Bevelled Tools from Tito Bustillo Cave (Asturias, Northern Spain). Revisiting an Understudied Magdalenian Antler Tool

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Abstract: Four *bevelled tools* from the Magdalenian site of Tito Bustillo cave (Ribadesella, Asturias) have been studied from a technological point of view. Literature on osseous industry at Magdalenian sites in south-west Europe (France and Spain) contains references to a large number of artefacts with similar characteristics, but they have not been studied in depth over the last decades. Through the study of these objects and an experimental reproduction, two procedures have been identified for their fabrication. Its interpretation helps us to understand the operative scheme of the deer antler transformation in the Tito Bustillo site, which still in progress.

Keywords: *bevelled tool*, osseous industry, antler technology, experimental reproduction, Cantabrian Magdalenian.

Introduction

Studies on the Palaeolithic osseous industry in the Iberian Peninsula have traditionally focused on the typological characterisation of the tools based on their morphology. In this framework, the scarcity of techno-functional approaches has caused some terminological imprecisions and errors in the identification of some osseous tools that do not match standardised typological forms or whose function cannot be assumed clearly.

Although common criteria were proposed for the typologization of these artefacts from the 1970s (especially through the work group of H. Camps-Fabrer, 1974-2009), it is important to stress the lack of terminological and/or methodological unanimity in the study of some aspects of tools from the Upper Palaeolithic. This disparity of criteria is seen in the case of bevelled (uni and bifacially) tools, which are called *ciseau*, or *coin* in French historiography, and described as chisels, retouchers, wedges, bevelled tools, etc. (cincel, retocador, cuña, útil biselado, romo, intermedio, etc.) in Spanish literature; see for example, Utrilla, 1981; Rueda i Torres, 1985-1986; Adán, 1997).

These bevelled objects are well documented throughout the Upper Palaeolithic (but also during the Mesolithic, Neolithic and Metal Ages). Nevertheless, they have been scarcely studied in comparison with other types of Magdalenian bone implements, such as projectile and barbed points, perforated batons, etc.

In French contexts, this type of implement becomes more common in the Magdalenian than in earlier periods, especially at Abri Morin (Aquitaine), Gourdan (Haute-Garonne) and Laugerie Basse (Dordogne) (Deffarges *et al.,* 1974: 95). During the Magdalenian, they were also decorated, like those found at such sites as La Madeleine (Ardèche), Courbet (Occitanie) and Ker de Massat (Ariège) (Musée des Antiquités Nationales, 1964; Sieveking, 1987).

According to morphological criteria, these objects have been described by Chauvet (1910); Deffarge, Laurent et Sonneville-Bordes (1974, 1977), Leroy-Prost (1975), and Allain *et al.* (1985) for French Magdalenian contexts. However, these studies refer to these objects with the terms *coin* and *ciseau*, whose nomenclature has not yet been solved. So, in most cases, the terms of *outiles biseautés* or *tranchants* are used to avoid the acceptance of the other (Caps-Fabrer *et al.,* 1998).

The study of Legrand (2000) for bevelled tools from the middle Magdalenian of La Garenne (Saint-Marcel), integrates an analysis from a morphological, technological, experimental, and functional point of view. Since this, there have been no new investigations, at least as far as we know, that question the function, functionality, and issues related to these objects for Magdalenian contexts in southwestern Europe.

In North Spain, these utensils are also well documented during the Magdalenian. However, examples of those yielded in a complete technological study of the osseous industry assemblages of the archaeological contexts are scarce. For the Cantabrian region, we find mentions at El Cierro Cave (Tapia *et al.,* 2018) or Ermittia, Urtiaga (Mujika, 1983) and Aitzbitarte IV (Mujika, 1983; Garrido, 2015). In Mediterranean Spain, they are mentioned in studies of assemblages of El Parpalló in Valencia (Borao, 2019) and Bora Gran in Girona (Lefebvre, 2016). Nevertheless, no functional analysis has been carried out for Peninsular contexts to characterise these objects, which are defined indistinctly as antler *chisels*, *wedges* or even *smoothers*.

Also, it has been proposed that fragments of other tools, such as the bevelled part of projectile points, were reused as wedges or chisels (Deffarges *et al*., 1977), and they are well-documented in different Magdalenian contexts (examples at Isturitz or Cueva Morín in Cantabria among others, Deffarges *et al.,* 1974, 1977; Garrido, 2015). However, from our point of view, these are functional adaptations and variations in the initial morphology of other types. Therefore, they must be distinguished from bevelled tools of "first intention" (Legrand, 2000: 45; Goutas, 2003).

Four bevelled deer antler objects are studied here. Previously unpublished, they were found in the *Living Area* in Tito Bustillo (Ribadesella, Asturias) in J. A. Moure's excavations in the 1970s and 80s. Through their description and experimental reproduction, together with a review of the literature on similar objects documented at sites in southwest Europe, we aim to define more precisely this type of tool that, despite being frequent in Magdalenian deposits, has not been considered sufficiently in specialised literature. We therefore present the preliminary technological study based on four objects. This is intended to be completed with functional studies, and a further characterization of the techno-economic exploitation of the antler industry of Tito Bustillo cave, currently in progress.

The *living area* in Tito Bustillo Cave (Asturias, northern Spain)

Tito Bustillo (Ardines, Ribadesella, Asturias) is one of the most important Magdalenian sites in North Spain. It is in the valley of the River San Miguel, a tributary on the left of the River Sella (43° 27' 35' ' N, 5° 23' 10" W). A little under a kilometre from the modern coastline, in Greenland Stadial 2 it would have been 4 or 5 km from the sea (Álvarez-Fernández *et al*., 2018, 2022) (Figure 1.1).

The *Living Area* is a large chamber 20-25 m inside the original entrance of the cave, which has faced the west and is now blocked (Moure, 1990). The archaeological excavations, next to the collapse that sealed the cave at the end of the Magdalenian, were started by M. García Guinea in 1970 and continued by J. A. Moure from 1972 to 1986. Although the results of the first excavations seasons and a general synthesis were published (García Guinea, 1975; Moure, 1975, 1990; Moure and Cano, 1975), Moure's excavations in the *Living Area* were never described in detail. However, in the last decade a team (E. Álvarez-Fernández, M. Cueto Rapado and J. Tapia Sagarna) has been studying the remains found in the excavations in the last century (Álvarez-Fernández, 2012, 2013; Álvarez-Fernández *et al*., 2015, 2018) and since 2020 new fieldwork has been carried out to invetsigate the occupations in that part of the cave (Álvarez-Fernández *et al*., 2022) (Figure 1.2).

García Guinea's excavation in the *Living Area* found four levels (Levels I to IV) attributed to different times in the Magdalenian (García Guinea, 1975). J. A. Moure continued the excavations in the same part of the cave, extending them over a surface area of 27m2, and differentiated two levels: Level 1, about 50 cm thick, and Level 2, where he did not reach the base. Level 1 was divided into different layers based on sedimentological criteria and the archaeological content (Moure, 1975, 1990, 1997): Layers 1a, 1b and 1c (with a further four subdivisions). Later, Level 1 was split into two complexes by grouping the layers: Upper Complex (1UC) and Lower Complex (1LC) (Figure 1.3). All the antler artefacts studied here come from Levels 1UC and 1LC.

J. A. Moure attributed Level 1 to the early Upper Magdalenian/Middle Magdalenian, based on the osseous and lithic artefacts and portable art objects made from different materials. He also noted the possible existence of occupations in an older Magdalenian phase and published a series of radiocarbon dates measured by classic and AMS methodologies. The project currently being carried out has obtained more AMS dates to establish the chronology of the sequence more precisely (Álvarez-Fernández *et al.*, 2015).

The calibration of all the radiocarbon dates published so far (Álvarez-Fernández *et al.*, 2018) indicates a chronology between 19.0 and 17.5 ka cal. BP for Level 1 and of ca. 18.3 ka cal. BP for Level 2. Despite the apparent inversion in the radiocarbon results, both levels are bracketed in the

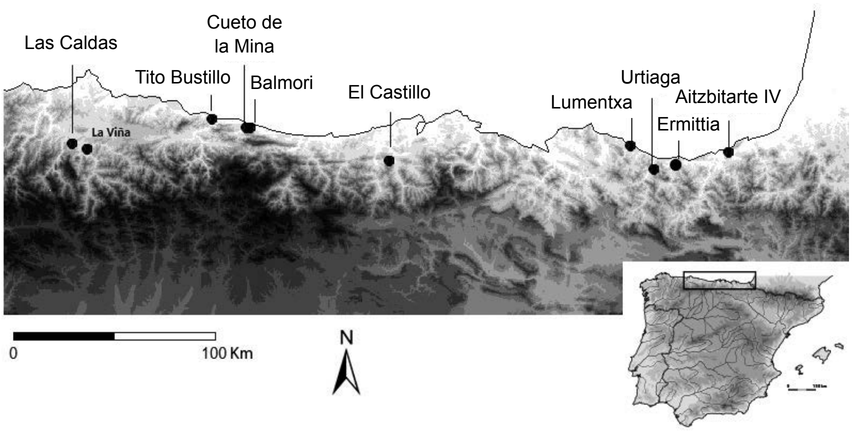

Figure 1.1 - Location of the main Cantabrian Spain sites mentioned in the text

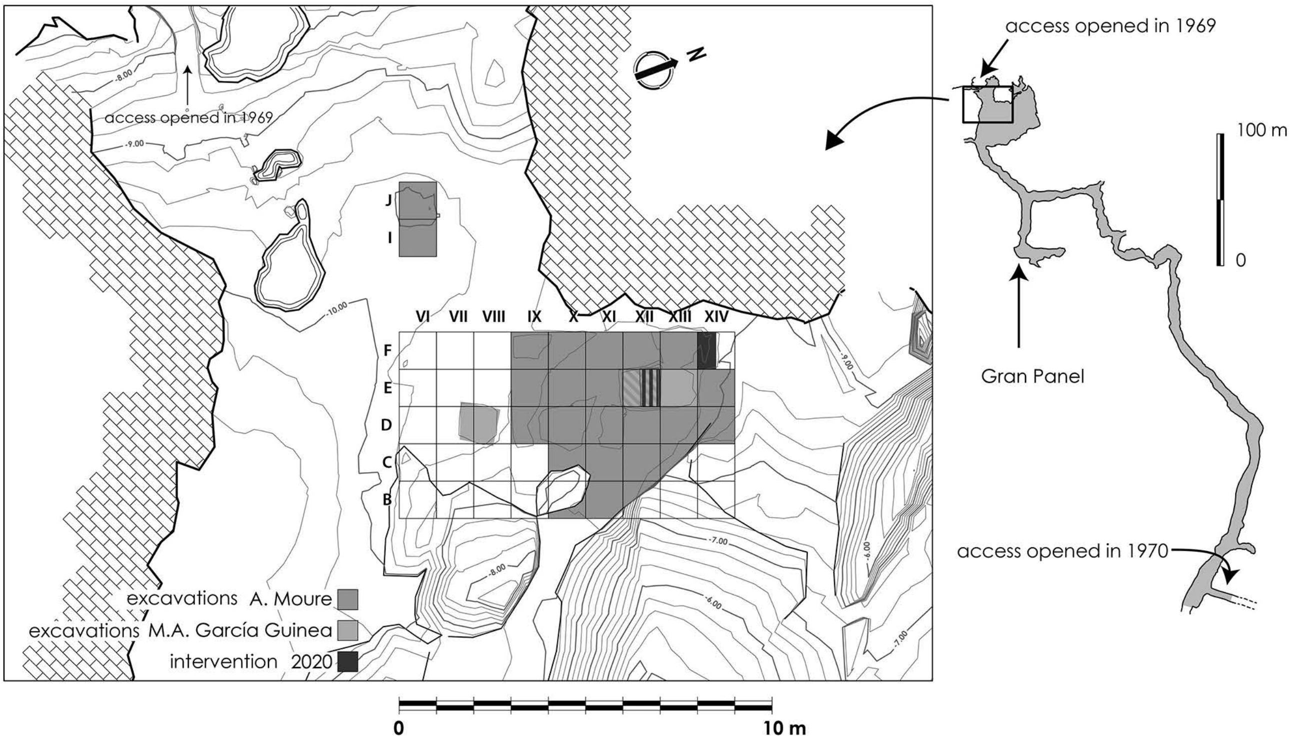

Figure 1.2 - Tito Bustillo Cave (Asturias). Location of the Living Area, showing the squares excavated between 1970, 1986 and 2020 (Álvarez-Fernández et al., 2022: 250, fig. 2)

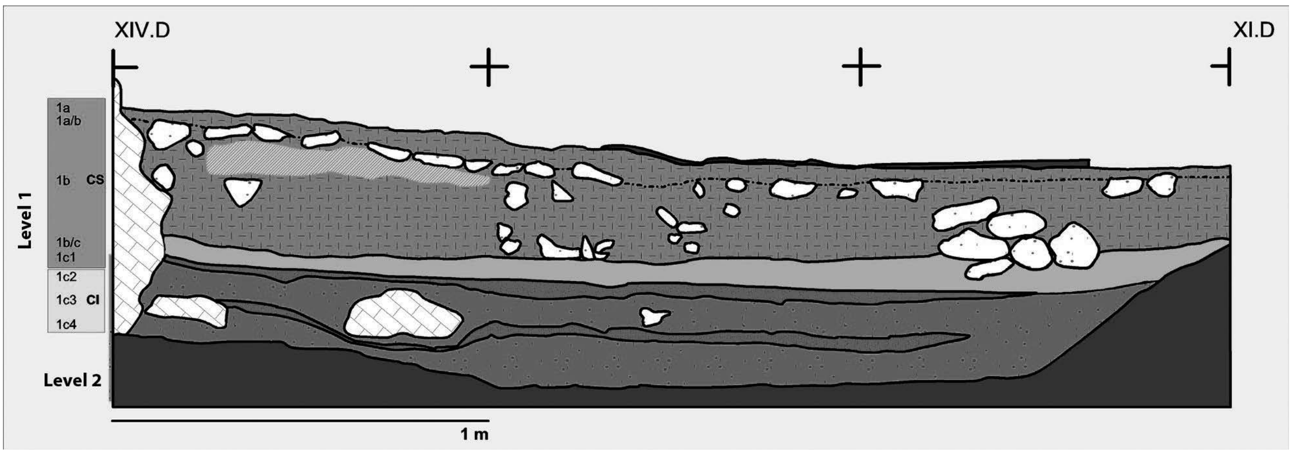

Figure 1.3 - Profile of Square XIV D – XI D in the Living Area in Tito Bustillo Cave (after Moure 1997, modified in Álvarez-Fernández et al., 2018: 112, fig. 3). CS: Upper Complex; CL: Lower Complex

period between 19.0 and 17.5 ka cal. BP and new studies and documentation are expected to clarify the sequence (Álvarez-Fernández *et al*. 2022).

Osseous industry in Tito Bustillo Cave

Publications on the osseous assemblage from Tito Bustillo Cave have concentrated mainly on the typological characterisation of finished tools (García Guinea, 1975; Moure, 1975; Moure and Cano, 1976), which Moure (1990) quantified as 380 objects (projectile points, rods, spatulas, needles and barbed points). However, it is not specified if they are made of bone or antler. Although remains of antlers with evidence of being worked are cited, the study does not mention other fabrication waste and does not give a total count of elements with technical stigmas. Also, C. González Sainz (1989) and G. E. Adán (1997) published analyses about two different small assemblages deposited at that time in Asturias Archaeological Museum (Oviedo, Spain) and which they were able to access. Based on an initial taxonomical classification and the raw materials, their research involved a typological and decorative characterisation of the antler and bone tools. In addition, the remains studied by G. E. Adán included brief notes on taphonomic and technological aspects.

Case study: the *bevelled tools* from Tito Bustillo Cave

The four specimens analysed technologically here were found in J. A. Moure's excavations in 1977, 1982, 1983

Figure 1.4 - Antler *bevelled tools* from the *Living Area* in Tito Bustillo Cave found in J. A. Moure's excavations.

and 1986, but have remained unpublished until now. We used the methodology developed by Averbouh (2000), Pétillon (2006) and Christensen y Goutas (2018), among others. Translation of terms employed follows the lexicon developed by the GDRE PREHISTOS (2015).

The tools we analysed were recovered in the northern part of the *Living Area* (Squares XIID, XIVC and XIVE) in Level 1. Three of them came from the Upper Complex (Layers 1a and 1b/c) and the other from the Lower Complex (Layer 1c3). They are all made from red deer antlers.

The first of them is a fragment of the basal area of an antler in which the brow tine has been removed by cutting and breaking it, as well as by striking it (Figure 1.5, part 1) (GDRE PREHISTOS, 2015). Its measurements (maximum length, width and thickness) are 186.71 x 47.68 x 40.44mm. On its posterior face it displays the negative of an extraction made by double grooves that revealed the spongy tissue of the antler. The double grooves can be identified by the flat facets with a series of longitudinal striations affecting both sides of the compact tissue, but the length of this extraction cannot be determined because of the later modification of the object (Figure 1.5, part 2) to transform into a chisel a matrix to extract blanks. This shaping of the point interrupts the series of striations of the grooves, gives a convex section to the lateral facets and creates a change to the previous profile of the object. However, concretions, a recent fracture and its general state of preservation do not allow us to macro-observe trace of use on the active part of the tool.

The second specimen is an antler tine measuring 95.21 x 29.61 x 31.49mm. Shaping of the proximal end does not allow the identification of how the point was removed from the antler. However, some negatives of impacts can be observed, and these might be related to percussion

Figure 1.5 - *Bevelled tool* made from the basal beam of an antler, from Level 1c3 in the *Living Area* in Tito Bustillo Cave (TB.77. XIID.1c3 – no. 42). Details at 8x magnification.

or blows, with abrasion striations superimposed. The spongy tissue that was exposed has been crushed, possibly through its use as a chisel or intermediate utensil. The bevel cuts the shaft of the object obliquely, revealing the central spongy part but ensuring that the active part coincides with the compact part of the antler. The saw-toothed fracture plane near the base of the bevel, suggests that it was made by pulling it off. The distal part of the bevel was later shaping. This is seen in the scraping of the edge of the compact tissue, where longitudinal striations can be seen and smoothing of the edges created by the previous extraction (Figure 1.6, parts 1 and 2). The active part of the tool is broken, but stepped negatives produced by successive impacts towards the bevelled face can be observed. These would be related to its use as a chisel or intermediate percussion tool (Figure 1.6, part 1). The superficial pearling of the antler has not been modified away from the active parts.

The third object is a fragment from a basal antler beam, 112.61 x 30.12 x 25.47mm in size. The anterior face displays the negative of a large extraction that occupies its whole surface, revealing the spongy tissue. The tool finishes in a double bevel. The previous extraction was made with the double grooving procedure (DGP), which can be identified by striations and parallel traces of configuration on the edge of the object. As in the case of the first sample (Figure 1.5), the length of the extraction cannot be determined because of the later modifications to turn the object into a bevelled tool. The double bevel is at the distal end of the object, where stigmas of configuration (abrasion or scraping?) can be observed on both faces, which cause a marked angle to the profile of the object. Superimposition of fabrication and the use of traces can be appreciated on the bevel on the anterior face over the previous marks of the extraction by DGP. Polish is seen on the cortical sides and the fibres of the spongy tissue have been squashed. On the posterior face, the bevel can be identified by the eliminations of the natural roughness of the antler and by striations and polished areas. The whole surface of the proximal zone of the tool has been strike (Figure 1.7).

Finally, a fourth bevelled object (121.65 x 22.12 x 24.78mm) was made from an antler tine that was cut and shaping in its proximal end. It displays possible flaking caused by impacts during its use as a chisel (Figure 1.8, part 1). It also exhibits the negative of a large extraction that affects three-quarters of its length and cuts the profile of the object obliquely, revealing the spongy tissue. The toothed end of this extraction near the proximal end suggests that it was breaking by bending (Figure 1.8, part 3) although it cannot be determined whether this was combined with breaking it by percussion or fracturation. The plane of the fractured surface and traces of striations are seen more clearly towards the distal end. They correspond to the shaping of the active end of the tool (Figure 1.8, part 2). The end is broken, and stepped fractures can be seen as in a previous specimen (Figure 1.8, part 1). The proximal end presents a rough *débitage* surface (the initial blank production by sectioning), but it has stigmas by crushing and deformations superimposed, which are indicative of the use of the object as a chisel or intermediate element.

Figure 1.6 - ***Bevelled tool*** **made from an antler tine, found in Layer 1b/c in the** ***Living Area*** **in Tito Bustillo Cave (TB.86. XIVE.1b/c – no. 572). Details at 8x magnification.**

Figure 1.7 - ***Bevelled*** **tool made from an antler beam, found in Layer 1b/c in the** ***Living Area*** **in Tito Bustillo Cave (TB82.XIVC.1b/c – no. 598). Details at 8x magnification.**

Experimentation

Experimentation has been carried out to determine whether alternative procedures are compatible with the technical traces observed on the original sample. The material that was used was an antler that had been cast by a modern red deer (*Cervus elaphus*). Flint blanks and tools made of different varieties of flint, were used to work with the antler. This reproduction was carried out by only one of the authors (R. Cerezo-Fernández) to avoid biases due to different technical skills, actions or movements during the procedure. The process was recorded with photographs and videos, and each operation was timed. The videos were taken at two distances, close and general, in order to record both actions and details, such as kinetic variations and different postures that might condition the result of the experiment.

Two phases of work were reproduced in the experimental protocol to transform the antler into a tool: the removal of the brow tine and the transformation of the block into a bevelled tool by DGP.

Fragmentation of the antler and preparation of the block

The work with the antler was facilitated by removing the brow tine by sawing it with flint tools and then bending it (Figure 1.9, part 1). The burr was maintained to verify if it conditioned the next steps in the fabrication of the tool.

Shaping the bevel by DGP

In this phase, the piece of antler was cut longitudinally by convergent DGP. The sides of the whole section and the distal end of the tool were shaped in a single operation in this way. Reiterated previous incisions were required to guide the line of the grooving and ensure that it was uniform (Figure 1.9, part 2). However, during the grooving, the succession of long and continuous cuts led to a gradual

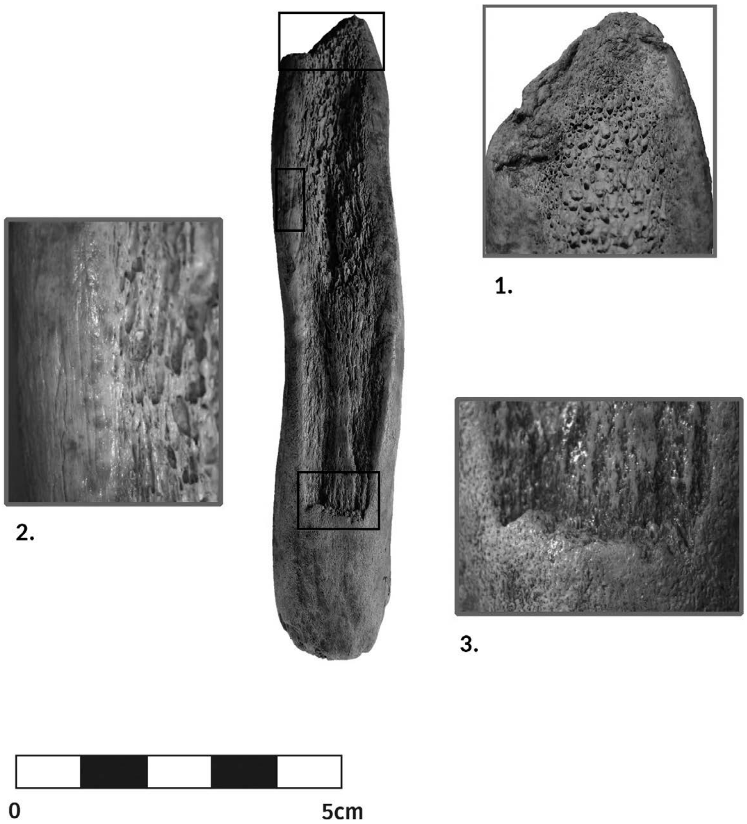

Figure 1.8 - *Bevelled tool* made from an antler tine found in Layer 1a in the *Living Area* in Tito Bustillo Cave (TB.83. XIVE.1a – no. 1256). Details at 8x magnification.

regularisation of the groove and the bevel created was more continuous and uniform than observed in Specimens no. 42 and no. 598 in the archaeological sample.

To separate the two sections of the block, flint flakes were used as wedges or intermediate elements and the brow tine removed previously was put to use as a lever (Figure 1.9, part 3). However, this action was hampered by the toughness of the burr, which had to be removed with a metal saw. The sawn surface was later smoothed by abrasion with a sandstone pebble using oblique back and forward movements, so that its cross-section and shape resembled those of bevelled tool no. 42 (Figure 1.10). Once the burr had been removed, the previous task was performed successfully. As in the archaeological specimen, in the experimental object, the grooving was superimposed on the transversal section of the block.

The use of flint flakes to split the grooved part concentrated on the proximal part and enabled the block to be opened and divided by pulling and bending it. The insertion of the flint wedges caused a series of notches overlapping longitudinally on the section of the compact tissue, which interrupted and deformed the line of the previous grooving striations.

Results

The archaeological specimens studied here are the product of two different operational sequences with morphologically similar results.

Cases TB.86.XIVE.1b/c – no. 572 and TB.83.XIVE.1a – no. 1256

These bevelled tools were made from antler tines. The raw material came from the anatomical parts removed when the central beam of the antler was prepared for other purposes (use of tines), and therefore the stigmas observed in the proximal zones correspond to other previous actions.

The next step consisted of removing a portion of the tine to create in the other part a preform of the bevel. This was carried out from the end of the tine probably by breaking by bending flexion (perhaps accompanied by percussion?). This generated irregular surfaces caused by ripping on the cortical sides of the fracture, exposing the spongy tissue and finishing in a saw-toothed final edge. The size of the original object was not predetermined but depended on the variable size of the tines, the way they were separated from the antler and the size of the area subjected to pressure/flexion in the zone of the point.

Lastly, the tool was shaping. This involved quickly regularisation the edges of the fracture by scraping, and probably also the spongy tissue due to traces observed. The distal active was also shaping by scraping (and abrasion?). The proximal part rest apparently rough of *debitage,* but surface was smoothed probably during the use of the tool. The rest of the object was non-modified and the original pearling was maintained.

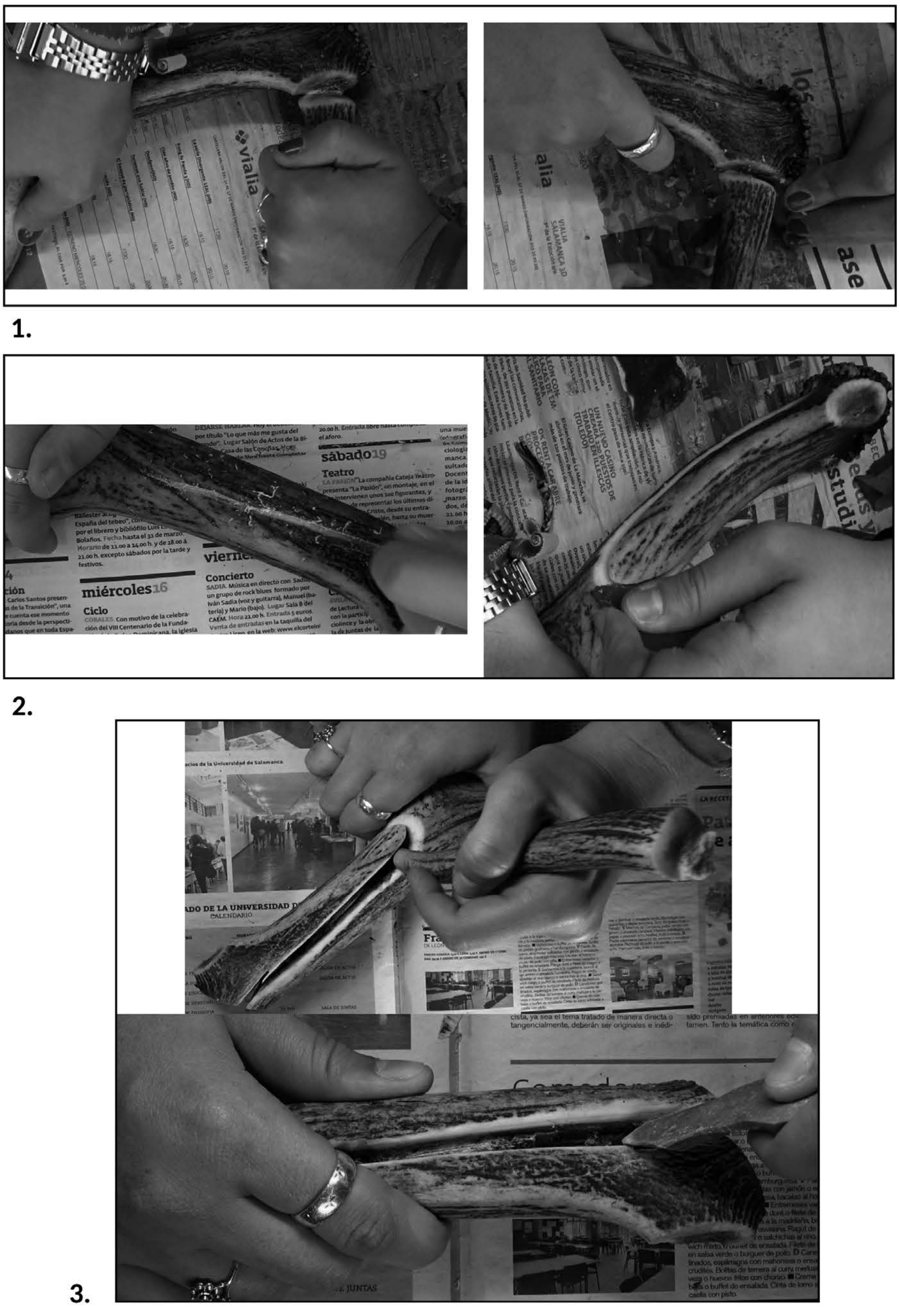

Figure 1.9 - Steps of experimental reproduction (fragmentation of the antler and preparation of the block and shaping the bevel by DGP)

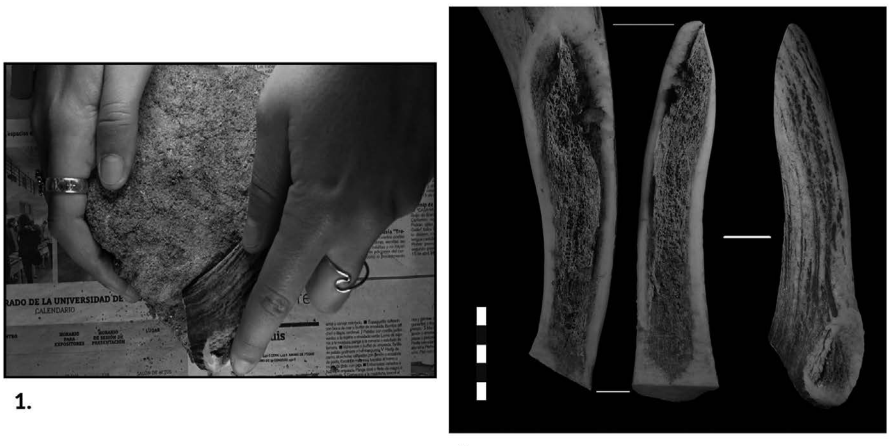

Figure 1.10 - Final configuration of the experimental replica

Cases TB.77.XIID.1c3 – no. 42 and TB82.XIVC.1b/c – no. 598

These tools were made from a matrix of antler. The raw material came from the basal beam of the antler, which had previously been used in a different operational chain: in both cases rods had been extracted by DGP. In the case of object no. 42, the eye tine had been removed from the anterior face and the proximal shape of the tool was a result of that previous operation.

Because of those previous modifications the active zone of the tool was shaped directly by scraping. This work is clearly seen in the change of direction of the stigmas in the profile of the tool, whereas in the other procedure the bevel is uniform along the whole section. In detail, it can be seen how the striations left by the previous grooving are interrupted by the striations generated by the bevel shaping.

Experimental tool

The experiment succeeded in reproducing a tool with a similar shape to the objects from Tito Bustillo Cave, but the superimposition of marks left on the experimental tool differ from the sequences described on the archaeological specimens. These results mean that the sequence followed experimentally can be discarded as the hypothetical technical procedure followed in the original tools.

Tools no. 42 and no. 598 clearly show the superimposition of shaping striations over those generated by the extraction by DGP. In contrast, in our replica, the DGP striations are continuous from the base to the distal end of the tool. Additionally, the kinetic inertia of the grooving work smoothed the line of the groove, which gradually became straighter. This contrasts with the inflection point seen in the profiles of those specimens.

Similarly, the traces left on the experimental tool clearly differ from those on bevelled tools no. 572 and no. 1256, which shows that the initial bevels on both tools were not made by DGP.

Both the experimental reproduction and use of a block-matrix of antler required the previous removal of the antler tines to be able to work comfortably, and this allowed the use of the tines to be subordinated to other operational sequences.

In the case of the shaping of the base, it is likely that the removal of the burr would correspond to a previous operational sequence (by DGP) for two reasons:

- It would not be necessary to remove it to create a percussion surface (supposing it was an antler that had been cast) and it would not hinder the use of the artefact as a a striking plane.
- The basal roughness determines and limits the size of the extraction by DGP, which means that it must be finished at a distance from the burr.

Concluding remarks on results

According to Camps-Fabrer et al. (1998), there are formal variabilities of these objects according to their transformation scheme. These are: i) Unifacial distal bevelled object without longitudinal *débitage*, with generally massive bases, raw debitage (*tronçon*); ii) Unifacial distal bevelled object with longitudinal *débitage*, with bases of varied morphology (*hemi-tronçon*), according to the part of the shaft used and iii) On *baguettes* (which generally correspond to tools, normally bevelled projectile points or rods, reused as intermediate pieces). In this sense, the specimens nº 1 and 4 (Figure 1.4) from Tito Bustillo, would correspond to the first group and those nº 2 and 3 (Figure 1.4) to the second, which explains the formal variability mentioned in our analysis.

The results demonstrate that the objects derived from the reuse of the waste from a previous operation; came from the preparation and use of the antler in different operational sequences. It was therefore a secondary or accessory production, which was carried out after the main objectives, consisting of the production of preforms for sagaies, rods or other osseous tools. This subordination to the main operational sequences led to the use of waste with varying but always robust formats, which explains the variability in the shape of the tools and the presence of other technical marks inherited from the other productions.

In short, they were robust tools that were discriminated almost exclusively by their flat-convex cross-section in their distal part (Camps-Fabrer *et al.*, 1998; Goutas, 2003). Their limited shaping was reduced to: i) the preparation of a previous initial bevel (only if necessary); ii) shaping a percussion surface at the base; and iii) finishing the tool with an active zone with a pointed cross-section and flat or rounded delineation.

Despite being secondary products, they have been documented from the Gravettian onwards at such sites as Isturitz and Laugerie Haute, where they were related to the transformation of blocks (*matrices-outils*), identifying various economic behaviors (Goutas, 2003). This production raises the possibility of determining whether the techno-economic behaviors underlying their operation have any conceptual similarities in different Upper Paleolithic contexts.

The polish stigmata on the active zones have been linked to their use to rub and burnish soft surfaces, like wood or skin (Barandiarán, 1967; Deffarges *et al.,* 1974; Adán, 1997; Camps-Fabrer *et al.,* 1998) although functional studies have not been carried out since Legrand (2000). According to Tapia *et al.* (2018), one of these *bevelled tools* has been related to deformations in sawn surfaces seen on objects from El Cierro Cave (Asturias). Because of the close relationship with removals by DGP and the presence of splintering in their active zone, it has been suggested that they were used as wedges to remove pieces of antler after they had been grooved, and this is compatible with the stigmas of percussion of their proximal zone. The mechanical work to which those types of tools would be subjected required the robustness that differentiates them from other bevelled implements, used for polishing, smoothing, etc.

Based on these observations, these objects, which vary in size and are shaped on different types of support, have in common the presence of a beveled distal part opposite a flat proximal end that served as a striking plane. Furthermore, the technical study of these tools has shown their low degree of modification, which contrasts with the economic importance of their presumed uses.

Magdalenian *bevelled tools* in South-West Europe

Descriptive levels for an object are its shape, how it works, and what it is used for. That is, thefunctionality and form of an object derive from its function (Sigaut, 1991). According to this, *beveled tool* refers to the shape, while *intermediate tool* (used in percussion), refers to how the tool works, and *chisel* refers to function, even if it is only a partial functional determination.

Issues regarding their definition, description and analysis were addressed mostly in the French academic world in the last century and have hardly been updated since then. *Ciseaux* and *coin* have been described in the literature according to morphological criteria (Chauvet, 1910; R. Saint-Périer, 1930, 1936; R and S. Saint-Périer, 1952; Deffarge, Laurent et Sonneville-Bordes, 1974, 1977; Leroy-Prost, 1975; Deffarges *et al.* 1976; Otte, 1979 Allain *et al*., 1985). This distinction has been made according to the raw material (beam or tine), the morphology of the bevel (single or double) and the stigmata of use observed on the proximal surface and on the active part of the objects, thus testifying an action of these as an intermediate piece (Camps-Fabrer *et al.,* 1998).

In the Iberian Peninsula, studies dedicated exclusively to these tools are practically non-existent. In Cantabrian Spain, where osseous industry studies did not take off until the 1970s, their description has focused mainly on typological, morphological and decorative characteristics. Nevertheless, some authors have established a clear distinction between wedges and chisels and alluded to basic technological aspects that enable at least a first approach to those tools.

For I. Barandiarán (1967), the indistinct terms of *cinceles*, *compresores* and *alisadores* cover deer antler tools with a robust morphology that used the whole thickness and volume of the antler matrix, and bevelled distal end. This faceting, as noted here, affected nearly the whole surface of the face on which it was made. He associates this type of tool with those that French historiography has indiscriminately called *lissoir*, *ciseau* or *pousoir* (Breuil and Saint-Perier, 1927) and indicates that they are most common in the Magdalenian VI (Upper Magdalenian), in reference to the finds at sites north of the Pyrenees.

J. A. Mujika (1983) defined as *cuñas* the elements with a bevel made by sawing and with percussion marks in the proximal area and interprets them as intermediate tools used in percussion tasks (translated from Mujika, 1983: 159). Although this definition totally coincides with the proposal presented here through the analysis of the *bevelled tools* from Tito Bustillo Cave, differences in the description of technical aspects hinder the comparison between tools from different collections.

For Mª S. Corchón (1986) antler bevelled tools would correspond to *cinceles*, reserving the term *cuñas* for tools made on bone. Although in more recent works uses same terms without distinction of raw material (Corchón and Ortega, 2017).

G. Adán (1997) created a typological classification for the osseous industry which, in the category of bevelled tools, differentiated between *alisador*, *cincel*, *cuchillo* and *retocador*. The category of *alisador* (smoother) included what is understood here as a *bevelled tool*, among other artifacts. She defined it as 'an object made from a rib, humerus, femur or antler whose distal end is bevelled by use-wear. These marks reflect blunting and polish, which may reveal the spongy part of the osseous object. The rest of the tool may have been worked or unmodified' (translated from Adán, 1997: 46).

A review on the literature of Magdalenian osseous industry in Cantabrian Spain (Table 1.1) has identified artefacts compatible with the present characterisation of *bevelled tools.* Table 1.1 lists some examples of objects whose descriptions, photographs and drawings allow this identification despite terms used to refer them.

Away from Cantabrian Spain and France, of course Magdalenian *bevelled tools* are documented Mediterranean Iberia. Particularly, those from Bora Gran (Girona) and El Parpalló (Valencia) are included in a more complete technological study by Lefebvre (2016) and Borao (2019), which have been classified as *outils intermediaires* and *útiles intermedios* and *útiles biselados* respectively.

Despite no functional analysis having yet been carried out on these tools from Tito Bustillo, all of them show stigmata of percussions on their proximal parts, suggesting their use as intermediate tools. Therefore, defining them solely as "bevelled tools" does not reference other characteristics we have observed: their robustness and the presence of percussion marks on the opposite side of the bevel.

Whether these artefacts were used as intermediate tools for extracting antler rods or for other purposes at Tito Bustillo cave must be clarified by future functional analyses. Nevertheless, their technological description allows us to identify their production as secondary objectives among the antler processing procedures, as well as to clearly differentiate them from other bevelled tools found at the site.

Table 1.1 - Examples of Magdalenian sites in Cantabrian Spain where *bevelled tools* have been found.

Site	Municipality, Province/ Region	Level	Period	No.	Reference
Aitzbitarte IV	Rentería, Guipúzcoa (BC)	1b	Magdalenian to Azilian transition	1	Garrido, 2015: 638 fig. 4.144; Mujika, 1983: 554, fig.5.
Aitzbitarte IV	Rentería, Guipúzcoa (BC)	Indet.	Magdalenian to Azilian transition	1	Garrido, 2015: 639 Fig. 4.145; Mujika, 1983: 573, fig. 24.
Aitzbitarte IV	Rentería, Guipúzcoa (BC)	Indet. l	Magdalenian to Azilian transition	1	Mujika, 1983: 577, fig.28.
Ermittia	Deba, Guipúzcoa (BC)	III	Magdalenian	1	Mujika, 1983: 588, fig.39.
Urtiaga	Deba, Guipúzcoa (BC)	D	Magdalenian final-Azilian	3	Mujika, 1983: 599, fig. 50, 601, fig. 52, 626, fig.77.
Lumentxa	Lekeitio, Vizcaya (BC)	IV	Upper Magdalenian	1	Barandiarán, 1967: appendix sn, fig. 17 (n)
El Castillo	Puente Viesgo, (C)	1-2 f-h	Lower/Middle Magdalenian	1?	Utrilla, 1981: 148, fig 60; 152; 328.
Balmori/Quintanal	Balmori, Llanes (A)	Indet.	Magdalenian	1	Adán, 1995: sn-Vol. IV fig. 19; Adán, 1997: 200.
Cueto de la Mina	Bricia, Llanes (A)	Indet.	Magdalenian	3	Adán, 1995: sn-Vol. IV fig. 13, 37, 216; Adán, 1997: 223, 238.
La Viña	Manzaneda, Oviedo (A)	IV	Middle Magdalenian	1	Duarte and Rasilla, 2020: 332, fig. 4 (32).
Las Caldas (Chamber II)	Priorio, Oviedo (A)	a	Upper Magdalenian	1	Corchón, 1981: 202 fig. 48.
Las Caldas (Chamber II)	Priorio, Oviedo (A)	IV	Middle Magdalenian	1	Corchón and Ortega, 2017: 482 fig. 302.

Conclusions

This paper has focused on the specimens from Level 1 of Tito Bustillo Cave and has succeeded in establishing some specific morphological and technical details that define these tools such as objects, which vary in size and are shaping on different types of support. They have in common the presence of a beveled distal part opposite a flat proximal end that served as a striking plane. Technical study of these tools has shown their low degree of modification, which contrasts with the economic importance of their presumed uses.

This study has also compared the traces seen on the original objects and the sequence of actions, tasks and procedures performed in the reproduction. It has thus helped to discern between the priority objectives in Tito Bustillo's technical transformation schema.

Also, we highlight that they were made in operational sequences subordinated to the extraction of preforms and closely related to DGP. A preliminary interpretation suggests they were used, among others, as a final element in the extraction of those preforms. For this purpose, we believe that defining them is necessary to clarify the rod extraction procedures that we are studying in the Tito Bustillo's antler transformation schema.

Bevelled tools are the only typologies of the Upper Paleolithic that allow us to refer to a plurality of actions and functions (Legrand, 2000). The technical characterisation of Tito Bustillo tools has revealed their limited modification, which contrasts with the importance of their proposed functionality in literature.

In this sense, we must be careful not to limit ourselves solely to the functioning of a tool without considering its function and should be tested by further experimentation and use-wear studies.

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