



EVIDENCE FOR THE USE OF BONES AS CUTTING BOARDS IN THE FRENCH MOUSTERIAN

Philip G. CHASE*

Normally, the zooarchaeological interpretation of tool marks on bones follows logically from the anatomy of the animal in question. Cuts adjacent and parallel to an articulation indicate disjointing; scrape marks on a meat-covered bone imply defleshing; a cut mark across the medial surface of an artiodactyl phalange suggests cutting of an adductor tendon; and cuts around an antler pedicle probably indicate skinning. In each case the interpretation is based on two factors⁽¹⁾, the material known to overlie the bone (ligament, muscle, tendon, and hide, respectively) and⁽²⁾ the fact that the traces left by a stone tool indicate that it was used in an appropriate manner. However, the animal bones from a Mousterian site in France bear abundant tool marks which could not be interpreted in terms of butchering because either one or both of these conditions was not met.

Instead, these specimens from the faunal remains discussed here come from current excavations La Quina in the Charente (Debénath and Jelinek 1987, 1988, Jelinek, Debénath, and Dibble 1986, Armand 1990, Chase *et al.* in press, Chase 1986) (fig. 1), provide evidence of an unexpected practice, the use of bones as cutting boards, that is, as surfaces on which to cut materials unrelated anatomically to the bone. This interpretation is based on two lines of evidence.

First, the marks often occur where there is nothing to cut - no meat, no ligaments,

and no tendons. Second, the nature, orientation, and spacing of the marks are consistent with using the bone as a cutting board, but inconsistent with normal butchering practices such as disjointing, defleshing, skinning, or the removal of tendons.

Tool marks are common on the medial and lateral faces of metapodial shafts (fig. 2) and on the anteromedial surface of the proximal portion of the tibial shaft (fig. 3). In these locations, no muscle, tendons, or ligaments overlie the bone. While certain marks on the metapodials might be attributable to cutting tendons, and certain scrape marks might be attributable to skinning or to removal of the periosteum (Binford 1978), most cannot. The locations and orientations are inconsistent with such functions (fig. 4).

In fact, even when the location of tool marks indicates some activity such as defleshing, skinning, or tendon removal, the orientation and spacing of the marks often indicate otherwise. For example, although the marks show in figure 5 are located where one might logically cut the extensor digitorum tendons near the distal end of the metatarsal, their side-by-side distribution along the diaphysis means that the tendons would have been cut into very short and utterly useless pieces. When parallel cuts appear on bone overlain by meat (fig. 6), they are consistent with defleshing only if it were done by slicing the meat in place. This may well have been the case, but such parallel cut marks also appear on bones not covered by meat (fig. 3), indicating that the practice of slicing material on bone was not limited to defleshing. It is therefore likely that even on meaty bones, such marks were often unrelated to defleshing. Moreover, on meat-covered bones, the orientation of cut marks may be inappropriate even for slicing meat (fig. 7).

* University Museum of Archaeology and Anthropology University of Pennsylvania Philadelphia, Pennsylvania 19104 U.S.A.

(1) This was done by Bruce Hardy, Department of Anthropology, University of Indiana.

(2) Patrick Auguste (personal communication) has indicated that there may be similar use of bone at the early Middle Paleolithic site of Biache-Saint-Vaast, Pas-de-Calais.

D
O
S
S
I
E
R
S

There are alternative explanations for these marks, but they do not fit the facts. First, it is conceivable that some of them are the result not of human but of geological action. However, at La Quina, where virtually all of the long bones were broken for marrow, a deliberate effort was made to look for tool marks on both the interior surfaces of these bones and on the surfaces of the breaks. Marks on the interior surface of the marrow cavity appear to be virtually non-existent, and cuts on the broken surfaces extremely rare. Thus, the marks in question were apparently made before the bones were broken for marrow and are not post-depositional in origin. The same data indicate that the marks in question were not due to trampling either.

A second interpretation for parallel markings that has been proposed at other Lower and Middle Paleolithic sites is that these are in some way symbolic or artistic in nature (Marshack 1976a, 1976b, Behm-Blancke 1987, Mania and Mania 1988, Gonzalez-Echegaray 1988). While such an explanation might be considered plausible for some of the long and most regularly spaced marks (figs. 3, 6), it cannot account for the more common cases in which either the marks have not consistent orientation or else, while still roughly parallel, are not so evenly spaced (figs. 2, 4, 5, 7). In fact, both orderly and disorderly arrangements of marks are wholly consistent with use as a cutting board. In the first case, the bone may have been used once, with no change in position, to slice some material or to cut it into segments. In the second, it may have been used several times, or its position may have been changed during a single session of slicing or cutting, resulting in a pattern that still reflects cutting and slicing, but that is also less regular (and therefore less esthetically pleasing to modern archaeologists). In any case, the more prosaic functional explanation accounts for more specimens than does the more speculative artistic explanation.

It is not clear what was being cut on these bones. A number of specimens from La Quina were scanned for residues, without success. The fact that the bones often seem to have been used before they were broken for marrow suggests that this activity may have been part of the butchering process, and that it

was animal products that were being cut up. However, we cannot exclude the possibility that other materials, such as plant foods, were being processed on bones that happened to be at hand.

Closer inspection of material from other sites may show that the practice extended beyond the Mousterian and beyond France. In any case, it is clear that zooarchaeologists must keep in mind the possibility that the bones they study may have served as cutting boards. It may be that hitherto incomprehensible marks can be interpreted in this way.

ACKNOWLEDGMENTS

The excavation and research on which this paper is based were funded by the National Geographic Society, the National Science Foundation, the Ministère de la Culture of France, the University of Pennsylvania, the University of Arizona, the Université de Bordeaux, the Agnes N. Lindley Foundation, Auchan-La-Couronne, and the Association des Amis de la Quina. Excavations were directed by André Debénath and Arthur Jelinek, and faunal identifications were made by Dominique Armand. Harold Dibble, Associate Director of excavations at La Quina, read and provided helpful comments on a draft of this paper.

REFERENCES

- ARMAND D., 1990,
La Quina: quelques données sur la faune du Bone Bed. *Paléo* n° 2, p. 127-136.
- BEHM-BLANCKE G., 1987,
Zur geistigen Welt des Homo erectus von Bilzingsleben. *Jahresschrift für mitteldeutsche Vorgeschichte* 70, p. 41-82, p. 313-339.
- BINFORD L.R., 1978,
Nunamiut Ethnoarchaeology. Academic Press. New York.

EVIDENCE FOR THE USE OF BONES AS CUTTING BOARDS
IN THE FRENCH MOUSTERIAN

- DEBENATH A. and JELINEK A.J., 1987,
Gardes-le-Pontaroux, La Quina. Notice sur
la campagne de fouilles 1986. *Bulletin de
Laison et Information, Association des
Archéologues de Poitou-Charentes* 16, p.
14-15.
- DEBENATH A. and JELINEK A.J., 1987,
Gardes-le-Pontaroux, La Quina. Notice sur
la campagne de fouilles 1987. *Bulletin de
Laison et Information, Association des
Archéologues de Poitou-Charentes* 17, p.
16-17.
- DEBENATH A. and JELINEK A.J., 1987,
Decorative patterns in the Mousterian of
Cueva Morín. In O. Bar-Yosef, ed. *L'Homme
de Néandertal*, Vol. 5, La Pensée, pp. 37-
42. E.R.A.U.L. 32. Liège.
- GOREN-INBAR N., RABINOVICH R. and
WEINSTOCK J., 1987,
Cut marks on a bone from Biq'at Quneitra -
a mousterian site in the Golan Heights.
*Mitekufat Haeven, Journal of the Israel
Prehistoric Society*, 20 (19), p. 136-142.
- HENRI-MARTIN G., 1964,
La dernière occupation Moustérienne de la
Quina (Charente). Datation par le
radiocarbone. *Comptes rendus
hebdomadaires de l'Académie des
Sciences*, 258, p. 3533-3535.
- JELINEK A.J., DEBENATH A. and DIBBLE
H.L., 1984,
A preliminary report on evidence related
to the interpretation of economic and social
activities of Neanderthals at the site of
La Quina (Charente), France. In M. Patou
and L.G. Freeman, eds. *L'Homme de
Néandertal*, vol. 6, La Subsistance, p. 99-
106. E.R.A.U.L. Liège.
- MANIA D., MANIA U., 1988,
Deliberate engravings on bone artefacts of
Homo erectus. *Rock Art Research* 5, p. 91-
107, p. 127-132.
- MARSHACK A., 1976a,
Implications of the Paleolithic symbolic
evidence for the origin of language.
American scientist 64, p. 136-145.
- MARSHACK A., 1976b,
Some implications of the Paleolithic
symbolic evidence for the origins of
language. *Current Anthropology* 17, p. 274-
282.

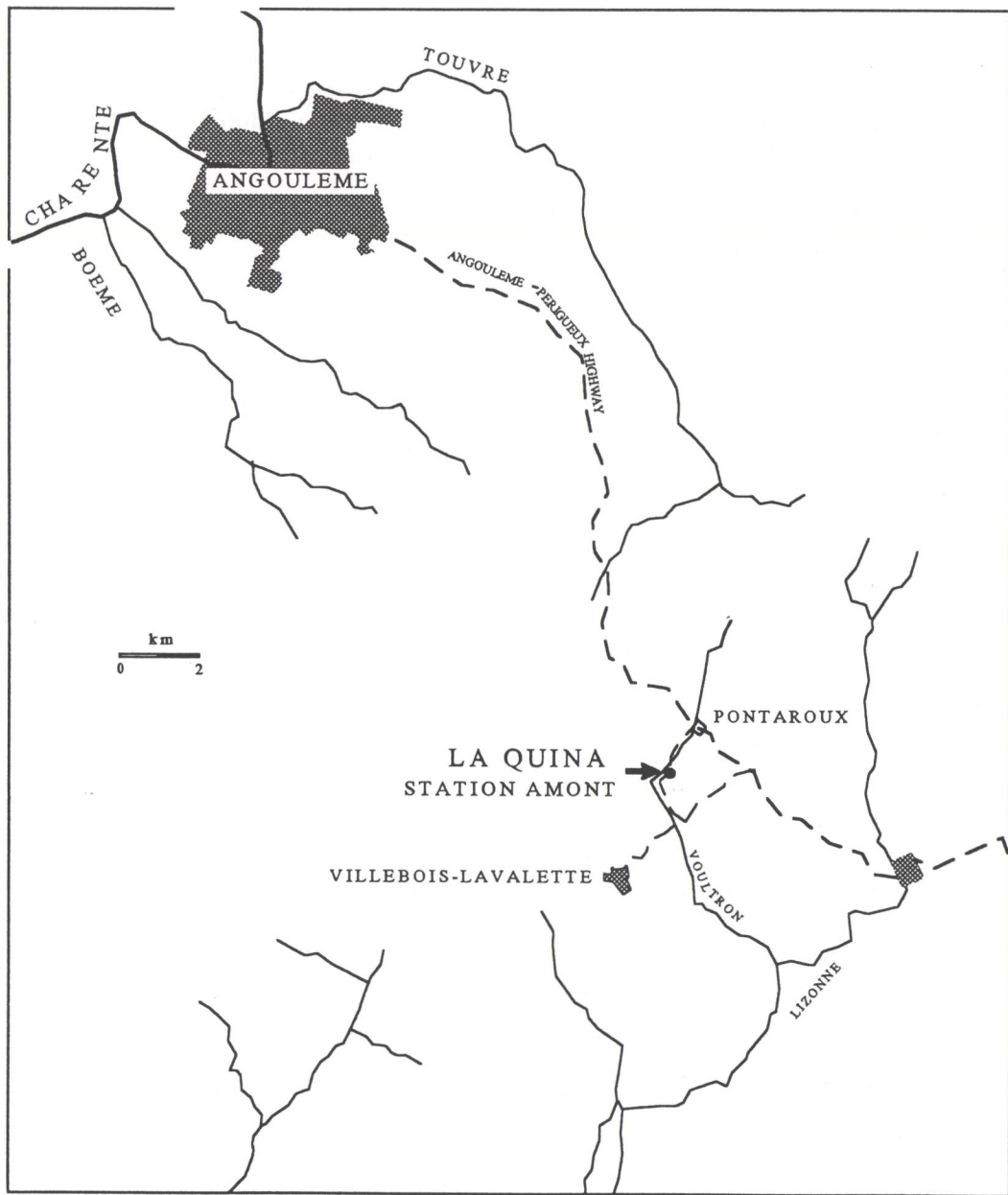


Figure 1. Location of La Quina.

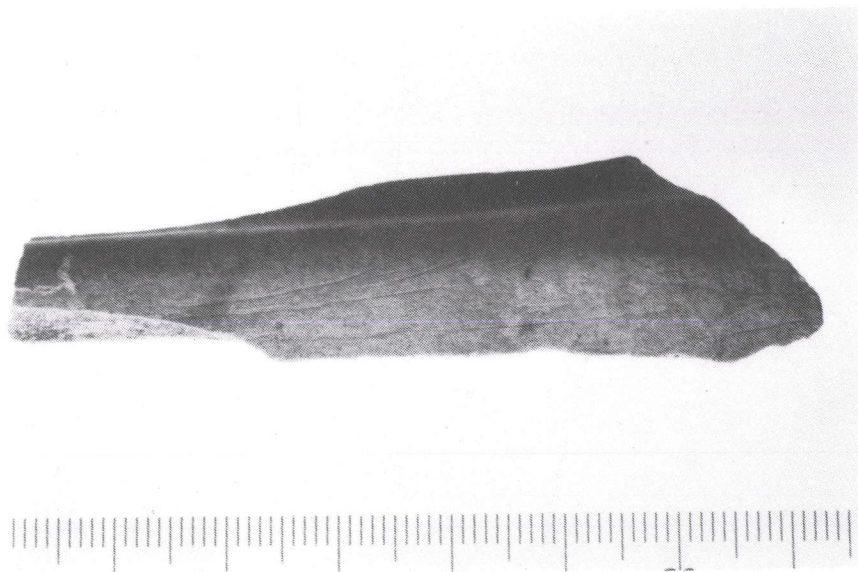


Figure 2. Fragment of reindeer (*Rangifer*) metatarsal diaphysis with long cuts along the lateral side [Bed 8, M5-2027].



Figure 3. Fragment of *Equus* tibia with subparallel cuts on the medial surface of the bone, slightly below the distal end of the crest. The arrow indicates the distal end of the crest [Bed 8, M5-2090].

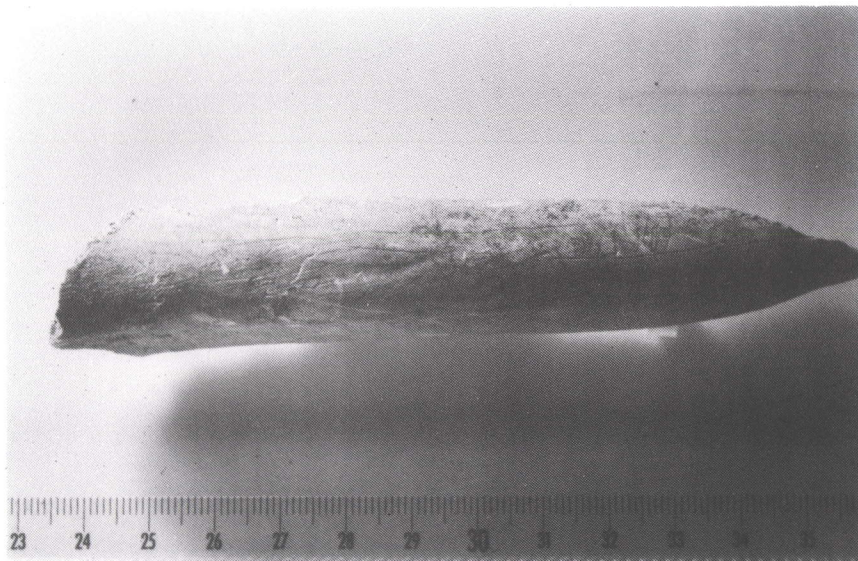


Figure 4. Posteromedial fragment of a reindeer metatarsal with cut marks on the medial surface and on the posteromedial corner of the diaphysis [Bed 8, M4-70].



Figure 5. Distal portion of a reindeer metatarsal shaft, with long cut marks along the medial border of the interosseous groove, short cuts across its lateral border, an other cuts on the lateral face of the bone [Bed 8, M5-2040].



Figure 6. Fragment of *Equus* humerus with subparallel cut marks [Bed 6D, M5-813].



Figure 7. The cut marks on this proximal reindeer humerus are too far from the articulation to indicate disjuncting. In addition, because they are so numerous, and because of their locations and orientations relative to each other, it is difficult to see how they could relate to defleshing of the forelim [Bed 8, L5-1366].

