MATEUSZ JAEGER · LADISLAV OLEXA

THE METALLURGISTS FROM NIŽNÁ MYŠĽA (OKR. KOŠICE-OKOLIE/SK)

A CONTRIBUTION TO THE DISCUSSION ON THE METALLURGY IN DEFENSIVE SETTLEMENTS OF THE OTOMANI-FÜZESABONY CULTURE

It is a widely held view that the defensive settlements from the Early Bronze Age were a key element in a complex interregional network (Sherratt 1993). They controlled the exchange routes, along which relevant knowledge and concepts travelled together with the goods (Kristiansen 2004; Kristiansen / Larsson 2005). Bronze (as well as copper and tin) was one of the most important raw materials distributed along the Bronze Age transit routes, which were controlled by the elites erecting the settlements, followed by amber and gold (Sherratt 1987; 1993, 21. 29). In this respect, the defensive sites are interpreted as centres of exchange and production (Točik 1982, 411-413). Detailed regional studies devoted to individual areas of Central Europe have yielded a more dynamic picture, pointing, among other things, to the range of local traditions which influenced the strategies of adopting and using metallurgic innovations by the communities of defensive settlements (Jaeger 2011). The most abundant evidence testifying to local metal production was provided by sites located in two areas of the Carpathian Basin: in the basins of the central Danube (Great Hungarian Plain: Vatya culture) and of the upper Tisza (eastern Slovakia: Otomani-Füzesabony culture; hereinafter referred to as OFC for convenience) (Jaeger 2011, 92-97. 138-149). This study addresses the latter region, relying on sources from the Nižná Myšľa site in eastern Slovakia (okr. Košice-okolie). With respect to the Carpathian Basin (and more broadly – Central Europe) the finds are unique.

OTOMANI-FÜZESABONY CULTURE IN EASTERN SLOVAKIA

The OFC settlement in today's Slovakia is concentrated in the northern zone of the ecumene of this grouping. At present, three key settlement areas may be distinguished, namely: the East Slovak Lowland, the Spiš area and the Košice valley (**fig. 1**; Gašaj 2002a, 16-18). The sites are grouped primarily in the basin of the upper Tisza, on the Hornád, Torysa and Latorica rivers. Among those, defensive settlements are the best explored. In the Košice valley, only several kilometres away from Nižna Myšľa with its two fortified settlements dating from different times and an extensive burial ground, there are two other significant sites: Košice-Barca and Rozhanovce, as well as numerous cemeteries, including Čaňa, Seňa, Valaliky and the open settlement of Veľká Ida (all sites: okr. Košice-okolie/SK) (Olexa 1982, 396 fig. 5; Gašaj / Olexa 1992, 9 map 1; Horváthová 2011). In turn, in the mountainous region of Spiš, the OFC settlement was due to a broader expansion process of its community. As a result, this group arrived also in the area of the Low Beskids in Poland (**fig. 1**; Gancarski 1994, 97; 1999; 2002a; Jaeger 2010). The best known site of the OFC ecumene in Spiš is the settlement in Spišský Štvrtok (okr. Levoča/SK; Vladár 1979).

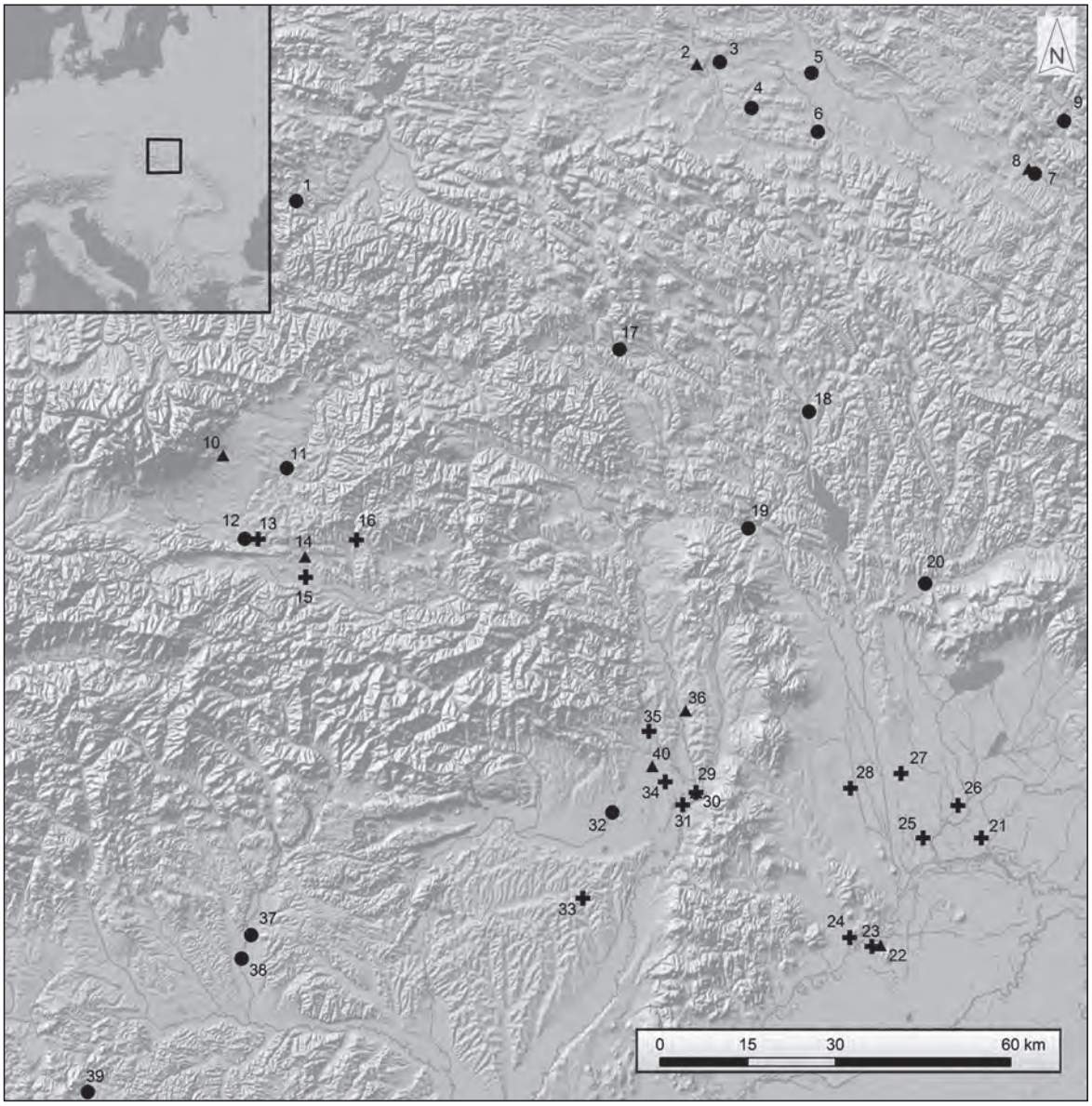

Fig. 1 Main sites of the Otomani-Füzesabony culture in Poland and Slovakia: **1** Maszkowice. – **2** Trzcinica. – **3** Jasło. – **4** Łajsce. – **5** Potok. – **6** Wietrzno-Bóbrka. – **7** Sanok. – **8** Trepcza. – **9** Hłomcza. – **10** Lomnica. – **11** Kežmarok. – **12** Gánovce. – **13** Švábovce. – **14** Spišský Štvrtok. – **15** Spišské Tomášovce. – **16** Levoča. – **17** Mokroluh. – **18** Stropkov. – **19** Hanušovce nad Topľou. – **20** Humenné. – **21** Čičarovce. – **22** Streda nad Bodrogom. – **23** Streda nad Bodrogom. – **24** Borša. – **25** Oborin. – **26** Drahňov. – **27** Bracovce. – **28** Trebišov. – **29** Nižná Myšľa. – **30** Nižná Myšľa. – **31** Čaňa. – **32** Veľká Ida. – **33** Seňa. – **34** Valaliky. – **35** Košice-Tepláreň. – **36** Rozhanovce. – **37** Tornaľa. – **38** Včelince. – **39** Stará Bašta. – **40** Košice-Barca. – Symbols: ● settlements; ✚ cemeteries; ▲ fortified settlements. – (After Gašaj 2002a; Jaeger 2011; created with base map from ESRI Data & Maps Media Kit 9.3, STRM global shaded relief data & River/Lake overlays).

METALLURGY IN THE DEFENSIVE SETTLEMENTS OF THE OTOMANI-FÜZESABONY CULTURE

In terms of sources, the metallurgy of the OFC ecumene in eastern Slovakia is one of the best documented phenomena. However, none of the settlements has been discussed in a monograph providing a complete review of sources. The issue of metallurgy in the Carpathian Basin was frequently addressed in synthetic studies, which emphasise the importance of the region in the development of bronze production in other

parts of Europe (Sherratt 1987; 1993; Liversage 1994; 2000, 73-75; Kristiansen / Larsson 2005). Only two monographs so far have dealt with metallurgy in the Early Bronze Age defensive settlements on the territory of the present-day Slovakia (Novotná 1983; Bátora 2009, 210-213). The studies provide a description of the basic sources: crucibles and moulds, endings of bellow nozzles and the finished metal products. Furthermore, there is a monographic study of the hoards of the Hajdúsámson-Apa horizon, which to a large extent are associated with the OFC environment (David 2002; Vachta 2008). Apart from that, much attention has been devoted to individual deposited objects – full-hilted swords of the Apa type and various forms of hatchets (cf. Kroeger-Michel 1983; Kovács 1994; Bartík / Furmánek 2004). Their elitist nature and the baggage of social and cultural components is thought to be related directly to the phenomenon of defensive settlement (Sherratt 1987, 58; David 2002, 415 note 26).

The research at the defensive sites brought a range of discoveries associated with the various stages of copper / bronze and gold processing[1]. To a degree, the presence of substantial amounts of certain sources, such as the stone moulds and finished metal products is due to their specific durability, which resisted the destructive post-depositional processes (cf. the remarks in Bartelheim 2002, 36). Nevertheless, the fact that all sites discussed below have yielded a considerable number of objects associated with metallurgy, is likely to reflect the originally high degree of technological advancement and a widespread knowledge of the craft among the OFC communities[2].

At the site of the Spišský Štvrtok settlement, a deposit of malachite ore has been discovered (Vladár 1975, 217). In all probability this may be considered to have been a stock of raw material for further processing. Local production in this settlement is borne out by the finds of casting moulds (Vladár 1975, 217; Novotná 1983, 67) and the rich assortment of finished gold and bronze objects (Gašaj 2002b, 40. 47 figs 30. 33). Half-finished gold pendants came to light in two locations in Spišský Štvrtok. According to the author of the studies, a substantial part of the metal objects were deposited in chests / »treasuries« under floors and on the premises of dwellings situated in the so-called acropolis. In one of the structures (no. 4.68) three deposits were found (Vladár 1979, 10). Ample hoards are also known from other defensive settlements. For instance, a collection of gold jewellery was discovered in a dwelling in Košice-Barca (Hájek 1954; Gašaj 2002b, 46 fig. 47). The site is also known for its deposits of flanged axes and bronze jewellery (Gašaj 2002b, 22 fig. 1; 46 fig. 45). Particular significance should be attached to the deposits found in individual dwellings, since they imply the existence of private property and demonstrate that it was possible for gold and bronze to be amassed by private persons (e. g. as the property of one family).

The research carried out in Rozhanovce has yielded the least sources associated with bronze metallurgy, though even there local production is evidenced by stone casting moulds, including a dagger mould (Gašaj 1983, 134; 2002b, 37 fig. 25). The existing sources confirm that daggers were also produced in the remaining settlements (Olexa 2002, 82 fig. 97; 2003, 52 tab. XI, 3; Bouzek 2004). In this context, the finds from the sites in Košice-Barca and Nižná Myšľa are particularly significant. In the former, besides casting moulds, a richly ornamented, broken dagger blade of the Kelebia type was discovered (Vladár 1973, 315 fig. 71, 7; Bóna 1992, 52 f. fig. 23; Gašaj 2002b, 45 fig. 43). Numerous dagger blades were found in the graves in Nižna Myšľa (Olexa 2002, 74. 82 figs 81. 98; 2003, 39. 68 tabs IV. XVII). In many cases, the artefacts were made and ornamented with great care. They demonstrate that the local metallurgists had the knowledge and experience necessary to turn out blades of adequate length and quality. Those skills, combined with the knowledge of Central European dagger shape with full hilt and the possible Aegean-Anatolian »stimulus«, understood as familiarity with the new kinds of weapons (type A rapier), were a foundation which brought forth a new form of sword – the Apa type (Kovács 1994, 59; Bartík / Furmánek 2004, 265; Bouzek 2004; Schulz 2006, 219).

The most numerous and most comprehensive publications of sources related to bronze and gold metallurgy are associated with the long-running research in Nižna Myšľa (Olexa 2003, 19-21; Olexa / Nováček 2012).

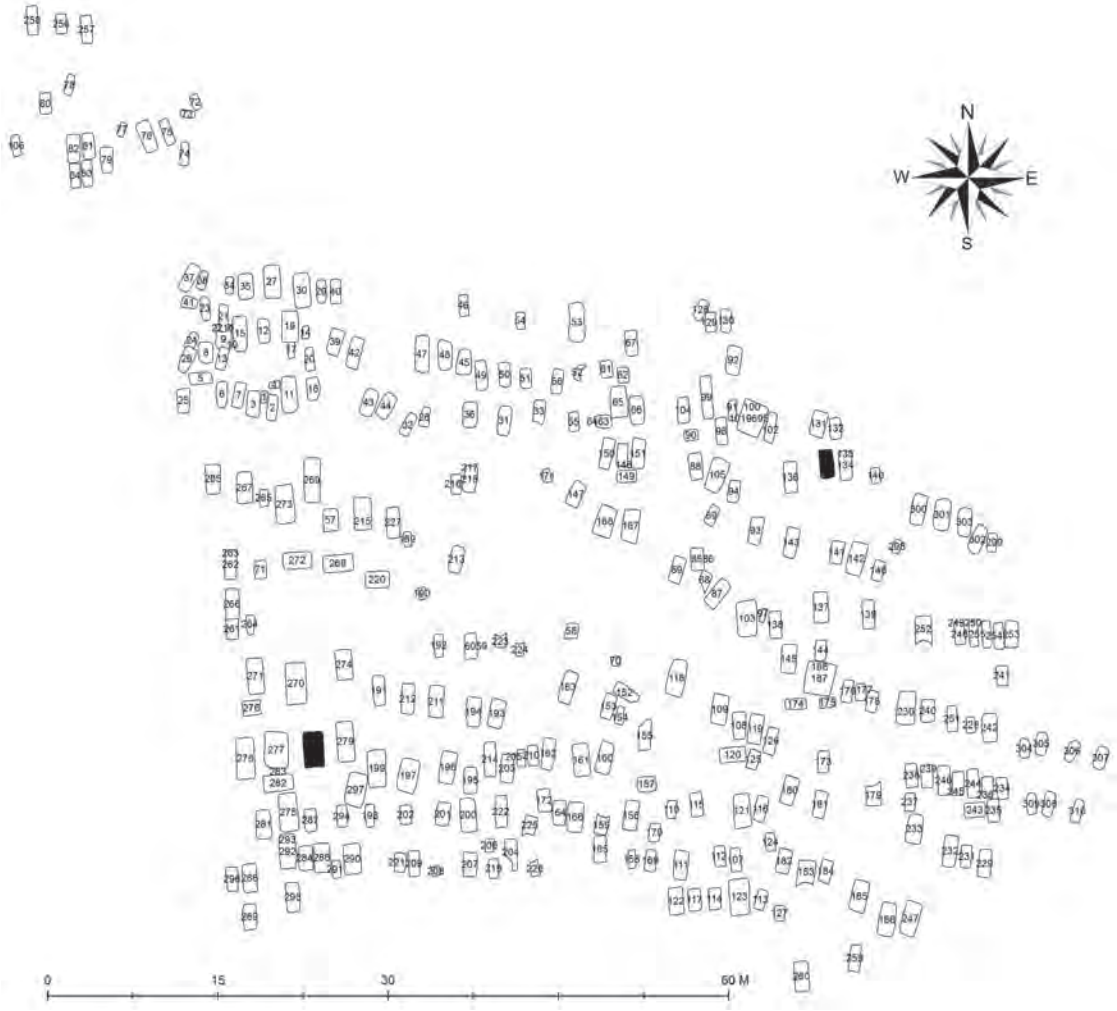

Fig. 2 Nižná Myšľa (okr. Košice-okolie/SK). Western part of the cemetery (graves nos 1-310). – Metallurgist's graves marked in black: in north-eastern part of the site, grave no. 133; in south-western part of the site, grave no. 280. – (After Olexa / Nováček 2013).

In this particular instance, the information originating from two defensive settlements was supplemented by the unique sepulchral finds.

Within the perimeter of the two defensive sites in Nižna Myšľa, the researchers have discovered very abundant assemblages which unequivocally attest to the local production of a very wide range of objects. They stemmed both from remains of dwellings, from their immediate surroundings as well as from pits and the ditch fill (Olexa 1997, 94; 2003, 59). None of the zones at the sites have yielded a particular concentration of finds associated with metal processing nor accumulations of objects (e. g. casting tools) and structures (e. g. furnaces) of special nature, which would point to the original location, the number and the type of potential places of production [3].

The bronze artefacts, whose local production is confirmed by the finds of casting forms, includes jewellery (pins, cord ferrules) as well as weapons (spearheads, daggers) and tools (axes) (Gašaj 2002b, 44 fig. 39; Olexa 2003, 46 tab. VII; 52 tab. XI; 58 tab. XIII). Apart from the stone moulds, metal processing is also confirmed by the presence of numerous metallurgic tools, including crucibles (also with remnants of smelted metal), casting ladles and ends of bellow nozzles (Gašaj 2002b, 24 fig. 4; Olexa 2003, 52 tab. XI, 1-2. 6). There are also unfinished and destroyed objects, which constitute production waste (Olexa 1992, 193).

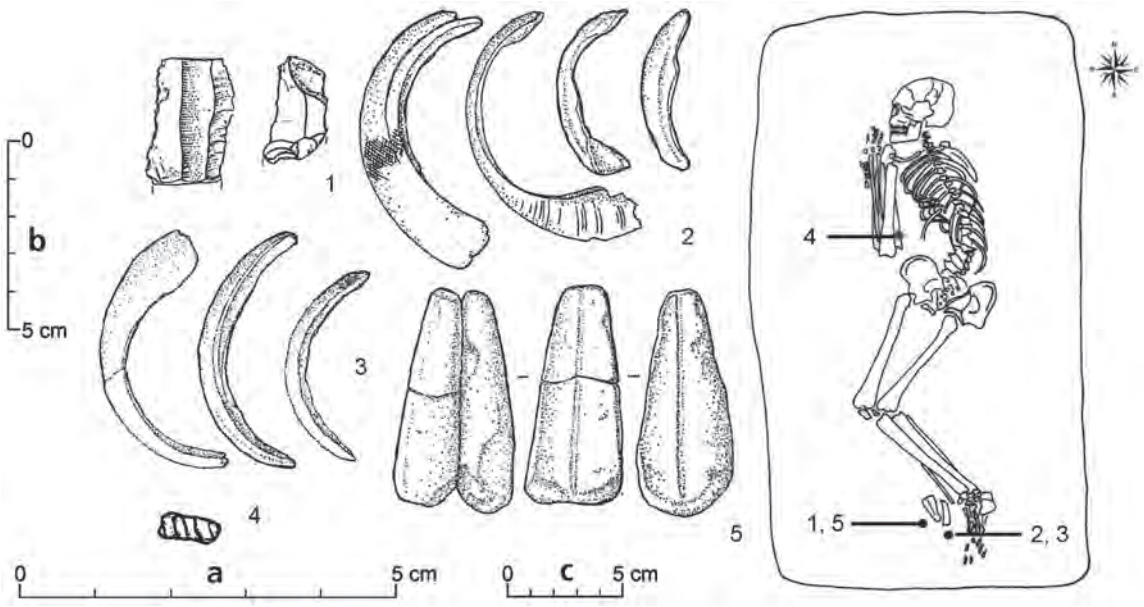

Fig. 3 Nižná Myšľa (okr. Košice-okolie/SK). Grave no. 133: burial and grave furnishings. – (After Olexa / Nováček 2013). – a scale 1:1; b scale 1:2; c scale 1:3.

In the case of the Nižná Myšľa site, eleven bronze and one gold artefact were analysed in order to determine the origin of the material. The research led to a conclusion that the raw material was obtained from local deposits (copper ores found near Bankov [okr. Košice-okolie/SK], gold deposits in the vicinity of Telkibánya [Kom. Borsod-Abaúj-Zemplén/H] as well as gold discovered in the bed of the Ida river) (Luštík / Mihok / Olexa 1991; Olexa 2003, 61; Bátora 2009, 212). However, at present the hypothesis needs to be verified by means of new analytical procedures, primarily by combined analysis of lead isotopes and trace elements in finished objects and samples from the potential sources of the material (Pernicka 1987; Villa 2009).

The above review of available information concerning the metallurgy in the OFC defensive settlements permits one to draw certain general conclusions. First and foremost, the ubiquity and the diversity of discovered sources is striking, being a singular leitmotiv of the discussed sites. It should be emphasised that they comprise not only finished products (potential result of exchange) but also objects associated with metallurgic production: moulds, crucibles, casting ladles, bellow nozzles as well as half-finished products and waste. Nevertheless, furnaces or other structures that would enable a metallurgic workshop to be identified have not been discovered so far in any of the settlements.

BURIALS OF METALLURGISTS FROM NIŽNÁ MYŠĽA

In the course of long-running research at the extensive burial ground in Nižná Myšľa (Olexa 2002; Olexa / Nováček 2013) two of the graves come to light thus far have been identified as burials of metallurgists (**fig. 2**; Olexa 1987). Given the fact that similar discoveries of this kind dating from the Early Bronze Age are few and dispersed across the entire Europe (Bátora 2002, 193-195. 199-207; Soriano 2011, 45 fig. 8), the aforementioned graves represent a unique source of information.

In the first of those (no. 133), a man was buried in a rectangular hollow measuring 100 cm × 200 cm × 200 cm (width × length × depth), in a position characteristic of the OFC – crouching and on his right side (**fig. 3**). The accoutrements of the deceased included a bronze spiral near the right elbow, two flakes (the first a

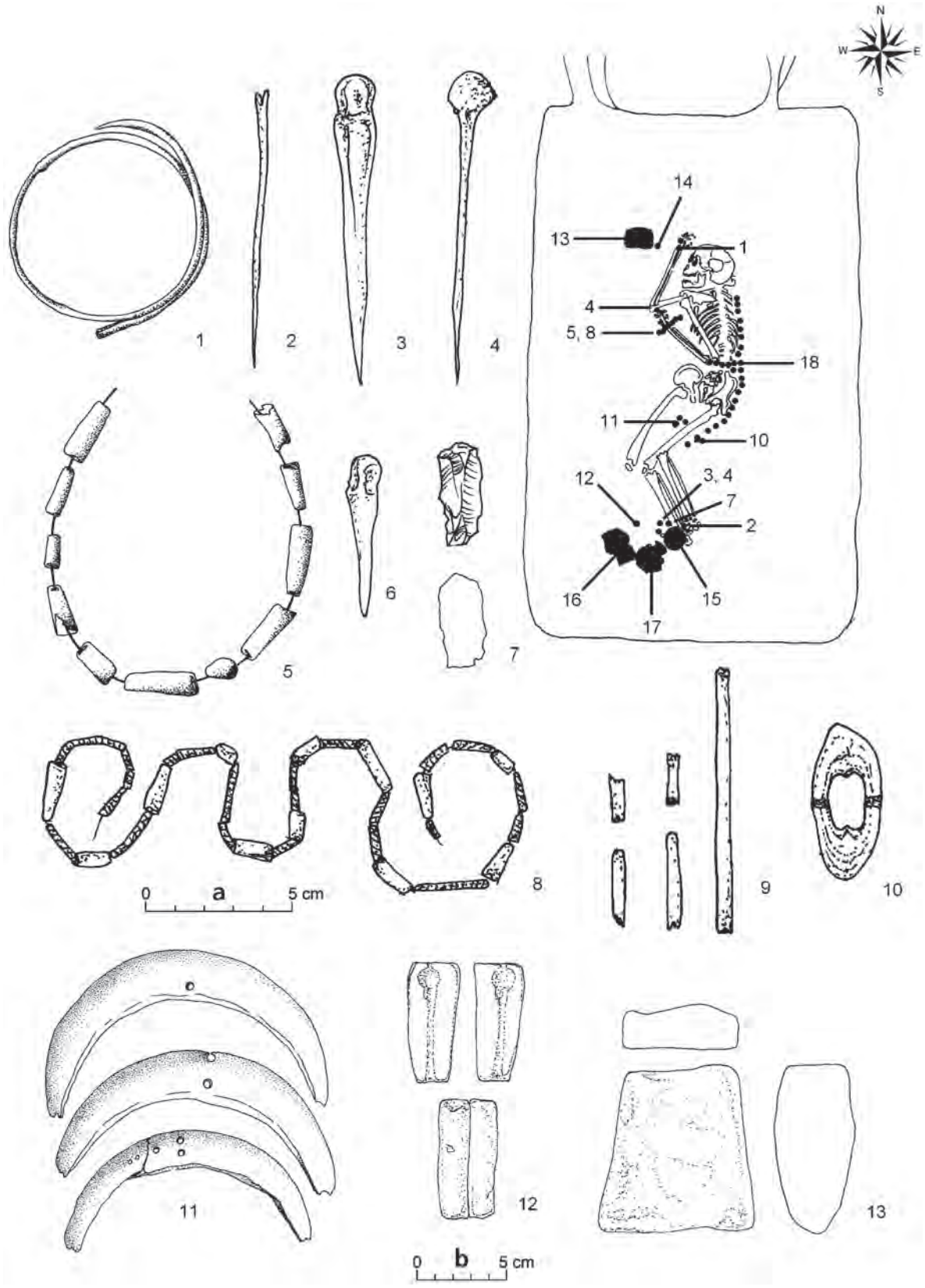

Fig. 4 Nižná Myšľa (okr. Košice-okolie/SK). Grave no. 280: burial and grave furnishings. – (After Olexa / Nováček 2013). – a scale 1:2; b scale 1:3.

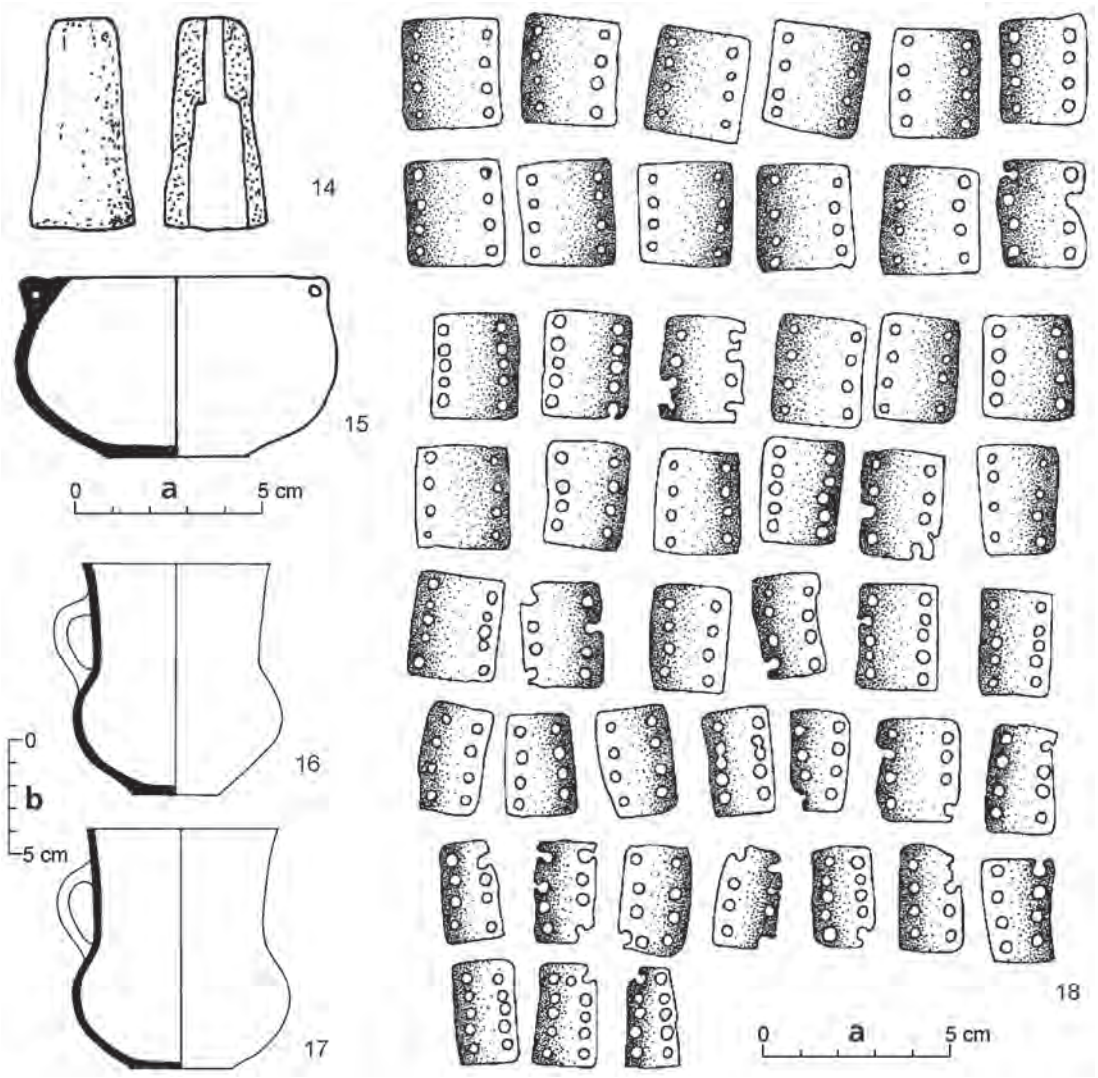

Fig. 5 Nižná Myšľa (okr. Košice-okolie/SK). Grave no. 280: grave furnishings. – (After Olexa / Nováček 2013). – a scale 1:2; b scale 1:3.

carelessly fashioned chert flake and the second a good quality flake made from obsidian), seven boar tusks, halved along the vertical axis, and a stone mould for casting pins or awls (**fig. 3**; Olexa 1987, 259 f. fig. 2).

The second grave (no. 280) was roughly rectangular in shape and measured 155 cm × 250 cm × 210 cm (width × length × depth). It was slightly disturbed in the southern section by a looting dig. In this grave, a man is buried in crouching position on his right side (**fig. 4**). The burial is equipped with 49 boar tusk plates with eight to ten perforations (**fig. 5**; Olexa 1987, 263), a »clasp« made from antlers, a spiral bracelet on the bones of the right forearm, as well as a massive nozzle of bellows and an ore crushing hammer in front of the fingers. A pin with massive, spherical, obliquely perforated head was found close to the left hand, as well as a necklace of shells, bronze spiral and tubes, and three pendants made from boar tusks. The remaining objects were laid at the feet of the deceased. These included: an obsidian flake, a bronze pin (or possibly a needle), two bone chisels, a sandstone mould for casting pins with massive, spherical, obliquely perforated head, and three vessels (**fig. 4**).

Specific elements of the equipment in the above graves allow them to be classified as burials of metallurgists. In the case of the burial no. 133 this applies chiefly to the casting mould but also to the halved boar

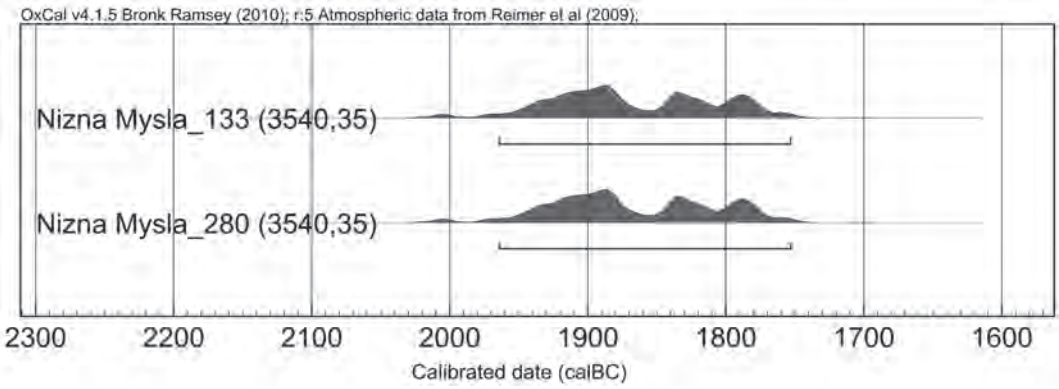

Fig. 6 Nižná Myšľa (okr. Košice-okolie/SK). The sum of the probable distribution of ^{14}C dates from the graves nos 133 and 280. – (Illustration M. Jaeger).

tusks. The latter may be interpreted as tools used to grip and hold the hot crucibles/casting ladles. In the burial no. 280 there were more artefacts unequivocally associated with metallurgy: the mould, the nozzle of bellows and the massive hammer for crushing ore.

The chronological positioning of the burials is an important argument in the discussion on their significance. Following typo-chronological analysis both burials were estimated to date to the pre-classical phase of the OFC, i. e. to the beginning of the BrA2 period, to which the oldest burials at the site date back as well (Olexa 1987, 255. 257 note 1; Gašaj 2002c, 95). Radiocarbon dating conducted on the obtained bone samples has rendered the presumed time frame more precise.

The dating (AMS) was performed at the Poznańskie Laboratorium Radiowęglowe (**fig. 6**). In the light of the results of physical-chemical dating both burials should be considered contemporaneous. Their age falls within the time span 1965-1754 BC (95.4 %).

DISCUSSION

The results of radiocarbon dating lead to specific interpretative consequences with regard to at least two issues.

The first is how one should understand the spatial arrangement of the burial ground in Nižná Myšľa. Although both burials are concurrent in terms of the time period, no spatial relationship between them exists. The graves are situated at a relatively large distance from one another, in different parts of the burial ground which is characterised by a specific internal structure, manifested in the alignment of burials in rows (**fig. 2**). Such an arrangement may suggest chronological order and a successive pattern in which the subsequent rows of burials appeared. The hypothesis is difficult to verify without an adequately long series of radiocarbon dating. The ^{14}C-based dating of the discussed burials of metallurgists may be treated as grounds for a cautious supposition concerning the influence of factors other than chronological on the placement of the graves. Above all, one should consider kinship, which may have played a significant role in creating and organising funeral space.

The second issue which requires to be addressed in the light of the obtained radiocarbon dating is the interpretation of sources related to metallurgy. Both burials differ not only in the assortment of described artefacts but also in terms of general wealth of the equipment. Unlike the burial no. 133, where the deceased was provided only with a minor bronze ornament and two flakes, the burial no. 280 revealed a range of bronze embellishments, an antler clasp and an exceptionally abundant collection of boar tusk accessories.

The characteristic arrangement of the latter in the burial suggests that they constituted an element of the attire, forming a kind of armour. The few deceased in whose graves similar accessories have been discovered (in much smaller numbers) are perceived as persons with special status in the society (Olexa 2002, 77 f. 83). Both graves may be indisputably classified as burials of metallurgists. The apparent difference in the wealth of their equipment reflects dissimilar esteem that both enjoyed as metallurgists. The multifaceted nature of metallurgic production advanced in literature (Rowlands 1971; Levy 1991; Kuijpers 2008) presupposes that differences in competences may have existed within this group of craftsmen. Specialisation may have been due chiefly to the complex nature of metallurgic processes – from ore mining to casting objects from molten metal (Eibner 1982; Kuijpers 2008, 52). The individual links in the production chain may have potentially been the province of individual persons – specialists. Yet it is possible that there were craftsmen capable of controlling the entire technological process. Individual skills of a craftsman were probably the final, decisive factor.

Drawing a distinction between a specialist and a non-specialist is possible following the criteria suggested by C. L. Costin (2001, 279). The criteria are: a) intensity of production (time spent on production); b) compensation (quality and quantity of goods received as remuneration for work rendered); c) skills / abilities (set of intellectual and physical features which enable a specific degree of workmanship). As M. Kuijpers aptly observes, only the latter criterion, i. e. skills / abilities, is manifested in archaeological sources. Subjective assessment of the craftsmanship in a relevant case is based on finished metal (bronze) objects and the context of their deposition (Kuijpers 2008, 31).

Elaborate forms, high technological standard and the opulent ornamentation of artefacts deposited in the hoards of the Hajdúsámson-Apa horizon (Kroeger-Michel 1983; David 2002), permit a hypothesis assuming the existence of a highly specialised group of craftsmen / metallurgists engaged in their production. The deposits in this category consisted exclusively of weapons. Each item was crafted with high degree of precision, while their rich spiral ornamentation and the form were frequently distinctively individual or customised [4]. Based on these features it may be surmised that the objects denoted prestige, and most likely were not used practically as weapons (cf. Kristiansen 2002). The aforementioned hoards were not deposited in the settlements. In this context, the seemingly modest fragment of a richly ornamented hatchet (most likely with a button-shaped poll) discovered in the settlement in Nižná Myšľa gains some significance (Olexa 2002, 80 fig. 94; 2003, 57 tab. XII, 17). This is the only find which attests to the relationship between defensive sites and the parade weapons deposited in the eastern part of the Carpathian Basin (David 2002, map I).

The simple, unornamented artefacts, such as minor decors, axes and other tools constitute an entirely different group of metal products, given the knowledge and skills required during their production. Such objects are represented in substantial numbers in the inventories of the OFC settlements in Slovakia. The context in which they were discovered suggests that they had been lost and were not subject to selective deposition. They served as objects of everyday use on the premises of individual households (Gašaj 2002b, 31. 35).

Experience, individual skills and predispositions may have hypothetically engendered ever narrower specialisation and social stratification of persons engaged in metallurgic production. The burial no. 133 yielded objects associated only with casting metal into simple forms (**fig. 3**), while the finds in the burial no. 280 suggest broader competences of the deceased, including mechanical (hammer) and thermal processing (bellow nozzle) of ore / metal as well as casting bronze / gold artefacts (mould and the finished pin) (**fig. 4**).

The contrasting wealth of burial equipment of metallurgists in Nižna Myšľa allows one to assume that there were both craftsmen of different status and clients whose needs varied. It is believed that there is a consistency in the relationship between the high status of the producer, the quality of produced goods and the

high social standing of the buyer (Costin 1991, 12 f.). The rich deposits of ceremonial weapons of the Hajdúsámson-Apa horizon suggest that a number of those who acquired metallurgic products required objects of special form and ornamentation, used in the process of cultural and social reproduction.

THE IMPORTANCE OF METALLURGY OF THE OTOMANI-FÜZESABONY CULTURE

In the aforementioned study of metallurgy in defensive settlements across Slovakia, the author puts forward a thesis stating local significance of the existing metallurgic workshops (Novotná 1983, 67). In her opinion, local metallurgists catered primarily to the needs of the inhabitants of settlements and their immediate surroundings. Given the present state of knowledge, this view should be verified, indicating a broader role of the OFC defensive sites.

The long-running research at the burial ground in Nižna Myšľa demonstrates that metal objects, bronze as well as gold ones, were in evidence in an overwhelming majority of graves, i. e. in 85-90 % of the 784 discovered burials. The large number of metal artefacts found in the burials in Nižna Myšľa and the numerous proofs for the local metallurgic production may essentially be considered a basis for the conclusion that bronze (and gold) objects were produced for the local needs, i. e. for the inhabitants of the settlement and its surroundings. However, if one adopts the above hypothesis stating a two-tiered nature of metallurgic production at the discussed site, which is confirmed indirectly by the diversified wealth of chronologically contemporaneous burials of metallurgists from Nižna Myšľa, one may posit supralocal significance of metallurgy in (at least some) OFC defensive settlements. Certain high quality products (e. g. swords, hatchets, gold pendants [*Lockenringe*]) made for the local elites were probably an object of supraregional exchange for the latter (David 1998, 252-254; 2002, 410-416; Kristiansen / Larsson 2005, 147. 149; Makarowicz 2009).

Thanks to the local deposits of copper ore, the area of the Carpathian Basin gained significance after the period of dominance of metallurgy associated with the Únětice culture (Sherratt 1993, 26 f. fig. 7). It is highly likely that the raw material used in metallurgic production on the territories of the present-day Poland and Scandinavia originated precisely from the area of the Carpathian Basin (Liversage 2000, 73-75 graphs: av, ay, az, ba; Hensel / Dąbrowski 2005). It should be assumed that the supply of material and finished bronze products was accompanied by a transfer of a store of information and cultural models to the importing areas (Kristiansen / Larsson 2005; 2007).

The literature of the subject points to the presence of elements from beyond the Carpathians on the territory of today's Poland (Czebreszuk 1988; Makarowicz 1999; Jaeger 2010, 313 f.). The authors refer to the specific style of the ceramics (ornamentation and morphology of the vessels) related to the Trzciniec cultural circle as their most conspicuous features. The fact is commonly associated with the impact of the OFC settlement in the area of the Low Beskids (Makarowicz 1999; 2010, 360; Górski 2003; 2010, 234-240; Muzolf / Muzolf 2010). However, the influx of characteristic metal objects which originate from beyond the Carpathians (associated chiefly with the OFC) suggests an alternative route by which cultural stimuli from the said area were transmitted (Jaeger 2010).

The artefacts are grouped mainly in western Poland, in Silesia, Greater Poland and Western Pomerania. In the main, they include hatchets with button-shaped polls, full-hilted swords and small ornaments. They are known both from isolated finds and from deposits which, in view of the presence of individual forms and characteristic structure, may be termed as hoards of the Koszider type (Jaeger 2010, 316-321).

The nature of the importation of metal objects from beyond the Carpathians to the areas of Poland (richly ornamented, high quality artefacts, deposits) allows them to be treated as an outcome of a broader process in which the cultural models of the OFC were transmitted to Northern Europe. Scandinavia proved to be

singularly receptive to the new models (Sherratt 1993, 29; Thrane 1990; Kristiansen / Larsson 2005, 186-227), where a number of innovations associated with the areas of the Carpathian Basin (chiefly chariots and Apa-type, full-hilted swords) was included among the paraphernalia of the local elites (Kristiansen / Larsson 2005, 213-225).

CONCLUSION

There can be no doubt that most defensive settlements played a vital role in regional and interregional trade and exchange of the Bronze Age. The locations were land equivalents of the »ports of trade« (Polanyi 1963) and were to be found in regions which occupied a significant place on the contemporary map of Europe (Jaeger / Czebreszuk 2010, 231 f.; Jaeger 2012). The abundance of sources which testify to local metallurgy (of bronze and gold) in the OFC settlements and the extensive area where objects of that style were distributed, given their being recorded in various parts of Europe, demonstrate the dynamic of the Carpathian communities.

The unique burials from Nižná Myšľa provide evidence supporting the necessity to approach the metallurgy of the Bronze Age as a dynamic phenomenon. The diversity of wealth of articles with which the deceased were equipped may be interpreted as a reflection of the internal development processes observed as part of the existing craft. Towards the end of the Early Bronze Age, the significant social standing of a metallurgist was not due solely to the expertise in technology, since the knowledge of its basics was ever more widespread (Kienlin 2007). The crucial quality were the individual skills and competences of the maker, who was capable of meeting the requirements of a specific buyer. The spectrum of needs is reflected in the deposition context of objects whose complexity in production varied. The example of the OFC metallurgy clearly demonstrates two quality levels of production. One is manifested in the opulent deposits of ceremonial arms (hoards of the Hajdúsámson-Apa type), found across the OFC ecumene and beyond it (David 2002), while the other is evinced in the objects of everyday use, mislaid and discovered in random sedimentary contexts.

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Notes

1) One of the oldest iron artefacts in Europe, discovered in a well in Gánovce (okr. Poprad/SK), is also likely to have been made in the OFC environment (Furmánek 2000).

2) The OFC sites in Hungary and in Romania have also yielded numerous finds related to metallurgy (Bóna 1975, 156. 256; Găvan 2012).

3) The lack of material remnants of metallurgic workshops by no means diminishes the evidential value of other categories of sources which attest to the production. The conducted experiments indicate that the techniques of producing bronze objects (smelting, casting) do not leave traces that would be easily detectable by means employed in archaeology, since they do not require the use and construction of complex installations (Kuijpers 2008, 81-93). Despite the extensive research in defensive settlements in the Carpathian Basin, and more broadly in South-Eastern Europe, discoveries of metallurgic workshops represent exceptional cases. One may quote only the structures from the settlements in Lovasberény-Mihályvár (Kom. Fejér/H; Petres / Bándi 1969, 175 fig. 6) and Feudvar (Južnobački okrug/SRB) (Hänsel 2009, 112 fig. 117).

4) This is perfectly illustrated by the pommel of the sword no. 1 from the Apa hoard. Although in the course of comparative studies it has been suggested that it is similar to specimens discovered in the Carpathian Basin, the Aegean area or even Egypt, a convincing analogy has not been presented so far (Bader 1990, 204 f.).

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Zusammenfassung / Abstract / Résumé

Die Metallurgen von Nižná Myšľa (okr. Košice-okolie/SK). Ein Beitrag zur Diskussion der Metallurgie in den befestigten Siedlungen der Otomani-Füzesabony-Kultur

Nižná Myšľa ist ohne Zweifel eine der wichtigsten Fundstellen der europäischen Bronzezeit. Die Ausgrabungen, die seit den 1970er Jahren vor Ort stattfinden, erbrachten Hunderte von Gräbern im Zusammenhang mit einer der befestigten Siedlungen der Otomani-Füzesabony-Kultur. Die in diesem Artikel präsentierte Diskussion beruht auf den jüngsten ^{14}C-Datierungen der bekannten Metallurgengräber von Nižná Myšľa. Die Bestimmung des absoluten Alters dient als Grundlage für ein interpretatives Modell, das die Bedeutung der Bronzemetallurgie in den befestigten Siedlungen bewertet und gleichzeitig Voraussetzung für die Hypothese einer Spezialisierung im Handwerk innerhalb der Gemeinschaft der Otomani-Füzesabony-Kultur ist.

The metallurgists from Nižná Myšľa (okr. Košice-okolie/SK). A contribution to the discussion on the metallurgy in defensive settlements of the Otomani-Füzesabony culture

Without a doubt, Nižná Myšľa is one of the more significant sites of the European Bronze Age. The excavations, which have been carried out in the location since the 1970s, revealed hundreds of graves associated with one of the defensive settlements of the Otomani-Füzesabony culture. This paper presents a discussion relying on the recent ^{14}C-based dating of very well-known burials of metallurgists from Nižná Myšľa. The determination of their absolute age provided a starting point in devising an interpretative model for the assessment of the significance of bronze metallurgy in the defensive settlements and for the hypothesis presupposing the existence of a specific craft specialisation within the community of the Otomani-Füzesabony culture.

Les métallurgistes de Nižná Myšľa (okr. Košice-okolie/SK). Contribution à l'étude des métallurgies au sein des habitats de la culture d'Otomani-Füzesabony

Nižná Myšľa est incontestablement l'un des plus importants sites de l'âge du Bronze européen. Les fouilles archéologiques menées depuis les années 1970 ont permis de découvrir des centaines de sépultures associées à un habitat défensif de la culture d'Otomani-Füzesabony. Cet article propose une discussion à propos de la datation radiocarbone la plus récente des tombes de métallurgistes de Nižná Myšľa. La détermination de leur âge absolu a permis de développer un modèle interprétatif visant à évaluer l'importance de la métallurgie du bronze au sein des sites défensifs et suppose une haute spécialisation artisanale des groupes Otomani-Füzesabony.

Schlüsselwörter / Keywords / Mots clés

Slowakei / Bronzezeit / Karpatenbecken / Chronologie / Metallurgie / Handwerk
Slovakia / Bronze Age / Carpathian Basin / chronology / metallurgy / craft
Slovakie / âge du Bronze / plaine de Pannonie / chronologie / métallurgie / artisanat

Mateusz Jaeger
Uniwersytet im. Adama Mickiewicza w Poznaniu
Instytut Kultury Europejskiej
Ul. Kostrzewskiego 5-7
PL - 62-200 Gniezno
jaeger@amu.edu.pl

Ladislav Olexa
Archeologický ústav SAV
Výskumné pracovné stredisko
Hrnčiarska 13
SK - 040 01 Košice
olexal@saske.sk

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