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By

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ABSTRACT

EXAMINATION OF TWO POST CIRCLES FOUND IN THE OHIO VALLEY

By

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This thesis provides a systematic examination of two large circular post structures, the Great Post Circle and the Moorehead Circle, found in southwestern Ohio associated with Middle Woodland (200B.C. – A.D. 400) earthworks. Intra-site descriptive analysis of each structure's post architecture, artifact assemblages, interior features, and carbon dates provides the first opportunity for preliminary inter-site inferential analysis.

The Great Post Circle and the Moorehead Circle, located within five miles of each other, are ideal for inter-site comparison. Their associated earthworks represent the two recognizable styles of Ohio Hopewell earthworks, geometric and hilltop enclosures. They are both circular post structures that have been systematically investigated archaeologically, but documentation of both has been limited. The Great Post Circle was excavated as a salvage effort prior to construction, while the Moorehead circle is still in the early stages of exploration and analysis. This thesis focuses on an intra-site descriptive analysis investigating each structure's architecture, interior features, carbon dates, and artifact assemblages, which are then compared between the two sites to gain insight into this form of Hopewell monumental architecture.

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Chapter 1

Introduction

This thesis provides a systematic examination of two large circular post structures, the Great Post Circle and the Moorehead Circle, found in southwestern Ohio associated with Middle Woodland (200B.C. – A.D. 400) earthworks. The Great Post Circle was discovered during salvage work in 1999 and, until the discovery of the Moorehead Circle in 2005, was thought to be the only one of its kind found in Ohio (Cowan and Sunderhaus 2002; Cowan et al. 1998, 1999; Riordan 2006, 2008, 2009). A similar structure, called the "Stockade", was discovered during the 1960s at the Schultz site in Michigan (Fitting 1972). This thesis will focus on the Ohio Valley examples in order to provide an intra-site descriptive analysis of each structure's post architecture, artifact assemblages, interior features, and radiocarbon dates providing the first opportunity for preliminary inter-site inferential analysis.

Middle Woodland, specifically Hopewell, earthworks have been a part of the southern Ohio landscape for more than two thousand years, and studies have focused on their easily visible walls and mounds (Squire and Davis 1848; Mainfort and Sullivan 1998; Byers 1987, 2004; Pacheco 1996; Greber 1976; Willoughby 1916). Considering that many earthworks are covered in dense vegetation, it is not surprising that visual surveys are ineffective for locating interior earthwork features and that shovel testing is often inefficient for covering the sometimes expansive interior earthwork spaces. This is why structures such as the Great Post Circle and the Moorehead Circle have gone undetected. Investigators have needed an efficient field method that allowed for the positive identification of subsurface remains of features both within and around

earthworks. The application of geophysical survey technology to archaeological research has allowed site coverage to substantially increase. This non-invasive survey method has allowed us to rapidly and non-destructively discover features located within enclosures. The Great Post Circle and the Moorehead Circle represent the discovery of a new form of monumental construction never before seen in the Ohio Hopewell expression. This thesis offers the first descriptive analysis of these monuments and presents a preliminary comparison.

The Great Post Circle located near the Stubs Complex and the Moorehead Circle located within Fort Ancient, are less than five miles apart ideal for inter-site comparison (Figure 1). Their associated earthworks represent the two recognizable styles of Ohio Hopewell earthworks, geometric and hilltop enclosures. They are both circular post structures that have been systematically investigated archaeologically, but documentation of both has been limited. The Great Post Circle was excavated as a salvage effort prior to construction, while the Moorehead circle is still in the early stages of exploration and analysis. This thesis focuses on an intra-site descriptive analysis investigating each structure's architecture with particular attention to post mold (also referred to as posts), interior features, radiocarbon dates, and artifact assemblages, which are then compared between the two sites to gain insight into this new form of Hopewell monumental architecture. The inter-site analysis will also include data from post molds found at the Schultz "Stockade" as an additional comparative example.

Middle Woodland Hopewell

Hopewell is the name given to a set of cultural traits, including unique ceramics, tool types, mortuary practices, and monumental construction found throughout the

Midwest, particularly in Ohio, Illinois, Indiana, and Michigan, that occurred during the Middle Woodland period (200B.C. – A.D. 400) (Brose 1985; Prufer 1961). The root of Hopewell studies lies in the initial quest of antiquarians to discover the identity of the mound builders. In 1848 the Smithsonian Institution published "Ancient Monuments of the Mississippi Valley" which quickly became a standard for studying the earthen monuments of the Midwest (Squier and Davis 1848). This volume is comprised mainly of observations and excavations of mound groups found in the Ohio valley, a focus which became problematic when considering mound groups from outside the Ohio region. During the late 19th century McAdams and Snyder found that Squier and Davis' mound classification did not adequately describe the mound groups found in Illinois (Buikstra et al. 1998). Instead they developed a separate classification system, but continued to call the culture Hopewell. This regional distinction represents the beginning of a unique problem in defining Hopewell culture.

Today Hopewell is generally defined as an amalgamation of "localized polities adapting to local social and physical environments, connected within and across regions by some vaguely defined ideological network expressed in panregional stylistic motifs, raw material choices, and artifact forms" (Jeske 2006: 288). More specifically it has been suggested that there are two approaches to defining Hopewell. Carr (2005) distinguishes between interregional definitions of Hopewell and local Hopewell classifications. The recognition of similar cultural practices, specifically social and ritual, with their material expressions, shared by at least two Middle Woodland groups provides an interregional Hopewell definition. A local Hopewell definition is created by recognizing the overarching similarities, and then identifying specific variations of the interregional

tradition into a local form. There are several local Hopewell traditions recognized as manifestations of collective identity of Hopewell including, Ohio Hopewell, Swift Creek, Copena, Crab Orchard, and Havana. The Ohio Hopewell core area is in the Scioto River and Paint Creek valleys (Brose 1985; Prufer 1961; Byers 1987, 2004; Pacheco 1996; Greber 1976, 1997; Greber and Ruhl 2000; Carr and Case 2005; Dancey and Pacheco 1997; Seeman 1979; Shetrone 1926). Swift Creek and Copena manifestations of Hopewell are found in the southwestern states of Georgia, Alabama, Mississippi, Tennessee, and Kentucky (Beck 1995; Walthall 1973, 1979, 1980; Butler and Jefferies 1986). The Crab Orchard tradition (Butler and Jefferies 1986; Cole et al. 1951; Caldwell 1964; Winters 1967; Struever and Houart 1972) is found in Southern Indiana and Illinois as well as the Havana tradition (Braun 1979; Caldwell and Hall 1964; Deuel 1952; Struever 1965; Tainter 1975, 1977; Griffin et al. 1970; Farnsworth 2004; Moorehead 1928, 1930; Baker et al. 1941; Cole and Deuel 1937; Farnsworth and Wiant 2006; Perino 1968, 1973) in Illinois, Iowa, and Missouri. These traditions all have traits that unite them as Hopewell culture, but have at least one unique material expression of the common cultural practices. This paper focuses on the Hopewell tradition of monumental architecture and is informed by research at a site found in the lower Illinois valley, the Mound House site. Additionally, data on post molds from the Schultz "Stockade" will be used in the comparative analysis.

Illinois Hopewell

"Ancient Monuments of the Mississippi Valley" set the early standard for identifying and discussing earthworks in the Midwest. McAdams and Snyder soon realized that the mound classification system used for the mounds in the Ohio valley

could not be blindly used on the mounds found in Illinois. Instead of the four categories laid out by Squire and Davis (1848), McAdams (1881, 1884, 1887) identified several types of burial mounds (simple round mounds, larger oval or egg shaped structures, and cremation mounds), house mounds, pottery mounds, temples mounds and earthworks. Snyder also recognized differences in mounds types in Illinois. He differentiated between effigy, memorial, and temple mounds (Snyder 1895, 1898, 1909). Even though differences were identified, it seems as though the earthen monuments of Illinois were more often ignored than their counterparts in Ohio. This remained the case until Fay-Cooper Cole and Moorehead began to direct the work of the University of Chicago and University of Illinois, respectively, in the central Illinois Valley.

Twentieth century investigations of Illinois Hopewell earthworks have primarily been concerned with chronology and function. Struever greatly contributed to the new work on Illinois earthworks through his work at the Illinois Valley Kamp Mound group and a synthesis of material from across the lower Illinois Valley Middle Woodland mounds (1960, 1968). Struever and many of his contemporaries focused on the corporate-ceremonial aspects of the Illinois Hopewell by focusing on earthworks, taking an interregional Hopewell approach. Buikstra and Charles provide local Hopewell characterizations, integrating both corporate-ceremonial and domestic spheres. They identify bluff top and flood plain clusters of mounds as two distinct burial arrangements (Buikstra and Charles 1999). Examination of the Klunk and Gibson bluff crest mound groups and contrasting flood plain clusters at Peisker and Kamp lead Buikstra to conclude that this local manifestation of Hopewell buried the more elite segments of the population within the flood plain clusters, while the rest were buried in the bluff-crest

mounds (Buikstra 1976). This is a local Hopewell definition, but she ties these regionally specific practices to interregional definition of Hopewell by positing that the elite individuals were influential in intercommunity relations and were involved in the interregional trade of exotic goods.

Not only do Charles and Buikstra differentiate between bluff-crest and flood plain mounds based on location and evidence of social stratification, but also by the types of mortuary rituals evident at each. They hypothesize that the bluff-crest mounds were used by a single groups participating in ancestor worship, which would be particular to that individual group, while the flood plain mounds were used for mortuary rituals, which could be common to more than one group (Buikstra and Charles 1999). The flood plain mounds also appear to have more constructed features and be the site of more modification than the bluff-crest mounds (Charles and Buikstra 2002). This is evident at the Mound House site, which has particular importance for this paper.

Investigations at the Mound House site in Green County, Illinois located along the lower Illinois River Floodplain are particularly important for this thesis because of the discovery of posts forming concentric circles found underneath the main mound earthwork. This multi-component site has evidence of Early Archaic occupation through the nineteenth and twentieth century Euro American settlement (Buikstra et al. 1998). The Middle Woodland component consists of at least two and as many as five mounds across 5 ha. While excavating Mound 1 in 1994, a series of post molds were discovered below the mound. These posts are on average about 17 cm deep and are spaced about 75 cm apart forming several concentric circles about 20 m in diameter (Buikstra et al. 1998). The post fill suggests a sequence of construction, removal, and replacement. Based on

these observations it is thought that the structure was cyclically built and rebuilt. The close spacing of the posts was initially thought to be evidence of a bent pole, or roofed structure, but when compared to other structures found at other Illinois Hopewell mortuary sites, the floor area was found to be over twice as large and no internal posts were found suggesting the Mound House structure was most likely a screen or palisade (Buikstra et al. 1998: 69, 73). These concentric circles represent a new style of monumental architecture found in the Illinois Hopewell tradition, just as the Great Post Circle and the Moorehead Circle do for the Ohio Hopewell. Drawing on their model of the sequence of ritual behavior related to the patterns of use, this thesis utilizes post size, spacing, and fill consistency to better understand the nature of these new structures.

Ohio Hopewell

In southern Ohio, the most recognizable cultural artifacts created by the Hopewell people are the large geometric and hilltop earthworks. The easily visible mounds and embankment walls of these features have been the focus of research aimed at uncovering their use and function. Throughout the mid-1800s and into early 1900s the list of uses expanded to include sacred places, cemeteries, arenas and settlements (Atwater 1833; Squire and Davis 1848; Mills 1908, 1922; Moorehead 1895). Most recently Weinberger laid out seven uses that have been most commonly suggested over the last 150 years of earthwork research (2006). They are ceremonial centers, burial sites, communal meeting places, trading centers, defense, settlement, and horticulture. It is from this list that hypotheses about earthwork function have evolved.

There are two dominant hypotheses concerning the use of Hopewell earthworks. Both the Ceremonial Center hypothesis and the Corporate Center hypothesis were

developed to explain the presence/absence of supporting evidence for site use. The Ceremonial Center hypothesis narrows the use of earthworks to ceremonial and mortuary activities. This creates a dichotomy between sites being used for sacred or secular purposes. Evidence found in support of this hypothesis often comes solely from mound and embankment contexts. This restrictive perspective is largely due to the ineffectiveness of surface survey, shovel testing and sporadic excavation of non-mound space in providing a clear representation of earthwork activities. It is often concluded that the lack of artifacts is a result of ritual cleaning of the earthworks' interior after ceremonial observance, that people gathering together to ritually witness celestial events or ceremonial observances would not leave lasting artifacts, or that there has not been enough systematic research of these interior spaces (Brown 1997; Mainfort and Sullivan 1998). There are areas where there has been substantial work within earthworks. The results of these excavations led to the development of the Corporate Center hypothesis.

While the Ceremonial Center hypothesis focuses on the ceremonial and burial site uses of Hopewell earthworks, the Corporate Center hypothesis presents the possibility for multiple site uses. This model eliminates the dichotomy of whether a space was used for sacred or secular purposes, and proposes instead a variety of simultaneous site uses, ranging from mortuary and ceremonial to craft manufacture, trading, and feasting (Smith 1992; Greber 1992). When either of these hypotheses is used to describe the function of an earthwork it is used to typify the lifetime of individual earthworks. Habitation structures, charnel houses, and craft production structures have been identified at earthworks such as Hopewell and Seip and included in site use models (Weinberger 2006; Greber 1997). The discovery of monumental architecture associated with

earthworks such as the circles discovered at the Stubbs Complex and Fort Ancient adds another dimension to the range of earthwork functions.

While the focus of this study is the Great Post Circle and the Moorehead Circle, data will also be used from the Schultz "Stockade" for regional inter-site comparison. The Schultz site is located in the Saginaw Valley of Michigan, near the joining of the Tittabawassee and Shiawassee Rivers, which form the Saginaw River. Numerous archaeologists and field crews have worked at the Schultz site. Of interest for this investigation is the work done by the Macomb County field crew consisting of Henry Wright, James Fitting, David Taggart, Gary Wright and Fred Fischer in 1962 and 1963 (Fitting 1972). During their excavations they uncovered a series of post molds about a meter apart and about 22 cm in diameter which is referred to by Fitting as "The Stockade" in the 1972 site report (Fitting 1972). It is the data collected on the post diameters that will be used for inter-site analysis during the conclusion.

This study will examine both the Great Post Circle and the Moorehead Circle in detail and provide an initial comparison of this new form of Hopewell architecture. Through examination of the each circle's posts I will look for patterns in construction technique as well as the construction material use by recording the size of the posts being used, use of post ramp/slip trench, and type and amount of stones for chinking. I will also examine artifacts recovered from post mold excavations to suggest possible uses for the circles themselves. In order to provide an inter-site comparison the artifact samples may be too small to allow for statistical testing, however the types and counts of recovered artifacts will still be valuable for preliminary interpretations. With these details I will provide the first description of these new monumental forms of Hopewell architecture. In

Chapter 2 I will provide detailed information about each of the structures, The Great Post Circle and Moorehead Circle. I will describe the associated earthwork, previous archaeological research done at their respective earthworks, the discovery of the structure, provide a basic description, and inventory the available data from each site. Chapter 3 will outline the analytical methods I used to collect, examine, and interpret the data from both sites. Chapter 4 provides my intra-site interpretation of each site and Chapter 5 provides a preliminary comparative analysis. Chapter 5 will include a comparison of both structures' geographic position, artifact assemblages, and structure architecture with a special look at post mold diameters found not only at the Great Post Circle and the Moorehead Circle, but also at the Schultz "Stockade."

Chapter 2

The Stubbs Complex Great Post Circle, Fort Ancient's Moorehead Circle: Background Information

The Great Post Circle and the Moorehead Circle are both structures discovered within the last ten years, and both are found at earthworks that have been explored for the last 200 years. These structures lie just over five miles apart along the Little Miami River and while the Stubbs Complex is situated within its flood plain, Fort Ancient is located on a plateau overlooking the Little Miami River. This chapter will provide the archaeological background of the earthworks associated with both the Great Post Circle and the Moorehead Circle; it will describe the discovery of each structure; and provide a basic description of each structure.

The Stubbs Complex

The Stubbs Earthworks consists of nearly 1.7 miles of earthen walls located along the Little Miami River floodplain located in Warren County, Ohio (Figure 2). This area is dominated by Wisconsin Outwash and several gravel pits (Genheimer 1997). The enclosure consists of a large rectangle with an adjoining semicircle. First mapped in 1839 by Whittlesey, it was not systematically investigated until the late 20th century. The area was extensively surveyed from 1979-1980 and again in 1983 (Genheimer 1997). These surveys resulted in the discovery of numerous artifacts including diagnostic bladelets, projectile points and pottery sherds. The site was not systematically investigated again until 1998.

Between 1998 and 2000, intensive investigations were conducted at the Stubbs complex to mitigate the impact of expansion of the school that currently occupies the site

(Cowan et al. 1998 and 1999). The Cincinnati Museum Center (CMC), in cooperation with the Little Miami School District, The Archaeological Conservancy, contractors Dugan & Meyers, and a grant from the Fleischmann Foundation excavated the site from 1998 through 1999 (Figure 3). Geophysical survey was employed as a preliminary examination, but due to the gravel composition of the matrix features were not easily recognizable. Over the course of these two years of excavation, Cincinnati Museum archaeologists Dr. Frank Cowan, Robert Genheimer, research associate Ted Sunderhaus, and numerous volunteers excavated more than 3,800 square meters.

The Great Post Circle

Excavations conducted in 1998 revealed nearly 400 post molds representing at least five house structures. These housing structures were unique because most of the Hopewell houses found have been generally rectangular, these ranged from square to circular. Excavations continued in 1999 and it was the work from this field season that revealed Structure 8, later named "The Great Post Circle." Until the discovery of the Moorehead Circle in 2006, was thought to be the only one of its kind in the Ohio Valley.

The structure itself is actually situated 50 m outside the southern wall of the square earthwork (Figure 4) and consists of 171 posts (Cowan and Sunderhaus 2002). The posts from a continuous line around the whole feature with no obvious opening. There is a clustering of posts in the northwest corner. There are five posts that are not a part of the perimeter posts and are all on the outside of the circle. It is not suggested that this is an entrance or opening, but it represents the only variation around the circle.

The Great Post Circle is 75 meters in diameter which means the circumference of the circle is 235.619m (circumference = diameter x pi), rounded to nearest whole number,

236m. The area the circle encloses is 4417.864m^2 (area = pi x radius^2), rounded to the nearest whole number 4418m^2. The entire circle was uncovered during the excavation of Transect 15 and 20 revealing 171 posts (Figure 6). Using the calculated circumference length and the number of posts discovered, the distance between evenly distributed posts should mathematically be about 1.380m (Distance between posts = 236/171). The actual distance between posts was determined by using the scaled drawing and taking measurements between posts along the north arc, posts 613-646 (Table 1). Thirty-three measurements reveal that the average distance between posts is 1.386m.

It is important to remember that the driving force behind the excavation of this structure was salvage. The Little Miami High School made plans for expansion cutting into the Stubbs Earthwork and its surroundings. Where the circular structure was found is now a baseball diamond. Information was gathered as quickly and as thoroughly as possible.

The expedient nature of the excavation allowed for only 57 of those posts to be documented (Table 2). Thirty-three of the 57 investigated were fully cross-sectioned (Table 3). The soil from post investigations was sifted through quarter inch (0.64 cm) mesh. Time constraints did not permit sifting of the balance of the excavated soil. The information gathered for each post investigated includes a to-scale rough plan view, post fill soil color, matrix soil color, interpretations, and artifact numbers and flotation sample numbers. Interpretations range from very detailed to nothing recorded on the feature forms. The disparity seems to be from the experience of the recorder. The only additional information recorded for fully excavated posts is the depth of the post.

Other information available from the excavation of the Great Post Circle includes radiocarbon dates, artifacts, and flotation. The radiocarbon dates were obtained from charcoal samples collected from posts around the circle. The samples were processed by Beta Analytic, Incorporated. Artifacts were collected and archived according to the post they were associated with, but no artifact studies or inventories were completed (Cowan and Sunderhaus 2002; Cowan et al. 1998, 1999). The flotation samples collected from the site have suffered the same fate as the artifacts. The samples have been processed but not reviewed. It should be stressed that a great deal of data was recovered, and while it may not have been processed, it is now the only evidence we will ever have for the Great Post Circle.

Fort Ancient

The Fort Ancient earthwork is located in Warren County, Ohio (Figure 7). Six kilometers of earthen walls enclose about 51 hectares 76 meters above the Little Miami River. Fort Ancient has been considered and discussed in several segments, the South Fort, Middle Fort and North Fort. Warren K. Moorehead (1895) was one of the first to systematically investigate this earthwork and concentrated his efforts on the mounds in the South Fort, where he found burials. The earthwork was not professionally investigated again until the 1980s and 1990s when Patricia Essenpreis and Robert Connolly began investigating areas of the North Fort (Essenpreis and Moseley 1984). In the early 1990s the Ohio Historical Society decided to relocate the museum from outside the earthwork to within the walls of the North Fort. They invited the Ohio State University to investigate the proposed area to ensure nothing of importance was destroyed in the process. A densely populated habitation site was discovered. Expedited

excavations were undertaken and the museum was constructed on top of the footprint of this habitation site. Other investigations have taken place in parts of the Middle Fort, and near the twin mounds just outside the North Fort walls (Connolly and Lepper 2004). New discoveries have been made in the last few years as a result of geophysical surveys done by Jarrod Burkes in 2005 (Figure 8). These surveys have identified features never before examined including the Moorehead Circle currently being investigated by Wright State University.

The Moorehead Circle

Efforts to prevent and control erosion damage at Fort Ancient led to the geophysical survey of a substantial area in the North Fort (Figure 9). This survey was conducted to ensure no archaeological features would be disturbed by heavy trucks moving through the area. The results of this survey produced a plethora of features never before detected by surface surveys (Figure 10). The most predominant of these features is the outline of a circular feature that is about 60 m in diameter. This feature displayed a significant magnetic anomaly at its center and when tested with an auger, produced bright red soil. Excited about this new discovery, the Ohio Historical Society asked Robert Riordan of Wright State University to conduct ground truthing excavations of the circular feature.

Three trenches were opened in June of 2006 with a backhoe, borrowed from the erosion control work. The backhoe was used to open Trench A, Unit B, and Trench C (Figure 10). After initial auger tests it was determined that disturbed soils only extended 16-20 cm below the sod surface. The backhoe stripped 10-14 cm saving the field crew many intense hours of busting sod and removing roots. The remaining 2-6 cm of plow

zone was then removed by hand uncovering cultural floors and intact features. The circular line, apparent in the geophysical survey, revealed itself as a series of posts cutting across Trench A. Several clusters of posts were discovered within Trench A, and a single clear line of posts was found consistent with the circle detected by the geophysical survey. Trench C is situated on the opposite side of the projected circle. It was opened in 2006 while the backhoe was available with the intention of replicating data found in Trench A. Excavations during both 2007 and 2008 were geared towards gathering data from the opposite side of the circle in order to gain a better understanding of the structure. Unit B was opened in 2006 and work continued through both the 2007 and 2008 field seasons. This unit is situated to investigate a highly magnetic feature found in the center of the circle by the geophysical survey. After the 2006 field season the structure was named the Moorehead Circle, after one of the earliest investigators of Fort Ancient.

The shape of the Morehead Circle has been assumed to be circular based on the geophysical data. Excavations of trenches cut along the detected circular line have supported this assumption. Using the interpretational map, the circle has a diameter of 60 meters which means the circumference of the circle is 188.495m (Circumference = diameter x pi), rounded to nearest whole number, 189m. The area the circle encloses is 2827.433m^2 (Area = pi x radius^2), rounded to the nearest whole number 2827m^2. Portions of the circular feature have been examined through the excavation of Trench A and Trench C. While both trenches were stripped of 10-14 cm of soil in 2006, Trench C was covered and left for subsequent field seasons and Trench A was promptly excavated. The geophysical data exhibited several lines that appeared inside the main circular feature,

Trench A was designed to cross-cut not only the main feature, but also these interior arcs. Excavation of Trench A revealed a total of 15 posts with a series of five posts in a line across the (grid) western edge of Trench A. These posts are spaced about .75m apart. The total number of posts used for the circular structure can be estimated using this information. Using the calculated circumference length 189m, the observed distance between posts .75m, and assuming that all the posts are evenly distributed, the estimated number of posts used at the Moorehead Circle is 252 posts (189/.75).

The excavation of Trench C began in 2007 with the intent of duplicating the data found in Trench A. Eleven posts were found during the 2007 field season with an additional eleven discovered in 2008. The main circular feature was more difficult to find, but a post pattern similar to Trench A has been detected.

Unlike the excavations at the Great Post Circle there were few time restrictions laid on the excavation of the Moorehead circle. There is no threat of impending construction. The investigation is being conducted by both Wright State University students as well as a handful of volunteers under Robert Riordan. While a backhoe was employed to remove the top 10-14 cm of soil from Trench A, C and Unit B, the rest of the cultural layers were excavated by hand and 100% sifted through quarter inch (.64 cm) mesh. Over the course of several summers a total of 37 posts have been discovered as part of the circular ring (Table 4). Each of these posts has been cross-sectioned. The information gathered for each post investigated includes a scaled plan and profile map, post fill soil color, matrix soil color, feature contents, detection level elevation, chinking stone weights if present, diameter of the top, base, and post depth.

Other information available from the excavation of the Moorehead Circle includes radiocarbon dates, artifacts, and flotation. The radiocarbon dates were obtained from charcoal samples collected from posts around the circle. The samples were processed by Beta Analytic, Incorporated. Artifacts were collected and archived according to the post they were associated with. Wright State University lab classes have processed all the artifacts recovered producing an accession catalogue, preliminary analysis, and artifact summaries. The flotation samples collected from them have been processed and the faunal analysis is being conducted by Karen Leone of Ohio Valley Archaeology Consultants, Ltd.; Wright State lab is in possession of the heavy fraction.

The discovery of the Great Post Circle and the Moorehead Circle is separated by just under ten years. This separation allowed for the Great Post Circle to sink into obscurity as a random anomaly found in association with Hopewell earthworks. The discovery of the Moorehead Circle in association with a Hopewell earthwork, and so close to the Great Post Circle requires a more detailed understanding of these little-known monuments. This thesis documents these features in detail and provides the first comparative analysis while also incorporating data from what appears to be a similar structure in Michigan. This thesis also lays the foundation for examining other such structures in the future. The next chapter will outline the data I collected in order to explore these structures and how I use that data to interpret and compare these structures.

Chapter 3

Analytical Methods

In order to provide a preliminary comparative analysis of the Great Post Circle and the Moorehead Circle, it is necessary to examine each site individually. The first issue to be addressed is the nature of the structure. How was the structure built, and is there a pattern in the construction material and methods? With such large monumental structures it will be valuable to look for regularity in the construction to observe if it was a single construction event conducted by one or multiple groups, or if multiple groups were working on the same project, but with different ideas of how to meet the goal. The next question to be asked is the periodicity of the structures. Were the structures built for one long-term purpose, or were they used cyclically? The patterns of cyclic post replacement observed through the examination of post fill and placement at the Mound House Site will be used as an example for this investigation. After this intra-site analysis is completed it will be possible to compare the Great Post Circle and the Moorehead Circle and, along with limited data from the Schultz "Stockade," a baseline of comparative data for future analysis is provided.

Data Collection

To address issues of construction consistency, periodicity, and dating, several sets of data are necessary. Construction consistency will be analyzed based on information from post molds (hereafter also referred to as posts). Metric data will include the diameter and depth of the post, weight of associated chinking stones, and the distance between posts, the presence of slip trenches will be investigated. Diameter will be measured by examining the plan view maps at the level of detection, while the middle

and base diameters were determined from the profile maps. From the Schultz "Stockade" only the level of detection diameter will be considered. The distance between posts will be measured from the center point of each post. These variables will allow for a better understanding of construction materials and technique. Examination of the post fill and the relationship of posts to each other will be used to discuss the periodicity of use and maintenance of the structure. Stratified post fill and evidence of concentric circles, like that found at Mound House, will be used to indicate multiple construction and use episodes (Buikstra et al. 1998). A long-term use will be evidenced by a single circle, homogenous post fill, little or no evidence of post replacement and the presence of large amounts of chinking stones. To date the structures, both radiocarbon dates and artifact assemblages will be used. Radiocarbon dates from both the structure post fills and from interior features will be used. In addition, artifacts found in association with the posts and with interior features will be used to not only characterize some of the activities, but also diagnostic artifacts will indicate the time frame the site was used. To ensure that the data being analyzed will be useful not only for intra-site analysis, but for inter-site analysis as well, sample selection must be comparable.

Sample Selection

While the field methods at both the Great Post Circle and the Moorehead Circle are varied, comparable samples can be identified. Excavated post molds at both sites include information about the diameter and depth of posts, as well as the presence of slip trenches and associated chinking stones. From the Schultz "Stockade" only the diameters of the excavated post molds will be used (Table 19). Excavated interior features at both sites are focused in the center of the circles. At the Great Post Circle a trench was cut

across the circle searching for central interior features, and at the Moorehead Circle the geophysical survey indicated the presence of a central feature. The artifact sample selection, however, is more complicated. Time restrictions at the Great Post Circle dictated that only the soil from individually excavated posts was sifted, while at the Moorehead Circle 100% of the soil, below the backhoe stripped 10-14 cm, was sifted. To ensure comparable artifact samples, only those artifacts found while investigating posts will be examined. For the Great Post Circle, artifacts from posts will be inventoried and analyzed. At the Moorehead Circle lot numbers are assigned to each discovered post, and artifacts collected while cross-sectioning the post are catalogued with the same lot number as the post. While the artifacts may not have come directly from the post fill at either site, they were recovered in the same manner.

From the Great Post Circle data was recorded for 57 posts, 33 of which were fully excavated with profile maps. Post mold metrics were gathered from the completed feature forms. The feature forms also indicate whether chinking stones or artifacts were recovered with associated field specimen numbers. Of the 33 posts excavated, 13 of the feature forms indicated recovered chinking stones and 19 indicated artifact collections. Data was collected by examining the contents of the each bag associated with the 19 posts with recorded artifacts. Chinking stones and artifacts are curated at the CMC lab (Table 5 and 6) Radiocarbon dates were also run for four of the posts in the circle.

From the Moorehead Circle a total of 37 posts were identified, only two of which were not fully excavated to provide a profile. Post data was collected by examining the feature forms, feature plan scale maps, and feature profile scale maps. If chinking stones or artifacts were recovered and stored in the lab at Wright State University, their lot

number is recorded on the feature form; some of the chinking stones recovered from posts were weighed in the field, recorded on the feature form, and then discarded and are included in this study. Of the 37 posts with feature forms, 12 had available chinking stone data (Table 7). Twelve posts were found to have associated artifacts resulting in two bladelets, 27 flakes, 26 pieces of ceramic, three pieces of exotic material, several pieces of FCR, and 19 pieces of bone (Table 8). Artifact data for the ceramics was collected from artifact forms completed by Wright State University lab classes, the bladelet and lithic data was derived from artifact analyses of Joe Shaffer (2007) and Logan Miller (2008) respectively, the rest was gathered from the accession catalogue, organized by lot numbers, kept for all artifacts recovered and stored in the Wright State University lab. A total of five radiocarbon dates have been run for the posts in the Moorehead Circle.

Chapter 4

Intra-Site Analysis

The Great Post Circle

Structure Architecture

The Great Post Circle is defined by 151 exposed post molds. Of those 151 posts 57 were documented, and 33 of those were cross-sectioned. Post mold diameter, depth, presence of chinking stones, and indication of slip trenches were recorded for each of the 33 cross-sectioned posts (Table 2). The quantitative data, the diameter of the post and the depth of the stain, has been subjected to descriptive statistical analysis (Table 9), while the quantitative data, presence/absence of chinking stones and slip trenches has been recorded and totaled.

The Great Post Circle is situated on a glacial outwash plain peppered with modern gravel pits. With the difficulty of digging through packed gravel and cobble matrix, it is surprising that the posts used in construction of the Great Post Circle are rather substantial. The level of detection for the posts was not recorded on the feature forms; however it can be assumed that the level of detection was approximately 20-25 cm below surface, the range in which the backhoe was operating. At the level of detection the diameter of the post was measured for 56 posts. The average diameter is 45.1 cm with a standard deviation of 8.2 and a standard error of 1.1 (Table 9). Of those 56 posts, 33 have the depth of the mold recorded as well. The average depth is 48.5 cm with a standard deviation of 11.03 and a standard error of 1.9 (Table 9). If Post 537 is considered an outlier based on its *z*-score of 3.3, then the statistics become tighter, with an average depth of 47.3 cm with a standard deviation of 9.0 and a standard error of 1.59. Post 537

could legitimately be an outlier, should this post have been found before the backhoe continued its cut, unfortunately there is nothing in the notes to suggest an excavation reason for why this post is so deep.

For many of the posts recorded, chinking stones were found associated with posts and collected. There are occasions when the feature form does not mention chinking stones being associated with the post, but artifact lots exist with stones extracted from the post. Twenty-two posts have associated chinking stones with a total of 202 stones weighing a total of 181.3 kg (Table 5). Most of the chinking stones were tabular limestone, but there were also some sandstone pieces as well as cobble-size stones. The largest stone was found with Post 492. The stone measured 45 cm by 25 cm and weighs 14 kg. Each post had at least one stone that weighed close to 1 kg, and many posts had at least one stone over 2 kg. The calculated average post chinking stone weight is about 8 kg with a standard deviation of 9.1 and standard error of 1.9 (Table 5). Post 490 is well above this average at 36.7 kg. Eliminating 490 as an outlier the average becomes 6.6 kg, the standard deviation decreases to 6.7 and the standard error is reduced to 1.5. Nine posts are recorded as having post ramps associated. Ramps were identified by an oval shape at the top of the post and a more circular post mold base.

Radiocarbon Dates

Four radiocarbon samples were processed for posts at the Great Post Circle. Post 537 returned a modern date and has been attributed to an intrusion and discarded as a viable date for the structure (Cowan and Sunderhaus 2002; 11). Post 531, 594, and 632 returned dates with a weighted average of A.D. 180 +/- 40 (Beta-156230, Beta-156232,

Beta-156233), securely placing the circle in the second half of the second-century A.D. (Cowan and Sunderhaus 2002; 13).

Interior Features

Transect 16 was cut through the center of the Great Post Circle in an effort to locate the opposite edge as well as to determine if there was a central feature. Several more transects were opened as offshoots of Transect 16. Transects 17, 18, and 24 were cut perpendicular to Transect 16 in order to explore the interior of the Great Post Circle. The backhoe was used to open all the interior transects, removing 20-25 cm. Feature 595, located in the western end of Transect 16, appeared as a shallow basin feature 110 cm long by 75 cm wide. There interior soil matrix was a silty loam, while the surrounding soil was a sterile subsoil mixed with rounded gravel. Cultural material was found including ceramics, lithics, and FCR, but nothing diagnostic. The edge of a feature was discovered on the northern wall of Transect 16 necessitating the cut of Transect 17 to define the feature. Feature 506 is identified as a large area containing several posts and a pit feature. Within Feature 506 are Posts 679, 980, and 681. These posts averaged 22 cm in diameter with a depth of 20 cm cutting through the darker soil of Feature 506. Feature 688 is a shallow basin-shaped pit feature about 80 cm in diameter. Feature 506 was distinctive because its fill was mostly free of gravel, unlike the surrounding area, which is part of an outwash.

Artifact Assemblage

To ensure comparable artifact assemblage samples for inter-site comparison, only those artifacts found during post excavation were examined. The artifacts were classified into one of eight categories, bladelet, biface, flint flake, formal tool, ceramic, bone, fire

cracked rock (FCR), or exotic (Table 8). Quantitative measurements were taken for both lithics and ceramics. For the lithic artifacts, length, width, relative thickness, and weight were measured and weight was also recorded for ceramics. Quantitative information was also recorded for ceramics including temper type and decoration identification when possible. Seventy-eight artifacts were examined from the Great Post Circle. Four bladelets, 16 flakes, eight pieces of FCR, 21 pieces of ceramic, 20 pieces of bone, and seven pieces of exotic material, were inventoried from post excavation, no bifaces or formal tools were identified.

The lithics found in association with posts at the Great Post Circle include four bladelets, 16 flakes, and eight pieces of FCR. Fire cracked rock was not examined in detail, but its presence was recorded. All eight of the pieces collected from post-context were from two consecutive Posts 503 and 504. One complete bladelet was found in association with Post 531, there were also two distal ends and one proximal end found (Table 10). Variation in the fragment sizes of the bladelets recovered makes both length and weight unreliable variables. Width is a more consistent variable considering most bladelets break along their middle, not down the length. The average width for these bladelets is 10 mm. Sixteen flakes were found in association with the posts (Table 11). Flake type, length, width, and thickness were recorded for each flake. Flakes were classified as a primary reduction flake (Wilmsen 1970:25), thinning flake (Crabtree 1972:94) or a trimming/sharpening flake (Vickery 1983:74), coded in the chart as CI, CII, CIII respectively. There were three primary reduction flakes, seven thinning flakes, and six trimming flakes. The average length of the flakes was 18.3 mm; average width 11.0 mm; average thickness 2.6 mm; and average weight 0.8 g (Table 12).

The ceramics found with the Great Posts Circle posts do not deviate from the typical ceramic assemblages found in and around the Stubbs Complex. Ceramics are generally a rare find in and around the Stubbs Cluster. Twenty-eight discrete Middle Woodland surface scatters were identified between 1979, 1980, and 1983, with a total of 9,684 recovered artifacts of which only 132 were ceramic sherds (Genheimer 1997). Most of these ceramic pieces were grit temper and identified as Middle Woodland. At the Great Post Circle 21 pieces of ceramic were found in direct association with the circle's posts. Five of the pieces from Post 557 were badly eroded making identification of temper, vessel region, and thickness impossible. The same is true for the piece found in association with Post 484. The remaining 15 pieces were examined with their vessel region, temper, thickness, and surface treatment recorded (Table 13). Ten of the pieces are body sherds, three are from the neck region, and two are rim pieces. All of the pieces are grit tempered. Five of the pieces displayed cord marked surface treatment. Of those five one is a neck piece, the rest are body pieces. The average weight of the 15 usable pieces is 6.3g and the average thickness is 6.8 mm. This collection of ceramic pieces is consistent with the other collections of ceramics found through the Stubbs Complex.

Bone was found in eight posts. The presence of 20 pieces was recorded for these posts (Table 6). Post 500 had numerous pieces of burned degrading bone and no specific number of pieces has been recorded, because even during the process of handling the pieces, new ones were formed at an alarming rate. Fifteen of the pieces and the unnumbered fragments are associated with consecutive Posts 490 through 503.

Seven pieces of mica were found in as many posts (Table 6). Mica is considered an exotic good, because its source is not in Ohio but in the Carolinas. The mica pieces came from seven different post context and none of the pieces display worked edges.

Discussion

It is difficult to consider construction consistency, periodicity, and dating statistically because of the small sample size. Instead it becomes valuable to consider the data inferentially. Diameter and depth of the post molds indicate a high degree of construction consistency. This homogeny in post diameter suggests a pattern in the selection of trees used for construction in order to create uniformity for visual effect. On initial inspection, the depth the posts were set does not appear to be standardized. The basic statistics show a large standard deviation and at least one outlier, Post 537. The gravelly nature of the Wisconsin Outwash would have made digging post holes extremely difficult and is most likely the cause for the variability in post depth, and not a lack of desired uniformity. The post fill is consistent across the excavated posts indicating that the posts were removed and never replaced in the same circle. The lack of concentric rings also suggests that this circle was built and used for a single purpose, then decommissioned and erased from the landscape unlike the Mound House site. At the Mound House site the concentric circles indicate repetitive activity concluded by the mound building phase.

The small artifact assemblage, gathered from the post mold excavations, cannot be used to categorize the function of the site, but is useful for general observations of the nature of localized site activities and dating. The presence of several different flake types suggests that there was not one particular stage of lithic reduction, such core reduction or

tool manufacture taking place. If the structure was used as a specialized lithic manufacturing area, even with a small sample, we would expect to see more consistency in the shape, size, weight, and especially relative thickness of the flakes (Connolly 1991). The ceramic pieces all contain a grit temper, with no special inclusion such as mica or hematite, and only five of the pieces display decorative markings. This lack of special treatment suggests that the vessels these sherds belonged to were not necessarily ceremonial. The presence of FCR and bone, both burned and unburned, indicates that food may have been prepared in the area, however even with such a small sample the lack of an interior hearth feature virtually eliminates the possibility that the structure was used to prepare and hold ritual or large feasting activities. All together the small sample of artifacts found at the Great Post Circle seems to indicate domestic activities along the post wall. These artifacts could have been left prior to the construction of the structure or even after, but it is certain they were present when the structure was decommissioned in order for them to become post fill. While this does not help sort out what activities may have been directly concurrent with the use of the structure, it does indicate that the area was not ritually cleaned. The discovery of seven pieces of mica may alter this generalization; however the pieces were small flakes, lacking cut marks that would indicate they were the direct result of craft production. As for dating, the presence of bladelets, diagnostic of Middle Woodland, coupled with the Middle Woodland radiocarbon date from Post 531 indicate that the Great Post Circle is a component of the monumental architecture tradition of the Hopewell people and most likely contemporary with the Stubbs Complex.

The Moorehead Circle

Structure Architecture

A total of 37 posts have been found during the excavation of exterior Trenches A and C. The diameter at the level of detection was recorded for all but one of these posts and 35 of the posts were fully excavated with the depth of the post recorded. The presence of chinking stones and slip trenches was also recorded. The data from Trench A provides a more distinctive picture of the main circular feature than the post information recovered so far from Trench B. It is hoped that by first analyzing the data from Trench A that a pattern will emerge that will prove helpful in distinguishing main circle posts in Trench C.

The level of detection for the posts found in both Trench A and C was generally 30 cm below surface. The average diameter for the posts found in these exterior trenches is 22.14 cm with a standard deviation of 6.04 cm and a standard error of 1.01 (Table 14). The average depth of all the posts excavated in both trenches is 47.51 cm with a standard deviation of 24.56 cm and standard error of 4.15 (Table 14). Trench A provided the most distinct picture of the main circular feature with the discovery of Posts 06-1, 06-5, 06-8, 06-16, and 06-17. Of these five posts the depth of three were recorded for Posts 06-1, 06-5, and 06-16. The depth of these three average about 96 cm. The average depth of all 13 posts found in Trench A is about 59 cm. Removing the main circle posts the average drops down to 48.5 cm. Trench C posts were more confusing and a clear pattern of main circle posts, like that found in Trench A, is not as apparent. The average for the 22 posts found in Trench C is 40.5 cm. Even though the detection level of the posts found in Trench C is the same as that of Trench A, the posts are set less deeply. The only post

found in Trench C that is comparable to the posts found in Trench A as far as depth is Post 07-56. This post is set 81 cm deep and is the deepest post in Trench C. The examination of post diameter and depth alone does not help distinguish the main circle posts in Trench C.

The presence of slip trenches and the amount of chinking stones found with posts, adds detail needed to potentially distinguish between the main post circle and other features. Of the posts uncovered in Trench A only five had distinctive slip trenches associated with them. There were 06-1, 06-5, 06-8, 06-16, and 06-17, the main circle posts. All of these slip trenches were found to be on the exterior of the circle. Contained within these slip trenches are substantial amounts of rock (Table 7). Two of the slip trenches were dismantled and the rock contained within weighed. The slip trench of Post 06-1 contained 37 rocks weighing a total of 101.6 kg. The largest stone found weighed 14 kg. The slip trench contents of Post 06-05 were strikingly similar. There were 39 rocks weighing a total of 98 kg, the largest single stone weighed 11.5 kg. In addition to the stones found within the slip trenches of Posts 06-1 and 06-5, chinking stones were weighed for Posts 06-3 and 06-23. These contained far less stone with a total of 16.5 kg between the two.

Chinking stones and a slip trench were found in Trench C, but again there was no great distinction between outer circle posts and other feature posts. Stones were weighed for eight posts. Post 07-56, the most likely candidate for an exterior circle post based on its depth, was found to have a slip trench. Unlike the slip trenches found in Trench A this slip trench lay on the inside of the circle instead of on the outside. A portion of the slip trench was excavated, but not all of the stone was removed. The stone that was removed

totaled six stones weighing 64 kg, the largest stone weighing 22.2 kg. It is more than likely that the total weight of stone contained within the slip trench would reach 100 kg, similar to that of the posts found in Trench A. Posts 07-60 and 08-93 also contained substantial amounts of chinking stones. Post 07-60 was a large pile of rocks that when investigated revealed four posts. Two posts were found on either side of the rock pile and it was evident that one post from each side had been pulled and replaced by the neighboring post. The rock weight from 06-60 is 67.5 kg from 49 rocks. Post 08-93 was found to contain 54 rocks weighing in at 40.5 kg, but no slip trench is evident. Other posts found in Trench C containing chinking stones ranged from 7 kg to 18 kg.

Radiocarbon Dates

Radiocarbon dates have been obtained from four of the posts found in the exterior trenches A and C. From Trench A two samples were taken and tested from Feature 06-1. A sample was taken from the post hole, resulting in a date of 1600 +/- 40 RCYBP (Beta-225389) calibrated at two sigma A.D. 390-550 (Riordan 2008: 11). Another sample was taken from underneath the rocks at the bottom of the associated slip trench resulting in a date of 1870 +/- 40 RCYBP (Beta-225391) calibrated at two sigma A.D. 60-240 (Riordan 2008: 11). The disparity between these two dates is enough to determine that there are two different eras being represented by the radiocarbon dates. There is no evidence to suggest that the post hole or slip trench were re-excavated after construction and the amount of rock present both in the slip trench and in the post hole itself should have deterred burrowing animals from introducing carbonized material at a later time suggesting that one of these dates is wrong (Riordan 2006). Another date was obtained from Feature 06-21, a post found approximately one meter from Feature 06-1. This is a

smaller post and not one of the main outer ring posts. The date for Feature 06-21 is 1950 +/- 40 RCYBP (Beta-255388) and calibrated to 40BC-AD130 at two sigma, which is good Middle Woodland date (Riordan 2008; 11). It is not expected that this post dates the same as the larger posts associated with the main circle, but given its proximity it can be expected to be related to the presence of the circle. Because the date from Feature 06-21 overlaps with the date from the slip trench of Feature 06-1 it has been suggested that the Circle was constructed during the mid-first century to early second century A.D., rejecting the date from the post hole of Feature 06-1 as intrusive (Riordan 2006).

Two dates were taken from Trench C posts as well. Samples were tested from Feature 07-56 and Feature 08-125. Feature 07-56 returned a date of 2010 +/- 40 RCYBP (Beta-251617) calibrated at two sigma the calibrated date is 100BC – AD70 (Riordan 2009: 7). This date falls nicely into the proposed time frame of the Moorehead Circle derived from the dates gathered within Trench A. Feature 08-125 also returned Middle Woodland date of AD10-210, 1890 +/- 40 RCYBP (Beta-251622) (Riordan 2009: 7).

Interior Features

Excavation trenches were set at the Moorehead Circle based on the results from geophysical survey. Unit B was placed in the estimated center of the circle to investigate a magnetic anomaly. After the geophysical survey indicated the presence of this anomaly, an auger test was preformed and found to contain a distinctive red soil. Unit B was designed to uncover and investigate this anomaly. It was found that the red soil was part of a large circular feature. Designated as Feature 06-22 the red soil area is oval in shape measuring 4.7 m north-south, and 4 m east-west. Auger tests indicate that the red soil may go down as far as 80 cm. Soil from Feature 06-22 has resulted in no artifacts and no

radiocarbon samples. Surrounding Feature 06-22 is an apron of unburned soil containing burned timbers and hundreds of ceramic pieces. It appears as though entire pots were smashed against Feature 06-22. An array of other features has been found within Unit B as well. A number of posts have been found, including four that appear to mark the four corners of Feature 06-22. There have also been several trench features found containing posts within the trench. Artifacts from these features included diagnostic bladelets, as well as a great number of mica pieces, several of which have cut marks. Radiocarbon dates were taken for Feature 06-4, a pit feature, as well as from Feature 06-42 the apron surrounding Feature 06-22. The radiocarbon sample from 06-4 resulted in a calibrated date of A.D. 420-610, and 06-42 resulted in a calibrated date of A.D. 250-420.

Artifact Assemblage

To ensure comparable artifact assemblage samples for inter-site comparison, only those artifacts found during post excavation were examined. The artifacts were classified into one of eight categories, bladelet, biface, flint flake, formal tool, ceramic, bone, fire cracked rock (FCR), or exotic (Table 8). Quantitative measurements were taken for both lithics and ceramics. For the lithic artifacts, length, width, relative thickness, and weight were measured and weight was also recorded for ceramics. Quantitative information was also recorded for ceramics including temper type, appearance of decoration, and decoration identification when possible. Eighty artifacts were examined from the Great Post Circle. Two bladelets, 27 flakes, three pieces of FCR, 26 pieces of ceramic, 19 pieces of bone, and three pieces of exotic material, were inventoried from post excavation, no bifaces or formal tools were identified.

Twenty-seven flakes were recovered from post mold excavation (Table 15). Of those flakes 11 were classified as CIII trimming flakes, thirteen as CII thinning flakes and three as CI primary reduction flakes. The average length of this flake set is 15.27 mm, width is 11.94 mm, thickness is 2.28 mm and weight is 0.62 g (Table 16).

The ceramics found on the perimeter of the Moorehead Circle have been generally the same. Of the 1,510 ceramics found during the excavation of the Moorehead Circle only 198 of those pieces were found in the perimeter excavations of Trench A and Trench C. The perimeter pieces are almost all plain grit-tempered body sherds (Riordan 2008). There are several exceptions including five rim sherds, 19 cord marked pieces, and one rocker stamped piece (Riordan 2008). The 24 pieces of ceramic found in post contexts don not include any of these variations (Table 17). All of the recovered pieces had grit temper and were body fragments. None of the pieces displayed any type of surface treatment. The average weight of the pieces recovered is 2.28 g and the average thickness is 6.03 mm.

Bone was found in association with only one post in Trench A, and with seven posts in Trench C. Nineteen total pieces of bone were recovered, 18 of which came from Trench C (Table 8). No exotic material was found in association with Trench A posts, however several pieces of mica were found with Trench C posts. None of the pieces displayed recognizable cut marks.

Discussion

While the excavation strategy at the Great Post Circle was to uncover the exterior posts around the entire circle, the strategy for excavating the Moorehead Circle has been to examine samples from two separate sides. Impending destruction is not a driving force

for the excavation of the Moorehead Circle allowing for information to be gathered from samples, leaving the potential for much of the site to remain undisturbed and intact. There are clear patterns of posts within Trench A. A series of five posts (Features 06-1, 5, 8, 16, 17) were found arcing across the western end of the Trench A and is considered the main circle. These posts presented the same pattern of slip trench and post with extremely similar post diameters, depths, and chinking stone weights. Toward the eastern end of Trench A another line of posts is evident including Features 06- 2, 3, 23, 24, and 25. These posts form another arc about five meters inside of the main circle. The presence of two circles is similar to the concentric rings found at Mound House, although there is no evidence of cyclic use of post holes. The configuration of posts at Trench C has been more difficult to interpret.

It was anticipated that the excavation of Trench C would duplicate the data found in Trench A, identifiable arcs of posts with similar post size and construction methods such as the use of slip trenches. After two years of excavation in Trench C the only statement that can be made with certainty is that there are posts. Excavation of this area has yielded 22 posts, and no clear patterns. Several posts have similar characteristics to those of the main line in A (Feature 07-55, 56, and 78), but their spacing does not suggest a line that would match up with the one found in A. The only post that is set at about the same depth as the main line in A is Feature 07-56, which has a depth of 81 cm, where all main line posts in Trench A have a depth of at least 90 cm. The geophysical survey data does suggest that there are additional features to the main circle in close proximity of Trench C; this could explain the scattering of posts. Future excavation will hopefully help

sort out the plethora of posts found in C, but for now Trench A provides the clearest representation of the Moorehead Circle.

The Schultz "Stockade"

The focus of this thesis is the circles found in the Ohio Valley. In order to provide a brief regional comparison the Schultz "Stockade" is considered. The feature is 43 m in diameter and located near the base of an earthwork mound. One hundred and twenty-seven posts were uncovered, 22 of which were fully investigated and recorded. Data was gathered from the 1972 site report of the Schultz Site edited by James Fitting. The post data was recorded in a table in English and for this report was converted into metric centimeters (Table 19) for consistent comparison with the Great Post Circle and the Moorehead Circle (Fitting 1972: 18). The average post diameter is 21.41 cm with a standard deviation of 4.72 cm (Table 19).

Chapter 5

Preliminary Comparison of the Great Post Circle and the Moorehead Circle and Conclusions

The goal of this thesis is to systematically examine a little known type of Hopewell architecture. The Great Post Circle and the Moorehead Circle are the only two documented examples of large post circles found in the Ohio Valley. Chapter four provides data and interpretation specific to each site. This chapter uses those observations to comment on similarities between the Great Post Circle and the Moorehead Circle in geographic position, structure architecture, and artifact assemblages. Post diameters will be a focus of the section on structure architecture and will include data from the Schultz site. At the end of this chapter will be concluding thoughts as well as how this information can be used in the future.

Geographic Position

A little more than five miles separate the Great Post Circle and the Moorehead Circle. Both are associated with Middle Woodland Hopewell earthworks situated along the Little Miami River. The earthworks associated with these wooden circles represent not only two different earthwork types, but are also located on two different land forms: a floodplain geometric enclosure and a hilltop enclosure. While it is unclear how common these post circles are, these observations suggest they may be found at a variety of sites and locations.

Structure Architecture

Superficially the Great Post Circle and the Moorehead Circle appear similar because they are both large circles made of posts. Closer examination of the posts reveals

patterns in their construction. Mound House in Illinois provided the example for what variables to examine to determine if the structure had been built and rebuilt in the same location indicating cyclic use. If the structures were used only once, homogenous post fill or evidence that the post rotted in place would be expected; if they were used in a cyclic pattern than layered post fill would be expected. At both sites, excavations of the post molds reveal that the posts had been pulled indicating that the structures were used for one set period of time at the end of which they were decommissioned and dismantled.

The average diameter of the posts appears to be internally consistent within the Great Post Circle, the Moorehead Circle, and the Schultz "Stockade" suggesting that at each site a specific diameter of tree was selected for use as structure posts. Examining the histograms of the diameters at the Great Post Circle, Moorehead Circle, and the Schultz "Stockade", they all appear to be normally distributed allowing for simple t-tests (Table 20, 21, 22). The Great Post Circle's average post diameter is over 20 cm larger than those of the Moorehead Circle and the Schultz "Stockade". This difference is reflected in the t-test results of 14.40 ($df = 90$) and 12.58 ($df = 76$), respectively, indicating population difference with a 99% level of confidence. The results between the Moorehead Circle and the Schultz "Stockade" however indicate no difference with a result of .26 ($df = 56$) and a confidence interval of 95%. Differences in post diameter may be due to the types of trees available for construction or for a desired aesthetic look. The t-test results indicated a possible correlation in the post size being used at both the Moorehead Circle and the Schultz "Stockade", while larger posts were being used at the Great Post Circle. This difference may be related to the size of the circle, the Great Post Circle has the largest

diameter. Regardless it is apparent that there is internal consistency within each of these structures.

As for post depth there is greater comparability. The average post depth at the Great Post Circle is 48.45 cm and at the Moorehead Circle average depth is 47.51 cm. This is interesting considering how difficult digging through glacial outwash would have been at the Great Post Circle, but more than likely indicates the depth was necessary in order to support the size of the posts being used.

It appears that at both sites post ramps, or slip trenches, were used. Nine of the 33 fully excavated posts at the Great Post Circle have notes indicating the use of post ramps, while at the Moorehead Circle slip trenches have been recorded for four of the 37 posts. Chinking stones for post stabilization were also used at both sites. While the amount of chinking differed between both sites, limestone was the most common chinking material at each structure. The similarities found in post depth, intra-site consistency in post diameter, and the common use of post ramps and chinking stones suggest a regular pattern in construction methods at the Great Post Circle and the Moorehead Circle. The radiocarbon dates derived from post fill at the Great Post Circle and Moorehead Circle overlap suggesting that the structures may have been on the landscape at the same time.

Artifact Assemblages

The artifact assemblages from these two sites are small, but they seem to represent the same range of activities. Artifacts were collected from the post fill at both sites and most likely represent activities that are roughly contemporary with monument use. Even so, the collections of both sites are relatively similar with comparable numbers of each of the six artifact classes recorded; bladelets, flakes, ceramics, exotics, fire

cracked rock (FCR), and bone. There are disparities in the counts of artifacts within these classes, but it is important to note again that all of the posts excavated at the Great Post Circle were clearly part of the main circular structure, while at the Moorehead Circle there are only five posts that are positively identified with the main circle from Trench A and two from Trench C that have the same signature.

The flakes found at each structure have similar measurements in length, width, thickness, and weight. They also have similar measures of relative thickness. Relative thickness is calculated by taking the sum of the flake's length and width, and then dividing it by its thickness, and when considered with measurements of weight, can be used to comment on reduction stages (Connolly 1991). Connolly recommends the use of median values for both the relative thickness and weight because the standard deviations are usually too great to give the mean relative thickness much value. The median relative thickness for the Great Post Circle is 0.5 mm and the median weight is 0.5g (Table 9) while at the Moorehead Circle the relative thickness is 0.3 mm and median weight is 0.3 g (Table 14). Small thin flakes are generally the result of final stages of tool manufacture, while larger thicker flakes are the result of core production and earlier stages of reduction. In both relative thickness and weight the Moorehead Circle flakes appear to be smaller and thinner than the Great Post Circle. While this indicates that more tool finishing or retouching may have been occurring at the Moorehead Circle, the samples size is small.

The ceramics from both sites suggest that there may have been similar depositional activities. The ceramic data recorded for this study is intended to provide a preliminary overview of the variety and amount of material found in association with the

posts of the circles. The Great Post Circle ceramic collection includes several cord marked pieces while the Moorehead Circle collection contains none. This is not considered significant because the larger ceramic assemblages from both sites include primarily undecorated sherds with small collections of cord marked and/or rocker stamped pieces. Solheim's (1961) sherd per ounce methodology proposes that if an assemblage shows no significant difference in the kind of sherds, expressed in the number of sherds per ounce (in this case grams), then the site can be considered homogenous. The expectation is that the combination of the Great Post Circle and the Moorehead Circle ceramic assemblages will indicate two sites that have similar relative amounts of ceramic debris and experienced similar depositional activities. Two ceramic types are found at the Great Post Circle and the Moorehead Circle, grit temper plain and grit temper cord-marked. The sample contains a total of 39 pieces with a total weight of 148.3g. When sorted into the two varieties, plain and cord-marked, the number of pieces per gram is essentially the same 3.7 and 3.9 respectively. This suggests that the Great Post Circle and the Moorehead Circle have similar amounts of ceramic pieces resulting from similar levels of activity, deposition and/or taphonomic processes.

Both sites also have collections of FCR and bone, burned and unburned. It is interesting to note that at both sites bone fragments are in spatially distinct clusters. As mentioned in the intra-site analysis, 15 of the 20 pieces of bone found at the Great Post Circle were found among consecutive Posts 490-503 on the southeast end of the circle. At the Moorehead Circle a similar pattern was found; 18 of the 19 pieces of bone found were found in Trench C on the southwest (grid north east) side of the circle. Both sites also have pieces of mica.

Conclusions

This paper set out to investigate possible patterns within and between the Great Post Circle and the Moorehead Circle. The artifact assemblages are small and can be used to comment on the amount of material being left around the posts themselves, the taphonomic processes affecting them after they were discarded, and offer some chronological indicators. There are some significant differences in the amount and type of interior features, such as the mound of red soil surrounded by a ceramic-filled burned apron at the Moorehead Circle and the relative lack of interior features at the Great Post Circle. Possible explanations for these differences could be attributed to the expedient nature of the work done at the Stubbs Complex, or even to variation in activities associated with the structures. Evidence from the excavated posts indicates an internal construction consistency. From these details it can be concluded that the Great Post Circle and the Moorehead Circle represent two similar monumental structures, built with comparable materials and techniques.

The information provided and assessed here offers a preliminary framework for examining circular post structures too large for roofing. So far the Great Post Circle and the Moorehead Circle represent the only two excavated examples in the Ohio Valley; this study demonstrates that they are not singularly unique structures. The brief examination of the Schultz "Stockade" and its comparability to the Moorehead Circle indicates an important possibility that more of these structures have been lost into obscurity or have yet to be discovered. The Great Post Circle was discovered as part of a salvage excavation designed to uncover features that were going to be destroyed by construction. The Moorehead Circle was discovered by geophysical survey prior to the activity of

heavy machinery. Both instances revealed structures invisible on the surface in areas that would have continued to be considered vacant and ignored if not threatened. It is possible that more of these structures exist throughout Ohio and beyond, yet their discovery depends our ability to systematically test areas within and adjacent to Hopewell earthworks.

The discovery of the Moorehead Circle through the use of geophysical survey was the catalyst for this research and lead to the reexamination of the Great Post Circle and the Schultz "Stockade". The Great Post Circle and the Schultz "Stockade" were found through fortuitous circumstances, reported, and then left as isolated features. This thesis presents the possibility that more large post features may have suffered the same fate and are waiting to be rediscovered, and discovered through the use of geophysical survey.

Table 1: Distance between posts at the Great Post Circle

Post to Post	Distance Between Posts (m)
613-614	1.25
614-615	1.75
615-616	1.25
616-617	1.50
617-618	1.25
618-619	1.50
619-620	1.25
620-621	1.25
621-622	1.50
622-623	1.50
623-624	1.25
624-625	1.25
625-626	1.75
626-627	1.50
627-628	1.50
628-629	1.00
629-630	1.50
630-631	1.25
631-632	1.50
632-633	1.50
633-634	1.50
634-635	1.25
635-636	1.75
636-669	1.50
669-638	1.75
638-639	1.25
639-640	1.50
640-641	1.50
641-642	1.50
642-643	1.25
643-644	0.75
644-645	1.00
645-646	1.25

Descriptive Statistics for the Distance Between Posts	
Mean	1.39
Median	1.50
Mode	1.50
Std. Deviation	0.23
Range	1.00
Minimum	0.75
Maximum	1.75
n=	33.00

*Distance measured from the middle of the post stain to the middle of the next post stain.

Table 2: Recorded posts at the Great Post Circle

Post #	Diameter at Top	Chinking Stones?
522	35cm	y
528	34cm	y
534	35cm	
550	56cm	y
574	53cm	y
576	40cm	y
582	48cm	
586	60cm	
587	58cm	y
588	60cm	
594	50cm	y
596	40cm	
597	50cm	
600	50cm	
607	38cm	
609	36cm	
614	30cm	
617	42cm	
621	40cm	
625	50cm	
632	50cm	
639	38cm	
665	44cm	

Table 3: Fully excavated posts at the Great Post Circle

FS #	Post #	Diameter at Top	Diameter at Middle	Diameter at Bottom	Depth of Post	Chinking Stones	Ramp
849	477	35cm	28cm	23cm	35cm	y	
880	478	48cm	42cm	40cm	38cm	y	
834, 843	479	55cm	36cm	28cm	45cm	y	y
	480	55cm	52cm	40cm	45cm		
	482	44cm	44cm	42cm	48cm	y	
	483	30cm	30cm	30cm	40cm	y	
970	484	46cm	46cm	46cm	40cm		
469	488	55cm	55cm	50cm	48cm	y	
	489	35cm	38cm	25cm	56cm	y	
894-897	490	40cm	40cm	37cm	60cm	y	
953-959	491	50cm	48cm	32cm	50cm		
919-920	492	43cm	39cm	35cm	50cm	y	
986	493	48cm	46cm	30cm	58cm		
925-927	497	45cm	40cm	30cm	58cm	y	
906-907	500	43cm	43cm	27cm	50cm	y	
938-939	503	30cm	30cm	10cm	40cm		
889	504	43cm	40cm	20cm	40cm	y	
1095	515	35cm	30cm	18cm	38cm	y	y
1285	531	30cm	30cm	20cm	40cm		
1051	537	48cm	32cm	26cm	85cm		
1034	552	48cm	44cm	18cm	48cm	y	
1209	557	46cm	30cm	20cm	30cm	y	
1191	570	60cm	28cm	14cm	69cm		y
1196	571	44cm	30cm	12cm	50cm	y	y
1203	572	43cm	34cm	30cm	50cm	y	
1266	643	48cm	32cm	10cm	44cm		y
	645	54cm	38cm	20cm	54cm		y
1226	646	50cm	48cm	16cm	64cm	y	
1085	648	40cm	30cm	12cm	40cm	y	y
1125-1126	655	58cm	40cm	10cm	60cm	y	y
1105	660	48cm	38cm	30cm	40cm	y	
1112	661	40cm	30cm	10cm	42cm	y	
1118, 1225	663	50cm	40cm	25cm	44cm	y	y

Table 4: Fully Excavated Posts at the Moorehead Circle

Post #	Diameter at Top	Diameter at Middle	Diameter at Bottom	Depth of Post	Chinking Stones?
1	24cm	24cm	22cm	90cm	y
2	22cm	16cm	8cm	74cm	y
3	24cm	24cm	18cm	79cm	y
5	22cm			100cm	y
6	18cm			35cm	y
8	25cm				
16				97cm	
17	20cm				
20	30cm			30cm	
21	13cm			13cm	
23	17cm			38cm	
24	28cm			45cm	
28	26cm			75cm	
29	20cm			57cm	
30	41cm			39cm	
55	16cm	12cm	10cm	75cm	y
56	32cm	30cm	20cm	81cm	y
57	19cm			28cm	
58	12cm			55cm	y
59	33cm			30cm	y
69	18cm	18cm	18cm	25cm	
72	20cm	18cm	18cm	17cm	y
73	19cm	19cm	19cm	35cm	y
76	15cm	20cm	18cm	35cm	y
77	19cm	19cm	13cm	49cm	y
78	20cm	18cm	15cm	68cm	y
81	28cm	25cm	20m	32cm	y
83	20cm	21cm	13cm	57cm	y
94	18cm	16cm	9cm	43cm	y
97	20cm	18cm	8cm	36cm	y
109	25cm	25cm	24cm	13cm	
112	27cm	20cm	13cm	23cm	
117	15cm	12cm	12cm	8cm	y
124	18cm	16cm	10cm	43cm	y
125	23cm	23cm	8cm	38cm	y
126	22cm	15cm	10cm	36cm	y
127	28cm	26cm	18cm	64cm	y

Table 5: Recorded chinking stones at the Great Post Circle

Post #	FS#	Number of Rocks	Weight (kg)
478		7	2.4
479	834, 843	5	1.8
480	1004	14	7.1
489	1032	11	11.2
490	895	14	10.7
490	896	9	11.5
490	897	2	14.5
491	1023	10	29.3
492	919	4	17.9
497	927	8	5.1
497	927	4	2.3
500	907	12	7.4
503	938-939	1	1.0
504		3	0.3
515	1095	11	2.3
552	1034	7	7.0
571	1196	2	3.2
643	1266	3	7.0
646	1226	13	10.3
648		7	2.0
649	1079	15	5.4
649	1079	1	1.0
655	1126	10	10.3
660	1105	5	2.7
661	1112	7	1.3
663	1118/1125	17	6.3
	Totals	**202**	**181.3**

Table 6: Artifact inventory for the Great Post Circle posts

Post Number	FS Number	Bladelets	Flakes	Ceramics	Exotics	FCR	Bone
477	849						1
478	880		2				
479	834, 843			2	1		
482	1033		2		1		
484	970	1	1	1			
489	1032						
490	894-897			1			1
492	919-920			2			4
493	986	1	3		1		4
497	925-927		2				4
500	906-907	1	2	4			frags
503	938-939		1	1		3	2
504	889			2	1	5	
515	1095		2				
531	1285	1	1		1		
537	1051			1			
557	1209			6			
570	1191			1	1		
655	1125-1126		2		1		4
Totals		**4**	**18**	**21**	**7**	**8**	**20**

Table 7: Recorded chinking stones at the Moorehead Circle

Post #	Number of Rocks	Weight
1	37	106.1
3	5	7.2
5	39	98
23	6	9.3
55	4	8.7
56	6	64.2
58	11	8.5
59	6	7
60	49	67.5
81	2	13.5
82	83	18
93	54	40.5
Totals	302	448.5

Table8 : Artifact inventory for the Moorehead Circle posts

Post Number	Lot Number	Bladelets	Flakes	Ceramics	Exotics	FCR	Bone
1	373		6	6		1	1
5	362		7	15			
6	323		5	1		1	
20	354	1					
56	792			1			3
58	743		1		1	1	5
59	753		5				1
81	744	1	1				2
83	745			3	1		1
94	735						1
97	785		1				
124	734		1		1		5
Totals		2	27	26	3	3	19

Table 9: Descriptive statistics for the posts at the Great Post Circle

Post Depth	
Mean	48.45
Median	48.00
Mode	40.00
Standard Deviation	11.03
Minimum	30.00
Maximum	85.00
n=	33.00

Post Diameters	
Mean	45.07
Median	45.50
Mode	50.00
Standard Deviation	8.23
Minimum	30.00
Maximum	60.00
n=	56.00

Table 10: Bladelets found in post fill at the Great Post Circle

FS #	Post #	Weight	Length (mm)	Width (mm)	Region	Retouch	Utilization
970	484	0.4	26.62	9.18	distal	n	y
986	493	/	16.62	6.53	proximal	n	n
1285	531	2.3	35.14	15.93	whole	y	n
906	500	0.3	22.38	8.64	distal	y	n

Length	
Mean	25.19
Median	24.50
Standard Deviation	7.80
Range	18.52
Minimum	16.62
Maximum	35.14
Count	4.00

Width	
Mean	10.07
Median	8.91
Standard Deviation	4.07
Range	9.40
Minimum	6.53
Maximum	15.93
Count	4.00

Table 11: Flakes found in post fill at the Great Post Circle

Feature Number	Artifact Number	Flake Type	Length (mm)	Width (mm)	Thickness (mm)	Relative Thickness	Weight (g)
478	880		44.67	16.58	3.35	18.28	2.6
	880		12.28	11.74	4.01	5.99	0.8
482	1033	CIII	16.10	5.50	1.57	13.76	0.1
		CII	20.90	11.52	1.53	21.19	0.5
484	970	CIII	15.18	9.58	0.95	26.06	0.1
493	986	CIII	9.25	7.33	1.41	11.76	/
		CII	31.12	19.40	3.19	15.84	2
		CI	21.77	12.98	4.56	7.62	0.8
515	1095	CIII	9.21	6.18	1.27	12.12	/
		CII	14.00	8.64	2.86	7.92	0.3
531	1285	CII	12.61	7.07	2.87	6.86	/
500	906	CIII	14.07	10.48	1.98	12.40	0.2
		CIII	10.42	9.83	1.51	13.41	0.2
497	925	CII	16.00	16.00	2.71	11.81	0.4
		CII	14.40	10.40	2.68	9.25	0.5
503	938	CI	31.00	12.70	4.84	9.03	2.4

Table 12: Descriptive statistics of the Great Post Circle flakes

Length	
Mean	18.31
Median	14.79
Mode	na
Standard Deviation	9.68
Minimum	9.21
Maximum	44.67
Count	16.00

Thickness	
Mean	2.58
Median	2.70
Mode	na
Standard Deviation	1.20
Minimum	0.95
Maximum	4.84
Count	16.00

Weight	
Mean	0.84
Median	0.50
Mode	0.80
Standard Deviation	0.89
Minimum	0.10
Maximum	2.60
Count	13.00

Relative Thickness	
Mean	2.58
Median	2.70
Mode	na
Standard Deviation	1.20
Minimum	0.95
Maximum	4.84
Count	16.00

Width	
Mean	11.00
Median	10.44
Mode	na
Standard Deviation	3.88
Minimum	5.50
Maximum	19.40
Count	16.00

Table 13: Ceramics found in the post fill at the Great Post Circle

Post #	FS #	Temper	Vessel Region	Surface Treatment	Weight (g)	Thickness (mm)
479	834, 843	grit	neck	cord	8.40	6.49
		grit	body	plain	2.10	4.62
504	889	grit	body	cord	2.80	5.30
		grit	body	cord	1.60	4.06
537	1051	grit	rim	plain	3.70	9.67
557	1209	grit	body	plain	5.50	8.22
570	1191	grit	body	cord	1.60	5.89
490	894	grit	neck	plain	18.50	10.15
500	906	grit	rim	plain	24.30	7.70
		grit	neck	plain	1.90	5.90
		grit	body	cord	5.10	6.30
		grit	body	plain	4.40	6.10
492	920	grit	body	plain	9.90	7.01
		grit	body	plain	0.90	6.81
503	938	grit	body	plain	3.00	8.20

Weight	
Mean	6.25
Median	3.70
Mode	1.60
Standard Deviation	6.74
Minimum	0.90
Maximum	24.30
Count	15.00

Thickness	
Mean	6.83
Median	6.49
Mode	na
Standard Deviation	1.72
Minimum	4.06
Maximum	10.15
Count	15.00

Table 14: Descriptive statistics for the posts at the Moorehead Circle

Post Depth	
Mean	47.51
Median	39.00
Mode	35.00
Standard Deviation	24.56
Minimum	8.00
Maximum	100.00
n=	33.00

Post Diameters	
Mean	22.14
Median	20.00
Mode	20.00
Standard Deviation	6.04
Minimum	12.00
Maximum	41.00
n=	36.00

Table 15: Flakes found in post fill at the Moorehead Circle

Post Number	Artifact Number	Flake Type	Length (mm)	Width (mm)	Thickness (mm)	Relative Thickness	Weight (g)
6	323-03	CIII	15.9	7.4	1.9	12.3	0.4
	323-04	CIII	16.7	12.0	3.5	8.2	0.7
	323-05	CIII	16.9	9.7	0.6	44.3	0.6
	323-06	CI	15.8	6.4	2.6	8.5	0.2
	323-07	CIII	9.2	5.6	2.1	7.0	0.1
5	362-01	CIII	18.4	16.3	1.5	23.1	0.6
	362-02	CII	16.9	11.4	3.0	9.4	0.6
	362-03	CII	17.8	6.6	3.2	7.6	0.6
	362-04	CI	15.0	9.2	2.6	9.3	0.3
	362-05	CIII	13.8	9.2	1.1	20.9	0.2
	362-06	CIII	9.2	9.0	1.3	14.0	0.1
	362-22	CIII	8.5	6.1	0.8	18.3	0.0
1	373-08	CI	26.9	15.9	4.4	9.7	1.9
	373-09	CII	29.0	27.3	3.8	14.8	2.4
	373-10	CII	13.7	10.7	1.0	24.4	0.3
	373-11	CII	14.2	8.3	2.2	10.2	0.2
	373-12	CII	10.8	10.1	2.0	10.5	0.2
	373-13	CII	12.2	8.9	1.2	17.6	0.2
93	734-6	CIII	8.5	8.0	1.8	9.2	0.1
58	743-07	CII	17.8	13.5	1.8	17.4	0.6
81	744-1	CII	20.9	13.2	3.7	9.2	0.8
59	753-01	CII	24.7	26.8	2.6	19.8	2.7
	753-02	CIII	16.8	24.2	1.9	21.6	1.4
	753-03	CII	9.4	18.0	4.2	6.5	0.8
	753-04	CII	10.6	9.3	2.3	8.7	0.3
	753-05	CIII	9.1	10.3	3.4	5.7	0.3
97	785-01	CII	13.5	9.0	1.1	20.5	0.2

Table 16: Descriptive statistics of the Moorehead Circle flakes

Length	
Mean	15.27
Median	15.00
Mode	16.90
Standard Deviation	5.46
Minimum	8.50
Maximum	29.00
Count	27.00

Thickness	
Mean	2.28
Median	2.10
Mode	2.60
Standard Deviation	1.07
Minimum	0.60
Maximum	4.40
Count	27.00

Weight	
Mean	0.62
Median	0.30
Mode	0.20
Standard Deviation	0.69
Minimum	0.00
Maximum	2.70
Count	27.00

Relative Thickness	
Mean	14.40
Median	10.45
Mode	na
Standard Deviation	8.26
Minimum	5.71
Maximum	44.33
Count	27.00

Width	
Mean	11.94
Median	9.70
Mode	9.20
Standard Deviation	5.97
Minimum	5.60
Maximum	27.30
Count	27.00

Table 17: Ceramics found in the post fill at the Moorehead Circle

Feature #	Lot #	Artifact #	Temper	Vessel Region	Surface Treatment	Weight (g)	Thickness (mm)
06-6	323	2	grit	body	plain	2.1	6.2
06-5	362	7	grit	body	plain	6.8	6.2
	362	8	grit	body	plain	5.7	7.2
	362	9	grit	body	plain	2.8	2.7
	362	10	grit	body	plain	2.5	2.4
	362	11	grit	body	plain	2.7	6
	362	12	grit	body	plain	1.6	5.9
	362	13	grit	body	plain	2.2	7.3
	362	14	grit	body	plain	1.4	7
	362	15	grit	body	plain	1.7	8
	362	16	grit	body	plain	0.7	5.7
	362	17	grit	body	plain	1.8	4.9
	362	18	grit	body	plain	1.7	5.3
	362	19	grit	body	plain	0.6	5.1
	362	20	grit	body	plain	0.6	5.5
06-1	373	2	grit	body	plain	5.1	8.9
	373	3	grit	body	plain	2.6	8.8
	373	4	grit	body	plain	0.8	5.2
	373	5	grit	body	plain	0.5	5.2
	373	6	grit	body	plain	0.8	4.8
	373	7	grit	body	plain	0.8	5.1
08-83	745	2	grit	body	plain	1.4	6.5
	745	3	grit	body	plain	4.5	7.3
	745	4	grit	body	plain	3.2	7.6

Table 18: Descriptive statistics for Moorehead Circle ceramics

Weight	
Mean	2.28
Median	1.75
Mode	0.80
Standard Deviation	1.71
Minimum	0.50
Maximum	6.80
Count	24.00

Thickness	
Mean	6.03
Median	5.95
Mode	6.20
Standard Deviation	1.60
Minimum	2.40
Maximum	8.90
Count	24.00

Table 19: Excavated Posts from the Stockade at the Schultz Site (converted from Fitting 1972)

Post Mold Number	Diameter
3	18cm
4	18cm
5	18cm
6	18cm
7	18cm
14	21cm
19	27cm
20	15cm
25	18cm
35	21cm
47	27cm
116	21cm
124	21cm
132	24cm
136	30cm
139	27cm
146	27cm
153	18cm
160	27cm
162	21cm
164	18cm
170	18cm

Descriptive Statistics for the Schultz "Stockade" post diameters	
Mean	21.41
Median	21
Mode	18
Std. Deviation	4.72
Minimum	15
Maximum	30
n =	22

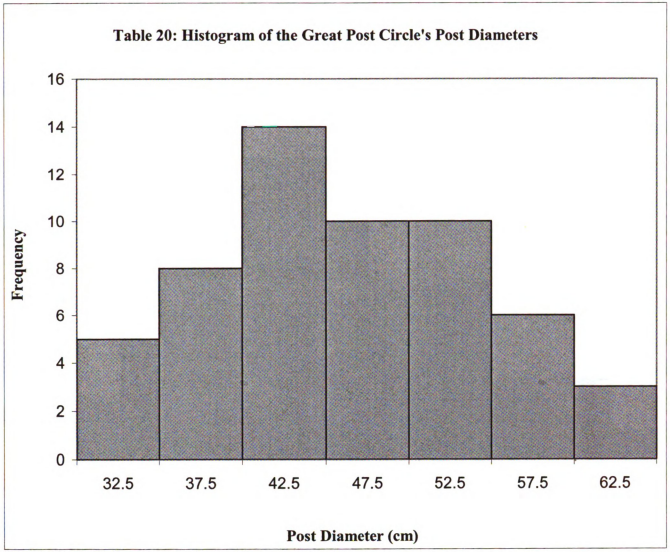


Table 20: Histogram of the Great Post Circle's Post Diameters
16
14
12
10
8
6
4
2
0
Frequency
32.5
37.5
42.5
47.5
52.5
57.5
62.5
Post Diameter (cm)

Table 21: Histogram of the Moorehead Circle's Post Diameters

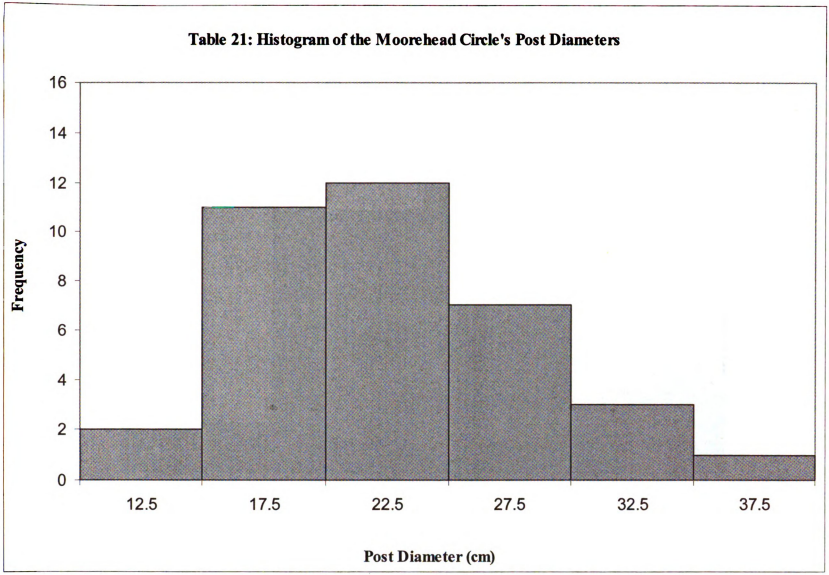
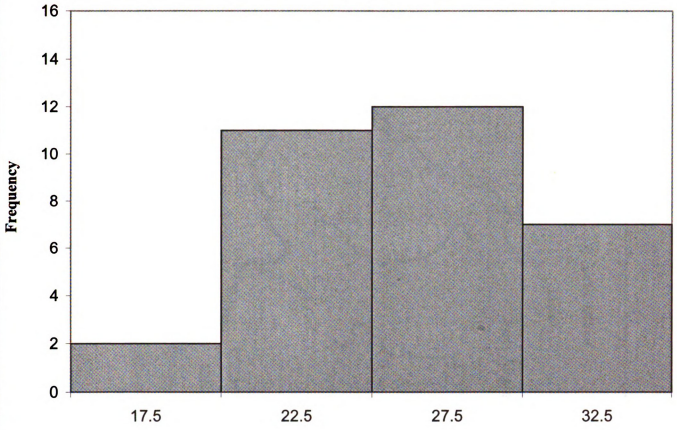


Table 22: Histogram of the Schultz Site "Stockade" Post Diameters



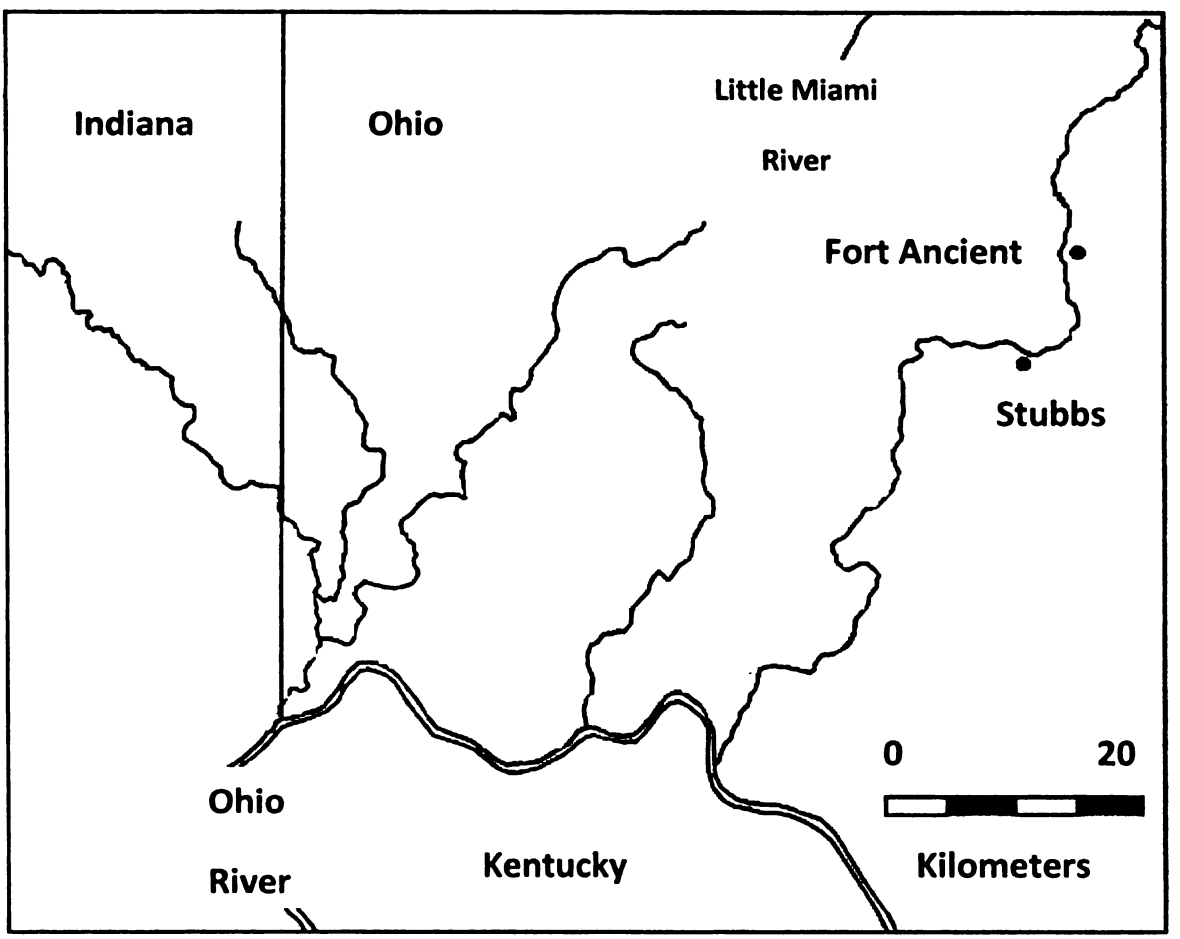


Figure 1: The Stubbs Complex and Fort Ancient along the Little Miami River (Image courtesy of Frank Cowan)

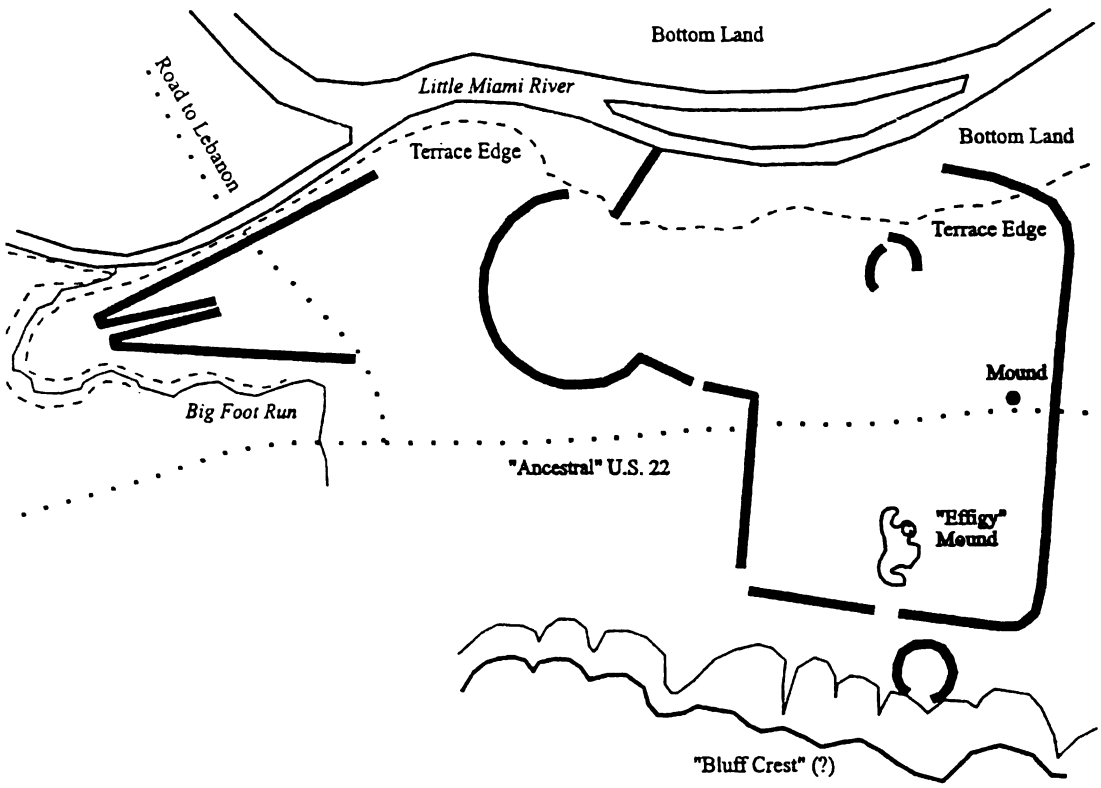


Figure 2: Map of the Stubbs Complex (after Whittlesey 1852)

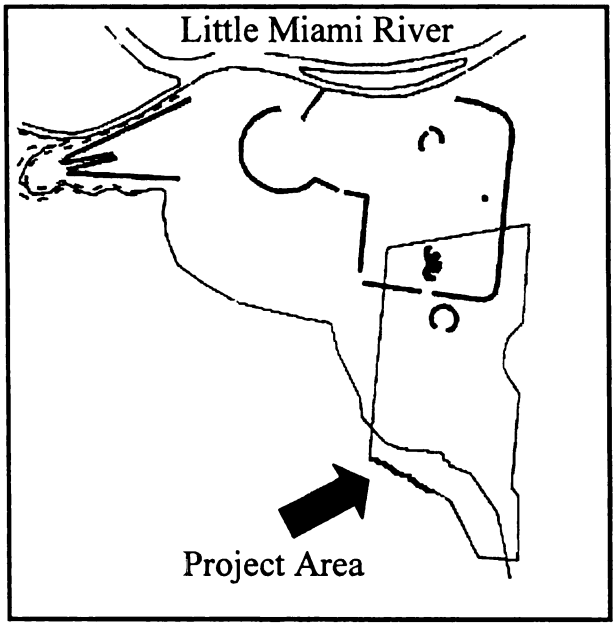


Figure 3: Stubbs Complex Project Area
(Image courtesy of Frank Cowan)

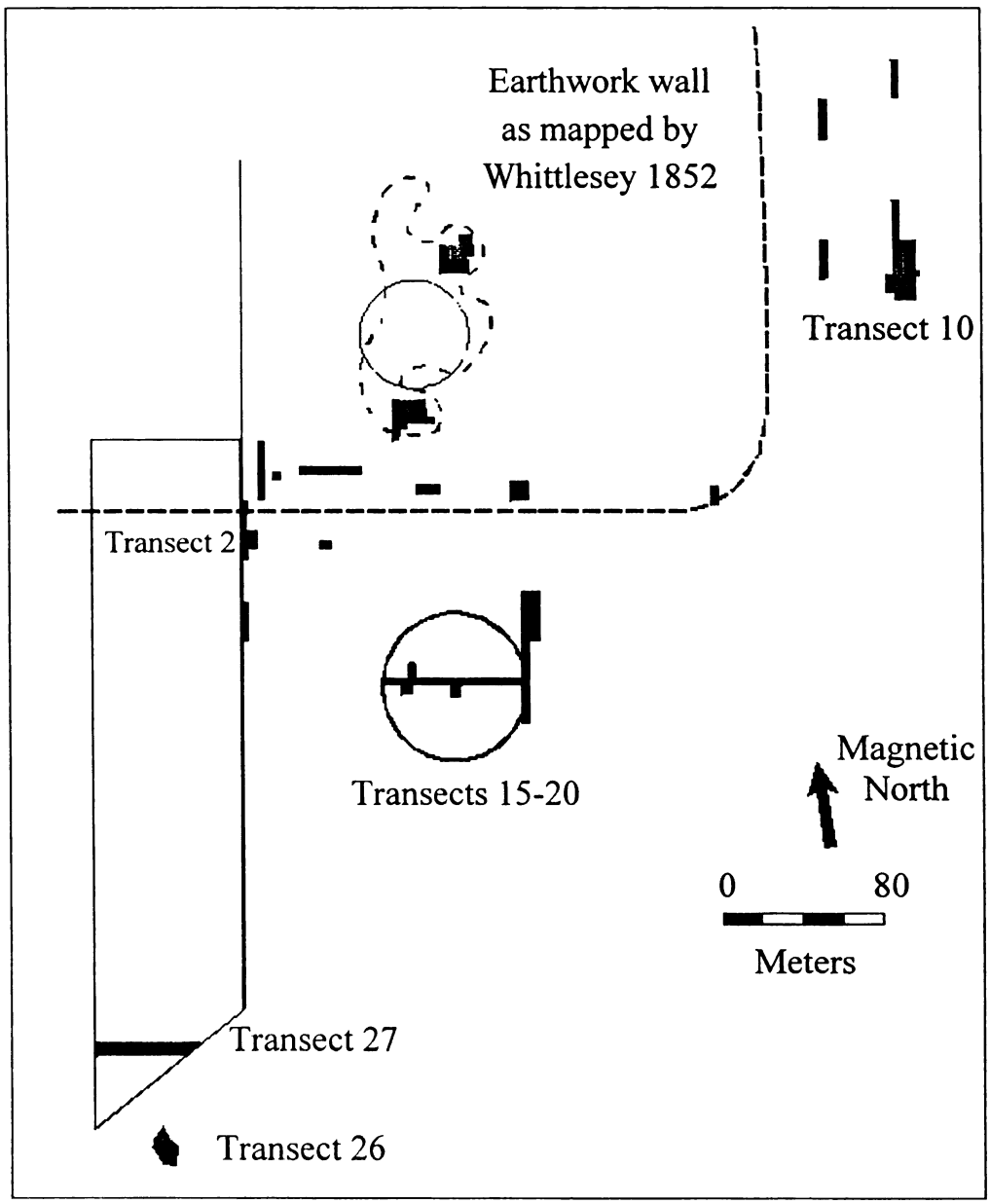


Figure 4: Stubbs Complex and the Great Post Circle
(Image courtesy of Frank Cowan)

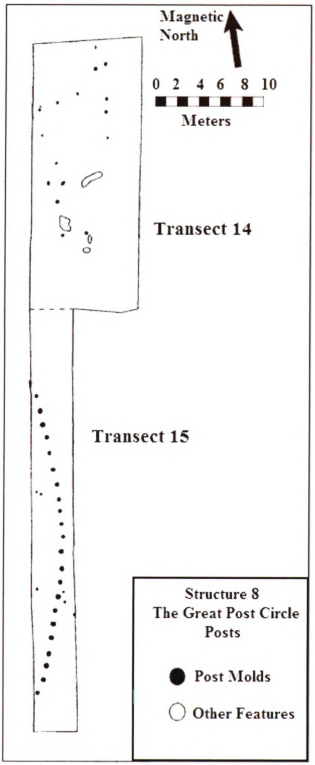


Figure 5: Transect 15 at the Stubbs Complex; Great Post Circle posts (Image courtesy of Frank Cowan)

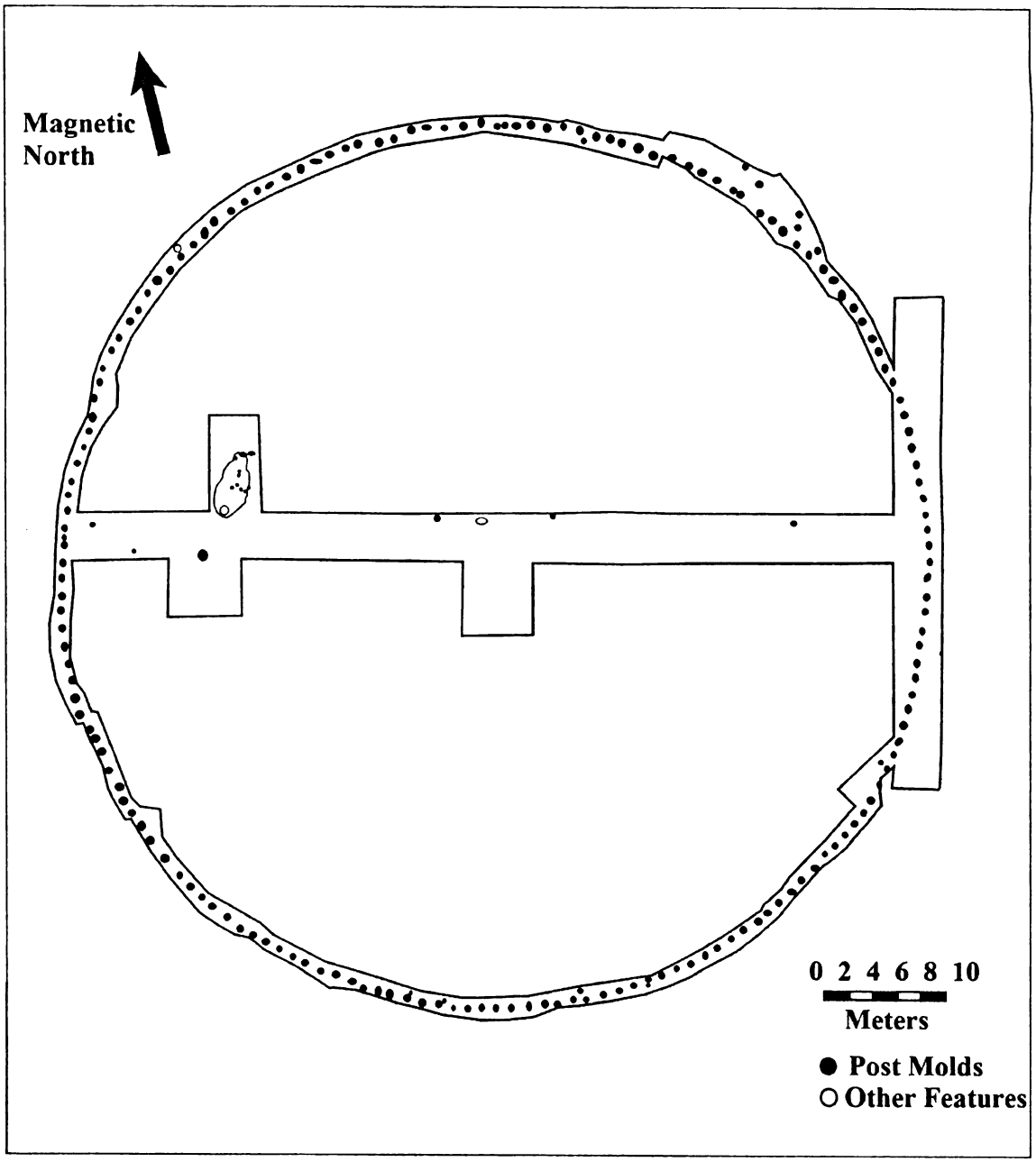


Figure 6: The Great Post Circle
(Image courtesy of Frank Cowan)

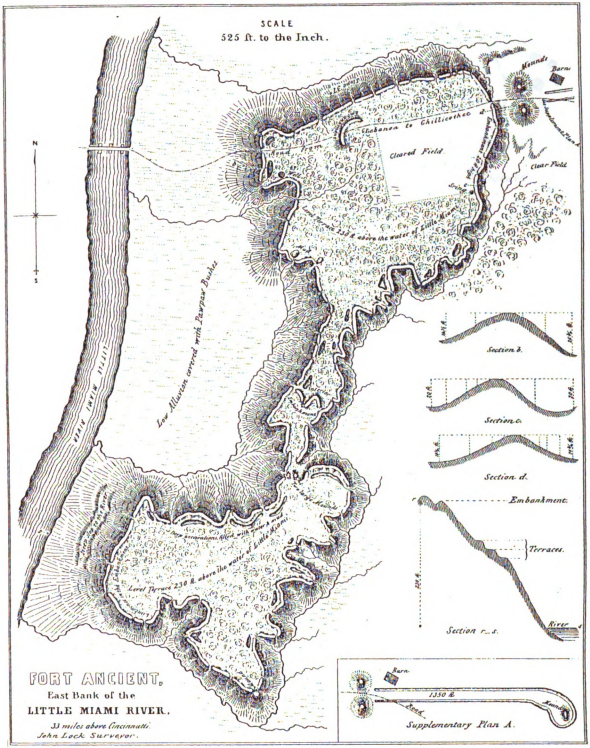


Figure 7: Map of Fort Ancient (Squire and Davis 1848)

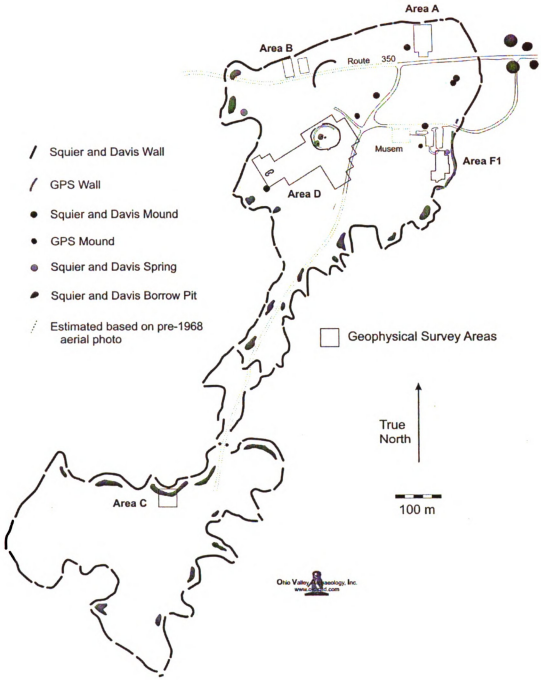


Figure 8: 2005 Survey areas at Fort Ancient (Moorehead Circle was discovered in Area D: image from Burks 2006; Figure 20)

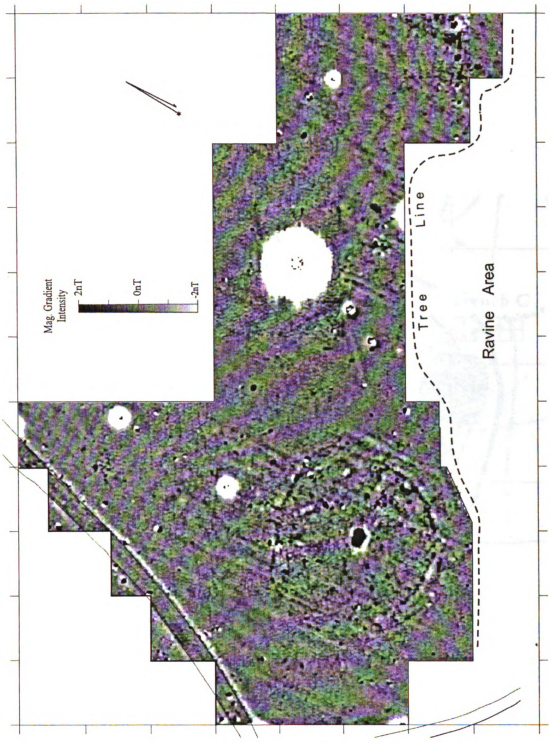


Figure 9: Geophysical Survey Data from Fort Ancient (from Burks 2006; Figure)

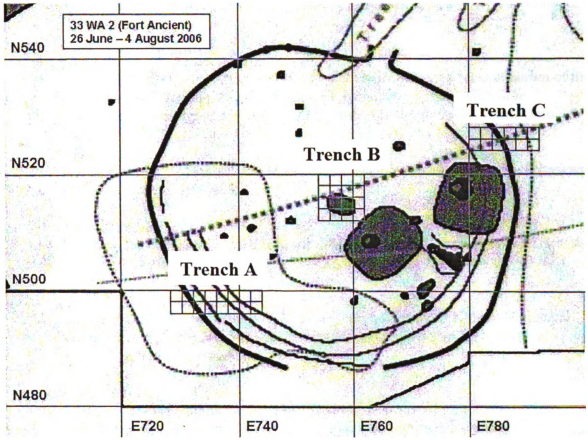


Figure 10: Geophysical Data Interpretation with Excavation Trench Overlay (Image courtesy of Robert Riordan)

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