

**Insights into Panhandle Archaic Technology at the East Steubenville Site (46BR31):  
A Late Archaic Site in the Northern Panhandle of West Virginia**

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**Abstract**

GAI's recent investigation of the East Steubenville Site (46BR31) provided the first opportunity in nearly 50 years for detailed study of a Panhandle Archaic artifact assemblage from a shell midden site. Lithic analysis identified a variety of tool types including projectile points, bifaces, drills, cores, and unifaces. The lithic assemblage is dominated by the biface class, which includes a square-bit type not previously identified within the region. Due to the unusual preservation conditions afforded by the sites' shell midden, a number of bone and antler tools were recovered, providing the first opportunity to characterize bone and antler tool industries from a Panhandle Archaic site. In this paper, we review the results of the lithic, bone, and antler analysis and present a preliminary interpretation of Panhandle Archaic technologies.

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# **Insights into Panhandle Archaic Technology at the East Steubenville Site (46BR31): A Late Archaic Site in the Northern Panhandle of West Virginia**

Kenneth W. Mohney and Renee Sobota

## **Introduction**

In this paper, we present preliminary results of artifact analysis at the East Steubenville Site (46BR31), performed as part of the data recovery investigations being conducted for West Virginia Department of Transportation (Lothrop 2000, 2004). The East Steubenville Site is the type-site of the little studied Panhandle Archaic Complex. In the 1950's, Dr. William J. Mayer-Oakes, then of the Carnegie Museum in Pittsburgh, Pennsylvania, defined the Panhandle Archaic based on artifacts recovered during avocational archaeological investigations at the Steubenville Site (Mayer-Oakes 1955a). While Mayer-Oakes did not conduct any excavations himself, he did perform test excavations at the nearby Globe Hill Shell Heap (36HK34-1), a multi-component site containing a Panhandle Archaic occupation, located upriver from East Steubenville (Mayer-Oakes 1955b). These investigations formed the bulk of our knowledge of the Panhandle Archaic in the 1950's.

Since the 1950's, regional archaeologists have conducted little work on the Panhandle Archaic, and the distinctive projectile point types and artifact assemblages associated with the Panhandle Archaic have never been systematically studied. In this presentation, we:

- 1) Discuss the Panhandle Archaic tool types and their implications for tool use at the site;
- 2) Describe distinctive bone artifacts found at the Steubenville Site;
- 3) And finally, offer our views on the organization of Panhandle Archaic technology.

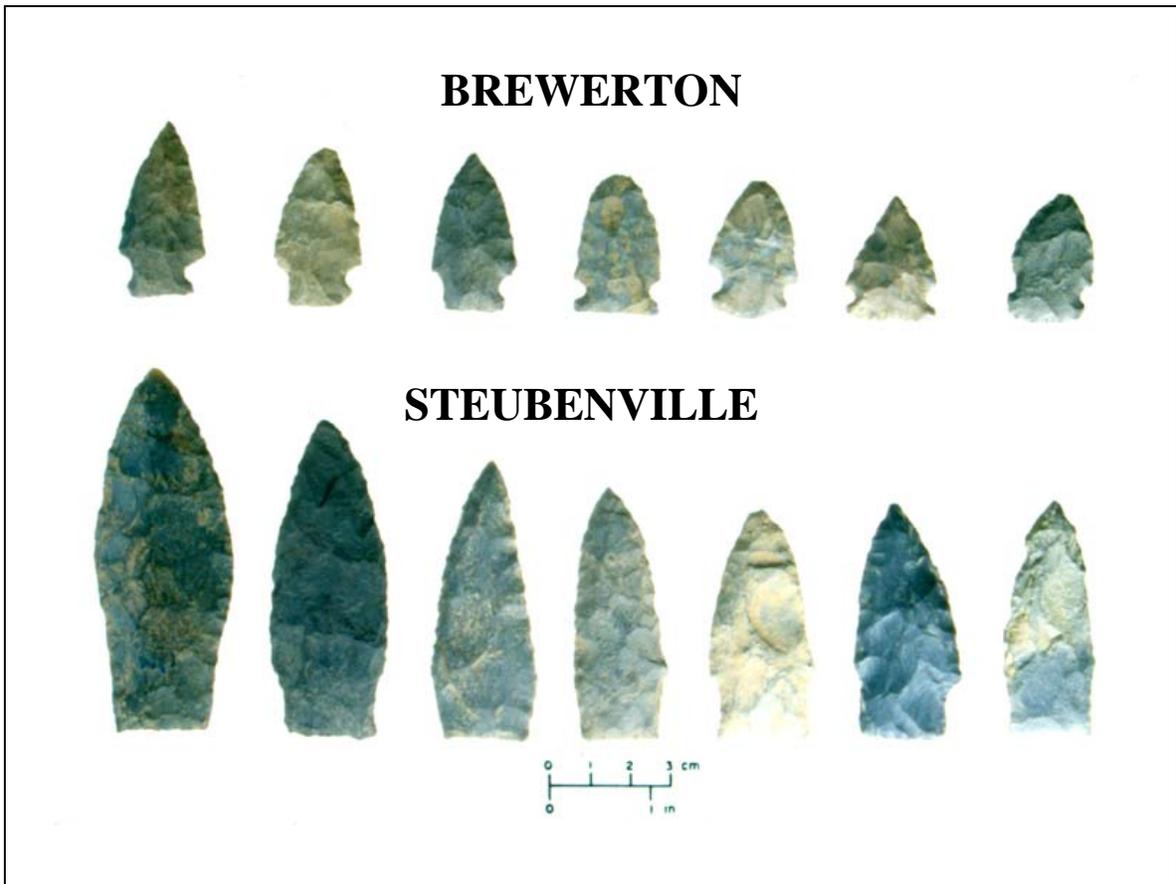
## **Artifact Analysis**

We identified two point types at the site (Photograph 1), Steubenville Stemmed points and Brewerton notched points, both Late Archaic diagnostics (Mohney 2002). Steubenville points are long broad forms with stems ranging from distinct to ill-defined. In general, these points exhibit superior workmanship as evidenced by the presence of parallel flake scars on several specimens. Though hard to quantify, many Steubenville points appear to exhibit patterned flaking. In addition, the Steubenville manufacturing sequence includes distinctive preforms. These preforms are large, lanceolate shaped bifaces; while some researchers have referred to these lanceolate shaped forms as finished projectile points, most appear to be unfinished versions of the stemmed type.

Brewerton points are the second most common point found at the site. Most of these tools were side-notched, while several were corner-notched. Compared to Steubenville points, most Brewerton points are smaller and were likely made from small oval preforms. While Mayer-Oakes believed that Steubenville and Brewerton points were in

use at the same time by the same group of Native Americans, radiocarbon dating of Brewerton components at regional sites suggests that Brewerton occupation likely predates Steubenville encampments at East Steubenville.

Photograph 1. Comparison of Brewerton Points and Steubenville Points recovered from East Steubenville Site



## Lithic Sources

The specific raw materials Panhandle Archaic Americans relied on for flaked stone tool manufacture differs between the Brewerton and Steubenville occupations. Figure 1 is a map of lithic raw material sources in the Upper Ohio Valley and adjoining regions. Bedrock chert sources found in the Valley include Monongehela, Uniontown, Ten Mile, and Brush Creek. Stream cobble cherts include Onondaga and Gull River both found along the gravel bars of the Ohio River. In addition sources within the valley, we identified two exotic types, Upper Mercer and Flint Ridge or Vanport cherts; bedrock sources of both are located over 150 km to the west in East Central Ohio. In all, chert is moderately abundant in and near the Ohio River Valley.

Figure 1. Map of Lithic Source Areas for Raw Material Found at East Steubenville

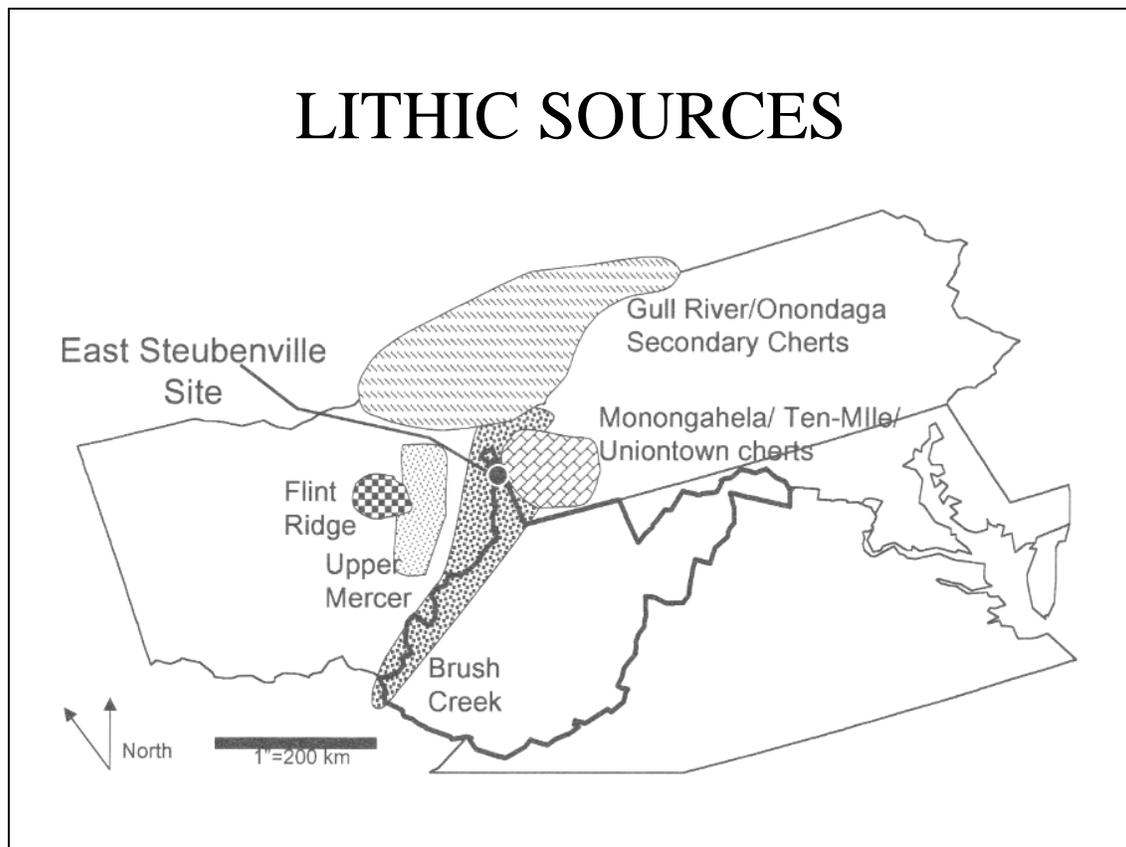
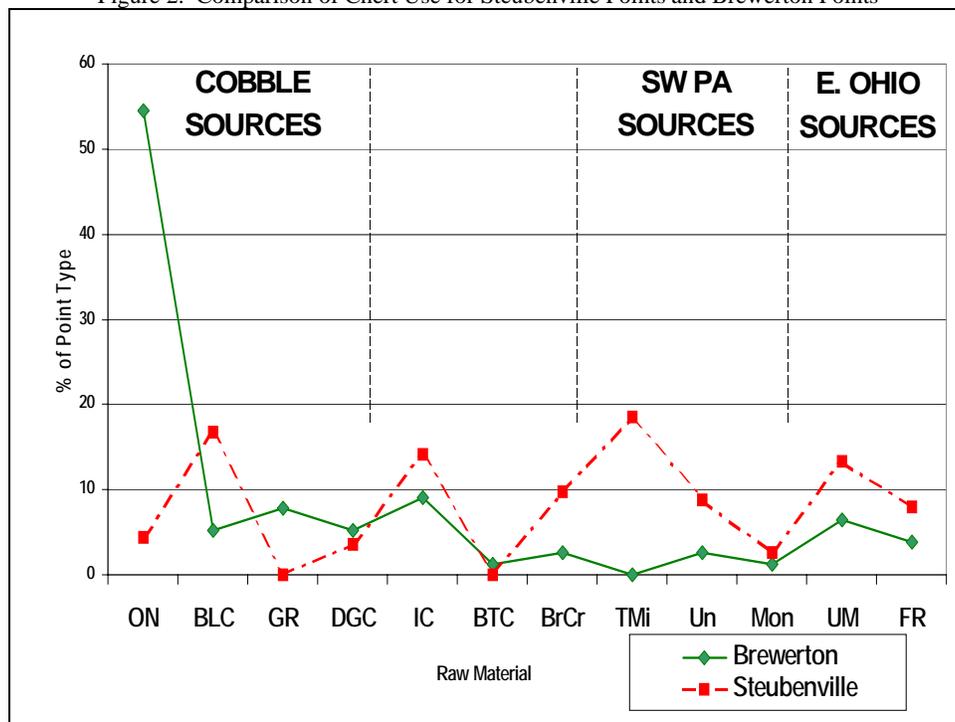


Figure 2 shows chert used in the manufacture of Steubenville points. Although a variety of sources were used, as this slide shows, most were acquired from bedrock outcrops in the Upper Ohio valley and from east-central Ohio. The large size and complex manufacturing sequence of Steubenville points likely required the use of bedrock cherts because the raw material could produce larger performs and would have fewer flaws.

In contrast, Brewerton point makers acquired most of their rock from alluvial sources. These alluvial cherts were likely procured from the nearby Ohio River. The smaller size and less complex reduction sequence of Brewerton points probably made manufacture from cobble cherts feasible.

Figure 2. Comparison of Chert Use for Steubenville Points and Brewerton Points



\*ON – Onondaga Chert; BLC – Black Chert; GR – Gull River Chert; DGC – Dark Grey Chert; IC – Indeterminate Chert  
 BTC – Black Translucent Chert; BrCr – Brush Creek Chert; Tmi – Ten Mile Chert; Un – Uniontown Chert;  
 Mon – Monongahela Chert; UM – Upper Mercer Chert; FR – Flint Ridge/Vanport Chert

### Additional Stone Tool Types

In addition to projectile points, we identified numerous unfinished bifaces in various stages of reduction (Photograph 2). In fact, the biface class dominates the flaked stone tool sample, accounting for 70 percent of all tools. In contrast to the numerous bifaces, the uniface assemblage accounts for only one percent of the tool assemblage, a striking contrast for what we believe is a residential encampment.

Our analysis identified a distinct biface type, a type that we have not seen at other sites in the region. We call this class square bit bifaces (Photograph 3). This tool type consists

of two morphological varieties. The first is square to rectangular in plan view with a squared working margin. The second exhibits a distinct haft element, in addition to a square working edge; these were probably made from broken projectile points. Both types display moderate to severe edge rounding and/or microflaking on the distal end as a result of intense use. Microwear analysis performed on this tool type by Dr. Melody Pope suggests the working of dry hide. This tool might have served the same function traditionally assigned to endscrapers, and would partially explain the near absence of unifacial tools at the site.

Photograph 3. Square-Bit Bifaces Recovered from East Steubenville



The ground stone tool assemblage includes adzes, celts, a maul, and an axe. The adzes are the most interesting and were first identified by Mayer-Oakes as “Pointed Poll Adzes” (Figure 3). These tools exhibit a square bit, triangular butt section, and a  $\frac{3}{4}$  groove for hafting. These tools likely served as heavy woodworking items, possibly for dugout canoe manufacture. Mayer-Oakes believed that these tools, along with Steubenville points, were diagnostic of the Panhandle Archaic.

Figure 3. Illustration and Photo of Pointed Poll Adzes Recovered from East Steubenville (Illustration by Sarah Moore).



Celts recovered from East Steubenville are classed as either square-butt or round-butt, with one example of a celt manufactured on an adze. Square-butt celts are rectangular in both plan view and in cross section, and relatively small in their dimensions. The round-butt celts are larger and more robust, exhibiting a plano-convex to biconvex cross section. The difference in the size of these celts types may indicate each was manufactured for a specific task -- the round-butt celts' larger size would be useful for felling trees or heavy butchery, while the smaller square-butt celts were perhaps employed in more delicate woodworking tasks.

In addition to groundstone, we found a number of rough stone tools, including pitted cobbles, anvils, mortars, manos, netsinkers, and numerous hammerstones. The majority of these tools were used for resource processing activities such as the reduction of bipolar cores, stone tool manufacture, and the processing of nutmeat. The four netsinkers are the only example of resource procurement tools within the cobble tool class and we assume are related to fishing in the Ohio River.

Included with the roughstone tool class is an enormous, immobile sandstone anvil, found during excavations in the central portion of the East Steubenville site. This artifact exhibited a number of pits on its upper surface (Photograph 4). Numerous hammerstones, complete and broken stone tools and projectile points were found in the excavation block surrounding the anvil, suggesting that this area was a focus of stoneworking and other activities.

Photograph 4. Sandstone Anvil In Situ at East Steubenville Site



### **Organic tools**

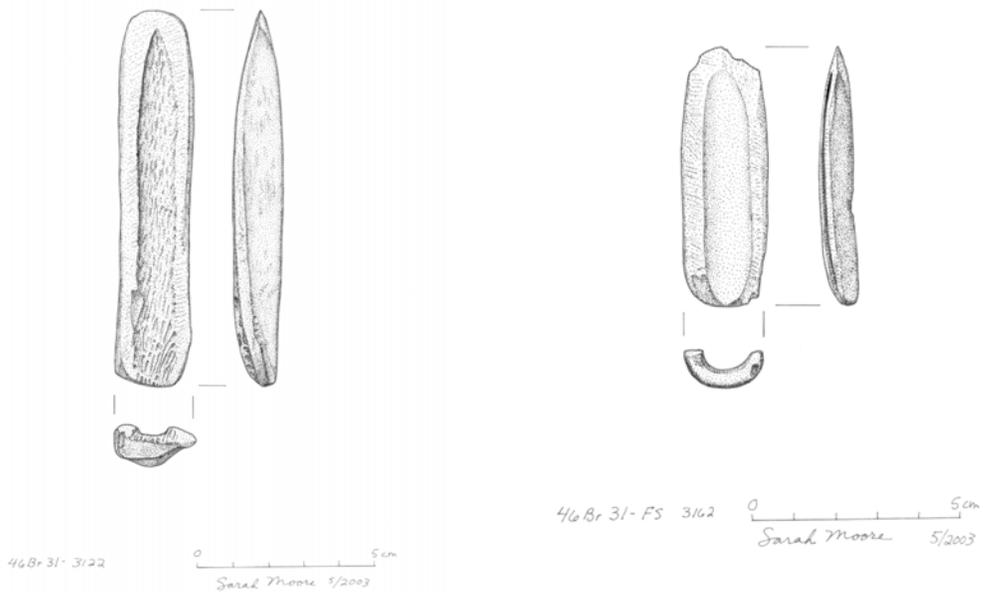
In addition to stone tools, the presence of mussel shell at the site buffered bone from the effects of acid soil and led to the recovery of several preserved organic tools not normally found at sites in the Upper Ohio Valley. These include bone endscrapers, bone and antler points, awls, and an antler flaker. The two bone endscrapers are perhaps the most interesting of the bone tools (Photograph 5). Each has an angled distal bit that exhibits a

high degree of polish and a blunted butt end (Figure 4). These tools are similar to artifacts found at Shell Mound Archaic site which have been classed as chisels or gouges employed to work with wood; however, the use-wear on these tool bits indicates use on a soft material, so they were likely used to scrape hides.

Photograph 5. Bone endscrapers from East Steubenville site (distal bits to right).



Figure 4. Illustrations of Bone Endscrapers Showing Angled Distal Ends (Illustration by Sarah Moore).



The antler points are conical and have hollowed bases, presumably to facilitate hafting. The bone points have been ground and polished into a flattened triangular shape (Photograph 6). One exhibits a notched base. These points are similar to bone and antler points identified at several Shell Mound Archaic sites and were likely used in hunting.

Photograph 6. Antler (left two) and Bone (right two) Points Recovered at East Steubenville



Several types of bone awls were recovered including cylindrical, flat tip, and blunt tip awls. The bone awls were probably used for many tasks including clothing manufacture and plant processing. Two artifacts, typed as beveled bone implements, exhibit polish and a beveled point (Photograph 7). One of these is heavily polished over its entire surface and the beveling on the distal end appears to superimpose the polish. This high degree of polish may indicate its original function as a bone pin; after breakage, the pin was modified for use as an awl or perforator.

Photograph 7. Beveled Bone Implements Recovered from East Steubenville (bottom specimen may have once been used as a pin).



As reported by Lisa Dugas, we also recovered a number of mussel shells that exhibit wear patterns along their margins. The convex edge of the shell may have been ideal for scraping. Again, these tools, made on mussel shells, may help explain the rarity of unifacial tools. The shells are large, easily held, and are an abundant by-product from on-site cooking.

### **Summary of Technological Organization**

Reconstruction of technological organization between the Brewerton and Steubenville occupation is difficult because the site represents a palimpsest of these two occupations as well as scattered evidence of several other much smaller, primarily Late Archaic occupations. Nevertheless, we can offer several tentative observations regarding trends in the artifact assemblage by examining the diagnostic point type data. The emphasis on bedrock cherts for the Steubenville occupation suggests a desire for high quality material (Mohney 2002). The large size of Steubenville points and their complex manufacturing sequence likely made the regular use of smaller sized cobble cherts impractical.

In contrast, Brewerton points were made from a variety of cherts, especially those from alluvial sources, and distinct preforms were not recognized. In all, the manufacturing sequence for Brewerton appears less complex than for Steubenville.

The emphasis on bedded cherts in the Steubenville point assemblage suggests a deliberate targeting of bedrock sources for the high quality chert to make the large Steubenville points. The dominance of locally available alluvial chert and the wide variety of bedrock cherts found in the Brewerton assemblage suggest the less selective use of both primary and secondary sources; in this scenario, toolstone resources were picked up as they were encountered by foraging groups. The smaller size of Brewerton points allowed the use of either higher quality bedrock material or lower quality cobble chert.

It is clear that stone unifaces were rare at the East Steubenville Site. Perhaps the square bit bifaces, bone scrapers, and shell tools fulfilled scraper functions more commonly associated with stone uniface tools.

### **Conclusions**

Excavations at the East Steubenville Site provided one of the first opportunities in 50 years to study the Panhandle Archaic Complex. Building on Mayer-Oakes' insights, our work at Steubenville has served to better define the unique projectile points associated with this archaeological culture and to more fully define Panhandle Archaic tool assemblages and raw material procurement and use. While GAI is learning much from the East Steubenville investigation, future excavations at other Panhandle Archaic sites will be required to fill in the many knowledge gaps for this pivotal time period in West Virginia prehistory.

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