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## THE CENTRAL-EUROPEAN “SPIRAL ARM-GUARD” NOTES ON THE BRONZE AGE ASYMMETRICAL ARM- AND ANKLETS

*The aim of this study is to evaluate seven, unpublished Late Bronze Age (Br D–Ha A1) “spiral arm-guards” (Germ. Handschutzspiralen) from the Delhaes collection (Hungarian National Museum, Budapest). Despite the fact that their exact finding place and circumstances of discovery are unknown, it was possible to locate their presumable place of origin by the aid of the typo-chronological method. Moreover, with the help of macroscopic observations, we could provide new data and questions on the possible manufacturing techniques and usage of this important jewelry group. In relation to the above, it was necessary to offer a new overview on the typo-chronological aspects and functional questions of the earlier published artefacts from the Br A2 to the Ha B1.*

*Jelen tanulmány célja, hogy a Delhaes gyűjtemény (Magyar Nemzeti Múzeum, Budapest) hét, eddig közöletlen, késő bronzkori (Br D–Ha A1) “kézvédő tekercsét” vegye vizsgálat alá. Annak ellenére, hogy a tárgyak lelőhelye és pontos előkerülési körülményei ismeretlenek, a tipokronológiai elemzés alapján megtudtuk határozni lehetséges készítési területüket, továbbá a makroszkópikus megfigyelések segítségével új adatokkal tudunk szolgálni ezen jelentős ékszercsoport lehetséges készítőtechnológiájáról és használatáról. Mindehhez kapcsolódóan elkerülhetetlen feladat volt, hogy egy újabb áttekintést adjunk a korábban már közölt Br A2 és Ha B1 közé keltezhető tárgyak tipokronológiai és funkcionális kérdéseiről.*

**Keywords:** *collection of István Delhaes, Bronze Age Carpathian Basin, defensive weapon, wearable jewellery, symbolic objects*

**Kulcsszavak:** *Delhaes István gyűjteménye, bronzkori Kárpát-medence, védőfegyverek, hordható ékszerek, szimbolikus tárgyak*

### *Introduction<sup>1</sup>*

The analyzed “spiral arm-guards” were originally part of the collection of the famous painter and collector: István Delhaes (1843–1901). After his death, this vast collection was split into parts and was acquired by many different museums. A significant part of his prehistoric collection – which included approximately 208 bronze, stone and ceramic artefacts from the Neolithic to the Late Iron Age – was donated to the Hungarian National Museum (Budapest), in 11. January 1902 (PALLOS 2002, 243–244; PALLOS–KEMENCZEI 2002, 38). Although some objects were published earlier by Amália Mozsolics and Tibor Kemenczei, the whole prehistoric collection had never been presented to the archaeological community (MOZSOLICS 1967, Taf. 35, 6–8, Taf. 64,

1a–c; KEMENCZEI 1988, 53–56, Taf. 30, 280). The main objective of this study is to evaluate the seven “spiral arm-guards” of the collection from typo-chronological and technological point of view, as accurately as it is possible on the current level of the research.

Unfortunately, the analyzed objects’ exact finding place and circumstances of discovery are unknown. Therefore, they should be interpreted and analyzed as stray finds. However, the possibility should not be excluded that they could have been originally buried together, due to their dating (Br D–Ha A1) and their identical types and because of the deposition of similar objects within one assemblage in high quantity is also known (e. g. Aiud – 14 pcs) (PETRESCU-DÎMBOVIȚA 1998, 32–33). Furthermore, the collection contains additional objects with

similar dating – for instance rings with geometrical decorations, spiral-headed rings, Kemece-Type pendant and symmetrical armlet etc. –, which might indicate that the objects in question could have been a part of one or more Br D–Ha A1 depots with mixed composition. In any case, these assumptions can no longer be proven due to the lack of documentation of the context.

#### Description (Fig. 12)

It is a well-known phenomenon that during the Bronze Age the “spiral arm guards” appeared in one or more pairs within one assemblage. Based on their dimensions, decorations and the shape of their middle-knobs, it is possible to hypothesize such grouping within the analyzed seven artefacts.<sup>2</sup> Consequently, pair I. is composed of the two smaller ones (length: 15,6 cm and 13,9 cm) with cross-hatched triangle patterns and spiny disc-shaped middle-knobs (No. 1–2, Fig. 1, 1–2). The larger examples (length: 27 and 23,6 cm) are also decorated with bundles of lines and can be sorted into pair II. In this case, however, they are equipped with spiny star-shaped middle-knobs (No. 3–4, Fig. 2, 3–4). Regardless of the fact that their dimensions and middle-knobs are nearly the same, No. 5 and No. 6 have different types of decorations (No. 5–6, Fig. 3, 5–6).<sup>3</sup>

**No. 1.** The ring part of the object is round-sectioned, the shaft and the great spiral are rhomboid-sectioned. Hammering traces can be detected on the ring part and the rolled-terminal of the object. The geometric decoration of the shaft is composed of bundles of slant lines and antithetic, hatched triangles. It is important to note that the above decoration is slightly imprecise. The pattern along the outer coil of the great spiral is composed of fine punched lines. Well-identifiable polishing traces can be observed on the whole surface of the great-spiral and the frontal part of the spiny disc-shaped middle-knob. However, the lower side of the latter is less worked, due to unpolished casting seams are still visible on its surface. It is worth to note that incisions can be observed along the center of the great spiral’s inner part. In addition, abrasion traces are visible on the ring part and the outer coil of the great spiral. Length: 15,6 cm, thickness (lower): 0,5 cm x 0,5 cm, thickness (upper): 0,6 x 0,4 cm, width (lower): 7,9 cm, width (upper): 8,6 cm, diameter of the lower section: 6,7 cm x 8,2 cm, diameter of the casted middle-knob: 2,4 cm, width of the narrow side: 4,5 cm, outstretched length: 162,2 cm, weight: 205 g (Fig. 1, 1).  
**No. 2.** The ring part of the object is round-sectioned, the shaft and the great spiral are rhomboid-sectioned. The end of the object is rolled. Hammering traces can

be detected on the ring part and the rolled-terminal of the object. The shaft is decorated with bundles of slant lines and antithetic, hatched triangles. Similarly to No. 1 these patterns are also imprecise. The pattern along the outer coil of the great spiral is composed of fine punched lines. Polishing traces can be observed on the surface of the great spiral and the outer surface of the spiny middle-knob. Unpolished casting seams are visible on the lower side of the middle-knob. Similarly to the other, incisions can be observed along the center of the great spiral’s inner part. The abrasion traces concentrate on the ring part and the outer coil of the great spiral. Length: 13,9 cm, thickness (lower): 0,5 cm x 0,5 cm, thickness (upper): 0,6 cm x 0,5 cm, width (lower): 7,4 cm, width (upper): 8,7 cm, diameter of the lower section: 6,5 cm x 7,9 cm, diameter of the casted mid-section: 2,3 cm, width of the narrow side: 5,1 cm, outstretched length: 166,2 cm, weight: 188 g (Fig. 1, 2).

**No. 3.** The ring part of the object is round-sectioned, the shaft and the great spiral are rhomboid-sectioned. The end of the ring part is rolled. On the ring part, hammering traces are visible. The decoration of the shaft is composed of bundles of slant lines. The outer coil of the great spiral is decorated with fine punched lines. Both the frontal and the lower side of the star-shaped middle-knob are less elaborated. In addition, overflows and horizontal shift are also visible on the lower side. Length: 27 cm, thickness (lower): 0,6 cm x 0,6 cm, thickness (upper): 0,8 cm x 0,6 cm, width (lower): 8 cm, width (upper): 11,7 cm, diameter of the lower section: 6,7 cm x 10,1 cm, diameter of the casted mid-section: 4,4 cm, width of the narrow side: 8,1 cm, outstretched length: 240,7 cm, weight: 355 g (Fig. 2, 3).

**No. 4.** The ring zone is round-sectioned, the shaft and the great spiral are rhomboid-sectioned. The end of the object is rolled. On this part, clear traces of hammering are visible. The shaft is decorated with bundles of slant lines, the outer coil of the great spiral is decorated with fine punched lines. The surface of the great spiral is well-polished. Similarly to the latter the spiny star-shaped middle-knob shows traces of casting faults (e. g. overflows and horizontal shift) and its outer surface is well-polished. It is important to note that similarly to the No. 1 and No. 2 examples fine incisions are visible along the spine of the great spiral’s inner part. The abrasion traces concentrate on the ring part and the outer coil of the great spiral. Length: 23,6 cm, thickness (lower): 0,6 cm x 0,6 cm, thickness (upper): 9 cm x 0,6 cm, width (lower): 10 cm, width (upper): 14,1 cm, diameter of the lower section: 8,7 cm x 11 cm, diameter of the casted mid-section: 4,6 cm, width of the narrow side: 5,6 cm, outstretched length: 269,2 cm, weight: 581 g (Fig. 2, 4).

**No. 5.** Its ring part is round-sectioned but the shaft and the great spiral are rhomboid-sectioned. The end of the

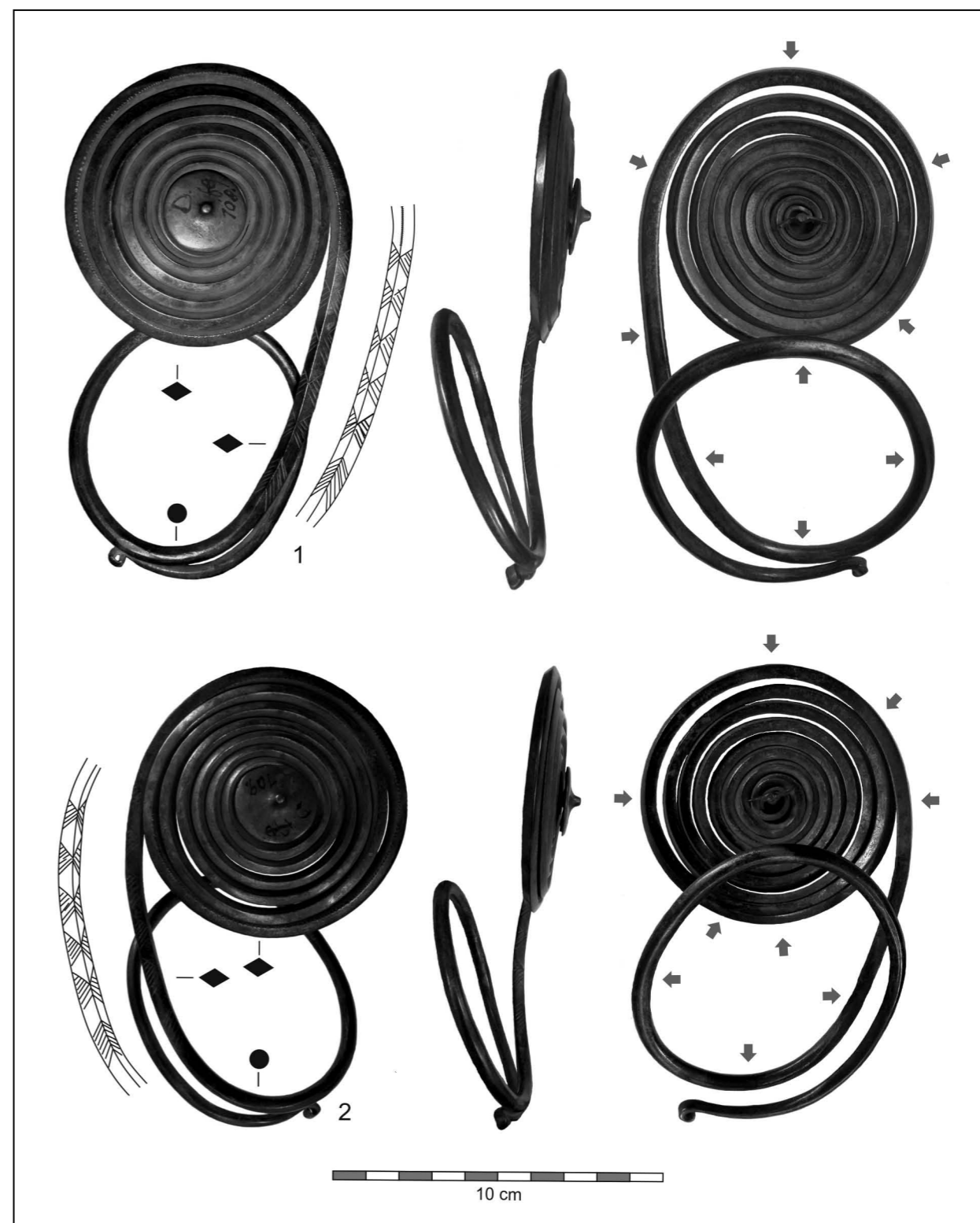


Fig. 1 Asymmetrical arm- and anklets from the Delhaes collection (Hungarian National Museum):

No. 1–2 (arrows: abrasion traces)

1. kép Asszimetrikus kar- és lábperecek a Delhaes gyűjteményből (Magyar Nemzeti Múzeum):

1–2. sz. (nyilak: kopásnyomok)

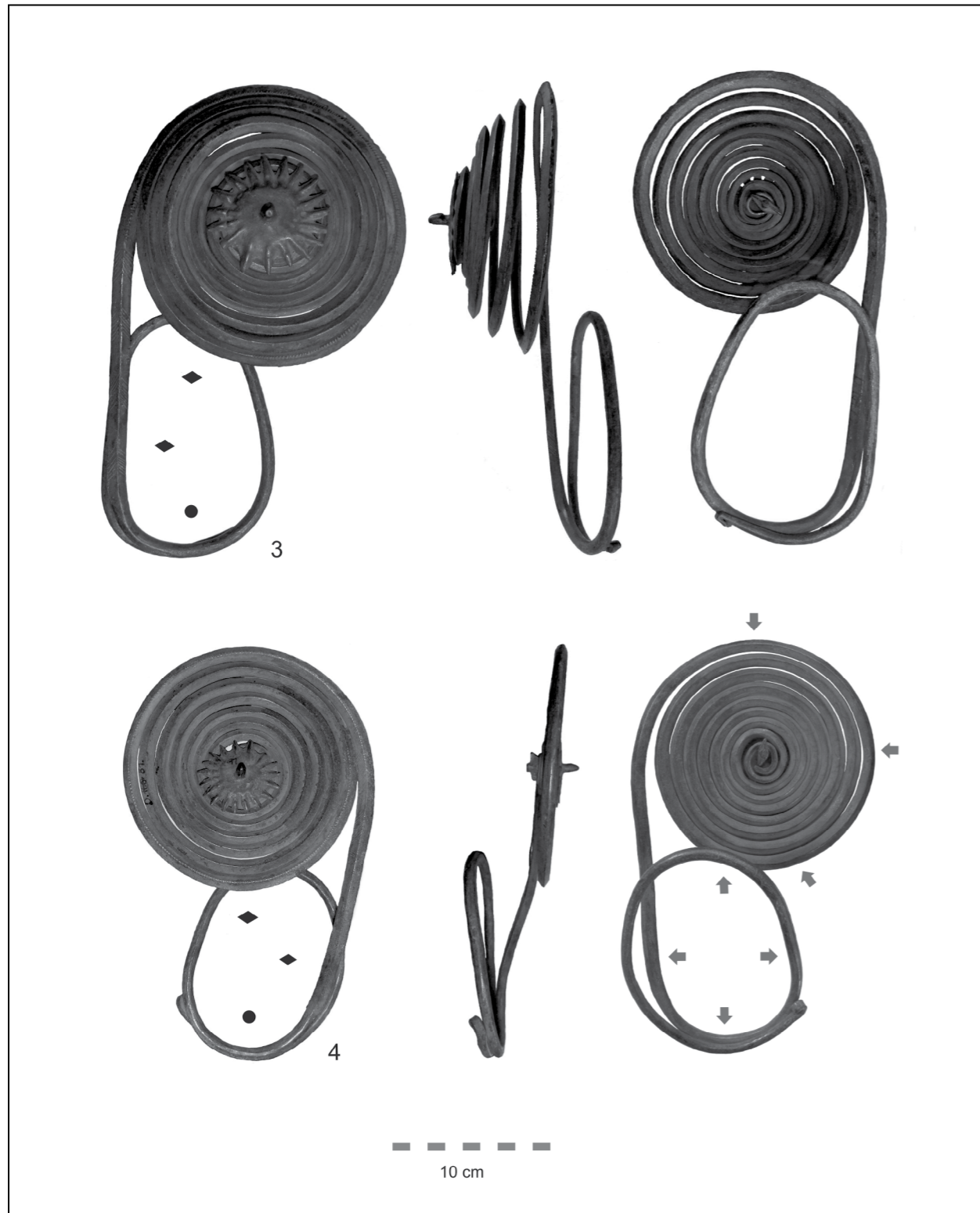


Fig. 2 Asymmetrical arm-and anklets from the Delhaes collection (Hungarian National Museum): No. 3-4  
(arrows: abrasion traces)  
2. kép Asszimmetrikus kar-és lábperecek a Delhaes gyűjteményből (Magyar Nemzeti Múzeum): 3-4. sz.  
(nyilak: kopásnyomok)

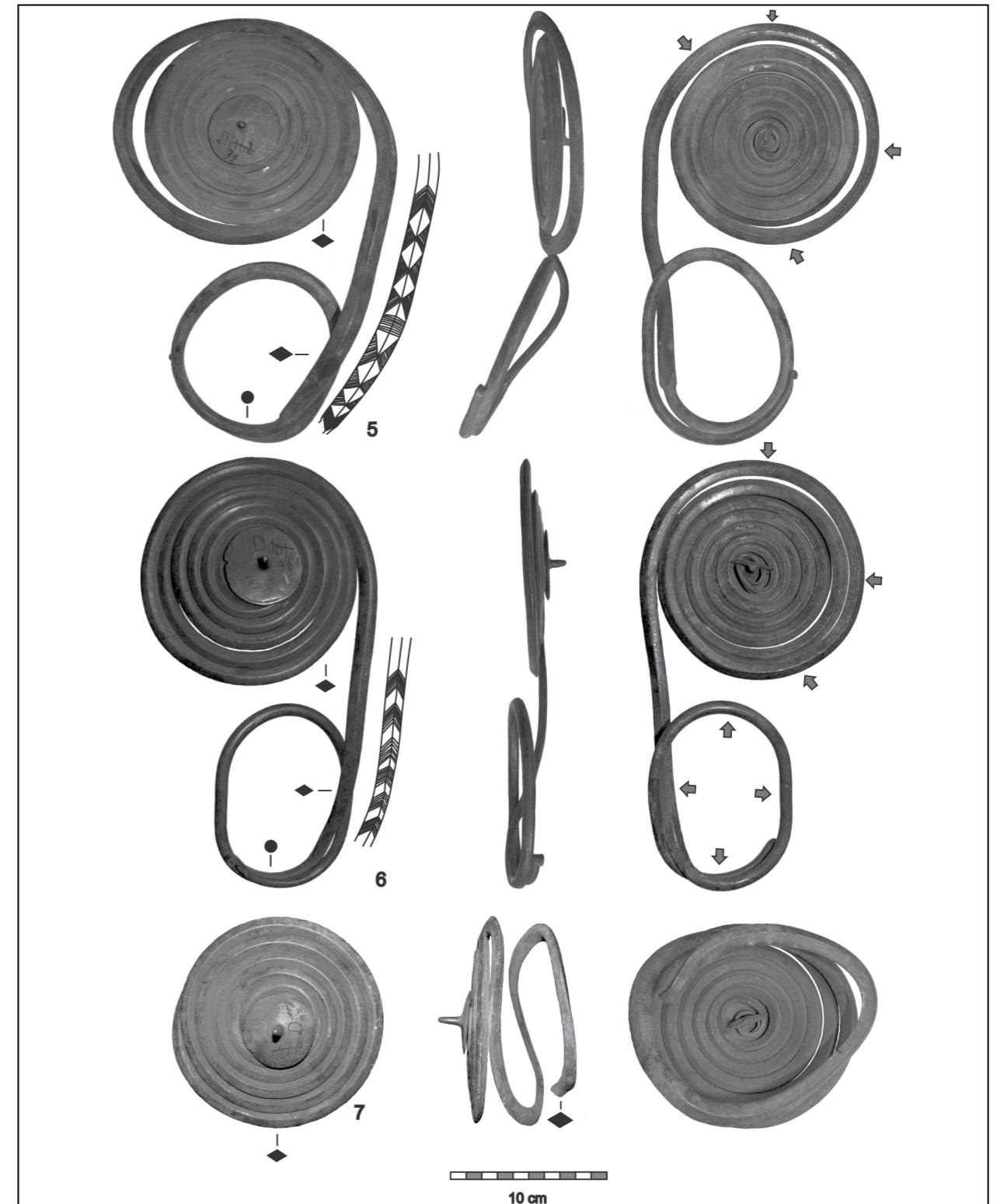


Fig. 3 Asymmetrical arm-and anklets from the Collection of István Delhaes (Hungarian National Museum): No. 5-7  
(arrows: abrasion traces)  
3. kép Aszimmetrikus kar-és lábperecek a Delhaes gyűjteményből (Magyar Nemzeti Múzeum): 5-7. sz.  
(nyilak: kopásnyomok)

object is rolled. On the ring part hammering traces are visible. The pattern of the shaft is composed of antithetical, hatched triangles and parallel bundles of lines. The pattern along the outer coil of the great spiral is composed of fine punched lines. Polishing is visible on the great spiral and the outer surface of the disc-shaped middle-knob. It is important to note that casting faults were visible on the back side of the middle-knob. Incisions were detected on the inner part of the great spiral. The abrasion traces concentrate on the outer coil of the great spiral. Length: 27,1 cm, thickness (lower): 0,9 cm x 0,8 cm, thickness (upper): 1,2 cm x 0,7 cm, width (lower): 10,1 cm, width (upper): 16,6 cm, diameter of the lower section: 11,1 cm x 8,5 cm, diameter of the casted mid-section: 4,3 cm, width of the narrow side: 9,9 cm, outstretched length: 288,7 cm, weight: 864 g (Fig. 3, 5).

**No. 6.** The ring part of the object is round-, the shaft and the great spiral are rhomboid-sectioned. The ring part is rolled, hammering can be observed on this part. The geometric decoration of the shaft is composed of bundles of slant lines. The pattern along the outer coil of the great spiral is composed of fine punched lines. The great spiral and the outer surface of the spiny disc-like middle-knob are well-polished. Abrasion traces concentrate on the outer coil of the great spiral. Length: 27, 5 cm, thickness (lower): 0,8 cm x 0,8 cm, thickness (upper): 1 cm x 0,6 cm, width (lower): 9,1 cm, width (upper): 14,4 cm, diameter of the lower section: 10,7 cm x 7,7 cm, diameter of the casted mid-section: 4,6 cm, width of the narrow side: 5,3 cm, outstretched length: 252,2 cm, weight: 704 g (Fig. 3, 6).

**No. 7.** The remaining part of the shaft and the great spiral are rhomboid-sectioned. Fine punching can be observed on the spine of the shaft. The outer part of the middle-knob and the great spiral are well-polished. Slight horizontal shift can be seen on the back side of the middle-knob. The pattern along the outer coil of the great spiral is composed of fine punched lines. Length: 13,5 cm, thickness: 1,2 cm x 0,6 cm, width: 13 cm, diameter of the casted mid-section: 4,2 cm, width of the narrow side: 9,5 cm, outstretched length: 223,4 cm, weight: 623 g (Fig. 3, 7).

#### *The results of the macroscopic observations*

Within the following brief subsection, we would like to raise a few questions and outline possibilities on the manufacturing techniques and usage of the analyzed specimens from the Delhaes collection. The presented presumptions are primarily rested on our macroscopic observations,<sup>4</sup> discussions with experts and colleagues<sup>5</sup> and the data from archaeological literature (BLAJER 1984, 73–77). We are aware of the evident fact that these objects could have been manufactured and used by many different

ways, therefore the below described results cannot ultimately answer the question of manufacturing; this paper is rather an attempt to understand these objects better on our current level of knowledge. In order to give a more complex – scientifically adequate – answer to the questions of *how it was made* and *how it was used*, further experimentations with different kinds of methods and archaeometrical analyses are essential in the future (e. g. KISS ET AL 2015).

My assumption is that the production of comparable objects such as the specimens of the Delhaes collection can be divided into two main parts. One of them is the casting of the middle-knob (Fig. 4). The clear traces of this manufacturing method can be easily detected on the backside of the middle-knobs where less polished casting seams (Fig. 4, 2, 4, 7), the remain of the broken casting jet (Fig. 4, 1–4) and even minor casting faults such as vertical shifts of the casted sides<sup>6</sup> are visible (Fig. 4, 2). The above observations refer to the possibility that these parts were casted in bivalve moulds (Fig. 4, 8). (Unfortunately, we are not aware of such middle-knob moulds from the archaeological record.) After casting, the freshly made middle-knob logically went through different stages of fabrications which include the removal of the casting jet and casting seams and finally polishing the minor casting faults and the outer surface of the object (Fig. 4, 5–6, 9–10).

The other step of production – the manufacture of the object's body – is less clear, and in my point of view without experimentations it cannot be answered precisely. Therefore, the below suspected sequence of the different sub-stages are also not entirely certain. However, it is probable that this step started with the casting of a thick rod ingot which was later stretched by annealing and hammering into the required size. The following step could be the formation of the cross-sections. Both end of the rod was hammered into thin and rectangular shape. One of them later became the center of the great spiral (Fig. 4, 1–4), the other served as the rolled-terminal of the object (Fig. 6, 1). The main part which later served as the great spiral and the shaft were hammered into rhomboid-sectioned probably on a special ambos (e. g. Tállya-Várhegy) (V. SZABÓ 2013, 812, Fig. 18). After this process, the surface of this area was polished (Fig. 5, 4). According to the dimensions of the analyzed specimens from the Delhaes collection, the length of the rod before the formation of the great spiral could have varied approximately<sup>7</sup> between 162,2 cm (No. 1) to 288,7 cm (No. 5). In relation to the decorations, the macroscopic observations support that the pat-

tern was applied by a slightly curved edged punching chisel which traces can be well-identified by the creasing of the punched surface (Fig. 5, 1–2). It is not entirely clear that the decoration on the shaft was applied before, after or during the formation of the great spiral. However, the position of the pattern on the No. 2 specimen might exclude the posterior decorating (Fig. 6, 2). In contrast, the decorations on the outer coil can also be created after the formation of the great spiral (Fig. 5, 3).

Perhaps the most uncertain stage is the formation of the great spiral which could be carried out by many different ways. Based on our observations, the first two inner coils were hammered around a rod or the middle-knob (Fig. 4, 1–4). I believe that it is most likely that the middle-knob was applied after the formation of the whole great spiral because the thin inner part of the spiral can easily bended out. This posterior manipulation could provide enough space to put in the middle-knob before closing the inner part of the spiral around it. It should be noted that the punch marks on the inner coil might be associated with the above process (Fig. 4, 1). After manufacturing the first coils the additional parts could have also been manufactured by hammering which could be carried out by two different ways, the so called “shell-” and the “corkscrew” methods (BLAJER 1984, 75, Abb. 3–4). Basically, the difference between the above techniques is how the craftsman presses the conical shaped spiral into disc (BLAJER 1984, Abb. 3). According to the corkscrew method, the conical spiral was pressed in a second stage after its manufacturing, while in the case of the shell method the spiral is under a constant pressure (BLAJER 1984, Abb. 4). However, in case of our analyzed example, hammering traces were not visible at all along the lateral side of the coils of the great spiral, moreover these parts were perfectly angular (e. g. Fig. 7, 3). This observation indicates, that these rectangular great-spirals might be created by annealing and bending. In any case, due to its uncertainties this fabrication stage must be tested by experiments. The next step is the manufacture of the ring part that might have followed the formation of the great spiral, which presumption can be supported by the unfinished product from Sălăcea (BADER 1972, Fig. 1). This part partly fastened the object to the wearer's leg or forearm (EMÖDI 2011, 186–187, Fig. 2; KOVÁCS 1992, Abb. 62; MATIĆ 2010, 147, Sikla 5) was hammered into circular-sectioned form (Fig. 6, 3) and after that its terminal was also rolled by hammering. It should be noted that this formation process share similarities with the manufacturing of the torques (VASIĆ 2010, 3–9).

According to the documented burial context and the clay representations, these metal objects were worn primarily on the leg, but the wearing practice on the wrist or forearm should not be excluded either (KOVÁCS 1992, Abb 62; MATIĆ 2010, 147, Sikla 5; EMÖDI 2011, 186–187, Fig. 2). It is very possible that they were applied to some sort of organic material (presumably to shoes or to an outerwear). According to observations by József Hampel in the 19<sup>th</sup> century, textile residues were visible on the inner surface of the Cserépfalva find (HAMPEL 1896A, 188–119). Unfortunately, during our present day investigation, we could not identify any traces of this organic material because its remains were completely destroyed by earlier restoration. Noteworthy, that the existence of organic part could explain the frequent application of the middle-knobs which could stabilize the fastening. In association with the usage, interesting observations can be made on specimens from the Delhaes collection. On five of the seven specimens (No. 1–2, No. 4–6) intensive traces of abrasion were visible along the ring part and along the outer coil of the great spiral, especially on the inner surface (Fig. 1, 1–2, Fig. 2, 4, Fig. 3, 5–6). Hollow abrasions are visible sometimes on the inner part of the great spiral caused by rubbing against the middle-knob (Fig. 7, 7). Similar effect could cause the polishing of the shaft of the middle-knobs (Fig. 4, 1–4, Fig. 7, 7). Although it should not be excluded that these abrasions can be associated with post-depositional processes, I believe their intensity could support their prehistoric origin. By all means, experimentation could prove what kinds of use and materials (e. g. textile, leather, human skin) could cause similar phenomenons. This might also solve an essential question: the question of ceremonial or everyday use. Last but not least, during the examination of the artefacts we paid special attention to the detection of weapon impacts. In contrast to Kristian Kristiansen's analysis, no traces of such impact were visible on the analyzed objects (KRISTIANSEN 2002, 326; MOLLOY 2009, Fig. 4–5). Therefore, we cannot support the defensive weapon theory.

In this section, our goal was to investigate the manufacture techniques and possible usage of the collection's artefacts by aid of the macroscopic observations. Based on these results, a very interesting, complex *chaîne opératoire* can be outlined. However, as it was already emphasized, these results should be tested by experimentations based on archaeometrical analysis (e. g. TOF-ND and EPMA).

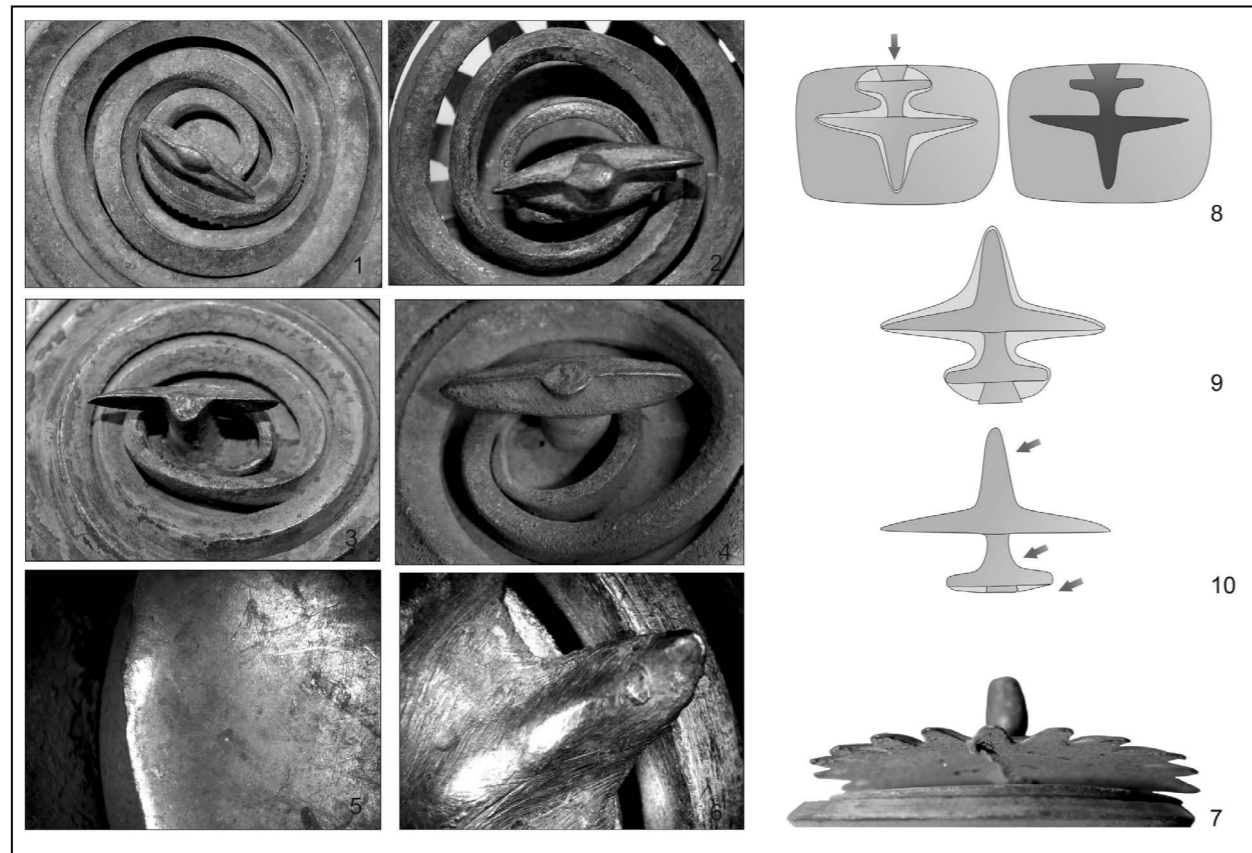


Fig. 4 Macroscopic observations. 1–4: the lower side of the middle-knobs (No. 4–7); 5–6: polishing traces on the outer surface of the middle-knobs (No. 3, No. 7); 7: casting seam on the lower side of the No. 3 specimen's middle-knob; 8–10: the steps of middle-knob casting  
 4. kép Makroszkópikus megfigyelések. 1–4: A középgombok alsó része (4–7. sz.); 5–6: polírozás nyomok a középgombok külső felületén (3–7. sz.); 7: öntési varratok a 3. példány középgombjának alsó részén; 8–10: a középgomb öntésének szakaszai

### Too heavy armour?

The so called “spiral arm-guards”, commonly known as Handschutzspiralen (Germ.) have been evaluated since the 19<sup>th</sup> century. During this long research, these objects occurred under several different Hungarian<sup>8</sup>, German<sup>9</sup>, English<sup>10</sup>, French<sup>11</sup> and other names (KUBÍNYI 1861, 87; RÓMER 1866, 53; HAMPÉL 1881, 277; HAMPÉL 1886B, 74; HAMPÉL 1886C, 14; HAMPÉL 1890, 148; CHILDE 1929, 274; POPESCU 1937–1940, 122; NESTOR 1938, 190; PATAY 1954, 46; FOLTINY 1955, 31; HACHMANN 1957, 92; KEMENCZEI 1962–1963, 15; JÓSA–KEMENCZEI 1965, X. T.; PATAY 1966, 81; VON BRUNN 1968, 33; KEMENCZEI 1969, 29; NOVOTNÁ 1970A, 27; BROWN ET AL. 1987, 94; PETRESCU–DÎMBOVIȚA 1998, 29; HELLEBRANDT 1999, 140; KRISTIANSEN 2002, 326–327). This confusing terminology – which is not an uncommon methodological problem today – basi-

cally can be associated with these objects' functional interpretations.

The very first who sorted them into the group of defensive weapons was Flóris Rómer (RÓMER 1866, 53). Later, his concept was adopted by József Hampel despite that Rómer emphasized the uncertainties of this idea (HAMPÉL 1886A, 188–119, XXXVI. T. 4–5, XXXVII. T. 1–2). According to him, these objects protected the back of hand and probable used together by the reason of that “left- and right-handed” pieces are often combined within one assemblage. On the basis of the textile residue on the inner surface of the specimen from Cserépfalva, he suspected that these objects could have originally some sort of felt or other organic part which was fastened by the aid of a middle-knob (HAMPÉL 1896A, 118–119; VACHTA 2007, 37). Another concept was that they were slipped through the arms and covered the breasts (CHILDE 1929, 274). Following the above

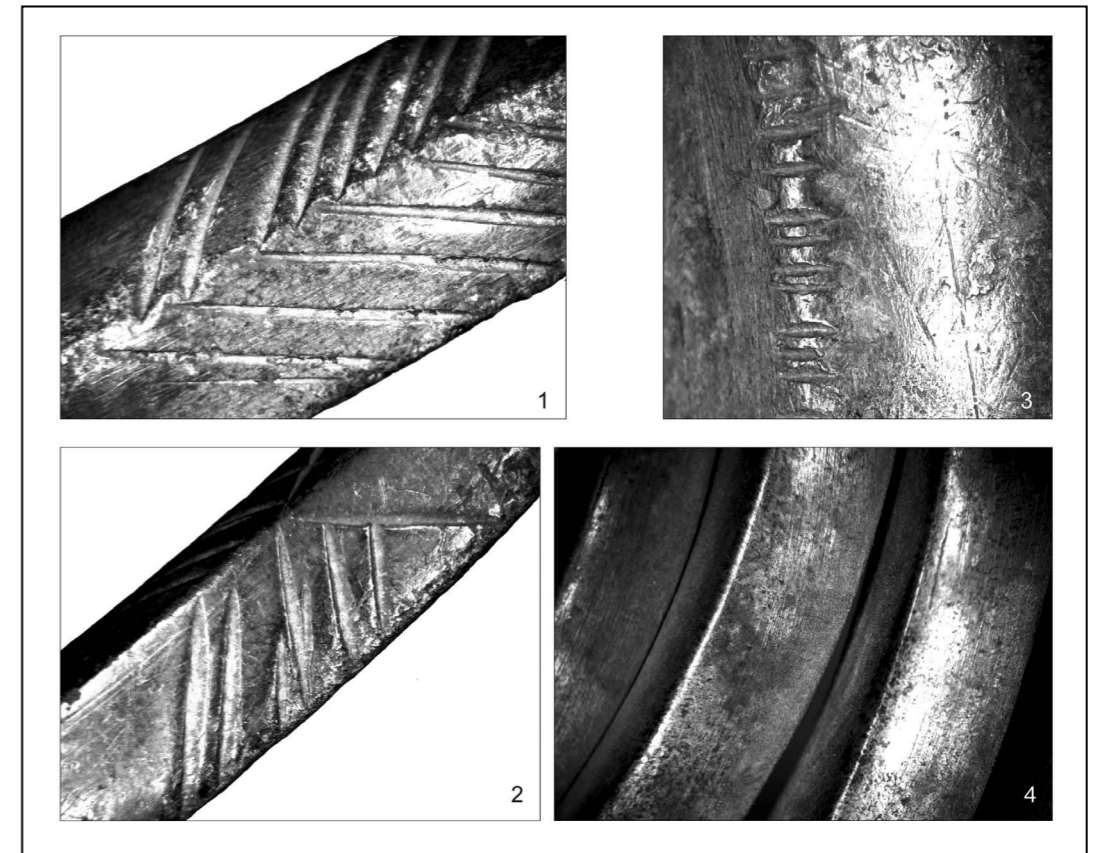


Fig. 5 Macroscopic observations. 1: the punched decoration of the shaft (No. 3); 2: “Imprecise” punched decoration on the shaft (No. 2); 3: punched decoration on the outer coil of the great spiral (No. 6); 4: polishing traces on the great spiral (No. 2)

5. kép Makroszkópikus megfigyelések. 1: poncolt díszítés a száron (3. sz.); 2: “pontatlan” poncolt díszítés a száron (2. sz.); 3: poncolt díszítés a nagyspirál külső menetén (6. sz.); 4: polírozás nyomok a nagyspirálon (2. sz.)

thoughts of Childe, the Slovakian research often called attention to the similarities and connections between the star-shaped middle-knob of the one from Švedlar and the breast part of the Čaka armour (PAULÍK 1963, 51, Abb. 7C.1; NOVOTNÁ 1970A, 39; NOVOTNÁ 1970B, 39, Taf. 56, 13). Later, on the basis of the uncomfortable wearing, this idea was rightly criticized by Tibor Kemenczei (KEMENCZEI 1964–1965, 113). Even though, in her earlier works, Amália Mozsolics classified them into the group of jewellery (MOZSOLICS 1967, 73–75; MOZSOLICS 1973, 62–63). In 1985, she sorted these objects into the group of defensive armours and suggested that they could have been worn on the upper arm and served as knee-protective armour (MOZSOLICS 1985, 29). Later, the defensive weapon theory was supported again by Kristian Kristiansen who stated that the smaller versions protected the hand and the greater ones covered the upper arms and the elbow.

His theory seemed to be confirmed by the object forms, dimensions and the well-known fact that they often combine with other offensive- (e. g. swords, lances) and possible defensive weapons (POPESCU 1937–1940, 122; SCHUMACHER–MÄTTHAUS 1985, Tab. 91–95; HANSEN 1994, 278; KRISTIANSEN 2002, 326). In contrast to this, Gisela Schumacher-Mätthaus formulated a rather sceptic opinion and interpreted these objects as arm jewellery (SCHUMACHER–MÄTTHAUS 1985, 119, Taf. 68, 2a–3a, Taf. 69, 2a, 4a, Taf. 72, 1a–2a, Taf. 74, 2a–5a, Taf. 77, 2a–5a). She also drew attention to the fact that although they often combine with weapons, their appearance with woman jewelry can also be observed. Moreover, in the case of the smaller examples – such as our No. 1 and No. 2 (Fig. 1, 2–3) –, it should not be excluded that they could have been worn by children (SCHUMACHER–MÄTTHAUS 1985, 119–120, Tab. 91–95). As Wojciech Blajer has pointed out,

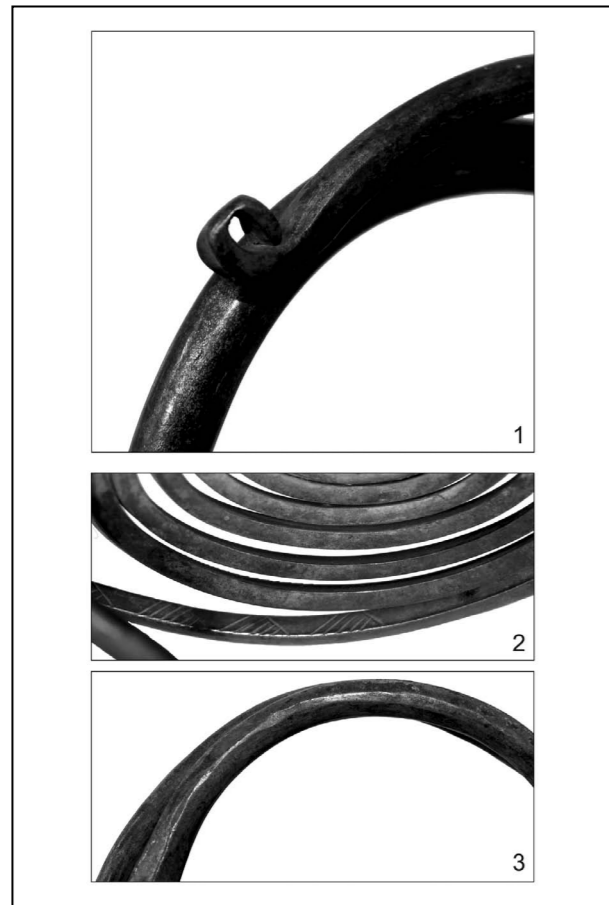


Fig. 6 Macroscopic observations. 1: hammering traces on the rolled-terminal of No. 2 specimen; 2: the position of the decoration on the object No. 2; 3: hammering traces on the ring part of the object No. 4

6. kép Makroszkópikus megfigyelések. 1: kalapálás nyomok a 2. példány visszapödrött végén; 2: a díszítés helyzete a 2. sz. tárgyon; 3: kalapálás nyomok a 4. sz. darab gyűrű részén

her last suggestions are not necessarily true because the smaller examples could have been worn on slenderer body parts (e. g. wrist) as well (BLAJER 1984, 79). The recent ideas of Tillman Vachta should be emphasized who stated that the weight of these objects simply made them ineffective during a fight, therefore they can rather be interpreted as a special type of jewelry or symbolic object which lost their primary and “utilitarian” function during their long period of developing (VACHTA 2007, 38–39). His suggestions can be supported by the fact that the classical defensive armours between the Ha A and Ha B stages are composed of relatively light, flexible metal sheets riveted onto organic materials. None of these above mentioned features are charac-

teristic to the “spiral arm-guards” which structure is rigid and their weight is too heavy to allow fast movements during a real combat (e. g. No. 5: 864 g, No. 6: 704 g, Fig. 3, 5–6). Based on the above considerations and the results of our macroscopic observations, it is highly unlikely that these objects could have served as defensive weapons.

To conclude, the whole functional and terminological problem is rooted in the fact that the known “spiral arm-guards” were mostly unearthed as part of hoards, therefore our knowledge is very limited about their exact wearing practices. For instance, in the case of the Late Bronze Age ones we can only rely on macroscopic observations such as our present analysis which seems to support their wearing practice. However, the Tiszafüred-Majoroshalom grave and the miniature examples from Piliny culture’s burials (e. g. Bátonyterenye, Piliny) are seen to be exceptions (HAMPEL 1886A, LXX. T. 9; PATAY 1954, 42, 46, Abb. 17, 4–5; HÄNSEL 1968A, 102; SCHUMACHER-MÄTTHAUS 1985, 119; DAVID 2002A, 473; DAVID 2002B, Taf. 261A, 4). In the case of Tiszafüred, the object in question was pulled through the deceased’s leg (KOVÁCS 1991–1992, 29; KOVÁCS 1992, Abb. 62). In connection with the latter, an interesting artefact group was published by János Emödi. On the clay leg representations from Valea lui Mihai, Oradea and Marghita these objects were positioned on the ankle (EMÖDI 2011, 186–187, Fig. 2). Nevertheless, other sources such as the representations of anthropomorphic idols (e. g. Dupljaja) indicate that the older form of the “spiral arm-guards” have been worn on the forearm (MATIĆ 2010, 147, Sikla 5; VACHTA 2007, 38). Consequently, it is likely that the analyzed objects – especially the older ones – could have been served as some sort of anklets or armllets, comparable to the symmetrical variants of this jewelry group<sup>12</sup> (RICHTER 1970, 41; BLAJER 1984, 16–64; PETRESCU-DÎMBOVIȚA 1998, 37–39). Based on the above, in the present study we shall follow the terminology of Wojciech Blajer and Milan Salaš and name these objects as asymmetrical arm-and anklets (BLAJER 1984, 2, Abb. 1; SALAŠ 1997, 93–94).

#### *A typological model of the asymmetrical arm-and anklets of Central Europe*

After József Hampel’s classical work, several new artefacts have come to light from all across the Carpathian Basin (HAMPEL 1896A, 118–119). Most of them have been published; however it is also possible that some fragmented or less characteristic examples were not evaluated as asymmetrical arm-

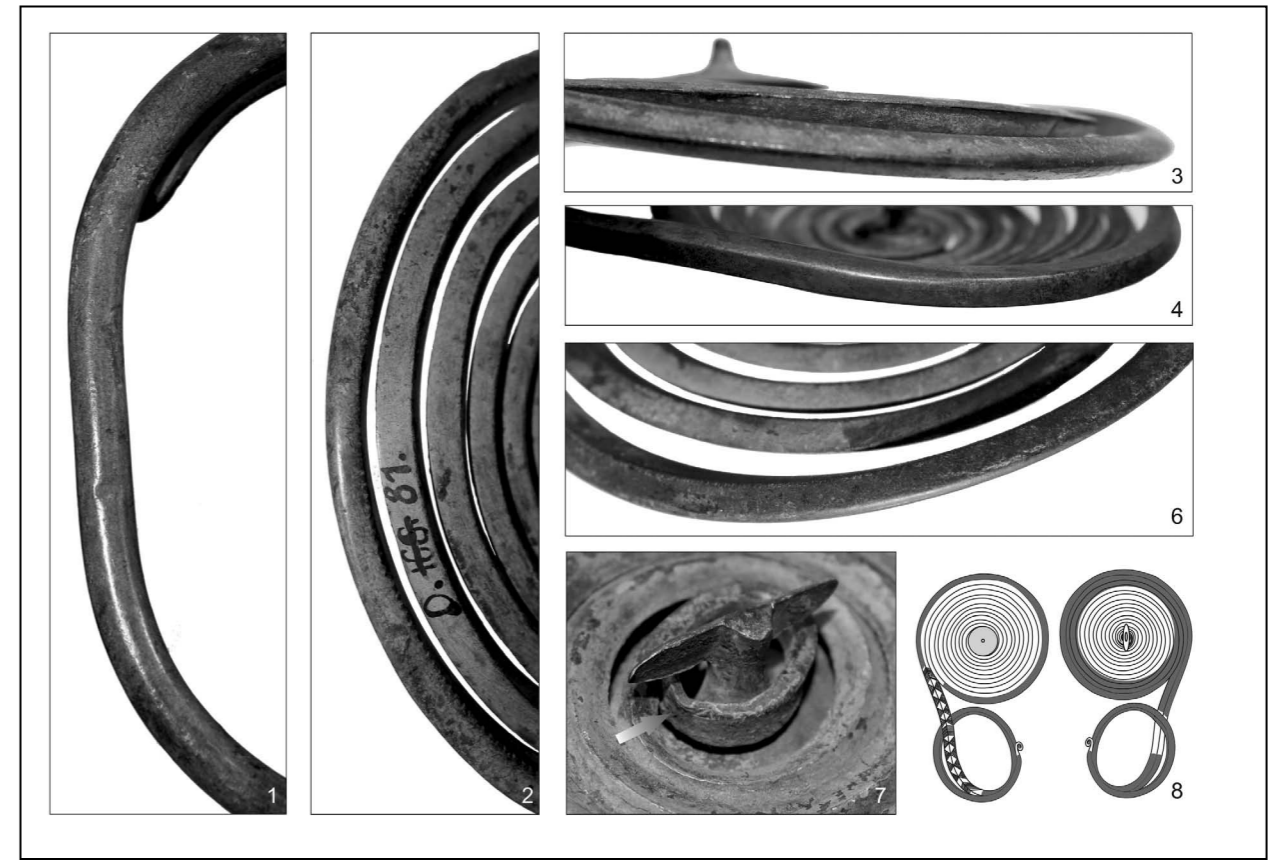


Fig. 7 Macroscopic observations. 1: abrasion on the ring part of the No. 8 specimen; 2–6: abrasion on the outer coils of the great spiral (No. 2, No. 4–5); 7: abrasion on the inner coil of the great spiral (No. 6); 8: the concentration of wearing traces on the analyzed objects

7. kép Makroszkópikus megfigyelések. 1: kopásnyom a 8. sz. példány gyűrű részén; 2–6: kopásnyom a nagyspirál külső részén (2. és 4–5. sz.); 7: kopásnyom a nagyspirál belső részén (6. sz.); 8: a használati nyomok sűrűsödése az elemzett tárgyakon

and anklets. In addition, another part of them could have been sold on auctions or very likely remained hidden in Western European or Hungarian private collections (Fig. 8–11, List 3). Because the quantity of the published examples has grown since the 19<sup>th</sup> century, it is necessary to establish a more detailed typological scheme. As a consequence, many prominent studies attempted to analyze these objects’ chronological and typological features (NESTOR 1938, 178; FOLTINY 1955, 31–32; KEMENCZEI 1965, 111–113; MOZSOLICS 1967, 73–75; HÄNSEL 1968A, 102–104; NOVOTNÁ 1970A, 39–40; BADER 1972, 92–94; MOZSOLICS 1973, 62–63; FURMÁNEK 1977, 275–276; BLAJER 1984, 65–69; MOZSOLICS 1985, 29; SCHUMACHER-MÄTTHAUS 1985, 119–120; KACSÓ 1997–1998, 14; KOBAL’ 1997–1998, 38–39; PETRESCU-DÎMBOVIȚA 1998, 35–36; KOBAL’ 2000, 29–30; VACHTA 2007, 37). Following the same typological method, these works took under examina-

tion the objects’ fine features such as the decorations, middle-knob types, cross-sections and terminals (Fig. 12). Apart from their different grouping, these works’ common characteristic is the distinct separation of the older ones (Early/Middle Bronze Age) from the younger Late Bronze Age specimens (Table 1). In spite of their prominent results, as Josip V. Kobal’ has earlier pointed out, some typological problems and contradictions still remain unsolved (KOBAL’ 1997–1998, 38–39). Therefore, to evaluate and interpret the Delhaes collection’s seven asymmetrical arm-and anklets on our current level of knowledge, it is necessary to overview and rebuild the typology of this artefact group. As a consequence, a new typological model of the asymmetrical arm-and anklets will be presented below. The principles of grouping and terminology partly follow and rely on the above cited fundamental works. The main goal of this classification is not to give

	terminology	decoration	middle-knob	cross-section		great spiral	rolled-terminal	smaller spiral
				spiral	shaft			
Kemenczei 1965	Koszider group (form 1)		without		quadratic			
	Koszider group (form 2)		without		rounded			
	Rimaszombat-Type	decorated	knob		quadratic			
	Salgótarján-Type	decorated	rounded with spike		triangular			
	Koszider-Felsőszőcs-Type (surviving)	decorated	knob		rounded			
Mozsolics 1967	older examples (B IIIa-IIIb)	undecorated						X
	younger examples (B IV)	decorated (cross-hatched triangles)	X (conical, disc-like with spike)			greater	X	
Mozsolics 1973	older examples (B III)	undecorated	without					X
	younger examples (B IV) (Salgótarján)	decorated (cross-hatched triangles)	rounded with spike	rhomboid			X	
Hänsel 1968	Variant 1							X
	Variant 2	decorated	with				X	
Bader 1972	Variant 1 Apa-Type	undecorated	none	quadratic		(3-4)		
	Variant 2 Ighiel-Zajta-Type	decorated (shaft)	conical	quadratic	oval	(4-5)		
	Variant 3 Typ Barca-Type	decorated	conical		rounded	(6-8)		
	Variant 4 Salgótarján-Type	decorated	spiny conical	triangular (West), quadratic (East)		(7-8)		
Blajer 1984	Ighiel-Zajta-Type - variant 1	undecorated		quadratic	rounded	(4-5)		X (3)
	Ighiel-Zajta-Type - variant 2	outer surface of the spiral is notched		quadratic	rounded	9		X (2-4)
	Salgótarján-Type	oblique bundles of lines	spiny	triangular (West), quadratic (East)	rounded		X	
Schumacher-Mätthaus 1984	Type A				quadratic	3		
	Type B	undecorated except Áporka	undecorated except Áporka		quadratic	6		
	Type C				rounded			
	Type D				rounded			
	Type E				octogonal (Stupava)			
	Type F		decorated					
Petrescu-Dîmbovița 1998	Form 1	undecorated	without		quadratic or rounded			
	Form 2	often decorated	with				X	
Kobal' 2000	Koszider-Type		spool like		rounded (rhomboid)	X		X
	Kriva-Type		undecorated except Čomonin		rounded (Čomonin - rhomboid)	X		X
	Čomonin-Type				rounded	X		X
	Salgótarján-Type		with (perforated)		rhomboid		X	
Kacsó 1997 - 1998	Koszider-Type - variant A			quadratic	quadratic			
	Koszider-Type - variant B			quadratic	rounded			
	Koszider-Type - variant C			rounded	rounded			

Table 1 The most influential typological schemes of the asymmetrical arm-and anklets  
1. táblázat Az asszimmetrikus kar-és lábpercecek legjelentősebb tipológiai csoportjai

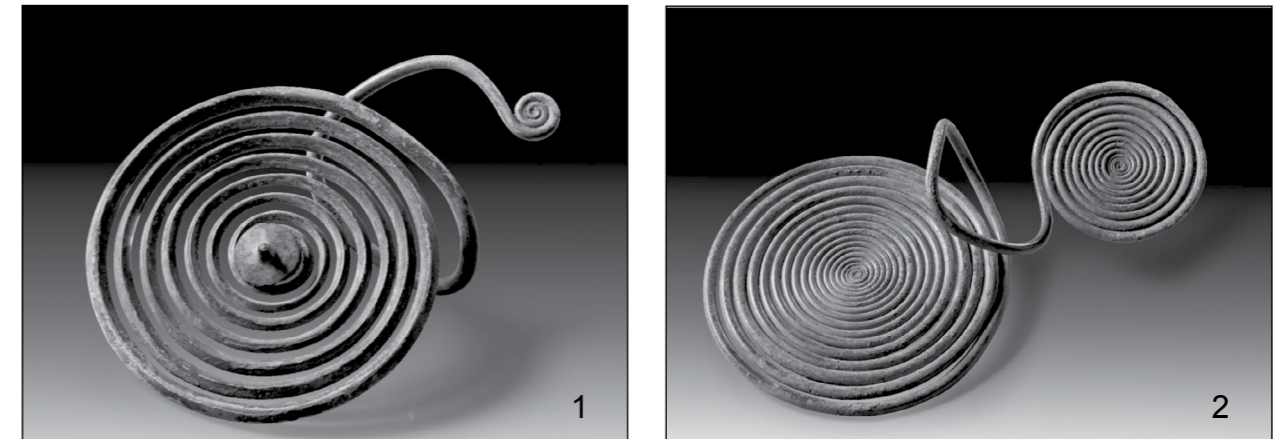


Fig. 8 Asymmetrical arm-and anklets from the auction of the Gorny&Mosch (List 3, 1-2)  
8. kép Aszimmetrikus kar-és lábpercecek a Gorny&Mosch aukciójáról (3.lista 1-2)

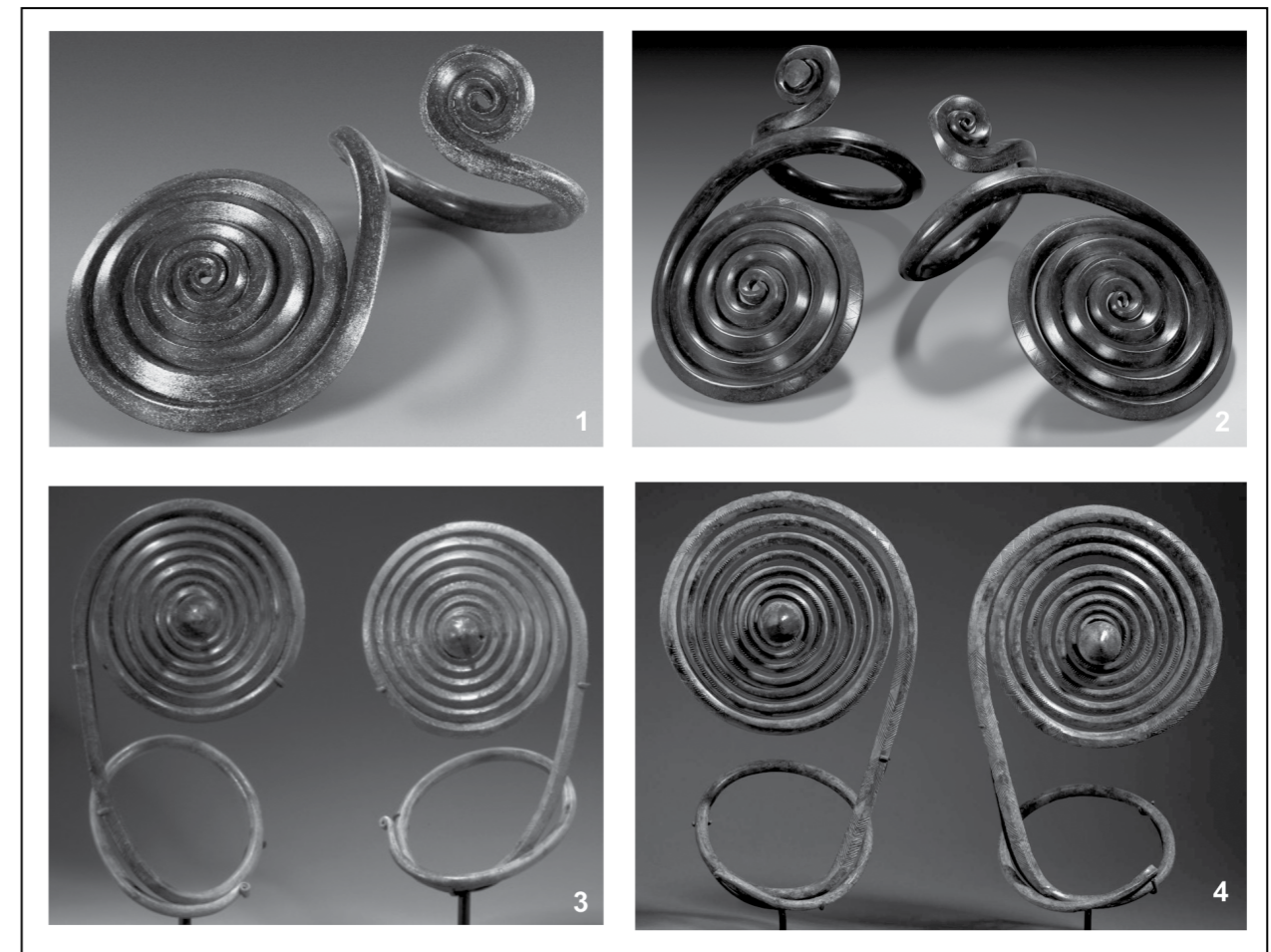


Fig. 9 Asymmetrical arm-and anklets from Western European auctions (List 3, 3-6)  
9. kép Aszimmetrikus kar-és lábpercecek nyugat-európai aukcióról (3.lista 3-6)

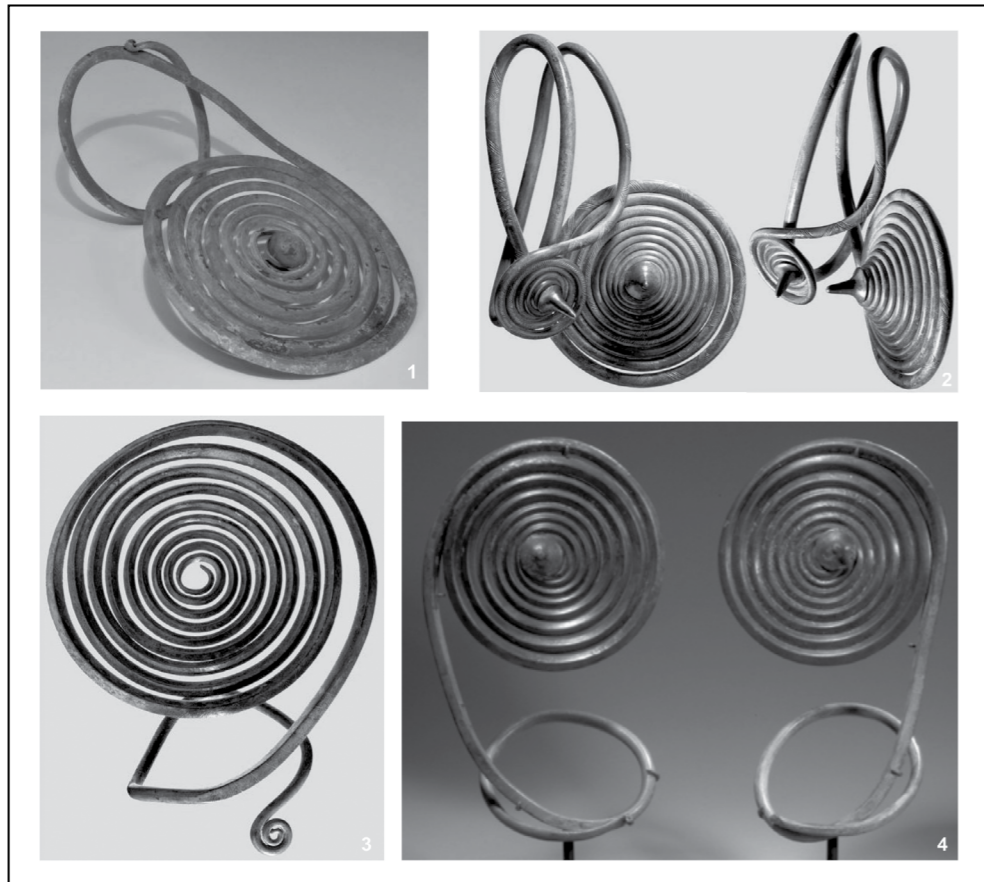


Fig. 10 Asymmetrical arm-and anklets from Western European auctions (List 3, 7–10)  
10. kép Aszimmetrikus kar-és lábperecek nyugat-európai aukciókról (3. lista 7–10)

an over-detailed grouping with countless of sub-variants and combination types but rather build an easily analyzable, spatially and chronologically relevant scheme. It is important to emphasize that this model cannot be perfect without the re-examination of the published artefacts which extends beyond the aim of the current study.<sup>13</sup>

The group of asymmetrical arm-and anklets has appeared in the Br A2 and shows dominance in the Br B. However, the highlight of their deposition can be dated to the Br D–Ha A1 stages after which only few specimens are known (FOLTINY 1955, 31–32; BÓNA 1959, 238; KEMENCZEI 1962–1963, 15; KEMENCZEI 1964–1965, 50, 53; KEMENCZEI 1965, 111–112; PATAY 1966, 81; HÄNSEL 1968A, 103; NOVOTNÁ 1970A, 26; BLAJER 1984, 68–69; MOZSOLICS 1985, 29; SCHMUCHER-MÄTTHAUS 1985, 119; PETRESCU-DÎMBOVIȚA 1998, 35; VACHTA 2007, 37; TÓTH 2010, 64–65) (Fig. 14). During this long period of deposition, they primarily distribute over the Eastern part of the Carpathian Basin. However, they are also known – sporadically – from Trans-

danubia, the Balkan Peninsula and the territory of South-Eastern Bohemia, Austria and even from Northern Europe (Fig. 15–16). As it was mentioned earlier, their appearance could have been associated with the group of symmetrical arm-and anklets, but as Waldtraut Bohm pointed out the asymmetrical ones are possibly Carpathian developments (BOHM 1935, 63). From typological point of view, the older examples (Br A2–B) can be sorted into the Apa-Type (variant 1–3) which includes oversized examples and prototypes of the Late Bronze Age ones. The later, more individualistic examples (Br C–B1) include miniature specimens. In my estimation, they can be sorted into four main types and one hybrid-type: Salgótarján-Type, Kriva-Type, Sântana-Type, Chomonyn-Type and Nyírszölös-Hybrid Type (Fig. 13).

The earlier forms (**Apa-Type**) of the asymmetrical arm-and anklets have appeared first in the Br A2, in Transylvania (e. g. Apa, Păuliș, Valea Chioarului) (BADER 1972, 92; PETRESCU-DÎMBOVIȚA 1998, 31, Taf. 13, 104; SOROCEANU 2012, 39, 69–70, Pl.

13, 3, Pl. 20, 5). Nevertheless, most of the known specimens belong to the Br B stage. Dominant part of them are individual or stray finds or were found in depots, only two specimens are known from burial context (Tiszafüred-Majoroshalom, Hernádkak) (TOČIK–BUDINSKÝ–KRIČKA 1987, Abb. 8; KOVÁCS 1992, Abb. 62) (List 1). Their common characteristic is that all of them have a great and a small spiral and except from the “prototypes” of the Late Bronze Age ones they are undecorated. As regards their dimensions, smaller and greater ones can be equally found among them. It is important to note that the phenomenon of oversizing (e. g. Abaújdevecser, Vinga) is only characteristic to this type (PETRESCU-DÎMBOVIȚA 1998, 32, Taf. 16, 120; HELLEBRANDT 2011, 133, 3–5. kép). Following the footsteps of Carol Kacsó, it is possible to sort them into three variants: variant 1 (angular-sectioned), variant 2 (angular-sectioned with round-sectioned ring part), variant 3 (round-sectioned) (KACSÓ 1997–1998, 14). However, it should be emphasized that the distribution and dating of these variants strongly overlap. In addition, it is not uncommon that they combine within one assemblage (e. g. Săpânța, Stefkowa) (BLAJER 1984, 65–67, Taf. 65, 213; SOROCEANU 2012, 97, Taf. 29, 3–4) (Fig. 12). As regards their chronology, the 1<sup>st</sup> and 2<sup>nd</sup> variants

appeared together in the Br A2, however, they show dominance in Br B depots along with the 3<sup>rd</sup> variant. It is important to note that later deposition (e. g. Br D – Rimavská Sobota 2) of the 1<sup>st</sup> variant was also documented (PAULÍK 1965, Taf. 2, 1–2). The so called “prototypes” which have first appeared in the Br B (Fig. 14) are essential from typological point of view. These objects can be well-sorted into the Apa-Type, however, some of their features can be related to the Late Bronze Age specimens (KEMENCZEI 1965, 111). Most of them are decorated on their shaft, great spiral or ring parts (e. g. Angermünde, Hodejov 2, Spišský Štvrtok, Stockerau, Včelince, Zsadány) and in some cases they are equipped with middle-knobs (e. g. Békés, Dunaújváros-Kosziderpadlás 3, Pusztaszentkirály) just as we can see in the case of the Late Bronze Age ones (BOHM 1935, Taf. 15; ANGELI 1961, 141, Taf. 8, 3–4; NOVOTNÁ 1966, Taf. 8; MOZSOLICS 1967, 135–136, 153–154, 156, Taf. 52, 5, Taf. 63, 1–2, Taf. 69, 1–3; FURMÁNEK 1977, 258, Taf. XXXII, 8, 13; SZATMÁRI 1998, 117–118, 19. T. 5, 7; FURMÁNEK 2004, 73) (Fig. 13). Their distribution shows no specific concentration. However, these specimens appear in relatively greater number in the territory of the North-Eastern Carpathian Basin which later became the main distribution area of the Late Bronze Age Salgótarján-Type.

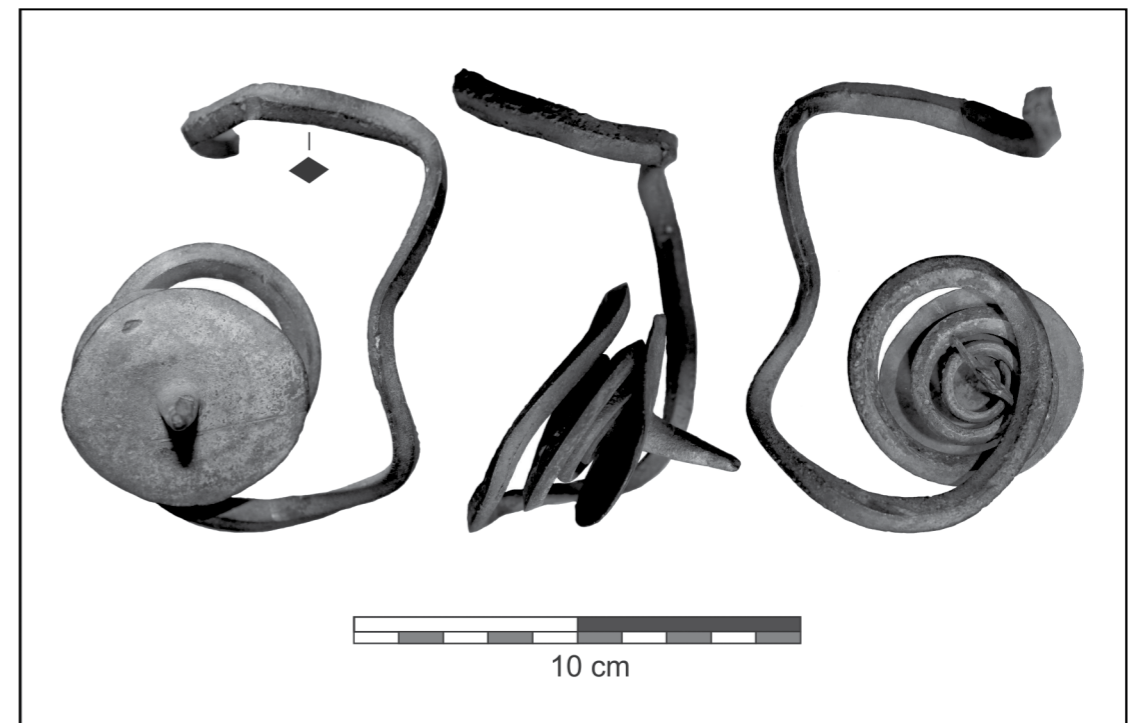


Fig. 11 A Salgótarján-Type fragment from the private collection of Zoltán Repkényi (List 3, 11)  
11. kép Salgótarján típusú töredék Repkényi Zoltán magángyűjteményéből (3. lista 11)



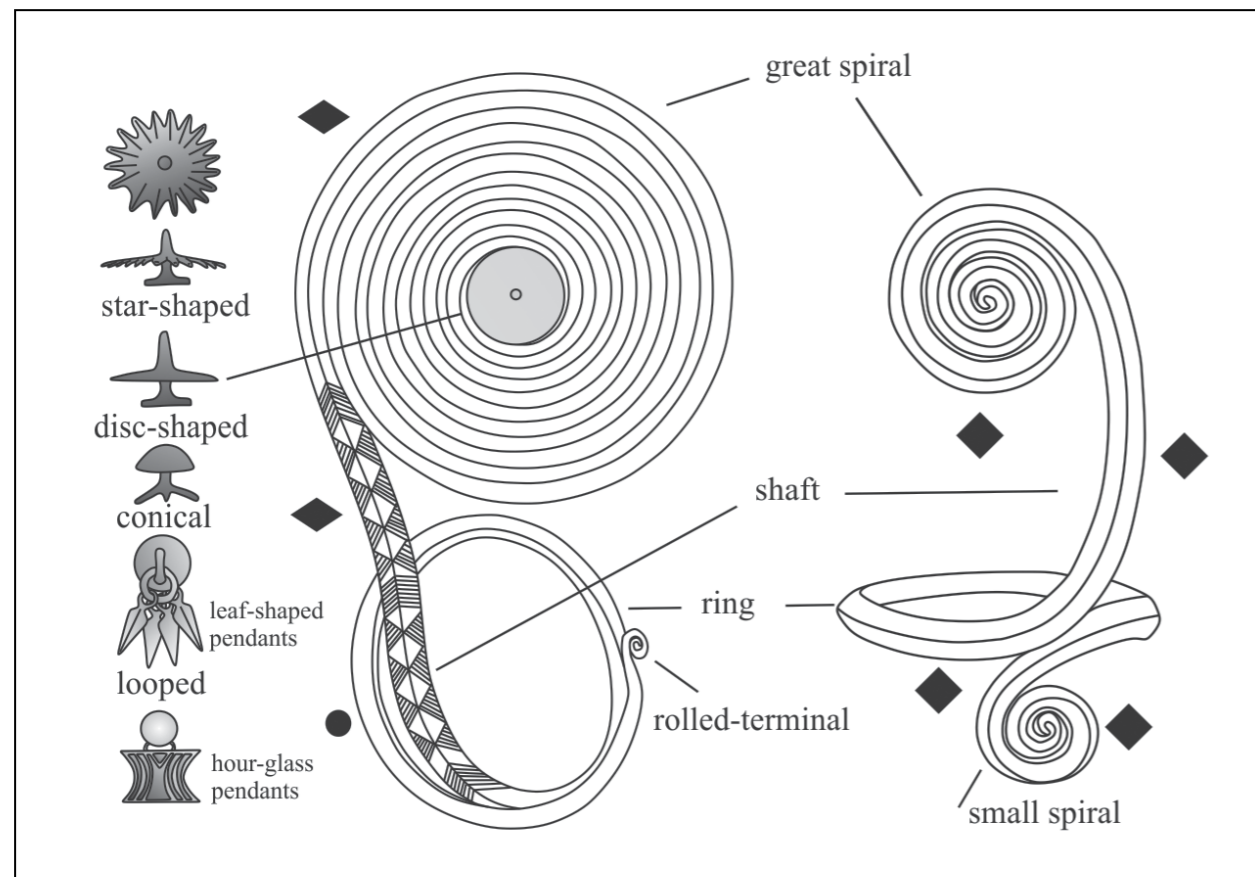


Fig. 12 The morphology of the asymmetrical arm-and anklets (HAMPEL 1886A, XXXII. T. 1–2; BLAJER 1984, Taf. 66, 215; PETRESCU-DIMBOVIȚA 1998, Taf. 21, 160a; DAVID 2002B, 492)

12. kép Az aszimmetrikus kar-és lábpercek morfológiája (HAMPEL 1886A, XXXII. T. 1–2; BLAJER 1984, Taf. 66, 215; PETRESCU-DIMBOVIȚA 1998, Taf. 21, 160a; DAVID 2002B, 492)

The Salgótarján-Type which was first classified by Tibor Kemenczei can be interpreted as the most frequent and widespread Late Bronze Age type (KEMENCZEI 1965, 111–112) (Fig. 16). Its first examples were deposited in the Br C (e. g. Forró) but they are dominant between the Br D and Ha A1 stages (MOZSOLICS 1973, 136, Taf. 6, 11–14) (Fig. 14).<sup>14</sup> According to our knowledge, they are unknown from burial contexts and practically all of them were buried as part of depots or were found as individual- or stray finds (List. 2, 1). Their main form is quite characteristic and can be well-described from typological point of view. The cross-section of their ring part is rounded, their shaft and great spiral are rhomboid-sectioned. Their other features are that their terminals are rolled and they are equipped with spiny disc-, conical- and star-shaped middle-knobs, moreover, looped ones can be also found among them (e. g. Banatski Kralovac, Załęże) (HOLSTE 1951, Taf. 17, 11; KEMENCZEI 1965, 111; BLAJER 1984, Taf. 66, 215–216). In certain cases, they

are also equipped<sup>15</sup> with hour-glass or leaf-shaped pendants (e. g. Banatski Kralovac, Ticvanu Mare, Załęże) (HOLSTE 1951, Taf. 17, 11; SĂCĂRIN 1981, 98, Pl. III–IV; BLAJER 1984, Taf. 66, 215–216) (Fig. 12–13). Dominant part of them are decorated with bundles of lines or cross-hatched triangles along the shaft or the great spiral. However, undecorated ones (e. g. Berkesz) and individual variations (e. g. Kračúnovce, Vel'ký Blh, Szentistvánbaksa) are also known (FOLTINY 1955, 31, Taf. 17.15; JÓSA-KEMENCZEI 1965, XIV. T. 63; FURMÁNEK 1977, Taf. XXIII, 11–12; KEMENCZEI 1984, Taf. LC). Miniature examples from Bányterenyé and Piliny can also be connected to this type, based on their formal similarities (HAMPEL 1886A, LXX. T. 9; PATAY 1954, 42, 46, Abb. 17, 4–5). The Salgótarján-Type appears over the territory of North-Eastern Hungary and South-Eastern Slovakia which region was often associated with the Piliny- and the Kyjatice culture (KEMENCZEI 1965, 112) (Fig. 13). Other examples are sporadically known outside of this core area from

the territory of Bohemia, Austria, Western Hungary, the Northern Balkan and even from South-Western Poland (e. g. Załęże) and in the Ukrainian Dniester region (e. g. Hrushka) (ŽUROWSKI 1949, 159–161; KEMENCZEI 1965, 111–112; HÄNSEL 1968B, Karte 22; BADER 1972, 93–94; BLAJER 1984, 68, Taf. 80; MOZSOLICS 1985, 29) (Fig. 16).

Regarding to their typology, the specimens of the Delhaes collection can be sorted into the above discussed type and they can be dated between the Br C–Ha A1 stages. Based on their cross-hatched (group I: No. 1–2, 5, Fig. 1, 1–2, Fig. 3, 5) and bundles of lines (group II: No. 3–4, 6, Fig. 2, 3–4, Fig. 3, 6) decorations it is also possible to link them to certain examples: group I (List 2. 1. 5, 6, 10, 12, 20, 23, 26, 28, 32, 34, 42, 45, 47, 53, 55), group II (List 2.1. 7, 10, 11, 16, 20, 22, 24, 25, 30, 33, 35, 37, 41, 42, 43, 48, 54). Both decoration groups

concentrate on the main distribution area of this type, however certain examples of the first group have appeared in Transcarpathia (e. g. Volovec), Middle-Slovakia (e. g. Zvolen) and the Southern regions of the Carpathian Basin (e. g. Otok-Privlaka, Topolnica) (HOLSTE 1951, Taf. 5, 36; FURMÁNEK 1980, Taf. 40, 1–2; HARDING 1995, Taf. 58, 5; KOBAL' 2000, Taf. 12, 1). It is also important to draw attention to the star-shaped middle-knob of the No. 3 and No. 4 examples which was only documented in the case of Svedlar and Mezönyárád (NOVOTNÁ 1970B, Taf. 56, 13; HELLEBRANDT 1999, 7. kép 1–2). To conclude, based on their fine stylistic and formal parallels the analyzed objects of the Delhaes collection could have been originated – or at least manufactured – in the core distribution area of the Salgótarján-Type: in the North-Eastern Carpathian Basin (Fig. 16).

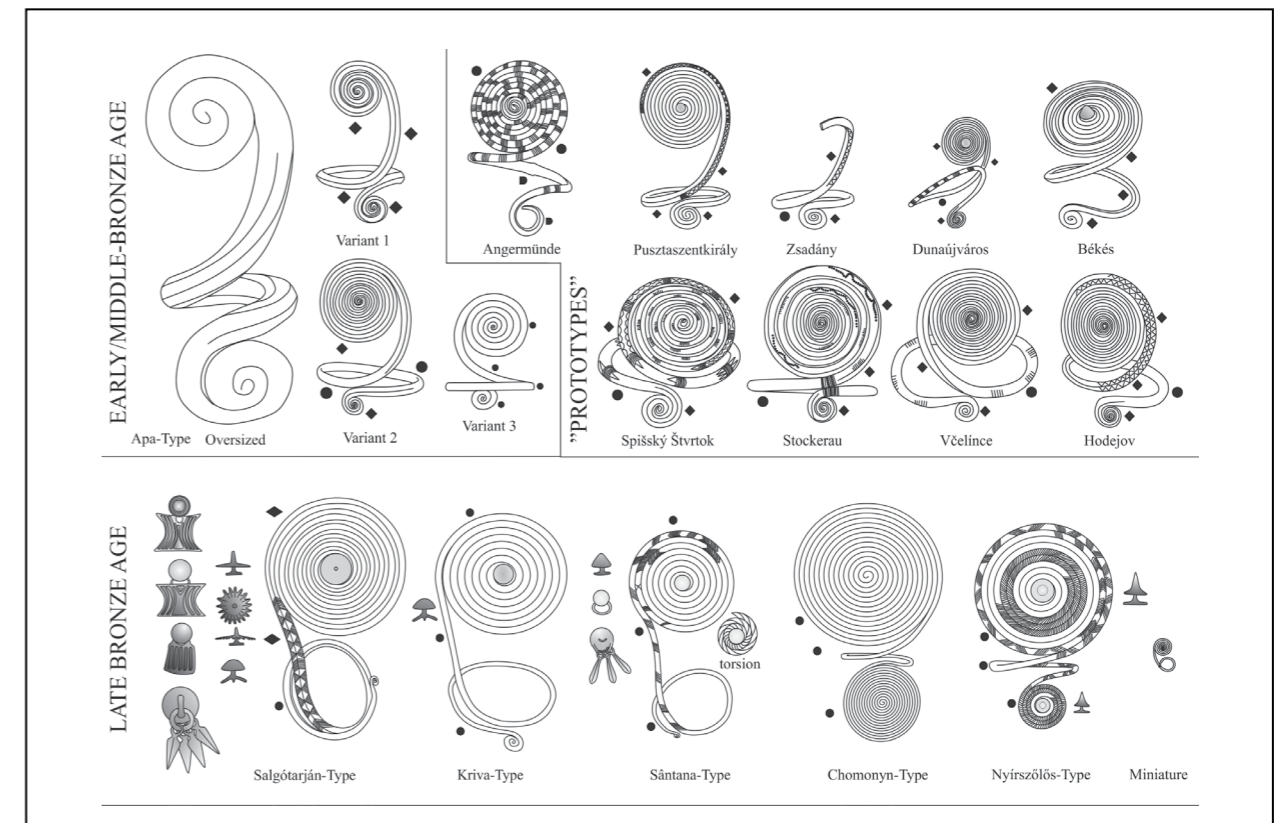


Fig. 13 The typology of the asymmetrical arm-and anklets (HAMPEL 1886A, XXXII. T. 1–2, LXX T. 9; BOHM 1935, 114, Taf. 15; ANGELI 1961, Taf. 8, 4; MOZSOLICS 1967, Abb. 20, Taf. 69, 2, Taf. 52, 5; GARAŠANIN 1972, Cat Nr. 137; FURMÁNEK 1977, Taf. XXXII, 13; BLAJER 1984, Taf. 66, 215; PETRESCU-DIMBOVIȚA 1998, Taf. 21, 160a.c; SZATMÁRI 1998, 19, T. 5; KOBAL' 2000, Taf. 10, 5; DAVID 2002B, 492, Taf. 171.10; FURMÁNEK 2004, 73; HELLEBRANDT 2011, 3. kép) 13. kép Az aszimmetrikus kar-és lábpercek tipológiája (HAMPEL 1886A, XXXII. T. 1–2, LXX T. 9; BOHM 1935, 114, Taf. 15; ANGELI 1961, Taf. 8, 4; MOZSOLICS 1967, Abb. 20, Taf. 69, 2, Taf. 52, 5; GARAŠANIN 1972, Cat Nr. 137; FURMÁNEK 1977, Taf. XXXII, 13; BLAJER 1984, Taf. 66, 215; PETRESCU-DIMBOVIȚA 1998, Taf. 21, 160a.c; SZATMÁRI 1998, 19, T. 5; KOBAL' 2000, Taf. 10, 5; DAVID 2002B, 492, Taf. 171.10; FURMÁNEK 2004, 73; HELLEBRANDT 2011, 3. kép)

The cross-sections of the **Kriva-Type** are rounded and their terminals resemble to the Early- and Middle Bronze Age ones (KOBAL' 1997–1998, 38–39; KOBAL' 2000, 29–30). However, this type is equipped with middle-knobs similarly to the Salgótarján-Type and the later presented Sântana-Type (Fig. 13). Their quantity is relatively lower than that of the Salgótarján-Type and almost all of the documented specimens are from depot contexts (List 2.2). Their primal distribution area is the Rétköz, Tiszahát, Szatmári lowlands and the Southern part of the Transcarpathian lowlands (KOBAL' 1997–1998, 38–39). Some specimens from the Zemplén mountains and Transdanubia (e. g. Szigliget) are also known (SZENTMÁRTONI DARNAY 1897, 351, I. T. 9) (Fig. 16). The first example was dated to the Br B (Zajta), but they are also known from the Br C stage (e. g. Abaújkér) (HOLSTE 1951, 21, Taf. 39, 2). From chronological point of view, they are rather characteristic to the Br D stage, however their younger deposition (Ha B1) can be documented in the case of the Podgorjany hoard (MOZSOLICS 1967, 178, Taf. 65, 3; MOZSOLICS 1973, 116, Taf. 5, 8; KOBAL' 2000, 93, Taf. 2, 38, 41). In my point of view, their determination as an individual – probable local – type can be supported by their early appearance (Br B)

and their spatial distribution which is clearly separated from the Sântana- and Salgótarján-Type.<sup>16</sup>

The Chomonyn-Type is composed of 31 specimens (7 depots and one uncertain find), and it can be interpreted as a special, probable local form in the territory of South-Western Transcarpathian and North-Eastern Tisza region (KOBAL' 2000, 29) (Fig. 8, 2, List 2.3). Outside of this well-definable area only uncertainly classifiable specimens are known (Fig. 16). In contrast to the other Late Bronze Age types, this one has a small spiral without middle-knob. Its other characteristic is that it consists of round-sectioned wire and it is always undecorated (Fig. 13). The dating of the Chomonyn-Type is quite uniform (Br D–Ha A1), however two specimens from a younger depot (Pusztadobos – “Ha A2”) are known (JÓSA–KEMENCZEI 1965, 24, XLIX. T).

The **Sântana-Type** consists of approximately 38 specimens from 13 depots and one stray find. It first appeared in the Br D, although it shows dominance in Ha A1 depots (Fig. 14, List 2.4). Similarly to the Salgótarján-Type, their terminal is rolled, but their cross-section is rounded. However, their distinct characteristics are the elaborate bundles of lines and complex geometrical decoration along their whole outer surface. It is also common that they are

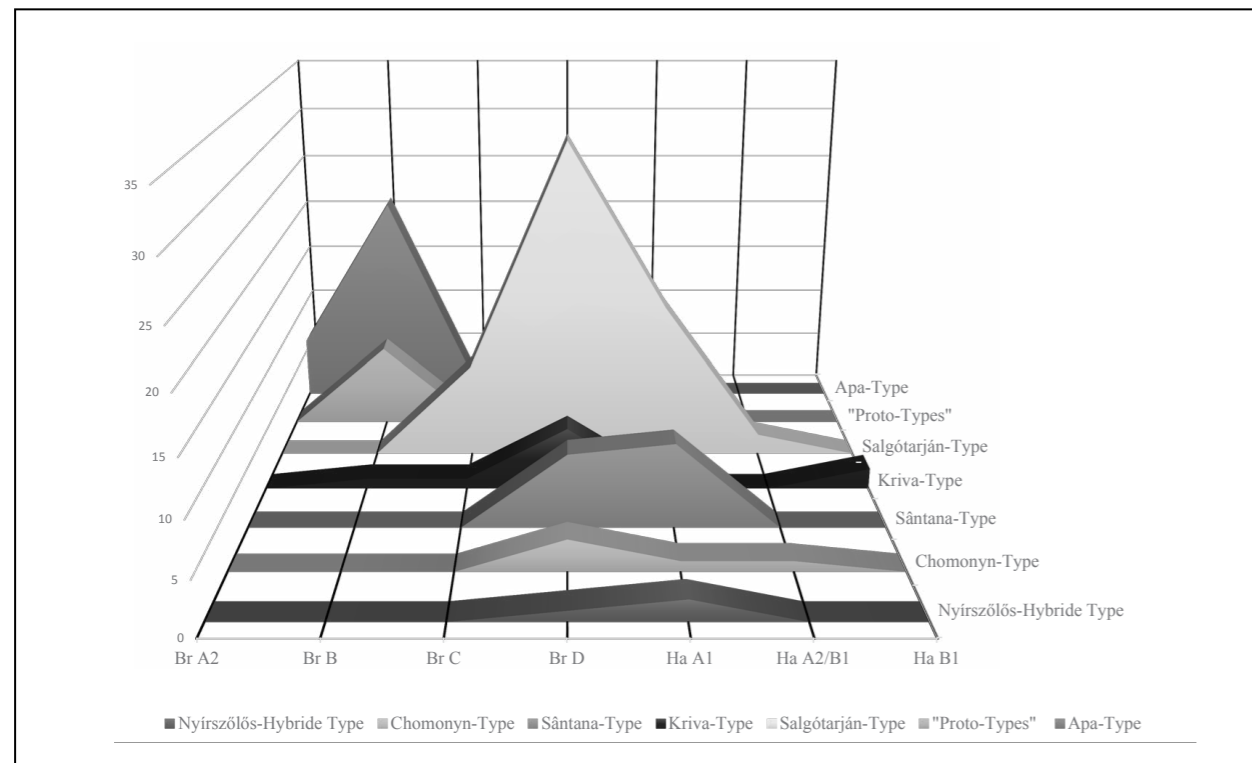


Fig. 14 Chronological position of the asymmetrical arm-and anklets (List 1–2)  
14. kép Az aszimmetrikus kar-és lábpercecek időrendi helyzete (1–2.lista)

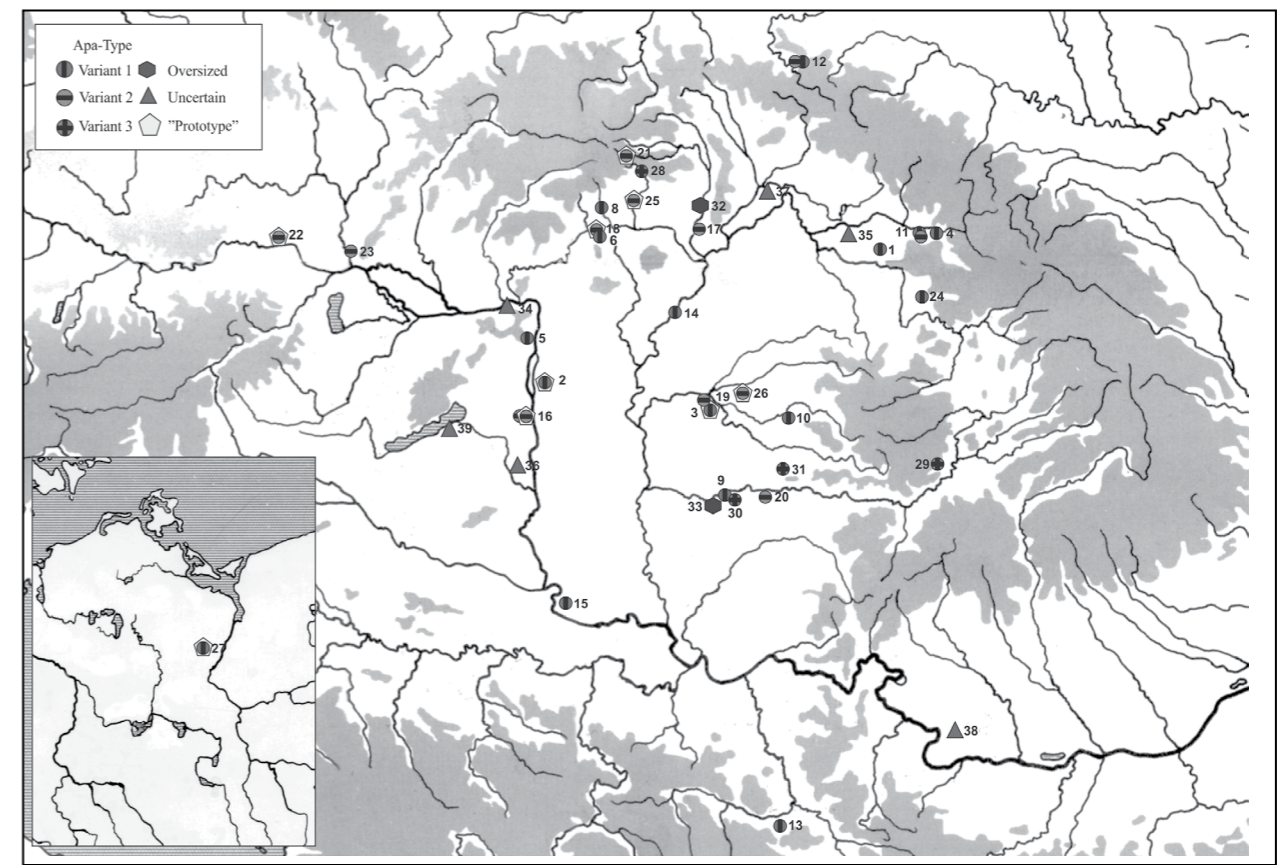


Fig. 15 Distribution of Apa-Type asymmetrical arm-and anklets in Central Europe (List 1)  
15. kép Az Apa típusú aszimmetrikus kar-és lábpercecek elterjedése Közép-Európában (1. lista)

equipped with different types of looped or conical middle-knobs and leaf-shaped pendants (e. g. Aiud) (PETRESCU-DÎMBOVIȚA 1998, Taf. 19, 154) (Fig. 13). Regarding the Sântana-Type distribution, it concentrates in the Eastern Körös region. However, specimens are also known from the Southern part of the Transylvanian plateau, Moravia and North-Eastern Hungary as well (SALAŠ 1997, 40) (Fig. 13).

The last Late Bronze Age form is the “Nyírszölös hybrid type” which includes few confusing specimens from Br D and Ha A1 depots (Crasna (?), Nyírszölös, Mačkovac, Topličica) and one object from the auction of the Hermann Historica (MOZSOLICS 1973, 162, Taf. 55, 2–3; VINSKI-GASPARINI 1973, 186, Tab. 76, 16; PETRESCU-DÎMBOVIȚA 1978, 118, Taf. 92A, 1–2; KARAVANIĆ 2001, 9, Tab. 7, 1) (Fig. 10, 5, List. 2, 5). These round-sectioned specimens have a small spiral similarly to the Chomonyn-Type, but their complex decoration strongly resembles to the Sântana-Type. However, their most uncommon feature is the appearance of the secondary spiky middle-knob on the small spiral which could be related to a different kind of fastening method. To my best knowledge, similar secondary middle-

knob is only known from an Apa-prototype which was sold on the auction of GmCoinArt (John Moore Collection) (Fig. 9, 2). Their spatial distribution concentrates on no special territory, although the one from the Nyírszölös depot should be underlined due to its deposition in the contact zone of the above cited Sântana- and Chomonyn-Types. In my estimation, interpreting these objects as an independent type is not entirely possible without uncertainties on account of their low quantity. Moreover, their fragments can be easily confused with the similarly decorated Sântana-Type. Therefore, the objects in question can rather be described as a strange mixed form – a hybrid type – of the Sântana- and Chomonyn-Types.

#### *An enigmatic object of the Bronze Age*

To conclude, the seven asymmetrical-arm or anklets from the collection of István Delhaes can be sorted into the most frequent Late Bronze Age form: the Salgótarján-Type which main distribution area can be well-localized in the North-Eastern part of the Carpathian Basin (Fig. 16). Based on the results

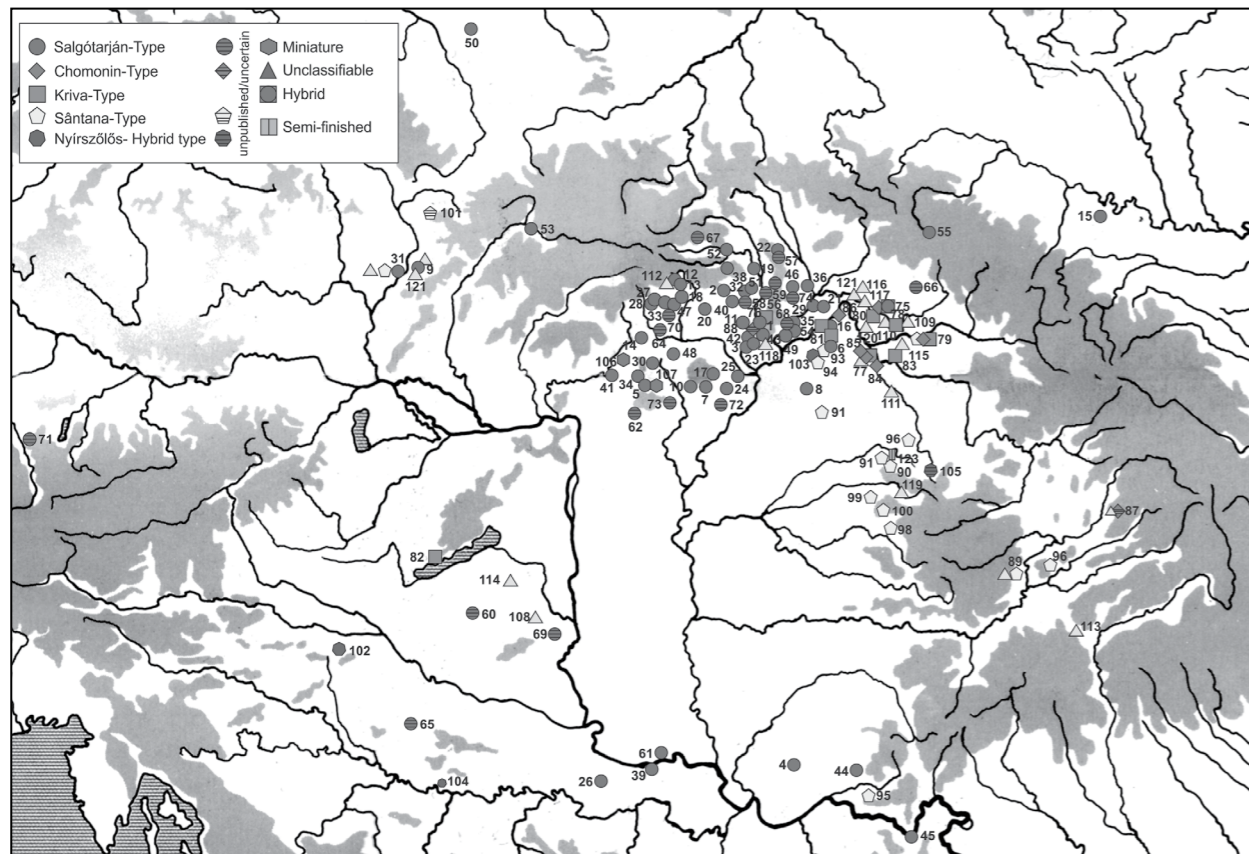


Fig. 16 Distribution of Late Bronze Age asymmetrical armlets in Central Europe (List 2)  
16. kép Késő bronzkori aszimmetrikus kar-és lábpercek elterjedése Közép-Európában (2.lista)

of our overview, the analyzed objects can be dated into the Br C or more likely the Br D–Ha A1 stages. Besides the above questions we also tried to understand the manufacturing techniques, functional- and typo-chronological aspects of the whole artefact group. In conclusion, based on the currently published data two simple questions should be asked: 1.) *what are the asymmetrical-arm and anklets?* 2.) *How can we exceed our current knowledge?*

1.) Based on the few representations, burial context and the macroscopic observations on the specimens of the Delhaes collection it seems likely that the analyzed objects can be interpreted as wearable arm- or anklets, despite their heavy weight and relatively great size. In my estimation, the defensive weapon theory which is originated from a 19<sup>th</sup> century preconception is less convincing due to the dimensions of the object and the lack of fighting damages. However, as a possibility this theory should also be examined in the future on other objects and most importantly by experiments. In any case, either these jewels were worn on special events or in every day use, their symbolic role is

most likely. This presently less understood symbolic aspect can be supported by the fact that they have been buried in depots, moreover the phenomenon of oversizing and miniaturizing can be observed among them. In addition, their strong individualization and the appearance of probable symbolic parts (e. g. star-shaped middle-knobs and new Late Bronze Age pendant types) which can be associated with the sphere of special artefacts (e. g. B-Type passermenterie fibulae, great chain pendants, diadems and belts) are all convincing arguments in favor to the symbolic and representative aspects of this artefacts group (HAMPEL 1886A, LXIII. T. 3, LXX. T. 9; HOLSTE 1951, Taf. 17, 11; KOSSACK 1954, 80–82; PATAY 1954, 42, 46, Abb. 17, 4–5; PAULÍK 1963, 51, Abb. 7C, 1; NOVOTNÁ 1970A, 39; NOVOTNÁ 1970B, 39, Taf. 56, 13; BLAJER 1984, Taf. 66, 215–216; ŘÍHOVSKÝ 1993, Taf. 9, 89; PETRESCU-DÎMBOVIȚA 1998, Taf. 19, 154, Taf. 21. 160A–D; HELLEBRANDT 1999, 7. kép 1–2; JANKOVITS 2008, 64–65; HELLEBRANDT 2011, 133; MÖDLINGER 2013, 67–75; MÖDLINGER 2014, Fig. 6). However, in my estimation, this symbolic function which was previously associated with the

Bronze Age elite cannot be enlightened without further analysis (KEMENCZEI 1964–1965, 133; BADER 1972, 94). Similar is true for the question of the sex of the wearers, although the representations, burial context and its combination with weapons refers to men. Nevertheless, it should not be forgotten that most of the Bronze Age objects were worn by both gender. It is in itself interesting that the asymmetrical arm- and anklets basically kept their main forms; moreover, they had been continuously deposited and manufactured for a long period of time by many different archaeological cultures from the Br A2 to the Ha B1. Although our current knowledge is very limited about their exact manufacturing methods, the Br B can be clearly interpreted as a turning point due to the appearance of the first prototypes of the Late Bronze Age main types (Fig. 17). Comparing the distribution of the older variants to the younger specimens it can be concluded that the Late Bronze Age examples are more concentrated on certain geographical areas than their predecessors (Fig. 15–16). The Salgótarján-Type domi-

nates the territory of the Southern Slovakian Ore Mountains and the North Hungarian Mountains. In contrast to them, the North-Eastern part of the Great Hungarian Plain (Bodroghköz, Nyírség, and Tiszahát) and the territory of the Transcarpathian Lowlands show a different picture. Along with the Salgótarján-Type other forms like the Chomonyn-Type, Kriva-Type, Nyírszölös-Hybrid type, and even the Sântana-Type appear. It should be noted that the last one is rather characteristic to the Eastern Körös region (KEMENCZEI 1965, 111–112; HÄNSEL 1968A, 213–214, Liste 103–104, Karte 22; BLAJER 1984, Taf. 79–80; HANSEN 1999, 179).<sup>17</sup> In conclusion, the asymmetrical arm-and anklets can be defined as a probable wearable jewellery group which was continuously manufactured and deposited between the Br A2 and the Ha B1.

2.) Even though, it appears first that the present study resolved and answered many problems and questions, in fact, unlocking the secrets of the asymmetrical arm-and anklets are far from complete. Yet again, it should be underlined that the here estab-

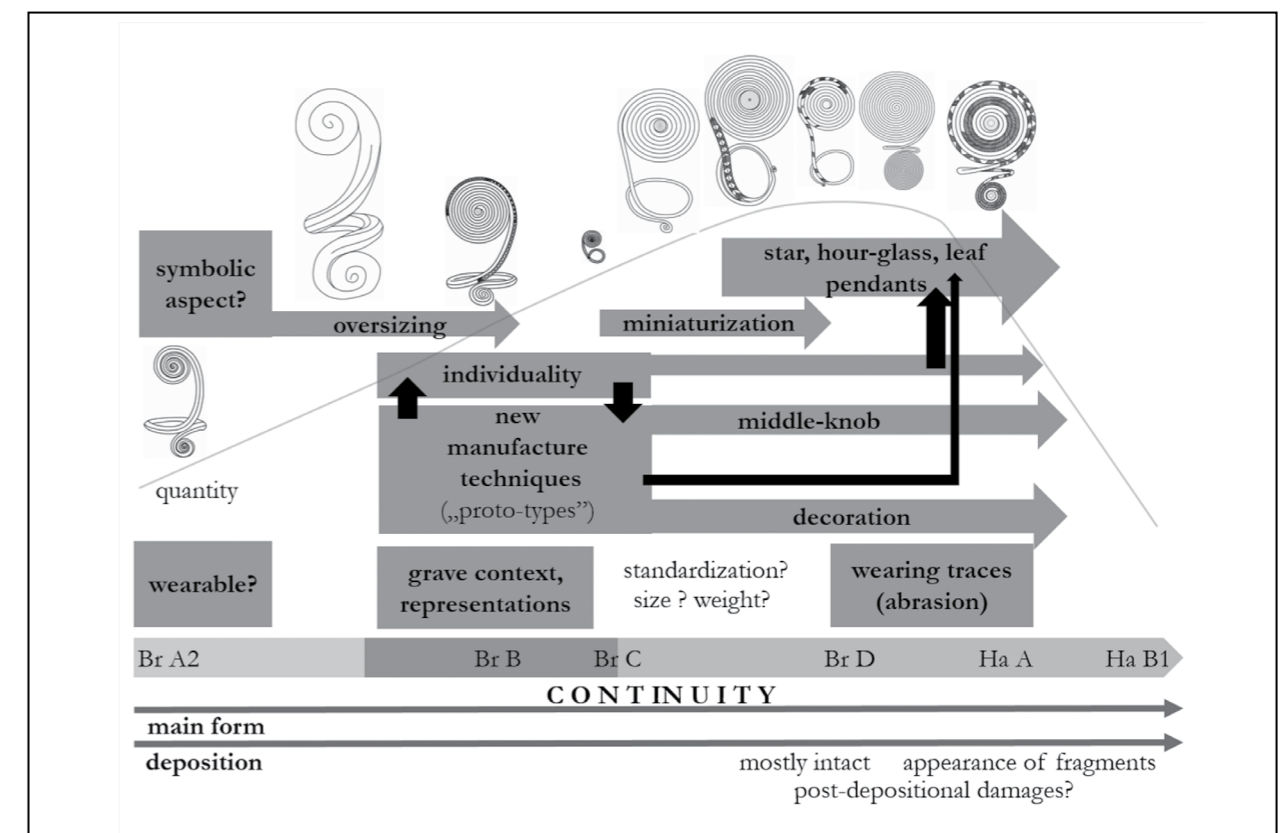


Fig. 17 The changing of asymmetrical arm-and anklets between the Br A2 and Ha B1 (HAMPEL 1886A, XXXVII. T. 1, LXX. T. 9; MOZSOLICS 1967, Abb. 20; DAVID 2002B, Taf. 171, 10; HELLEBRANDT 2011, 3. kép)  
17. kép Az aszimmetrikus kar-és lábpercek változása a Br A2 és Ha B1 között (HAMPEL 1886A, XXXVII. T. 1, LXX. T. 9; MOZSOLICS 1967, Abb. 20; DAVID 2002B, Taf. 171, 10; HELLEBRANDT 2011, 3. kép)

lished typological model is unfinished and limited by the quality of the previous publications. Presently, prominent part of the objects is unpublished or only mentioned in the literature, therefore the exact number of the types is unknown. Moreover, due to the schematic illustrations the decoration types cannot be analyzed precisely therefore our grouping can be also mistaken. Consequently, in the future, the main objective of the research should be the re-publishing of the whole artefact group with a comparable descriptive system for which here we attempted to

give a sample. By the aid of this attempt this typological model can be corrected and rebuilt. Moreover, new question can be investigated. The most important objective is the creation of an extended database of the macroscopic observations. By the aid of this work it would be possible to generalize the results of this preliminary method and raise new technological questions. An inevitable next research phase can be the testing of the results and presumptions of the macroscopic observations by experiments which are based on archaeometallurgical analyses.

## APPENDIX

### List 1. Older variants

#### List 1.1. Apa-Type

##### List 1.1.1. Variant 1

1. **Apa** (Romania, Satu Mare) – depot (Br A2) – 1: POPESCU 1937–1940, 119, Fig. 1, 5; MOZSOLICS 1967, 128, Taf. 14, 2; PETRESCU-DÎMBOVIȚA 1977, 39, Taf. I, 6; PETRESCU-DÎMBOVIȚA 1998, 31, Taf. 13, 104; SOROCEANU 2012, 17–20, Taf. 4, 1a–c.
2. **Áporka/Pusztaszentkirály/Szentkirály** (Hungary, Pest) – depot (Br B) – 2: HAMPEL 1879, 63; HAMPEL 1886B, 100–101; HAMPEL 1892, 121; MOZSOLICS 1967, 156, Abb. 20, Taf. 63, 1–2; DAVID 2002A, 467; DAVID 2002B, Taf. 184, 1–2.
3. **Békés-Keckeméti utca** (Hungary, Békés) – depot (Br B) – 2: SZATMÁRI 1998, 117–118, 19. T. 5, 7; DAVID 2002A, 467; DAVID 2002B, Taf. 133, 5–6.
4. **Bila Tserkva/Belaia Cerkov’/Biserica Albă/Fehéregyháza** (older versions in the literature: *Sărășau/Szarvaszó*) (Ukraine) – individual object: RÓMER 1868, 197, b. ábra; KACSÓ 1977, 135, 137, Abb. 4, 1; DAVID 2002B, 492.
5. **Budapest-Óbuda** (Hungary, Pest) – individual find: HAMPEL 1886A, 105, XXXVI. T. 4; HAMPEL 1886B, Pl. XXXVI, 4; FOLTINY 1955, Taf. 36, 9.
6. **Hodejov/Várgede 2** (Slovakia, Rimavská Sobota) – depot (Br B) – 1: NOVOTNÁ 1966, Taf. 8.
7. **Hungary** – unknown: HAMPEL 1886A, XXXVI. T. 5; HAMPEL 1886B, Pl. XXXVI; FOLTINY 1955, 31, Taf. 18, Abb. 1.
8. **Rimavská Sobota/Rimaszombat/Gross-Steffelsdorf 2a** (Slovakia, Rimavská Sobota) – depot (Br D) – 2: PAULÍK 1965, Taf. 2, 1–2.
9. **Satu Mare/Temesnagyfalva/Naghifola/Naghifalău** (Romania, Arad) – depot (Br B1) – 2: PETRESCU-DÎMBOVIȚA 1977, Taf. 9, 7; PETRESCU-DÎMBOVIȚA 1978, Taf. 18b, 1; KACSÓ 1997–1998, 14, Taf. 4; PETRESCU-DÎMBOVIȚA 1998, 31, Taf. 15, 114; SOROCEANU 2012,

101, Pl. 31, 10–11.

10. **Sânnicolaul Român/Sînnicolau Român/Oláh szentmiklós 1** (Romania, Bihor) – depot (Br A) – 2: PETRESCU-DÎMBOVIȚA 1977, Pl. 12, 1–2; PETRESCU-DÎMBOVIȚA 1998, 31, Taf. 13, 107–108; SOROCEANU 2012, 90–91, Taf. 25, 3.
11. **Săpânța/Săpînța/Szaplonca** (Romania, Maramureș) – depot (Br B1) – 1: POPESCU 1963, 99–100, Abb. 6, 4; POPESCU-RUSU 1966, Pl. 8a, 4; PETRESCU-DÎMBOVIȚA 1977, Pl. 11, 1; PETRESCU-DÎMBOVIȚA 1998, 31, Taf. 13, 105–106; SOROCEANU 2012, 97, Taf. 29, 4.
12. **Stefkowa** (Poland, Krosno) – depot (Br B2) – 1: BLAJER 1984, 65–67, Taf. 65, 213.
13. **Studenica** (Serbia, Kraljevo) – depot (Br A2/B1) – 1: VINSKI 1961, 36, Tab. VIII, 2.
14. **Tiszafüred-Majoroshalom** (Hungary, Jász-Nagykun-Szolnok) – grave D 305 – 1: KOVÁCS 1991–1992, 29; CSÁNYI-TÁRNOKI 1992, 208, Abb. 62; KOVÁCS 1992, Abb. 62; DAVID 2002A, 473; DAVID 2002B, Taf. 261A, 4.
15. **Vajska/Vajszka** (Serbia, Vojvodina) – depot (Br A2/Br B) – 1: HARDING 1995, 70, Taf. 56, 2–3.

##### List 1.1.2 Variant 2

16. **Dunaújváros-Kosziderpadlás 3** (Hungary, Fejér) – depot (Br B) – 3: BÓNA 1959, 14, Taf. I, 3–4; MOZSOLICS 1967, 135–136, 257, Taf. 51, 3–4, Taf. 52, 5.
17. **Hernádkak** (Hungary, Borsod-Abaúj-Zemplén) – grave – 1: TOČIK-BUDINSKÝ-KRIČKA 1987, Abb. 8; DAVID 2002A, 469; DAVID 2002B, Taf. 262, 2; B. HELLEBRANDT 2005, 9, 3. kép 5.
18. **Hodejov/Várgede 1** (Slovakia, Rimavská Sobota) – depot (Br B) – 3: FURMÁNEK 1980, 17, Taf. 35, 13–14; DAVID 2002A, 488; DAVID 2002B, Taf. 171, 9–10; Taf. 175, 3.
19. **Mezőberény** (Hungary, Békés) – depot (Br B) – 1: MOGYORÓSSY 1885, 224; MOZSOLICS 1967, 149–150, Taf. 67, 4.
20. **Păuliș/Păulișul Vechi/Ópálos/Ópaulis/Paulis** (Roma-

nia, Arad) – depot (Br A2) – 1: POPESCU 1963, 93, Abb. 2, 4; MOZSOLICS 1967, 153, Taf. 18, 5; PETRESCU-DÎMBOVIȚA 1977, 49, Taf. 20, 1; PETRESCU-DÎMBOVIȚA 1998, 31, Taf. 15, 113; SOROCEANU 2012, 69–70, Pl. 20, 5.

11. **Săpânța/Săpînța/Szaplonca** (Romania, Maramureș) – depot (Br B1) – 1: POPESCU 1963, 99–100, Abb. 6, 3; POPESCU-RUSU 1966, Pl. 8a, 3; PETRESCU-DÎMBOVIȚA 1977, Pl. 10, 6; PETRESCU-DÎMBOVIȚA 1998, 31, Taf. 13, 105; SOROCEANU 2012, 97, Taf. 29, 3.
21. **Spišský Štvrtok/Szepescsütörtök** (Slovakia, Levoča) – unknown – 1: FURMÁNEK 2004, 73.
22. **Stockerau** (Austria, Niederösterreich) – depot (Br B) – 2: ANGELI 1961, 141, Taf. 8, 3–4.
12. **Stefkowa** (Poland, Krosno) – depot (Br B2) – 6: BLAJER 1984, 65–67, Taf. 64, 207–209, Taf. 65, 210, 212, 214.
23. **Stupava/Stomfa** (Slovakia, Bratislava) – depot (Br B) – 2: HAMPEL 1886B, 54–55; HAMPEL 1892, 135; MOZSOLICS 1967, 162–163, Taf. 41, 1, 10.
24. **Valea Chioarului/Gaura/Kővárgara/Kővárgóra** (Romania, Maramureș) – depot (Br A2) – 1: HAMPEL 1879, 39–40; HAMPEL 1886B, 74; HAMPEL 1892, 43–46; MOZSOLICS 1967, 146; SOROCEANU 2012, 39, Pl. 13, 3.
25. **Včelínce/Lászlófalva/Méhi** (Slovakia, Rimavská Sobota) – depot (Br B) – 3: MOZSOLICS 1967, 149; FURMÁNEK 1977, 258, Taf. XXXII, 8, 13; DAVID 2002A, 488; DAVID 2002B, Taf. 179, 4–6.
26. **Zsadány-Orosipuszta** (Hungary, Békés) – depot (Br B) – 3: MOZSOLICS 1967, 153–154, Taf. 69, 1–3.

##### List 1.1.3 Variant 3

27. **Angermünde** (Germany, Angermünde) – depot (Br B) – 2: BOHM 1935, 114, Taf. 15; HACHMANN 1957, 202; GOLDMANN 1979, 55, 147.
28. **Brzotín/Berzété** (Slovakia, Košice) – stray find – 1: NOVOTNÁ 1968, 48, Tab. XVIII, 1.
29. **Ighiel/Igenpataka** (Romania, Alba) – depot (Br B) – 3: BERCIU 1939–1940, Fig. 2, 1–4. Fig. 6, Fig. 7; MOZSOLICS 1967, 141; PETRESCU-DÎMBOVIȚA 1977, 40, Taf. 3, 1–4; PETRESCU-DÎMBOVIȚA 1998, 31, Taf. 14, 109–112; SOROCEANU 2012, 52–53, Taf. 18, 1–4.
30. **Satu Mare/Temesnagyfalva** (Romania, Arad) – grave (Br B1) – 1: PETRESCU-DÎMBOVIȚA 1998, 31, Taf. 15, 115; SOROCEANU 2012, 100–103, Taf. 31, 10–11.
31. **Vârșand/Gyulavarsánd 2** (Romania, Arad) – uncertain depot – 2: PETRESCU-DÎMBOVIȚA 1998, 32, Taf. 15, 118–119; SOROCEANU 2012, 118–120, Taf. 45, 5a–b, Taf. 47, 4a–b.

##### List 1.1.4 Oversized

32. **Abaújvecser** (Hungary, Borsod-Abaúj-Zemplén) – individual find: HELLEBRANDT 2011, 133, 3–5. kép.
33. **Vinga/Vinga** (Romania, Arad) – uncertain depot – 2: PETRESCU-DÎMBOVIȚA 1998, 32, Taf. 16, 120.

##### List 1.1.5 Uncertain (unpublished, fragment)

34. **Region of Esztergom** (Hungary, Komárom-Esztergom) – depot (Br A2/B) – 2: MOZSOLICS 1967, 73–74.
35. **Kispalád 1** (Hungary, Szabolcs-Szatmár-Bereg) – depot (Br A2) – 1: MOZSOLICS 1967, 144, Taf. 17, 4.
36. **Kölesd-Nagyhangos** (Hungary, Tolna) – depot (Br B) – 1: MOZSOLICS 1967, 151–152, Taf. 33, 87.
37. **Malý Horeš/Kisgères** (Slovakia, Košice) – depot (Br B–Br D) – 1: PASTOR 1951, 155, Obr. 115.
38. **Moțăței** (Romania, Dolj) – stay find – 1: PETRESCU-DÎMBOVIȚA 1998, 32, Taf. 15, 116.
39. **Siófok-Balatonkiliti/Somogykiliti** (Hungary, Somogy) – depot (Br B) – 1: KUZSINSZKY 1920, 8, 8. Ábra 33; MOZSOLICS 1967, 161–162, Taf. 37, 2.

List 2. Younger variants (HÄNSEL 1968A, Liste 103; BADER 1972, 97–100; BLAJER 1984, 68–69; SCHUMACHER-MATTHAUS 1985, 119–125; PETRESCU-DÎMBOVIȚA 1998, 31–37; KOBAL’ 2000, 29–30)<sup>18</sup>

List 2. 1. *Salgótarján-Type* (The closest parallels of the Delhaes collections specimens are marked with *italic*)

1. *Abaújkér* (Hungary, Borsod-Abaúj-Zemplén) – depot (Br D-Ha A1) – 1: HOLSTE 1951, 21, Taf. 39, 2; KEMENCZEI 1984, 112.
2. *Aggtelek-Baradla cave* (Hungary, Nógrád) – uncertain depot (Ha A) – 1: TOMPA 1934–1935, 37, 106, Taf. 51, 6; KEMENCZEI 1984, 144, Taf. C, 1.
3. *Alsóobsza* (Hungary, Borsod-Abaúj-Zemplén) – depot (Ha A1) – 1: KEMENCZEI-VÉGH 1971, 511; KEMENCZEI 1984, 112–114, Taf. XLI, 26; MOZSOLICS 1985, 85–86, Taf. 167, 5.
4. *Banatski Karlovac/Károlyfalva/Nagykárolyfalva/Karlsdorf* (Serbia, Vojvodina) – depot (Ha A2/B1) – 1: HOLSTE 1951, 10, Taf. 17, 11; GARAŠANIN 1972, Cat Nr. 137.
5. *Bátorterenye/Kisterenye-Hársas hegy* (Hungary, Nógrád) – depot (Br D) – 1: KEMENCZEI 1965, 145–146, Taf. I, 1; MOZSOLICS 1973, 148–149.
6. *Berkesz-Csonkás* (Hungary, Szabolcs-Szatmár-Bereg) – depot (Ha A1) – 4: JÓSA-KEMENCZEI 1965, 20, XIV. T. 63–64, XV. T. 69–70; KEMENCZEI 1984, 170, Taf. CLXVIII, 21, Taf. CLXIX, 1–2, 8; MOZSOLICS 1985, 96–97, Taf. 178, 1–2, Taf. 179, 2, 7.
7. *Cserépfalu/Cserépfalva* (Hungary, Borsod-Abaúj-Zemplén) – depot (Ha A1) – 1: HAMPEL 1886B, 68; HAMPEL 1892, 21; KEMENCZEI 1984, 115, 254, Taf. XLIVd, 2.
8. *Debrecen-Felsőjózsa* (Hungary, Hajdú-Bihar) – uncertain depot – 1: VON BRUNN 1968, 33; KEMENCZEI 1984, 173–174, Taf. CLXXXc.
9. *Drslavice 2* (Bohemia, Uherské Hradiště) – depot (Br D2) – 1: SALÁŠ 2005A, 332–342; SALÁŠ 2005B, Tab. 171, 395.

10. *Eger* (Hungary, Heves) – depot (Br D) – 3: HÄNSEL 1968A, 213, 230, HÄNSEL 1968B, Taf. 50, 10–12.
11. *Forró* (Hungary, Borsod-Abaúj-Zemplén) – depot (Br C) – 4: HAMPEL 1890, 146–148, I. T. 11–14; HAMPEL 1892, CLXII. T.; MOZSOLICS 1973, 136, Taf. 6, 11–14.
12. *Gemer/Sajógömör* (Slovakia, Rimavská Sobota) – depot (Br D) – 1: NOVOTNÁ 1968, 39–41, Obr. 2.
13. *Gemer/Sajógömör* (Slovakia, Rimavská Sobota) – depot (Br D) – 1: NOVOTNÁ 1968, Tab. XVIII, 3.
14. *Gemerský Jablonec/Gömöralmágy/Almágy* (Slovakia, Rimavská Sobota) – depot (Br D) – 2: HAMPEL 1896B, 180; KEMENCZEI 1965, 109, XXIX. T. 2, XXX. T. 4.
15. *Hrushka* (Ukraine, Tlumach) – depot (Br D–Ha A1) – 3: ŽUROWSKI 1949, 159–161, Tabl. LV, 1a–3c.
16. *Jéke* (Hungary, Szabolcs-Szatmár-Bereg) – depot (Br D) – 3: MOZSOLICS 1973, 143–144, Taf. 56, 1–3.
17. *Kisgyőr* (Hungary, Borsod-Abaúj-Zemplén) – depot (Br C) – 2: KEMENCZEI 1965, 107, VII. T. 1–2; MOZSOLICS 1973, 146.
18. *Kelemér* (Hungary, Borsod-Abaúj-Zemplén) – depot (Br C–D) – 1: PAULÍK 1965, 50–51, Tab. XVIII, 2; MOZSOLICS 1973, 145; FURMÁNEK 1977, Taf. XXXVIII, 18.
19. *Košice/Kassa/Karschau* (Slovakia, Košice) – depot (Br D) – 2: FURMÁNEK 1977, Taf. XXIV, 1, 4.
20. *Kurtyán* (Hungary, Borsod-Abaúj-Zemplén) – depot (Br D – Ha A1) – 3: GÁBORI–HELLEBRANDT 1975, 138, 5. kép; HELLEBRANDT 1996, 184, Abb. 10, 1, Abb. 11, Abb. 17.
21. *Král'ovský Chlmec/Királyhelmece* (Slovakia, Košice) – individual find: HAMPEL 1886B, Pl. XXXVI, 5; DANKÓ–PATAY 2000, 30, 37. kép.
22. *Kračúnovce/Karácsonmező-Kuková* (Slovakia, Prešov) – depot – 2: FURMÁNEK 1977, Taf. XXIII, 11–12.
23. *Megyaszó* (Hungary, Borsod-Abaúj-Zemplén) – stray find – 1: KOÓS 1993, 8, I. T. 1.
24. *Mezőnyárád* (Hungary, Borsod-Abaúj-Zemplén) – depot (Br D–Ha A1) – 2: GÁBORI–HELLEBRANDT 1975, 138–139; HELLEBRANDT 1975, 16; MOZSOLICS 1985, 149–150; HELLEBRANDT 1999, 140, 143–144, 7. kép 1–2.
25. *Nyékkládaháza-Gólem tó* (Hungary, Borsod-Abaúj-Zemplén) – depot (Br D–Ha A1) – 1: TÓTH 2010, 63–65, 3. kép 1.
26. *Otok-Privlaka* (Croatia, Vukovar-Srijem) – depot (Ha A1) – 1: HOLSTE 1951, 5, Taf. 5, 36; VINSKI-GASPARINI 1973, 217, Tab. 28, 29.
27. *Ožd'any/Osgyán 1* (Slovakia, Rimavská Sobota) – depot (Br C) – 1: HAMPEL 1886B, 90; HAMPEL 1892, 111; KEMENCZEI 1965, XXXI.1; MOZSOLICS 1973, 166.
28. *Ožd'any/Osgyán 2* (Slovakia, Rimavská Sobota) – depot (Br C) – 4: KUDLÁČEK 1952, 28–30, Obr. 21–22; PAULÍK 1965, 61, Tab. XI. 1, 4, 9–10; FURMÁNEK 1977, Taf. XXV, 9; FURMÁNEK–NOVOTNÁ 2006, 22, Taf. 44, 5.
29. *Pácin-Képhomok* (Hungary, Borsod-Abaúj-Zemplén) – depot (Br C) – 4: KEMENCZEI 1965, 109, XXVI. T. 1–4; MOZSOLICS 1973, 167.
30. *Pétevársára 2* (Hungary, Heves) – depot (Br D) – 2: HOLSTE 1951, 16, Taf. 30, 5; KEMENCZEI 1965, 106–107, IV. T. 1, 3, 11; MOZSOLICS 1985, 175.
31. *Polešovice* (Bohemia, Uherské Hradiště) – depot (Ha A1) – 1: SALAŠ 1997, Taf. 23, 567.
32. *Rešica/Reste* (Slovakia, Košice) – depot (Br D) – 1: FURMÁNEK 1977, Taf. 27, 2; NOVOTNÁ 1980, 68, Taf. 58d, 2.
33. *Rimavská Sobota/Rimaszombat/Gross-Steffelsdorf 2a* (Slovakia, Rimavská Sobota) – depot (Br D) – 1: HAMPEL 1886A, CXII. T. 2–3; HAMPEL 1886B, 93–94, Pl. CXII, 2–3; HAMPEL 1886C, 14, I. T. 2–3; HAMPEL 1892, 126–127; FURMÁNEK 1977, Taf. XXVIII, 6; PAULÍK 1965, Taf. 2, 3.
34. *Salgótarján/Salgó/Tarján/Šalgov-Tarjany/Schalgotarjan* (Hungary, Nógrád) – depot (Br C/D) – 2: HAMPEL 1886A, XXXII. T. 1–2; HAMPEL 1886B, 95, Pl. XXXVII, 1–2; HAMPEL 1892, 133; FOLTINY 1955, 31, Taf. 21, 4; MOZSOLICS 1973, 175; KEMENCZEI 1984, 120.
35. *Region of Sáropatak* (Hungary, Borsod-Abaúj-Zemplén) – depot (Br D) – 1: KEMENCZEI 1965, 109, XXI. T. 4; MOZSOLICS 1985, 185, Taf. 11, 5.
36. *Slavkovce/Szalók* (Slovakia, Košice) – depot (Br D) – 1: VIZDAL 1962, 793, Obr. 251; MOZSOLICS 1973, 63.
37. *Slovakia* – uncertain depot – 1: PAULÍK 1965, Tab. IX, 1.
38. *Švedlár/Svedlér/Schwedler* (Slovakia, Košice) – depot (Br D–Ha A1) – 3: NOVOTNÁ 1970B, 39, Taf. 56, 12–14; FURMÁNEK 1977, Taf. XXXI, 3, Taf. XXX, 9–12.
39. *Sviloš* (Serbia, Vojvodina) – depot (Ha A1) – 1: HOLSTE 1951, 9, Abb. 16, 39; ЕРЦЕГОВУБЪ 1955, 25, Tab. III, 3; VINSKI-GASPARINI 1973, 220, Taf. 88, 3.
40. *Szakácsi* (Hungary, Borsod-Abaúj-Zemplén) – depot (Br D) – 2: SZENDREI 1888, 351–352, III. T. 1, 4, 11; KEMENCZEI 1965, 108, XIX. T. 10–11; KEMENCZEI 1984, 120.
41. *Szécseény 1* (Hungary, Nógrád) – depot (Br D) – 2: KEMENCZEI 1965, 106; KEMENCZEI 1984, 121; MOZSOLICS 1985, 189, Taf. 6, 4–5.
42. *Szentistvánbaksa* (Hungary, Borsod-Abaúj-Zemplén) – stray find – 1: KEMENCZEI 1984, 120, Taf. LC.
43. *Tállya* (Hungary, Borsod-Abaúj-Zemplén) – depot (Ha A1) – 5: KEMENCZEI 1969, 28–31, IX. T. 1–4; MOZSOLICS 1985, 200–201, Taf. 163, 1–5.
44. *Ticvanu Mare/Nagytikvány* (Romania, Caraș-Severin) – uncertain depot – 2: SĂCĂRIN 1981, 98, Pl. III–IV; PETRESCU-DIMBOVIȚA 1998, 33, Taf. 21, 160a–d.
45. *Topolnica* (Serbia, Majdanpek) – depot – 4 (Br C2/D): HARDING 1995, 36, Taf. 58, 5–6.
46. *Trebišov/Töketerebes/Trebischau* (Slovakia, Košice) – depot (Br D) – 3: BUDINSKÝ-KRIČKA 1961, 44, Obr. 34; NOVOTNÁ 1970A, 120, Taf. IX.

47. *Vel'ký Blh/Felsőbalog/Vámosbalog* (Slovakia, Rimavská Sobota) – depot (Br C) – 2: HAMPEL 1881, 277–279, I. T. 3–4; HAMPEL 1886A, XCIV. T. 3–4; HAMPEL 1886B, Pl. XCIII, 3–4; FOLTINY 1955, 31, Taf. 17, 15; PAULÍK 1965, 68, Tab. VII, 1–2; NOVOTNÁ 1970A, 122; MOZSOLICS 1973, 133–134, Taf. 7, 4–5.
48. *Zabar* (Hungary, Nógrád) – uncertain depot – 1: PAULÍK 1965, 94, Tab. 9, 1; KEMENCZEI 1984, 122.
49. *Zalkod* (Hungary, Borsod-Abaúj-Zemplén) – depot (Br D) – 3: HOLSTE 1951, 20, Taf. 38, 13; MOZSOLICS 1985, 216, Taf. 10, 1–3.
50. *Załęże/Zalenze* (Poland, Krosno) – depot (Br D) – 2: ŹAKI 1962, 204, Tab. 3, 7–8; BLAJER 1984, 68, Taf. 66, 215–216.
51. *Zádiel/Szádelő* (Slovakia, Košice) – depot (Br D–Ha A1): GAŠAJ 1994, 23.
52. *Žehra-Drevenik/Zsigra-Drevenik* (Slovakia, Spišská Nova Ves) – depot (Br D) – 2: NEUSTUPNÝ 1938–1939, 219–220, Tab. XII, 13–14; MOZSOLICS 1973, 130; FURMÁNEK 1980, Taf. 39, 3.
53. *Zvolen/Zólyom/Altsohl* (Slovakia, Zvolen) – depot (Br D–Ha A1) – 2: FURMÁNEK 1977, Taf. XXXIV, 12–13, 15; FURMÁNEK 1980, 19, Taf. 40, 1–2; FURMÁNEK–NOVOTNÁ 2006, 67, Taf. 46, 9.
54. *Viss 3* (Hungary, Borsod-Abaúj-Zemplén) – depot (Br D) – 3: KEMENCZEI 1974, 24; MOZSOLICS 1985, 214–215, Taf. 12, 3, Taf. 14, 1–2.
55. *Volovec/Volovec'-Pod Kilicou/Volóc* (Ukraine, Beregovo) – depot (Br D) – 8 (?): JANKOVICH 1931, 53, V. T. 7; BERNJAKOVIČ 1960, 353; KOBAL' 2000, 99–100, Taf. 12, 1–4, Taf. 13, 15–19.

*Uncertain Salgótarján-Type (unpublished, unknown context, fragmented)*

56. *Čaňa/Hernádcsány* (Slovakia, Košice) – unknown: BADER 1972, 97.
57. *Babie/Bábafalva* (Slovakia, Prešov) – unknown: FURMÁNEK 1977, 276.
58. *Bakta* (Hungary, Borsod-Abaúj-Zemplén) – unknown: SZENDREI 1888, 348; HAMPEL 1892, 7; KEMENCZEI 1965, 112.
59. *Blažice/Balogd/Bologd* (Slovakia, Košice) – depot (Br D) – 2: DOMEČKA 1931, Obr. 26, 19–20.
60. *Dombóvár-Döbrököz/Szarvaspuszta* (Hungary, Tolna) – depot (Ha A1) – 1: MÉSZÁROS 1977–1978, 6. T. 4; MOZSOLICS 1985, 113–114.
61. *Futog/Futak* (Serbia, Vojvodina): MOZSOLICS 1973, 63.
62. *Gyöngyös* (Hungary, Heves) – depot: KEMENCZEI 1965, 107, 111.
63. *Heves county* (Hungary) – unknown – 1: HÄNSEL 1968A, 213.
64. *Hostice/Gesztete* (Slovakia, Rimavská Sobota): KEMENCZEI 1965, 112.

65. *Hrustovac/Hrastovac* (Croatia, Bjelovar-Bilogora) – unknown: BLAJER 1984, 69.
66. *Kolodnoe'/Kolodne/Tökés/Tökésfalu-Strednij Hunok 1* (Ukraine, Irshava) – depot (Ha B1) – 3: LEHÓCZKY 1893, 260–262, I. T. 5; HAMPEL 1896A, CXCIX. T. 5; BERNJAKOVIČ 1960, 349–350; MOZSOLICS 1967, 170; KOBAL' 2000, 83, Taf. 4, 16–18.
67. *Nová Lesná/Alsóerdőfalva* (Slovakia, Prešov) – unknown: BLAJER 1984, 69.
68. *Olaszliszka* (Hungary, Borsod-Abaúj-Zemplén) – unknown: KEMENCZEI 1964, 15.
69. *Palotabozsok* (Hungary, Baranya) – depot (Ha A1) – 1: HAMPEL 1886A, C. T. 5; HAMPEL 1892, 18–19; MOZSOLICS 1985, 166–168, Taf. 75, 53.
70. *Rimavské Janovce/Janosovce/Jánosi/Rimajánosi* (Slovakia, Rimavská Sobota) – unknown: BLAJER 1984, 69.
71. *Salzburg* (Austria, Salzburg) – unknown: HÄNSEL 1968A, 214.
72. *Szentistván* (Hungary, Borsod-Abaúj-Zemplén) – unknown: KEMENCZEI 1965, 111.
73. *Verpelét* (Hungary, Heves) – depot: HOERNES 1904, 210; KEMENCZEI 1984, 122.
74. *Vilyvitány* (Hungary, Borsod-Abaúj-Zemplén) – unknown: FURMÁNEK 1977, 276.

*Individual form of Salgótarján-Type and Kriva-Type*

75. *Chomonyn/Čomonyn/Csongor 1* (Ukraine, Mukachevo) – depot (Br D) – 1: BERNJAKOVIČ 1960, 363; KOBAL' 2000, 78, Taf. 10, 5.

*List 2. 2. Kriva-Type*

76. *Abaújkér* (Hungary, Borsod-Abaúj-Zemplén) – depot (Br C) – 1: MOZSOLICS 1973, 116, Taf. 5, 8; KEMENCZEI 1984, 112.
77. *Géberjén* (Hungary, Szabolcs-Szatmár-Bereg) – depot (Br D) – 3: MOZSOLICS 1973, 137, Taf. 58a, 16.
16. *Jéke* (Hungary, Szabolcs-Szatmár-Bereg) – depot (Br D) – 4: MOZSOLICS 1973, 143–144, Taf. 56, 4.
78. *Chudlovo/Chudl'ovo/Horlyó* (Ukraine, Uzhhorod) – (Br D) – 5: KOBAL' 1997–1998, 38–39, Taf. II, 4, Taf. III, 1–4; KOBAL' 2000, 77–78, Taf. 98, 1–4.
79. *Kryva/Kryva/Tiszakryva-Sokoliv Kamin* (Ukraine, Chust) – depot (Br D) – 8: ПЕНЯК 1972, 108, Таб. II, 2–5; MOZSOLICS 1973, 183; KOBAL' 2000, 83, Taf. 8, 22, Taf. 9, 29, 30.
80. *Podgorjany/Órhegyalja/Pidhorjany-Menšij Hrunok-Korunduláz 2* (Ukraine, Mukachevo) – (Ha B1) – 2: BERNJAKOVIČ 1960, 365–366; KOBAL' 2000, 93, Taf. 2, 38, 41.
81. *Papp* (Hungary, Szabolcs-Szatmár-Bereg) – depot (Br D) – 1: MOZSOLICS 1973, 168, Taf. 43, 3.
82. *Szigliget* (Hungary, Veszprém) – depot (Br D) – 1: SZENTMÁRTONI DARNAY 1897, 351, I. T. 9; MOZSOLICS

1985, 187.  
**83. Zajta** (Hungary, Szabolcs-Szatmár-Bereg) – depot (Br B) – 1: TOMPA 1934–1935, Taf. 35, 8; MOZSOLICS 1967, 178, Taf. 65, 3.

*List 2. 3. Chomonyn-Type*

**84. Császló** (Hungary, Szabolcs-Szatmár-Bereg) – depot (Br D) – 4: josamuzeum.hu/regeszeti/rolunk/kutatas/asatasok/gyujto/ (2015.02.16).  
**75. Chomonyn/Čomonyn/Csongor 1** (Ukraine, Mukachevo) – depot (Br D) – 11: BERNJAKOVIČ 1960, 363; KOBAL' 2000, 78, Taf. 10, 1, 2, 4, Taf. 11, 6–8.  
**77. Géberjén** (Hungary, Szabolcs-Szatmár-Bereg) – depot (Br D) – 3: MOZSOLICS 1973, 137, Taf. 58a, 15–17  
**79. Kriva/Kryva/Tiszakirva-Sokoliv Kamin** (Ukraine, Chust) – depot (Br D) – 8: MOZSOLICS 1973, 183; KOBAL' 2000, 83, Taf. 8, 23, 25, Taf. 9, 26, 28.  
**85. Pusztadobos** (Hungary, Szabolcs-Szatmár-Bereg) – depot (Ha A2) – 2: HAMPEL 1892, 24; JÓSA–KEMENCZEI 1965, 24, XLIX. T.  
**86. Velikaya Byygan/Velyka Bihan' 1** (Ukraine, Beregovovo) – depot (Ha A1) – 2: BERNJAKOVIČ 1960, 364; KOBAL' 2000, 97–98, Taf. 99A, 1, 5.

*Possibly the fragment of a Chomonyn-Type*

**87. Călugăreni/Mikeháza** (Romania, Mureş) – depot (Ha A1) – 7: PETRESCU-DÎMBOVIȚA 1998, 32, Taf. 16, 123–127.  
**88. Felsődobosza** (Hungary, Borsod-Abaúj-Zemplén) – depot (Br D) – 1: HAMPEL 1886B, 9–11; HAMPEL 1892, 37–39; MOZSOLICS 1973, 134–135, Taf. 47, 2.

*List 2. 4. Sântana-Type*

**89. Aiud/Nagynyed/Straßburg am Mieresch** (Romania, Alba) – depot (Ha A1) – 14: PETRESCU-DÎMBOVIȚA 1998, 32–33, Taf. 17, 132–136, Taf. 18, 137–140, 142–144, Taf. 19, 145–154, Taf. 20, 157–160, Taf. 22, 167–170, Taf. 23, 171–183, Taf. 24, 184–188.  
**90. Balc/Bályok 1** (Romania, Bihor) – depot (Br D) – 2: HAMPEL 1899, 377; HOLSTE 1951, 16, Taf. 16, 30, 27; PETRESCU-DÎMBOVIȚA 1978, 98, Taf. 20a, 9–10; PETRESCU-DÎMBOVIȚA 1998, 33, Taf. 22, 162–163.  
**91. Debrecen-Fancsika 1** (Hungary, Hajdú-Bihar) – depot (Ha A1) – 2: MOZSOLICS 1985, 110, Taf. 212, 1–2; PATAY 1966, Abb. 2, 10–12.  
**92. Galošpetreu/Galospetri** (Romania, Bihor) – depot (Br D–Ha A1) – 2: CHIDIOȘAN–SOROCEANU 1995, 173–174, Abb. 3, 25–26.  
**93. Kemece 1** (Hungary, Szabolcs-Szatmár-Bereg) – depot (Ha A1) – 1: JÓSA 1893, 167, I. T. 7; JÓSA–KEMENCZEI 1965, 22, XXXII. T. 23; MOZSOLICS 1985, 132, Taf. 189, 10.  
**79. Kriva/Kryva/Tiszakirva-Sokoliv Kamin** (Ukraine, Chust) – depot (Br D) – 8: KOBAL' 2000, 83, Taf. 9, 27;

MOZSOLICS 1973, 183.

**94. Nyíregyháza-Bujtos 2** (Hungary, Szabolcs-Szatmár-Bereg) – depot (Br D) – 2: MOZSOLICS 1973, 161, Taf. 9, 16–17.  
**95. Moldovița/Carlsdorf** (Romania, Caraș-Severin) – stray find: PETRESCU-DÎMBOVIȚA 1998, 33, Taf. 21, 161.  
**31. Polešovice** (Bohemia, Uherské Hradiště) – depot (Ha A1) – 7: SALAŠ 1997, Taf. 22, 562–563, Taf. 23, 564–566, 569–571.  
**96. Spálnaca/Ispánlaka 2** (Romania, Alba) – depot (Ha A1) – 1: TÉGLÁS 1892, 406–407; PETRESCU-DÎMBOVIȚA 1978, 127–131, Taf. 156, 566; PETRESCU-DÎMBOVIȚA 1998, 33, Taf. 20, 155.  
**97. Sâna/Stîna/Sâna de Sus/Stîna de Sus/Felsőbobáld** (Romania, Satu Mare) – depot (Br D) – 1: HOLSTE 1951, 18, Taf. 33, 29; MOZSOLICS 1973, 134, Taf. 45a, 4; BADER 1978, Pl. LXXI, 7; PETRESCU-DÎMBOVIȚA 1978, Taf. 47a, 5; PETRESCU-DÎMBOVIȚA 1998, 33, Taf. 22, 165.  
**98. Sântana/Újszentanna/Neusanktanna** (Romania, Arad) – depot (Br D – Ha A1) – 2: GOGĂLTAN–SAVA–MERCEA 2013, Pl. 2, 2a–b.  
**99. Sînnicolaul Român/Oláhszentmiklós 2** (Romania, Bihor) – depot (Br D) – 1: PETRESCU-DÎMBOVIȚA 1978, 106, Taf. 46A, 1, 3–4; PETRESCU-DÎMBOVIȚA 1998, 33, Taf. 22, 164; SOROCEANU 2012, 90–92, Taf. 25, 10.  
**100. Tăut/Feketetót/Körösfeketetót** (Romania, Bihor) – depot (Ha A1) – 2: HAMPEL 1886B, 72; HAMPEL 1892, 34; HOLSTE 1951, 16, Taf. 31, 3; MOZSOLICS 1973, 151, Taf. 48, 1–2; PETRESCU-DÎMBOVIȚA 1977, 33, Taf. 213, 17, Taf. 279, 16; PETRESCU-DÎMBOVIȚA 1978, 131, Taf. 159, 6k; PETRESCU-DÎMBOVIȚA 1998, 33, Taf. 20, 156, Taf. 22, 166.

*Possible fragment of a Sântana-Type<sup>19</sup>*

**101. Bystřice pod Hostýnem** (Bohemia, Kroměříž) – depot (Ha A1) – 10 (?): SALAŠ 2005A, 311–313; SALAŠ 2005B, Tab. 99, 40–41.

*List 2. 5. Nyírszölős-Hybrid type<sup>20</sup>*

**102. Mačkovac** (Croatia, Nova Gradiška) – depot (Ha A1) – 1: KARAVANIĆ 2001, 9, Tab. 7, 1.  
**103. Nyírszölős** (Hungary, Szabolcs-Szatmár-Bereg) – depot (Br D) – 2: MOZSOLICS 1973, 162, Taf. 55, 2–3.  
**104. Topličica/Novi Marof 1** (Croatia, Krapina) – depot (Ha A1) – 1: LJUBIĆ 1889, 60–62; VINSKI–GASPARINI 1973, 186, Tab. 76, 16.

*Uncertain fragment of a Nyírszölős-Type*

**105. Crasna/Kraszna** (Romania, Sălaj) – depot (Ha A1) – 2: HAMPEL 1879, 45; FETZER 1897, 358; MOZSOLICS 1973, 152; PETRESCU-DÎMBOVIȚA 1978, 118, Taf. 92A, 1–2.

*List 2. 6. Miniature*

**106. Bátonyterenye/Nagybátöny** (Hungary, Nógrád) –

grave 209 and 934 – 2: PATAY 1954, 42, 46, Abb. 17, 4–5.

**107. Píliny** (Hungary, Nógrád) – grave – 1: HAMPEL 1886A, LXX. T. 9; HAMPEL 1892, 113–117; FOLTINY 1955, 31, Taf. 15, 10.

*List 2. 7. Uncertain fragments*

**89. Aiud/Nagynyed/Straßburg am Mieresch** (Romania, Alba) – depot (Ha A1) – 14: PETRESCU-DÎMBOVIȚA 1998, 32–33, Taf. 18, 141.

**108. region of Bonyhád** (Hungary, Tolna) – depot (Ha A1) – 1: WOSINSKY 1890, 41, III. T. 32; HAMPEL 1892, 16, CLIII. T. 32; MOZSOLICS 1985, 102–104, Taf. 39, 16, 23.

**109. Borzhava/Borzsova/Borzsa** (Ukraine, Berehove) – depot (Ha A1) – 1: LEHÓCZKY 1888, 156–157; HAMPEL 1892, 18; BERNJANKOVIČ 1960, 363–364, Taf. XIII, 8; KOBAL' 2000, 76, Taf. 57B, 7.

**110. Borzhavs'ke/Priborzhavs'ke/Nagycsongova** (Ukraine, Vinogradovo) – depot (Ha A1) – 1: HAMPEL 1886A, 49; KOBAL' 2000, 76, Taf. 51, 23.

**87. Călugăreni/Mikeháza/Mikháza** (Romania, Mureş) – depot (Ha A1) – 7: PETRESCU-DÎMBOVIȚA 1998, 32, Taf. 22, 163A.

**111. Căpleni/Kaplony 1** (Romania, Satu Mare) – depot (Br D) – 2: BADER 1978, 122, Pl. LXXIX, 4–5; PETRESCU-DÎMBOVIȚA 1998, 32, Taf. 16, 128, Taf. 17, 129.

**9. Drslavice 2** (Bohemia, Uherské Hradiště) – depot (Br D2) – 4: SALAŠ 2005A, 332–342; SALAŠ 2005B, Tab. 171, 393, 396.

**112. Gemer/Sajógömör** (Slovakia, Rimavská Sobota) – stray find: PAULIK 1965, 59, Tab. XVI, 1.

**77. Géberjén** (Hungary, Szabolcs-Szatmár-Bereg) – depot (Br D) – 3: MOZSOLICS 1973, 137, Taf. 58A, 17.

**113. Gușterița/Szenterzsébet/Hammersdorf 2** (Romania, Sibiu) – depot (Ha A1): PETRESCU-DÎMBOVIȚA 1978, 120–122; PETRESCU-DÎMBOVIȚA 1998, 32, Taf. 17, 130.

**114. Keszőhidegkút** (Hungary, Tolna) – depot (Ha A1): MOZSOLICS 1985, 29.

**115. Kispalád 2** (Hungary, Szabolcs-Szatmár-Bereg) – depot (Br D) – 1: SÖREGI 1939–1940, 103, 15. kép; MOZSOLICS 1973, 147, Taf. 39, 11–12.

**116. Lazy/Lázárpaták I** (Ukraine, Volovec) – depot (Ha A1) – 2: LEHÓCZKY 1885, II. T. 28; BERNJAKOVIČ 1960, 365; KOBAL' 2000, 84–85, Taf. 47, 32, 34.

**117. Malaya Dobron'/Mala Dobron'/Kisdobrony 1** (Ukraine, Uzhhorod) – depot (Br D) – 2: LEHÓCZKY 1910, 256–257; BERNJAKOVIČ 1960, 356; KOBAL' 2000, Taf. 39, 14–15.

**118. Mád-Pádihegy** (Hungary, Borsod-Abaúj-Zemplén) – depot (Br D) – 2: HELLEBRANDT 1980, 81, IV. T. 3–4; KEMENCZEI 1984, 119.

**119. Oradea-Mișca** (Romania, Bihor) – depot (Br D): PETRESCU-DÎMBOVIȚA 1978, 104, Taf. 39B, 14;

PETRESCU-DÎMBOVIȚA 1998, 32, Taf. 15, 117.

**31. Polešovice** (Bohemia, Uherské Hradiště) – depot (Ha A1) – 1: SALAŠ 1997, Taf. 23, 568.

**120. Tiszabездéd/Bezdéd** (Hungary, Szabolcs-Szatmár-Bereg) – depot (Ha A1) – 2 (?): HAMPEL 1891, 83, I. T. 29–30; HAMPEL 1892, 13, CLVI. T. 29–30; JÓSA–KEMENCZEI 1965, 20, XVI. T. 1–2.

**121. Vlčnov** (Bohemia, Uherské Hradiště) – depot (Ha A2): SALAŠ 2005A, 408–409; SALAŠ 2005B, Tab. 315, 5, 8.

**122. Zatyshne** (Ukraine, Berehove) – depot (Br D) – 3 (?): BERNJAKOVIČ 1960, 354; KOBAL' 2000, 100.

*Semi-finished*

**123. Sălacea/Szalacs** (Romania, Bihor) – stray find – 1: BADER 1972, 86, Fig. 1; PETRESCU-DÎMBOVIȚA 1998, 32, Taf. 17, 131.

*List 3. Asymmetrical armlets and anklets from Western European auction houses and private collections*

- 1. Gorny&Mosch GmbH** – (private collection, Munich) – (800 €): Kriva-Type, diameter of the spirals: 12 cm – 2 cm, length: 17,5 cm. <http://www.the-saleroom.com/en-gb/auction-catalogues/gorny-and-mosch-gmbh/catalogue-id-srgor10000/lot-a9627857-346e-48e1-b9fd-a401009e4a3a> (Fig. 8, 1).
- 2. Gorny&Mosch GmbH** – (private collection, Munich) – (800 €): Chomonyn-Type, diameter of the spirals: 14 cm – 8 cm, length: 25 cm. <http://www.the-saleroom.com/en-gb/auction-catalogues/gorny-and-mosch-gmbh/catalogue-id-srgor10000/lot-d6154881-0197-4237-8d97-a401009e49d7> (Fig. 8, 2).
- 3. GmCoinArt** (Collection of John Moore, England) – (3,000.00–4,000.00 €): Apa-Type variant 2, length: 24 cm, diameter of the great spiral: 14,5 cm. [https://www.gmcoinart.de/auction/misc\\_Armberge.aspx?los=40&lager=00104&ActiveID=1511&lang=en](https://www.gmcoinart.de/auction/misc_Armberge.aspx?los=40&lager=00104&ActiveID=1511&lang=en) (2014.08.05). (Fig. 9, 1)
- 4. Gm, CoinArt** (Collection of John Moore, England) – (8,000.00–38,000.00 €): Apa-Type variant 2, length: 28 cm, diameter of the great spiral: 16 cm. [https://www.gmcoinart.de/Auction\\_Detail\\_AxCMS?lager=00102&los=57](https://www.gmcoinart.de/Auction_Detail_AxCMS?lager=00102&los=57) (2014.08.05). (Fig. 9, 2)
- 5. Royal Athena** (ex German collection) – (12,500 \$): Salgótarján-Type, length: 21.5 cm, diameter of the great spiral: 12 cm. EISENBERG–PRICE 2010, 40, no. 82 (Fig. 9, 3).
- 6. Rupert Wace Ancient Art** (ex German private collection, acquired from the UK in 1995): Salgótarján-Type, length: 26,5 cm – 27 cm. <http://www.rupertwace.co.uk/Pair-spiral-arm-guards-DesktopDefault.aspx?tabid=6&tabindex=5&objectid=601482&categoryid=7859> (2014.08.10) (Fig. 9, 4).
- 7. Gorny&Mosch A198** (lot 510B), Timeline auctions – (1760–2010 €): Salgótarján-Type, length: 27 cm,

- weight: 745 g. <http://www.timelineauctions.com/lot/salgotarjan-arm-spiral/9150/> (2014.08.05) (Fig. 10, 1).
8. **Hermann Historica** – (1500–1800 €): Nyírszölös-Type, width: 17 cm. [http://www.hermann-historica-archiv.de/auktion/hhm60.pl?f=NR\\_LOT&c=2091&t=temartic\\_A\\_D&db=kat60\\_a.txt](http://www.hermann-historica-archiv.de/auktion/hhm60.pl?f=NR_LOT&c=2091&t=temartic_A_D&db=kat60_a.txt) (2014.08.25) (Fig. 10, 2).
9. **Hermann Historica** (Private Collection from Dortmund) – (1200 €): Salgótarján-Type with Kriva-Type features, height: 21 cm. [http://www.hermann-historica.de/auktion/hhm65.pl?f=NR\\_LOT&c=438&t=temartic\\_AW\\_D&db=kat65\\_a.txt](http://www.hermann-historica.de/auktion/hhm65.pl?f=NR_LOT&c=438&t=temartic_AW_D&db=kat65_a.txt) (2014.08.05). (Fig. 10, 3)
10. **Unknown** – (12,500 \$): Salgótarján-Type, height: 23.8 cm, width: 13.9 cm. <http://www.iliadny.com/furniture/antiquity-greek-roman-decorative> (2014.08.10) (Fig. 10, 4).
11. “Eger”, Hungary<sup>1</sup>, private collection of Zoltán Repkényi<sup>2</sup> – (3.33 €) – 1: Salgótarján-Type. Accord-

- ing to the owner’s statement the fragment was acquired from a Hungarian marketplace and it was probably found in the vicinity of Eger. This rhomboid-sectioned great spiral fragment is equipped with a spiny disc-like middle-knob. 10,5 cm x 6,3 cm, thickness: 0,5 cm x 0,5 cm, diameter of the casted middle-knob: 4,5 cm x 4,8 cm, height of the middle-knob: 3,7 cm, weight: 121 g (Fig. 11).
12. **Unknown** – (Collection of Lord McAlpine, ex Egger Collection) – 1: Salgótarján-Type. BROWN ET AL. 1987, 94–95.
13. **Unknown** – (Collection of Lord McAlpine) – 2: Salgótarján-Type. BROWN ET AL. 1987, 96.
14. **Hungary** – 1: Salgótarján-Type. EGG–PARE 1995, 54, Taf. V.
15. **Hungary** – (ELTE Institute of Archaeological Sciences) – 2: Apa-Type – variant 2, Salgótarján-Type, (unpublished).

## Notes

- 1 I am grateful to Tibor Kemenczei for the possibility of evaluation of the artefacts. I would also like to thank to Ildikó Szathmári and Botond Rezi and Árpád Kolumbán for their advices, suggestions and the proofreading of the text. I would also like to thank to Gábor V. Szabó and János Dani for their helping.
- 2 Due to its fragmentary state, the original decoration of the shaft of No. 7 remains unknown, therefore it cannot be sorted into this grouping.
- 3 It should be noted that combination of different decoration types are also known (e. g. Eger) (HÄNSEL 1968B, Taf. 50, 10–12).
- 4 The macroscopic observations were made by high resolution pictures and a Conrad Electronic’s Digital microscope camera (type: USB 9.0MP 200X).
- 5 Due to very few works were written on the manufacture techniques of this artefact group, I take into account the suggestions of Árpád Kolumbán metal-smith (Romania, Târgu Mureş) and Ádám Vecsey restorer-metalsmith (Budapest History Museum) for which I am gratefull to them. For their inspiring discussions and suggestions I also would like to thank to Botond Rezi, Eszter Fejér, Ildikó Szathmári.
- 6 This casting fault can be associated with the imprecise positioning of the bivalve mould which is a quite characteristic (minor) casting fault among the Late Bronze Age bivalve molded artefacts.
- 7 The formation of the ring part in the last stage could influence the above length.
- 8 Kézfejtvédő spirális, korongos tekeres, tekeres, karvédő tekeres, kézfejtvédő tekeres, kartekeres.
- 9 Armberg, Armreif mit entgegengesetzten Endspi-

- ralen, Armreif mit einer Spiralscheibe, Asymmetrischen Fußbergen, handschützene Spiralarmbergen, Handschutzspirale, Handberg, Ober-Armspiralen, Scheibenrollen.
- 10 Hand-and elbow-protecting arm spiral/spiral rings, heavy coil, spiral arm-guard.
- 11 Spirale discoïdale, brăcelet en spirale.
- 12 The close relations between the two groups can be well-illustrated with the examples from Topolnica, Kemece and Hungary. The cross-sections and dimensions of these hybrid forms can be related to the later form of the asymmetrical arm-and anklets, however they are equipped with two great spiral (HAMPEL 1886A, XXXV. T. 4; HAMPEL 1896, CCXXXIV. T. 3; HARDING 1995, 36, Taf. 58, 1–2).
- 13 The source of typology – the publications – were written in different stages of the research and operate with different kinds of publishing methods. Therefore, significant information like cross-sections, dimensions (weight, length etc.), macroscopical features and even decorations are unknown or hard to analyze.
- 14 In connection with the development of the Salgótarján-Type an interesting object from Chomonyn can be underlined (KOBAL’ 2000, Taf. 10, 5). The above object is not equipped with a middle-knob and its outer coil is decorated with similar cross-hatched triangle patterns as the prototype from Hodejov (DAVID 2002B, Taf. 171, 10). Its other features resemble to Late Bronze Age types (cross-section – Salgótarján-Type, terminals – Kriva-Type). Interestingly, this object was buried as a part of a Br D hoard which contains other different Late Bronze Age types (e. g. Chomonyn-Type, Kriva-Type). Based on this fact, I

- suspect that the object in question can rather be interpreted as a hybrid Late Bronze Age form which strongly related to its predecessors.
- 15 The pendants can be fastened to the shaft of the middle-knobs (e. g. Ticvanu Mare) or hanged on closed rings (e. g. Załęże) (SĂCĂRIN 1981, 98, Pl. III–IV; BLAJER 1984, Taf. 66, 215–216). Based on the drawings of the objects, their manufacturing or fastening method cannot be described.
- 16 Botond Rezi suggested another type of sorting during our discussion on the typology of the asymmetrical arm-and anklets. According to him, it is possible to analyze the Kriva-Type and a Sântana-Type as one type’s two, territorially different variants. His point can be supported by the one from Kriva which shows similarities with both type (KOBAL’ 2000, Taf. 9, 27).
- 17 The only difference in the deposition is that the breakage is more frequent during the Late Bronze Age (Ha A–Ha B stages) (MOZSOLICS 1985, 29).
- 18 The specimens from Bogdan Vodă, Gégény 2, Kék can also be associated with other arm-and anklet types (VON BRUNN 1968, 33; MOZSOLICS 1973, 63; KEMENCZEI 1984, 124, 174–175, Taf. LIXa, 15; MOZSOLICS 1985, 121, 131–132; MOTZOI-CHICIDEANU–IUGA 1995, Abb. 6, 21, 26; PETRESCU-DIMBOVIȚA 1998, 32, Taf. 16, 121–122; KACSÓ 2010, Pl. 13, 1).
- 19 However, it can be associated with the Nyírszölös-Type.
- 20 Hybrid-Type of the Kriva- and Sântana-Types.
- 21 Grateful thanks are due to Gábor V. Szabó who called my attention to this artefact.
- 22 I am indebted to Zoltán Repkényi who generously contributed to the publication of the object (Fig. 11).

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## A KÖZÉP-EURÓPAI “KÉZVÉDŐ SPIRÁL” ADATOK A BRONZKORI ASSZIMETRIKUS KAR-ÉS LÁBPERECEKRŐL

### Kivonat

A tanulmány kiindulási pontját Delhaes István (1843–1901), Magyar Nemzeti Múzeumban őrzött, őskori gyűjteményének hét “kézvédő spirálja” adta (1–3. kép). A mindezidáig közöletlen tárgyakkal, mind lelőhelye, mind pedig előkerülési körülményei ismeretlenek. Mindezen oknál fogva, lehető legpontosabb vizsgálatukhoz elengedhetetlen volt a teljes tárgycsoport tipo-kronológiai újraértékelése a ma rendelkezésre álló ismereteink alapján. Emellett a gyűjtemény darabjainak dokumentációja során egyedülálló lehetőségünk nyílt számos érdekes makroszkópikus megfigyelés elvégzésére, melyek újabb adatokat szolgáltatottak, de leginkább további kérdéseket vetettek fel a tárgycsoport készítése technikája, viselete és lehetséges funkciója kapcsán (4–7. kép).

Megítélésem szerint a makroszkópikus megfigyelések legfontosabb és egyben egyik legmeggyőzőbb eredményei közé tartozik a középgombok készítése technikájának meghatározása. A kétrészes öntőformával történő öntés nyomai világosan elkülöníthetőek a vizsgált darabokon, gondolhatunk ezalatt az eltávolított öntőcsap és az öntési varratok maradványaira, de akár kisebb öntési hibákra is (4. kép 1–4, 7–10). Másik jelentős megfigyelésnek tarthatjuk a tárgyak karikáján és a nagyspirálok külső menetén látható kopásnyomok jelenségét (7. kép). Úgy gondolom, hogy ezen nyomok bronzkoriként való meghatározása részben intenzivitásuk, részben a velük egybeeső ábrázolások alapján lehetséges (EMÖDI 2011, 186–187, Fig. 2; KOVÁCS 1992, Abb 62; MATIĆ 2010, 147, Sikla 5). Problémásnak tekinthetjük viszont a tárgy testének készítés technikáját és az egyes formálási szakaszok sorrendjét, ezekről megfigyeléseink alapján mindössze feltételezéseket és lehetséges módszereket tudunk csak felvázolni. Ebből kifolyólag úgy vélem, hogy egyfelől a fenti két eredmény pontosítása és igazolása miatt, másrészt pedig a tárgy készítése technikájának valódi megértéséhez a jövőben elengedhetetlen archaeometriai elemzé-

sek (pl.: kristályszerkezet keresztmetszet csiszolat vagy elektronsugaras mikroanalízis) alapján kísérleti módszerekkel további alá vizsgálat vetni a szóban forgó tárgycsoportot.

Habár lehetőségeink szerint törekedtünk arra, hogy a tipokronológia alapját szolgáló adatbázis a lehető legteljesebb legyen, számos olyan kritikus problémával szembesültünk, amelyek ennek a vizsgálati módszernek az eredményeit jelentősen befolyásolták (1–3. lista). Sajnálatos módon ide sorolhatjuk a nyugat-európai aukciós házakban árult vagy magángyűjteményekben őrzött, bizonytalan kontextusuk okán tudományos szempontból nézve gyakorlatilag teljesen értékelhetetlen leletek magas száma (8–11. kép). Elszomorító, hogy ezek között számos ritka, a tárgycsoport időrendjének és tipológiájának szempontjából kiemelkedő jelentőségű leletet is láthatunk (8. kép 2, 9. kép 2, 10. kép 2, 3). Egy másik probléma, hogy a publikált leletek egy meghatározó része közöletlen, létezésükről mindössze szakirodalmi utalásokból tudunk, mitöbb a legtöbb tárgy dokumentációja elégtelen még az alapvető tipológiai jegyek (díszítések, átmetszetek) meghatározásához is. Hasonló probléma, hogy a pontos metrikai adatok (pl.: súly) jórészt nincsenek feltüntetve, ebből kifolyólag a tárgycsoport időbeli méretnövekedései vagy metrikai alapú klaszszifikációja jelenleg nem lehetséges. Habár a fenti problémák nagy része kutatástörténeti okokkal bír, hiszen egységes publikációs protokoll máig nincs kidolgozva a Kárpát-medencei fém tárgyakra, mégis a tipológia elmélyítéséhez ezen adatok rögzítése elengedhetetlen. A fenti okokból kifolyólag tanulmányunkban, a kutatás korábbi eredményire támaszkodva, a lehetőségekhez mérten megalkotható modellt hoztunk létre, amelyet a teljes tárgycsoport egységes újraközlésével a jövőben mindenképp megvitatni, tesztelni, lebontani és újraértékelni kell (13–14. kép; 1 táblázat). A típusok elkülönítését időrendi, formai (átmetszetek, középgomb típusok, díszítések, végződés) és területi szóródás alapján

határoztuk meg (12–13. kép). Az így létrehozott modell alapján úgy tűnik, hogy az asszimmetrikus kar-és lábperecek első példányai (Apa típus) a Br A2-ben jelentek meg és néhány kivételtől eltekintve jórészt a Kárpát-medence keleti felén kerültek deponálásra (14–15. kép). Hozzávetőlegesen alacsony számuk és bizonytalan tipológiájuk miatt – gondolhatunk itt az átmetsetek alapján elkülönített variánsokra – területei csoportjaik nem választhatóak el. Az Apa-típus jelentősége, hogy a Br B-ben olyan változataik tűnnek fel, amelyek stiláris és technológiai jegyei (pl.: díszítések és középgomb felszerlése) a késő bronzkori típusok esetén válnak általánossá (13. kép). Tanulmányunkban, a korábbi feltételezéseket követve ezeket az Apa típusba sorolható darabokat neveztük prototípusnak (KEMENCZEI 1965, 111). Ellentétben a korai példányokkal, a késő bronzkori darabok viszonylag jól elkülöníthető csoportokba rendeződnek. Legdominánsabb képviselőjük a Br C és Ha A között deponált Salgótarján-típus, amely megjelenését tekintve a Kárpát-medence északkeleti részén sűrűsödik, de példányai sporadikusan ezen zárt régió kívülre is eljutnak (16. kép). A fenti forma képviselői a Delhaes gyűjtemény darabjai is, melyek pontos párhuzamait jól tudtuk vázolni a szóban forgó típuson belül. Egy másik jelentős forma a Tiszakriva/Kriva típus, melynek elterjedése a Rétköz, Tiszahát és Szatmári síkság területére koncentrál (13. kép, 16. kép). Legkorábbi példányai a zajtai kincsben találhatóak meg, viszont deponálása meglepő módon még fiatalabb együttesekben is (Podgorjani – Ha B1) megfigyelhető (14. kép). Nagyjából ugyanezen a területen sűrűsödik a különleges formájú hangsúlyos spirálokkal ellátott Csongor/Chomonyn típus is a Br D és Ha A között (13–14. kép, 16. kép). A formája és díszítése alapján jól elkülöníthető az Újszentanna/Sántana típus, mely egy sajátos, zártabb csoportot képvisel, elsősorban Körös vidék keleti részén (13–

14. kép, 16. kép). A késő bronzkori asszimmetrikus kar-és lábperecek legutolsó képviselője a Csongor/Chomonyn és Újszentanna/Sántana típusok kevérekjegyeit magán viselő Nyírszőlős “hibrid-típus”, melynek elterjedése részben fedi a fenti két típus megjelenési területét a Br D és Ha A1-es szakaszban (13–14. kép, 16. kép).

Összefoglalva elmondhatjuk, hogy a Delhaes gyűjteményben található hét “asszimmetrikus kar-és lábperec” egy speciális, a Br B-től egészen a Ha B1-ig kontinuuosan deponált tárgycsoport körébe tartozik. Pontos keltezésük szörvány voltak miatt nem meghatározható, legvalószínűbb viszont, hogy a Salgótarján-típus fő deponálási időszakában a Br D és Ha A1 között kerülhettek a földbe. Készítési helyüket illetően, a típus elterjedése alapján a Kárpát-medence északkeleti zónáját tartjuk a legvalószínűbbnek. Funciójuk kérdését tekintve, messze vagyunk még a végső választól, mindenestre, megítélésem szerint a Rómer Flóris által felvetett “védőfegyver elmélet” nehezen bizonyítható. Maga a “kézvédő spirál” terminus pedig a Tiszafüred-majoroshalmi sír és az ábrázolások domináns része alapján elvethető, helyette az asszimmetrikus kar-és lábperec megnevezést támogatjuk. Sokkal valószínűbb, hogy ezen tárgyak nagy része inkább egy hivatalkodó, némileg túlméretezett ékszer lehetett. Ebben a tekintetben érdekes adatokkal szolgálhat a Delhaes gyűjtemény tárgyain észlelt kopásnyomok vizsgálatának kiterjesztése a többi példányra is. A kérdéses tárgyak mindennapi használaton túlmutató esetleges többlet jelentését támaszthatják alá a túlméretezett és miniatűr példányok, a szimbolikus aspektussal bíró alkatrészek (függők, csillag alakú középgombok) és maga tény, hogy egy történelmi évszámokkal leírva rendkívül hosszú időszakon keresztül rejtették el őket kincseletek részeként (17. kép).

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