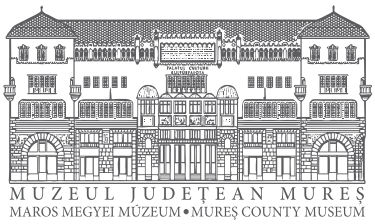
MARISIA

ARCHAEOLOGIA
HISTORIA
PATRIMONIUM

2

Târgu Mureș
2020



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ISSN 2668-7232

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CONTENTS

WEAPON IN THE ATTIC. A LATE BRONZE AGE SWORD REDISCOVERED

Botond REZI*

Recently the Mureș County Museum acquired a full-hilted sword. Due to the lack of any archaeological context the paper focuses primarily on technological and metallurgical aspects, thus trying to decipher a very particular biography of the artefact. It is a low-quality but good looking weapon which despite visible casting faults was neatly worked and decorated and seemingly never used. The adornment of the hilt points towards Central European connections being a remote representative of the eastern Alpine metallurgical center.

Keywords: stray find, technology, casting faults, decoration, Late Bronze Age
Cuvinte cheie: descoperire incidentală, tehnologie, defecte de turnare, ornament, epoca Bronzului Târziu

FIND CIRCUMSTANCES

In the autumn of 2019 the Mureș County Museum purchased a full-hilted sword from Sandina Costin a resident of Hărțău (Mureș County; Hu: Harcó), house nr. 125. The prehistoric weapon was found by the father or brother of the aforementioned lady, during the repair of the roof tiles of a nearby stable. The sword was found already broken and the two pieces were used to support the tiles. The family didn't know about the presence of the bronze artefact. It is not known how did the sword wind up in the attic, or who and when acquired it. It is obvious that the location Hărțău needs to be considered a secondary findspot (Fig. 1). The original find circumstances of the sword are undeterminable, therefore the newly discovered artefact needs to be regarded as a find with 'unknown place of discovery'.

Because the potential offered by this material is limited and the archaeological context is entirely missing and cannot be reconstructed the paper will focus primarily on technological and metallurgical aspects, and secondly on typological and chronological assessments. Although precise information on the depositional context is unknown the adornment of the sword is outstanding for this part of the Carpathian Basin and it shows great similarities with a distant Central European sword type.

DESCRIPTION OF THE OBJECT

Broken but complete full-hilted sword (Fig. 2) with three horizontal ribs on the grip and a round-shaped pommel that ends with a conical knob. The transition between the pommel disc

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Fig. 1. The place of recovery of the sword.

and the grip is smooth, without any thickening or ribbing (*Echinus*). The grip slightly broadens in the middle and reaches its maximum width in the area of the central rib. It has an oval cross-section. The shoulders of the hilt are curved and the corners of the guards are slightly rounded as well. In between a U-shaped recess with a round sunken rivet on either side fixes the blade into the hilt. The sword has an elongated and smooth ricasso. The blade broadens gradually almost near the tip and reaches its greatest width in the lower third. It has a lengthwise, well-pronounced central rib flanked by a shallow parallel rib on either side. These slightly fade away at 2–3 cm from the tip. The blade has a lens-shaped cross-section.

The entire hilt is richly decorated but somehow clumsily executed. The side of the knob is covered by four horizontal and evenly distributed chased lines. The upper side of the pommel disc is decorated with nine identical motifs, which are composed from three concentrically arranged semicircles pointed outwards. Between them three radially punched lines starting from the edge point towards the conical knob. Six of the presumably nine such lines are missing. The lower side of the pommel disc is decorated with three concentrically arranged punched lines. The exterior line is situated near the edge of the pommel disc, the inner line around the base of the oval grip, while the middle line is evenly arranged between the two. Under the pommel disc and above the upper rib the grip is decorated with a three times twisted spiral motif (*Archimedean spiral*), flanked by a vertically placed punched line on each margin. Between the three ribs two identical motifs appear: three times twisted spiral motifs are executed near each of the grip's margins and they are bind together by a diagonally placed line connecting the top of one of the spirals with the bottom of the other one. Under the lower rib two small decorations appear with two times twisted spirals near the margins of the grip. One of the patterns has a third spiral arm. The direction and elaboration of the spirals is always the same, starting from the middle and expanding towards right. The decoration of the grip is similar on both sides.

The traces of prehistoric use and wear are not visible. The cutting edges and the tip of the sword bear traces of prehistoric sharpening in spite of the fact that the sharpening striations are not noticeable. The entire artefact is wonderfully manufactured. The casting remains were carefully removed. Traces of hammering are visible on one side of the U-shaped recess and around the tip of the blade. Both hilt and blade, but mainly the latter one, have many micro cavities which suggest a deficient and superficial casting. The artefact has modern deterioration marks as well. The moderate bending,

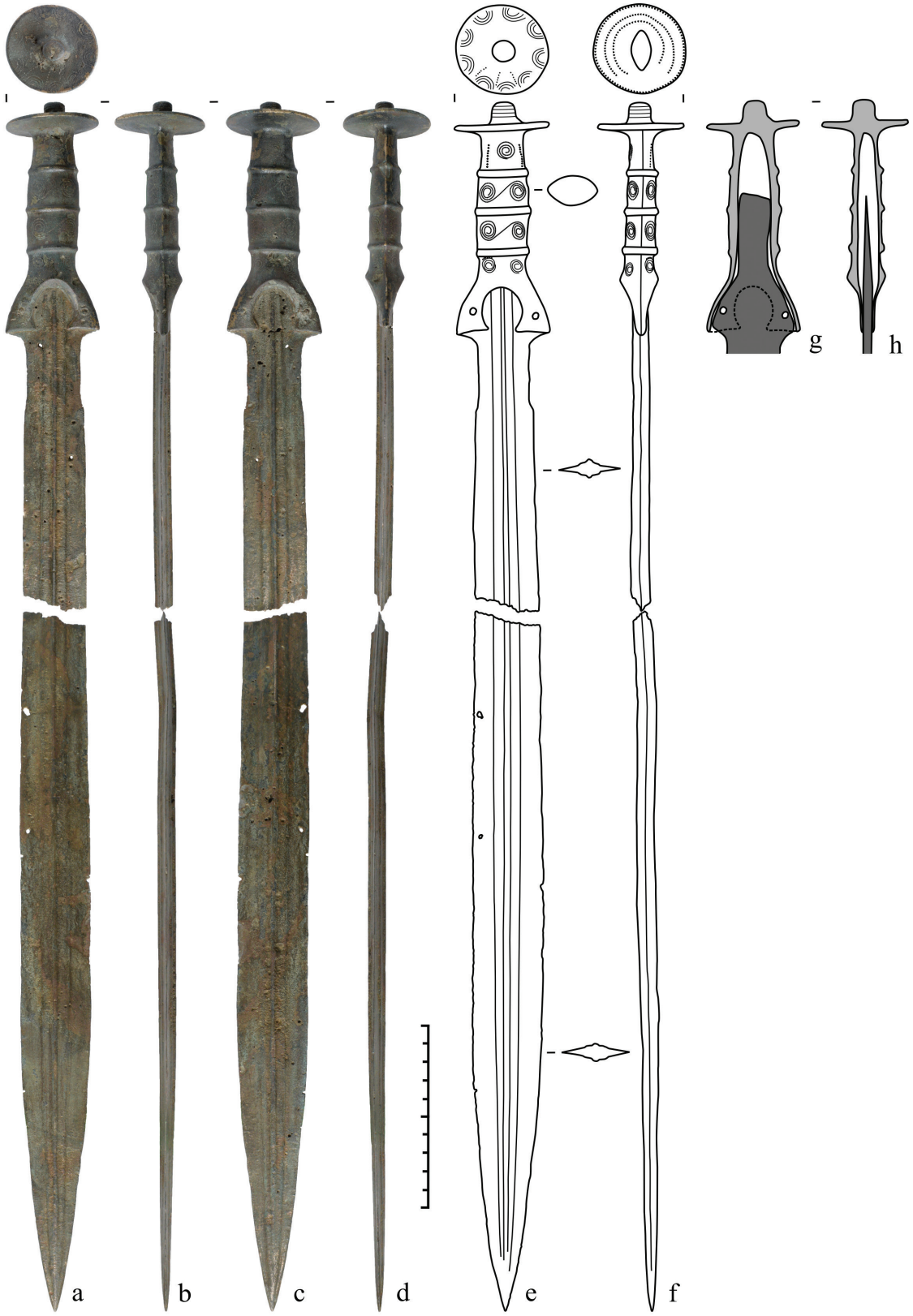

Fig. 2. The newly discovered sword after restoration.

the breakage, minor cracks near the breakage line, traces of grinding, cutting through corrosion layers, and small notches on the cutting edge suggest that the artefact was manipulated in recent times. The hilt is better preserved and has a uniform dark green patina, which flaked off from the edge of the pommel disc, from the upper part of the grip and from the shoulders of the sword. The blade is poorly preserved, as several layers of corrosion expose the yellowish surface of the metal. Still, on scattered small areas the dark green patina is visible. Dimensions: total length: 64.6 cm; length of the hilt: 12.3 cm; length of the blade: 52.3 cm; diameter of the pommel disc: 5 × 4.8 cm; thickness of the pommel disc: 0.3 cm; maximum width of the hilt: 2.9 cm; width of the guard: 5.1 cm; thickness of the guard: 0.7 cm; maximum width of the blade: 3.8 cm; thickness of the blade: 1 cm; weight of the fragmented upper part: 379.5 g; weight of the fragmented lower part: 348.5; total weight: 728 g.

TECHNOLOGICAL CONSIDERATIONS

From technological point of view, the sword is an acceptably manufactured artefact with carefully elaborated interventions, such as the removal of the casting traces, hammering, and decoration. The hilt is well-worked, it is symmetrical in profile, thus the moulds were aligned properly.[1] The three ribs are not perfectly horizontal as they have a slight inclination. Casting remains can be seen only on the inner side of one of the U-shaped recess, where the surface of the metal is choppy. In the same spot and on the edge of the recess traces of hammering are also visible (Fig. 3/1–2). The rest of the hilt is properly worked without any traces of use or wear.

The mounting of the hilt and blade is well-executed. The widening of the blade under the guard is symmetrical and the two sides of the guard bend firmly on it. The two rivets ensure a tight fit. There is a clearance between the blade and the thickest part of the U-shaped depression,[2] which continues under the grip as well until the pommel disc (Fig. 3/3–4). The blade has a medium flange, slightly trapezoidal-shaped from the front and wedge-shaped from the side, which fits well into the hollow of the thick walled hilt. Medium or long flanges are mostly wedged into the hilt bar, while the most common short flanges sometimes do not have this fastening (Fig. 2/g, h, Fig. 4).[3] This suggests that the blade's end fit well into the hilt, the hammering and riveting of the guard was enough to provide a solid joint.[4] A thorough and intensive hammering of the thickest part of the recess was unnecessary.[5] The casting of the blade and hilt represent two separate stages in sword production, the later stage being more complex and requiring more attention. Nonetheless, the inappropriately joint swords were most probably used for thrusting.[6]

The elaboration of the undecorated but lower quality blade is well-made. The ricasso is smooth without post-casting indentations (Fig. 2/a, c). The entire surface of the blade is neatly polished and worked. The cutting edges were evenly sharpened from the lower end of the ricasso until the tip of the blade. Subtle concave hammering[7] can be observed in parts along the edge and around the tip (Fig. 3/5–7).

[1] For the probability of the use of clay moulds, see: Siedlaczek 2011, 111–114; Sicherl 2014, 113–115; Pola et al. 2015, 1637–1638; Bunnefeld 2016a, 146–148. Alternative methods such as sand casting (Barbieri et al. 2015, 99–101) or lost-wax-casting (Mödlinger 2011b, 153) has to be taken into consideration as well. See also Wirth 2003, 114–128.

[2] Concerning the function of the U-shaped recess, see: Molloy 2007, 108; Bunnefeld 2015, 37.

[3] Brandherm–Sicherl 2001, 231–236; Grömer–Mödlinger 2005, 53; Bunnefeld–Schwenzer 2011, 219–224; Sicherl 2014, 108; Bunnefeld 2016b, 398; Bunnefeld 2018, 200.

[4] Hristova–Nekhrizov 2008, 14; Mödlinger–Trnka 2009, 352.

[5] Mödlinger 2011a, 45–46; Mödlinger 2011b, 156.

[6] Čivilytė 2009, 99–101.

[7] Concerning the difficulties of identifying such traces, see: Winiker 2015, 21; Horn–Karck 2019, 6.

Fig. 3. Macroscopic observation of the sword with specific post-casting work traces: 1–2. hammering traces along the rim of the U-shaped recess; 3–4. gap between the hilt and the blade; 5. concave hammering traces along the cutting edge; 6–7. concave hammering traces around the tip.

Such cold working increased the hardness and sharpness of the edge[8] but decreased its toughness.[9] Although modern interventions affected the blade, large part of the edge is covered by patina but still, fine grinding traces are not visible along the edges.

The grip and the pommel disc are the only decorated parts of the artefact. Although it has a uniform and thought-out pattern parts of its execution display superficiality or even lack of experience. The motifs are not always perfectly drawn and sometimes the chased and punched

[8] Hofmann et al. 1982, 153–155; Mödlinger–Ntaflos 2009, 195–196; Mödlinger 2011a, 46; Mödlinger 2011b, 163; Molloy 2011, 69, 71; Molloy 2018, 88–89.

[9] Molloy 2011, 75; Horn–von Holstein 2017, 91.

Fig. 4. Computer tomography of the sword.

patterns are alternating unevenly. Similar inaccurate execution is quite common on Late Bronze Age swords.[10] The pommel disc is decorated on both sides, but unfortunately the decoration is not visible on the entire surface. It is common for the corrosion to affect decoration too and can lead to its eradication, but this is not the case here. On its exterior surface, the motives with three concentrically arranged semicircles around the edge (Fig. 5/1) are arranged unevenly and the distance between three of the motifs is larger than between the others. This suggests that the planning of the decoration was not properly conceived and its execution changed during the decoration process (Fig. 2/a, e). Furthermore, not every radially arranged dotted line was implemented (Fig. 5/2), as out of nine possible lines only three are visible (Fig. 2/a, e, Fig. 7/1). Parts of the concentrically punched lines on the lower side of the pommel disc are missing as well (Fig. 5/3). This latter absence however, can be the result of inappropriate preservation. Another hasty execution can be seen between the shoulder and the lower rib of the hilt. Slight shift is visible on the two spirals above the shoulders, on both sides of the sword, the rightward being always lower. One of them has a third, doted spiral arm, with insecure execution and blurry outlines, as if one was trying to eliminate a mistake of late notice (Fig. 5/8). Nevertheless, the proportions of the patterns defined by their place on the hilt is well-kept and set out.

As in the case of many similar swords, the fine ornamentation was executed after casting.[11] The gravers and punches made from bronze had a higher tin content and were additionally hardened by hammering in the cold material state.[12] Late Bronze Age artefacts were decorated using a multitude of auxiliary tools, depending on the respective ornament.[13] In this particular case several distinct decoration traces can be observed, such as dotted lines (Fig. 5/2–3, 7, 9), semicircles (Fig. 5/1), and curved lines (Fig. 5/5–6). Based on their form and dimension the dotted motifs were executed with two different sized and shaped punches: a smaller and round one was used for the upper side of the pommel disc and above the upper rib as well as a larger and wedge-shaped one for the lower side of the disc. It seems that the main decoration elements between the ribs of the grip were executed with the first one, only the distribution of the dots is denser, giving the impression of a continuous line. The four smaller spirals under

[10] Mödlinger–Ntaflos 2009, 196; Mödlinger 2011a, 42–45; Winiker 2015, 18–19.

[11] Bunnefeld–Schwenzer 2011, 225; Bunnefeld 2015, 35–36.

[12] Mödlinger–Trnka 2009, 352.

[13] Rezi 2013 with older literature.

Fig. 5. Detailed photos with the decoration of the hilt: 1. continuously chased arched lines on the upper side of the pommel disc; 2–3. chased dotted lines on the upper and lower side of the pommel disc; 4. chased lines on the knob; 5–6. spiral motifs with dense dotted lines between the ribs; 7. chased dotted line between the spirals; 8. spiral motif with faulty execution; 9. chased dotted line under the pommel disc.

the lower rib most probably were executed with an obliquely held prolonged or slightly curved edged chaser. The width and depth of the marks are almost identical to the arched motifs found on the upper side of the pommel disc. Even though the arched motifs on the upper side of the pommel disc look similar their tracing and size varies so the use of semi-circular punches cannot be accepted. Presumably the lines on the knob were executed with a straight edged chaser. So it is probable that three or maybe four distinct punches were used for the decoration of the hilt: a round edged punch, a wedge-shaped punch, a straight edged punch, and a slightly curved punch. The wedge-shaped dotted line could have been implemented with the edge corner of a straight edged punch as well (Fig. 6).

From a technological point of view, the only shortcoming of the sword is the multitude of round, oval, and irregular cavities which are present on the entire surface in alternating density (Fig. 4). The knob displays a large defective surface at its base, in the area of the three radially arranged dotted lines (Fig. 7/1). Two larger casting faults can be observed on one of the shoulders and on the opposite side around the rivet (Fig. 7/3–4). Few micro cavities are visible on the grip. On the other hand, the blade

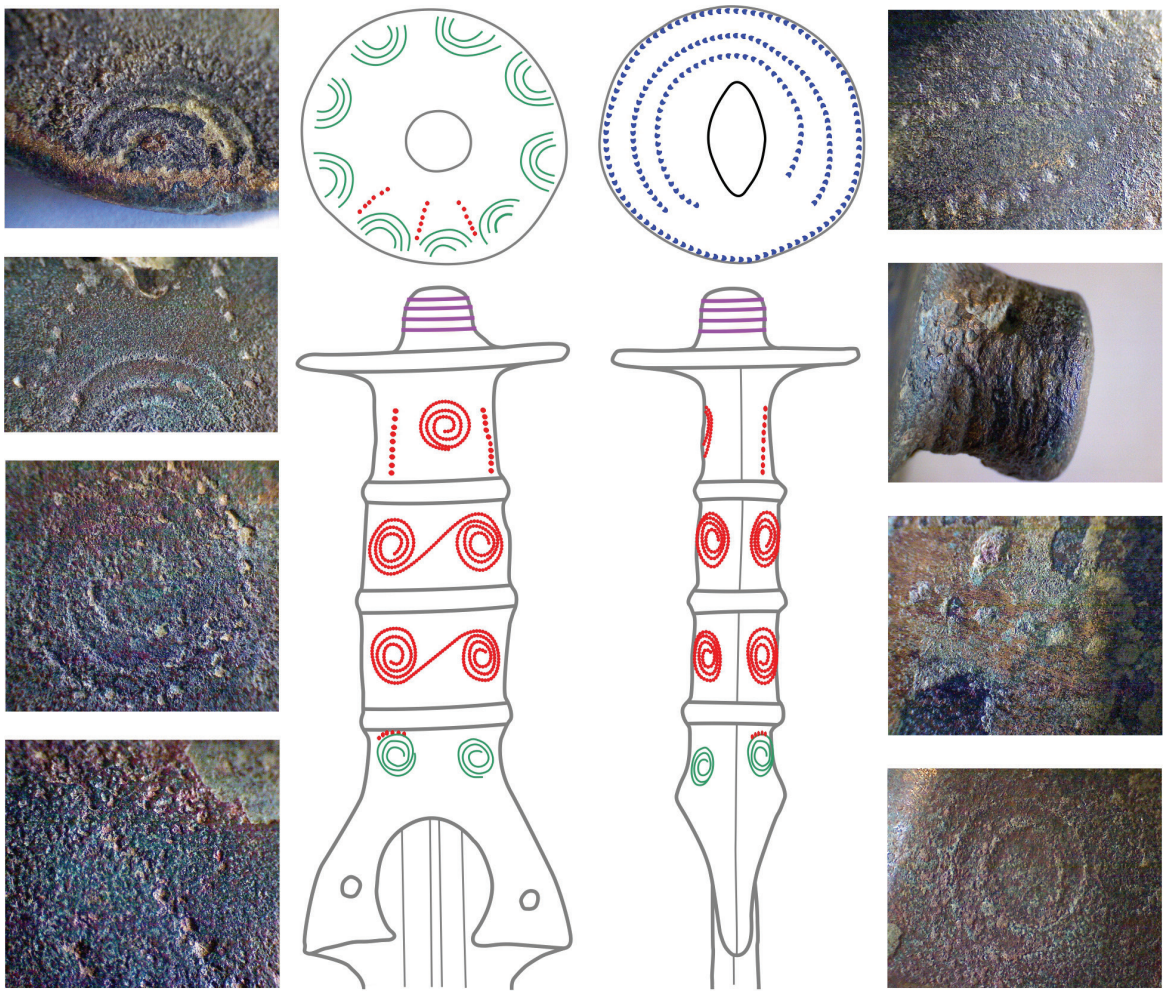

Fig. 6. Distinguishable chasing marks on the hilt executed with different punches: round edged punch (red), wedge-shaped punch (blue), straight edged punch (purple), slightly curved punch (green).

is densely covered by such porosities. The lower part of the blade, around 14 cm from the tip is roughly devoid of areas with porosity, but the middle and upper section is heavily affected. For this reason, the blade near the guard and the ricasso has a 'spongy' aspect (Fig. 7/7–8). These cavities affect the depth of the entire material/blade, as the point of breakage of the modern intervention confirms (Fig. 7/5–6). As a result of these tiny air bubbles the thinner parts of the blade were effectively pierced. The cutting edge is affected as well (Fig. 7/11). At the same time, the tiny cavities affected especially one side of the blade, while the other one has a smoother surface. This could be the result of a not fully dried,[14] an insufficiently heated or bad quality (excess lime) clay mould,[15] or even the lack of gas-escape channels.[16] Thereby, on the more deteriorated side the central rib is altered as well, showing a corroded-like surface (Fig. 7/10).

The concentration of casting faults and porosity can indicate the direction of the poring

[14] Mödlinger–Ntaflos 2009, 195.
[15] Born–Hansen 1991, 149; Molloy 2011, 69.
[16] Brandherm 2007, 159.

Fig. 7. Macroscopic observation of the sword with casting faults and recent deterioration marks: 1. casting fault at the base of the knob; 2. casting fault under the pommel disc; 3–4. casting faults on the shoulders and around the rivet; 5–6. porosity visible in cross-section; 7–8. gas-porosity traces on the surface of the blade; 9. incomplete filling; 10. corroded-like surface due to porosity; 11. recent crack across the blade; 12–13. recent chipped cutting edge.

gate,[17] in this case on the upper end of the blade (Fig. 1/a, c, Fig. 4). The weakest point of a sword used for slashing is the area, where the hilt and blade are joint together.[18] The recently discovered sword encompasses most of the micro cavities in this area, thus becoming inappropriate for intense use. Similar conclusion based on comparable observations was put forward for other swords as well.[19]

This sword had all the visual signs of an uncertain quality weapon making it less than ideal for performing its intended task. The sword probably did look equally 'bad' to its original user just as it looks deficient for a modern observer.[20] Still, not all swords that appear imperfect were destined for recycling. Tolerable casting faults and imperfect weapons were acceptable as long as they served the purpose and needs of the manufacturer or owner.[21] Badly crafted swords with large casting pores can exhibit clear damage traces[22] suggesting an intensive use despite their poor condition. Others were richly adorned in order to compensate the inferior quality, showing that at that time a weapon's aesthetic function was just as important as its function.[23]

Regarding its usability, it is important to stress that the heavy deterioration traces visible on the artefact are the results of modern interventions. The breakage, the slight bending on the blade, and several small notches on the cutting edge are recent manipulations (Fig. 2/b, d, Fig. 7/12–13). The casting quality is rather low around the broken line, as shown by the many pores in the cross-section (Fig. 7/5–6), thus the modern deterioration is understandable, despite the fact that it is not the weakest point of the weapon. Although the size and weight, the execution of the hilt, the outline of the blade support a proper usability,[24] pre-depositional usage is difficult to reveal, as clear traces are not discernible. The recent interventions on the blade prevent the possibility to detect re-sharpening striations on the edges as the original surface is lost. At a distance of 6–9 cm from the tip one of the cutting edges narrow closer to the midrib (Fig. 7/9). Such an asymmetrical outline is often found on Bronze Age swords and interpreted as repair or re-sharpening marks.[25] Similar traces cannot be seen elsewhere on the blade, not even on the surfaces with traces of patina. Therefore, this irregular line can be seen as an erroneous filling of the mould, or this part of the blade could have also required repair to eradicate casting flaws immediately after production.[26]

No large indentations, notches, blow marks, medium to strong curvatures or other plastic deformations are visible on the sword, which could be linked to traces created in combat with bronze swords, spears, metal shields or other hard objects.[27] The damage that is present on Late Bronze Age swords is rarely severe,[28] except on examples that have been intentionally disfigured or 'killed' according to cultural-specific norms.[29] Still, the number and intensity of use-wear traces seem to depend on the hardness

[17] Mödlinger 2007, 104; Bunnefeld–Schwenzer 2011, 219; Mödlinger 2011a, 33; Sicherl 2014, 106.

[18] Mödlinger–Ntaflos 2009, 193; Mödlinger–Trnka 2009, 351–352; Mödlinger 2011b, 154–155.

[19] Dani et al. 2013, 44; Winiker 2015, 20.

[20] Gener 2011, 121.

[21] Colquhoun 2011, 55–56.

[22] Molloy 2017, 19.

[23] Čivilytė 2009, 100.

[24] Mödlinger 2011b, 163–164; Kristiansen 2002, 320–321; Molloy 2011, 74–75; Bunnefeld 2015, 37; Kristiansen–Suchowska-Ducke 2015, 367–369; Winiker 2015, 21–26; Molloy–Horn 2020, 122–126.

[25] Kristiansen 1984, 188–194; Kristiansen 2002, 323–326; Thrane 2006; Horn–von Holstein 2017, 93; Bunnefeld 2018, 200–201; Horn–Karck 2019, 6.

[26] Horn 2013, 14; Horn 2017, 528.

[27] Bridgford 1997; York 2002; Quilliec 2008; Colquhoun 2011, 56; Matthews 2011; Molloy 2011, 75–76; Horn 2013, 3, 13–17; Bunnefeld 2014, 49–50; Gutiérrez Sáez–Lerma 2015, 176–180; Horn 2017; Horn–von Holstein 2017, 91–92; Tarbay 2017, 82–83; Puskás 2020, pl. 5–6.

[28] Molloy 2007, 107–108; Molloy 2017, 18.

[29] Bridgford 1997; Nebelsick 2000; Horn 2011; Mörtz 2018, 174–178.

and malleability of the raw material, determined primarily by the amount of the tin content.[30] The broadest part of the blade,[31] where supposedly a slashing sword was used the most, and was effective when pulled along a surface on impact presents no usage traces either. The micro indentations visible on the cutting edge, other than the modern deteriorations, were created by the defective releasing gases.[32] No wear traces can be observed on the edges of the shoulders, on the grip, on the ribs, and on the pommel disc either.[33] The tip is not broken, the rivets are not worn out or torn out, which could suggest an intensive use.[34] The high number of micro cavities challenge the usability of the weapon.[35] Thus, based on our observations we can assess that the sword was worked after casting and it seems that it was never used. Unfortunately, no information is available regarding the find circumstances and place of discovery of the find, but as the technological evaluation indicates it can be stated that the newly discovered sword had a very specific purpose and an extremely short life.

In spite of the missing archaeological context the above presented technological description can help us to answer several basic questions, which can offer a general picture about the life-cycle of this weapon:

1. Is it a good quality casting or not? From technological point of view, the sword is an acceptable artefact and cannot be classified as a waste product. Taking into account the final outlines the flow of the bronze had an optimal state and temperature, thus the smallest parts of the moulds were filled.[36] Besides the area near the tip, no incomplete fillings are noticeable on other parts of the weapon.
2. What are the defects of the artefact? The blow holes and many pores represent the only deficiency of the weapon. In this respect there is a visible difference between the casting quality of the hilt and blade, the latter one being much more affected. Even so, as the casting result was the first thing the prehistoric metalworker set eyes on and undoubtedly the micro cavities were already visible at that point, the elaboration, the sharpening, and decoration of the artefact were still carried out. This suggests that these variable sized casting defects were considered tolerated imperfections.
3. Was it processed? The post-casting working of the sword is very good. The casting remains were carefully removed both from the hilt and blade. Slightly uncertain handling can be noticed in the decoration but still, it has a uniform and thought-out pattern.
4. Was it used? Unfortunately, it is almost impossible to separate prehistoric wear and usage mark. The very small indentations most probably can be linked to recent interventions. The larger ones are the by-products of the tiny air bubbles that formed the cavities. Along the cutting edge, where the ancient patina is still present no use-wear or re-sharpening can be seen. This suggests that the sword was finished and most probably never used.

STYLISTIC AND CHRONOLOGICAL CONSIDERATIONS

As an artefact without any archaeological context the discussion of detailed typo-chronological problems shall be avoided. Only common aspects will be highlighted. The general form of the presented artefact (form of the knob, disc pommel, grip, the curvature

[30] Soriano Llopis–Gutierrez Sáez 2009, 118–120; Gutiérrez Sáez–Lerma 2015, 173.
[31] Molloy 2007, 105–107; Molloy 2017, 18.
[32] See also Fontijn et al. 2012, 207.
[33] Kristiansen 2002, 330–331; Tarbay 2016, 10–14.
[34] Mödlinger–Trnka 2009, 354; Mödlinger 2011b, 164.
[35] Born–Hansen 1991, 149–150; Čivilytė 2009, 101.
[36] Unfortunately, we didn't have the opportunity to conduct metallographic analysis. Thus, the exact properties of the casting material and its suitability for cold working and fighting cannot be evaluated.

of the shoulders, the half-circle recess) has an ordinary outline. The ornamentation deserves more attention, as it correlates the newly discovered weapon to the Erlach,[37] Erding[38] or N type 1st variant[39] of the full-hilted swords (*Dreiwulstschwerter*), being characteristic for the Eastern Alpine metallurgical region. The production center of the type is situated in the region of south Bavaria and Upper Austria, south of the Danube, between the Iller and Traun Rivers. From here they spread mainly towards Slovakia, western Hungary, northern Serbia, and northern Croatia. Remote finds were discovered in Switzerland, Rhineland-Palatinate region, eastern France, Poland, and Ukraine.[40]

Despite the fact that it shows great similarities with the Erlach type it has a specific elaboration. The execution of the ornamentation is simplistic compared to the general pattern of the mentioned type.[41] While the Erlach type has three combined spiral motives between the ribs the newly discovered sword is decorated with two spirals bind together by a diagonal line. The same over-simplified pattern appears on the shoulders and under the disc pommel as well.

An almost identical analogy is provided by the hilt from Corni (Suceava County, Romania).[42] The distribution and proportions of the spiral pattern and the overall simplistic appearance are the same. It is classified as a distinct ornamented full-hilted sword type,[43] in close connection with the Erlach type. Unfortunately, it's find circumstances are unsecure, implicitly its dating is problematic.

Regarding the pommel disc another close parallel is the sword from Bingula-Divoš (Srem District, Serbia) with the same simplistic S-spiral design on its hilt and with an almost identical ornamentation on the upper side of the pommel disc. This sword is classified as a close variant of the Schwaig type.[44] The pommel disc of the sword from Vrútky (Turiec Region, Slowakia) shows great similarities with concentrically arranged semicircles and central circles on the upper side and two concentrically arranged punched lines on the lower side.[45] Its chronological position is unsecure. The upper side of the disc pommel from the Rinyaszentkirály hoard (Somogy County, Hungary) bears similar round-arched motives pointed outwards.[46] An uneven displacement of the ornamentation is visible as well. Together with the remainder objects the hoard is dated to HaA1. Further analogous patterns can be found on the lower side of the disc pommel on the finds from Kirchdorf (Biberach District, Germany),[47] Mining (Braunau District, Upper Austria),[48] Kuhardt (Rhineland-Palatinate Region, Germany)[49] and Kraiburh a. Inn (Bavaria Region, Germany)[50] with three concentrically punched lines, while the upper side of the disc pommel from Klettham (Bavaria Region, Germany)[51] has very similar round-arched motives. The two latter parallels are classified in the slightly later dated Grundelsheim type swords. The sword from the Stenn tumulus (Saxony Region, Germany) has a

[37] Müller-Karpe 1961, 7–13.
[38] Quillfeldt 1995, 142–148.
[39] Kemenczei 1991, 29–30, Taf. 82A.
[40] Müller-Karpe 1961, 10–11, Taf. 92/Karte 1; Krämer 1985, 26; Kemenczei 1991, 30, Taf. 82/A; Quillfeldt 1995, 148, Taf. 122; Harding 1995, 75, Taf. 53/A; Stockhammer 2004, 77–86, Karte 21; Novotná 2014, 41, Taf. 39; Winiker 2015, 47, Taf. 28.
[41] Regarding the overall aspect and characteristics of the ornamentation, see: Quillfeldt 1995, 143–146.
[42] Ignat 1981, 139, fig. 4.
[43] Bader 1991, 138–139, Nr. 332; Stockhammer 2004, 264.
[44] Müller-Karpe 1961, 14, Taf. 9/8.
[45] Novotná 2014, Taf. 6/31.
[46] Kemenczei 1991, Taf. 17/84.
[47] Müller-Karpe 1961, Taf. 4/3.
[48] Krämer 1985, Taf. 10/55.
[49] Quillfeldt 1995, Taf. 44/132.
[50] Quillfeldt 1995, Taf. 49/146.
[51] Quillfeldt 1995, Taf. 48/142.

very similar pattern on the upper side of the disc pommel with concentrically arranged semicircles pointed outwards and a simplistic pattern on the lower side.[52] Two swords from Kirchberg am Wagram (Tulln dDstrict, Lower Austria)[53] and Greiner Strudel (Perg District, Upper Austria)[54] present comparable ornamentation on the disc pommel. The first one has a similar design on its lower side made of two concentrically punched and one continuous line. Unfortunately, their find contexts are unsecure. Besides the sword from Bingula-Divoš other parallels could not be identified which have radially arranged punched lines on the upper side of the disc pommel.

The differentiation between early (HaA1) and late (HaA2) forms[55] is hardly sustainable, as it is unlikely that small typological features, such as the shape of the pommel knob and outline of the blade can point towards technological change.[56] In east-central Europe such a distinction is not valid either, since a great number of swords found in this particular area show a combination of those attributes, which are considered as indicative from a chronological point of view in western central Europe.[57] Furthermore, different sword types with assumed divergent formal and stylistic elements were buried within the same hoard.[58] Even with known archaeological contexts the chronological value of the isolated finds is much lower. In this particular case as a discovery without any information concerning its find circumstances, the dating of the sword can be undertaken on typological grounds, but only on a very general scale and questionable manner. Former assessments have to be taken into consideration, thus a rough HaA dating seems presumable.[59] Apart from the meticulous formal characteristics the element of display seems to have gained in significance, both on regular and ceremonial swords,[60] thus the ornamentation becomes one of the basic distinguishing elements. It is important to note that the star motif first appears on cast bronze objects from the Middle Bronze Age in south-eastern and central Europe on dress pins, metal-hilted swords, and disc-butted axes. The star motif which consists of a circular arrangement of separate arcs, the ends of which are not conjoined is combined with rings-and-dots already on early swords. The Erlach type swords are the latest objects on which the star motif appears, on later swords the arcs developed into a continuous waveband.[61]

It is already an established fact that two identical full-hilted swords do not exist. Even though standard combinations of forms and ornaments cannot be observed and seems that every single sword was decorated individually, some show greater similarity and are likely to have been produced in the same workshop.[62] While the widespread formal uniformity of the swords continued to prevail during Ha A, the ornamental attributes underwent a clear regionalization, which aimed to develop distinctive product

[52] Wüstemann 2004, Taf. 61/428.

[53] Krämer 1985, Taf. 11/62.

[54] Krämer 1985, Taf. 11/63.

[55] Müller-Karpe 1961, 8–9, 24, 28–29, 31.

[56] Stockhammer 2004, 61–66.

[57] Stockhammer 2004, 62.

[58] See for example the hoards from Krasznokvajda (Mozsolics 1985, 139–140, Taf. 152–153), Zsujta (Mozsolics 1985, 217, Taf. 154A), Tuzsér (Mozsolics 1985, 206–207, Taf. 209/1–3), Nagydém (Kemenczei 1991, 37/119–120, Taf. 28/119–120, 49/192, Taf. 43/192), Mátészalka (Tarbay 2018, 315–319, fig. 2), Bunești (Petrescu-Dîmbovița 1978, 148/251, Taf. 255A), Stoboru (Kacsó 2014, 155, fig. 8), Oľchovica (Kobal 2000, 91/102, Taf. 76), Podgorjany I (Kobal 2000, 93/112, Taf. 83), Negrovo II (Kobal 2000, 89/93, Taf. 85) dated to HaA and HaB1. Regarding the distribution of swords within hoards, see: Hansen 1994, 43–58.

[59] Krämer 1985, 26; Kemenczei 1991, 29–31; Hansen 1994, 41–42; Harding 1995, 75; Quillfeldt 1995, 147–148; Wüstemann 2004, 132; Novotná 2014, 40–41; Winiker 2015, 46.

[60] Fontijn 2002, 172.

[61] Mödlinger 2013, 68–70, fig. 3.

[62] Bunnefeld 2016b, 396.

features.[63] Arched lines pointed outwards, triple wavy lines on the upper side of the pommel disc, while concentrically punched lines, concentric lines sometimes alternating with concentric arches on the lower side of the pommel indicate a western metallurgical origin.[64] The manner in which the socket of the grip is executed or the fitting of the hilt and blade is carried out shows varying geographical and typological attributes, expressing different workshop styles and implicitly metallurgical traditions.[65] Minor typological differences may represent regionally relevant traditions and they could spatially and chronologically cut across the boundaries of typological groupings.[66] The newly discovered weapon can be seen as a distinct form of the Erlach type swords, being correlated through the general design of its adornment as well as through the clear absence of eastern Carpathian decorative motifs.[67] Despite the fact the archaeological context of the artifact is unknown it can still be interpreted as a probable local imitation, modelled according to a supra-regional style, but without the fine and distinctive Erlach ornamentation elements. Looking at its closest analogy, namely the hilt from Corni (Suceava County, Romania), the eastern Carpathian presence of both swords can be seen as an isolated but not a unique appearance. As the easternmost representatives of this type their oversimplified adornment is not surprising. Taking into consideration their almost identical ornamentation and remote presence in relation to the Erlach type one can ask whether they were the products of the same smith or not?

CONCLUDING REMARKS

It has already been suggested that swords could have served many purposes other than killing or injuring weapons. They were, perhaps above all, weapons of prestige and as such would have played a role within the appearance of the warrior class or stratum of society,[68] or could have been employed on a wide spectrum of other religious and social activities.[69] Often the richly decorated appearance indicates a higher value or an alternative assessment, reflecting the need or preference of the manufacturer or the customer. To what extent can this sword be individualized and assumed with a specific biography is difficult to evaluate,[70] taking into consideration that individuals could have chosen swords which were produced without their direct input.[71]

Assessing all this several essential questions arise: why such an elaborate decoration for an artefact with evident casting deficiencies? Why the lack of use-marks when it is worked? Being aware of the missing context, still one needs to ask for how long could this artefact have been 'used' before it was removed from the circulation? Damage was part of the procedure for ending the life of specific bronze items. Still, deterioration traces that would more likely indicate a ritual-related nature, such as twisting or intensive, deep, large notches are not visible on the blade, nor was it broken down for recycling. Therefore, the purpose of this item most probably needs to be looked for within its lifespan and not during its disposal. As mentioned earlier signs of use-wear cannot be noticed, which can point towards a possible context of functional

[63] Stockhammer 2004, 107–118, Abb. 16–18, Karte 64 and 65; Kristiansen–Suchowska-Ducke 2015, 378.
[64] Stockhammer 2004, 107, 109, Abb. 19.
[65] Sicherl 2014, 110–113, Tabelle 1.
[66] Molloy 2018, 87.
[67] Stockhammer 2004, 115–117.
[68] Fontijn 2002, 226–228; Fontijn 2005, 147; Čivilytė 2009, 155; Colquhoun 2011, 56–57; Dani et al. 2013, 44; Kristiansen–Suchowska-Ducke 2015, 371–372.
[69] Soroceanu 2011; Vandkilde 2015, 609–611.
[70] Kristiansen 2002.
[71] Molloy 2017, 18–19.

use: combat, worn at the waist, held in the hand etc. Apparently being an unused item it can hint towards a symbolic or social function, namely a marker of status or a mere ritual object,[72] or perhaps it did not have a practical use at all.[73] Nonetheless, it can point towards a finished but refused weapon as well. However, independently from its context (isolated, hoard or settlement find, grave furnishing) the sword most likely had a short and passive life. A similar item was found in the hoard from Ría de Huelva (south-western Spain). The sword fragment had all the visual signs of a really bad quality casting (irregularities and cavities covering the entire surface, piercing in some places, even on the blade), still a lot of work and care was involved in making it as functional as possible. The user perhaps knew the limits of the material and the usage of the sword was adapted accordingly.[74] Another good example is a used, solid-hilted sword from Kuhbier (Brandenburg Region, Germany) which despite clear casting faults, being covered by hundreds of porosities, was worked and repaired in a very particular way.[75]

The paper attempted to present a short stage from the life-cycle of a weapon. Due to its unknown archaeological context a longer biography cannot be reconstructed.[76] Based on technological observations it can be stated that the sword had a special biography, expressed through a short lifetime and presumably a particular function. It was a good looking but low-quality sword: despite visible casting faults it received proper attention after casting. These later were all neglected for the purpose of a specific function and then discarded without any visible evidence of use-marks.

ACKNOWLEDGMENTS

I would like to express my gratitude towards Tibor Bader and Gábor J. Tarbay for useful comments and observations regarding the typological and technological evaluation of the sword. I am grateful to Árpád Kolumbán, a local smith from Târgu Mureș, for his useful guidance in understanding bronze casting and working techniques. I am much obliged to László Hadnagy in carrying out the Computer Tomography and to Zoltán Kis for his valuable suggestions regarding computer tomographic imaging. Furthermore, my thanks go to Ünige Bencze for the English proof reading.

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[72] Bunnefeld 2012; Bunnefeld 2015, 39; Horn 2017, 529.
[73] Fontijn 2002, 30.
[74] Gener 2011, 121–122, fig. 2.
[75] Born–Hansen 1991, 148–150, Abb. 3a.
[76] Gosden–Marshall 1999; Kopytoff 2000; Fontijn 2002, 26–30; Molloy 2011, 68–73; Harding 2016.

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ABBREVIATIONS

AARGNews	Aerial Archaeology Research Group Newsletter
Acta	Acta. Muzeul Naţional Secuiesc, Sfântu Gheorghe
ActaArchHung	Acta Archaeologica Academiae Scientiarum Hungaricae, Budapest
ActaMB	Brukenthal. Acta Musei, Sibiu/Hermannstadt
ActaMN	Acta Musei Napocensis, Cluj-Napoca
ActaMoldMer	Acta Moldaviae Meridionalis. Anuarul Muzeului Judeţean Vaslui
ActaMP	Acta Musei Porolissensis, Zalău
ActaMT	Acta Materialia Transylvanica. Technical Sciences Department of the Transylvanian Museum Society, Cluj-Napoca/Kolozsvár
ActaPraehistA	Acta Praehistorica et Archaeologica
ActaSic	Acta Siculica, Sf. Gheorghe/Sepsiszentgyörgy
ActaTS	Acta Terrae Septemcastrensis, Sibiu
AISC	Anuarul Institutului de Studii Clasice Cluj
AJA	American Journal of Archaeology
Aluta	Aluta. Studii şi cercetări
AmJPhysAnthropol	American Journal of Physical Anthropology
AnatRec	Anatomical Record. American Association of Anatomists
Angustia	Angustia. Muzeul Carpaţilor Răsăriteni, Sfântu Gheorghe
AnMuzOlt	Anuarul Muzeului Olteniei
AnnForRes	Annals of Forest Research
AnnHN	Annales Historico-Naturales Musei Nationalis Hungarici, Budapest
ANsachs	Archäologie in Niedersachsen
AnthrK	Anthropológiai Közlemények, Budapest
Antiquity	Antiquity. A Quarterly Review of Archaeology
Apulum	Apulum. Acta Musei Apulensis, Alba Iulia
ArchAust	Archaeologia Austriaca
ArchBulg	Archaeologia Bulgarica, Sofia
ArchÉrt	Archaeologiai Értesítő, Budapest
ArchHist	Archaeologia Historica, Brno
ArchHung	Archaeologia Hungarica, Budapest
ArchKorr	Archäologisches Korrespondenzblatt, Römisch-Germanischen Zentralmuseum Mainz
ArchPol	Archaeologia Polona,
Areopolisz	Areopolisz. Történelmi és társadalomtudományi tanulmányok, Székelyudvarhely
Argesis	Argesis. Studii şi comunicări, Piteşti
ASz	Agrártörténeti Szemle
AusgrFuWestf	Ausgrabungen und Funde in Westfalen-Lippe

AVes	Arheološki vestnik, Ljubljana
BÁMÉ	A Béri Balogh Ádám Múzeum Évkönyve, Szekszárd
Banatica	Banatica, Muzeul Banatului Montan, Reşiţa
BAR (I.S./B.S.)	British Archaeological Reports, International Series / British Series, Oxford
BerRGK	Bericht der Römisch-Germanischen Kommission
BMI	Buletinul Monumentelor Istorice, Bucureşti
BMJT (S.A.)	Buletinul Muzeului Judeţean Teleorman (Seria Arheologie), Alexandria
BuletinCIVA	Buletinul Cercului de Istorie Veche şi Arheologie „Vladimir Dumitrescu", Sibiu
BulletinPeabody	Bulletin of the Peabody Museum of Natural History
CA	Cercetări Arheologice
CCAR	Cronica Cercetărilor Arheologice din România
CommArchHung	Communicationes Archaeologicae Hungariae, Budapest
Cumania	Cumania. A Bács-Kiskun Megyei Múzeumok Közleményei, Kecskemét
CurrSwedA	Current Swedish Archaeology
CsSzMÉ	Csíki Székely Múzeum Évkönyve, Csíkszereda
Dacia (N. S.)	Dacia. Recherches et décuvertes archéologiques en Roumanie, I–XII (1924–1948), Bucureşti; Nouvelle série (N. S.): Dacia. Revue d'archéologie et d'histoire anciene, Bucureşti
DissArch	Dissertationes Archaelogicae ex Instituto Archaeologico Universitatis de Rolando Eötvös Nominatae, Budapest
DolgKolozsvár (Ú.S.)	Dolgozatok az Erdélyi Nemzeti Múzeum Érem- és Régiségtárából, (új sorozat, 2006–), Kolozsvár
DolgSzeged	Dolgozatok a Szegedi Tudományegyetem Régiségtudományi Intézetéből, Szeged
Drobeta	
EJA	European Journal of Archaeology
EphemNap	Ephemeris Napocensis, Cluj-Napoca
FI	File de Istorie. Muzeul de Istorie al Judeţului Bistriţa-Năsăud, Bistriţa
FolAnt	Folia Anthropologica, Szombathely
FolArch	Folia Archaeologica, Budapest
Gallia	Gallia. Fouilles et monuments archéologiques en France metropolitaine
Georeview	Georeview. Scientific Annals of Ştefan cel Mare University of Suceava, Geography Series
Germania	Germania. Anzeiger der Römisch-Germanischen Kommission des Deutschen Archäologischen Instituts
Hierasus	Hierasus. Muzeul Judeţean Botoşani
HOMÉ	A Herman Ottó Múzeum Évkönyve, Miskolc
HTRTÉ	A Hunyadmegyei Történelmi és Régészeti Társulat Évkönyve, Déva
HZ	Historische Zeitschrift
IJOsteo	International Journal of Osteoarchaeology
Istros	Istros. Muzeul Brăilei
JAHA	Journal of Ancient History and Archaeology

JAMÉ	A Nyíregyházi Jósa András Múzeum Évkönyve, Nyíregyháza
JASc	Journal of Archaeological Science
JAT	Journal of Ancient Topography – Rivista di Topografia Antica
JbAS	Jahrbuch Archäologie Schweiz
JbRGZM	Jahrbuch des Römisch-Germanischen Zentralmuseums, Mainz
JCerEnvD	Journal of Ceramics and Environmental Design
JHumEvol	Journal of Human Evolution
JNES	Journal of Near Eastern Studies
JOM	JOM. The Journal of The Minerals, Metals & Materials Society
JRA	Journal of Roman Archaeology
JRomPotSt	Journal of Roman Pottery Studies
JSchrVgHalle	Jahresschrift für Mitteldeutsche Vorgeschichte Halle (Saale)
KJb	Kölner Jahrbuch für Vor- und Frühgeschichte
KM	Keresztény Magvető. Az Erdélyi Unitárius Egyház Folyóirata, Kolozsvár
KRRMK	A Kaposvári Rippl-Rónai Múzeum Közleményei
KuBA	Kölner und Bonner Archaeologica
Levant	Levant. Journal of the Brithish School of Archaeology in Jerusalem and the British Institute at Amman for Archaeology and History
MacActaA	Macedoniae Acta Arhaeologica, Prilep
Marisia	Marisia (V–), Studii şi Materiale, Târgu Mureş
Marisia-AHP	Marisia: Archaeologia, Historia, Patrimonium, Târgu Mureş
MCA	Materiale şi Cercetări Arheologice, Bucureşti
MFMÉ	A Móra Ferenc Múzeum Évkönyve, Szeged
MMMK	A Magyar Mezőgazdasági Múzeum Közleményei
MTAK (II)	A Magyar Tudományos Akadémia II. Társadalmi-Történeti Tudományok Osztályának Közleményei (1950–1966), A Magyar Tudományos Akadémia II. Filozófiai és Történettudományi Osztályának Közleményei (1966–1981)
NMMÉ	Nógrád Megyei Múzeumok Évkönyve, Salgótarján
OxfJA	Oxford Journal of Archaeology
PBF	Prähistorische Bronzefunde, Stuttgart
ProblemeKfsNsg	Probleme der Küstenforschung im südlichen Nordseegebiet
ProcPrehistSoc	Proceedings of the Prehistoric Society
PZ	Praehistorische Zeitschrift
RCRFA	Rei Cretariae Romanae Fautorum Acta, Tongeren
RevBis	Revista Bistriţei, Complexul Judeţean Muzeal Bistriţa-Năsăud
Sargetia (S.N.)	Sargetia. Acta Musei Devensis, Deva
SCA	Studii şi Cercetări Antropologice
SCIV(A)	Studii şi Cercetări de Istorie Veche (şi Arheologie 1974–), Bucureşti
SlovArch	Slovenská Archeológia, Bratislava
SMMK	A Somogy Megyei Múzeumok Közleményei, Kaposvár
StAntArch	Studia Antiqua et Archaeologica, Iaşi
Starinar	Starinar. Arheološki Institut Beograd

StCercNum	Studii şi cercetări de numismatică, Bucureşti
StComSM	Studii şi Comunicări Satu Mare
StComVrancea	Vrancea. Studii şi comunicări, Focşani
StudiaAA	Studia Antiqua et Archaeologica, Iaşi
SUBB-Historia	Studia Universitatis Babeş–Bolyai, series Historia, Cluj-Napoca
Századok	Századok, A Magyar Történelmi Társulat Folyóírata, Budapest
Terra Sebus	Terra Sebvs, Acta Musei Sabesiensis, Sebeş
Thraco-Dacica	Thraco-Dacica. Institutul de Arheologie „Vasile Pârvan" Centrul de Tracologie, Bucureşti
Tyragetia	Tyragetia. The National Museum of History of Moldova, Chişinău
UPA	Universitätsforschungen zur Prähistorischen Archäologie, Bonn
VAH	Varia Archaeologica Hungarica, Budapest
VMMK	A Veszprém Megyei Múzeumok Közleményei, Veszprém
WMMÉ	A Wosinsky Mór Múzeum Évkönyve, Szekszárd
ZBf	Zeitschrift für Balkanforschung