The Hopewell culture created numerous earthworks across the landscape of Ohio between 200 BC and 400 AD. Archaeologists believe these earthworks to have been important fixtures in the Hopewell social landscape. Unfortunately, 19th and 20th century agricultural activity destroyed a large majority of the structures. Archaeologists possess little contextual data from these activities except for brief descriptions and locations provided by early settlers. This project leverages the spatial data that remain with a set of Network Analyst tools to model prehistoric human temporal costs for both land and water navigation.

**Methodology**

The GIS creates a transport network using ESRI’s Network Analyst. Dugout canoe speed is calculated both upstream and downstream in kilometers per hour using research performed by E.A. Little in 1987. The National Hydrologic Dataset hosted by the USGS provided the reach data for the Hydrologic network. The network was ordered by the USGS and the rivers were ordered using Strahler’s system for ordering rivers. The rivers are then included or excluded from analysis in the network based on this order. The earthworks are then connected to the rivers by an algorithm that finds the nearest river and connects a line, or landpath.

**Further Work**

The process of building this GIS has illuminated many areas for further work. In addition to earthworks, known resource zones and village sites can be included into the network. Allowance for canoe portages would be a useful addition to the network. Right now, the network uses only perennial streams. The option to include intermittent streams into the network would be a useful addition to the network. Right now, flow direction is ordered by Strahler’s system for ordering rivers.

**Conclusions**

The GIS does what it was designed to do. A user can select an earthwork and find how far a hypothetical Hopewellian could have traveled from the origin. A successful tool will be delivered to the client.