

Lithic artifacts from the lower levels of Ambrona (Spain) - taphonomic features

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SUMMARY: The present report discusses the main features and the nature of the stone artifact assemblages from Ambrona, based on their stratigraphic provenience, raw material, edge rounding, size and general assemblage composition.

1. INTRODUCTION

Excavations undertaken over the last few years (1993-2000) have provided a more precise and detailed understanding of the depositional context of stone and bone remains found at Ambrona. In the past, lithic artifacts of the lower levels have been related to the presence of fauna, particularly *Elephas*, and published only in general terms (Howell *et al.* 1995).

In this paper, we analyze the Ambrona artifacts by stratigraphic units (Pérez-González *et al.* 2001; Soto *et al.* 2001; Villa *et al.* 2001). These units in combination correspond to the so-called "Lower Member Complex" of Howell *et al.* (1995). It was in this complex that F.C. Howell (1961-1963 and 1983), E. Aguirre (1973), and F.C. Howell and L.G. Freeman (1981-1982) excavated some 2088 m² and recorded 1388 lithic pieces whose precise strati-

Tab.1 - Stone artifacts by level (1993-2000).

Artifacts showing no signs of edge rounding (edge rounding = 0) in AS3 are in parentheses.

	AS1	AS1/2	AS2	AS2/3	AS3	AS4	AS5
Non-cortical flakes	25	1	6		11 (6)	76	1
Non-cortical flake fragments	39	2	3		13 (1)	83	1
Cortical or partly cortical flakes	23				6	24	
Cortical or partly cortical flake fragments	14		1		3	27	
Tools on non-cortical flake	25	6		1	13 (4)	41	2
Tools on cortical flake	19	1			4	10	
Cores	19				4 (1)	15	
Cores on flake	2				2 (2)		
Retouched cores	1					3	
Chunks	40	3	4	1	10 (2)	56	2
Small tools on pebble	4					1	
Choppers	6					1	
Modified pebbles	1						
Hammers	8				4 (?)	1	
Bifaces	5				2 (2)	1	
Biface fragments	1						
Flake cleavers and similar pieces	2	1					
Trihedrals	1						
Total : 682	235	14	14	2	72	339	6

graphic position remained undescribed (Howell *et al.* 1995).

Knowledge of the stratigraphic context of these pieces is a key factor in defining sets of artifact of similar age and for understanding the accumulation processes of each aggregate. Besides the stratigraphic position, our analysis considers certain basic characteristics such as general assemblage composition, artifact size, edge rounding and raw materials.

2. EXCAVATED AREAS

During the period 1993 to 2000, 630 m² of the central and western sector of the site were excavated. The total number of pieces found in this area is 682. The artifacts were unevenly distributed throughout the levels AS1 to AS5, and are more abundant in levels AS1, AS3 and AS4 (Tab. 1). The total density slightly exceeds 1 piece per square meter; it was given as 0.7 in previous excavations, though these numbers are of little significance since each level is an independent sedimentary and chronological unit. In the central sector level AS6 was removed prior to 1993. AS5 and AS6, excavated in the southern sector of the site in 1993, were sterile. Only very few stone artifacts were found in level AS5 of the northern sector (Tab. 1).

The area excavated in each level is provided in Table 2. Levels AS1, AS4 and AS5 covered the entire site surface, while AS1/2, AS2, AS2/3 and AS3 occupied more limited sectors. In AS4, artifacts were found only in the detrital facies. In AS1 only 35 m² were completely excavated (from top to bottom of level); in the rest of the site, the excavation stopped when the top of this level was reached. The main faunal sets (the majority from AS3) have been left in situ. Thus 50 m² of the levels below AS3 have not been excavated.

3. RAW MATERIALS

The Ambrona stone artifacts were made on different varieties of flint and silicified limestone (here treated together as “flint”), of quartzite, quartz and limestone. With the exception of the latter found in nearby outcrops of the Upper Triassic and Jurassic beds (Imón Formation), all other raw materials are allochthonous and were introduced by man, as indicated by Freeman (1991). The Buntsandstein conglomerates of Miño, 4,5 Km away, are the closest source of quartzite clasts. To the SW of Miño, there is a relative abundance of quartz in the Cretaceous basal facies of Ventosa del Ducado, while flints are found further away. All levels with a substantial number of artifacts (Tab. 3) show similar lithology, with a slight predominance of quartzite over flint or even quantities of both and a minor but constant frequency of quartz and limestone. The assemblage formed by the unabraded pieces of AS3 differs by showing a clear predominance of flint, although the sample size is small.

Note that stone hammers, cores and knapping byproducts – from cortical flakes to small debris generated by tool retouch – occur in all raw materials at least in the AS1 and AS4 assemblages (Tab. 1). All the debitage phases are documented. The incidence of cortical items (not just hammers) suggests the introduction of blanks or blocks of raw material for knapping.

4. DENSITY AND SOURCE OF ARTEFACTS IN EACH LEVEL

- Level AS1. Nearly 80% of the artifacts of this occupation appeared in the 35 m² excavat-

Tab.2 - Areas excavated in each level (1993-2000).

Level	AS1	AS1/2	AS2	AS2/3	AS3	AS4
Area excavated (m ²)	580 upper 35 tot.	195	195	ca 2	250	630 total 379 detrital facies

Tab.3 - Raw materials.

Raw materials (%) Level	Flint	Quartzite	Quartz	Limestone
AS1 (N=182)	34.1	52.7	9.3	3.8
AS1/2 (N=14)	50.0	50.0	0	0
AS2 (N=14)	21.4	57.0	21.4	0
AS3 (N=72)	40.3	45.8	8.3	5.6
AS3, R=0 (N=18)	72.2	27.8	0	0
AS4 (N=339)	46.6	43.1	7.4	2.9

Tab.4 - Edge rounding.

Edge rounding (%) Level	R0 null	R1 moderate	R2 strong	R>2 very strong
AS1 (N=226)	3.1	56.6	34.3	6.3
AS1/2 (N=14)	0	71.0	29.0	0
AS2 (N=14)	0	35.7	57.1	7.1
AS3 (N=68)	26.5	38.2	32.4	2.9
AS4 (N=339)	5.3	68.0	21.0	5.6

ed in the northern sector. The remaining 53 pieces were derived from its exposed top surface (545 m²). The density of items in the first of these sets was 5.2/m² (around 6.5/ m³). This value is notably lower than that registered at other sites, in fluvial deposits of the Middle Pleistocene of the Meseta (40/ m³ in Pinedo and Cuesta de la Bajada, 120/ m³ in La Maya I; on the surface of comparable gravel levels in Cuesta de la Bajada, the density was 2 per m², while on the AS1 surface it is 1/10 m²). The ratio flake/blank in AS1 (3.7:1) was, nevertheless, similar to that recorded at the above-mentioned sites (5:1 in La Maya I and 4:1 in Pinedo; Santonja 1986; Santonja *et al.* 2000).

The AS1 assemblage is clearly abraded (Tab. 4). The few fresh pieces (R = 0) occurred mostly in clay lenses. The artifacts appear to have undergone transport and their mean dimensions (Tab. 5) confirm this, which are of the same order as the gravels forming the AS1 level. This transport must have occurred over short distances since the slope drained by the transport-

ing channels is very close and the flake/blank ratio is not excessively unbalanced.

- Level AS3. The excavated area of 250 m² has produced 72 stone artifacts with clear signs of edge rounding and fluvial transport related to the detrital clasts that reach this level. Eighteen, or 25%, of the pieces show completely unabraded edges, suggestive of primary context; these pieces may be associated with the fauna of this level. Despite their small number, it should be noted that in addition to two bifaces there were several non-cortical flakes with little retouch, mostly made of flint and generally larger in size than the site mean (Tabs. 1, 3 and 5).

- Level AS4. This is the largest assemblage, yet it shows a lower density of artifacts than AS1, that since it does not exceed 1/m² (1 to 2/m³) over the 379 m² excavated in the detritic facies. The flake/blank ratio is high (13/1), but if we take into account the high proportions of slightly rolled to rolled pieces (Tab. 4) and their size - the smallest recorded at Ambrona (Tab. 5)

Tab.5 - Size of stone artifacts.

Size (mm) Level	N	Max. – Min.	Mean
AS1	235	223 - 08	37.8
AS1, hammers and modified pebbles excluded	226	223 - 08	37.0
AS 1-2	14	89 - 19	40.5
AS2	14	53 - 12	24.1
AS3, excluding stone hammers	68	125 - 08	36.7
AS3, only R=0	18	125 - 14	54.6
AS4	339	134 - 03	24.8
AS4, excluding bifaces and choppers	337	69 - 03	24.2

- it appears that clear selection by size took place in the transporting medium. The origin of this assemblage must be sought at the periphery of the preserved site. The absence of artifacts in the less detritic facies of AS4 should be noted; it suggests that those in the rest of the level could be derived from the erosion of former deposits including those of AS1.

- Levels AS1-2, AS2, AS2-3 and AS5. These show a very small number of lithic pieces. Like AS1, AS1-2 and AS2 are fluvial levels, but represent distal facies from the E and SE of greater length than the northern channels that gave rise to AS1. These transported artifacts occur at a low density in the Ambrona area, less than 1 piece per 10 m², but reflect human activity in the S and E of the preserved site, with raw materials resembling those of AS1. The scarcity of lithic artifacts in AS5 (only 6) could suggest a secondary position for these materials.

AS2-3 is clay facies of the AS2 level and is only distinguishable in the most southern sector. Its only interest seems to be in that it bears witness to the continuity of human presence throughout the lower stratigraphic units at Ambrona.

5. CONCLUSIONS

The density of lithic artifacts in Ambrona is relatively low and it is clear that they were part-

ly introduced into the preserved site from nearby areas. There appears to be a direct relationship between the group of unabraded pieces in AS3 and the characteristic megafauna of Ambrona. This small series, with two bifaces and several flakes with minimally retouched cutting edges, may be distinguished from the pieces recorded in AS1 and AS4, where flake tools are more frequent.

Judging by the lithic industry, it might be stated that human presence in Ambrona was not intense during the time represented by the lower occupation levels. However, it would also seem that this was the case throughout the entire period, since the introduction of nonlocal raw materials into the site appears to be a consistently repeated feature.

6. REFERENCES

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