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THE LATE URNFIELD CULTURE BETWEEN THE EASTERN ALPS AND THE DANUBE

PROCEEDINGS OF THE INTERNATIONAL CONFERENCE IN ZAGREB, NOVEMBER 7-8, 2013

Zagreb, 2017



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INTRODUCTION

Late Urnfield Culture between the Eastern Alps and the Danube was an international scientific conference held at the Institute of Archaeology in Zagreb on the 7th and 8th of November 2013 with the support of the Croatian Ministry of Science and Education. The conference was about the younger phase of the Urnfield culture in the area between the eastern Alps and the Danube. In recent years, excavations have been undertaken at numerous sites dating from the younger phase of the Urnfield culture (from the late 12th century to the late 9th century BC) in the wider area of the Carpathian Basin. The study of specific Late Bronze Age topics created the need for scientific discussions and exchanges of experiences from the wider geographic area. Conferences of this kind are a great opportunity to examine numerous problematic issues, but also to define future directions of study of what was a period of distinct regions and flourishing communications. The Danube was the eastern limit of expansion of this Central European cultural phenomenon, with northern Croatia being particularly interesting as a contact zone lying on three rivers – the Drava, the Sava, and the Danube – which had an important communication role in prehistory.

The conference gathered 37 researchers and included 17 lectures on topics from the Alpine sphere to the western Balkans. The lectures presented results of multidisciplinary studies of settlements, analyses of the use of cemeteries and hoards, and studies of networks of exchange of metal items. The final conference discussion pointed out the need to define regional distribution networks by shape and decoration of pottery as the greatest group of finds, to shed light on funerary rites – especially in the subsequent period of transition to the Early Iron Age – and to explore the paleo-environment that influenced the network and modes of exchange of knowledge and skills in the period.

The *Serta Instituti archaeologici* series, vol. 9, has published some of the conference lectures. They represent particular sites and regions, issues and insights, within the current research of the dynamic period between the second and the first millennium BC.

The cycle of scientific conferences on the Late Bronze Age started with *The Beginning of the Late Bronze Age between the Eastern Alps and the Danube*, a conference held in the Archaeological Museum in Osijek in 2011. Some lectures from that conference were published in the *Serta Instituti archaeologici* series, vol. 1. By organising *The Late Urnfield Culture between the Eastern Alps and the Danube* and publishing the conference proceedings in the *Serta Instituti archaeologici* series, vol. 9, the Institute of Archaeology gathered Late Bronze Age researchers from the southern Carpathian Basin and Central Europe, bringing contemporary challenges of Late Bronze Age studies into the focus of research. After a chronological overview of the state of research and open issues, the Institute of Archaeology has implemented scientific projects to study particular topics related to the Late Bronze Age, with the intention to keep initiating exchanges of knowledge, experience and practice among researchers.

Marko Dizdar

FUNERARY TRADITIONS OF THE BRONZE AGE METALLURGICAL COMMUNITIES IN THE IRON GATES HINTERLANDS

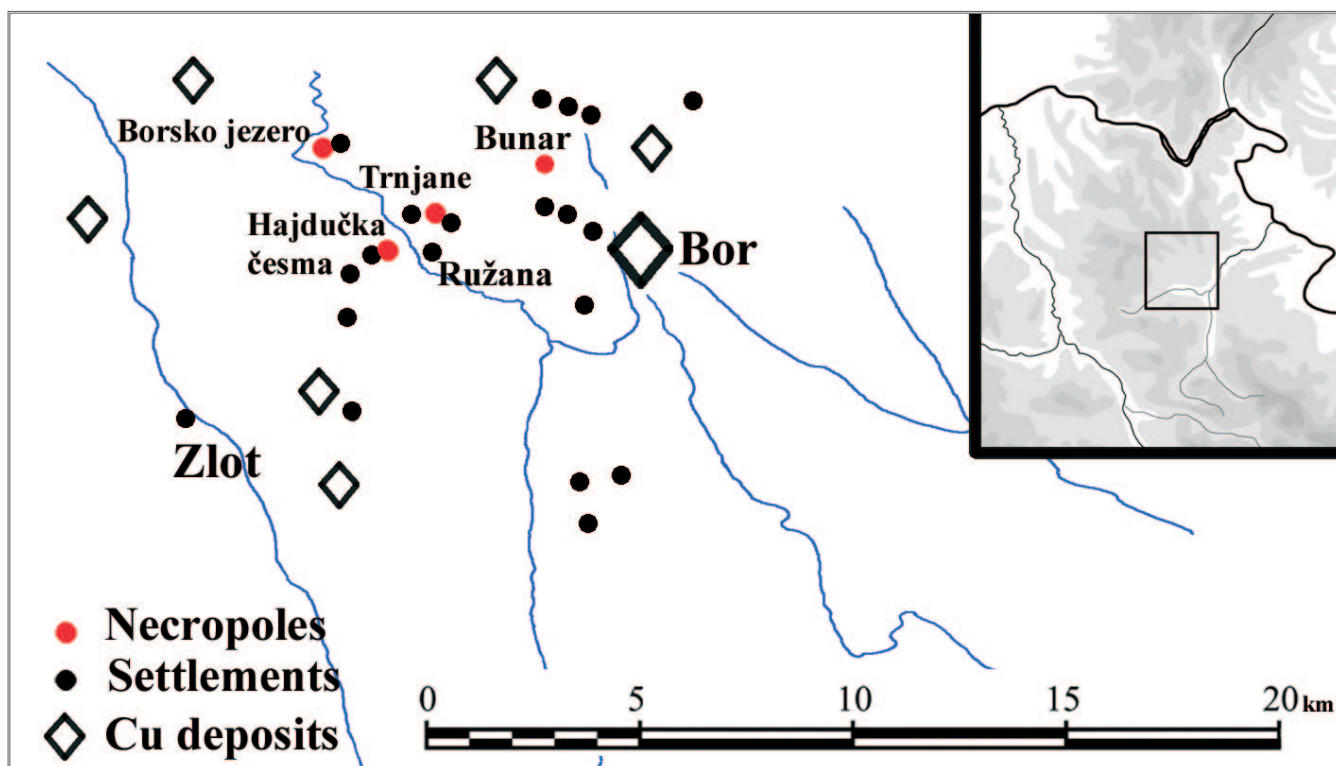
Metallurgical communities in the Iron Gates hinterlands are best presented through necropolises, for which traditions of Urnfield Culture influences can be recognized. Only four necropolises have been noted for being clearly connected with the metallurgical communities so far. Anthropological analyses were made on a smaller number of osteological finds, but even these data are sufficient to help reach new conclusions regarding the funerary traditions and relationship towards the deceased, characteristic for the period of the Late Bronze Age. Apart from the osteological analyses, this paper shall also present the results obtained through scanning electronic microscopy, contributing to the confirmation of some earlier theories proposed by the authors regarding the cremations of the deceased during the Bronze Age.

Keywords: north-eastern Serbia, necropolises, Bronze Age, Urnfield Culture, metallurgy, anthropological analyses, SEM analyses

This paper presents new results obtained through the osteological research of cremated individuals from the necropolises of the Late Bronze Age in the area of the Bor metallogenic basin, or the Serbian part of the Danube Gorges hinterlands. The aim of the research was to use a multidisciplinary approach, combining the results of archaeology, archaeometallurgy, physical anthropology, and SEM X-ray spectrometry, in order to contribute to a better perceiving of the funerary practices among the metallurgical societies towards the end of the Bronze Age in north-eastern Serbia. Also, we shall present new results obtained through the excavation of one metallurgic centre, for which we believe that it confirms the theories about the economy of exploitation and processing of mineral riches of these societies. We assume that this kind of economy contributed to its special status within the Late Bronze Age communities on the territory of north-eastern Serbia, as well as Central Balkans in general.

ANTHROPOLOGICAL REMAINS

After almost two decades of stagnation, the collaboration between the Archaeological Institute in Belgrade and the Museum of Mining and Metallurgy in Bor is renewed. It is worth to note that such an inter-institutional collaboration in the course of the 1960s and the 1970s led to the discovery of the first copper mine in Europe, at the location of Rudna Glava near Majdanpek (Jovanović 1982). The renewal of this successful collaboration continued through the excavations of the Trnjane site (situated in the vicinity of Brestovačka Banja), and one of the largest necropolises with cremated individuals in this area (Jovanović, Janković 1987/1990: 1–20; Jovanović 1999; Лазић 2004). In the course of the last decade two more necropolises have been discovered, one of which was situated in the place of the present-day artificial Bor lake (Kapuran 2014; Капуран, Миладиновић 2011), and the other, named Hajdučka česma, in the vicinity of Brestovačka Banja (Срејовић, Лазић 1997: 227). Recent research campaigns conducted in the surroundings of the Čoka Lu Balaš settlement revealed a Bronze Age necropolis at the location of Kriveljski kamen-Bunar, to the north-east of Bor (Kapuran et al. 2013) (Map 1). The collected osteological material was subjected to a detailed anthropological analysis and presented results of a kind that is unfortunately still rare for Bronze Age materials in Serbia.



Map 1 The Late Bronze Age Sites in Bor metallogenic basin (NE Serbia)

THE NECROPOLIS OF KRIVELJSKI KAMEN-BUNAR

During the summer of 2012, a new necropolis from the Late Bronze Age with cremations was discovered around 5 km to the north of Bor (Капуран et al. 2013: 145–156) (Map 1; Fig. 1). In the course of the excavations of a medieval necropolis from the 15th century, stone structures of an Urnfield-type prehistoric necropolis were encountered.¹ It seems that there existed a continuity of a „sacral ground“ in this case. The newly discovered site, named Kriveljski kamen-Bunar, is located on a small elevated hump, and has visual contact with the hillfort site of Čoka Lu Balaš (Tasić 1982). The excavated surface is around 65 m². On that occasion, four burial structures were discovered, with urns beneath them belonging to the Bronze Age.

Urn with the incinerated remains of the deceased were laid inside circular stone rings made of crushed stone, large white pebbles and large chunks of yellow chalcopyrite. They have the stylistic and typological properties of the Paraćin culture, and its characteristic ornaments prevail on the rest of the metallurgic societies' pottery assemblages from the ore-bearing regions of eastern Kučajske mountains and the surroundings of Bor (Jovanović, Janković 1987/1990; Jovanović 1999).

RESULTS OF THE ANTHROPOLOGICAL ANALYSIS

Urn 1

Incinerated remains of an adult individual of unknown sex and age were recovered. It contained 235 fragments, measuring between 0.4–28 mm and weighting 49.1 g (Капуран et al. 2013: 150). The degree of organic matter oxidation ranged between 525–1200°C (the bones of lower limbs show a low burning temperature). There are no traces of post-burning bone fragmentation. The fragments of bones contain no traces of melted copper/slag. No fragments of animal remains or pyre were contained in the urn.

Urn 3

Incinerated remains of an adult individual of unknown sex and age, and inhumated remains of a juvenile/adult indi-

¹ The archaeological research of the medieval necropolis was done by M. Vuksan from the Serbian Museum of History, together with M. Jovčić and D. Nikolić from the Museum of Mining and Metallurgy in Bor. The research of the prehistoric necropolis was done by dr A. Kapuran, I. Jovanović and M. Dimitrijević.

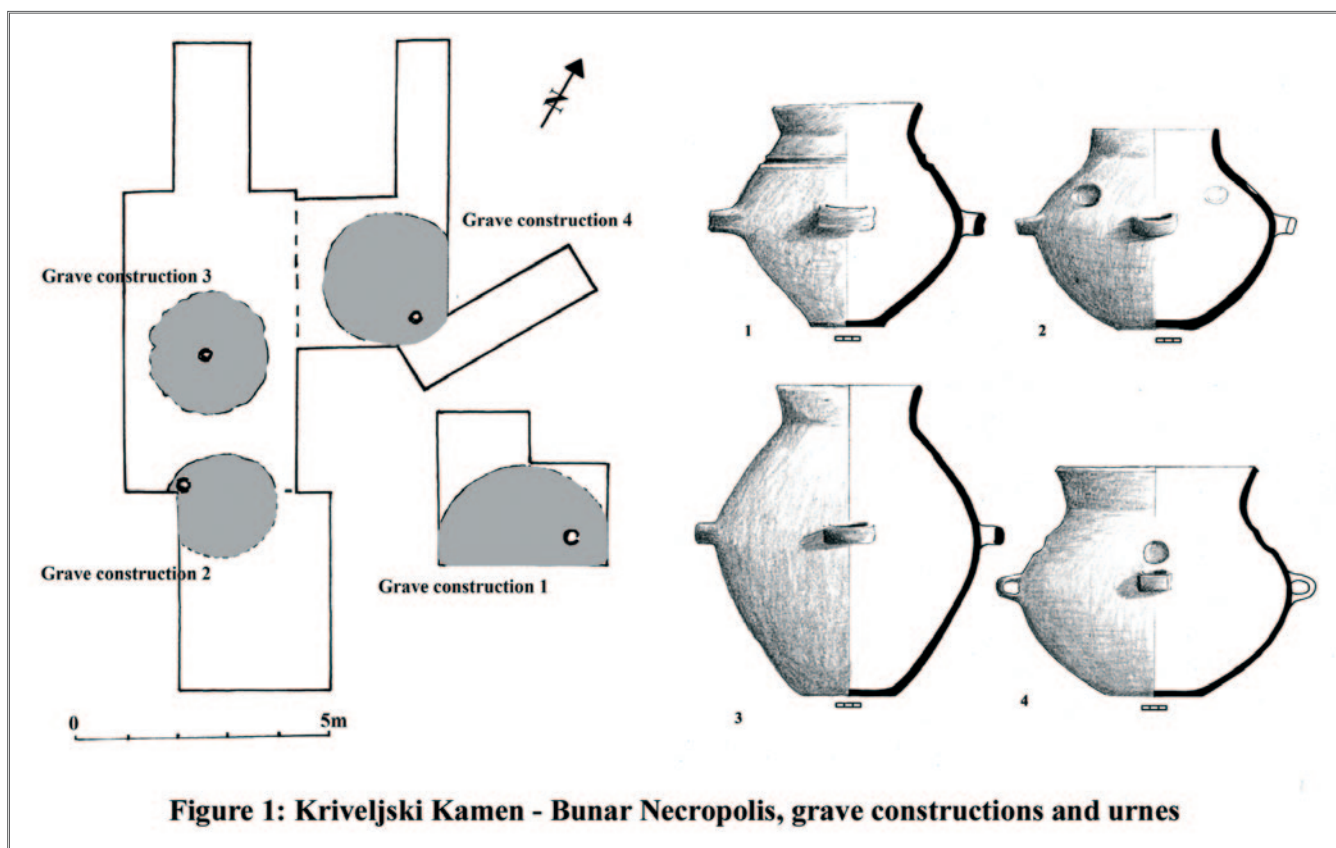


Figure 1: Kriveljski Kamen - Bunar Necropolis, grave constructions and urns

Fig. 1 Kriveljski Kamen - Bunar Necropolis, grave constructions and urns

vidual, probably female, were recovered. There was a total of 25 burnt fragments, measuring 7–48 mm, weighting 11.6 g, and 216 unburnt fragments, measuring 1–26 mm, weighting 109 g (Капуран et al. 2013: 150). The degree of organic matter oxidation ranged between 645–1200°C (the bones of lower limbs show a low burning temperature). There are no traces of post-burning bone fragmentation. The fragments of bones contain no traces of melted copper/slag. No fragments of animal remains or pyre were contained in the urn.

Urn 4

Incinerated remains of an adult individual of unknown sex, probably between 40–50 years old, were recovered. It contained 63 fragments, measuring 4–29 mm and weighting 7.5 g (Капуран et al. 2013: 150). The degree of organic matter oxidation ranged between 645–1200°C. There are no traces of post-burning bone fragmentation. Fragments of bones contain no traces of melted copper/slag. No fragments of animal remains or pyre were contained in the urn. The anthropological analysis of the incinerated remains from the Kriveljski kamen-Bunar necropolis shows a great degree of bone fragmentation and a high degree of organic matter oxidation. There are no traces of post-burning fragmentation, and no bones contain melted copper/slag. No fragments of animal remains or pyre were contained in the urn.

NECROPOLIS AT THE BOR LAKE

The necropolis at the Bor Lake was excavated in the course of rescue excavations in two campaigns. T. Rajkovača, curator at the Bor Museum, did excavations in 1997 (Капуран 2014; Капуран, Миладиновић-Радмиловић 2011), while new rescue excavations were conducted only recently in 2002, by M. Lazić from the Centre for Archaeological Research, Faculty of Philosophy in Belgrade (Јовановић 2013) (Map 1).

RESULTS OF ANTHROPOLOGICAL ANALYSIS

Burial structure 2/97

It contained the incinerated remains of an adult individual of unknown sex, between 30–50 years old. A total of 78 bone fragments were recovered, measuring 0.1–37 mm and weighing 32.5 g (Капуран, Миладиновић-Радмиловић 2011:

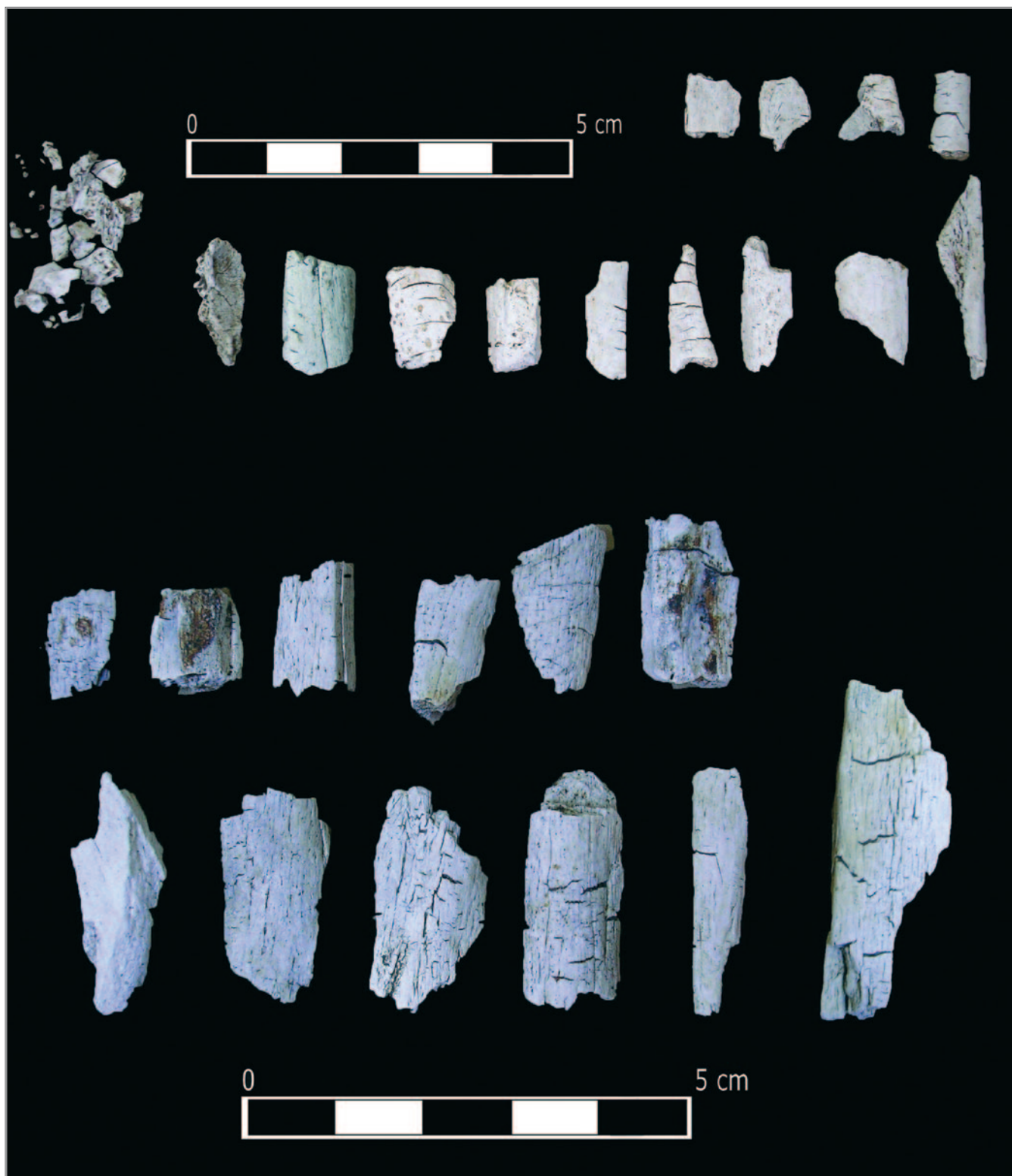


Fig. 2 Bor Lake necropolis, burial construction 2/97, bone fragments with traces of melted copper/slag

145–147). The degree of organic matter oxidation ranged between 525–1200°C (the bones of lower limbs show a lower burning temperature). There are no traces of post-burning bone fragmentation. Traces of melted copper/slag have been noticed on bone fragments (Fig. 2). No fragments of the pyre or animal remains were contained in the urn.

Burial structure 13/97

It contained the incinerated remains of a juvenile/adult individual of unknown sex and age. The recovered bones num-

ber 58 fragments, measuring 0.5–30 mm and weighing 13.4 g (Капуран, Миладиновић-Радмиловић 2011: 147–150). The degree of organic matter oxidation ranged between 525–1200°C. There are no traces of post-burning bone fragmentation. Traces of melted copper/slag have been noticed on bone fragments. No fragments of the pyre or animal remains were contained in the urn.

Grave 3

The grave contained the incinerated remains of an adult individual of unknown sex and age. A total of 63 fragments were recovered, measuring 4–29 mm and weighing 24.2 g. The degree of organic matter oxidation ranged between 645–1200°C. There are no traces of post-burning bone fragmentation. Traces of melted copper/slag have been noticed on bone fragments. No fragments of the pyre or animal remains were contained in the urn.

Urn 12

The urn contained the incinerated remains of an adult individual of unknown sex and age. A total of 709 bone fragments were recovered, measuring 1–35 mm and weighing 67.4 g. The degree of organic matter oxidation ranged between 525–1200°C. There are no traces of post-burning bone fragmentation. Traces of melted copper/slag have been noticed on bone fragments. Slag (38.6 g) was recovered from the urn together with human remains. No fragments of the pyre or animal remains were contained in the urn.

Urn 15

The urn contained the incinerated remains of an adult individual of unknown sex and age. A total of 219 bone fragments were recovered, measuring 3–38 mm and weighing 107.5 g. The degree of organic matter oxidation ranged between 525–1200°C. There are no traces of post-burning fragmentation. Traces of melted copper/slag have been noticed on bone fragments. No fragments of the pyre or animal remains were contained in the urn.

Urn 17

The urn contained the incinerated remains of an adult individual of unknown sex, aged possibly between 20–30 years old. A total of 508 bone fragments were recovered, measuring 2–41 mm and weighing 205.8 g. The degree of organic matter oxidation ranged between 525–1200°C. There are no traces of post-burning bone fragmentation. Traces of melted copper/slag have been noticed on bone fragments. No fragments of the pyre or animal remains were contained in the urn.

Urn 18

The urn contained the incinerated remains of an adult individual of unknown sex, aged less than 40 years old. A total of 958 bone fragments were recovered, measuring 1–35.5 mm and weighing 215.7 g. The degree of organic matter oxidation ranged between 525–1200°C. There are no traces of post-burning bone fragmentation. Traces of melted copper/slag have been noticed on bone fragments. No fragments of the pyre or animal remains were contained in the urn.

Urn without number

The urn contained the incinerated remains of an adult individual of unknown sex, aged 30–40 years old. A total of 549 bone fragments were recovered, measuring 1–45 mm and weighing 96.5 g. The degree of organic matter oxidation ranged between 300–1200°C (the bones of lower limbs show a lower burning temperature). There are no traces of post-burning bone fragmentation. Traces of melted copper/slag have been noticed on bone fragments. Four animal bone fragments were found together with human remains, with the degree of organic matter oxidization between 645–1200°C. No fragments of the pyre have been observed.

The anthropological analysis of the incinerated remains from the Bor Lake necropolis identified a high degree of bone fragmentation and a degree of organic matter oxidation. There are no traces of post-burning fragmentation.

Traces of melted copper/slag have been noticed on bone fragments. Slag was found with human remains (38.6 g in urn 12) and four animal bone fragments (urn without number). No fragments of the pyre have been observed.

HAJDUČKA ČESMA NECROPOLIS IN BRESTOVAČKA BANJA

Unfortunately, for the necropolis named Hajdučka česma, discovered in the vicinity of Brestovačka Banja (Срејовић, Лазић 1997: 227), there is no accompanying archaeological documentation, so that we do not have the possibility to assess its distribution pattern and size. Also, we lack the data about burial constructions, as well as finds from the cultural layer (Map 1). The museum in Bor holds three urns from this necropolis, which contain incinerated human remains (Јовановић 2013).

RESULTS OF THE ANTHROPOLOGICAL ANALYSIS

Urn 2

The urn contained the incinerated remains of a juvenile individual of unknown sex, probably belonging to the Juvenilis I age stage. A total of 65 bone fragments were recovered, measuring 3.5–30 mm and weighing 13.4 g. The degree of organic matter oxidation ranged between 645–1200°C (the bones of lower limbs show a lower burning temperature). There are no traces of post-burning bone fragmentation. Traces of melted copper/slag have been noticed on bone fragments. Slag was contained in the urn (7.8 g). No fragments of the pyre or animal bones have been observed.

Urn without number

The urn contained the incinerated remains of a juvenile individual of unknown sex, aged between 20–30 years, comprising 7028 bone fragments, measuring 0.1–45.5 mm and weighing 647.7 g; an infant individual of unknown sex, aged 7 years ± 24 months, comprising 546 bone fragments, measuring 4–27.5 mm and weighing 7.8 g; and a foetus of unknown sex, comprising 138 bone fragments, measuring 3–17 mm and weighing 7.8 g. The degree of organic matter oxidation ranged between 645–1200°C for the adult remains (bones of the skull, mandible, upper and lower limbs show a lower burning temperature), 525–1200°C for the infant remains (bones of the skull, upper and lower limbs show a lower burning temperature), and 645–1200°C for the foetal remains (with the ribs showing a lower burning temperature). There are no traces of post-burning bone fragmentation. The fragments of bones contain no traces of melted copper/slag. No fragments of animal remains were contained in the urn, but fragments of the pyre were recovered (0.6 g).

The anthropological analysis of the incinerated remains from the Hajdučka česma-Brestovačka Banja necropolis reveals a high degree of bone fragmentation and oxidation of organic matter. There are no traces of post-burning bone fragmentation. The bone fragments contained traces of melted copper/slag. Slag (7.8 g in urn 2) and pyre remains (0.6 g in the urn without number) were recovered together with human remains. No animal remains were recovered from urns.

THE TRNJANE NECROPOLIS

The Trnjane necropolis presents the largest sacral object of the Bronze Age discovered so far in the vicinity of Bor and Majdanpek. In the course of archaeological excavations, 40 graves were discovered, with or without stone circular constructions (Јовановић, Јанковић 1987/1990; Јовановић 2013) (Map 1). The majority of the remains from this necropolis were analysed by M. Roksandić. On this occasion, we present the analysis of later research (or those not contained in the mentioned study).

RESULTS OF THE ANTHROPOLOGICAL ANALYSIS

Grave in trench 6/5

It contained the incinerated remains of an adult individual of unknown sex and age. A total of 63 bone fragments were recovered, measuring 2–32 mm and weighing 22.9 g. The degree of organic matter oxidation ranged between 645–1200°C. There are no traces of post-burning bone fragmentation. Traces of melted copper/slag are not present on bone fragments. No fragments of animal remains were contained in the urn. 9 g of pyre fragments were collected from the urn.

Urn 25

It contained the incinerated remains of an adult individual of unknown sex and age. A total of 36 bone fragments were recovered, measuring 3–20.5 mm and weighing 7.6 g. The degree of organic matter oxidation ranged between 645–1200°C. There are no traces of post-burning bone fragmentation. Traces of melted copper/slag are not present on bone fragments. No fragments of the pyre or animal remains were contained in the urn.

G-29

The grave contained the incinerated skeletal remains of an infant individual of unknown sex and precise age. A total of 30 fragments were collected, measuring 1–15 mm and weighing 1.4 g. The degree of organic matter oxidation ranged between 645–1200°C. Traces of melted copper/slag are not present on bone fragments. Fragments of the pyre are contained with the remains (0.9 g). There are no traces of post-burning bone fragmentation. No fragments of animal remains were contained in the urn.

G-38

The grave contained the incinerated skeletal remains of an adult female of unknown age, represented by 419 bone fragments measuring 1–41 mm and weighing 161.1 g; and a foetus of unknown sex, 34 weeks old, represented by 19 fragments measuring 7–20 mm and weighing 3.9 g. The degree of organic matter oxidation ranged between 525–1200°C in both individuals (the bones of the skull and lower limbs of the adult female show a somewhat lower burning temperature). There are no traces of post-burning bone fragmentation. Traces of melted copper/slag are not present on bone fragments. Fragments of the pyre are contained with the remains (9.4 g). No fragments of animal remains were contained in the urn.

G-43

The grave contained the incinerated skeletal remains of an infant individual of unknown sex, 9 ± 3 months old. A total of 824 fragments were recovered, measuring 1–20.5 mm and weighing 14.2 g. The degree of organic matter oxidation ranged between 525–1200°C. There are no traces of post-burning bone fragmentation. Traces of melted copper/slag are not present on bone fragments. Fragments of the pyre are contained with the remains (2.0 g). No fragments of animal remains were contained in the urn.

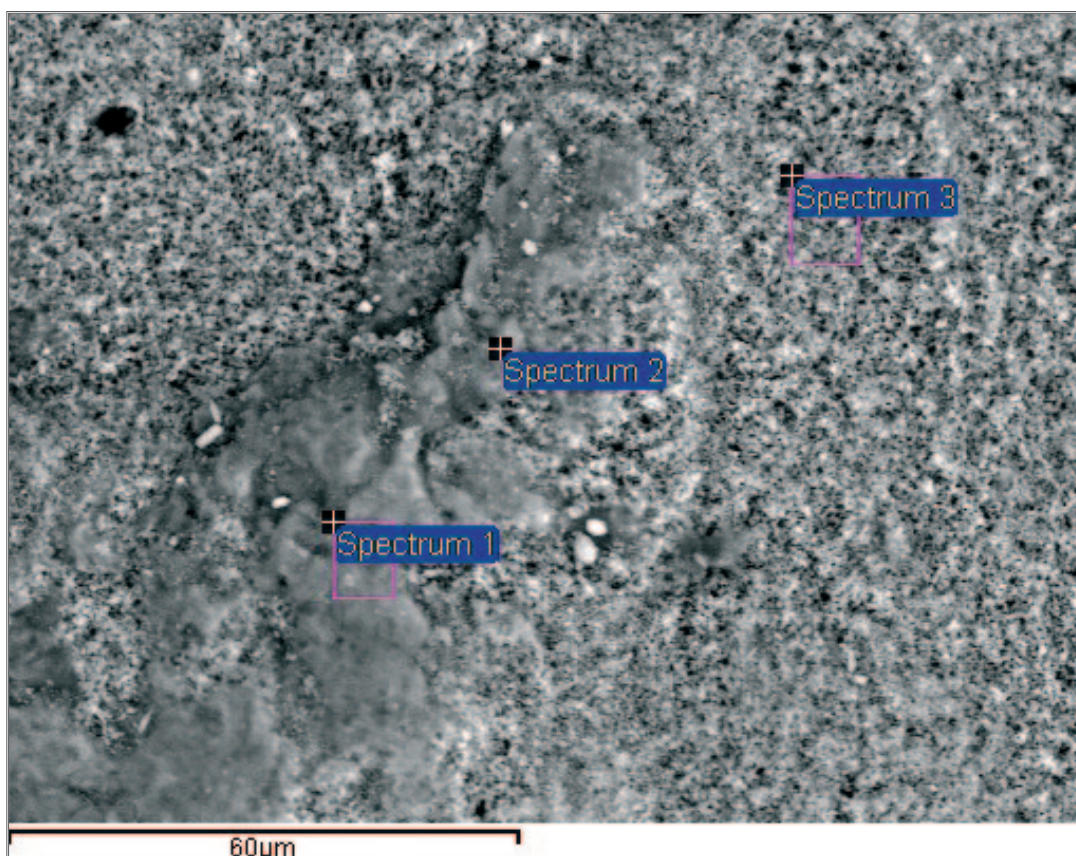


Fig. 3 Stains of mixed ferrous aluminium silicates in human bone structure via binding energy spectrometry (BES)

The incinerated human remains from Trnjane also show a high degree of bone fragmentation and a high degree of organic matter oxidation, but the burning temperature was somewhat lower in comparison to the remains from other

sites. One of the burials contained the remains of a pregnant woman (G-38).² There are no traces of post-burning bone fragmentation. Traces of melted copper/slag are not present on bone fragments. Fragments of the pyre were regularly found within the burial, weighting 0.9–9.4 g. No fragments of animal remains were contained in the urn.

RESULTS OF PHYSICAL/CHEMICAL ANALYSES

At the last conference held in Osijek in 2011, we were yet to confirm our statement that the incineration process could have happened at places where ore was melted (Kapurán 2014: 289). We draw this conclusion from the anthropological analysis of osteological material. The large number of incinerated bone fragments contained unusual light or dark brown stains of various sizes (Fig. 2). Macroscopical observations revealed that they do not only affect bone surface, but penetrate in some instances deep inside bone structure. Also, the high degree of fragmentation and organic matter oxidization on the basis of colour made us assume that incineration was practised at very high temperatures, which are hard to attain even in present-day conditions. We concluded that such changes could have occurred only in the course of the incineration process, and that they may have been caused by the slag residue in structures for melting ore. We decided to observe bone fragments with scanning electron microscopy which, along with providing a very high magnification (30–10000 times), can also trace and quantify chemical elements via binding energy spectrometry (BES) on the basis of the peaks they produce when releasing energy stimulated by X-ray emission.

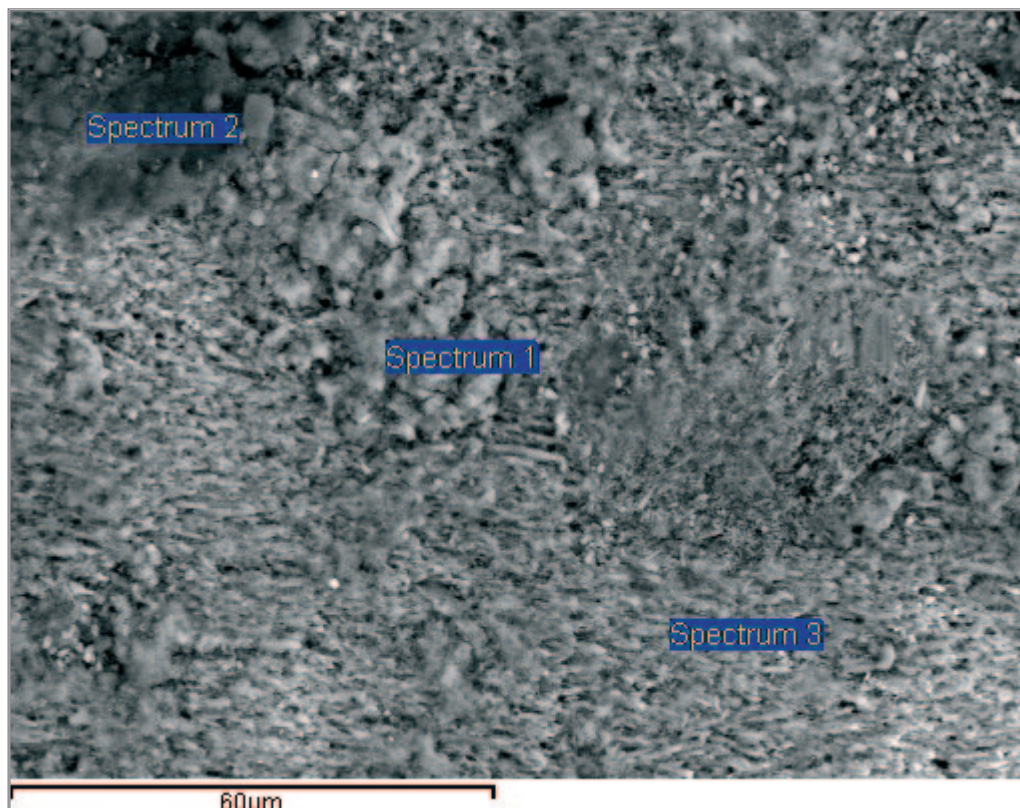


Fig. 4 Stains of iron in human bone structure via binding energy spectrometry (BES)

The BES signal obtained through the scanning of these stains shows the fine porous structure of human bone structure, comprised of the characteristically composed spalled calcium-phosphate aggregates. The same specimens contain stains of irregular shapes corresponding to microscopically detected dark coloured stains (Fig. 3–4; Spectrum 3). The stains are comprised of elements such as aluminium silicates (clay) or mixed ferrous aluminium silicates (Fig. 3), and iron (Fig. 4).

The presented physical/chemical composition is compared with the sample of metallic slag found within the burials from the Trnjane necropolis, as well as in the newly discovered metallurgic centre in Ružana. The analyses show that the slag has an almost identical element composition as the stains on the incinerated human remains, represented by ferrous

² As it was stated earlier, M. Roksandić did anthropological research of osteological material from Trnjane necropolis (32 burials). Obtained results match with recent studies. All are single burials (except G-28 where an adult individual of unknown sex and age buried together with an infant). Degree of organic matter oxidation points to the burning temperatures above 600°C, and prevailing weight of human remains below 100 g (in 60% of incinerated remains).



Fig. 5 Ružana, Bronze Age slag remains

aluminium silicates and iron (Fig. 6). A high percentage of iron is common in all the metallic slags from the Bronze Age, maybe because its oxide was added to the sulphide ore in the course of a better removal of slag from copper (Potrebica 2013: 14). The slag acquired in this way was then dumped at depots where it developed a cortex resulting from weathering and oxidation.

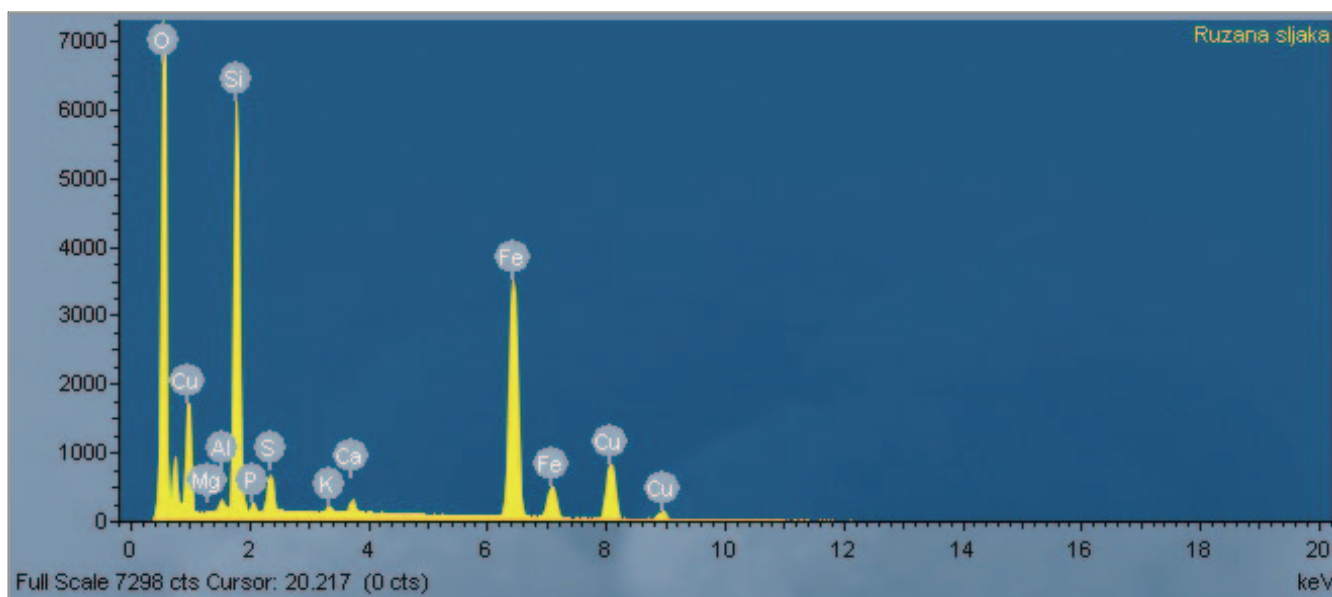


Fig. 6 Element composition of slag from Ružana

SOME NEW RESULTS OF ARCHAEOLOGICAL RESEARCH

New evidence about the metallurgic traditions of the Late Bronze Age societies in the surroundings of Bor, aside from the research of new settlements and necropolises, has been obtained from a recent discovery of a metallurgic centre situated in the area between the necropolises of Trnjane and Hajdučka česma (Kapuran, Jovanović 2013). The site was discovered by chance, in the course of earthworks for the construction of a house in the village of Banjsko polje, in the vicinity of Brestovačka Banja (Map 1). The site was named Ružana after a creek which is a tributary to the Brestovačka river, on whose

right bank there existed a settlement with horizons dating from prehistory to the Roman imperial period. The volcanic rock base contributes to poor water drainage and significant erosion, resulting in the redeposition of archaeological material, pottery and wall plaster from various periods of prehistory – the Bronze Age, the Early Iron Age, the Late Iron Age, and finds from Late Antiquity. Unfortunately, the prehistoric settlement is located in the modern suburbs of Bor, so that we are confined to free areas of small dimensions that the owners of the houses allow us to excavate.

Stratigraphy shows a multi-stratified settlement with cultural horizons from the Late Bronze Age, the Basarabi culture (8th–7th cent. BC), the Zlot group (6th–4th cent. BC) and La Tène or a prevalence of the Celts (1st cent. BC–1st cent. AD).

The metallurgic Bronze Age centre was comprised of one furnace and a pit for slag refuse beneath it. The homogeneous material comprised Bronze Age pottery and a large amount of animal remains, many of which were saturated with malachite or were green coloured. However, most remains of slag had various sizes, forms and composition. The slag dispensed from the furnace burnt the floor underneath it, over which it was deposited together with a large amount of ashes and charcoal.

The discovered slag is found in the higher cultural layers of the settlement, but it is comprised of smaller fragments, while the culturally homogeneous layer from the Bronze Age had slag remains of larger dimensions (from the weight of 3.5 kg) (Fig. 5). The observed types of slag include bowl-shaped slag, tap slag and amorphous slag. In comparison with the modern slag from the mining-smelting basin of Bor, with samples from the Trnjane necropolis, grave 7, and with Ružana, it is deficient in the amount of Ca from the slag, which points to a less advanced level of smelting, without adding flux such as calcium-oxide (CaCO₃). In the slag from Ružana, we observe a striking loss of copper (almost 15% of Cu in its component), which is more analogous to the slag resulting from converting the ore than the slag produced by direct ore smelting under the present-day standards of processing (Fig. 6). It seems that the slag from Ružana was already copper-depleted, and most probably was a side product of the refining of the already obtained copper.

CONCLUSION

The Bronze Age in the areas producing the best known copper ore in Serbia – the Bor mining basin – is primarily characterized by population growth in comparison to other periods of prehistory (Kapuran 2014a: 54). Numerous settlements have been observed both in fertile lowlands and in mountainous regions which are situated near the sources of copper ore. Recent archaeological research discovered, among other, a place of metallurgic activity with the remains of a metallurgic furnace and slag refuse.

The anthropological analysis of the incinerated remains from these sites shows high bone fragmentation and a high degree of organic matter oxidation, without subsequent fragmentation. The bone fragments from the site of Kriveljski kamen-Bunar do not contain traces of melted copper/slag. No animal or pyre remains were found together with the human remains. Traces of copper/slag are present on bone fragments from the Bor lake. One urn (urn 12) contained 38.6 g of slag, while the urn without number contained some animal bone fragments (0.2 g). No remains of the pyre have been encountered. The bone fragments from the site of Hajdučka česma-Brestovačka Banja also contain traces of melted copper/slag. Slag was found together with the human remains in urn 2 (7.8 g), and remains of the pyre were found in the urn without number (0.6 g). No animal bones were found together with the human bones. The incinerated human remains from Trnjane also show a high degree of bone fragmentation and a high degree of organic matter oxidation, but the burning temperature was somewhat lower in comparison to the remains from other sites. One of the burials contained the remains of a pregnant woman (G–38). Traces of melted copper/slag have not been observed. Fragments of the pyre were regularly encountered, weighing 0.9–9.4 g. No animal remains were encountered together with the human remains.

It can be concluded that these metallurgic societies could attain very high temperatures owing to certain skills. These skills and techniques were not used only for ore smelting, but also in the course of the incineration of the deceased. The above-mentioned comparisons of element spectrometry confirm the usage of worn furnaces for the incineration process. We hope that further research of these Urnfield sites will strengthen our assumptions and help us complete our understanding of their funerary practices.

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