



Research papers

Testing the endurance of prehistoric adornments: Raw materials from the aquatic environment



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ARTICLE INFO

Article history:

Received 9 October 2015

Received in revised form

5 April 2016

Accepted 6 April 2016

Keywords:

Prehistory

Romania

Operational scheme

Experimental replication procedures

Use-wear traces

ABSTRACT

Raw materials deriving from the aquatic environment were systematically used for personal ornamentation by modern humans throughout their entire history. In this study we analyse three types of raw materials: *Lithoglyphus* sp. shells, *Unio* sp. valves and *Cyprinus carpio* opercular bones. The central purpose of this paper is to initiate a database of the way in which wear develops according to the system of attachment and the longevity of use. In order to identify the costs invested in the manufacturing of these types of items, both from the point of view of time and effort, an experimental programme has been developed, which permits the recording of all the variables (means of gathering the raw material, technological stages, time recorded for each operation, and tools used). Furthermore, it was set the task of wearing the beads experimentally processed, as adornments, for two years, and of periodically evaluating the perforation and the surface of the pieces under a microscope. Moreover, observations made on archaeological specimens were compared to experimental replicas. The archaeological assemblages from the Romanian Neolithic were used as a case study to illustrate the relevance of the results.

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1. Introduction

Personal adornments made of raw materials deriving from the aquatic environment seem to have been associated with modern humans throughout their entire history. Thus, in human evolution the earliest known ornaments made of *Nassarius gibbosulus* sea snail shells were discovered in the site of Skhul Cave (Israel), more than 100,000 years old (Vanhaeren et al., 2006). This case is not unique, since other shell ornaments have been found in many sites in Africa or Asia: Blombos Cave (d'Errico et al., 2005; Henshilwood et al., 2004; Vanhaeren et al., 2013); Border Cave (d'Errico et al., 2012); Grotte des Pigeons, Rhafas, and Contrabandiers (Morocco) (Bouzouggar et al., 2007; d'Errico et al., 2009); Oued Djebbana (Algeria) (Vanhaeren et al., 2006); and Qafzeh (Israel) (Bar-Yosef Mayer et al., 2009).

North of the Danube, the first adornments of this type appear in the Gravettian stage, namely *Lithoglyphus* sp. shell beads identified at the settlement of Poiana Cireșului (Piatra Neamț) (Cârciumaru and Cârțiumaru-Țuțuianu, 2012), in a level dated between 25,760 ± 160 BP and 27,321 ± 234 BP (Zeeden et al., 2009). In the

Early Holocene, Mesolithic communities continued to use local aquatic resources, in order to obtain personal adornments: perforated shells of *Lithoglyphus* sp., *Theodoxus* sp. and *Cyclope* sp. identified at Cuina Turcului (Mărgărit, 2008) and a *Cyclope neritea* shells necklace discovered at Ostrovul Banului (Păunescu, 2000). Another characteristic element for this area of Europe is the use of the pharyngeal teeth of cyprinidae, sewn onto clothes (Cristiani and Borić, 2012; Cristiani et al., 2014). From Neolithic times, the Starčevo-Criș culture (6200–5300 cal. BC) provided the most detailed data. The shells used belonged to gastropod molluscs (*Lithoglyphus* sp., *Ansius planorbis*, *Theodoxus danubialis* or *Esperiana* sp.), and bivalves (*Unio* sp.). For other Neolithic cultures, the information is less detailed, but seems to reflect a decrease in the number of species used. For instance, in the Dudești level (Middle Neolithic, 5500–5000 cal. BC) in the settlement of Măgura Buduiasca, *Lithoglyphus* shells and *Unio* valves are the only ones selected from local species. In the Gumelnița culture (Chalcolithic, 4600/4500–3800/3700 cal. BC), *Lithoglyphus* shells continued to be used (Berciu, 1956; Bălășescu et al., 2003; Lazăr et al., in preparation). Other species of gastropods gathered for their shells are *Bithynia* sp. (Bălășescu et al., 2003) and *Planorbis* sp. (Mărgărit and Radu, 2014). Processing of *Unio* sp. valves is attested in numerous Gumelnița tell-settlements (Berciu, 1956; Bălășescu

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et al., 2005; Hansen et al., 2008; Mărgărit and Popovici, 2012). In all these cases the valves were transformed into circular beads. In the tell-settlement of Hârșova beads made of *Cyprinus carpio* opercular bones were identified (Mărgărit et al., 2014a).

Adornments have benefited from detailed studies regarding their possible social-cultural functions, underlining their poly-semantic character (e.g., Rigaud, 2011; Vanhaeren, 2005). Nor have studies of wear traces on the surface of the pieces been lacking, proposing ways of attaching the adornments (e.g., Cristiani and Borić, 2012; Vanhaeren et al., 2013). The present author's attention has been directed toward the second segment of study: evolution of adornments' usage and their time-span endurance. The focus has been on some local aquatic resources, used by prehistoric communities north of the Danube for processing personal adornments: *Lithoglyphus* sp. shells, *Unio* sp. valves and *Cyprinus carpio* opercular bones. A review of the literature highlights the lack of technological and functional analysis of personal adornments from Romanian Neolithic and Chalcolithic assemblages. The main typological and statistical categories were mentioned, with few functional or technological considerations, and even fewer archaeozoological or malacological determinations of the chosen blanks. Pieces with a common morphology were usually assigned to a single functional category, with no description of the wear traces, which would have allowed a more precise interpretation and classification according to the real manner in which they were used. Moreover, beads were not always recovered from archaeological sites due to insufficient rigour in excavation techniques.

Nevertheless, after 2000, under the impulse of a new generation of archaeologists, experimental archaeology in Romania entered a new dimension, oriented mainly toward three fields: architecture (the replication of the construction techniques, the materials used and the manner of degradation and burning – e.g., Cotiugă, 2009; Dumitrescu, 2011; Gheorghiu, 2009; Lazăr et al., 2012; Lazăr, 2015; Monah et al., 2004), ceramics (the techniques of manufacturing, moulding and firing the pottery – e.g., Buzea and Briewig, 2010; Cotoi, 2012; Dănilă, 2014; Tencariu, 2011) and salt exploitation (e.g., Buzea, 2012; Tencariu et al., 2015). Tangentially, other aspects were also emphasized: lithic industry (Barbu, 2008; Barbu and Barbu, 2014; Vornicu, 2015) or hard animal materials industry (Barbu, 2012; Mărgărit et al., 2014a; Mărgărit, 2015; Mihail and Provenzano, 2014;). Unfortunately, lacking any coherent strategy, these initiatives remained rather isolated and little known by other specialists in the same field. For instance, no database of the macro and microscopic traces was developed, in order to be constantly updated with contributions from new experiments.

Understanding personal adornments' considerable potential for revealing important aspects of the communities' social and spiritual life, the central purpose of this paper is to initiate a database of the way in which wear develops according to the attachment system and use longevity. Similar future analyses are envisaged on other categories of raw materials. It is a significant challenge since there is no reference point within the background of the Romanian archaeology from which to start. At the same time, it must be underlined that the category of adornments was not randomly selected. Beyond the aesthetic impact, which seems secondary within traditional societies, personal adornments represent a language, which transmits messages for members of the same community or for neighbouring communities: it is connected to ethnic identity, social position, gender affiliation or age class (e.g., Preston-Whyte, 1994; Sciama and Eicher, 1998; Trubitt, 2003; Vanhaeren, 2005). Sociologists (Sanders, 2002) have underlined the strong bond between adornment, language and genetics. In short, ornaments were a central means of defining social identity.

2. Archaeological and cultural framework

2.1. Early and Middle Neolithic

The first agriculturalists entered Europe through the Balkans and the Carpathian Basin, around 6200 cal. BC, establishing small agricultural farms, rituals centered upon the female symbol and *Spondylus* adornments of Mediterranean origin (Perlès, 2001, 2010). This transition generated two migration waves, one going eastwards along the Danube through Romania and Bulgaria, and another beyond the rivers Mureș and Körös, creating similar types of ceramics and tools, grouped under the name of the Starčevo-Criș-Körös culture (Anthony, 2010). Another colonization wave began around 5600–5500 cal. BC, carrying the animal breeders and agriculturalists' way of life beyond the Carpathians. The new colonists, belonging to the so-called 'linear pottery' culture, would intersect in the north Danubian region with representatives of the Dudești culture, which started from northwest Anatolia (Ursulescu, 2001). This is a very brief review of cultural evolution within the geographical area under consideration, but it reveals intense upheavals, generated by population movements, which created more complex social relations between Neolithic communities. Without doubt, an important element of this social complexity is represented by adornments, which show a significant increase in their presence and a greater diversity of use and expression during the Neolithic (Bains et al., 2013).

The present initiative started from a set of archaeological materials that were considered relevant, both because of the well-documented archaeological context of the artefacts and their capacity to reveal an evolution pattern of the cultural options regarding adornments, throughout the north Danubian Neolithic (Table 1). This archaeological assemblage derives from the settlement Măgura Buduiasca ("Boldul lui Moș Ivănuș"). According to the present-day state of research, it seems that the occupation started during the Starčevo-Criș I phase (6100–6000 cal. BC), or in a late stage of the Early Neolithic (Starčevo-Criș III, cal. 5700 BC) (Mirea, 2005); also, it extended and continued through the Middle Neolithic (5500–5200 cal. BC). Thus the site includes occupations from the entire span of the Neolithic, both Early (Starčevo-Criș), and Middle (Dudești and Vădastra) (Mărgărit et al., 2014b). *Lithoglyphus* sp. shells are well represented in the Starčevo-Criș I level. 19 shells of *Lithoglyphus* sp. are quite special and they were identified in a unique arrangement that illustrates very well the manner of suspension of these beads, in the form of composed adornments of bracelet or necklace type. To these, another 23 pieces from different contexts can be added. In the Starčevo-Criș III level was discovered a single shell of *Lithoglyphus* sp. From the Dudești level derive two shells of *Lithoglyphus* sp., while a manner of processing the *Unio* sp valve in the form of a circular bead was recorded for the first time. Unfortunately, there is only one such example.

2.2. Chalcolithic

The chronological period known as the Chalcolithic represents one of the most important in the history of mankind, with numerous economic, technological and social developments. They are characterised particularly by the presence of tell-settlements, sometimes surrounded by defensive structures such as ditches and embankments, or by palisades, with dwellings arranged in parallel rows (Petrescu Dîmbovița, 2001; Popovici, 2010; Ștefan, 2010). From a chronological viewpoint, the Chalcolithic ranges from c. 4500 to 3500 cal. BC, but with some regional chronological variations, depending on when and how the human communities developed copper metallurgy – the technological element that defines this new period (Whittle, 1996; Thomas, 1999; Bailey, 2000;

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