Justification for Inscription

HOPEWELL CEREMONIAL EARTHWORKS

Mound City Group, photo from The Ancient Ohio Trail
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3.a. CRITERIA UNDER WHICH INSCRIPTION IS PROPOSED, AND JUSTIFICATION

CRITERION i: Hopewell Ceremonial Earthworks represent a masterpiece of human creative genius;

The Hopewell Ceremonial Earthworks, individually and collectively, exhibit a mastery of earthen architecture. The people of the Hopewell culture constructed their earthen enclosures and mounds using a variety of soils of varying textures and colors to produce enduring and symbolically rich earthen forms on a monumental scale. They incorporated into this architecture a sophisticated knowledge of geometry constructing perfect circles, squares and other geometric forms to precise dimensions that are repeated at sites sometimes far from each other. Many of the earthworks incorporate astronomical alignments in their designs revealing both a necessarily long tradition of observing the apparent movements of celestial bodies and the surveying skills to produce monumental architecture that accurately records those alignments.

The combination of enduring monumental earthen architecture built to precise geometrical and astronomical specifications over a vast geographic area demonstrates that the Hopewell Ceremonial Earthworks are masterpieces of creative genius.
CRITERION iii: Hopewell Ceremonial Earthworks bear a unique or at least exceptional testimony to a cultural tradition or to a civilization which is living or which has disappeared;

The Hopewell Ceremonial Earthworks bear unique or exceptional testimony to an indigenous North American cultural florescence marked by an unparalleled investment in monumental and often precise earthen ceremonial architecture; by the acquisition and ritual use of exotic raw materials drawn from locales spanning two-thirds of the continent; by the selective sharing of a certain specific set of sociotechnic or ideotechnic artifacts by disparate peoples scattered over the entire eastern Woodlands; all in the context of non-hierarchically organized, simple societies practicing subsistence economies based on hunting, gathering, and the cultivation of native wild and domesticated plants prior to the emergence of intensive maize agriculture. This florescence began at around 1 CE and ended circa 400 CE in the wake of sweeping cultural transformations that brought an end to the Hopewell cultural tradition.

CRITERION iv: Hopewell Ceremonial Earthworks represent an outstanding example of a type of building, architectural or technological ensemble or landscape which illustrates (a) significant stage(s) in human history;

The individual sites comprising the Hopewell Ceremonial Earthworks each represent outstanding examples of monumental earthen architecture designed to encompass vast spaces, sacralized by astronomical alignments, in which mortuary ceremonies as well as other public religious and social performances were enacted by members of the Hopewell culture, circa 1 - 400 CE. They document the diversity of this architecture and present the principal exemplars of the various types of earthworks, including geometric earthworks (Newark Earthworks), hilltop enclosures (Fort Ancient), and mortuary precincts (Mound City). Collectively, they illustrate the monumental architectural settings in which the social, political and religious fabrics of small-scale, egalitarian, hunting and gathering societies in the Ohio Valley were being woven into a larger tapestry of more sedentary communities with ascriptive leadership roles supported by agriculture and linked by the exchange of iconographically rich objects crafted from exotic raw materials.
3.b. PROPOSED STATEMENT OF OUTSTANDING UNIVERSAL VALUE

The Hopewell Ceremonial Earthworks represent a unique cultural achievement in which dispersed groups of semi-sedentary, non-hierarchically organized indigenous people used earth, stone, wood, and water to create a series of monumental architectural forms incorporating a complete mastery of the use of earth as a construction medium, a deep understanding of geometry, and precise astronomical alignments. These masterpieces of creative genius, replicated with controlled variations across a vast landscape, were created by dispersed groups united through their participation in a ceremonial program which not only called for earthwork construction, but also for the acquisition of exotic raw materials from distant lands. The people crafted these raw materials into magnificent works of art possessing great social and spiritual power. The people used these objects in a variety of mortuary and non-mortuary related rituals enacted within the earthwork precincts. The earthworks were non-defensive and are largely vacant of domestic residues. Architecture on this scale and of this sophistication is usually associated with densely settled, hierarchically organized, urban societies reliant upon agriculture for their subsistence. Instead, the Hopewell Ceremonial Earthworks were created in the context of societies that were actively engaged in the transition from foraging to food producing economies. This ferment extended to experimentation in forms of social organization and as a result Hopewell societies are not readily classifiable as tribes, chiefdoms, or states. This transitional stage of human history is not well understood and is not represented by any extant or historically-recorded societies.
3.c. **COMPARATIVE ANALYSIS**

**INTRODUCTION**

**PURPOSE OF THE COMPARATIVE ANALYSIS**

The UNESCO World Heritage Resource Manual “Preparing World Heritage Nominations (Second Edition, 2011)” defines the purpose of the comparative analysis as an effort to answer two questions: “first, whether there is scope in the World Heritage List for the inclusion of the nominated property, and second, to demonstrate that there are no comparable properties in the same geo-cultural area (cultural properties) or globally (natural properties) with similar values that might be nominated in the future” (UNESCO 2011:67).

The question of “scope” has to do with whether “there is room on the World Heritage List” (UNESCO 2011:67) for the nominated property: that is, whether there are properties already inscribed that express the same values (significance) and attributes (manifestations). Hence the first task of the comparative analysis is to define the significance or potential outstanding universal value of the nominated property, and to identify the attributes or features of the nominated property that express this significance. Then the nominated property can be compared to other similar properties already inscribed “to ascertain whether this combination of values and attributes is already represented on the World Heritage List” (UNESCO 2011:67). If so, there would be no room for the nominated property.

The second task of the comparative analysis is “to consider whether, in the future, other similar properties could be nominated from within the same geo-cultural region or, where appropriate, from other parts of the world” (UNESCO 2011:68). If other similar properties exist, the comparative analysis must demonstrate why “the nominated property should be seen as the best exemplar or representative, or whether in the future other properties might join it as a serial nomination” (UNESCO 2011:68). For serial nominations, the comparative analysis must document and justify the rationale for the choice of components. Authenticity and integrity are important considerations in the comparative analysis to assess which properties or components best express the potential outstanding universal value.

**FILLING THE GAPS: PREVIOUS STUDIES OF THE WORLD HERITAGE LIST**

Several previous studies of the existing World Heritage List are particularly relevant to this comparative analysis. These studies identify critical gaps in the existing World Heritage List which would be filled by nomination of the Hopewell Ceremonial Earthworks.
Global Strategy for a Representative, Balanced and Credible World Heritage List

In 1994, the World Heritage Committee launched the “Global Strategy for a Representative, Balanced and Credible World Heritage List.” Its aim is to ensure that the List reflects the world’s cultural and natural diversity of outstanding universal value. An expert meeting organized in June 1994 reflected on the existing World Heritage List and the Tentative Lists, and found these lists to be unbalanced from a variety of perspectives: thematic, chronological, geographical and typological. Below is a short list of initial findings extracted from the expert group report (UNESCO 1994):

- Europe was over-represented in relation to the rest of the world;
- historic towns and religious buildings were over-represented in relation to other types of property;
- Christianity was over-represented in relation to other religions and beliefs;
- historical periods were over-represented in relation to prehistory and the 20th century;
- “elitist” architecture was over-represented in relation to vernacular architecture;
- in more general terms, all living cultures - and especially the “traditional” ones -, with their depth, their wealth, their complexity, and their diverse relationships with their environment, figured very little on the List.

Inscription of Hopewell Ceremonial Earthworks would help to address these lacunae in the existing World Heritage List. As examples of pre-Colonial indigenous American sacred architecture, Hopewell Ceremonial Earthworks would fill a recognized gap in World Heritage representation.

In 2000, the World Heritage Committee at its 24th session in Cairns (2000) requested both the International Council on Monuments and Sites (ICOMOS) and the International Union for Conservation of Nature (IUCN) to: “proceed with an analysis of sites inscribed on the World Heritage List and the Tentative List on a regional, chronological, geographical and thematic basis”. ICOMOS published its analysis and action plan as “The World Heritage List: Filling the Gaps - an Action Plan for the Future” (ICOMOS 2004, ICOMOS 2005). This was a study of the existing list to identify gaps from three perspectives: Typological; Chronological-Regional; and Thematic.

Of interest to the present analysis is the finding that from a typological perspective, properties of religious significance on the existing World Heritage List and Tentative Lists are overwhelmingly representative of the Christian faith. Properties of religious significance to the indigenous peoples of North America are very poorly represented (see ICOMOS 2005:47).

From a chronological-regional perspective, North American properties representing “the Archaic cultures and early agriculturalists” are entirely lacking, as are properties representative of indigenous North American “Great Lakes, Laurentian and Appalachian cultures” (ICOMOS 2005: 62-63). In fact, the prehistory of North America is represented by only four inscribed properties, and these relate exclusively to the village farming societies of the Southwest and the Mississippi Valley (Mesa Verde National Park, ref. 27; Cahokia Mounds State Historic Site, ref. 198; Chaco Culture, ref. 353; Taos Pueblo, ref. 492). The addition of the Monumental Earthworks of Poverty Point, if inscribed on the World Heritage List, would represent an important addition, but still would fail to encompass the variability in earthworks across North America and the time period between Poverty Point and Cahokia.

From a thematic perspective, the ICOMOS analysis associated properties inscribed on the World Heritage List with six main global themes: Expressions of Society; Creative Responses and Continuity (monuments, groups of buildings and sites); Spiritual Responses (religions); Utilising Natural Resources; Movement of Peoples; and Developing Technologies. Various sub-themes were identified within each of the main themes. The ICOMOS analysis concluded that there are significant gaps in the representation of particular themes and sub-themes on the existing World Heritage List. A review of the Thematic Framework (ICOMOS 2005...
HOPEWELL CEREMONIAL EARTHWORKS

73-80) reveals several gaps that could be filled by a nomination of Hopewell Ceremonial Earthworks:

- I.A.2. Social Systems
- II.2. Religious and Commemorative Architecture
- II.15. Rural Settlements
- II.17. Sacred Sites
- II.18. Cultural Landscapes
- III.6. Indigenous belief systems in the Americas
- IV.A.2. Crop and flock farming
- IV.A.3. Hunting, gathering, and fishing
- V.2. Pilgrimage places and places of origin

The Hopewell Ceremonial Earthworks are preeminent examples of the visualization and concretization of landscape on a vast scale associated with transitioning agricultural societies, and of sacred or ceremonial monumental architecture reflecting complex indigenous belief systems.

**Human Evolution: Adaptations, Dispersals and Social Developments (HEADS)**

Most recently, the WHC concluded that “Properties with strong links to Prehistory are the least represented on the World Heritage List and located in all the regions of the world. The values of these properties are not sufficiently recognized, and it is often challenging for States Parties to conserve this heritage and manage its specific vulnerability” (UNESCO 2009:27). In response, the WHC adopted the World Heritage Thematic Programme on Prehistory at its 33rd session, June 2009, Seville, Spain (see UNESCO 2009). Initially, three main thematic areas were defined: Human Evolution, Rock Art and Prehistoric Sites (UNESCO 2009:28, 29). Subsequent expert meetings led to a revised programme title, “Human Evolution: Adaptations, Dispersals and Social Developments (HEADS)” and a revision of the thematic areas (UNESCO 2010a:13). The programme now recognizes properties related to three main themes:

- Human evolution and sites related to early human origins
- Rock Art
- Early archaeological sites and the beginning of cultural diversity

The nomination of the Hopewell Ceremonial Earthworks is most closely related to this last thematic category: “The related properties account for many innovations in culture, behavior, adaptation, and technology which shaped the future course of humanity as we know it today. This long process has increasingly transformed the human experience from life in a natural environment to life in a largely built environment, from
a hunter-gatherer lifestyle, through the more settled ways of life of farmers, herders, and fishermen, to the present day - when for the first time a majority of human populations now live in the artificial built environment of cities” (http://whc.unesco.org/en/activities/608/).

The Hopewell Ceremonial Earthworks are not cities, but they represent artificially built ceremonial environments in which dispersed and semi-sedentary communities gathered for social and religious purposes that served, at least in part, as a means of social integration that may have paved the way for life in large, urban centers. The reliance of these small communities on a hunting, fishing and gathering economy, while participating in the intensive use and eventual domestication of a suite of native plants situates this creative florescence of art, ceremony and monumental architecture at the transformative moment when hunter-gatherers were in the process of shifting to the more settled life of farmers. Specifically, their earthen architecture, distinguished by its scale, precision, complexity, and vast landscape and celestial alignments, speaks eloquently of a shift in human understanding associated with new ways of relating to the earth (subsistence production), and to the sky (calendrical astronomy).

The HEADS programme recognizes several specific property types relevant to the nomination of Hopewell Ceremonial Earthworks (UNESCO n.d.):

- deposits containing human remains, including intentional ones, such as burial sites,
- funeral mounds and megalithic tombs;
- artificial alterations to the landscape, or drainage works, ditches and enclosed areas;
- places of sacred or spiritual value, or forming part of associative cultural landscapes;
- sites of importance to the history of science, such as Zhoukoudian, Cro-Magnon, Balzi Rossi and Altamira;

The Hopewell Ceremonial Earthworks were primarily places of ceremony; they represent massive alterations to the landscape for the purposes of creating and sustaining sacred architecture of lasting and evolving spiritual value, and their investigation engaged the focused attention of the earliest scientific societies established in the United States of America, including the American Antiquarian Society, which published the first major study of the earthworks of eastern North America in 1820, and the Smithsonian Institution, which published “Ancient Monuments of the Mississippi Valley” as the first volume in its Contributions to Knowledge series.
**World Heritage Earthen Architecture Programme (WHEAP)**

The ten-year World Heritage Earthen Architecture Programme (WHEAP) (2007-2017) was adopted at the 31st session of the World Heritage Committee (Decision 31 COM 21C, see UNESCO 2007). The program recognizes earthen architecture as “one of the most original and powerful expressions of our ability to create a built environment with readily available resources. It includes a great variety of structures, ranging from mosques, palaces and granaries, to historic city centres, cultural landscapes and archaeological sites. Its cultural importance throughout the world is evident and has led to its consideration as a common heritage of humankind, therefore deserving protection and conservation by the international community” (http://whc.unesco.org/en/earthen-architecture/)

The Hopewell Ceremonial Earthworks, unlike most other examples inscribed or considered under this initiative, which remain traditional “buildings” made with earthen materials, manifest a completely different type of understanding of “the earth” as “architecture:” as revealed in their form (an undulated, swelling surface of the earth itself), their scale (a vastness of spatial enclosure almost beyond human perception), and their precision (dimensions and exactitude achieved over multiple kilometers).
**Astronomy and World Heritage Initiative**

“The objective of the Astronomy and World Heritage thematic initiative, developed since 2004 (http://whc.unesco.org/en/astronomy) as requested by the World Heritage Committee at its 28th and 29th sessions (Decisions 28 COM 9 and 29 COM 5b), is to establish a link between science and culture on the basis of research aimed at acknowledging the cultural and scientific values of properties connected with astronomy. The identification, safeguarding and promotion of these properties are the three lines of actions for the implementation of this programme.” (UNESCO 2010a). UNESCO recently launched a new integrated web portal, Portal to the Heritage of Astronomy, for the Astronomy and World Heritage Initiative. The Portal was launched August 24, 2012 during the sessions of the IAU’s Astronomy and World Heritage Working Group at the 28th IAU General Assembly in Beijing, China.

The Hopewell Ceremonial Earthworks connect the monumental public works of a prehistoric society with an immensely sophisticated knowledge of astronomical, especially lunar, phenomena, measured and marked across vast landscape vistas.

**Cultural Landscapes**

Cultural landscapes have been recognized as cultural properties representing the “combined works of nature and of man” as designated in Article 1 of the Convention since they were approved for inclusion in the Operational Guidelines by the World Heritage Committee at its 16th session (Santa Fe 1992) (see document WHC-92/CONF.002/12).

According to Annex 3 of the “Operational Guidelines for the Implementation of the World Heritage Convention” (World Heritage Centre 2008), cultural landscapes fall into three main categories: “landscape designed and created intentionally by man”; “the organically evolved landscape”; and “the associative cultural landscape.”

The first category “embraces garden and parkland landscapes constructed for aesthetic reasons which are often (but not always) associated with religious or other monumental buildings and ensembles.”

Organically evolved landscapes include two subcategories: “a relict (or fossil) landscape ... in which an evolutionary process came to an end at some time in the past” or “a continuing landscape ... which retains an active social role in contemporary society closely associated with the traditional way of life.”

Finally, the associative cultural landscape emphasizes the “powerful religious, artistic or cultural associations of the natural element.” Hopewell Ceremonial Earthworks manifest attributes of all three categories.
# Table 1: Key Comparative Attributes

<table>
<thead>
<tr>
<th>Attribute Present</th>
<th>Absent</th>
<th>Insufficient Data</th>
</tr>
</thead>
<tbody>
<tr>
<td>Simple Societies: little evidence of hierarchy or ascriptive leadership</td>
<td>x</td>
<td>?</td>
</tr>
<tr>
<td>Simple Economies: little evidence of intensive food production</td>
<td>x</td>
<td>?</td>
</tr>
<tr>
<td>Monumental Scale (complexes &gt; 5 hectares)</td>
<td>x</td>
<td>?</td>
</tr>
<tr>
<td>Monumental Architecture as Vacant Ceremonial Centers</td>
<td>x</td>
<td>?</td>
</tr>
<tr>
<td>Regional Landscape Expression (monumental landscapes repeatedly expressed at disparate locations)</td>
<td>x</td>
<td>?</td>
</tr>
<tr>
<td>Earthen Architecture (excluding masonry, adobe and &quot;subtractive&quot;)</td>
<td>x</td>
<td>?</td>
</tr>
<tr>
<td>Complex Geometry</td>
<td>x</td>
<td>?</td>
</tr>
<tr>
<td>Astronomical Alignments</td>
<td>x</td>
<td>?</td>
</tr>
</tbody>
</table>

- **Attribute Present**: Indicates the presence of the attribute.
- **Absent**: Indicates the absence of the attribute.
- **Insufficient Data**: Indicates insufficient data to determine the presence or absence of the attribute.
### Table 2: Comparative Analysis - Hopewell Sites

<table>
<thead>
<tr>
<th>Site Name</th>
<th>Exemplary of Hopewell Achievement</th>
<th>State of Conservation</th>
<th>Summary Rating</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Nomination Components</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mound City Group</td>
<td>Good - 53 ha</td>
<td>Good</td>
<td>Excellent</td>
</tr>
<tr>
<td>Hopewell Mound Group</td>
<td>Excellent - 46 ha</td>
<td>Good</td>
<td>Excellent</td>
</tr>
<tr>
<td>Seip Earthworks</td>
<td>Excellent, roughly 32 ha enclosed</td>
<td>Good</td>
<td>Excellent</td>
</tr>
<tr>
<td>Hopeton Earthworks</td>
<td>Excellent - 16 ha</td>
<td>Good</td>
<td>Excellent</td>
</tr>
<tr>
<td>High Bank Works</td>
<td>Excellent &gt; 15 ha</td>
<td>Good</td>
<td>Excellent</td>
</tr>
<tr>
<td>Newark Earthworks State Memorial-Octagon Earthworks Great Circle Earthworks Wright Earthworks</td>
<td>Excellent</td>
<td>Good</td>
<td>Excellent</td>
</tr>
<tr>
<td>Fort Ancient State Memorial</td>
<td>Excellent - 40 ha</td>
<td>Good</td>
<td>Excellent</td>
</tr>
<tr>
<td><strong>Other Ohio Hopewell Earthworks</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fort Hill State Memorial</td>
<td>Excellent - 16 ha</td>
<td>Good</td>
<td>Excellent</td>
</tr>
<tr>
<td>Sparta Hill Works</td>
<td>Excellent - 57 ha</td>
<td>Good</td>
<td>Excellent</td>
</tr>
<tr>
<td>Pickets Earthworks - Quadrants Mound Cora Mound Sacred Way</td>
<td>Excellent</td>
<td>Good</td>
<td>Good</td>
</tr>
<tr>
<td>Barks Works</td>
<td>Poor - 4.9 ha</td>
<td>Good</td>
<td>Good</td>
</tr>
<tr>
<td>Heroes (Burial) Works</td>
<td>Excellent, roughly 32 ha enclosed</td>
<td>Good</td>
<td>Excellent</td>
</tr>
<tr>
<td>Bryam Earthworks - Hopewell Mound</td>
<td>Excellent</td>
<td>Good</td>
<td>Excellent</td>
</tr>
<tr>
<td>Buck Earthworks</td>
<td>Excellent, roughly 32 ha enclosed</td>
<td>Good</td>
<td>Excellent</td>
</tr>
<tr>
<td>Cabby Bark Works</td>
<td>Good - 13 ha</td>
<td>Good</td>
<td>Poor</td>
</tr>
<tr>
<td>Golden Fans</td>
<td>Good - 11 ha</td>
<td>Poor</td>
<td>Poor</td>
</tr>
<tr>
<td><strong>Hopewell Sites Outside Ohio</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Marksville State Historic Site</td>
<td>Excellent - 16 ha</td>
<td>Good</td>
<td>Excellent</td>
</tr>
<tr>
<td>Pinion Mounds State Archeological Park, Marks, Mississippi</td>
<td>Good &gt; 7 ha</td>
<td>Good</td>
<td>Excellent</td>
</tr>
<tr>
<td>Old Stone Fort State Archeological Park, Caro, Mississippi</td>
<td>Excellent - 20 ha</td>
<td>Good</td>
<td>Good</td>
</tr>
<tr>
<td>Anderson Mounds, Mounds State Park, Madison County, Indiana</td>
<td>Poor &lt; 1 ha</td>
<td>Good</td>
<td>Excellent</td>
</tr>
<tr>
<td>Moni Site and Ql Mound, Pope County, Indiana</td>
<td>Excellent, small enclosures only roughly 38 ha</td>
<td>Poor</td>
<td>Good</td>
</tr>
<tr>
<td>Kobeski Mounds Historic Park, Early County, Georgia</td>
<td>Excellent, small enclosures only roughly 38 ha</td>
<td>Poor</td>
<td>Good</td>
</tr>
<tr>
<td>Fort Center Ruins</td>
<td>Good - largest enclosure = 13 ha</td>
<td>Poor</td>
<td>Poor</td>
</tr>
<tr>
<td>Perry Hugh Site (Pike and Perry Mounds, Chickasaw, Lamar and Perry counties, Mississippi)</td>
<td>Poor - no enclosures, mounds</td>
<td>Poor</td>
<td>Good</td>
</tr>
<tr>
<td>Takabina Mounds and Mason's Sites</td>
<td>Poor - no enclosures</td>
<td>Poor</td>
<td>Good</td>
</tr>
<tr>
<td>Hoosac Hopewell Sites (Nippeno Road, Sharp &amp; Elizabeth Mounds, Bedford Mound Group, Kemp Mound, Runk-Gibson Mound Group, Peaker Site, Golden Eagle Mound House, and others)</td>
<td>Poor - no enclosures</td>
<td>Poor</td>
<td>Good</td>
</tr>
</tbody>
</table>

**Notes:**
- **Exemplary of Hopewell Achievement:**
  - Monumental Scale
  - Complete Documentation
  - Artistry
  - Archaeology
- **State of Conservation:**
  - National Historic Landmark
  - National Park System
  - State Historic Landmark
  - State Park System
  - National Register Listed
  - National Register Eligible
- **Summary Rating:**
  - National Park System
  - National Register Listed
  - National Register Eligible
HOPEWELL CEREMONIAL EARTHWORKS IN GLOBAL PERSPECTIVE

This brief overview of previous analyses of the World Heritage List helps to define the significant thematic and geo-cultural contexts within which the Hopewell Ceremonial Earthworks should be compared to other similar properties to determine whether their inscription would contribute to a representative, balanced, and credible World Heritage List. This review, taken together with the proposed statement of outstanding universal value and the proposed criteria for inscription, suggests a set of key comparative attributes that can be used to assess the relative significance of Hopewell Ceremonial Earthworks against other similar properties. These are the key comparative attributes selected for analysis:

- Simple Societies: little evidence of hierarchy or ascriptive leadership
- Simple Economies: little evidence of intensive food production
- Monumental Scale (complexes > 5 ha)
- Monumental Architecture as Vacant Ceremonial Centers
- Regional Landscape Expression (monumental landscapes repeatedly expressed at disparate locations)
- Earthen Architecture (excluding masonry, adobe and “subtractive”)
- Complex Geometry
- Complex Astronomical Alignments

With these key attributes in mind, the existing World Heritage List, Tentative Lists, and other sources were examined to identify other cultural properties around the globe that express these same values. Rather than an exhaustive list, care was taken to select those properties with the broadest similarity to Hopewell Ceremonial Earthworks. Further care was taken to ensure a wide geographic and chronological distribution of comparables. Table 1, Key Comparative Attributes and Sites, outlines a framework for the following analysis of Hopewell Ceremonial Earthworks in global perspective. Brief reference to Table 1 demonstrates that the nominated properties uniquely possess the full suite of eight attributes that express the outstanding universal value of Hopewell Ceremonial Earthworks.

COMPARABLE PROPERTIES AROUND THE GLOBE

POVERTY POINT STATE HISTORIC SITE/POVERTY POINT NATIONAL MONUMENT (UNITED STATES OF AMERICA, TENTATIVE LIST, REF. 5246)

Poverty Point is an elaborate earthwork complex built in Louisiana between 1700 and 100 BCE. The principal feature of the Poverty Point site is the “semioctagonal” earthwork composed of five sets of six roughly parallel wall segments separated by four avenues. The outermost ring of earthwork ridges is about 1200 meters in diameter; the innermost ring surrounds a plaza about 600 meters across. The plaza borders Bayou Maçon. A huge earthen mound (Mound A) dominates the western border of the site. With a volume of 238,500 cubic meters, this is the second largest earthwork in North America, exceeded only by Monks Mound at Cahokia (Kidder 2012: 462).

Sassaman (2005), Clark (2004) and Kidder (2012) provide evidence for complex geometric relationships within the Poverty Point complex; and between Poverty Point and other mound complexes in the region. Distances between major mounds and earthwork elements at Poverty Point are related to a standard unit of measure (multiples of 86.63 m). This same standard of measure defines relationships between mounds at several other lower Mississippi valley mound complexes constructed some 2000 years before Poverty Point, during the Middle Archaic period (ca. 3750–6950 BCE). A true north-south meridian extended through Mound A at Poverty Point intersects two other mounds located about 600 m north and 180 m south, respectively. This same meridian intersects a fourth mound 2.4 km south: this mound, the Lower Jackson Mound, predates Poverty Point by more than 2000 years. Hence, it appears Poverty Point’s builders incorporated this already-ancient monument into their own design, perhaps legitimizing their own social and material order by reference to this earlier monument.
**SIMPLE SOCIETIES**

One of the most remarkable aspects of the Hopewell Ceremonial Earthworks is the broad consensus of archaeological opinion that holds that these monumental works of earthen architecture were constructed within the context of simple societies with little evidence of hierarchy or ascriptive leadership.

Archaeological evidence that would indicate significant status differentiation in Hopewell societies, such as bigger houses for chiefs or clear patterns of burial for children indicating the ascribed status recognition due to the sons or daughters of leaders, is entirely lacking. In addition, bioarchaeological markers of physiological and dietary stress, disease, and trauma are no different between Hopewell men and women buried with large quantities of fine artifacts and those with few or no artifacts (Koot 2012). Therefore, the benefits of high status didn’t include access to more and better food, better housing, or relief from the ordinary labors of daily life.

This is in contrast to the Late Prehistoric period builders of Serpent Mound. At the later Fort Ancient culture sites, such as SunWatch Village, the chief’s house is larger, associated with more and larger storage pits and burials with richer offerings. Moreover, Diana Greenlee determined that a few individuals in Late Prehistoric cemeteries had a significantly better diet than the majority of people at the site. This pattern is even more evident at the Mississippian era Cahokia Mounds. Analyses of the skeletons buried in Mound 72 indicate high and low status individuals had a significantly different quality of diet and health (Ambrose et al. 2003).

The architectural wonders and cultural landscapes of the Heart of Neolithic Orkney and Stonehenge are linked to the emergence of chiefdoms with “defined territories, strong leadership, long-distance alliance structures, and the creation of distinct local identities” (Darvill 2006:92). The rise of competitive polities is evident here, as elsewhere, by the “presence of arrowheads and cleft skulls amongst the burials of people living in the Stonehenge landscape” (Darvill 2006:92).

In striking contrast, there is little if any evidence of warfare, or conflict of any kind, in the archaeological record of the Hopewell. According to Christopher Carr, “of the approximately 250 excavated skeletons of Hopewell people in the Scioto drainage, none are known to have embedded projectile points or their markings, parry fractures, cracked ribs, bashed in skulls, or other signs of interpersonal violence” (Carr 2008a650).

(see Lekson 1999 for further examples of positional legitimization).

According to Brecher and Haag (1983), the southwest and northwest avenues are in alignment with the summer and winter solstice sunset azimuths. Due to the uncertainty of determining a centerpoint for the earthwork there is disagreement about the validity of these alignments (Pennington 1983).

“Most contemporary analysts now conclude Poverty Point’s social structure was corporate and egalitarian, adopting a model of hunter-gatherer behavior wherein resource sharing and status-suppressing behaviors inhibited formation of social or economic inequalities” (Kidder 2012: 464).

**EFFIGY MOUNDS NATIONAL MONUMENT (UNITED STATES OF AMERICA)**

Effigy Mounds National Monument includes more than 200 earthen mounds built in the shapes of a variety of animals, including birds, bears and panthers, or water spirits, as well as linear embankments and conical burial mounds. The effigy mounds also could include burials. The largest concentration of mounds in the monument (the Sny Magill Unit) contains 112 mounds. The mounds are usually arranged in linear groups up to about 500 m long and occupying areas up to about 3 ha. The largest single effigy is the Great Bear Mound, 42 m long and over a meter in height.

The Effigy Mound culture occupied the Upper Mississippi River valley during the Late Woodland period (circa 500 CE to 1200 CE). The Late Woodland cultures generally were maize farmers living in relatively large, sometimes fortified villages. The effigy mounds were places of ceremony, including mortuary ceremonies. It has occasionally been argued that some effigy mounds in the region have significant astronomical alignments, Robert Birmingham (2010:39-41), however, concluded that these likely are coincidental alignments. Certainly, “effigy mound arrangements are elegantly patterned... and thus form ceremonial landscapes...” (Birmingham 2010:41).
SIMPLE ECONOMIES

The Hopewell Ceremonial Earthworks were created by small scale societies engaged principally in hunting and gathering the natural abundance of the region’s wild plant and animal communities with a “significant integration of swidden gardening” focused on the cultivated and domesticated plants of the Eastern Agricultural Complex, including goosefoot (Chenopodium berlandieri), maygrass (Phalaris caroliniana), knotweed (Polygonum erectum), marshelder (Iva annua), sunflower (Helianthus annuus) and squash (Cucurbita pepo) (Carr 2008b:91). The builders of these earthworks occupied a complex economic space between foraging and farming. Further studies of Hopewell peoples and other populations worldwide who occupied this interesting “middle ground” promise to shed light on one of the most important transitions in global human history: the origins of agriculture (cf. Smith 1998, 2006).

The extent of Hopewell cultivation could be prodigious as it certainly was at the Fort Ancient Earthworks (McLauchlan 2003), but this may have been due to the need to provide local surpluses of food at critical times, such as when large numbers of people gathered at the ceremonial centers for periodic festivals or religious observances. The plants of the Eastern Agricultural Complex were native to the region and could thrive without the active involvement of sedentary farmers.

Certainly, the Hopewell commitment to agriculture was far less than that of most other societies, both in eastern North America and worldwide, that created monumental architecture on the scale of the Hopewell Ceremonial Earthworks. The Poverty Point earthworks were constructed by purely hunting and gathering groups, but the amount of labor invested at this singular site is far outmatched by the labor invested in the dozens of Hopewell mound and earthwork complexes built all across southern Ohio.

Fort Ancient, photo from The Ancient Ohio Trail

Serpent Mound is 435 meters long and the largest securely documented effigy mound, or geoglyph, in the ancient world. Astronomical alignments incorporated into the structure of Serpent Mound reveal the sophisticated astronomical knowledge of the effigy mound’s builders and allows the architecture to reflect the sacredness of the heavens by expressing those cosmic rhythms in its form and structure. These dual aspects of calendar and shrine are found at a number of ancient sites around the world, including the World Heritage sites of Stonehenge, Quirigua, El Tajín, Lines and Geoglyphs of Nasca and Pampas de Jumana, Uxmal, Chaco Culture, and Cahokia Mounds.

The best estimate of the age of Serpent Mound places it within the Late Prehistoric era, circa 1100 CE (Fletcher et al. 1996), making it a contemporary of Cahokia Mound. It is associated with a Late Prehistoric village and burial mound as well as two Early Woodland burial mounds and a smaller Early Woodland occupation.

The head of the Serpent Mound appears to be aligned to the setting sun on the summer solstice (Hardman and Hardman 1987; Fletcher and Cameron 1991). The coils of the Serpent are claimed variously to align to the summer and winter solstices and the spring and fall equinoxes (Hardman and Hardman 1987; Fletcher and Cameron 1991) or the lunar maxima rise and set points along with the mid-point rise and set (Romain 1991). The fact that varying alignments can be proposed for the same coils indicates that the short sight lines and lack of clear linearity in these embankments renders uncertain any determination of the intentions of its builders.
**MONUMENTAL SCALE (COMPLEXES > 5 HECTARES)**

The monumental scale of Hopewell Ceremonial Earthworks sets these properties apart from most other ancient monuments. The Hopewell Ceremonial Earthworks represent a unique type of architecture that emphasizes the horizontal dimension, the enclosure of vast spaces. The smallest of the nominated components (Mound City) encompasses more than 5 ha within its earthen walls. The largest single enclosure among the nominated components (Hopewell Mound Group) encompasses a minimum of 45 ha. At the Newark Earthwork complex, parallel earthen walls defining avenues or processional ways several kilometers long linked together four major enclosures that together encompass almost 70 ha (Lepper 2010a). Hopewellian laborers moved more than half a million metric tons of earth to construct just five of the 16 major monuments in the central Scioto-Paint Creek ceremonial zone (Bernardini 2004; DeBoer 2010).

By comparison, the base of Monks Mound at Cahokia and that of the Great Pyramid at Giza each occupy less than 6 ha, roughly equivalent in area to the smallest of the nominated components. The Great Pyramid would fit quite comfortably inside the Wright Square at Newark or the square earthwork at Seip; almost 10 of these colossal structures would fit inside the main enclosure at Hopewell Mound Group. Stonehenge and Avebury are often invoked as examples of enormous monuments, yet these are dwarfed by the Hopewell monuments. The outer ring of sarsen stones at Stonehenge is 37 m in diameter and could be entirely buried under the central mound at Seip Earthworks. Avebury, the largest stone circle in the world, is enclosed by an earthen ditch and bank 410 m in diameter. This is just a bit larger than the Observatory Circle (321 m) and the Great Circle (358 m) at Newark. The main enclosure at Hopewell Mound Group could easily encircle the Avebury complex. In total, the Lines

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*Hopewell Mound Group, reconstruction by CERHAS, 2002*
and Geoglyphs of Nasca and Pampas de Jumana occupy a vast area, and several of the linear features stretch several kilometers, but the individual figures so prominent in popular imagination (spider, hummingbird, monkey, etc.) would each fit comfortably inside the Observatory Circle at Newark. Similarly, while the core ceremonial district of “downtown Chaco” stretched for several kilometers along the canyon floor, even the largest of the individual Great Houses, Pueblo Bonito, occupied less than about 1.2 ha at its height. The Amazonian Geoglyphs in Bolivia and Brazil resemble the Hopewell works in their earthen construction and geometry, but most are on the order of only 100 to 200 m in diameter.

Clearly, the monumental scale of Hopewell Ceremonial Earthworks, and in particular their sprawling horizontal dimensions, set these works apart from other ancient monuments worldwide.
MONUMENTAL ARCHITECTURE AS VACANT CEREMONIAL CENTERS

Hopewell Ceremonial Earthworks are clearly examples of monumental architecture: human constructions of space and manipulations of landscape executed with a scale and permanence that has cross-generational impact. Ancient monumental architecture is a part of humankind’s global cultural heritage with examples from every continent. Monumental architecture takes myriad forms, from the standing stones of Stonehenge in southern Britain, to the causeways and colonnades of Karnak in Egypt’s Nile Valley, to the pools and pyramids of Angkor in northern Cambodia (See Scarre 2011 for a useful overview). Given this great diversity, the selection of comparable properties is a challenge.

Hopewell Ceremonial Earthworks can be distinguished from many examples of monumental architecture because the Hopewell earthworks functioned primarily in non-residential contexts, as “vacant ceremonial centers.” This sets the Hopewell examples apart from monumental architecture that is closely integrated with domestic residential spaces. The great Mississippian “temple town” complexes exemplified by the Cahokia Mounds World Heritage site are a case in point.

Monks Mound and most of the other monumental earthen constructions at Cahokia and other Mississippian town-and-mound centers represent a fundamentally different sort of architecture in comparison to the Hopewell Ceremonial Earthworks. The flat-topped Mississippian earthen pyramids served as platforms for temples and chiefly residences. Furthermore, platform mounds at Cahokia and other classic Mississippian temple towns are arranged around plazas and are closely integrated into densely settled residential districts. Hopewell Ceremonial Earthworks are devoid of any significant evidence of domestic habitation. Finally, from an architectural point of view, the Hopewell Ceremonial Earthworks are of a fundamentally different spatial typology than Cahokia’s mounds, being instead figural enclosures of vast monumental spaces, defined by complex earthen and stone gateways, water features, and long subtle vistas.

On similar grounds, several other prominent Pre-Columbian sites in the Americas are not useful as meaningful comparisons in this analysis because they represent a monumental architecture that is tightly integrated into dense urban centers in contrast to the vacant ceremonial architecture of the Hopewell Ceremonial Earthworks. Among New World sites already inscribed on the World Heritage List, these would include the Pre-Hispanic City of Teotihuacan (Mexico, ref. 141), the Historic Centre of
More than 200 geometrically patterned earthen geoglyphs have been discovered and described in western Amazonia from northern Bolivia to western Brazil (Mann 2000a, 2000b, 2008; Pärssinen et al. 2009; Schaan 2012; Virtanen 2011). The geoglyphs so far reported include “perfect circles, rectangles, and composite figures” (Pärssinen et al. 2009:1085). The composite figures are combinations of geometric geoglyphs, such as the Fazenda Colorada site, which “is comprised of three ditched structures with outside embankments: one circle, a quadrangle and a double ditch structure which forms a three-sided square” (Pärssinen et al. 2009:1087).

The earthen geoglyphs are monumental in scale with circles and squares ranging in size from between 50 to more than 200 meters across (Schaan 2012). They do not appear to be urban centers or fortifications. Instead, they are thought to be ceremonial centers at which “small, dispersed communities... would meet for short periods at set times of the year for religious cults and feasts” (Schaan 2012:157). Although, by 500 CE onward, more complex societies emerged in Amazonia, which were “ruled by regional chiefs whose symbolic and political power at times extended for many kilometers” (Schaan 2012:19).
**REGIONAL LANDSCAPE EXPRESSION**

The Hopewell Ceremonial Earthworks, individually and collectively, constitute vast and clearly defined and often interconnected cultural landscapes that frequently incorporate elements of organically evolved landscapes. This combination of “constructed and conceptualized landscapes” is not uncommon in indigenous Native American contexts (Knapp and Ashmore 1999:11).

Individually, sites such as Mound City are argued to mimic the hills visible along the eastern horizon. Ray Hively and Robert Horn (1982, 1984, 2010), William Romain (2004) and others have demonstrated that the Hopewellian architects “linked earth, sky, and water in compositions of breathtaking grandeur” (Lepper 2010b:204).

The Fort Ancient and Newark earthworks are situated such that they are nearly surrounded by watercourses, suggesting a cosmological linkage to the creation of the Earth, which emerged from and was surrounded by the primordial waters of the Beneath World in many American Indian stories (Lankford 1987). At Fort Ancient, two natural watercourses were intentionally extended to enclose the earthwork in an outer “ring” of water, while an elaborate and surprisingly uniform necklace
of clay-lined ponds was built to parallel and reflect the earthen walls from the interior.

N’omi Greber, one of the foremost students of the Hopewell culture, observed that over centuries “people transformed the natural environment of the Hopewell valleys into a unique planned landscape” (2003:88).

Bradley Lepper (2010a:114-116) has proposed that the diverse yet interconnected components of the Newark Earthworks represented “a monumental ritual machine,” which was “designed and built [within a short period of time] as a distinct and unified architectural composition.” Hively and Horn (2010) argue that the locations and designs of the Newark Earthworks as well as the profusion of earthworks in the Scioto River-Paint Creek valleys reflect “regional plans” that were coordinated with local topography and alignments to both lunar and solar extremes.

Warren DeBoer (2010), moreover, argues that these Hopewelian earthworks referenced each other both in the use of similar architectural designs as well as in alignments between sets of enclosures that he refers to as “time lines,” because they may link decommissioned earthworks to their successors. Stephen Lekson (1999) has argued that the “Chaco Meridian” functioned as...
in a similar way to link the successive “capitals” of the Southwest -- Chaco Canyon, Aztec, Paquime, and possibly Culiacan. Indeed, the architects of Chaco Canyon, with its astronomically-aligned Great Houses and their “complex architectural composition,” came the closest in ancient North America to creating a “monumental landscape” comparable to what the Hopewell achieved in southern Ohio (Lekson et al. 2006:68). And Lekson et al. (2006:83) attribute the level of architectural complexity achieved at Chaco to “centralized, hierarchical decision making,” which is not evident within the Hopewell culture (e.g., Lepper 2010a).

The architectural forms themselves echo the hills, valleys, and watercourses that characterize the central Ohio River Valley region, the earthworks usually placed and formed either to intensify and symbolize these landscape features, or to create functioning “artificial horizons” that delineate terrestrial and astronomical alignments.

In Neolithic Europe, the Heart of Neolithic Orkney World Heritage site represents a landscape of astronomically-aligned chambered tombs, stone circles, and other sites, but the smaller scale, lack of uniformity in design and obvious architectural or symbolic linkages between the various sites distinguish them from the Hopewell Ceremonial Earthworks.

Stonehenge and its complex ceremonial landscape is markedly similar to the Hopewell Ceremonial Earthworks. The astronomically-aligned monuments, including geometric earthworks, avenues defined by parallel walls of earth connecting the ceremonial center to nearby rivers, and timber circles all suggest similar attempts to link “the sky, the earth, and the ground beneath as a structured system: a cosmology of the world” (Darvill 2006:90). Stonehenge, however, was built by a society with a more complex social organization supported by a pastoral economy.

The Wurdi Youang site in Australia is part of a larger landscape of stone circles some of which have astronomical alignments incorporated into their designs, but the small scale of the features and the lack of uniformity in design make them quite different from the Hopewell Ceremonial Earthworks.
**EARTHEN ARCHITECTURE**

According to the World Heritage Inventory of Earthen Architecture (Joffroy 2012:7) “Earthen architecture is one of the most original and powerful expressions of our human ability to create a built environment using locally available resources.” This study identified 150 properties that were built with earth and inscribed on the UNESCO World Heritage List (Joffroy 2012:7). These were a “very diverse” set of properties representing a “wide range of earth building techniques” (Joffroy 2012:10-11). The World Heritage Earthen Architecture Programme inventory explicitly includes the Hopewell Ceremonial Earthworks, along with Poverty Point and Serpent Mound, in the “Pre-inventory of properties built with earth inscribed on the tentative lists” (Joffroy 2012:202-203).

The sites identified as germane to the theme of “earthen heritage” encompassed architecture that used earth materials in the following ways“:

- Load-bearing walls (different techniques, rammed earth, adobe, cob, hand shaped earth);
- Mortars, in stone or burnt brick walls;
- Fillings for wooden structures, mainly as part of ‘wat-tle and daub’ constructions, with many variations;
- Roofs and floors, often in conjunction with wooden load-bearing structures;
- Coatings and paints, exterior or interior;
- Extensive landscaping works requiring specific engineering solutions” (Joffroy 2012:8).

The Hopewell Ceremonial Earthworks are especially interesting because they represent novel ways of using earth in architecture. The massive earthen walls created by the Hopewell culture were not load-bearing. The earth did not serve merely as mortar or as coatings for other surfaces. Instead, the Hopewell Ceremonial Earthworks sculpt the surface of the earth itself into powerful symbolic figures and subtly complex enclosures. Inscription of the Hopewell Ceremonial Earthworks would make a unique contribution to the earthen architecture initiative because they represent an unprecedented expressive idea: designs made with the surface of the earth itself. The Hopewell Ceremonial Earthworks can also be considered to be “extensive landscaping works requiring engineering solutions.”

The Hopewell Ceremonial Earthworks involved a sophisticated use of earth materials to create monumental architectural spaces. According to archaeologists Sarah Sherwood and T.R. Kidder (2011:84), earthwork construction “was an art and a
science requiring considerable knowledge, skill and planning, hard work, and impressive aesthetic and symbolic expression.”

According to John Hancock, professor of architecture at the University of Cincinnati, one reason the Hopewell Ceremonial Earthworks deserve recognition as extraordinary examples of earthen architecture is that they reflect “a spatial conception that is fundamentally beyond the grasp of the modern Western imagination” (Hancock 2004:259; see also Hancock 2010). He suggests that the Hopewell earthworks, due to their nearly incomprehensibly huge scale and the subtlety and precision that literally are imperceptible to a casual on-the-ground human observer, defy all conventions of how to make enclosures – and therefore constitute a previously unknown kind of architecture. Sigfried Giedion (1971), in his book *Architecture and the Phenomena of Transition*, asserted that all architecture consists of “space radiating volumes,” such as the Egyptian pyramids and Greek temples, developed “interior space,” the principal architectural achievement of the Romans, or a combination of perceived volume and interior space, which was an invention of the Modern period of the early 20th century. All of these, moreover, tend to emphasize the vertical rather than the horizontal dimension.

Hopewellian architecture appears to lie outside of these conceptions of space that otherwise encompass all monumental architectural traditions. Its emphasis is on vast horizontal extensions where the architecture creates its own artificial horizon and on a type of enclosure that, due to its monumental scale, is barely perceptible as an enclosure.

Among the sites considered in the WHEAP study that seem most comparable to the Hopewell Ceremonial Earthworks are the Archaeological Complex of Pachacamac, Peru, the Archaeological Zone of Paquimé, Mexico, and the Poverty Point State Historic Site, Cahokia Mound, Serpent Mound, Chaco Canyon, and Mesa Verde in the United States of America. Yet all of these sites, with the exception of Poverty Point, were built by societies with a more hierarchically-structured social organization supported by agricultural or pastoral economies. And none of these sites, including Poverty Point, exhibit an equally extensive sphere of interaction focused on the accumulation of extraordinary objects crafted from exotic raw materials as monumental ceremonial centers.
COMPLEX GEOMETRY

Complex and precise geometric regularities and inter-relationships are manifested in the architecture of Hopewell Ceremonial Earthworks and set these works apart from virtually all comparable monuments.

The first Western observers to encounter the Ohio earthworks in the 18th and 19th centuries were universally impressed by the geometric regularity of the enclosures. Squier and Davis, in their pioneering 1848 survey of North American mounds and earthworks noted that those in the Ohio region were unique in their great size and geometric regularity:

“in the region watered by the Ohio and its tributaries, we find ancient works of greater magnitude and more manifest design...[Here] are numerous enclosures of earth and stone, frequently of vast size, and often of regular outline. These are by far the most imposing class of our aboriginal remains, and impress us most sensibly with the numbers and power of the people who build them” (Squier and Davis 1848:3).

Further, Squier and Davis note that

“the square and the circle, separate or in combination, were favorite figures with the mound-builders; and a large proportion of their works in the Scioto valley, and in Ohio generally, are of these forms...Another fact, bearing directly upon the degree of knowledge possessed by the builders, is, that many, if not most, of the circular works are perfect circles, and that many of the rectangular works are accurate squares. This fact has been demonstrated, in numerous instances, by careful admeasurements; and has been remarked in cases where the works embrace an area of many acres, and where the embankments, or circumvallations, are a mile and upwards in extent” (Squier and Davis 1848:8; emphasis in the original).

Newark Octagon Earthworks, LIDAR image by William Romain
In 1887, Cyrus Thomas led the Mound Exploring Division of the Bureau of Ethnology, Smithsonian Institution, in a carefully controlled survey of several of the more important circular, square, and octagonal earthworks in south-central Ohio (Thomas 1889a, 1894). The survey employed standard and explicit methods of observation, and ranks among the earliest examples of scientific archaeology in the Americas. Thomas’ field survey of the Newark Observatory Circle found this enormous figure to be laid out to within 1.22 meters of a perfect circle having a diameter of 321.34 meters. The High Bank Circle was found to be laid out to within similar tolerances of a perfect circle with a diameter of 321.95 meters. Squares too were found to be laid out with great regularity: the corners of the square enclosures at the Newark, Baum and Liberty (Harness) earthworks varied by less than 1 degree from true right angles.

Complex geometric relationships are evident among Hopewell earthwork complexes separated by many kilometers. As noted above, the Newark Observatory Circle and the High Bank Circle differ by less than a meter from a common diameter of 321 meters; this despite being located more than 90 kilometers apart. The enclosing earthwork at Fort Ancient is irregular, following the hilltop topography. But within the enclosure are four stone-covered mounds arrayed as a square with sides closely approximating 160.5 m in length-- one-half of the 321 m module encoded in the earthworks at Newark and High Bank. William Romain provides evidence that as many as 24 circular, square, and octagonal earthworks incorporate this same 321 meter dimension in their design, suggesting they were constructed using a common unit of measure (Romain 2000:65-100). At least four of the nominated properties--Fort Ancient, High Bank, Newark, and...
and Seip---incorporate this common dimension and manifest this complex geometric interrelationship.

Furthermore, the orientation of several widely separated earthworks demonstrates complex inter-relationships (see Hively and Horn 1982). The principal axis through the conjoined Observatory Circle and Octagon at Newark is precisely perpendicular to the principal axis through the circle and octagon figures at the High Bank Works more than 90 km distant. The square at the Liberty (Harness) Earthworks has exactly the same orientation as the Newark Square, again more than 90 km distant.

Complex geometric relationships also are evident within individual earthwork complexes. Ray Hively and Robert Horn (1982, 1984) and William Romain (1996, 2000) identified several examples. At the Newark Earthworks, the circumference of the Great Circle (1140 m) is equal to the perimeter of the Wright Square, the area of the Wright Square (8 ha) is equal to the area of the Observatory Circle (321 m) and the area of that square (12 ha) is equal to the area of the Great Circle (Hively and Horn 1982:58-9; Romain 2000:40, 56). At Hopeton, the diameter of the Circle is equal to the width of the conjoined Square (293 meters vs. 292 m). Hively and Horn (1982, 1984) note that at High Bank, the radius of the Circle is equal to the apothem of the Octagon.

The complex geometry displayed by the nominated Hopewell Ceremonial Earthworks is unmatched by any other property in the ancient world. Poverty Point State Historic Site/ Poverty Point National Monument (on the U.S. Tentative List) is the most comparable property. The principal earthworks at Poverty Point display a “semioctagonal” geometry, but this in no way approaches the precise regularity or complexity of geometric inter-relationships expressed in the circular, square and octagonal Hopewell Ceremonial Earthworks. Poverty Point shares geometric and proportional regularities with four much earlier Middle Archaic mound complexes in northeast Louisiana, suggesting the use of a common standard of measurement. The Hopewell Ceremonial Earthworks elaborate on this theme in intricate ways: multiples of a common unit of measure define complex relationships among geometric figures at two dozen or more Hopewell earthworks scattered over a region more than 200 km from end to end. Several mounds near Poverty Point are aligned along common meridians as much as 3 km in length. Warren DeBoer (2010) and Hively and Horn (2010) identify intersite alignments between Hopewell earthworks as much as

Wurdi Youang is semi-circular arrangement of stones built by the indigenous peoples of Australia sometime between 25,000 BCE to 1835 CE. Ruggles and Cotte (2010:77) describe it as “a roughly egg-shaped circle, about 50 m in diameter, of about 100 basalt stones... [which] range from small rocks about 20 cm in diameter to standing stones about 1 m high.” It incorporates alignments to setting sun on the summer and winter solstices as well as the Equinox.
40 km in length, far in excess of the scale of intersite alignment evident at Poverty Point.

The geometry of Stonehenge, Avebury and Associated Sites has been an enduring focus of fascination and speculation. The outer ring of sarsen stones at Stonehenge is aligned to a true circle, but claims for more complex geometric relationships have been controversial. Over the course of a long and productive career, Alexander Thom read in these and other monuments a “megalithic science” that integrated sophisticated astronomy, complex geometry and precise measurement (see Thom 1967, 1971, 1978). However, time and critics have not been kind to Thom’s megalithic science, and claims that Europe’s megalith builders possessed sophisticated knowledge of geometry enjoy little support among mainstream archaeologists today (see Chippindale 1994:220-231). Complex geometry is not among the attributes for which Stonehenge, Avebury and Associated Sites were inscribed on the World Heritage List: geometry is not mentioned among the criterion for inscription, nor in the advisory body evaluation (ICOMOS 1985).

The Amazonian geoglyphs in Bolivia and Brazil include geometric figures such as circles, squares and octagons, but these have not yet been surveyed or analyzed in ways that might shed light on the degree to which they incorporate complex geometric regularities or inter-relationships.
COMPLEX ASTRONOMICAL ALIGNMENTS

According to the joint ICOMOS-IAU thematic study of “Heritage Sites of Astronomy and Archaeoastronomy in the context of the UNESCO World Heritage Convention” (Ruggles and Cotte 2010:6), the following represent the “principal types of astronomical heritage”:

- Observatories as ‘scientific monuments’. …
- Fixed and moveable instruments. Tangible astronomical heritage raises the question of the borderline between fixed property and moveable artefacts, i.e. portable instruments, moveable domes or floors, etc. This is not a straightforward issue, since an instrument in the form of a fixed ‘monument’ could serve exactly the same purpose as a personal portable instrument or a ‘semi-moveable’ instrument located in specific places for observation...
- Material representations of the results of astronomical observations and cognitive understanding:
  - Tangible representations of observations, events and predictions (calendars, time measurements, predictions of eclipses, zodiacs, celestial representations, etc);
  - Cosmological and symbolic representations (iconography, palaeography).
- The material products of the application of astronomy: constructions, architecture and urbanism related to applied astronomy and/or bearing astronomical information.
- Properties whose design and/or landscape setting have significance in relation to celestial objects or events.
- Cultural landscapes related to the history of astronomy and/or human cultural practices related to astronomy.
- Dark night sky areas where the ability to see natural starlight preserves the visual links to the sky that have connected humankind to the cosmos throughout history.”
Six of these types of tangible astronomical heritage are incorporated in the Hopewell Ceremonial Earthworks:

1. Observatories as ‘scientific monuments’;
2. Fixed ... instruments;
3. Material representations of the results of astronomical observation and cognitive understanding;
4. The material products of the application of astronomy

Many Hopewell Ceremonial Earthworks incorporate astronomical alignments into their architecture and can be regarded as astronomical observatories. Some of the earthworks, such as Newark’s Octagon (Hively and Horn 1982; 2006; 2010) and Chillicothe’s High Bank Works (Hively and Horn 1984; 2010), include alignments of such accuracy and precision that they could have been utilized as instruments or, in effect, observatories. Further, the accuracy and precision reflects the use of some kind of instrumentation to make the observations that led to the ability of the Hopewell people to design such architecture. In other words, regardless of the purposes of the earthen enclosures themselves, observatories of some kind are implicated in their design and construction. Therefore, the Hopewell Ceremonial Earthworks can be considered to be observatories or to reflect the contemporary presence of indigenous American observatories.

The Hopewell Ceremonial Earthworks were created through the systematic observations of natural phenomena, the discovery of regular patterns in those observations, and the construction of monumental architecture incorporating those patterns, which, in effect, constituted machinery to test the repeatability of those observations. Hence, these earthworks can be regarded as “scientific monuments” (even if the builders themselves did not think of them in these Western terms).

The above discussion also means the Hopewell Ceremonial Earthworks constitute fixed instruments (in the form of fixed “monuments”) and are “material representations of the results of astronomical observation and cognitive understanding.”

5. Properties whose design and/or landscape setting have significance in relation to celestial objects or events;
6. Cultural landscapes related to the history of astronomy and/or human cultural practices related to astronomy.

Hively and Horn (2010:160) make a compelling argument that the “Hopewell planners understood not only the yearly cycle of the sun but also the longer 18.6-year cycle of the moon, and that they sought to express this understanding in the siting and design of corporate ceremonial architecture. Where the natural environment itself suggested link, for example,
between the paths of river, valley, mountain ranges, and the long journey of the moon, they sought to build on that suggestion. They linked their corporate centers to salient features of the land, to one another, and in some cases to the heavens. Something like this cosmographic vision seems to us to be required in order to account for the ingenuity, the meticulous craft, and the labor invested in this remarkable architecture."

These interpretations demonstrate that the design of the earthworks as well as their landscape setting “have significance in relation to celestial objects or events.” Moreover, these rich, cultural landscapes are related directly to the history of indigenous American astronomy (see also Romain 2000; 2004).

Among the sites considered in the ICOMOS/IAU study that seem most comparable to the Hopewell Ceremonial Earthworks are the Stonehenge World Heritage Site, United Kingdom and Wurdi Youang, Australia. Other World Heritage sites incorporating archaeoastronomical alignments that also may be compared usefully to the Hopewell Ceremonial Earthworks are the Cahokia Mounds State Historic Site and the Chaco Culture World Heritage Sites. Relevant sites listed on the Tentative Lists include the Poverty Point State Historic Site and Serpent Mound. Most of these sites were built by hierarchically-organized societies supported by agricultural economies, which had both the practical motivation to create monumental calendars linking the ceremonial life of a community to cycles of planting and harvest and the centralized leadership that could compel large numbers of people to build them. For those societies without either a centralized authority or a commitment to agriculture, the Hopewellian earthworks, especially the Newark Earthworks, are the most monumental and well-documented and convincing examples of astronomically oriented architecture in the world.
GLOBAL PERSPECTIVE: DISCUSSION AND CONCLUSIONS

The achievements of the Hopewell Culture are remarkable and are not surpassed by any site or serial set of sites currently inscribed on the UNESCO World Heritage List. In the valleys of southern Ohio, relatively small, dispersed groups of semi-sedentary, non-hierarchically organized hunter-gatherers who engaged in some horticulture used earth, stone, wood, and water to create a series of monumental architectural forms incorporating a deep understanding of geometry and precise astronomical alignments, which appear to have been devoted principally to ceremonial purposes. Moreover, elements of this architecture are duplicated precisely at sites that can be widely separated from each other reflecting a ceremonial landscape spanning perhaps 60,000 square kilometers.

Several World Heritage sites exhibit monumental architecture of earth and stone aligned to some astronomical events most frequently associated with the Sun. The sites most comparable to the Hopewell Ceremonial Earthworks in terms of scale, geographic extent and sophistication of design, include Stonehenge, the Great Houses of the Chaco Culture and the earthworks of Cahokia. These, however, all are products of societies more hierarchically organized than the Hopewell culture and also more fully supported by agricultural and, in the case of Stonehenge, pastoral economies. Moreover, Chaco and Cahokia are fundamentally different and non-comparable architectural typologies. Of those built by non-hierarchically organized hunter-gatherers all are either smaller in scale, such as Wurdi Youang, or isolated and unique structures for their time periods as exemplified most precociously at Poverty Point.

The monumental ceremonial earthworks of the Hopewell culture are unlike any other monumental architecture in the world. In its enormous scale and extreme levels of geometric and astronomical precision, which would not have been apparent to most if any contemporary visitors to the sites, the architecture may be unprecedented. Indeed, the spatial conceptions underlying the design of the earthworks may represent a previously unrecognized type of architecture. The fact that monumental architecture on this scale and with these levels of precision was created not once, but in several locations across a vast landscape by simple societies with no hereditary leaders and with little commitment to an agricultural economy is astonishing.

The Cahokia Mounds and the series of related Mississippian expressions scattered across the southeastern United States approach the Hopewellian achievement, but the geometric and
astronomical precision is absent. Moreover, the Mississippian societies were led by hereditary chiefs with authority to compel their followers to undertake such projects. And, crucially, the Mississippian societies were fueled by maize agriculture. Poverty Point approaches the scale of individual Hopewell earthworks and it too was built by a simple society, but the Poverty Point earthwork has neither the degree of precision nor the repetition of forms across a wide geographic space exhibited by the Hopewell Ceremonial Earthworks.

Finally, both Poverty Point and Cahokia had large, for their respective time periods, resident populations. Therefore, they appear to have operated largely if not exclusively in the socio-political sphere. The Hopewell Ceremonial Earthworks, however, were mostly vacant ceremonial centers. Although large groups of people undoubtedly gathered at these sites for periodic ritual observances or festivals, for much of the year these monumental earthworks appear to have been vacant. The frequent emphasis on mortuary activity, the cryptic astronomical alignments, the arcane geometry of the Hopewell earthworks, and the absence of evidence for a significant year-round residential population make it clear that the Hopewell earthworks functioned largely, if not exclusively, in the religious or ceremonial sphere.

As a final point of consideration, inscribing the Hopewell Ceremonial Earthworks on the World Heritage List would further the goals of the World Heritage Committee’s Global Strategy for a Representative, Balanced and Credible World Heritage List. Indigenous, pre-Columbian cultural properties in eastern North America are underrepresented on the World Heritage List. Only the Cahokia Mounds State Historic Site is currently inscribed. Inscription of the Hopewell Ceremonial Earthworks would help to ensure that American centers of indigenous religious devotion are more fully represented on the World Heritage List. Similarly, inscription of the Hopewell Ceremonial Earthworks would help to ensure that examples of indigenous earthen architecture stand alongside Western and “elitist” architecture on the World Heritage List.
Having considered Hopewell Ceremonial Earthworks in a global comparative context, the analysis now turns to a consideration of the nominated sites in local context, compared to other Hopewell sites. The following discussion lays out the rationale for the selection of the particular set of Hopewell sites included in the serial nomination. This section demonstrates that the selected components, taken together, are the best exemplars of the attributes and features that express the outstanding universal value of Hopewell Ceremonial Earthworks. The discussion first demonstrates that the “Ohio Hopewell” culture is the most elaborate and flamboyant expression of the Hopewellian phenomenon anywhere in eastern North America. Next, the selected components are compared to other Hopewell sites, both within and outside Ohio. In each case it will be shown that no other sites are better exemplars of the monumental scale, complex geometry, astronomical knowledge, and artistry that characterize the Hopewellian achievement.

These comparisons also take into account the depth and quality of research and documentation available for each site, which bears directly on how well each site can express the outstanding universal value of Hopewell Ceremonial Earthworks. Similarly, the comparisons will take into account the current state of conservation of each site: the national conservation status of each site; the extent to which effective protection and management measures are in place; and the land tenure status of each property. Finally, the comparisons take into account the authenticity and integrity of each site, though these attributes will receive extended examination in Section 3.d “Authenticity and Integrity.” In all, these comparisons address the three foundations that must be in place for a property to be judged as having Outstanding Universal Value: 1) the property must meet one or more World Heritage criteria; 2) the property must possess integrity and authenticity; and 3) the property must meet the requirements for protection and management.

Table 2, “Comparative Analysis - Hopewell Sites” summarizes the comparisons among Hopewell properties. Five variables were used to assess the degree to which each property is exemplary of the Hopewell achievement. “Monumental Scale” differentiates between sites with very large enclosures (>15 ha) and mounds; sites with smaller enclosures (5-10 ha) and mounds; and sites marked only by small enclosures (<5 ha) or mounds. “Complex Geometry” differentiates between sites with circular, square or octagonal earthworks; sites with non-geometric enclosures; and sites marked by mounds but
lacking enclosures. “Astronomy” differentiates between sites with evidence for astronomical alignments that has been independently evaluated by multiple investigators; sites with alignments proposed by one or a few investigators; and sites for which no astronomical alignments have been documented. “Artistry” differentiates between sites with publicly-accessible collections containing many of the finest examples of Hopewell artistry; sites with publicly-accessible collections containing a few examples of “high art” or other collections with significant research value; and sites with collections that are not publicly-accessible or are of little research value (i.e., unprovenienced collections). “Research and Documentation” differentiates between sites with an extensive record of professional research (including excavation) and publication, and records in public archives; sites with limited research records; and sites with little or no record of research. Three variables assessed the current state of conservation of each property: “National Conservation Status,” “Effective Protection and Management,” and “Land Tenure.” Two variables assessed “Authenticity” and “Integrity.”

The rightmost column in Table 2 includes a numerical rating summarizing the comparative information for each property. These summary ratings are visualized in the following chart. These comparisons demonstrate that the nominated properties are better exemplars of Hopewell achievement, display more favorable states of conservation, and exhibit superior authenticity and integrity when compared against any other Hopewell site, within or outside of Ohio.
### SUMMARY RATINGS - HOPEWELL SITES COMPARISONS

<table>
<thead>
<tr>
<th>NOMINATED COMPONENTS</th>
<th>Rating</th>
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<td>Mound City Group</td>
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<td>Hopewell Mound Group</td>
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<td>Seip Earthworks</td>
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<td>High Bank Works</td>
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<td>Newark Earthworks State Memorial - Octagon Earthworks, Great Circle Earthworks, Wright Earthworks</td>
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<td>Fort Ancient State Memorial</td>
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<tr>
<th>OTHER OHIO HOPEWELL EARTHWORKS</th>
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<tr>
<td>Fort Hill State Memorial</td>
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<td>Spruce Hill Works</td>
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<td>Marietta Earthworks - Quadranau Mound, Conus Mound, Sacred Way</td>
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<td>Pollock Works</td>
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<td>Harness (Liberty) Works</td>
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<td>Portsmouth Earthworks - Horseshoe Mound</td>
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<td>Baum Earthworks</td>
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<td>Cedar Bank Works</td>
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<td>Glenford Fort</td>
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<th>HOPEWELL SITES OUTSIDE OHIO</th>
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<tr>
<td>Marksville State Historic Site, Avoyelles Parish, Louisiana</td>
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<td>Pinson Mounds State Archaeological Park, Madison County, Tennessee</td>
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<td>Old Stone Fort State Archaeological Park, Coffee County, Tennessee</td>
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<td>Anderson Mounds, Mounds State Park, Madison County, Indiana</td>
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<td>Mann Site and GE Mound, Posey County, Indiana</td>
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<td>Kolomoki Mounds Historic Park, Early County, Georgia</td>
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<td>Fort Center, Florida</td>
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<tr>
<td>Bynum Mound and Village Site; Pharr Mounds, Chickasaw, Itawamba and Prentiss counties, Mississippi</td>
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<td>Toolesboro Mounds and Museum, Iowa</td>
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<td>Havana Hopewell Sites (Naples-Russell Mound 8, Elizabeth Mounds, Bedford Mound Group, Kamp Mound, Klunk-Gibson Mound Group, Peisker Site, Golden Eagle,</td>
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OHIO HOPEWELL: A UNIQUE EXPRESSION

The nominated components are all representatives of the “Ohio Hopewell” regional cultural tradition: the most complex, most flamboyant, and most richly developed of all the regional Hopewellian manifestations.

The term “Hopewell” may be used to describe an “interaction sphere” that linked together many different Native societies across eastern North America for four centuries between about 1 CE and 400 CE. The specific evidence for this interaction comes in the form of a small set of characteristic ceremonial artifacts and raw materials found in earthen mounds and enclosures scattered from the Great Lakes to the Gulf Coast, from the Appalachian Mountains to the Mississippi Valley. The characteristic artifacts include copper bicymbal earspools, copper panpipes, platform smoking pipes, and “Hopewell ware” ceramics with zoned incised decorations. The characteristic raw materials include copper, mica, marine shell, and obsidian. While this small set of exactly similar ceremonial artifacts and raw materials has been recovered from locations widely scattered across eastern North America, the domestic artifacts of the associated societies show marked local and regional differences (e.g., the everyday cooking pots, stone knives and projectile points, etc.). It is apparent then, that this “Hopewell interaction sphere” linked together many distinct societies, each with its own local traditions and customs. In many cases, the characteristic Hopewell ceremonial artifacts and raw materials were shared among societies that must have spoken mutually unintelligible languages.
Within this pan-eastern North American distribution, there are three regions where Hopewell mounds, earthworks, and interaction sphere artifacts are particularly concentrated: the Scioto, Muskingum and Miami river drainages of southern Ohio; the lower Illinois River valley of west-central Illinois; and the Wabash-Ohio River confluence region of southern Indiana, Illinois and western Kentucky. These are the homelands of three regional societies whose participation in the Hopewell interaction sphere was particularly intense. These have been labeled “Ohio Hopewell” in Ohio, “Havana Hopewell” in Illinois, and “Crab Orchard or Mann Hopewell” in the Wabash confluence region (see Ruby et al. 2005). Each of these regions contains a number of notable Hopewell archaeological sites. Notable Hopewell sites outside of these three core regions appear as more isolated occurrences: examples of these more widely scattered cases from east-central Indiana, and the South and Midsouth regions of eastern North America will be discussed and compared below.

Several observations set the Ohio Hopewell sites apart from all other regions. First, while sites showing evidence of participation in the Hopewell interaction sphere can be found throughout eastern North America, Ohio Hopewell represents a unique regional variant of this cultural phenomenon. Ohio Hopewell societies produced the most complex and flamboyant expressions of the broader, pan-eastern Hopewell tradition. Ohio Hopewell monumental mounds and earthworks are unique in scale and complexity. The vast geometric earthwork enclosures at Newark Earthworks, Seip, Hopewell Mound Group, Hopeton and High Bank have no peers elsewhere in eastern North America in terms of architectural complexity, labor investment, or sophisticated understandings of geometry and astronomy. The great hilltop enclosure at Fort Ancient State Memorial is similarly unique—no other Hopewell hilltop enclosure approaches its imposing scale, or evidences such complex geometric regularities and
astronomical alignments. By the same token, the quantity, quality and diversity of Hopewell raw materials and artifacts from the Ohio Hopewell sites included in the nomination is unmatched elsewhere. The finest expressions of Hopewell artistry and craft are found in the Ohio sites: Mound City and the Hopewell Mound Group are particularly notable in this regard.

The Ohio Hopewell sites simply stand apart as the most sophisticated and ramified expression of the wider Hopewelian phenomenon. A landmark synthesis of Hopewell research was published in 1979 (see Greber and Brose 1979). Olaf Prufer noted in his review of this volume: “As is apparent from nearly all of the contributions to the present tome, Ohio Hopewell is still the measure of all things, i.e., it still sets the standard against which other Hopewelian manifestations are compared” (Prufer 1982:15). The nominated components are all representative of this “gold standard” and represent the best exemplars of the wider Hopewelian phenomenon.
COMPARISONS WITH OTHER OHIO HOPEWELL SITES

This phase of the analysis began with a survey of primary sources to identify other Hopewell sites in Ohio with attributes and features that might express the potential outstanding universal value of Hopewell Ceremonial Earthworks (see esp. Atwater 1820; Fowke 1902; Squier and Davis 1848; Thomas 1894; see also Blank 1985; National Park Service 1987). Only four other Ohio Hopewell sites emerge as serious candidates: Fort Hill State Memorial; Spruce Hill Works; Marietta Earthworks; and Pollock Works. Fort Hill is a particularly fine example of a monumental Hopewell hilltop enclosure. Small-scale professional excavations in the enclosure wall, and more extensive investigations in related contexts in the valley below contribute to an excellent level of available research and documentation (Prufer 1997; Baby 1954; Lepper et al. 1998; Morgan and Thomas 1950). The site is remarkably well preserved, suffers very little modern intrusion, and displays excellent authenticity and integrity. The site is publicly owned and managed for public visitation. Yet despite these positive attributes, Fort Ancient stands among the
nominated components as a better example of a monumental Hopewell hilltop enclosure, and is more capable of expressing the outstanding universal value of Hopewell Ceremonial Earthworks. Fort Ancient is much larger and more complex, incorporates examples of Hopewellian astronomical knowledge, boasts a much richer and more extensive record of research and documentation, and enjoys a similar state of preservation, conservation, authenticity and integrity.

The Marietta Earthworks site is one of the largest Hopewell mound and earthwork centers, a sprawling complex at the confluence of Muskingum and Ohio rivers in southeastern Ohio. Original components of the complex included a large rectangular enclosure encompassing more than 21 ha and surrounding four large flat-topped rectangular mounds; another smaller rectangular enclosure (ca. 10 ha); a large conical mound surrounded by an encircling ditch and embankment; and a straight “graded way” flanked by embankments linking the complex to the Muskingum River.

The site and its surroundings were selected for the first permanent settlement of the United States of America north and west of the Ohio River, owing to its strategic location at the gateway to the Ohio country. The United States Army constructed Fort Harmar near the earthworks in 1785, and the Ohio Company of Associates founded the town of Marietta in 1788. Because of these early developments, the earthworks at Marietta were among the first to be mapped, described and investigated by the learned and scientific communities of the day (see Prufer 1961). However, the development of Marietta ultimately led to the destruction of most of the prehistoric complex. Three small areas set aside for preservation as public parks early in the history of the Marietta settlement are all that remain today: “Quadranaou Mound,” “Conus Mound,” and portions of the graded way or “Sacra Via.” A public library sits atop another of the flat-topped pyramidal mounds, the “Capitolium Mound.” The complex as a whole is entirely enveloped by the urban townscape of Marietta and it is not possible today to appreciate the works as an integrated whole without the aid of historic maps. The record of field research at the site is scant and fragmentary.
The Spruce Hill Works was first described by 19th-century antiquarians as a prehistoric stone-walled hilltop fortress located in the Paint Creek valley, 12 miles west of Chillicothe in Ross County, Ohio. These early accounts describe a low, broad heap of un-dressed sandstone ringing the brow of a prominent, flat-topped plateau overlooking Paint Creek. A series of re-entrant gateways mark the principal access points to the summit, including a complex of gateways across the narrow “isthmus” defining the southern boundary of the enclosure. National Park Service test excavations in 1995-1996 recovered diagnostic Hopewell prismatic bladelets and ceramics in this area, lending support to the conclusion that the enclosure was constructed by Ohio Hopewell populations between about CE 1 - 400 (Ruby 2009). Beyond these small scale investigations, the documentary record of professional research at the site is quite limited. The stone walls, gateways, and mounds at Spruce Hill are quite difficult to trace today, limiting the site’s potential for public visitation.

The Pollock Works consist of a series of earthen embankments enclosing a high promontory of about 4.9 ha in the Little Miami River drainage in Greene County, southwestern Ohio (Squier and Davis 1848:33-34, Plate XII No. 3). More than a decade of careful excavation has revealed a complex construction sequence and chronology, but little in the way of an artifactual record of Hopewell art, craft or occupation (Riordan 1995, 1996, 2002). The site is preserved for public access in Indian Mound Reserve, Greene County Park District.
Glenford Fort contains a prominent stone wall, 1 to 2 m tall, enclosing a hilltop about 11 ha in area. Several stone mounds are in the area. The site attracted considerable antiquarian interest in the 19th century, but there have been no significant professional investigations of the site in the modern period (see Muller 2010 for an overview). Similarities with other better-known hilltop enclosures suggest a Hopewelian affiliation. The lack of research to understand the nature, age and affiliation of the site limits its potential to contribute to our understanding of Hopewell Ceremonial Earthworks. The site is currently in private ownership and not publicly accessible.

The Cedar Bank Works consists of an earthen wall and adjacent ditch forming a three-sided rectangular enclosure encompassing about 12.9 ha in Ross County, Ohio (Squier and Davis 1848: Plate XVIII). The open side of the enclosure fronts a steep bluff dropping to the Scioto River below. A flat-topped rectangular mound with ramps on the north and south sides lies within the enclosure. No professional investigations shed light on the age or affiliation of the mound or earthworks, hence its potential to contribute to our understanding of Hopewell Ceremonial Earthworks is presently quite limited. The site is in private ownership and the current land use is agricultural.

The documentary record of the Marietta Earthworks marks this site as one of the most important and elaborate of all Hopewell ceremonial earthworks, on par with any of the major centers in the Scioto-Paint Creek confluence area, and approaching the complexity of the Newark Earthworks. However, more than 200 years of urban development associated with the city of Marietta - Ohio’s first permanent non-Indian settlement - has practically led to the utter destruction of this once-great complex. Only tiny fragments of the Marietta Earthworks remain: Quadranau Mound, Conus Mound, Capitolium Mound (surmounted by a modern building), and a small portion of the Sacra Via. The urban landscape of Marietta surrounds these remaining vestiges, entirely obliterating the vast earthen enclosures that once defined the site as a major center of Hopewell culture.
The Liberty (aka Harness) Earthworks represent one of five “tripartite” mound and earthwork complexes in the Scioto-Paint Creek confluence region in Ross County, Ohio (the other tripartites include Baum, Seip, Frankfort, and Works East). Each of the tripartite works is marked by three conjoined geometric enclosures: a large circle encompassing about 16.2 ha, a smaller circle encompassing about 4.5 ha, and a square enclosure enclosing about 10.9 ha. In and around the geometric enclosures at Liberty were a series of mortuary mounds that attracted substantial archaeological interest in the 19th century, extending into the modern period. Squier and Davis, Frederic Ward Putnam, Warren King Moorehead, William C. Mills, N’omi Greber and Mark F. Seeman all conducted fieldwork at the site (see Seeman 1998 for an overview). As a result, there is a rich and detailed documentary record relating to specific features at the site. In addition, there is a very large and well-provenanced private surface collection amassed over many years; however this collection is not publicly accessible. The earthworks themselves have been largely destroyed by agricultural activities and can no longer be traced on the ground. The site is in private ownership and the current land use is agricultural.
This destruction was visited upon the Marietta Earthworks so early (beginning in the 1780s), that it was largely gone before the emergence of archaeology as a professional discipline in the Americas. Hence, little of the site’s history or significance has been, or could be reconstructed through scientific investigation. The remaining fragments of the Marietta Earthworks are incapable of expressing the outstanding universal value of Hopewell Ceremonial Earthworks.

Spruce Hill and Pollock Works are further examples of Hopewell hilltop enclosures, and each contributes to a fuller understanding and appreciation of the Hopewell achievement. But as in the case of Fort Hill, neither can stand against Fort Ancient as the premiere example of a Hopewell hilltop ceremonial enclosure.

Other Ohio Hopewell sites considered in this comparative analysis include Liberty (Harness) Works, Baum Earthworks, Cedar Bank Works, Portsmouth Works and Glenford Fort. Reference to Table 2 demonstrates that these sites generally lack evidence for astronomical alignments and significant expressions of Hopewellian artistry. All of these sites suffer from a lack of research and documentation. There is little hard data to demonstrate the Hopewellian affiliation of the Cedar Bank Works. Portsmouth Works suffered a fate similar to the Marietta Works: only small fragments of this once vast complex survive; urban development has swallowed the rest.

Baum Earthworks, by Squier and Davis, 1848
**COMPARISONS WITH HOPEWELL SITES OUTSIDE OF OHIO**

This final phase of the analysis began with a survey of relevant syntheses and overviews to identify sites outside of Ohio with attributes and features that might express the potential outstanding universal value of Hopewell Ceremonial Earthworks (see esp. Brose and Greber 1979; Charles and Buikstra 2006; Griffin 1967; Ruby et al. 2005; Smith 1986; Steponaitis 1986).

None of the Havana Hopewell sites in the Illinois River region include earthwork enclosures (Naples-Russell Mound 8, Elizabeth Mounds, Bedford Mound Group, Kamp Mound, Klunk-Gibson Mound Group, Peisker Site, Golden Eagle, Mound House, Toolesboro Mounds, and others). Enclosures and geometric earthworks are absent at prominent Hopewell sites in the South as well, such as Kolomoki Mounds Historic Park in Georgia, or the Bynum and Pharr sites in Mississippi. As such, these sites lack the critical attributes necessary to express the potential outstanding universal value of Hopewell Ceremonial Earthworks. Fort Center in Florida contains mounds and geometric earthworks and ditches that some have interpreted as having been inspired by Ohio Hopewell architecture. However, none of the goods, raw materials or iconography identified as hallmarks of participation in the Hopewell Interaction Sphere are present at Fort Center, limiting the potential for this site to contribute to this nomination.

**BRIEF DESCRIPTIONS OF HOPEWELL SITES OUTSIDE OF OHIO**

Several sites in the “Havana Hopewell” area of west-central Illinois have produced important archaeological assemblages that contribute significantly to our understanding of Hopewellian social organization, ceremonialism, and inter-regional interaction (see Ruby et al. 2005 for an overview). However, none contain earthwork enclosures; the vast majority of Havana Hopewell mounds are quite modest in size; and none to my knowledge are in public ownership. A partial list would include:

- Naples-Russell Mound 8, Elizabeth Mounds, Bedford Mound Group (Pike County, Illinois)
- Kamp Mound, Klunk-Gibson Mound Group, Peisker Site, Golden Eagle (Calhoun County, Illinois) Mound House (Greene County, Illinois)
- Farther north in the Havana Hopewell region is the Toolesboro Mound Group in Louisa County, Iowa. This National Historic Landmark is in public ownership and open to visitation. The significance of the site is poorly documented owing to the absence of modern archaeological investigations.
The Anderson Mounds and other east-central Indiana examples are significant because they are very rare examples of geometric earthworks constructed outside of Ohio. But in terms of monumental scale, geometric complexity, and evidence for astronomical alignment, these examples pale in comparison to the great geometric complexes at Newark, High Bank, Hopewell, Hopeton and Seip. The examples of Hopewell artistry found here, while important in their own right, add little to the expressions of Hopewell artistry exemplified by the collections from Mound City, Hopewell Mound Group, and other sites included among the nominated components.

The Mann Site, near the confluence of the Wabash and Ohio rivers in Posey County, Indiana is probably the largest and most complex Hopewell site outside of Ohio. It contains two of the five largest Hopewell mounds ever constructed (the other three include the Mann-related GE Mound in Posey County, Indiana, and the Seip-Pricer Mound and Hopewell Mound 25 in Ohio). The Mann Site includes the only large geometric earthworks found anywhere outside of Ohio. A square earthen enclosure 310 m on a side (9.6 ha) shares the same size and design as five Ohio Hopewell earthworks, suggesting a close and sustained relationship. The Mann site is also notable because it contains the largest concentration of Hopewell-period domestic habitation debris anywhere in eastern North America (covering at least 40 hectares/ 100 acres) (Kellar 1979, Ruby 1997, Ruby et al. 2005). Finally, the Mann site and

East-central Indiana is home to a regional complex of mound and enclosure sites that show close affinities to Ohio Hopewell (Cochran and McCord 2011). These include two square enclosures (the Fudge and Graves sites), and three complexes characterized by groups of small circular enclosures, panduriform earthworks, and associated mounds (the Anderson Mounds, New Castle and Bertsch complexes). However, only the Anderson Mounds is in public ownership and available for public visitation. Four enclosures are visible at the Anderson group: The Great Mound, a circular ditch and embankment approximately 107 m in diameter (.9 ha) encompassing a small conical mound; the Fiddleback Enclosure, a panduriform earthwork about 66 m long and 43 m at its widest point; a small circular earthwork approximately 30 m in diameter; and another small circle about 26 m in diameter.
Only four other sites outside of Ohio display monumental architecture even remotely comparable in scale to the nominated earthworks: The Mann Site and GE Mound in Indiana; Old Stone Fort and Pinson Mounds in Tennessee; and the Marksville Site in Louisiana. No evidence for astronomical alignments has been documented at either Mann or Marksville, limiting their potential to contribute to this nomination. Land tenure contributes to an unfavorable state of conservation at the Mann site. Further, the Mann phase GE Mound was entirely destroyed by earth-moving and looting activities. The hilltop enclosure at Old Stone Fort compares favorably in terms of scale and complexity to some of the Ohio Hopewell hilltop enclosures (i.e., Glenford Fort, Fort Hill, and Spruce Hill), but is much smaller and less complex than the nominated Fort Ancient. Further, there is little or no direct evidence of participation in inter-regional Hopewell interaction or ceremonialism at Old Stone Fort. There is better evidence of inter-regional Hopewell interaction at Pinson in the form of non-local ceramics and lithics. However, the enclosure at Pinson is much more modest than even that at Old Stone Fort, limiting the potential of this site to contribute to the nomination.

In all though, none of these sites display the combination of monumental scale, complex geometry, astronomical alignments, and evidence of the highest levels of Hopewell artistry and craft that is manifested in the nominated earthwork sites. As a consequence, none of these other sites can express the outstanding universal value of Hopewell Ceremonial Earthworks as well as the nominated components.
LOCAL PERSPECTIVE: DISCUSSION AND CONCLUSIONS

The Ohio Hopewell mound and earthwork complexes proposed here for serial nomination are the best exemplars of the attributes and features that express the outstanding universal value of Hopewell Ceremonial Earthworks. The nominated components have been compared to other Hopewell sites in Ohio, as well as sites representing regional expressions of Hopewelian ceremonialism in Illinois (Havana Hopewell), the lower Wabash-lower Ohio region (Mann phase Hopewell), and more far-flung expressions in east-central Indiana, the Midsouth and South. None of these other sites display the combination of monumental scale, complex geometry, astronomical alignments, and evidence of the highest levels of Hopewell artistry and craft that is manifested in the nominated earthwork sites. Unfavorable states of conservation further limit the potential of some sites to contribute to the serial nomination. The nominated components include the finest examples of the largest, most complex, best-studied and best-preserved of all the Ohio Hopewell lowland geometric enclosures, as well as the largest and most complex of the hilltop enclosures.

Kolomoki Mounds Historic Park is a National Historic Landmark in Early County, Georgia. Kolomoki is one of the largest and most impressive mound sites in the Southeast, and contains at least nine large earthen mounds, the largest of which is nearly 17 m tall. Two linear embankments 1-2 m tall and up to 300 m long frame the mound area on the north and south sides, but these can only loosely be considered to form an enclosure. The size and complexity of the site led earlier investigators to attribute the site to the later Mississippian period (Sears’ “Kolomoki problem”). Recent reanalyses place the site’s construction at the tail end of the period of Hopewell interaction, ca. 350 to 750 CE (Pluckhahn 2003).

Marksville State Historic Site is a National Historic Landmark in Avoyelles Parish, Louisiana. It represents the largest and most complex Middle Woodland site in the lower Mississippi Valley. The site includes several large mounds bounded by a semi-circular ditch and embankment more than 800 m long, enclosing about 16 ha. As many as 70 small circular earthworks are associated (McGimsey 2003; Setzler 1933; Vescelius 1957). Archaeological investigations in the 1920s and 1930s discovered artifacts and raw materials indicating significant participation in the Hopewell interaction sphere. Jones and Kuttruff (1998) cite evidence that the site was constructed to a preconceived plan using a standard unit of measurement, the so-called “Toltec Module.” The State of Louisiana manages the site and associated museum for public access.
3.d. INTEGRITY AND AUTHENTICITY

In preparation.
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