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Isabelle Sidéra. Crude adzes. Focus on special and unknown artefact type. Ancient and Modern Bone Artefacts from America to Russia. Cultural, technological and functional signature., nternational series 2136, BAR, p. 227-233., 2006, British Archaeological Reports, 978 1 4073 0677 3. halshs-00128215

HAL Id: halshs-00128215

<https://shs.hal.science/halshs-00128215>

Submitted on 31 Jan 2007

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Crude adzes Focus on special and unknown artefact type

Isabelle Sidéra (CNRS, France)

Key words : Neolithic, Chalcolithic, Eastern-Europe, Western-Europe, Near-East, technology, use wear analysis, tradition, Spread of the Neolithic

Abstract

This paper aims to make known a curious type of artefact made of a long broken bone whose epiphysis is used as a handle, and the break as a cutting edge. Because no further shaping generally occurs, its aspect does not differ from a faunal remain. For this reason, it has rarely been seen as an artefact.

The first items were identified in Syrian (at the end of PPNa), Jordanian, Anatolian and Iranian (PPNb) collections. Some were found in the south-eastern Early European Neolithic and many in the Early Chalcolithic from Bulgaria. Others have been also discovered in the western European Neolithic (Linear Pottery Culture).

Because of their extraordinary spread and their long-lasting existence, which follow the Neolithic diffusion, these artifacts deserve to be described in detail so as to help researchers to identify them and further document their chronological and geographical distribution. They also address the question of their manufacture, whose simplicity contrasts strongly with the very elaborated other artefacts within the assemblages they lie in. Their function, for which several hypotheses have been suggested, are also investigated. All these questions will be treated here based on an illustrated description of this artifact type.

1) Morphological description and history of research

In the early eighties, Danielle Stordeur who settled the principles of bone technology, detected some curious and inedited artefacts in four Pre-Pottery Neolithic assemblages from Syria (Mureybet) (Stordeur 1980), Anatolia (Cafer Höyük ; Cheikh Hassan) (Stordeur 1988 & 1994: 259) and Iran (Stordeur 1994: 257-259). She described them as follows: “these objects are integrated in a homogenous whole [...] and are very numerous (121). Their definition is almost entirely expressed in the name attributed to them [flensers]. They are composed of [long] broken bones whose fracture zone is located on variable points of the diaphysis and affects roughly the morphology of short bisels, entirely retouched.” (Stordeur 1994: 257) (fig. 1-11 to 1-15).

Lately, sorting out bones from Kovacevo -an Early Neolithic assemblage of Bulgaria- when looking for artifacts related to the Near-east, several similar items as the ones described by Danielle Stordeur were found out (Sidéra 1994) (fig. 1-1 to 1-13). Whole proximal or distal extremity of metapodials, femuri, humeri, radii and tibiae from sheep, goat and cattle are used, giving variable morphologies and dimensions from one piece to another (fig. 1 to 3). When consulting some publications, I then discovered that several others, conveyed by a PPNb assemblage of Iraq (Jarmo), could also relate to this type (Sidéra 1998). « ... Five objects that were possibly bone fleshers were found, but unfortunately not one of them has the working edge intact. All were broken in antiquity at some point below the condylar surface, which probably served as the handle... » (Watson 1983: 356).

Many other items of this type were discovered in an Early Chalcolithic site (Drama, Bulgaria – Sidéra inedited study), always composed by a whole extremity of big cattle femuri, radii or humeri (fig. 2). Others, coming from varied periods of the continental Neolithic, were after identified.

The strong recurrence of these artefacts presenting the same morphology, shows that we indeed face a real type of objects, within dimensional and morphological varieties according to species and anatomic skeletal parts that were chosen for their elaboration. Some are large and heavy. In Drama for instance, one, made with a cattle proximal humerus, can weigh 355 grams. Others, on sheep or goat tibiae, are small and light (fig. 1). The items which are described here come from the current studies I have engaged in, principally those from Kovacevo, Drama and Cuiry-lès-Chaudardes and Reichtett, with references to the published ones.

2) Technology: artefacts or not?

The most striking feature is their rough aspect which does not differ from a faunal remain. « ...They all have in common a weak degree of elaboration till a complete lack of shaping » (Stordeur 1988). A minimal technology is set for realizing them: breaking and sometimes abrading. No other technical transformation is added. Nevertheless, the manner of producing the break on the diaphysis needs care and experience. The examination of the less used items let appear that a twist morphology is sought after the break. A higher part is indeed necessary to ease the working edge, which is apparently directly used, without any other modification - by the way, I haven't seen any.

As Danielle Stordeur and Patricia Watson wrote (see above), the conservation of the epiphysis is an important design feature, as they are employed as a suitable handle. Any shaping which would result from a hafting apparatus do not appear either on this part of the artefacts. At least, from a technological and morphological point of view, any criterion or almost none leads to insure that we face manufactured objects. They are characterized by a crude aspect, due to rapid technical actions like percussion, which traces are often difficult to interpret. Their quality as artefacts can be called in question because of their proximity to rough bones, just broken for getting marrow (fig. 4).

3) Use wear analysis: the proof

The only way to demonstrate if we deal or not with an artefact is to investigate use wear, focusing on the so called "working edge". A stereomicroscope, enlarging in a range of magnification from x5 to x80 is used for scrutinizing and for taking microphotographs. Let's add that their use wear are is or very few described in the publications. An original work has thus been done.

A) The first attribute which allows to isolate potential artefacts is the repetition of removals lining their distal edge. Danielle Stordeur stay prudent on their interpretation. From her point of view, they can result from the technical shaping of the working edge as well as its use (Stordeur 1994 : 259) (fig. 1 to 3).

On the studied examples, removals are numerous and affects different shapes and dimensions. Some are short, deep and hinged. They margin the edge. Others, thin and long, invade the body of the tool. Both are located on each side of the "active edge", external and internal, creating thus a stepped like bevelled profile (fig. 5).

B) The retouched edge is always flat, except for few items (fig. 5). Flatness is due to a level of the use, resulting from a process linked to an axial percussion. The bone fibres separate one after one during work, marking transversal fissures (fig. 5-5). This produces at least removals which shapes step by step the working edge till it reaches a balance. The same result is obtained when the edge of a flint is knapped with a stone or a wooden hammer (personal experience). Repetitive percussion causes a flatten retouched edge.

At least, we can say that flatness and removals are linked by a causal relation due to axial percussion. This unusual object shapes itself by producing removals. It is becoming a sharpened double bevel as it works.

Other manifestations of use appear through the stereomicroscope.

C) Smoothing and crushes, always associated with removals and fissures, are observed. They are more or less developed. They line the first millimeters of the bevel formed by the removals (fig. 5-1; 5-3; 5-5; 5-6). Smoothing can also be located below, bordering the sketch of the removals and invading the intact part of the diaphysis (fig. 5-3).

D) Gloss and polish have different shapes. They are associated with striations, smooth or micro-removals. They can be very local and occur on a ridge or appear by small spots (fig. 6-1). They line more or less deeply the edges (fig. 6-2 & 6-3). Sometimes, they invade the edge and are associated with a strong smoothness (fig. 6-4).

E) Different kinds of striations appear under a higher magnification. They can be short, long, large (fig. 7-1), thin (fig. 7-3), deep (fig. 7-1), superficial (fig. 7-4), seldom (fig. 7-2) or numerous (fig. 7-4), straight (fig. 7), separate (fig. 7-1) or crossed (fig. 7-3 & 7-4). They border the active part and the removal edges.

In what do these items consist of? If they are artefacts indeed, what is their function? How to classify them?

Considering the large amount of removals, Danielle Stordeur considered she faced flint or obsidian retouchers. Nevertheless, to be made on flint, retouches needs accurate tool for being efficient and experimental tests definitely showed this function did not fit (1980). She also thought that they could have chopped plants or crushed seeds, but that does not fit either with archaeological use wear (1994). Patricia Watson sees them as fleshers (1983). But use wear linked to leather making are well-known and very different of what is observed on these tools' retouched edge. Removals are contradictory with fleshers, which need smooth surfaces.

Let's gather all functional information and let's order it. 1) Points B, C, D and E prove the link between removals' formation and use, not shaping. 2) Points A, B and C points out the action of the item, which is a percussion implement. It works with a natural edge, only formed by breaking and its use mainly consists of removals which tend to shape a sharp and bevelled cutting edge tool (fig. 8). 3) Point C, D and E show that the worked material is capable to crush and flake the bone and also to produce smoothing, gloss, polish and striations. These points recover more particularly the nature of the worked material: resistant but not hard and compounding fibres. Polish and gloss suggest that additional chemical elements like grease or resin are included. Stone can be excluded. Wood and bark are the most capable for leaving such use wear. Thus, what I propose as a functional hypothesis for most of these tools, while no experiments is done, is to see them as adzes, employed to decorticate wood. A question is still addressed: do they or not compound a haft? While no trace of hafting is available, the edges use wear suggest that a strong proportion of them were strongly and heavily thrown on the worked material by the mean of a haft. A part of them would thus correspond to adzes, others perhaps were hand-adzes. If we consider the simplicity of their technology and conception, this explains the chosen terms of crude adzes.

5) Archaeological context: in which assemblage?

Let's place the general context of this particular production.

If we look at Kovacevo assemblage, an early Neolithic site in southern Bulgaria, which contains crude adzes, and more generally to karanovo I and II assemblages (Georgiev 1967; Hiller & Nikolov 1988), we can be amazed by the strong contrast between well-shaped decorated and at least sophisticated spoons, hooks, rings, chisels, awls, etc. and a simple production as tubes, crude hand-adzes, splinter awls and scrapers (Sidéra 1997). This contrast is yet one trait of the Near-

eastern Neolithic culture: a similar sophisticated production neighbouring with a similar simpler one.

The Linear Pottery culture bone production doesn't show such large difference between artifacts classes. It is much simpler than the Bulgarian Early Neolithic one (Sidéra 1989). The coexistence between the most common tools and crude adzes fits better. But even in here, crude adzes stay original because of their contrast with the most traditional tools shaped before fulfilling any function.

If we admit that cultural behaviour is involved in this contrast within bone production, it includes probably other meanings. In addition to cultural behaviour, are social practices the origin of this two opposite manners of making bone artifacts? This, should be a research track to further exploration.

4) Geographical and chronological dispersion

The huge geographical and chronological dispersal of crude adzes is a intriguing and uncommon phenomenon which serves to be investigated.

They begin to be known in Syria, Anatolia, Jordan and Iran, then Bulgaria, France (Alsace and Paris Basin) and, very recently, some have been discovered in Austria by Daniela Fehlmann and Günther Karl Kunst (pers. com.). This large spread fits with a long-lasting existence. They are attested from the IXth millenium in the Near-East (end of PPNa in Syria), to the IVth millenium in Bulgaria (Karanovo VI-Gumelnitza), for the youngest pieces (fig. 9).

Another interesting point is that these artifacts link the Near-East to the Balkans and to Western Europe. At least, they make part of the tool kit which accompanies the Neolithic diffusion. For that last reason crude adzes could not be ignored. They necessarily fulfil a strong economic and functional role, may be social. Perhaps, their simple technology explains their success.

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Figure caption

Fig 1: South-Eastern Europe and Near-East.

1 to 10: Kovacevo (photo by M. Lichardus); 11 to 13: Ganj Dareh (from Stordeur 1994, fig. 14; 14: Mureybet (from Stordeur 1988, fig. 1); 15: Cafer Höyük (from Stordeur 1998, fig. 1).

Fig. 2: Items from Drama (Bulgaria).

Photos from the archives of the Bulgarian/German Archaeological Mission in Drama's Microregion (Direction † I. Lichardus).

Fig. 3: Items from Western Europe: Linear Pottery Culture.

1. Cuiry-lès-Chaudardes (France); 2: Reichtett (France) (photos by S. Oboukhoff).

Fig. 4: Simple faunal remains from Reichtett (Alsace, France). Photos by S. Oboukhoff.

Fig. 5: Smoothing and crushes on various items (photos by author).

Fig. 6: Polish and gloss on various items (photos by author).

Fig. 7: Striations on various items (photos by author).

Fig. 8: Schema of the tool's action and results on items (drawings by author).

Fig. 9: Crude adzes geographical and chronological distribution.

1: Ganj Dareh (7th mill. BC); 2: Jarmo (6th mill. BC); 3: Mureybet (9th mill. BC); 4: Cafer Höyük (7th mill. BC); 5: Cheikh Hassan (7th mill. BC); 6: Kovacevo (6th mill. BC); 7: Drama (4th mill. BC); 8: Asparn (5th mill. BC); 9: Reichtett (5th mill. BC); 10: Cuiry-lès-Chaudardes (5th mill. BC) (drawings by author).

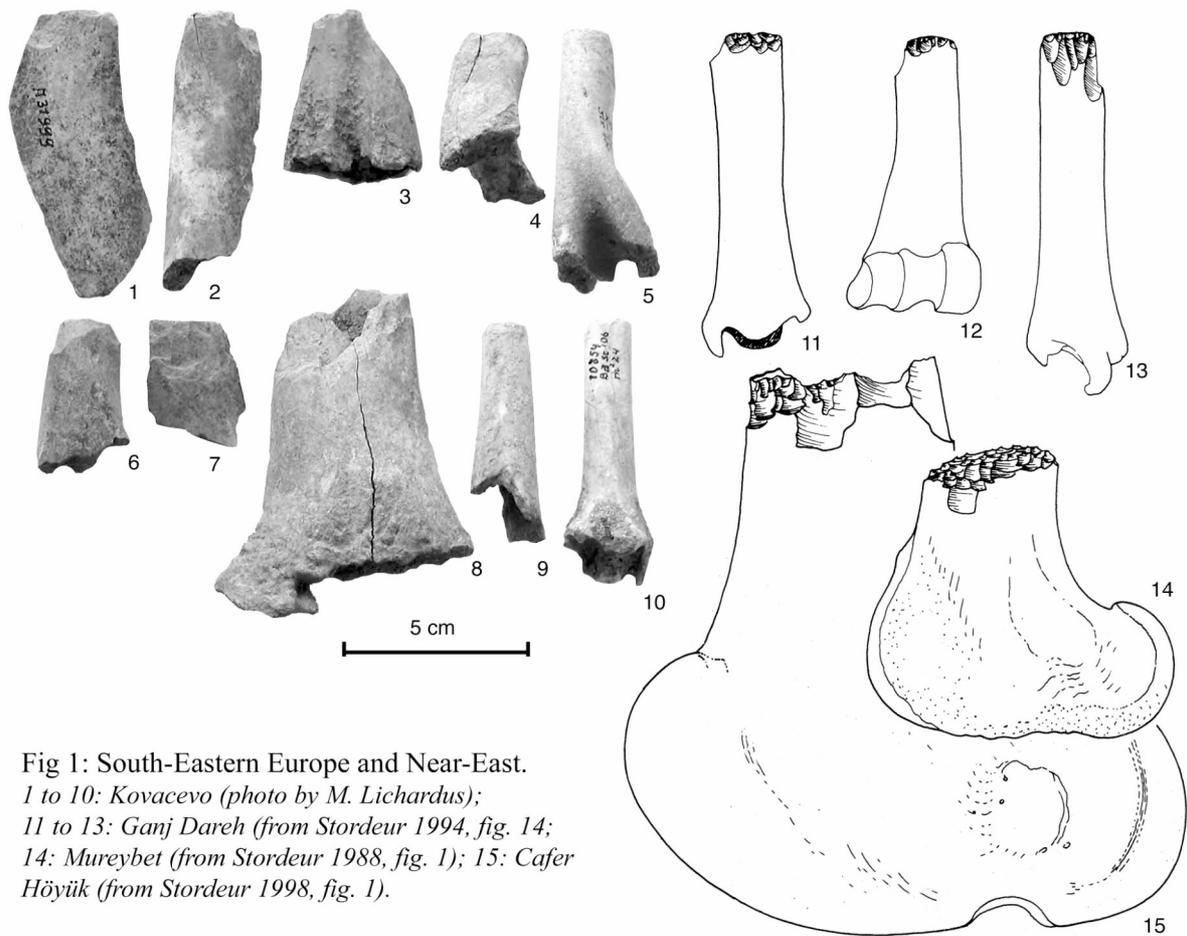


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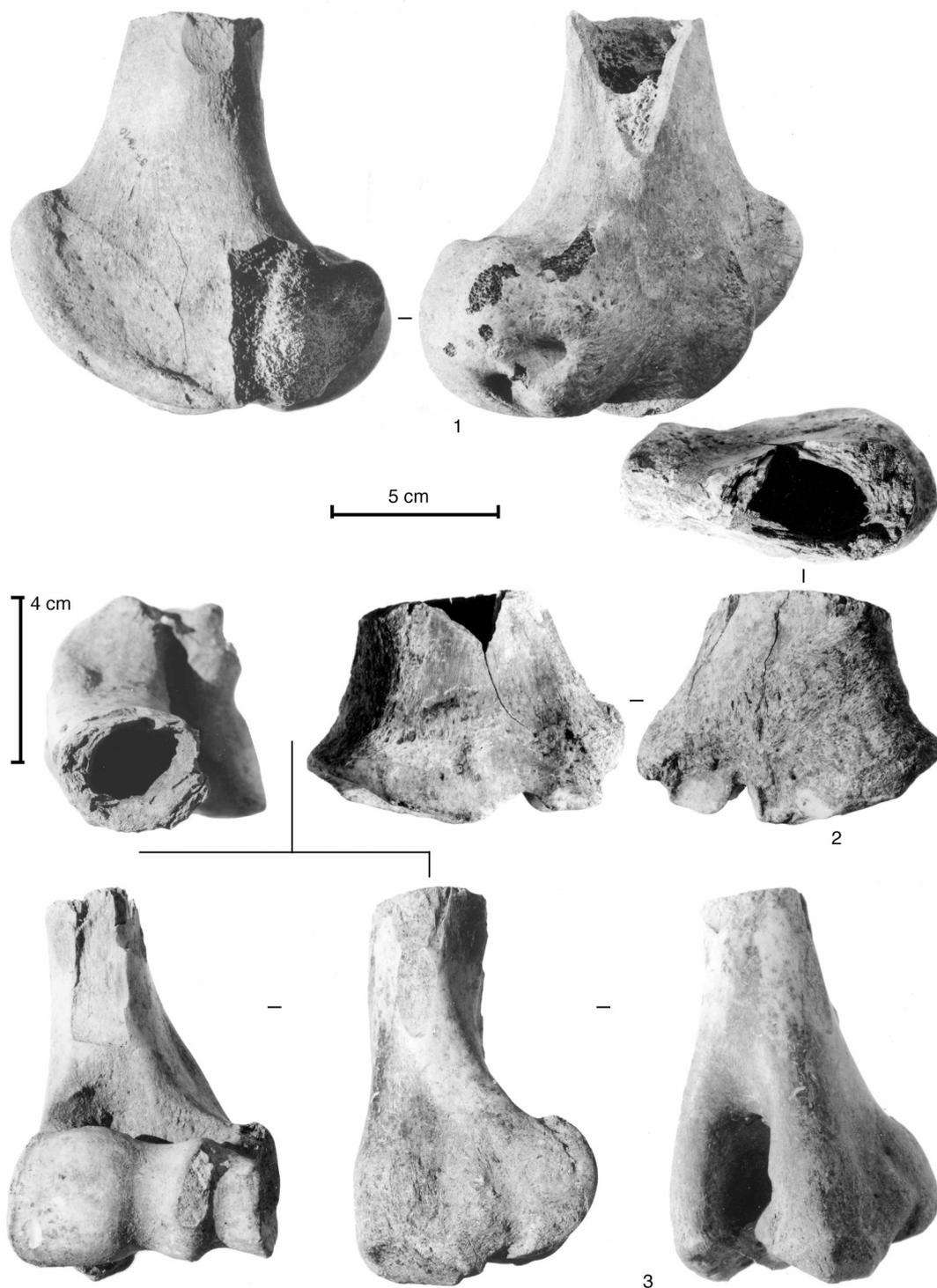


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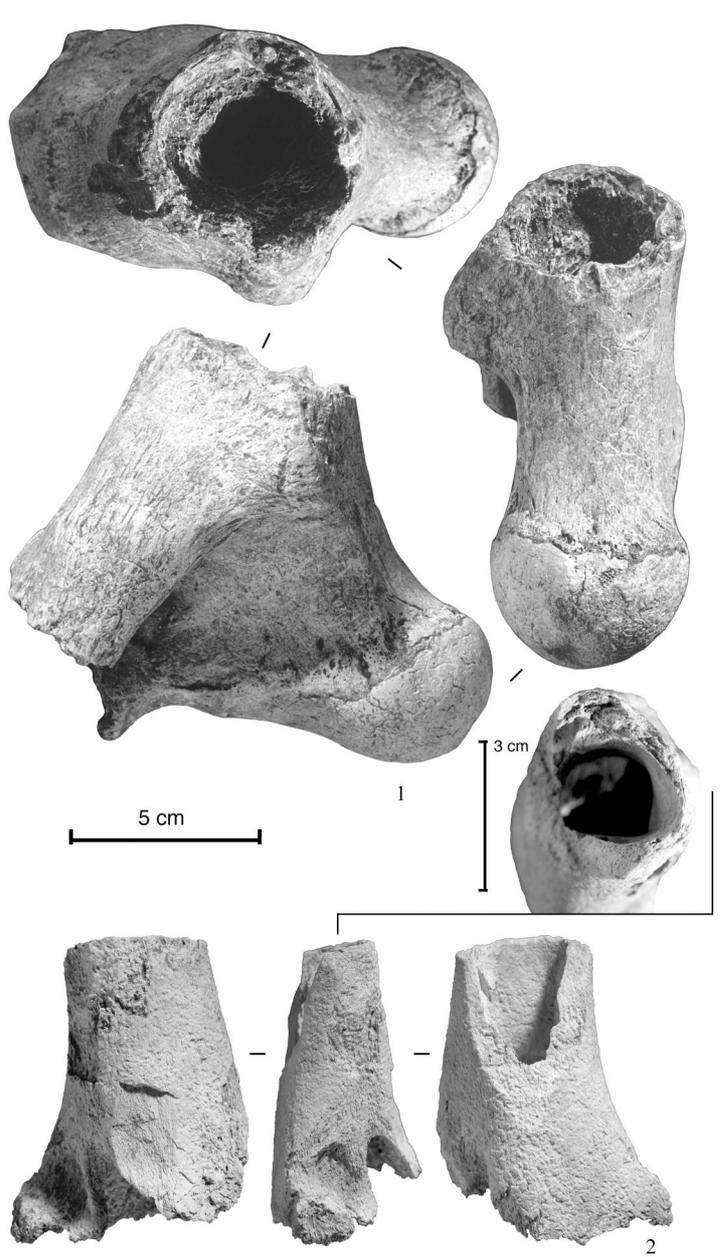


Fig. 3: Items from Western Europe: Linear Pottery Culture.
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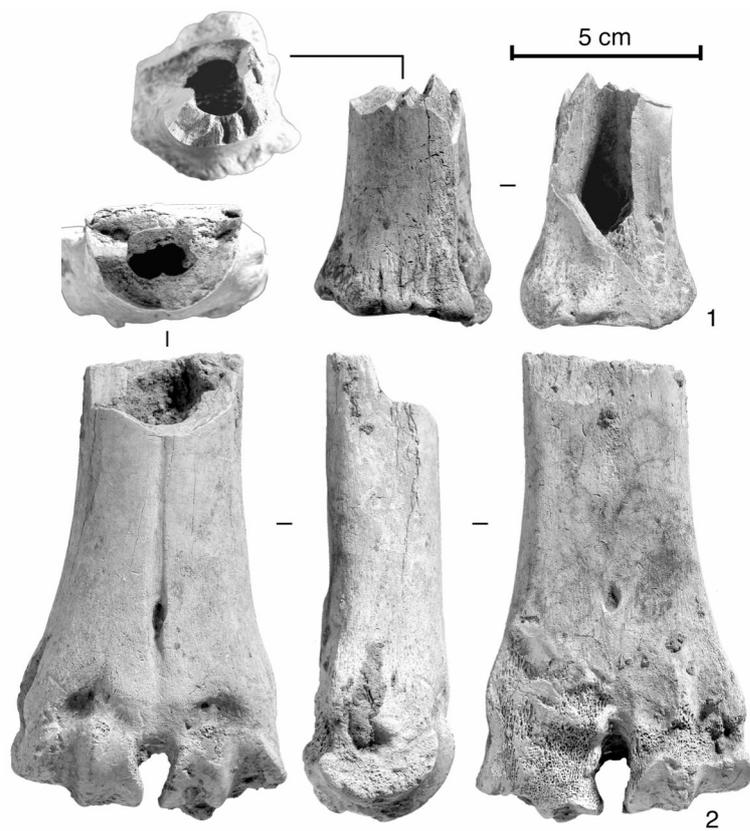
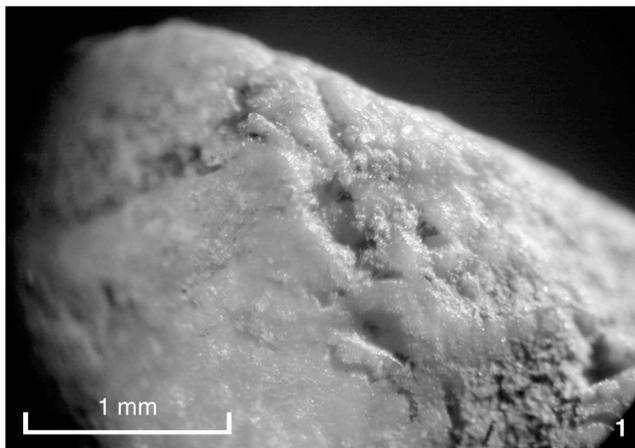


Fig. 4: Simple faunal remains from Riechtett (Alsace, France).
Photos by S. Oboukhoff.



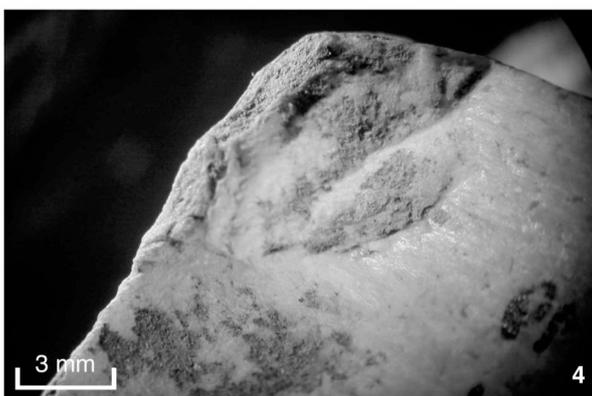
Kovacevo: n°31698, upper face of the cutting edge, left side x63



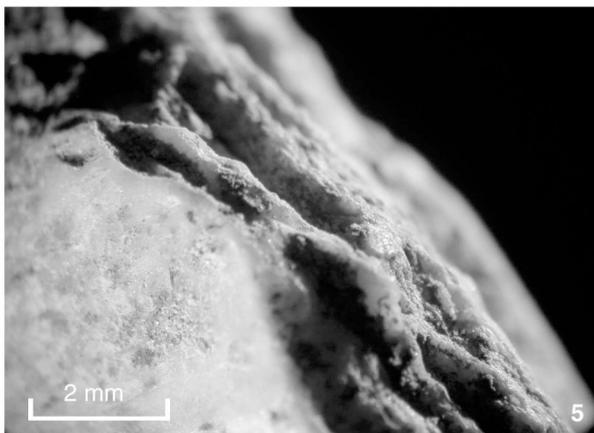
Drama: n°98/1650, lower face of the cutting edge from above x10.



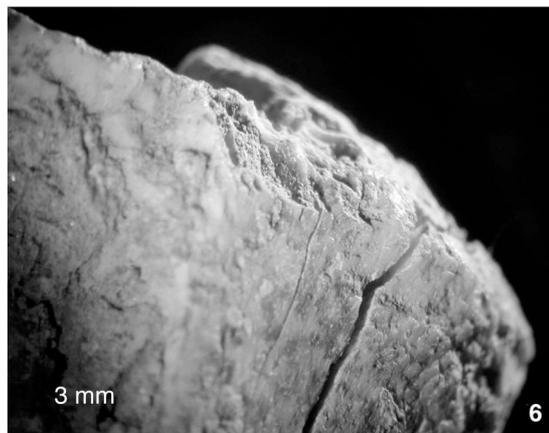
Kovacevo: n°15711b, upper face of the cutting edge x10



Kovacevo: n°12172, upper face of the cutting edge, right side x10



Kovacevo: n°31999, cutting edge from above x20

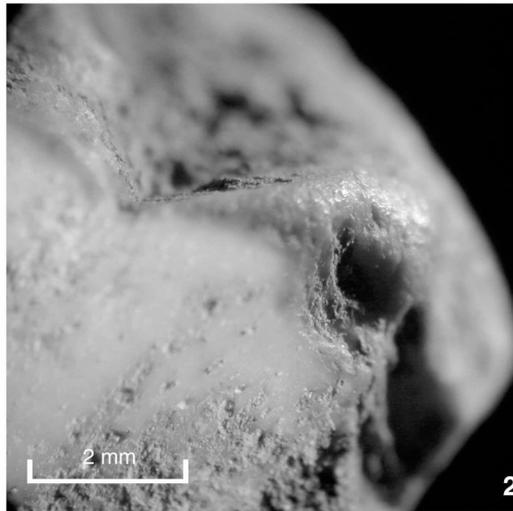


Kovacevo: n°29167, lower face of the cutting edge x10

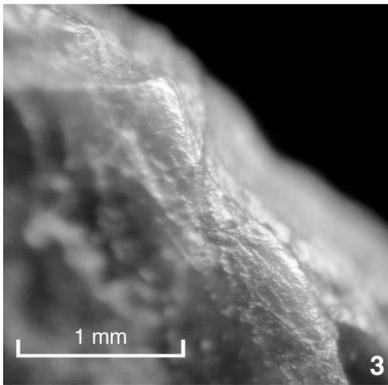
Fig. 5: Smoothing and crushes on various items (photos by author).



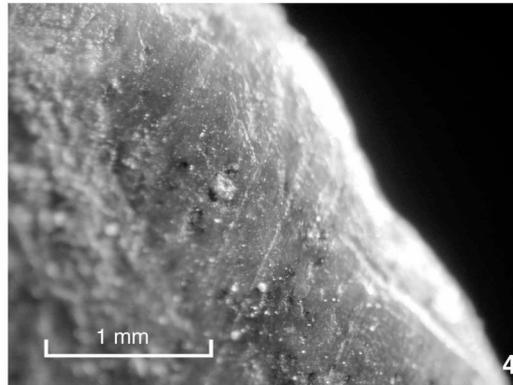
Drama: n°98/527, upper face, 6mm of the cutting edge x63



Kovacevo: n°32095, lower face of the cutting edge x20

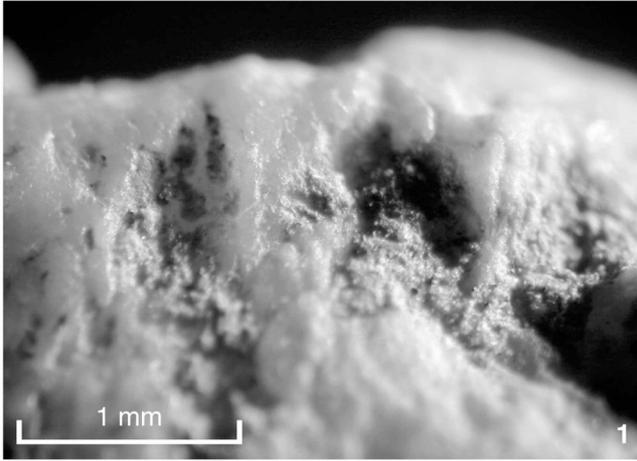


Drama: n°98/1631, upper face of the cutting edge center x63



Drama: n°98/1660, upper face of the cutting edge x63

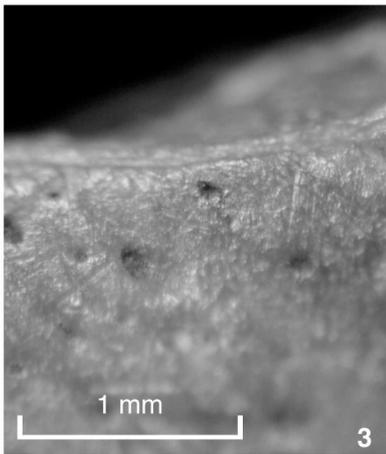
Fig. 6: Polish and gloss on various items (photos by author).



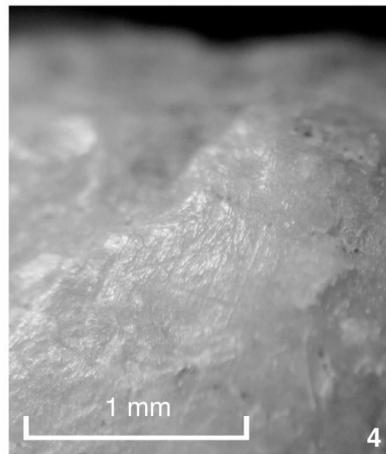
Kovacevo: n°15711b, upper face of the cutting edge, center x63



Drama: n°98/1620, upper face of the cutting edge, center x63



Drama: n°98/1606, upper face of the cutting edge, center x63



Drama: n°98/1631, upper face of the cutting edge, center x63

Fig. 7: Striations on various items (photos by author).

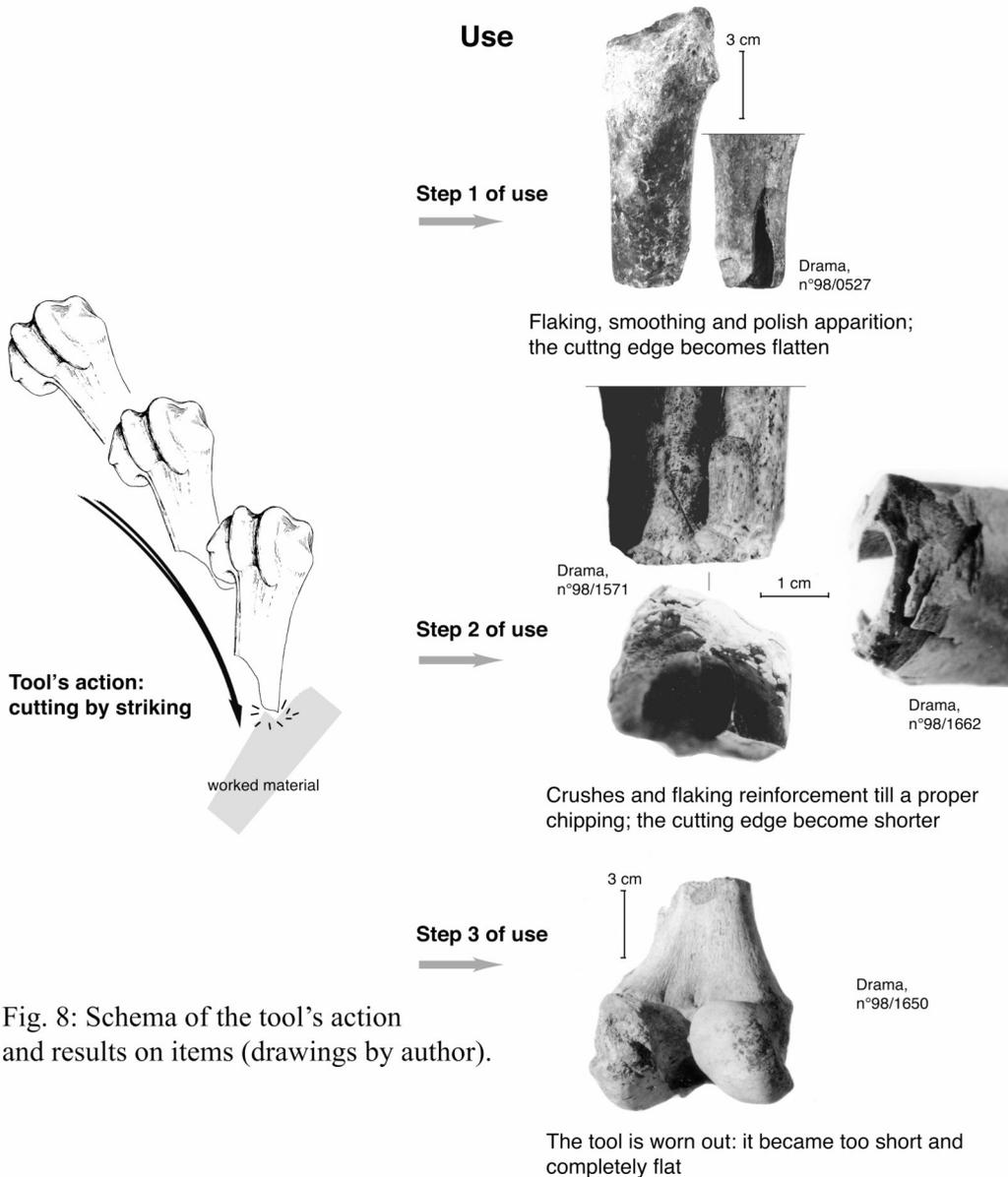
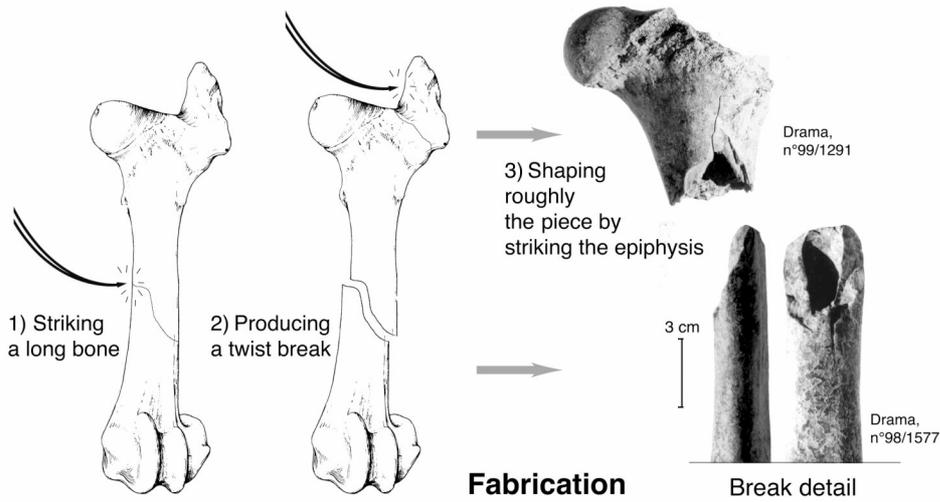


Fig. 8: Schema of the tool's action and results on items (drawings by author).

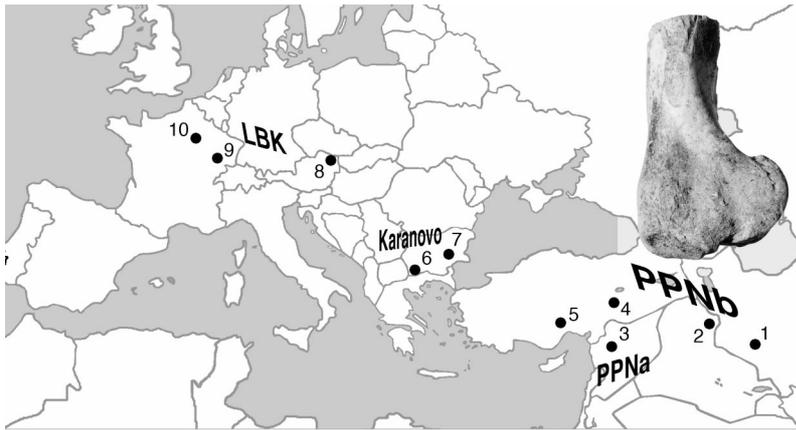


Fig. 9: Crude adzes geographical and chronological distribution.

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