

## Hopewell Archeology:

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### **4. The Great Hopewell Road: GIS Solutions Towards Pathway Discovery**

By Timothy A. Price

Traversing hills, valleys, and streams, the sixty-mile long Great Hopewell Road might have begun at the monumental earthworks located in Newark, Ohio and ended near Chillicothe, at the site of another ancient earthwork named the High Bank Works. It is tempting to try to connect these two earthworks for they both contain circular and octagonal arrangements, aligned in ways that suggest that one of the complexes might have been built to complement the other, perhaps through a unifying religious ritual that followed the 18.6-year lunar cycle (Aveni 2000:226, Lepper 1995). More important, the Scioto Valley was the “undisputed center of Ohio Hopewell culture” (Lepper 2002), so a road passing through the region could have linked the area together.

Monumental roads were not uncommon in prehistoric North and Central America. Aveni (2000) and Nials et al, (1987) examine how other studies have shown prehistoric cultures engaged in very similar road-building phenomena. In the Yucatan, for example, Mayan roads connecting various ceremonial and sacred sites are well known. Similarly, the Anasazi of the southwestern United States constructed sacred roads and pathways between their most important places of pilgrimage. The same can be said of numerous places in Europe, India, and China.

The Hopewell Indians, who flourished in central and Southern Ohio between approximately 200 B.C. and A.D. 500, appear to have been no different from their counterparts. A deeply religious group, the Hopewell were “wide ranging in their contacts, with a resource network that reached for hundreds of miles in all directions” (Romain 2000:2). Still though, much of the direct confirmation for the existence of such a colossal achievement comes in the form of early land surveys, aerial photographs, and, for some, just a plain “gut” feeling about the road’s existence. Caleb Atwater, one of Ohio’s first archaeologists, suggested in 1820 that the parallel walls that ran southwest from Newark’s octagon might extend 30 miles or more.

One of the most important pieces of evidence, however, is the map that James and Charles Salisbury, early residents of Newark, drew in 1862 depicting the Newark Earthworks and the series of parallel walls appearing to connect the various enclosures there. This document was misplaced for decades following the Civil War, only to be rediscovered in 1991 at the American Antiquarian Society in Worcester, Massachusetts by Dr. Brad Lepper. The Salisbury’s traced these walls and, although they did not follow them to their end, they noted that:

*“These works have been accurately surveyed and described – on account of the discovery of outside walls, connected with the fortified ways & other Earthworks of interest. One of the highways has been traced over six miles in the direction of Circleville. These walls are all of clay – differing materially from the soil on which they repose – which appears to indicate that originally they may have been constructed of adobe; or sun dried brick; similar to the fortified highways of the Incas of Peru” (Salisbury and Salisbury. 1862).*

The Salisbury's map reinforces maps drawn by Squier and Davis in 1848, and Wyrick in 1866, while at the same time expanding on both works by giving details not previously mentioned.

Lepper, of the Ohio Historical Society, has recently searched along this same corridor between Newark and Chillicothe, Ohio for traces of road using aerial reconnaissance and archival photography, and has identified traces of parallel lineation along the projected route in several places. Lepper contends that the first segment can be found 16.2 miles south of Newark, while another is located at the projected terminus of the Great Hopewell Road near Chillicothe.

Using the locations that Dr. Lepper identified as a starting point; it is my contention that by using the tools of Geographic Information Science (GISc) we can begin to examine how the roles of slope, land cover, proximity to water, etc., would have played in the Hopewell's decision of where to locate just such a road

## **Methodology**

Known places of prehistoric Indian activity were obtained from the Ohio Historical Society's database. Additionally, Dr. Lepper provided exact coordinates for the parallel lineation's which he had previously identified within the study area. Digital elevation and land cover data were acquired from the U.S. Geological Survey.

1. Once all of the data was collected, several assumptions about the Great Hopewell Road had to be decided upon so that modeling procedures could be implemented.
2. As is the case with modern roads, it likely would have been preferable to build the Hopewell road on relatively flat ground;
3. It was decided that certain land covers would have been better suited for road construction than others, taking into consideration the effort involved in moving across different land cover types;
4. The road would have been located near rivers and other water bodies

The road would have been located near the earthworks in Chillicothe and Newark since it is assumed that the road would have linked those locations, as well as near other ancient locations along the route.

Because so many variables were initially chosen for this study, it became necessary to assign a weighting scheme for the different datasets, and then produce a suitability model as the first step. This type of model allows researchers to find areas that are the most suitable for particular objectives.

To see if the possibility of a Hopewell Road was more fact than fiction, several cost-weighted distance/shortest distance models were created so that the shortest route could be identified without all of the variables initially included in the suitability model. Cost models identify optimum corridors and factor in economic, environmental, or other objectives. For these models, the dataset of the cost of traveling over the landscape was based on the fact that it is more costly to traverse steep slopes and construct a road on certain land types.

## **Discussion**

While this study is not able to conclusively determine the existence of a Great Hopewell Road, it does set the stage for further research. In so doing, this study looked at several

variables that might have influenced the Hopewell's way of thinking when it came to deciding on just where to construct a road that stretched for 60 miles or more. This study examined proximity to water bodies, rivers, and other earthworks, as well as slope and land cover. When examined with all potential factors originally thought to be pertinent, the potential routes do not follow the projected route between Newark and Chillicothe. This, then, raises the natural question of which variables are essential to the calculations and which are likely extraneous.

Next, a model of the route was completed that looked solely at slope and land cover between the earthworks located in Newark and those found in Chillicothe. This possible route follows Lepper's predicted route extremely closely, deviating most on the southern portion. Moreover, this model shows two possible routes that the Road might have taken in the south. The only explanation that justifies this split is the fact that it occurs exactly where the Salt Creek River would cross the Hopewell Road.

For the final part of this study, the area between Newark and the southernmost point that Dr. Lepper believes to be part of the Road was examined. Again using slope and land cover as the main criteria, the shortest path between the two points was determined (**Figure 1**). In this model, the fit of the route again deviates from the projected path of the Hopewell Road only in the southern portion of the study area, but alters course to connect with Lepper's location. It is this model that most closely follows Lepper's predicted route of the Great Hopewell Road. Indeed, the majority of the model falls within a one-half-mile buffer zone of the projected road, while the entire model falls within two miles (**Figure 2**).

**Figure 1**

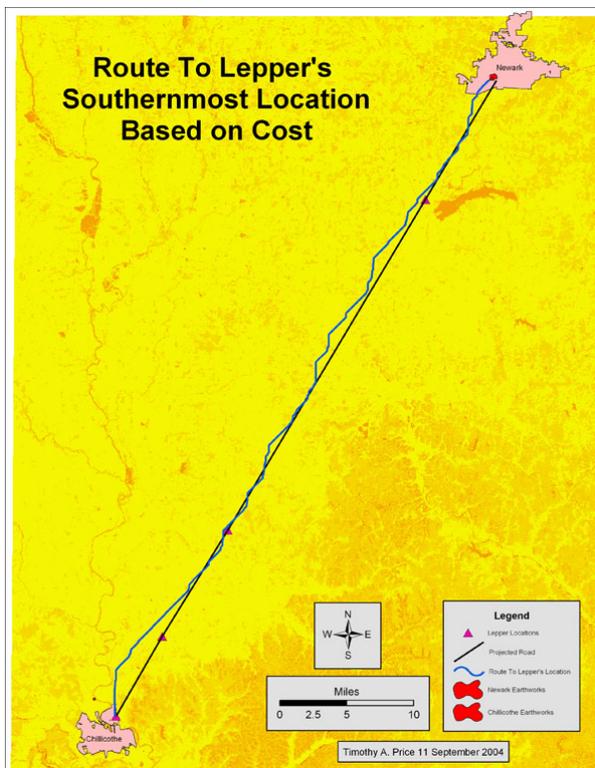
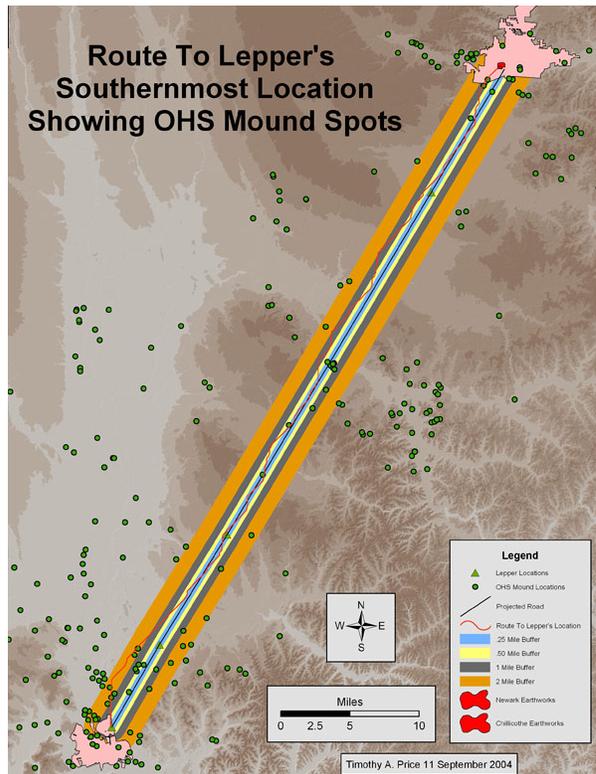


Figure 2



## Results

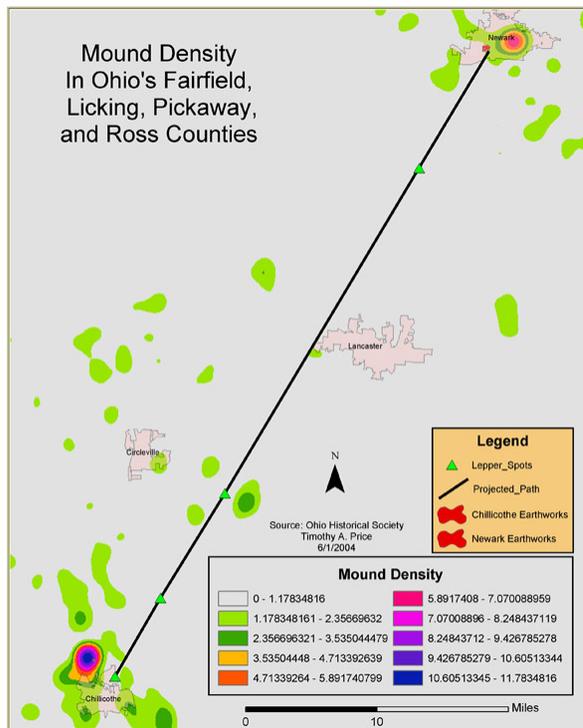
Slope and land cover appear to have made the most dramatic impact on the outcome of this study. It would appear that the physical landscape transpired with land use to reveal an astonishingly accurate connection between the two major archaeological sites located near Newark and Chillicothe, Ohio. Indeed, these considerations, as applied in the various models, appear to support Lepper's conclusion that the Hopewell "designed and laid out [the road] with great care and with intimate familiarity of the intervening landscape". The fact that the majority of the models that examined the area between Newark and Lepper's southernmost point fell within one half mile to one mile of the projected route is extremely significant; indeed, many portions follow the projected route almost exactly.

As a byproduct of this research, a second discovery was also revealed that is highly worthy of not only mention, but further investigation. Upon closer examination, the figure showing the Ohio Historical Society's ancient mound locations reveals a significant number of "events" that occur within the projected path's buffer zones. Out of 244 mound locations within the study area, fifty four fall within a two-mile buffer; 25 are within one mile, and twelve are within one half of a mile.

Looking at the mound density map, (figure 3), it becomes quickly apparent that the Ohio Valley was indeed a hotbed of prehistoric Indian activity. Perhaps the road was a means of connecting these various places, or, more likely, the

mounds were part of villages that sprang up along the way as it was being built. With the advances of radio-carbon dating in the field of archaeology, it might be possible to put a chronology to the sites located nearby that may help determine when the road may have been built and, possibly, in which direction the Hopewell might have started from. Only further investigations will allow researchers to find clues that may one day unravel these continuing mysteries.

**Figure 3**



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