

Close to the bone: current studies in bone technologies

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Caričin Grad (Iustiniana Prima), 6th century AD

Back cover illustration

Niš (Naissus), 4th-6th century AD

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Selena Vitezović

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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), Märgärit 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 élaboré* 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 multi-disciplinary 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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Selena Vitezović

ZOOMORPHIC DECORATIONS FROM OSSEOUS MATERIALS FROM NAISSUS (NIŠ)

Toni Čerškov
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Selena Vitezović

Abstract: Roman Naissus (modern Niš, Serbia) was one of the most important cities in Late Antiquity in the province of Dacia Mediterranea. Well-developed economy, as well as the fact that this was the birth place of emperor Constantine I (306-337), were the main reasons for the city's prosperity in this period, today visible in rich and diverse archaeological remains, that include secular and sacral buildings, necropolises and individual mausoleums, and very rich portable archaeological material.

In one of the luxurious city building, presumably used as palatium for high officials, a large quantity of small decorative objects made from red deer antler was discovered. The find includes zoomorphic and geometrical shapes, decorated by incising and carving. This find represents remains of some sort of panel decoration, probably on (wooden) furniture, that was inlaid into the wood the similar manner as mosaic tiles were arranged to form a composition (in opus sectile technique). This is a unique find in the central Balkan area, and after stylistical traits may be dated into the period from mid- or second half of 4th to the 6th century AD. Technological aspects, possible reconstruction and the place of this find within wider context of Late Roman craftsmanship will be discussed.

Apstrakt: Rimski Naissus (današnji Niš, Srbija) bio je jedan od najvažnijih kasnoantičkih gradova u provinciji Dacia Mediterranea. Dobro razvijena ekonomija, kao i činjenica da je to bilo rodno mesto cara Konstantina I (306-337), bili su glavni razlozi za prosperitet grada u ovom periodu, koji je danas vidljiv u bogatim i raznovrsnim arheološkim ostacima, u koje spadaju sekularne i verske građevine, nekropole i individualni mauzoleji, kao i veoma bogat pokretni arheološki materijal.

U jednoj od luksuznih gradskih zgrada, koja je verovatno koršćena kao palata za visoke zvaničnike, otkrivena je velika količina malih dekorativnih objekata izrađenih od roga jelena. Nalaz obuhvata zoomorfne i geometrijske oblike, ukrašene urezivanjem i rezbarenjem. Nalaz predstavlja verovatno neku vrstu panelne dekoracije, verovatno na (drvenom) nameštaju, koji je bio ugrađen u drvo na sličan način kao što su kockice mozaika slagane tako da sačinjavaju kompoziciju (u tehnici opus sectile). Ovo je jedinstveni nalaz na teritoriji centralnog Balkana, i po stilskim odlikama može se datovati u period od sredine ili druge polovine IV do VI veka. U radu će biti predstavljeni tehnološki aspekti, moguća rekonstrukcija i mesto ovog nalaza u širem kontekstu kasnorimskog zanatstva.

INTRODUCTION

Carving in osseous materials was a well represented craft in the Roman times. Diverse materials, bone, antler, ivory, were used for everyday items, tools, toilet accessories, jewellery, etc. (cf. Bíró 1987, 1994;2012, Deschler-Erb 1998, Hrnčiarik 2004, 2012, MacGregor 1985, Petković 1995, Schallmayer 1996, *inter alii*). Also, all these osseous materials were used as decorations placed onto object made from other material – wooden furniture pieces, boxes, lids, etc. (cf. e. g. MacGregor 1985, Schallmayer 1996, Goldfus and Bowes 2000, Bíró 2012, Vass 2012). They may have been purely decorative, abstract, but also floral, zoomorphic and particularly complex representations of mythological scenes were very finely made (e.g., Bíró 1987, 2012, Petković *et al.* 2016).

THE ARCHAEOLOGICAL CONTEXT OF THE FIND

The Roman city of Naissus was established during the 1st century AD, as a settlement of artisans and trad-

ers that followed the army. The city obtained the status of municipium probably at the same time as the other cities in the province of *Moesia Superior*, during the reign of the emperor Traianus (98-117) or Hadrian (117-138) (Петровић 1976: 34-35). There are no information if Naissus received the status of colonia, although this can not be excluded, considering that it was one of the four largest cities in Roman Dardania. City territory was the place of the battle in 269 AD between the Roman army and Goths, when the emperor Claudius II achieved an important victory (Petrović 1979: 39). During the entire 4th century AD, Naissus was an important city, where emperors would stay during their journeys and where they issued edicts (Vasić 2008: 9-23). The city was heavily destroyed by Huns in 441 and 447, but was partially recovered afterwards.

During the Late Antiquity, Naissus was one of the most important cities in the central Balkan area. Diverse archaeological remains of it are often encountered as the modern city develops. Rescue excavations carried out in 20th and 21st century revealed numerous and rich find-

ings, including residential and ceremonial buildings, churches, graves and grave monuments, and diverse and extraordinary portable finds (Петровић 1993: 64-69, Jeremić 2014: 5-55).

During the rescue excavations carried out in 1987-8 in the north-western part of the Late Antique fortification, a Late Antique building was discovered. The building was *intra muros* and it had walls preserved up to 3 m. This object, later labelled „palace“, had at least three phases of building and was in use during the Late Antique and Early Byzantine period. In the Middle Ages, this area was used as a cemetery (fig. 1).



Fig. 1. „Octagon“ structure after the excavation.

The structure was partially researched – the northern part, approx. 30 x 11 m, obtained one room of octagonal ground-plan and two additional square rooms. They were all decorated with floor mosaics with geometric motives, fresco painted walls, architectural stone decoration (pillars, etc.), installations for floor and wall heating and developed system for water supply. The period of building of this structure is placed into early 4th century AD after the find of Maximinus Daia coins. Second phase is probably mid-4th century; it was destroyed by Goth (378-380) or perhaps Hun invasions (441 or 447 AD). During 6th century, traces of economic activities were noted (large number of iron tools for leather and wool processing) and place was abandoned in late 6th century (Jeremić 2007: 95-97).

Apart from other portable material, in the central part of the octagonal room, in the layer of ashes and charcoal, above mosaic and red burnt soil, a large quantity of antler decorative pieces were recovered, that will be presented here.

THE FIND

A total number of approximately 210 pieces were found (some of the broken pieces were fitted together, but not all of them). They were all made from red deer antler cortex, predominantly (or exclusively) from beam segments. They were all heavily burnt, differing in co-

lour – from black, greyish nuances to completely white and reddish (from debris), probably due to the different position within the burning debris at the moment of fire (exposed to direct fire or covered by debris). The pieces included abstract, floral and zoomorphic decorations.

Manufacture

First phases of manufacture can only be hypothetically reconstructed.

From entire antlers, beam segments were selected; tines were probably chopped off or cut off and either discarded or used for other objects. The initial preparation for working must have included some softening of the raw material, since antlers are very resilient while fresh, but also must not be too dry, or they may break irregularly (cf. MacGregor 1985). There are several possible softening techniques, soaking antlers in cold water, applying acid solutions, combining soaking in cold water with short period of boiling, etc. (cf. MacGregor 1985: 63-66, Osipowicz 2007, see also Deschler-Erb 2005: 211-212). However, exact technique used can be only speculated.

After that, blanks from outer cortex were extracted, in shapes of baguettes or plaques. In order to make the most from given raw material, probably grooves were incised first to ease detaching of blanks with the help of wedges (cf. MacGregor 1985: 55-58).

Since final objects were of small dimensions, presumably blanks were smoothed prior to cutting final shapes on both, front and back surfaces. This may have been done by files or rasps for more rough parts, but final polishing was performed by use of cloth and sand, plant stems, etc. (cf. MacGregor 1985: 58, Bianchi 2007: 368-369, and references therein). Since no traces of file or rasp movements were noted, we may assume that the final polishing was carried out by use of some very fine polishing mean, such as cloth or something similar. Back surfaces were very finely polished on all pieces, although slightly damaged at some of them (cf. back surfaces on fig. 2b, 5, 8, 9).

Final shapes included diverse geometrical shapes and zoomorphic representations, namely fish and birds (manufacture of each is discussed below). Last stage was making decoration and positioning pieces into predetermined area, presumably on some wooden artefact.

Decoration consisted mainly of incisions and dotted circles, but arranged and combined in such a manner to avoid repetition and to create visual effect. Incisions may be vertical, horizontal or diagonal, following the outer lines of the given shape or be running in different directions, and may be single or double.

Circle-and-dot decoration was made by a metal bit with a tip consisting of a middle anchoring spike and two engraving spikes on either side of it, that was used in a following manner: “When the middle anchoring spike was placed on the surface of the support, only two arcs were scratched to begin with around the central point. Next,

when these two arcs joined to form a circle, they became a circle-and-dot decoration. By this time, the central bit had already made a hole, namely the dot, in the middle.” (Vecsey 2012: 68, see also figs 29-32).

Curved lines were also made by the same method and with the same tool as drilling operations.

Several large groups can be outlined within this find: discs, elongated stripes (ghirlandes), lozenge-shaped and leaf-like pieces, fish and birds. There are also several individual pieces that do not belong to any of these groups and pieces too fragmented to establish their original shape.

Discs

Total number of 89 segments, slightly oval in shape, were found (dim. usually approx. 1,7 x 1,5 or 1,8 x 1,6 cm) (fig. 2, 3). Except for two, all of them were decorated by two parallel circular incisions (*double circle-and-dot motif*, for manufacture cf. Vecsey 2012 and see above), thus forming three panels, and had a perforation in the centre. At some pieces, the perforation is used, widened and of irregular shape, so perhaps some of these were fastened by nails (for example, fig. 3b). Only one disc was left undecorated and just one had four dotted circles.

Discs were all extracted from a blank by drilling out the antler from the lower surface only, thus obtaining slightly trapezoidal cross-section (i. e., lower diameter is

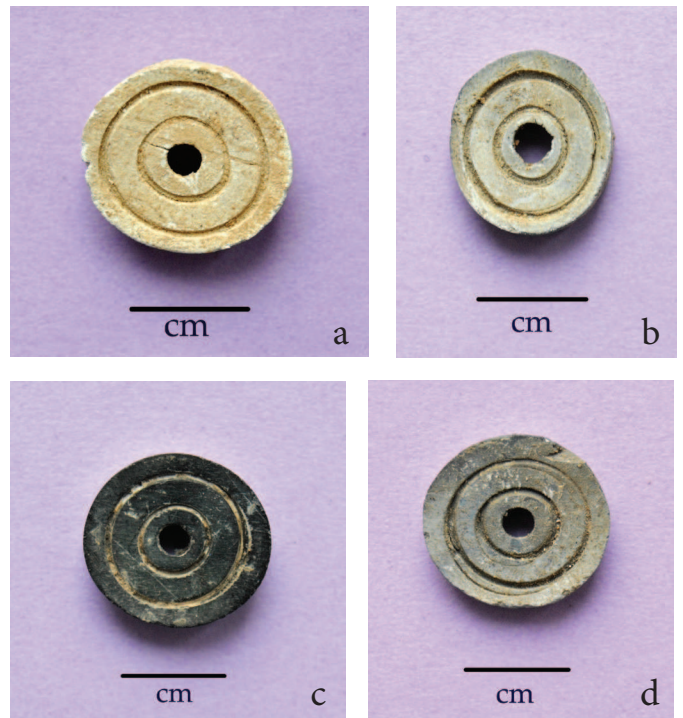


Fig. 3a-d. Discs.

slightly narrower than the diameter at the upper surface). Since it is easier to cut through thick antler from two sides, the choosing of this method may have been functional, perhaps such cross-section was needed to fit more easily the discs into predetermined, carved space on the object on which they were placed.

Few discs had outer surface slightly irregular, from piece being snapped off after it was almost cut through. Variations in dimensions between different discs were probably due to the level of abrasion (i. e., they were all most likely made with just one, not with diverse tools).

Lozenge or leaf-like pieces

Second group of the geometrical motives comprises 25 pieces (fig. 4, 5), mainly leaf-like (21) or lozenge-shaped (4), decorated (15) or without decoration (10). Their dimensions vary, with length from 2,8 to over 5 cm, suggesting several different templates were used for obtaining these pieces. They were cut out by chisels and wedges.

Decorations was in shape of incised lines, dotted circles or net of lozenges in various combinations: incised lines that run parallel to object edges, with or without

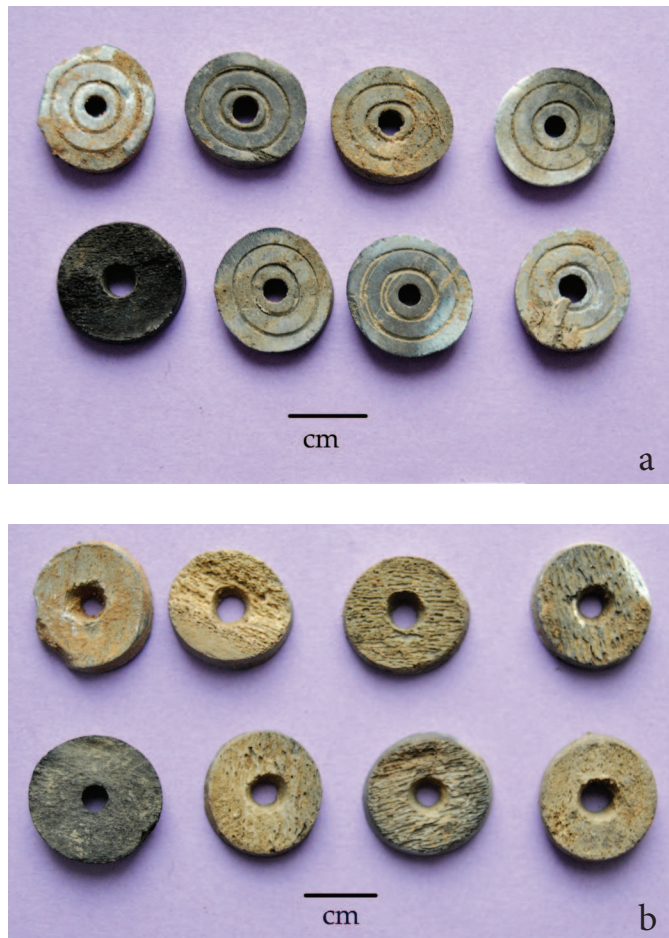


Fig. 2. Discs: a) front, b) back side.



Fig. 4. Lozenge-shape.



Fig. 5. Lozenge-shape.

dotted circles (fig. 4), dotted circles connected by incised lines or with curved lines running around them, one piece had large double dot-and-circle at the centre, etc. (fig. 5).

Elongated stripes (ghirlandes)

Several fragments of elongated, narrow, wavy stripes were found, 0,7-0,8 cm wide (fig. 11-13). All are fragmented, i. e., it was not possible to establish the original length for any of them. It is also possible that several pieces were placed one after another in a row to create one or more long stripes. They were also made by cutting with chisels and wedges. Most of them are decorated by combination of dotted circles and incised lines – lines connecting diagonally the dots (lower edge of a dot is connected with upper edge of the next one in row), probably imitation of water waves.

They may have represented some sort of a frame for the entire scene, or perhaps were placed separately, on others sides of the object (assuming it was square-shaped).

Fish representations

Almost 30 pieces represent fish. Two were completely preserved (fig. 8, 9), other pieces included fish body, tail and head segments (fig. 6, 7). They all have the same initial shape – body is in a shape of lozenge with rounded edges, with triangular extension representing the tail. The head is marked by two deep curved incisions and had eye, in a shape of dotted circle, and mouth, in a shape of deep,



Fig. 6. Fish representations.



Fig. 7. Fish representations.

slightly curved incision. Bodies were decorated with dotted circles or undecorated, tails were ornamented with incisions, running parallel to the tail edges.

Shaping and decoration are quite simple, but effective, giving very realistic impression. Small variations in design of pattern give the illusion of great diversity, although they all have the same and very simple form. Some fish were turned into right, others into left – per-



Fig. 8. Fish representation, front and back side.

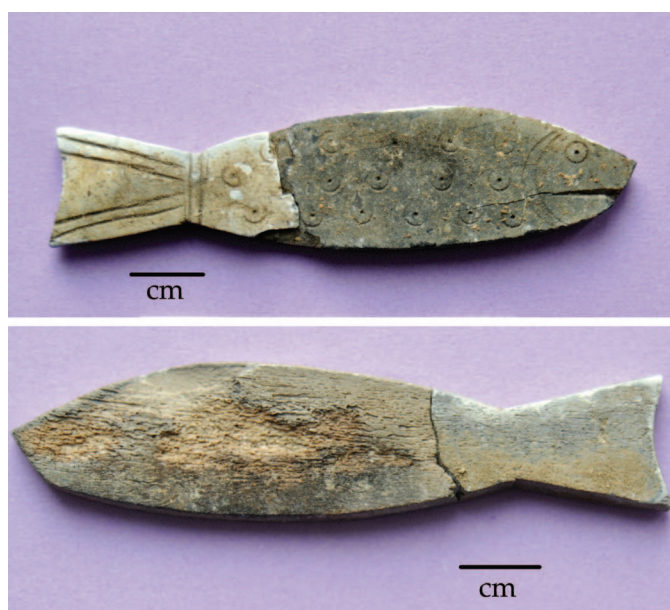


Fig. 9. Fish representation, front and back side.

haps they represented pairs. Again, dimensions vary, with maximal length 8-8,5 cm, and width 1,4-1,8 cm, suggesting several templates were used.

Birds

Three bird heads could have been recognized (fig. 10). The best preserved had elongated neck and part of the body, while the remaining two were too fragmented. Other two are simply head fragments.

The birds had eyes in a shape of dotted circles, same as fish, and beaks had short incision. By their looks, it is most likely that they represent ducks or some other water fowl. Several diverse segments, some fan-shaped, with dotted circles, may have been parts of tails.

Other

Other pieces included pieces with oval or straight edges with incised lines and/or dotted circles, that were either unique or shape or too fragmented to be fall into any of the groups above. Also, several simple amorphic fragments without decoration were noted.



Fig. 10. Bird representations.

DISCUSSION AND CONCLUSION

The find from „Octagon structure“ most likely represents decoration of one single object, probably furniture piece such as chair or chest. One large stone block, discovered at the site, covered by ash, soot and plate pieces may point to such hypothesis. This block may have served as the base for wooden furniture, however, there are no direct evidence for that. As no traces of contact with metal were found, it can be assumed that these pieces were used as inlay, placed into prepared carvings, or glued to the surface (some circular pieces may have been fastened, but with wooden fittings, since no traces of contact with metal were preserved).

Osseous materials were commonly used for crafting inlays and decorative plates for diverse artefacts in the Roman period, such as lids for boxes, pyxis and other small artefacts (cf. Petković 1995: 37, T. XXI, 8-9; 53, T. XL, 1-3, 7, Petković *et al.* 2016). Some individual analogies may be found for other segments, however, the find from Naissus as unity has no known analogies.

Fish representations made from osseous materials are rare, only few tokens are known from western provinces (*missilia*), used in spectacles after important military vic-

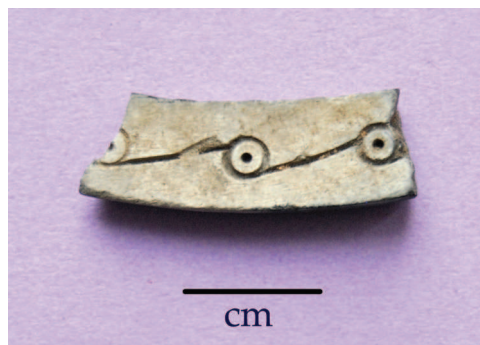


Fig. 11. Ghirlande segment.



Fig. 12. Ghirlande segment.



Fig. 13. Ghirlande segment.

tories or imperial jubilees (Schenk 2012: 13-14). One plate from red deer antler with carved decoration of fish emerging from water is known from the site of Kostol-Pontes in Serbia, dated into late 3rd - first half of the 4th century AD (Petković 1995: 55, 107, kat. 692, T. XLI, 8), and probably represents an application from wooden furniture.

Some parallels may be found in other types of raw material. Throughout the Roman times, especially in the 4th century, panels made in *opus sectile* technique, from glass, precious stones and marble were particularly popular. Panels and vessels decorated in such technique with fish representations were discovered in Athens, Corinth, Rome, Narbonne, Cairo (Feugère 2001: 11-20; Platz-Horster 2002: 148-149, fig. 4-5).

In the region of the Black Sea, furniture with wooden applications in a shape of swan are known from the period of 6th-2nd century BC (Сокольский 1971: T. III), and from the same region originates one comb sheath from the Roman period (1st-2nd century AD) with carved swan (Сокольский 1971:141, T. XVII, 8). However, again,

most analogies may be found among artefacts made from mosaic glass, particularly in one type of shallow bowls decorated by incrustations on their interior. They were made in workshops of Alexandria in 4th century AD, and were discovered in Carnuntum and Trier. Here birds, most likely ducks, were represented surrounded by floral motives (Merten 2010:377-378). One such vessel was discovered at Mediana near Naissus, with representation of a white peacock.

Bone was the dominant osseous material for long time, in particular preferred skeletal elements were long bones, especially metapodials, from cattle and horses. Compact bone of long bones was widespread, since this material possesses desired physical and mechanical qualities – especially great thickness, and that allows a representation to be carved more easily and with more precision. Luxurious objects were predominantly made from antler or elephant or hippopotamus ivory (cf. Schallmayer 1996). Antler in general was less popular as raw material in period from 1st-3rd century AD; it was rarely encountered in the southern parts of the Empire, while in northern it represents Celtic traditions. The situation changed in the 4th century, when almost no bone, but many antler workshops existed (Deschler-Erb 2005: 213). The quantity of antlers used in their manufacture was substantial, suggesting that workshop in which it was made had regular and relatively rich supply in this raw material (unlike bones, which were obtained from butchers or leather-working – cf. Choyke 2012).

The reconstruction of the entire scene was not possible. Fish and water birds imply this was most likely some swamp or lake representation. Several oval and other pieces with somewhat elaborated decoration may have represented plants around it. Discs, ghirlandes, etc., may have been placed around the main scene, but also may have taken place on other sides of the object. What object was it is also an open question – it may have been some wooden box, or chest, but also some other furniture piece, such as throne (keeping in mind the context of the find, i. e., the luxury of the room where it was found).

Decorative applications made from elephant ivory or other osseous materials, with figural motives, represented luxurious items and are only occasionally found. The find from Naissus stands out by its richness and extraordinary crafting. Its origin, i. e., where they made in some of local artisan's workshops, or imported, remains open. Although the Alexandrian workshops were famous for production of bone and ivory items and plating for furniture, in the Late Roman period this craft was transferred to the western artisan centres, like the newly-founded capital city of Constantinople. Also, recent discoveries of workshop debris and carved pieces from both the East and the West suggest that bone carving workshops were much more numerous than previously thought (cf. Goldfus and Bowes 2000: 186, and references therein).

The workshop where our objects were manufactured may have been located in a large city centre, like *Thessalonica* or Constantinople, it is also possible that it was made in one of local towns, such as Scupi, Ulpiana or Naissus. Furniture, was usually produced in carpenters' workshops and often the same artisans were carving both wood and bone artefacts (Petković 1995: 13-14).

From one side, it is entirely possible that among numerous artisans' workshops in Naissus also existed bone/ivory workshop. The remains of such workshop were not (yet) discovered, but this may be due to various reasons – excavations were carried out mainly on sepulchral area, collection of bone material on excavations from early and mid-20th century was inadequate, etc. On the other hand, the very status of Naissus as a rich and important city and also trade centre implies large quantities of luxurious artefacts were circulating (Drča 2004: 189-191, cat. 133-141). In the city was also confirmed the presence of the state workshop (*officina*) for production of the objects from precious metals, where were also manufactured famous silver vessels – jubilee bowls, given as presents for merits and loyalty to the emperor Licinius in 317/318 AD (Drča 1983: 9-31, Popović 1997: 134-138, Popović 2006: 116-117; Mirković 2012: 12).

This find belongs to the period of flourishing of Naissus, and period when this building was occupied by some important person. Central place of the find suggest it may have been decoration of a luxury chair (θρόνος) or box (*scirinia*), used by the owner or user of the building for reception in the official part of the *palatium*.

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