the area where houses had previously stood, the rest of this area was relatively quiet; however, it was not possible to determine whether this was indicative of an absence of archaeological features, or instead due to any remains that might be present being too deeply buried by silt and other material brought in during flooding. A third option, that features are present but undetectable by magnetometry due to insufficient magnetic contrasts, seemed unlikely due to the presence of responses associated with plow scars, suggesting a good topsoil/subsoil contrast. Towards the back of the terrace, a number of weaker positive anomalies (< 9nT) were identified for further investigation through coring or excavation. A test unit later exposed cobbles at one location that might have been the remains of a hearth, but could also represent a natural stony layer found to be present throughout this T0 terrace. The combined results therefore suggest that cultural remains are not deeply buried in this area, and that the absence of magnetic anomalies is likely evidence for an absence of archaeological features.

In the hayfield at the center of Garden Creek, a very different picture emerged. Here some very strong anomalies in excess of ±60 nT were identified that might be geological in origin, or possibly even caused by lightning strikes. The effects of plowing were also evident and much more extreme than in the first field, frequently measuring between 10-22 nT in strength. This indicates a greater magnetic contrast between topsoil and subsoil layers, and such a situation can occur on occupation sites where the magnetic susceptibility of the topsoil has been enhanced through burning and decomposition of organic matter. Suggestions of anomalies consistent with being caused by buried archaeological features were visible at similar strengths to the plow scar responses, but the background level of noise made identifying them and determining patterns quite difficult.

The opportunity to survey in one of the larger backyards produced much clearer results, revealing numerous discrete magnetic anomalies without the strong plow scar effects. These measured between 5-20 nT. Plowing was still evident here, but far less severe than the hayfield. Such discrete responses are consistent with being due to buried pits, pit ovens and hearths, and interpretations were made based on anomaly form and strength. Subsequent coring and excavation confirmed their anthropogenic origin, and augmented interpretation of the data.

In addition to the linear plow scar responses and discrete anomalies in this area, an intriguing curvilinear anomaly measuring up to 11 nT in strength was identified in the northern corner of the yard, extending into the adjacent property. Expanding the survey into this area to better define it was hampered by intense ferrous responses, but it appeared to represent a subrectangular ditched enclosure, measuring approximately 18m x 15m, and oriented ENE-WSE. An opening to the ENE was suggested, but not clear from the magnetometer data.

Similar geometric earthworks are known from Adena and Hopewell sites in the Ohio Valley (e.g. (e.g., Burks, 2010; Burks and Cook, 2011; Jefferies et al., 2013), but have not previously been recognized in North Carolina. Excavation units were placed to investigate this possible enclosure and confirmed the presence of a *c.*1.0m deep ditch and allowed important diagnostic cultural material to be recovered.

A third hayfield was available for survey on the other side of Garden Lane from the yard, and included a possible mound. Significant plow scar anomalies dominated much of this area, producing a distinct 'envelope' pattern in the data. Despite this noise, a second probable ditched enclosure was identified 25m northeast of the first, and approximately the same size and orientation as this other enclosure. This response measured between 5-12 nT. Plow scar anomalies and an intense response caused by a utility pole limit more from being said about this feature, but it appears to be slightly covered by the new probable mound. This would suggest that the mound is indeed anthropogenic and that it is younger than then enclosure. A third possible feature is suggested by the data within/under the mound, but this is less clear and may relate to the mound itself.

Other discrete positive magnetic anomalies up to 15 nT, and one in excess of 30 nT, were identified through the plow noise; these are most likely due to larger pits and/or pit ovens based on their strength. A cluster of similar responses was identified along the northeastern edge of the survey, close to the break of slope. Downslope from this the anomalies drop off towards Pigeon River, with nothing resembling an anomaly of archaeological origin discernable on the lowest terrace – much like the lower terrace surveyed in the first open area. This appears to confirm the absence of anthropogenic features along the T0 terrace.

Despite the generally high levels of magnetic noise detected throughout the 2011 magnetometer survey, the clearer results away from modern disturbances suggest that there are far fewer archaeological anomalies than expected if a substantial village were present on this landform. There are many possible explanations for this, including: the occupation was relatively short-lived or perhaps seasonal; the main occupation area lies outside the survey area; or the results represent the limitations of magnetometry in this environment. An additional consideration is that to date, few magnetometer surveys have been conducted over Early and Middle Woodland village sites, and there is little to compare these data with to assess whether these results represent a "typical" occupation site.

The unexpected findings of the two geometric enclosures, and the possible mound, raised further questions about the nature of this site and the relationships between the monuments, as well as broader questions regarding the placement of Garden Creek in regional interactions.

Other findings of the 2011 survey included mapping the location of the 1965-6 excavation over Mound No. 2.

Aims of the 2012 Geophysical Surveys

Following the 2011 magnetometer survey and feedback provided by the archaeological investigations, it was decided to conduct a second round of geophysical testing to help answer some of the questions raised by the initial surveys and excavations. In addition to expanding the magnetometer survey, it was decided to conduct a magnetic susceptibility survey to more rapidly cover the site and define its full extent, and potentially identify variations in activity. GPR was also employed to further investigate the geometric enclosures. This method is unaffected by the ferrous disturbance from structures and other modern features (that had overwhelmed the magnetometer signal), and can also help 'see' through the disturbed plowzone, so it was hoped that it would allow a clearer picture of intact subplowzone features to be obtained.

Specifically, the aims of the 2012 surveys included:

- To determine the size and extent of occupation at the Garden Creek site;
- To obtain clearer images of the two geometric enclosures and associated features that had been suggested by the magnetometer results;
- To help define the relationship between the new Mound No. 4 and Enclosure No. 2;
- To identify the presence of features within Mound No. 4;
- To assess the potential of GPR in this environment, especially given the presence of soils with high clay content;
- To develop an effective methodology using topsoil magnetic susceptibility as a reconnaissance tool for locating and mapping former occupation areas in this environment.

Methodology at Garden Creek in 2012

In 2012, geophysical surveys were conducted between February 27 – March 9. During this time the survey conditions were generally amenable for geophysical survey, and GPR was employed towards this end of the period to take advantage of drier weather when it was hoped the ground would contain less moisture.

2012 Magnetometer Survey

The magnetometer survey was expanded using the same field methodology as in 2011 to ensure consistency between the results from the two years. By the end of the 2012 season, the total magnetometer survey had encompassed an area of around 8.0ha.

2012 Magnetic Susceptibility Survey

The magnetic susceptibility survey was conducted using a Bartington MS2B susceptibility meter with field coil. Readings were made at 5m intervals using a handheld GPS as a guide. In most instances, two measurements were made on the ground approximately 0.3-0.5m apart in order to ensure a consistent and reliable reading, and the unit was zeroed in the air at every other position. One reading for each position was written down onto a prepared survey sheet. Measurements were not made over the roads or where other obstacles prevented the coil being placed flat on the ground surface.

In order to cover as much area within the time available, in some places it was decided to collect MS readings at 5m intervals along transects spaced by 25m apart. Both N-S and E-W transects were conducted in this way, allowing a total area of around 11 ha. to be sampled by one person in just a few days.

Magnetic susceptibility data were entered into a Microsoft Excel along with their UTM coordinates. No processing is required for these data, and they were displayed without interpolation. While this produces a rather blocky appearance, it more accurately reflects the fact that readings were collected at 5m intervals, and not at a tighter resolution from which it might be tempting to draw further interpretations.

2012 GPR Survey

The GPR surveys were conducted using a Sensors and Software Noggin ground-penetrating radar system. A 250 MHz antenna was chosen as this frequency has been found to provide a good combination of subsurface resolution and depth penetration for features in similar soils. (e.g. Horsley 2013). For both areas, GPR profiles were recorded along parallel transects spaced 0.5m apart to allow the production of amplitude time-slices. Along each transect, individual samples were recorded at 0.025m intervals; measurements were triggered using a survey wheel integrated into the cart used to collect the data. In this way, a total area of 0.9 ha. was surveyed.

All GPR data were collected and recorded onto the dedicated data recorder and subsequently downloaded onto a PC. Processing was undertaken using the 2D data analysis module in *Reflex-Win Version 3.5*. Minimal processing was undertaken prior to the production of time-slices: a standard procedure consisting of *de-wowing*, *gain correction* and *time-zero correction*. Following initial analysis of the time-slices, additional processing was applied to the radargrams to remove horizontal banding (*background removal*), and a *bandpass Butterworth filter* to limit the frequency response between 160-500MHz. Both steps have aided analysis of the results, and reference was made to both processed data sets when interpreting the data.

To allow conversion of time into real depth, the average velocity of the ground was found by matching computer-generated hyperbolae to the data; this velocity is specific to different sediments and water content and for both survey areas it was found to be around 0.084m/ns. It is worth noting that this is the average velocity for the entire profile, and the component velocities will be different for different materials, such as topsoil, subsoils, and bedrock, as well as variations in water content.

Following processing, the individual radargrams were combined to produce a 3-dimensional block of data that was 'sliced' horizontally to produce the amplitude time-slices corresponding to different depths. These were produced in the 3D data interpretation module of *Reflex-Win Version 3.5*. Slices of specific thickness, (0.1m and 0.2m), were then been produced from the ground surface down to 2.0m. These allow the horizontal relationships between reflections to be more easily identified, and both radargrams and time-slices were consulted to interpret the results.

2012 Topographic Survey

To complement the magnetometer and GPR surveys over the area of Mound No. 4, a topographic survey was undertaken to better map the extent of this mound. A total station was used to collect elevations at 5-15m intervals across the survey grids containing the mound, and the results plotted in *Surfer* to produce a contour map that was later superimposed over the geophysical data in the GIS.

Results of the 2012 Surveys

Magnetometer Results

Expanding the magnetometer survey produced much the same result as in 2011, that is, a combination of anomalies of probable modern and prehistoric origin. During this season it was possible to include a number of private yards, many of which contained septic fields that obscure any potentially archaeological anomalies. Two additional hayfields were surveyed, both of which were seen to be dominated by plow scar responses, but are also seen to contain discrete anomalies of archaeological origin. These extend at least 200m from Keel's proposed village boundary, although it should be cautioned that is it not possible to date features and occupation areas from their magnetic anomalies, and more than one phase or period may well be represented in the data.

The strongly magnetic plow scar anomalies again indicate a distinct magnetic contrast between topsoil and subsoil that may have been exaggerated by MS enhancement due to human occupation. This fact appears to be supported by the topsoil MS results (see below), although this interpretation will require verification through ground-truthing.

Magnetic Susceptibility Results

The MS results present a broader, although coarser picture of magnetic variation across the Garden Creek site. In the time available it was not possible to survey the entire area at 5m intervals, and a methodology had to be devised to effectively sample the area. Away from what had been identified as the core of the site – the area around the known monuments - MS measurements were collected along transects spaced 25m apart to obtain a better sense of the overall trends. Since the MS measurements do not change significantly, it is hoped that the 'gaps' can be filled in during a future investigation.

The results reveal elevated MS values across a large portion of the landform in which plowing had obscured magnetometer results. Measurements reach 300 x 10^{-5} SI in places, dropping off to below 40 x 10^{-5} SI to the northwest and southeast. Comparison with soil and geology maps suggests that these higher MS values do not correspond to known variations in the underlying materials, and while there are observable differences between gardens and hayfields, differences in land use do not easily explain the general trends. As would be expected, there is excellent correlation between the MS and magnetometer results, with some of the most intense MS readings recorded in areas where the magnetometer data are dominated by plow scar responses, and significantly lower over the lower terrace. This again supports the interpretation that the topsoil is considerably more magnetic than the subsoil, and while this does not rule out a natural origin for the enhanced MS values, it strongly suggests an anthropogenic source. If the elevated values are derived from parent material, both the topsoil and subsoil would be expected to have higher MS values, but the magnetometer data has demonstrated a distinct contrast that implies the topsoil MS has been enhanced, and an anthropogenic origin is probable. Without ground-truthing, it is impossible to determine whether such enhancement is contemporaneous with the construction and use of the mounds or earthworks.

GPR Results

The GPR survey conducted over and around the two geometric enclosures reveals a much clearer image of these subsurface features. The ability to produce time-slices corresponding to different depths allows images to chosen below the disturbed ground of the plow zone, where features, deposits and stratigraphy are apparently intact. The GPR data allow both enclosures to be accurately mapped, and it is now possible to identify entrances on the two sides facing each other, although the central axes of the enclosures is offset slightly.

Numerous additional features can be positively identified that were not clear in the magnetometer data. Pits, likely containing concentrations of fire-cracked rock, produce clear magnetic anomalies and GPR reflections, but the GPR results also reveal pit alignments and probable ditches/trenches to the south of Mound No. 4, and possible arrangements of pits or large postholes to the east.

In addition to the spatial arrangement of features, comparison with the topographic data allows vertical, and hence, temporal relationships to be analyzed and discussed. Within the mound itself are numerous reflections that may indicate features associated with its construction, but more likely represent features contained within the mound or close to its base. These, and many apparent groupings and alignments of anomalies at the base of the mound, may indicate additional sub-mound structures or possibly monuments.

While not possible at this time, excavation will be required to verify and better understand these results, especially within the mound where determining the absolute relationships between features from their geophysical anomalies is not always possible.

Conclusions

Geophysical surveys at Garden Creek have been shown to be extremely effective in many aspects of archaeological investigation, despite the site lying under a modern community. Previously known and newly discovered monuments have been mapped and placed into their natural and cultural landscape. The results have also assisted traditional archaeological investigation, which in turn has augmented understanding and interpretation of the geophysical data. This has allowed an effective sequential strategy to be developed and demonstrated the potential of this approach for the region.

Magnetometry has proven to be successful in close proximity to modern houses and other features, allowing buried features – and monuments – to be detected and characterized in a range of environments. Unexpectedly, it was the open fields that presented the greatest challenge to this method due to extreme noise caused by plow scars that obscure more subtle anomalies of archaeological origin. While somewhat limiting in these areas, this noise also indicates a strong magnetic susceptibility contrast that is likely an effect of past human occupation. These enhanced MS values, when measured directly, are seen to cover much of this landform and drop off significantly on the lower terrace. Further work will be required to test whether this is an accurate representation of past human activity and to obtain dating evidence, but the magnetometer and MS results both point towards habitation features throughout much of the survey area.

GPR has been demonstrated to be successful in this environment, despite concerns about clay minerals attenuating the soil. Although slower than magnetometry, this technique is relatively unaffected by modern metal in adjacent structures, and data can be extracted from below the disturbed plow zone to produce clearer images of buried features. Vertical relationships can also be investigated, and when integrated with excavation data, allow discussion of both the spatial and temporal relationships between monuments and features.

These results offer exciting ground for continued integration of geophysical and traditional archaeological data at Garden Creek site and beyond. Taken together, they reveal a long and complex history of monumental practices at Garden Creek. There is certainly evidence for occupation, but without more complete coverage and in the absence of comparative data from similar sites, it is not possible to determine the exact nature of this. Further research will certainly be required to better understand Early and Middle Woodland village sites in the region, and to develop appropriate geophysical methodologies for their proper investigation and identification.

APPENDIX B

SHOVEL TEST SURVEY RESULTS

Twenty shovel test pits (STPs) were excavated at 15 m intervals across the Waters Point Lot (see Chapter 3). The following data were collected by University of Michigan graduate students and a visiting archaeology class from Warren Wilson College.

STP # 1, E130 N1045

Level	Top (cmbs)	Bottom (cmbs)	Texture	Color	Notes
1	0	9	Sod	n/a	
2	9	70	Sandy silt loam	10YR3/4	Mica-flecked; did not reach subsoil

STP #2, E130 N1030

Level	Top (cmbs)	Bottom (cmbs)	Texture	Color	Notes
1	0	10	Sod		
2	10	38	Sandy loam	10YR3/3	Rocky base, historic architectural debris

STP #3, E145 N1075

Level	Top (cmbs)	Bottom (cmbs)	Texture	Color	Notes
1	0	6	Sod	n/a	
2	6	28	Sandy silt loam	7.5YR3/4	Topsoil/subsoil
3	28	Not recorded	Sand and gravel	7.5YR4/6	Subsoil

STP #4, E145 N1060

Level	Top (cmbs)	Bottom (cmbs)	Texture	Color	Notes
1	0	12	Sod	n/a	
2	12	30	Sandy loam	7.5YR3/3	Topsoil/plowzone. iron nail
3	30	40	Sand and gravel	7.5YR4/3, 10YR3/6	River cobbles ~38 cmbs; mottled
4	40	50	Sand	10YR3/6	Subsoil

STP #5, E145 N1045

Level	Top (cmbs)	Bottom (cmbs)	Texture	Color	Notes
1	0	8	Sod		
2	8	27	Sandy silt loam	10YR3/6	Topsoil/plowzone
3	27	38	Sandy loam	10YR3/6 & 5/6	Mottled
4	38	45	Coarse sand	10YR5/6	Subsoil, no cobbles

STP #6, E145 N1030

Level	Top (cmbs)	Bottom (cmbs)	Texture	Color	Notes
1	0	10	Sod		
2	10	28	Sandy silt loam	10YR3/6	Topsoil/plowzone
3	28	33	Sandy loam	10YR3/6 & 5/6	Mottled
4	33	48	Coarse sand	10YR5/6	Subsoil; cobble base

STP #7, E160 N1075

Level	Top (cmbs)	Bottom (cmbs)	Texture	Color	Notes
1	0	9	Sod		
2	9	29	Sandy loam	7.5YR3/3	Topsoil/plowzone; a few sherds, debitage
3	29	36	Sandy loam	7.5YR3/3 &4/3	Mottled
4	36	49	Coarse sandy clay	7.5yYR4/3	Subsoil

STP #8, E160 N1060

Level	Top (cmbs)	Bottom (cmbs)	Texture	Color	Notes
1	0	6	Sod	n/a	
2	6	39	Sandy loam	7.5YR3/3	Topsoil/plowzone
3	39	49	Coarse sandy clay	7.5YR4/6	Subsoil

STP #9, E160 N1045

Level	Top (cmbs)	Bottom (cmbs)	Texture	Color	Notes
1	0	10	Sod	n/a	
2	10	42	Sandy loam	7.5YR3/4	Topsoil/plowzone
3	42	Not recorded	Sand and gravel	7.5YR4/6	Subsoil

STP #10, E160 N1030

Level	Top (cmbs)	Bottom (cmbs)	Texture	Color	Notes
1	0	13	Sod	n/a	
2	13	30	Sandy silt loam	10YR3/4	Topsoil/plowzone
3	30	37	Sandy loam	10YR3/4 & 4/6	Mottled
4	37	43	Coarse sand	10YR4/6	subsoil

STP #11, E160 N1015

Level	Top (cmbs)	Bottom (cmbs)	Texture	Color	Notes
1	0	9	Sod	n/a	
2	9	20	Sandy silt loam	10YR3/4	Topsoil/plowzone, several large, angular rocks
3	20	24	Sandy loam	10YR3/4 & 3/6	Mottled
4	24	48	Coarse sand	10YR3/6	subsoil

STP #12, E175 N1075

Level	Top (cmbs)	Bottom (cmbs)	Texture	Color	Notes
1	0	5	Sod	n/a	
2	5	42	Silty clay loam	7.5YR2.5/3	Topsoil/plowzone
3	42	45	Silty clay loam	7.5YR3/4	Subsoil

STP #13, E175 N1060

Level	Top (cmbs)	Bottom (cmbs)	Texture	Color	Notes
1	0	9	Sod	n/a	
2	9	29	Sandy silt loam	7.5YR2.5/3	Topsoil/plowzone; sherd, flakes, charcoal
3	29	45	Sand	7.5YR4/4	Subsoil

STP #14, E175 N1045

Level	Top (cmbs)	Bottom (cmbs)	Texture	Color	Notes
1	0	8	Sod	n/a	
2	8	30	Sandy silt loam	7.5YR3/3	Topsoil/plowzone; sherds
3	30	50	Sandy silt loam	7.5YR3/6	More sherds
4	50	61	sand	7.5YR4/6	Subsoil

STP #15, E175 N1030

Level	Top (cmbs)	Bottom (cmbs)	Texture	Color	Notes
1	0	8	Sod	n/a	Some chert debitage
2	8	25	Sandy silt loam	7.5YR3/3	Topsoil/plowzone
3	25	34	Sandy loam	7.5YR3/3 & 4/6	Mottled
4	34	48	Coarse sand	7.5YR4/6	Subsoil

STP #16, E175 N1015

Level	Top (cmbs)	Bottom (cmbs)	Texture	Color	Notes
1	0	9	Sod	n/a	
2	9	30	Sandy silt loam	7.5YR2.5/3	Topsoil/plowzone
3	30	36	Sandy loam	7.5YR2.5/3 & 4/6	Mottled; quick transition to subsoil
4	36	44	Coarse sand	7.5YR4/6	Subsoil

STP #17, E190 N1075

Level	Top (cmbs)	Bottom (cmbs)	Texture	Color	Notes
1	0	7	Sod	n/a	
2	7	26	Sandy clay loam	10YR3/4	Topsoil/plowzone
3	26	43	Sandy clay	7.5YR4/6	Subsoil; diffuse upper boundary

STP #18, E190 N1060

Level	Top (cmbs)	Bottom (cmbs)	Texture	Color	Notes
1	0	6	Sod	n/a	
2	6	38	Sandy clay loam	7.5YR4/3	Topsoil/plowzone; several potsherds
3	38	48	Sandy clay loam	7.5YR4/3 & 4/6	Mottled
4	48	53	Sandy clay	7.5 YR4/6	Subsoil

STP #19, E190 N1045

Level	Top (cmbs)	Bottom (cmbs)	Texture	Color	Notes
1	0	8	Sod		
2	8	33	Sandy clay loam	7.5YR4/3	Topsoil/plowzone
3	33	47	Sandy clay	7/5YR4/6	Subsoil

STP #20, E190 N1030

Level	Top (cmbs)	Bottom (cmbs)	Texture	Color	Notes
1	0	10	Sod		
2	10	28	Sandy clay loam	10YR3/6	Topsoil/plowzone
3	28	42	Sandy clay loam	10YR3/6, 7.5YR4/6	Mottled
4	42	54	Sandy clay	7.5YR4/6	Subsoil

APPENDIX C

CERAMIC ANALYSIS

More than 11,000 sherds were analyzed for this study. At UNC-RLA, I macroscopically examined 7420 sherds excavated by Keel in the 1960s, including all sherds from all features, all sherds from the primary mound summit, and a 50% sample of sherds from the pre-mound midden (i.e., all sherds from every-other grid square). I macroscopically examined all 3651 sherds recovered during the 2011 and 2012 seasons, from both plowzone and sub-plowzone contexts, except for sherds that were less than 2 cm in diameter, and thus considered "residual." Rather than use culture historical typological analysis, I conducted attribute-based analysis of each sherd. In the future, these data may be useful to clarifying temporal ceramic variability in the Appalachian Summit, and/or different Middle Woodland ceramic communities of practice. Recorded attributes for all sherds included:

- Vessel portion (body, rim, base, pode/foot, shoulder)
- Maximum sherd thickness and diameter
- Temper material, size, sorting
- Presences/absence of mica
- Exterior and interior surface treatment (and if applicable check size/ shape)
- Decoration (punctations, incisions)
- Presence/absence of exterior and interior usewear
- Exterior and interior color
- Presence/absence of coil break

Additional attributes were collected on rim sherds (rim profile, rim form, lip form, rim decoration, lip thickness, orifice diameter, percentage of orifice arc present) and base sherds (basal form, basal thickness, presence/absence of podal supports, pode length and shape). The tables below present counts, weights, temper types, and exterior surface treatment types for all sherds recovered during the 2011-2012 excavations. Similar data from the 1966 excavations of Mound No. 2 are available in Keel 1976. I have also included rim data for each rim sherd analyzed (from 1966 and 2011-2012 excavations). These latter date were the basis for the assignment of certain vessel forms to different feature contexts. ***Pots*** had restricted rims; small pots had orifice diameters less than or equal to 13 cm, and large pots had orifice diameters greater than or equal to 14 cm. ***Jars*** had open rims and orifice diameters greater than or equal to 18 cm; thin-walled jars were less than or equal to 6.4 mm in sherd cross-sections, while thick-walled jars were greater than or equal to 6.5 mm in sherd cross-sections. ***Bowls*** had open rims and orifice diameters less than or equal to 17 cm; thin-walled bowls were less than or equal to 6 mm in sherd cross-sections, while thick-walled bowl were greater than or equal to 6.1 mm in sherd cross-sections. It should be noted that the raw number of rims almost certainly overestimates the original number of vessels in the assemblage, due to post depositional breakage.

Ceramic Total from All Units, 2011-2012 Excavations

Unit	Context	# Sherds	Mass sherds (g)	# Residual	Mass residual (g)
1	Plowzone	21	46.3	24	12.6
1	Sub-plowzone	6	10.5	0	0
2	Plowzone	3	32.2	9	4.8
2	Sub-plowzone	9	7.8	1	1.3
3	Plowzone	303	1119.9	598	486.3
3	Sub-plowzone	53	245.5	90	53.5
4	Plowzone	824	2974.3	1195	1079.6
4	Sub-plowzone	250	1295.3	272	223.4
5	Plowzone	100	501.5	264	217.7
5	Sub-plowzone	31	12.37	50	34.7
6	Plowzone	438	1108.5	545	447.4
6	Sub-plowzone	146	616.7	266	196.2
8	Plowzone	845	3466.4	1590	1285.7
8	Sub-plowzone	438	2099.3	420	208.2
9	Plowzone	21	150.8	266	14.1
9	Sub-plowzone	6	515.1	55	74.6
10	Plowzone	0	0	0	0
10	Sub-plowzone	9	26.1	4	2.5
11	Plowzone	9	30.5	11	6.8

Tempers and Surface Treatments in Each Unit, 2011-2012 Excavations

UNIT 1 (n=27)	Temper	Brushed	Check stamped	Cord marked	Plain	Rectilinear stamped	Indeterminate stamped	Eroded
Plowzone	*Coarse sand/grit*				1			1
	Crushed quartz		3		3	1	1	
	Fine sand		1	2	2		4	2
Sub-plowzone	*Crushed quartz*		1		2			
	Fine sand	1			1			1

UNIT 2 (n=12)	Temper	Check stamped	Cord marked	Plain	Rectilinear stamped	Indeterminate stamped	Eroded
Plowzone	*Coarse sand/grit*			2	1		
	Crushed quartz	1		2		1	
	Fine sand		1				1
Sub-plowzone	*Fine sand*			3			

UNIT 3 (n=356)	Temper	Brushed	Check stamped	Cord marked	Plain	Rectilinear stamped	Simple stamped	Indeterminate stamped	Eroded
Plowzone	*Coarse sand/grit*		8	5	21	1	5	23	15
	Crushed quartz	2	6	1	13		5	8	14
	Fine sand	6	7	13	65	5	6	45	29
Sub-plowzone	*Coarse sand/grit*		2		1	4		1	5
	Crushed quartz		1	1	5	1		1	4
	Fine sand	3	4	4	6		1	4	5

UNIT 4 (n=1074)	*Temper*	Brushed	Burnished	Check stamped	Cord marked	Fabric marked	Plain	Rectilinear stamped	Simple stamped	Indeterm.inate stamped	Eroded
Plowzone	*Coarse sand/grit*	5		1	4	1	42		9	41	36
	Crushed quartz	3		8	6		63	14	7	23	45
	Fine sand	9	1	8	28		165	9	13	116	122
	Other				1			43			
Sub-plowzone	*Coarse sand/grit*			4	4	1	8	19	1	21	15
	Crushed quartz			1	5		33	6	2	8	15
	Fine sand	2		3	9		40	21	2	19	11

UNIT 5 (n=131)	*Temper*	Brushed	Burnished	Check stamped	Cord marked	Plain	Rectilinear stamped	Simple stamped	Indeterminate stamped	Eroded
Plowzone	*Coarse sand/grit*			1		4	1		1	4
	Crushed quartz						1	1	1	
	Fine sand	1	1		2	29			44	29
Sub-plowzone	*Coarse sand/grit*			1		2	2		1	3
	Crushed quartz	2		3		3			3	
	Fine sand	1		1		2	2			5

UNIT 6 (n=584)	*Temper*	Brushed	Burnished	Check stamped	Cord marked	Fabric marked	Plain	Rectilinear stamped	Simple stamped	Indeterminate stamped	Eroded
Plowzone	*Coarse sand/grit*	5		22	2	1	34	6	9	32	36
	Crushed quartz	1		11	4		23	1	3	14	13
	Fine sand	6	8	25	7		61	11	7	45	30
	Limestone	2		9	1		4			2	3
Sub-plowzone	*Coarse sand/grit*	1		9			10		3	5	6
	Crushed quartz	1		19			24		4	4	7
	Fine sand			15	1		21		1	9	6

UNIT 8 (n=1283)	*Temper*	Brushed	Burnished	Check stamped	Cord marked	Curvilinear stamped	Fabric marked	Plain	Rectilinear stamped	Simple stamped	Indeterminate stamped	Eroded
Plowzone	*Coarse sand/grit*	5		32	10		2	81	10	18	52	66
	Crushed quartz	4		32	2			37	2	7	26	14
	Fine sand	17		43	22	1	1	16 7	19	14	89	57
	Limestone			2	1			5		1	2	1
	Sand and other										1	2
Sub-plowzone	*Coarse sand/grit*			49	1	1	1	4		3	30	11
	Crushed quartz		1	78				6	1	1	38	17
	Fine sand	15		75	3		1	28	5	5	45	15
	Limestone										1	
	Other	1										

UNIT 9 (n=27)	*Temper*	Brushed	Check stamped	Cord marked	Plain	Rectilinear stamped	Indeterminate stamped	Eroded
Plowzone	*Coarse sand/grit*				1			1
	Crushed quartz		3		3	1	1	
	Fine sand		1	2	2		4	2
Sub-plowzone	*Crushed quartz*		1		2			
	Fine sand	1			1			1

UNIT 10 (n=9)	*Temper*	Check stamped	Cord marked	Plain	Eroded
Sub-plowzone	*Coarse sand/grit*	2			2
	Crushed quartz		1	1	
	Fine sand			2	1

UNIT 11 (n=9)	*Temper*	Cord marked	Plain	Rectilinear stamped	Eroded
Plowzone	*Coarse sand/grit*		2		
	Crushed quartz		2	1	3
	Fine sand				1

All Rim Sherds, 2011-2012 Off-Mound Excavations

Unit	Context	Temper	Surf. Treatment	Body Thick-ness (mm)	Profile	Rim Form	Lip Form	Orifice Diam. (cm)	Arc%
8	F.6 (ditch)	fine sand	check stamped	6	everted	thickened	rounded	20	4.0
8	F.6 (ditch)	fine sand	check stamped	5	everted	unmodified	flattened	9.0	5.0
4	F.4	crushed quartz	cord marked	7	everted	unmodified	rounded	11.0	7.0
10	F.26	crushed quartz	cord marked	7	indeterm.	indeterm.	indeterm.		
4	F.4	crushed quartz	eroded	7	everted	unmodified	flattened	15.0	4.0
8	PZ	coarse sand	eroded	7	everted	thickened	notched		
4	F.4	grit	eroded	6	everted	unmodified	rounded	23.0	5
6	PZ	grit	eroded	7	indeterm.	unmodified	rounded		
4	PZ	fine sand	eroded	8	indeterm.	unmodified	flattened		
8	PZ	fine sand	eroded	6	indeterm.	indeterm.	indeterm.		
4	PZ	fine sand	eroded	5	indeterm.	indeterm.	indeterm.		
4	PZ	fine sand	eroded	9	indeterm.	indeterm.	indeterm.		
8	F.6 (ditch)	crushed quartz	indeterm. stamped	5	everted	unmodified	flattened	16.0	5.0
8	F.6 (ditch)	crushed quartz	indeterm. stamped	6	indeterm.	indeterm.	indeterm.		
4	F.4	coarse sand	indeterm. stamped	5	indeterm.	indeterm.	indeterm.		
3	PZ	fine sand	indeterm. stamped	8	indeterm.	unmodified	rounded		
6	F.8	fine sand	indeterm. stamped	6	indeterm.	indeterm.	indeterm.		
4	PZ	fine sand	indeterm. stamped	5	indeterm.	indeterm.	indeterm.		
6	F.6 (ditch)	crushed quartz	plain	7	everted	collared	flattened	17.0	4.0
8	PZ	crushed quartz	plain	6	indeterm.	collared	rounded	26.0	4.0
8	PZ	crushed quartz	plain	7	straight	collared	notched	11.0	4.5
8	PZ	crushed quartz	plain	6	everted	collared	flattened	15.0	4.5

Unit	Context	Temper	Surf. Treatment	Body Thick-ness (mm)	Profile	Rim Form	Lip Form	Orifice Diam. (cm)	Arc%
8	PZ	crushed quartz	plain	7	inverted	collared	flattened	15.0	6.0
10	F.26	crushed quartz	plain	5	everted	thickened	flattened	14.0	9.0
6	F.6 (ditch)	crushed quartz	plain	8	straight	unmodified	flattened		
6	F.6 (ditch)	crushed quartz	plain	8	straight	collared	flattened		
8	PZ	coarse sand	plain	8	straight	collared	rounded		
8	PZ	coarse sand	plain	4	everted	unmodified	rounded	14.0	4.0
8	PZ	fine sand	plain	8	straight	collared	flattened	13.0	3.0
6	PZ	fine sand	plain	6	everted	thickened	flattened	14.0	3.0
5	PZ	fine sand	plain	6	inverted	collared	rounded	18.0	3.0
8	PZ	fine sand	plain	7	inverted	collared	flattened	18.0	3.0
6	PZ	fine sand	plain	7	everted	unmodified	flattened	23.0	3.0
8	PZ	fine sand	plain	7	inverted	collared	flattened	20.0	4.0
8	PZ	fine sand	plain	5	inverted	unmodified	flattened	22.0	4.0
4	PZ	fine sand	plain	8	everted	thickened	flattened	23.0	4.0
8	PZ	fine sand	plain	8	everted	collared	rounded	12.0	6.0
8	F.6 (ditch)	fine sand	plain	4	everted	unmodified	rounded	5.0	15.0
4	PZ	fine sand	plain	7	indeterm.	indeterm.	indeterm.		
6	PZ	fine sand	plain	7	everted	collared	flattened		
4	PZ	fine sand	plain	7	indeterm.	collared	rounded		
6	PZ	fine sand	rect. stamped	7	everted	thickened	rounded		
8	PZ	fine sand	rect. stamped	6	everted	unmodified	flattened		
8	PZ	crushed quartz	simple stamped	6	everted	thickened	flattened		
8	PZ	crushed quartz	brushed	6	everted	unmodified	rounded	22.0	5.0

Unit	Context	Temper	Surf. Treatment	Body Thick-ness (mm)	Profile	Rim Form	Lip Form	Orifice Diam. (cm)	Arc%
4	PZ	fine sand	brushed	6	indeterm.	collared	flattened	15.0	4.0
8	F.6 (ditch)	crushed quartz	check stamped	6	indeterm.	unmodified	flattened		
6	PZ	fine sand	cord marked	5	straight	unmodified	rounded	15.0	3.0
4	F.4	fine sand	cord marked	5	straight	unmodified	flattened	12.0	5.0
3	F.1B	fine sand	cord marked	6	everted	unmodified	rounded		
4	F.4	crushed quartz	eroded	5	straight	unmodified	rounded	16.0	4.0
6	PZ	fine sand	eroded	4	indeterm.	indeterm.	indeterm.		
4	PZ	fine sand	eroded	6	indeterm.	indeterm.	indeterm.		
8	PZ	crushed quartz	indeterm. stamped	5	everted	unmodified	flattened	18.0	3.0
8	PZ	grit	indeterm. stamped	7	everted	unmodified	rounded		
6	PZ	fine sand	indeterm. stamped	6	everted	thickened	rounded		
6	PZ	fine sand	indeterm. stamped	6	straight	unmodified	rounded		
8	F.6 (ditch)	fine sand	indeterm. stamped	5	everted	unmodified	flattened	13.0	5.0
4	PZ	fine sand	indeterm. stamped	7	indeterm.	indeterm.	indeterm.		
6	PZ	crushed quartz	plain	5	everted	unmodified	flattened	25.0	2.0
5	F.5	crushed quartz	plain	7	straight	unmodified	flattened	9.0	3.0
8	PZ	crushed quartz	plain	5	everted	unmodified	flattened	13.0	6.0
4	PZ	crushed quartz	plain	4	straight	unmodified	flattened		
6	PZ	crushed quartz	plain	5	inverted	unmodified	rounded		
4	PZ	crushed quartz	plain	8	everted	collared	flattened		
3	PZ	coarse sand	plain	14	everted	collared	flattened		
3	PZ	fine sand	plain	7	inverted	collared	rounded		
3	F.1A	fine sand	plain	4	everted	unmodified	flattened	21.0	2.0

Unit	Context	Temper	Surf. Treatment	Body Thick-ness (mm)	Profile	Rim Form	Lip Form	Orifice Diam. (cm)	Arc%
8	PZ	fine sand	plain	5	everted	unmodified	rounded	9.0	5.0
3	PZ	fine sand	plain	7	inverted	unmodified	rounded	14.0	5.0
4	PZ	fine sand	plain	7	indeterm.	indeterm.	indeterm.		
8	PZ	fine sand	plain	5	everted	unmodified	rounded		
1	PZ	fine sand	plain	9	straight	unmodified	notched		
4	PZ	fine sand	plain	6	everted	unmodified	rounded		
4	F.4	crushed quartz	rect. stamped	6	everted	unmodified	flattened	25.0	3.0
4	PZ	fine sand	rect. stamped	13	indeterm.	indeterm.	indeterm.		
8	PZ	coarse sand	simple stamped	7	everted	unmodified	flattened		
8	PZ	fine sand	check stamped	5	everted	unmodified	rounded	12.0	5.0
8	PZ	fine sand	eroded	6	everted	unmodified	rounded	13.0	6.0
8	PZ	crushed quartz	indeterm. stamped	8	straight	unmodified	flattened	10.0	3.5
6	F.6 (ditch)	coarse sand	indeterm. stamped	3	everted	unmodified	rounded	12.0	4.0
8	F.6 (ditch)	coarse sand	indeterm. stamped	5	everted	unmodified	rounded	25.0	4.0
8	F.6 (ditch)	grit	indeterm. stamped	5	straight	unmodified	rounded	8.0	5.0
4	PZ	crushed quartz	eroded	6	indeterm.	indeterm.	indeterm.		
4	PZ	crushed quartz	plain	7	indeterm.	collared	flattened	15.0	4.0
4	PZ	crushed quartz	plain	5	everted	thickened	flattened	3.0	4
4	PZ	crushed quartz	plain	8	inverted	unmodified	notched	4.0	4
8	PZ	crushed quartz	plain	7	everted	unmodified	rounded		
6	PZ	crushed quartz	plain	6	everted	unmodified	rounded		
4	PZ	crushed quartz	plain	7	everted	thickened	flattened		
4	PZ	crushed quartz	plain	9	straight	unmodified	flattened		

Unit	Context	Temper	Surf. Treatment	Body Thick-ness (mm)	Profile	Rim Form	Lip Form	Orifice Diam. (cm)	Arc%
8	PZ	coarse sand	plain	7	everted	unmodified	rounded	12.0	4.0
4	PZ	coarse sand	plain	10	inverted	collared	flattened	25.0	4.0
8	PZ	coarse sand	plain	10	indeterm.	applique	flattened		
8	PZ	coarse sand	plain	7	everted	collared	flattened		
6	PZ	coarse sand	plain	7	straight	unmodified	rounded		
8	PZ	coarse sand	plain	9	straight	unmodified	rounded		
8	PZ	fine sand	plain	6	everted	thickened	flattened	16.0	3.0
8	PZ	fine sand	plain	7	inverted	collared	rounded	22.0	3.0
8	PZ	fine sand	plain	5	straight	unmodified	flattened	16.0	4.0
4	PZ	fine sand	plain	7	inverted	thickened	flattened	5.0	4
5	PZ	fine sand	plain	7	everted	unmodified	rounded		
4	PZ	fine sand	plain	8	everted	thickened	rounded		
8	PZ	fine sand	plain	12	straight	collared	flattened		
4	PZ	fine sand	plain	9	straight	collared	flattened		
4	PZ	fine sand	rect. stamped	6	everted	unmodified	rounded		
4	PZ	fine sand	brushed	7	everted	thickened	flattened		
8	PZ	crushed quartz	check stamped	7	everted	unmodified	rounded		
4	PZ	fine sand	eroded	8	indeterm.	indeterm.	indeterm.		
6	PZ	crushed quartz	indeterm. stamped	5	everted	thickened	rounded	10.0	3.0
6	F.8	crushed quartz	indeterm. stamped	7	inverted	unmodified	flattened	20.0	3.0
4	PZ	crushed quartz	indeterm. stamped	5	indeterm.	thickened	flattened	3.0	4
4	PZ	fine sand	indeterm. stamped	6	inverted	unmodified	flattened	25.0	2.0
8	PZ	fine sand	indeterm. stamped	6	everted	thickened	rounded	8.0	6.0

Unit	Context	Temper	Surf. Treatment	Body Thick-ness (mm)	Profile	Rim Form	Lip Form	Orifice Diam. (cm)	Arc%
8	PZ	fine sand	indeterm. stamped	7	indeterm.	indeterm.	indeterm.		
4	PZ	fine sand	indeterm. stamped	5	indeterm.	indeterm.	indeterm.		
4	PZ	fine sand	indeterm. stamped	6	indeterm.	indeterm.	indeterm.		
8	PZ	crushed quartz	plain	7	everted	thickened	flattened	11.0	6.0
4	PZ	coarse sand	plain	7	everted	thickened	rounded	23.0	3.0
8	F.6 (ditch)	coarse sand	plain	8	inverted	applique	rounded	8.0	4.0
6	n/a	coarse sand	plain	8	inverted	collared	rounded	20.0	4.0
6	PZ	fine sand	plain	9	indeterm.	collared	rounded		
4	PZ	fine sand	plain	6	everted	unmodified	flattened	17.0	3.0
8	PZ	fine sand	plain	6	straight	unmodified	rounded	10.0	5.0
6	PZ	fine sand	plain	6	inverted	unmodified	flattened	8.0	6.0
4	PZ	fine sand	plain	5	everted	thickened	flattened		
5	F.5	coarse sand	rect. stamped	6	inverted	collared	rounded	17.0	3.0
3	F.1A	coarse sand	rect. stamped	10	inverted	collared	flattened	15.0	6.0
5	PZ	fine sand	rect. stamped	7	indeterm.	indeterm.	indeterm.		
8	F.6 (ditch)	coarse sand	simple stamped	5	straight	unmodified	flattened	17.0	8.0
3	PZ	fine sand	indeterm. stamped	9	indeterm.	collared	rounded		
8	PZ	fine sand	plain	6	everted	collared	rounded	23.0	2.0
6	PZ	grit	rect. stamped	6	inverted	collared	rounded	22.0	4.0
8	PZ	coarse sand	brushed	4	straight	thickened	flattened		
8	F.6 (ditch)	fine sand	brushed	5	indeterm.	indeterm.	indeterm.		
6	F.8	crushed quartz	check stamped	6	everted	unmodified	flattened	25.0	4.0
6	F.6 (ditch)	crushed quartz	check stamped	5	everted	unmodified	flattened		

Unit	Context	Temper	Surf. Treatment	Body Thick-ness (mm)	Profile	Rim Form	Lip Form	Orifice Diam. (cm)	Arc%
8	F.6 (ditch)	coarse sand	check stamped	4	inverted	thickened	flattened		
4	F.4	crushed quartz	cord marked	8	indeterm.	indeterm.	indeterm.		
4	PZ	fine sand	indeterm. stamped	7	indeterm.	indeterm.	indeterm.		
4	PZ	crushed quartz	plain	7	indeterm.	thickened	notched		
6	PZ	crushed quartz	plain	7	everted	unmodified	flattened		
6	PZ	coarse sand	plain	7	everted	thickened	rounded	16.0	4.0
8	PZ	coarse sand	plain	8	straight	unmodified	flattened	13.0	5.0
9	F.28	coarse sand	plain	4	everted	unmodified	rounded		
3	F.1A	fine sand	plain	8	indeterm.	indeterm.	indeterm.		
4	PZ	fine sand	plain	6	indeterm.	indeterm.	indeterm.		
8	F.6 (ditch)	fine sand	plain	4	everted	thickened	rounded		
11	PZ	crushed quartz	rect. stamped	6	straight	thickened	flattened	16.0	5.0
4	PZ	fine sand	rect. stamped	7	straight	unmodified	flattened	11.0	4.0
8	PZ	crushed quartz	check stamped	4	everted	unmodified	rounded		
8	PZ	coarse sand	cord marked	7	everted	unmodified	rounded	22.0	2.0
4	F.4	fine sand	cord marked	6	inverted	unmodified	flattened	10.0	2.0
4	PZ	crushed quartz	eroded	6	everted	unmodified	flattened	15.0	5.0
5	PZ	fine sand	eroded	5	everted	thickened	rounded		
8	PZ	crushed quartz	indeterm. stamped	7	everted	unmodified	flattened		
4	F.4	grit	indeterm. stamped	8	everted	unmodified	rounded	22.0	5.0
8	PZ	fine sand	indeterm. stamped	7	everted	unmodified	flattened		
8	F.6 (ditch)	crushed quartz	plain	7	everted	unmodified	flattened	18.0	3.0
8	PZ	coarse sand	plain	10	everted	collared	flattened		

Unit	Context	Temper	Surf. Treatment	Body Thick-ness (mm)	Profile	Rim Form	Lip Form	Orifice Diam. (cm)	Arc%
6	PZ	coarse sand	plain	11	straight	unmodified	flattened		
6	PZ	coarse sand	plain	8	everted	collared	flattened		
9	PZ	fine sand	plain	5	everted	thickened	flattened		
6	F.6 (ditch)	fine sand	plain	4	everted	unmodified	flattened	11.0	3.0
3	PZ	fine sand	plain	5	everted	unmodified	flattened	24.0	3.0
8	PZ	fine sand	plain	5	straight	unmodified	flattened		
4	PZ	fine sand	plain	6	everted	unmodified	rounded		
1	PZ	crushed quartz	rect. stamped	7	everted	unmodified	rounded	15.0	5.0
8	PZ	crushed quartz	rect. stamped	6	everted	unmodified	rounded		
6	PZ	fine sand	rect. stamped	6	indeterm.	indeterm.	indeterm.		

All Rim Sherds, 1966 Mound No. 2 Excavations

Context	Temper	Surf. Treatment	Body Thick-ness (mm)	Profile	Rim Form	Lip Form	Orifice Diam. (cm)	Arc%
Feature 1	crushed quartz	plain	6	everted	thickened	flattened		
Feature 3	coarse sand	cord marked	6	straight	unmodified	flattened	11	5
Feature 3	coarse sand	plain	5	everted	thickened	rounded		
Feature 3	coarse sand	eroded	indeterm.	indeterm.	collared	flattened		
Feature 5	fine sand	plain	3	everted	unmodified	rounded	13	5
Feature 9	coarse sand	brushed	9	straight	unmodified	rounded	20	8
Feature 13	coarse sand	plain	6	inverted	unmodified	rounded		
Feature 17	fine sand	eroded	5	indeterm.	thickened	flattened		
Feature 18	coarse sand	plain	7	straight	unmodified	flattened	16	9
Feature 18	coarse sand	plain	5	everted	unmodified	rounded	11	6
Feature 18	coarse sand	plain	5	straight	unmodified	rounded		
Feature 20	coarse sand	eroded	7	everted	unmodified	flattened	10	5
Feature 20	coarse sand	indeterm. stamped	6	everted	unmodified	flattened		
Feature 20	coarse sand	plain	6	straight	thickened	flattened	15	5
Feature 20	coarse sand	plain	6	straight	unmodified	flattened	14	5
Feature 20	coarse sand	cord marked	7	everted	unmodified	rounded	22	6
Feature 20	coarse sand	brushed	7	everted	unmodified	rounded		
Feature 20	coarse sand	brushed	7	straight	unmodified	rounded	16	5
Feature 27	coarse sand	cord marked	5	straight	unmodified	flattened	15	6
Feature 30	coarse sand	brushed	6	everted	unmodified	flattened	18	4
Feature 30	coarse sand	plain	6	everted	unmodified	flattened		4

Context	Temper	Surf. Treatment	Body Thick-ness (mm)	Profile	Rim Form	Lip Form	Orifice Diam. (cm)	Arc%
Feature 30	coarse sand	brushed	6	everted	unmodified	rounded	20	7
Feature 30	coarse sand	plain	4	straight	unmodified	rounded		
Feature 30	fine sand	plain	4	straight	unmodified	rounded	10	4
Feature 30	coarse sand	plain	4	straight	unmodified	rounded		
Feature 30	fine sand	plain	7	straight	thickened	rounded		
Feature 30	coarse sand	cord marked	5	everted	unmodified	rounded	15	3
Feature 30	coarse sand	cord marked	4	everted	unmodified	rounded	9	8
Feature 30	coarse sand	plain	5	straight	unmodified	flattened	15	3
Feature 36	coarse sand	brushed	7	everted	unmodified	flattened		
Feature 36	coarse sand	cord marked	6	straight	unmodified	flattened		
Feature 36	coarse sand	brushed	7	straight	unmodified	flattened	24	5
Feature 36	coarse sand	brushed	8	straight	unmodified	flattened	24	5
Feature 36	fine sand	brushed	4	everted	unmodified	rounded		
Feature 36	coarse sand	brushed	7	indeterm.	indeterm.	indeterm.		
Feature 36	coarse sand	brushed	9	indeterm.	indeterm.	indeterm.		
Feature 37	fine sand	indeterm. stamped	6	everted	unmodified	rounded	19	4
Feature 37	coarse sand	cord marked	6	straight	unmodified	rounded	12	6
Feature 39	coarse sand	plain	5	straight	unmodified	flattened	21	12
Feature 39	fine sand	brushed	6	straight	unmodified	rounded		
Feature 39	coarse sand	plain	5	indeterm.	indeterm.	indeterm.		
Feature 40	fine sand	cord marked	8	straight	unmodified	flattened	15	9
Feature 40	fine sand	plain	6	everted	unmodified	notched	11	5
Feature 40	coarse sand	cord marked	7	straight	unmodified	rounded	11	6

Context	Temper	Surf. Treatment	Body Thick-ness (mm)	Profile	Rim Form	Lip Form	Orifice Diam. (cm)	Arc%
Feature 40	coarse sand	brushed	7	straight	unmodified	rounded		
Feature 40	fine sand	cord marked	7	straight	unmodified	rounded		
Feature 40	fine sand	cord marked	6	straight	unmodified	flattened		
Feature 40	fine sand	brushed	6	straight	unmodified	notched		
Feature 41	coarse sand	plain	7	straight	thickened	flattened		
Feature 41	coarse sand	brushed	5	everted	unmodified	notched	12	5
Feature 41	coarse sand	brushed	5	straight	unmodified	notched		
Feature 43	fine sand	cord marked	7	straight	unmodified	notched		
Feature 43	coarse sand	plain	7	straight	unmodified	notched	19	10
Feature 44	fine sand	plain	4	everted	unmodified	flattened	21	4
Feature 44	coarse sand	plain	7	straight	unmodified	flattened		
Feature 44	coarse sand	cord marked	10	straight	unmodified	flattened		
Feature 44	coarse sand	plain	6	straight	unmodified	flattened		
Feature 44	coarse sand	simple stamped	4	straight	unmodified	flattened		
Feature 44	fine sand	indeterm. stamped	7	straight	unmodified	flattened		
Feature 44	coarse sand	plain	5	indeterm.	unmodified	flattened	23	5
Feature 44	fine sand	plain	3	everted	unmodified	rounded		
Feature 44	coarse sand	check stamped	7	everted	unmodified	rounded	11	4
Feature 44	fine sand	simple stamped	5	everted	unmodified	rounded	16	5
Feature 44	coarse sand	plain	8	straight	unmodified	rounded	26	11
Feature 44	coarse sand	plain	5	straight	unmodified	rounded		
Feature 44	coarse sand	cord marked	7	straight	unmodified	flattened		
Feature 44	fine sand	brushed	5	straight	unmodified	rounded	22	5

Context	Temper	Surf. Treatment	Body Thick-ness (mm)	Profile	Rim Form	Lip Form	Orifice Diam. (cm)	Arc%
Feature 44	fine sand	check stamped	6	straight	unmodified	flattened		
Feature 44	fine sand	plain	4	indeterm.	indeterm.	indeterm.		
Feature 47	fine sand	plain	4	straight	unmodified	flattened		
Feature 47	fine sand	check stamped	4	straight	unmodified	flattened	18	5
Feature 47	coarse sand	plain	8	straight	unmodified	flattened	9	15
Feature 47	coarse sand	plain	8	straight	unmodified	flattened	21	5
Feature 47	coarse sand	brushed	6	straight	unmodified	flattened	23	3
Feature 47	coarse sand	cord marked	8	straight	unmodified	flattened	18	8
Feature 47	coarse sand	cord marked	5	straight	unmodified	flattened	15	5
Feature 47	fine sand	plain	6	straight	unmodified	flattened		5
Feature 47	coarse sand	plain	7	straight	unmodified	flattened		
Feature 47	coarse sand	brushed	8	straight	unmodified	flattened		
Feature 47	coarse sand	cord marked	7	straight	unmodified	flattened	26	6
Feature 47	coarse sand	brushed	7	straight	unmodified	flattened		
Feature 47	coarse sand	indeterm. stamped	5	everted	unmodified	rounded	11	6
Feature 47	coarse sand	cord marked	5	everted	unmodified	rounded	8	5
Feature 47	fine sand	cord marked	6	everted	unmodified	rounded	10	6
Feature 47	fine sand	plain	6	everted	unmodified	rounded	14	4
Feature 47	fine sand	eroded	5	everted	indeterm.	rounded		
Feature 47	coarse sand	brushed	8	straight	unmodified	rounded	19	6
Feature 47	coarse sand	cord marked	9	straight	indeterm.	rounded		
Feature 47	coarse sand	plain	6	straight	unmodified	rounded		
Feature 47	fine sand	cord marked	5	straight	unmodified	rounded	10	5

Context	Temper	Surf. Treatment	Body Thick-ness (mm)	Profile	Rim Form	Lip Form	Orifice Diam. (cm)	Arc%
Feature 47	coarse sand	cord marked	8	straight	unmodified	rounded	26	5
Feature 47	coarse sand	cord marked	8	straight	unmodified	rounded		
Feature 47	coarse sand	plain	9	indeterm.	unmodified	rounded	14	5
Feature 47	coarse sand	plain	6	indeterm.	unmodified	rounded		
Feature 49	fine sand	cord marked	6	straight	thickened	rounded	13	5
Feature 51	coarse sand	plain	8	straight	unmodified	flattened		
Feature 52	fine sand	simple stamped	4	everted	thickened	flattened	17	4
Midden	coarse sand	indeterm. stamped	4	everted	unmodified	indeterm.	10	10
Midden	coarse sand	indeterm. stamped	5	everted	thickened	cham-fered		
Midden	coarse sand	check stamped	4	everted	unmodified	flattened	11	6
Midden	coarse sand	cord marked	6	everted	thickened	flattened		
Midden	fine sand	check stamped	4	everted	unmodified	flattened		
Midden	coarse sand	eroded	7	everted	unmodified	flattened		
Midden	fine sand	plain	4	everted	unmodified	flattened		
Midden	fine sand	plain	4	everted	unmodified	flattened		
Midden	coarse sand	brushed	5	everted	unmodified	flattened		
Midden	coarse sand	cord marked	9	everted	thickened	flattened		
Midden	coarse sand	plain	4	everted	unmodified	flattened	11	4
Midden	coarse sand	indeterm. stamped	5	everted	unmodified	flattened		
Midden	coarse sand	plain	5	everted	thickened	flattened		
Midden	fine sand	indeterm. stamped	5	everted	thickened	flattened		
Midden	fine sand	indeterm. stamped	4	everted	unmodified	flattened		
Midden	coarse sand	check stamped	6	everted	thickened	flattened	18	5
Midden	coarse sand	brushed	7	everted	thickened	flattened		

Context	Temper	Surf. Treatment	Body Thick-ness (mm)	Profile	Rim Form	Lip Form	Orifice Diam. (cm)	Arc%
Midden	fine sand	brushed	5	everted	unmodified	flattened		
Midden	fine sand	simple stamped	5	everted	unmodified	flattened		
Midden	coarse sand	plain	7	everted	unmodified	flattened		
Midden	fine sand	plain	4	everted	thickened	flattened		
Midden	coarse sand	cord marked	7	everted	thickened	flattened		
Midden	fine sand	brushed	6	everted	unmodified	flattened		
Midden	fine sand	indeterm. stamped	4	everted	unmodified	flattened	14	5
Midden	fine sand	brushed	5	everted	unmodified	flattened	16	5
Midden	fine sand	brushed	7	everted	unmodified	flattened	25	8
Midden	coarse sand	indeterm. stamped	4	straight	thickened	flattened		
Midden	fine sand	cord marked	3	straight	unmodified	flattened	8	6
Midden	coarse sand	indeterm. stamped	5	straight	unmodified	flattened		
Midden	coarse sand	check stamped	4	straight	unmodified	flattened	14	5
Midden	fine sand	indeterm. stamped	4	straight	unmodified	flattened		
Midden	fine sand	plain	4	straight	unmodified	flattened		
Midden	fine sand	plain	3	straight	unmodified	flattened		
Midden	coarse sand	plain	5	straight	unmodified	flattened		
Midden	coarse sand	brushed	8	straight	unmodified	flattened		
Midden	coarse sand	plain	6	straight	unmodified	flattened		
Midden	coarse sand	cord marked	6	straight	unmodified	flattened	20	5
Midden	coarse sand	cord marked	5	straight	unmodified	flattened	20	5
Midden	coarse sand	cord marked	6	straight	unmodified	flattened		
Midden	coarse sand	cord marked	6	straight	unmodified	flattened	21	4
Midden	fine sand	brushed	7	straight	unmodified	flattened		
Midden	fine sand	plain	4	straight	thickened	flattened	20	6
Midden	fine sand	cord marked	5	straight	thickened	flattened		

Context	Temper	Surf. Treatment	Body Thick-ness (mm)	Profile	Rim Form	Lip Form	Orifice Diam. (cm)	Arc%
Midden	coarse sand	indeterm. stamped	4	straight	unmodified	flattened	13	5
Midden	coarse sand	brushed	6	straight	thickened	flattened	16	5
Midden	fine sand	ind. stamped	5	straight	thickened	flattened		
Midden	fine sand	plain	5	straight	unmodified	flattened		
Midden	fine sand	brushed	7	straight	unmodified	flattened		
Midden	fine sand	check stamped	6	straight	thickened	flattened	17	8
Midden	fine sand	fabric marked	5	straight	unmodified	flattened		
Midden	coarse sand	check stamped	4	straight	unmodified	flattened		
Midden	coarse sand	plain	6	straight	unmodified	flattened		
Midden	coarse sand	plain	5	straight	unmodified	flattened		
Midden	fine sand	brushed	5	straight	thickened	flattened		
Midden	fine sand	plain	5	straight	unmodified	flattened		
Midden	fine sand	cord marked	6	straight	unmodified	flattened	14	6
Midden	fine sand	brushed	5	straight	unmodified	flattened		
Midden	fine sand	plain	4	straight	unmodified	flattened		
Midden	fine sand	brushed	5	straight	thickened	flattened		
Midden	fine sand	cord marked	9	straight	unmodified	flattened		
Midden	coarse sand	indeterm. stamped	4	inverted	thickened	flattened		
Midden	coarse sand	check stamped	7	inverted	thickened	flattened		
Midden	fine sand	check stamped	7	inverted	thickened	flattened	6	15
Midden	fine sand	fabric marked	3	inverted	thickened	flattened		
Midden	coarse sand	check stamped	7	inverted	unmodified	flattened		
Midden	coarse sand	ind. stamped	3	inverted	thickened	flattened		
Midden	fine sand	cord marked	6	inverted	thickened	flattened		
Midden	fine sand	plain	4	inverted	unmodified	flattened		
Midden	coarse sand	cord marked	7	inverted	unmodified	flattened	17	5

Context	Temper	Surf. Treatment	Body Thick-ness (mm)	Profile	Rim Form	Lip Form	Orifice Diam. (cm)	Arc%
Midden	coarse sand	indeterm. stamped	7	inverted	thickened	flattened		
Midden	coarse sand	eroded	7	inverted	unmodified	flattened		
Midden	coarse sand	indeterm. stamped	7	inverted	unmodified	flattened	21	6
Midden	coarse sand	check stamped	5	indeterm.	unmodified	flattened		
Midden	coarse sand	plain	6	indeterm.	unmodified	flattened		
Midden	coarse sand	check stamped	7	straight	applique	flattened	6	
Midden	coarse sand	check stamped	5	straight	applique	flattened	6.6	
Midden	coarse sand	check stamped	6	indeterm.	thickened	flattened	5.8	
Midden	coarse sand	brushed	9	inversted	unmodified	flattened		
Midden	fine sand	plain	4	indeterm.	unmodified	notched		
Midden	coarse sand	plain	5	everted	unmodified	rounded		
Midden	fine sand	plain	5	everted	unmodified	rounded		
Midden	coarse sand	simple stamped	5	everted	unmodified	rounded		
Midden	coarse sand	check stamped	5	everted	unmodified	rounded		
Midden	coarse sand	check stamped	5	everted	unmodified	rounded		
Midden	coarse sand	check stamped	3	everted	unmodified	rounded		
Midden	coarse sand	plain	6	everted	unmodified	rounded		
Midden	fine sand	plain	5	everted	unmodified	rounded		
Midden	fine sand	plain	6	everted	unmodified	rounded		
Midden	fine sand	eroded	4	everted	thickened	rounded	10	7
Midden	coarse sand	plain	7	everted	unmodified	rounded		
Midden	coarse sand	brushed	7	everted	unmodified	rounded	21	5
Midden	coarse sand	plain	4	everted	unmodified	rounded		
Midden	coarse sand	indeterm. stamped	6	everted	unmodified	rounded	11	5
Midden	fine sand	brushed	5	everted	unmodified	rounded	13	8

Context	Temper	Surf. Treatment	Body Thick-ness (mm)	Profile	Rim Form	Lip Form	Orifice Diam. (cm)	Arc%
Midden	fine sand	plain	3	everted	unmodified	rounded		
Midden	fine sand	plain	5	everted	unmodified	rounded		
Midden	fine sand	brushed	6	everted	unmodified	rounded		
Midden	fine sand	plain	5	everted	unmodified	rounded	14	7
Midden	fine sand	indeterm. stamped	6	everted	unmodified	rounded	23	8
Midden	fine sand	plain	4	everted	unmodified	rounded		
Midden	fine sand	plain	5	everted	unmodified	rounded		
Midden	fine sand	plain	5	everted	unmodified	rounded		
Midden	coarse sand	plain	4	everted	unmodified	rounded		
Midden	coarse sand	indeterm. stamped	6	everted	unmodified	rounded		
Midden	coarse sand	indeterm. stamped	4	everted	unmodified	rounded		
Midden	fine sand	plain	4	everted	unmodified	rounded	13	5
Midden	fine sand	brushed	4	everted	unmodified	rounded	20	4
Midden	fine sand	plain	4	everted	unmodified	rounded		
Midden	coarse sand	plain	5	everted	unmodified	rounded	14	4
Midden	coarse sand	plain	6	everted	unmodified	rounded		
Midden	coarse sand	plain	6	everted	unmodified	rounded	20	7
Midden	coarse sand	indeterm. stamped	7	everted	unmodified	rounded		
Midden	coarse sand	plain	4	everted	unmodified	rounded		
Midden	coarse sand	cord marked	10	everted	unmodified	rounded		
Midden	coarse sand	brushed	8	everted	unmodified	rounded		
Midden	coarse sand	indeterm. stamped	6	everted	thickened	rounded		
Midden	coarse sand	brushed	4	everted	unmodified	rounded		
Midden	coarse sand	plain	7	everted	unmodified	rounded		
Midden	fine sand	cord marked	5	everted	thickened	rounded	11	5
Midden	fine sand	plain	6	everted	thickened	rounded		
Midden	fine sand	indeterm. stamped	4	everted	unmodified	rounded		

Context	Temper	Surf. Treatment	Body Thick-ness (mm)	Profile	Rim Form	Lip Form	Orifice Diam. (cm)	Arc%
Midden	fine sand	brushed	6	everted	unmodified	rounded		
Midden	fine sand	plain	5	everted	unmodified	rounded		
Midden	coarse sand	eroded	7	everted	unmodified	rounded		
Midden	fine sand	plain	5	everted	unmodified	rounded		
Midden	fine sand	plain	4	everted	unmodified	rounded		
Midden	coarse sand	check stamped	5	everted	unmodified	rounded		
Midden	coarse sand	indeterm. stamped	6	everted	unmodified	rounded		
Midden	fine sand	simple stamped	5	everted	unmodified	rounded		
Midden	coarse sand	cord marked	7	everted	unmodified	rounded		
Midden	coarse sand	plain	5	everted	unmodified	rounded	23	7
Midden	coarse sand	plain	8	everted	unmodified	rounded	20	6
Midden	coarse sand	brushed	6	everted	unmodified	rounded		
Midden	coarse sand	check stamped	6	everted	unmodified	rounded		
Midden	coarse sand	cord marked	5	everted	unmodified	rounded		
Midden	fine sand	plain	6	everted	unmodified	rounded		
Midden	coarse sand	plain	6	everted	unmodified	rounded	24	2
Midden	coarse sand	plain	6	everted	unmodified	rounded		
Midden	coarse sand	plain	6	everted	unmodified	rounded		
Midden	fine sand	plain	7	everted	unmodified	rounded	25	6
Midden	fine sand	plain	5	everted	unmodified	rounded		
Midden	coarse sand	indeterm. stamped	5	everted	unmodified	rounded	6	10
Midden	fine sand	plain	8	everted	unmodified	rounded		
Midden	fine sand	brushed	5	everted	unmodified	rounded		
Midden	fine sand	eroded	9	everted	thickened	rounded		
Midden	fine sand	plain	5	everted	unmodified	rounded		
Midden	coarse sand	plain	4	everted	unmodified	rounded		
Midden	coarse sand	indeterm. stamped	8	everted	unmodified	rounded		

Context	Temper	Surf. Treatment	Body Thick-ness (mm)	Profile	Rim Form	Lip Form	Orifice Diam. (cm)	Arc%
Midden	other	eroded	7	everted	unmodified	rounded	13	5
Midden	fine sand	cord marked	6	everted	unmodified	rounded		
Midden	fine sand	plain	6	straight	unmodified	rounded	8	6
Midden	fine sand	indeterm. stamped	6	straight	unmodified	rounded		
Midden	coarse sand	brushed	7	straight	unmodified	rounded	9	10
Midden	coarse sand	indeterm. stamped	5	straight	unmodified	rounded		
Midden	coarse sand	indeterm. stamped	7	straight	unmodified	rounded	23	4
Midden	coarse sand	cord marked	6	straight	unmodified	rounded	18	5
Midden	coarse sand	brushed	6	straight	unmodified	rounded		
Midden	coarse sand	plain	5	straight	unmodified	rounded	13	5
Midden	coarse sand	brushed	8	straight	unmodified	rounded	14	8
Midden	coarse sand	plain	5	straight	thickened	rounded		
Midden	fine sand	check stamped	5	straight	thickened	rounded		
Midden	fine sand	cord marked	5	straight	unmodified	rounded		
Midden	fine sand	indeterm. stamped	4	straight	unmodified	rounded		
Midden	coarse sand	cord marked	9	straight	unmodified	rounded		
Midden	fine sand	brushed	5	straight	unmodified	rounded	11	6
Midden	coarse sand	indeterm. stamped	4	straight	unmodified	rounded		
Midden	fine sand	brushed	4	straight	unmodified	rounded	18	5
Midden	fine sand	indeterm. stamped	4	straight	thickened	rounded		
Midden	coarse sand	indeterm. stamped	5	everted	unmodified	flattened		
Midden	coarse sand	cord marked	5	everted	unmodified	flattened	17	5
Midden	fine sand	simple stamped	6	everted	unmodified	flattened		4
Midden	coarse sand	cord marked	6	everted	unmodified	flattened	23	5

Context	Temper	Surf. Treatment	Body Thick-ness (mm)	Profile	Rim Form	Lip Form	Orifice Diam. (cm)	Arc%
Midden	coarse sand	simple stamped	6	straight	unmodified	flattened	10	5
Midden	coarse sand	check stamped	5	straight	unmodified	flattened		
Midden	coarse sand	check stamped	5	straight	thickened	flattened	21	17
Midden	fine sand	brushed	5	everted	thickened	rounded	13	5
Midden	coarse sand	plain	7	everted	unmodified	rounded		
Midden	fine sand	brushed	4	straight	unmodified	rounded		
Midden	fine sand	brushed	5	straight	unmodified	rounded		
Midden	fine sand	brushed	6	straight	unmodified	rounded		
Midden	fine sand	cord marked	4	everted	thickened	indeterm.	8	12
Midden	coarse sand	check stamped	4	straight	applique	flattened	5.1	20
Midden	coarse sand	brushed	12	straight	unmodified	rounded	23	7
Midden	coarse sand	check stamped	3	straight	unmodified	rounded		
Midden	coarse sand	plain	6	straight	unmodified	rounded	11	5
Midden	fine sand	plain	3	straight	unmodified	rounded		
Midden	coarse sand	check stamped	6	straight	unmodified	rounded	12	6
Midden	fine sand	plain	7	straight	unmodified	rounded		
Midden	coarse sand	indeterm. stamped	5	inverted	unmodified	rounded		
Midden	fine sand	plain	4	indeterm.	unmodified	rounded		
Midden	coarse sand	check stamped	4	everted	unmodified	indeterm.	19	4
Midden	fine sand	ind. stamped	5	everted	unmodified	flattened		
Midden	coarse sand	check stamped	6	everted	unmodified	flattened		
Midden	coarse sand	check stamped	6	inverted	thickened	flattened		
Midden	fine sand	check stamped	3	everted	unmodified	flattened	11	8
Midden	coarse sand	check stamped	5	everted	unmodified	flattened		
Midden	coarse sand	check stamped	3	everted	unmodified	flattened		

Context	Temper	Surf. Treatment	Body Thick-ness (mm)	Profile	Rim Form	Lip Form	Orifice Diam. (cm)	Arc%
Midden	coarse sand	check stamped	7	everted	unmodified	flattened		
Midden	coarse sand	indeterm. stamped	6	everted	unmodified	flattened		
Midden	coarse sand	cord marked	6	everted	unmodified	flattened		
Midden	coarse sand	check stamped	6	everted	unmodified	flattened	15	4
Midden	coarse sand	check stamped	4	straight	unmodified	flattened		
Midden	fine sand	check stamped	4	straight	unmodified	flattened		
Midden	fine sand	check stamped	5	straight	unmodified	flattened		
Midden	fine sand	check stamped	7	straight	thickened	flattened	24	5
Midden	fine sand	check stamped	5	inverted	unmodified	flattened		
Midden	fine sand	ind. stamped	4	inverted	unmodified	flattened		
Midden	coarse sand	check stamped	8	inverted	thickened	flattened		
Midden	coarse sand	check stamped	3	inverted	unmodified	flattened		
Midden	coarse sand	indeterm. stamped	4	inverted	unmodified	flattened	14	5
Midden	coarse sand	indeterm. stamped	6	inverted	thickened	flattened	5	10
Midden	coarse sand	check stamped	5	inverted	thickened	flattened		
Midden	coarse sand	check stamped	5	inverted	thickened	flattened		
Midden	coarse sand	indeterm. stamped	6	everted	unmodified	rounded		
Midden	coarse sand	brushed	7	straight	unmodified	flattened	23	7
Midden	coarse sand	brushed	4	everted	unmodified	notched		
Midden	fine sand	indeterm. stamped	4	straight	unmodified	notched		
Midden	fine sand	plain	6	straight	unmodified	notched	13	6
Midden	fine sand	cord marked	5	indeterm.	unmodified	notched		
Midden	fine sand	plain	5	everted	unmodified	rounded	24	5
Midden	crushed quartz	plain	4	inverted	thickened	flattened	8	5

Context	Temper	Surf. Treatment	Body Thick-ness (mm)	Profile	Rim Form	Lip Form	Orifice Diam. (cm)	Arc%
Midden	fine sand	plain	5	everted	unmodified	indeterm.		
Midden	fine sand	plain	6	indeterm.	unmodified	indeterm.		
Midden	coarse sand	indeterm. stamped	4	everted	unmodified	flattened		
Midden	coarse sand	check stamped	4	everted	unmodified	flattened		
Midden	coarse sand	check stamped	5	everted	thickened	flattened		
Midden	coarse sand	cord marked	5	everted	unmodified	flattened	18	5
Midden	coarse sand	indeterm. stamped	5	everted	unmodified	flattened		
Midden	fine sand	indeterm. stamped	6	straight	unmodified	flattened		
Midden	coarse sand	check stamped	5	straight	unmodified	flattened		
Midden	fine sand	check stamped	4	straight	unmodified	flattened	19	4
Midden	coarse sand	simple stamped	6	straight	unmodified	flattened		
Midden	coarse sand	plain	4	inverted	unmodified	flattened		
Midden	coarse sand	brushed	9	inverted	unmodified	flattened		
Midden	coarse sand	indeterm. stamped	4	inverted	thickened	flattened	8	10
Midden	fine sand	plain	5	inverted	thickened	flattened	17	4
Midden	coarse sand	indeterm. stamped	4	indeterm.	thickened	flattened		
Midden	fine sand	indeterm. stamped	4	everted	unmodified	rounded		
Midden	coarse sand	check stamped	7	indeterm.	indeterm.	indeterm.		
Midden	coarse sand	check stamped	4	indeterm.	indeterm.	indeterm.		
Midden	coarse sand	check stamped	4	indeterm.	indeterm.	indeterm.		
Midden	coarse sand	ind. stamped	7	indeterm.	indeterm.	indeterm.		
Midden	coarse sand	plain	6	indeterm.	indeterm.	indeterm.		
Midden	fine sand	cord marked	5	indeterm.	indeterm.	indeterm.		
Midden	coarse sand	brushed	5	indeterm.	indeterm.	indeterm.		

Context	Temper	Surf. Treatment	Body Thick-ness (mm)	Profile	Rim Form	Lip Form	Orifice Diam. (cm)	Arc%
Midden	coarse sand	brushed	9	indeterm.	indeterm.	indeterm.		
Midden	coarse sand	check stamped	3	indeterm.	indeterm.	indeterm.		
Midden	coarse sand	plain	6	indeterm.	indeterm.	indeterm.		
Midden	coarse sand	plain	6	indeterm.	indeterm.	indeterm.		
Midden	fine sand	indeterm. stamped	4	indeterm.	indeterm.	indeterm.		
Midden	coarse sand	indeterm. stamped	8	indeterm.	indeterm.	indeterm.		
Midden	coarse sand	brushed	6	everted	unmodified	flattened	11	14
Summit 1	fine sand	plain	6	everted	unmodified	chamfere d		
Summit 1	fine sand	eroded	5	straight	unmodified	indeterm.		
Summit 1	fine sand	cord marked	7	everted	thickened	flattened		
Summit 1	fine sand	plain	6	everted	unmodified	flattened		
Summit 1	coarse sand	brushed	6	straight	unmodified	flattened	28	15
Summit 1	coarse sand	brushed	5	straight	unmodified	flattened	28	
Summit 1	coarse sand	brushed	6	straight	unmodified	flattened	28	
Summit 1	coarse sand	plain	4	straight	unmodified	flattened	11	5
Summit 1	coarse sand	brushed	5	straight	unmodified	flattened	14	5
Summit 1	coarse sand	cord marked	7	straight	thickened	flattened		
Summit 1	fine sand	brushed	6	inverted	unmodified	flattened		
Summit 1	fine sand	plain	6	everted	unmodified	rounded		
Summit 1	coarse sand	brushed	7	everted	unmodified	rounded		
Summit 1	fine sand	cord marked	6	everted	thickened	rounded		
Summit 1	fine sand	cord marked	5	everted	unmodified	rounded		
Summit 1	coarse sand	brushed	7	straight	unmodified	rounded	14	6

Context	Temper	Surf. Treatment	Body Thick-ness (mm)	Profile	Rim Form	Lip Form	Orifice Diam. (cm)	Arc%
Summit 1	fine sand	cord marked	7	straight	unmodified	rounded	25	7
Summit 1	coarse sand	plain	6	straight	unmodified	flattened		
Summit 1	fine sand	plain	4	straight	unmodified	notched	10	6
Summit 1	coarse sand	brushed	7	everted	unmodified	notched	20	4
Summit 1	fine sand	plain	4	straight	unmodified	notched		
Summit 1	fine sand	plain	5	everted	unmodified	indeterm.		
Summit 1	coarse sand	brushed	6	indeterm.	indeterm.	indeterm.		
Summit 1	fine sand	brushed	5	indeterm.	indeterm.	indeterm.		

APPENDIX D

CHIPPED STONE ANALYSIS

All chipped stone recovered from plowzone and sub-plowzone contexts in off-mound areas excavated in 2011 and 2012 were macroscopically analyzed at the University of Michigan Museum of Anthropology. The assemblage was subdivided into two categories: debitage (defined as chipped stone without retouch or usewear) and tools (defined as chipped stone with retouch or one or more utilized edges). Numerous attributes were recorded for each of 1025 pieces of debitage. Each piece was first assigned a category according to two different typological approaches: (1) the typology adopted by Andrefsky (2005), which includes proximal flakes, flake shatter, and angular shatter; and (2) the typology adopted by Sullivan and Rozen (1985), which includes complete flakes, flake fragments, broken flakes, and debris. Other attributes recorded for each piece of debitage included:

- Flake termination (feathered, stepped, hinged, overshot; only applied to complete flakes)
- Raw material (chert, quartz, crystal quartz, quartzite, slate, other)
- Color (with potential to distinguish between different chert sources, identify heat treating, etc.)
- Presence/absence of raw material impurities
- Sheen (dull, waxy, glossy; only applied to chert debitage)
- Striking platform width, thickness, and type (cortical, flat, complex, abraded)
- Maximum length, width, thickness, and weight of each piece of debitage
- Approximate percentage of dorsal cortex
- Number of dorsal flake scars.

The following tables include information regarding the amounts, types, and raw materials of debitage according to individual units (including plowzone) and features excavated during the 2011-

2012 Garden Creek Archaeological Project. These data are most relevant to the present volume. Additional data is in the possession of the author.

Debitage Totals from GCAP Units and Features

Unit	**Total pieces of debitage**	**Total weight debitage (g)**
1	32	10.3
2	1	2.1
3	134	102.8
4	192	94.7
5	37	23.7
6	179	110.7
8	369	248
9	61	92.4
10	1	0.3
11	12	5.3
12	7	1.5

Feature	**Total pieces of debitage**	**Total weight debitage (g)**
1	36	21.7
4	9	2.2
5	1	0.1
6 (Ditch)	123	83
8	14	12.6
14	1	0.5
21	3	2.8
24	1	0.1
26	1	0.3
28	7	4.1

Debitage Types from GCAP Units and Features

Unit	ANDREFSKY CATEGORY			SULLIVAN-ROZEN CATEGORY			
	Proximal flake	**Flake shatter**	**Angular shatter**	**Complete flake**	**Flake fragment**	**Broken flake**	**Debris**
1	12	13	7	11	13	1	7
2			1				1
3	29	35	70	27	35	2	70
4	58	55	79	50	55	8	79
5	6	13	18	5	13	1	18
6	55	55	69	46	55	9	69
8	138	84	147	115	84	23	147
9	19	14	28	13	14	6	28
10			1				1
11	5	5	2	5	5		2
12	7	5	2	5			2

Feature	ANDREFSKY CATEGORY			SULLIVAN-ROZEN CATEGORY			
	Proximal flake	**Flake shatter**	**Angular shatter**	**Complete flake**	**Flake fragment**	**Broken flake**	**Debris**
1	10	8	18	10	8		18
2		2					
4	4		3	3	2	1	3
5			1				1
6 (Ditch)	40	31	52	37	31	3	52
8	4	4	6	3	4	1	6
14	1			1			
21	1		2	1			2
24			1				1
26			1				1
28	3	2	2	1	2	2	2

Debitage Raw Materials from GCAP Units and Features

Unit	Chert	Crystal Quartz	Quartz	Quartzite	Slate	Other
1	23	6	3			
2	1					
3	57	32	23	20		2
4	119	32	18	19	2	2
5	20	9	5	3		
6	89	37	29	20	4	
8	171	91	61	40	2	4
9	38	12	7	4		
10			1			
11	10	2				
12	5	1	1			

Feature	Chert	Crystal Quartz	Quartz	Quartzite	Slate
1	24	2	5	5	
2					
4	7		1	1	
5	1				
6 (Ditch)	41	47	19	15	1
8	7	1	6		
14				1	
21	1	2			
24	1				
26	6		1		
28		1			

The chipped stone assemblage from the 2011 and 2012 seasons also included formal and informal tools. The vast majority of these artifacts originated in the plowzone. The following tables include the attributes recorded for lithic tools and projectile points macroscopically examined by the GCAP crew.

Projectile Points from Off-Mound Areas, 31Hw8

Unit	Context	Type	Raw Material	Color	Max. Length (mm)	Max. Width (mm)	Max. Thickness (mm)
8	PZ	Connestee Triangular	chert	dark gray	23.2	17.4	2.9
4	F.4	Haywood Triangular	chert	banded black/gray	17.7	15	3.9
4	PZ	unknown	chert	black	29.1	12	4.2
6	PZ	unknown	chert	dark gray	37.1	22.7	6.9
5	PZ	Haywood Triangular	chert	black	19.4	15.3	4.9
3	PZ	unknown	chert	light gray	26.4	15.7	6.3
6	F.6 (ditch)	Connestee Triangular	chert	black	29.4	17.2	6.2
1	PZ	Connestee Triangular	chert	dark gray	20.2	21	6.6
8	PZ	Pentagonal corner-notched	chert	olive brown	21.3	21.5	4
4	PZ	Bradley Spike	chert	light gray	25.8	12.3	5.6
4	PZ	Bradley Spike	quartz	white	27.1	12.6	5.1

Chipped Stone Tools from Off-Mound Areas, 31Hw8

Unit	**Context**	**Type**	**Bi/uni**	**Material**	**Color**	**Max length (mm)**	**Max Width (mm)**	**Mass (g)**
5	PZ	utilized flake	biface	chalcedony	white	18.8	11.7	0.6
5	PZ	utilized flake	uniface	chert	gray	24.3	17.9	1.9
5	PZ	utilized flake	biface	chert	gray	23	10.7	1.2
8	F.6 (ditch)	utilized flake	uniface	chert	gray	37.7	17.6	3.8
8	F.6 (ditch)	utilized flake	uniface	chert	pink	22.3	11.45	0.9
8	PZ	blade	n/a	chert	white	29	8.1	0.7
8	PZ	blade	n/a	chert	black	32.9	8.9	1.3
4	L	utilized flake	uniface	chert	brown	17.5	10.1	0.4
8	F.6 (ditch)	debitage	n/a	chert	gray	22.6	11.6	0.5
9	PZ	utilized blade	uniface	chert	gray	19.5	5.2	0.2
8	PZ	utilized flake	uniface	chert	black	2.5	16.4	1.1
4	PZ	utilized flake	biface	chert	brown	9.8	12.3	0.2
3	PZ	utilized flake	uniface	chert	gray	17.9	9.8	0.4
4	PZ	blade	n/a	chert	black	19.1	6.3	0.6
4	PZ	utilized flake	n/a	chert	gray	20.9	8.1	0.5
8	PZ	utilized flake	biface	chert	gray	20.1	11.2	0.9
4	F.4	blade	n/a	chert	brown	22.3	7.6	0.3
6	PZ	utilized flake	biface	chert	pink	10.8	9	0.3
4	PZ	utilized flake	biface	chert	gray	22.9	8.7	0.7
6	PZ	utilized flake	uniface	chert	black	18.3	7.4	0.4
3	PZ	utilized flake	biface	chert	black	18.2	9.9	0.3
6	F.6 (ditch)	utilized blade	uniface	chert	gray	21.2	8.1	0.3
6	F.6 (ditch)	unknown	n/a	shale	brown	64.1	26.3	23.3
4	PZ	utilized flake	biface	chert	gray	20.1	15.9	1.2
8	PZ	utilized flake	biface	chert	orange	19.3	14.6	1.3
4	PZ	utilized flake	uniface	quartz	white	35.1	32	5.8
8	PZ	utilized flake	biface	chert	black	30.2	14.5	1.9

APPENDIX E

MACROBOTANICAL ANALYSIS

A total of 277 liters of earth from the 2011 and 2012 excavation seasons at Garden Creek underwent flotation. These efforts yielded a heavy fraction of 6103.85 grams and a light fraction of 193.99 grams, including 5.17 grams of plant remains and 34.92 grams of wood remains. The following tables summarize the carbonized plant taxa recovered from individual feature contexts within 31Hw8, including Enclosure No. 1, and from 31Hw8 as a whole. Flotation and analysis were completed under the supervision of Dr. C. Margaret Scarry and the University of North Carolina, Chapel Hill.

Feature 1a Taxa (n=1)

Common Name	Taxonomic Name	Seasonality	Count
Nuts			
Hickory	*Carya* sp.	fall	2

Context Totals
9.5 L floated
<0.01g plant
3.76g wood
HF = 241.35 g
LF = 31.47 g

Feature 1b Taxa
(n=25)

Common Name	Taxonomic Name	Seasonality	Count	Context Totals
	Fruits			11 L floated
Bramble	*Rubus* sp.	late summer/fall	1	0.03g plant
	Starchy and Oily Seeds			12.2g wood
Chenopod	*Chenopodium* sp.	late summer/fall	1	HF = 1133.24g
Chenpod/amaranth			1	LF = 20.12g
	Miscellaneous			
Carnation family	Caryophyllaceae		1	
Grass family	Poaceae		7	
Pitch			4	
Unidentifiable seed			10	

Feature 4 Taxa
(n=62)

Common Name	Taxonomic Name	Seasonality	Count	Context Totals
	Nuts			54.5 L floated
Acorn	*Quercus* sp.	fall	2	0.32 g plant
Acorn cf.	cf. *Quercus* sp.	fall	1	3.24g wood
Hickory	*Carya* sp.	fall	4	HF = 859.18g
Hickory cf.	cf. *Carya* sp.	fall	2	LF = 55.4g
	Starchy and Oily Seeds			
Tobacco cf.	*Nicotiana* sp. cf.	late summer/fall	1	
	Crops			
Squash	*Curcurbita* sp.	late summer/fall	1	
Maize cupule	*Zea mays*	late summer/fall	1	
Maize kernel	*Zea mays*	late summer/fall	32	
	Miscellaneous			
Grass	Poaceae		5	
Pitch			8	
Unidentifiable seed			4	
Unidentified seed			1	

Feature 5 Taxa
(n=13)

Common Name	Taxonomic Name	Seasonality	Count
	Nuts		
Hickory	*Carya* sp.	fall	3
	Starchy and Oily Seeds		
Amaranth	*Amaranth* sp.	spring/summer	1
	Crops		
Maize cupule	*Zea mays*	late summer/fall	1
	Miscellaneous		
Catchfly	*Silene* sp.		1
Pinecone	*Pinus* sp.		2
Sedge family	Cyperaceae		1
Unidentifiable seed			4

Context Totals
9 L floated
<0.01g plant
0.92g wood
HF = 119.2g
LF = 1.52g

Feature 6b Taxa
(n=207)

Common Name	Taxonomic Name	Seasonality	Count
Nuts			
Acorn	*Quercus* sp.	fall	2
Hazel	*Corylus* sp.	fall	2
Hickory	*Carya* sp.	fall	27
Hickory cf.	cf. *Carya* sp.	fall	1
Starchy and Oily Seeds			
Amaranth cf.	*Amaranth* sp. cf.	spring/summer	3
Chenopod	*Chenopodium* sp.	late summer/fall	4
Chenopod/amaranth			3
Little barley	*Hordeum pusillum*	spring/early summer	45
Maygrass	*Phalaris caroliniana*	spring/early summer	7
Ragweed	*Ambrosia* sp.		1
Ragweed cf.	*Ambrosia* sp. cf.		1
Crops			
Maize kernel	*Zea mays*	late summer/fall	1
Squash	*Curcurbita* sp.	late summer/fall	2
Miscellaneous			
Copperleaf	*Acalypha* sp.		3
Bedstraw	*Galium* sp.		5
Grass	Poaceae		6
Purslane	*Portulaca* sp.		5
Wood sorrel	*Oxalis* sp.		3
Pitch			8
Unidentifiable seed			17
Unidentified seed			25
Unidentified bark/cone			1
Unidentifiable			35

<u>Context Totals</u>
112 L floated
0.18g plant
3.55g wood
HF(6) = 1770.54g
LF(11) = 39.51g

Feature 8 Taxa (n=7)

Common Name	Taxonomic Name	Seasonality	Count	Context Totals
Nuts				10 L floated
Hickory	*Carya* sp.	fall	3	0.05g plant
Walnut	*Juglans* sp.	fall	1	4.84g wood
Fruits				HF = 698.99g
Bramble	*Rubus* sp.	late summer/fall	1	LF = 6.06g
Starchy and Oily Seeds				
Chenopod	*Chenopodium* sp.	late summer/fall	1	
Maygrass	*Phalaris caroliniana*	spring/early summer	1	

Feature 25 Taxa (n=11)

Common Name	Taxonomic Name	Seasonality	Count	Context Totals
Nuts				10 L floated
Acorn	*Quercus* sp.	fall	2	0.02g plant
Hickory	*Carya* sp.	fall	3	1.76g wood
Fruits				HF = 230.14g
Grape	*Vitis* sp.	summer	1	LF = 3.92g
Miscellaneous				
Pitch			4	
Unidentifiable seed			1	

Feature 26 Taxa (n=15)

Common Name	Taxonomic Name	Seasonality	Count	Context Totals
Nuts				30 L floated
Acorn	*Quercus* sp.	fall	2	0.06g plant
Hickory	*Carya* sp.	fall	6	2.1g wood
Walnut	*Juglans* sp.	fall	1	HF = 831.35g
Miscellaneous				LF = 18.69g
Spurge	*Euphorbia* sp.		1	
Pitch			1	
Unidentifiable seed			4	

Feature 28 Taxa
(n=40)

Common Name	Taxonomic Name	Seasonality	Count
Nuts			
Acorn	*Quercus* sp.	fall	8
Hickory	*Carya* sp.	fall	11
Walnut	*Juglans* sp.	fall	1
Fruits			
Grape	*Vitis* sp.	summer	1
Starchy and Oily Seeds			
Chenopod	*Chenopodium* sp.	late summer/fall	1
Maygrass	*Phalaris caroliniana*	spring/early summer	1
Miscellaneous			
Pitch			14
Unidentifiable seed			1
Unidentified seed			2

Context Totals
31 L floated
0.10g plant
2.04g wood
HF = 219.86g
LF = 17.3g

Carbonized Plant Remains Recovered from 31HW8 Garden Creek (n=383)

	Common Name	Taxonomic Name	Seasonality	Count
Nuts	Acorn	*Quercus* sp.	fall	16
	Acorn cf.	cf. *Quercus* sp.	fall	1
	Hazel	*Corylus* sp.	fall	2
	Hickory	*Carya* sp.	fall	59
	Hickory cf.	cf. *Carya* sp.	fall	3
	Walnut	*Juglans* sp.	fall	3
Fruits	Bramble	*Rubus* sp.	late summer/fall	2
	Grape	*Vitis* sp.	summer	2
Starchy and Oily Seeds	Amaranth	*Amaranth* sp.	spring/summer	1
	Amaranth cf.	*Amaranth* sp. cf.	spring/summer	3
	Chenopod	*Chenopodium* sp.	late summer/fall	7
	Chenopod/amaranth			4
	Little barley	*Hordeum pusillum*	spring/early summer	45
	Maygrass	*Phalaris caroliniana*	spring/early summer	9
	Ragweed	*Ambrosia* sp.		1
	Ragweed cf.	*Ambrosia* sp. cf.		1
	Tobacco cf.	*Nicotiana* sp. cf.	late summer/fall	1
Crops	Maize cupule	*Zea mays*	late summer/fall	2
	Maize kernel	*Zea mays*	late summer/fall	33
	Squash	*Curcurbita* sp.	late summer/fall	3
Miscellaneous	Bedstraw	*Galium* sp.		5
	Carnation family	Caryophyllaceae		1
	Catchfly	*Silene* sp.		1
	Copperleaf	*Acalypha* sp.		3
	Grass family	Poaceae		18
	Purslane	*Portulaca* sp.		5
	Sedge family	Cyperaceae		1
	Spurge	*Euphorbia* sp.		1
	Wood sorrel	*Oxalis* sp.		3
	Pinecone	*Pinus* sp.		2
	Pitch			39
	Unidentified bark/cone			1
	Unidentified seed			29
	Unidentifiable seed			41
	Unidentifiable			35

Analysis Totals

277 L floated

5.71g plant

34.92g wood

HF = 6103.85g

LF = 193.99g

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