Close to the bone: current studies in bone technologies
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INTRODUCTION

Studies of worked osseous materials were neglected for a long time, but in the past two decades they are on the rise. In recent years, numerous methodological and theoretical innovations were introduced and the quantity and quality of publications increased, including numerous individual articles, PhD thesis, monographs. Particularly important were several conferences and thematic sessions held in Europe, North America and Asia, devoted to the problems of worked bone. As a result, several edited volumes appeared, with high quality and diverse papers – for example, those edited by H. Luik et al. (2005), Ch. Gates-St-Pierre and R. Walker (2007), A. Legrand-Pineau & I. Sidéra et al. (2010), J. Baron and B. Kufel-Diakowska (2011), F. Lang (2013), A. Choyke and S. O’Connor (2013), Mărgărit et al 2014, to mention just a few.

Osseous materials began to be recognized as an important part of the archaeological finds first by the French school, and the most important theoretical and methodological work was done by French researchers. The most significant was the work by H. Camps-Fabrer, who initiated a large research program on bone industry, La Commission de Nomenclature sur l’Industrie de l’Os Préhistorique, later continued by other researchers. Work organized by M. Patou-Mathis on the industrie osseuse peu élabóre should also be mentioned. However, the most important role in spreading and promoting the research on bone artefacts and its importance in the past few decades has been that of the Worked bone research group (WBRG), formed almost 30 years ago, and one of the official working groups of the International Council for Archaeozoology (ICAZ) since 2000. The main role of the WBRG is to improve communication between individuals studying worked animal hard tissues (especially bone, antler, and ivory) with a special emphasis on archaeological finds. A broad diachronic and multidisciplinary approach is emphasized in order to promote the exchange of ideas concerning attitudes towards and procurement of raw materials, technology, and cognitive aspects of bone working.

Since the first meeting, held in London in 1997, eight other meetings took place and in 2014 Belgrade was the host of the jubilee 10th Meeting of the WBRG (for more information, see www.wbrg.net).

Over sixty oral and poster presentations were held during the five conference days, contributed by 100 authors. Thirty-nine papers were selected for this volume, and I. Riddler, the organiser of the very first meeting in London, also contributed a paper with N. Trzaska-Nartowski.

Selected papers encompass the wide chronological and geographical range – from the Mesolithic period to the 18th century AD, from South America to the Eurasia and South Africa. Selected case studies do not simply present interesting archaeological material, but they also cover a wide range of topics – methodological issues, in particular traceological investigations, reconstructions of technological procedures, problems related to the interpretation of functions, problems of the identification of workshops, and also symbolic use of osseous raw materials in both prehistoric and historic times. Papers are organised by alphabetical order, since the topics overlap and it was not possible to create distinctive thematic groups.

Such a variety in topics, as well as an increasing number of researchers focusing on studies of osseous raw materials, clearly shows that these studies have an important potential to contribute to the more general archaeological studies. Osseous artefacts are no longer disregarded, but are slowly gaining more and more space and are slowly taking place alongside with lithic industries and other classes of raw materials. However, there is still much work to be done, and bone tool studies still have to show all the potential they have.

Last but not least, I would like to thank all the people who helped during the conference and afterwards, during the preparation of the book. Special thanks to all the colleagues from the Institute of Archaeology and to all the colleagues and staff from the National museum in Belgrade, which generously offered the room for the conference and also helped with the lovely post-conference excursion to the Lepenski Vir. I would also like to thank for the hospitality to Dragan Janković, curator of the City museum, who welcomed us at the site of Vinča-Belo Brdo, and to dr Mira Ružić, who welcomed us at the Archaeological collection of the Faculty of Philosophy.

Finally, special thanks to the reviewers, who helped to enhance the scientific value of this volume.

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Close to the bone...


Selena Vitezović
LIFE IN A MEDIAEVAL CASTLE: BONE ARTEFACTS AS INDICATORS OF HANDICRAFT AND LEISURE

Tatjana Tkalčec

Abstract: The paper presents artefacts made of animal bones found in the archaeological excavations at Vrbovec castle in Croatia. The osteological sample consists of around 6850 fragments of bones, teeth, horns and antlers (mostly mammalian, with some bird and fish bones). Bone artefacts are rare finds at the castle, and mostly come from the backfill of the mediaeval cistern and from the modern-period horizon. In other words, they date from the 15th and the first half of the 16th century. We can divide the finds into utilitarian objects used as tools (awls) and implements for sewing and knitting, and perhaps also for working lace, and objects related with leisure (pipe/flute, spinning tops-astragaloi). They inform us about certain segments of life and activities taking place at the castle during the Late Middle Ages and the Early Modern Period.

Apstrakt: U radu su predstavljeni predmeti izrađeni od životinjskih kostiju otkriveni tokom arheoloških istraživanja Burga Vrbovec u Hrvatskoj. Uzorak se sastoji od ukupno oko 6850 fragmenta kostiju, zubi i rogova ( uglavnom sisavaca, nesto ptica i ribljih kostiju). Predmeti izrađeni iz kostiju rijedak su nalaz na burgu, a uglavnom potjeću iz sloja zatrpavanja srednjovjekovne cisterne te iz novovjekovnog horizonta, odnosno datiraju se u 15. i prvu polovinu 16. stoljeća. Možemo ih podijeliti na uporabne predmete korištenje kao alatke (šila) pribor za šivanje i pletenje, te na predmete za razbibrigu i dokolicu (svirala, zvrkovi-astragali). Govore nam o nekim segmentima života i aktivnostima koje su se odvijale na samome burgu tijekom kasnog srednjeg i ranog novog vijeka.

The castle of Vrbovec lies on a steep slope offering a splendid view of the Sutla river valley, in the village of Kleenovec Humski in the very north-western part of Croatia. The Institute of Archaeology (Zagreb) began the trial investigations of the castle in 1987 and 1994, and from 2001 the archaeological investigations and conservation work on the architecture have been continuously carried out till present day. The results of the first ten seasons of archaeological research have been presented at museum exhibitions and in numerous articles and academic papers, as well as in a monographic edition (Tkalčec 2010a, with a list of complete older references; Tkalčec 2014a). The last five seasons of excavations have brought a new understanding of life in the mediaeval castle (Tkalčec 2012, 2013, 2014b, 2015).

Vrbovec Castle or castrum Vrbouch is directly or indirectly mentioned in historical sources in the period between 1267 and 1497 (Karbić 2010). Although we can track historical data referring to the castle of Vrbovec from the second half of the 13th until the late 15th century, archaeological excavations point to an even earlier time of its construction, i.e. to the very end of the 12th century, and to an even longer continuity of its use until the mid-16th century. The polygonal layout of the Romanesque castle has been preserved only at foundation level and in the lower portions of walls of ground-floor rooms. Nevertheless, the well-discerned layers with rich finds provided a wealth of new information about the ways everyday life in the castle functioned, especially in its later phases, from the way kitchenware was used in the preparation of food, to more luxurious eating and drinking vessels used by the feudal lord, to the interior design of the castle, lavishly decorated with tile stoves, as well as stone profilations of windows, doors etc., characteristic for the beginning of the 15th century (Horvat, Tkalčec 2009, Tkalčec 2010b, 2010c, Zglav-Martinač 2010).

Archaeological investigations brought to the light of day abundant faunal remains from all periods of life at the castle. The sample consists of a total of around 6850 fragments of bones, teeth and horns/antlers, of which 20.92% were determined as mammals (Mammalia), 3.17% as birds (Aves) and 0.23% as remains of fish (Pisces). Indeterminate fragments amounted to 75.68%. For the period between the 12th and 14th centuries a predominance of remains of pigs (around 60%) is noticed (NISP analysis), while remains of cattle and small ruminants vary between 10% and 20% depending on the period. During the second half of the 15th century the proportion of pigs drops significantly but grows again towards the end of the 15th, while in the 16th century its proportion is again very low. A decline in the proportion of pigs in the latter half of the 15th century coincides with a substantial rise of small ruminants. At the turn of the 16th century and during that century the number of bone remains of cattle rises. A calculation of the minimum number of individuals (MNI) shows a fairly balanced proportion for all animal species through all the periods, with the exception of pigs and cattle at the turn of the 16th century, where the MNI for these species rises significantly. The share of wild animals (wild boar, red deer, roe deer and rabbit) was relatively constant at all times and does not exceed 5% (Trbojević Vukičević et al. 2010). There is only a single bone attributable to the horse. Although there are only few remains of dog bones, the presence of carnivore tooth marks on bones of domestic and wild animals allow the assumption that dogs were common at the site.
Traces of butchery marks were documented on a large number of animal bones, including both primary and secondary (dismemberment into smaller pieces) as well as tertiary marks (shallow incisions on bones, characteristic for defleshing of bones) (Trbojević Vukičević et al. 2010: 242).

Although a number of faunal remains were found at the Vrbovec Castle, the finds of worked bone artefacts are exceptionally rare. Most come from the backfill of the mediaeval cistern. The assemblage consists of artefacts used as sewing and knitting implements, objects used during time of leisure, as well as certain objects and semi-products of indeterminate function. Except for the needle and the flute, the function of the remaining bone artefacts (including the so-called astragaloi) remains at least partly open. This is due to the fact that, on the one hand, such artefacts may have been used in various ways and in a number of different activities and, on the other, we were unable to find direct typological analogies in artefacts with a clearly identified function, that is, various possibilities of their application and use have been put forward in the literature.

As explained previously, a few of the bone artefacts show different marks of primary treatment in the process of making a bone artefact. That indicates these activities at the very castle of Vrbovec. Initial processing attempts are identified on a deer antler (Cervus elaphus L.) from the cistern backfill dated to the second half of the 15th c. - second half of the 16th c. (Cat. No. 1). This half-finished product exhibits traces of short, sharp cuts. One end is sawn off in a regular fashion, while the other is irregular. A fragment, or more precisely, fragments of another red deer antler (Cervus elaphus L.), which was scorched by fire that also damaged a wooden tower from the first half of the 16th century, likewise exhibits short incisions, probably from processing (Cat. No. 2).

A sewing needle with a damaged upper part where a thread hole (the eye) is visible represents the oldest artefact made of bone, and originates from a layer dated to the 14th or the first half of the 15th century (Cat. No. 4). The needle, due to its dimensions, was probably used for sewing coarse materials or hide. Most of the other bone objects originate from the layer of backfill of the castle cistern, dating back to the late 15th and the first half of the 16th century.

A long bone artefact, made of compact bone substance (substantiae compactae), probably a long bone of cattle, is coarsely made or unfinished, although finely smoothed on the outside and somewhat less well on the inside. Both ends are pointed near the top. Due to this, the object might have been an awl or possibly a tool for knitting fishing nets (Cat. No. 3). The next object, also finely made of compact bone substance of a large animal (e.g. cattle), may have equally been used as an awl or a tool for knitting fishing nets (Cat. No. 5). One end is crudely pointed while the other is regular and ends with a slightly bulging circle. A similar, but smaller object of the same type, whose function escapes us, is an awl (?), likewise made of compact bone matter of a large animal (Cat. No. 6).

An interesting artefact, also made of finely processed compact bone matter from a diaphysis of a long bone whose lower end is broken off while the upper one finishes with a narrowing neck topped by a pronounced round bulge, allows several possible interpretations of its function (Fig. 1, Cat. No. 7). On the one hand, the artefact is reminiscent of a lace-knitting tool—a lace bobbin—of the kind used in the manufacture of the so-called Lepoglava lace. In this part of Croatia, the lace making craft affirmed itself in particular towards the end of the 19th and the beginning of the 20th century, and today the Lepoglava lace is inscribed on the List of Intangible Cultural Heritage of the UNESCO. Even though it is believed that the Pauline Order introduced this lace-making method in Lepoglava, a town lying around 30 km from the Vrbovec castle, we nevertheless, due to the lack of concrete information or analogous finds, cannot ascertain that this artefact served this precise function. In the literature, bobbin lace is dated to the 16th century, although the place of its origin is still uncertain. Some authors are
more inclined to the theory positing Italy as the cradle of bobbin lace, same as in the case of needle lace, which is mentioned in the sources as far back as the 15th century (Jackson 1900: 15-16), while others favour Flanders as the place of origin of bobbin lace (HE: 314). Moreover, as regards the identification of the function of this artefact from Vrbovec, there is mention in the literature of similar bone artefacts that sometimes feature a thin metal prong on the very top, which, alternatively, may be merely pointed. Such artefacts have been interpreted as writing instruments, that is, the so-called stylî, used for writing on wax tablets or parchments (Soltan-Kościelecka 2007). Since such round-tipped writing implements are extremely rare, we assume that our artefact should rather be interpreted as a sewing tool or an implement for weaving or knitting. It also merits mention that similar bone artefacts were found in Hungary, in the 16th century Styrian fort of Bajcs, where they were interpreted as stiffeners (Gürtelverstreifer) (Vándor 2002: 126, Cat. no. 57-58), as well as in the Royal Palace of Buda, where they were also interpreted as clothing accessories, namely as elements of belts (Kovács 2005: 313, Fig. 3: 6-7). Such finds are found at the Royal Palace of Visegrád (Kováts 2005: 301, Fig. 15), as well as at the Lower Castle from Visegrád. Although there are several similar finds known from Hungary from the late medieval and early modern period, and they were usually defined as “belt stiffeners”, no explanation of their use is available in the literature. Our specimen, in spite of one broken end, is highly reminiscent of the mentioned objects. On the other hand, in case its now missing part had originally had a thickened, drop-shaped form, this might really have been a lace bobbin. If, however, its broken top extended into a point, it is not excluded that this may have been a knitting needle, which would give us a hint as to how a noblewoman spent her day in the castle. In case this object was really a lace bobbin, this would expand our understanding of the production of this type of lacework to include the late mediaeval period in Croatia. However, the problem surrounding the identification of this object remains unresolved.

A few bone artefacts tell us also a story about how the nobleman and noble child spent their leisure time - playing flute and playing with astragaloi. A unique find of a pipe or flute (Fig. 2, Cat. No. 8) made of a bird femur (os femoris) was found in the cistern backfill. It exhibits a clearly visible opening with flat upper and round lower edge. The upper top of the flute is cut straight, while the lower one is cut at a slant; it is also partly damaged, although it is not entirely clear whether this might be the beginning of another hole, since the end is broken off. Based on this, the object might have been a pipe, that is, a flute, but it might equally have been a whistle used for military purposes or during hunting. In Croatia, the only specimens so far published in the literature are the bone pipes from the forts at Čanjevo (Višnjić 2008: 117, T. 2/8) and Barilović (Janeš 2014: 75, Fig. 76). In the foreign literature dedicated to the Middle Ages and the Modern Period, the finds of pipes made of long bird bones are more common, appearing from the Early Middle Ages until the Modern Period (Klápště 2002: 381, Tab. 175/6), that is, they are known also from the earlier periods of Antiquity up until the Late Middle Ages and the Modern Period, in which we underline the pipes found in Visegrád (Gál 2005: 328-329, Fig. 6-7).

Objects made of phalanges or metatarsal animal bones, the so-called astragaloi, perforated with one hole (passing through both sides of the bone) or several, like in the case of the three finds from Vrbovec, in archaeological contexts are found from prehistoric times to the Modern Age. They were by and large made of knuckle-bones of sheep or goats, as well as pigs. They are usually interpreted as bone pendants of votive and divining character, but are also recognised as objects intended for augury, gambling, and play. Two astragaloi made of pig bones Cat. No. 9 (Phalanx proximalis) and Cat. No. 10 (Ossa metatarsalia III) were found in the cistern backfill and dated to the 15th century, while an astragal Cat. No.
made of a large ruminant bone, most probably cattle (Phalanx proximalis) originates from the layer dated to the first half of the 16th century.

Astragal Cat. No. 9 has three holes for threads on three sides on its wider end, while the opposite, narrower end has two opposing holes. The second specimen was made of the left metatarsal bone of pig, perforated at the middle with two holes through either side of the diaphysis (Cat. No. 10). The latter specimen has analogies in Schlossberg, in a specimen made of a metacarpus of a young pig, perforated with a single hole and dated to the 15th century (Bitschnau et al. 2007: 227, Taf. 1/D9). The authors attributed the artefact to the assemblage of gaming and leisure items, noting that such a bone on a cord may have produced sounds when pulled and may have also been used as a spinning top or rattle. In addition to the more common specimens with one hole, there are also sporadic finds with two parallel holes (likewise perforated through either side of the bone), such as our specimen (Bitschnau et al. 2007: 219-220). The third astragal from Vrbovec, Cat. No. 11, has two perforated channels with regular circular openings (below the proximal edge in the lateral-medial direction and immediately above the distal epiphysis in the cranial-palmar/plantar direction). Below the proximal edge on the palmar/plantar side there is another circular opening entering into the existing proximal channel.

Although the function of some of the artefacts presented here has not been fully ascertained, there are clear indicators that some kind of minor bone processing activity took place at the Vrbovec castle. Bone artefacts might have formed part of dressing accessories or as tools for knitting fishing nets; as sewing, weaving or lace making implements (?), as well as music instruments and toys in the everyday life of the inhabitants of the mediaeval castle.

CATALOGUE

1. Bone artefact, bone, red deer antler (Cervus elaphus L.?), object of unknown use, traces of longitudinal processing visible on all sides of the bone; traces of transverse processing visible on one end; length 8 cm, diameter 2.9 cm, weight 44.6 g; Fieldwork marks: PGV’04, □ B4, PN 401; Context: SJ 76; Stored at: Veliki Tabor Castle, Inv. no. DVT 1588.

2. Bone artefact, bone, red deer antler (Cervus elaphus L.? – two fragments exposed to fire, with visible sharp cuts – attempts at processing; length 9.5 cm, width 6.1 cm, weight 39.4 g; Fieldwork marks: PGV’08, U 272, PN 453; Context: SJ 171; Stored at: Veliki Tabor Castle.

3. Awl (?), compact bone matter (substantiae compacte), probably from a long bone of cattle, crudely processed or unfinished tool, rectangular cross-section, both ends pointed; length 19.3 cm, width 1.1 cm, thickness 0.8 cm, weight 25.5 g; Fieldwork marks: PGV’04, □ B4a, PN 318; Context: SJ 76; Stored at: Veliki Tabor Castle, Inv. no. DVT 1590.

4. Needle, bone, damaged upper part with a hole for thread, flattened and smoothed body, pointed top, round cross-section; length 8.6 cm, width 0.9 cm, weight 2.7 g; Fieldwork marks: PGV’06, □ A6, PN 367; Context: SJ 90; Stored at: Veliki Tabor Castle, Inv. no. DVT 1582.

5. Awl (?), (tool for knitting fishing nets?), bone, compact bone matter (substantiae compacte), probably from a long bone of cattle, round cross-section, one side damaged, pointed top; length 9 cm, width 1.1 cm, weight 7.1 g; Fieldwork marks: PGV’04, □ B4, PN 319; Context: SJ 76; Stored at: Veliki Tabor Castle, Inv. no. DVT 1589.

6. Awl (?), (tool for knitting fishing nets?), bone, compact bone matter (substantiae compacte), probably from a long bone of cattle, round cross-section, pointed top; length 4 cm, diameter 9 mm, weight 2.8 g; Fieldwork marks: PGV’04, □ B4, PN 337; Context: SJ 76; Stored at: Veliki Tabor Castle, Inv. no. DVT 1587.

7. Needle/lace bobbin (?), bone, compact bone matter from a diaphysis of a long bone, round top, narrowed neck serving as a spool (?); preserved length 5 cm, neck diameter 6 mm, top diameter 8 mm, body diameter 7 mm, weight 2.7 g; Fieldwork marks: PGV’04, □ A/B4, PN 311; Context: SJ 76; Stored at: Veliki Tabor Castle, Inv. no. DVT 1584.

8. Pipe, thigh bone of a bird (os femoris); one preserved hole, damaged top, length 53 cm, diameter 8 mm, weight 1.6 g; Fieldwork marks: PGV’04, □ B4, PN 400; Context: SJ 76; Stored at: Veliki Tabor Castle, Inv. no. DVT 1585.

9. Astragal, bone, phalanx (Phalanx proximalis), upper phalanx of a pig; on the wider end of the phalanx there are three holes for passing thread on three sides, while on the opposite narrower end there are two opposing holes; length 3.6 cm, width 1.8 cm, weight 4 g; Fieldwork marks: PGV’04, □ B4, PN 399; Context: SJ 76; Stored at: Veliki Tabor Castle, Inv. no. DVT 1583.

10. Astragal, bone, left metatarsal bone of a pig; two pairs of holes perforated on the distal end through both sides of the diaphysis; length 7.3 cm, width 2.1 cm, diameter of the middle part of the bone 1.2 cm, weight 8.5 g; Fieldwork marks: PGV’04, □ B4, PN 309; Context: SJ 76; Stored at: Veliki Tabor Castle, Inv. no. DVT 1586.

11. Astragal, bone, phalanx (Phalanx proximalis), upper phalanx of a large ruminant (most likely cattle) perforated with two channels with openings of regular circular form (below the proximal edge in the lateral-medial direction and immediately above the distal epiphysis in the cranial-palmar/plantar direction) and another circular opening on the palmar/plantar side below the proximal edge, length 4.9 cm, width 2.5 cm, weight 12.8 g; Fieldwork marks: PGV’04, □ C4, PN 454; Context: SJ 72; Stored at: Veliki Tabor Castle.
Close to the bone...

T. 1

1

2 a

2 b

3

0 5 cm
T. Tkalcčec, Life in a mediaeval castle...
Close to the bone...

T. 3

9

10

11

0 5 cm
REFERENCES


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Artefacts are stored at the Veliki Tabor Castle, Museums of Hrvatsko Zagorje.

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