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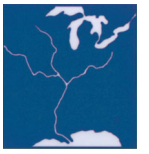

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An Event-Centered Perspective on Mound 2 at the Hopewell Earthworks

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ABSTRACT

This article reports on our assessment of the events that resulted in Mound 2 at the Hopewell Earthworks, with a special focus on its two caches of blue-gray chert bifaces. Our analysis begins by examining the ritual practices associated with Mound 2, including the evidence for fire ceremonialism, extended burial regimes, and the ceremonial deposition of two biface caches. Initially, we focus on evidence of Scioto Hopewell fire ceremonialism on the lower floor under Mound 2, including the significance of the basin-shaped hearth found next to the lower cache of bifaces and several features that contained puddled-clay hearth fragments. We then examine the five burials found under Hopewell Mound 2, considering their grave goods and mortuary furniture. Next, we analyze the two biface caches and their resemblance to similar deposits. We also provide a preliminary assessment of the chert sources from which these bifaces were produced based on a reflectance spectroscopic analysis of 172 bifaces. Our subsequent discussion considers the historical intersection of these three aspects of Hopewell Mound 2 (i.e., fire ceremonialism, biface caches, and burials), including how Middle Woodland ceremonial situations gathered together and arranged increasingly complex assemblages in novel ways.

KEYWORDS

Hopewell; cache; bifaces; ceremonialism; mortuary ritual

Introduction

Situating local contexts as part of broader institutions[1] and historical trajectories has become a conundrum for Middle Woodland archaeologists, especially when assessing Adena and Hopewell sites in the central Ohio Valley (COV; Henry and Miller, this issue). Nevertheless, many contexts at these complex sites deserve more analytical attention in order to illustrate how ceremonial institutions are knotted together with more localized practices. Accordingly, we argue that event-centered analyses can lead to identifying unrecognized patterns and establishing useful analogies, as well as deconstructing complex sites (like the

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Hopewell type site) in meaningful ways (Baires, this issue; Everhart, this issue; Henry et al., this issue).

In this article, we assess the events that resulted in the creation of Hopewell Mound 2 and its two caches of blue-gray chert bifaces. Our analysis begins by examining the ritual practices associated with Hopewell Mound 2, including the evidence for fire ceremonialism, extended burial regimes, and the ceremonial deposition of the two biface caches. Initially, we focus on indications of Scioto Hopewell fire ceremonialism on the lower floor under Mound 2, including the significance of the basin-shaped hearth found next to the lower cache of bifaces and several features that contained puddled-clay hearth fragments. We then explore the significance of the grave goods and mortuary furniture that accompanied the five burials, which were associated with the lower floor identified in Hopewell Mound 2. Next, we consider the two biface caches that were interred as sacrificial oblations and their resemblance to similar ceremonial deposits. Moreover, we provide a preliminary assessment of the chert sources employed to produce these bifaces, based on a reflectance spectroscopic analysis of 172 bifaces.[2] Our subsequent discussion examines the historical intersection of these three aspects of Hopewell Mound 2 (i.e., the fire ceremonialism, biface caches, and burials) and how increasingly complex assemblages gathered together and arranged in novel ways during Middle Woodland ceremonial situations. We also highlight the substantial amount of planning, resources, intercommunity collaboration, and time that Ohio Hopewell peoples invested in their ritual regimes.

Hopewell Mound 2

The Hopewell site is located along the north fork of Paint Creek, which is part of the Scioto River watershed (Figure 1). It consists of 4 earthen enclosures, a woodhenge, and 40 documented mounds positioned on the second and third terraces above the creek (Figure 2; Greber and Ruhl 1989; Lloyd 2002; Lynott 2015; Moorehead 1922; Ruby 2019; Shetrone 1926). The number of mounds, quantity and diversity of artifacts, and its sheer size[3] make the Hopewell type site remarkable (Greber and Ruhl 1989; Lloyd 2002; Ruby 2019; Seeman 1979). Yet Hopewell is not one of the best understood Middle Woodland sites because our knowledge of many contexts is based primarily on nineteenth- and early twentieth-century excavations (Moorehead 1922; Shetrone 1926; Squier and Davis 1998 [1848]). Archaeologists have often struggled to make sense of these early investigations (cf. Carr and Case 2005; Case and Carr 2008; Greber and Ruhl 1989; Lloyd 2002). Additionally, the massive Hopewell Mound 25 has captured the interest of many scholars, while less attention has focused on the other mounds. Since perspectives on the Hopewell type site have often gravitated to the importance of Mound 25, this investigation explores how Mound 2 illustrates that other types of events occurred at the site.

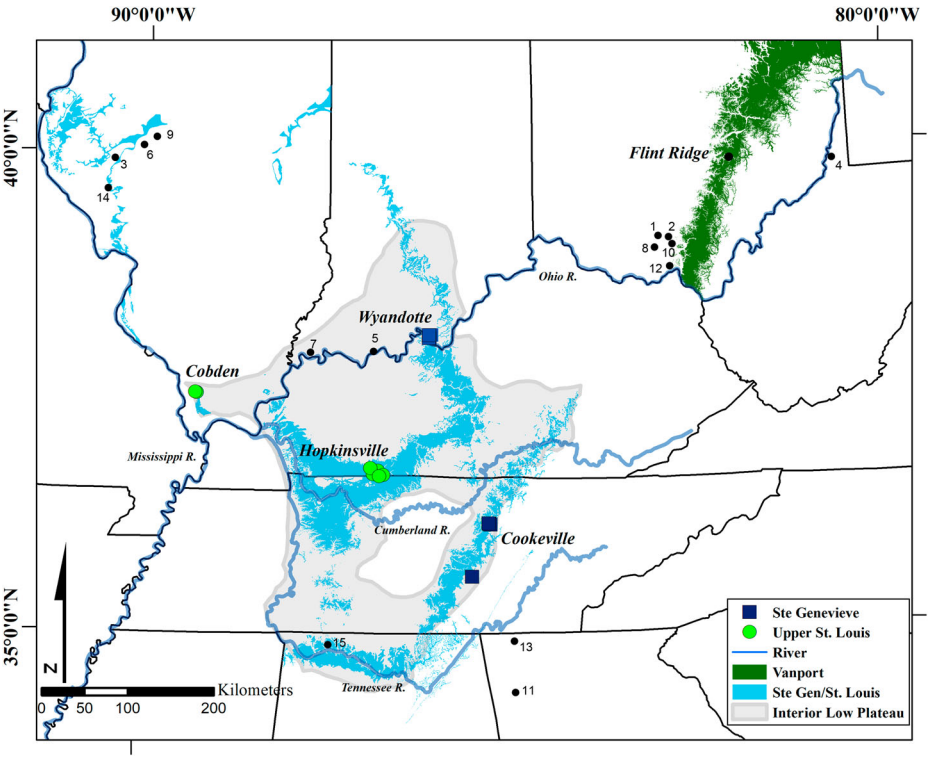

Figure 1. Map of the archaeological sites mentioned in the text and the chert sources identified through the reflectance spectroscopic analysis of a sample of bifaces from Hopewell Mound 2. Archaeological sites: (1) Hopewell type site, (2) Mound City, (3) Baehr, (4) Cresap, (5) Crib, (6) Havana/Neteler, (7) Mann, (8) Medcalf, (9) Morton, (10) R. P. Swartz, (11) Shaw, (12) Tremper, (13) Tunnacunnee, (14) Weaver, and (15) Wright.

Hopewell Mound 2 was positioned in the center of the large enclosure (see Figure 2) and had an "ovid shape with a rounded base," which George Dorsey (1898:38) thought resembled the outline of the bifaces it contained. It measured at least 24.4 m (80 ft) in diameter and 1.8 m to 2.1 m (6–7 ft) in height. It was capped with two sand layers that covered the mound fill, which was "a very hard black muck or gumbo soil" (Shetrone 1926:20). These layers of mound fill covered two surfaces or floors on which were placed caches of early stage blue-gray chert bifaces (Moorehead 1922:95–96; Shetrone 1926:18, 27–30; Squier and Davis 1996[1848]:158). Henry Shetrone (1926:29) suggests that the upper thin whitish limestone gravel surface could have been "continuous through the mound." However, this upper floor was probably extensively disturbed by plowing and the earlier excavations so that the only feature that could be definitively associated with it was the upper cache of bifaces. It is, therefore, unclear whether this upper cache was placed on a primary mound surface or a prepared floor. In contrast, the lower "poorly defined" floor was associated with post molds that probably represented one or more timber structures, a

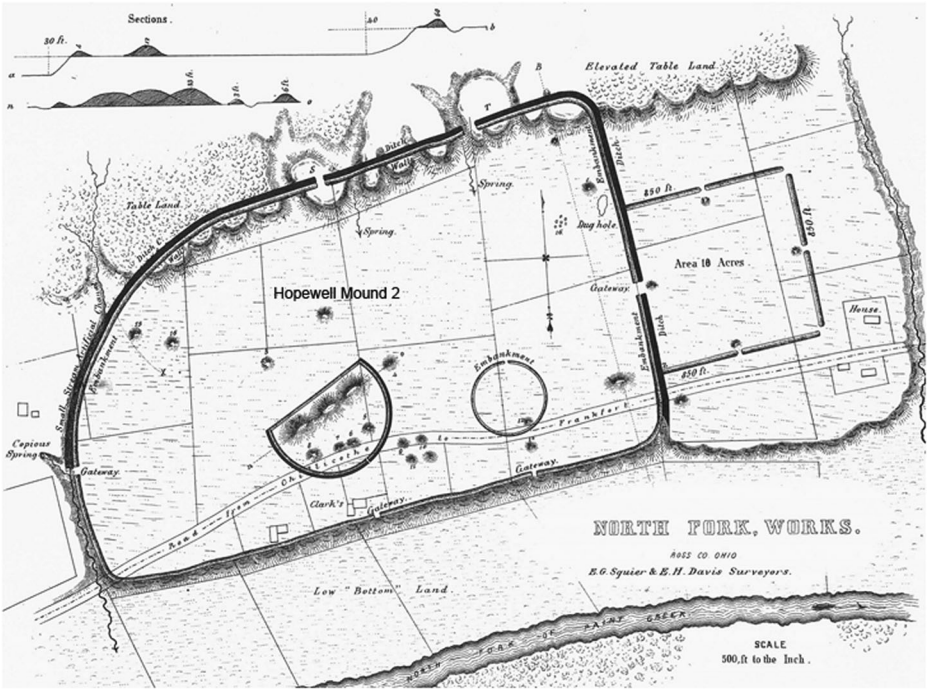

Figure 2. Mound 2 on Squier and Davis's 1848 map of the Hopewell type site, originally titled the "North Fork Works."

puddled-clay basin-shaped hearth (e.g., altar/crematory), the lower cache of bifaces, five burials, and several other archaeological features (Figure 3).

Shetrone (1926) illustrated a plan of the lower floor that has around a 17 m (57 ft) diameter (Lloyd 2002:127), but it is difficult to infer the shape of the timber structure or structures it contained. Shetrone did "note the more or less regular plan of postmolds which, in this mound, are unusually large and deep" (Shetrone 1926:27). These post molds ranged from 15 cm to 25 cm (6–10 in) in diameter and were between 0.9 m and 1.07 m (3–3.5 ft) deep, indicating a substantial structure or structures (Shetrone 1926:27). If these post molds are associated with one structure, then its long axis would have been around 17 m, comparable to the largest submound buildings at Mound City (Brown 2004, 2017). Alternately, these post molds could have been associated with two or more smaller timber structures, which might have been roofed.

In this vein, modern archaeological work has illustrated the structure of Ohio Hopewell submound buildings (Brown 1979, 2004, 2017; Greber 1983, 2009; Greber and Ruhl 1989). For instance, the buildings found under mounds at Mound City were typically "substantial bent pole structures laid out in a generally oblong or oval ground plan with straightened sides" (Brown 1979:213). Some of the smaller submound buildings at Mound City have more oval or trapezoidal shapes, while their interiors often had "an 'H' shaped pattern of internal

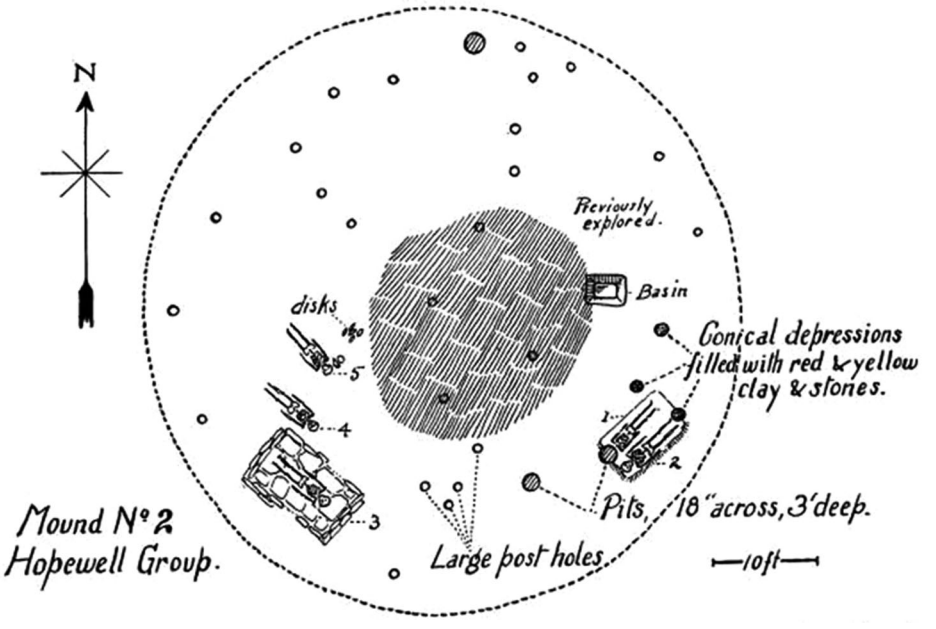

Figure 3. Henry Shetrone's (1926) map of the burials and features identified under Hopewell Mound 2. (Courtesy of the Ohio History Connection.)

supports" to hold the weight of the roof (Brown 1979:213, 2004:153). Other larger structures had supplemental posts along their flanks that were probably "necessary to support extra weight-loading on the outside wall posts" (Brown 2004:153). Large conjoined timber structures have also been identified under some large loaf-shaped mounds, such as the Hopewell Mound 25, Hopewell Mound 23, the Seip-Pricer Mound, the Seip-Conjoined Mound, and the Edwin Harness Mound (Greber 1983, 2009; Greber and Ruhl 1989; Lloyd 2002). Passageways between buildings, covered by separate mounds, were also found at Mound City, such as between the timber structures underneath Mounds 12 and 13 (Brown 1979, 2004, 2017).

Yet it is unclear which of these timber (submound) structures provides an apt analogy for the configuration of post molds found under Mound 2 at the Hopewell Earthworks. It is even possible that it might represent a wooden post enclosure, as opposed to a more formal roofed building, given the large, deeply set and widely spaced posts identified in this space (Shetrone 1926:27). Nevertheless, the evidence seems to support that one or more timber structures were present on the lower floor. The timber structure(s) associated with the lower floor in Mound 2 were likely dismantled before this space was covered over, which created the upper surface (a floor or primary mound) on which the second cache of bifaces was placed (see below).

The lower floor identified in Mound 2 was also associated with the earlier cache of blue-gray bifaces, a puddled-clay hearth (altar/crematory), five

burials, and several other archaeological features. Spatially, the hearth was located on the eastern edge of the biface caches and constructed from the "typical" bright yellow puddled clay (Shetrone 1926:22–23). Burials 1 and 2 were interred together on a raised platform constructed in the southeast corner, while Burial 3 was placed in a stone grave in the southwest corner (see Figure 3; Table 1). Burials 4 and 5 were placed directly on the (upper) floor. An isolated skull, wearing a copper coronal plate, was also placed next to Burial 5. The other archaeological features identified on the upper floor include several pits and three inverted cone-shaped features filled with stones and brightly colored burned red and yellow clays (Shetrone 1926:22).

Unfortunately, there are no absolute dates from Mound 2. However, Pedersen Weinberger (2006:61) has suggested that Katherine Ruhl's (1992) ear-spool seriation might clarify the chronology of the Hopewell Earthworks. Ruhl's (1992) seriation of the ear spools from Mound 2 at the Hopewell Earthworks applies to the lower floor, since the eight ear spools were found with Burials 1, 3, 4, and 5 (see Table 1). In Ruhl's (1992:55–56) sequence, Mounds 24 and 26 are older than Mound 2 and (Moorehead's) Mound 17,[4] while Mound 25 has a wide temporal span that encompasses these other periods. Mound 24 is a small mound located within the main enclosure that contained at least 10 burials with

Table 1. Burials Found by Henry Shetrone (1926) on the Upper Floor Under Hopewell Mound 2.

Burial	Sex Est.	Age Est.	Artifacts	Depositional Context	Notes
1	Male	Adult	2 Copper Ear Spools (hands); Copper Coronal Plate (near head)	Interred on Earthen Platform (152 mm [6 in] in height) with Burial 2	Pit (0.762 m) dug at top of Burial 1. The skull of this burial was found at the bottom of this pit
2	Female	Adult	100 Copper Beads (left hand); Copper Adze (left foot)	Interred on Earthen Platform (152 mm [6 in] in height) with Burial 1	
3	Indeter.	Young Adult	Conch Shell (right side of head); several thousand Shell Beads (head, face, neck, and shoulders); Copper Quadriconcave Plate (under left shoulder); Copper Quadriconcave Plate (under hips); 2 Copper Ear Spools (hands); small copper ax (between feet)	Interred in SW Stone Grave/Crypt (3.35 m × 2.43 m), dug 0.61 m (2 ft)	
4	Indeter.	Young Adult	Conch Shell (right side of head); Shell and Pearl Beads (head and neck); Quadriconcave Plate (under base of head); 2 Copper Ear Spools (hands)	Interred on Floor Southwest of Burial 3	
5	Male	Old Adult	Conch Shell (head); Shell Beads (neck); Quadriconcave Plate (under head); 2 Copper Ear Spools (hands); Mussel Shell Spoon (right foot); Mica Plate (right shoulder)	Interred on Floor Northeast of Burial 4	Second Human Skull with Copper Coronal Plate (possible trophy) was placed 25 cm to the right of the head of Burial 5.

limited grave goods. Mound 26 covered numerous burials, two puddled-clay basin-shaped hearths, and a deposit with exotic objects and was located inside the D-shaped enclosure that contained Mound 25 (cf. Greber and Ruhl 1989; Lloyd 2002; Moorehead 1922; Shetrone 1926).

Fire Ceremonialism

An important aspect of Scioto Hopewell caches is their close association with puddled-clay basin-shaped hearths (Brown 2004, 2017; Greber 1996; Seeman 2004). In general, these puddled-clay basins were between 3 ft and 6 ft in length (Seeman 2004:69) and were "functionally . . . fireplaces, but of a more formal design than normal domestic hearths" (Greber 1996:159). These basins were carefully formed from puddled clay that was often hardened through prolonged exposure to fire and many were deeply baked and cracked from repeated usage (Greber 1996; Greber and Ruhl 1989; Seeman 2004). Mark Seeman (2004:69) notes that "broken or shattered basins were carefully cared for, and sometimes were included as portions of offerings in intact basins." Some of the cracked hearths were also extensively repaired and patched with puddled clay, although the repaired examples were generally not reused (Mills 1922).

The basin-shaped hearth found on the lower floor under Mound 2 was constructed from the "typical" bright yellow puddled clay. It was oriented along a northwest–southeast axis and measured 1.1 m (44 in) long by 0.89 m (35 in) wide. Shetrone (1926:22–23) notes that it was quite bold in form, but the "muck soil" that covered it was "so incorporated with it that it was difficult to uncover without disfiguration." This muck was like the soils Shetrone (1926:20) documented over Burials 1 and 2, so there might have been more complex mounding or filling of certain areas of this lower floor. Unlike some other Scioto Hopewell puddled-clay hearths, no artifacts or ashes were found within this basin. Yet it was located adjacent to the dug-out area, associated with the earlier excavations, which contained the lower cache of bifaces (Brown 2004, 2017; Greber 1996; Greber and Ruhl 1989; Seeman 2004). It was associated with "fully two cubic yards of the usual bright yellow clay used for basin construction," which was spread across the floor with the basin located at its center and "troweled into form" (Shetrone 1926:23).

Shetrone (1926) also found three inverted cone-shaped features on the lower floor under Mound 2, which provide additional evidence of fire ceremonialism. He describes these features as inverted cone-shaped holes that were 14 inches in diameter at the top and 15 inches deep (Shetrone 1926:22). These features are labeled in Shetrone's (1926:19) plan view of Mound 2 as "Conical depressions filled red and yellow clay & stones," (e.g., see Figure 3). They were "partly filled with stones" at the bottom and "highly colored red and yellow burned clay" at the top (Shetrone 1926:22). It was clear to Shetrone (1926:22)

that the brightly colored red and yellow clay fragments in these features were derived from a puddled-clay "basin as portions of it retain the smooth burned surfaces characteristic of those receptables." These three inverted cone-shaped features, therefore, appear to be the remains of one or more puddled-clay hearths that were dismantled and ritually reinterred on this lower floor. Three of these features were placed on the eastern portion of this precinct, which also contained the intact puddled-clay hearth and Burials 1 and 2 (see Figure 3).

So, what is the significance of fire ceremonialism at Scioto Hopewell sites? First, there was an association between these puddled-clay hearths and the deposition of ritual caches and formal deposits of ritual objects. Second, the puddled-clay hearths were (independently) significant given their ritual treatment (Greber 1996; Greber and Ruhl 1989; Seeman 2004). Historically, these formal hearths were dubbed "altars" by Squier and Davis (1848 [1998]) because they were often closely associated with ritual caches or formally arranged artifact deposits (Seeman 2004:69). For instance, Squier and Davis (1998 [1848]) found the cache of broken effigy platform pipes under Mound City Mound 8 near a large puddled-clay basin. They therefore interpreted these features as "altars," which had votive offerings placed within (or adjacent to) them (Squier and Davis 1998 [1848]). This influenced Warren Moorehead's (1922) use of the term to describe the puddled-clay hearths at the Hopewell site and other mound sites in Ohio. Moorehead's (1922) excavation of two puddled-clay basins (Altars 1 and 2) in Hopewell Mound 25 probably reinforced this interpretation because a large amount of ceremonial paraphernalia was placed in these hearths and burnt (Greber and Ruhl 1989). Along these lines, it is notable that large diverse caches of ceremonially charged objects were also placed in the basin-shaped hearths covered by Turner Mounds 3 and 4 (Willoughby and Hooton 1922).

In contrast, William Mills (1922:562) argued that these puddled-clay hearths were used to cremate the dead. This interpretation was based on the small pieces of these basins that were sometimes found in cremations (Brown 1979:213). Thus, the function of these puddled-clay hearths became closely associated with how Ohio Hopewell peoples cremated their dead (cf. Baby 1954; Brown 1979, 2004, 2017 Konigsberg 1985). Accordingly, William Webb and Charles Snow (1945:182) questioned whether the smaller puddled-clay basins were large enough to cremate the dead. In response, Raymond Baby (1954) argued that Hopewell people dismembered corpses before cremating them. Lyle Konigsberg (1985) assessed this issue through the analysis of cremations from Seip. Konigsberg (1985:134–135) found that these cremations occurred before extensive decomposition based on the presence of carbonized soft tissue or "clinkers," but he did not identify any cut marks on the remains from Seip, so the remains do not appear to have been dismembered. Konigsberg (1985:134) notes, however, that some basins had substantial surrounding

flanges that could have been used to cremate "fleshed" corpses, while many of the larger examples could have fit a human corpse without dismembering it. Yet variations in the size and morphology these basin-shaped hearths raise questions about whether these features were consistently used to cremate the dead. Additionally, interpreting these hearths as crematories does not explain why large caches of ceremonial objects or formally arranged artifact deposits were placed next to and in these features. As a result, Greber (1996) and Seeman (2004) have suggested that the physical and social uses of these ceremonial basin-shaped hearths varied.

We add that the treatment of these puddled-clay basins could have continuities with later ceremonial regimes since, "sacred" fires and hearths were symbolically charged for many Eastern Woodlands communities (cf. Baltus and Baires 2012; Hudson 1976; Koons 2016; Martin 2001). For instance, the sacred fire was often considered a living being closely connected to the sun (Hudson 1976). Accordingly, fires were fed only particular substances and they were not extinguished with water (its ritual opposite), except during funerary ceremonies (Hudson 1976:128). For instance, the Cherokee believed that blood was to fire as saliva was to water, so it was important not to spit in fires. Placing meat/blood in fires was consequently acceptable, and successful Cherokee hunters would give (sacrifice) a small portion of their kill to the fire (Hudson 1976:126, 1984:12). Similarly, green ears of corn, black-drink tea leaves (*Ilex vomitoria*), bear oil, and button snakeroot medicine were offered to the rekindled sacred fire during Muskogean Green Corn Busk ceremonies (Martin 2001:51). The Muskogean Creek also considered the sacred fire to have a life cycle that begins with infancy and then moves through adolescence, maturity, and senescence before it is ritually extinguished and relit (Koons 2016:124–125).

In this vein, conceptual parallels could exist in the ritual treatment of Scioto Hopewell ceremonial hearths and the fires they contained. For example, the caches and objects placed next to (or within) these puddled-clay hearths appear to be sacrificial oblations or dedicatory offerings, like the substances ritually fed to sacred fires by later peoples in the Eastern Woodlands (Hudson 1976, 1984; Koons 2016; Martin 2001). Alternately, the treatment of these hearths appears to emphasize their importance and "life cycle," since some of these basins were patched and others were cared for in other ritual ways at the end of their use life (Seeman 2004). Many puddled-clay hearths were also associated with Scioto Hopewell mortuary practices, so an analogy between the care taken in the treatment of the dead and these hearths seems appropriate. In the case of Mound 2, pieces of dismantled hearth were placed in several features in the eastern portion of the lower floor, near the low platform on which Burials 1 and 2 were placed. Historically, the sacred fire was closely associated with the sun and the Above World, so the placement of these hearth fragments next to the raised earthen platform with Burials 1 and 2 could have been intentional.

Hopewell Mound 2 Burials

Five burials were interred on the lower floor that Shetrone (1926) found within Hopewell Mound 2 (see Figure 3). These burials were differentiated through the grave goods interred with them and whether they were placed on this surface or on prepared mortuary furniture. For instance, Burials 1 and 2 were placed on a low earthen platform, whereas Burial 3 was interred in a stone-lined crypt dug into the floor (see Table 1; Shetrone 1926:23–24). In contrast, Burials 4 and 5 were placed directly on the upper floor. The grave goods that accompanied the five burials interred under Hopewell Mound 2 also indicate their social and ceremonial importance, as well as a complex mixture of more local and wider spread institutions (see Table 1). For example, shell, pearl, and copper beads are relatively ubiquitous at Middle Woodland sites, and different amounts of these adornments accompanied four of the five burials from Hopewell Mound 2.

Four burials were also interred with copper ear spools (Shetrone 1926). Bicymbal copper ear spools have a broad Middle Woodland distribution and seem to have originated in the Illinois or Tennessee River valley, given Katherine Ruhl's (2005) seriation and the lack of antecedents in Ohio. Yet the largest concentration of copper ear spools was deposited at the Hopewell site (e.g., in total over 672), an assemblage that dwarfs those from other Middle Woodland sites (Ruhl 2005:702). When placed with extended burials, copper ear spools were interred principally in two body positions: around individuals' ears or on their hands. The eight copper ear spools from Hopewell Mound 2 were all found in the hands of Burials 1, 3, 4, and 5 (see Table 1; Shetrone 1926). Regrettably, the specific ear spools deposited with these burials cannot be identified and used to date specific contexts due to outdated curation and excavation practices that left their provenience information unrecorded (cf. Ruhl 1992, 2005).

Burials 3, 4, and 5 had conch-shell cups placed next to their heads (see Table 1), which reflects widespread influences and institutions. For example, conch-shell cups were placed with Middle Woodland burials in several different regions, including the Ohio, Illinois, Mississippi, and Tennessee Valleys, as well as the Florida panhandle (Milanich 1979; Seeman 1979). The placement of shell cups around burials' heads also occurs in several geographic areas and constitutes a pattern that deserves further exploration. The resemblance of these conch-shell cups to those historically used for serving Black Drink (cf. Emerson 2018; Hudson 1979, 1984; Milanich 1979) offers a potentially testable interpretation (Crown et al. 2012). Yet the findings of Crown and colleagues (2012) have been called into question because modern caffeine contamination can bias the results of residue analyses (sensu King et al. 2017). One way or another, conch-shell cups were not typically deposited in domestic contexts in these regions, which emphasizes their ceremonial associations (Milanich 1979:90).

Other objects interred with these burials have a predominately local distribution centered in the COV. Most of the known Middle Woodland quadriconcave plates and coronal headplates made from copper have been found in the COV. The two copper coronal headplates found outside the COV include a plain example from the Mann site in the lower Ohio Valley and an effigy-shaped example from the Havana/Neteler site in the central Illinois Valley (Seeman 1979:318–322). These coronal headplates were worn on the center of the head, almost exclusively by adult males (Carr 2005a:282–283). This idea is reinforced by their placement with burials and depiction on an anthropomorphic statuette (Cat # S278) from Mound City. This statuette appears to portray an adult male, who has falconoid imagery emblazoned on his face and is also wearing a coronal headplate, a quadriconcave plate, and (probably) ear spools (Giles 2019).

Copper quadriconcave plates seem to have a longer history than coronal headplates because a similar, albeit smaller, example was found near the base of the Cresap Mound in West Virginia and dated to 2380 BP ± 15 (ISGA-A 1832, 430 BC uncalibrated; McConaughy et al. 2014:16). A generally comparable quadriconcave copper plate[5] was also interred with Burial 3 in the Early Woodland Morton Mound F^{0}11 in the central Illinois Valley, which could be roughly coeval with or earlier than Cresap (Esarey 1986). The similarities between these temporally early copper quadriconcave plates could indicate connections between these regions during the Early Woodland period. Yet the distribution of Middle Woodland copper quadriconcave plates is centered in the COV. Only seven sites outside the COV have copper quadriconcave plates. They include three Copena sites in the Tennessee Valley (e.g., Shaw, Tunacunnee, Wright) and three Havana sites located in the Illinois (e.g., Weaver) and upper Mississippi (e.g., Sioux Coulee and White) Valleys (Carr 2005b; Seeman 1979:315–317).[6]

Additionally, certain burials appear to have been manipulated in symbolically significant ways. For example, a pit was dug above the shoulder of Burial 1, and it contained his cranium, mandible, and several vertebrae. In contrast to these skeletal elements, the curved copper coronal headplate was found at the top of the pit (Shetrone 1926:20–21). While Shetrone (1926:20–22) believed that these skeletal elements had fallen into the pit after the decomposition of various pieces of grave furniture, it is equally plausible that their placement was intentional. We support the latter possibility because the other copper coronal headplate found under Hopewell Mound 2 was placed on a "trophy" skull interred next to Burial 5, offering a useful point of comparison (Shetrone 1926:26–27). Consequently, this ceremonial regime could include a focus on decapitation or the loss of one's head. This exemplifies a larger scale (global) pattern in which skulls or crania were extensively manipulated by Middle Woodland peoples, a topic that has been explored by several scholars (cf. Carr and Case 2005; Case and Carr 2008; Johnson 2015; Jones et al. 2017; Seeman 1988, 2007).

While the distribution and use of these various objects could be discussed in greater detail, even basic contextual information can reveal shared conditions, as well as connections, between particular manifestations and assemblages. This is a reminder of Joseph Caldwell's (1964:143) perspective on how "little traditions" might have contributed to a "Great Tradition" during the Middle Woodland period. Accordingly, Robert Hall (1980:407–408) argued that certain shared "little traditions" could have served as mechanisms for communication, such as the sacredness of tobacco/smoking pipes, the use of raptorial bird designs, and the "use of fictions of kinship." Yet the analytic boundaries between many of these shared traditions and institutions blur, as exemplified by the peregrine falcon (smoking) platform pipes found at Tremper and Mound City (Giles 2020). Similarly, falconoid imagery and a coronal headplate, quadriconcave plate, and (probably) ear spools were depicted on a Mound City statuette (Cat # S278; Giles 2019). Other Middle Woodland traditions and institutions likely blur analytic categories as well, such as the association between copper coronal headplates and head loss/decapitation in Mound 2. In other words, these ritual objects, practices, and institutions appear to have rhizomatic connections that extend into other times and places, but the way they are assembled highlights interrelationships and larger communal structures (sensu Baires, this issue; Deleuze and Guattari 1994; Henry and Miller, this issue; Nail 2017).

Caches of Blue-Gray Chert Bifaces

Like other large Ohio Hopewell caches, the cache of bifaces on the lower floor under Mound 2 was placed adjacent to a basin-shaped puddled-clay hearth (Shetrone 1926:19, 22–23). In a general sense, Ohio Hopewell caches can be considered sacrificial offerings that appear closely associated with the use of these formal hearths (Greber 1996; Seeman 2004). The placement of large caches next to these puddled-clay hearths emerges near the beginning of the Ohio Hopewell sequence. This is exemplified by the Great Cache found next to a large basin-shaped hearth under the Tremper Mound (Mills 1916). The other cache of bifaces was placed on the upper floor identified in Mound 2 (see also Moorehead 1922:95–96; Shetrone 1926:29; Squier and Davis 1998 [1848]:158). However, this upper floor was likely extensively disturbed, so the contextual associations for the later cache are unclear. Yet it could be analogous to caches placed on primary mound surfaces, such as the "second" cache of pipes discovered in the Tremper Mound (Mills 1916:284–285) and the cache of copper artifacts found in Hopewell Mound 25 (Greber and Ruhl 1989; Moorehead 1922:109–-110, 123). N'omi Greber (1996:170) has argued these two biface caches could reflect calendrical rites, like the paired caches from Turner Mounds 3 and 4 (Willoughby and Hooton 1922). Greber's (1996) hypothesis has cross-cultural parallels to the sacrificial rites celebrated by other groups that often correspond to events on ritual calendars (sensu Küchler 1997, 2002).

The biface caches from Mound 2 cannot be considered typical because many (if not most) Ohio Hopewell megacaches feature a diverse range of objects (Carr et al. 2005). Instead, they appear more analogous to Middle Woodland biface caches found in Illinois and Indiana, with the highest concentration occurring in Illinois Hopewell contexts (Daniels and McElrath 2010; Farnsworth 2005; Morrow 1992; Morrow et al. 1992; Winters 1984). In these two caches, the chert disks were grouped into piles of a half-dozen bifaces, and they could have originally been deposited in stacked bags, creating a herringbone-like "masonry" (organization) in these deposits (Dorsey 1898; Moorehead 1922; Shetrone 1926). Moreover, if these bifaces were originally deposited in bags, these containers might have facilitated their movement to the Hopewell earthworks, especially because Jennifer Pederson Weinberger (2006:147) indicates that "evidence for large-scale biface production is not present at the Hopewell site" (see also Greber 1996:162). Since it does not appear that these bifaces were knapped at the Hopewell earthworks, these objects might have had explicit nonlocal symbolic associations.

These Middle Woodland biface caches also have similarities to the Terminal Archaic and Early Woodland caches of blue-gray Turkey Tail points and other bifaces found primarily in Wisconsin, Michigan, Iowa, Illinois, Indiana, and Ohio (Didier 1967; Hall 1983, 2019; Krakker 1997; Ritzenthaler and Quimby 1962; Seeman 1986, 1992). Preexisting Early Woodland (biface) caches have been discovered near Adena and Hopewell sites in the Scioto Valley that anticipate subsequent ritual regimes, such as the Spetnagel cache of Turkey Tail bifaces found in the R. P. Swartz Mound (see Figure 1; Greber 1991; Seeman 1986; Shetrone 1923). The caches from Hopewell Mound 2, therefore, have rhizomatic connections to other regions and times, which suggest interrelated sets of conditioning relations (sensu Deleuze and Guattari 1994; Nail 2017).

The blue-gray chert artifacts from Mound 2 tend to be circular or oval bifaces, which have concentric rings or bands that tend to be centered in these artifacts (cf. McNerney 1975; Parish and Giles 2017; White 1968:27). The photograph of the bifaces excavated by Warren Moorehead (1922:Plate XLII) from Mound 2 shows them stacked by a tent and illustrates the scale of these deposits (Figure 4). Analogous blue-gray chert bifaces are sometimes referred to in the literature as chert disks or disk cores (sensu Daniels and McElrath 2010; McNerney 1975). Most were probably knapped from nodular or ball cherts given their concentric banding and our firsthand knowledge of the blue-gray chert outcrops found throughout the Midwest (Morrow et al. 1992:167–168; Parish and Giles 2017; Squier and Davis 1998[1848]:214). Unfortunately, the number of bifaces found in each deposit beneath Hopewell Mound 2 is unknown because the bifaces from the upper and lower caches are not curated separately. But their combined total of over 8,200 bifaces makes them some of the largest Middle Woodland caches of their kind.[7] Accordingly, the caches from Mound 2 at the Hopewell site are exceeded only by the Middle Woodland

Figure 4. Photograph of the bifaces excavated from Hopewell Mound 2, prepared by Hilborne T. Cresson for Warren K. Moorehead (from Moorehead 1922:Plate XLII). Field Museum of Natural History. CC-BY-NC. (Anthropology) Collection, Site Maps, 1891, undated. http://dl.fieldmuseum.org/cdm/compoundobject/collection/p17032coll2/id/562, accessed December 16, 2019.

cache of 10–12 thousand blue-gray chert bifaces found at the Crib Mound site in Spencer County, Indiana (see Figure 1; Gerber 2007; Parish and Giles 2017; Scheidegger 1968). The caches from Baehr Mounds 1 and 2 also rival these deposits because around 6,200 and 5,300 blue-gray chert bifaces, respectively, were found in these contexts (cf. Farnsworth 2005; Morrow 1992; Morrow et al. 1992; Winters 1984).

The bifaces from Hopewell Mound 2 have been visually identified as Ste. Genevieve, Wyandotte chert, derived from sources in Harrison and Crawford Counties in Indiana (see Figure 1; Fowke 1928; Tankersley 1984). However, chert source determinations based on macroscopic qualitative assessments are potentially inaccurate (Morrow et al. 1992). For instance, some chert types have overlapping visual characteristics that confound the correct identification of their geologic parent formations in general and outcrops or source regions specifically. In this vein, Ste. Genevieve and Upper St. Louis chert types from the Mississippian geologic subperiod share many visual similarities that make them difficult to distinguish from one another. Both chert types occur as nodules that exhibit a light-colored cortex, gray to blue interior, a waxy fine-grained texture, occasional concentric banding, and quartz/calcite-filled vugs. Moreover, the Ste. Genevieve and Upper St. Louis formations encompass large geographic areas, together spanning portions of six states and over 600 linear km.

A sample of 172 bifaces from Mound 2 was, therefore, analyzed with reflectance spectroscopy to bypass the uncertainties that accompany macroscopic visual examination of chert (cf. Luedtke 1992; Parish 2013; Smith 2011).

Reflectance spectroscopy is useful for differentiating the properties of sampled materials because it records the interaction of matter (i.e., chert) with portions of the electromagnetic spectrum (Smith 2011). Chert primarily contains microcrystalline and crytpocrystalline quartz grains but also has various additional mineral impurities. As electromagnetic radiation interacts with the surface and near-surface areas of chert samples, portions of it are reflected, absorbed, and transmitted (Luedtke 1992). The portion of the spectrum that is absorbed is diagnostic of both atomic configuration (electron valence field strengths) and molecular (dipole) bonding within the chert being analyzed (Parish 2013). Recorded variation relates to the sample's chert type, the deposit's paleodepositional environment, and the diagenetic processes that formed them, which makes it possible to infer their diagnostic spectral differences. Once quantified, these spectral differences can be used to define chert by location and source unknown artifacts back to known sources.

To source the bifaces from Mound 2, reflectance spectroscopy was used to analyze 810 geologic reference samples (420 Ste. Genevieve; 390 Upper St. Louis) obtained from 27 deposits (30 samples per deposit). The resulting measurements were used to characterize the chert by parent formation and by deposit within each formation. The spectra were processed using spectral transforms, such as absorbance conversion, normalization, and first derivative GAP, to eliminate noise, highlight slight absorption features, and standardize intensity differences (Parish 2013). The GRAMS and Unscrambler X 10.3 software suites aided spectral processing. A stepwise canonical discriminant function analysis (DFA) in Statistical Package for the Social Sciences (SPSS) was used to select the most diagnostic spectral features, characterize the deposits, and calculate group prediction for both the geologic samples and the artifacts, as well as to plot scatter diagrams. A discriminant function analysis was then employed to group the results, and it correctly assigned all 810 geologic samples and the 30 Burlington control samples to their parent formations. The 100% correct classification of the chert reference data set provides confidence that reflectance spectroscopy can characterize and differentiate between the visually similar Ste. Genevieve and Upper St. Louis chert types.

Though not presented in detail here, preliminary results indicate that nearly half the bifaces (n = 81, 47%) in the sample from Mound 2 were produced from Ste. Genevieve cherts and most of the remainder (n = 85, 49%) from Upper St. Louis cherts.[8] A few (n = 6, 4%) were also produced from Vanport and Zaleski cherts that outcrop in Ohio (see Figure 1). The results also demonstrate that most of the Ste. Genevieve bifaces source to deposits near Cookeville in White and Putnam Counties, Tennessee, while a secondary source are the deposits around Wyandotte Cave in Harrison County, Indiana (see Figure 1). Additional source diversity is reflected in those bifaces identified as Upper St. Louis chert. Most of the Upper St. Louis bifaces in our sample source to deposits in southwestern Kentucky, immediately north of Clarksville, Tennessee,

in the Cumberland Valley. A significant number of the Upper St. Louis bifaces also source to deposits near Cobden in Union County, Illinois, while a few examples were produced from chert that outcrops in Montgomery County, Tennessee (see Figure 1).

Based on these preliminary results, we argue that multiple geographically dispersed communities probably quarried and produced the bifaces that were placed in caches under Hopewell Mound 2. Consequently, the bifaces contributed or gifted by these various Middle Woodland communities might have materialized and memorialized the social bonds between these groups and their (gifting) relations with important other-than-human person(s). This reinforces that Hopewell Mound 2 was constructed by a plurality of groups (cf. Bernardini 2004; Carr et al. 2005; Clay 2002; Henry and Barrier 2016).

Discussion

So how do these three aspects of Hopewell Mound 2 (i.e., fire ceremonialism, mortuary practices, and biface caches) historically intersect and reflect different dimensions of Middle Woodland ceremonial situations? The most obvious historical antecedents of Mound 2 are Terminal Archaic and Early Woodland caches of blue-gray chert Turkey Tail and other bifaces, especially since burials were placed with some of these assemblages and covered with mounds (Didier 1967; Krakker 1997; Ritzenthaler and Quimby 1962; Seeman 1992). For example, approximately 50 heat-damaged "killed" Turkey Ttail bifaces were found in a bed of ashes adjacent to two burials under the Early Woodland Medcalf Mound in Ross County, Ohio (Seeman 1986:568–570). The Medcalf Mound, therefore, highlights an early interconnection between fire ceremonialism, the deposition of biface caches, and mortuary ceremonialism. Yet each of these elements appears separable, since some caches of Turkey Tail bifaces were not interred with burials or covered by mounds (cf. Greber 1991, 2005; Seeman 1986, 1992).

Other aspects of the Mound 2 assemblage emerged during the Early through Middle Woodland periods, including the timber charnel houses, basin-shaped puddled-clay hearths, mortuary furniture, and many of the grave goods that accompanied the five burials (cf. Brown 2004; Greber 1991, 2003, 2005; Seeman 2004). In this vein, one notable facet of Middle Woodland ceremonial situations is that, at least, certain communities created increasingly formalized spaces that required larger investments of time, energy, and various resources (cf. Abrams 2009; Abrams and LeRouge 2008; Carr and Case 2005; Case and Carr 2008; Henry and Barrier 2016; Henry and Miller, this issue). For example, the timber structure(s) that preceded Mound 2 likely influenced the activities that occurred within this precinct, curtailing certain practices while enabling others, such as the horizontal differentiation of burials and other features (sensu Brown 1979). Similarly, the puddled-clay hearths found within Ohio

Hopewell (submound) buildings indicate increased formalization, associated with institutionally approved knowledge of the ways these features should be constructed, used, decommissioned, and ceremonially disposed of (cf. Giles 2010; Greber 1996; Seeman 2004).

This increased formalization appears intertwined with the extended processing and celebration of the dead during Middle Woodland ceremonial situations. In other words, later ceremonial events became progressively longer and more elaborate than earlier ritual regimes. Many Middle Woodland ceremonial situations were likely associated with secondary burial regimes, that is, mortuary rites that occurred after the dead were cremated or while they decomposed (Giles 2010; Parker Pearson 1999). Although secondary burial rites were probably a feature of earlier ritual regimes, their increasing importance in the mortuary practices of Ohio Hopewell and other Middle Woodland peoples was associated with greater planning, resource expenditure, intercommunity collaboration, and time investment. These facets of Middle Woodland ceremonial situations are reflected in the accumulation and installation of the two caches of (over 8,200 in total) blue-gray chert bifaces in the precinct under Hopewell Mound 2, as well as the mortuary furniture, grave goods, and treatment of the five burials interred in this space.

Congruently, the preliminary results of our chert-sourcing analysis with reflectance spectroscopy indicate the presence of both Ste. Genevieve and Upper St. Louis cherts in the assemblage, a greater variability than had been previously assumed (cf. Fowke 1928; Tankersley 1984). Multiple sources for both (Mississippian geologic subperiod) blue-gray cherts were identified, as well as a few Vanport/Zaleski bifaces (see Figure 1). The use of these geographically dispersed sources suggests that multiple Middle Woodland communities probably quarried and knapped the bifaces placed under Hopewell Mound 2. We argue that representatives from these different communities likely attended the ceremonies that formed Hopewell Mound 2, as well as the events associated with the other mounds and enclosure at the site. As Wesley Bernadini (2004) has illustrated, the construction of the large Ohio Hopewell mound and earthwork complexes required the labor and investments of many communities. Middle Woodland ceremonial situations, therefore, drew geographically distinct communities together across multiple scales of interaction (see also Clay 2002; Henry and Barrier 2016).

How did Ohio Hopewell peoples convince other Middle Woodland communities to collaborate and contribute to these ritual regimes? There were likely multiple reasons for these collaborations (cf. Carr 2005b), but they probably emerged, in part, as mechanisms to create and maintain social relationships. As Deborah Battaglia (1992) has illustrated, many gift-giving societies consider words to form unstable bonds, whereas the exchange of objects spurs remembrance of the giver and solidifies social connections. Historical connections between gifting and inciting remembrance are well documented in the

Eastern Woodlands (Murray 2000; Shoemaker 2004). Moreover, there is abundant evidence that gift giving was an important aspect of Middle Woodland ceremonial situations given the size and complexity of the exchange networks, often dubbed the Hopewell Interaction Sphere (cf. Abrams 2009; Caldwell 1964; Carr 2005b; Hall 1980; Seeman 1979). Consequently, the results of these collaborative events exemplify the complex ways that social friendships, obligations, and alliances were established, maintained, and negotiated between a multiplicity of Middle Woodland individuals, families, and larger groups.

The religious content associated with Middle Woodland ceremonial situations also likely prompted the collaboration of multiple communities, possibly as a way of creating and maintaining the appropriate relations with important other-than-human persons (Morrison 2000). In this vein, the biface caches could have been gifts or ritual oblations for important other-than-human persons that were intended to elicit a return gift, as was the case in many cross-culturally documented sacrificial regimes (cf. Giles 2010; Küchler 1997, 2002; Morrison 2000). Additionally, these mnemonically charged gift caches would evoke recollections of their contributors (sensu Battaglia 1992; Murray 2000; Shoemaker 2004).

The symbolism of the two superimposed biface caches under Hopewell Mound 2 was likely significant, as well. Distinct layers of bifaces were also placed, under Baehr Mounds 1 and 2, in mortuary contexts on heavily burned surfaces (Morrow 1992). These similarities suggest that Hopewell Mound 2's assemblage was organized by a set of conditioning relations (e.g., abstract machine) that were bolstered by interregional ideas and beliefs (sensu Nail 2017), although strongly influenced by local Scioto Hopewell perspectives. Equally, we suspect that the visual contrast between the "dark" caches of blue-gray chert bifaces and the adjacent "typical" bright yellow puddled-clay hearth (and its surrounding flange) was meaningful (Shetrone 1926:22–23). Moreover, the blue-gray color, banding, and rippling of these bifaces resemble ice and water, a historic association of chert among certain communities in the Eastern Woodlands (sensu Hall 1983, 2019). The circular banding in these discoidal bifaces also appears intentionally centered during their production and could have been viewed as a symbolic portal. Accordingly, Mircea Eliade (1959:37–47) argues that all cultures attempt to create portals, or *axes mundi*, even though their approaches differ. This raises the question of whether placing these circular bifaces with centered circular bands next to the puddled-clay basin-shaped hearth nested two types of *axes mundi* together. This seems pertinent because many historic communities in the Eastern Woodlands considered sacred fires as messengers or symbolic portals for transmuting offerings into rising smoke and, thus, lines of communication with ancestral deities or the spirits of the upper world (Baltus and Baires 2012; Hudson 1976, 1984; Koons 2016; Martin 2001). In turn, portals or *axes mundi* can have a prominent place in mortuary rituals as rites of passage, which often mark various stages in the transition from the realm of the living to that of the dead (Parker Pearson 1999).

The organization and treatment of the five burials interred on the upper floor under Hopewell Mound 2 also suggest that Middle Woodland ceremonial situations incorporated lengthy mortuary regimes. For example, three of the five burials were placed on or within distinct mortuary furniture, such as an elevated platform (e.g., Burials 1 and 2) and stone-lined crypt (e.g., Burial 3; see Table 1; Shetrone 1926). Moreover, the construction of an elevated platform and recessed crypt recall that many Native American peoples in the Eastern Woodlands conceptualized the cosmos as composed on several layers, although the number of layers and their significance varied (cf. Carr 2008; Charles 2012; Lankford 2007; Reilly 2004). The vertical layering and spatial positioning highlight other differences as well, such as the placement of quadriconcave plates, conch-shell cups, and shell and pearl beads with only the three burials (e.g., Burials 3, 4, and 5) in the west. In contrast, only copper artifacts were placed with Burials 1 and 2 on the raised platform. Moreover, the cone-shaped depressions that contained dismantled hearth fragments were situated adjacent to the raised platform with Burials 1 and 2 in the eastern area (see Figure 3). Consequently, there are different ritual associations for the eastern (e.g., Burials 1 and 2) and western (e.g., Burial 3, 4, and 5) burials. However, certain practices might tie together specific burials from these groups, such as a focus on decapitation or the loss of one's head (e.g., Burials 1 and 5; see above). One way or another, the differences between these burials' mortuary furniture, grave goods, and spatial positions suggest a lengthy ritual regime, which was only complete when the lower floor was covered over. Even then, the use of this precinct continued, as exemplified by the deposition of the upper biface cache, until Hopewell peoples constructed Mound 2 over the entire area.

Conclusion

Our concluding point is that Middle Woodland ceremonial situations have historical antecedents that suggest that earlier ritual regime incorporated many of the same symbolic associations. Yet greater amounts of planning, resources, intercommunity collaboration, and time were invested in the mortuary practices of Ohio Hopewell and other Middle Woodland peoples. This seems to have been associated with a lengthening of many Middle Woodland ritual regimes. These facets of Middle Woodland situations are exemplified by Mound 2 at the Hopewell earthworks, which is characterized by an extended ritual sequence. The facilities present on the lower floor likely included at least one (or more) timber structure(s) that were associated with interior furniture, including a puddled-clay basin-shaped hearth, a large cache of bifaces, five richly endowed burials, and several other features. The timber structure(s) were likely dismantled, and this floor was covered over creating a second surface—either a primary mound or another floor onto which the second cache of blue-gray bifaces was deposited. Our article also examines the historical intersection of three aspects of Mound 2

(i.e., the fire ceremonialism, its burials, and biface caches), which exemplify how increasingly complex assemblages were gathered together and arranged during Middle Woodland ceremonial situations. Additionally, the preliminary results of a reflectance spectroscopic source analysis, based on a sample (n = 172) of the bifaces from Hopewell Mound 2, indicate that various geographically dispersed chert sources were employed to produce the bifaces in these caches. We therefore argue that multiple geographically dispersed communities probably quarried and produced the bifaces that were placed in caches under Hopewell Mound 2, which suggests that Middle Woodland ceremonial situations entailed extensive interregional collaboration.

Notes

1. Following Henry and Miller (this volume), we conceptualize institutions as "the normative behaviors that promote solidary and … participation in cooperative events."
2. The provenience information associated with the disk cores at the Field Museum does not indicate whether specific examples derive from the upper or lower caches.
3. The Hopewell site covers 45 hectares and is one of the largest earthwork sites in Eastern North America (Greber and Ruhl 1989; Lynott 2015; Pederson Weinberger 2006; Ruby 2019).
4. Moorehead's Mound 17 was assigned a different number by Shetrone, who suspected that it was the same as his Mound 29 (cf. Greber and Ruhl 1989; Lloyd 2002).
5. The quadriconcave copper plate from the Morton Mound F^{0}11, however, seems to be missing the two central perforations that are typically present on examples from the COV.
6. The Bedford copper plate is not included in this tally because it might not have been worn in the same manner as the copper quadriconcave plates interred with burials under Hopewell Mound 2.
7. The sample used in our analysis derives from the Field Museum, but other bifaces in these assemblages are curated at the Ohio History Connection and the British Museum.
8. Unfortunately, nineteenth- and early twentieth-century archaeological excavation techniques and curation practices did not separate the bifaces found in these two caches, so it is impossible to assess the similarities and differences in their composition.

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