CEREMONIAL “KILLING” OF HOPEWELL ITEMS RECOVERED FROM REDEPOSIT PITS IN MANN MOUND 3, POSEY COUNTY, INDIANA

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by

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# TABLE OF CONTENTS

TABLE OF CONTENTS.................................................................................................................. iii

LIST OF FIGURES.......................................................................................................................... v

LIST OF TABLES............................................................................................................................. vii

ACKNOWLEDGMENTS.................................................................................................................. viii

CHAPTERS

I. Those Who “Killed” ...................................................................................................................... 1
   Introduction ................................................................................................................................. 1
   Hopewell .................................................................................................................................... 2

II. Discussion of the Mann Site ...................................................................................................... 8
   The Mann Site ........................................................................................................................... 8
   History of Mann Site Excavations ............................................................................................. 9
   Mound 3 ..................................................................................................................................... 12
   Plummets ................................................................................................................................. 16
   Lithics ......................................................................................................................................... 21
   Bone .......................................................................................................................................... 25
   Ceramics ................................................................................................................................. 27
   Galena ....................................................................................................................................... 28
   Other ......................................................................................................................................... 29

III. Hopewell “Killings” ................................................................................................................... 38
   Hopewell Practice of “Killing” .................................................................................................. 38
   Cases and their Context ............................................................................................................. 39
   Mound City, Ross County, Ohio .............................................................................................. 39
<table>
<thead>
<tr>
<th>Location</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tremper Mound, Scioto County, Ohio</td>
<td>41</td>
</tr>
<tr>
<td>Hopewell Mound Group, Ross County, Ohio</td>
<td>41</td>
</tr>
<tr>
<td>Turner Site, Hamilton County, Ohio</td>
<td>43</td>
</tr>
<tr>
<td>Edwin Harness Mound, Liberty Earthworks, Ross County, Ohio</td>
<td>47</td>
</tr>
<tr>
<td>Russell Brown site, Ross County, Ohio</td>
<td>47</td>
</tr>
<tr>
<td>Smith Site, Warren County, Ohio</td>
<td>49</td>
</tr>
<tr>
<td>Fort Ancient, Warren County, Ohio</td>
<td>50</td>
</tr>
<tr>
<td>GE Mound, Posey County, Indiana</td>
<td>50</td>
</tr>
<tr>
<td>Discussion of Hopewell “Killings”</td>
<td>51</td>
</tr>
<tr>
<td>IV. Discussion of Current Experiment</td>
<td>54</td>
</tr>
<tr>
<td>Experiment</td>
<td>54</td>
</tr>
<tr>
<td>Materials</td>
<td>55</td>
</tr>
<tr>
<td>Methods</td>
<td>58</td>
</tr>
<tr>
<td>Results</td>
<td>66</td>
</tr>
<tr>
<td>V. Analysis</td>
<td>71</td>
</tr>
<tr>
<td>Analogies and Models</td>
<td>71</td>
</tr>
<tr>
<td>Prospect 1</td>
<td>71</td>
</tr>
<tr>
<td>Prospect 2</td>
<td>73</td>
</tr>
<tr>
<td>Prospect 3</td>
<td>75</td>
</tr>
<tr>
<td>“Killing” at Mann Mound 3</td>
<td>77</td>
</tr>
<tr>
<td>CONCLUSIONS</td>
<td>82</td>
</tr>
<tr>
<td>BIBLIOGRAPHY</td>
<td>85</td>
</tr>
</tbody>
</table>
LIST OF FIGURES

Figure 1. Mann Site Map Based on Lacer’s Map Featured in Ruby 1997:313 ............................... 9
Figure 2. Glenn A. Black in Unknown Year .................................................................................. 10
Figure 3. Charles Lacer, Jr. in 1955 at the Mann Site. ................................................................. 11
Figure 4. Ruby’s Estimate of Floor Plan and Profile from the Lacer Excavations (Ruby 1997:328) ................................................................................................................................. 15
Figure 5. Lacer’s Illustration of the Plummet Type from Mound 3 (Lacer n.d.:38) ................. 17
Figure 6. The Inner View of a Destroyed Limonite Plummet ...................................................... 18
Figure 7. The Outer View of a Destroyed Limonite Plummet ...................................................... 19
Figure 8. The Outer View of a Destroyed Steatite Plummet ...................................................... 20
Figure 9. Fragments of Destroyed Sandstone Plummets .............................................................. 21
Figure 10. Chert Flakes Burned and Destroyed by Exposure to Fire ........................................... 23
Figure 11. Lead Pellets Recovered from Pit 1 in Mann Mound 3 .................................................. 29
Figure 12. Destroyed Quartz Fragments ...................................................................................... 32
Figure 13. Cross-sections of Pits and Tunnels in Mound 3 at Turner Site: a, Pit 5; b, Pit 16; c, Outer Pit; d, Tunnel; e, Inner Pit; f, Clay Cap; g, Burnt Clay Covering Thin Stratum of Black Ash (Willoughby 1922:36) ............................................................................................................. 45
Figure 14. Plan of Mound 3 at the Turner Site: 1-6, 11, 12, 16, 28, Pits with Tunnels; 10, Hearth of Burnt Clay; 10, Place of Cremation; 31, Small Pit with Flue; 32, 35, Cache-pits; 33, Central Altar; 34, Small Altar; 36, Post-holes (Willoughby 1922:39) ................................................. 45
Figure 15. An Illustration of the Inner Workings of a Dakota Oven at the Portage County Historical Society (Kunst 2006:8) ................................................................................................................. 59
LIST OF TABLES

Table 1. Chart Detailing the Contents of Mann Mound 3. ................................................................. 34
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CHAPTER I

Those Who “Killed”

Introduction

The mystery of the large mounds and earthen structures that are found all over the Ohio Valley has captivated people since they were discovered at the time of European expansion. Amateur and professional archaeologists have been attempting to solve this “mystery” by excavating and interpreting material remains since the beginning of the 19th century (Silverberg 1970:50). Contemporary archaeologists now know that the mounds and earthworks cannot be attributed to one singular group of people, but multiple, possibly unrelated, societies that existed for hundreds of years in what is now known as the Midwestern region of the United States. The people who were responsible for creating these structures during the Middle Woodland period (200 B.C. – A. D. 500) are known by people today as Hopewell (Ruby 1997:1). These ancient people lived in complex communities, participated in ceremonial activities, and travelled great distances to obtain expensive trade goods (Ruby 1997:1). While many of the classic Hopewell sites are primarily within the boundaries of modern Ohio, sites with similar attributes have been discovered and excavated all over the eastern United States (Ruby 1997:4-5).

The primary goal of this research project is to thoroughly examine one of the ceremonial activities, the destruction, or “killing”, of items by thermal alteration or other means, observed at Hopewell sites in the Ohio Valley and, specifically, at one Hopewell mound at the Mann Site in southern Indiana. Examples of Hopewell “killing” of material objects will be reviewed and
compared, the purpose of this destruction will be discussed, and the contents of the mound at the Mann site will be described. This project also includes an experimental component to further advance these research goals.

**Hopewell**

The archaeological concept of Hopewell is difficult to define and classify, which is made apparent by its long history of evolved models. The interpretation of Hopewell has always been inherently influenced by the traditions of its analysts, beginning when Hopewell mounds were first identified and pondered in the 19th century. During this time, they were popularly assumed to have been constructed by a mythical lost race of “Mound Builders” (Jeske and Charles 2003:118). This idea was readily accepted because it provided an enchanting history of North America that was previously unheard of, and it helped justify the extermination of modern Native Americans who had now appeared to have destroyed the culturally rich, superior, and assumedly unrelated, mound-building civilization (Jeske and Charles 2003:119). As the traditions of the American people have changed and the research priorities and methods of American archaeology have evolved, so has the accepted interpretation of Hopewell.

In the mid-20th century, the Hopewell model shifted, and archaeologists began interpreting the concept as a “mortuary cult”, focusing on a set of religious and political ideas (Jeske and Charles 2003:119). This model led to the introduction of the Hopewell interaction sphere, originated by Joseph Caldwell, but most influentially described by Streuver and Houart in 1972 (Jeske and Charles 2003:119). This model, which will be discussed in more detail in later chapters, dismissed the idea of a mortuary cult and instead focused on economic and subsistence aspects, viewing Hopewell as a trade network (Jeske and Charles 2003:124). While there is still substantial room for the model to evolve, modern archaeologists are making an
effort to more definitively outline social, economic, and political dynamics, for, until recently, most researchers have ignored temporal and spatial variation and, instead, viewed Hopewell as a uniform and singular entity (Charles 2012:471). Focus of research has, in the late 20th and into the 21st century, begun shifting from objects and mounds to the people who crafted and used the objects and worshipped, celebrated, and gathered at the mounds and earthworks. Scholars are also increasingly addressing the lives of the people away from the ceremonial aspects associated with the mounds and how they lived and thrived within communities in domestic situations. A popular modern model of Hopewellian communities, developed by Bruce Smith, examines both the “corporate-ceremonial” and “domestic” spheres of life (Ruby 2006:190). The “corporate-ceremonial” sphere focuses on the interaction and integration of corporate actions and ceremonies in Hopewell communities, specifically in the contexts of mounds/mortuary facilities, geometric earthworks, and any other non-residential buildings (Ruby 2006:190). Conversely, the “domestic” sphere focuses on subsistence production, procurement, and consumption in the contexts of households, hamlets, and short-term extraction camps located near corporate-ceremonial centers (Ruby 2006:190). I believe the future of Hopewell archaeology will, like Smith’s model, more thoroughly delve into the relationship between the ceremonial and domestic activities of Hopewell communities and individual inhabitants. However, researching and recording material classifiable traits, which are traditionally more commonly recognized and defined than the above-mentioned ideas, is still relevant to people seeking to gain an understanding of Hopewell.

The Hopewell trait most obvious to observers of the landscape is the presence of large mounds across many of the major drainages in the Midwest and Southeast. These mounds and earthworks, which required considerable planning and construction efforts by their creators,
often spanning over multiple generations, are good indicators of a relatively complex society and suggest that supporting populations lived in extended, semi-permanent occupations. The mounds themselves often contain human burials and extravagant, ceremonial items constructed from expensive, traded or procured, materials (Henry 2016:4).

The complexity of the geometric enclosures, as opposed to the mounds, is not evident from their size and contents, but from their shape and position. Ohio Hopewell, more than any other regional manifestation, is characterized by the construction of complex geometric earthworks, sometimes, but not always, associated with mound construction. At least some of these earthworks were constructed with alignments to the cardinal directions or other cosmologically-related principles (Romain 2000:8). These alignments served to focus spiritual energy and create cosmic centers for ritualistic activities (Romain 2000:8). The most well-known example of alignment is found at the Newark Earthworks near Newark, Ohio. When an individual stands on the Observatory Mound at this location, once a generation the moon will rise up to bisect the site (Romain 2000:171).

Another Hopewell trait is the use of “exotic” raw materials. The word “exotic”, when used in the description of Hopewell materials in this thesis, refers to materials having an “extraregional source of origin”, as per Seeman’s explanation of the Hopewell Interaction Sphere (Seeman 1979:29). These materials, often sought from distant and powerful localities, include such diverse materials as obsidian, silver, copper, galena ore, marine shell, quartz crystal, meteoric iron, alligator teeth, sharks’ teeth, grizzly bear canines, Knife River Flint, chlorite, gold, and ivory (Seeman 1979:291-308). To procure these materials, people travelled hundreds of miles over treacherous terrain, bargained and traded with far-off communities, and travelled back home with the newly obtained raw material. Once the supplies were transported back to the
Hopewell communities, they were used to make ceremonial weapons and tokens, pipes, personal ornaments, and costume elements (Seeman 1979:311-377).

Importantly for the purpose of this thesis, another Hopewell trait is the ceremonial “killing” of manufactured items and raw materials by the application of intense heat or other means of total destruction (Seeman and Soday 1980: 96). When “killed” items are excavated in an archaeological context, they are often destroyed so extensively that their original form and function is difficult to classify. These destroyed items are frequently positioned or re-deposited in ritual contexts different than that where they were destroyed. To aid in a better understanding of this practice, chapter 3 will examine several different motives for artifact destruction and their contextual correlates. These in turn will be used in an effort to interpret the destroyed materials recovered from a mound at the Mann Site in Posey County, Indiana.

Hopewell sites at the mouth of the Wabash River, where the Mann Site is located, are significantly unique and have the potential to provide a wealth of information on all aspects of Hopewell life, including community organization, ceremony, domestic settlements, and subsistence. Though there is little archaeological data in the Wabash Lowlands connected to times that pre-date the Middle Woodland era (Ruby 1997:57), stylistically, archaeological finds from the area that are diagnostic to the earliest Middle woodland period reveal a connection to the Illinois Crab Orchard Tradition, evidenced by the presence of Fulton blades, Snyders Cluster projectile points, wide lamellar blades, and Crab Orchard Cordmarked vessels with a grog temper (Ruby 1997:64-65). This regional connection to a distinctive tradition centered in the Southern Till Plains and Shawnee Hills of southern Illinois (Ruby 1997:62) lessens dramatically with the introduction of traits and artifacts diagnostic of later, Middle Woodland sites. Instead of a continuation of association with Illinois communities, practices and crafts of the people living
in the Wabash Lowlands during Middle Woodland times are considerably more comparable to those living and performing rituals in the Scioto and Miami Valleys of Ohio.

Middle Woodland Mann Phase sites, (200-500 A.D.) such as the Mann Site, at the mouth of the Wabash, are linked to Ohio Hopewell sites through similarities in styles of artifacts commonly recovered as well as the practices in which inhabitants participated in. There is a distinct difference in the style of bladelets recovered from Illinois Hopewell sites versus the style seen at Ohio Hopewell sites with those found in Mann Phase contexts matching the Ohio style. According to an analysis of blade production at the Ohio Hopewell Turner Site in Hamilton County, Ohio, Nolan et al. (2007:316) observed that the mean width of blades recovered from Mann Phase sites is similar to Ohio Hopewell blades instead of the geographically closer Illinois Havana Hopewell blades. Another similarity between blades manufactured at the Mann Site and those made at major Ohio Hopewell sites such as Turner and the Liberty Earthworks in the Scioto Valley, is the dominance of one raw material (Nolan et al. 2007:321). Blades recovered from the Mann Site are almost exclusively comprised of Wyandotte chert, similar to how those excavated at the Turner site are predominantly Flint Ridge Flint (Nolan et al. 2007:321).

Mann Phase sites in the Wabash Lowlands of southwestern Indiana and Hopewell sites in the Scioto Valley of Ohio are also linked by the occurrence of cremation burials, especially in the ceremonial context of altars at the base of mounds. This is observed in mounds at the Mann Site and at virtually every Ohio Hopewell ceremonial locale. However, cremation burials are rarely seen at Illinois Hopewell sites or contemporaneous sites with Hopewell affiliations in the Southeast; they are unique to Ohio and southwest Indiana. This undeniable link of Middle Woodland sites in the Wabash Lowlands to contemporary sites in the Scioto Valley, instead of to those at closer proximities, is remarkable, but this linkage is not strong enough to cause the
uniquely distinct Wabash Lowland sites to be grouped together with Scioto Valley Hopewell sites.

A departure of the Wabash Lowlands during the Middle Woodland era from all other comparable regions during that time is the density of domestic occupation. Archaeological evidence does not support any Middle Woodland domestic habitation area in any geographical region as dense as the one that surrounds the Mann Site (Ruby 2006:204). This could be due to warm temperatures, long growing season, and a heavy concentration of resources at the confluence of the Wabash and Ohio Rivers. These major rivers, sloughs, and backwater lakes in the region provide a connectedness not seen in other Midwestern regions (Ruby et al 2006:131). Transportation around the region would have been relatively easy and probably resulted in an increase of communication within the region as well as with communities farther down the Ohio River, to the Midsouth through the Green, Tennessee, and Cumberland Rivers, and to the Great Lakes via the Wabash River (Ruby et al 2005:131). Regardless of the reason, this anomaly confirms that, while there are many broad similarities between the Wabash Lowlands and the Scioto Valley, the variability and uniqueness is substantial.
CHAPTER II

Discussion of the Mann Site

The Mann Site

The Mann Site is a large prehistoric, multi-component site in Posey County, Indiana, at the junction of the Ohio and Wabash Rivers. While artifacts found on the 175 hectares that make up the site (Ruby 1997:315) represent a continuous occupation from Paleo-Indian times all the way up to the Historic period, the majority of the findings belong to a large Middle Woodland settlement (Kellar 1979:100). The site, at the time of modern discovery, contained at least 16 earthworks, including 5 geometric earthworks, a linear embankment and 10 mounds, which makes it the largest Middle Woodland earthwork site outside of Ohio (Lacer n.d., cited by Ruby 1997:313) (Figure 1). However, years of plowing on what is now agricultural farmland have resulted in the mounds and geometric earthworks becoming low and unnoticeable to the untrained eye. Mounds and earthworks are not the only features of this site, as there is a habitation area near the earthworks, which contained semi-permanent or permanent living quarters for the inhabitants of the community (Ruby 1997:398). The Mann site is believed to have been a Hopewell center with multiple functions associated with ceremony, politics, ritual, and status (Ruby 1997:399).
**History of Mann Site Excavations**

Several archaeological excavations have taken place at the Mann Site, beginning in the late 1800s by Joel W. Hiatt, and most recently by Indiana University (Kellar 1979:100). The exact details of Hiatt’s earliest excavations of the site, which occurred sometime between 1876 and 1885, are unknown because of the vagueness of his field notes. What is known, however, is that he dug into 3 burial mounds which contained materials diagnostic to the Middle Woodland time period (Kellar 1979:100), such as copper earspools, drilled bear canines, freshwater pearl beads, and two-holed rectangular slate bar gorgets (Hiatt n.d. cited in Ruby 1997:43).

The community of professional archaeologists did not take significant notice of the Mann Site until 1940 when Glenn A. Black (Figure 2) discussed it in a paper which was read at the first meeting of the Anthropology Section of the Indiana Academy of Science (Black 1941) (Ruby
Black discussed findings of surface collections of the area, as well the uniqueness of ceramic assemblages from the Mann site (Ruby 1997:44), especially focusing on the complicated stamped pottery found at Mann.

Figure 2. Glenn A. Black in Unknown Year

An archaeological survey of Posey County, conducted soon after Black presented his paper, in 1946 by William Adams, did not focus specifically on the mounds at the Mann Site, but it did recognize parallels between the Mann Site and two Middle Woodland cultures affiliated with Ohio Hopewell: Marksville in Louisiana and Swift Creek in much of the Southeastern United States (Kellar 1979:100). The survey also took on the important task of summarizing all of the available data from the Mann site, paying close attention to accuracy and details (Kellar 1979: 100).
The most extensive and substantial excavations of the mounds at the Mann Site were conducted by Charles Lacer, Jr. (Figure 3), beginning in 1950 and continuing for more than three decades (Ruby 1997:46). Lacer excavated both ceremonial and domestic occupations at the site, accumulating an extensive collection of artifacts, the majority of which is now housed at the Indiana State Museum in Indianapolis. This collection reveals a uniqueness of the Mann site, in both intensity and complexity, to the Southwestern region of Indiana as well as to the expansive Hopewellian sphere (Ruby 1997:46). The details of Lacer’s field notes and descriptions of his excavations will prove to be invaluable in the upcoming description of the contents of Mound 3. Lacer assigned numbers to all of the earthworks at the Mann Site during his excavations, and these are the numbers used in this thesis. Lacer’s Mound 3, the subject of discussion in this thesis, is also known as IU Mound 9 (Ruby 1997:326).

![Figure 3. Charles Lacer, Jr. in 1955 at the Mann Site.](image)

Excavations done by James H. Kellar and Indiana University field schools in the 1960s and 70s focused on the habitation areas of the site instead of the mounds, earthworks, and ceremonial contexts (Ruby 1997:46). These investigations provided a wealth of information for later studies, including research on ceramics (Rein 1974; Jones and Jones 1982), lithic

Bret Ruby, professional archaeologist at the Hopewell Culture Center, has contributed a considerable amount of knowledge of the Mann site to academia. His research done for the doctoral program at Indiana University resulted in the most complete and cohesive publication about the Mann site (Ruby 1997). After his completion of the program, Ruby continued to publish research on the Mann site, focusing primarily on ceramics and the community structure of the site (Ruby 2000, 2005, 2006).

Mound 3

Mound 3 is the largest mound at the Mann Site, measuring 150 meters long, 75 meters wide, and nearly 4 meters high. (Ruby 1997:326). It is a platform mound, meaning it is nearly rectangular with a flat top. Platform mounds, most commonly associated with later Mississippian sites, are rarely seen in Middle Woodland contexts, especially at the major Ohio Hopewell sites in the Scioto Valley, where there are only two mounds that fit this description (Ruby 2006:197). However, at the Mann Site, Mound 3 and the adjacent Mound 10 are both platform mounds. Platform mounds are often associated with ceremonial activities other than funerary rituals, specifically feasting. The presence of large quantities of nuts, seeds, and other edible remains in and around platform mounds such as the Ginther Mound in the Scioto Valley and the Pinson Mounds in Central Tennessee suggest that they were used as centers for members of near and distant communities to gather and participate in ceremonial feasting (Seeman 1979b:42 and Ruby 2006:197).

Charles Lacer excavated Mound 3 a total of three times (Ruby 1997:326). During the second excavation, he obtained information involving the inner structure of the mound, including
two sand floors separated by four feet of soil that both contained typical Middle Woodland artifacts and a single post mold (Lacer n.d.:8). During Lacer’s third excavation he discovered more post molds within the higher of the two sand floors (Lacer n.d.:37) and a third sand floor. This floor was located in the northeast quarter of the mound, which was also the most elevated section (Lacer n.d.:9). The reason this floor was not found in the prior excavations is because those only involved lower, side sections of the mound (Lacer n.d.:9). The internal structure of Mound 3 is similar to that of the two known platform mounds in the Scioto Valley in that they all share the common feature of multiple prepared sand floors (Ruby 2006:197). During the third excavation, Lacer also encountered a high concentration of artifacts in a section of the plow zone, which warranted further exploration that led to the discovery of eight redeposit pits (Lacer n.d.:10).

The eight redeposit pits in Mound 3 were excavated from an area on the eastern side of the mound between the middle and lowest sand floor layers (Lacer n.d.:10). Figure 4, an estimate of the floor plan of Mound 3 drawn by Bret Ruby, based on Lacer’s written description, shows the approximate location of these pits. As the information regarding the size and location of excavations and features was not precisely recorded, the details on the sketch are approximations (Ruby 1997:327). A variety of types and genres of artifacts were recovered from the pits, including many that are commonly found in domestic refuse contexts and many that are non-utilitarian and more typical of ceremonial contexts. The remarkable common ground between the majority of artifacts recovered is that they were severely burned and destroyed, or “killed” (Lacer n.d.:12). Very few items were recovered from these pits and other areas of the mound that were entirely intact and unexposed to fire, as most were broken from exposure to extreme heat and possibly other destructive scenarios. The soil in the pits contained significant amounts
of charcoal and burned organic material, but the floors of the pits were unexposed to fire, indicating that the artifacts within the pits were a result of secondary deposits, burned at a disparate location. (Lacer n.d.:37). While a high percentage of the excavated artifacts were recovered from the surface of the mound, this is most likely because of turbation and disturbances caused by years of plowing the agricultural land where the site is located, and many of the surface artifacts were possibly originally placed in the pits. Pits one, two, three, four, and seven have been described as “shallow basins”, measuring 8-10 cm deep (Lacer n.d.: chart). Pits five, six, and eight have been described as “deep”, but without measurements reported (Lacer n.d.: chart). Pits five and six intruded into pit four (Lacer n.d.: chart), therefore the division of the contents of those pits is approximate. This intrusion, as well as the different depths of the pits is likely the result of disturbances caused by the plow. No artifacts were recovered from pit eight (Lacer n.d.: chart). How the pits are spatially related, within the area which they were excavated, was not reported in Lacer’s notes. The following descriptions are of the items found within the pits, and a chart of the pit contents is provided after the descriptions (Table 1 below).
Figure 4. Ruby’s Estimate of Floor Plan and Profile from the Lacer Excavations (Ruby 1997:328)
Plummets

Plummet fragments were found in six of the eight Mound 3 pits with a total of 284 fragments (Lacer n.d.: chart). The large number of plummet fragments is remarkable in that plummets are not nearly as widely distributed in Middle Woodland sites as they are in Archaic sites (Perino 1968:78-81). Most, if not all, of the plummet fragments recovered are originally from plummets consistent in morphological type. These plummets, when intact, would have been grooved at the top end with a round, ball-shaped body tapering to a cylindrical projection at the bottom end (Lacer n.d.:38). Lacer has sketched an example of what these plummets would have looked like intact (Figure 5). At least 24 plummets are represented by the 284 fragments. This estimate is based on the recovery of 24 whole, grooved tops of plummets, but the actual number is likely much higher since 33 pieces of the entire bottom ends of plummets were recovered (Lacer n.d.:39). This type of plummet is also found in village midden and borrow pits in the habitation portion of the Mann site, but always in fragments (Lacer n.d.:39 and 266). There are no known complete plummets of this morphological type recovered from the Mann Site (Lacer n.d.:266), suggesting that the destruction of the plummet was essential to its purpose. This type of plummet, which is morphologically similar to the Snyder type, is the same type found in the mounds at the Crystal River site in Florida and the Seip Mound in Ohio (Lacer n.d.:38). Seeman (1979:345-347) reports seven Florida sites and four in Ohio, notably the Seip site, that yielded similar materials.
Most of the plummet fragments from Mound 3 are manufactured from the raw material limonite (Figure 6 and 7). The limonite pieces available at the Indiana State Museum include 21 top fragments, 2 bottom fragments, and 146 midsection fragments. These limonite fragments were recovered from pits seven, six, three, and the plow zone. More rarely, plummets from this mound were constructed from steatite (Figure 8). The fragments available at the Indiana State Museum include one steatite top, sixteen midsection fragments, and one base, all recovered from pit seven. Given that all the steatite fragments were recovered from the same pit and there are not multiple fragments representing either end of a plummet, this could be the remains of a singular plummet. Similarly, one top piece, one bottom piece, and 7 midsection fragments of plummets made from granitic material were also available for inspection at the Indiana State Museum. As with the steatite fragments, these pieces could represent a singular plummet. Other plummet fragments include materials of non-tempered clay, and sandstone (Figure 9). One complete hematite plummet, which has grooved top, a very round body, and a short cylindrical projection, was found on the surface of the mound. This is the only known complete plummet recovered from Mound 3, and since it was on the surface instead of in a burn pit, there is a possibility that it is not contextually associated with the other plummet fragments.
Figure 6. The Inner View of a Destroyed Limonite Plummet
Figure 7. The Outer View of a Destroyed Limonite Plummet
Figure 8. The Outer View of a Destroyed Steatite Plummet
Plummets made from Hopewell “exotic” materials such as hematite, steatite, marine shell, copper, and crystal quartz are rare at the Mann Site as well as in Mound 3. Since Mann plummets were mostly made of local materials, they were likely manufactured at the site. If true, this practice is disparate from Ohio Hopewell-participating societies, who are thought to have brought back finished plummets from the Gulf Coast area of Florida (Seeman 1979:347).

**Lithics**

Two complete notched Lowe Flared Base projectile points, the most common type of projectile point found at the Mann Site (Lacer n.d.:193), were encountered in pits four and six, while three other specimens of this type were found on the Mound surface and in the plow zone. The Lowe Flared Base point has a trianguloid blade with straight to excurvate edges and an expanding stem with flared, straight edges (Justice 1987:212). It is most associated with the
terminal Middle Woodland period (A.D. 200-500) (Kellar 1973:50). The majority of Lowe Flared Base points have been found within the lower Ohio valley in southern Indiana, southern Illinois, and northern Kentucky (Tomak 1970:114), but their greatest density is from the Wabash and Lower Ohio Valleys (Ruby 1997:276). Two of the points were manufactured from an unidentified type of white chert, while the other three were made from Wyandotte chert. While this type of projectile point is commonly found in village settings at the Mann Site, the size of specimens recovered from Mound 3 makes them unique. The largest of the five points, made from a white chert, is about 10.8 cm in length. Two other unusually large Lowe Flared Base points, one made from white chert and one made from Wyandotte chert, are each about 8.9 cm long. The remaining two specimens are both made of Wyandotte chert and are approximately 6.4 and 7.0 centimeters long. Lowe Flared Base points normally range in size from 4–6 centimeters long (Justice 1987:210). All of the other pits were void of this type of finished projectile point.

There were at least 166 lamellar blades found during the excavations. Michele Greenan of the Indiana State Museum (personal communication 2013) estimates that 80% of the blades were manufactured from Wyandotte chert, but there are also blades from Mound 3 manufactured from other raw materials, such as quartz, Holland chert, and Flint Ridge flint. Thin lamellar blades like the ones found in Mound 3 are diagnostic to a Mann phase cultural affiliation when recovered from sites in the lower Wabash-Ohio Valley area (Ruby 1997:266). Many of the blades have been exposed to heat and exhibit signs of heat fracture. Lacer has observed glaze on the surface of some of the blades (Lacer n.d.:40). In an analysis of the blades at the Middle Woodland Turner mound site in Hamilton County, Ohio by Nolan, many of the blades observed had polish or glaze on a pointed tip and were classified as perforators (Nolan et al. 2007:312). This is one possible explanation for the polish on the blades at the Mann site. Blades are
regularly abundant at Middle Woodland sites throughout the Midwest. The blades found at the Mann Site are interestingly more similar in structure to those of the Ohio Hopewell than those of Havana Tradition of Illinois (Nolan et al. 2007:316), which, according to Oriol Pi-Sunyer are wider and longer (Pi-Sunyer 1965:66–69, 74–78). Ruby hypothesizes that this size difference is due to the Ohio Hopewell use of a punch removal technique while the Havana people used the direct percussion technique (Ruby 1997:216).

Chert flakes, both unmodified and retouched, were recovered from seven out of the eight pits and from the surface of the mound (Figure 10). Chert cores were recovered from four pits. A large quantity of chipped biface fragments (332 pieces) were recovered from eight pits. These flakes, cores, and biface fragments were manufactured from a wide variety of raw material. The frequency of Wyandotte chert observed in the lamellar blades is not observed to the same extent in flakes, cores, and bifaces.

![Figure 10. Chert Flakes Burned and Destroyed by Exposure to Fire](image)

23
A single, unmodified chert nodule was recovered from pit seven. Wyandotte chert, when found in its natural state is known for its round formations of nodules which range in size from that of a golf ball to a soccer ball (DeRegnaucourt and Georgiady 1998:109). While it is likely that the type of nodule discovered in Mound 3 was composed of Wyandotte, the actual type of chert is undocumented.

One basal fragment of a contracting stem projectile point was recovered from the inner portion of pit five. This specimen was the only diagnostic artifact recovered from the mound that is not clearly Middle Woodland in origin. Even though this type of point is associated with a period earlier than Middle Woodland, it has been observed in several instances in village areas of the Mann Site. This point most closely resembles a Dickson Contracting Stemmed, which is typically found at sites that date between 500 B.C. and 300 B.C. (Justice 1987:191). This type of point is distributed throughout most of Illinois and into Missouri, Iowa, Michigan, Indiana, Wisconsin, Kentucky, and northeast Oklahoma (Justice 1987:191). The projectile point in Mound 3 is manufactured from a light grayish chert and shows signs of heat application.

Obsidian, an exotic volcanic glass typically procured from two sources in the Yellowstone National Park area of the Rocky Mountains (Griffin et al. 1969:1), was found in four pits in Mound 3 and on the surface of the mound. The obsidian recovered was in the form of 12 small flakes, which is a relatively large amount compared to the rest of the Mann Site. While obsidian pieces have been discovered in habitation areas, they are rare and the pieces are not clustered together as they are in the mound and pits. No fragments of or whole obsidian projectile points were found anywhere in Mound 3.

One chert drill was found on the surface of the mound. The drill is manufactured from a dark gray chert, most likely Wyandotte, and does not show evidence of burning.
Whole Copena triangular points, preforms, and fragments were recovered from five pits and the surface of the mound. Lowe Flared Base projectile points are often manufactured from this type of preform (Justice 1987:212), but this is true for several other specific types of points as well (Greenan 2013).

Bone

Fragments of bone were by far the biggest contributor to the quantity of artifacts in Mound 3. Engraved bone fragments, both burned and unburned, were found in five out of the eight pits and on the surface of the mound. These bone fragments are thought to be mainly from birds because they have the characteristics of being thin-walled and curved (Ruby 1997:404), though mammal bones were also recovered from many pits. Most of the fragments are too small to draw any conclusions of what, specifically, the engravings represent, but Lacer has examined and drawn the designs on the bones, identifying a human arm wearing a bracelet, the head of an eagle, bird beaks, portions of wings and feathers, bird feet with talons, an insect leg and foot, animal jaws that are open with the teeth bared, and a wide variety of abstract geometric forms (Lacer n.d.:13–42). Most of the engraved bones have been cut and ground to varying degrees of smoothness on at least one end. There are only a few instances where the joint of the bone remains intact and was not altered or cut in any way. The method and technique used to engrave, cut, and grind these bones appears to be similar to the process that was used to make bone tubes at other large Hopewell complexes. The images depicted on the bones are also similar to engraved bone themes at other Hopewell sites. For example, an engraved leg bone of a bear found at the Edwin Harness Site depicts an image of a bird’s face (Mills 1907:62). While the exact purpose of bone tubes is widely debated, the larger bone tubes found in Mound 3 may have been used as sucking tubes. The use of the smaller engraved bone tubes, however, is more
ambiguous. The engraved bones have been burned to varying degrees. Some bones are slightly warped from heat, others have been heated to the point that areas of breakage have curled toward the medullary cavity (the inner hollow portion of the bone) and many bones have been so severely burned that they are nearly incinerated.

The same five pits that contained engraved bone and the mound surface also produced unengraved bird bone fragments, once again both burned and unburned. While both engraved and unengraved bone were plentiful, most of the bone fragments recovered, 81.3%, were unengraved. This percentage of unengraved bone includes plain bone fragments, bone awl fragments, turtle shell fragments, and perforated canine tooth fragments. A possible explanation for this high percentage of unengraved bones is that the plain fragments may have been detached from larger, engraved bones. Since most of the bone fragments recovered from the mound were very small, it is impossible to say with certainty whether or not the unengraved pieces were broken from whole unengraved bones.

Hundreds of unidentified, modified, and burned bone fragments were present in 4 pits as well as the surface of the mound. Many of these fragments were most likely originally bone awls, the most common bone implement found at the Mann site, but cannot be labeled with certainty due to their fragmentary nature. No whole, undamaged awls were found in Mound 3. Though the fragments were all too broken and damaged by fire to extract specificities from, bone awls at the Mann Site, in general, were most commonly made from the leg bone of a turkey or other various bird bones (Lacer n.d.:354). Manufacturing bone awls from the bones of turkeys is not unique to the Mann Site. Several specimens of awls made from the tarso-metatarsus (lower leg bone) of a wild turkey were recovered from burial mounds at the Edwin Harness Site in Ross County, Ohio (Mills 1907:55). Many of the modified bone fragments may also be from
decorative bone pins, which are likely to be more skillfully manufactured and more highly polished than bone awls (Lacer n.d.:364).

Small canine teeth with holes drilled through them were plentiful in Mound 3. Somewhere between 80 and 100 specimens were found in four pits as well as on the surface of the mound. The canine teeth were all burned and fragmentary with a single perforation, drilled from both sides, at the root end of the tooth. The fragments of the canines are so miniscule that the number of individual teeth represented, the average tooth size, and the species from which the teeth were extracted are all unknown. At the nearby Mt. Vernon or GE Mound, also in Posey County, IN, seven similar perforated canines were recovered and described as “small” and “dog-sized” (Tomak 1994:38). Several hundred perforated and burned canines of the same nature were excavated at the Edwin Harness site, and those teeth were confirmed to belong to raccoons and opossums (Mills 1907:61). Since the physical environment at the Mann Site would be similar to that of Edwin Harness, it is possible the teeth were of the same species.

Ceramics

Cordmarked body sherds were the most common type of ceramics found in Mound 3. They were present in six pits and on the surface with a total of 158 sherds (Lacer n.d.: chart). Of the 41 cordmarked sherds available at the Indiana State Museum, 26 have a grog temper, 12 have a limestone temper, one has a grit temper, one has a primary grog and secondary grit temper, and one has a primary grit temper and secondary sand temper. Rocker-stamped pottery sherds were present in five pits and on the surface with a total of 22 sherds (Lacer n.d.: chart). There are two rocker-stamped sherds available at the Indiana State Museum, and they are both grog tempered. Plain body sherds were found in four pits and the surface with a total of 52 sherds (Lacer n.d.: chart). Of the eight plain sherds available at the Indiana State Museum, three are grit tempered,
one is sand tempered, one has a primary grit and secondary limestone temper, and three are grog tempered. Simple stamped body sherds with a grit temper were found in two of the pits (Lacer n.d.: chart). Rim sherds and vessel tetrapodal supports were less common than the body fragments. Rim sherds were recovered from three pits and the surface, and tetrapodal fragments were recovered from one pit (Lacer n.d.: chart). The two tetrapodal fragments available at the Indiana State Museum are both tempered primarily with grog and secondarily with grit. Fired clay without a temper was present in six pits as well as on the surface of the mound (Lacer n.d.: chart). The large amount of fired clay pieces (57) (Lacer n.d.: chart) could be small fragments of ceramic vessels, or they could be evidence that the burned artifacts were originally burned in a clay basin before being moved to the pits. Pieces of fired limestone were found in all eight of the pits, as well as on the surface of the mound (Lacer n.d.: chart).

**Galena**

Nearly 800 pieces of galena were recovered from Mound 3. The clear majority of the galena, 765 pieces, was melted, while only 29 pieces of galena were unaltered (Lacer n.d.:40). Galena is common to midden pits in the village area of the Mann Site, but is not normally melted in that context. The melted galena was found in four pits and the surface of the mound, while the unaltered galena was found in three pits and the surface of the mound (Lacer n.d.: chart). No unaltered galena was recovered from pits that did not also contain melted galena (Lacer n.d.: chart). The majority of the melted pieces, more than 765, were in the form of slag and small round balls, or lead pellets (Figure 11), but 29, naturally shaped, galena cubes were also found (Lacer n.d.:40). The presence of these lead pellets is significant in that it could be evidence of the advanced technique of smelting in a culture where this technology was basically unheard of. While Hopewell people often manufactured artifacts out of metallic materials such as copper and
silver, this was done by laborious cold-hammering, or annealing, not smelting (Squier and Davis 1848:196), which requires a firing temperature of 1,981 degrees Fahrenheit (Cahill and Kirshenbaum 1961:1080).

![Lead Pellets Recovered from Pit 1 in Mann Mound 3](image)

**Figure 11. Lead Pellets Recovered from Pit 1 in Mann Mound 3**

**Other**

Organic, burned material, such as charred wood, nuts, and seeds, was found in large quantities in all of the pits as well as on the surface of the mound (Lacer n.d.: chart). Lacer observed charred seeds of squash, pawpaw, and hackberry, which represent autumn crops, leading him to believe that the pits were most likely deposited around this time (Lacer n.d.:41). However, a macrobotanical analysis later done on charred material from pits three and seven revealed both spring and autumn harvest plants in the single-deposit pits, supporting a theory that seed resources were being stored at the Mann Site (Turner 2011:374). The macrobotanical
material identified from the samples were the same in both pits, but the quantities varied (Turner 2011:367). Specific items identified include hickory nutshell, pecan, black walnut, hazelnut, acorn (Turner 2011:367), goosefoot seeds, maygrass seeds, erect knotweed seeds, grape seeds, persimmon seeds, and squash rind (Turner 2011:368). In a different study, charred material from pit seven was radiocarbon dated to AD 420 +/- 45 (Ruby 1997:326).

Small, unaltered, mica flakes were present in two pits as well as on the surface of the mound. None of the pieces of this exotic material, originally procured from the Appalachian Mountain region of North Carolina (Seeman 1979:296), show any evidence of cutting. Some of the mica flakes are metallic and opaque in appearance and others, more typical to the rest of the Mann Site, are transparent. A single fragment of an unworked micaceous conglomerate was found on the surface of the mound (Lacer n.d.: chart). In other areas of the Mann Site, this type of material is found in the form of beads, gorgets, and discs. Large, unworked pieces of this exotic material recovered from the site indicate that it was most likely quarried at its original source in North Carolina, then transported to the Mann Site where it was used to manufacture objects.

The raw material of cannel coal was found in the form of several unworked flat discs in four pits, but no items manufactured from the material were recovered (Lacer n.d.: chart). Cannel coal, a material included in the exotic material list of the Hopewell Interaction Sphere, outcrops in several locations including central Ohio, West Virginia, and southern Indiana and is rarely used for the manufacture of non-utilitarian weapons (Seeman 1979:296). The material itself is widely found at the Mann Site, but finished objects constructed from this material are almost nonexistent (Lacer n.d.:288).
A possible celt fragment was found on the surface of the mound. The Havana area of Indiana has produced the largest concentration of non-utilitarian celts outside of Ohio (Seeman 1979:352), so it would not be surprising if the unknown fragment is, in fact, a piece of a celt.

Pestle fragments were found in two of the pits (Lacer n.d.: chart).

Unworked sandstone fragments were found in six pits as well as on the surface of the mound (Lacer n.d.: chart).

Sand was present in all the pits as well as on the surface of the mound (Lacer n.d.: chart). The sand was most likely procured from nearby areas around the Ohio River.

Rock fragments were present in all pits as well as on the surface of the mound (Lacer n.d.: chart). These fragments include a wide variety of rock types, but most could be placed in the categories of pebbles and gravel (Greenan 2013: personal communication). River pebbles were present in six pits as well as on the surface of the mound (Lacer n.d.: chart). It is possible that the presence of the river pebbles is related to the presence of sand, most likely also from the Ohio River, throughout the mound.

Crystal quartz, a common material in village contexts at the Mann Site, was found in the form of sixteen fragments in four of the pits as well as on the surface of the mound (Figure 12). Crystal quartz is included as an exotic material in Seeman’s analysis of the Hopewell Interaction Sphere (1979:298), and was most likely procured and transported from the area of Hot Springs, Arkansas (Struever and Houart 1972:67).
Figure 12. Destroyed Quartz Fragments

Copper, procured from the Lake Superior Uplands (Seeman 1979:292), is on Seeman’s list of Hopewell exotic raw materials. It is found in substantial quantities, in both ceremonial and habitation contexts, at Hopewell sites all over the Midwest, including the Mann site. Surprisingly, there is not a single instance of copper observed in Mound 3 at the Mann site, whether it be in the pits, in the plow zone, or on the surface.

The details of the contents of Mann Mound 3 redeposit pits and surface have been organized in the form of a chart, which can be seen below (Table 1). The information in the chart is based on Lacer’s excavation notes, Ruby 1997, as well as the Indiana State Museum Mann Site collection. The chart provides estimates of artifacts counts which are as accurate as possible. An X symbol indicates the item or material was present at that location, but the quantity is not
recorded. As mentioned previously, pits one, two, three, four, and seven were shallow, pits five, six, and eight were deep, and pits five and six intruded in part through pit four.
Table 1. Chart Detailing the Contents of Mann Mound 3.

<table>
<thead>
<tr>
<th></th>
<th>Pit 1</th>
<th>Pit 2</th>
<th>Pit 3</th>
<th>Pit 4</th>
<th>Pit 5</th>
<th>Pit 6</th>
<th>Pit 7</th>
<th>Pit 8</th>
<th>Plow Zone</th>
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34
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<td>Rock Fragments</td>
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While Mann Mound 3 is unlike any other earthen structure of any archaeological region or era, it does bear a resemblance to what archaeologists have observed at the Pinson Site in western Tennessee. The Pinson Site is comparable to the Mann Site in that they are the two most complex and largest Middle Woodland sites outside of Ohio (Ruby 2006:197). Both sites are homes to rare occurrences of geometric earthworks outside of Ohio, and Pinson is the location of the most extensive and best-documented series of Middle Woodland platform mounds (Ruby 2006:197). The similarities between the Mann and Pinson platform mounds are vast and include construction, size, shape, and contents (Ruby 2006:198). Like Mann Mound 3, three of the Pinson platform mounds contained prepared horizontal floors, basin-shaped pits, and burned and broken cultural materials (Ruby 2006:197). None of the platform mounds investigated at either the Mann Site or Pinson Site suggested use related to mortuary ceremonialism (Ruby 2006:198).

Aside from Mound 3, many of the mounds and earthworks at the Mann site remain a mystery for various reasons. Some have not yet been excavated, some have been obliterated by cultivation, and others have been looted or excavated, but were poorly documented (Ruby 1997:321–325). The majority of remaining mounds at the Mann Site that have been excavated contain burials, and none of them have produced “killed” artifacts (Ruby 1997:321–351). One mound of interest that has not been excavated is Mound 10 (Ruby 1997:326). This mound is only slightly smaller than Mound 3 (125 meters long, 80 meters wide, and less than 2 meters high), adjacent to Mound 3, and constructed with the same rectangular, flat-topped appearance (Ruby 1997:326). All the other mounds at the Mann Site are either conical or loaf-shaped (Ruby 1997:321–325). Another earthwork that bears a spatial relationship to Mound 3 is Lacer 18, which is a C-shaped enclosure with a 35-meter diameter located between Mounds 3 and 10 (Ruby 1997:325–326). The opening of the enclosure faces the northern part of Mound 3 (Ruby
Further research and excavations of Earthwork 18 and Mound 10 would likely enhance our understanding of the contents retrieved from Mound 3. While there are no other documented instances of “killing” at the Mann Site, archaeologists have observed and recorded such occurrences at many other Hopewell sites. In the following chapter, I will provide details of documented “killing” in Ohio Valley Middle Woodland contexts.
CHAPTER III
Hopewell “Killings”

Hopewell Practice of “Killing”

The intentional destruction of objects by means of extreme heat and/or percussion has a long tradition in Ohio and surrounding areas. The rituals involved with this destruction, or “killing”, often associated with mortuary rites and human cremation, begin in Paleoindian times ca. 8000 B.C. (Deller and Ellis 2001:268) and are well-represented in sites of the Red Ochre Complex ca. 1000 B.C. (Seeman 1986:568–570). With Ohio Hopewell, however, “killing” relates both to a broader range of material types and to larger quantities of materials. The practice itself in these contexts is also unique, in that Hopewell artifact destruction often mirrors the physical methods and rituals performed on the human body. Hopewell funerary sites and burial mounds in the Ohio and Scioto River Valleys provide evidence of the transformation of human bodies by cremation and other means not seen to the same extent anywhere else during prehistoric times in the United States. Cremated burials and “killed” artifacts are often both deposited in clay basins or altars within Hopewell mounds, sometimes together in the same basin and sometimes on their own. The deceased, in these contexts, can also be compared to “killed” artifacts in the way the body is treated before its final destination at the base of a mound. In Ohio Hopewell cremated burials, the deceased were systematically disarticulated before cremation (Cooney 2014:220). This dismemberment of body parts and, in a way, destruction of the human body, is not unlike the breakage and “killing” of certain raw materials that sometimes occurred
before those materials were subjected to intense heat. The “killing” of artifacts outside of the Ohio Valley in other regional manifestations of Hopewell is largely absent, with the notable exception of sites at the mouth of the Wabash such as Mann and the GE Mound. These sites show an undeniable close connection to middle to late Ohio Hopewell, particularly, in their practice of “killing”.

**Cases and their Context**

Many cases of “killing” in Ohio Hopewell contexts have been excavated and documented, both by amateurs and professionals. Some of the notes on the excavations are detailed and some are vague; some of the methods of excavations were meticulous and some were haphazard. Regardless, information was extracted, and a thorough review at this point is necessary to understand the major patterns of methods, locations, and placement.

**Mound City, Ross County, Ohio**

The first example of a deposit consisting of “killed” materials, in this review, was excavated in Mound 8 at Mound City in Ross County, Ohio. This deposit, placed in a clay basin near the center of the mound floor and measuring 6 ft. 2in x 4 ft., contained 200 pipes carved of stone, as well as several pearl and shell beads, copper discs, copper tubes, and copper ornaments (Squier and Davis 1848:152). The pipes, mostly manufactured from a red porphyritic stone, were “killed”, as evidence shows they were calcined and broken into fragments (Squier and Davis 1848:152). The detail and complexity found in the design of the pipes would have required the skills of a talented craftsman. Most of the pipe bowls were carved in miniature figures of animals, birds, and reptiles (Squier and Davis 1848:152). Creatures depicted include an otter, heron, hawk, panther, bear, wolf, beaver, squirrel, raccoon, crow, swallow, buzzard, paroquet,
toucan, turtle, frog, toad, rattlesnake, and multiple human heads (Squier and Davis 1848:153). The basin also contained calcined limestone items (Squier and Davis 1848:152). The temperature of the fire that destroyed the items in the altar was not hot enough to melt copper (Squier and Davis 1848:152), which means it did not reach 1,981 degrees Fahrenheit (Cahill and Kirshenbaum 1961:1080). Ashes were observed in the basin, surrounding the items, but it is unknown if they were from a cremated human body or something else. Since the deposit was discovered in a clay basin, an instrument commonly used by Hopewell to hold ceremonial fire, and there were ashes present, it is likely the pipes were “killed” at the same location which they were excavated, as opposed to being buried secondarily.

Several instances of “killing” were recorded within and around a charnel house in Mound 13 at Mound City in Ross County, Ohio. A charnel house, often recorded within Hopewell burial mounds, is a roofed, permanent structure with doors, used for the processing and cremation of deceased individuals and the storage of their bodies and grave goods (Brown 1979:212). Around a crematory basin within this charnel house, measuring 1.8 x 1.3m, were mica scraps, artifact fragments, and bits of cremated human remains. There were several burials associated with the crematory basin and charnel house, but the most notable and elaborate, undoubtedly the resting place of a very important person or persons, is known as the “Great Mica Grave”. Around this grave were many complete and broken artifacts, with the surface covered by large, unaltered sheets of mica. On top of the sheets were four cremations, a copper helmet headdress, and a circular mica mirror. These cremations were covered by soil and additional mica sheets (Brown 1979:214–215). Also within the charnel house in Mound 13, broken artifacts were found with four mounded platform burials and a shallow, sub-floor pit grave (Brown 1979:215). Just outside
the charnel house, but still within Mound 13, burned and broken artifacts were found with the cremated remains of a child in a shallow pit (Brown 1979:215).

**Tremper Mound, Scioto County, Ohio**

A site near Mound City, the Tremper Mound in Scioto County, Ohio, is home to a scenario similar to the case mentioned above. The Tremper Mound was constructed over a large wooden structure that was used to prepare the deceased for rituals and interment (Mills 1916:274). One room of this structure, excavated at the base of the mound, contained a cache of skillfully crafted, “killed” smoking pipes (Mills 1916:275). The pipes were not destroyed with fire, as is the case at Mound City, but by using force to break the Ohio Pipestone with which the pipes were crafted (Mills 1916:265, 284). Near the cache, in the same room, is a cremated, single individual in a crematory basin (Mills 1916:275).

**Hopewell Mound Group, Ross County, Ohio**

Several examples of Hopewell “killing” practices were documented at the Hopewell Mound Group in Ross County, Ohio. This large earthwork and mound site arguably produced the most astounding collection of Hopewell artifacts, and is now part of the Hopewell Culture National Historical Park. Within Mound 17, hundreds of bone awl fragments, severely calcined, were excavated near a cremated burial (Moorehead 1922:91). Also, recovered from the floor of that mound were burned and destroyed perforated shark teeth, thousands of mica sheets, and 12–15 pounds of unaltered galena (Moorehead 1922:91).

Mound 5 in the Hopewell Mound Group contained an altar with a few burned fragments of ornaments and beads. However, Squier and Davis (156) speculate that the majority of the original contents may have been removed by modern natives. They came to this conclusion after
observing an intrusive burial in the mound and related disturbances in the mound wall (Squier and Davis 1848:156).

The excavation of Mound 9 at Hopewell Mound Group revealed two features at the floor level. One feature, a 6 x 6 feet layer of charcoal did not contain anything other than charcoal. However, near this feature, was an altar measuring 2 feet in diameter that contained many “killed” items (Squier and Davis: 155). Contents of this altar included broken and destroyed obsidian tools, which were described as “too thin and slender for points of spears”, but seemed suited for “cutting purposes” (Squier and Davis: 155). Other items within the altar were cut mica ornaments, burned cloth remnants, fragments of bone needles, pearl beads, and fragments of copper (Squier and Davis: 155).

At 23 feet tall, the largest mound at the Hopewell Mound Group, and the most significant when considering the ceremonial “killing” of objects, is Mound 25. This mound contained many, mostly complete, elaborate burials where the high-status individuals were interred with ornate, expensive grave goods as well as two altars. The first altar, aptly referred to as altar 1, was found to contain a vast array of burned and destroyed artifacts, diagnostic to a ceremonial Hopewell context. Specific items recovered include mica ornaments, spool-shaped copper ornaments, copper balls, large beads, bear’s teeth, panther’s teeth, engraved bones, stone effigies, stone tablets, slate ornaments, stone and terracotta rings, worked quartz crystal flint knives, cloth, and fragmented worked pieces of cannel coal. The fire within the altar had been a high enough temperature to melt copper, as much of it had run together.

The second altar excavated in Mound 25, altar 2, was nearly identical to the first one, except it was larger (Moorehead 1922:114). The contents were similar, but of greater quantities, and additionally included obsidian, fine pipes (Moorehead 1922:140), and an intact hematite
plummet (Moorehead 1922:136). One of the pipes removed from this altar, carved in the shape of a roseate spoonbill, was, interestingly, determined to have been broken and mended back together before being placed in the altar and burned (Moorehead 1922:141). While the contents of the altar had clearly been exposed to a fire of extreme heat, some of the items remained undamaged, likely because the altar was covered with a layer of soil while the fire was still burning (Moorehead 1922:114).

**Turner Site, Hamilton County, Ohio**

At the Turner Site in Hamilton County, Ohio, the central altar, found near the middle of the base of Mound 3, produced a large number of artifacts, some of them “killed”. The items recovered from this altar had been placed in a rectangular clay basin with rounded corners, measuring 5 feet diagonally, from corner to corner (Willoughby 1922:45). The base of the basin was burned to depth of 4 inches, suggesting that the burning of the contents occurred in the basin, as opposed to at a separate, secondary location (Willoughby 1922:45). Many of the items, including some of the approximately 36,000 pearl beads and 12,000 unperforated pearls, were calcined and mixed with ashes (Willoughby 1922:46). However, most other items were not described as having been damaged by fire. E. F. Low who was a member of the team that excavated the altar, suggested that all the items were placed in the altar while the fire was burning, but shortly before it was extinguished, so the items closest to the hottest embers (the beads) were calcined, while the rest remained undamaged (Willoughby 1922:46). Other items in this altar include 35 nuggets of copper, 28 copper ornaments, 50 copper ear ornaments, 3 copper bracelets, a copper adze blade, 700 copper beads, several metal-covered clay buttons, numerous items constructed from meteoric iron, small sheets of gold, 3 ovals of cut mica, 50 ornaments cut from mica, pieces of several large vessels made from busycon shells, 600 phalanges of small
animals, replicas of bear teeth made from shell, 4500 shell beads, 500 perforated marginella shells, 17,000 embroidery shells, 36 perforated bear canines, 12 alligator teeth, 2000 perforated canines of small animals, 34 cones made from deer antler, 27 chipped blades (11 of which are obsidian), 11 ceremonial spear points made from micaceous schist, 3 terra cotta ear ornaments, 2 incised bone discs, and a tortoise shell “spatula-like” object (Willoughby 1922:47). The altar and all of its contents was covered with four inches of clean sand (Willoughby 1922:46). Perhaps more relevant to this thesis than the contents of the central altar, are the pits and tunnels discovered around the inner perimeter of the mound floor (Figure 13). These 30 pits and tunnels are fairly evenly spaced and organized to face, generally, towards the altar at the center of the mound. They appear to have been earthen kilns, each composed of a pit and a tunnel connecting it to two or three flues, extending upward at the end opposite of the pit (Figure 14) (Willoughby 1922:38–40). Evidence of these pits being exposed to fire is identified by the ashes present within the pits and the tunnels, the hoods of clay covering the tops of the pits (Willoughby 1922:39), and the layers of burnt clay and black ashes covering the pits and tunnels found in the southern half of the mound floor (Willoughby 1922:37). There was no trace of fire in the flues or tunnels, meaning that the fire was confined to the pit while air and heat were conducted through the flue and tunnel (Willoughby 1922:42). The only cultural items recovered from the pits and tunnels were a few flakes of mica from tunnel 5 and 1 fragment of pottery from tunnel 6 (Willoughby 1922:40). The lack of artifacts found within the pits and tunnels, as well as the small scale of severity with which the altar contents were burned, leads me to believe that ceremonial items were not “killed” within these kilns. Alternatively, the kilns may have been used to create an enormous amount of heat, flame, and smoke, which could have been integral to the ambiance of the ceremony performed during the deposit of the central altar contents.
Figure 13. Cross-sections of Pits and Tunnels in Mound 3 at Turner Site: a, Pit 5; b, Pit 16; c, Outer Pit; d, Tunnel; e, Inner Pit; f, Clay Cap; g, Burnt Clay Covering Thin Stratum of Black Ash (Willoughby 1922:36)

Figure 14. Plan of Mound 3 at the Turner Site: 1-6, 11, 12, 16, 28, Pits with Tunnels; 8, Hearth of Burnt Clay; 10, Place of Cremation; 31, Small Pit with Flue; 32, 35, Cache-pits; 33, Central Altar; 34, Small Altar; 36, Post-holes (Willoughby 1922:39)
Altar 1, within the Great Enclosure at the Turner Site, provides another example of “killed” artifacts. This rectangular altar, like most others at the Turner site, was constructed of clay, and it measured 36 x 25 inches (Willoughby 1922:8). Contents excavated from the altar include perforated canine teeth of small animals, beads of bone and copper, copper-covered buttons, fragments of copper ear ornaments, perforated fossil teeth of a shark, a flint knife blade, pieces of mica, fragments of carved bones, and various other items (Willoughby 1922:8). All of the artifacts in the altar were broken or destroyed by intense heat, and the clay of the altar was burned to a depth of 10 inches (Willoughby 1922: 8). This indicates that the items were burned in situ as opposed to secondarily.

A third instance of “killing” at the Turner site was discovered near the center of the base of Mound 4 in altar 1. This altar measured 5 feet diagonally and contained within it a circular basin measuring 15 inches in diameter (Willoughby 1922:63). The small basin’s contents, covered by a layer of pebbles, included a copper bracelet, several copper beads, and fragments of mica (Willoughby 1922:63). The contents of the altar were more extensive and complex. In the center of the floor, which was covered in 13 inches of ashes, was a 3 lb., 10 oz. piece of copper and off to one side was a large piece of worked and charred cannel coal (Willoughby 1922:63). The remaining artifacts recovered from this altar are as follows: a hollow stone effigy wrapped in mica, numerous “killed” terra-cotta fragments of the human form, a serpent cut from mica, nuggets of copper, nugget of meteoric iron, fossils of various kinds, hollow cones made of antler tips, natural stones used as fetishes, a copper bracelet, copper cones and beads, pearl beads, hollow stone effigies, and fragments of worked bone, shell, teeth, claws, and flint (Willoughby 1922:64–65). On top of these items was a layer of worked cannel coal pieces, a layer of sand, and a layer of large stones (Willoughby 1922:64). The presence of so many layers suggests an
important element of organization and purposefulness. Of all the artifacts in this altar, the terracotta figurines are of greatest interest. The effigies, likely representing people who resided in the area, were broken deliberately before placement in the altar, by the heat of the altar fire, or both (Willoughby 1922:71–72). They are not crude effigies similar to some seen in other parts of the United States, but expertly crafted in human likenesses (Willoughby 1922:72).

**Edwin Harness Mound, Liberty Earthworks, Ross County, Ohio**

One example of a possible “killing” was excavated at the Edwin Harness Mound of the Liberty Earthworks in Ross County, Ohio. A broken effigy pipe in the form of a human head was found in a basin-like cavity in Altar 1, located in the northern section of the mound, along with mica, shell, flint, and carved bone (Greber 1996:159). The pipe measures 4.6 x 4 x 5 cm and is carved from a fine-grained, brown sandstone (Greber 1996:159). It is broken across the top of the head and at the neck, and it possesses several features characteristic of Hopewell design: curvilinear decorations, a hair bun, and serpent and fish attributes (Greber 1996:159).

**Russell Brown site, Ross County, Ohio**

During an excavation at the Russell Brown site in Ross County, OH, “killed” items were recovered from Mound 2, feature 3. Approximately 120 triangular bifaces, all destroyed and exposed to intense heat, were recovered from a large basin-shaped pit, measuring 183 cm in diameter and 33 cm deep, within the mound (Seeman and Soday 1980:85, 88). The triangular bifaces were manufactured from three different materials: Flint Ridge flint, Harrison County flint, and an indeterminate gray fossiliferous chert (Seeman and Soday 1980:88). The pit also contained two large “killed” blade cores manufactured from Flint Ridge Flint (Seeman and Soday 1980:89), which outcrops in Licking County, Ohio. These blade cores were destroyed.
before their usage had been maximized, as additional blades could have still been removed (Seeman and Soday 1980:89). After these cores were re-assembled it was apparent, due to a large number of missing fragments, that they were either burned and destroyed at a separate location before being deposited in the pit or items had been removed after destruction (Seeman and Soday 1980:89). On top of the lithics were several layers of grit-tempered potsherds of various decorations (Seeman and Soday 1980:85).

More “killed” material was discovered in Russell Brown Mound 2 within feature 87, a concentration of artifacts inside the periphery of a charnel house (Seeman and Soday 1980:89). The feature contained 11 projectile point fragments composed of Flint Ridge Flint and an unidentified fossiliferous gray chert, representing at least 4 individual corner-notched points that had been exposed to extreme temperatures until they had shattered (Seeman and Soday 1980:89-90).

Another instance of “killing” at Russell Brown Mound 2 was discovered in feature 41, near the northwest wall of the charnel house (Seeman and Soday 1980:90). This feature was composed of a concentration of artifacts, including four burned projectile point fragments of Flint Ridge flint.

The final item “killed” by exposure to intense heat found within Russell Brown Mound 2 was a partial slate pendant recovered from the burn zone, isolated from a specific feature (Seeman and Soday 1980:90). While two fragments of the pendant were extracted from the mound, approximately 1/3 of the whole piece remains unaccounted for (Seeman and Soday 1980:90). The pendant, manufactured using the pecking and grinding technique, was pentagonal in shape and featured a suspension hole drilled equal distances from both sides (Seeman and Soday 1980:90).
Also at the Russell Brown site, feature 73 in mound 1 yielded a “killed” item. While there were no obvious human burials excavated in this mound, this feature is thought to be a mortuary offering (Seeman and Soday 1980:78), and it contained several trimmed mica sheets, a plain stone tablet, and a “killed” bird head effigy (Seeman and Soday 1980:79). The bird head was carved from garnet-mica schist, a material most likely procured from the Appalachian Mountains, and killed by applying extreme heat (Seeman and Soday 1980:79). Not all of the fragments of the effigy were recovered from feature 73 (Seeman and Soday 1980:79), suggesting that, unless some were removed post-“killing”, it is a secondary burial.

A singular “killed” stone tablet was discovered in the burned horizon of Russell Brown mound 1, not associated with a specific feature (Seeman and Soday 1980:80). The tablet was a carved and polished specimen of garnet-mica schist with two shallow circular depressions on one side, and the talons of a bird incised on the other side (Seeman and Soday 1980:80). Only one fragment of this stone tablet was recovered during the excavation (Seeman and Soday 1980:81).

**Smith Site, Warren County, Ohio**

The Smith site, located in Warren County, Ohio, adjacent to another, more known, Hopewell site, Stubbs Earthworks, produced interesting results during its 2001 excavation. Feature 37, a pit on the apex of a steep, naturally occurring terrace which was the only feature at the Smith Site to produce large quantities of artifacts, shows evidence of the Hopewell “killing” practice. The pit measured 1.5m in diameter and 90cm deep with a round, basin-shaped bottom, and contained three cultural strata. The uppermost strata contained a large amount of fire cracked rock and chert artifacts, including bladelets, bladelet fragments, and several fragments of very thin, heat-fractured bifaces. The middle stratum contained pottery, mica, calcined bone, fire cracked rock, charcoal, and burnt soil. The lowest stratum contained only a few pottery sherds,
pieces of chert, fire cracked rock, and charcoal. 43% of the pottery recovered from the pit is considered a ritualistic style, and the other 57% is considered utilitarian. While this feature was determined to be a secondary deposit with no proximity to an area used for ceremonial activity, the contents are considered to be the result of “ritual cleaning of adjacent, special-purpose activity areas” (Sunderhaus 2001).

**Fort Ancient, Warren County, Ohio**

Excavations at Fort Ancient, a Hopewell mound site in Warren County, Ohio, revealed a cache of “killed” objects, located near, but not within, a mound (Griffin 1943:221). The cache, measuring 18in x 24in and 12in deep, contained 54 copper items, including breastplates, celts, ornaments, and bracelets (Griffin 1943:220–221). All of the items had been battered and destroyed by means of cold hammering before they were covered with approximately 100 sheets of mica (Griffin 1943:220–221). Besides the copper artifacts, a few fragments of galenite were the only other items recovered from the cache (Griffin 1943:221).

**GE Mound, Posey County, Indiana**

The GE Mound located in the Wabash lowland of Posey County, Indiana provides another example of items purposely destroyed by fire in a Hopewell context (Seeman 1995:128). Before it was largely destroyed by looters in 1988, the mound was large and loaf-shaped, measuring 350–400 feet long, 125–175 feet wide, and 15–20 feet tall (Seeman 1995:127–128). The majority of artifacts originally came from an area 60 feet in diameter on or near the mound floor (Seeman 1995:128). These artifacts included copper celts, copper earspools, copper panpipes with silver coverings, copper beads, copper pins, copper head plate, copper breastplates, copper hemisphere, copper cones, silver effigy, silver hemisphere, ovate bifaces,
Ross barbed spears, Affinis Snyders spears, Paint Creek notched spears, Ansell-like spear, projectile points, human mandible ornaments, bear canine ornaments, pearl and shell beads, mica mirrors and cutouts, leather odornos and wrappings, textiles, deer metapodial pins, cannel coal discs, bone tooth handle, and incised bone awl (Seeman 1995:129) Many of these artifacts were destroyed by intense heat, evident by color shifts, fire fracturing, and charring (Seeman 1995:128). Any conclusions made about the GE mound and its contents are largely speculations due to the destruction of the mound and, thus, the destroyed context of the artifacts (Ruby 1997:417).

**Discussion of Hopewell “Killings”**

Now that “killing” practices from major Hopewell sites throughout Ohio, and one in Indiana, have been observed and described, they can be compared and contrasted with each other and to Mound 3 at the Mann Site. It is clear from the examples provided in this chapter that while the ceremonial “killing” of items in Hopewell communities was an important part of life and rituals, the conditions in which it has been observed are considerably variable. Despite this variation, it is clear that the practice of “killing” was an important and communal act for the participants.

The items most often observed in the examples given include copper ornaments, mica (both unaltered and cut pieces), lithics, beads, and effigies carved into pipes or out of stone. Of these items, copper was the most abundant and variable. It was recovered from the “killings” in its raw form as well as in the shape of headdresses, beads, celts, panpipes, pins, headplates, discs, tubes, and buttons. Many of the “killings” contained a variety of items, but a clear focus on one specific category. For example, the basin in Mound 8 at Mound City contained many types of non-utilitarian items, but the main subjects of that offering were the 200 destroyed pipes.
Similarly, the clay basin in Turner Mound 3 contained many kinds of artifacts, but most notably the 36,000 beads and 12,000 pearls. Most of the examples of “killings” at Hopewell sites contain non-utilitarian items constructed from expensive, exotic materials with much care and attention paid to details and quality. An exception to that is the pit in Russel Brown Mound 2, which contained triangular bifaces constructed from local materials, blade cores, and grit tempered potsherds. These items are commonly found in habitation sites and less frequently in ceremonial contexts such as mounds. For the purpose of this thesis, it is not only important to note the details of Hopewell “killings”, but also how they compare to what was observed at the Mann Site.

Of all the instances of Hopewell “killing” identified and detailed in this chapter, none of them liken the “killing” observed in Mound 3 at the Mann Site. Most of the locations where “killed” items were observed contained a singular pit or altar, whereas Mann Mound 3 contained eight separate pits of destroyed material. While secondary burials of “killed” material, as seen at the Mann Site, are not uncommon at similar sites, the majority observed were primary burials containing cremated human remains or located adjacent to a complete human burial. As noted previously, the materials one would most often expect to find at a Hopewell “killing” include copper, mica, lithics, beads, and effigies. However, in Mann Mound 3, copper and beads were nonexistent, small mica flakes were sparse, a moderate amount of lithics were recovered, and effigies were observed only on sections of engraved bone. Though the specificities of Hopewell “killings” differ from each other and, even more so, from the Mann “killing”, the clear majority share the commonalities of containing non-utilitarian items destroyed by fire within a pit, buried in a mound.

In sum, to understand a ceremonial activity, such as the “killing” of objects by the application of intense heat, at one location, it is beneficial to research similar occurrences at
similar locations, looking to identify the differences, as well as the similarities. Another step in understanding said practice is to determine the methods that were used by the original inhabitants of the sites. In the following chapter, I will discuss an experiment formulated to do just that.
CHAPTER IV

Discussion of Current Experiment

Experiment

Archaeological studies involving Hopewell exotic materials traditionally focus on the long-distance trade network and the distribution of the materials, but when the properties of the materials have been altered, specifically by heat, the processes leading up to this are often neglected. Few experimental studies exist that focus on the thermal destruction of archaeological materials at Middle Woodland sites. Whether or not materials have been burned is regularly observed and recorded, but how they were burned, the range of temperatures at which they were burned, and before and after comparisons of their physical state have not been systematically studied. One reason that few of these experimental studies exist is that, while burning artifacts and materials was a common practice in Hopewell societies, relatively few sites exhibit thermal destruction to an extent as great as in Mound 3 at the Mann Site. Secondly, the artifacts are often deposited and burned at the same location, and when this is the case, speculation of the purpose of “killing” is potentially substantially reduced.

The problem addressed in the following experiment is that, when faced with “killed” artifacts in a secondary burial deposit, information about their background is inevitably lost. To help determine more precisely the conditions in which the artifacts at Hopewell sites were burned and destroyed, an experiment was formulated. By executing an experiment involving three different types of fires (a campfire, a fire on a clay basin, and a Dakota oven) and six
different types of materials common to Hopewell sites and identical to those found in Mann Mound 3, the archaeological data can be examined in ways that were not previously possible. The reason for building three different kinds of fire is that the fires will hypothetically burn at different temperatures, resulting in different reactions of the materials. The burned artifacts recovered from archaeological sites were broken and burned, but it is unknown if high temperatures from the fire could have caused all the breakage, or if they were burned and broken in two separate activities. It is possible that the relatively low temperatures produced by a campfire are not capable of causing damage to the raw materials to the same extent as the extreme temperatures produced by a Dakota oven. It is also possible that none of the types of fires will cause breakage in some of the materials. No matter what the outcome, valuable information can be gained from the experiment.

Materials

Six types of raw materials were used in this experiment: limonite, steatite, Wyandotte chert, hematite, granite, and galena. All of these types of materials, aside from hematite, were recovered in a burned and destroyed condition from the Hopewell Mann Mound 3. The destroyed plummets in the mound were made from limonite, steatite, and granitic material. Most of the blades, as well as many other lithic artifacts, were manufactured from Wyandotte chert. Galena was present in large quantities in both melted and unaltered forms. One hematite, unburned plummet was found on the surface of the mound. The length, height, and width of the pieces of the various materials were measured using a 0-150mm electric digital caliper. The specimens were also weighed using a Taylor brand digital scale. Measurements were recorded in centimeters and grams. The specimens were photographed so that their appearance was
documented and could be compared to that of the same specimens after the experiment. The shapes of the specimens were irregular, so the measurements of the dimensions are approximate.

The limonite used in this experiment was purchased from [www.ebay.com](http://www.ebay.com). The specimens were procured from California, but this type of material is commonly found in many locations throughout the United States, especially the Southeast. The specimens purchased for the experiment are identical in appearance to the material retrieved from the mound. As mentioned previously, the majority of the fragments of plummets from the mound were manufactured from limonite. Limonite has a natural reddish-orange tint, but the edges of many of the fragments from the mound are much brighter red than the interior.

The pieces of Wyandotte chert used in the experiment were separated from chunks of chert belonging to the Kent State University collection of raw materials, originally procured from Harrison County, Indiana. The frequency of Wyandotte chert in Mound 3 mirrors the frequency of Wyandotte chert at the Mann Site, in that it is the most plentiful raw material excavated from the site. Wyandotte chert was widely popular not only at the Mann site, but throughout much of southern Indiana in the Early and Middle Woodland periods (Seeman 1975:55). Wyandotte chert, not considered a Hopewell exotic material, is usually procured from the area of Harrison County, Indiana (Cantin 2008:71). While the highest concentration of this raw material exists in the areas nearest its outcrop location, specifically southern Indiana, it is widely traded and has been consistently observed in most of the eastern United States (DeRegnaucourt and Georgiady 1998:110). Wyandotte Chert has also been called “Indiana Hornstone” or “Harrison County Chert” (Cantin 2008:71), but it should be noted that this type of chert also outcrops in areas outside of Harrison County (Tankersley 1985:252 as cited in Cantin 2008:71). When exposed to
heat, expanding gases can cause Wyandotte chert nodules to either explode or form a series of potlids (Cantin 2008:71).

The steatite, commonly referred to as soapstone, was purchased from www.ebay.com. The procurement location of the steatite used for the experiment is unknown, but the steatite collected from most Hopewell sites was likely quarried in the Southern Appalachian region (Seeman 1979:297). Steatite, is a talcose rock that outcrops in large pieces (Seeman 1979:297) and has been used by Hopewell people to craft earspools (Seeman 1979:335) and, as observed at the Mann Site, plummets (Lacer n.d.:929).

The pieces of granite were donated to the experiment by Lakeside Sand and Gravel, Inc. in Mantua, Ohio. Granitic material, used to manufacture plummets at the Mann Site, was recovered from Mound 3 in the form of destroyed fragments. Granite is known for being a very coarsely-grained, igneous rock, composed of quartz, feldspars, and mica. It is not considered an “exotic” Hopewell material, as it is one of the most common rocks in existence, found all over the world.

Like the steatite and limonite, the galena was also purchased from www.ebay.com. The galena used in the experiment was originally procured from Chihuahua, Mexico. Galena is the only known compound in the lead-sulfur system and the most important source of lead (Kullerud 1969:233). Galena was used in this experiment because of the frequency it occurs in Mound 3 and because it appears in both melted and unaltered forms. Small lead pellets were also recovered, which could be the result of galena being melted after exposure to high temperatures, something that has not been observed at any other Hopewell sites (Walthall 1981). The temperature required for galena to melt and transform into lead is 2,039 degrees Fahrenheit (Kullerud 1969:233). The source of Hopewell galena has been disputed by archaeologists, but it
was most likely procured from the area around Joplin, Missouri (Seeman 1979:294–295). Galena lumps are widely thought to have been used by the Hopewell people to manufacture white paint (Seeman 1979:375), but melting the galena is not part of the paint making process (Lucas 1930:41).

Methods

The first phase of the experiment was to burn the raw materials in a Dakota oven. A Dakota oven consists of an underground pit which contains a fire and a tunnel to the surface to allow in oxygen while the fire burns (Figure 15). The oven can easily be turned on and off by opening and obstructing the air hole, while maintaining a live fire for multiple days (Kunst 2006:8). Archaeological evidence for Dakota ovens has been observed at the Turner site in southwest Ohio, which is a large, typical Hopewell mound site. As mentioned in Chapter 3, Willoughby describes each Dakota oven-type feature as two pits, which have a layer of burned ash at their bottoms, connected by a tunnel (Willoughby 1922:39). While evidence for these ovens has not been observed in any other Hopewell sites (Kunst 2006:9), the amount of interregional travel in the Hopewell interaction sphere supports the hypothesis that the knowledge and technology was probably widely known. Robert Kunst, a local archaeologist and expert on Dakota ovens, assisted in this experiment. Kunst has constructed two Dakota ovens at the Portage County Historical Society. The elder of the two was used in this experiment to burn raw materials (Figure 16 and 17). The fire in the Dakota oven was started with tinder, then fed large logs to establish the hottest possible temperature. The temperature of the Dakota oven was determined by pointing the laser of a Raytek Raynger 3i digital infrared thermometer inside the top opening of oven. Fifteen thermal measurements of the Dakota Oven were recorded in degrees Fahrenheit, resulting in an average temperature of 1,639 degrees.
Figure 15. An Illustration of the Inner Workings of a Dakota Oven at the Portage County Historical Society (Kunst 2006:8)
Figure 16. Dakota oven at the Portage County Historical Society
The samples of the raw materials were placed inside a tin canister, which was lowered into the main cavity of the Dakota oven via the larger opening on the surface (Figure 18). The materials were left in the fire for thirty minutes. Their reactions during the time inside the oven and immediately after their removal were observed and recorded. This process was repeated twice more, so that three separate specimens of each raw material were tested.
The second phase of the experiment began by constructing a clay basin similar to those found in Hopewell sites around the Midwest. Clay basins, or altars, were used in Hopewell ceremonies throughout Ohio and Indiana to burn objects and human corpses (Squier and Davis 1848:143). They can range in size from 60 centimeters in diameter to 550 centimeters in diameter and are most often found at the center of the floor level of excavated mounds, on top of a layer of sand (Squier and Davis 1848:144) (Figure 19). The layer of sand could be considered a method of purification in that it separates the basin from the ground. For purposes of this
experiment, the homemade clay basin was on the small side of the range. First, a shallow hole the size of the proposed basin was dug. Next, the raw clay was placed in the hole and formed into the shape of a basin. The clay was hardened by burning a fire on top of a platform of crisscrossed small pieces of wood which had been laid across the top of the basin. The fire was built using the tipi method. The embers and ashes from the fire fell onto the clay basin, heating and hardening it as the fire burned. After the clay was hardened, larger pieces of mixed hardwood were used to create the maximum temperature (Figure 20). The Raytek digital thermometer was used to take the temperature of the clay basin 15 times in various locations. The temperatures recorded, in degrees Fahrenheit, were an average of 1,432 degrees.

![Mound City Section](image)

**Figure 19. Section of Mound No. 18 in Mound City, Which has Three Sand Strata and an Altar of the Usual Form and Dimensions (Squier and Davis 1848:144)**
Samples of the raw materials were placed inside a tin canister on top of the clay basin while the fire was still burning within it. The materials were left on the clay basin for thirty minutes before they were removed and their reactions recorded. The experiment was once again repeated so that three specimens of each raw material were heated.

The last phase of the experiment involved burning the materials in an open campfire on top of stone tablets (Figure 21). The campfire was constructed in a traditional manner on the property of the Portage County Historical Society. First a few handfuls of tinder were placed in the center of the stone tablets. Next, small kindling sticks were placed over the tinder as if building a small tipi. The next step was to ignite the tinder. More tinder was slowly added until the fire reached a substantial size. Once the fire was stable, larger logs were added. When the fire was burning bright and large enough to survive on large logs, the temperature of the fire was
recorded. The laser of the thermometer was pointed, as with the previous fires, in several different places that appeared to be the hottest points of the fire. The temperatures of the points, in degrees Fahrenheit, averaged to be 1,276 degrees.

![Campfire on Top of Stone Tablets at the Portage County Historical Society](image)

**Figure 21. Campfire on Top of Stone Tablets at the Portage County Historical Society**

After the campfire was established, the raw materials were burned, and their temperatures and reactions were recorded. The materials were left in the canister on top of the fire for thirty minutes before they were removed. Different samples of the same materials were twice more left in the fire for thirty minutes and then removed. The reactions of the materials were observed and recorded during their heating and after their removal from the fire.
Results

The physical reactions of the raw materials when subjected to heat in three different forms were observed and recorded during and immediately following the experiment. The burned materials were then photographed, weighed, and measured at the Kent State University archaeology lab so that they could be accurately analyzed.

The first material discussed in this analysis is the limonite. Of the three specimens placed within the Dakota oven, two of them reacted in a clamorous, destructive manner. Small pieces of these specimens began breaking off and forcefully popping into the air after approximately three minutes inside the oven. The breakage was so forceful that some pieces popped several feet into the air and some escaped the tin canister, and even the Dakota oven. The loss of material via this violent fracturing was 22%, measured by comparing the weight of the materials before and after heating. The popping continued for approximately five minutes before it stopped completely, leaving the limonite in shattered fragments. The third specimen of limonite that was heated in the Dakota oven experienced breakage to a lesser degree. All three specimens exhibited an alteration of color, going from a brownish-orange to a darker, rustier shade. When the limonite was heated in the clay basin it experienced similar, but less consistent results. One of the three specimens went through violent destruction, and the fragments did not explode off the original material with the same intensity observed in the Dakota oven phase. The popping sounds produced by this destruction started later and lasted longer. Much less material, 7%, was lost in this phase of the experiment. The other two specimens heated within the clay basin did not break. All three specimens, once again, experienced a change of color. The limonite specimens that were heated on the open fire all experienced intense breakage and color change, but they reacted more slowly than those in the previous fires. The popping sounds produced from the breakage occurred only a
few times a minute and continued for the full duration of heating. Limonite heated on the open fire experienced a 13% decrease in weight caused by fragments expelled from the canister.

As discussed earlier, it is not advantageous, from a flint-knapper’s perspective, to heat Wyandotte chert. This statement was affirmed beyond a doubt, especially in the Dakota oven phase of the experiment. The Wyandotte specimens placed in the Dakota oven were destroyed within ten minutes. The chert broke apart, sometimes in large chunks and sometimes into miniscule flakes. The chert was observed to break less around the cortex of specimens. When the Wyandotte chert was heated using the fire on the clay basin, it experienced much milder results. Two specimens, one which was largely cortex, experienced no breakage, but became darker and lost much of their natural luster. The other specimen broke when exposed to the heat of the clay basin, but the fragments were much less numerous than those produced by the Dakota oven. When the Wyandotte chert was heated on the stone open fire, one specimen did not break, one specimen broke into two pieces, and the last specimen broke into many miniscule fragments. As with before, the material darkened and appears more matte after the heat treatment.

The steatite specimens all reacted in the same way when heated in the three different types of fire. None of them changed in appearance or experienced any kind of breakage. The stones became very hot in the fires, and after being removed, they retained their heat for a lengthy amount of time. The specimens were all still warm to the touch for approximately one hour after being removed from the source of heat, while most other materials, excluding the granite, cooled completely after approximately ten minutes.

The granite specimens, like the steatite, retained their heat for an elongated amount of time. Unlike the steatite, the granite specimens underwent other changes as well. Of the three specimens of granite heated in the Dakota oven, one broke into several fragments, one broke into
two fragments, and all three exhibited a slight change in color. The granite, when heated on the clay basin and open fire, did not break or exhibit any noticeable, visible alterations.

The hematite did not consistently have an obvious reaction when exposed to elevated temperatures. Two specimens of hematite, when exposed to the heat inside the Dakota oven, did not react. The other specimen broke into many small fragments in a manner similar to that of the limonite except less spectacularly. When the hematite fractured, it did so with forceful popping, but not forceful enough to expel the fragments from the canister. This is supported by the fact that the weights of the hematite specimens before and after heating are almost identical. When heated over the clay basin, the hematite specimens had similar reactions. One specimen fractured into many pieces, but the breakage occurred for a longer period of time than it did with the specimens heated in the Dakota oven. One specimen broke into two pieces, and one specimen did not exhibit any visible changes after being exposed to heat on the clay basin. When heated over the open stone fire, one specimen experienced a large degree of fragmentation, and the other two specimens did not exhibit any visible changes.

The last material in the experiment, galena, underwent two types of metamorphoses when subjected to heat from the three different fires. Two of the galena specimens, when heated in the Dakota oven, maintained their whole cube forms, but developed a different texture which resembles a bubbling liquid (Figure 22 and 23). These specimens underwent the beginning stages of melting, but did not melt to the extent of the galena/lead pellets recovered from Mound 3 at the Mann site. The third galena specimen, when heated in the Dakota oven, broke into several small pieces, some of which show similar signs of early melting. The specimens of galena that were heated in the clay basin maintained their layered, angular texture, but broke into several small fragments. The specimens of galena, when exposed to the heat of the open fire broke into
even more small, angular fragments than when exposed to the heat from the clay basin. They retained their smooth, layered texture. No signs of melting were present on any galena specimens that were heated in the clay basin or on the open fire.

Figure 22. Natural Galena Before Exposure to Heat

Figure 23. The Same Galena Cube After Heated for 30 Minutes in a Dakota Oven

With the information gathered from this experiment, conclusions were made about how specific raw materials react when exposed to varying degrees of heat. The physical reactions of
these materials and the circumstances required to create those reactions will aid in understanding
the process inhabitants of the Mann Site and other locations used to “kill” items. Possible
explanations for why the items were “killed” will be discussed in the following chapter.
CHAPTER V

Analysis

Analogies and Models

Now that the specificities of Mound 3 at the Mann Site have been described in detail, examples of “killings” at other Hopewell sites have been carefully considered, and knowledge of the burning process has been gained from the experiment, three possible explanations for the “killing” of material objects will be addressed with examples from ethnographic literature.

Prospect 1

One possible motive for artifact destruction at Hopewell sites may have been a material one, for the relief of inflationary pressures. In order to properly examine this possibility, one must first consider Hopewell economic and exchange practices. People living in these communities participated in an elaborate exchange system wherein they traded valuable items with communities near and far. This complex exchange system was a necessary conceptual component of the “Hopewell Interaction Sphere” which Struever and Houart (1972:49) define as a series of transactional systems whereby local Middle Woodland groups obtained exotic raw materials, finished artifacts, and stylistic concepts. In this formulation, the “regional transaction center” is an important concept. It is a location of extraordinary size and internal complexity which functioned both as the loci of transactions in an intraregional network and as nodes that controlled interregional transactions in the larger mid-continental area (Struever and Houart 1972:52). A “local transaction center” is slightly less complex than the previously explained
“regional transaction center” and enabled participation in the distribution of commodities among other Hopewell communities (Struever and Houart 1972:61). Criteria that Struever and Houart give a local transaction center include a floodplain location, presence of burial mounds, a proximity to a habitation site, and a large quantity of diverse Hopewell artifacts (1972:61). Sites that fit the criteria of both regional and local transaction centers were undoubtedly home to inhabitants that possessed knowledge of methods to keep all the parts of the economy and exchange system operational and successful. This interpretation of the reasoning behind “killing” may also carry the notion of “fighting with property” since the destination of material may represent an opportunity for public display and aggrandization (Codere 1951). Societies that participate in this system use the distribution of property and material goods as a measure of social prestige and typically refrain from warfare and physical violence (Codere 1951).

Within this intellectual framework, it is reasonable to conclude that Hopewell-style artifacts were destroyed for material purposes, specifically to control inflation. If this were the case, the destroyed objects under consideration should be exceptionally valuable, such as completed goods manufactured from local or exotic materials by specialists who possessed skills and knowledge not available to outside communities who travel to the locale for trading purposes. These criteria would result in items with high value to nonlocal communities. Throughout the Hopewell exchange network, raw materials from extraregional locations were regularly procured and brought back to local and regional transaction centers before they were manufactured into finished products (Braun 1986: 118). Considering this, unmodified exotic raw materials would likely not have been typically traded regionally between Hopewell communities. As a support point, Braun (1986:118) has noted that there is no significant difference noted between the distribution of completed artifacts manufactured from exotic materials and those
manufactured from local materials. Since the raw material of an object seems to not be the deciding factor in its trade value, the morphological type must play this role. If the quantity of a specific trade good type becomes very high, this commodity would lose some of its value, and many of them would need to be disposed of in some way to stabilize the economy.

An ethnographic account of destroying items for material purposes is found in the intervillage trade practices of the Pomo Indians of central California. The Pomo people would use beads, usually made of shell, in reciprocal gift-giving and often as payment for goods and services or to settle feuds, in place of violence and warfare (Vayda 1967:495–496). As part of their funerary custom, the Pomo would destroy these beads, along with most of the deceased’s material possessions, by subjection to fire to prevent the growth of significant inequalities of fortune (Vayda 1967:496). In doing this, the wealth of one person would not be passed on to others after their death, and beads would not experience devaluation.

Prospect 2

Another possibility as to why artifacts were destroyed, burned, and deposited at Hopewell sites is that they may have undergone a transformation of state as gifts or offerings for the deceased upon their journey to the afterworld. These gifts would have special meanings for the specific people with which they were interred, and, as they provided well-being for the individual during life, they would provide well-being for their soul, eternally. The deceased inhabitants which have been excavated at Hopewell sites are commonly found to be buried with seemingly personal and valuable items. This attention to burial items indicates the probability that these people anticipated needing specific items in an afterlife (Shetrone 1930:86). A possibility of why the items were sometimes destroyed instead of just buried is evident in the fact that artifact destruction often mirrors that of the deceased. In the same way the human body is
destroyed and loses its place in the living world, so does the artifact before its essence can be permitted passage into the afterworld. The idea that certain Hopewell people were given items to use in the realm they travelled to after death is not a new one. There are several examples of individuals being buried with a large amount of a specific raw material and/or a tool kit for a specific trade. Research suggests that this practice occurs when an expert or trade specialist dies so that he will be able to continue his trade for eternity. For example, items expected to be found in a grave associated with a specialist in flint knapping would include antler tines, antler drifts, abraders, finished projectile points, and, less commonly, hammer stones, bifaces, and cores (Seeman 1984:18). These items make up the tools necessary to manufacture projectile points, as well as a collection of the specialist’s well-made finished products. If other items, such as woodworking tools, were found in the same grave, this would not disprove the idea that the deceased was a flint knapping specialist, but perhaps indicate that he engaged with multiple specialties or occupied multiple social roles (Seeman 1984:18).

An ethnographic example of the transformation of state of “killed” material objects as offerings for the deceased is found in the funerary ceremonies of Vikings. While not all deceased Vikings were given graves of any type, royalty and those of high status in Viking-age Scandinavia were usually cremated before their ashes were buried in mounds (Price 2008:259–260). Material objects were often included in the cremation process, and occasionally broken by methods other than burning before being buried in the mound with the deceased. This destruction and burial ritual was likely done to mimic their owner’s death (Price 2008: 259–260). The gifts and offerings would have held personal importance to the individual with which they were buried, making them vital to a successful transition into the afterworld. Some typical items used for offerings would include those necessary for a trade specialist, weapons, and aggrandizing
ornamental decorations. Items that played a large part in defining an individual on earth would serve that same purpose after death.

**Prospect 3**

A third possible explanation for the “killing” of Hopewellian artifacts is that they may have been burned and destroyed as part of a symbolic purification. If items and possessions were thought to be polluted or impure, they would have been seen as dangerous in their complete, unaltered form. By destroying the polluted artifacts, people would also be purifying or cleaning them, thus removing all potential danger. Van Gennep describe this process as a “rite of purification”, which is one of many rites of passage (Van Gennep 1960). For the purpose of these rites, ceremonies are commonly held to enable the passage from one defined position to another (Van Gennep 1960:3). There are several variations in examples of objects being altered in ceremonial ways because of pollution and purification.

If, like many other cultures, Hopewell people believed that spirits of the deceased are able to survive in their belongings (Van Gennep 1960:150), they may have destroyed objects in order to expel the spirit. This implies that “killed” artifacts recovered from Hopewell sites were the possessions of specific people whose spirits or souls survived them in the objects after death. The destroyed objects may have been buried in mounds after purification by fire as a precaution. If the pollution was not thoroughly removed from the objects, or perhaps as another added precaution, they may have been separated from habitation settlements where the pollution would not spread and affect the living people.

In some extant societies, polluted people and objects, those which have been exposed to the dead, are considered a threat to individuals and the community as a whole (Watson 1982:165). The people in these societies have a strong aversion to all items directly or indirectly
associated with a corpse, and the people who handle these items become contaminated (Watson 1982:155). This aversion is not specific to the belongings of the deceased, but any objects that may have been exposed to the corpse. An ethnographic example of this is the Cantonese, who center their funerary rituals around pollution and cleansing of the corpse and all items associated with it and the funeral (Watson 1982:155). They believe that pollution exists because there is a release of a disembodied spirit after a death, which is out of place and, therefore, dangerous. The spirit is disrupting the natural orders of the cosmos (Watson 1982:180). In this society, fire and water both have effective purification powers. Water is used to purify the corpse and the living members of the community that have been associated with it (Watson 1982:168). Fire is used to dispose of and destroy clothing and bedding of the deceased, as well as items that were contaminated during the funeral ritual, such as tables, stools, pots, bowls, and everything else (Watson 1982:168). Since these polluted items are considered extremely dangerous to the society, purification takes precedence over everything else. As part of the funerary ritual, this is a communal event, involving a group effort to restore order to the cosmos. This example of a modern society using fire to cleanse impure objects can aid in the interpretation of the Hopewell phenomena of burning artifacts before placing them in a mound. Since Hopewell people often associated mounds with the deceased, it is possible that “killed” artifacts found in mounds were associated with the deceased. The artifacts may have been in proximity of a corpse, thus determined to be polluted and in need of purification. They may have also been used as ceremonial objects in a funerary ritual, which would require their disposal as that too is associating the objects with the dead.
“Killing” at Mann Mound 3

Based on the analysis of possible reasons for “killing” items detailed above, the destroyed items of Mound 3 most closely fit into the category of items killed as part of a purification ritual. The fact that the artifacts consist of a wide variety of styles and materials and are not directly associated with the burial of an individual supports this hypothesis. However, there is also evidence of the items being destroyed for material purposes, as a protection against inflation. A better understanding of why this is will be discussed while analyzing the individual types of artifacts recovered from the mound and how they fit into these different theories.

The Mann site fits the definition as a regional transaction center, as well as a local transaction center. As mentioned previously, a regional transaction center is extraordinary in both size and complexity and functioned as the loci of transactions in an intraregional network and as nodes that controlled interregional transactions in the larger mid-continental area (Struever and Houart 1972:52). A local transaction center includes a floodplain location, presence of burial mounds, a close proximity to a habitation site, and a large quantity of diverse Hopewell artifacts (Struever and Houart 1972:61). The Mann site includes a nearby habitation site (Ruby 1997:315), a large diverse quantity of artifacts as evident by the collection held at the Indiana State Museum, and a series of burial mounds contiguous to a floodplain as seen in Figure 24. Because the Mann site was both a regional and local transaction center, it is likely the inhabitants established methods to keep all the parts of the economy and exchange system operational and successful, including destroying items for economic or material purposes.
The first artifact class to be examined in inflationary terms is the plummet. The plummets from the Mann Site Mound 3 are unique to the area in that specimens made from limonite with the specific morphological shape are unknown to other areas in comparable quantities. Limonite is not a rare raw material nor is it difficult to work with, so the specialty of craftsmen at the Mann site is probably in the manufacture of the particular shape of plummet. With few exceptions, it seems the destruction of plummets in Mound 3 involved a specific shape and material, which is evidence for the destruction of the plummets for economic reasons. However, evidence against this hypothesis can be found in the rest of the Mann site. The type of plummet found in Mound 3, both morphologically and compositionally, is not seen anywhere at the Mann site in its complete form, whereas plummets of other types have been frequently recovered. If the Hopewell people were destroying a type of object for economic reasons, they would not likely
destroy every single specimen. It seems that destruction is an inherent stage for this type of plummet.

Another artifact type common in Mound 3 that could have been destroyed for material reasons is engraved bone. Engraved bone, specifically that which has been engraved with designs of birds, has been observed at many Hopewell sites, but the quantity of engraved bone in the Mann Site mound 3 is almost unprecedented. Though the bones used for engravings would have been available to people at all locations, the process of engraving the bones likely required a skillset not easily obtainable. The more sites where small quantities of engraved bone are excavated, the more likely they could have been the subject of inflationary pressures. Speculation about the type of engraved bone recovered from the Mann Site is difficult because of the ambiguity of its purpose.

A large quantity of burned and destroyed lamellar blades recovered from Mound 3 supports the hypothesis that items were destroyed for material reasons. Small blades such as these are widely popular at Hopewell sites, so it is a distinct possibility they would be sought after and traded to distant communities. A craftsman of lamellar blades would be a specialist of blade manufacture, possessing very specific skills (Cowan 2006:29; Greber et al. 1981:518; Pi-Sunyer 1965:60; Parry 1994:94). The majority of the blades at the Mann site were manufactured from Wyandotte chert, which outcrops relatively nearby. The closeness of the raw material source and the quantity of lamellar blades at the site both support the idea that this type of blade may have been manufactured at the Mann site as a trade good.

The next items of consideration are the burned and destroyed ceramics recovered from pits in Mound 3. If these ceramics were burned for material purposes, they would most likely represent a specific local style. The most common type of ceramic fragments in the mound are
cordmarked body sherds, followed by plain body sherds. These are both common types of ceramics which were manufactured at many, if not all, Hopewell sites. The majority of the destroyed fragments found in Mound 3 are representative of vessels that would not require an expert craftsman. The skills used to manufacture these ceramics would not have been considered specialized, thus they would not be trade goods destroyed for material reasons. If the artifacts in Mound 3 were destroyed for purposes of inflationary prevention, one would expect to see a large quantity of destroyed Lowe Flared Base points, which appear at the Mann Site in larger quantities than any other site. Because so many were recovered from the Mann Site, as opposed to other Middle Woodland sites, there must have been expert, local specialists crafting them. However, only five completed Lowe Flared Base points were recovered from this mound, a low number when compared to the other mounds at this site. Fragments of trianguloid preforms and chert flakes are plentiful in the mound, but these would not be items traded to nonlocal visiting groups of people. Another discrepancy in what would be expected in this scenario and actuality is the fact that the objects were placed in a ceremonial context after they were destroyed. The Hopewell people could have destroyed objects for material purposes in a ceremonial way, but this would be unusual, as the mounds are commonly associated with the deceased as opposed to functional in an economic sense.

The “killed” artifacts recovered from Mann Mound 3 were possibly destroyed because they were considered polluted due to prior exposure to or association with a corpse. Since the people who lived at Hopewell sites often associated mounds with the deceased, it is possible that the artifacts found in Mann Mound 3 were associated with the deceased, even though no known actual human remains accompany them. The burned artifacts may have required purification due
to exposure to a corpse or they may have been used as ceremonial objects in a funerary ritual, which would also necessitate their destruction and disposal.

Support for this hypothesis is present in the wide variety of artifacts found in Mound 3. Any item could be associated with or at one time have been near a corpse, so there is no limit to what types of artifacts would be expected to be purified by means of thermal destruction. Additionally, since the artifacts are distributed between eight separate redeposit pits, they could be associated with eight separate deceased individuals. While this hypothesis has the least flaws of the three hypotheses, there will always be speculation on this matter. Why an ancient culture chose to take part in certain activities is not a question that can be definitively answered.
CONCLUSIONS

Several issues were examined during this research of Hopewellian artifact “killing”. While there is likely no singular reason why this practice was done and why it was an important component of Hopewell ceremonies, one can narrow down the possible theories by examining the “killed” items, their archaeological context, and comparable ethnographic examples. After close examination of the artifacts recovered from Mound 3 at the Mann Site, they appear to have been destroyed for either material reasons or as part of a purification ritual.

Besides considering why the artifacts were destroyed, it is important to also consider how they were destroyed, which was addressed in the experimental phase of this research project. One of the original questions addressed by the experiment was “How extreme did temperatures need to be to cause the damage observed in the materials of the deposits?”. The three different types of fires, as anticipated, produced varying temperatures. The Dakota oven was the hottest, the clay basin was the second hottest, and the open fire was the coolest (Figure 25). Extreme temperatures, such as those created using the Dakota oven, may have been required to severely damage some of the materials excavated from Mound 3 at the Mann site, but not all of them. Limonite, Wyandotte chert, and hematite were equally and thoroughly damaged in all three types of fires. Steatite and granite were not damaged in any of the three fires to the extent which was observed in the artifacts at the Mann site. This could mean that hotter temperatures are necessary for this kind of destruction, or that the artifacts were damaged by some other means, such as burning for longer periods or hammering with dense objects. Breaking items by means of percussion before burning them seems to mirror the Hopewell method of cremating corpses.
previously discussed. In the same way that they dismantled the human body into pieces before cremation, they may have altered the chosen items before completing the “killing” process with the subjection to intense heat. The two practices are also linked by the fact that they are communal activities, bringing together members of the community as well as members of neighboring and distant communities.

Galena reacted differently in the hottest fire, but would require slightly higher temperatures to fully transform into lead pellets. The highest recorded temperature in the Dakota oven was 2,008 degrees Fahrenheit, approximately 30 degrees lower than what is required to transform galena to a liquid (Kullerud 1969:233). It is noteworthy that the high temperature of the Dakota oven was 17 degrees Fahrenheit hotter than that required to melt copper. The Hopewell inhabitants of the Mann site either possessed the knowledge and technology to build fires that produced temperatures higher than those recorded in the Dakota oven or they traded with other knowledgeable societies for the lead pellets.

![Fire Temperatures](image)

**Figure 25. Temperatures of the Three Fires Created in the Experiment**
If archaeologists wish to further their knowledge of the methods and reasons behind “killing” artifacts at the Mann Site and other Hopewell sites, there are a few things that can be done. One possibility is to do more experimentation on how to obtain hotter temperatures. A larger Dakota oven or one with multiple chambers might be used to possibly achieve more extreme temperatures, for example. While this will not help to determine why the items were “killed”, discovering a method that produces temperatures high enough to transform raw galena into lead pellets could provide information on what technologies were available to the Hopewell people. While the documented Hopewell archaeological sites that produced “killed” deposits are not numerous, with further research more might be found. Additional documented and researched sites with “killed” artifacts will lead to more information that can be used to determine why this practice existed. Another thing that future archaeologists could consider doing is research sites with “killed” artifact outside the bounds of the Ohio Valley. Since the people who lived at Hopewell centers traded and communicated with people located far from their habitation sites, it could be beneficial to consider the “killing” of artifacts at sites toward the geographic boundaries of the Hopewell Interaction Sphere. Lastly, to obtain a better understanding of the “killing” practices at the Mann Site specifically, further archaeological excavations could be done at Mound 10 and Earthwork 18, which appear to be closely related to Mound 3. Excavations of these earthen features could lead to the primary location of the “killings”, evidence of Dakota ovens, or burials associated with the 8 pits found in Mound 3, to name a few possibilities. Regardless of what future conclusions are drawn considering this subject, it is irrefutable that more research, work, and experimentation will lead to a better understanding of the Hopewell ceremonial practice of “killing”.

84
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