

# REPRESENTATIONS, SIGNS AND SYMBOLS

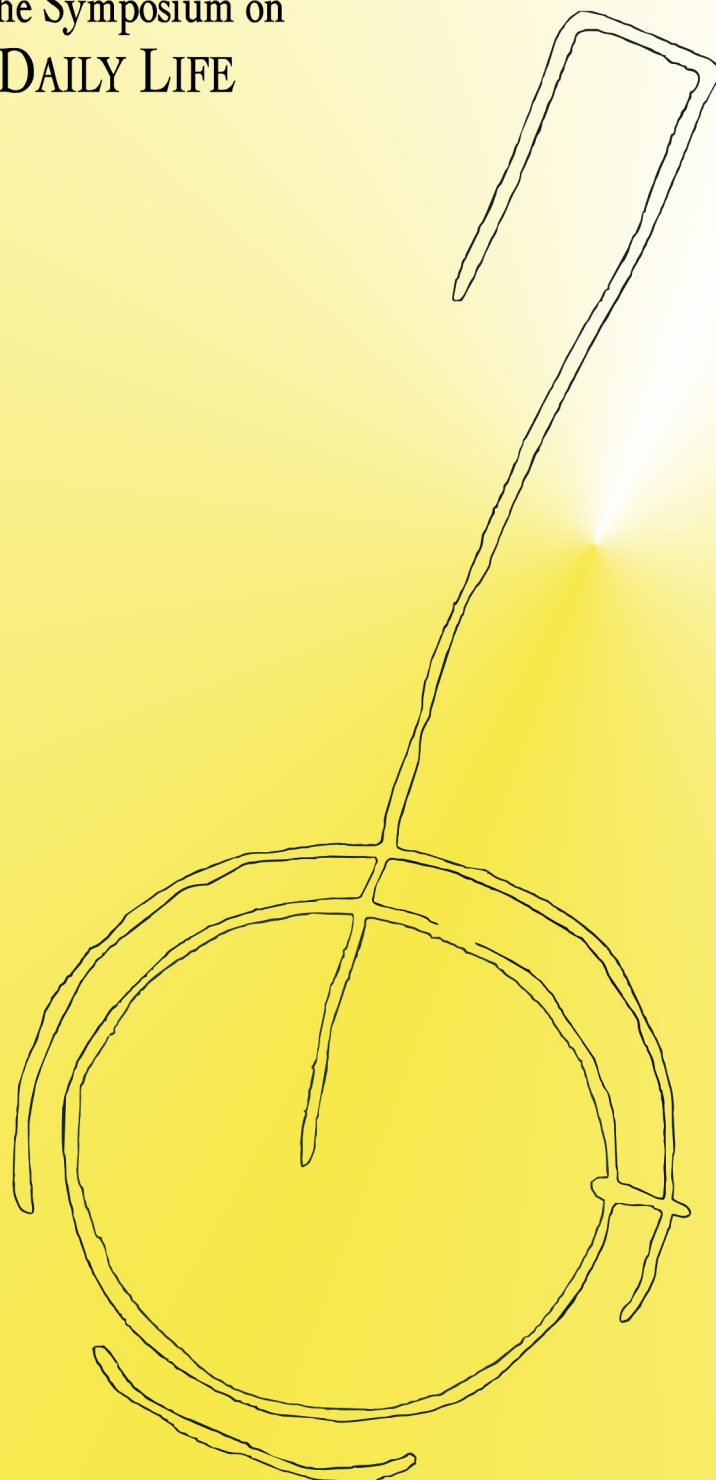
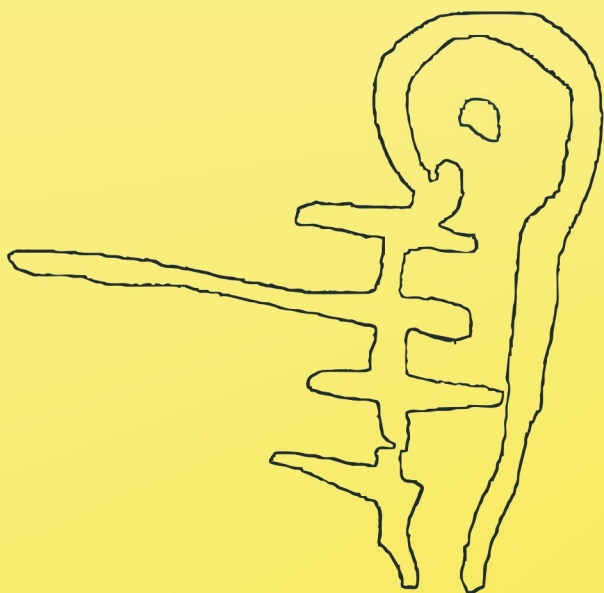
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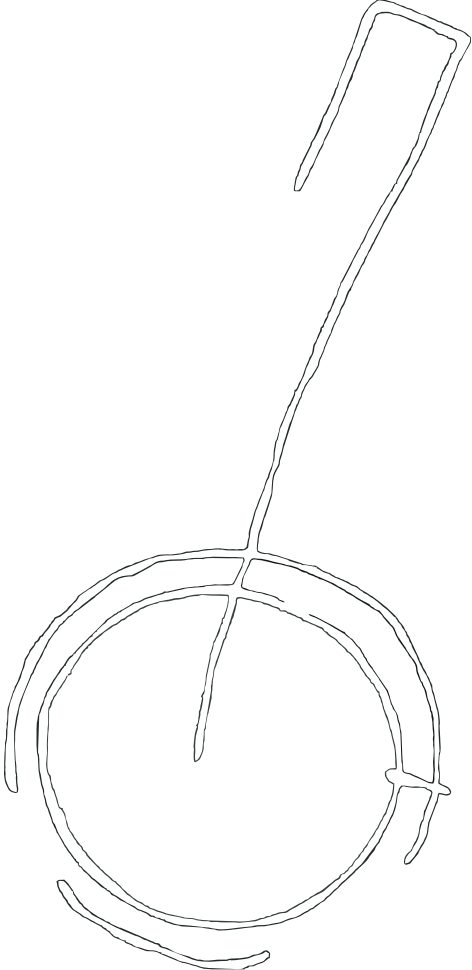
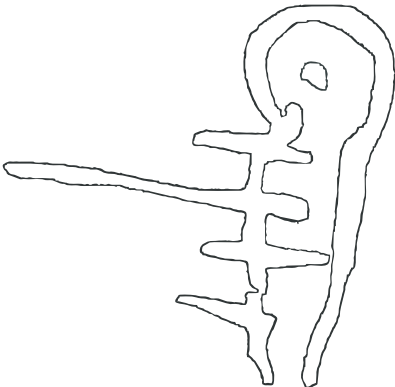
IOSIF VASILE FERENCZ

OANA TUTILĂ

NICOLAE CĂTĂLIN RIȘCUȚA



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**Editors:**

Iosif Vasile Ferencz, Oana Tutilă, Nicolae Cătălin Rișcuța

**Review:**

Oana Tutilă, Iosif Vasile Ferencz, Nicolae Cătălin Rișcuța

**Layout:**

Oana Tutilă

**Cover Design:**

Iosif Vasile Ferencz, Nicolae Cătălin Rișcuța

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# HANDLE WITH CARE: HANDLES, HAFTS AND SLEEVES FROM OSSEOUS MATERIAL IN THE STARČEVO CULTURE

SELENA VITEZOVIĆ

Institute of Archaeology, Belgrade, SERBIA  
selenavitezovic@gmail.com

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**Keywords:** *osseous raw materials, prehistoric technology, hafting, Early Neolithic, Starčevo culture.*

**Abstract:** *Osseous raw materials are very convenient for variety of purposes; they can be easily transformed into an efficient tool or to deadly weapon, they can be carved into various forms and transformed into objects of art or into ornaments. They can also be effectively used as handles or sleeves for tools made from diverse materials. However, it is not always easy to identify them if the inserted tool is not preserved. In this paper*

*will be presented the assemblage of handles from the Early Neolithic Starčevo culture sites in Serbia. The problems of identification, their morphological variety and technological choices will be discussed. These examples show variety in raw materials – diverse segments of long bones or antler. Their dimensions suggest that most of them may have been used for slender pointed tools and for tools of relatively small width (for example, pointed bone tools, chipped stone tools, small stone chisels, etc.).*

## INTRODUCTION

Creating and making a haft, handle or sleeve for a tool was one of the important steps in the history of technology. Combining and uniting separate elements into a single tool, the very idea of assembling two different kinds of materials into one object, was not only a major technological improvement, but also represents one very significant step in the minds of early hominins.

Hafts and handles have both aesthetic, purely decorative purpose, and practical role. Their purpose is to protect both the user's hand and the tool itself, but also they can make the artefact (tool or weapon) more effective, more resilient, prolong its usability, etc. The tool or weapon can be inserted into the handle or attached to it, and the insertion can be lateral, longitudinal or transversal<sup>1</sup>. Hafts and handles can be made from diverse materials; often wood was used, as well as other perishable materials. Also osseous raw materials were widely used throughout prehistory and in later periods as well<sup>2</sup>. Hard animal tissue, especially long bones and antlers, are very convenient – their natural cylindrical shape can be used almost unmodified or can be easily transformed to insert another artefact; they are also resilient and may serve as shock absorbers<sup>3</sup>.

First handles and hafts made from osseous raw materials occur already in the Palaeolithic period<sup>4</sup>, and these hafts were mainly intended to increase the efficiency of the hunting weapons. In the Neolithic period, when sedentary life and economy based on agriculture and animal herding brought in diverse new activities and associated tools, also the need for handles and hafts increased

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<sup>1</sup> Cf. papers in CAMPS-FABRER ed. 1993.

<sup>2</sup> Cf. papers in CAMPS-FABRER ed. 1993.

<sup>3</sup> For mechanical and physical properties of osseous raw materials, cf. CHRISTENSEN 2004 and references therein.

<sup>4</sup> Cf. papers in CAMPS-FABRER (ed.) 1993, and references therein.

and new forms appeared. For example, sickle handles made from antler tines, sometimes even decorated, are known from the Early Neolithic sites in Anatolia<sup>5</sup> and are even considered as characteristic for the Near-Eastern Neolithic and recognised as “Near-Eastern influence” in the bone assemblages from the Balkans<sup>6</sup>.

In the Neolithic in central Europe, especially on the sites situated on lake shores in present-day Switzerland, where particularly rich assemblages of artefacts made from red deer antler were uncovered, sockets or sleeves were particularly abundant<sup>7</sup>. They were intermediary segments – their purpose was to fit stone axes into wooden handles. Antler is elastic and resilient, so these sleeves also served as shock absorbers, thus protecting both the wooden handle and the stone axe from breaking. Rich findings enabled to observe the changes in hafting technology through time and also to identify the chronologically sensitive types. During the earlier phases, before 4000 cal BC, stone tools were mostly directly fitted into wooden handle and antler sockets were used only rarely. They became more common in the first half of the 4<sup>th</sup> millennium cal BC; first simple forms made from antler tines occurred and in later phases large segments of antler beams were used, thus allowing much larger axes to be fitted<sup>8</sup>.

However, such quantity and diversity of handles and hafts is not encountered within all of the Neolithic sites. It is reasonable to assume that many of the handles and sleeves were made from wood or from other perishable materials<sup>9</sup>. Furthermore, the identification of osseous artefacts used as handles, hafts or sleeves is not always easy or straightforward, since some of these objects may have served for other purposes as well. On Chalcolithic sites in France, for example, finds of smaller cylindrical pieces of long bones were interpreted as beads, until several specimens with another tool still inserted were discovered<sup>10</sup>. Careful analysis of these items also offered some of the directions for the interpretation of the traces that can be noted on handles: absence of the traces produced by a string or a cord, polish and shine are not distributed on the entire object but on separate zones, the polish is less prominent than in the case of ornaments, and traces of use such as small damages are present, especially at distal ends, where the opening for inserting the tool was<sup>11</sup>.

In the Starčevo culture, handles from osseous materials are not numerous, but were still discovered on several sites. They were made from diverse osseous raw materials and they display some interesting technical solutions.

## HANDLES FROM OSSEOUS RAW MATERIALS IN THE STARČEVO CULTURE

Early and Middle Neolithic in the central Balkans and neighbouring areas is represented by the Starčevo culture, part of the Starčevo-Körös-Criş cultural complex. Starčevo communities were the earliest agricultural communities in the region; their economy was based on farming and animal herding<sup>12</sup>.

The tool assemblages from Starčevo culture sites include rich and diverse lithic artefacts. Chipped stone industry included unretouched and retouched blades, sometimes quite long, retouched flakes, perforators, sidescrapers, endscrapers, double sidescrapers, geometric microliths, represented in diverse ratios at different sites, made from locally available raw materials, but also obsidian artefacts

<sup>5</sup> For example, at the site of Hacilar – MELLAART 1970, figs. 177–179.

<sup>6</sup> SIDÉRA 1998.

<sup>7</sup> SUTER 1981; SCHIBLER 1987; SCHIBLER 2013.

<sup>8</sup> SCHIBLER 2013, p. 351–352, and references therein.

<sup>9</sup> Some ideas about the forms of the wooden handles and sleeves may be obtained from the sites with excellent preservation of wooden artefacts – for example, from the Mesolithic site of Zamostje 2 in Russia – cf. LOZOVSKAYA 2011; LOZOVSKAYA 2012, and references therein.

<sup>10</sup> BARGE-MAHIEU 1990; BARGE-MAHIEU ET AL 1993b.

<sup>11</sup> BARGE-MAHIEU 1990; BARGE-MAHIEU ET AL 1993b.

<sup>12</sup> Cf. GARAŠANIN 1973, SREJOVIĆ (ed.) 1988; for AMS dates see WHITTLE ET AL 2002.



occur<sup>13</sup>. The typological repertoire of the ground stone artefacts encompassed axes, adzes, chisels, hammers, grindstones, pounders, querns. At some sites, such as Velesnica in the Iron Gates region, also weights were present, used probably for fishing<sup>14</sup>.

The osseous industry is characterized by predominant use of bones, mainly long bones and ribs from sheep/goats, cattle and occasionally other animals. Red deer and rarely roe deer antlers were used in different ratios on different sites. Also teeth and mollusc shells may occur in small quantities. The typological repertoire included mainly tools for everyday crafts and activities (awls, needles, heavy points, spatulae, scrapers, chisels, retouching tools, hammers, small percussion tools, etc.), and in smaller quantities weapons (mainly projectile points and rarely fish hooks), special items, such as spatulae-spoons, and ornaments (pendants, beads, buckles, etc.)<sup>15</sup>.

Hafts and handles were discovered only on few sites, and among them several subtypes may be identified<sup>16</sup>.

#### *Subtype A*

The handles of the first subtype are made from long bone segments, where the tool is inserted longitudinally. Different bones were used, mainly ungulate metapodial bones or tibiae, convenient for their regular, straight shaft axis and circular or oval cross-section. Epiphyses are removed and only the diaphysis segment, cut sideways at both ends, was used. The length of the segment varied (almost entire diaphyseal part or just a portion of it). The natural hollow interior, the canal which contains bone marrow in the living animal, was used for inserting a tool. They may be identified as hafts by traces of use—irregularly distributed polish, lines and striations, small damages from use, etc.<sup>17</sup>.

One fragmented handle of this subtype was discovered at the site of Starčevo-Grad, made from a smaller long bone, probably tibia, polished from use. Its inner diameter is 8 mm, suitable for chipped stone tools or pointed bone tools. One very finely made, completely preserved handle was discovered at the site of Grivac (Fig. 1). It was made from epiphysis of a smaller long bone, probably sheep/goat tibia. It has very fine traces of manufacture preserved – traces of transversal cutting at both ends with a chipped stone tool and its entire outside surface is covered with traces of burnishing with an abrasive stone tool. Also polish from use may be observed. One opening is 1.2 and other 0.8 cm wide, suitable for chipped stone tools or for bone (or even wooden?) pointed tools.

Some of the fragmented artefacts from unsplit long bones with traces of use from other sites perhaps also represent handles of this subtype, such as one object from the site of Zmajevac<sup>18</sup>. However, it is difficult to identify with certainty all the bones used as handles and some fragmented pieces may remain undetected.

This subtype (*manches en os à insertion longitudinale*) is widely distributed in prehistoric Europe, in particular in the Neolithic and Chalcolithic<sup>19</sup>.

#### *Subtype B*

The second subtype is hafts made from the epiphysis and diaphysis segment of long bones. The bone was cut transversally and then the epiphysis retained as a natural grip, and the empty tube of the diaphysis was used to insert a tool. Sometimes small ungulate bones were used (for example, sheep/goat femur), but there were also some pieces from large ungulate bones (cattle or red deer). These artefacts are in fact manufacture debris; the remaining portion of the bone was selected and

<sup>13</sup> ŠARIĆ 2005; ŠARIĆ 2006; ŠARIĆ 2014.

<sup>14</sup> ANTONOVIĆ 2003; ANTONOVIĆ 2008.

<sup>15</sup> VITEZOVIĆ 2011; VITEZOVIĆ 2013; VITEZOVIĆ 2014; VITEZOVIĆ 2017.

<sup>16</sup> VITEZOVIĆ 2011; VITEZOVIĆ 2013; VITEZOVIĆ 2014; VITEZOVIĆ 2017.

<sup>17</sup> Cf. BARGE-MAHIEU 1990; BARGE-MAHIEU ET AL 1993b.

<sup>18</sup> VITEZOVIĆ 2011.

<sup>19</sup> BARGE-MAHIEU ET AL 1993a; BARGE-MAHIEU ET AL 1993b, and references therein.



**Fig.1.** Subtype A handle from the site of Grivac, made from long bone segment.

used for other purposes. Both unused segments of this type can be encountered, as well as those used as handles. Used objects have traces of use such as polish, worn surfaces, and irregularly distributed lines and striations on their outer surfaces. They are not numerous, yet they were found on several sites – at Donja Branjevina, Obrež-Baštine, Golokut (in Vojvodina region), Drenovac and Grivac (in central Serbia).

From Donja Branjevina, two such tools were found. One is fragmented, only the diaphysis segment is preserved, while the epiphysis is broken. The other is almost complete, made from sheep/goat femur (Fig. 2). Both of them have fine traces of transversal division by grooving and sawing. The dimensions of their internal space for inserting another tool were approximately 1.1–1.5 cm, which can correspond to some chipped stone tools from the site<sup>20</sup>. At the site of Baštine were found two somewhat larger handles, both fragmented, made from large mammal long bones (one from cattle humerus) (Fig. 3). The diameter of their interior was up to 5 cm, and they may have been used for inserting tools such as smaller chisels, etc. Similar to them was fragmented handle from Golokut, also made from a large mammal long bone, with diameter also suited for some of the smaller stone artefacts discovered at the site<sup>21</sup>. Both handle from Golokut and the one from Baštine have a groove below the rim (Fig. 3), made with an abrasive fibre. It may represent traces of the unfinished transversal cutting, but perhaps this groove was functional as well, used for fastening the inserted tool with ropes or leather stripes.

Two complete handles and one possible fragment of a third such artefact were discovered at the site of Drenovac. One was made from sheep/goat humerus and the other from red deer tibia (Fig. 4). Both have fine traces of manufacture – carefully executed groove for the transversal cutting. Polish, worn surfaces and fine, random striations may be observed on outer surfaces. The opening of the larger handle was approx. 3.5 cm, and of the smaller one was 0.9 cm wide. Also one fragmented artefact comes from Grivac, suitable for smaller tools.

<sup>20</sup> V. chipped stone artefacts in ŠARIĆ 2005, CLXXV/12, 13.

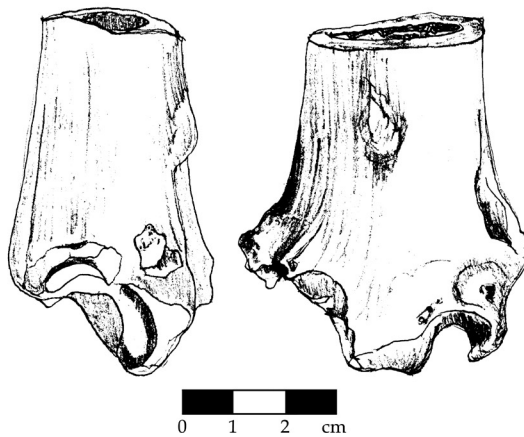
<sup>21</sup> V. lithic artefacts in PETROVIĆ 1984–5, t. VII, 2, 3, 4, 7.



**Fig. 2.** Subtype B handle from the site of Donja Branjevina, from sheep/goat femur.



**Fig. 3.** Subtype B handle from the site of Obrež-Baštine, with a groove below the opening.



**Fig. 4.** Subtype B handle from the site of Drenovac, from red deer tibia.



These objects are characteristic for the Starčevo-Körös-Criș cultural complex – the very technique of transversal cutting with a groove made by chipped stone tool and/or abrasive fibre and cutting and sawing through the circumference of the bone is typical for the Early Neolithic bone technology in the region<sup>22</sup>. The remaining portion of the bone may have been used for some of the characteristic ornaments, such as rings, bracelets, buckles, or the epiphysis was split and used for production of pointed or burnishing tools<sup>23</sup>. Their use for handles is supported by their use wear traces, corresponding to the ones encountered on other findings of handles<sup>24</sup>: polished, worn surfaces, randomly distributed striations and lines, and occasionally small damages around the opening. Such objects were reported from Körös<sup>25</sup> and Criș<sup>26</sup> culture sites, although they were not interpreted as handles. Segments of diaphysis with epiphysis preserved were also used for handles on numerous other prehistoric sites in Europe<sup>27</sup>,

<sup>22</sup> VITEZOVIĆ 2011.

<sup>23</sup> Cf. VITEZOVIĆ 2011.

<sup>24</sup> Cf. BARGE-MAHIEU 1990; BARGE-MAHIEU ET AL 1993b.

<sup>25</sup> MAKKAY 1990, abb. 13, 14.

<sup>26</sup> BELDIMAN 2007, pl. 195.

<sup>27</sup> Cf. BARGE-MAHIEU ET AL 1993b.

however, the examples from Starčevo are specific by their technological traits – the diaphysis part is much shorter and they in fact represent debris.

### *Subtype C*

The third subtype represent handles made from cylindrical antler segments, hollowed completely, where the tool was inserted longitudinally. Mainly antler beam segments were used, with traces of cutting at both ends, and the spongy tissue was removed. Morphologically, they are similar to the first subtype, only made from different raw material. In both cases, the natural cylindrical shape of the skeletal element was used, with minimal modifications.

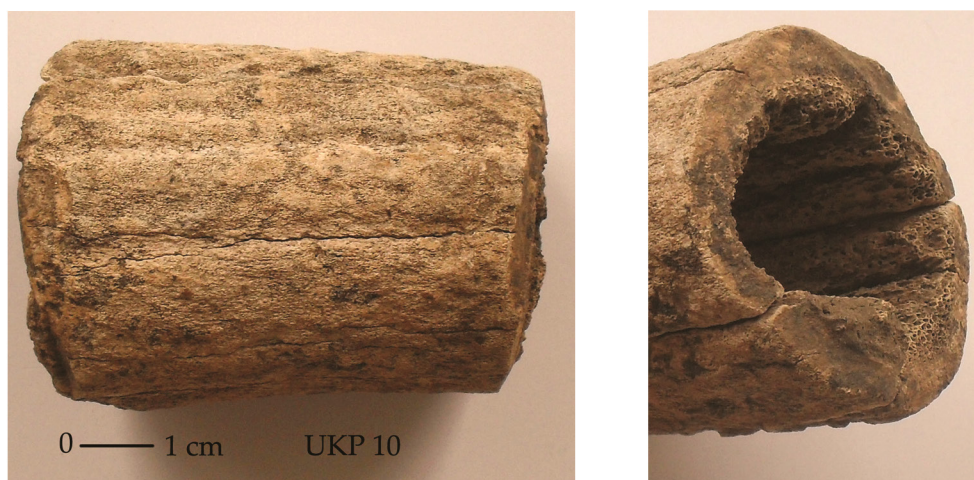
One fragmented handle of this subtype was found at the site of Starčevo-Grad, made probably from tine segment. All the others were recovered from the sites in the Iron Gates region, from the sites of Velesnica, Ušće Kameničkog Potoka and Knjepište. These handles were made mainly from beam segments, carefully cut at both ends. Only the specimen from Velesnica has one end obliquely cut, the remaining examples have their edges cut straight. At least three handles were discovered at the site of Knjepište. One of them is almost complete, made from a small beam segment (Fig. 5, left), and one almost completely preserved is particularly carefully made – the preserved groove from transversal cutting is finely made and the entire outside surface of the antler is completely smoothed by burnishing (Fig. 5, right). All these handles also display fine traces use wear traces consistent with their use as handle – irregular polish and small damage in the distal part. Their interior space is up to 3 cm wide, and they were perhaps used for smaller chisels, either lithic or from osseous materials. At the site of Ušće Kameničkog Potoka three such handles were found; the one that is completely preserved had the dimensions of the openings  $3 \times 2-2.5$  cm (Fig. 6). Also fine traces of use wear may be noted, small short incisions and damages of the edges.

Again, this type of handles (*manches en bois de cervide à insertion longitudinale*) was used in other regions throughout prehistory<sup>28</sup>.



**Fig. 5.** Subtype C handles from the site of Knjepište, made from antler.

<sup>28</sup> CAMPS-FABRER, RAMSEYER 1993.



**Fig. 6.** Subtype C handle from the site of Ušće Kameničkog Potoka, made from antler.

#### *Subtype D*

The fourth subtype is sickles (*corps de faucille*) – antler tines carved in the interior of the curve for inserting chipped stone blades. Only one such object was discovered within the Starčevo culture sites, at the site of Poroš, in vicinity of Subotica, on the Ludaš lake. This sickle is heavily damaged, made from smaller antler tine. In the interior of the curve two oval holes were preserved; their dimensions were approximately 2 × 1 cm (Fig. 7).

As mentioned above, such sickle handles are known in the Early Neolithic in Anatolia, at sites such as Hacilar<sup>29</sup>, Çatal Höyük<sup>30</sup>, etc.. They were also discovered at several Early Neolithic sites in the South-East Europe<sup>31</sup>, for example, at sites such as Karanovo<sup>32</sup>, Ovčarovo-Gorata<sup>33</sup>, Samovodene<sup>34</sup> and other sites in Bulgaria, or in Romania, at sites such as Cârcea-Viaduct<sup>35</sup>. Usually the first (brow) tine was used, which is the longest and has the most prominent curve. On the inner side of the tine's curve, either a continuous groove or several holes are made by carving with a chipped stone tool. Some examples can even be decorated. These sickles are generally considered as a part of the “Neolithic package” and their occurrence in the Balkans is interpreted as the Near-Eastern influence<sup>36</sup>.



**Fig. 7.** Subtype D handle, sickle made from antler, from the site of Nosa-Poroš.

#### *Subtype F*

Composite sleeves of sockets made from large antler segments comprise the fifth subtype. Usually beam or beam and tine segments were used and they have perforation for the wooden handle the mesial part and the opening for inserting some tool at the distal end. Only two fragmented artefacts of this subtype were discovered. The first one is found at the site of Ušće Kameničkog Potoka,

<sup>29</sup> MELLAART 1970, figs. 177–179.

<sup>30</sup> RUSSELL 2006, p. 348–349, fig. 16.10.

<sup>31</sup> Cf. BELDIMAN ET AL 1993.

<sup>32</sup> BÄČVAROV 2002.

<sup>33</sup> ZIDAROV 2014, abb. 191.

<sup>34</sup> STANEV 2002, fig. 96.

<sup>35</sup> BELDIMAN, SZTANCS 2011, p. 65, fig. 7; cf. also references in BELDIMAN ET AL 1993.

<sup>36</sup> SIDÉRA 1998.

made from the segment where beam ends and the crown begins. The end towards beam is carefully cut and has slight polish from use, so this is probably the part where the tool was inserted. In the central part is the perforation, crudely executed. One fragmented artefact from Divostin was probably this subtype. Beam segment has one end carefully cut and it is broken in the mesial part, on the place where the perforation was. In the interior, spongy tissue is carved out and polish from use may be noted.

## DISCUSSION AND CONCLUDING REMARKS

The handles from the Starčevo culture sites made from osseous raw materials are not numerous, but they reveal some interesting technological aspects. The first three subtypes share similar technical solution – the natural cylindrical shape of the skeletal element was used, with minimal modifications. In the case of the subtype B the epiphysis is preserved as natural grip. This subtype at the same time represents another interesting technical solution – these objects are in fact used manufacture debris. The difference in subtypes A and C are in size – those of subtype A are mainly from medium-sized animals, suited for smaller, probably mainly slender pointed artefacts, while the subtype C is of larger dimensions, convenient for larger tools, and also more resilient due to higher elasticity of the antler.

Cylindrical hafts, made from different segments of long bones (simple diaphyseal segments, epiphysis + small segment of diaphysis or almost entire bone with just one epiphysis removed) were used throughout prehistory in Europe for diverse tools, bone, lithic and in the later periods even for fine metal tools<sup>37</sup>. Examples from Starčevo culture sites may have served for pointed tools (such as bone points, flint perforators...), for small chipped stone tools, and some of them are even suited for small ground stone tools, such as small chisels.

The sockets or sleeves, made from antler segments, used as intermediary piece to connect the active tool and wooden handle, also occur in diverse shapes in numerous prehistoric cultures<sup>38</sup>. In the Starčevo culture they are not common, so it is not possible to discuss hafting methods or differences in typological traits. Their relative scarcity may be because different methods of hafting of axes and adzes were applied (for example, the tool was directly attached to the wooden handle, without the sleeve, or the sleeve was from other, perishable materials).

Only the subtypes B and D can be considered as chronologically and culturally sensitive; subtype B for its technological traits and subtype D is widespread in the Early Neolithic in the region<sup>39</sup>. It is interesting, though, that the antler sickles are relatively scarce at Starčevo culture sites. This may be connected with the taphonomy and/or recovery methods on certain sites, or simply cultural practices. However, the question is how common were these sickles on other sites – were they abundant or were they just easily identifiable and at the same time attractive for publication. At Çatal Höyük, for example, during the excavation seasons 1995–1999, 565 artefacts were uncovered, but only one antler sickle<sup>40</sup>.

Regional differences were not noted; only subtypes C and E, made from antler, are somewhat more numerous on the sites in Iron Gates region, where antler as raw material is generally more commonly used<sup>41</sup>.

The existence of hafts or handgrips from organic materials (wood, bone, antler) for some stone and flint tools has been presumed for a long time, but only few specimens are known so far. The relative scarcity of handles on the Starčevo culture sites may be explained by recovery methods (at some of the sited excavated in the 20<sup>th</sup> century only the complete, recognisable bone objects were collected),

<sup>37</sup> BARGE-MAHIEU ET AL 1993a; BARGE-MAHIEU ET AL 1993b.

<sup>38</sup> In particular in the Neolithic in Switzerland – SCHIBLER 2013; see above.

<sup>39</sup> See above.

<sup>40</sup> RUSSELL 2006.

<sup>41</sup> VITEZOVIĆ 2014.

taphonomic reasons or by the cultural practices – wood was perhaps more commonly used for these purposes. However, careful analyses of use wear traces on osseous objects may sometimes reveal those used as handles or sleeves.

Future cross-technological analyses of residues and hafting traces on lithic artefacts may provide more information on the hafting techniques in the Early Neolithic.

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