Paleoindian portable art from Wyoming, USA

Danny N. WALKER\textsuperscript{a}, Michael T. BIES\textsuperscript{b}, Todd SUROVELL\textsuperscript{c}, George C. FRISON\textsuperscript{c}, Mark E. MILLER\textsuperscript{a}

Abstract

Paleoindian portable art, while sparse, has been reported from several Wyoming localities, both dated and undated, and with good archaeological provenience or no established provenience. Additional examples have been recovered from many later Holocene sites. Media for these art objects include sandstone, steatite, bison bone, and mammoth ivory. Techniques ranged from light incision and deep scoring to pecking, and motifs ranged from abstract to anthropomorphic to zoomorphic. This paper reviews these Late Pleistocene portable art examples and relates the motifs to cliff face art through time.

Waldo R. Wedel divided the Great Plains of North America into five geographic areas: Southern, Central, Northwestern, Northeast Periphery, and Middle Missouri (Wedel 1961: 23). Together, these areas occupy a large share of central North America, from a short distance east of the Mississippi River to the Rocky Mountains and from southern Canada to Mexico. Geographically, the Northwestern Plains cover a large share of eastern Montana and Wyoming east of the Rocky Mountains along with the northwest corner of Nebraska, extreme western North and South Dakota, and an extension into southwest Alberta. Actual boundaries are difficult to establish. Mountains may rise abruptly to form a somewhat distinct separation from the plains at one location, whereas in other locations mountains and plains merge gradually. Mountain ranges such as the Wind Rivers extend into the plains areas with a wide river valley between that range and the Absaroka Mountains. In contrast, the Big Horn Basin is nearly completely detached from the plains, surrounded by mountains (Fig. 1). With some hesitation by many researchers, the Wyoming Basin (Fenneman 1931) is regarded as part of the Northwestern Plains (see Mulloy 1958). This basin forms a corridor through the mountains and provides access from the Plains to the Great Basin (see Fig. 1).

\textsuperscript{a} Wyoming Department of State Parks and Cultural Resources, Wyoming State Archaeologist's Office, USA.
\textsuperscript{b} Worland Field Office, Bureau of Land Management, U.S. Department of the Interior, USA.
\textsuperscript{c} Department of Anthropology, University of Wyoming, USA.
Archaeologically, the Northwestern Plains is as diverse as its topography and environment. Cultural complexes occur in the region that are not found elsewhere, but classic North American Paleoindian groups, such as Clovis, Folsom, Hell Gap, Eden, and others are also commonly recorded. In fact, many of these complexes were originally defined based on Wyoming archaeological sites. The Paleoindian age of these complexes has repeatedly been verified by dozens of radiometric dates. Lithic technology has defined these complexes over the years. However, we do know about other aspects of the lives of these peoples, including artistic endeavors. Evidence for early art includes both petroglyphs on cliff faces and portable art.
The initial researchers studying rock art in Wyoming and the surrounding area did not realize how long the region had been occupied. None of the early archaeological excavations revealed art in a dateable context. David Gebhard created the first rock art chronology for Wyoming in the 1930s and 40s based on his research at Dinwoody Lake, Wyoming (Gebhard & Cahn 1950; Gebhard 1951) and limited information from other parts of the State. Gebhard’s relative chronology was based largely on superposition studies and included six major traditions with subtypes. He called Types IA & IB Early Hunting Tradition (Fig. 2) which is the oldest, with the successive types being progressively younger.

Fig. 2. Pleistocene petroglyphs at Legend Rock site, Wyoming, USA.

Fig. 3. Varnish thin section from outlined animal and glyphs with experimental varnish dates suggesting Pleistocene age. Petroglyphs associations can be seen in Figure 2.
Types II & III are referred to as Interior Line Tradition; Type IV (A & B) is primarily incised and less well executed; IVA is related to Plains rock art and IVB is a variation that incorporates elements from other areas to the south and west. The horse is present in Type IV indicating proto-historic or later time periods. Type V is called the Tool Mark Type, and Type VI includes all pictographs.

In the Bighorn Basin, the Legend Rock site, which belongs to this macrotradition, has petroglyphs with minimum limiting age estimates between 11,000 and 10,000 years ago (Dorn personal communication 1995; Liu & Dorn 1996). A varnish micro-lamination sample from an outline pecked animal shows a black layer indicating deposition during the Younger Dryas. Other glyphs on the same panel include an outline pecked human, an outline pecked male wapiti, and a pecked hand. This panel also includes two outline pecked female wapiti, a mountain sheep, and an en toto pecked deer, along with four animals for which the species is difficult to determine although they have similar varnish. Three are most likely female wapiti and one may be a bear. None of the oldest animal images are from extinct species. In addition to these images (Fig. 2-3), there are heavily varnished incised line abstract symbols at the site that have not yet been dated. The abstract images are obscured (Fig. 4) by the superposition of Holocene-aged Interior Line tradition images (Francis et al. 1993). More research is needed to identify all of the oldest petroglyphs at the site.

Fig. 4. Superposition of elements at Legend Rock Petroglyph site.

More recently, Ron Dorn, Julie Francis and Larry Loendorf published a chronology derived from radiometric dates, cation-ratios, and varnish micro-laminations which suggests considerable antiquity for several rock art panels in the Bighorn Basin, Wyoming (Francis et al. 1993). These experimental dating methods were discussed in detail by others in the 2010 IFRAO Congress. Alice Tratebas has refined Gebhard’s Early Hunting Tradition to show two variants of what he called Early Hunting that may belong to the same macrotradition (Tratebas 2004).
Excavations at Legend Rock have not produced artifacts or radiometric dates from the Paleoindian period. The excavations have focused on areas being actively eroded by Cottonwood Creek and areas that have been proposed for construction of site facilities. These areas are within the younger landforms at the site. None of these areas are directly associated with the oldest panels.

Portable art in the form of worked and carved bone, antler, and ivory objects has been excavated at several Paleoindian campsites dating before 8,000 years. Taken by themselves, these are often some of the rarest objects recovered from the sites, but they are consistently present when campsites are excavated.

Fig. 5. Excavated Late Pleistocene decorated and artistic artifacts from the Northwestern Plains. A. Sheaman site (Wyoming); B. Anzick site (Montana, courtesy of Larry Lahren); C. Powers II site (Wyoming); D. Fenn Cache (possible Wyoming, courtesy Forest Fenn); E. Agate Basin site (Wyoming); F. Agate Basin site (Wyoming); G. Lindenmier site (Colorado, courtesy Jason LaBelle); H. Powers II site (Wyoming); I. Hell Gap site (Wyoming).

The first of these are the so-called bone rods and chipped stone crescents recovered from Clovis age sites in several localities, including Anzick, Montana (Lahren & Bonnichsen 1974), Sheaman, Wyoming (Frison & Stanford 1982), Richy-Roberts, Washington (Gramley 1993), Fenn Clovis Cache (Frison & Bradley 1999), and Powars II (Stafford et al. 2003), among others (Fig. 5). Some researchers have described the markings on the bone and antler rods as utilitarian. They call these
items foreshafts, and credit the cross hatching with allowing for better adhesion to the main shaft. Others believe the distinctive crosshatching on some of the rods also shows an artistic side to these objects. The stone crescents recovered from these contexts are also distinctive to Clovis contexts. Their utilitarian use remains unknown, but they remain distinctively artistic.

Two Folsom age campsites have been excavated with numerous examples of carved bone and other specimens: the Folsom occupation at the Agate Basin site in Wyoming (Frison & Stanford 1982) and the Lindenmier site in northern Colorado (Wilmsen & Roberts 1978) (Fig. 5). Many of these items do appear more as basic artistic endeavors and less as utilitarian, although some are proposed as gaming pieces. While bone beads were not identified at the Agate Basin site, bead manufacturing residue was recovered as the cut distal ends of both rabbit (Lepus sp.) and fox (Vulpes vulpes) tibiae in the Folsom occupation. Formal bone beads have been recovered from the Lindenmier site (Fig. 5), the Powars II site, and two different Paleoindian levels at the Hell Gap site in eastern Wyoming (Larson et al. 2010).

Bone, antler, and ivory tools are known from Clovis contexts elsewhere — the best known are the mammoth bone shaft wrench recovered from the Murray Springs site in Arizona (Haynes & Hemmings 1968; Hemmings 2007) and pointed and beveled bone, antler, and ivory rods known from various localities including the Sheaman site (Frison 1982), Blackwater Draw (Boldurian & Cotter 1999), the Itchtucknee River, Florida (Jenks & Simpson 1941), the Anzick (Lahren & Bonnichsen 1974) and East Wenatchee Clovis caches (Gramly 1993), and Sheriden Cave in Ohio (Tankersley 1997). At Blackwater Draw, Clovis foragers began but never completed the process of segmenting a mammoth tusk, presumably for the purpose of manufacturing something, what exactly we may never know (Saunders et al. 1990; see also Saunders et al. 1991). The incised artifacts which have been recovered from Clovis contexts at the Gault site are incised limestone cobbles (Collins 2002). Apparently, more than 100 of these objects have been found, and they typically show abstract geometric designs.

Perhaps the most intriguing Paleoindian portable art piece from Wyoming, the Barnes tusk, was found about five years ago. This is an incised segment of mammoth ivory collected by an avocational archaeologist in the Big Horn Basin of Wyoming not far from the Legend Rock site discussed above. The original photographs sent to us showed an artifact fragment of what appeared to be ivory, based on its herring bone surface texture, and even more intriguing were the geometric incisions which appeared to encircle its circumference. We now have reason to doubt the Pleistocene antiquity of the site where it was found, but we still believe the artifact is of at least Clovis age, and therefore has the potential to inform us about early Paleoindian art and bone and ivory technologies.

We believe the tusk to be mammoth ivory, but it is certainly possible it could be mastodon. The smooth, rounded end has been shaped, as fresh tusk tips tend to be considerably more pointed. The artifact was broken after it was incised, as all incisions meeting the break surface are clean breaks (Fig. 6.1) and there is no evidence of incisions continuing onto the break surface itself. The tusk fragment has a mass of 434g, or close to one pound, and is 14.9cm in length. Just above the break, the fragment is 4.8cm in width and 14.6cm in circumference. Secondary pedogenic carbonates have precipitated into the incisions and the break surface on one side of the tusk, eliminating the possibility this is a modern forgery. Traces of red ochre can also be seen under magnification.
The incised design, in our opinion, is not literally representational, but instead is comprised of a series of abstract geometric designs (Fig. 6.2). We must, however, keep in mind that the artifact broke in antiquity, and that the complete design is not present. To view the entire pattern of incision, we combined a series of photographs into a single flat image, shown here as two complete copies of the entire circumference (Fig. 7). The most prominent features are a series of bisected triangles and a webbing design, or what Marshack (1979: 276) refers to as a "ladder motif." Two additional points are worth noting. First, because we do not know how the piece
was intended to be viewed, it is worthwhile to examine the design from alternative perspectives. Second, while we do not wish to engage in any interpretation of the markings, it is interesting to note that both the bisected triangles and the ladder motif are known from Upper Paleolithic art (Guthrie 2005; Marshack 1979).

Fig. 7. Drawing of mammoth tusk engravings viewed from two directions.

Since the Barnes tusk, a solid piece of mammoth ivory, was broken after it was manufactured, it seems likely it did serve some utilitarian function, but it is also possible it was simply a piece of art mobilier that served a nonutilitarian purpose. In this sense, it could be similar to the incised stones from the Gault site or carved fragments of mammoth ivory, such as those from Upper Paleolithic sites in the Czech Republic and Russia (Marshack 1979).

A possible functional interpretation of the Barnes tusk is that it is a broken bâton de commandement, also known as a shaft wrench or shaft straightener. Similar artifacts of bone, antler, and ivory are known from the Upper Paleolithic across a huge geographic area from Iberia to Siberia, and they are also known from Clovis contexts (Guthrie 2005; Haynes & Hemmings 1968; Hemmings 2007). In the
Upper Paleolithic, these artifacts are commonly decorated with incised designs, and often are recovered broken, though typical breaks occur across the opening.

Whatever purpose this artifact served, it is important for several reasons. First, the art is associated with Pleistocene fauna and could be Clovis in age or possibly earlier. Second, it is incredibly well preserved, suggesting the possibility of an early Paleoindian site with well preserved faunal remains, something very important for investigating current questions of Paleolithic subsistence and Pleistocene extinctions. We decided not to attempt to date the tusk itself, assuming it would yield a Pleistocene date, because it would be irreversibly destructive of the artifact itself. Also, it would not tell us anything about the date of its incision, or the age of the geologic context in which it was found. In July of 2008, we made a brief visit to what is now known as the Barnes site (48HO949) for the purpose of collecting dateable materials.

The Barnes site sits in the southern Bighorn Basin of Wyoming, approximately 15 km northeast of the town of Thermopolis and 37 km south of the Colby site, a Clovis mammoth kill site. It sits along the western bank of Red Springs Draw, a south to north trending tributary of Kirby Creek which flows into the Bighorn River, on the northern edge of the Bridger Mountains foothills. The site is at the mouth of a small canyon where the stream incised through Cretaceous bedrock. The tusk was found on the surface at the base of an abandoned road cut into an alluvial terrace. Time only permitted a minimal reconnaissance of the immediate site area, documentation of a handful of surface artifacts, excavation of a single auger hole, and collection of dateable materials from the stratigraphic exposure on the terrace itself.

The tusk was found on the surface of the road cut, just at the base of the vertical exposure of the terrace. A hearth was observed in the profile just above where the artifact was found. A sparse scatter of surface artifacts was observed on the terrace surface, and a single tool, a small biface fragment, was recovered from an exposure on the edge of the terrace. Although none of the artifacts were diagnostically Paleoindian, none were diagnostically not of Paleoindian age either. Before our arrival at the site, a distal fragment of what appears to be a Paleoindian point, very likely Clovis, was found on a higher terrace surface, approximately 300m east of the site.

During the fieldwork, we relocated the hearth feature in the terrace profile. The feature is a broad shallow pit cut into underlying fluvial sands. The red color of the sands is derived from the bedrock and is not from heat induced oxidation. The light brown fill of the pit is capped by a charcoal-rich layer a few centimeters thick that contains fragments of burned sandstone. We do not know if the tusk was originally derived from the same stratum as the feature, but it seemed likely. We collected a small sample of the hearth fill for dating.

Approximately 2m west of the terrace scarp, we dug a single 3-inch diameter auger hole with the intent of recovering dateable materials and getting a first glimpse of the site’s stratigraphy. We also hoped to encounter a dark soil analogous to the black mats seen at numerous Clovis sites across the west (Haynes 2008). We augured through approximately four meters of deposits. We stopped coring at that depth because we thought that we were below the layer from which the tusk was derived although we had not reached the base of the deposits. The deposits were generally fine grained, ranging texturally from clays to sands, and most likely derived from overbank deposition. No obvious mollic A-horizons were encountered, but
secondary pedogenic carbonates were evident intermittently through the profile, raising the possibly of comparing isotopically the sedimentary carbonates in the site sediments to those in the tusk, something we have not yet done. In the auger test, we recovered a single sample of dateable charcoal from a depth of 205 to 219cm, which was a little more than one meter beneath the hearth.

It should be noted that a buried soil was observed approximately 20cm beneath the surface of the road cut on the north side of the site. This soil was not observed in the auger, or on the southern end of the site, where the tusk was recovered. Because the buried soil was not observed in the auger test, it seems likely that an erosional disconformity is present. It is possible that a late Holocene cut and fill has truncated older Pleistocene sediments. The artifacts and tusk may have been derived from this soil rather than from the overlying deposits in the upper portion of the terrace.

With funding from the Wyoming Archaeological Foundation and the Office of Research at the University of Wyoming, in early August, we submitted both charcoal samples for AMS radiocarbon dating to Beta Analytic. On September 11, 2008, we received the results, and to say the least, they were somewhat disappointing. The charcoal sample from the hearth dated to 2400 ± 40 BP (Beta-247797). The sample from the auger hole dated to 4190 ± 40 BP (Beta-247797). The tusk appears to have derived from a late Holocene alluvial terrace containing what is very likely a Late Archaic archaeological component.

This, of course, raises the question of how it happened. How did an incised mammoth tusk end up in a Late Archaic site? We are exploring several theories. First, we hypothesize that this is an artifact originally manufactured in early Paleoindian times, when mammoths still roamed Wyoming. It may have occurred in a late Holocene site because it was picked up by a Late Archaic person and discarded in the Barnes site. Alternatively, it could have been deposited by some natural geologic process, such as a flood event. Another possibility is that a Late Archaic forager discovered fossil mammoth tusk, incised it, and discarded it in the Barnes site. Finally, it is possible there is a dating error, and we are grossly mistaken about the age of the Barnes site. In other words, it might be an early Paleoindian artifact in an early Paleoindian site.

We feel one of these hypotheses is easily falsified. The tusk was recovered from fine-grained alluvial deposits, and the only large clasts present are artifacts. Thus, it seems almost certain the agent of deposition of the Barnes tusk was a prehistoric human and not flowing water. If it was transported there by fluvial processes, we would expect to see other large clasts not culturally modified, and we do not.

Regarding the final hypothesis, the two radiocarbon dates are in correct stratigraphic order, and one was more than 2m beneath the surface, making it very unlikely that the material dated is intrusive. The dates are far too young to explain on the basis of contamination. Thus, it seems very likely these deposits truly date to the late Holocene. That said there remains a small chance that this is an early Paleoindian site. Because the buried soil was not observed in the auger test, it seems likely an erosional disconformity is present. In other words, it is possible that a late Holocene cut and fill has truncated older Pleistocene sediments. To test this hypothesis, we submitted two radiocarbon samples from geologically equivalent contexts around the site and both came back again from the Late Holocene, tending
to confirm the idea of an erosional disconformity. The sample from a paleosol
exposed in the bottom of the road cut returned a date of around 1160 BP. Another
sample from a well-formed paleosol one-quarter mile upstream of the site came back
with a date of around 1800 BP.

As for the remaining two hypotheses, we favor the former that this is an early
Paleoindian artifact, although we are not highly confident in this assessment.
Consider that mammoth ivory would have been most plentiful to humans during the
late Pleistocene, prior to the extinction of mammoths. Thus, one could make a
probabilistic argument that any artifact manufactured on mammoth ivory from
Wyoming was most likely manufactured during the late Pleistocene. However, it
appears that during the Late Archaic a person managed to acquire a piece of ivory.

A second and perhaps slightly more compelling argument can be made on
stylistic grounds. While incised bone artifacts are known from the Plains during later
prehistory, they are not common, and typically they show very simple designs (e.g.,
Wedel 1986; Wedel & Hill 1942). In other words, even ignoring that it was
manufactured on mammoth ivory, stylistically this artifact fits comfortably within an
early Paleoindian or Upper Paleolithic assemblage, but it would be highly unusual in
a late Plains Archaic site. Therefore, despite the Barnes tusk being a relatively
unique artifact in New World prehistory, there is nothing about the artifact itself to
suggest it does not date to early Paleoindian times.

Therefore, our working hypothesis is that the Barnes tusk is an early
Paleoindian artifact that made its way into a Late Archaic occupation by the hands of
a prehistoric person. If we are correct that it was incised in the late Pleistocene, it
expands what is currently a rather meager database of recognized early Paleoindian
art in Wyoming. No matter its age, it is a unique piece and one that makes a lasting
impression on all who see it. Everyone who sees it recognizes its significance, which
may explain why it was originally manufactured from the largest bone of the largest
mammal on the Ice Age landscape. It might also explain why it was picked up during
prehistory some 10,000 years after it was made, and why it was picked up once
again 2,500 years later.

Finally, in an important 1984 article, George C. Frison wrote that avocational
archaeologists are the eyes and ears of the profession (Frison 1984: 191). Were it
not for the widespread network of communication between professional and
avocational that he advocated, we may never have learned about the discovery of
the Barnes site. Jeb Barnes and Tom Young are due a tremendous amount of
gratitude for their role in this case as the eyes of Wyoming archaeology, and for
reporting it to the professional community. An outgrowth of the communication
network fostered by Frison is the strong support of the Office of State Lands and
Investments who gave us permission to investigate the site and curate the incised
tusk at the University of Wyoming Archaeological Repository. As with so many other
significant sites in Wyoming, we know of this discovery only through the ongoing
cooperation of interested members of the public.
BIBLIOGRAPHY


Quote this article