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A POSSIBLE BEADMAKER'S KIT FROM NORTH AMERICA'S LAKE SUPERIOR COPPER DISTRICT

Susan R. Martin

Beads of copper are amongst the oldest and most widespread ornaments known in North America. Native copper was an important material to prehistoric Americans, and certainly the most important metal. It was collected, transported and traded over wide areas as early as 7000 years before present, and its use for ornaments persisted until it was gradually replaced by European metals over the many years of the contact period. A recently discovered cache of copper beads, bead preforms, awls, a crescent knife and scraps of raw copper at site 20KE20 in northern Michigan offers insight into the process of copper-bead production in 5th-century North America.

INTRODUCTION

The use of native-copper beads as ornamentation was probably one of the most widespread and long-lived traditions in prehistoric eastern North America. The most plentiful source of native copper (i.e., relatively pure elemental copper) in the world is the Lake Superior basin of interior North America (Fig. 1) where it is found both in ancient volcanic lodes and as a constituent of Pleistocene-age glacially transported river and stream gravels. Native people of the region made use of the material as early as 7000 years B.P. (Beukens et al. 1992; Martin 1993). It was mined, gathered and used for various tools such as awls, spear points, knives and adzes, as well as for ornamental and symbolic objects such as beads, bracelets, ear spools, tinkling cones and, occasionally, engraved and embossed breastplates, musical instruments and headdresses.

The distribution of the oldest copper artifacts is basically the same as the spatial distribution of the glacial drift within which the raw copper is often

found. In addition, there is some evidence that the material was traded far to the east and south of its most-abundant Great Lakes source in very early times. Other copper sources are known from Nova Scotia, New Jersey, the Appalachians and the American Southwest (Rapp et al. 1990), and there is growing evidence that copper was mined and gathered in these areas by aboriginals, particularly in the last thousand years (Childs 1994; Goad 1978).

Copper implements are somehow entrancing to many North American prehistorians. Students of technology and aesthetics find it fascinating that the material was used routinely for many thousands of years with straightforward technologies of processing, largely cold-hammering and annealing, a continuum with ancient stoneworking technologies. No one in eastern North America resorted to smelting the metal; there was no real need to because the material was nearly pure copper. It was shaped by hammering and annealing. The results include some of the most compelling, beautiful artistry known from North American prehistory (Halsey 1983). Students of symbolic behavior find copper implements of particular interest because some aboriginal cultures charged them with special cosmological and symbolic properties. Copper objects were thought to contain the powers of good medicine, wealth and well-being. Copper is also sometimes found in important social contexts such as burials and ritual cremations (Greber and Ruhl 1989; Hruska 1967). Copper objects were widely sought, and trading ornaments and talismans of copper became a standard feature of prehistoric life far afield from the Upper Great Lakes and other sources (Brose 1994).

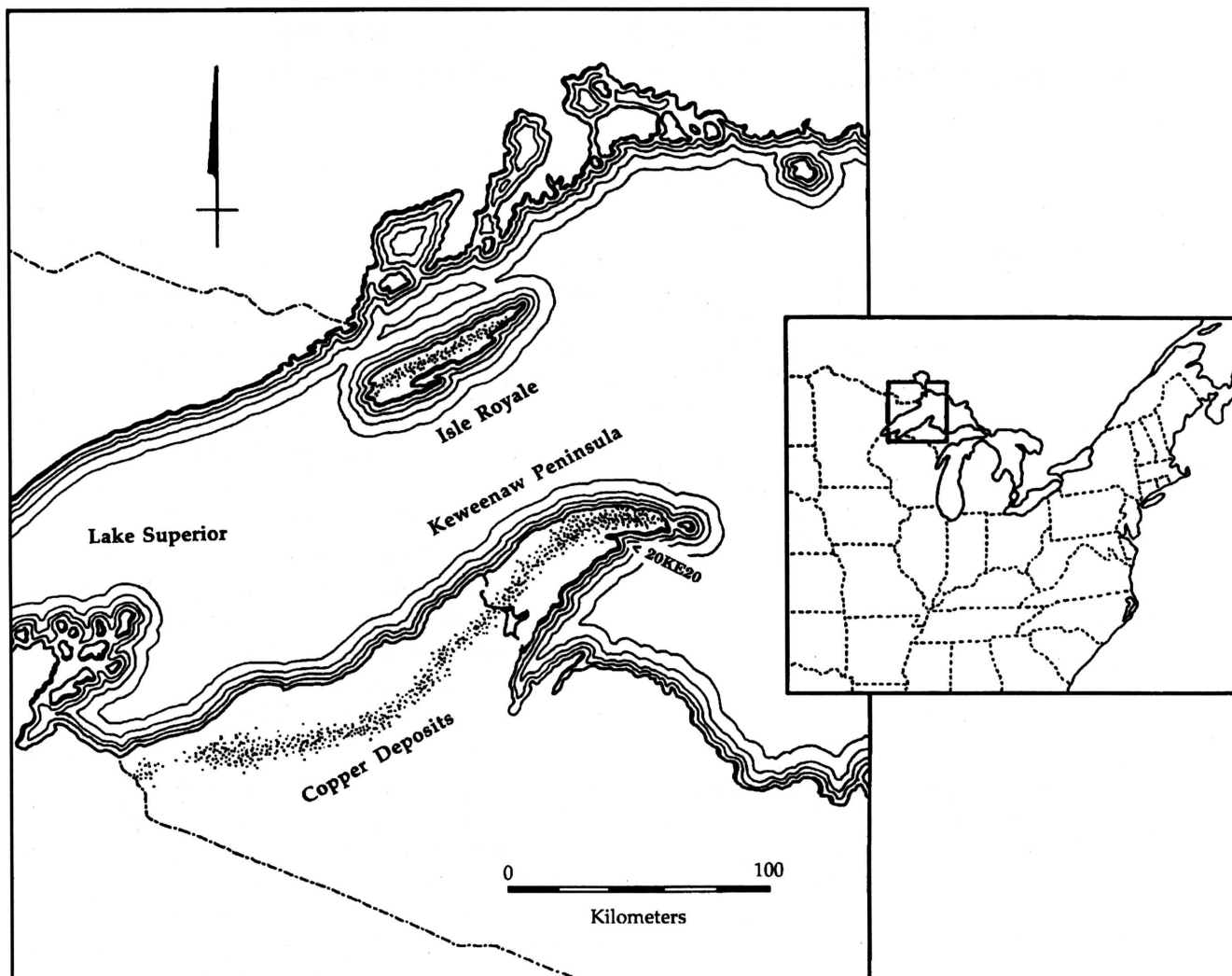


Figure 1. Location of selected native copper deposits in the Lake Superior district, United States/Canada border region (drawing by Patrick E. Martin).

A BEADMAKER'S KIT UNCOVERED

Concentrated deposits of copper artifacts and raw nuggets, colloquially referred to as caches, are occasionally discovered and reported. This is particularly common in the northeastern United States and adjacent areas of Canada, and is of particular interest because it is assumed that the practice of caching is intentional or, as Leader (1988:72-73) puts it, the caches "represent ordered behavior" and may

include "some form of processing tool kit." The caching of copper for future recovery seems to have been a common pattern of behavior through long reaches of prehistoric time (Binford 1961; Griffin and Quimby 1961; Halsey 1983; Leader 1988; Martin 1993; Popham and Emerson 1954). This is the depositional context of the copper artifacts described in this paper: a pouch of copper beads and bead preforms in various stages of the production process buried in a sandy ridge about 15 centuries ago.

In 1987, an amateur artifact collector, prospecting with a metal detector on a wooded relict beach ridge adjacent to an outcrop of native copper in Keweenaw County, Michigan, discovered the cache of copper artifacts. He very hastily collected the cache, making no use of modern excavation procedures. Later, and somewhat reluctantly, he enlisted the help of professional archaeologists at Michigan Technological University for description and analysis. The cache was a great find because it included preserved textiles and leather associated with copper artifacts. Many isolated copper artifacts have been discovered at the site as well; typologically, the range of the recovered tool types suggests a long period of occupancy and use (Martin 1993).

Limited rescue excavations were conducted at the site (20KE20) in the summer of 1988, by the Archaeology Laboratory of Michigan Technological University (MTU), with the financial support of MTU, the Michigan Bureau of History and the National Geographic Society. A series of radiocarbon dates and their consistency with what appear to be sequent beach features suggests that copper use and fabrication at 20KE20 went on over a substantial period of prehistoric time, perhaps the range of 7800-1500 years B.P. (Martin 1993:175). The cache allows us to better understand prehistoric beadmaking and trade patterns in northeastern North America, particularly from 500 B.C. to A.D. 500.

DESCRIPTION OF THE CACHE

Found in a shallow pit, the cache at site 20KE20 consisted of various copper items contained in a leather bag or wrapper within which was a remnant of textile. Several kilograms of small, corroded and concreted copper strips were collected and stored for some intended use. In addition, there were 43 awls, a crescent knife, a small triangular point, a hammered nugget and more than 300 copper beads, some strung on fiber cord. According to the finder, the copper artifacts were systematically arranged within the package (Fig. 2). Judging from the quantity of finely prepared and worked copper items from the cache, it appears that the surrounding area was an extraction/collecting and fabrication workshop of the sort predicted by Halsey (1983:35).

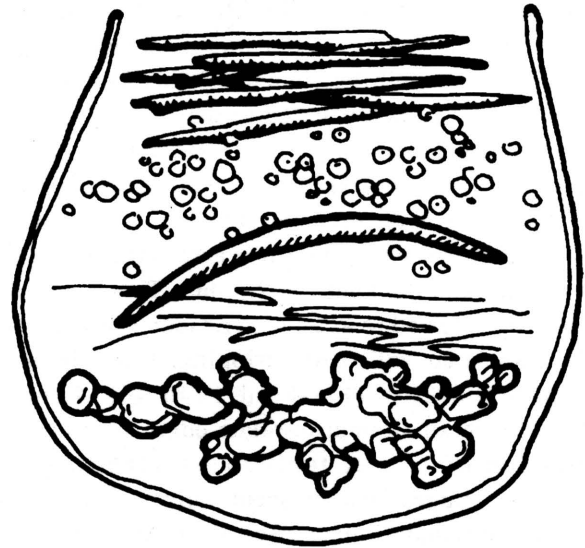


Figure 2. Schematic drawing of the copper artifact cache recovered at site 20KE20 in 1988. From the top: awls, beads, crescent, textile remnant, bead preforms, leather pouch. Not to scale (drawing by Timothy Pauketat).

Upon professional re-excavation in 1988, the feature appeared to extend to a depth of about 30 cm below ground surface and covered an area about 25 cm in diameter. There was no evidence that the cache was part of a burial; the feature appeared rather isolated in the middle of a large discolored area that had resulted from root or rodent action. A leather sample found in direct contact with a mass of native copper in sandy soil ca. 15-25 cm below surface yielded an uncalibrated date of 1570 ± 100 radiocarbon years or about A.D. 280-480 (Martin 1993:175).

THE COPPER CACHE FINDS

The artifacts from the cache are described here in groups determined by probable function. The beads ($n = 300+$), strung on 3-ply z-twist fiber cord of unknown species, are shown in Plate VA. Their appearance suggests that they were strung in an order somewhat graduated by size; they range in length from 1.5 mm to about 9.0 mm. The beads are in the possession of the finder and are, unfortunately, not available for more intensive study.

Of 43 awls (Pl. VB), most are square in transverse cross-section and single-pointed with a blunted or

flattened opposite end. Double-pointed awls are scarce. The specimens are remarkably standardized in appearance, something which has been noticed in other caches and is attributed to the "hand," or style, of an individual copper worker (Leader 1988:73).

A single crescent knife lay underneath the beads and atop the textile remnant (Fig. 2). The object is 11.7 cm long, measures 17.8 mm across the blade, and has a maximum thickness of 2.5 mm. This form, also commonly referred to as an ulu (Leader 1988:63), has been associated with bark stripping, food chopping and hide working (Flaskerd 1940:46). Penman (1977:19), in an attempt to relate edge angles of one collection of copper tools to hypothetical tool functions, alleges that crescent knives, "similar to ulus or semilunate knives used by Eskimo women," include a great range of edge angle measurements consistent with multiple aspects of meat butchering. Implements of this general form are assumed to be of Late Archaic age based on associations in caches and burials with diagnostic Old Copper Culture artifacts (Wittry 1957:218); however, I suggest that the temporal position of crescents needs reconsideration given the dating of the cache at 20KE20.

A singular cache item is a triangular flat point 5.8 cm in length, 8.7 mm in width at the base, and 2.4 mm in thickness. This long narrow piece is called a point for lack of a more specific term; it may have functioned as a piercing tool. It shows no evidence of any haft structure, and rather looks like a short fat awl or an awl-in-progress.

Situated at the bottom of the cache, underneath the textile remnant, the copper strips are among the most interesting finds (Pl. VC). Some beads are present among the strips, and many of the strips have already been worked into recognizable and regular shapes; some are partially curved. The strips, a kilogram of which was available for study ($n = 1000+$), vary only a little in size. Average weights and metrics, according to a grab sample of rectangular pieces from the deposit ($n = 72$), are: weight = .25 g, length = 7.5 mm, width = 2.5 mm. They appear to be blanks partially worked into bead shape, and are what beads look like before they are crimped or hammered into a spherical or semi-spherical form. The sides of the blanks appear to have a slight central bulge, and the ends, which will eventually abut or overlap, are tapered slightly. These bead blanks fit neatly into the

size range of the finished beads and appear to represent beads at the small end of the size range: those roughly 1.5 mm to 2.5 mm in length. Similar materials, dating nearly a thousand years earlier, were recovered from the Boucher site in Vermont (Heckenberger, Peterson and Basa 1990:188).

THE ANCIENT COPPER-BEADMaking PROCESS

Controlled excavation of the immediate environs of the cache at 20KE20 in 1988 resulted in the recovery of 38 copper beads. Found within about a meter of the cache, most were associated with rodent and/or root activity. The professional excavators found others by sifting the amateur's backdirt. The specimens ranged from 1.5 mm to 9.0 mm in length (Table 1) and included several sets strung on fiber cord.

Careful examination of the beads revealed some interesting characteristics of the beadmaking process and the aesthetics that accompanied it. The beads were examined, measured and then photographed under low magnification at the Archaeology Laboratory of Michigan Technological University. This examination expanded our understanding of how beads were formed, finished and strung, and revealed what patterns of aesthetic preference are recognizable in the strung arrangements of the beads.

For at least a century, researchers have offered explanations about prehistoric metallurgical and artisan skills applied to native copper (Clark and Purdy 1982; Cushing 1894; Goad 1980; Leader 1988; Smith 1965). These explanations are correct; however, they are spatially removed from the primary context of the metal extraction localities and depend largely on metallographic analyses and experimental metal working for conclusions. With the 20KE20 beads and associated finds, we have archaeological evidence of the process in its entirety, at the immediate source of the raw material and on the probable manufacturing site.

The fabrication process for the beads is relatively complex. The raw material was gathered from conglomerate deposits of native copper about 100 m from the cache. Small, regular, flat pieces of copper—perhaps the by-products of other tool fabrication

Table 1. 20KE20 Copper Bead Measurements (in mm).

Catalog No.*	Length	Diameter	Thickness	Comments
2.1	5.1	4.5	<1.5	no grinding, very rough
2.2	4.7	5.2	—	spaced evenly on cord (no species identification on cording)
2.3	4.0	5.0	—	
2.4	3.9	5.5	—	
2.5	5.0	5.5	—	
6.1	7.7	6.0	2.5	
18.1	1.9	2.5	<.5	strung on 3-ply z-twist cord (<i>Asclepias syriaca</i>)
18.2	2.0	2.7	<.5	
18.3	1.5	1.9	<.5	
18.4	broken	—	<.5	
27.1	6.3	7.5	2.0	beveled
27.2	3.0	3.0	—	slight bevel (strung on <i>Asclepias syriaca</i>)
27.3	5.9	6.5	—	
27.4	4.9	6.0	1.5	
27.5	3.5	3.8	—	
27.6	2.7	3.1	—	
27.7	2.8	3.0	—	<i>Asclepias syriaca</i>
27.8	3.6	3.8	.75	no bevel
31.1	6.9	8.3	2.8	
31.2	5.6	8.5	2.3	
31.3	6.7	9.0	2.8	
31.4	7.6	7.2	1.9	
31.5	7.0	8.8	2.5	
31.6	9.0	8.5	—	smaller bead in hole of a larger bead; spacer bead?
31.7	6.0	6.7	—	strung in graduated sizes (no species identification on cord)
31.8	5.5	6.0	—	
31.9	4.5	5.0	—	
31.10	4.5	4.8	—	
31.11	4.0	3.9	—	

Table 1. Continued.

Catalog No.*	Length	Diameter	Thickness	Comments
42.1	3.8	3.9	—	the strand has a 90 degree
42.2	3.8	4.1	—	angle in it
42.3	4.6	4.4	—	(the cord species is
42.4	5.0	5.0	—	indeterminate,
42.5	4.9	4.5	—	but it is different from the
42.6	3.0	3.2	—	other strands)
42.7	4.2	4.5	—	
42.8	4.5	4.5	—	
42.9	3.4	3.8	.8	

*Beads grouped together are strung together.

tasks—were saved and prepared for use as bead pre-forms. They were extremely regular in shape and were somewhat smoothed or ground before being shaped into beads. They may have been produced by intentionally folding thinned copper sheets (Franklin 1982), or by fine hammering. The size of the blank obviously dictated the size of the finished bead. A blank about 6.0 mm wide, 1.4 cm long and 2.0 mm thick would have produced a bead 6.0 mm in length and about 7.5 mm in diameter.

After selecting a blank and heating it to a temperature that softens the copper, the blanks were bent, hammered or squeezed into a rounded shape. It is possible that this rounding was done free-form for the larger beads; that is, the blank was held and lightly hammered, perhaps with blows directed via a fine-tipped awl, into the desired shape, then finished. There are other possibilities as well. One is that the strip could be completely or partially tapped around a form, such as a bone, copper awl or dowel. Another is that the strip could be pinched or crimped around a cord or thong, thus accomplishing forming and stringing in one operation. This would seem potentially useful particularly for the smallest beads, those in the ca. 1.5-mm-length range.

The wrap joins, or areas where the ends of the bead blank meet, were also carefully treated. Irregularities at the ends are neatly tucked together, and the join area smoothed. In some cases this joining is so precise that it is nearly invisible. This is not due to

corrosion products obscuring the seam, but to the care and artistry with which the beads were produced. Joins on larger beads tend to overlap and are usually carefully smoothed; those on smaller ones are more frequently irregular. The larger beads tend to be regular in cross-section and precisely rounded, whereas the smaller ones are more likely to be out of round. This is especially true of the 1.5-mm beads; some researchers attribute shape irregularities to insufficient annealing in larger artifact forms (Childs 1994:244).

In general, the beads from 20KE20 are either globular or sub-globular (i.e., they are slightly wider than they are long). In some cases the beads have been ground, polished or smoothed on the ends to the point that they appear beveled or even faceted. The beads have also generally been smoothed or polished around the interior circumference of the perforation, likely to protect the cord or thong from abrasion. The final appearance of the bead is, no doubt, the collective result of hammering into shape, smoothing, and abrasion after stringing.

The smallest beads deserve additional comment, for simply handling such small items is difficult so that forming them into a predictable shape is quite an accomplishment, one that is not well understood. In some cases, particularly with the smaller beads (those ca. 1.5-1.9 mm in length), the overlap seams are aligned precisely along the cord, and the orientation of the seam overlap or abutment is always the same.

Furthermore, these beads are spaced at precise intervals along the string and are sometimes slightly out of round, all of which suggests that these very small beads were crimped and strung in one operation (Fig. 3,d). In other cases, the smaller beads were imbedded in the holes of larger ones (Pl. VD), leading us to investigate whether they were actually exfoliated interiors of the larger specimens. Upon microscopic examination there was no evidence of breaks, shedding or exfoliation on the surfaces of the smaller beads, suggesting that they are definitely individual beads. If evidence of exfoliation was hidden by corrosion and oxidation layers, it was certainly not apparent under magnification. It appears that the positioning of the larger and smaller beads was intentional, suggesting that the smaller beads were used as spacers to set off the larger ones on a strand.

APPEARANCE OF THE BEAD STRANDS

The orderly appearance of the recovered bead strands suggests an overall concern with size relations and variable patterns of bead stringing. Because groups of beads were recovered in strands, we have the pleasure of understanding and describing how strands of beads should look, according to the aesthetics of a 5th-century native North American. The beads recovered through excavation display a number of patterns; there are five of particular interest which are illustrated in an idealized fashion in Fig. 3. In the first pattern (Fig. 3,a), the bead strand makes a right-angle turn. The beads are approximately even in size, but the perforation in one bead is angular rather than straight, causing the strand to kink at a right angle. It is unclear whether this pattern is intentional or accidental, but the decorative effect of the kink is quite striking.

A second pattern is shown in Fig. 3,b. Here, five beads appear to be graduated in size, much like the longer strand in Pl. VA. The third pattern (Fig. 3,c) is one in which there is an alternating pattern of small and large beads. In this pattern, small beads may have acted as spacers between larger beads. In the fourth pattern (Fig. 3,d), which involves the smallest specimens, beads of very uniform size are crimped or strung along a fine cord at standard intervals and with aligned overlaps. Fig. 3,e depicts the final pattern in which a random assortment of sizes is strung.

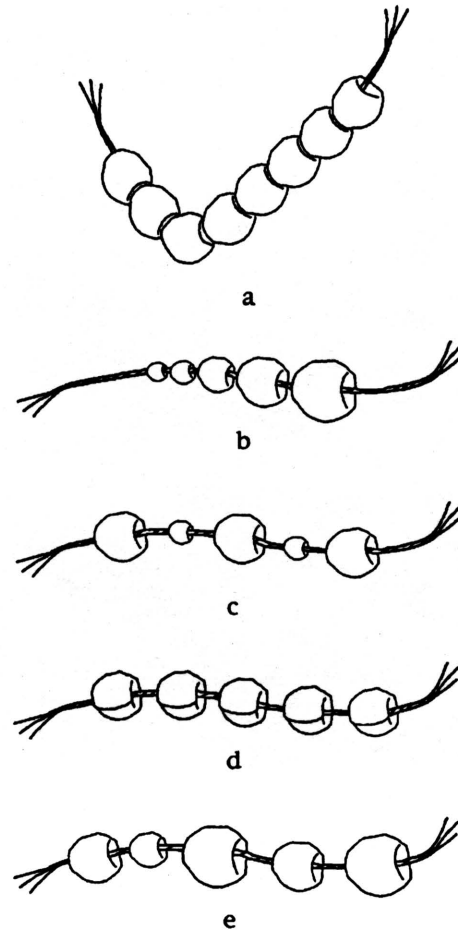


Figure 3. Hypothetical patterns of stringing beads (not to scale): a, right-angle; b, graduated; c, alternating size; d, crimped and aligned; e, random (drawing by Julia J. Bailey).

CORDING AND TEXTILES IN THE CACHE

Fortunately, the preservation of organic materials is enhanced by saturation with copper salts so we can relate some details about the materials used to string ancient beads (Bisbing and Martin 1993:170). Three samples of bead cord were compared to modern samples of *Asclepias syriaca* (milkweed) and *Apocynum androsaemifolium* (dogbane), both of which were commonly used by Native Peoples of the northern Great Lakes region (Yarnell 1964). Two of the samples are indistinguishable from the milkweed; no sample resembled dogbane. One of the samples remains unidentified. The structural details of some of the cord are clearly apparent: a 3-ply z-twist cord of milkweed fibers is the stringing element of the beads

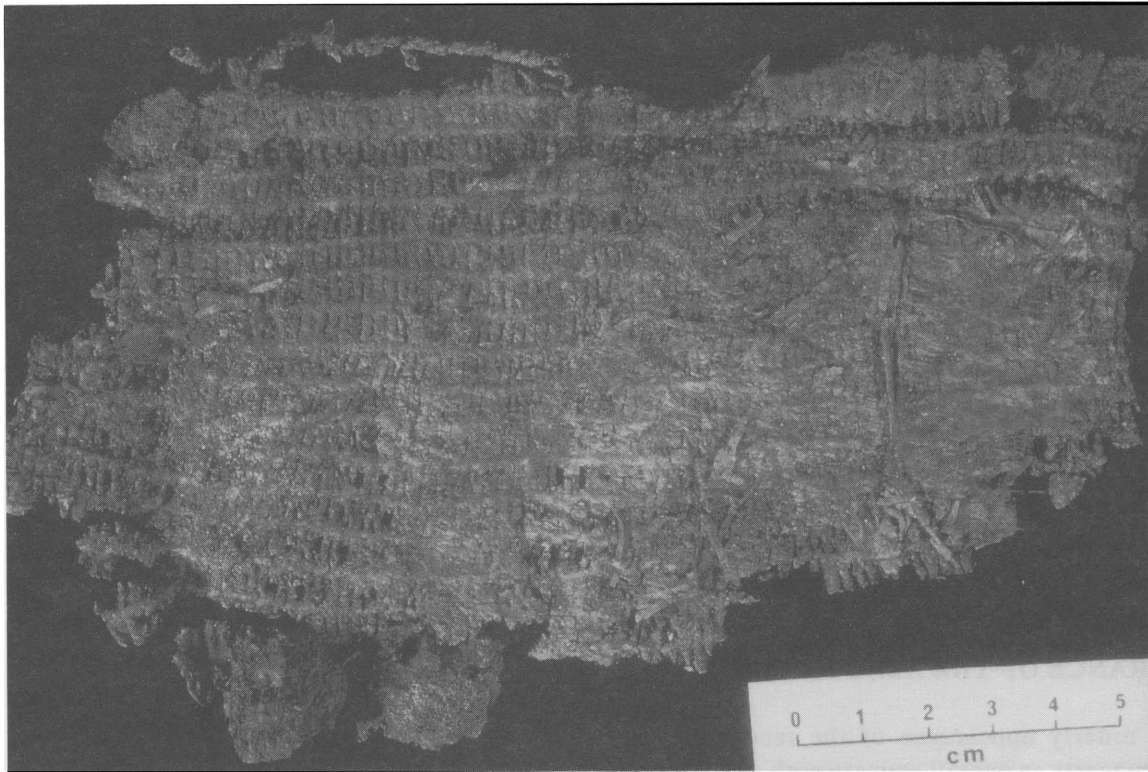


Figure 4. Textile associated with the cache, 5th century A.D. (photo by Patrick E. Martin).

in Pl. VA, and also the very small (1.5-1.9 mm size) beads (Table 1).

The textile fragment found in the cache (Fig. 4) is a woven fabric composed of at least three constituents. It is weft-twined with the twined stitches dropping to the left. The warp (the components which extend lengthwise from the loom or origin point) consists of coarse, woody bast fibers which are poorly retted. There may be remnants of woody tissue adhering to this fiber; i.e., it appears to be incompletely retted or separated from coarse woody layers originating close to the fine fibers. The warp fiber appears very coarse and the species remains unidentified.

The warp appears to be wrapped in a translucent material which is of animal origin. Although the translucent wrap, when examined by polarized light microscopy, does not show any structural details such as cellular outlines or undulating birefringent fiber structures, it does accept Van Gieson stain which is characteristic of collagen in leather. Micro-Fourier transform infrared

spectroscopy produces absorption characteristics typical of polyamides or proteins. Though it is unclear what the exact source of this material is, its transparency and birefringence are consistent with porcupine quills. Overall, the textile is very similar in structure to examples recovered from the Boucher site and from the Riverside cemetery (Heckenberger, Peterson and Basa 1990:204; King 1968:121).

The weft (components that extend from selvage to selvage) is composed of bast fibers that are similar to those comprising the bead cords. The yarn has been very carefully retted and is more delicate than the warp. It is unclear whether the apparent difference in the fibers relates to differential preservation or to differential preparation before fabrication of the textile. The animal fiber wrap around the warp may have prevented the infiltration of copper salts. The species of the weft fibers is uncertain although the ultimate fibers are unlike dogbane but similar to the modern milkweed.

DISCUSSION AND CONCLUSIONS

The proposed age of the 20KE20 cache deserves discussion because the artifact assemblage appears to include some temporally incongruous elements. The radiocarbon date for the feature is inconsistent with the assumed age of crescents or ulus thought to be of Late Archaic age. However, in a cursory search of the literature from sites in Wisconsin and upper Michigan, where the putative Late Archaic dates of these implements originated, no organic constituents of ulus or crescents have yet been dated by radiocarbon methods. It is important to recognize also that many, if not all, of these sites are multicomponent localities which were excavated somewhat unsystematically over many years. Crescents are not present in the Osceola site (Wisconsin) or Boucher site (Vermont) collections; the specific contexts of crescents at the Riverside site (Michigan) and at the Oconto site (Wisconsin) are not dated. At the Reigh site (Wisconsin), several crescents are associated with burial contexts but no radiocarbon dates are available from the specific areas of the site where crescents were recovered. Thus, it is difficult to conclude that the attribution of crescents to the Late Archaic is well established. Rather, one might conclude that the age or longevity of crescents as an implement type is still in question. Four possibilities arise as a result of the 20KE20 date:

- a. The radiocarbon date for the 20KE20 cache is too recent and crescents are really Late Archaic in age.
- b. The crescent at 20KE20 is an heirloom from the Late Archaic.
- c. The ages of crescents from sites in Wisconsin and Michigan are actually unknown and/or crescents are wrongly attributed to Late Archaic components.
- d. Crescents are actually a long-lived artifact type not solely associated with the Late Archaic.

Given the fact that contexts containing crescents have yet to be dated by radiocarbon methods to the Late Archaic, one conclusion is that options c and d may be considered provisionally correct.

What is the relationship, if any, between sites such as 20KE20 and Boucher? What explanation is there for the copper, textile, technological and contextual similarities between Boucher and 20KE20 despite the time and distance that separate them? Site 20KE20 is

so similar to Boucher in terms of beadmaking potential and textile materials that we must try and explain why these similarities exist despite 1000 years' time difference and 1000+ kilometers distance in space.

The prehistoric Upper Great Lakes region was connected by an elaborate water highway within which there existed crosscurrents of many cultural traditions, uniting peoples of vastly separate territories. In some ways, the prehistoric Northeast was—at least around and to the north of the Great Lakes—one large cultural province within which a continuum of related beliefs, behaviors and material culture extended over long time spans. Thus, the Boucher site and its material contents—the beads, the bead preforms, the textiles—hold much in common with site 20KE20 which was used 500-1000 years later in time, with virtually identical bead technology, bead morphology and textile technology/design. The Riverside site (20ME1), about 250 km south of 20KE20 at the western edge of Lake Michigan and occupied through Late Archaic times into the Woodland era, also shares these features (Hruska 1967; King 1968). The most compelling model that comes to mind to explain this widespread similarity is one of down-the-line trade across space via long-established trading partnerships which were modeled on real or fictive kin relations (Heckenberger et al. 1990:140). These long-lived patterns of trade definitely operated within the Upper Great Lakes (Brose 1994).

Another sense of the interconnectedness of the region comes from a look at the constituents of assemblages of Upper Great Lakes archaeological sites, especially those with pottery representative of the Woodland cultures. On sites of Terminal Woodland age on Lake Superior's Isle Royale, for instance, it is clear that the prehistoric inhabitants either made pottery in imitation of Huron pottery of eastern derivation or acquired Huron pottery by trade, or Hurons brought pottery to the island themselves (Clark 1991). One thing is absolutely certain; there was either direct or indirect contact across the length of the Lake Superior basin with material traditions that included the Huron and other eastern styles of pottery making. These strong similarities suggest repeated contact through mutually desirable trading links over vast reaches of time and space.

In general, one concludes that there was wide-spread communication in the Northeast during prehistory to the point that rather continuous and heterogeneous styles in material culture are regular elements in prehistoric deposits in the copper-bearing district as elsewhere. This may help to explain why non-material aspects of culture, like mythical understandings and depictions of water spirits native to the Upper Great Lakes (Childs 1994), are wide-spread across northeastern North America during prehistory. Ideologies and materials make identical journeys.

Is the 20KE20 cache a beadmaker's kit and are the awls in the cache perhaps related to the manufacture of beads? The technical function of the awls related to beadmaking is problematic. It is certainly a possibility that their co-deposition is not caused by bead production requirements at all. It is, however, interesting to consider whether the awls might play a role in bead production. Certainly awls are, along with beads, one of the most ubiquitous of copper objects. Awls could have been used in a variety of ways in a beadmaker's kit. A pointed awl round in cross-section could have functioned as a mandrel to form beads of various sizes. In addition, awls might have been used to hold bead preforms in place during heating, as punches to direct force to form beads and bar stock for the production of bead preforms.

How many strands of beads might be represented in the 20KE20 cache? At the Boucher site, 100+ beads were judged to comprise a hypothetical bead strand, based on counts of beads recovered from burial contexts (Heckenberger, Peterson and Basa 1990:190). This number is more or less accurate for Riverside, although some burials included fewer, but very large, beads (Hruska 1967). If the Boucher bead-per-strand count is applied to 20KE20, then there may have been as many as three or four strands of beads in preparation. This figure fits well with the number of hypothetical patterns and size ranges of strands discussed earlier.

The traditional normative functions of the tools found in the 20KE20 cache suggest a woman's kit for beadmaking, as well as for other domestic tasks; e.g., food preparation, hide-working/piercing and the like. The cache is primarily composed of sedentary tools, as named by Leader (1988): i.e., tools used for processing materials rather than food procurement. The presence of a crescent or ulu supports the notion

that the cache is a woman's tool kit. Awls are often assumed to be women's tools, but supporting evidence, such as the inclusion of awls with female burials, is not as strong as might be desired, at least in the region and time period of interest. As far as the sites mentioned earlier are concerned, the Riverside cemetery awls are associated with women's burials, but are more commonly part of undifferentiated fill (Hruska 1967). The evidence from Boucher is not conclusive; the only awl recovered from a burial context was associated with a young adult of undetermined sex. Crescents are also sometimes associated with male burials (Ritzenthaler et al. 1957:286; 295; 299), leaving us wondering whether they are exclusively women's tools.

Obviously, the evidence here for interpreting the cache as a woman's beadworking kit is inconclusive and yields a hypothesis rather than a conclusion. It is clear that widely distributed and long-lived similarities in form and style indicate probable trading contacts for copper, and this bundle of objects may have been part of that trade. This likelihood suggests that we at least rethink our assumptions about the activities of women regarding copper manipulation, and this analysis is a rudimentary attempt to do that. It is also reasonable to entertain alternative ideas about the technical functions of implements, such as awls, beyond normative concepts of skin-working and piercing. It is interesting to note that years ago, Ray H. Landon, then president of the Minnesota Archaeological Society, expressed the view that copper-working was a valued male skill in ancient societies. He put it this way: "It may be that there were certain men in the tribes that worked copper who occupied a position similar to that of the so-called arrowhead maker" (Landon 1940:28). Perhaps the special status of the copper-worker can, on the evidence of the cache at 20KE20, be extended to some of the women of prehistory as well.

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Susan R. Martin

Archaeology Laboratory

Michigan Technological

University

Houghton, Michigan 49931



Plate VA. *Copper Beadmaking:* Examples of prehistoric copper-bead strands (photos by Patrick E. Martin).

Plate VC. *Copper Beadmaking:* Four concreted masses of copper-bead preforms.



Plate VB. *Copper Beadmaking:* Some of the copper awls from 20KE20.

Plate VD. *Copper Beadmaking:* Detail of prehistoric copper beads; note the bead within a bead at the top.

