

# Taphonomy at Ambrona: new perspectives

P. Villa<sup>1</sup>, E. Soto<sup>2</sup>, A. Pérez-González<sup>3</sup>, R. Mora<sup>4</sup>

<sup>1</sup>*University of Colorado Museum, Boulder, Colorado, USA - villap@stripe.colorado.edu*

<sup>2</sup>*Museo Nacional de Ciencias Naturales, Madrid, Spain*

<sup>3</sup>*Departamento de Geodinamica, Universidad Complutense, Madrid, Spain*

<sup>4</sup>*Departamento de Prehistoria, Universidad Autonoma de Barcelona, Bellaterra, Spain*

**SUMMARY:** This paper presents a taphonomic analysis of the faunal assemblages from the 1993-2000 excavations at Ambrona (Spain), directed by Manuel Santonja and Alfredo Pérez-González. Bone modifications considered in the light of sedimentary contexts indicate a significantly greater importance of natural processes in shaping the site structure than previously suggested.

## 1. INTRODUCTION

The new excavations have been directed mainly to a reanalysis of the stratigraphic sequence, of the sedimentary contexts and of processes of accumulation of faunal and lithic materials. Our objectives are to document, refute or support the opposing interpretations of the site proposed by F.C. Howell and L. Freeman (Howell *et al.* 1995; Freeman 1994) and by L.R. Binford (1987) concerning the hominid subsistence activities.

## 2. SEDIMENTARY CONTEXT AND TAPHONOMIC FEATURES

The faunal (mainly *Elephas antiquus*, *Bos*, *Equus*, *Dama*, *Cervus*) and lithic remains are found in varied sedimentary contexts: an alluvial fan, lacustrine muds, fluvial sands and channel deposits. Faunal remains in the lacustrine muds (AS3) are often, but not always, in primary context. In this level remains of elephant and deer carcasses may be found in partial articulation or proximity and appear to represent natural occurrences without clear evi-

dence of hominid intervention. In other contexts the faunal remains are occurrences of single anatomical elements either displaced by water or left isolated in situ.

Very limited evidence of anthropic action is provided by a few SEM verified cutmarks on isolated bones (a few elephant and bovid bones). In contrast, light and chaotic abrasion striations occur on many bones, due to mechanical friction by clasts during water transport processes or, less commonly, through expansion and contraction of clast-containing clays in the AS3 lacustrine muds. Single heavier grooves occurring occasionally on some elephant bones do not show features diagnostic of human action and may be due to trampling by live elephants. Trampling is actually suggested by distinctive depression fractures on elephant skulls and other large bones. Activities of live animals at the site is also suggested by the occurrence of more than 50 ivory points and flakes from juvenile tusks in these levels (Villa & d'Errico 2001). Breakage of tusk tips during activities, such as intra-specific fights or when elephants use their tusk for pushing and lifting heavy objects, digging for water, scrap-

ing soil for salt or stripping bark from trees, has been documented by Haynes (1991) in African game preserves. Thus the Ambrona ivory points cannot be considered evidence of the use of ivory by the hominids but are another indication of the importance of natural processes in the accumulation of materials at the site.

The extremely low frequency of convincing cutmarks (already noted by Shipman & Rose 1983) is partly a function of the very low proportions of observable bone surface. More than 80% of the bones (teeth and tusk fragments excluded) have surfaces that are either too altered or too abraded or too much covered

with rootmarks to be observable. However the pattern of limited human intervention on bones is confirmed by the fact that fractures on fresh bones, of possible human origin, are also extremely rare. Most breakage patterns are either syn- or post-depositional, due to mechanical breakage in transport or to sediment pressure.

Bone surfaces show varying degrees of mechanical abrasion (Fig.1); occasionally bone fragments are so rolled that they have almost completely lost their original shape. The lowest incidence of mechanical abrasion occurs in level AS3 although even there about 40% of the bones show limited abrasion.

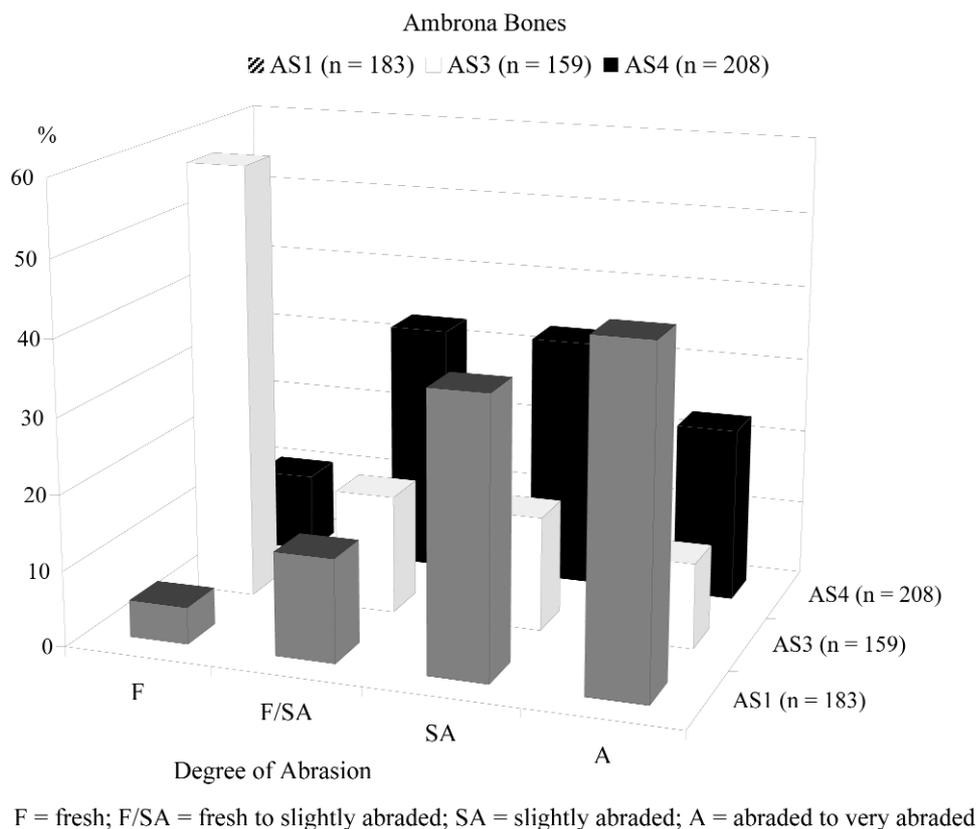


Fig.1 - Degree of abrasion on bones from the lower levels at Ambrona. The sample does not include teeth and tusk fragments.

Comparable observations on water transport and degree of abrasion of stone artifacts are provided by Santonja & Pérez-González (2001).

### 3. DISCUSSION AND CONCLUSION

In conclusion, we suggest that data from the new excavations do not support the hunting hypothesis nor the scavenging alternative interpretation. Interpretations of particular association of stone tool types and faunal remains are not based on robust evidence and should be discarded. In fact, data on the sedimentary context, on the physical state of bone preservation, on biased and incomplete anatomical representation and on the scarcity of anthropic modifications clearly indicate that the stone and bone assemblages of Ambrona are a complex mix of natural and human components, and that natural processes of displacement, loss and postdepositional modification render the bone assemblage less informative of human activities than it has been suggested in the past. While the occurrence of human activities at the site is clearly indicated by few facts (including, of course, the occurrence of stone artifacts and of few cutmarks on bones) the extent and specific nature of the hominid-animal interaction, beyond a simple interpretation of perhaps occasional butchery, cannot be fully elucidated. Even if we choose to see the evidence of limited interaction as a form of scavenging, this reductionist interpretation is too weak to be extrapolated in terms of general human behavior patterns at other sites.

### 4. REFERENCES

- Binford, L.R. 1987. Were there elephant hunters at Torralba? In M. Nitecki & D. Nitecki (eds.) *The Evolution of Human Hunting*: 47-105. New York: Plenum Press.
- Freeman, L.G. 1994. Torralba and Ambrona. A Review of Discoveries. In R.S. Corruccini & R.L. Ciochon (eds.) *Integrative Paths to the Past*: 597-638. Englewood Cliffs, New Jersey: Prentice Hall.
- Haynes, G. 1991. *Mammoths, Mastodons, and Elephants*. Cambridge: Cambridge University Press.
- Howell, F.C., Butzer, K.W., Freeman, L.G. & Klein, R.G. 1995. Observations on the Achelean occupation site of Ambrona (Soria Province, Spain). *Jahrb. Römisch-Germanischen Zentralmus.* Mainz 38: 33-82.
- Howell, F. C., & Freeman, L. G. 1983. Ivory points from the earlier Acheulean of the Spanish Meseta. In *Homenaje al Prof. Martin Almagro Basch*: 41-61. Madrid: Ministerio de Cultura.
- Klein, R. 1987. Reconstructing how early people exploited animals: problems and prospects. In M. Nitecki & D. Nitecki (eds.) *The Evolution of Human Hunting*: 11-43. New York: Plenum Press.
- Santonja, M. & Pérez-González, A. 2001. Lithic artifacts from the lower levels of Ambrona (Spain). Taphonomic features. *This volume*.
- Shipman, P. & Rose, J. 1983. Evidence of butchery and hominid activities at Torralba and Ambrona. *J. of Archaeol. Science* 10: 465-474.
- Villa, P. & d'Errico, F. 2001. Ivory points in the Lower Paleolithic of Europe. *This volume*.