PURE GOLD WITH POOR WORKMANSHIP – SOME UNUSUAL PIECES OF POLYCHROME METALWORK FROM THE 5TH-CENTURY CARPATHIAN BASIN•

AZ ARANY TESZI AZ EMBERT – GYENGE KIDOLGOZÁSÚ POLIKRÓM ARANYTÁRGYAK AZ 5. SZÁZADI KÁRPÁT-MEDENCÉBŐL

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Abstract

Jewellery, dress accessories and other personal ornaments made of precious metal and decorated with gemstones were representative elements (prestige objects) of Migration-period supra-regional fashion in Europe. Due to their valuable materials and impressive appearance, these polychrome artefacts are highlighted items in art albums and exhibition catalogues as the key objects of the period. Their vast majority represents high standard of workmanship even from a modern perspective. A small minority comprises, however, objects of lower or even poor quality, falling below the standard. This paper focuses on these exceptions. Dozen finds showing low-quality workmanship are collected, analysed and interpreted below, with special attention to their technical features, material compositions as well as their functions as status indicator.

Our results indicated that the poorly-made objects were produced in workshops of local significance following and imitating high-standard models. The observed technological features pointed out that their makers were inexperienced in techniques requiring meticulous work and precision. The analytical data revealed, however, that they were dominantly made of high purity gold with a composition of partly or wholly identical to that of the technically outstanding items. Apparently, the high social status was not so demanding on the workmanship, rather the quality of the processed gold.

Kivonat

A színes ékkövekkel berakott, nemesfémből készült ékszerek, viseleti tárgyak és egyéb díszítmények a népvándorlás kori divat meghatározó elemei (presztízstárgyai) voltak Európában. Ezek a polikróm ötvösmunkák, értékes alapanyagaik és látványos megjelenésük miatt a korszak leleteit bemutató művészeti albumok és kiállítási katalógusok elmaradhatatlan elemei. Döntő többségük technikai kidolgozása modern szemmel nézve is kiemelkedő színvonalú, de szűk kisebbséget képezve vannak közöttük olyan darabok is, melyek (jóval) alulmúlják a sztenderd minőséget. Jelen írásban ezekről a kivételekről lesz szó, összesen tizenkét tárgyról. Elemzésünk és értelmezésünk során főként technikai jellemzőikre, anyagösszetételükre, valamint státuszjelző szerepükre került hangsúly.

Eredményeink azt támasztják alá, hogy a gyengébb kivitelű tárgyak lokális jelentőségű műhelyekben, minőségi előképe(ke)t követve és imitálva készültek el. A megfigyelt technológiai jegyek azt a benyomást keltik, hogy készítőiknek nem volt elegendő tapasztalata az aprólékos munkát és precizitást igénylő eljárásokban. A vizsgálatok ugyanakkor rávilágítottak, hogy anyagösszetételük részben vagy egészében megegyezik a technikailag kiemelkedő darabokéval, ebben a minőségükben tehát nem, vagy csak pontszerűen mutatkozik éles különbség. Mindez arra utal, hogy a tárgyak viselőinek társadalmi megítélése függetlenedett a technikai színvonaltól, és inkább a feldolgozott alapanyagok minőségén, abszolút értelemben vett értékén múlt.

KEYWORDS: 5TH-CENTURY ELITE, POLYCHROME METALWORK, HIGH PURITY GOLD, WORKMANSHIP, IMITATION

KULCSSZAVAK: 5. SZÁZADI ELIT, POLIKRÓM ÖTVÖSSÉG, NAGY TISZTASÁGÚ ARANY, KIVITELEZÉS, IMITÁCIÓ

• How to cite this paper: HORVÁTH, E., MOZGAI, V. & BAJNÓCZI, B., (2019): Pure gold with poor workmanship – some unusual pieces of polychrome metalwork from the 5th-century Carpathian Basin. , *Archeometriai Műhely* **XVI/1** 43-56.

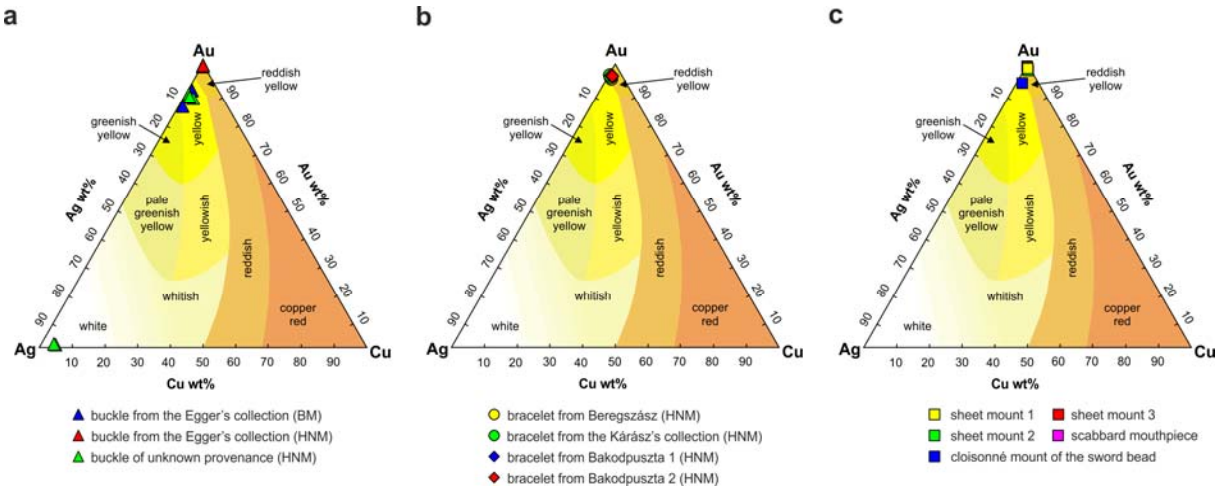

Fig. 1.: Chemical composition of the objects discussed in the paper, plotted in the gold–silver–copper ternary diagram: a) shoe buckles, b) bracelets with animal-head terminals, c) sword accessories. The colouring indicates the colours of various gold–silver–copper alloys (after Leuser 1949). Diagram: Viktória Mozgai

1. ábra: A cikkben említett tárgyak kémiai összetétele az arany–ezüst–réz háromszög diagramon ábrázolva: a) cipőcsatok, b) állatfejben végződő karperecek, c) kard szerelékek. A színezés a különféle arany–ezüst–réz ötvözetek színét jelzi (Leuser 1949 nyomán). Diagram: Mozgai Viktória

Introduction

In the Carpathian Basin, the first bloom of the polychrome metalwork can be dated to the late 4th and 5th centuries AD, which corresponds to the Hunnic period and the subsequent decades. This group of goldsmiths' works – unearthed mainly from aristocratic burials, hoards and ritual deposits – are generally interpreted as the legacy of the elite members of the barbarian communities of these times, primarily as markers of prestige (e.g. Tejral 1999; Schmauder 2002; Quast 2009). Their owners – chiefly military or political officials in alliance with the Roman Empire and their relatives – were in a privileged position. They could afford to display their wealth, authority, and power through valuable objects with special decoration and workmanship (Hardt 2004, 60-96.). Their sources were diplomatic gifts accepted from the Empire, as well as the golden tribute (*tributum*) received annual in terms of the alliance (Kiss 1986, 108-110; Hardt 2004, 187-190.)

Although most of the 5th-century polychrome goldsmiths' works were made for the needs of the elite, the sites and organisational framework of their production are little known. There are only indirect evidence derived from the analysis of the finished products. Based on the previous studies (Horváth 2012; 2013), some the objects were made in the Barbaricum and some in the Roman Empire, either in a local or central workshop – actually, there are examples for any combinations of these categories. The manufacturing process involved at least two craftsmen – specialised in the gem-processing and the metal-working. Cooperation between them was not usual but rather occasional. The phases of workflow were characterised by low degree of standardisation. Gold of high purity even up to a fineness of 99 wt% was often used as raw material of the objects. In these cases, Roman *solidi*, available in large quantities due to the *tributum*, could have been directly processed (Hawkes et al. 1966, 99; Kovrig 1985, 129; Giumlia-Maír 2013, 27.). Among the coloured inlays, red garnets originating from India and Sri Lanka were dominant, obtained in sets, ready for setting or in pre-cut form, which still needed to be shaped and sized (Horváth & Bendő 2011; Horváth 2013, 290-291.). Their acquisition required the maintenance of long-distance trade relationships with the sites where their extraction and/or preparation was carried out.

The vast majority of the objects represents high standard of workmanship even from a modern perspective. They comprise simpler artefacts rich in identical details and more complex, unique masterpieces. Gold items are outstanding even in this context: their shaping and decorating phases of production usually relies on meticulous, time-consuming techniques. Normally, they were crafted of a large number of components – pieces of sheet metal and small elements of filigree and granulation – which were fixed to each other by precision soldering. All of these indicate experienced and skilful makers. The polychrome jewellery is however far from being uniform in quality. In contrast to the splendid exemplars some items are of lower or even poor quality, falling below the standard described above from one or more aspects. The present paper focuses on these exceptions.

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Table 1.: Short catalogue of the low-standard objects discussed in the paper.

1. táblázat: A cikkben tárgyalt gyenge kivitelű tárgyak rövid katalógusa.

Ref. nr.	Provenance site	Country	County/Raion	Context	Object type	Museum	Inventory number	Dating	Materials	Metalworking techniques	References
1	Egger's collection	H	Szeged?	unknown	shoe buckle	British Museum (BM)	1900,0714.2	5th c. 1/2	Au	hammering	Kiss 1970, 123, Pl. 1.5
2				unknown	shoe buckle	Hungarian National Museum (HNM)	107/1893.4	5th c. 1/2	Au	hammering	Alföldi 1932, 86, Pl. 34.4; Bóna 1993, 256, Fig. 93.5.
3	unknown provenance	H	unknown	unknown	shoe buckle		235/1870.III.12	5th c. 1/2	Au, Ag	hammering, casting, granulation	Alföldi 1932, 86, Pl. 34.3; Bóna 1993, 256, Fig. 93.2.
4	Miskolc-Sajópart	H	Borsod-Abaúj-Zemplén	unknown	earring with polyhedral bead	Herman Ottó Museum (HOM)	R.3913.	5th c. 1/2	Au	hammering, beaded wire	Lovász 1999, 258.
5-6	Békéscsaba-Téglagyár	H	Békés	unknown	pair of earrings with polyhedral bead	Móra Ferenc Museum (MFM)	A.53.146.1.	5th c.	Au	hammering, twisted wire	Csallány 1961, 121, Taf. 188.14-15.
7	Kárász's collection	H	unknown	unknown	bracelet with animal-head terminals	Hungarian National Museum (HNM)	107/1893.3.	5th c. 2/3	Au	casting, punching	Hampel 1905, 418, Taf. 42.1.
8	Bátaszék-Iskola	H	Tolna	ritual deposit	scabbard mouthpiece	Wosinsky Mór Museum (WMM)	65.1.8.	5th c. 1/2	Au	hammering	Kovrig 1985, 129, Abb. 9.3; Bóna 1993, 249-250, Fig. 53.
9					sheet mounts of the handle and the scabbard of a *spatha*		65.1.13.		Au	hammering	Kovrig 1985, 129, Abb. 9.4; Bóna 1993, 249-250, Fig. 53.
10							65.1.13.		Au	hammering	Kovrig 1985, 129; Bóna 1993, 249-250.
11							65.1.13.		Au	hammering	
12							65.1.13.		Au	hammering	

Presentation of the objects

The finds representing low-quality workmanship form a small minority of polychrome fine metalwork pieces. Although further items may later be added to the list, from the currently known nearly 250 late 4th-5th-century gold objects (Horváth 2012, Table 4.1), only twelve belong here. These artefacts involve a pair of buckles from the Egger's collection preserved in Budapest and London, another buckle of an unknown provenance, three earrings with polyhedral beads from Miskolc and Békéscsaba, a bracelet with animal-head terminals from the Kárász's collection without any indication of the provenance, as well as five sheet mounts decorating the double-edged sword (*spatha*) of the ritual deposit from Bátaszék (**Table 1.**).

With the exception of the Bátaszék finds, all of them are stray items – there is no information about the context of their discovery or their owners. In terms of their function, the artefacts show a mixed picture: they can be identified as jewellery, dress accessories, or ornaments of weaponry. Qualitative differences are most discernible with respect to their object types. Accordingly, the examples are described in four groups: 1) shoe buckles; 2) earrings with polyhedral beads; 3) bracelets with animal-head terminals; 4) sheet mounts.

The following descriptions are based on our technological and material analyses extended with available previous data. The technological characteristics were observed by optical microscope at the accessible finds. In those cases where no previous analyses were performed, the chemical composition of the objects (their metals) was determined non-destructively by handheld X-ray fluorescence analysis (hXRF) (**Fig. 1, Table 2**)

Shoe buckles

The first examples belong to a notable object type of the Hunnic period, a distinctive form of buckle with a stumpy plate and a long tongue bent onto a massive loop, made in gold. The small and medium-sized items of this type form a significant part of 5th-century polychrome gold finds in the Carpathian Basin (**Fig. 2d**). Their characteristic feature is the golden cellwork executed in standard *cloisonné* technique on the plate (Horváth 2012b, 215, **Fig. 2b**). This was the most time-consuming phase of the workflow, which required special attention because of the multiple joining and soldering. From the nearly thirty gold buckles preserved in Hungarian museums, only two items have their surface decorated with simpler bezel settings instead of cellwork. One of them has a pair currently found in the collection of the British Museum. Their sizes indicate that all three pieces were used to decorate the straps of footwear. In their appearance, they are far below the average level of Hunnic-period polychrome metalwork (**Fig. 2, Table 1.1-3.**).

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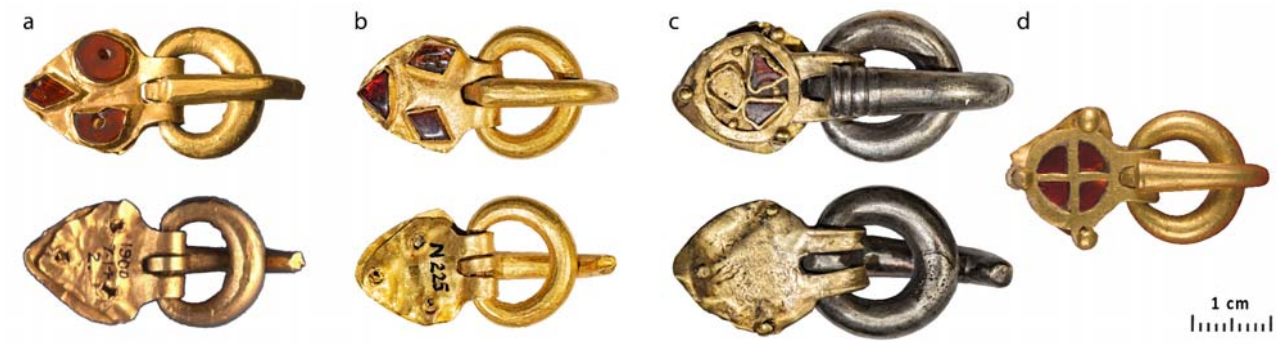

Fig. 2.: Hunnic-period shoe buckles of the Egger's collection from the British Museum (a) and from the Hungarian National Museum (b), of unknown provenance (c) and from Bátaszék (d). Photo: Trustees of the British Museum (a), Eszter Horváth (b-d)

2. ábra: Hun kori cipőcsatok az Egger gyűjteményből, a British Museumból (a), és a Magyar Nemzeti Múzeumból (b), ismeretlen lelőhelyről (c) és Bátaszékről (d). Fotó: Trustees of the British Museum (a), Horváth Eszter (b-d)

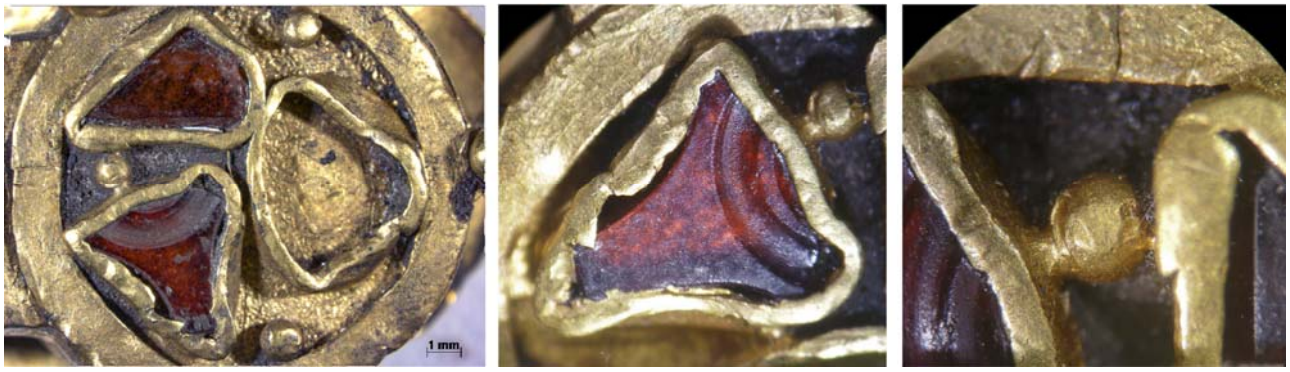

Fig. 3.: Garnet inlays and granulation on the shoe buckle of unknown provenance. Photo: Eszter Horváth

3. ábra: Az ismeretlen lelőhelyű cipőcsat gránátberakásai és granulációs díszítése. Fotó: Horváth Eszter

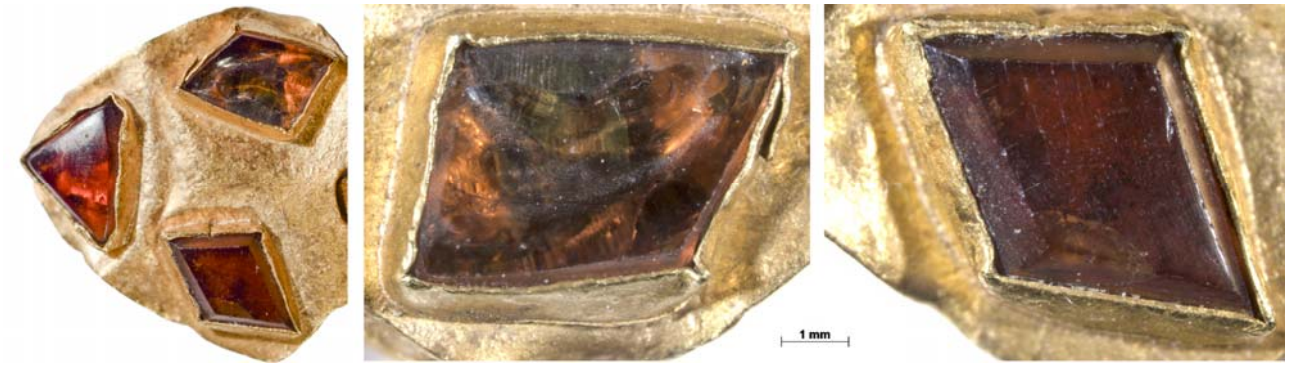

Fig. 4.: Garnet inlays on the shoe buckle of the Egger's collection from the Hungarian National Museum. Photo: Eszter Horváth

4. ábra: A Magyar Nemzeti Múzeumban őrzött Egger-féle cipőcsat gránátberakásai. Fotó: Horváth Eszter

Two of the buckles survived thanks to the collecting activity of the Egger brothers, who were influential goldsmiths and antiques dealers during the dual monarchy of Austria-Hungary (Kemenczei 2011). The buckles originating from the region of Szeged (Csongrád) (erroneously noted Tolna by Kiss 1969-70) had different fates after the private collectors died in the late 19th century. Following a brief interlude, one was purchased by the Hungarian National Museum, and the other by the British Museum (Bóna 1993, 256, Fig. 93.5). The unity of the two finds, their identification as a pair has never been questioned in scholarship. Their technical execution is surprisingly unhandy and negligent. Their plates are unusually plain constructions made of folded sheet metals shaped as irregular triangles.

Table 2.: Chemical composition of the objects discussed in the paper. [1]SEM-EDS data from Craddock et al. 2010; [2]new hXRF data, not published yet; [3]hXRF data from Horváth 2012; [4]AES data from Vorsatz 1985. (< LOD=below limit of detection) Elements deriving from surface contamination or corrosion (e.g. Si, Fe, S) were not taken into account during data evaluation.

2. táblázat: A cikkben említett tárgyak kémiai összetétele. [1]SEM-EDS adatok Craddock et al. 2010 alapján; [2]új, közöletlen hXRF adatok; [3]hXRF adatok Horváth 2012 alapján; [4]AES adatok Vorsatz 1985 alapján. (< LOD=kimutatási határ alatt) Az adatok kiértékelésénél a felületi szennyeződésből, illetve korrózióból származó elemeket (pl. Si, Fe, S) figyelmen kívül hagytuk.

Ref. nr.	Measurement points	Chemical composition (weight %)				
		Au	Ag	Cu	Pb	Bi
1	*shoe buckle from the Egger's collection (British Museum)* [1]					
1.1	plate	99.3	0.7	0.2	< LOD	< LOD
1.2	loop	90.7	8.1	1.2	< LOD	< LOD
1.3	tongue	85.1	13.8	1.1	< LOD	< LOD
2	*shoe buckle from the Egger's collection (Hungarian National Museum)* [2]					
2.1	plate	99.5	0.4	0.1	< LOD	< LOD
2.2	loop	99.7	0.3	0.0	< LOD	< LOD
2.3	tongue	99.5	0.4	0.1	< LOD	< LOD
3	*shoe buckle of unknown provenance* [2]					
3.1	plate (back)	89.5	9.6	0.9	< LOD	< LOD
3.2	plate (side)	87.8	9.1	3.0	< LOD	< LOD
3.3	plate (front)	88.0	9.9	1.6	< LOD	< LOD
3.4	loop	1.1	93.9	3.7	0.6	0.1
3.5	tongue	0.9	93.6	4.3	0.6	0.1
7	*bracelet from the Kárász's collection* [2]					
7.1	ring	93.7	3.5	0.2	< LOD	< LOD
7.2	bezel	95.3	3.8	0.8	< LOD	< LOD
A	*bracelet from Beregszász* [2]					
A.1	ring	94.7	3.8	1.4	< LOD	< LOD
B	*bracelet from Bakodpuszta (1)* [2]					
B.1	ring 1	95.0	3.3	0.6	< LOD	< LOD
B.2	ring 2	94.9	3.2	0.7	< LOD	< LOD
C	*bracelet from Bakodpuszta (2)* [2]					
C.1	ring 1	96.2	3.0	0.7	< LOD	< LOD
C.2	ring 2	95.7	3.0	1.3	< LOD	< LOD
8-11	*sheet mounts from Bátaszék* [3]					
8	scabbard mouthpiece	98.7	0.6	< LOD	< LOD	< LOD
9	sheet mount 1	97.0	1.1	1.0	< LOD	< LOD
10	sheet mount 2	98.7	0.7	0.1	< LOD	< LOD
11	sheet mount 3	97.8	0.8	0.6	< LOD	< LOD
D	*sword-bead from Bátaszék* [4]					
D.1	cloisonné mount	95.0	4.0	1.0	< LOD	< LOD
D.2	rivet	0.4	99.4	< LOD	< LOD	< LOD

Note to **Table 2.:**

1: New hXRF data were acquired by a SPECTRO xSORT Combi type handheld X-ray fluorescence spectrometer (Peltier cooling, Rh anode X-ray tube, energy-dispersive, SDD detector, 15–50 kV, 30–120 µA, 'Light Elements' built-in calibration, 3 mm measured area in diameter, 30 sec acquisition time).

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According to the results of material analysis, the buckle kept in the British Museum was made up of parts of extremely different quality, which were certainly used secondarily (**Fig. 2a**). The material of the plate is pure gold (99.3 wt% Au, 0.7 wt% Ag, 0.2 wt% Cu), like Roman *solidi*, whereas the loop and the tongue are alloys containing more silver and copper, (loop: 90.7 wt% Au, 8.1 wt% Ag, 1.2 wt% Cu; tongue: 85.1 wt% Au, 13.8 wt% Ag, 1.1 wt% Cu) (**Table 2.1.**) (Craddock et al. 2010, 57-59, Table 1). Similarly, the surface of the buckle was decorated with re-used inlays. The settings enclose two flat beads (one of which is broken in half) and a flat-cut, lozenge-shaped, chipped slab, with bevelled edges. Thus, the buckle comprises the remains of three or four individual objects.

The other piece of the pair, kept in the Hungarian National Museum, is much more homogenous in general (**Fig. 2b**). Its components were all made of gold of great fineness (99.5–99.7 wt% Au, 0.3–0.4 wt% Ag, 0.03–0.1 wt% Cu) (**Table 2.2, Fig. 1a**). It is inlaid with regular-shaped garnet slabs, however one of the lozenge-shaped slabs has a rough or chipped surface, which indicates that still not only carefully processed gemstones were selected for the decoration of this item (**Fig. 3.**).

The third buckle, which is of unknown provenance, was also acquired by the Hungarian National Museum towards the end of the 19th century (**Fig. 2c**). It can be connected to the previous pair of buckles since its maker was also inexperienced and had little artistic sense. Among the three examples it represents the lowest material quality. Based on the results of the metal analysis, its plate was made of less pure gold (87.8–89.5 wt% Au, 9.1–9.9 wt% Ag, 0.9–3.0 wt% Cu) (**Table 2.3.1-3, Fig. 1a**). The low purity is even reflected by the dull colour of gold (**Fig. 2c**). In contrast with the plate, the loop and the tongue were made of a silver-copper alloy (loop: 93.9 wt% Ag, 3.7 wt% Cu; tongue: 93.6 wt% Ag, 4.3 wt% Cu). The chemical composition of the two parts is quite similar, even in minor and trace element composition (loop: 1.1 wt% Au, 0.6 wt% Pb, 0.1 wt% Bi; tongue: 0.9 wt% Au, 0.6 wt% Pb, 0.1 wt% Bi (**Table 2.3.4-5, Fig. 1a**). Apparently, the object was patched together from elements of different origins. Similarly to the examples above, the plate of this buckle is decorated with secondarily used garnet inlays enclosed by poorly made, irregular bezel settings, accompanied by three awkwardly arranged granules (**Fig. 4.**). One bezel contains the broken angle of a concave, triangular slab decorated with concentric circles, while the other contains another chipped triangle. The third inlay of the buckle is missing, but the shape of its setting suggests that it was again irregular.

Earrings with polyhedral bead

The next three examples represent another characteristic type of 4th- and 5th-century polychrome jewellery, the earring with polyhedral bead. The appearance of the earrings is greatly unified in the discussed period, which is primarily due to the same material and construction they have, as well as their distinctive form that resembles rhombic dodecahedron garnet crystals. They were made from relatively plain elements, with a simple workflow. Normally, their hoop is a single undecorated wire most often made of gold, occasionally of gold-plated copper alloy. Seldom, it was made by twisting three or four fine round wires (for the examples see Horváth 2012). Their ornament – the bead – was crafted of a single hammered sheet of gold, cut-out for the inlays, which was then folded serving as the edges of a polyhedron, soldered at its vertices (**Fig. 5a-b**).

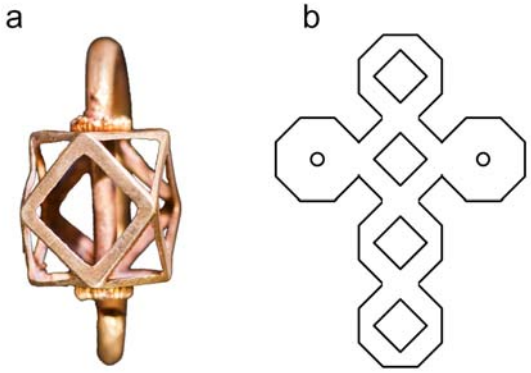

Fig. 5.: Earring with polyhedral bead from Bakodpuszta (a), polyhedral bead fold-out (b). Photo: Eszter Horváth

5. ábra: Poliédergombos fülbevaló Bakodpusztáról (a), a poliédergomb kiterített rajza (b). Fotó: Horváth Eszter

Inside, the bead was filled with backing paste, in which the garnet slabs of matching size and shape were set. There are only minimal differences in the design of the openwork settings – occasional enrichment or division of the central settings or alternative shapes of inlay on the triangular faces of the beads (Horváth 2012).

Among the multitude of uniform pieces in the collections of Hungarian museums there are only two stray finds that stand out. One was found in Miskolc, on the bank of River Sajó (Borsod-Abaúj-Zemplén), and the other (a pair) was discovered in the area of a brick factory in Békéscsaba (Békés) (**Fig. 6., Table 1.4-6.**). Similarly to other items, these earrings were made of gold sheets (unfortunately, chemical analysis was not yet performed on them) and garnet slabs, but with unusual technical and geometric solutions. All three lack the characteristic network structure. The real openwork settings were replaced by an alternative.

HU ISSN 1786-271X; urn: nbn: hu-4106

Fig. 6.: Earrings with polyhedral bead from Miskolc (a) and Békéscsaba (b). Photo: Eszter Horváth

6. ábra: Poliédergombos fülbevalók Miskolcról (a) és Békéscsabáról (b). Fotó: Horváth Eszter

The earring from Miskolc more or less resembles the other items in shape. As a significant difference from the standard, its polyhedral bead is formed from two four-pronged sheets, folded and soldered to each other on their vertices (**Fig. 6a, 7a**). The sheets enclose four rectangular holes, but no additional shapes (round or triangular) were cut out. As a consequence, the earring could be set only with four inlays instead of the usual twelve pieces. The maker of the pair from Békéscsaba was apparently unaware of even the basic steps of producing a polyhedral bead. The basis of the ornaments is a rectangular prism, onto which the bezel settings of the lozenge-shaped, rectangular and round inlays were soldered (**Fig. 6b, 8a**). Both of the beads could be set with altogether five inlays.

In addition to the structural differences, the hoops of the earrings were also produced and adorned in an unusual way. While in the case of the Miskolc example, the maker tried to prepare beaded wire using a single-bladed tool (**Fig. 7b**), in the case of the pair from Békéscsaba, twisting was employed to a simple wire of square cross-section (**Fig. 8b**).

Finally, the objects are also outliers as their technical execution falls below the standard. In the case of the item from Miskolc, the jagged edges of the gold sheets, the uneven and unfinished character of the beaded wire, whereas at the pair from Békéscsaba, the irregular twisting of the wire and the unaligned beads of unequal size and shape suggest careless, negligent work.

Fig. 7.: Details of the earring from Miskolc, a) polyhedral bead, b) hook, c) garnet inlay. Photo: Eszter Horváth

7. ábra: A miskolci fülbevaló részletei, a) poliédergomb, b) karika, c) gránátberakás. Fotó: Horváth Eszter

Fig. 8.: Details of the earring from Békéscsaba, a) polyhedral bead, b) hook, c) garnet inlay. Photo: Eszter Horváth

8. ábra: A békéscsabai fülbevaló részletei, a) poliédergomb, b) karika, c) gránátberakás. Fotó: Horváth Eszter

The irregular shape and the uneven edges of the majority of the garnets, which might have been shaped by breaking, convey an even more clumsy impression (**Fig. 7c, 8c**).

Bracelets with animal-head terminals

Our next example leads to the golden bracelets terminating in animal heads. The earliest examples of this jewellery type – combining Greek Hellenistic and Early Roman elements with the Sarmatian polychrome animal style – is dated as early as the 1st century AD (Schiltz 2006, 173, 272, Cat. 58; Mordvinceva & Treister 2007). These are particular items produced in relatively small quantities – only six whole examples are known from the 5th-century Carpathian Basin. Compared to the buckles and earrings discussed above, they are more diverse in manufacturing technique, construction and ornamentation.

Four bracelets are solid casts with a simple, open ring construction, ending in robust or plane heads.

HU ISSN 1786-271X; urn: nbn: hu-4106 © by the author(s)

Fig. 9.: Bracelets with animal-head terminals from Bakodpuszta (a, d), Beregszász (Berehove/Beregovo, Ukraine) (b, e), and from the Kárász's collection (c, f). Photo: Eszter Horváth

9. ábra: Állatfejben végződő karperecek Bakodpusztáról (a, d), Beregszászról (b, e), és a Kárász gyűjteményből (c, f). Fotó: Horváth Eszter

Examples with robust heads are from Beregszász (today: Berehove/Beregovo, Ukraine) (Hampel 1905, 418.), and from the Kárász's collection (**Fig. 9b-c, Table 1.7, 1.A**), whereas pieces with plate heads are from Diósjenő (unpublished material). In contrast with them, the pair of bracelets discovered in grave No. 1 at Bakodpuszta (today: Dunapataj-Bödpuszta, Bács-Kiskun) (Fettich 1951, 22-23, 82.) represents a special technical solution with hollow structure, hinged construction and screw-clasp (**Fig. 9a**). In addition to its exact parallel from the Kiev treasure (Merowingerzeit 2007, 363, Cat. III.18.1.), analogues are known only among the early Byzantine goldsmiths' works, such as the extraordinary pieces from the princely grave at Malaya Pereschepina, dated to around 600 (Werner 1984, 19, Taf. 25; Deppert-Lippitz & Krause 1995, 171-172, Abb. 134).

Despite the decisive structural differences, the bracelets from Beregszász and the Kárász's collection show similarities with the Bakodpuszta pair in terms of the decorative techniques and ornamentation. Their settings played essential role in the design of the animal heads. While the eyes and ears were highlighted by bezel settings, the collars were formed by cellworks executed in standard *cloisonné* technique (**Fig. 9d-f**). This latter ornamentation – being unusual on polychrome bracelets, occurring rather on other object types of the period (Nagy 2007, 31) – is of key importance.

With regard to the quality of workmanship, different levels including extremities can be discerned. While the highest level is shown by the Bakodpuszta pair, which can be considered as a kind of prototype, the example from the Kárász's collection represents the lowest standard. This latter one is even the most robust, with a weight of over 150 grams. Comparing with the Beregszász item, the quality of its casting process shows a significant decline from technical and aesthetical aspects. This can be observed especially on its surface; the simplified workflow lacked the post-casting treatment. The bezels and the cell walls forming the eyes, ears and collars were clumsily set to the raw cast (**Fig. 10a**). They are almost completely empty now, only one single backing foil has remained as a possible evidence to the former inlays (**Fig. 10b**). The rough edges and the lack of inlays suggest that it is an unfinished object. Nevertheless, it must have been in use, as the round bezels are fragmented, and the central part of the ring is broken (**Fig. 10c-d**).

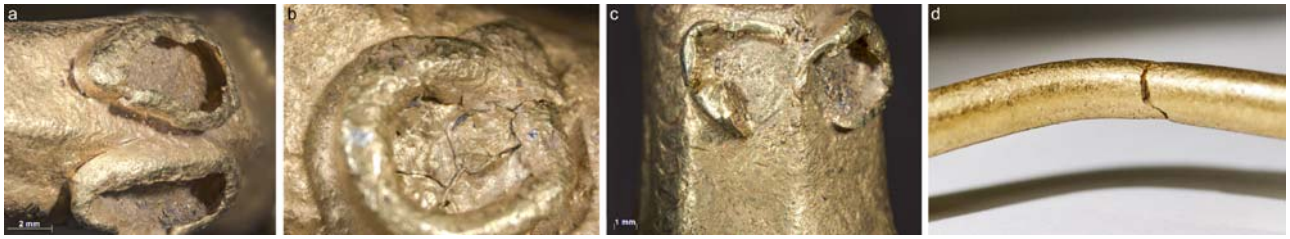

Fig. 10.: The raw cast surface (a), a backing foil (b), fragmented round bezels (c), and the broken ring (d) of the bracelet from the Kárász's collection. Photo: Eszter Horváth

10. ábra: A Kárász-féle karperec nyers öntvény felülete (a), megmaradt fólia alátéte (b), töredékes állapotú pántfoglalatai (c), és megrepedt karikája (d). Fotó: Horváth Eszter

The technical and quality differences are not reflected by the material composition. Based on the performed analyses, the four bracelets with *cloisonné* cellwork were made of high purity (but not pure) gold, without significant differences in the fineness (93.7–96.2 wt% Au, 3.0–3.8 wt% Ag, 0.6–1.4 wt% Cu) (**Table 2.7, 2.A-C; Fig. 1b**). The measured silver and copper amount can suggest conscious alloying and primary natural gold-silver alloy as well (Craddock 1995, 111; Mozgai 2017, 232-233.).

Sheet mounts

Qualitative difference can be observed among items of the same find assemblage or even among ornaments of a particular artefact. An example of this is the ritual deposit from Bátaszék (Tolna), and within that, those pieces of polychrome metalwork, which decorated the accessories of the *spatha* i.e. the handle, the scabbard as well as the sword-bead (**Fig. 11., Table 1.8-12, 1.D**). These gold ornaments with garnet inlays do not represent the same technological standard in spite of that they were set together during the ritual. Their common origin and workshop affinity can be clearly excluded, as Ilona Kovrig had already deduced in her detailed analysis of the finds (Kovrig 1985, 129).

The sword-bead is adorned with a cellwork (standard *cloisonné*) of high technical quality: the appearance of the wing-shaped inlays is uniform and regular, the finishing of the upper rims of the cell walls was carried out with great care, the cells enclose patterned backing foils, and the beaded wire frame is evenly distributed (**Fig. 12a**). As opposed to this, the mounts of the handle and scabbard – one wider and four narrower sheets – show extremely poor workmanship. The edges of the sheets are uneven, the length of the bezel settings does not correspond to the circumference of the inlays, and the size and shape of the garnet slabs are not uniform, either. The latter is particularly true for the widest sheet, which is decorated with slabs of mixed size and irregular shape – including a flat bead broken in half (**Fig. 12b**). Besides, one of the narrower sheets was also inlaid with secondarily used garnet slabs (**Fig. 12c**).

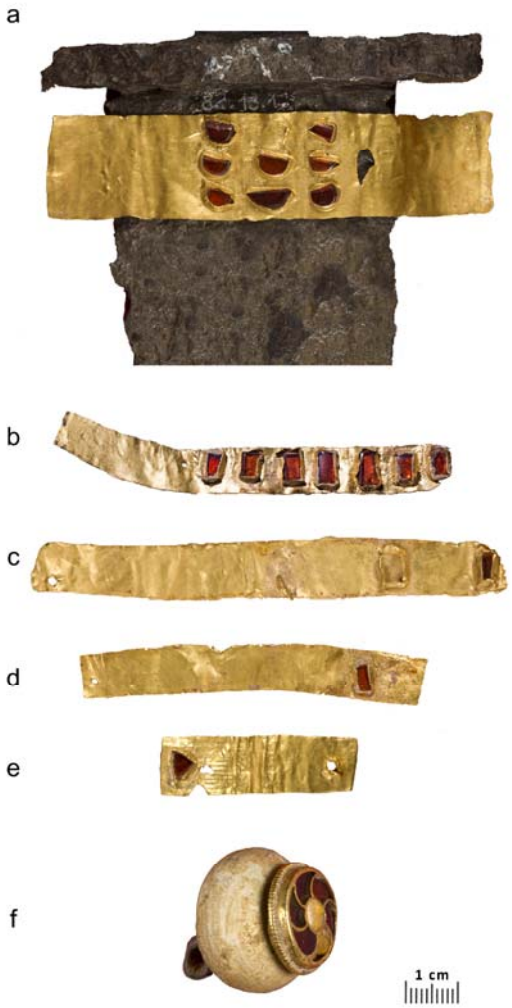

Fig. 11.: Sword accessories from the ritual deposit from Bátaszék, a) scabbard mouthpiece, b-e) various sheet mounts, f) sword-bead. Photo: Wosinsky Mór Museum (a, c-d), Eszter Horváth (b)

11. ábra: Kard szerelékek a bátaszéki áldozati együttesből, a) tokszájveret, b-e) különféle lemezveretek, f) kardfüggesztő gomb. Fotó: Wosinsky Mór Múzeum (a, c-d), Horváth Eszter (b)

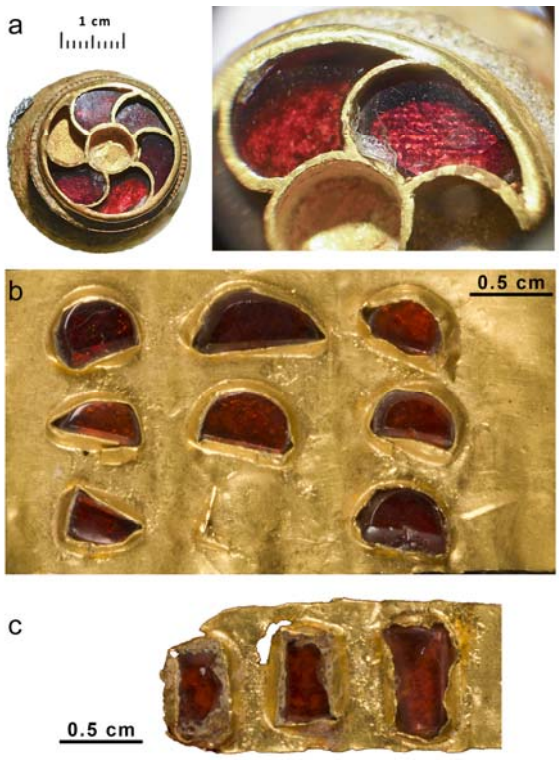

Fig. 12.: Details of the garnet inlays and their settings on the sword-bead (a), scabbard mouthpiece (b) and one of the sheet mounts (c) from Bátaszék. Photo: Eszter Horváth (a), Wosinsky Mór Museum (b-c)

12. ábra: Gránátberakások és foglalásuk részletei a bátaszéki kardfüggesztő gombon (a), tokszájvereten (b) és az egyik lemezvereten (c). Fotó: Horváth Eszter (a), Wosinsky Mór Múzeum (b-c)

Based on the results of the previous material analysis, even the metal composition of the ornaments is diverse (Vorsatz 1985, 146-147, Table 1. nr. 3, 12; Horváth 2012, Table 6.2.). The mounts of the handle and scabbard were made of unalloyed gold (97.0–98.7 wt% Au, 0.6–1.1 wt% Ag, 0–1.0 wt% Cu) (**Table 2.8-11; Fig. 1c**), most probably obtained directly by the melting of *solidi*. However, the *cloisonné* mount of the sword-bead was made of less fine gold (95.0 wt%), containing considerable amount of silver and copper (4.0 wt% Ag, 1.0 wt% Cu) (**Table 2.D.1; Fig. 1c**). The fineness of gold and the delicacy of workmanship are in inverse relation. A similar phenomenon occurs in case of analogous gold mounts from Nagyszéksós (Giumlía-Mair 2013, 29-35).

The differences above can partly be explained by the different purposes of the objects. The decorated sword-bead – including both the magnesite bead and the mounted cellwork – clearly bear the signs of use. The sheet mounts, on the other hand, – which are damaged but not worn – were obviously designed for a single use. The simpler design, and the less elaborate details are generally typical of the garnet inlaid sheet gold ornaments belonging to Hunnic-period ritual deposits.

Fig. 13.: Bow brooch with spiral ornamentation from Szilágysomlyó (Şimleu Silvaniei, Romania) (a), details of the irregularly arranged filigree ornaments and inlays. Photo: Eszter Horváth

13. ábra: Spiráldíszes kengyelfibula Szilágysomlyóról (a), a szabálytalanul elrendezett rátétdíszek és berakások részletei (b). Fotó: Horváth Eszter

The pieces from Bátaszék represent the lowest quality even among them. Analogues of extremely poor quality are known only from outside the Carpathian Basin, from Jakuszowice (Poland) (Kürti 1987, 180, Taf. 8. Kat. III.49.d; Bóna 1993, 233). The scabbard mount from Pécsüszög reflects a barely better workmanship, whereas the horse harness ornaments from Pécsüszög and Nagyszéksós bear more adornments, and their inlays are in greater harmony in terms of shape and size (Alföldi 1932, 65, 67; Fettich 1953, 21.). Furthermore, the cross-guards of the *spathae* discovered in Pannonhalma (Tomka 1986, 438-441, Fig. 18; Bóna 1993, 250, Fig. 58.) and Katzelsdorf (Austria) (Müller & Nowotny 2018, 955-956, Abb. 3.) as well as the dagger mouthpiece from Telki (Szenthe et al. 2019, Fig. 10.) were decorated with more massive and compact *cloisonné* cellworks.

The twelve examples presented here were dominantly made of high purity gold with poor workmanship. Their special position is manifested in the selection of the ornaments and related goldsmiths' techniques, as well as the quality of execution of the latter. These products must have been made by craftsmen, who did not reach up to the general outstanding level of the period, either in terms of their knowledge (i.e. "know-

how") or their skills in practice. The organisational framework and infrastructure of production – reconstructed indirectly – also point out more primitive conditions.

In case of the objects normally rich in identical features, the distinctive forms and techniques are missing, as if the standard design had not been known to the makers. Some ornaments and mounts were carried out in a specifically amateur manner or poorly. This is shown by the clumsy use of tools, the uneven and irregular features, as well as the imprecise joining and soldering. There is a lack of consistency in size and design. Further common phenomena are the secondary use of items or their remnants that became unsuitable for wearing, the shortening of workflow, and the replacing of certain procedures with simpler techniques (such as employing casting instead of hammering and soldering). The result gives the impression that the makers were inexperienced in techniques requiring meticulous work and precision.

The metallic raw material of the objects is gold, or gold and silver. Their composition – based on the available data – is partly or wholly identical to that of the technically outstanding items. Consequently, there is no or little difference in the quality of their material. This consistency rules out the option of forgery, implied by the obscure context of the objects (Craddock 2009, 370.). The direct use of the gold of great fineness available in the form of *solidi* must have been disadvantageous from a practical aspect. Pure, unalloyed gold is too soft, and has little tensile strength. Although it can be shaped well, it is less resistant to be damaged, and the surface of finished objects gets easily worn. Thus, the purity of gold may indicate not only the status of the customers, but the professional knowledge of the makers as well. Ideally, the craftsman adjusted the raw material to the character of the object: prepared and alloyed the gold according to need. In the majority of the discussed items, this step – by negligence or through necessity – was omitted from the workflow.

Discussion

These artefacts raise many intriguing questions. The low technical standards, the contrast between the high-quality raw materials and the poor workmanship, the similarities between high standard masterpieces and these items combining poor technical quality with high valued materials: how could we explain the low technical standards? What does it imply? Who were the owners? Same of the high-quality counterparts or others?

All of the poorly-made items – whether unique artefacts or objects rich in identical traits – have high-quality analogues among the pieces of fine metalwork. Due to their rare occurrence they are typically overlooked. The lower level of workmanship observed is not related to the traditions of the region or to the typical characteristics of the individual artefacts. It may be explained by the practices special for the particular production sites or makers. Necessity driven unique conditions as well as intentional individual decisions played decisive roles in the development of the special practices of individual workshops. The organisational frames of workshops, the available equipment and set of tools limited the technical possibilities of goldsmiths working there. Similarly, the knowledge and skills of the goldsmiths were restricting them to certain techniques at a certain level, setting thereby the steps of manufacturing workflow, as well as the quality of the execution. On the other hand, the individual styles of goldsmiths also had decisive impact on the workshops. The artistic intention – practically the taste and creativity of goldsmiths – could have influenced the practice of workshops by setting the conservative or innovative steps of production (Horváth 2018, 356-357.). The finds discussed here represent particular cases, where the identified imperfect technical solutions were consequences of different constraints.

The differences versus good-quality analogues are much more obvious today due to the methods of archaeometry than it was for the naked eye at the time of wearing. The similarities, however, could be perceived in the past, just like today. This was certainly the intention of customers or makers. The latter ones might have consciously used other objects as models and had their own ideas how to reproduce them. However, the result was below the standard of the original items due to the lack of a profound knowledge of them or certain professional skills. The design suggests that the customers did not have (regular) contact with workshops and goldsmiths making high-quality products. That is why they had their objects manufactured by less skilled craftsmen.

All of the listed items must be regarded as products of workshops of local significance following high-standard contemporary models, in other words, they may be labelled as imitations. If the imitation was the intention of the maker, he was most probably focusing on the quality of the object; if it was driven by the customer, the mediated status and prestige could have been an additional motivation. Unfortunately, we do not have any evidence about the identity of the customers/owners, except for the Bátaszék find assemblage, which certainly represented a prominent member of the ruling circles. In the absence of an archaeological context, we can only set hypotheses within the frames of the given economic and social conditions.

On the one hand, we can start with the assumption that the owner did not belong to the elite, but wanted to appear as he was – hence, he imitated not only the object, but also the related content, i.e. status and prestige. From the examples discussed above, the three small buckles can be connected to this interpretation the most. Their incongruously varied parts suggest that their wearers were not the primary recipients of

obtained gold (presumably the golden tribute) but acquired the valuable raw materials and other components in alternative ways. The processing – i.e. their reuse – was also unusual. It cannot be explained by a general shortage of raw materials. The abundant gold supply attested by written sources and archaeological evidence, as well as the average quality of 5th-century finds rule out this explanation.

On the other hand, we must also consider the possibility that the goldsmiths' items owned by the members of the elite did not represent equally high standards. The status and wealth of the customers did not necessarily go hand in hand with the demand for high-quality fine metalwork. Despite their high status, they might have had to settle for the products of less experienced goldsmiths and their potentially available raw materials, for example, due to craftsmen working at a high standard becoming temporarily inaccessible. A similar scenario could explain the production of the solid gold bracelet terminating in animal heads of the Kárász's collection. The weight of the object and its gold material imply a wealthy customer, belonging probably to the elite. The clumsy design of the animal heads, the simplified production technique, the lack of post-casting treatment as well as garnet inlays, however, indicate the poor skills of the maker and his limited access to resources.

The sheet mounts of the Bátaszék *spatha*, might lead to the same conclusion except the difference in their use/function. The thin sheets prepared for a ritual deposit were primarily of symbolic significance and were not intended for permanent use. That is why they were originally made during a simplified and shortened workflow, and it also provides a reasonable explanation for the direct use of the metallic raw material without alloying (corresponding to the fineness as *solidi*). However, it does not explain the poor workmanship below standards: the careless execution of the chosen techniques and the mismatched character of the garnets, some of which showed the signs of secondary use. The context of the finds and their gold material – considered to be the highest standard in this period – leave no doubt that they were indicators of status: their owner certainly belonged to the ruling circles. Therefore, although they were produced as imitations, the meaning conveyed by them is authentic.

Concerning the earrings from Miskolc and Békéscsaba, we do not have enough information to decide between the options mentioned above or to derive another one. In their case, material analysis may again provide further, valuable insights. However, the production of the Kárász's bracelet and the Bátaszék mounts raises another intriguing question: how important was the technical execution of the objects in the period under discussion? Was there a generally accepted quality, a required standard of appearance in the case of status indicators? The case of the bracelet gives the impression that the large amount of gold alone was sufficient for representation. Furthermore, the garnet inlaid sheet mounts of the *spatha* make it clear that – despite the technical deterioration – the sacrifice was considered to be complete and the ritual took place.

Considering the question further, in addition to the examples above, mention must be made about a pair of brooches decorated with spiral ornaments belonging to the hoard from Szilágysomlyó (today: Şimleu Silvaniei, Romania) (Fettich 1932, 30-32.) (**Fig. 13a**). Although the hoard clearly comprises the most outstanding finds of the era, these brooches show some kind of imperfection in their details. The gold-plated silver brooches are decorated with filigree ornaments and gemstone inlays, the quality and technical execution of which are not uniform. While the cellwork reflects careful design and perfect implementation, the bezel settings were made carelessly. The inlays equally comprise beautifully cut garnets, as well as secondarily used pieces and replacements in glass. The strip-twisted and beaded wires were manufactured evenly and accurately, but they were used imprecisely and negligently (**Fig. 13b**). The general picture is therefore rather controversial. This unusual phenomenon rules out the possibility of imitation, in contrast with the items above. The lack of consistency may have been caused by co-operation within the workshop (i.e. the division of work between craftsmen). On the basis of the differences observed, the pair of brooches must have been manufactured by two craftsmen, at least: one of them was responsible for the preparation of small ornaments and the other for their arrangement and fixing (Horváth 2018, 365-366.).

Artefacts that are different from the average are always exciting, valuable parts of find assemblages, as through the analysis of these, we may arrive at fundamental questions, or gain fresh insights about the whole period. This holds true here as well, even though the number of finds discussed in our paper is relatively small. Summarising our work, we can conclude that the polychrome gold artefacts from the 4th- and 5th-century Carpathian Basin do not represent uniformly high standards. As the twelve items presented above attest, the high-quality raw materials do not necessarily go together with high-standard workmanship. We have discussed some of the potential background aspects, and addressed topics such as the differences between the influence of the customer or the craftsman, and the distinction between conscious imitation or the force of circumstances as possible explanations.

It is important to note that although the discussed technological differences were visible at the time of wearing, they must have been less disturbing than one would interpret today. Based on these concrete examples, lower technical standards had presumably no major consequences for the judgment of their wearers. It rather depended on the outstanding quality of the processed gold – that is its value in absolute terms. As the saying goes, dress does not make a man

great, to which we may add that in the Hunnic period it was not even the perfect technical execution of jewellery that made a man look great, but the quality and quantity of gold used for it.

Acknowledgements

We are grateful to Zoltán May, for the analytical results on the gold sheet mounts from Bátaszék contributed to Eszter Horváth's PhD thesis. The research behind this study is part of a project supported by a Grant from the Hungarian Scientific Research Fund (OTKA/NKFIH-PD109234).

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