Regional Variation in Hopewell Copper Use

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ABSTRACT

The Hopewell complex arose in the Middle Woodland period around 2000 years ago in the Midwest United States. Conical burial mounds, elaborate artifacts, and acquisition of exotic materials characterized Hopewell. Questions remain regarding how to define Hopewell and how and why Hopewellian ideas and material culture spread. However, socio-religious ideas have garnered recent attention. This study compared three Hopewell regions to explore these questions. The use of copper was investigated in the Hopewell center in Ohio, the Havana variant based in the Illinois River Valley, and Hopewell-affiliated sites in southwestern Wisconsin. Analysis of the form and style, context, and metric attributes of copper artifacts addressed how and why this material was used, as well as offering insight into interregional relationships. While similarities between the Havana and Wisconsin regions were found, certain characteristics of the Wisconsin sites suggest interaction with the Hopewell core that did not run through the Havana region.

INTRODUCTION

When in the vicinity of other groups and able to travel to different areas, societies rarely remain isolated. Whether in numbers large or small, they interact and exchange materials, ideas, and practices. Through material remains, archaeologists attempt to determine the ideas and forces promoting such activity. Interregional interaction has been considered through different perspectives, as well as different areas around the world, throughout the history of archaeology (Schortman and Urban 1987). The eastern and central Midwest region of the United States, especially during the Middle Woodland period, has been subjected to such examination. During this time, from around 100 B.C. to A.D. 400, what has been known as "Hopewell" rose to prominence, with its center in Ohio (Byers 2004:2; Struever 1965). Major Hopewell hallmarks included elaborate mound structures, many with burials, and the acquisition of various exotic materials and their incorporation into artifacts (Byers 2004:2-3; Converse 2003:216).

Neat and clear definitions of Hopewell have eluded archaeologists, and varying views have dominated over time. From the time of Struever (1965) up to the present with Carr (2005), experts have remarked upon and puzzled over the multitude of conceptualizations of Hopewell, for instance as a culture or burial complex. Some researchers in the 1960s and 1970s promoted an emphasis on an interaction sphere involving the trade of exotic materials (Seeman 1979; Struever 1965). DeBoer (2004:91-93) later viewed Hopewell through two major spheres: an inner panpipe zone and a Zone of Extraordinary Travels extending farther west. More recently, focus on Hopewell has turned to widespread "practices, ideas, and material-symbolic representations, especially religious and social ones," but the answer to whether Hopewell was interregional or local, and to what degree, remains uncertain (Carr 2005:51).

Tied to this continued discussion of definitions is the physical extent of Hopewell settlement and influence. Regional variation carries importance when considering attempts to characterize Hopewell (Struever 1965:212). A number of Hopewell regions have been identified in the eastern half of the United States (see Figure 1). In addition to the main region along the Scioto River of Ohio, the Havana region in Illinois was home to Hopewell-related peoples, and Wisconsin Hopewell sites have been included in this variant (Bernardini and Carr 2005; Seeman 1979:258-263, 282-287, Table 9). The recognition of Wisconsin sites as significantly related to Hopewell stretches back to studies by researchers such as McKern (1931). Work investigating the Wisconsin Hopewell connection, and as mentioned above Hopewell interregional interaction in general, has continued since McKern. Stoltman (2006), for example, offers a new perspective on the relationship of southwestern Wisconsin to Havana Hopewell and attempts to clarify the chronology of certain phases in that state.

One factor clearly involved with Hopewell was the manufacture and movement of goods from copper, among other exotic materials (Bernardini and Carr 2005; Seeman 1979:292; Struever 1965:211). While these other exotic

materials may have come from areas across what is now the United States, the major sources of copper occurred in the Lake Superior Uplands (Bernardini and Carr 2005:625; Converse 2003:246; Seeman 1979:292). Items fashioned from this metal included ear spools, breastplates, headplates, beads, buttons, and celts, axes, and adzes (Bernardini and Carr 2005; Struever 1965:211). However, these did not just have worth as physical objects. Copper objects such as celts carried with them certain meanings, symbolized particular ideas, and represented qualities and roles of the owner (Bernardini and Carr 2005). Therefore, study of such artifacts and their variation by region may provide insight into not only how copper use differed but the possible social and religious factors represented in them and how these relate to the Hopewell concept more generally.

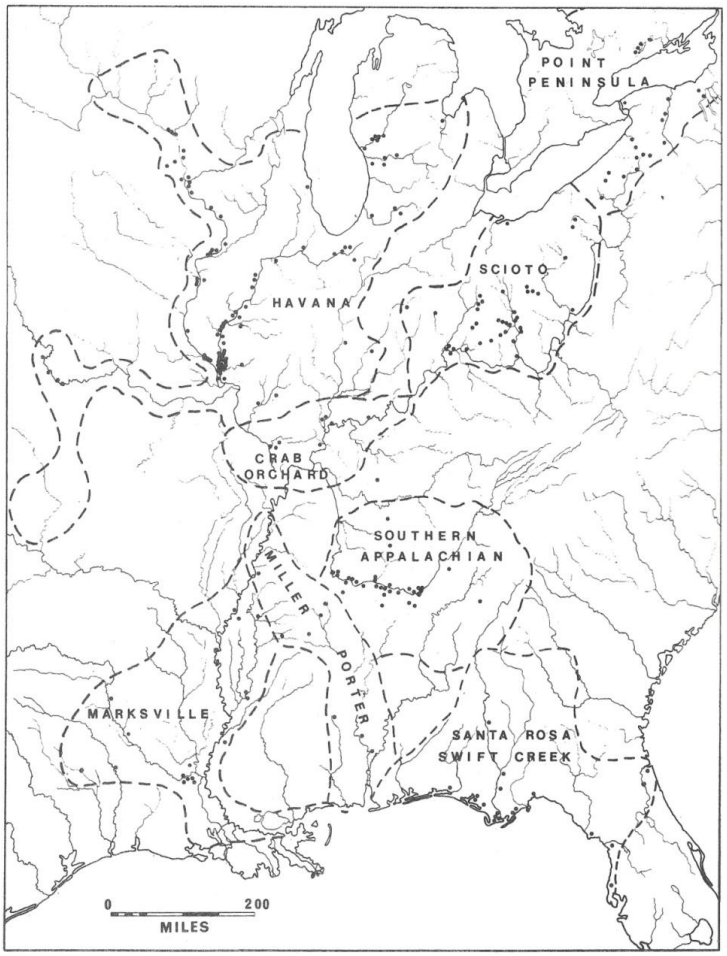

Figure 1. Hopewell regions (Seeman 1979:Figure 1)

This investigation examines the use and meaning of copper in the Scioto Hopewell core, the Havana Hopewell tradition, and sites of Hopewell affiliation in southwestern Wisconsin. Sites under consideration in this study include the Hopewell Mound Group of Ohio, specifically Mound 25, in the Scioto Hopewell core; the Liverpool, Hannah, and Gibson sites in the Havana region of Illinois; and the Trempealeau Lakes Mound Group (including Nicholls Mound and the Schwert Mound Group) and the Overhead site of southwestern Wisconsin. Burial and mound sites are focused on, as these have been the major contexts of Hopewell copper artifact finds. Copper artifact assemblages will be compared based on region. Categories of comparison include form and style of artifacts, context within mounds and burials, and metric attributes such as size and weight. Through this analysis, regional variation in copper use and meaning will be identified. Conclusions may then be drawn as to the relationship between Wisconsin sites of Hopewell affiliation and the Havana region based in Illinois and the major Hopewell nucleus in Ohio. A greater understanding of the nature of the differences between and interaction among these regions and the driving factors and ideas behind this, whether economic, social, or religious, should result.

THE MANIFESTATION AND CONCEPTUALIZATIONS OF HOPEWELL

The Middle Woodland Period

The Middle Woodland period of North America, 100 B.C. to A.D. 400 (Byers 2004:2), saw the emergence of Hopewell in Ohio and extending to the west, north, and south. The Adena culture was settled in the Ohio area before Ohio Hopewell, but the Hopewell culture may not have definitively proceeded from it, and a connection to the Glacial Kame culture is also possible (Converse 2003:220, 222-223). The Hopewell center was based in the major river valleys of Ohio. The Scioto River, the Muskingum River in the east and Great and Little Miami Rivers to the west were the major veins of the Hopewell heartland in the Central Ohio Valley (Byers 2004:3). During Hopewell times, earthen structures were erected. These included earthworks and conical mounds, many with burials and other features, on terraces and bluffs of rivers (Birmingham and Eisenberg 2000:92; Byers 2004:2-3). The mounds and other earthworks likely played a role as meeting places and served religious or ceremonial functions (Birmingham and Eisenberg 2000; Converse 2003). The people who built these structures likely lived in a hierarchical society (Converse 2003:242).

In terms of subsistence, domesticates of tropical origin which later were more commonly utilized, like corn, were not integrated into the Hopewellian pattern (Dancey and Pacheco 1997:10). However, other foods may have been emphasized. Plant foods such as squash, sunflower, little barley, maygrass, knotweed, and chenopod were relied upon (Dancey and Pacheco 1997:10-11). Still others may have rounded out or contributed significantly to the diet. Nuts and acorns could have played a prominent role in subsistence, with wild game such as deer, turkey, and fish contributing from hunting (Converse 2003:243-244).

In addition to mounds, Hopewell was characterized by the long-distance movement and utilization of a range of raw materials. Various exotic objects, such as mica and marine shells, were traded or acquired by Hopewell peoples from as far west as the Yellowstone region, as far north as Lake Superior, and as far south as the Gulf Coast (Converse 2003:216-217). In certain respects, this was not an entirely new phenomenon. Exchange networks had previously reached across the continent, but with Ohio Hopewell the quantity and variety of material traded, including copper, greatly increased (Converse 2003:245; Seeman 1979:293). Major copper deposits could be found near the northern Great Lakes (DeBoer 2004:Figure 7, 98). Once acquired, copper was fashioned into a range of objects, some rather dissimilar in form. These included celts, adzes, and axes, ear spools, head and breast plates, beads, buttons, headdresses, and pan flutes (Bernardini and Carr 2005; Moorehead 1922; Perino 2006a; Struever 1965:211).

After around five centuries, the Hopewell complex reached its end. The great level of trade and acquisition of exotic goods and the production of objects such as those found en masse in burial mounds decreased (Theler and Boszhardt 2003). Scholars have proposed a number of reasons to explain the cessation. Climate change to cooler and drier conditions may have impacted subsistence, or perhaps not enough of the population may have been involved in subsistence, but rather elite roles. Groups may have developed a greater regional focus and not valued trade as highly as well. Other issues may have developed with disease or warfare, though little evidence has been found to support these hypotheses (Birmingham and Eisenberg 2000:98; Converse 2003:305-306). While the cause of the cultural shift away from Hopewell practices may be unclear, this change had occurred by around A.D. 400 (Theler and Boszhardt 2003:121).

While the Hopewell core was in Ohio, a number of regional variants developed in areas surrounding and extending from the center. One of these was the Havana region, based in Illinois. The Havana tradition began around 200 B.C. and spatially extended to the Kaskaskia River to the south, the Kankakee River to the north, the Illinois and Mississippi Rivers to the west, and the central Wabash Valley to the east (Seeman 1979:283, 285). Middle Woodland settlement in Illinois occurred in major river valleys, and the Illinois River Valley in particular became a major location for Hopewell mortuary sites (Asch et al. 1979:82; Seeman 1979:287). In the Illinois Valley, people settled in fairly sedentary groups along the bluff bases of the river or secondary creeks, on levees and terrace margins, and at times at secondary creeks in the river floodplain (Asch et al. 1979:82-83). Much as in Ohio, plants such as maygrass, knotweed, and goosefoot may have been cultivated, and squash and gourd played a role in subsistence as well, while corn was not yet a dietary staple (Asch et al. 1979:83). It was not long until Hopewell connections were made. With the presence of Hopewell core and blade technology and the wide Snyders point, Seeman (1979:283-284) believed the Havana variant had joined the Hopewell Interaction Sphere by around 100 B.C. At around A.D. 200, this participation had ended, as indicated in changes to Hopewell ware and Havana ware ceramics and the use of Steuben Stemmed points (Seeman 1979:284).

Hopewell-affiliated sites in Illinois were also connected to sites in Wisconsin (Stoltman 1979:139). The culture influenced by Havana Hopewell stemmed from the Red Ocher culture which was prominent during the Late Archaic, and likely sedentism and villages arose in the Middle Woodland period (Birmingham and Eisenberg 2000:96; Theler and Boszhardt 2003:110). In southwestern Wisconsin, the main episode of Hopewell influence was

the Trempealeau phase, from around A.D. 100 to 300, with the Millville and Allamakee phases following (Theler and Boszhardt 2003:111, 122). Stoltman (2006), however, suggests that the idea of the Trempealeau phase may no longer be sensible based on investigation of ceramic assemblages from the area. Subsistence was similar to that of Ohio and Illinois. Hunting of deer and other game, gathering, and cultivation of certain plants allowed people to survive (Birmingham and Eisenberg 2000:96; Stoltman 1979:134). Some Hopewell items have been discovered in northern Wisconsin, and mounds were built in central and eastern Wisconsin near locations such as the lower Fox River and Lake Mendota farther south and east (Birmingham and Eisenberg 2000). However, a more major area of Hopewell influence in Wisconsin lies near the Mississippi River in the southwestern portion of the state. Southwestern Wisconsin is known as the Driftless Area, a section of the state left unglaciated during the last ice age (Stoltman 1979:122-123). Many mound groups may be found between the Trempealeau and Wisconsin Rivers along the Mississippi (Birmingham and Eisenberg 2000:92). Wisconsin was home to certain materials which were important to Hopewell trade or desired by Hopewell peoples. Perishable objects such as food and wood may have played a role in trade and left little or no trace (Theler and Boszhardt 2003:119). Other materials are more successfully recovered by archaeologists. Copper from the area around Lake Superior has already been mentioned. In addition, the area around the Mississippi River may have had an important position in the trade of lithic material from further west and Hixton Silicified Sandstone from Silver Mound in Jackson County, Wisconsin, especially given its location on a major waterway (Birmingham and Eisenberg 2000:95; Theler and Boszhardt 2003:118).

However, certain Hopewell characteristics seem not to have been prevalent in Wisconsin. While mounds and mound groups were erected by Wisconsin peoples, other earthwork types were not often constructed (Birmingham and Eisenberg 2000:96). Some types of Hopewell artifacts are not commonly found in Wisconsin. This includes Havana objects like marine shell containers and mica sheets (Theler and Boszhardt 2003:111-112). Regarding Havana in relation to Wisconsin specifically, Wisconsin artifacts are "less well made" and less numerous (Theler and Boszhardt 2003:111).

Hopewell Investigations and Theories of Interaction

Hopewell mounds were first noticed early on in the history of the United States. Explanations were suggested for who constructed the mounds and crafted the accompanying artifacts, and why they were erected. So-called "moundbuilder myths" proliferated in the 1800s, which connected the construction of the elaborate burial mounds and earthworks to peoples who had come into the area from elsewhere, not the native peoples of the area (Byers 2004:5). In the early 1900s, many mounds were examined and excavated (Cole and Deuel 1937; Farnsworth 2004; McKern 1931; Moorehead 1922). These explorations did not follow the rigorous scientific standards of modern archaeology. Mounds were prized for the burials and associated artifacts they contained (Converse 2003:241). However, this attention only to burials and burial goods did not remain the lone interest in Hopewell.

For over a century, archaeologists have attempted to figure out what Hopewell was and developed different explanations. Caldwell (1964) and Struever (1965) noted the difficulty of defining Hopewell and the multiple conceptualizations of it in archaeological circles, whether as culture, complex, or shared mortuary practices, among others. Variation continues in the present. Theler and Boszhardt (2003), in their work on the archaeology of the Upper Mississippi Valley, use the meaning of Hopewell as a suite of burial practices. In terms of regional and broader interaction in particular, the idea of a Hopewell Interaction Sphere focusing on the trade and exchange of exotic items held sway for a time (Caldwell 1964; Seeman 1979). Caldwell (1964) recognized in the interaction sphere model, as applied to Hopewell, shared religious and mortuary beliefs, whereas regional variation existed on a smaller scale, particularly in what he described as secular aspects of culture. Seeman employed the interaction sphere concept slightly differently in his 1979 work.

In more modern times, Hopewell interregional interaction has come to be seen differently. The research begun over a century ago continues, and aspects of the Hopewell period are still being explored. Converse (2003:245), for example, suggests that tribute may have brought such great amounts of exotic material to the Hopewell core of Ohio, and that people from Ohio could have travelled themselves to obtain certain distant materials. Carr (2005:51) points out that the importance of the spread of ideas, especially social and religious ones, has become a prominent way for researchers to think about and investigate Hopewell today. This study attempts to recognize not only the material aspects of copper use and regional variation in it, but in a similar vein to explore how copper was exchanged and the ideas that might have been associated with copper artifacts.

Hopewell Sites Examined in this Study

For the present study, sites were chosen from these three areas based on availability of data. The comparability of the copper assemblages was also considered, seeking sites which contained a significant number of copper artifacts. In addition, because the Overhead site in Wisconsin was excavated so much later relative to many

Hopewell-related sites, this study offers an opportunity to include detailed contextual information from this site and consider it among other sites. Early site reports were many times not as detailed. Thus, the sites selected were not a random sample.

Hopewell Mound 25, Ohio. Hopewell Mound 25 of the Hopewell Mound Group will represent the Hopewell core in Ohio for this study. It is from this site, on the M.C. Hopewell farm, that "Hopewell" gets its name (Theler and Boszhardt 2003:109). To avoid confusion as to whether the Hopewell site or the Hopewell culture is being discussed throughout this study, an attempt will be made to specify Hopewell Mound 25 or the Hopewell Mound Group when the site is of focus. It is located on the North Fork of Paint Creek in Ross County (Converse 2003:215; Figure 2). It contains approximately forty mounds, as well as earthworks, and is located on a terrace above the floodplain (Greber and Ruhl 1989:11-12; Lloyd 2002:2). It was not excavated, though measured, in the first scholarly investigation of the site by Squier and Davis in 1845 but was excavated by Moorehead in 1891-1892 and then by Shetrone in 1922-1925 (Greber and Ruhl 1989:13, 16; Shetrone 1998:12 [1926]).

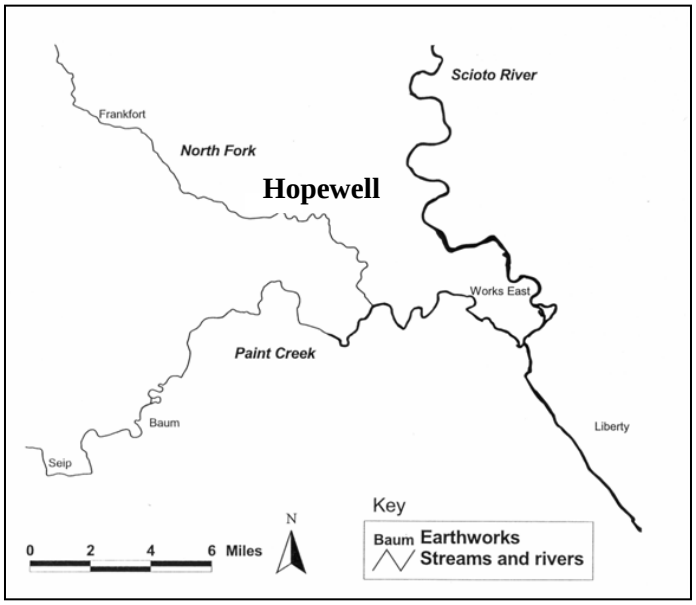

Figure 2. Location of the Hopewell Mound Group, Ohio (Carr and Case 2008:Figure 1.4)

In all, 101 individuals have been discovered through work at Mound 25 (Lloyd 2002:201). Case and Carr (2008), Moorehead (1922), and Shetrone (1998 [1926]) also mention two altars, a copper deposit, and two other deposits not specifically associated with burials. Of these, approximately 43 burials (eight being cremations), the two altars, and the copper deposit contained copper artifacts. Multiple burials with two individuals, and in one case three individuals, were present. In the case of the three individuals, only one had copper artifacts. In five cases one of two individuals were accompanied by copper artifacts, and in five cases both individuals were buried with copper artifacts, with two additional cases in which reports did not specify if artifacts went with either body. A number of copper artifacts from the Hopewell site which I examined at the Milwaukee Public Museum, though not all, were from this mound, and in general it held many copper artifacts. It bears mentioning that it is the largest mound at the Hopewell site (Shetrone 1998: 57 [1926]). Though multiple episodes of excavation have been carried out at Mound 25 and the Hopewell Mound Group in general, absolute dates for the site remain elusive. Lloyd (2002:4) remarks that the radiocarbon dates taken from materials from the site do not point to an extremely certain date, and an estimate based on these would range from A.D. 1 to A.D. 400.

Liverpool, Hannah, and Gibson Mounds, Illinois. Three sites were selected to represent the Havana region based in Illinois (Figure 3). The Liverpool site is located in Fulton County, the Hannah site lies in Peoria County, and the Gibson Mounds site is in Calhoun County. As can be seen from the map, all three are river locations, and they are spread out along the Illinois River, running from the central to the more western and lower portion of the state.

Figure 3. The Liverpool, Hannah, and Gibson sites in western Illinois (Adapted from Seeman 1979:Figure 3; Van Nest et al. 2001:Figure 1)

The Liverpool Mounds, consisting of mounds F°77, 78, 79, 80, and F°87 farther east, are located on the western side of the Illinois River (Cole and Deuel 1937:132-133). The site was explored by multiple excavators in the early 1900s. This included work without records by Frank Solomon in 1926, excavation complete with records and artifacts by the brothers Ernest and Marion Dickson in 1929, and focus on this same mound, F°77, by the University of Chicago in its excavations in 1930 (Cole and Deuel 1937:133-136). Most of the data used herein comes from the Dickson excavations of Mound F°77 and the Frank Solomon excavations of Mounds F°78 and F°79. F°77 contained a tomb with three individuals, with a celt between two of them, and another tomb with eight extended burials and a mat burial, of which copper artifacts were found between two burials, with another burial, and with the mat burial (Cole and Deuel 1937:134). This mound also held a cremation pit that was 14 in deep, 60 in long, and 14 in wide, in which an adze was found (Cole and Deuel 1937:134). The number of burials was not recorded for F°78, but these were in a log-delineated area enclosing multiple burials. Lastly, F°79 was also excavated by Solomon. In it was found a rock-lined tomb, 10 ft long and 20 ft wide, with an estimated 40 individuals with rock walls around them and a possible cremation basin in one corner (Cole and Deuel 1937:143). No further discussion of F°80 or 87 was included. A village was also located at the site, but that component of the site is not discussed in this study.

The second Havana site included in this study is the Hannah site. Like the Liverpool Mounds the site is near the Illinois River, and it is situated on a bluff (Morse and Morse 1965). One mound and one possible mound were discovered. P°124 was identified as a mound and almost wholly excavated by Georg Neumann and the Indiana University – National Science Foundation Institute in Anthropology, whereas P°125, the possible mound, was not excavated (Morse and Morse 1965:130-131). Therefore, the data for Hannah comes from only the one excavated mound. This mound contained nineteen burials, six (four extended, one flexed, and one bundle) in one tomb and thirteen (three extended, seven bundle, and three unknown) in a second (Morse and Morse 1965:Figure 71). Of these, four contained copper artifacts, and all of these were extended and in the first tomb. Morse and Morse (1965:145) estimated that the mound dates to around 50 B.C.

The final Havana site included the Gibson Mounds, also near the Illinois River in Calhoun County, Illinois (Perino 2006b:400). The site was excavated under Gregory Perino in 1969. However, Lester Gibson had already investigated the site by the time of Perino's work (Perino 2006b:400). Six mounds were erected at the site, and three knolls (A, B, and C) were also of interest to researchers. Of these mounds, 2 and 4 contained copper artifacts. This included five (two extended and one extended with a partial bundle and group of bones) of 50 bodies (36 extended,

five flexed or semi-flexed, two bundles or reburials, and seven burials of unknown type) in Mound 2 and an extended individual in a tomb in Mound 4, in which three total individuals were buried in their own graves.

Trempealeau Lakes Mound Group and Overhead Site, Wisconsin. Two sites in southwestern Wisconsin near the Mississippi River were chosen in order to look at the Hopewell connection and variation in that state. These are the Trempealeau Lakes Mound Group in Trempealeau County and the Overhead site in La Crosse County (Figure 4). These sites are near the northern margin of the Havana Hopewell region. Copper artifacts from both of these sites were available for direct analysis, with the Nicholls Mound artifacts of Trempealeau Lakes available at the Milwaukee Public Museum and the Overhead Site artifacts at the Mississippi Valley Archaeology Center (MVAC) at the University of Wisconsin-La Crosse.

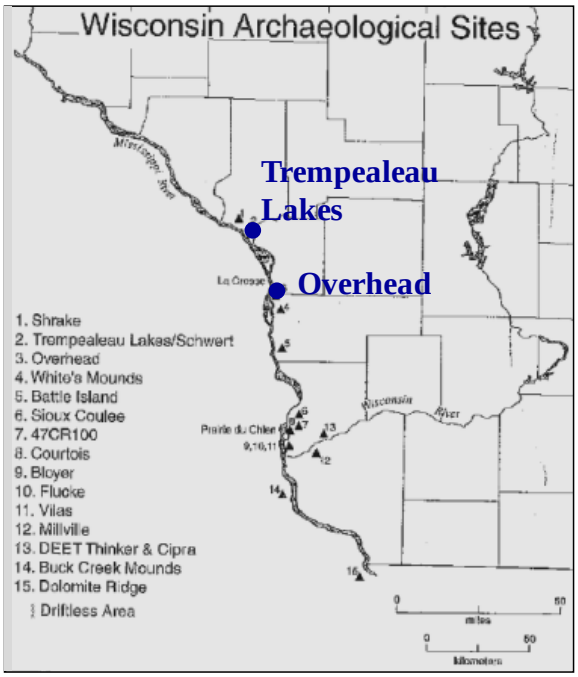

Figure 4. Wisconsin sites in this study (Adapted from Stoltman 2006:Figure 17.1)

Nicholls Mound and the Schwert Mound Group make up the Trempealeau Lakes Mound Group, located in Trempealeau County, Wisconsin. Nicholls is actually also numbered as Schwert Mound 1. The conical Nicholls Mound lies on a terrace of the Mississippi River near a group of river sloughs, with three smaller mounds to the northwest, which are numbers 17, 18, and 19 of the Schwert group (McKern 1931: 199-200). Nichols is the largest mound in southwestern Wisconsin (Stoltman 1979:127). Like other mounds explored during this time, Nicholls was not in pristine condition upon excavation. On the southwest portion, previous digging had occurred, and on the southeast side some of the mound had been taken for land filling (McKern 1931:242). The mound contained an intrusive extended burial and bark-lined pit with four extended individuals, an extended infant, and two reburials, of which the intrusive burial, three of the extended burials, and the infant burial had copper artifacts (McKern 1931:245-246).

Twenty-six mounds make up the Schwert group. Of these over half-dozen mounds, Nicholls, discussed above, and Schwert 3, 7, 8, 9, 10, 11, 12, 14, 16, 17, 18, and 19 were excavated, according to McKern (1931). Mounds 4 and 26 were later excavated, but the results of these excavations are not considered here except for their radiocarbon dates (Stoltman 1979:122). Future study could incorporate information in addition to these dates.

Of the excavated mounds studied by McKern, Nicholls and Schwert 8, 10, 12, 16, 17, 18, and 19 contained copper artifacts. In addition to Nicholls, mound 18 contained many copper artifacts. Seven extended burials, 19 reburials, and 19 burials of unknown type were discovered in mound 18, with some reburials on a parapet and the rest of the burials together in a pit. Of these, copper artifacts were found with six of the extended burials, five of the reburials, and in unknown contexts (McKern 1931:264). Mound 8 held a burial with five extended individuals and a burial of unknown type, and copper beads were found with two, though whether this included the unknown burial was not specified (McKern 1931:251-252). Mound 10 held six extended burials and three bundle burials. One extended burial and one bundle burial each had accompanying copper (McKern 1931:256). Mound 12 held two

separate intrusive reburials and a burial of 13 extended bodies and 18 bundle burials. Of these, one extended burial contained copper artifacts (McKern 1931:260-261). Mound 16 held extended burials and reburials, but these were not numbered. One reburial contained associated copper beads, and a celt was found with an unspecified burial type (McKern 1931:261-262). In mound 17, two extended and two reburied bodies were found, as well as one individual represented only by teeth. A piece of copper was found among bones, though it was not specified with which kind of burial (McKern 1931:262-263). Mound 19 contained a decayed individual of unknown burial type with a copper celt (McKern 1931:266). Some radiocarbon dates have been derived for Trempealeau Lakes. These range from an early date of 610 B.C. ± 70 to a later 130 B.C. ± 70 from under Mound 4, but an extremely late date of A.D. 360 ± 60 was recorded from under Mound 26 (Stoltman 1979:Table 18.3).

The Overhead Site is located farther south, in La Crosse County. It is on a Mississippi River terrace (Gallagher and Fassler et al. 1981:1). The site was investigated by Stoltman in 1971, Pennman in 1978, and Gallagher in 1979, and in 1980 the site was excavated (Gallagher and Fassler et al. 1981:1-2). The work undertaken in 1980 is of greatest relevance here. During this excavation, Middle Woodland, as well as later Oneota, burials were discovered (Gallagher and Fassler et al. 1981:2). The Overhead site consists of twelve localities. The burials and mound of Hopewell affiliation were discovered in Locality 7, which was focused on for the present study. It contained three to four burial episodes. In the first, seven bodies were buried; then these were later moved and reburied for the second burial episode, in which six individuals were buried, three of these extended. Finally, two separate bundle burials were interred in the mound (Gallagher and Stevenson et al. 1981:26-27, 29). Copper artifacts were included in the first burial episode, though with which burial was not mentioned, and in the second episode with two of the three extended burials (Gallagher and Stevenson et al. 1981:26-28). An uncalibrated radiocarbon date was obtained from bone in the mound at the locality. This was 2130 ± 80 B.P (before present) (Gallagher and Stevenson et al. 1981:29). This translates to around 180 B.C. ± 80.

Additional mounds may have been present in Localities 6 and 9, as concluded from the 1980 excavations (Gallagher and Stevenson et al. 1981:48). In 1985, further investigation revealed more Hopewell burials at the site. However, only several small copper pieces were found with these burials. Later research could include information from the 1985 excavations.

METHODOLOGY

In order to answer questions involving the Hopewell use of copper and how it relates to interregional interaction, attributes of copper artifacts from the Ohio Hopewell region, Havana region of Illinois, and southwestern Wisconsin, were examined and compared by region. The sites under investigation were chosen based on availability of data and presence of copper artifacts. The methodology for this study proceeded with analysis on three principal fronts: form and style, context, and metric attributes. Such an examination will aid in understanding the possible meaning of types of copper artifacts and regional connection based on use of types, and analysis of metric attributes will provide quantitative evidence to support these conclusions.

Data Collection

Through an Undergraduate Research and Creativity Grant from the University of Wisconsin-La Crosse, I secured funding to travel to the Milwaukee Public Museum and examine the Hopewell copper artifacts housed there. These artifacts came from Moorehead's 1892 excavations of the Hopewell Mound Group, Ohio (Milwaukee Public Museum NAGPRA Inventory Sheets, 1 October 1996, Milwaukee Public Museum, Wisconsin). I was also able to examine the Hopewell copper artifacts from Nicholls Mound and Trempealeau I and II Campsites in Trempealeau County, Wisconsin. Because the Trempealeau Campsites were not burials or mounds, the data from the sites was not integrated into this study. Only a portion of the artifacts from the Hopewell Mound Group were traceable to Mound 25 specifically, yet examining even the artifacts only provenienced to the mound group offered a glimpse into the variety and manufacture of copper items from the Hopewell core. An example of a bracelet is shown in Figure 5. Documentation and photographs from this research, as well as data in the form of an Access database and Excel workbooks, may be found on file at the Mississippi Valley Archaeology Center.

Figure 5. Bracelet from Hopewell Mound Group (MPM Cat. #49076, used with permission of the Milwaukee Public Museum)

Each artifact was measured using electronic calipers to the nearest tenth of a millimeter, or if too large for electronic calipers, such as in the case of a number of celts and adzes, a standard wooden ruler with divisions to the millimeter. Measurements included maximum length, maximum and minimum width, maximum and minimum thickness, and measurements relevant to the nature of the artifacts, such as diameter for circular ornaments. The depth of depressions in some ear spools was measured using the rod of a protractor placed vertically into the bottom of the center of the concavity, the depth being marked with a straight edge horizontally from the outermost section of the spool, and measuring with a standard ruler this point on the protractor rod. Each copper artifact was also weighed using a portable electronic scale to the nearest tenth of a gram. In the event that certain artifacts exceeded the weight limit of the portable scale, a larger plug-in electronic scale was used. Again, artifacts were weighed to the nearest tenth of a gram. One artifact, ear spool 49081 c, was mistakenly not weighed. Photographs of the artifacts were taken using a digital camera (Figure 6). Additional data on artifacts from the Hopewell Mound Group was compiled from the Milwaukee Public Museum's NAGPRA Inventory Sheets for the artifacts, Moorehead (1922), Greber and Ruhl (1989), Case and Carr (2008:Appendix 6.1A: HOPEBIOARCH data base, 6.2: Hopewell Site Provenience Sheets, contained on CD), Shetrone (1998 [1926]), and Bernardini and Carr (2005:Appendix 17.1, contained on CD).

Figure 6. Leaf-shaped ornament from Hopewell Mound 25 (MPM Cat. #49115, used with permission of the Milwaukee Public Museum)

Data for the Liverpool site in Illinois came from Bernardini and Carr (2005:Appendix 17.1) and Cole and Deuel (1937). Though no artifacts from these sites could be measured directly, measurements and weights or estimated weights were taken from the abovementioned sources when they were available. Data for the Hannah site came from Morse and Morse (1965). Data for the Gibson Mounds came from Perino (2006b). Bernardini and Carr (2005:Appendix 17.1) was also valuable for celt metric data for the Hannah and Gibson sites.

Along with the data from the Milwaukee Public Museum's forms and the actual artifacts, information on the Trempealeau Lakes Mound Group, including Nicholls Mound and the Schwert Mound Group, came from

Bernardini and Carr (2005:Appendix 17.1) and McKern's (1931) report on the investigations. At the Mississippi Archaeology Center, located on the University of Wisconsin-La Crosse campus, copper artifacts from a Hopewell mound at the Overhead site, La Crosse County, Wisconsin were available for analysis. The methods employed in this examination were similar to those used at the Milwaukee Public Museum, using electronic calipers measuring to a tenth of a millimeter and an electronic scale. A digital camera was used to photograph the copper artifacts. Additional data concerning other artifacts found and burial context was found in the site reports, Gallagher and Fassler et al. (1981) and Gallagher and Stevenson et al. (1981), as well as field and cataloging forms from the Mississippi Valley Archaeology Center.

This data was entered into a Microsoft Access database. When the data was available, metric attributes such as length and weight were recorded. However, for some items, such as some Hopewell Mound Group sheet copper objects, these attributes were not measured and thus are not included. Once in the database, the data could then be organized to best address the three main areas of investigation.

Form and Style

Investigation of form and style of the copper artifact assemblages from the Ohio, Illinois, and southwestern Wisconsin sites involved determining which types of copper artifacts were found at each site and the proportion of the copper assemblage which they constituted. The style of artifacts at each site were also investigated, to the extent possible given the data. This included how elaborate artifacts were, as well as how well made they were. While this was more qualitative and subjective than measurements, it should aid in determining how and why copper artifacts were used in certain forms.

The types of copper artifacts present at each site were determined, and then the number of each type present was used to calculate the proportion of each type that was present in the copper assemblage. Tubular beads and flakes, which could be great in number but difficult to obtain an exact count on, were not included in these numerical calculations of proportion. This elucidated preferences for types of copper artifacts. However, weight and amount of copper in the artifact must also be considered. A dozen tubular beads, for example, may outnumber two celts, but two celts likely involve more copper and could represent different efforts to obtain the object in that form. Celts, axes, and adzes were included in the same category of artifact for ease of comparison with other copper artifacts. Bernardini and Carr (2005), in their study of celts, include these categories together. Future research may look into the finer differences among these three smaller categories, or whether the artifacts do indeed merit a separation into such categories from a broader one. In addition, connections can be made between artifacts of other materials which are of the same forms as copper artifacts, such as celts or pendants.

Context within Mounds and Burials

Study of the context of copper artifacts within mounds and burials of the sites included here was also undertaken. This could provide insight into the meaning of copper objects, the ideas they signified, and how this varied by region. Burials without copper artifacts were not considered in this analysis, though considering these burials in relation to ones with copper could be a fruitful avenue of future research.

A factor in such an analysis included the position of copper objects in relation to bodies in burials. One issue with such analysis was preservation. For instance, Cole and Deuel (1937:138) mention in their description of work at the Liverpool Mounds the poor preservation of bones discovered during excavation. Another issue was that in older site reports, detailed notes on precisely where artifacts were found were not always written. Therefore, this methodology was applicable to copper artifacts which were associated with a burial that was preserved to some degree and whose association was noted upon excavation, and where these observations would be relevant to this investigation. Whether each copper artifact was found with a burial, and the type of burial with which it was found, constituted relevant factors for this analysis as well.

Another consideration was the context of copper artifacts in relation to artifacts of other materials and types in mounds, in addition to whether copper artifacts were found together. Whether the copper artifacts were found in caches or with only a few or no other items was relevant, as an item alone or with only a few others of different type may have been personally owned or indicate something different than caches, which could have been compiled as a group effort.

Metric Attributes: Dimension and Weight

In order to quantify regional differences in copper use, data regarding metric attributes of copper artifacts was collected and analyzed when possible. For artifacts which were directly available for examination, which included those from the Nicholls Mound at the Milwaukee Public Museum, the Overhead site at the Mississippi Valley Archaeology Center, and a portion of the artifacts from the Hopewell Mound Group at the Milwaukee Public

Museum, measurements were taken as described above. The metric attributes available from site reports and studies by other researchers were used for artifacts not available for direct study.

The sizes of some types of copper artifact at the sites included for this study were used to compare each region when possible. These factors included length, width, and on rare occasion thickness. An average of each size factor was taken for each site when possible, and these averages were then used when comparing each region, mainly for celts. The range of measurements for each category of measurement was also taken into account. Quantity in terms of number of artifacts of each type was calculated and employed for comparison, but this was generally covered in relation to form. When information on weight of copper artifacts was available, this attribute too was compared between the sites in each region and offered information on how much copper was used.

ANALYSIS AND RESULTS

Form and Style

Hopewell Mound 25. As mentioned, Mound 25 of the Hopewell Mound Group is of major focus here. Though only a single mound, the number of copper artifacts from Mound 25 greatly exceeds that of the other sites discussed below. A large quantity of celts was found, as were ornate ornaments and sheets of copper, plates and buttons. Ear spools or ornaments were greatest in number, with an estimated five hundred found in Altar 1 alone. Cutouts or sheets, plates, and buttons followed, with great numbers but ones much lower than those of ear spools In addition to the great quantity a great variety of copper artifact types was present in Mound 25 (Table 1). Because of the uncertain nature of the exact numbers of each artifact type present, the percentage each type makes of the entire copper assemblage at Mound 25 was not calculated.

While some of these types will later be seen with the other sites of this study, some are restricted to the Hopewell site. Ornate plates or sheets of copper (Figure 7), as well as effigies, headdresses (Figure 8), bracelets, and rings were found in the mound but not at the other selected sites. Figure 9 provides an example of one of the ornaments from the copper deposit in Mound 25. Even within the category of copper cutouts or sheets, great variety was present in the specific shapes and forms. Animals such as birds or fish were represented, as were geometric or other more abstract forms, such as swastikas. However, types such as celts, beads, bear teeth of copper, breastplates, and buttons were common to other sites. Moorehead (1922:118) lists a copper awl as coming from Mound 25, but this awl is not listed in Greber and Ruhl (1989) or Case and Carr (2008:Appendices 6.1A, 6.2). Therefore, it is not included as part of Mound 25 in this paper.

Table 1. Artifact types and quantities from Hopewell Mound 25

Artifact Type[a]	Quantity
anklets/bracelets	>6
arrowheads/points	1
beads	>26
breastplates	8
buttons	>114
celts/axes/adzes	72
cutouts/sheets	>230
ear ornaments/spools	>608
figures/figurines/effigies	10
headdresses	6
headplates	4
pendants/other ornaments	>20
plates	115
tubes/panpipes	>9
unknown (nuggets, other unspecified objects)	>28

[a]Data from Case and Carr (2008:Appendix 6.1A, 6.2); Moorehead (1922); Shetrone (1998 [1926]).

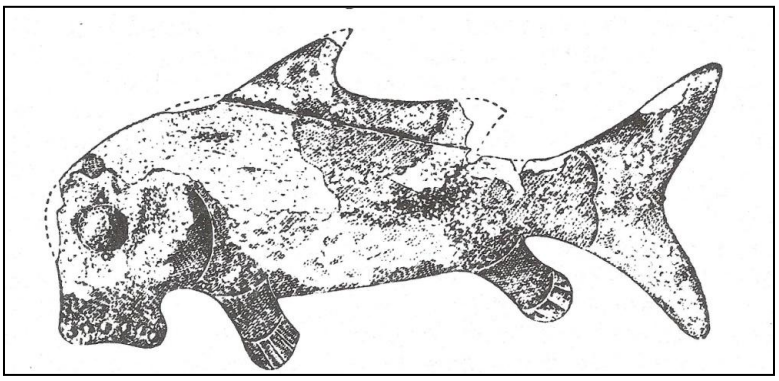

Figure 7. Fish cutout from Mound 25 (Greber and Ruhl 1989:Figure 4.24)

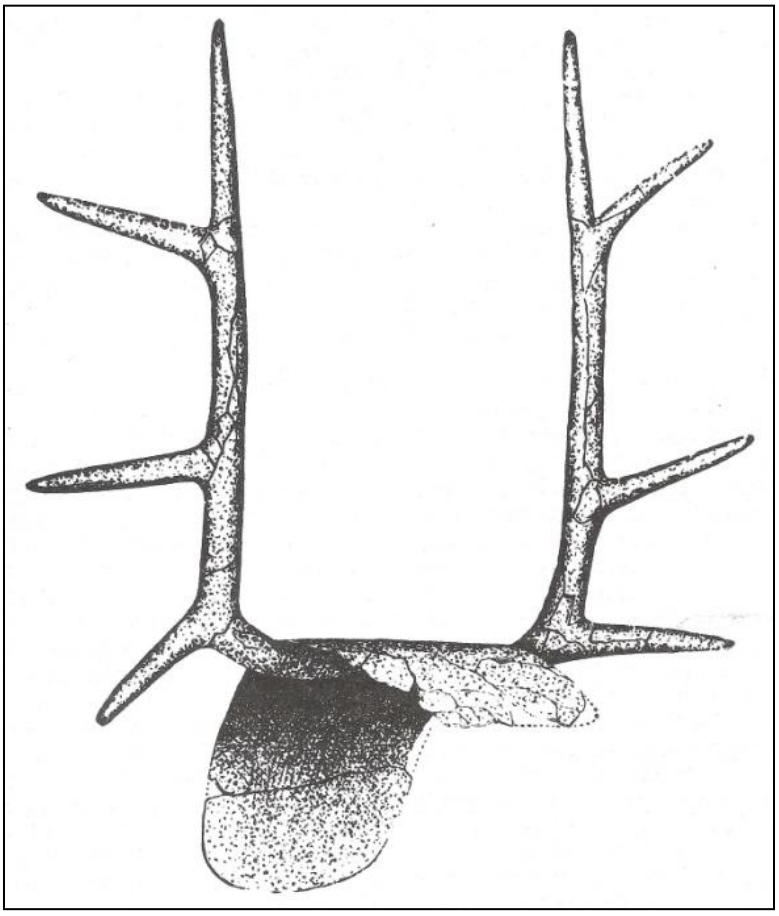

Figure 8. Headdress from Mound 25 (Greber and Ruhl 1989:Figure 4.15)

Figure 9. Disk-shaped ornament from Mound 25 Copper Deposit (MPM Cat. #49113, used with permission of the Milwaukee Public Museum)

Liverpool, Hannah, and Gibson. The Liverpool Mounds produced a fairly wide variety of copper artifacts (Table 2). Axes, adzes, and celts were present, as at other sites under investigation here, as well as beads. The imitation bear teeth provide a type of copper artifact not prevalent at the other sites in this study, except found at Hopewell Mound 25. However, when discussing artifacts of other materials below, it is found that real bear teeth were present at other sites. The wedge and blade are also uncommon at the other sites of this study, though they are similar to celts, axes, and adzes.

Table 2. Artifact types, quantities, and proportions from Liverpool

Artifact Type[a]	Quantity	Percentage of Copper Assemblage
celts/adzes/axes	10	43.48%
awls	1	4.35%
beads	82	N/A
blades	1	4.35%
flakes	present	N/A
imitation bear teeth	10	43.48%
wedges	1	4.35%
		Total = 100.01%

[a]Data from Cole and Deuel (1937).

The number of flakes of copper was not precisely determined. However, the other artifact types were quantifiable (Cole and Deuel 1937). By sheer number, beads were most common, though these are a small type of artifact and more likely than, for instance wedges or imitation bear teeth, to be found in great number together, as in a necklace. It is interesting that so many bear teeth were found, especially when taking into account the numbers of the other copper artifacts. In addition to the artifacts already mentioned, an awl was found. Finally, one of the adzes did have haft marks, suggesting that it was at least attached to something, if not used.

The Hannah site did not hold a wide variety of copper artifacts (Morse and Morse 1965). However, it may be noticed that the two types it did contain, adzes and beads, are found at other sites in the study. Figure 10 provides a view of a portion of the beads recovered. Also of note are the significant numbers of adzes and beads found, not just a few of each type (Table 3).

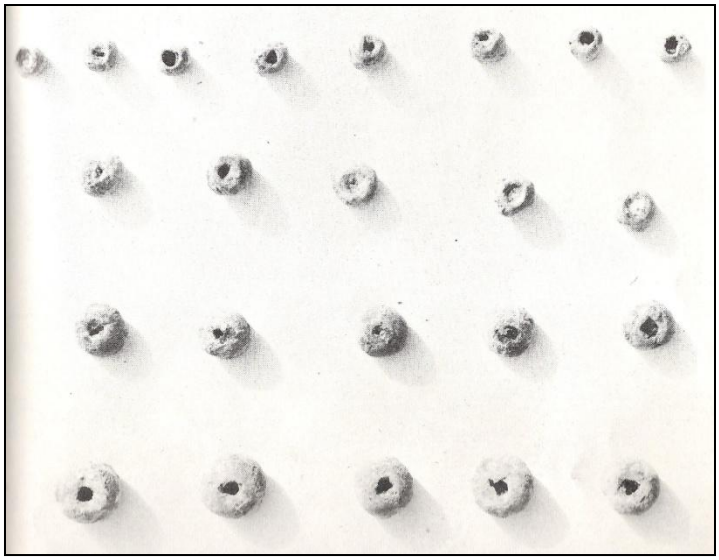

Figure 10. Copper beads from the Hannah site (Morse and Morse 1965:Figure 79)

Table 3. Artifact types, quantities, and proportions from Hannah

Artifact Type[a]	Quantity	Percentage of Copper Assemblage
adze	5	100.00%
beads	33	N/A
		Total = 100.00%

[a]Data from Morse and Morse (1965).

The Gibson Mounds contained copper artifacts similar to those at Hannah (Table 4). However, ear spools were represented at the site as well. These had two plates, or were bicymbal, as was common at Hopewell Mound 25. Nine "more-or-less globular" beads were found with tubular ones, though whether these are similar to copper buttons could not be told from the site report alone (Perino 2006b:420). These were strung with other beads, however, which may indicate that they are not the same as the buttons found in Wisconsin and Hopewell Mound 25. Seeman (1979) does not list Gibson as a site containing any form of button. Similar to the case at the Liverpool site, the adze at Gibson was described as showing signs of being hafted.

Table 4. Artifact types, quantities, and proportions from Gibson Mounds

Artifact Type[a]	Quantity	Percentage of Copper Assemblage
adze	1	14.29%
beads	41	N/A
ear spools	6	85.71%
		Total = 100.00%

[a]Data from Perino (2006b)

Trempealeau Lakes and Overhead. At Trempealeau Lakes, a number of relatively common copper artifact types were found, including tubular beads, celts, and ear spools, though these were not full two-plated ear spools as were common to Hopewell Mound 25 and Gibson (McKern 1931; Table 5). The breast plate and awl types, with one of each found at Trempealeau Lakes, were also found at Hopewell Mound 25 and the Liverpool sites, respectively. One copper artifact shaped like a button was discovered in Nicholls Mound, and a possibly broken down button (listed under "pieces of copper") came from Schwert Mound 17. The cones discovered represent a type not found at any of the Havana sites in this study, and Seeman (1979:322) mentions that these have only been found at the Flucke

site, Wisconsin, the Davenport site, Iowa, and the Turner and Mound City sites of the Hopewell core. A copper sleeve like the tubes and panpipes of Hopewell Mound 25 was discovered too.

Table 5. Artifact types, quantities, and proportions from Trempealeau Lakes

Artifact Type[a]	Quantity	Percentage of Copper Assemblage
awls	1	2.50%
beads	~ 353	N/A
breastplates	1	2.50%
buttons	1	2.50%
celts	11	27.50%
cones	13	32.50%
ear spools	5	12.50%
pieces of copper	1	2.50%
pieces of copper plate	1	2.50%
pieces of copper/disc	1	2.50%
sleeves	1	2.50%
pieces of copper/pendants	2	5.00%
unworked pieces of copper	2	5.00%
		Total = 100.00%

[a]Data from McKern (1931).

The Overhead Site, having only one Hopewell mound, had significantly fewer artifacts, and also a different distribution of types than Trempealeau Lakes (Table 6). In the relative paucity of copper artifacts, it is similar to the Hannah site mentioned above. A single awl was recovered, as was one possible celt (Gallagher and Stevens 1981). Addressed further under the section regarding metric attributes, this possible celt, though of a roughly rectilinear to trapezoidal shape, was significantly smaller than some celts found at some of the other sites investigated here.

Table 6. Artifact types, quantities, and proportions from Overhead

Artifact Type[a]	Quantity	Percentage of Copper Assemblage
celts	1	14.29%
awls	1	14.29%
buttons	5	71.43%
non-tubular beads	1	N/A
		Total = 100.01%

[a]Data from Gallagher and Stevenson et al. (1981); records on file at MVAC.

Interesting to note is that, while tubular copper beads were common at the other sites, none were found with the burials in the mound at Overhead. A non-tubular bead, like an extremely small ring rather than a tube, was found, but more frequent were the five domed beads or buttons of wood with a layer of copper on the outside (Figure 11). This differs significantly from the assemblages of Trempealeau Lakes, though a button-shaped copper artifact was found there (McKern 1931), and those of the Havana sites selected for this study.

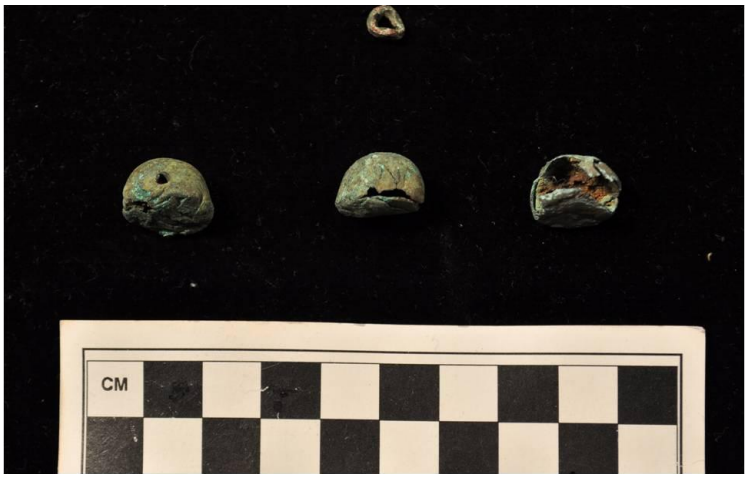

Figure 11. Copper Buttons and Non-Tubular Bead from the Overhead Site (Used with permission of the Mississippi Valley Archaeology Center)

The small Overhead celt, if it is in fact a complete celt, when combined with the single-plate ear spools of Trempealeau Lakes may indicate imitation of Hopewell forms. Lending support to this would be a the five Knife River points found at Overhead which on one side were finely knapped but not so intricately worked on the other (Arzigian, personal communication 2012). However, it must be noted that such small celts were found at the Hannah site, and even one at Hopewell Mound 25 was around 5 cm in length.

Composite Copper Artifacts. Certain copper artifacts involved other materials as well. Copper artifacts with bits of charcoal or fibers, cloth, or fur preserved through what was likely contact with other objects will not be discussed here. Only artifacts clearly involving copper and another material or materials in deliberate combination will be considered. Most of these came from Hopewell Mound 25. These included buttons with clay, stone, or bone within, a hemisphere-shaped artifact and balls with clay and other metal, possible mica and leather with a plate, headdresses with copper over wood cores and a headdress with a wood core and cloth with other materials attached, ear spools with meteoric iron or silver, skewers with cords around them for possible use in hair braids, cane, reeds, and possibly bone and iron with copper tubes and panpipes, and a copper mass with wood. Pearl beads were also on two ear spools from Burial 25 at Hopewell Mound 25. The copper sleeve or tubes from Trempealeau Lakes contained reeds as well, and the buttons from Overhead contain what is likely wood inside. At the Gibson Mounds in the Havana region, five of the six ear spools found were covered with meteoric iron, which is similar to a number of the Hopewell Mound 25 ear spools, and string was also found around them.

While artifacts incorporating copper and other materials were found at sites besides Hopewell Mound 25, this mound is the only one in which copper is combined with other materials for items such as headdresses. It is possible that for such items copper served to highlight or emphasize such a material, and copper was thought of slightly differently in the Hopewell core as a material with which to create this emphasis in a more ritual context.

Non-Copper Artifacts of the Same Form. Certain types of copper artifacts were found in the same form but different material in other instances. At Hopewell Mound 25 alone, bear canines of bone were present, as were stone and iron celts and plates of material such as iron. Bone awls and needles were also discovered. Again with bear teeth, the real form was found at Liverpool and Hopewell Mound 25 (where teeth in copper were prevalent) and Trempealeau Lakes and Overhead. Beads were of pearl or shell as well at some sites, including Hopewell Mound 25, Liverpool, Hannah, Gibson (with two silver beads as well), and Trempealeau Lakes. At Trempealeau Lakes, eleven silver buttons were found, similar to the copper specimens from Trempealeau Lakes, Overhead, and Hopewell Mound 25.

Context within Mounds and Burials

Hopewell Mound 25. The copper artifacts of Hopewell Mound 25 were found in a variety of contexts within the large mound (Table 7). Table 7 only includes identified artifacts and excludes unworked or unidentified items such as nuggets. Blank cells indicate that copper artifacts were not found in the particular context listed in the column. The ear spools category includes spools and ear ornaments. Many copper artifacts were found associated with other artifacts, often of the same type, rather than alone or with one or two artifacts of a different material or type. This may be contrasted with the situation in the Havana and Wisconsin sites for certain types, discussed below. While found in large numbers in Altar 1, many times ear spools were found near the ears of skulls, though they at

times were present in hands and in cremations. Many of the celts, 66 of the 72 total, came from one burial with two individuals.

Table 7. Context of copper artifacts from Hopewell Mound 25

Artifact[a]	With Primary or Extended Burial	With Reburial or Bundle	With Cremation	With Other Copper Artifacts	With Non-Copper Artifacts
anklets/bracelets (>1)	Altar 1	Altar 1	Altar 1	yes	
anklets/bracelets (>5)	yes			yes	yes
antler effigy	Altar 2	Altar 2	Altar 2	yes	yes
arrowhead/point	Copper deposit	deposit	deposit	yes	
other ornaments: balls (>1)	Altar 1	Altar 1	Altar 1	yes	yes
beads (>1)	Altar 1	Altar 1	Altar 1	yes	yes
beads (>25)	yes			yes	yes
breastplates (3)			yes		yes
breastplates (2), headplate, and plates (111)	yes			yes	yes
breastplates (3)	Copper deposit	deposit	deposit	yes	
buttons (>1)	Altar 1	Altar 1	Altar 1	yes	yes
buttons (>1)	yes				yes
buttons (>112)	yes			yes	yes
celt/axe/adze (71)	yes			yes	yes
celt/axe/adze cutout: effigy (3 or 4)	yes		yes	yes	yes
cutout: effigy	yes				yes
cutouts (>1)	Altar 2	Altar 2	Altar 2	yes	yes
cutouts/sheets (>225)	Copper deposit	deposit	deposit	yes	
ear spools (9)	yes				yes
ear spools (2)			yes		yes
ear spools (4)			yes		
ear spools (4)	yes			possibly	likely
ear spools (2 to 8 or 9)			yes	yes	yes
ear spools (>83)	yes			yes	yes
ear spools (4)	Copper deposit	deposit	deposit	yes	
ear spools (>500)	Altar 1	Altar 1	Altar 1	yes	yes
figurines (9)			yes	yes	yes
headdresses (6)	yes			yes	yes
headplate			yes	yes	yes

Table 7. (continued)

Artifact[a]	With Primary or Extended Burial	With Reburial or Bundle	With Cremation	With Other Copper Artifacts	With Non-Copper Artifacts
headplates (2) and plates (3)	yes				yes
pendants (2)	Copper deposit	deposit	deposit	yes	
pendants (2)			yes		yes
plate	yes				
ornaments (>15)	yes			yes	yes
tube/panpipe	yes			yes	yes
tubes/panpipes (>1)	Altar 1	Altar 1	Altar 1	yes	yes
tubes/panpipes(6)	Copper deposit	deposit	deposit	yes	

[a]Data from Case and Carr (2008:Appendix 6.1A, 6.2); Moorehead (1922); Shetrone (1998 [1926]).

A number of burials containing copper artifacts at Hopewell Mound 25 were cremations, which differed markedly from the sites in Wisconsin and in the Havana region. The exception was a cremation pit at Liverpool, discussed below. Beyond burials, Hopewell Mound 25 also held a deposit of over 240 copper artifacts and two altars, as well as two other deposits without confirmed copper artifacts. These provided contexts within a mound but not associated with a burial. Thus, the copper artifacts with these features were not directly associated with one person. In these deposits, large numbers of the same type of artifact could be present. In Altar 1, over 500 ear spools were discovered, for example (Figure 12).

Figure 12. Groups of ear spools from Hopewell Mound Group, far left traced specifically to Mound 25, Altar 1, through Greber and Ruhl (1989:150) (MPM Cat. #49081 a-c, used with permission of the Milwaukee Public Museum)

Liverpool, Hannah, and Gibson. The Liverpool site offered the contexts of three different mounds to investigate. All of the artifacts were associated with a burial, not free in the mound (Table 8). Two uncommon copper types, imitation bear teeth and a wedge, mentioned earlier, were found in the same mound at Liverpool, F°79. That these two would be found together, without any other copper artifacts, may be of importance. In addition, it must be noted that the only copper artifact type found in mound F°78 was the axe, with a group of six in what is

similar to a cache scenario. The unknown burials were a group found in what was only described as a rock-lined tomb by Cole and Deuel (1937) in F°79.

Table 8. Context of copper artifacts from Liverpool

Artifact[a]	With Primary or Extended Burial	With Reburial or Bundle	With Cremation	With Other Copper Artifacts	With Non-Copper Artifacts
adze			yes		yes
adze	yes				yes
adze	yes			yes	yes
awl	yes			possibly	possibly
axes (6)	unknown			possibly	yes
beads	unknown			yes	yes
blade	yes			yes	yes
celt	yes			possibly	possibly
flakes	yes			yes	yes
imitation bear teeth (10)	unknown			yes	yes
wedge	unknown			yes	yes

[a]Data from Cole and Deuel (1937).

The cremation pit at Liverpool offers a similar burial context to the cremations with copper artifacts found in Hopewell Mound 25. This could be telling of the links between the Havana region and the Hopewell core not seen prevalently in southwestern Wisconsin. One difficulty in describing the association of copper artifacts with other copper and non-copper artifacts based on the site report by Cole and Deuel (1937) was that while at times necklaces and beads were mentioned, the materials with which these were made was not always recorded. Therefore, "possibly" appears under both the "other copper" and "non-copper artifacts" categories, or just the "copper artifacts" category, in cases of such ambiguity.

The Hannah site includes only one mound, unlike Liverpool, for which each mound must be seen separately when looking at context. Three of the adzes were found in the same burial, which was similar to the case of the six axes at Liverpool, . However, none were found with the beads placed as a necklace, though these were found with a platform pipe (Table 9). Two of the adzes were found alone, with separate burials. All of the burials with copper artifacts were extended. However, the mound in which the burials were discovered did contain a number of bundle burials. All of the copper artifacts were also found with non-copper artifacts, such as pearl and shell beads, platform pipes, and Snyders points.

Table 9. Context of copper artifacts from Hannah

Artifact[a]	With Primary or Extended Burial	With Reburial or Bundle	With Cremation	With Other Copper Artifacts	With Non-Copper Artifacts
adzes (5)	yes				yes
beads	yes				yes

[a]Data from Morse and Morse (1965).

Burials with copper artifacts at the Gibson Mounds were mainly extended burials, though one was mixed with two secondary burials and was part of a charnel pit (Table 10). As was the case at the Hannah site, beads were found strung with individuals without other copper artifacts. The ear spools show a similar pattern to many at Hopewell Mound 25. They were found in three pairs, one by the ears and the other two by the hands. The pattern of ear spools

by the ears, as if worn upon burial, will also be seen below in connection with the spools of the Trempealeau Lakes Mound Group.

Table 10. Context of copper artifacts from Gibson Mounds

Artifact[a]	With Primary or Extended Burial	With Reburial or Bundle	With Cremation	With Other Copper Artifacts	With Non-Copper Artifacts
adze	yes			yes	yes
bead	yes	possibly			yes
beads (40)	yes				yes
ear spools (6)	yes			yes	yes

[a]Data from Perino (2006b).

Trempealeau Lakes and Overhead. The Trempealeau Lakes and Overhead sites provided an opportunity to see the context of copper artifacts at Wisconsin sites. While some similarities may be found, differences in the two assemblages persist, as was the case with copper artifact types. Some connection is shown to Havana and the Hopewell core, however.

Trempealeau Lakes contained a number of burials with copper artifacts, and of these a sizable portion was reburials (Table 11). This was unlike the Havana sites in the study and Hopewell Mound 25. A number of these artifacts were on a parapet with reburials in Mound 18, specifically the awl and cones. Some beads were found not associated with any burial, though with knives or points and red pigment. This continues the pattern of beads being found associated with no other copper artifacts from Hannah and the Gibson Mounds.

Table 11. Context of copper artifacts from Trempealeau Lakes

Artifact[a]	With Primary or Extended Burial	With Reburial or Bundle	With Cremation	With Other Copper Artifacts	With Non-Copper Artifacts
awl		yes			
bead		yes			yes
beads (>100)	yes				yes
beads	Not with burial	Not with burial	Not with burial		yes
beads (2)	yes				
beads (>150)		yes			
beads	unknown				
beads	yes			yes	yes
breastplate	yes			yes	yes
button	unknown			unknown	unknown
celts (3)	yes				
celts (3)	yes				yes
celt	unknown				yes
celts (4)	yes			yes	yes
cone	unknown			unknown	unknown
cones (12)		yes			yes
ear spools (2)		yes			
ear spools (3)	yes				

Table 11. (continued)

Artifact[a]	With Primary or Extended Burial	With Reburial or Bundle	With Cremation	With Other Copper Artifacts	With Non-Copper Artifacts
piece of copper	unknown				
piece of plate	yes				
piece of copper/disk	yes			yes	yes
sleeve	yes				composite, with reeds
pieces of copper/ pendants (2)		yes			

[a]Data from McKern (1931).

As seen in Table 12, the copper artifacts from Overhead were consistently found in burials and with other copper artifacts. Of note is that buttons or beads tended to be found in groups of two. The finding of buttons with burials occurred at Hopewell Mound 25 as well, but even with one burial they were greater in number in that mound, and they were found in the non-burial context of Altar 1. Interestingly, the awl, celt, and two beads were found together in Burial 6, and another group of artifacts which included a button or bead was found near the pelvis of an individual. Burial 6 was a reburial, whereas Burial 4 was an extended burial. This presence of reburials is consistent with the Trempealeau Lakes Mound Group.

Table 12. Context of copper artifacts from Overhead

Artifact[a]	With Primary or Extended Burial	With Reburial or Bundle	With Cremation	With Other Copper Artifacts	With Non-Copper Artifacts
awl		yes		yes	
buttons (3)	yes			yes	yes
buttons (2)		yes		yes	
celt		yes		yes	
non-tubular bead	yes			yes	yes

[a]Data from Gallagher and Stevenson et al. (1981); records on file at MVAC.

Metric Attributes: Dimensions and Weight

When data was available, metric attributes of the copper artifacts from the six sites in the study were investigated. It should be noted that many celts were given an estimated weight by Bernardini and Carr (2005:Appendix 17.1) through a regression equation, and some were given a weight of 0.03 kg when the equation did not produce a viable weight. The six celts from Nicholls Mound of the Trempealeau Lakes mound group were measured personally at the Milwaukee Public Museum. Other celt lengths and widths come from site reports, but most weights were estimated by Bernardini and Carr (2005:Appendix 17.1), and the lengths were correlated with that appendix from the site reports. When lengths and weights of celts were given in inches and pounds by Perino (2006b), these were converted personally into centimeters and grams.

Hopewell Mound 25. The Hopewell copper artifacts show quite a range in terms of metric attributes (Table 13). While some artifacts, such as beads and ornaments, were small and weighed little, others, such as celts, were much greater in size and weight. However, some artifacts of large size, such as plates or sheets, were so thin that their weights paled in comparison to those of the celts. Because so many celts were discovered, only the range of weights and lengths is listed here. In a similar manner, with the sheer number of ornaments, it would be difficult to depict all of their sizes in a meaningful way when data was available, namely from Greber and Ruhl (1989) for thickness. However, Table 13 does provide a sense of the range of size of copper artifacts in general in Mound 25. While only width and length are considered here, it may be mentioned that Greber and Ruhl (1989:Figure 4.4) listed thicknesses of some ornaments form Mound 25, with a range from .2 mm in minimum thickness to 12.4 mm in

maximum thickness. Weights, too, show great variability in the amount of copper used in the artifacts contained in the mound, especially when considering the small, thin ornaments versus the larger and thicker celts. Celts of lengths of 6.4 cm and 14.5 cm and 61.7 g and 868.3 g, respectively, were measured at the Milwaukee Public Museum, but because these were not definitively linked to any mound at the Hopewell site, they were not included in any analyses.

Table 13. Metric attributes of Hopewell Mound 25 artifacts

Artifact	Maximum Length (cm)	Maximum Width (cm)	Weight (g)
beads (n=15)[a]	approximately .5-1.0	approximately .2-.3 (diameter)	
crescent ornament[b]	30.5		
disk ornaments (n=2)[a]	3.1 (diameter)		2.2-2.3
leaf-shaped ornament[a]	4.4	1.8	1.3
ornament[a]	4.5	2.4	4.1
skewer[b]	30.5	1.0	
nostril ornaments (n=4)[b]	6.4		
plate[b]	41.9	17.8	
celts/axes/adzes (n=44, out of 72)[c]	5.1-59.9		30-17,270

[a]Measured at the Milwaukee Public Museum.
[b]Data from Case and Carr (2008:Appendix 6.1A, 6.2).
[c]Data from Bernardini and Carr (2005:Appendix 17.1).

Liverpool, Hannah, and Gibson. While a variety of different artifact types were present at Liverpool, data could be obtained only for the celts and adzes and the wedge (Table 14). The wedge falls behind the celts and adzes in terms of both length and weight.

The Hannah site showed great variability in the length and width of adzes (Table 15). The lengths for individual beads were not available for this study, but they were likely smaller than the adzes. The smallest adzes show some comparability to the small celt discovered at Overhead, mentioned below.

Table 14. Metric attributes of Liverpool artifacts

Artifact[a]	Maximum Length (cm)	Maximum Width (cm)	Weight (g)
celts/axes/adzes (n=2)	10.3		300
celts/axes/adzes (n=2)	12.8		450
wedge	7.4		120

[a]Data from Bernardini and Carr (2005:Appendix 17.1).

Table 15. Metric attributes of Hannah artifacts

Artifact	Maximum Length (cm)[a]	Maximum Width (cm)[a]	Weight (g)[b]
adze	2.4	1.1	30
adze	2.7	1.8	30
adze	9.2	4.4	151.2[a]
adze	9.8	4.6	317.5[a]
adze	18.7	7.3	800

[a]Data from Morse and Morse (1965).
[b]Data from Bernardini and Carr (2005:Appendix 17.1).

The Gibson Mounds contained only one adze for comparison with the other sites, but data on beads and ear spool diameter can help in gaining an idea of how much copper was used at the site and in comparison to other sites as well (Table 16). Data on bead size was also obtained for the Trempealeau Lakes Mound Group below.

Table 16. Metric attributes of Gibson Mounds artifacts

Artifact	Maximum Length (cm)	Maximum Width (cm)	Weight (g)
beads (26)[a]	.3-1.6 (diameter)		
beads (14)[a]	.5 (average diameter)		
ear spools (6)[a]	5.1-5.7 (diameter)		
adze	7.6[a]	5.4[a]	120[b]

[a]Data from Perino (2006b).
[b]Data from Bernardini and Carr (2005:Appendix 17.1).

Trempealeau Lakes and Overhead. While metric data for the width of all celts was not available, a good portion of data on length of the artifacts from Trempealeau Lakes could be compiled (Table 17). The group of cones shows a rather wide range in length, as do the celts. The beads may be compared with those from the Gibson Mounds. While the length was not given for Gibson, the diameter range of .3 to 1.6 cm and the average of .5 cm were given. The width or diameter of the beads measured from Nicholls Mound personally at the Milwaukee Public Museum was around .2 cm, which is slightly smaller than at Gibson. However, copper beads were more prevalent at Trempealeau Lakes, being found in nearly a dozen different cases.

Table 17. Metric attributes of Trempealeau Lakes artifacts

Artifact	Maximum Length (cm)	Maximum Width (cm)	Weight (g)
awl[a]	21.0		
beads[b]	up to 1.1	.2	
breastplate[b]	19.8	12.9	200.8
button[a]	1.5 (diameter)		
celts (n=11)[c]	3.2-22.2	3.8-8.7 (n=6)[b]	30-1210.8
cones (n=12)[a]	1.5-6.3cm		
disk[b]	7.3	6.6	25.3
piece of plate[b]	17.3	7.3	55.9
pieces of copper/ pendants[a](n=2)	1.5	1.5	
sleeve[a]	10.5		

[a]Data from McKern (1931).
[b]Measured at the Milwaukee Public Museum.
[c]Data from Bernardini and Carr (2005:Appendix 17.1); 6 from Milwaukee Public Museum.

The celts from Nicholls Mound were measured at the Milwaukee Public Museum. Therefore, data on maximum width of six of the eleven was obtained (Figure 13). The celts exhibit quite a range in terms of length, as well as maximum width, thickness, and weight. The smallest celt of 3.2 cm does not appear so unusual when compared to the celt discovered at Overhead, as well as the two smallest from the Hannah site mentioned above.

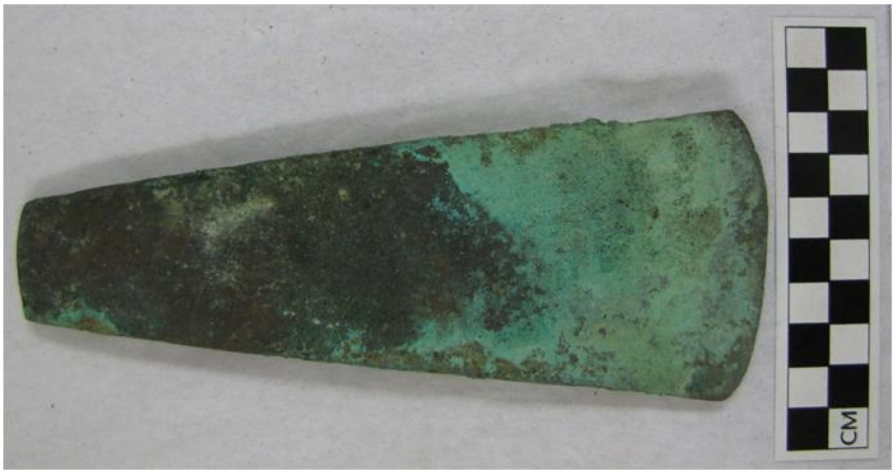

Figure 13. Celt from Nicholls Mound of Trempealeau Lakes (MPM Cat. #33071, used with permission of the Milwaukee Public Museum)

The Overhead artifacts show great consistency in size and weight by type in terms of the buttons or beads (Table 18). The objects with the most copper, the heaviest ones, were the awl followed by the possible celt. The buttons or beads consistently stayed under two grams in weight. Their maximum widths, measured around the base similar to a diameter because the buttons or beads were round, also show great similarity, ranging from between 1.5 and 1.7 cm. At the Milwaukee Public Museum, one button was measured which was not attributed specifically to Mound 25. This button was approximately 2.0 cm in diameter and approximately 9 mm thick, or in height from bottom to top of the domed top of the button, showing comparability in at least this one instance between the Hopewell site and Overhead. Interestingly, at Trempealeau Lakes only two of the celts were longer than the awl, and at Overhead the awl was longer than the celt (Figure 14).

Table 18. Metric attributes of Overhead artifacts

Artifact[a]	Maximum Length (cm)	Maximum Width (cm)	Weight (g)
button		1.6	1.8
button		1.5	1.4
button		1.5	1.5
Awl	12.8	.7	26.8
artifact/celt	3.9	3.2	24.5
button		1.7	1.7
non-tubular bead	.7	.4	.3
button (crushed)			1.1

[a]Measured at MVAC.

Figure 14. Awl from Overhead (Used with permission of the Mississippi Valley Archaeology Center)

Celts/Axes/Adzes. Data was readily available from sites reports and Bernardini and Carr (2005:Appendix 17.1) to compare celt/axe/adze length and weight across all of the sites for at least a portion of, if not all, of the celts at each site. For Hopewell Mound 25, data on 44 of 72 celts was available, and for Liverpool such data only accompanied four of the celts. Average length and weight by site are shown in Figure 15.

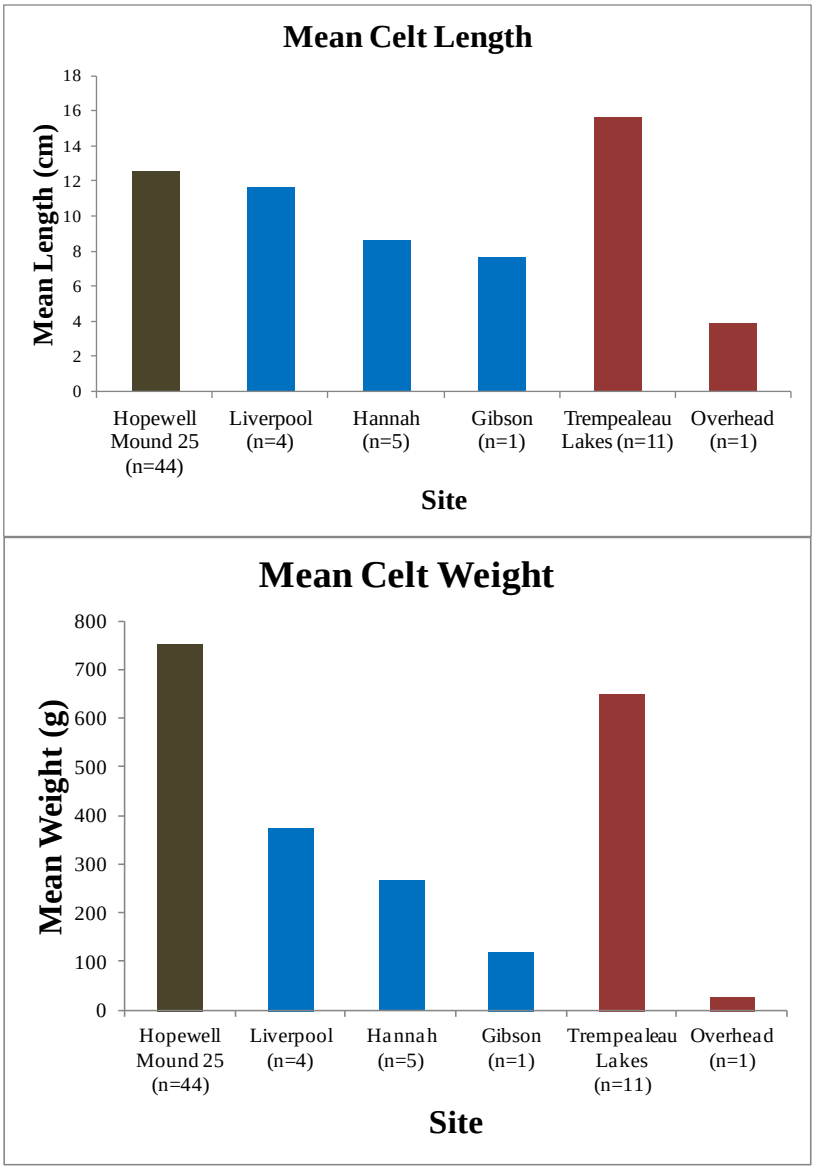

Figure 15. Mean celt length and weight

While Trempealeau Lakes leads in mean length at 15.6 cm, Hopewell Mound 25 contained celts with a greater mean weight at 751.4 g. Both are relatively close in each category, though. This may indicate some closer association between the Hopewell core and southwestern Wisconsin in terms of celt manufacture and acquirement. However, an important factor is the range of lengths and widths, as can be seen above under each site's metric data, and the standard deviation shown in Table 19. Hopewell Mound 25 shows a high degree of variation from the mean for both length and weight, while the Havana and Wisconsin sites show less variation from the mean. One Mound 25 celt was also of great length at 59.9 cm, though others were still long, over 20 cm. Celts from the Liverpool site were close to Mound 25 in mean length as well.

Table 19. Standard deviations in celt length and weight

Site	Standard Deviation (cm)	Standard Deviation (g)
Hopewell	9.1	2,568.2
Liverpool	1.4	86.6
Hannah	6.0	287.2
Gibson	Only 1 celt	Only 1 celt
Trempealeau Lakes	5.5	346.5
Overhead	Only 1 celt	Only 1 celt

DISCUSSION AND CONCLUSION

The analyses involved with form and style, context within mounds and burials, and metric attributes provide data with which to compare and contrast the regions and explore Hopewell culture in terms of material and social and religious ideas in the core and these regions. While regional variation was certainly evident, the sites investigated here suggest links among all three the regions, as well as some connections between regions.

Regional Variation and the Role of Copper

Wisconsin Compared to Havana. Important differences exist between the main Havana area and southwestern Wisconsin in terms of copper use. Certain forms of copper artifacts appeared at the Wisconsin sites and Hopewell Mound 25, yet were absent in the selected Havana sites in this study. The two main types were buttons and breastplates. The buttons are particularly relevant given that they have been found at only one other Havana site, Bedford where they are made of shell, and at a site in the Point Peninsula region (Perino 2006a:240; Seeman 318). Also, cones like those of Schwert 18 were found only at Flucke in Wisconsin and Davenport, Iowa, besides the core, though not specifically at Hopewell Mound 25 (Seeman 1979: 322). These findings may suggest more direct or independent interaction between Wisconsin and the Hopewell core rather than just a connection through the main Havana region along the Illinois River. However, the prevalence of Havana pottery types at Overhead (Gallagher and Stevenson et al. 1981), the meager one Hopewell vessel unearthed at Mound 17 at Trempealeau Lakes (McKern 1931), and similar prominence of utilitarian items such as awls and celts indicates input from or connection to Havana as well. The Havana sites, too, contained items such as copper bear teeth and bicymbal ear spools which correlate with artifacts at Hopewell Mound 25. At least for certain artifact types, such as ear spools with only a single plate, the southwestern Wisconsin sites seem to be striving to imitate rather than becoming heavily integrated into certain Hopewell core and Havana practices.

Havana and Wisconsin Compared to Hopewell. The Havana and Wisconsin sites in this study produced more utilitarian objects or representations of them out of copper when considering their proportion of the copper assemblage. I was also able to examine an awl from the Trempealeau Lakes Campsite I while visiting the Milwaukee Public Museum. This awl was quite smaller than the awls found at Overhead and the Trempealeau Lakes mounds, at 6.2 cm, possibly suggesting use. Thus, while the awls from Trempealeau Lakes and Overhead may not have been used, or at least to as great an extent, a utilitarian form was represented.

Given the large amount of sheet copper and cutouts in effigies of animals such as birds or bear claws, shapes, and other designs, as well as the extensive copper deposit and two altars with copper artifacts, a more ceremonial use of copper at Hopewell Mound 25 is suggested, though this is certainly not a new claim and, though supported by the data used here, is not a truly original finding. For example, Case and Carr (2008:Appendix 6.1A) list items such as copper balls and cutouts as having shamanic or other ceremonial or symbolic meaning in the HOPEBIOARCH database. Mention must be made of more decorative or display items also present at the Wisconsin and Havana sites. Bear teeth made of copper from Liverpool were likely not utilitarian, but could, similar to the wood headdresses covered in copper at Hopewell Mound 25, serve as symbols of the real material and had certain meanings. Buttons, cones, and the breastplate from the Wisconsin sites could have been worn for public display and thus served a role in social contexts, not just as material for utilitarian items.

The Role and Movement of Copper Overall and Regionally. A feasible possibility would be that people from the Hopewell core interacted with those of southwestern Wisconsin on the route to obtain copper near Lake Superior, or the southwestern Wisconsin people may have played a role in providing copper to people from the Hopewell core. Even in the midst of this interaction, links with the Havana region to the south and trade routes such as the Mississippi River could have persisted. Copper in some form was making its way to the Havana region, so some route and method was used to get it there. This would explain both Havana influence at the Wisconsin sites

and the traits more closely associated with the Hopewell center, such as the use and/or manufacture of copper buttons. As Theler and Boszhardt (2003:118) acknowledge for lithic material from the west, a consideration of land routes as major means of the movement of materials is likely pertinent. Hopewell sites did tend to be located along major river valleys, however, so water routes were near.

The use and movement of copper should be examined in consideration with other materials as well, which could be a subject for further study. This could help explain if a certain material or materials was being traded for copper or if it was obtained directly. As Theler and Boszhardt (2003:118) mention, the Trempealeau area may have been important for the trade and exchange of lithic material. Copper could have played a role in or been connected to this exchange, especially considering its presence in the northern regions of Wisconsin near Lake Superior.

Suggestions for Further Research.

A number of avenues from this study offer future research potential. To evaluate the possibility of Hopewell peoples from the core along the Scioto River traveling up to Lake Superior through Wisconsin to obtain copper or acquiring it from Wisconsin groups, sites closer to Lake Superior and southeastern Wisconsin, though few in number, could be investigated for patterns in their copper artifact assemblages and if they show similarity to the Trempealeau Lakes and Overhead assemblages. Incorporating more sites for the three regions focused on here in a study would offer a chance to investigate patterns with more data, as well.

Another line of research could go into greater depth into analysis of burials and other artifacts found with copper artifacts. Where possible, the association of artifacts with males and females could be investigated. Further consideration of gender and status could be an area of future research as well. Finally, chemical analysis such as X-ray fluorescence (XRF) could be undertaken to attempt to trace the source of copper artifacts. This could lend further support to the long-held belief that copper came from the Great Lakes area or aid in identifying other important sources, such as discussed in Seeman (1979). Either outcome would further the study of how copper played a role in the lives of Hopewell peoples, both in terms of trade and social and ceremonial or religious life.

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