

TOOLS OR SCRAPS? ANTLER WORKING IN TWO WELL-DATED COPPER AGE CONTEXTS IN THE MIDDLE GUADALQUIVIR BASIN (SOUTHERN IBERIA)

¿Instrumentos o desechos? Objetos en asta procedentes de dos contextos de la Edad del Cobre del Guadalquivir Medio (Sur de Iberia)

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ABSTRACT In the south of the Iberian Peninsula, as in many European sites, antler working has been a well-known technology since the Upper Paleolithic Period. However, apart from studies of the opportunistic use of unmodified elements such as antler-picks, antler working has been scarcely researched in the archaeology of the Neolithic and Copper Age in this region. This brief contribution focuses on three antler elements from the Andalusian Copper Age. Two of the elements are angular fragments recovered in the ditched enclosure of La Minilla (La Rambla, Córdoba), dated to around the middle of the 3rd millennium BC. The third object is a modified shed antler beam and basal part associated with a collective burial, dated to the end of 4th and early 3rd millennium Cal BC. It was discovered in the territory of modern Córdoba. These fragments are interpreted as waste material from manufacturing processes aimed at obtaining elongated blanks.

Key Words: Antler, Red Deer, Copper Age, Guadalquivir Basin.

RESUMEN Como en el resto de Europa, el trabajo del asta de ciervo constituye una técnica bien conocida en el sur de la Península Ibérica desde el Paleolítico Superior. Sin embargo, más allá de la observación de un uso frecuente a modo de pico de elementos apenas transformados, dicha tecnología ha sido escasamente tratada en la arqueología del Neolítico y de la Edad del Cobre en esta región. Esta breve aportación pretende presentar tres elementos de asta de la Edad del Cobre de Andalucía. Dos de ellos son fragmentos angulares recuperados en el recinto de fosos de La Minilla (La Rambla, Córdoba), y datadas a mediados del III milenio Cal AC. El último y tercero de ellos es una cuerna de desmogue que conserva roseta y rama principal, asociada a un enterramiento colectivo, datado en el tránsito del IV al III milenio Cal AC en el espacio

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Fecha de recepción: 17/03/2019. Fecha de aceptación: 20/07/2019.
<http://dx.doi.org/10.30827/CPAG.v29i0.9777>.

urbano de la actual ciudad de Córdoba. Estos objetos han sido interpretados como material de desecho resultado de la obtención de preformas longitudinales de asta.

Palabras clave: Asta, Ciervo, Edad del Cobre, Cuenca del Guadalquivir.

INTRODUCTION

Antler is a very hard, boney tissue, and with the exception of reindeer, it is only grown by bucks. In Southern Iberia, the buck grows its rack from early spring into the hotter months of July and August. At summer's end the antler stops growing and soon after matures and dies, coinciding with mating time, when males fight for control of female harems (Soriguer *et al.*, 1994). Following this, the buck sheds his antler once the spongy internal marrow is completely calcified. This is the moment when the antler becomes denser and harder, waiting to be replaced by next year's regrowth. Generally, each subsequent antler growth is bigger, with additional tines appearing through to the end of the deer's life. In traditional crafts, as well as in archaeological contexts, the majority of the antlers used and studied come from shedding rather than hunting or natural death. This is not only because of greater abundance and easy implementation, but also because the shed antler is denser and harder (Goss, 1983). Though antler has the same chemical composition as bone, its structure is stronger and more elastic as it must absorb the impacts and shocks of rutting bucks. Though three species of deer inhabited the Iberian Peninsula during Holocene, namely, red deer, roe deer and fallow deer—the last introduced after Roman times (Davis, 2009)—it was red deer antler that was used almost exclusively in the late prehistory.

The qualities of antler make it particularly adamant and highly cut resistance, meaning that prolonged sawing or repeated grooving were required to remove portions of the material. Most often, the cut portions took the shape of elongated blanks. Though antlers can be softened by soaking in water (Osipowicz, 2007), this process implies a working time longer than that usually spent with other bone elements, such as in the case of ruminant metapodials, those usually used in Iberian Late Prehistory (Pascual, 2016). As a hard material, antler blanks require complex cutting work and technical skill. Though other supports such as the flat rib of large mammals were also available and easier to process, raw antler material was preferred for its natural mechanical strength, break resistance and elasticity. These qualities resulted in it frequently being the choice construction material for projectile points. Examples of such usage are observable in the Solutrean and Magdalenian Cultures (20 ky-10 ky BC), where assegai points (unbarbed), rods (Asquerino, 2001-2002) and even harpoons (barbed points) (Aura, 1995) were made of antler. This use continues into the Neolithic and Copper Age, where antler portions serve as active or fitting elements, or as modifying blanks removed from the beam cortex, taking advantage of the material's natural surface grooves (Pascual, 1998). During the Bronze Age, antler is commonly used as a substitute for metal in the making of arrowheads, where it imitates the same typology (Altamirano, 2015).

MATERIAL, CONTEXTS AND SITES

The two elbow-shaped objects from La Minilla (Córdoba)

The archaeological site of La Minilla sits in the urban area of La Rambla Municipality, in the western Cordovan countryside, located between 37°36'42.04"N and 4°44'17.67"O. The site was recognized in 1985, after a chance discovery of two completely intact bell beakers, likely provenant of a funerary context. Excavations were carried out between 1986 and 1989 by Dr. Ruiz Lara (Ruiz, 1987, 1991). These works partially revealed, among other structures, two parallel ditches that likely were part of a ditched enclosure connected to a prehistoric settlement (figs. 1 and 2).



Fig. 1.—Map of location of two sites mentioned in the text, in southern Iberia. Black star, La Arruzafa (Córdoba); grey star, La Minilla (La Rambla).



Fig. 2.—Section view of the Ditch 1 (Z 1), during the archaeological survey of 1989.

Both ditches, reaching to a depth of 2 m, contained large numbers of faunal remains, mostly composed of domestic mammals (pigs, caprines, and cattle), followed by red deer, leporids and bird bones (Martínez and Ruiz, in press) in the bottom levels. Two antler objects were discovered in the northern ditch, mixed with the faunal remains. Both were made from part of the antler rack between the beam and the *trez-tine* or *bez-tine*. The segment was detached by grooving from the rest of the beam.

The first specimen (MN86 BS3-586) (fig. 3, top), found in structure S3, connected to Ditch 1, retains the trez-tine and comes from a right-side antler. The antler blank was removed by repeated grooving (three to six grooves can be observed, see figure 3, above) parallel to the main beam and in a perpendicular direction over the tine. Even though the edge of this tine is slightly damaged, the former length would have been approximately 140 mm. The second specimen (MN89 Z14-656) (fig. 3, below), came to light in a lower level (4) of Ditch 1. The complete tine



Fig. 3.—Elbow shaped antler from La Minilla, found in 1986 (MN86 BS3-586) (above), with some details of technological grooves. Below, antler object (MN89 Z14-656) found at level 4 of Ditch 1, in La Minilla site.

was broken and eroded. Despite its bad state of preservation, the shape indicates a very similar carving technique.

The size and morphology of these specimens suggest similarities with adze hafts found in Iberia, especially some dozen wooden hafts found at the Early Neolithic water-logged site of La Draga (Catalonia) (Palomo *et al.*, 2018). The most typical type is an elbow-shape haft with a flat surface in the upper section or else a short branch used to fit the adze blade which would be secured with sinew or a cord. In fact, some votive models of haft adzes made in limestone from burial contexts have been found in Central Portugal (the Tholos of Paimogo or Poço Velho Cave, among other examples, Gonçalves, 2003, 2005) depicted as having hafting systems that looked like the wooden finds. These votive models were in use throughout the 3rd millennium Cal BC (fig. 6:1).

The dating of a partially articulated swine bone from basal layer of Ditch 1, where the second example was found (CNA-3153), together with bell beaker pottery and the typical south Iberian Copper Age thickened rim plates, confirm the date in the middle 3rd millennium Cal BC for both objects (table 1).

TABLE 1
TABLE WITH RADIOCARBON DATINGS OF ARCHAEOLOGICAL CONTEXTS CITED IN THE TEXT. FOR THE CALIBRATION MODELLING WE HAVE USED OXCAL 4,3 (BRONK-RAMSEY, 2009)

<i>SITE</i>	<i>CONTEXT</i>	<i>SAMPLE</i>	<i>LAB CODE</i>	<i>BP</i>	<i>Cal BP 68.2%</i>	<i>Cal BP 95.4%</i>
La Minilla	Ditch 1	Pig bone	CNA-3153	4034 ± 36	2617-2488	2834-2470
La Arruzafa	Ind. 422	Human Bone	CNA-3190	4356 ± 40	3012-2915	3090-2897

Antler beam from a funerary context from La Arruzafa (Córdoba)

Our second case, partially preserved, was found during excavations in 2014 on the Early Copper Age site of La Arruzafa, in the northern area of the city of Córdoba, between the coordinates 37°54'15.49"N and 4°47'35.19"O (Martínez *et al.*, in press). The remains of four individuals were identified inside a burial context formed by a circular structure of 2,4 m. Therein a fragmented left shed antler with the burr, initial part of brow and bez-tine, and the junction part between the beam and trez-tine were discovered preserved under the pelvis of a man deposited in right lateral position with flex legs (figs. 4 and 5).

Some traits, like the absence of crown and the general appearance of tine junction surfaces indicate that they were removed from the beam by gnawing. It may have been the deer, themselves, that gnawed upon the antler once it fell to the ground, taking advantage of mineral supplements present in the osseous tissue. Among males, this habit is observed towards the end of the antler growing period, coinciding with the closing of summer and beginning of fall. Among hinds, it is



Fig. 4.—Mature male burial (Ind. 422), placed in a collective grave, and deposited over an antler beam. Right picture, pointed with a white arrow (picture taken once legs bone were removed). La Arruzafa (Córdoba).



Fig. 5.—Different views of the shed antler beam found in La Arruzafa (Córdoba), with evidence of blank removal by grooving.

common to observe this practice after giving birth at the end of spring (Gambín *et al.*, 2017). Accordingly, this object must have been collected from the surroundings landscape before being transformed.

In any case, the main feature linking it to human exploitation is the absence of a long part of the beam posterior surface, removed by grooving lengthwise with a stone tool, leaving a gap 25 cm long and 3,5 cm wide. This object is interpreted as an antler working scrap left over from the fabrication of antler blanks, themselves frequently used to make knives, plaquettes or *spatulae* (Maicas, 2007; Pascual, 1998).

A human femur sample from the associated individual (CNA-3190), yielded a date at the beginning of 3rd millennium Cal BC, in the Early Copper Age (table 1).

DISCUSSION AND INTERPRETATION

In contrast to mainland Europe, antler working in the South Iberian late Prehistory has received little discussion. Attention has been paid mainly to transformed objects, instruments, haft system and connecting devices, while the *chaîne opératoire* with which these objects were created has been approached at a lesser extent (Pascual, 1998).

The direct use of antler for heads or active parts of chisels, hammer-axes, simple axes or mace-heads, as in other parts of Europe (Pratsch, 2011; Billamboz, 1977) has been well-documented (Altamirano, 2013, 2014). Nonetheless, its use in connecting devices for wooden hafts, as in the antler sleeves typical of stone axes from Central Europe (Schibler, 2001), seems not to appear in Southern Iberia. The lack of such objects in this region makes the existence of other connecting devices or, perhaps, the use of hafts made with harder, tear-resistant woods (such as the Mediterranean evergreen oak), an attractive hypothesis worth exploring. Notable testimonies exist pointing in this direction, including the complete axe found in a collective burial site at Blanquizaes de Lebor (Almería) (Lomba, 1990), where dry conditions allowed the preservation of a stone axe complete with a hard-wood handle. Here, the hafting hole is located in the handle's thickest distal part, where the stone axe is placed directly without the intermediation of antler sleeves (fig. 6:3).

Additionally, the existence of straight and elbow-shape antler adze hafts in the Iberian Late Prehistory and, particularly, in the Mediterranean, has been documented. Most published examples show simple elbow-shape elements, with half-round or tubular branches to allow the adjustment of the adze head, itself made of stone or copper. The published cases from Ereta del Pedregal and Les Jovades (both in Valencia) are dated in the 3rd millennium Cal BC. These are hafts made from the basal part of the beam (Pascual, 1998). A thicker extremity is necessary to accommodate a hafting hole large enough to fit the axe or adze and to avoid affecting the overall stability of the tool. Accordingly, the part of the haft connected to the adze or axe is usually fashioned of the antler burr and basal beam from a large or mature red deer buck. Obviously, this is not the case for the La Minilla

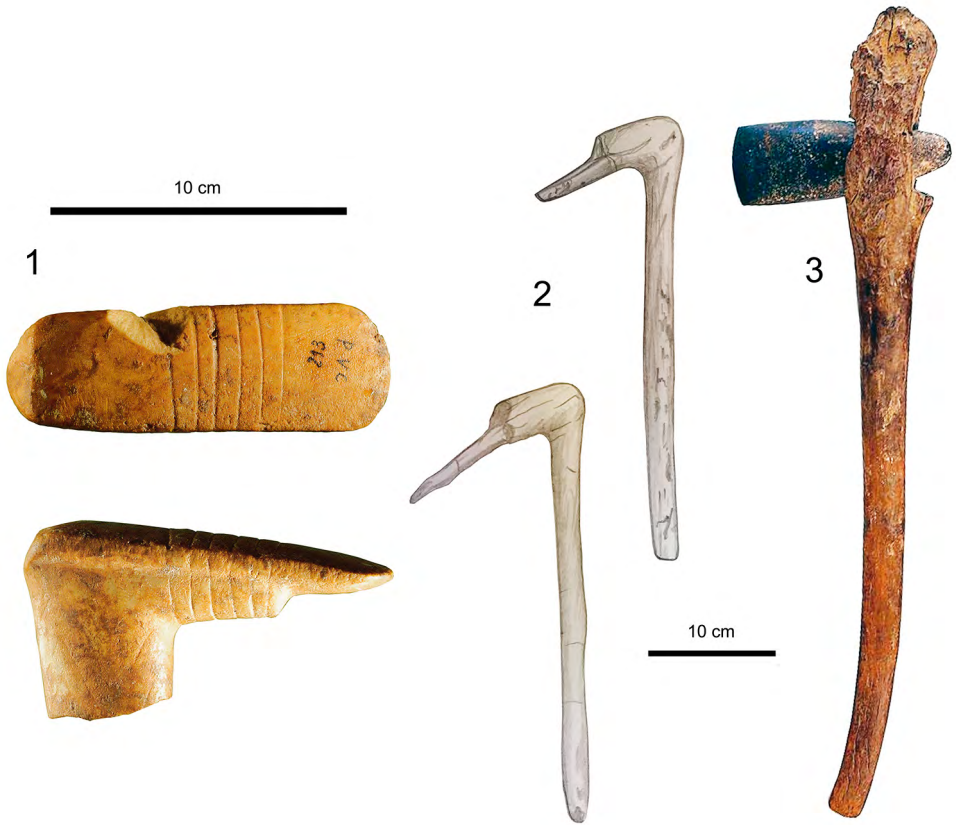


Fig. 6.—Different examples of hafting systems from Neolithic to Copper Age in Iberian Peninsula: 1, Limestone model from Poço Velho Cave (Gonçalves 2005); 2, two examples of elbow shaped hafts from La Draga site (Catalonia, Early Neolithic) made of pine and yew wood. Drawings by the author from photographs in Palomo et al., 2018; 3, wooden haft and stone axe from Los Blanquizaes de Lébor (Almeria), photo: *Red Digital de Colecciones de Museos de España*.

specimens, which, instead of the mounting hole required to receive the adze head, exhibit a plate surface. These examples were made from the junction between the trez- or bez-tine and the beam.

It may appear that some of the prehistoric elbow-shaped hafts found in Iberian Peninsula, even if only the wooden examples are considered, could be parallels of La Minilla examples. After the 4th millennium Cal BC, elbow-shaped hafts become quite common in Western Europe (Maigrot, 2003; Sidéra, 2001; Winiger 1981) often associated with connecting devices like antler sleeves or other system types (Bontemps *et al.*, 2015). The examples from La Draga, from the late 6th millennium and made of yew and pine wood, correspond to simplest type (Tarrus, 2008) (fig. 6:2).

However, if the La Minilla specimens are compared to all available haft system examples, it appears that the kinetics do not work. The complete objects seem small while the end of the hafts appear too short to transmit the power necessary for the active part to perform cutting. A wooden handle would be required to extend the haft, reducing the stability of the tool as a whole. Likewise, the shortness of the upper part would make attaching cords or fixing devices to successfully mount the axe/adze blade to the haft very difficult. What is more, the grooved or sawn surfaces corresponding to the main beam area were not polished or carved such to allow the axe/adze blade to be fixed. The detailed observation of some features taken separately leaves open the possibility of interpreting these elements as antler working scraps. Indeed, the *trez-tine* was usually eliminated to clear the beam part. This was the surface selected to extract blanks for the making of such elongated objects as *spatulae*, needles, projectile points or daggers (fig. 7).

Given the importance of red deer antler in the production of blanks for the fabrication of daggers or pointed instruments, intense workshop activity would obviously produce a large amount of waste material. Some of the antler fragments

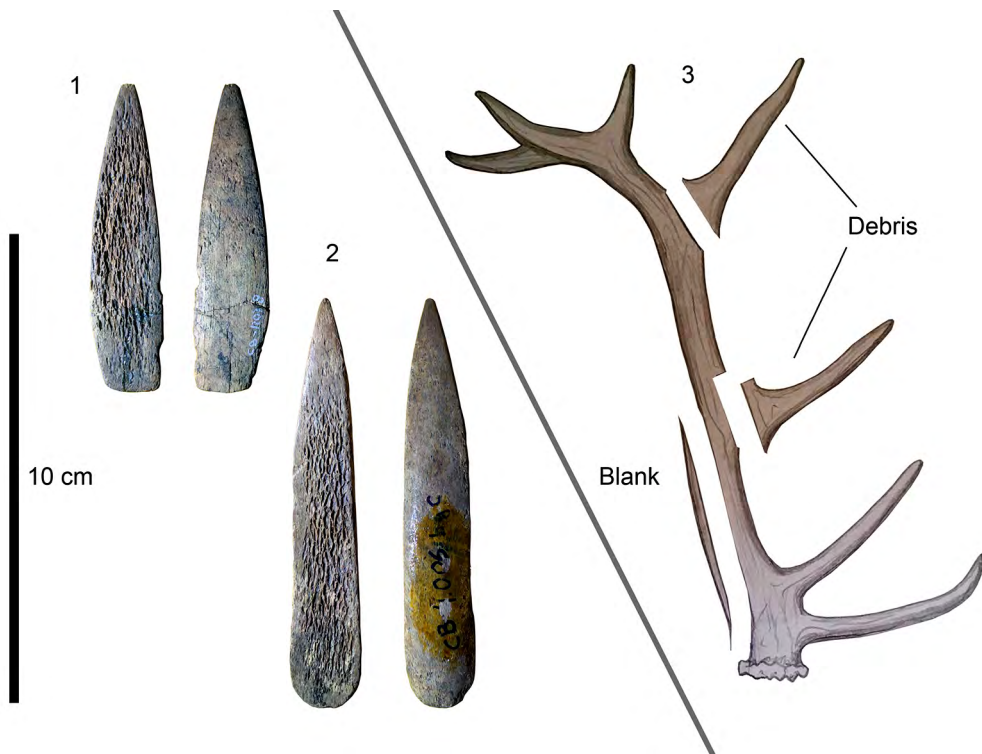


Fig. 7.—1 and 2: two examples of pointed tools made of antler cortex, El Malagón (Cullar Baza, Grenade). 3, Diagram showing the extraction of blanks and work debris following the data of this work.

would comprise basal and distal parts of the antler rack as well as separated junctions between the beam and tines. Such debitage can be observed in the operational sequence studied in antler work of the Upper Palaeolithic (Averbouh, 1999), late Prehistory (Billamboz, 1977), or even in Roman times (Rodet-Belarbi and Mallet, 2008). In the case of our Andalusian examples, even if general appearances and signs of artificial modification argue equally for them being tools parts or debitage from antler blank manufacturing, the latter argument appears the more reasonable. The final deposition of La Arruzafa case in a funerary context, associated with an old man and apparently placed there as grave goods, however, adds to the difficulty in elucidating the hypothetical symbolic role of such objects.

CONCLUSIONS

The distinction between tools and working scraps is often not easy. In the case of the elements presented in this work, we have two elbow shaped antler items that could be interpreted as hafting systems. In both cases, the little size and low mass among other reasons, invalidate the possibility that they correspond to such devices. Furthermore, in the Arruzafa case, the only evidence of anthropic modification is extraction of a blank evidenced on the dorsal side of the shed antler with taphonomic and weathering affection. Hence, interpreting these specimens becomes clearer and it is concluded that these are antler working debris. This shows the importance of the red deer antlers in the extraction of flat blanks as a base for the fabrication of multiple objects, where the pointed flat tools, made mainly of the main beam cortex, are frequent throughout the Copper Age in the southern Iberia.

Acknowledgements

Thanks specially to revisors whose efforts have contribute to improve this text. This work was supported by the *Consejería de Innovación, Ciencia y Empresa - Junta de Andalucía* (project P12-HUM1510) and within the framework of the State Plan for Scientific and Technical Research and Innovation 2013-2016 (*Juan de la Cierva-Incorporación*) (RMMS).

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