

Tomasz Bochnak

## **Early Circular Umbones of the Przeworsk Culture. The Role of Local Tradition and Celtic Influences on the Diversity of Metal Parts of Shields at the Beginning of the Late Pre-Roman Period**

In the late Pre-Roman period, the people of the Przeworsk culture used two basic types of shields with metal ferrules<sup>1</sup>. The first type includes shields modelled upon Celtic weapons, reinforced with a vertical rib and ferruled with band-shaped umbones (with open calottes), whereas the second type includes flat-sheet shields, ferruled with umbones with closed, circular calottes and with circular or rectangular edges. The described diversity is, in the opinion of the author of this paper, a fundamental criterion for typological analysis of shield ferrules. This paper is devoted to the genesis and diversity of older umbones with closed calottes; however, it is also necessary to present the basic statements referring to band-shaped umbones.

### **Genesis of Shields with Ribs**

The emergence of shields with ribs in the environment of the Przeworsk culture is commonly believed to be of Celtic influence. A large shield reinforced by a rib ferruled with a metal band-shaped umbo appears in the Celtic environment approximately during the LT B phase (Haffner 1976, 27, 110; Domaradzki 1977, 62; Brunaux, Lambot 1987, 130), even though older presentations of similar pieces of armament are known from the Villanova culture (Stary 1981, 292, 303, 304). It is believed that the Celts could have adopted the manner of using large shields from the Mediterranean peoples (Brunaux, Lambot 1987, 97). A significant role in the shaping of the defensive armament of the Celts was probably played by contact with Illyrian tribes and the peoples in-

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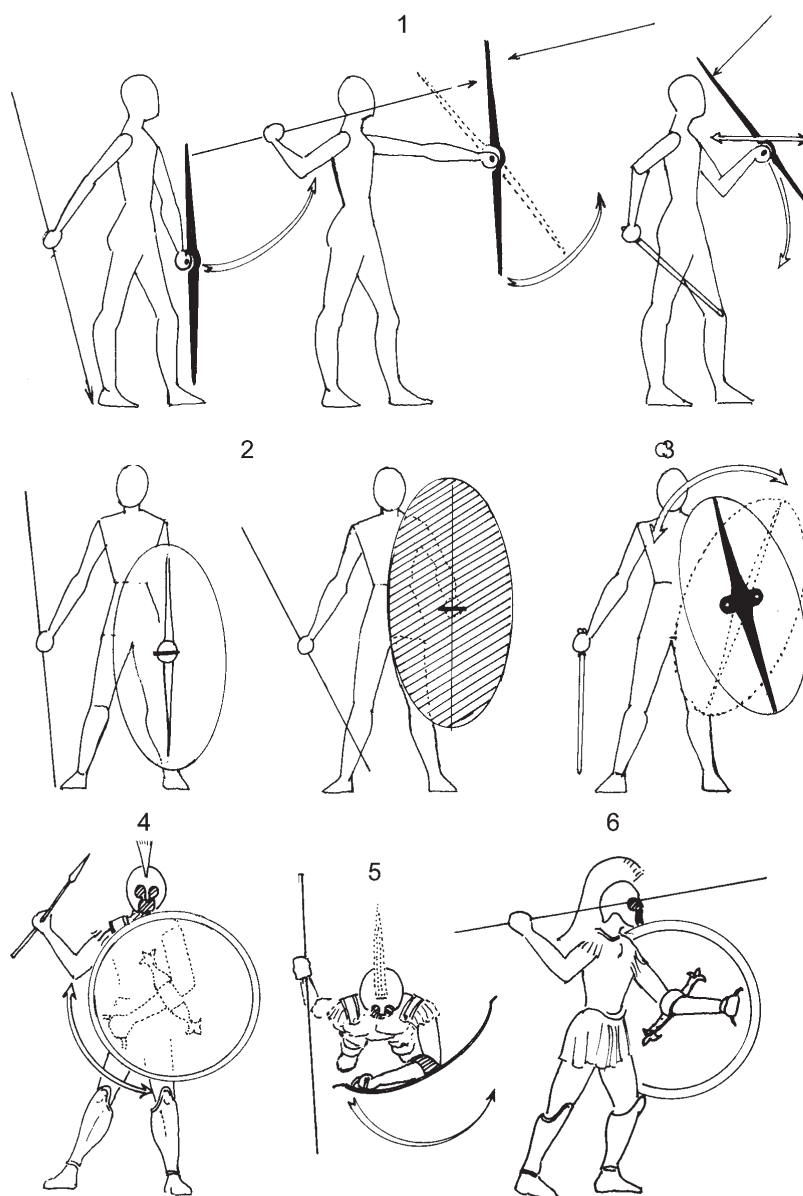
<sup>1</sup> The history of studies on shield ferrules used in Europe (with particular attention given to Polish lands) in the period of Celtic domination was presented in a separate paper (Bochnak 2005, 103–106); therefore, this paper omits this issue and concentrates on the subject determined in the title. The paper referred to above also discusses finds of band-shaped umbones from the area of the Przeworsk culture, which are left out of this article.

habiting the Apennine Peninsula, in particular the Samnites. On the basis of archaeological data and accounts of ancient authors, it is believed that the large Samnite shields could have been borrowed by Celtic tribes, and most probably this was also a beginning of the shields used by Roman legions (Stary 1979, 104, 105; 1981, 297). The sheet of Celtic shields remained flat, whereas Roman shields were convex. This difference is difficult to explain. A. Rapin supposed that a convex shield could have protected better from thrusts, whereas a flat one could have provided a more efficient protection from slashes. In his opinion, flat shields were often used in the antiquity by the cavalry (Brunaux, Rapin 1988, 15). It seems that apart from Illyrian and Samnite impacts, the influence of Greek civilisation on the Hallstatt culture also had a certain share in the development of Celtic weaponry. Proof of this is provided by a scene presented on a sheath from Hallstatt, dated from the 5<sup>th</sup> century B.C. The warriors presented there are equipped with shields, helmets and sometimes with shin guards, which could indicate the impact of hoplite armament. An element typical of Greek civilisation is also a curve shaped decoration adorning the shields. It is very significant that the Celts did not take over from the Greeks the double-point set of grips (*hoplon*)<sup>2</sup>, which allowed for significant freedom of movement. The hoplites had shields with two grips, one of which was attached to the forearm, and the second was held by the hand. In this manner, the shield was supported on the forearm, and if it was necessary, the left hand could be used to a limited extent; i.e., to hold a javelin. In the case of the Celtic shield, its weight made any prolonged use tiring, and the left hand could not fulfill any additional functions (**Picture No. 1**). Therefore, it is also necessary to notice that the use of shields with a one-point set of grips was a significant hindrance during horse-riding. On the other hand, the Celtic shield made it possible to protect oneself by bending the outstretched hand, which deflected thrusts.

Iconographic sources (including representations on the Hallstatt sheath and on the ferrule of a belt from Vele Ledine) and numerous finds of Roman art (Bieńkowski 1928) show that large, oval shields were used both by infantrymen and by cavalry. There are also a few examples confirming the use of shields by warriors fighting from carts. One such proof is a coin showing Lucius Hostilius Saserna I (the so-called Saserna I type), whose reverse presents a Celtic warrior equipped with a shield standing on a cart (Ostrowski 1999, 156, picture No. 92b). Most

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<sup>2</sup> Presentations of Celtic warriors holding a *hoplon*-stylised shield are common in Romantic art, yet incorrect from an archaeological point of view (Brunaux 1986, 60, 106).



Picture No. 1. Differences in using a single and double point set of grips, based on a model of a Celtic shield provided with a rib (1-3) and a Greek shield (4-6): 1 – deflecting a thrust by means of bending the outstretched arm; 2 – pushing the shield further out increased the field of protection; 3 – movement of the wrist allowed for relatively quick maneuvers of the shield; 4 – shield movements are within one level; 5, 6 – bending the forearm makes quick attack possible. (according to Brunaux ; Rapien 1988, 20 ; Picture No. 10).

probably, various manners of fighting influenced the diversity of structures and sizes of shields, yet it seems that until the eve of the La Tène period, there was no special equipment intended exclusively for infantrymen or cavalrymen<sup>3</sup> (Brunaux, Lambot 1987, 97).

## Genesis of Shields with Circular Umbones

Shields with circular umbones in the central section were commonly used in Europe in the Hallstatt period and at the beginning of the La Tène period. This is testified to by iconographic and archaeological data from the area of the British Isles, the Iberian Peninsula<sup>4</sup>, the Apennine Peninsula and present-day Austria (Couissin 1926, 144, 145; Stary 1981, 293, 294, 298, 300, 301, Abb. 1; 1981a, 164, Taf. 1; Lorrio 1997, 192–194; Birkhan 1999, 1120). Some of the discussed shields were round, others were oval; for example, shields presented on a *situla* currently stored in Providence (Rhode Island, USA). Statues of warriors from Este (Italy) dated from the Hallstatt C (Ha C) period and figures of carts from Strettweg (Austria) also have oval shields with circular umbones (Stary 1981, 293, 304, Egg 1996).

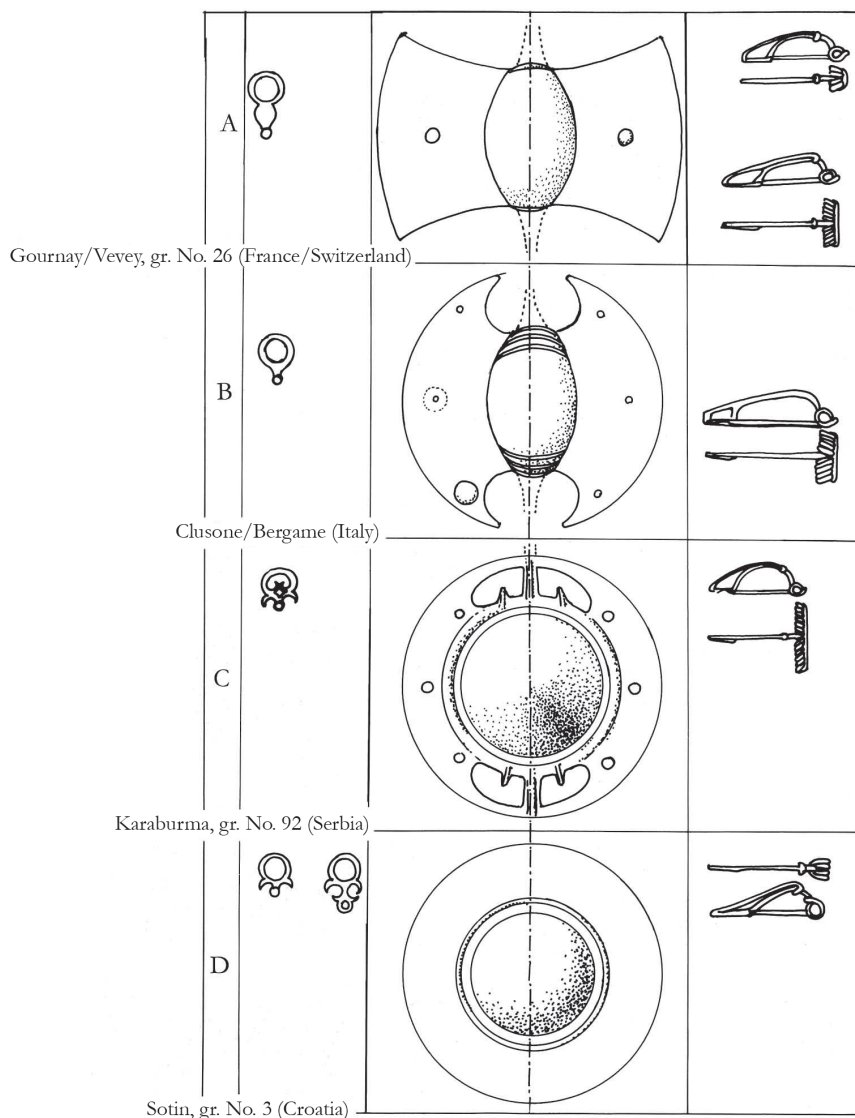
Similar shields were also used on Polish lands, which is confirmed by presentations on ceramic dishes of the peoples inhabiting these areas (Fogel 1982, 102). A vessel of the Lusatian culture from Sobiejuchy (grave No. 45 – Kujawsko-pomorskie province, Poland), dated from the end of the Ha C period or the beginning of the Ha D period, bears engravings interpreted as presentations of metal shields of the “Ognica” type or leather shields (similar in appearance) (Gediga 1970, 112, Picture No. 35, Bukowski 1971, 177–180, Picture No. 1; Sylwestrowicz 1979, 28). Similar drawings are also present on face urns of the Pomerania culture; e.g., a drawing of a shield with concentric circles visible on an urn from Strzelno (or Samostrzel) in the Kujawsko-pomorskie province (Bukowski 1971, 183, 184, Picture No. 5.5). Elements of figurative presentations on urns from Gdynia-Redłowo, Glińcz Nowy, Grabów Bobowski and Lubieszów Tczewski are considered to be images of shields (all these places are located in the Pomorskie province)

<sup>3</sup> There are premises which allow us to assume that in the Roman army, various types of shields were quickly differentiated. This phenomenon may be confirmed by Titus Livius, who mentions that Titus Manlius, preparing for a fight, took up an “infantry shield” (*History*, VII, 10).

<sup>4</sup> The tradition of using round shields by the peoples inhabiting the Iberian Peninsula is mentioned by Polibius (*History* III, 114) and Diodor of Sicily (*Historical Library*, V, 33).

(La Baume 1920, 1934, 1935, 1950, 159; Łuka, 1971, 47, Picture No. 14; Bukowski 1971; Sylwestrowicz 1979, 29–31, Picture No. 23, 26; Fogel 1982, 102). It is necessary to underscore the fact that distribution of shields with circular umbones in the Hallstatt period was probably not a result of inter-cultural contacts, but constituted a typical example of the concurrent development of the form.

The genesis of metal circular umbones which appeared in Europe in the period of Celtic domination has not yet been clarified (Łuczkiwicz 2004, 5). Some researchers consider them a local product of peoples inhabiting the Central European *Barbaricum* (Jahn 1916, 165, 166; Schönberger 1952, 41); however, in the opinion of others, umbones of this type were developed as a result of the evolution of the La Tène band forms, and the finds of the Przeworsk culture are an imitation of Celtic specimens (Klindt-Jensen 1950, 46–48; Woźniak 1970, 160; Domaradzki 1977, 70, 71; Brunaux, Rapin 1988, 66, 67, Picture No. 33; Rapin 1983/1984, 78). The advocates of the “evolutionary” theory of the genesis of umbones with closed calottes point to the existence of a sequence of band-shaped forms in archaeological sources, in which the calotte is gradually closed, which, in their opinion, led to the emergence of circular umbones (**Picture No. 2**). Important intermediate links in this evolutionary sequence are umbones of the Bartodzieje type and forms similar to the specimen from grave No. 92 from the Belgrade-Karaburma necropolis (Brunaux, Rapin 1988, 66, 67, Picture No. 33). However, this theory is burdened with two serious inadvertences. Whilst analysing the chronology of forms constituting individual elements of the discussed sequence, it turns out that the discussed concept is not corroborated by correctly dated specimens from the area of the Przeworsk culture and the Celtic circle. Studies on the transformations of shield ferrule forms in the Celtic environment are significantly hindered due to the changes in burial ritual, which took place from the end of the latter section of the middle La Tène period (LT C1) and which led to the disappearance of burial forms discernible by archaeological methods (Domaradzki 1977, 53, 54). A small number of shield ferrules from the LT C2 and LT D phases in comparison with the previous periods makes it difficult to carry out a typological and chronological analysis. Studies on the constructional transformations have to be based on insufficient finds from the area of the Balkan Peninsula, northern Italy and Gaul. Among the younger umbones, dated from the LT C2 phase and deriving from a sanctuary from Gournay-sur-Aronde, there are no forms with clearly closed calottes, even though there are specimens with fan-spanned edges (Type VII, according to A. Rapin) (Brunaux, Rapin 1988, 82). Finds from burial grounds in Arqua di Petrarca and Clusone, located in



Picture No. 2. Evolution outline of umbones from spindle-shaped to circular forms, synchronised with transformations in buckle forms and circular clasps with projections. (according to Brunaux, Rapin 1988, Picture No. 33).

northern Italy, confirm the occurrence of band-shaped umbones with closed calottes in the Celtic environment (**Picture No. 2.B**) only in the LT D1 and D2 phases (Gamba 1987, 250–252, 265, Picture No. 11:2, 20:1, Brunaux, Rapin 1988, 66, Picture No. 33). Analogous umbones (the so called Arqua-Mokronog type) are similarly dated in the area

of present-day Slovenia (Guštin 1991, 57, 58, Abb. 30). A bronze specimen from Karaburma (grave No. 92) provided as an example of the subsequent stage in the evolution of band-shaped forms (**Picture No. 2.C**) is dated from the last few decades before Christ (Todorović 1972, 77; Guštin 1984, 341).

The dating of specimens, which documents the evolutionary character of development of circular umbones, shows that there are no specimens older than the oldest forms with closed calottes deriving from the area of the Przeworsk culture. In the areas occupied by the Przeworsk culture, the first umbones with circular edges emerge in the A1 phase of the early Pre-Roman period (~end of LT C1 and LT C2 phase). Combining the distribution of umbones of this type in the area of Central Europe with Celtic influences is, according to the author of this article, dubious, because the specimens with hemispherical calottes are also found in the basin of the Elbe River and on Bornholm Island; i.e., areas where La Tène influences are less visible than in the area occupied by the settlements of the Przeworsk culture.

Apart from the reservations presented above, which refer to the chronology of umbones and which are believed to form a sequence leading to the emergence of forms with closed calottes, the second inadvertence is the omission of important elements related with the production technology of umbones and the structure of the shield. As mentioned earlier, there are two basic types of shields – those reinforced by a rib (often ferruled) or those devoid of this element – and the existence of intermediate forms is almost impossible<sup>5</sup>. Advocates of the theory on the emergence of round umbones from band-shaped forms often concentrate on a seeming similarity of metal ferrules, omitting the entirely fundamental, in the author's opinion, issue of shield structure, which a given umbo was ferruling. An outline describing the “evolution” of band-shaped umbones suggests that circular umbones emerged as a result of modification of band-shaped forms. These modifications were gradually performed by craftsmen producing metal shield ferrules, and their consequence was the formation of full umbones with closed calottes. However, it is necessary to point out that the production technology of band-shaped umbones significantly differs from the manner of producing a specimen with a closed calotte. These differences go back to the very beginning of processing iron, and the subsequent stages of forming band-shaped umbones cannot lead to circular umbones. The emergence of subsequent forms with closed calottes is the result of developing the process of forging a band-shaped umbo; yet in order to ob-

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<sup>5</sup> The problem of hybrid structures and combining certain elements of both types of shields is presented in a further section of this paper.



tain an umbo with a closed calotte, it is necessary to use different techniques, starting from the early stage of metal processing. A craftsman producing an umbo has to determine its type at the very start, and this will influence his subsequent activities<sup>6</sup>.

Where, therefore, should one look for the genesis of a circular umbo with a closed calotte? If it is assumed that the idea of an umbo derives from the tradition of the late Pre-Roman period, then it is possible to presume that its shape constitutes a certain reference to the forms of shield reinforcement used in that period, yet it is necessary to remember the natural conditions related with attempts to imitate analogous forms using a different material. In other words, introduction of new technologies and materials is often linked with attempts at imitating older, well-known forms with the use of new resources, yet due to the natural properties of such resources and the processing possibilities related with them, such a transfer is not always possible.

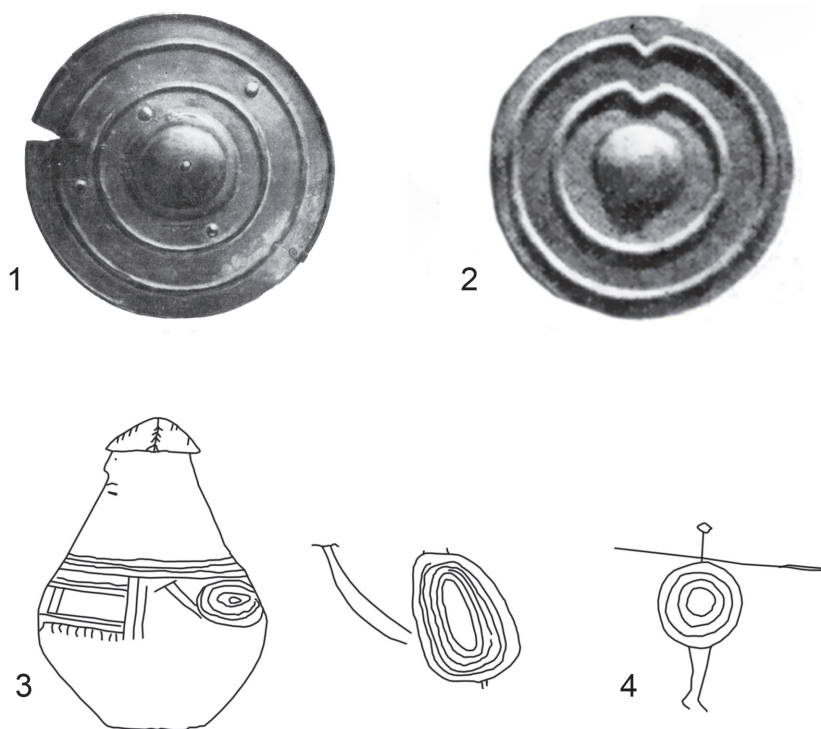
Older finds of shields (or their fragments) from the areas of Europe located beyond the sphere of Mediterranean culture are known from Kvärlöv (Martens 2001, 135–142) and Hjortspring (Rosenberg 1937; Randsborg 1995). Both the wooden umbo from Kvärlöv, radiocarbon dated from 760–410 B.C., and the specimens from Hjortspring, whose chronology was determined to be from the end of the 4<sup>th</sup> / beginning of the 3<sup>rd</sup> century B.C., have spindle-shape forms and slightly resemble the significantly reduced ribs (*spinae*) of La Tène shields. These umbones were attached to flat boards using wooden pins (Kvärlöv) or resin (Hjortspring). If one was to look for prototypes of metal umbones among the above-mentioned Scandinavian finds, it could be concluded that the older metal finds should also be spindle-shaped. However, it is necessary to notice that the elongated shape of wooden “umbones” depends on the fibrous structure of wood. If an umbo was bored into wood, it was given a spindle shape in order to avoid the cracking of the more delicate parts; i.e., those which were shaped whilst cutting across wood rings. It is understandable that whilst forging an iron sheet, it is possible to omit these aspects, yet providing a metal umbo with a spindle shape, however doable, requires a set of proper, specialised tools. Therefore, it can be assumed that the older iron umbones were not an imitation of earlier wooden umbones. However, it cannot be ruled out that circular umbones were created as a result of adapting iron in place of other organic substances used before (e.g. leather). A shield hardened by means of wax and hot water excellently protects against

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<sup>6</sup> The author would like to thank Mr. Wojciech Sławiński, a blacksmith from Grodzisk Mazowiecki, for technical explanations regarding the production process of band-shaped and circular umbones.



thrusts, which was proved during a series of experiments (**Picture No. 3**) (Ziemacki 1964, 133, 134; Coles 1977, 199–206). A shield made entirely of leather dated from the Bronze Age is known from Clonbrin in Ireland (Coles 1962, 160; 1977, 204; Eogan 1964, Pl. XXVIII). Wooden items were discovered in the British Isles which are supposed to be forms of a “last”, used for giving a wooden shield its desired shape. Items of this type derive from Cloonlara, Co. Mayo, Churchfield and Kilmahamogue, Co. Antrim in Ireland (Coles 1962, 160, 161, 181; Pl. XXVI; Eogan 1964, Pl. XXVIII). A shield made entirely of wood and leather also derives from Ireland, from Clonoura (Stead 1985, 45, Pl. XI; Brunaux, Rapin 1988, 19, 21, Picture No. 8; Raftery 1983, 107). Due to natural factors, finds of this type are very rare, and their absence in the area of Poland does not mean that similar shields were not used here (Fogel 1982, 102). The existence of similar traditions in the Polish lands could be indicated by a few finds of the “Ognica/Herzsprung”



Picture No. 3. Circular shields from Bronze Age and early Iron Age. 1 – bronze shield from Ognica, V BA (according to Bukowski 1971, Picture No. 3); 2 – modern replica of a leather shield (according to Coles 1977, Photo No. 16); 3 – presentation of a shield on a face urn from Strzelno (or Samostrzel) (according to Bukowski 1971, Picture No. 5.5); 4 – decoration detail of a bronze ferrule of a horn from Wismar (Germany), V BA (according to Bukowski 1971, Picture No. 4).

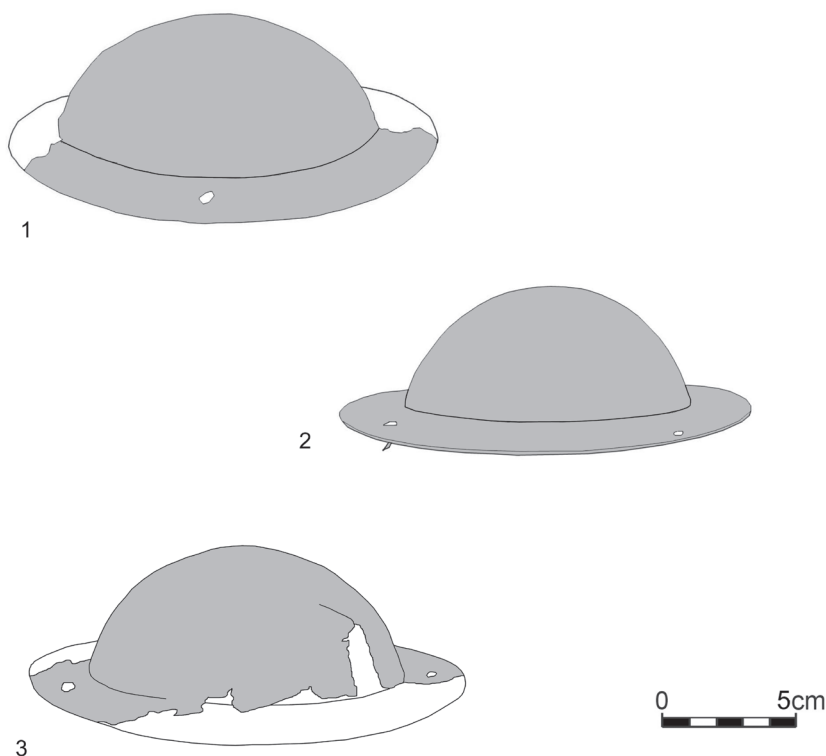
type shields, specimens of which were found in West Pomerania, in Holstein and in southern Germany (Bukowski 1971, 81). The manner of producing shields from thin bronze sheets makes it in principle impossible to use them effectively in a fight and seems to indicate their gala character, even though their shape corresponds closely to leather shields. In the central section of the “Ognica/Herzsprung” type shields, similarly to the leather specimens from the British Isles, a hemispherical protrusion was marked, under which a grip was placed. It is necessary to notice that the hemispherical shape of this “umbo” constitutes the only form with numerous symmetry axes which was possible to obtain. The protrusion has a shape similar to a low cupola, and the transfer of this shape onto a metal object is relatively easy and does not require specialised tools. The manner of processing leather and a sheet of metal is of course fundamentally different, yet these materials are similar to each other as far as the possibilities of shaping are concerned. This similarity could have been a cause for which a sheet of iron was processed in a manner emulating leather umbones and not wooden ones.

### Older Circular Umbones in the Przeworsk Culture

Low hemispherical umbones – type 1 according to D. Bohnsack (type 1 according to the recently proposed typology of T. Bochnak) – constitute the oldest form of circular ferrules of shields in Polish lands, and they are the form which began the development cycle of umbones used by the people of the Przeworsk culture during the late Pre-Roman period and the period of Roman influences (**Picture No. 4**). They are considered one of the determinants of phase A1 in the Przeworsk culture (Hachmann 1956/57, map No. 3; 1961, 52, 56, 57, 77, 240, 241, Abb. 18; Peschel 1977, 270, 271, Abb. 3; Dąbrowska 1988a, 28, 56, Breakdown No. 13). So far, no finds of umbones with hemispherical calottes are known in the context which would allow for the determination of their chronology at the very beginning of phase A1, which is connected with the occurrence of long brooches that are devoid of ornamentation (type A according to J. Kostrzewski) and long, ornamented fibulas type B – (Dąbrowska 1988a, 27, 28). Such umbones occur in complexes containing specimens which are younger from the determinants of the beginning of phase A1 of the late Pre-Roman period. A complex from Gołębiewo (grave No. 4<sup>7</sup>) could provide a good

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<sup>7</sup> In a paper devoted to the armament of the peoples of the Przeworsk culture in the Polish lands during the Early Pre-Roman period, wrongly determined as Gołębiewo, grave No. 1 (Bochnak 2005, 228).



Picture No. 4. Umbones type 1. 1: Lachmirowice 2 – Bartodzieje (grave No.) (according to Bohnsack 3: Przyborowo (grave No.).

example here, where the hemispherical umbo was discovered with a type C fibula according to Kostrzewski (Picture No. 5) (Kostrzewski 1919, 258). It is not out of the question that the long C type brooch was also among the accessories found in grave No. 3 in Bełcze in the Lubuskie province (Dąbrowska 1988a, Breakdown No. 13, Lewczuk 1997, 84). Type 1 umbones are also known from areas neighbouring the zone of closelyknit settlements of the Przeworsk culture. Specimens with hemispherical calottes are known from the areas occupied by people of the Oksywie culture, areas over the Elbe River and other cultural entities partially connected with German settlements; e.g., the Kobyly group (Bohnsack 1938, 56; Mähling 1944, 55, 99, Abb. 27; Hachmann 1956/57, Map No. 3; Wołagiewiczowie 1963, 53, 54, Picture No. 8; Peschel 1977, 270, 271, 277–279; Frey 1986, 46, 47, Abb. 1; Seidel 2000, 99; Bockius, Łuczkiewicz 2004, 77, 79, 189, 190, Abb. 12.3). An exceptional find of a type 1 umbo comes from Bornholm (Hachmann 1956/57, Map No. 3, 1961, 192; Frey 1986, 46, 47, Abb.1). Finds of various forms with



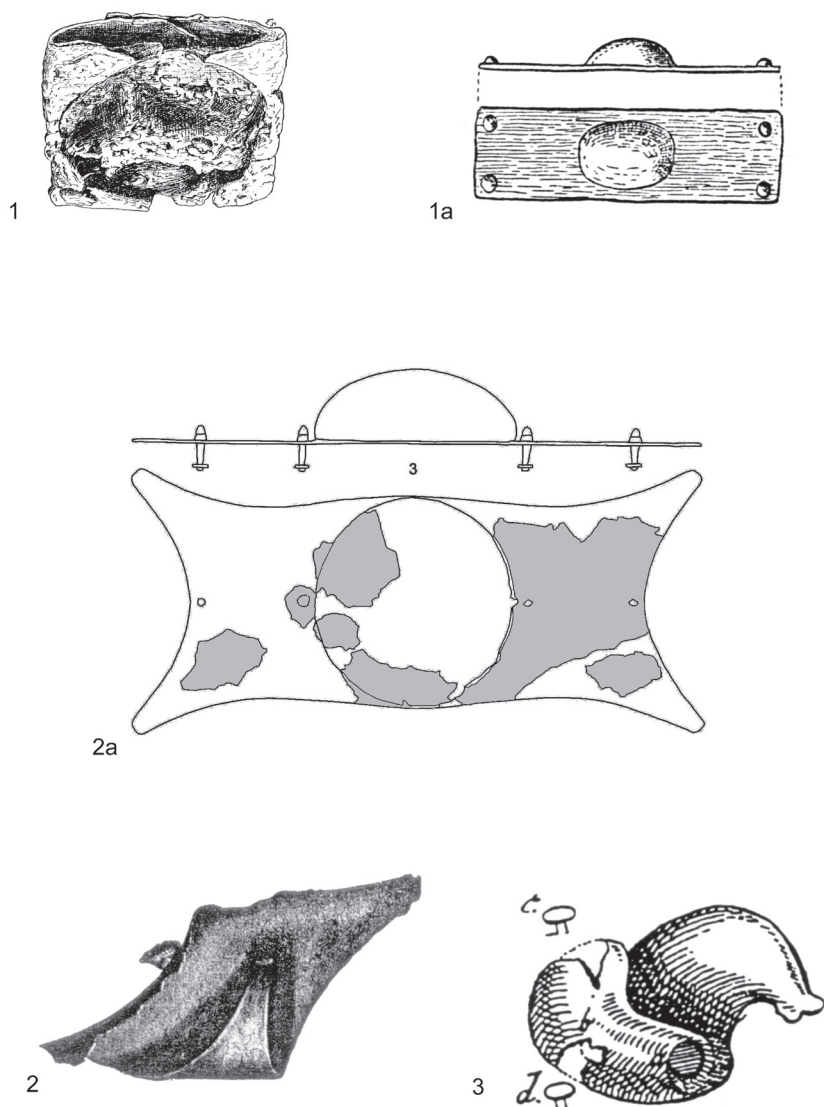
Picture No. 5. Gołębiewo (grave No. 4) (according to Gaerte 1929).

hemispherical calottes in the lands neighbouring the area occupied by the settlements of the Przeworsk culture are considered to be proof for inter-cultural impacts and contacts with the zone of the Przeworsk culture (Hachmann 1957; Peschel 1977; Frey 1986, 46). Fragments of an umbo similar to type 1 come from the grave of the Poienestî-Lukaševka culture from Răcătău in Romania (Babeş 1993, 117, Table No. 44.10). It is necessary to stress that in the areas which were not inhabited by the people of the Przeworsk culture, type 1 umbones appear most often in chronological stages synchronised with the A2 phase (~LT D1) of the late Pre-Roman period.

Typological and chronological analysis indicates that separation of different types of umbones (resembling the common model with a hemispherical calotte and narrow edge) took place very quickly after the application of technological assumptions to the production technology of type 1 umbones. These are umbones with hemispherical calottes and rectangular edges (determined as the “Bartodzieje” type,

type 2 according to T. Bochnak typology), specimens with hemispherical calottes supported on a trimmed (type 3 according to T. Bochnak) or cylindrical collar (type 2 according to D. Bohnsack, type 4 according to T. Bochnak) and ferrules with hemispherical calottes and wide edges (type 10 according to D. Bohnsack, type 5 according to T. Bochnak).

The “Bartodzieje” type umbones deserve a more comprehensive description. Sometimes they are considered, as was noted above, an intermediate stage in the supposed evolution from the band-shaped forms to the circular forms (Adler 1993, 231). The issues of their emergence and origin are widely discussed in modern literature (Bockius 1996; Kleemann 2002; Bockius, Łuczkiwicz 2004, 76–79; Łuczkiwicz 2004, 131; Bochnak 2005, cf. previous literature). It is necessary to underscore the fact that the discussed ferrules are in fact umbones with closed calottes and rectangular edges or edges resembling a rectangle (Dąbrowska 1988a, 55, 56), and due to this, they were sometimes considered a type 1 variant according to Bohnsack (Hachmann 1961, 53, 54, Abb. 13). The rectangular edge could have acted as an additional reinforcement for the shield structure. Only two specimens of umbones of the described type are known, and both of them derive from the Polish lands – from grave No. 7 in Bartodzieje in the Dolnośląskie province (Jahn 1931, 56, 57, Abb. 48, 50; 1937; Pescheck 1939, 201, 202) and from Wymysłowo in the Wielkopolskie province (grave No. 290) (Jasnosz 1951, 195, 195, Picture No. 295:3, 5) (**Picture No. 6**). the fragmentary status of both finds significantly hinders reconstruction of their original shape. This remark refers to, first of all, the specimen from Wymysłowo, due to the fact that the picture presenting the umbo before conservation does not allow for an explicit determination whether its calotte was closed. It seems that the reconstruction of the umbo from Bartodzieje, published numerous times, is correct (inaccuracies may refer to the hypothetical shape of the edge, yet the presence of the closed calotte does not seem to be subject to any doubts, on the condition that its edge was correctly interpreted). M. Jahn considered the find from Bartodzieje as proof of Rhetic influences, and his opinion was quoted in papers regarding cultural diversity on Silesian lands in the last ages before Christ (Jahn 1931, 56–59; 1937, 108–110; Pescheck 1939, 201, 202; Woźniak 1970, 161). However, it is necessary to stress that M. Jahn formulated the thesis on the Rhetic reference of the specimen from Bartodzieje on the basis of the similarity of this find to an umbo from grave No. 100 from the Persona burial ground in Ornavasso (**Picture No. 7.1**) (Bianchetti 1895, Picture No. VII: 1–2; Graue 1974, 65, 66, Abb. 31:58). The author of this paper is convinced that this analogy is easy to undermine, because it is limited to the similarity in horizontal



Picture No. 6. Umbones with rectangular edges. 1 – Wymysłowo (grave No. 290); 1a – Wymysłowo (grave No. 290) (reconstruction proposal) (according to Jasnosz 1951); 2 – Bartodzieje (grave No. 7) one of the preserved umbo fragments; 2a – Bartodzieje (grave No. 7) reconstruction proposal (according to Jahn 1931); 3 – Jeszkowice (according to Jahn 1931).

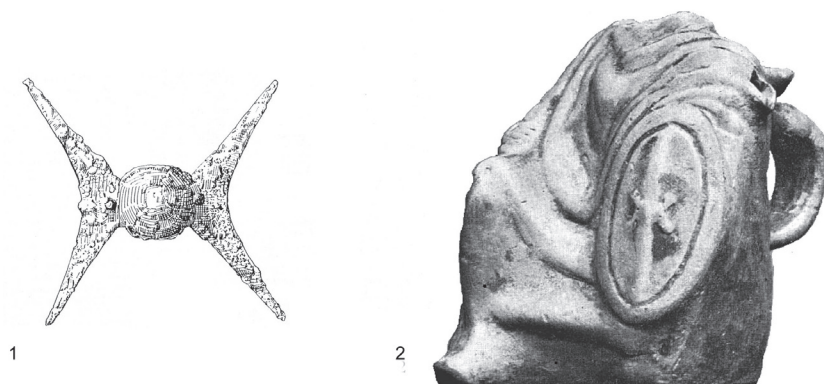
projections of these finds and does not take into account the most important feature, which is the type of shield ferruled by the umbo. The find from Bartodzieje represents a group of umbones with closed calottes, and, without doubt, it ferruled a shield devoid of ribs; on the



other hand, the specimen from Ornavasso needs to be included in the group of so-called butterfly-shaped umbones<sup>8</sup>, which are classified among shields with ribs (**Picture No. 7.2**). Moreover, the specimen from Ornavasso is much younger than the Silesian one. On the basis of dating a situla E.22 (variant Bargfeld) which derives from the same grave, J. Graue determined the age of grave No. 100 from the Persona burial ground as phase III, synchronised with the twilight of the late La Tène period (Graue 1974, 65).

During the last few years, attempts have been made to incorporate the “Bartodzieje” type umbones into a wider horizon of finds and comprising materials from the area of Austria, Hungary, Slovenia and Northern Italy (Bockius 1996, 144–150, Abb. 1–3, Bockius, Łuczkiwicz 2004, 76–79). J. Kleemann attempted to polemicise with the hypothesis of R. Bockius, justly indicating the weak preservation status of the finds which were supposed to be southern European analogies for the finds of the Przeworsk culture. J. Kleemann thought that “Bartodzieje” type umbones should be treated as derivatives of hemispherical umbones (Kleemann 2002, 221–223).

Just as mentioned above, the author of this article believes that the concept according to which umbones with closed calottes and rectangular edges are supposed to be proof of contacts with Southern Europe is



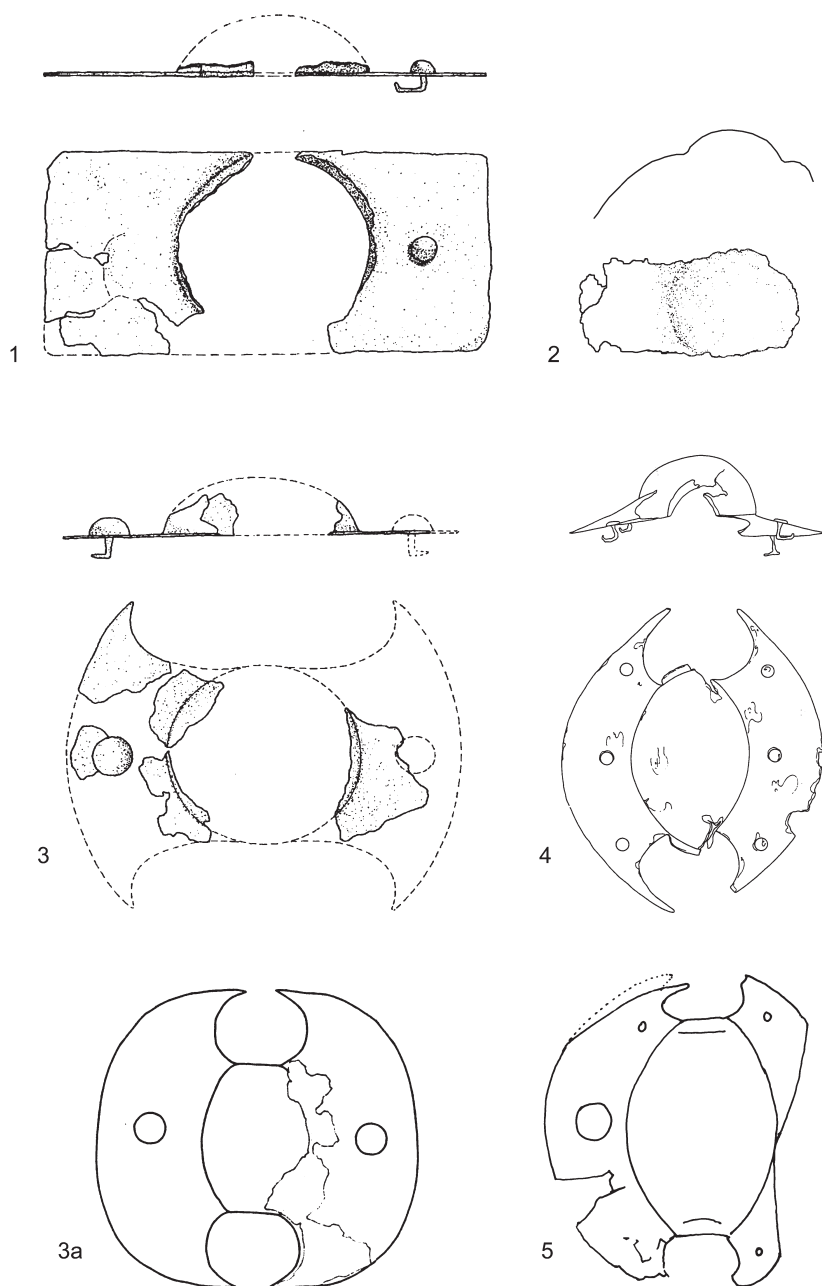
Picture No. 7. 1 – butterfly-shape umbo from Ornavasso (grave No. 100) (according to Jahn 1937), not to scale; 2 – presentation of a shield ferruled with such an umbo (according to Bieńkowski 1928), not to scale.

<sup>8</sup> The term “butterfly-shaped umbo” was used here in the context applied by P. Bieńkowski (Bieńkowski 1928, 139, 140) and not A. Rapin, who used the same name for band-shaped bosses with wings spreading in a fan-like manner (Brunaux, Rapin 1988, 82), similar to type II 2A, according to M. Domaradzki (Domaradzki 1977, 61) or the “Skorba” type, according to M. Guštin (1991, 56–58, Abb. 29, 30).

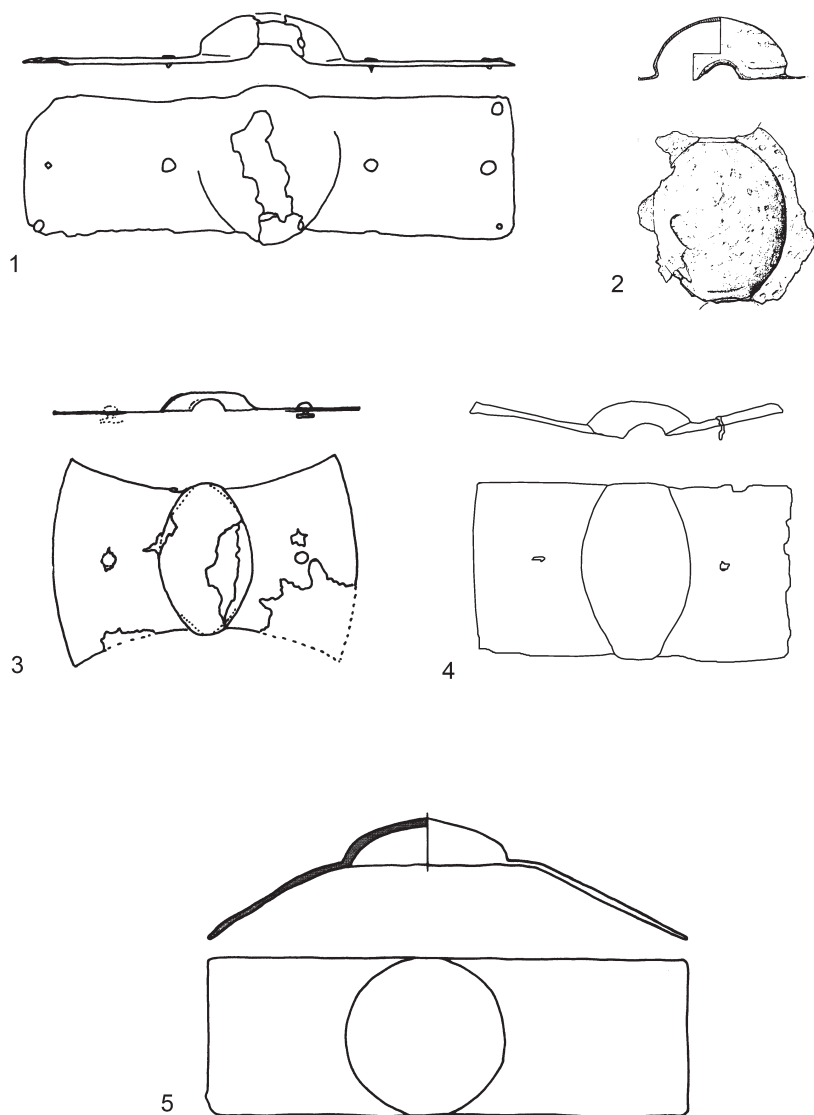


based on very weak premises. The majority of the seven points marked on the map in the paper of R. Bockius (1996, 151, Abb. 3), which are supposed to depict the spreading of “Bartodzieje” type umbones, mark specimens of various forms. Apart from marks denoting sites in Bartodzieje and Wymysłowo, according to R. Bockius, “Bartodzieje” type umbones were also found in Piotrków Kujawski and Jeszkowice<sup>9</sup>. In reality, the umbo from Piotrków Kujawski needs to be included among the band-shaped forms (Bochnak 2005, 106, 181, Table No. XXXI:1), whereas the umbo from Jeszkowice is known from a sketch and short references in literature (Jahn 1931, 58, 60; Abb. 60), yet very often it is wrongly connected with other specimens deriving from the same place, which confuse it with the cone-shaped umbo type J.5 (Jahn 1924, 35). It is necessary to underscore that it does not follow from the sketch included in the paper of M. Jahn that the find from Jeszkowice has a circular, closed calotte (**Picture No. 6.3**). The remaining umbones quoted by R. Bockius are specimens in very bad shape. There is no data allowing for a clear statement that the specimen from Este had a closed calotte, and in the opinion of the author of this paper, the preservation status of this find does make such a statement possible (**Picture No. 8.2**) (Bockius 1996, 148, 149, Abb. 2:2). The umbones from Pusztá Géc, Nógrád and Este counties are preserved in fragments, and on the basis of other well preserved specimens from Hungary and northern Italy, it is possible to propose different reconstructions of these finds, corresponding to band-shaped umbones of Mokronog-Arqua and Skorba types, which were common in this area (**Picture No. 8.1, 3, 3a, 4, 9.3, 4**) (Guštin 1991, 56–58, Abb. 29, 30). Finds from Teurnia (Lippert 1992) and Wénns (Egg 2002), quoted in the paper of R. Bockius and P. Łuczkiwicz (2004, 76–79), are specimens of band-shaped umbones with extended calottes (**Picture No. 9.1, 2**). These umbones have open calottes; therefore, they must have ferruled shields with ribs and not flat shields, as in the case of specimens from Bartodzieje (grave No. 7) and potentially from Wymysłowo (grave No. 290). With respect to this differentiation, the issue of similar arrangement of rivets on umbones from Wénns and Wymysłowo, brought to attention by R. Bockius and P. Łuczkiwicz (Bockius, Łuczkiwicz 2004, 76), has marginal signifi-

<sup>9</sup> Comparing umbones from the area of Poland, R. Bockius made use of a map published by T. Dąbrowska (Dąbrowska 1988, 62; Abb. 8), where band-shaped umbones along with “Bartodzieje” forms are marked with one sign described as “Bartodzieje type umbones”. A description of the same sign on an analogous map in a monographic paper devoted to the early stages of the Przeworsk culture (Dąbrowska 1988a, 72, map 5) reads “rectangular umbones”, which is not an incorrect term.



Picture No. 8. Umbones indicated as analogies for "Bartodzieje" type umbones. 1 – Pusztá Géc; 2 – Este; 3 – Reka (grave No. 7) (1–3 according to Bockius 1996, Abb. 2); 3a – Reka (grave No. 7) (according to M. Guštin 1991, Abb. 29), 4 – Roje pri Moravčach (according to Knez 1977; Table No. 8.3).



Picture No. 9. Umbones indicated as analogies for "Bartodzieje" type umbones. 1 – Enns (according to Bockis, Łuczkiwicz 2004, Abb. 12.1); 2 – Teurnia (according to Lippert 1992, Abb. 3 KLM 1999); 3 – Vevey (grave No. 26) (according to Brunaux, Rapin 1988), 4 – Odžak, (according to Todorović 1965, Table No. 1); 5 – Mihovo (according to Bockius, Łuczkiwicz 2004, Abb. 12.2).

cance in the opinion of the author of this article. The finds from Teurnia and Wenns cannot play an important role in deliberations about the chronology of shield ferrules, because they do not derive from sacrificial sites the so-called *Brandopferplätze* – used over a long period of time – (cf. Egg, 2002; Gleirscher 2002, further literature). The chronology of the *Brandopferplätze* from Teurnia comprises the LT C2 – LT D period (Lippert 1992, 294–299).

In principle, the only umbo outside the area of the Przeworsk culture, which could constitute an analogy for the find from Bartodzieje (and possibly from Wymysłowo), is a specimen from Mihovo, deriving from a grave where fibula, A.236<sup>10</sup> was found (**Picture No. 5**) (Bockius, Łuczkiwicz 2004, 77, 78, Abb. 12:2). However, it is necessary to pay attention to the fact that the published drawing of this umbo is very schematic and the openings for rivets were not marked on it. It is also not known whether the drawing reflects the actual status of preservation or whether it is a reconstruction. In fact, a horizontal projection of the umbo from Mihovo seems to suggest that the calotte was open (the convexity of the calotte is not circular), whereas the profile clearly indicates that it was open.

In relation to the above, it is possible to state that in the light of the available archaeological sources, the umbo from Bartodzieje (grave No. 7) does not have any close analogies in the Celtic world and probably is a local product. It is quite possible that the umbo from Wymysłowo (grave No. 290) is an analogy for the Silesian specimen, yet its status of preservation makes unambiguous determination impossible in the opinion of the author of this article. However, it cannot be ruled out that in the future the above determinations will have to be adjusted if similar umbones with closed calottes and rectangular edges are discovered in territories occupied by the Celtic culture<sup>11</sup>.

It is possible that the significant sizes of the edge constituted an additional element reinforcing the structure of the shield board. In the

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<sup>10</sup> R. Bockius and P. Łuczkiwicz, referring to the Ph.D. dissertation (unpublished) of H. Windl and devoted to the materials from Mihovo, emphasise that the site was examined at the end of the 19<sup>th</sup> / beginning of the 20<sup>th</sup> century and the contemporary methods of explorations do not give certainty as far as the homogeneity of the separated complexes is concerned (Bockius, Łuczkiwicz 2004, 78).

<sup>11</sup> The potential foreign provenance of the specimen from Wymysłowo may be confirmed by bronze rivets which, according to S. Jasnosz, were supposed to attach the umbo to the shield (Jasnosz 1951, 194, 195, Picture 295.4). The people of the Przeworsk culture used copper alloys in a very limited extent, which allows one to presume that items made of bronze might have been

opinion of the author of this paper, the appearance of the umbo from Bartodzieje indicates references to band-shaped La Tène umbones; yet these influences did not lead to the use of shields with ribs, but were only reflected in attempts of making an umbo with a closed calotte similar to Celtic specimens. The discussed specimen (and possibly also an umbo from Wymysłowo) most probably proves the reception and transformation of Celtic influences according to the shield making technologies prevailing in the Przeworsk culture. Despite the fact that “Bartodzieje” type umbones constitute a form which is typologically younger than hemispherical umbones with round edges, they are considered one of the determinants of phase A1 of the late Pre-Roman period (Dąbrowska 1988a, 56). Determining a more precise chronology of “Bartodzieje” umbones is problematic. In the opinion of T. Dąbrowska, the discussed type of ferrules should be dated from the older section of phase A1, which can be synchronised with the end of LT C1 phase, even though this researcher allows for the determination of their origin from the phase corresponding to the LT C2 stage (Dąbrowska 1988a, 56). In the opinion of the author of this paper, the second possibility is more plausible due to the fact that so far there is no date allowing for the dating of specimens with hemispherical calottes at the very beginning of A1 stage, and “Bartodzieje” type umbones probably constitute a form typologically younger than umbones with a circular edge. This dating is not contradicted by the presence of a long fibula type C discovered in grave No. 7 in Bartodzieje.

### Reception of Metal Shield Ferrules in the Cultures of Central Europe. Subject to La Tène Influences and Celtic Culture

As it has been emphasised a number of times, the impact of the La Tène culture has resulted in the taking over of various elements of Celtic armament by the people of the Przeworsk culture, and one of the basic elements connected with the Celtic impact is the popularisation of iron. Without doubt, double-edged swords with metal sheaths and spurs have to be included in the Celtic heritage. The heads of pole arms used by the people of the Przeworsk culture are also considered a testimony to the impact of the La Tène culture, yet this remark refers mainly to heads whose edges were cut in the form of leaves. In the

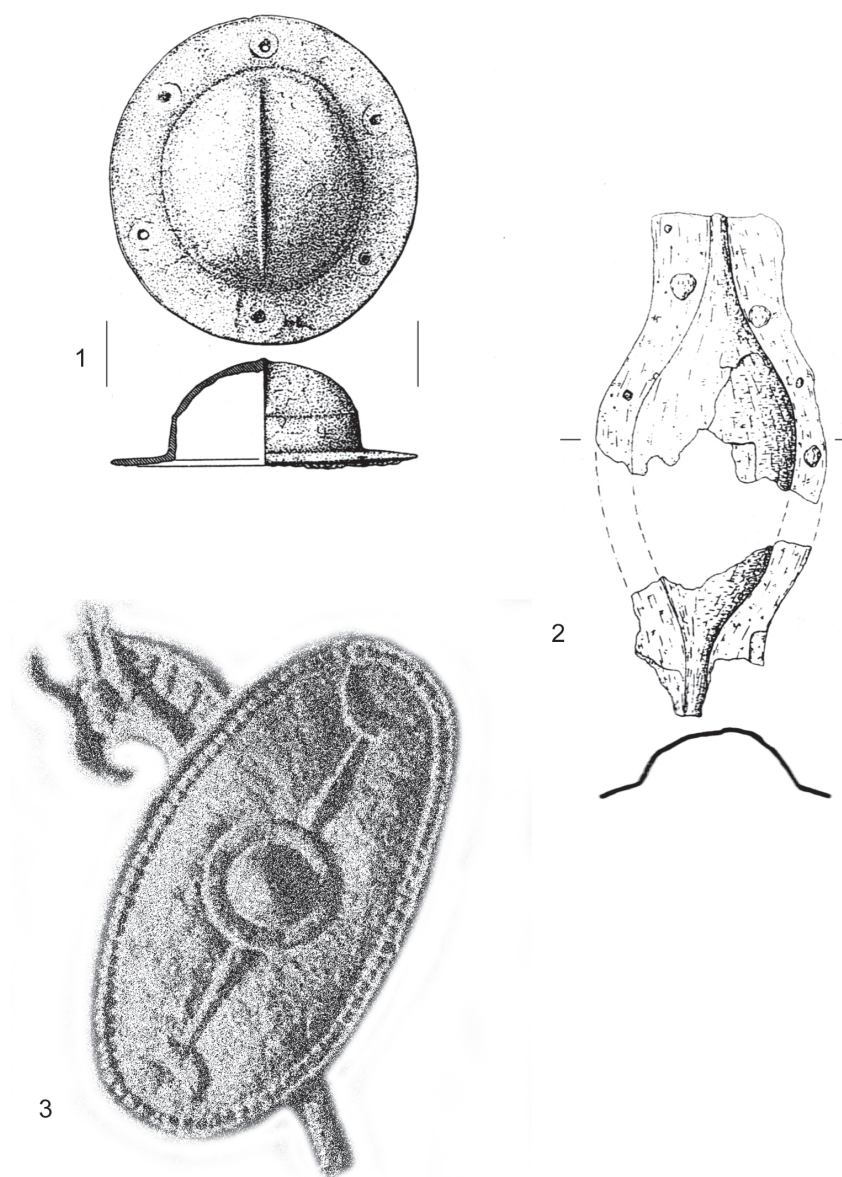
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imported. On the other hand, the author of this paper is not familiar with examples of attaching the iron umbo with bronze rivets from other cultural circles from the period of Celtic domination.

armament of people inhabiting Polish lands during the late Pre-Roman period, there are categories of weapons produced locally. Popularisation of single-edge swords, typical for the Baltic Sea basin though often encountered in areas occupied by the Przeworsk culture, points to the development of local arms production which omits Celtic traditions. The shields used by the people of the Przeworsk culture in the late Pre-Roman period probably derived from two separate traditions. On the basis of archaeological sources, it is possible to differentiate a small group of shields reinforced by ribs ferruled with band-shaped umbones and a more numerous group of shields ferruled with circular umbones. Shields with band-shaped umbones, based on Celtic models, occur at the beginning of the Przeworsk culture, yet there is no basis on which to believe that in the Polish lands they are older than shields without ribs. It is difficult to point out reasons for such a limited reception of the Celtic shield model. Probably shields ferruled with circular umbones, which are from local tradition, were better adapted to the local manner of fighting than the bigger and heavier Celtic shields reinforced with a vertical rib. It is probable that the reduction of shield size is related with conditions of the natural environment and the dominant manner of fighting. A change in the conditions of the natural environment is, according to J. Harmand, a cause for a reduction of the size of the shield of the Roman soldier during the Gallic war (Harmand 1967, 67–69). A large shield of a Roman legionary, presumably deriving from the Samnite *scutum*, fulfilled its task very well during fighting in northern Italy and in the de-forested areas of Gaul. The significant shield size made it possible to lock the shields together over the warriors' heads<sup>12</sup> and also provided the necessary protection against projectiles (Caesar, *The Gallic War*, II, 6; V, 38–49; VII, 68–90). However, when the legions entered the forested areas of *Gallia Belgica*<sup>13</sup>, their tactics had to be changed. The Gauls, plaguing the Roman army, made use of land forms and forests to prepare ambushes, with respect to which defensive techniques of the legionaries working out in the open turned out to be ineffective (Deyber 1987, 148). Smaller shields performed their tasks better on forest paths; they were easier to maneuver and more useful in combat. Such shields were most probably used by the Germanic tribe led by Ariovist, even though it is necessary to remember that this tribe also used a formation described by Caesar as a “phalanx” (creating a wall which protected the warriors) (Caesar, *The Gallic War*, I, 52).

<sup>12</sup> Devising this tactic is ascribed to the Celts, and it was described by Livy (*History of Rome from its foundation*, V, 43).

<sup>13</sup> Caesar mentions forests in the area of Gaul numerous times (Caesar, *The Gallic War*, II, 18, 19; III, 28, 29, 38; VI, 5).



Picture No. 10. Shield elements combining characteristics of circular specimens and specimens with ribs. 1 – Mehrum type (according to Kaczanowski 1995); 2 – spindle-shaped umbo (according to Kaczanowski 1995); 3 – shield image on an altar from Nîmes (according to Dechelette 1914).



It is possible that the natural conditions of the Polish lands was an influence on meagre popularity of large shields reinforced by ribs in the Przeworsk culture. Presumably, smaller shields, similar to those used in this area for centuries, turned out to be more useful. Indirect proof for the common use of small shields may be the diversity of weapons. It is well known that the type of defence strictly depends on the type of weapons used by the enemy. If the two fighting sides belong to a single cultural circle, the type of arms used is quite established, because changes are introduced most often as a consequence of clashes with enemy fighting in a different manner or as a result of technological progress (e.g. the popularisation of iron). Among the militaria of the Przeworsk culture, there prevail weapons used in fighting in clashes, and archaeological sources allow for the conclusion that the role of projectiles was slight (though probably underestimated). This diversity of weapons is better matched by shields of smaller sizes, which prove useful in hand-to-hand combat, whereas more massive and larger forms are more efficient when the enemy uses projectile weapons (Fogel 1982, 103). Therefore, it can be surmised that during armed conflicts between groups of the Przeworsk people, the Celtic manner of fighting with swords was mainly applied; nevertheless, single-edged swords were also used for thrusting and slashing. Due to the fact that the use of projectiles was limited, the basic method of defence could have been shields whose size was smaller than the Celtic shield. This type of defense constitutes a logical supplement for weapons used by the Przeworsk culture. In light of the above determinations, the comparison of sets of weapons of Roman legionaries and Celtic warriors (with respect to whom there are numerous accounts from ancient historians and iconographic presentations) is quite interesting. Weapons used by the Roman legions were compiled in a manner that made it difficult to choose appropriate shields providing protection during a fight. In hand-to-hand combat with an enemy using large shields and fighting in a close formation, usually short weapons are suitable and can be used for precise thrusts over the shield (Hazell 1981, 78, 79). The legionaries used hurled weapons in a fight, the best protection against which was provided by large shields; yet during hand-to-hand fighting, they used short *gladius* swords, which were much more effective than the long Celtic swords. It was also more difficult to shield oneself from their thrusts. Modifications of the Roman armament resulting from fighting in the Iberian Peninsula and the borrowing of weapons from the Celtic and Iberian environment combined with the organisation and discipline of the legions made the Gallic war relatively short in comparison with previous Celtic – Roman conflicts, even though the Gauls made organised resistance attempts.

The chronology and dynamics of the distribution of umbones with closed calottes in the La Tène culture indicates that these ferrules caught on in the Celtic environment relatively slowly (Stead 1985, 37). The first specimens of this type appear in the area of the La Tène culture at the end of the LT C / beginning of the LT D phase; i.e., later than in the Przeworsk culture, where the older umbones with closed calottes are dated from phase A1 of the late Pre-Roman period and are synchronised with the period comprising the end of LT C1 and LT C2. Among the oldest finds of this type are the isolated finds from Mokronog and Roje pri Moravčah (Domaradzki 1977, 62; Stead 1985, 37). In Domaradzki's opinion, the majority of circular umbones from the area of the Balkans related with the La Tène culture should be dated from the LT D phase (Domaradzki 1977, 62). The umbones from graves Nos. 169 and 187 from Nove Mesto (Knez 1987, 105, Taf. 23; 1992, 60, 63, T. 61.2, 67.3) are dated from the later section of this phase. The concept of a shield devoid of a rib was slowly adopted by the Celtic environment. In the area of Bavaria, individual umbones with circular edges appear in the course of the LT D1 phase (Krämer 1952, 334; 1962, Abb. 1) and during the D2 phase in the middle Rhine basin (Decker 1968, 51; Polenz 1971, 49; 50; Joachim 1974, 163–165). Among the oldest specimens with closed calottes (deriving from Gaul) is the umbo with a short spike discussed above and found in Alise-Ste-Reine and historically dated from 52 B.C. This umbo, having its closest analogies in the areas of Denmark, Germany and Poland, is believed to be an import in the Celtic environment and is connected with members of Germanic tribes led by Ariovist who stayed in the territory of Gaul (Duval 1987, 62; Sievers 1995, 151, 152, Abb. 38.1; Sievers 2001, 139, 153, 154; Bochnak, in printing). Also, a figure of a warrior or a god, discovered in the area of the Saint-Maur sanctuary (Oise department, France), with a shield with a circular umbo is believed to be a product created under the impact of Germanic influences due to the lack of features typical of the Celtic culture (Brunaux 1986, 78). Circular umbones in the area of Gaul do not appear until the LT D phase (Schönfelder 2002, 54–56). Introduction of shields devoid of ribs and ferruled with umbones with closed calottes did not lead to an immediate disappearance of typical Celtic forms with band-shaped umbones, which can be testified to by a find from Heimbach-Weiser dated from the end of the 1<sup>st</sup> century B.C., where specimens of both types were included among rich cremation burial accessories (Joachim 1973, 33–34, 41, Abb. 11). It cannot be ruled out that the shields ferruled by them had varied sizes and were used in slightly different situations. One should also remember that the presented picture of diversity with respect to chronology and distribution

of circular umbones is significantly hindered by a sudden decrease in the number of Celtic materials dating from the 2<sup>nd</sup> and the 1<sup>st</sup> century B.C. and resulting from changes in the burial ritual of the La Tène culture.

It is difficult to determine the character of influences which led to the re-introduction of umbones with closed calottes in the Celtic environment. Without doubt, the expansion of the Roman state in the Celtic area had fundamental significance for the cultural situation. Also, the contribution from Germanic tribes should not be disregarded, which began to play an important role in the politics of Rome starting from the end of the first half of the 1<sup>st</sup> century B.C. The presence of Germanic tribes on the left bank of the Rhine is confirmed by written and archaeological sources. Nevertheless, the tradition of using shields with circular umbones, which persisted in extensive areas of Europe at the beginning of the La Tène period (the Apennine and the Iberian Peninsula), should also be taken into consideration (Couissin 1926, 144, 145; Stary 1981, 293, 294, 298, 300, 301, Abb. 1; Lorrio 1997, 192–194). This tradition survived in the Iberian Peninsula until the 2<sup>nd</sup> century B.C. which is testified to by written sources (Polybius, *History*, III, 114, Diodor of Sicily, *Historical Library*, V, 33). Sporadic application of round shields with circular umbones in the Celtic environment is corroborated by stele presentations from *Clunia*, dating from the period of the reign of Octavian Augustus or an earlier period (Blazquez 1963, 412–414, Picture No. 8, 9). It cannot be ruled out that the relatively quick reception or reintroduction of shields with circular calottes in the Celtic environment is a result of the continued existence of local production traditions and usage of this type of armament. It is necessary to emphasise that at the beginning of the period of Roman influence, a group of hybrid shields appeared, combining certain features of the two separate structural concepts which were used in the La Tène period (i.e. shields ferruled with umbones with closed calottes and with open calottes reinforcing the vertical rib). Certain specimens of shields of one type have features characteristic of the second type. An example here is provided by a shield with a rib, yet ferruled with a circular umbo, which is presented on an early Roman altar from Nîmes (**Picture No. 10.3**) (Dechelette 1914, Picture 496). Without doubt, in this case the umbo divides the rib into two parts, weakening the shield structure. An important example depicting how the two concepts of shield structure overlapped may be early Roman umbones of the Mehrum type (**Picture No. 10.1**) (Gechter, Kunow 1983, 466; Abb. 16, 13; Zielsing 1989, 132; Kaczanowski 1992, 61, 62, Picture No. 15.1; Waurick 1994, 8, 11, Abb. 7.3) and the so-called spindle-shaped umbones (**Picture No. 10.2**) (Bockius 1989; Kaczanowski 1992a, 62, Picture No. 15.2; Waurick 1994,

8, 22, 23, Abb. 7.7; 14.4). The Mehrum type umbones, known only from three locations, are umbones with circular edges and circular calottes with a marked rib (**Picture No. 10.1**). In the opinion of P. Kaczanowski, the described umbones did not comprise the legionaries' armament, yet they were used by the *auxiliaries*; i.e., units in which representatives of individual ethnic groups inhabiting the Roman provinces served (Kaczanowski 1992, 62; Waurick 1994, *passim*). These could have been Celts or members of the Thracian tribes (Kaczanowski 1992, 62). The spindle-shaped umbones refer to the ferrules of Celtic shields, yet the rib which they reinforced was so delicate that most probably it did not have any major functional significance. Dating of these specimens, younger both with respect to typical specimens with open and closed calottes, indicates that they cannot be considered intermediate forms between the two basic types of shield structure. These relics can be compared to the "Bartodzieje" type umbones, which are two centuries older and which also combined certain features typical for circular and rectangular umbones.

## Recapitulation

Circular and band-shaped umbones represent different traditions, and there are no relations of "genetic" character between them. The characteristics of the older types of umbones used by the people of the Przeworsk culture in the late Pre-Roman period, which have been presented above, clearly indicates that the finds of band-shaped umbones, deriving from the Celtic environment, remain in a clear minority with respect to umbones with closed calottes. Therefore, it can be assumed that the people inhabiting Polish lands at the beginning of the late Pre-Roman period more often used shields without the rib reinforcing the structure. Umbones with closed calottes ferruling them were known in the Polish lands since phase A1. Therefore, these finds demarcate the older horizon of ferrules from the times of Celtic domination in Europe and, at the same time, constitute a beginning stage of evolution of metal umbones, which were used in the area of the *Barbaricum* in the late Pre-Roman period and in the period of Roman influence. The emergence of hemispherical umbones may be considered a result of the fusion of local traditions related with the application of hypothetical leather umbones and impacts from the Celtic circle manifested in the popularisation of iron processing.

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## **Wczesne umba koliste kultury przeworskiej. Rola tradycji lokalnych i wpływów celtyckich na zróżnicowanie metalowych części tarczy w początkach młodszego okresu przedrzymskiego**

### **Streszczenie**

Artykuł omawia genezę i zróżnicowanie najstarszych umb kolistych, przedstawiono również skrótowo podstawowe dane dotyczące umb taśmowatych. Omówiono zasadnicze różnice konstrukcyjne pomiędzy tarczami z żeberkiem okutym umbem taśmowatym oraz tarczami o płaskiej płycie, wzmocnionymi umbem z zamkniętą kalotą. Umba koliste były powszechnie używane w Europie w okresie halsztackim i w początkach okresu lateńskiego i należy przypuszczać, że wykształciły się one niezależnie w różnych częściach Europy; na Półwyspie Iberyjskim, Apenińskim, na Wyspach Brytyjskich oraz w Europie Środkowej. Problem genezy metalowego umba kolistego, które pojawiło się w Europie Środkowej w okresie dominacji celtyckiej, nie został dotychczas wyjaśniony. Część badaczy uważa je za miejscowy wytwór ludności zamieszkującej środkowoeuropejskie *Barbaricum*, zdaniem innych natomiast, umba tego typu powstały jako wynik ewolucji lateńskich form taśmowatych. W artykule przedstawiono argumenty przemawiające za pierwszą z opcji, oraz podważono hipotezę przeciwną, m.in. zwracając uwagę na fakt, że pierwsze metalowe umba koliste są starsze od umb uważanych za formy pośrednie między taśmowatymi a kolistymi.

Zdaniem autora, najstarsze metalowe umba koliste powstały w wyniku zaadaptowania nowego surowca – żelaza – w miejsce innych używanych wcześniej substancji organicznych, np. skóry. Skórzane tarcze z kolistymi umbami znane są z Wysp Brytyjskich, a na stosowanie zbliżonych osłon na ziemiach polskich wskazują źródła ikonograficzne. Skórzane umba mają kształt zbliżony do niskiej kopuły, a przeniesienie tego kształtu na wyrób metalowy jest stosunkowo proste i nie wymaga wyspecjalizowanych narzędzi. Sposób obróbki skóry i blachy metalowej oczywiście różni się od siebie zasadniczo, jednak materiały te są zbliżone do siebie, jeżeli chodzi o możliwości modelowania wybranych kształtów. Wspomniane podobieństwo mogło być przyczyną, dla której blachę żelazną obrabiano naśladując umba skórzane, a nie drewniane. Należy bowiem zauważyć, że wydłużony kształt najstarszych umb drewnianych ze Skandynawii (Kvärlöv, Hjortspring) jest uwarunkowany

włóknistą strukturą drewna. Gdy drążono w drewnie umbo, nadawano mu kształt wrzecionowaty, by zapobiec pękaniu najbardziej delikatnych partii, tj. tych, które kształtowano tnąc w poprzek słoików. W artykule przedstawiono również zróżnicowanie najstarszych umb z zamkniętą kalotą, w tym tzw. umb typu Bartodzieje, które zdaniem autora należy uważać za formę lokalną, typową dla kultury przeworskiej.