

## The white beauty – Starčevo culture jewellery

Selena Vitezović

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

**ABSTRACT** – *Personal ornaments are often used to display information about the person wearing them – identity, group or individual, status, current role. In this paper, I analyse ornaments from osseous raw materials from Early and Middle Neolithic sites in Serbia. The exotic origin and labour and skill invested in their production may have conferred value on them or added to it and their animal origin was considered of special significance. Specific forms conveyed information on status and/or social identity (membership of kin or social group, etc.) and their white colour probably had more than mere aesthetic significance.*

**IZVLEČEK** – *Nakit pogosto služi kot podajalec informacij o osebi, ki ga nosi – kaže na identiteto, skupinsko ali posamezno, status in trenutno vlogo osebe. V članku analiziramo koščeni nakit iz zgodnje- in srednje-neolitskih najdišč v Srbiji. Eksotično poreklo ter delo in spretnosti, ki so bile vložene v njihovo izdelavo, so morda tem predmetom dali posebno vrednost, ali pa so k temu vsaj prispevali. Poseben pomen je gotovo imel njihov živalski izvor. Oblike predmetov so posredovale informacije o statusu in/ali družbeni identiteti (pripadnost sorodstveni ali družbeni skupini itd.), njihova bela barva pa je imela verjetno več kot le estetski pomen.*

**KEY WORDS** – *personal ornaments; osseous raw materials; technological choices; aesthetic choices; Starčevo-Körös-Criş culture*

### Introduction

The appearance of the human body has always been used as a vehicle for display and for presentation. The entire body and its decoration can be, was and is, extensively used to show and negotiate different identities, from assertive (individual) to emblematic (group), from permanent or of long duration (such as belonging to a class or kin group) to temporary (e.g., the role of shaman, participant in a ritual, etc.). Through the decoration, clothes, jewellery, make-up, but different messages can be transmitted also through entire body posture and gesture, and the endless number of combinations were used throughout prehistory up to modern times (e.g., Wright, Garrard 2002; d'Errico, Vanhaeren 2002; Taborin 2004; Yatsenko 2004; Thomas 2011 with references). Hair, for example, was used to express individual status (single, married, young mother, widow, etc.), to signify strength and power, to denote eth-

nic identity, even as a visible sign of punishment (Firth 1973). Clothes are today used to display not only social status or wealth, but also the current role of the individual (e.g., uniforms for some occupations). Jewellery and other personal ornaments as well as various types of body decoration (from tattoos to war paint – cf. Norman 2011.140–143) can also be combined in an endless number of ways.

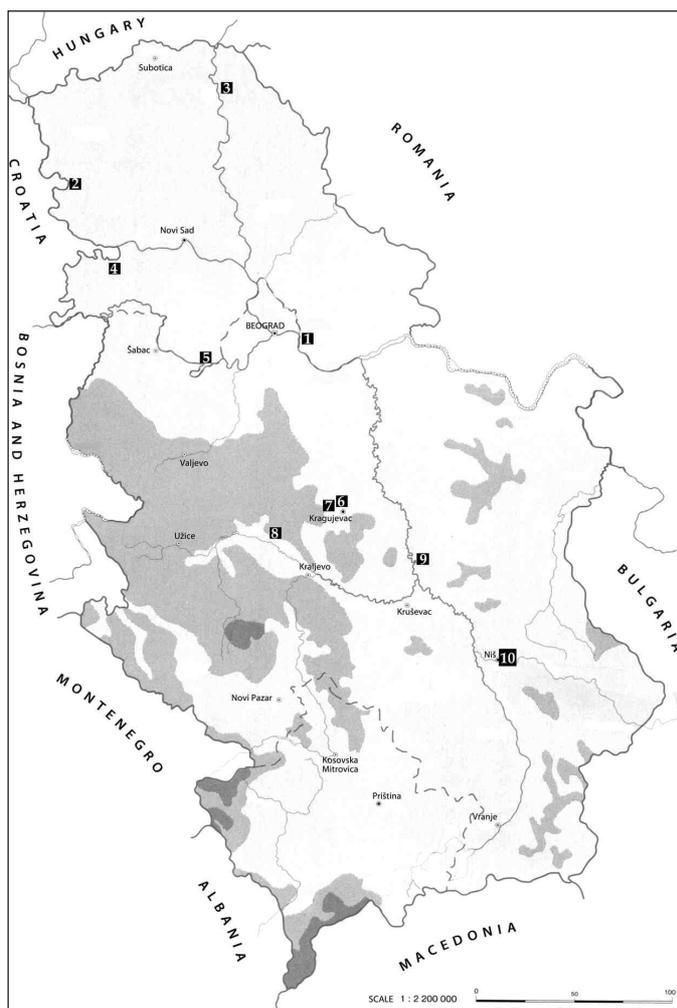
The first appearance of decorative beads is usually perceived as a mark of modern human behaviour, and although these items range widely in appearance, they are very important in human societies and their use is deeply embedded in human behaviour (cf. Henshilwood et al. 2004; d'Errico 2007; d'Errico et al. 2005; Álvarez Fernández, Jöris 2008; Rigaud et al. 2009).

A complete 'set' of decorations may, therefore, be perceived as a text and thus 'read' by decoding the messages embedded in them. In the archaeological record, when only the remains of decoration are available for study, this is of course a challenge and it is even questionable whether any answers may be obtained. As the theoretical framework for the comprehension of the role and significance of personal ornaments I would suggest a contextual and structuralist approach (*sensu* Hodder, Hutson 2003.156–205), *i.e.*, the analysis of the mode of use within a given society and the analysis of position within the social structure and relations with other activities (see also Braithwaite 1982), analogous to the analysis of language (*cf.* Lévi-Strauss 1958).

### Archaeological setting

Starčevo culture, part of the large Starčevo-Körös-Criş culture complex, represents the Early and Middle Neolithic in the central and western Balkans and south Pannonian plain. The study of Starčevo culture began almost one hundred years ago, when the eponymous site at Starčevo-Grad near Pančevo, near Belgrade, was excavated. The first relative chronology was proposed after the pottery was found in enclosed units at the site (Arandelović-Garašanin 1954; for recent work on relative chronology, *cf.* Tasić 1997). The <sup>14</sup>C dates obtained by the AMS method place it in the period from *c.* 6400 and 6200 calBC (the earliest dates are for Blagotin site: 7480±55 BP (OxA-8608) and 7230±50 (OxA-8760)). The dates for the Starčevo sites range from 6975±60 BP (OxA-8561) to 6480±55 BP (OxA-8560) (Whittle et al. 2002.107–117).

Today approximately 100 sites are known almost all of which are settlements, since grave finds are extremely rare (*cf.* Tasić 1997 with references). Finds relating to the bone industry from approximately 20 excavated sites have been collected and preserved; approximately 12 of these also contained decorative items (Map 1) – Donja Branjevina, Golokut, Starčevo, Baštine, Čoka-Kremenjak in Vojvodina, Divostin, Grivac, Međureč, Drenovac in central Serbia, Bujanj in eastern Serbia and Anište-Bresnica in western (Vitezović 2009; 2011a; 2011c). As these are all finds from settlements the number of arte-



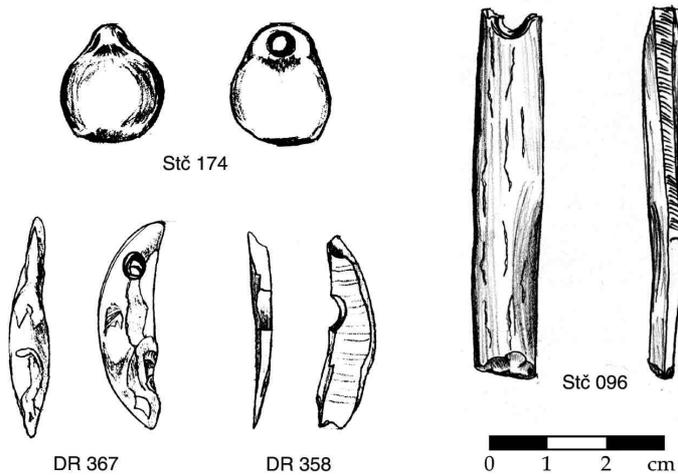
**Map 1.** Starčevo culture sites mentioned in the text: 1 Starčevo. 2 Donja Branjevina. 3 Čoka-Kremenjak. 4 Golokut-Vižić. 5 Baštine-Obrež. 6 Divostin. 7 Grivac. 8 Anište-Bresnica. 9 Drenovac. 10 Bujanj.

facts is not high; they were usually not *in situ*, but were found in secondary positions and they were probably discarded.

### Methods of analysis

Ornamental pieces fashioned from osseous raw materials were included among assemblages of objects made from osseous materials (*i.e.*, from animal hard tissue – bone, antler, teeth and mollusc shell), which encompasses the entire range of artefacts from manufacture debris and minimally worked pieces to various tools with elaborated forms (Averbouh 2000.187).

The objects were analysed in terms of technology (*cf.* Vitezović 2011b). This also entails the study of material culture in its social and economic context and the concept of technological choices – how and



**Fig. 1. Pendants: globular pendant from Starčevo; perforated Canidae canine from Drenovac; fragmented pendant from boar tusk from Drenovac; fragmented elongated antler pendant from Starčevo.**

why one society uses one and not some other technology and how technology is related to other social phenomena (see also Lemonnier 1992; 1993).

An important element of this analysis is the reconstruction of the *chaîne opératoire* (operational chain), an analytical method proposed by André Leroi-Gourhan (1964; 1965; 1971) which requires the examination of how an artefact is made, used and discarded, from raw material acquisition through manufacturing techniques, final shaping, mode of use (which also includes possible caching of the object, breakages, repairs, etc.) to final its disposal. A structure inheres in the making of things which is not only syntactic, but also paradigmatic, since it also involves decision making. The concept of *chaîne opératoire*, therefore, is not only a matter of reconstructing an algorithmic sequence for the life of an object, but is instead a complex analysis of production processes within a single society, which includes the question of choices that are made. The focus is not only on material culture and technological know-how, but also on individual and social behaviour (cf. Leroi-Gourhan 1964; 1965; 1971; Vitezović 2011b).

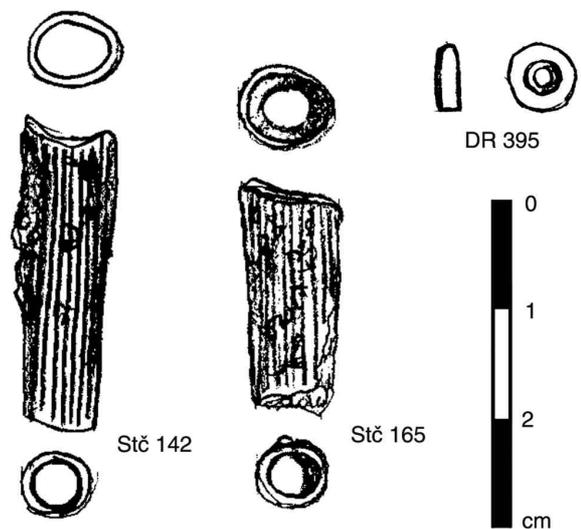
The *chaîne opératoire* approach is a “theoretically informed commitment to understanding the nature and role of technical activities in past human societies” (Schlanger 2005.19). This method can contribute to the study of material culture by helping to bridge the gap between the symbolic and the quotidian, between production and consumption. It can lead from the static remains recovered in the present to dynamic processes in the past, and thus

raise a range of archaeological and anthropological questions (Schlanger 2005.18–21).

Another analytical tool designed for the analysis of bone industry, which may also be applied to other raw materials, is ‘the manufacturing continuum or the continuum of quality’ (Choyke 1997; 2001; Choyke, Schibler 2007), which examines worked osseous materials in terms of the effort required for the manufacture of individual objects. The manufacturing continuum reflects cultural attitudes to the objects themselves and attitudes to the tasks in which they were used. Objects are aligned on an imaginary axis from minimally worked, ad hoc, to elaborated pieces following these criteria: (i) the regularity of choice of species and skeletal element used in their manufacture; (ii) the number of stages used in their manufacture; (iii) whether they have been worked; and (iv) their exploitation index, which measures the degree of working (the proportion of surface covered by manufacturing marks) relative to the degree of use (the proportion of surface covered by use wear, handling wear and degree of curvation) (Choyke 2001.63).

Techniques may be classified as practical and prestigious (cf. Hayden 1998 with references; see also Vitezović 2011b). Practical technology corresponds to the general way that the term ‘technology’ is used in archaeology and anthropology – it is meant to solve practical problems of survival and basic com-

munal needs (cf. Hayden 1998 with references; see also Vitezović 2011b). Practical technology corresponds to the general way that the term ‘technology’ is used in archaeology and anthropology – it is meant to solve practical problems of survival and basic com-



**Fig. 2. Beads: Dentalium beads from Starčevo and flat shell bead from Drenovac.**

fort. One of the underlying principles in practical technology is to perform tasks satisfactorily in an efficient and effective way. For a given problem, the criteria used in choosing between alternative technological solutions are how effective and how costly each solution is (Hayden 1998.2).

The purpose of creating prestige artefacts, on the other hand, is not to perform a practical task, but to solve a social problem. They display wealth, success, and power and are used for social tasks such as attracting mates, labour, and allies, or bonding members of social groups together via displays of success. Therefore, the logic and strategy governing the creation of prestige artefacts are fundamentally different from the logic and strategy governing the creation of practical artefacts. Hayden (1998.11) also suggested that the main goal of prestige technologies is to employ as much surplus labour as possible to create objects that will appeal to others and attract people to the possessor of those objects out of admiration for his or her economic, aesthetic, technical, or other skills (Hayden 1998).

### Raw materials and manufacture

Although the first image that jewellery often evokes is of precious stones and metals, the most common raw materials used throughout prehistory as well as in many historical societies were organic. Osseous raw materials are almost the only organic raw materials that survived from the Neolithic and one must assume that the personal ornaments encompassed the full range of other artefacts made from leather, hide, textile, wood, feathers, etc. (see also Pedersen 2004).

All available osseous raw materials were used for producing personal ornaments – bone, antler, teeth and mollusc shells. Bones and antler were also used for other artefacts such as everyday tools and there is no significant difference in the raw material choice, although bones from large ungulates (such as *Bos*) were somewhat preferred to those from smaller un-

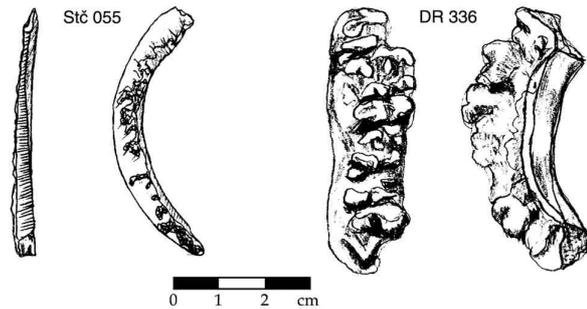


Fig. 3. Bracelets: Spondylus bracelet from Starčevo and antler bracelet from Drenovac.

gulates. *Bos* bones, especially metapodials, were the preferred choice for some artefact classes including highly valued spoon-spatulas and some sub-types of projectile point (the first were made in uniform ways with large investments in skill and labour and were in long-term use, often repaired – cf. Vitezović 2011a).

Teeth and mollusc shells, on the other hand, were generally not used for any other artefact types (only boar tusks were sometimes used for making scrapers). It is also important to note that bones for artefact production were generally obtained from domestic animals, while teeth were often taken from wild species (such as various carnivores and red deer canines).

Mollusc shells included *Spondylus* and *Dentalium* (Fig. 9); for some shell beads, however, it was not possible to determine the species. *Spondylus* was an exotic raw material obtained through trade or exchange and was widespread in prehistoric Europe (cf. Willms 1985; Borrello 2004; Borrello, Micheli 2004; Séfériadès 2010; Ifantidis 2011). *Dentalium* might have been obtained locally, although this has not been confirmed (cf. Dimitrijević et al. 2010).

Although the choice of raw materials for decorative items does not differ dramatically from the choice for everyday tools, the materials are more desirable and more valued osseous items (shells are of exotic origin, teeth from game animals, and neither were available every day and/or locally).

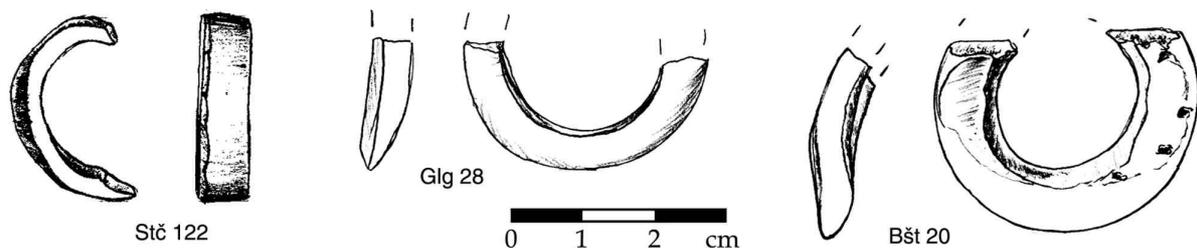
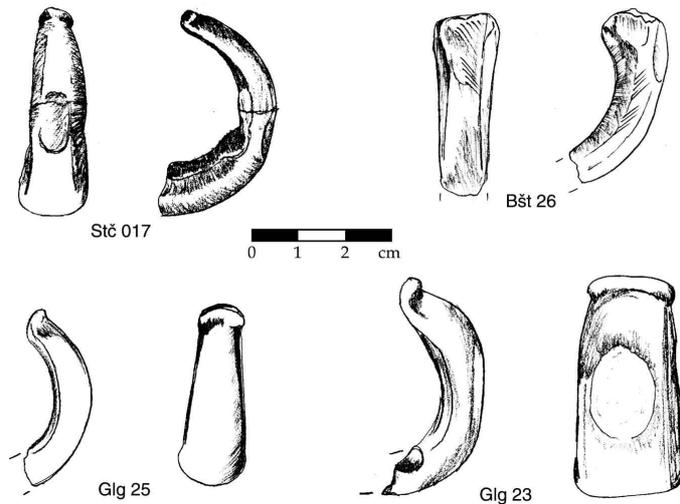


Fig. 4. Rings and discs from long bone segments, from Starčevo, Golokut and Baštine.



**Fig. 5. Buckles in the form of an open bracelet, from Starčevo, Baštine and Golokut.**

Bones and antler were transformed into decorative items by using the same techniques as for producing tools – first, a blank was created by breaking, cutting or chopping with stone and flint tools and further shaped by cutting and scraping with retouched and unretouched flint scrapers and burins (cf. Vitezović 2011a). However, the entire *chaîne opératoire* included additional stages, especially those of finishing – burnishing and polishing with sandstone or other abrasive stone, fabric with sand added, etc. In short, raw materials commonly used for tools were transformed into decorative items by means of much more demanding techniques and with the investment of more labour. This also confers or raises their value as the skills required to make them may have been of intrinsic value (cf. Sinclair 1995; 1998), which is a general characteristic of skills associated with prestigious technologies (cf. Hayden 1998).

In most cases, teeth were transformed into pendants by the simple addition of perforations made with a flint. The most difficult method to reconstruct is for making shell items as they were highly polished, leaving almost no trace of manufacture. Except for *Dentalium* beads, which were obtained by simple cutting, other artefacts were produced through a long sequence of cutting, scraping and polishing. The method for producing simple flat rounded beads may be reconstructed on the basis of methods from other cultures – a perforation was drilled through irregular pieces of shell obtained by cutting and breaking, and then several beads were string and burnished together with some abrasive stone (cf. Francis 1982; Miller 1996; Ricou, Esnard 2000). The absence of raw materials or manufacture debris suggest that ma-

rine shells were mainly imported as finished objects, although traces of repair (performed locally) may occasionally be observed.

### Typology and site distribution

The items were classified into types according to their general form. However, they may have been used in different ways and one type probably could have been worn in multiple ways: pendants and beads could have been parts of necklaces or bracelets, but also sewn or attached to clothing, a head-dress, etc. A further five types may be noted, divided into sub-types and variants: (1) pendants, (2) beads, (3) bracelets, (4) rings and discs, and (5) buckles (Vitezović

2011a).

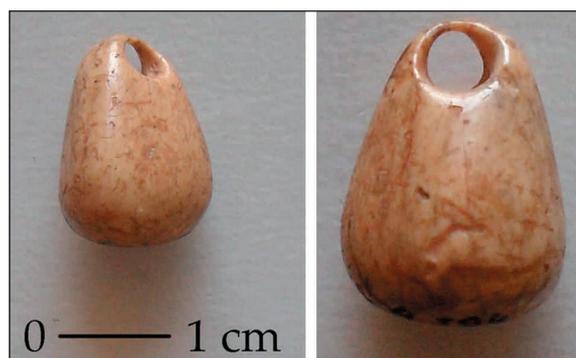
- Pendants (Fig. 1) were made from teeth, antler and bones. Several sub-types existed.
- *Globular pendants* (Figs. 7–8) were made from segments of large bones, probably large ungulate long bones. They had globular bodies and perforations on the upper part made by drilling; both were polished from use. One was found on Starčevo and another on Divostin, no other examples from the Starčevo-Körös-Criş culture are known.
- *Tooth pendants* (Fig. 6, left). Various teeth, usually carnivore or red deer canines, were transformed into pendants by the simple addition of a perforation. One red deer canine was discovered at Divostin, and at Starčevo one tooth with an unfinished perforation was found. Fragmented pen-



**Fig. 6. Pendants from Divostin, one from red deer canine and an imitation in bone.**

dants made from boar tusks are known from Drenovac, as well as a single perforated *Canidae* tooth. This sub-type occurs in the Palaeolithic and they have had a wide geographical and chronological distribution (cf. *Barge-Mahieu, Taborin 1991a; 1991b; d'Errico, Vanhaeren 2002; Taborin 2004*).

- *Bone imitations of teeth pendants* (Fig. 6, right). Bone segments were sometimes cut to resemble the shapes of teeth, most often imitating the drop-like form of red deer canines. They also have a perforation in the upper part and the surface is well polished. At Divostin, one such copy was discovered along with a real red deer tooth pendant.
- Other pendants include various geometrical shapes cut from a long bone or antler cortex segments, burnished and polished, and then perforated.
- ② Beads (Fig. 2) were usually made from shells, although bone may also have been used. Several sub-types may also be noted.
- *Elongated Dentalium beads* (Fig. 9, right). *Dentalium* shells were used unmodified or with the ends simply cut. So far, they are known only from Starčevo, where three rather large pieces were discovered (*Vitezović 2011c*).
- *B Flat rounded beads*. Flat beads were made from shell pieces, rarely bone. A hole was drilled and the shell then ground into a sphere. Although they must have been worn in bunches, settlement finds are usually restricted to single pieces that had probably been lost. They are known from Medureč and Drenovac. These beads had a wide chronological and geographical distribution (e.g., *Comşa 1973*), and were also produced from other raw materials, most often white stones (marble, limestone), which imitates the lustre and colour of shell beads (several such beads were discovered at Divostin – *McPherron et al. 1988*).
- ③ Bracelets (Fig. 3). Large circular artefacts are classified into bracelets. Judging from their size they were fit to be worn as bracelets on the wrist or arm, although they could also have been worn in other ways. They were made from two raw materials, *Spondylus* shells and antler.
- *Spondylus bracelets* (Fig. 9, left). Three such bracelets were discovered at Starčevo, another three



**Fig. 7. Globular pendant from Divostin.**

at Drenovac and several fragmented finds were excavated at Divostin (*Vitezović 2007; 2011c; McPherron et al. 1988*). None is completely preserved, although their original shape may be reconstructed after finds from other areas. Traces of manufacture are poorly visible; only polishing may be observed on small portions of their surfaces. One broken bracelet from Drenovac had a perforation, which perhaps suggests that it was repaired and modified after breakage.

- *Antler bracelets* (Fig. 3). One such bracelet was discovered at Drenovac, made from the pearly segment of the base of a shed antler. Fine lines from cutting with retouched flint tool are visible in the inner part, and the polish on the outer surface may be both natural and from use. Only one fragment is preserved, therefore its original form is not clear. Similar bracelets, a total of eight, including one with an animal head at one end, were found in Romania (*Beldiman 2000*).
- ④ Rings and discs (Figs. 4, 10, 11). Miscellaneous circular bone pieces are usually simply classified as 'rings'; however, only a few of them could have actually been worn on the finger as the bone is often too thick. Therefore, this type comprises various oval, circular or ellipsoid pieces having a large hole in the centre; most of them probably served as applications attached to clothing. Their shapes vary ac-



**Fig. 8. Globular pendant from Starčevo.**

According to the raw material (larger or smaller long bone) and the manufacturing technique – the diaphysis of a long bone could have been transversally cut into segments of different thicknesses, or a segment from the diaphysal wall cut into a certain shape (oval, circular, roughly rectangular); a hole was added in the centre. All of them were also carefully burnished and polished.



**Fig. 9. Shell ornaments from Starčevo: bracelet from *Spondylus* and *Dentalium* bead.**

Such pieces were found at several sites – Starčevo, Golokut, Baštine, Grivac, Donja Branjevina, Bujanj – all were made from bones, except for one specimen from Starčevo made from *Spondylus* shell (Vitezović 2011a). These items are the most common decorative pieces; also, debris related to their manufacture was discovered at several sites. Objects made in the same fashion have been found at sites of the Körös and Criş cultures (Makkay 1990.45; Beldiman 2007. 138) and similar artefacts have been encountered at other Neolithic sites in Europe (e.g., Pascual Benito 1998.152–6; Stratouli 1998.Taf. 27/9, Taf. 32/4,5). However, the second method of making these artefacts (with a large hole from which specific debris in the form of a chip or token is left) is exclusive to the Starčevo-Körös-Criş culture (Figs. 15–16).



**Fig. 10. Discs from Grivac.**

middle, their original shape is unknown, whether they were in a shape of a semi-circle or almost full circle. This breakage is probably due to use; these particular artefacts may have been used as belt buckles of some kind or clasps for clothing (e.g., for cloaks).

⑤ Buckles (Fig. 5). Artefacts of various shapes and sizes – presumably used as clasps of some kind, belt buckles, or fasteners for clothes – are classified into this type. Two sub-types can be identified.

- *Buckles in the form of an open bracelet* (Figs. 5, 12). Most of the finds are from sites in Vojvodina: 5 pieces were discovered at Starčevo and additional specimens were found at Donja Branjevina, Golokut, Baštine, and are also known from Grivac. They were all made from long bones of considerable size of large ungulates, probably *Bos*. The bones were cut transversally in the same manner as for ring production by making a groove with abrasive fibre and then by cutting the bone with a flint tool; the segment of the bone was part of the diaphysis closest to the epiphysis (judging from its interior tissue), where the bone has the largest diameter. All these objects have carefully shaped heads made by cutting and whittling with a flint tool, and all the surfaces were carefully polished with fine-grained stone.

- Although sometimes identified as fish hooks, the thickness of the broken part does not support such an interpretation, *i.e.*, the broken part is too thick to terminate in a sharp point and the preserved part differs from unbroken fish hooks. The decorative purpose is also suggested by careful burnishing and even polish from use. Similar artefacts, sometimes highly decorated, are known from Near Eastern Neolithic sites (Çatal Hüyük, Mellart 1963.Pl. XXVII; 1964.102), Greece (Stratouli 1998) and Hungary (Makkay 1990.40).



**Fig. 11. Discs from Golokut and Bujanj.**

- The diameter of these objects varies from between 3 to 5cm; however, as they are all broken in the

● *Buckles in the form of buttons with rounded head* (Fig. 13). Only two pieces were found, one at Starčevo and the other at Golokut. The object from Starčevo was in the form of a thin rod with a rounded head. It was made from a piece cut from a long bone, and has traces of grinding and polishing. Intense polish from use is visible on all surfaces, suggesting that piece was in contact with soft materials such as textile or leather for a considerable time. It may have been used as some sort of button or decorative needle. This polish is evenly distributed on all surfaces, so the head could not have been the working end of a tool, because the quality and degree of polish does not stand out from the rest of the object. Also the head is convex and therefore could not have been used as a tool (it would have become flat from use). The specimen from Golokut is similar, although of smaller dimensions and with less pronounced polish from use. Items of this type also exist in Romania, at Carcea-Viaduct (Beldiman 2007.Pl. 197).

In addition, some other, unique pieces probably served as buckles, clasps or appliqués. An elongated piece, greatly worn from use, with a rounded head and two 'legs' originates from Drenovac, while at Anište a single object in the form of a figure of '8' (Fig. 14) was discovered (Vitezović 2011a). At Čoka, manufacture debris probably related to the shaping of these '8' artefacts was found (cf. Banner 1960).

#### Production, use and discard

The actual places, working areas or workshops where decorative items were produced have not been identified at any sites. However, the presence of manufacture debris suggests that they were made at several sites: Čoka, Starčevo, Drenovac, Golokut (Figs. 15–16). The use of the same manufacturing techniques as for the other items in the bone inventory suggest they were produced in the same place, and therefore made locally, except for the *Spondylus* pieces (although repair was done locally).

The use of all these objects was partly or entirely decorative; they were worn as jewellery or as clothing pieces. All of them had use and display polish and worn surfaces from use (cf. d'Errico 1993; Bonnardin 2008), even breakage due to use. Prolonged use and the small number of specimens suggest that



Fig. 12. Buckles in the form of an open bracelet, from Baštine, Gričac and Donja Branjevina.



Fig. 13. Buckle in the form of a button with rounded head, from Starčevo.

these were valuable objects and most of them were discarded only when they were beyond repair.

#### Discussion

In the choice of raw materials, cultural and aesthetic preferences may be observed. Osseous materials, especially bones and teeth, derive symbolic value from their animal origin (cf. also McGhee 1977; Bernabò Brea et al. 2010). The preference for wild and carnivore teeth is especially conspicuous, as well as the choice of Bos bones, which had symbolic significance in the Early and Middle Neolithic (cf. Vitezović 2010).

Shells often had great symbolic value and were considered as prestigious, luxurious raw materials (Siklůsi 2004). Since the Palaeolithic, marine shells have served as prestige goods for adornment and display, money and wealth, status markers and ritual



Fig. 14. Ornament in the form of a figure 8 from Anište.



**Fig. 15. Manufacture debris from Starčevo.**

use, due to their shapes, colours, and the lustre of their natural forms in almost every part of the world (cf. Taborin 1993). They are often symbolically linked with water and the sea and their value increases with distance from the coast (Trubitt 2003). Meanings probably changed significantly through time and space; it is even not certain that all populations that used marine shells were aware of their origins or cared (Séfériades 2010). However, their importance was constant; in this regard, the Early and Middle Neolithic finds of (unworked) shells in graves should be mentioned (Velesnica, see Vasić 2008).

The raw materials have two important common traits – first, their origin was often from outside the settlement (shed antlers, wild animals, imported or collected shells); second, they are smooth, bright and white. Smoothness and brightness was even increased by manufacture through burnishing and polishing. The importance of colour in the choice of raw material for decorative items has already been observed elsewhere (e. g., Wright, Garrard 2002; Thomas 2011), and the significance of white is underlined by copies in white stone (see above). White is a fascinating, bright and shiny colour, and has a wide range of symbolic meaning in different cultures, ranging from symbols for death to symbols of the divine (Vollmar 2009).

The techniques used to produce them places all these items at the peak of the manufacturing continuum and also reveal that skill was valued. All their technological features make these items products of prestigious technologies – the choice of rare, more valuable and even exotic raw materials, the use of demanding manufacturing techniques and long use, sometimes even repair.

Typologically, Starčevo culture decorative items may be divided into two main groups. One comprises pie-



**Fig. 16. Manufacture debris from Čoka Kremenjak.**

ces with a large geographical and chronological distribution – perforated teeth, simple shell beads, *Spondylus* bracelets. The other group consists of types and sub-types whose distribution was restricted to the area of the Starčevo-Körös-Criş culture – rings and discs (made with a specific manufacturing technique), buckles in the form of an open bracelet, antler bracelets, and spherical beads. In some, Near Eastern influences are observable, but some are specific to Starčevo-Körös-Criş culture. Several unique finds, such as the buckle with rounded head and two ‘legs’ from Drenovac, may be representative of regional characteristics. The earliest examples probably demonstrated wealth and prestige, while the culture-specific items may be considered as items displaying cultural and social identities. Traces of personal identities, however, were not discerned in this limited collection.

#### ACKNOWLEDGEMENTS

*This paper is the result of work on the projects ‘The Archaeology of Serbia: cultural identity, integrational factors, technological processes and the role of the central Balkans in the development of the European prehistory’, no. OI 177020, and ‘The Bio-archaeology of ancient Europe: humans, animals and plants in the prehistory of Serbia’, no. III 47001, funded by the Ministry for Education and Science.*

## References

- Álvarez Fernández E., Jöris O. 2008. Personal Ornaments in the Early Upper Paleolithic of Western Eurasia: an Evaluation of the Record. In O. Jöris, D. S. Adler (eds.), *Dating the Middle to Upper Palaeolithic Boundary across Eurasia*. Proceedings of Session C57, 15<sup>th</sup> UISPP, Lisbon, Portugal, September 2006. *Eurasian Prehistory* 5(2). American School of Prehistoric Research at the Peabody Museum of Archaeology and Ethnology at Harvard University, Cambridge: 31–44.
- Arandelović-Garašanin D. 1954. *Starčevačka kultura*. Arheološki seminar. Ljubljana.
- Averbouh A. 2000. *Technologie de la matière osseuse travaillée et implications paléolithiques*. Unpublished PhD thesis. University Paris I Panthéon-Sorbonne. Paris
- Banner J. 1960. The Neolithic settlement on the Kremenjak Hill at Czoka (Čoka). *Acta Archaeologica Academiae Scientiarum Hungaricae* 12: 1–56.
- Barge-Mahieu H., Taborin Y. 1991a. Fiche generale des dents percées. In H. Camps-Fabrer (ed.), *Fiches typologiques de l'industrie osseuse préhistorique. Cahier IV. Objets de parure*. Université de Provence, Aix-en-Provence.
- 1991b. Fiche canines résiduelles de cerf (appelées craches). In H. Camps-Fabrer (ed.), *Fiches typologiques de l'industrie osseuse préhistorique. Cahier IV. Objets de parure*. Université de Provence, Aix-en-Provence.
- Beldiman C. 2000. Obiecte de podoaba neolitice timpurii din materii dure animale descoperite pe teritoriul româniei: bratari din corn de cerb. *Buletinul Muzeului Județean „Teohari Antonescu”* 5–7: 31–45.
2007. *Industria materiilor dure animale în preistoria României. Resurse naturale, comunități umane și tehnologie din paleoliticul superior până în neoliticul timpuriu*. Asociația Română de Arheologie, Studii de Preistorie, Supplementum 2. Editura Pro Universitaria. București.
- Bernabò Brea M., Mazzi P. and Micheli R. 2010. People, dogs and wild game: evidence of human-animal relations from Middle Neolithic burials and personal ornaments in northern Italy. In M. Budja (ed.), *18<sup>th</sup> Neolithic Studies. Documenta praehistorica* 38: 125–145.
- Bonnardin S. 2008. From traces to function of ornaments: some Neolithic examples. In L. Longo, N. Skakun (eds.), *Prehistoric technology 40 years later: functional studies and the Russian legacy*. BAR IS. 1783. Archaeopress, Oxford: 297–308.
- Borrello M. 2004. Conchiglie e archeologia, oltre 150 anni di ricerche. *Preistoria Alpina* 40. Supplement 1: 15–18.
- Borrello M., Micheli R. 2004. Spondylus gaederopus, gioiello dell'Europa preistorica. *Preistoria Alpina* 40. Supplement 1: 71–82.
- Braithwaite M. 1982. Decoration as ritual symbol: a theoretical proposal and an ethnographic study in southern Sudan. In I. Hodder (ed.), *Symbolic and structural archaeology*. Cambridge University Press, Cambridge: 80–88.
- Choyke A. 1997. The bone tool manufacturing continuum. *Anthropozoologica* 25–26: 65–72.
2001. A Quantitative Approach to the Concept of Quality in Prehistoric Bone Manufacturing. In H. Buitenhuis W. Prummel (ed.), *Animals and Man in the Past*. Archeological Research and Consultancy 41, Groningen: 50–66.
- Choyke A., Schibler J. 2007. Prehistoric bone tools and the archaeozoological perspective: research in Central Europe. In C. Gates St-Pierre, R. Walker (eds.), *Bones as tools: current methods and interpretations in worked bone studies*. BAR IS 1622. Archaeopress, Oxford: 51–65.
- Comșa E. 1973. Parures néolithiques en coquillages marins découvertes ent territoire roumain. *Dacia* 17: 61–76.
- Dimitrijević V., Tripković B. and Jovanović G. 2010. Perle od dentalijuma – ljuštura fosilnih morskih mekušaca na nalazištu Vinča-Belo brdo. *Starinar n. s. LX*: 7–18.
- d'Errico F. 1993. Identification des traces de manipulation, suspension, polissage sur l'art mobilier en os, bois de cervidés, ivoire. In P. Anderson, S. Beyries, M. Otte and H. Plisson (eds.), *Traces et fonction: les gestes retouvés*. Actes du colloque international de Liège, vol. 1. Etudes et recherches archéologiques de l'Université de Liège. Service de Préhistoire, Université de Liège, Liège: 177–188.
2007. The Origin of Humanity and Modern Cultures: Archaeology's View. *Diogenes* 54(2): 147–166.
- d'Errico F., Henshilwood C., Vanhaerend M. and van Niekerke K. 2005. Nassarius kraussianus shell beads from Blombos Cave: evidence for symbolic behaviour in the Middle Stone Age. *Journal of Human Evolution* 48: 3–24.
- d'Errico F., Vanhaeren M. 2002. Criteria for Identifying Red Deer (Cervus elaphus) Age and Sex from Their Canines. Application to the Study of Upper Palaeolithic and Mesolithic Ornaments. *Journal of Archaeological Science* 29: 211–232.

- Firth R. 1973. *Symbols: public and private*. George Allen and Unwin. London.
- Francis P. 1982. Experiments with early techniques for making whole shells into beads. *Current Anthropology* 23(6): 713–714.
- Henshilwood C., d'Errico F., Vanhaeren M. and van Niekerke K. 2004. Middle Stone Age Shell Beads from South Africa. *Science* 304(5669): 404.
- Hayden B. 1998. Practical and prestige technologies: The evolution of material systems. *Journal of archaeological method and theory* 5(1): 1–55.
- Hodder I., Hutson S. 2003. *Reading the past. Current approaches to interpretation in archeology*. Cambridge University Press. Cambridge.
- Ifantidis F. 2011. Cosmos in fragments: Spondylus and Glycymeris adornment at Neolithic Dispilio, Greece. In F. Ifantidis, M. Nikolaidou (eds.), *Spondylus in Prehistory: New Data and Approaches – Contributions to the Archaeology of Shell Technologies*. BAR IS 2216. Archaeopress, Oxford: 123–137.
- Lemmonier P. 1992. *Elements for an anthropology of technology*. Ann Arbor. Michigan.
1993. Introduction. In P. Lemmonier (ed.), *Technological choices: transformation in material cultures since the Neolithic*. Routledge, London: 1–35.
- Leroi-Gourhan A. 1964. *Le geste et la parole*. Éditions Albin Michel. Paris.
1965. *Évolution et techniques 1: L'homme et la matière*. Éditions Albin Michel. Paris.
1971. *Évolution et techniques 2: Milieu et techniques*. Éditions Albin Michel. Paris.
- Lévi-Strauss C. 1958. *Anthropologie structurale*. Plon. Paris.
- Makkay J. 1990. Knochen, Geweih und Eberzahngegenstände. *Communicationes Archaeologiae Hungaricae* 38: 23–58.
- McGhee R. 1977. Ivory for the Sea Women: the symbolic attributes of a prehistoric technology. *Canadian Journal of Archaeology* 1: 141–149.
- McPherron A., Rasson J. and Galdikas B. 1988. Other artifact categories. In A. McPherron, D. Srejović (eds.), *Divostin and the Neolithic of central Serbia*. University of Pittsburgh, Pittsburgh: 325–343.
- Mellart J. 1963. Excavations at Çatal Hüyük, 1962: Second Preliminary Report. *Anatolian Studies* 13: 43–103.
1964. Excavations at Çatal Hüyük, 1963, Third Preliminary Report. *Anatolian Studies* 14: 39–119.
- Miller M. A. 1996. The manufacture of cockle shell beads at Early Neolithic Franchti Cave, Greece: A case of craft specialization? *Journal of Mediterranean Archaeology* 9(1): 7–37.
- Norman C. 2011. Tribal tattooing of Daunian Women. *European Journal of Archaeology* 14(1–2): 133–157.
- Pascual Benito J. L. 1998. *Utillaje óseo, adornos e ídolos neolíticos valencianos*. Disputación provincial de Valencia. Valencia.
- Pedersen C. M. 2004. *Gem and Ornamental Materials of Organic Origin*. Butterworth-Heinemann. Amsterdam, Boston.
- Ricou C., Esnard T. 2000. Étude expérimentale concernant la fabrication de perles en coquillage de deux sites arténiens oléronais. *Bulletin de la Société Préhistorique Française* 97(1): 83–93.
- Rigaud S., d'Errico F., Vanhaeren M. and Neumann C. 2009. Critical reassessment of putative Acheulean Porosphaera globularis beads. *Journal of Archaeological Science* 36: 25–34.
- Séfériadès M. L. 2010. Spondylus and long-distance trade in prehistoric Europe. In D. Anthony (ed.), *The Lost World of Old Europe: The Danube Valley 5000–3500BC*. The Institute for the study of the Ancient World & Princeton University Press, New York, Princeton and Oxford: 178–190.
- Siklósi Z. 2004. Prestige goods in the Neolithic of the Carpathian Basin. Material manifestations of social differentiation. *Acta Archaeologica Academiae Scientiarum Hungaricae* 55: 1–62.
- Sinclair A. 1995. The Technique as a Symbol in Late Glacial Europe. *World Archaeology* 27(1): 50–62.
1998. The value of tasks in the late Upper Palaeolithic. In D. Bailey (ed.), *Archaeology of value*. BAR IS 730. Archaeopress, Oxford: 10–16.
- Schlanger N. 2005. The chaîne opératoire. In C. Renfrew, Paul Bahn (eds.), *Archaeology. The Key Concepts*. Routledge, London and New York: 18–23.
- Stratouli G. 1998. *Knochenartefakte aus dem Neolithikum und Chalkolithikum Nordgriechenlands*. Rudolf Habelt. Bonn.

- Taborin Y. 1993. La parure en coquillage au paléolithique. *XIXe supplément à Gallia Préhistoire*. Centre National de la Recherche Scientifique Editions. Paris.
2004. *Langage sans parole. La parure aux temps pré-historiques*. La Maison des roches. Paris.
- Tasić N. 1997. *Hronologija starčevačke kulture*. Unpublished PhD thesis. Faculty of Philosophy. University of Beograd. Beograd.
- Thomas J. T. 2011. Fashioning identities, forging inequalities: Late Neolithic/Copper Age personal ornaments of the Portuguese Estremadura. *European Journal of Archaeology* 14(1-2): 29-59.
- Trubitt M. 2003. The production and exchange of marine shell prestige goods. *Journal of Archaeological Research* 11(3): 243-277.
- Vasić R. 2008. Velesnica and the Lepenski Vir culture. In C. Bonsall, V. Boroneanț and I. Radovanović (eds.), *The Iron Gates in Prehistory. New perspectives*. BAR IS. 1893. Archaeopress, Oxford: 227-241.
- Vitezović S. 2009. Personal ornaments in Central Balkan Neolithic. *Paper presented at 15<sup>th</sup> Annual Meeting of the European Association of Archeologists at Riva del Garda, 15-20. Sept. 2009*.
2010. Perception of the environment in central Balkans Neolithic. *Paper presented at 16<sup>th</sup> Annual Meeting of the European Association of Archeologists at den Haag, 1-5. sept. 2010*.
- 2011a. *Koštana industrija u starijem i srednjem neolitu centralnog Balkana*. Unpublished PhD thesis. Faculty of Philosophy, University of Beograd. Beograd.
- 2011b. Studije tehnologije u praistorijskoj arheologiji. *Zbornik Matice srpske za društvene nauke* 137(4): 465-480.
- 2011c. Neolithic decorative objects from osseous materials from the site Starčevo - Grad. *Zbornik Narodnog muzeja* XX(1): 11-25.
- Vollmar K. 2009. *Das grosse Buch der Farben*. Königsfurt-Urania Verlag GmbH. Krummwisch.
- Whittle A., Bartosiewicz L., Borić D., Pettit P. and Richards M. 2002. In the beginning: new radiocarbon dates for the Early Neolithic in northern Serbia and south-east Hungary. *Antaeus* 25: 63-117.
- Willms C. 1985. Neolitischer Spondylusschmuck. Hundert Jahre Forschung. *Germania* 63(2): 331-343.
- Wright K., Garrard A. 2002. Social identities and the expansion of stone bead-making in Neolithic Western Asia: new evidence from Jordan. *Antiquity* 77: 267-284.
- Yatsenko S. A. 2004. Costume as an Index of Social Hierarchy in the Pre-Islamic Iranian Dynasties. In I. V. Sledzewski (ed.), *Abstracts. Third International Conference 'Hierarchy and Power in the History of Civilizations', June 18-21, 2004, Moscow*, Moscow: 90-91.