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Look to the earth: the search for ritual in the context of mound construction

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Abstract In North America mound research traditionally focuses on how these earthen structures functioned – as mortuary facilities, ceremonial platforms, observatories, and the residences of political elites and/or ritual practitioners. This paper acknowledges mound building as the purposeful selection of soils and sediments for specific color, texture, or engineering properties and the organization of deposits suggesting that the building process reflects both shared knowledge and communicates specific information. We present two examples: Late Archaic period Poverty Point site Mound A, and Mississippian period Shiloh site Mound A, in the exploration of structured deposits to identify ritual in contrast to a more mundane or purely practical origin. We argue the building of these earthen monuments was not only architecturally important as a means to serve a subsequent purpose but that the act of construction itself was a ritual process intended to serve its own religious and social purposes. In these contexts, ritual does much more than communicate underlying social relationships; it is instrumental to their production.

Keywords Geoarchaeology · Earthen mounds · Southeastern US · Ritual

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Introduction

Mound building and the resulting monumental architecture documented throughout the Eastern Woodlands of North America are broadly considered part of actively constructed ritual landscapes (Knight 2001, 2010; Sherwood and Kidder 2011; Howey 2012; Thompson and Pluckhahn 2012; Wright and Henry 2013). The construction of these cultural landscapes varies through time and across space taking on various forms and functions (Milner 2004). How we study these earthen monuments has evolved significantly from their eighteenth and nineteenth century treatments as abiding mysteries, considered by most Euroamericans of the time to be beyond the technological and organizational skills of indigenous populations. By the late nineteenth century science had finally put to rest most of the ambiguity surrounding various racist ideas about their source and ascribed these impressive earthworks to the ancestors of the Native Americans (Silverberg 1968; Thomas 1894). Through most of the twentieth century archeologists focused on the mounds as special features reflecting the behaviors and activities of indigenous populations.

Mound research in North America evolved through the twentieth century to examine the function of these features as mortuary facilities, ceremonial platforms, observatories, and the residences of political elites and/or ritual practitioners. While research explored mound use, little regard was given to how the mounds were actually built. However, recent studies have clearly demonstrated that mound building activities were not haphazard or unplanned. Instead, mounds are understood to be the outcome of structured activities that included the alteration of the landscape to receive the monument according to an "architectural grammar" (e.g., Lewis and Stout 1998; Gibson and Carr 2004; Kidder 2004; Thompson 2009; Knight 2010; Hermann et al. 2014). More recently,

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archeologists have refocused on ritual process as it relates to mound building and monumental architecture across a range of monumental scales and time periods (Knight 2001; Sherwood and Kidder 2011; Thompson and Pluckhahn 2012; Wright and Henry 2013). Further, attention has turned to the purposeful selection of soils and sediments for specific color, texture, or engineering properties and the organization of deposits suggesting that the building process reflects both shared knowledge and communicates specific information (Charles et al. 2004; Purcell 2004, 2012; Sherwood and Kidder 2011; Schilling 2012; Sherwood 2013).

In this paper we explore structured deposits (or sets of deposits) in two earthen mounds to identify ritual in contrast to a more mundane or purely practical origin. We seek to demonstrate that ritual practices are incorporated in the final product of the monument revealing ritually ascribed choices and actions throughout the process. Thus, we argue, the building of monuments was not only architecturally important as a means to serve a subsequent purpose (e.g., place of burial, platform for a structure) but that the act of construction itself was a ritual process intended to serve its own religious and social purposes. In these contexts, ritual does much more than communicate underlying social relationships; it is instrumental to their production (Swenson 2012:23). To address these issues archeologists must fully contextualize the cultural landscape in relation to the natural environment.

Our case studies are derived from two sites, Shiloh, Tennessee (ca 1200 to 300 cal BP) and Poverty Point, Louisiana (ca. 3600 to 3200 cal BP) (Fig. 1); each site includes platform mounds, which are defined as elevated, quadrilateral flat-topped earthen pyramids that are often raised in stages (Lindauer and Blitz 1997; Morgan 2008). The mounds discussed from both sites were unfortunately originally mapped as Mound A; each, however, have significantly different histories and represent opposite ends of the timeframe under which mound building was actively practiced in precontact North America (Ortmann and Kidder 2013; Anderson et al. 2013). Platform mounds can vary in their form, function and construction (see variability discussed in Sherwood and Kidder (2011:71-73)) but are uniformly considered prominent features on the landscape that are recognized as iconic and expressive acts (Knight 1986, 1990, 1998, 2001, 2006; Blitz, 1993; Pauketat 1993; Hall 1997; Byers 1998, 2004; Pauketat and Alt 2003; Charles et al. 2004; Emerson et al. 2008; Sherwood and Kidder 2011). As such, ritual most certainly played a part in their layout and construction reflecting an integrated Native American world view. Elsewhere we (Sherwood and Kidder 2011:73) proposed that conceptualizing the mounds as complex feats of geotechnical engineering is an important way to study their significance. In this paper we carry this notion forward with the recognition that at least part of that geotechnical knowledge was executed through ritual acts and/or prescribed by ritual practices that gave form to cultural processes (Buikstra and Charles 1999; Randall and Sassaman 2010; Howey 2012).

Theory

Richards and Thomas suggested in 1984 that we could interpret curious or "odd" structured archeological deposits not as the end product of inexplicable "ceremonial" activities, but as the result of deliberate actions that could be explicated by careful analysis and interpretation of the processes of deposition (Richards and Thomas 1984; Garrow 2012; Thomas 2012). Thomas (2012:126) argues that this shift is especially recognized because increasingly the processes of deposition are understood to not only be the outcome of natural and physical actions but also the end product of social practice. But how do we extract that social practice from the static end product? Long ago archeologists took up this challenge with the need to reconstruct "site formation processes" and, as articulated by Schiffer (1987), to sort out the C-transforms from N-transforms. This task is, however, only a part of the story in the study of the construction of earthen monuments. Earthen construction materials, even before they are integrated into the depositional sequence, may undergo significant modification at that transition between the natural landscape and the cultural landscape. Without identifying these processes that reflect that cultural practice, we cannot fully grasp the development of the cultural landscape.

The challenge comes in determining what among these patterned deposits are purely practical, related to shared knowledge of the response of earthen materials to specific conditions and what might be considered ritual practice, where ritual is defined as "expressive performance that is prescribed by appropriateness, and is sanctioned by tradition" (Lewis 1980:8; Thomas 2012:127). Historically, ritual has been considered non-functional or extraneous to the needs of daily life. However, an increasing body of thinking recognizes that within the context of a society, ritual is, in fact, functional as a means of organizing and structuring social practices (e.g., Bell 1992, 1997, 2007; Bruck 1999; Swenson 2012). As noted by Bruck (1999), the issue is not if ritual is functional or non-functional, but how and in what ways ritual provides a framework for social practice. Making a case for mound deposits as "structured" is obvious. They are organized together to modify the natural landscape and can be recognized as the end product of culturally sanctioned behavior. Making the conceptual or interpretive step from the construction of mounds as a socially functional action to one that is also ritually sanctioned and appropriate cannot be taken lightly, since ritual is one of the most significant social activities.

We recognize, however, that not all structured deposits are inherently socially meaningful or ritually proscribed. As noted by Garrow (2012:105):

Fig. 1 Map showing location of Poverty Point, Shiloh, and other sites mentioned in the text. The inset shows the map location in the context of the coterminous United States

> In most discussions of structured deposition, there has been a tendency to attribute enhanced meaningfulness to *material culture patterning*. Generally speaking, variability has been viewed as both intentionally created and symbolically relevant. We need to devote more attention and effort to examining the validity of any such meanings proposed, and to think through whether and how they could actually have been conveyed in practice (emphasis in original).

This quote reflects the challenge of determining and assigning meaning in any context. In the built world, though, meaning itself is multivalent and changes through time (Pearson and Richards 1994; Treib 2011). As with any architecture, in some contexts a mound is only a functional element; it serves a purpose as a vessel for burials, a platform for temples, or an elevated venue for public ceremonies. However, in other contexts it is more than a pile of dirt shaped in a specific way; in these multiple contexts a mound may take on meanings both intended by the builders and ascribed by those who see it, visit it, or witness activities on its slopes and summits. These meanings change through time, as well. Discerning what is structured by the practices of everyday life and what is ritually structured is clearly challenging. In particular, our ability to understand how structured deposits code—if they are coded—information is a critical goal for anyone attempting to understand the social processes of deposition. As ritual is increasingly used as an explanation of the archeological record, there has been growing confusion between the identification of curious and odd structured deposits and their interpretation as ritual processes. In short, how do we know that an odd deposit is the outcome of ritual as opposed to being just an odd deposit (Garrow 2012)? For Bruck (1999:325), distinctions between ritual and rationality are a result of modern thinking and emphasizing this distinction leads to the result where "the symbolic aspects of human action all too often have been stressed at the expense of the practical" (see also Garrow 2012). We need to test the proposition that a given deposit is indeed ritual and not just unusual to the modern eye.

Background

The emphasis on mounds as ritually constructed edifices is, in part, a recent response to three interrelated interpretive threads that have been woven through American archeology for the last half century. In one thread, mound building wasn't a special task because it was not a difficult undertaking (Muller 1997; Milner 1998, 2004; Hammerstedt, 2005). The process of sediment and soil deposition was generally gradual and largely the result of "basket loading" soil to build a suitably shaped heap of dirt. In a second thread, mounds themselves were often seen as a structure on which or in which the archeologically important actions of interest took place. Thus, mounds were substructures for buildings where chiefs or priests resided, or they were tumuli that served as the location of burials containing interesting artifacts. A third, more recent thread, is the hypothesis that mound stratigraphy is simply the result of an "unroofing" process where the stratigraphic sequence in a mound represents the order in which soil/sediment was mined from the source area from top to bottom, resulting in the opposite sequence in the mound (Monaghan and Peebles 2010: 944). In these instances the mounds themselves– and the efforts and processes of making them – were of secondary concern to the socially, culturally, or economically important actions that they in some fashion supported or represented in their location in relation to similar structures.

More recent literature has moved beyond mounds and earthworks as essentially background to ritual activity but instead part of the ritual process (Knight 2006; Sassaman 2005, 2011; Kidder 2010, 2011; Anderson 2012; Anderson and Sassaman 2012; Sassaman and Randall 2012). In fact, the attention to archeological deposits used to construct mounds and earthworks have the potential to play a more central role in the development of ritual theory as these frameworks have become increasingly focused on *practice* in religious studies (Bell, 1992). As stated by Berggren and Stutz (2010: 173) in consideration of an important role for archeology in ritual studies "…because of the nature of our sources, we need to start our analysis with the traces of what people in the past were doing rather than with what those actions 'meant', or signified"; and that "ritual – as action – is a part of the dialectical relationship with structure, which contributes to change and continuity within society."

To begin, not all mounds can be readily assigned a recognizable function. This is especially true of Middle and Late Archaic (5800–3200 cal BP) mounds, but this issue is valid throughout much of the archeological sequence in Eastern North America. In these instances, the mounds did not serve as substructures for perishable buildings and they were not used as places of interment. Thus, explaining these mounds requires a description that accounts for the significant effort needed for construction and that illuminates the purpose of the mounds. Ritual is understood as one of the prime ways to mobilize social action to achieve a physical goal (Pauketat and Alt 2003; Kidder 2010; Alt 2011; Randall and Sassaman 2010; Sassaman and Randall 2012; Randall 2015). Ritual is presumed to be both a functional way of bringing people together to undertake these tasks as well as a participatory process to perpetuate social systems (Dillehay 2007; Howey 2012). As such we should strive to identify ritual in the final product rather than assume it as the only possibility left after exhausting all other explanations.

Identification of ritual in the context of moundbuilding

Culturally modified sediments are artifacts. Thus, what we are proposing is analogous to how we identify "exotic" trade goods in material culture studies and how we assign meaning in their final resting place. First and foremost is the reconstruction of the provenance and the determination of it being "foreign" to the local or regional environment. What makes those objects unique, or gives them specific meaning in the context in which they are found? The approach to traditional artifacts and their altered meaning derived from shifts in their spatial mobility (e.g., Hahn and Weis 2013), can be applied to much of the earthen materials used to construct mounds. As objects are moved and transformed through time and space, typically so does the value attributed to them. Mapping out "itineraries" in the realm of the material allows us to grasp the nature of a given social formation through the shape and meaning taken on by its modification and, in case of earthworks, its emplacement and ultimately context. The value of a mica mirror in a Middle Woodland Hopewell mound in Ohio is not just in the context where archeologists collect it. It is based on the distance it traveled and the negotiations and social recognition that object was given in route to be ascribed its ultimate meaning and significance in the mound (Helms 1979). The consideration of the origin(s) of the soil or sediment, the way(s) it traveled to the place(s) of deposition, how (and/or if) it was transformed prior to or during deposition, and the manner(s) in which it was structured during the construction of mounds should be given similar consideration.

Recognizing the variability of the stratigraphy in a mound or earthwork in the color, texture, and juxtaposition of soil material and sediments and the depositional history these imply is one element of understanding their significance and is akin to the "itinerary," "biography," "social stratigraphy," or "social history" of objects or things and ultimately how we actually decipher their significance (e.g., Gosden and Marshall 1999; Gosden 2005; Mills and Walker 2008; McAnany and Hodder 2009; Joyce 2012). Whatever language you use to describe this perspective, we are exploring what happens at the interface between the natural landscape and the cultural landscape. What materials are available in the natural landscape, are they modified and if so how, and is that modification necessary to achieve the goal at hand, in this case creating a seemingly permanent monument in a specific place? Are the materials simply collected close at hand and shaped there or are specific attributes sought out and altered and what kind of energy investment is suggested from that process? Establishing these parameters allows us to move to the next step of associating practice with meaning, of determining material culture patterning from simply "odd" deposits.

Poverty Point

Poverty Point culture is generally acknowledged to be the pinnacle of cultural elaboration for the Archaic Period (Webb 1982; Gibson 2000). Emerging after ca. 4000 cal B.P. and developing over nearly a millennium, Poverty Point people engaged in unprecedented levels of mound construction and interregional exchange centered on the type site. The Poverty Point site consists of a 3-km^2 complex of nearly 765,000 m^3 of mounded earth in six nested, elliptical half-rings, two massive mounds thought by some to be bird-shaped effigies, two conical mounds, and one flat-topped mound (Ford and Webb 1956; Gibson 2000; Kidder 2002; Ortmann 2003; Kidder et al. 2004) (Fig. 2). Other settlements of Poverty Point affiliation were distributed throughout the Lower Mississippi Valley centered on the type site, with more distant communities participating through exchange with core groups (see papers in Byrd 1991). Poverty Point is located on Macon Ridge, a Pleistocene braided stream terrace roughly 5 m above the Mississippi River floodplain just east of the site. Macon Ridge is an undulating, moderately dissected, loess draped, landform with predominantly N to S drainage and numerous low sloughs and relict drainage features (Saucier 1967, 1994; Saucier and Fleetwood 1970). There is no evidence that Macon Ridge was ever covered by Holocene-age Mississippi River flood deposits.

Although neither long-distance exchange nor mound construction is considered an innovation of Poverty Point culture, the scale of both activities eclipsed anything that came before. The development of monumental earthen architecture and an economy engaged in extensive long-distance trade at Poverty Point are all the more intriguing because they take place in the context of a subsistence economy exclusively relying on hunting, gathering, and fishing. The complex behaviors of the inhabitants of the site contrast markedly with the seemingly egalitarian patterns of most contemporary populations throughout the Southeast. Subsistence at Poverty Point and nearby sites focused on the intensive use of large and small mammals and aquatic resources, especially fish, while the use of native cultigens was negligible (Jackson 1986, 1989; Fritz and Kidder 1993; Ward 1998). The importation of raw materials from as far away as the Great Lakes and the Appalachians, while impressive in volume and diversity, was often geared toward the production of mundane items. An extensive array of lapidary items executed on an extraordinary variety of exotic and non-local raw materials compliments the chipped and ground stone-tool industry (Webb 1982). Raw materials imported from considerable distances are widely distributed at the Poverty Point site and are also commonly recovered at small contemporary sites of the Poverty Point culture. This resource pattern stands in sharp distinction from contemporary sites across the East. Coupled with the ubiquitous baked clay objects, hearths, pits, and midden accumulation, the inventory of subsistence technology clearly shows that Poverty Point was a place of substantial sedentary residence (Gibson 2000:157; 2006, 2007), but the size of its resident population, its level of settlement permanence, and, of course, its sociopolitical make-up all remain unknown.

In recent years, interpretation of Archaic mounds and their significance has taken on a larger role as the antiquity of mound building has been extended back farther in time and as the debate has increasingly focused on the place of these mounds in the understanding of emerging social complexity in the Southeastern Archaic specifically, and among hunter-gatherers more generally (Ames 1999; Anderson 2002, 2004; Anderson and Sassaman 2004, 2012; Gibson and Carr 2004; Sassaman 2004; Sassaman and Anderson 2004). The debate is still resolved into two camps. On the one hand there are those who argue these mound building societies were (relatively) complex and on the other are those who consider these societies are (relatively) less complex.

One proof of this complexity is the mounds themselves. To some, they represent evidence of a new social order capable of mobilizing and organizing labor and indicate the emergence of inequality; in addition, the mounds are diagnostic of new patterns of social interaction and indicate greater investment in place, suggesting territorial demarcation and assertions of political durability (Anderson 2004; Gibson 2004; Gibson and

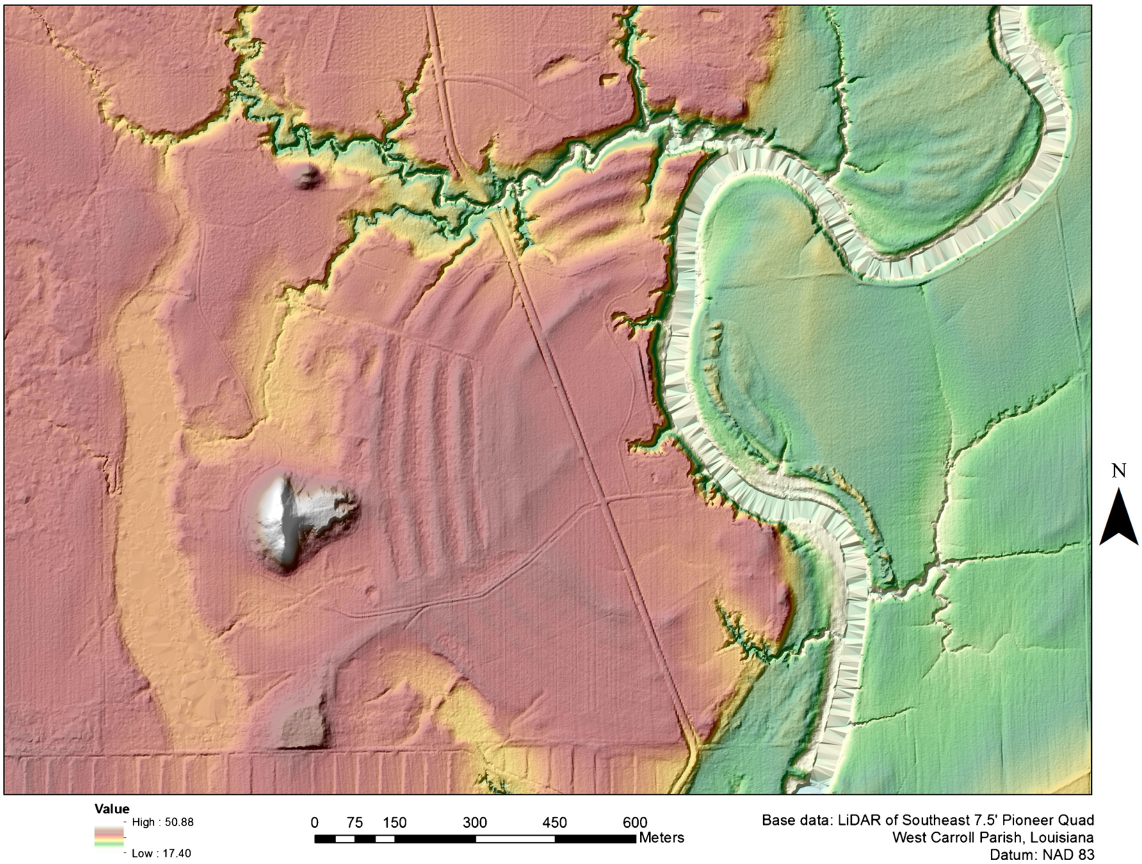


Fig. 2 Lidar map of Poverty Point (image courtesy of Kelly Irvin)

Carr 2004; Sassaman 2004, 2005; Sassaman and Heckenberger 2004; Widmer 2004; Kidder 2011). On the other hand, there are those who argue the mounds do not represent that significant a break with the past and who note evidence for social differentiation marked by the material culture of these mound building societies is actually minimal to nearly non-existent (Saunders 2004).

Mound A has been the focus of recent research on these issues of social complexity at Poverty Point (Ortmann and Kidder 2013). Mound A is the most prominent architectural feature at Poverty Point and is centrally located just west of the outermost sixth ridge (Ford and Webb 1956; Kidder 2002) (Fig. 2). The summit rises approximately 22 m above the surface of Macon Ridge; the mound is ~207 m long and ~210 m wide at its base, with a volume of approximately 238,500 m^3. In plan view, the western portion of Mound A appears as a steep-sided conical structure with its long axis oriented north to south. The eastern slope of the cone is relatively gentle and slopes down to a roughly rectangular, essentially flat 10 m-high platform (Moore 1913: Fig. 29; Ford and Webb 1956: Fig. 3; Kidder 2002: Fig. 1).

We hand-excavated a 3-m wide by 10-m deep profile into the south side of Mound A. We also removed 89 5.08 cm solid soil cores (Fig. 3) from various portions of the mound using a Giddings Soil Coring Machine. Readers can consult Kidder et al. (2009:30-54) for details of research methods and laboratory protocols. These borings complement 108 cores extracted by Ortmann and Allen from off mound contexts across the site and from non-site areas on Macon Ridge and in the Mississippi River alluvial valley to the east (Kidder et al. 2004, 2008a, b; Ortmann, 2003, 2007, 2010). In addition, we have benefited from stratigraphic and pedological information derived from dozens of cores extracted by Glenn Greene in 1988 and 1989 (Greene 1989, 1990), detailed analysis of the site specific and local soils conducted by soil scientists (Allen 1990; Allen and Touchet 1990), as well as the multiple excavations by Jon Gibson (1987, 1989, 1990, 1991, 1993, 1994, 1997).

The mound was built over a ~ 1–2 m deep natural depression on the surface of the Late Pleistocene terrace. The vegetation in this depression was burned and the builders then immediately covered the remains with light-colored nearly pure silt. The absence of any cultural mound stages or evidence of erosion or bioturbation at the boundaries of loaded fills throughout the mound suggests the bulk of the mound was erected in a single effort that lasted less than a year and likely as little as a month (Kidder, et al. 2009; Kidder 2010, 2011; Ortmann and

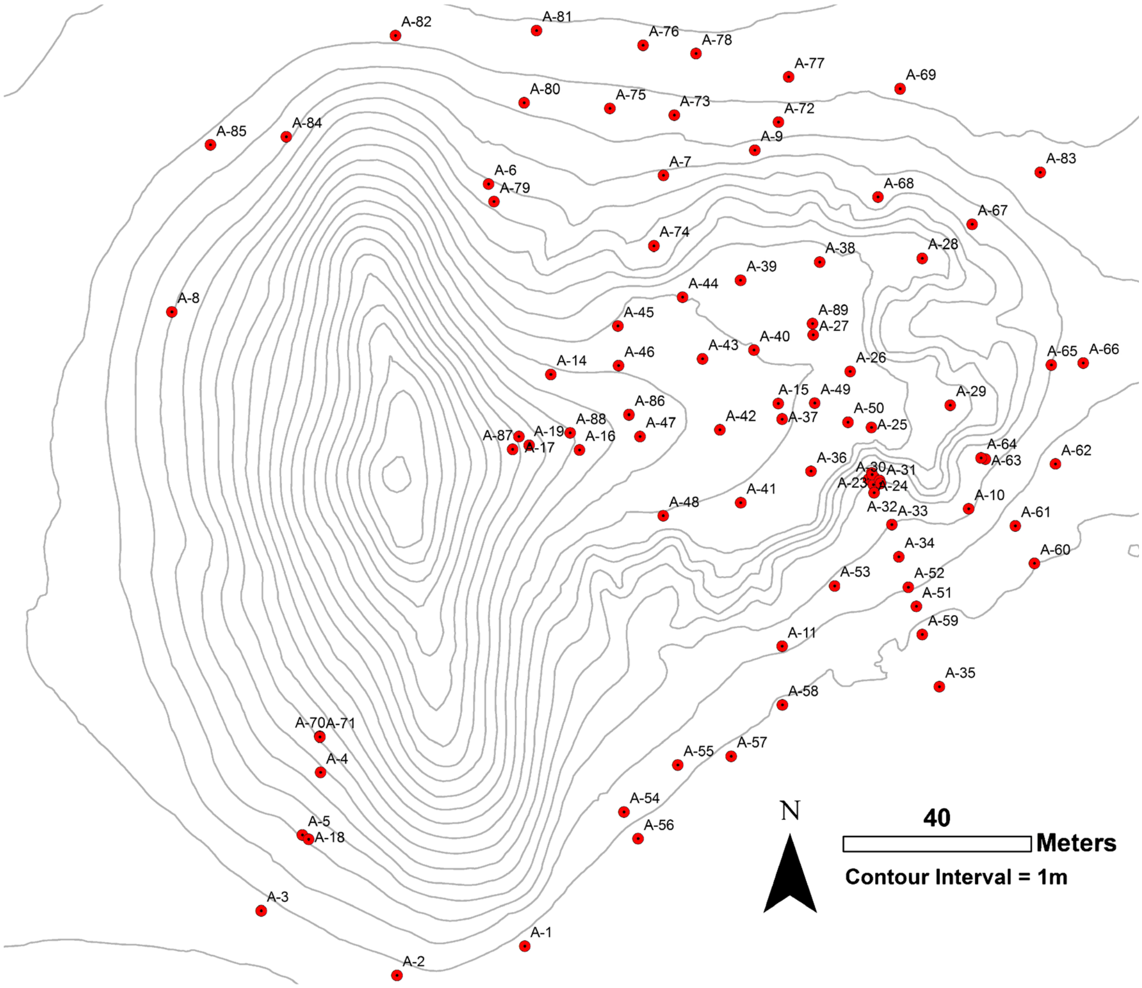


Fig. 3 Topographic map of Poverty Point Mound A showing the location of all cores

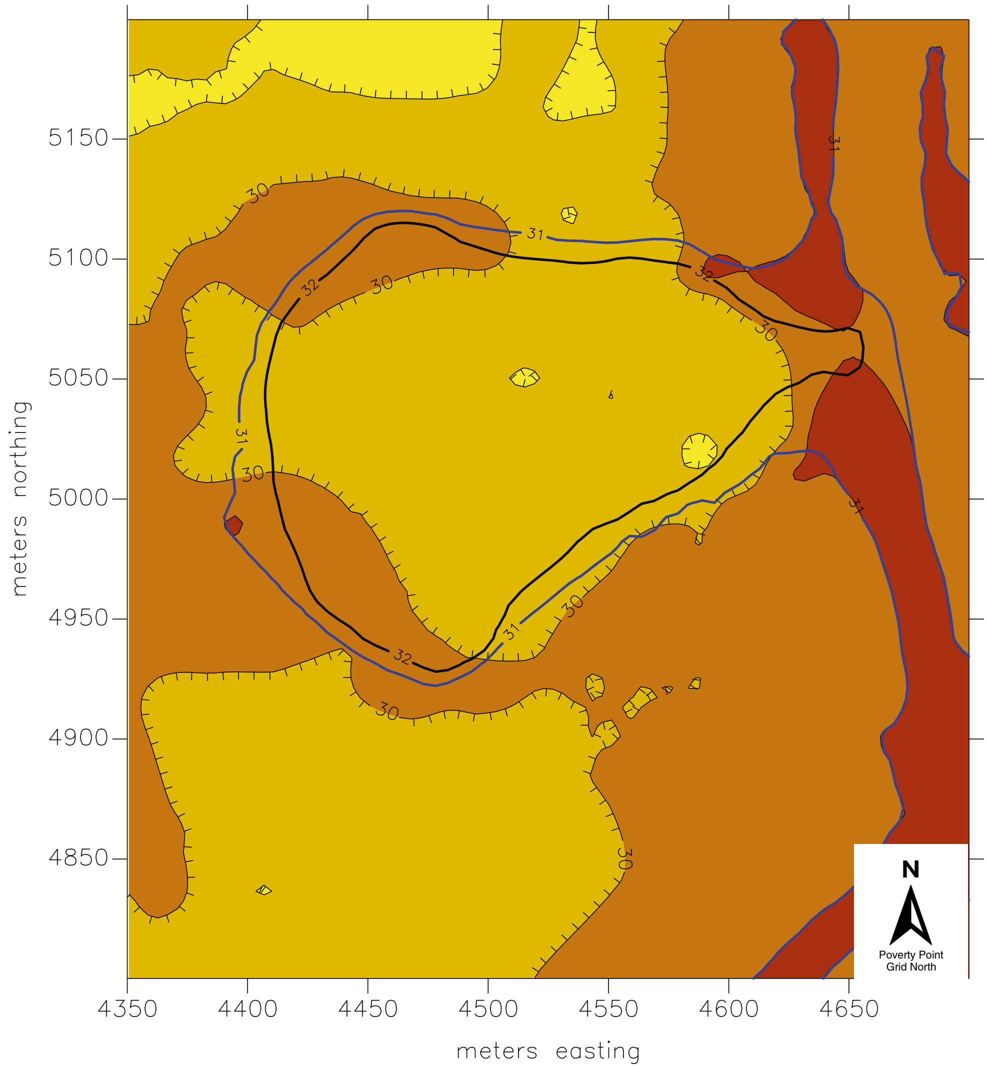
Kidder 2013). The mound does not appear to have any discernable function. There are no structures or features on the mound summit or platform surface, or that have been detected within the mound, and almost no artifacts have been found on or in the mound or on the mound slopes or adjacent fields. From the available evidence the researchers concluded that the mound was built to serve as a monument and that its construction process could be interpreted as a recapitulation of a story of creation akin to early ethnographic depictions of the Earth Diver myth (Kidder et al. 2008a, b; Kidder 2010, 2011).

Here we focus on the "biography" of one of the mound deposits and the ways these indicate evidence for ritual behavior. We investigate the submound deposits and first construction stage to explore the initial processes of mound construction. The biographies and itineraries of these deposits indicate that they cannot be considered with the realm of pure "function." They are simultaneously "odd" deposits but they are at the same time the result of clearly patterned material culture processes.

The preconstruction landscape

The surface of Macon Ridge is characterized by low ridges and relatively shallow 1 to 2 m-deep natural swales that trend NE to SW. Based on our coring of Mound A there is a swale immediately beneath the mound, roughly 250 m long on its NE-SW axis and about 150 m across (Kidder et al., 2009: Fig. 40) (Fig. 4). Coring and excavation revealed the presence of a significant, organically enriched, buried, natural Ab horizon beneath the platform (Fig. 5). This stratum is composed of very dark gray to dark grayish brown silty clay loam to silty clay and is unlike any deposits from higher areas of Macon Ridge seen in our coring or documented in soil surveys (Weems, et al. 1977). The average thickness of the submound Ab horizon is approximately 15.5 cm. However, the original thickness and entire soil structure of the submound Ab horizon has been altered by compression from the weight of the overlying mound (for a discussion of the effects of mounds on the compression of organically enriched soil horizons, see Crowther, et al. 1996). This deposit is ubiquitous beneath

Fig. 4 Topographic map showing the pre-occupation ground surface beneath Poverty Point Mound A as reconstructed from coring and excavation. The blue line is the 31 m contour, which is regarded as the elevation where the mound meets the modern ground surface. This map shows that the majority of the mound was constructed over a meter deep depression



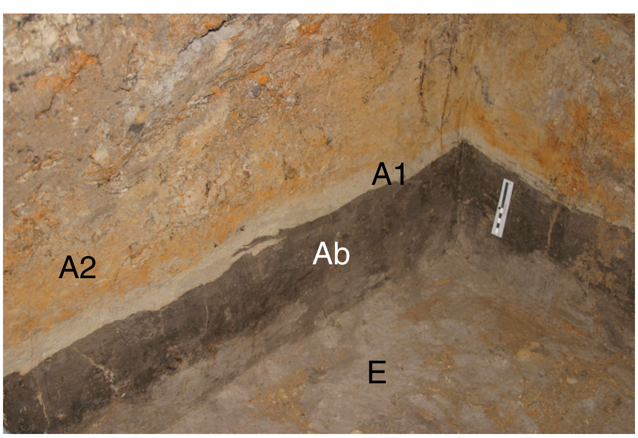


Fig. 5 Northwest corner of the Poverty Point Mound A excavation, showing the Ab horizon (dark band) and the overlying A1 construction deposit with the A2 construction mound fill above (photo 28077.jpg; 5/28/2005)

the platform. We identified the Ab horizon in only one core (A-88) beneath the cone; however, we have only penetrated to the mound subsurface in a few cores from this section. The Ab horizon does not extend beyond the limits of mound construction deposits along the north, south, and east sides of the platform where we have abundant core data (Fig. 3).

The presence of plentiful uncarbonized organics, including intact roots in their natural orientation (Kidder, et al. 2009:64), abundant carbonized organic material, and evidence of standing water indicates the surface of the Ab horizon was a wet swamp covered with vegetation immediately prior to construction of the mound. The Ab horizon contained abundant microartifacts, including large amounts of fired earth aggregates, consisting of clay, silt, and very rarely fine sand-sized grains cemented together by $CaCo_3$. In many instances, pieces of fired earth were partially vitrified, suggesting they were directly exposed to fire. These deposits also contain mineral concretions and fragments of concretions, as well as sand-sized quartz, chert, and other unidentified rocks. Clear, semitranslucent, and white quartz grains (ranging from ~0.02–2 mm) are present within all samples and constitute approximately 2 % of all analyzed materials by weight. The most likely explanation for the rounded clasts found within the submound deposit is that they are gastroliths (Wings 2007; Wings and Sander 2007). Organic materials collected included charcoal, and both carbonized and uncarbonized seeds and seed coats.

The content of the Ab horizon beneath Mound A indicates it is natural in origin. While the sediments in the swale contain far more clay than what is normally encountered in natural soils on Macon Ridge (Weems, et al. 1977), the lithology is very similar to that noted from the large natural swale located just west of Mound A (Scharf 2015). Microfossil indicators provide the most conclusive evidence that the preconstruction landscape was characterized by prolonged periods of saturation and/or ponding during the year. A thin section sample of the buried A (Ab) horizon beneath the platform contains the tests of single-cell protists (thecamoebians) (Kidder, et al. 2009: Fig. 45). These testate amoebae are only found in bodies of freshwater and saturated/water-logged environments; thus, they provide a sound proxy for paleoenvironmental conditions (Scott, et al. 2001:99). In addition, there is a complete absence of fired clay Poverty Point Objects (PPOs) or PPO fragments. This factor alone makes this deposit unique relative to all other culturally formed Ab horizons that have been investigated at the site. These fired earthen objects and their debris are the single most abundant material culture remains at Poverty Point (Gibson 2000:112; Connolly 2002:40; Ortmann 2007:57). Chipped stone flaking debris is also absent, as are calcined bone and ground stone fragments. The abundance of charcoal and the presence of burned silt aggregates and sandy concretions suggest that this was a natural depression supporting standing vegetation and that the vegetation in the swale was fired immediately prior to mound construction.

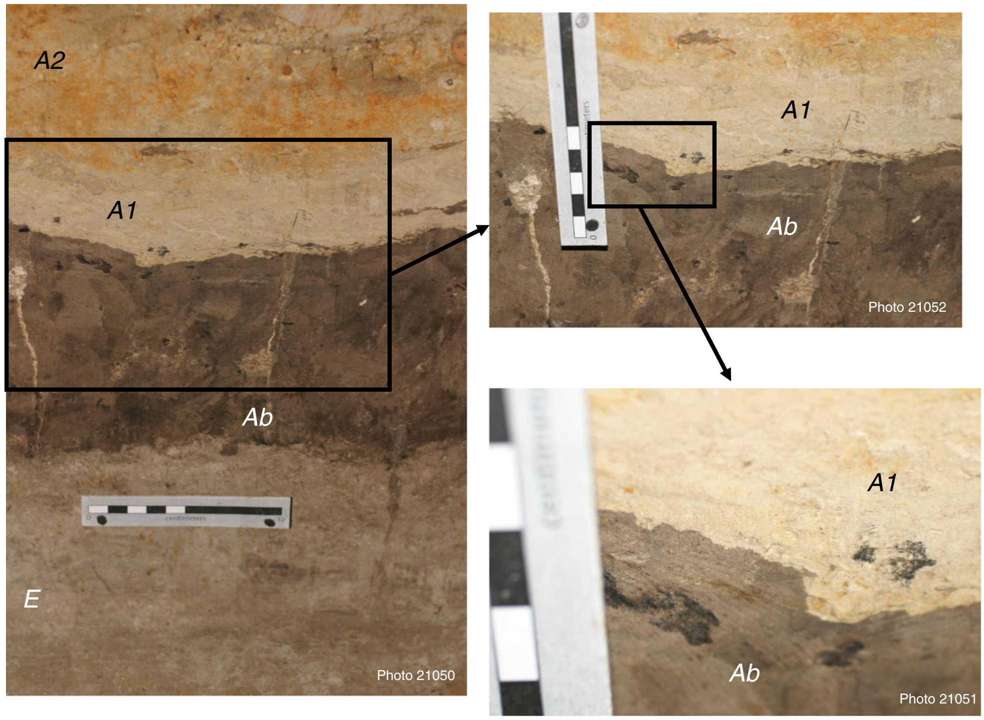
Initial construction deposit

The initial construction deposit (Stage A1) consists of a 6 to 10 cm-thick lens of homogeneous, light gray to nearly white (10YR 8/1, 8/2, 7/1, and 7/2) silt (Fig. 5) that covers the entire dark-colored submound Ab horizon. The light-colored A1 materials contrast sharply with the darker underlying Ab deposits. As with the natural Ab beneath it, the Stage A1 deposit was likely much thicker when initially emplaced; analysis of thin sections shows a dense microfabric with no void space, suggesting it was compacted by the weight of the mass of the overlying mound. However, assuming no compaction and taking a conservative estimate of the surface area of the swale, we estimate that it would have taken no less than ~3800 m^3 of material to construct the initial stage of the mound. The light gray to whitish sediments that comprise the stratum are composed of eluvial E-horizon deposits that are nearly pure and are not noted to be available on the surface of Macon Ridge (Weems et al. 1977; Allen 1990; Allen and Touchet 1990); instead, they are only found at depths from 0.35–3 m below the modern ground surface where they developed through pedogenesis. For example, coring through the submound Ab horizon revealed a natural E horizon at ~0.35–0.5 cm below the base of the Ab (see Kidder et al. 2009: Figs. 26, 43a). To acquire these sediments in nearly pure contexts would require they be selectively obtained from subsurface soil horizons across the Poverty Point landscape.

Potential source areas for this fill are the borrow areas to the north of Mound A. These are fairly shallow, but may have been deeper in pre-contact times. In any case, the closest borrow areas are about 50 m away, while more distant sources are found between 100 and 600 m from the mound. Alternatively, they may have been found in cutbanks in Harlan Bayou on the north edge of the site or in the terrace face of Macon Ridge. In our coring at Poverty Point we have not encountered thick or continuous lenses of E horizon material. In locations that were once wet, such as the swale beneath Mound A, the upper portions of the E horizon are often gleyed and/or oxidized by water movement. In many instances the upper boundaries of E horizons are gradual and thus the color and content lack the purity of the deposits we see at the base of Mound A. We conclude, therefore, that the mining of the stage A1 deposits required a labor intensive process of seeking out, exposing, and extracting E horizon sediments from a relatively large area. If the functional target only was to acquire silt the builders could have easily obtained abundant quantities from near surface deposits such as those used to build the cone portion.

After the construction materials were mined and transported, the initial deposit (Stage A1) was laid down rapidly; the boundaries between the Ab horizon and this overlying stratum are remarkably clear and exhibit no evidence of surficial weathering such as bioturbation or depositional microlaminae (Fig. 6). Upper boundaries of the deposit also lack evidence of surface exposure, indicating that the initial deposit of light-colored sediments was quickly covered by the heterogeneous loaded fills that constitute most of the mound. Immediately after the Stage A1 deposit was emplaced, it was covered with heterogeneous loaded fill (stages A2 (the cone) and A3 (the platform)). At the time the A1 layer was deposited and the overlying stage A3 fill was loaded, the underlying Ab horizon was wet enough to still be plastic. Vertical intrusions of E-horizon materials within the underlying Ab horizon suggest that there was a brief episode of drying that allowed soil cracks to form that were filled by the lighter colored soil (see, e.g., Figs 5 and 7). However, even though some surface drying did occur, sedimentary structures at the upper boundary of the submound Ab horizon and within the A1 deposits indicate soft sediment deformation (Nichols 1999; Boggs 2001) (Fig. 7). These so-called flame structures form when less

Fig. 6 Stage A1 mound construction. Note the sharp boundaries between the submound Ab and the A1 construction. a) Photograph of the A1 stage mound construction from the east wall (9 m) (photo 21050.jpg; 5/21/2005); b) Close up photographs of the Ab/A1 stage junction (photos 21051.jpg and 21052.jpg; 5/21/2005)



dense sediments are deposited on top of those of greater density. As a result of the compression exerted by the overlying mound fill, Ab horizon deposits were forced upward into the less dense mound fill. We encountered evidence of plastic deformation in cores across the length and breadth of the platform and the eastern edges of the cone where it overlay the submound swale.

Although the specific cultural significance of color symbolism in the construction of Mound A may never be known, a considerable amount of effort was allotted to the exacting task of gathering the light-colored sediments for the initial loaded stratum from buried soil horizons across the landscape. The sustained, rapid pace of construction reflects a high level of labor organization and coordination involved in the mound-building venture. Although the initial construction deposit constitutes a small fraction of the total mound volume, the deposit is a testament to the high degree of planning and physical effort invested in the construction project from its inception.

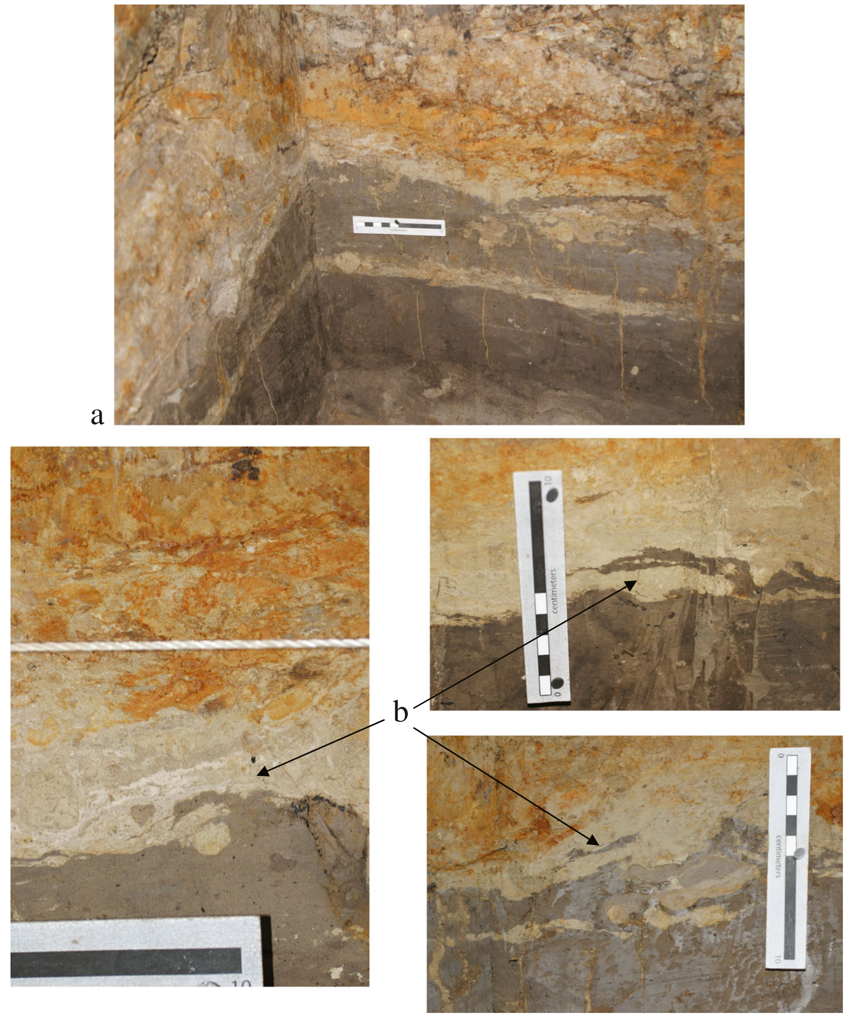
Following the deposition of the light colored sediment over the swale the mound itself was erected rapidly, albeit in a sequenced fashion. Our data indicate that the conical portion was built first and the platform was then added on once the cone had reached a height greater than ~10 m high. Sediments for the cone and from the platform are quite distinct from one another and appear to have been drawn from dissimilar borrow areas.

The cone mound fill (Stage A2) materials are predominantly composed of heavily weathered reddish-brown loess of the Memphis soil series. Cone sediments are distinct from those of the platform because they are more homogeneous in color and texture (Kidder et al. 2009: Figs. 64 and 71). We hypothesize that the homogeneous nature of these deposits is a result of the selection of specific fills; these loess soils were likely excavated from heavily weathered surface and near-surface deposits on Macon Ridge (Ortmann 2007). Even then, there is some mixing of colors within the cone fill. In contrast, the fill of the platform was exceptionally heterogeneous (Kidder et al. 2009: Figs. 52–57). This heterogeneity is most evident in color variation but can also be seen in texture composition (Kidder et al. 2009: Fig. 64).

These data suggest to us that stage A1 was put down very quickly followed by equally rapid deposition of the A2 and A3 fills; otherwise, it is hard to imagine that the Ab horizon beneath the mound could so uniformly and consistently deform. The breadth of deformation indicates the A1 and A2/A3 fills were both emplaced quickly but also nearly simultaneously across the area that would be covered by the eastern edge of the cone and the platform. Thus, it appears the mound was constructed as a nearly single entity, both vertically and horizontally.

Taken together the natural Ab and overlying stage A1 form a classically odd deposit. The effort required to burn the vegetation within the natural swale and then to rapidly cover it with a layer of nearly pure E-horizon soil acquired from some depth below the surrounding terrain suggests this is more than a functional process, if by function we mean the desire to cap or cover/seal the underlying soil from view or to provide an engineered surface on which to erect the rest of the mound. There is nothing random about these deposits; thus, while they

Fig. 7 Photograph of the mound construction showing evidence of plastic deformation or “flame” structures. a) NE corner of excavation showing variability of the submound Ab/A1 mound junction. The vertical lines are all mudcracks except the one on the far right of the image. This is a root penetration that could be followed to the top of the profile (photo 2333.jpg; 5/28/2005); b) details showing specific flame structures (photo 1895.jpg; 5/21/2005; photo 1878.jpg; 5/21/2005; photo 2353.jpg; 5/28/2005)



are indeed odd, they are also an example of patterned material culture. There is no obvious functional requirement to use the light-colored silt of the A1 deposit. Silt in similarly pure form can be found at or very near the surface and would not need to be selectively mined unless there was a specific color need. Ritual covering or sealing of surfaces with light-colored sediments is a practice claimed for later pre-contact mound-building groups (Buikstra, et al. 1998; Buikstra and Charles 1999; Van Nest, et al. 2001). Indeed, the wide spatial and temporal diversity of this practice suggests it is embedded in a deeply rooted and shared cosmology.

Shiloh

In North American prehistory the construction techniques and sheer number of earthen monuments reach their zenith in the Mississippian Period (ca. 800–1500 AD). Centered in the American Southeast and Midwest, the Mississippian period is characterized by social complexity in the form of cycling from simple to complex chiefdoms organized in hierarchical settlements with traits including hereditary status, intensive corn-based agriculture, manufacture of shell tempered pottery, and shared trade and ritual paraphernalia (attributed to the so-called Southeastern Ceremonial Complex) whose roots extend back to the Late Archaic Period at least 3000 cal B.P. (Steponaitis 1986; Anderson 1994; Peregine 1996; Walthall 1990; Blitz 2010). Earthwork construction, particularly platform mounds of varying sizes, is widely considered a key attribute of the Mississippian Period (though as noted above they appear throughout the history of earthen monument construction in North America (Knight 2001; Anderson 2012).

The Shiloh Mound site, located on the Tennessee River in south-central Tennessee, is considered a mid-size polity where people lived year round in a fortified village. The site, located within the boundary of the Shiloh National Military Park, was occupied at least as early as the Late Woodland period; however, the construction of the mound discussed in this paper was active during the Mississippian period in the twelfth through early fourteenth centuries (Anderson et al. 2013). The central site covers approximately 22 ha enclosed by the remains of a wooden palisade wall surrounding a village of at least several dozen wattle and daub houses and seven mounds (six platform and one conical mound) loosely clustered around a central plaza (Welch 2006) (Fig. 8). Extensive agricultural fields were likely located on the adjacent Tennessee River floodplain and low terraces immediately below the fortified site.

The largest mound at the site, Mound A, measuring 6.7 m high by 36.5 m in diameter, is located on the Late Pleistocene terrace edge approximately 30 m above the Tennessee River. Modern impoundment of the Tennessee River and the subsequent impact to the local hydrology is actively eroding the west bank and undercutting the terrace edge. As a result the eastern margin of Mound A has been eroding and federal regulations require the US National Park Service (NPS) to mitigate the future loss of this significant prehistoric structure. In an effort to stabilize the mound and salvage the eastern margin, a large-scale multiyear data recovery project was initiated by the NPS in 1999 that incorporated several hundred cubic meters of the mound (Anderson et al. 2013). The goals of the project broadly stated sought to determine the chronology (by construction stage) and function of the mound, as well as more detailed aspects such as social implications from the nature and contents of stage surfaces, appearance of the mound stages, and sediment content. A detailed technical report covering the methods and results of the mound excavation is published online (Anderson et al. 2013).

The salvage excavation produced a far more complexly constructed earthen structure than was initially suggested in early tests of the mound. Four stages and numerous substages were documented in the excavation profiles (Fig. 9). The assessment of the mound's construction history is limited to the eastern edge, essentially a wedge into the mound that only included approximately 5 % of the total volume so there are

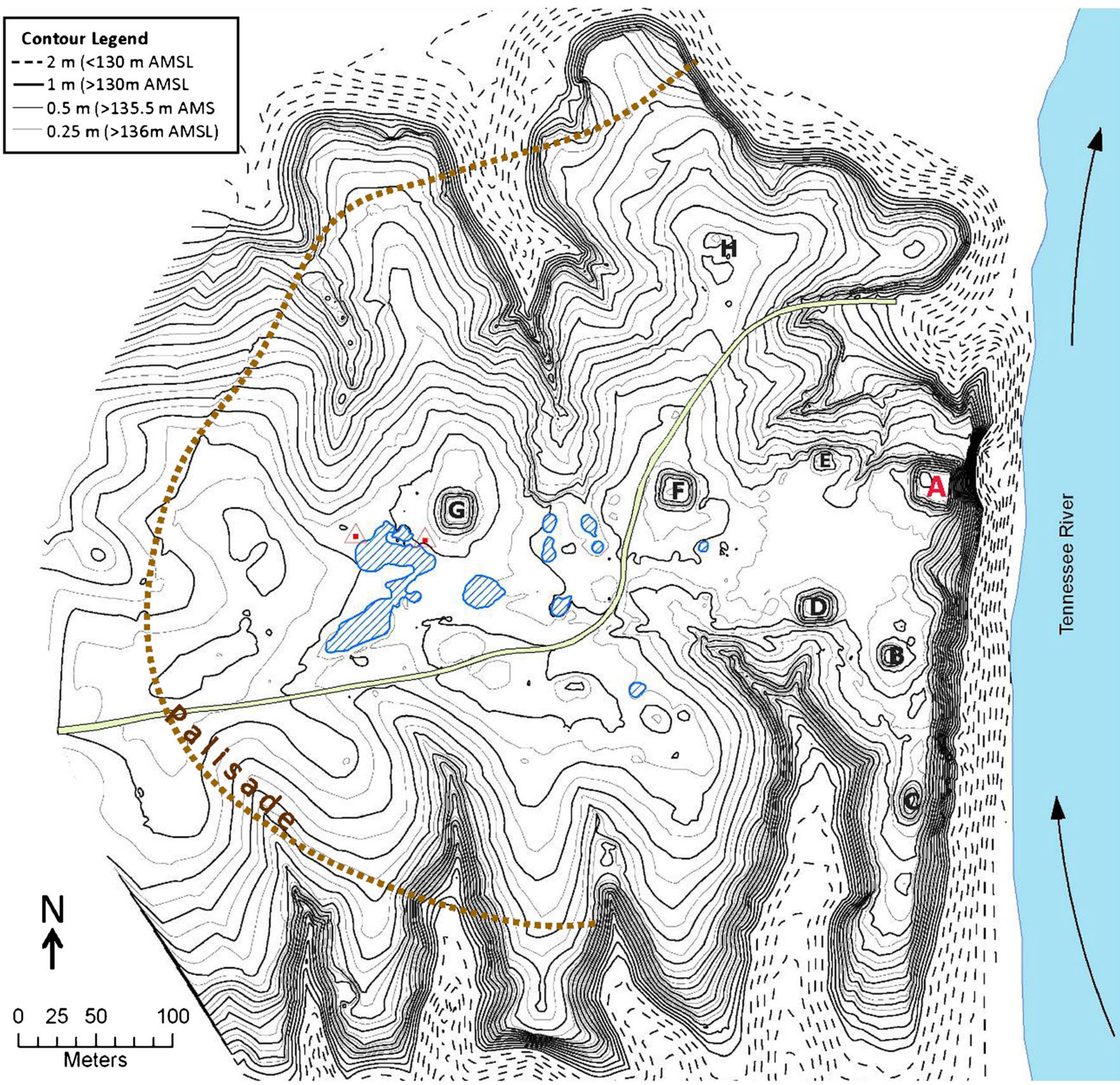


Fig. 8 Shiloh Mound Group map. Letters indicate mound designations. (Modified from Welch et al. 2013)

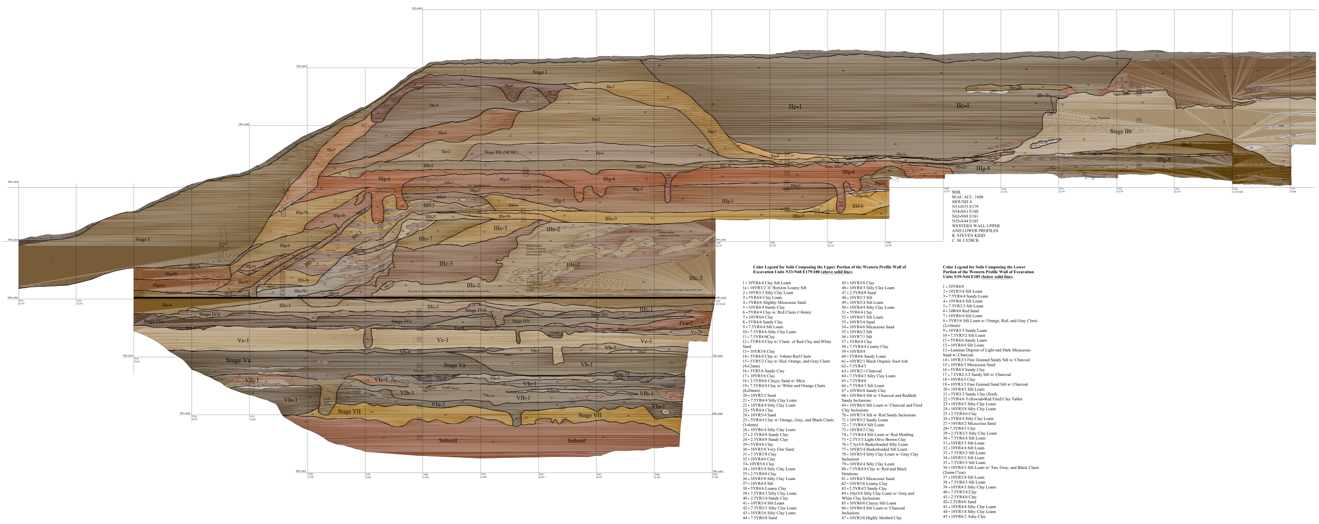


Fig. 9 Shiloh Mound A, main west profile including submound offset from the completion of the SEAC salvage excavation. (Modified from Anderson et al. 2013, Figures 9–02)

most certainly additional substages that remain preserved in the western part of the mound. The limited portion of Stage III examined in the excavation contained evidence for at least 9 wattle and daub structures primarily based on posthole patterns, but relatively few artifacts were recovered during the excavation overall (Anderson et al. 2013). The absence of abundant artifacts suggests that the area was kept relatively clean during its use and the soil/sediment exploited as building material did not come from midden accumulation areas. The stages are defined by variable textures and colored combination deposits that suggest attention to both geotechnical engineering and color symbolism (Sherwood and Kidder 2011; Sherwood 2013). Several additional "submound" layers were identified as manufactured horizontal deposits and cumulic layers beneath the current mound. A detailed geoarchaeological study of the contents and construction techniques can be found in Sherwood (2013).

We begin our discussion on the representation of ritual process in Shiloh's Mound A with a brief overview of the local soils and geomorphology because the significance of the mound construction cannot be assessed without an understanding of the materials available on the landscape leading us to better reconstruct the itineraries of these deposits (Sherwood and Kidder 2011; Van Nest et al. 2001). We focus in on one type of deposit among many that cannot be considered purely from an engineering perspective. These are the vivid red (2.5YR 4/6) clayey sands that, in their various applications in the mound, are clearly representative of "odd" deposits, likely symbolic in their use and application.

Local soils and geomorphology

Briefly summarized, the regional geology consists of horizontal Cretaceous (shallow marine sediments) overlain by Pleistocene (alluvial terrace) irregular gravel to clay sediments that are covered in fragiudult soil developed in a loess parent material cap (detailed in Sherwood 2013) (Fig. 10). This layer cake stratigraphy is not represented in reverse deposition in the construction of the mound (as maintained in the "unroofing" hypothesis) but instead different places on the landscape are used for extraction and in some cases materials are combined and used in different forms in different stages and substages.

Examples of variable deposits include cut intact blocks of E/B soil horizon used to build the core of the mound (Stage IIIc) while inverted intact A/B soil horizon sod blocks are used sparingly, placed along the boundary of exposed (at least briefly) steep slopes in lateral substages that appear to be embankments marking the outer boundary of the mound (Fig. 11). These sources would have been available from borrow areas on the terrace. The sod blocks in particular were likely from maintained unforested soils. Based on the mineralogy these are not extracted from the Tennessee River floodplain below the site where unforested areas would have been accessible. But rather the likely densely forested upland terrace where the site is located would have been difficult to remove intact soils, hence the suggestion that these represent "maintained" areas. The identification of these deposits as displaced *intact* soils and not simply derived from the process of dumping a "basket load" only came to light with the work of Van Nest et al. (2001). With careful study of mound profile photographs it is clear that this prehistoric technology was broadly applied in the Woodland and Mississippian period, often identified (if at all) as variegated layers or basket loads. The distinction of these "odd" or at least distinct deposits and where they are applied in the construction process, here and in other mounds (e.g., Van Nest, et al. 2001; Weinstein 2005; Schilling 2012) suggests these are integrated for functional

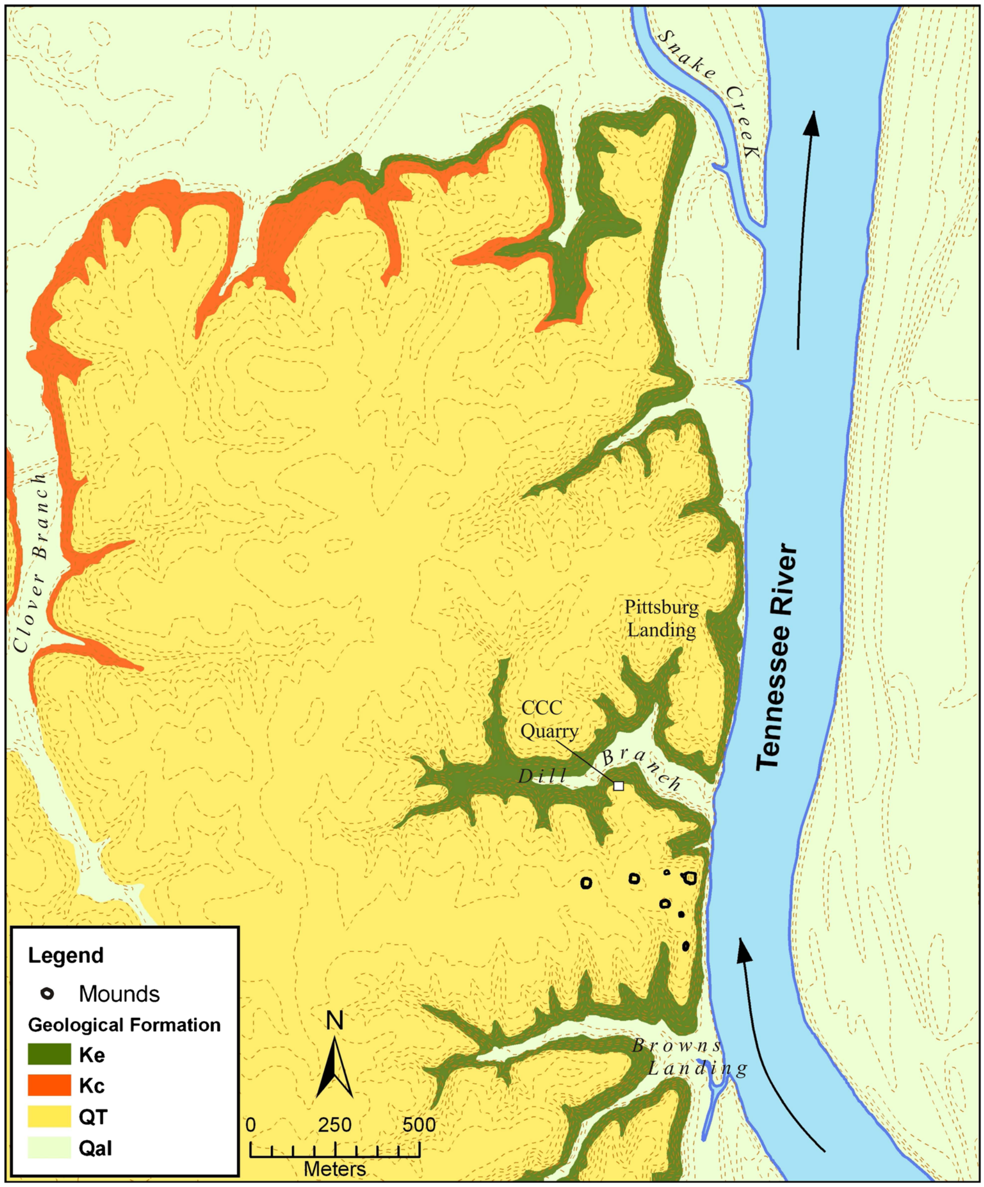


Fig. 10 Local sources for mound sediment from top to bottom, within the terrace. General Descriptions: Loess Soils – blanket the upper terraces and are not indicated on the geological map. Pleistocene/Holocene Fragiudults and Paleoudults (not indicated on the map). (Qal) Quaternary Alluvium – silt, sand and gravel, thinning up major tributaries. (QT) Quaternary and Tertiary Deposits – sands and gravel which is predominantly weathered chert with some quartzite and quartz, rounded, poorly sorted, commonly stained yellow and orange. Iron oxide cementation is common in irregular layers at the top of the formation. (Kc) Cretaceous Coffee Sands – quartz glauconitic sand, fine grained weakly cross-stratified. (Ke) Cretaceous Eutaw Formation – fine grained, well sorted, mostly gray laminated micaceous clay with sands. (Detail of the Pittsburg Landing Quadrangle, after Tennessee Division of Geology. Russell (1964))

reasons; however, that there could also be symbolism in their application must also be considered (e.g., Charles et al. 2004).

Mixed soil is occasionally used as part of massive fill zones in Shiloh's Mound A but most of the layers responsible for creating stable slopes, or visible maintained surfaces, are derived from the Pleistocene layers found deep in the landform. These layers, composed of distinct zones of different proportions of sand, silt and clay, in many cases in vibrant colors including red, yellow and gray, are best accessed where they crop out along the terrace surface (below the soils and often dense or cemented gravel layers). These would have been mined from the steep slopes along the deeply entrenched tributaries to the north (Dill Branch) and south (Browns Landing) and on the steep bank of the Tennessee River (Fig. 12). The highly heterogeneous matrix of the Pleistocene age deposits in the local cutbanks (as described above), would require a relatively complex and highly selective extraction process that moves far beyond the traditional ideas of borrow areas consisting of large pits located adjacent to the mound where soil is simply dug, loaded into carrying containers and dumped on the mound.

The use of the color red in Shiloh mound A

There are several contexts within the construction of the mound where red clayey sand appears. Here we focus our discussion to two locations within the mound, the "foundation" core on which the mound is constructed, and veneers in the later construction stages of the mound. What

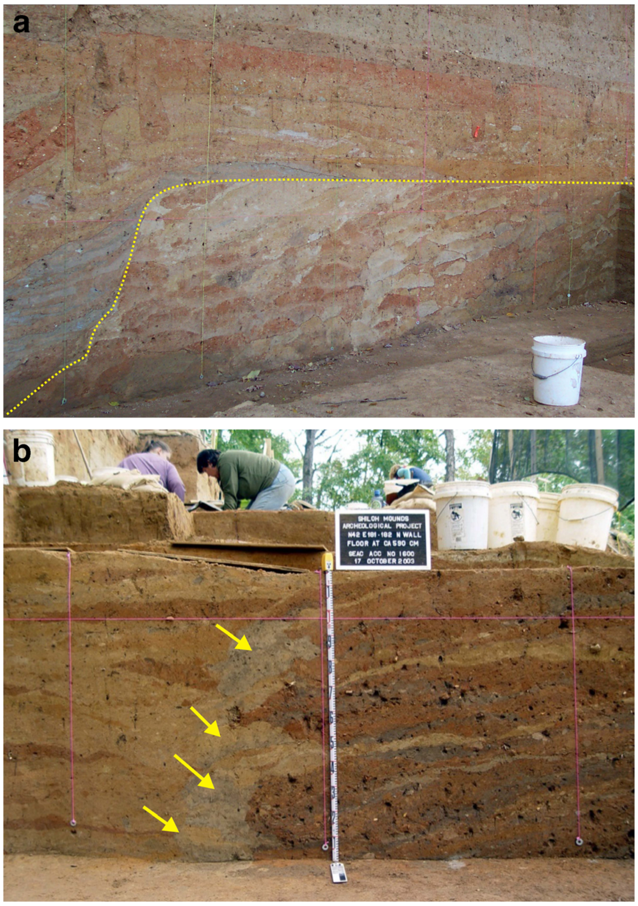


Fig. 11 Examples of variable deposits. a) cut intact blocks of E/B soil horizon used to build the core of the mound (Stage IIIc). b) inverted intact A/B soil horizon sod blocks placed along the boundary of exposed (at least briefly) steep slopes of substage 3b embankment (yellow arrows). (Photos courtesy of SEAC NPS)

separates these red layers from simply "odd" deposits is the investment required to acquire and apply this "exotic" sediment suggesting complex and potentially ritually prescribed itineraries. As described above, the red clayey sand is neither easily accessed, nor is it found in appreciably large amounts in its pure form.

The significance of the color red is well documented among indigenous cultures world-wide (e.g., Hudson (1976); Hamell (1992); Gage (1999); Purcell (2004, 2012); DeBoer (2005); Cobb and Drake (2008)). Purcell (2012) discusses the Southeastern Native American use of red and white to represent split ideological and social realities. He and others make the case that Mound A at Shiloh is likely one of many such Mississippian Period mounds that was deliberately constructed using color symbolism and perspective to create ritual space and influence daily practice. In this fashion, mounds are not simply earthen masses but visually communicative architecture that would require complex itineraries to create these cultural landscapes.

Mound construction overview

Research at Shiloh revealed that prior to the building of Mound A, approximately 1.5 m of soil was removed from the terrace edge. It is not clear if this was an area targeted for borrow for earlier mounds at the site (there is no existing chronology for the Mounds A-F) or if the terrace surface was intentionally lowered for some reason. Regardless, above this disconformity in the natural soil profile are a series of relatively consistent, lateral deposits, many of which reveal habitation areas including a wall trench, prepared hearth, and localized midden accumulation (Fig. 13). This area, built up during the

Fig. 12 Two examples of Quaternary terrace exposures. Note the heterogeneity of different textures and colors

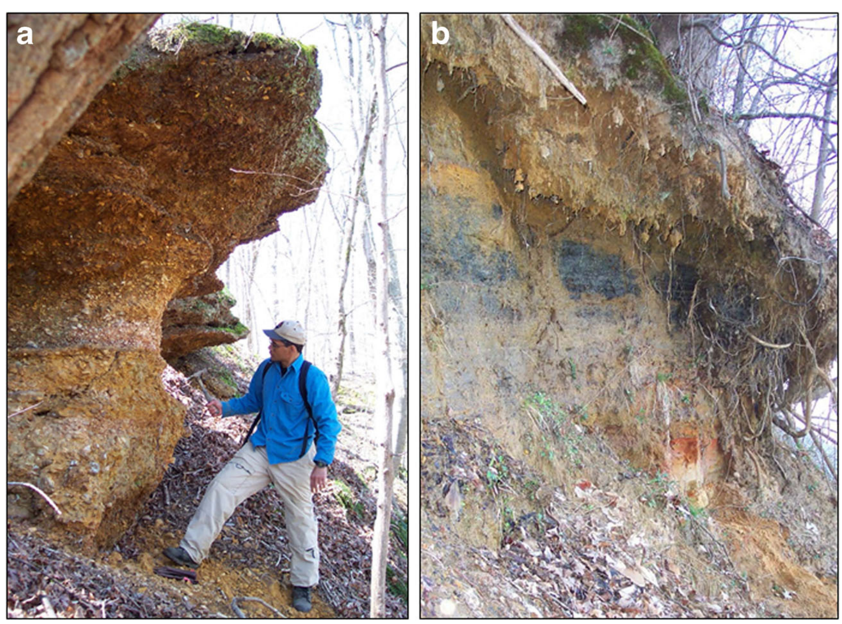


Fig. 13 Section of Shiloh Mound A submound stratigraphy

early mid twelfth century, was used, maintained, and covered relatively rapidly based on the absence of any soil formation (Sherwood 2013). Only a small area below the eastern edge of the mound was explored so it is impossible to assess how far back the original soil removal and these deposits extend.

In the early mid-thirteenth century A.D. the area was raised to the general ground elevation of the terrace, building this elevation to the north where the terrace sloped downward at least 3 m (Fig. 8). Before mound building commenced, an extensive red (2.5YR 4/6) clayey sand deposit approximately 20 cm thick, was laid down across this constructed surface (Fig. 14). Relatively clean sand appears to have been added to the upper surface and the area was kept clean based on the virtual absence of microartifacts identified in the field or in thin section. This layer (which is thinning in the outer portion visible to the south) appears to follow the outline of the core of Stage III, suggesting this red surface signaled a specific function. On this red surface, construction of the earthen monument commenced. The use of these textures moves beyond function to the significance of color since the sand and clay lenses from the Pleistocene deposits are a mixture of colors and to spend the time and effort to acquire only the pure red colored material would have been important. Clearly color, and likely the type of hard and stable surface these textures created, was the goal.

The initial stages of moundbuilding included a steep (ca 50–70 degree slope) 1 m high embankment of mixed sediments covered in inverted sod blocks positioned parallel to the river. The next substage consisted of a core, composed of intact E/B horizon soil blocks piled to create a central platform approximately 1.5 m high covering an unexplored area. Zoned fills (substage IIIf) were added to bridge these two earthen features and a surface, ca. 20 cm thick was built across the surface (Fig. 11b). At this point the near 90 degree slope of the soil block core was covered with alternating gray and brown zoned deposits creating a façade that would have resulted in a mostly gray but striped exterior (substage IIIe; Fig. 15a). These layers were exposed for an unknown length of time but certainly long enough to result in a series of laminated wash zones (that accumulated to a thickness of at least 20 cm (Fig. 15b)). Soon after this relatively unsuccessful stage (from an engineering standpoint), a substantial series of horizontal surfaces were placed on top (IIIg2 & 4) and integrated with a red and yellow zoned manufactured 40 degree slope. The new slope was raised first to increase the mound summit area, temporarily creating a raised edge, followed by the filling of the surface in preparation for a red sandy clay summit floor. A veneer that was added to the zone's slope suggested that the zoned fills were likely never meant to be observed. While the yellow and red slope interior may have been meaningful it just as likely could have provided the necessary texture and compaction or pore distribution necessary to maintain such a slope in the temperate south. The outer veneer, however, had specific visual meaning because it was selected from the red sandy clay source deposits described above, originating relatively far from the mound.

Over a period of about 75–100 years, during the late twelfth through late thirteenth centuries a series of wattle and daub buildings were raised on the new Stage III summit (Anderson et al. 2013:341). At the end of their use life, prior to new moundbuilding, the area was cleaned of the majority of the structure material leaving behind little in the way of traditional artifacts. By the early fourteenth century the slopes were again expanded; however, this time the process was not nearly as technically effective based on what appear to be patches of dichotomous colors and textures on the slopes and >40 cm of graded bedding from washing at the base of this slope. The construction period focused on both a slight expansion of the mound size and the placement of at least two ca. 1.5 m high separate mounds on the then summit, referred to as Stage II.

Stage II mounds (IIa and IIb) were equal in height and built ca. 4.5 m apart, but with different size bases (Fig. 16a). Stages IIa (7 m at the base) and IIb (width unknown, appeared to continue toward the northern edge >10 m) are constructed of different source material but likely had a similar appearance at their completion, at least in terms of outer color. Both mounds were covered in a thin red clayey sand veneer that continued across the surface between the two mounds. It remains unclear

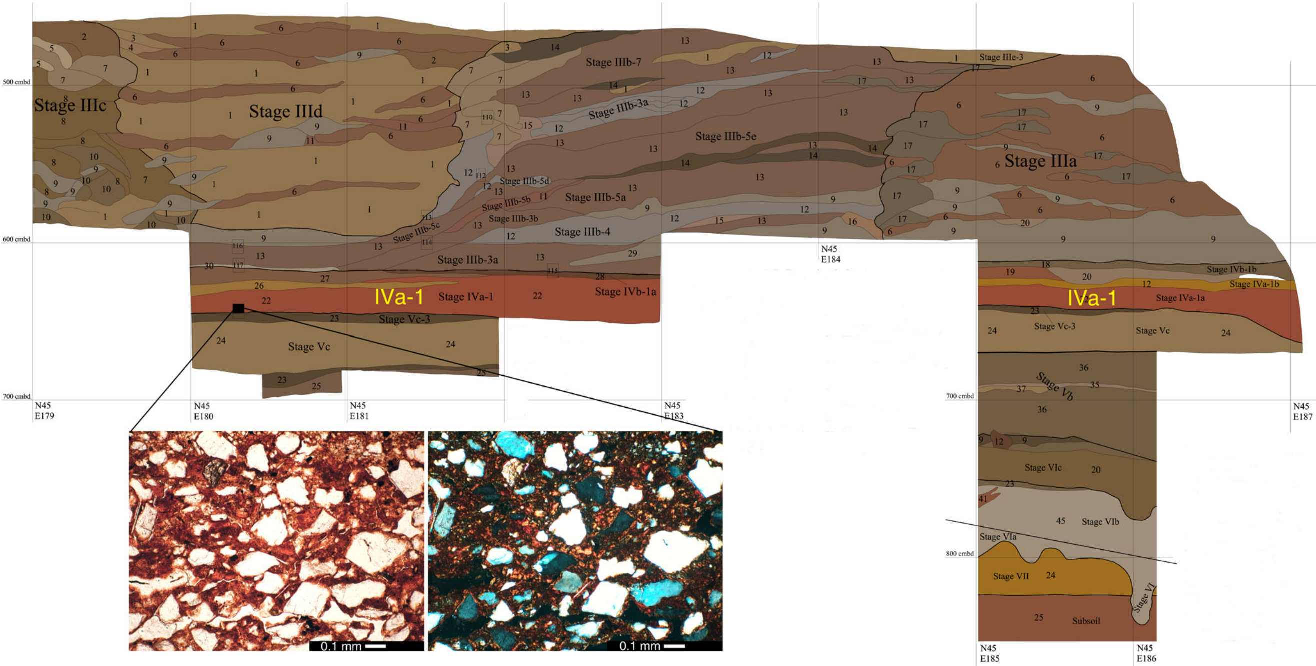


Fig. 14 a) North Profile Shiloh Mound A. Note layer IVa-a. b) photomicrograph of the surface

how these two smaller mounds functioned; however, probable portions of structures and fireplace features were identified on the eroded upper surface of Stage IIb (Anderson et al. 2013). The larger IIb, while only a portion of it was exposed, was

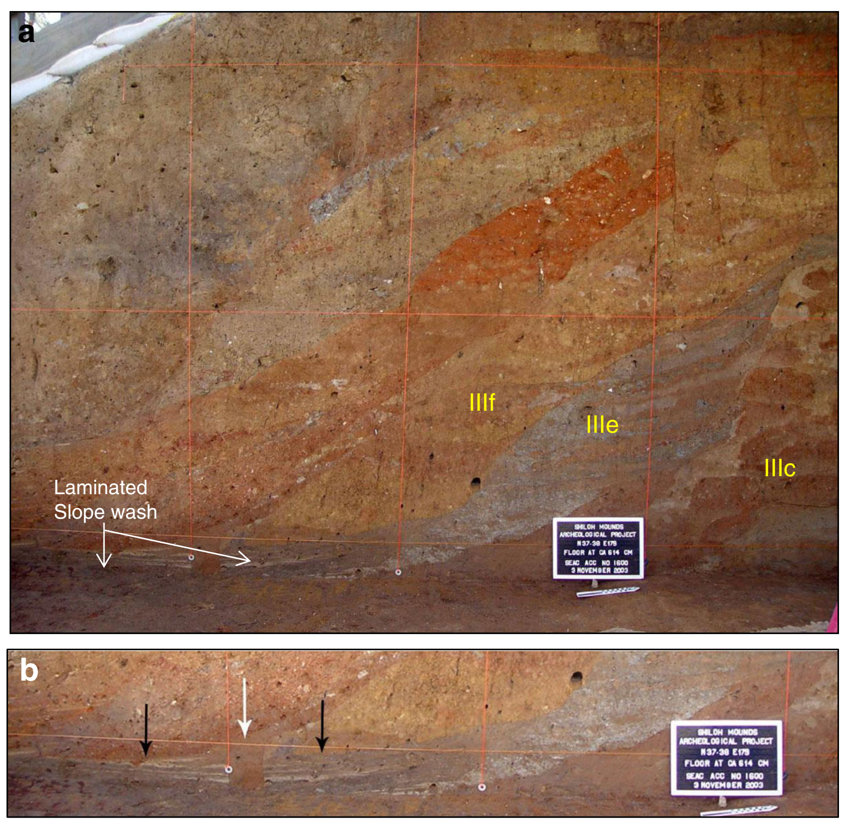


Fig. 15 a) Zoned gray and red façade (substage IIIf) covered Stage IIIc (the mound core primarily composed of soil blocks). This outer face quickly slumped with a zone of slope wash accumulated at the base of the slope (15b – black arrows). The white arrow indicates an intrusive feature that may have been a post added as part of a structure to support the base at a later date. Stage IIIe was quickly followed by the red and yellow zoned slope (Stage IIIf) that appears to have maintained a successful 45 degree slope

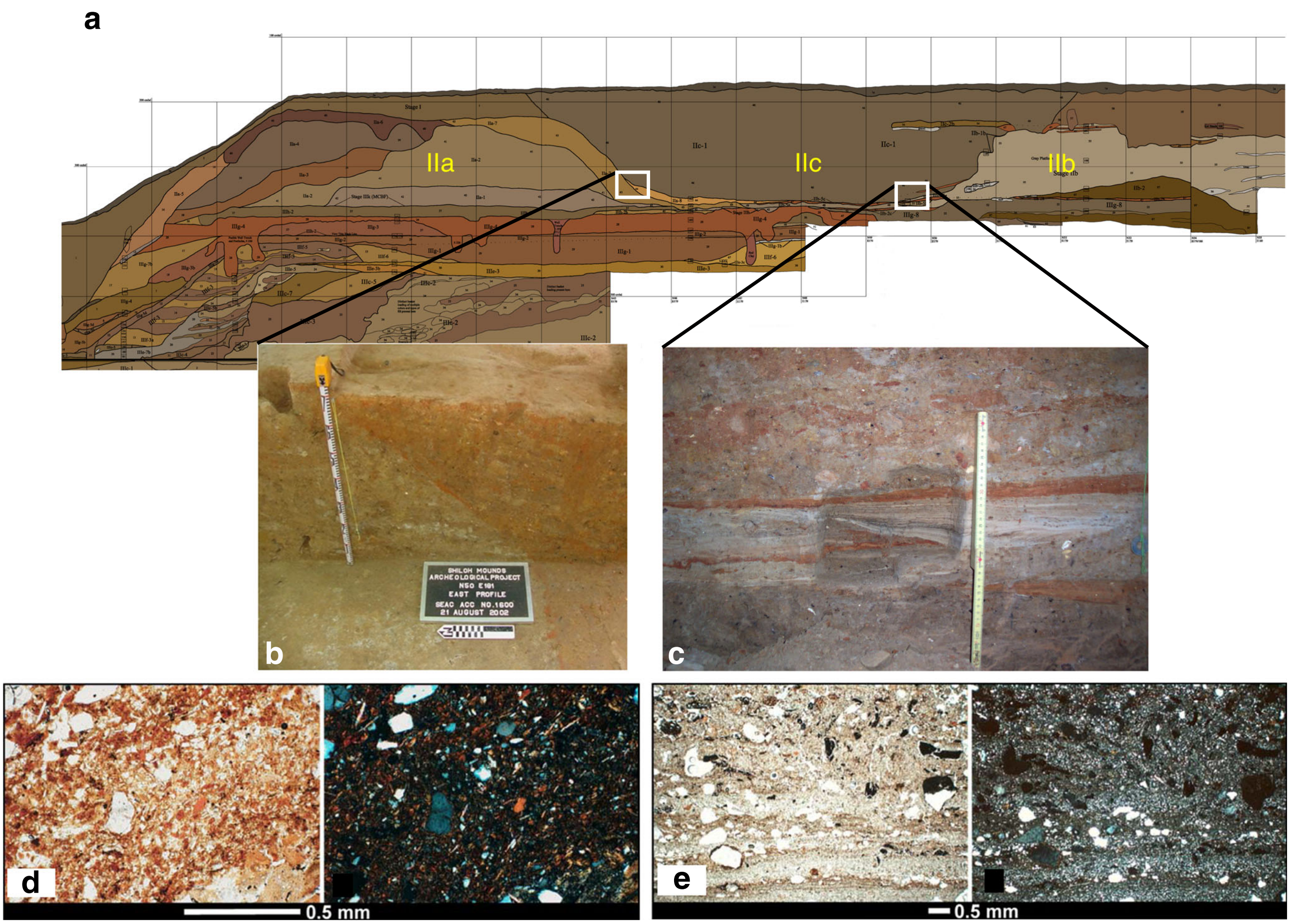


Fig. 16 a) Shiloh Mound A Profile section showing the relationship between stages IIIa, IIIb and IIIc; 16b) detail of the foot of the IIa mound stage with thin red veneer covering (note picture actually from profile 1 m east of the same deposits); 16c) detail of the slopewash deposits of the gray interior fill of mound stage IIIb and the repeated red veneer; 16d) micrographs of the same view in ppl and xpl showing the red veneer composition and structure; 16e) detailed micrographs of the same view in ppl and xpl of the micro laminated slopewash. Note the abundant fine charcoal in the upper layer and the vesicular voids suggesting air bubbles

composed of a clearly "odd" deposit made up of visibly loaded gray silt, that would have been locally acquired from Pleistocene silt deposits accessible at the head of a few of the local tributaries, buried beneath the final loess soil cap (Sherwood and Kidder 2011: 80–82; Sherwood 2013). This gray silt was observed as having fragic properties (cement-like when dry but soft and easily slaked when wet) and did not contain any artifacts. Covering this gray interior is a red clayey sand veneer created from combining the local clayey sand with additional processed clay that was likely applied as a slip to the outer mound (the process is described in Sherwood and Kidder 2011:80; Sherwood 2013: 520–23) (Fig. 16b, d). The trough shaped space between the two mounds, Stage IIc contains distinct wash zones up to 15 cm thick of mm thick gray and red layers (Fig. 16c, e). These layers indicate repeated erosion and reapplication of the veneer applied to the smaller mounds.

Veneers covering mound stages have been identified at several Mississippian and a few Late Woodland sites including Shiloh, Cahokia (Pauketat 1993; Young and Fowler 2000: 70; Reed 2009; Schilling and Kelly 2009; Schilling 2010) Lake George (Williams and Brain 1983, Fig. 4.9a) and Feltus in Mississippi (Kassabaum et al. 2014). Previously (Sherwood and Kidder 2011:81), we interpreted such veneers as functioning in two realms, the symbolic and the practical. Here we emphasize the potential for symbolism based on the strong symbolic connection between the color red and Southeastern Indian mythology, social organization, and political structure (Hudson 1976; DeBoer 2005; Cobb and Drake 2008). In all the sites noted above, red clay, or in the case of Shiloh, red clayey sand, must be sought out and intentionally extracted from the natural environment. And in all likelihood, as in the Stage II veneer, further modified to be applied as a slip creating thin coatings on slopes and surfaces. This level of investment suggests the potential for the process as well as the final product, being ritualized.

Conclusion

Where once ritual was an intellectual "kitchen sink" into which everything economically or politically inexplicable was consigned, the ritual turn in archeology has produced an array of new results and interpretations as scholars increasingly recognize that ritual itself is a socially important and generative force. The ritual turn in mound building is not universally accepted, however, and there has been considerable pushback. The foundation of these objections lies in the notion that there must be a functional logic for the behaviors of monument building (among other things) because these are, in energetic and economic terms, otherwise irrational behaviors. In these instances the proponents are essentially falling back on the "ritual is not functional" arguments even though they acknowledge that there are a variety of human impulses to engage in energetically costly behaviors (see Kantner and Vaughn 2012:79–80). Older versions of these approaches are more dismissive, suggesting that while the motivations for monument building may have been well intentioned the actors simply did not understand the underlying reason for their behaviors (Hamilton 1999). Contemporary views are more nuanced and acknowledge that economically and energetically impractical actions can be justified in their cultural contexts (Peacock and Rafferty 2013). In these interpretations, ritual, though, is a cloak that hides the otherwise true and rational function of mound building. Recent scholarship, however, demonstrates that ritual has an inherent logic and function of its own and should not be considered irrational or inexplicable (Richards and Thomas 1984; Bell 1992, 1997, 2007; Bruck 1999; Thomas 2012).

The position we take begins with the notion that sediments are artifacts that can inform us about the actions of their users and provide us with a basis for inferring meaning. By taking this approach, and by recognizing that the transformation of all artifacts from natural source to finished product is both a material and social process, we can begin to unpack mound building in its myriad forms. For example, we demonstrate that previous approaches, such as Monaghan and Peebles 2010 "unroofing" hypothesis, is a simplistic accounting that denies social process or agency to the mound builders. Our analysis of Mound A at Poverty Point and Mound A at Shiloh, and our experience with several other mounds in eastern North America, shows us that the physical and geotechnical process of mound building is neither random nor accidental. By fundamentally discounting the builders' knowledge about and careful selection of specific sediments, the unroofing hypothesis misses both the variability in mound construction practices at the level of specific sediments but also the idea that mound building itself could be important as a conceptual, prescribed and perhaps ritualized process.

At the level of specific sediments Native American mound builders often specifically selected for textures and colors that were not intrinsic in the original soils in their natural position. Moreover, when needed, the builders contrasted colors and textures, often combining soils of different origin into novel sediments that were then emplaced in very exact stratigraphic locations, spatial situations, or behavioral contexts. These uses certainly included a geotechnical function; at the very least they had to stay in place and support the deposition of yet more sediments or hold to a given, planned slope and footprint. But their very precise positioning and often unique mixing and emplacement argues that many sediments were created and deposited to affect more than a purely functional purpose.

To our thinking, the issue is not if the Native mound builders were embarking on an "expressive performance that is prescribed by appropriateness, and is sanctioned by tradition" (Lewis 1980:8; Thomas 2012:127) when constructing a mound. Indeed, to think otherwise would diminish our understanding of mounds and earthworks. It would also devalue Native tradition, which very explicitly makes reference to mound building as an expressive act of creation. We argue that the very actions of selecting sediments, transporting, mixing, and emplacing them, are part of a chain of social process that culminates with the completed mound. In making these claims we acknowledge that we cannot infer specific meanings with certainty. But, by looking to the earth and understanding it as an artifact, we have another avenue for understanding social, economic, political, and indeed, ritual practices. Understanding mound building and its social and ritual context requires a literal bottom up approach. Mound and earthwork sediments are a window into a world of Native social complexity that we are only beginning to appreciate.

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