FASCICULI ARCHAEOLOGIAE HISTORICAE
FASC. XXX, PL ISSN 0860-0007
DOI: 10.23858/FAH30.2017.015

ANDRZEJ JANOWSKI*

CHRONOLOGY AND EVOLUTION OF EARLY MEDIEVAL HOOKED SPURS IN THE LIGHT OF NEW FINDS AND ANALYSES

Abstract: The paper offers results of an analysis of spurs with terminals arms bent inside made from copper alloys (so-called Technotype I). These artefacts are divided into a few variants based on the differences in the height of the arch. In former archaeological literature, spurs with the lowest arch were considered as the earliest ones. The analysis of the topography and chronology of finds, combined with results of examinations of the chemical composition of alloys suggests that spurs of Variants A and B-C are not evolutionary links, but two different groups of specimens, with the same chronology but separate territory of use and different chemical composition.

Keywords: Slavonic territory, Early Middle Ages, military equipment, metallurgy, hooked spurs

Soon 60 years will have passed since Jan Żak completed a monograph devoted to hooked spurs with terminals bent inside[1], and almost 30 years will have passed since the publication of its revised and extended edition[2]. An increase in new sources and analyses, as well as a development of independent dating methods makes it possible to undertake a critical insight into attempts at classification and the model of evolution of this category of artefacts.

Jan Żak was not the first scholar who did research on hooked spurs[3], however, he was the first one who carried out research exclusively in this field and made an attempt at writing a monographic study. A basis for a classification which he worked out was primarily raw material and technology of production, and thereafter metric parameters of spurs. On the basis of these criteria he divided spurs into silver, bronze and iron ones. Among those, he distinguished 6 variants, based on the criteria of the internal height (the height of the arch): A (23-32 mm), B (40-50 mm), C (51-58 mm), D (68-75 mm), E (78-83 mm) and F (84-111 mm). Jan Żak was convinced that there was a very early chronology of finds with the low arch (Variant A) which were to date back to as early as the 6th century. Moreover, he believed that the evolution of this type of spurs meant an increase in the internal height of the arch. Therefore, each successive variant was later than the previous one. Periods in which they were to be in use were very short and they practically did not overlap. This resulted in considering hooked spurs as precise determinants of chronology. Worth mentioning is the fact that in 1959 Jan Żak had a knowledge of 68 spurs from 44 sites, out of which he analysed 57 only (from 36 sites), including eight bronze finds of Variants A, B and C.

An increase in the number of new finds and reinterpretation of earlier ones resulted in a growing number of opponents to Żak's hypotheses[4], especially in the 1980s[5]. Somewhat independently from them, Żak recognised imperfections of his system. Having at his disposal an almost twice that numerous body of finds (146 spurs from 82 sites), he introduced a series of modifications[6]. The first one concerned an introduction of the term 'technotype', i.e., the way a spur was made as the basic criteria of classification: I – bronze casting; II – two-part iron in which the yoke and prick are forged separately and then joined; III – one-part iron-forged. Moreover, in each of these technotypes, just like in previous ones, there were also technical variants: 1 – arch made of a band, 2 – arch made of a bar. Subject to changes were also metric ranges

* Institute of Archeology and Ethnology Polish Academy of Sciences, Szczecin, a.janowski@iaepan.szczecin.pl

[1] Żak 1959.

[2] Żak and Maćkowiak-Kotkowska 1988.

[3] Cf. Żak 1959, 9-12.

[4] Naturally, there was a group of scholars who accepted, at least initially, Żak's hypotheses – i.a., Blanka Kavánová (1976, 10-16) and Krzysztof Wachowski (1981, 156-159).

[5] I.a., Gabriel 1984, 123-126; Klanica 1986, 95-99; Szymański 1987, 350-359; Gabriel 1988, 113-116; Parczewski 1988, 96-101.

[6] See Żak and Maćkowiak-Kotkowska 1988.

of given morphological varieties, which were also somewhat better specified: A (12-39 mm), B (40-50 mm), C (51-60 mm), D (60-75 mm), E (78-83 mm) and F (90-107 mm). Moreover, Variant G (84-111 mm) was introduced, the arch of which has similar dimensions to the arch in Variant F; however, the prick is definitely longer. With regard to the chronology of spurs, Żaki concluded that the earliest finds were to appear in the Slavonic environment at the turn of the 6th and 7th centuries[7]. Among the spurs subject to analysis there were 12 finds[8] made of bronze (1 find – Technotype I.1; 11 finds – Technotype I.2), which belong to Variants A, B, C and D.

This suggestion also met criticism both from of Polish[9] as well as foreign scholars[10]. In Poland a classification by Wachowski is a modification of Żak's system[11]. An article of this scholar appeared even before a new study by J. Żak and L. Maćkowiak-Kotkowska, hence Wachowski made comments on findings made in 1959. Similarly to his predecessor, he based his typological and chronological considerations mainly on metric characteristics of the arch, although with regard to Variants E and F he would also base his conclusions on the shape and ornamentation. The most important change with regard to observations made by Żaki was an integration of Variants B and C into one Variant B-C. Furthermore, Wachowski shifted the time when hooked spurs appeared to no earlier than the 1st half of the 8th century. The collection analysed by Wachowski included a total of 202 hooked spurs, bent both inwards and outwards, of which 15 were made of bronze.

Here it needs to be noted that polemical voices which were raised with regard to Żak's classification concerned mainly chronology. Opponents did not question either the principle itself or the evolutionary model of development assuming the increase in the internal height of the arch, in which forms with the low arch were to be the first and the earliest link in the development of hooked spurs[12]. In this paper, I will try to adopt a critical view on this issue in the context of Technotype I made of copper alloys, commonly called bronze ones.

At present, the list of hooked spurs with terminals bent inside includes no fewer than 36 finds[13]. On the basis of criteria developed by K. Wachowski nine could be classified as Variant A, 26 as Variant B-C and one as Variant D (cf. list and Fig. 3); however, the latter find is unverifiable.

Topography of finds

An even more important issue in considerations over copper alloy hooked spurs with terminals bent inside is the distribution of finds. If, as presumed, spurs of Variant A and B-C are to be further links in the evolution, it could be expected that they would be found in areas which, at least partly, do not overlap. However, suffice it to look at the map to note that their distribution concentrates in two separate and mutually exclusive regions (Fig. 1). Except for two locations (list Nos. 3 and 22), spurs of Variant A can be found in the territory of Pomerania only. On the other hand, finds of Variant B-C concentrate in the Carpathian region of the Czech Republic, and individual finds are known in Slovakia, Austria, Romania and Lesser Poland. The only exception north of the Carpathian region is a fragment of a spur from Kraków-Wyciąże (list No. 8). Therefore, in the area of distribution of spurs of Variant A there are no finds of Variant B-C, which are allegedly „earlier". Hence in both cases they are „blind links" in the evolution which have neither earlier not later forms. It needs to be noted, however, that in both areas of distribution there are iron spurs (Technotype III) of Variants A and B-C.

Raw material and form

The non-overlapping topography of spur finds is not the only fact which raises doubts as to the evolutionary model of development of this kind of military equipment. A further issue is the way they were produced and the raw material used in the production process. Żak dealt with „bronze" spurs[14] indicating the lack of any analyses of raw materials used and he supported his conclusions with results of analyses of other finds (sic!) from a given location. For example, in the case of a spur excavated in Wólka Prusinowska[15] he assumed that the raw material would be similar to that in bracelets from the same place[16]. The spurs were to have been cast in „already decaying moulds"[17].

At present, we have information about the chemical composition of a few spurs and observations on production methods used in their manufacture (Diagram 1). Two such analyses were carried out for finds of Variant A. An analysis of a find from the area of Pień demonstrated that it was made of an alloy whose main component, apart from

[7] Żak and Maćkowiak-Kotkowska 1988; Żak 1990.

[8] Two finds which were finally classified by J. Żak as pseudo-hooked spurs were removed from the group of bronze spurs - cf. Żak and Maćkowiak-Kotkowska 1988, note 3.

[9] See Poleski 1992, 20-24; Poleski 2000, 424; Błoński 2000, 55-57; Szymański 2000, 358, note 2; Dulinicz 2006, 132-134; Kotowicz 2006, 21-23.

[10] Profantová 1990; Profantová 1994, 60-71.

[11] Wachowski 1991.

[12] See Żak and Maćkowiak-Kotkowska 1988, Fig. 3; Wachowski 1991, Fig. 6.

[13] The number of finds excavated in Mikulčice is uncertain – there were at least eight of them. Luděk Galuška (2013, 47) says that there were as many as 20, both entirely preserved and in fragments. Recently, at least two two-part bronze spurs with riveted pricks have been found in the Czech Republic (Sobotka-Spyšova and Senohraby – Profantová 2016, 8, 10).

[14] Żak 1959, 24-27, 37.

[15] This find is of a different technotype than the one discussed here – it has an arch made of a band and a riveted prick.

[16] Cf. Żak 1959, 27.

[17] Żak and Maćkowiak-Kotkowska 1988, 21.

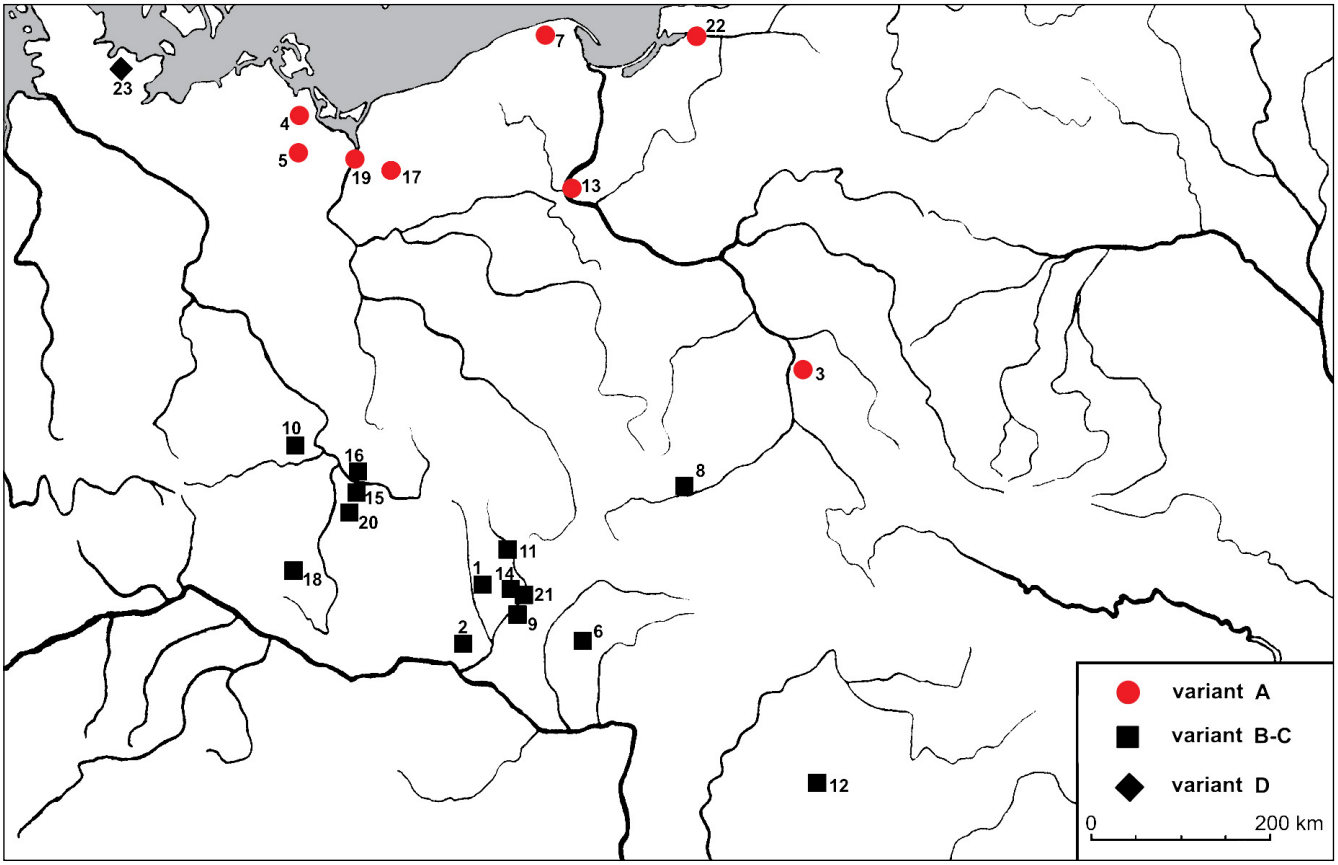

Fig. 1. Distribution of finds of copper alloy spurs with hooked terminals bent inside – Technotype I:2 according to J. Żak and L. Maćkowiak-Kotkowska: 1 – Brno-Líšeň, 2 – Burgstall Alteck, 3 – Chodlik, 4 – Glienke, 5 – Görke, 6 – Klátova Nová Ves, 7 – Kopaniewo, 8 – Kraków-Wyciąże, 9 – Mikulčice, 10 – Mukov, 11 – Olomouc-Povel, 12 – Oradea, 13 – Pień, 14 – Roštín, 15 – Sadská, 16 – Skorkov, 17 – Słodkówko, 18 – Strakonice, 19 – Szczecin, 20 – Tismice, 21 – Uherské Hradište – Ostrov Sv. Jiří, 22 – Višnevo (Kaup), 23 – Wakendorf. After Janowski 2010, Fig. 4; Poleski 2013; Profantová 2015, 285-286; Profantová 2016, with supplement.

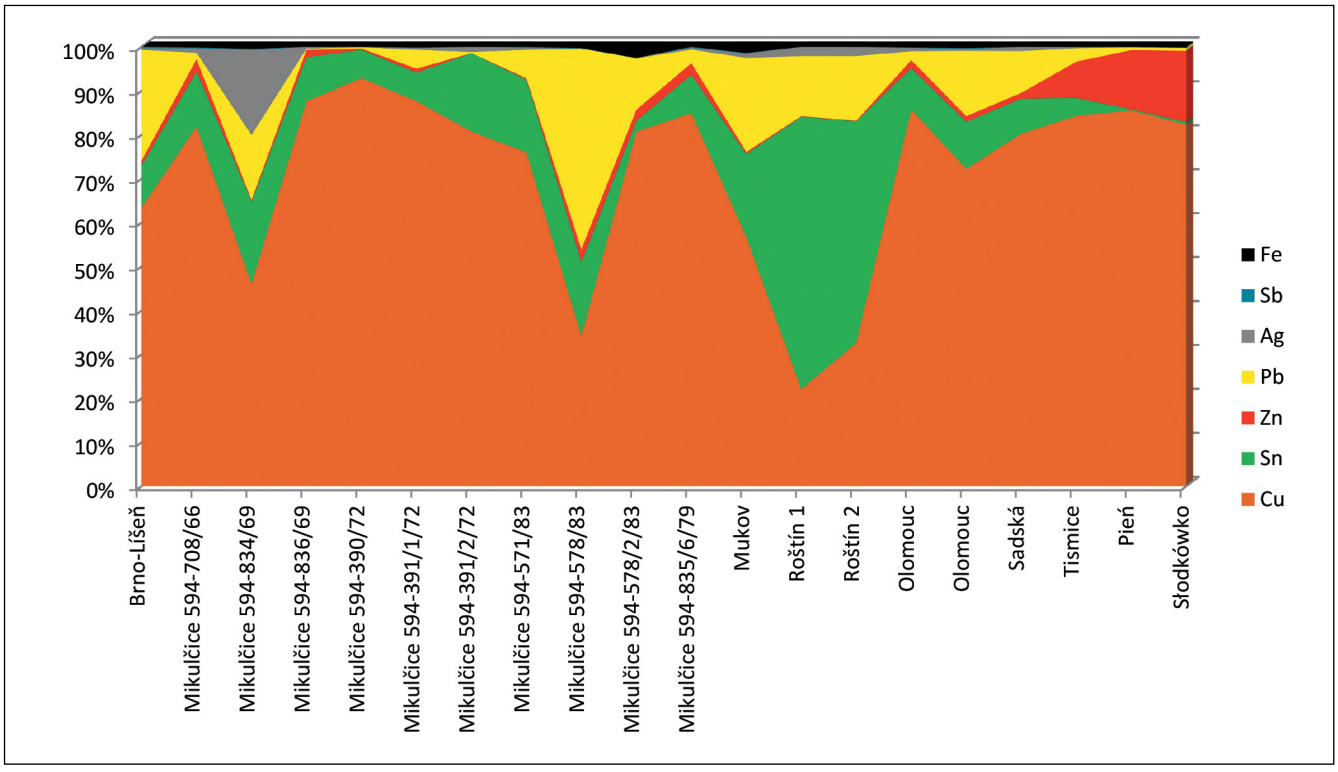

Diagram 1. Chemical composition of copper alloy spurs with hooked terminals bent inside. After Janowski 2016; Profantová 2016, tab. 1 and 1b; developed by A. Janowski.

copper (Cu – 85.26 %), was zinc (Zn – 13.43 %). The total share of other elements did not exceed 1.4% (Pb – 0.64 %, Sn – 0.26 %, Co – 0.14 %, Ni – 0.10 %, P – 0.04 %, Fe – 0.04 %, Ag – 0.04 %, S – 0.02 %, Sb – 0.02 %, Si – 0.01 %)[18]. A similar analysis of a spur from Słodkówka gave a similar result. It was made of an alloy in which the dominant components were copper (Cu – 81.89 %) and zinc (Zn – 16.17 %). There was also an about 2% share of accessory elements (Pb – 0.68 %; Sn – 0.60 %, Fe – 0.19 %, Cr – 0.17 %, Al – 0.14 %, Au – 0.12 %, Ag – 0.02 %, S – 0.01 %)[19]. In both cases the raw material was *aurichalcum*, i.e., an alloy displaying properties of bronze, in which the source of zinc is its ore – calamine.

Metallurgical analyses of spurs of Variant B-C are definitely more numerous. Finds from Brno-Líšeň, Mikulčice, Uherské Hradište, Olomouc, Mukov, Roštín, Sadská and Tismice were analysed in such a way[20]. In the light of published results of the analyses it might be noted that in practically every find the alloy composition demonstrated a low zinc content (within the range of 0.1-2.9%, in most cases 0.3-1.6%) and a high share of tin (usually over 15%)[21]. It needs to be noted that in the case of spurs which were sampled a few times the composition of the alloy in various spots displayed differences and usually the content of tin was higher than that of zinc. This observation should give rise to deep considerations. Such a composition is characteristic of bronze and different from the composition of spurs of Variant A. Among Czech finds there is one spur from Uherské Hradište with a different composition (Fig. 3.1); it which was made of bronze with a high copper content. Other elements included lead, iron and probably tin; the content of the latter is probably slightly over 1%[22]. This spur makes an impression of having been made of alloy from recycled artefacts[23]. Observations of this particular one as well as other spurs from this site demonstrated that they were made in two-part moulds, which sometimes did not fit properly[24]. A find from Roštín is absolutely unique: it was made of an alloy which was composed of, depending on the sampling place, 21-31% copper, 48-59% tin, 13-14% lead and no more than 0.1% zinc.

In the Carpathian region analyses demonstrated a deviation from the use of recipe, with a small amount of zinc in one case only. It was one of the three spurs from Tismice, which was made of an alloy of 82% copper, 8% zinc, 4% tin and 3% of lead. This find is considered to have been imported[25].

Hence at the present stage of research we deal with a situation in which spurs distributed in two not bordering regions were made of alloys with different compositions. It may constitute an argument for inferring that there were two unrelated bronze traditions. Not much is known about bronze alloys on the Baltic coast as there is a lack of a longer series of published metallurgical analyses and, perhaps apart from Truso, alloy workshops evidenced by sources. Analyses of metal bars excavated in Truso allowed to distinguish three groups of alloys. The dominant one were bars in which the alloy is composed of 77-83% copper with the zinc content of 10.5-16%, the tin content of about 0.03-0.54%, and the lead content of 0.83-7.81%. Apart from that, other compositions were also found which proved that bars were made of recycled alloy[26]. Finds from Truso which were subject to analyses prove that alloys with compositions similar to those in spurs of Variant A from Pień and Słodkówko were used in the production of bronze alloys in the regions on the Baltic coast. According to Ture Johnsson Arne[27], the alloy of copper and zinc with traces of lead and tin should be related to Scandinavian bronze-making. Its use in Northern Europe is also confirmed by observations made for areas inhabited by the Balts[28].

On the other hand, production of artefacts with the use of alloys with a low zinc content, just as in the case of spurs excavated in the Czech Republic and in Slovakia, was one of characteristic features of south European bronze making[29], including the Avars[30]. Avar influences on technology of Great Moravian production of military artefacts are beyond any doubt[31], although it needs to be noted that Avar horse riders did not use spurs. Those were a West European invention; however, finds of fragments of spurs of Variant B-C, poorly cast and not finished, which are known from Uherske Hradiste[32] and Klátova Nova Ves[33] would testify to their local production in the territory of the later Great Moravian State.

Apart from technological considerations, also formal aspects lead to a conclusion that there were two different „branches of evolution". Characteristic of spurs of Variant A are individualised shapes of archs and pricks (Fig. 2).

[18] Analysis of the chemical composition was made in 2016 in the Bio- and Archaeometric Laboratory of the Polish Academy of Sciences in Warsaw (analysis No. CL19495).

[19] Janowski 2016. Analysis of the chemical composition was made in 2016 in the Bio- and Archaeometric Laboratory of the Polish Academy of Sciences in Warsaw (analysis No. CL19485).

[20] Snášil 1984, 156; Frána and Maštalka 1992, 784, 787 – analysis of spurs from Mikulčice (inv. no. 594-390/72, 594-391/72 and 594-834/69; Profantová 2016, Tabs. 1 and 1b.

[21] Profantová 2015, 285, note 21; Profantová 2016, Tab. 1.

[22] Unfortunately, no detailed data regarding elements is given in an article by Snášil published in 1984, hence the result is not included in the chart.

[23] Snášil 1984, 156; Galuška 2013, 23.

[24] Snášil 1984, 156-157.

[25] Cf. Profantová 2016, Tab. 1b.

[26] Cf. Żołędziowski 2015, 77, Fig. 1.

[27] Arne 1914, 217-220.

[28] Bezzenberger 1904, 92-102.

[29] Arne 1914, 217-220.

[30] Cf. Profantová 1992, 647-650; Galuška 2013.

[31] Kind 2007, 557.

[32] Galuška 2013.

[33] Jakubčinová 2015, 94, Fig. II:6.

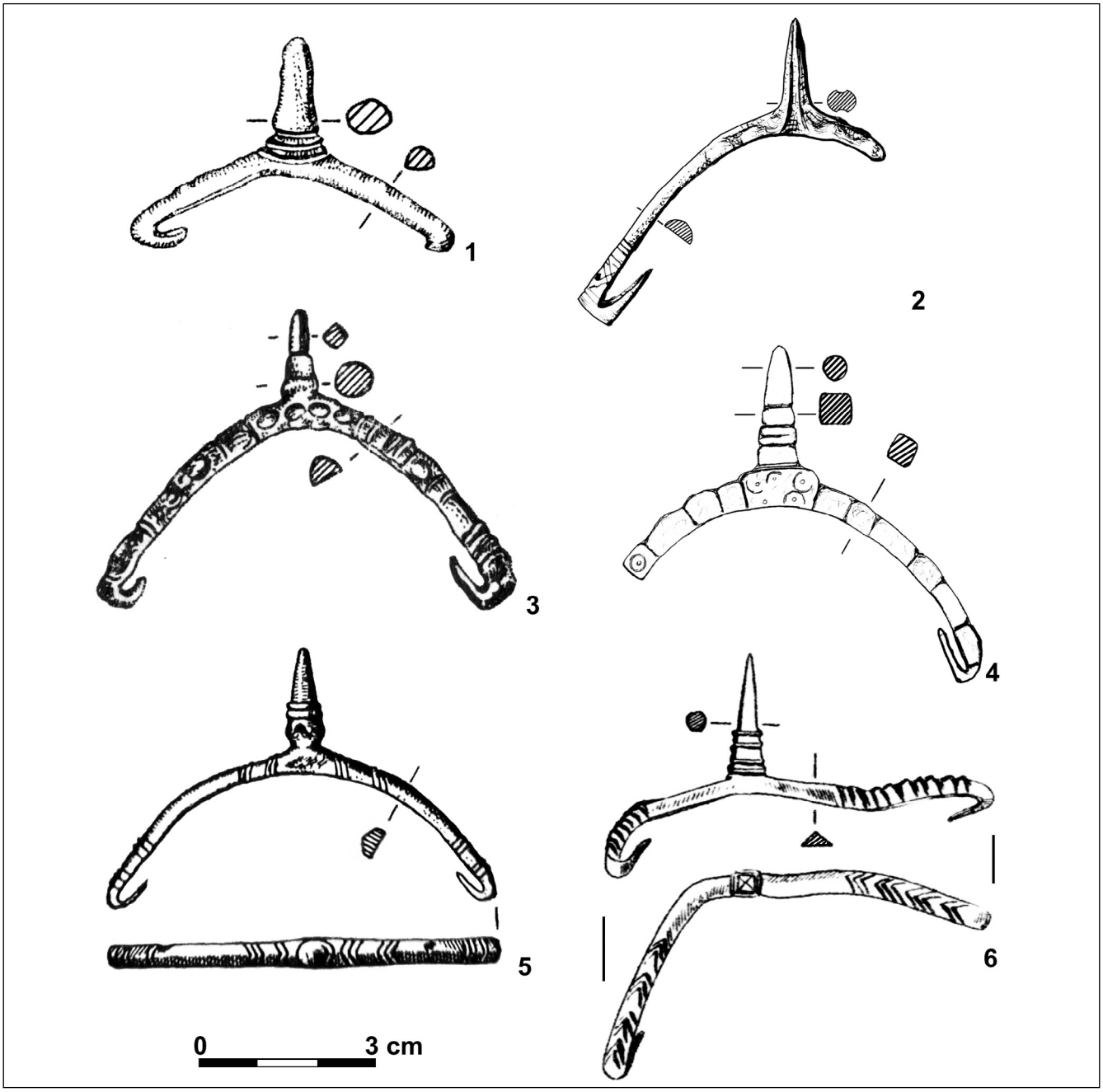

Fig. 2. Spurs of Technotype I.2 of Variant A: 1 – Chodlik. After Żak and Maćkowiak-Kotkowska 1988, Table I.1; 2 – Słodkówko. After Janowski 2016, Fig. 2; 3 – Kopaniewo. Aafter Żak and Maćkowiak-Kotkowska 1988, Table II.2; 4 – Pień. After Janowski 2010, Fig. 2; 5 – Görke. After Schoknecht 1964, Fig. 167.f; 6 – Szczecin. After Cnotliwy and Rogosz 1983, Fig. 145.12.

In fact, each of the finds is different, while spurs of Variant B-C are strongly standardised, produced according to a uniform pattern, and a few of them give an impression as if they were made in one workshop, using the same mould (Fig. 3-4). Moreover, differences in shapes and proportions of both variants are so immense that a possible evolution would *de facto* have had to take place in steps and by way of a smooth transition, hence slow extension of the arch is out of the question.

Chronology

A further issue is the dating of spurs. Out of nine Variant A spurs only two are finds without context (Kopaniewo, Słodkówko); in the case of other finds the context is known. The beginnings of the settlement in Görke date back to the second and third quarter of the 8th century[34]. Contexts in Szczecin in which a spur was found were originally dated to the second half of the 7th century[35]. However, such a chronology does not stand the test considering the composition of shards. Therefore, they are currently dated to the second half of the 8th and the beginning of the 9th century[36]. On the basis of dendrochronological and radiocarbon

[34] Dulinicz 2006, 134.
[35] Cnotliwy and Rogosz 1983, 169-170.
[36] Dulinicz 2006, 324; Łosiński 2008, 111-112.

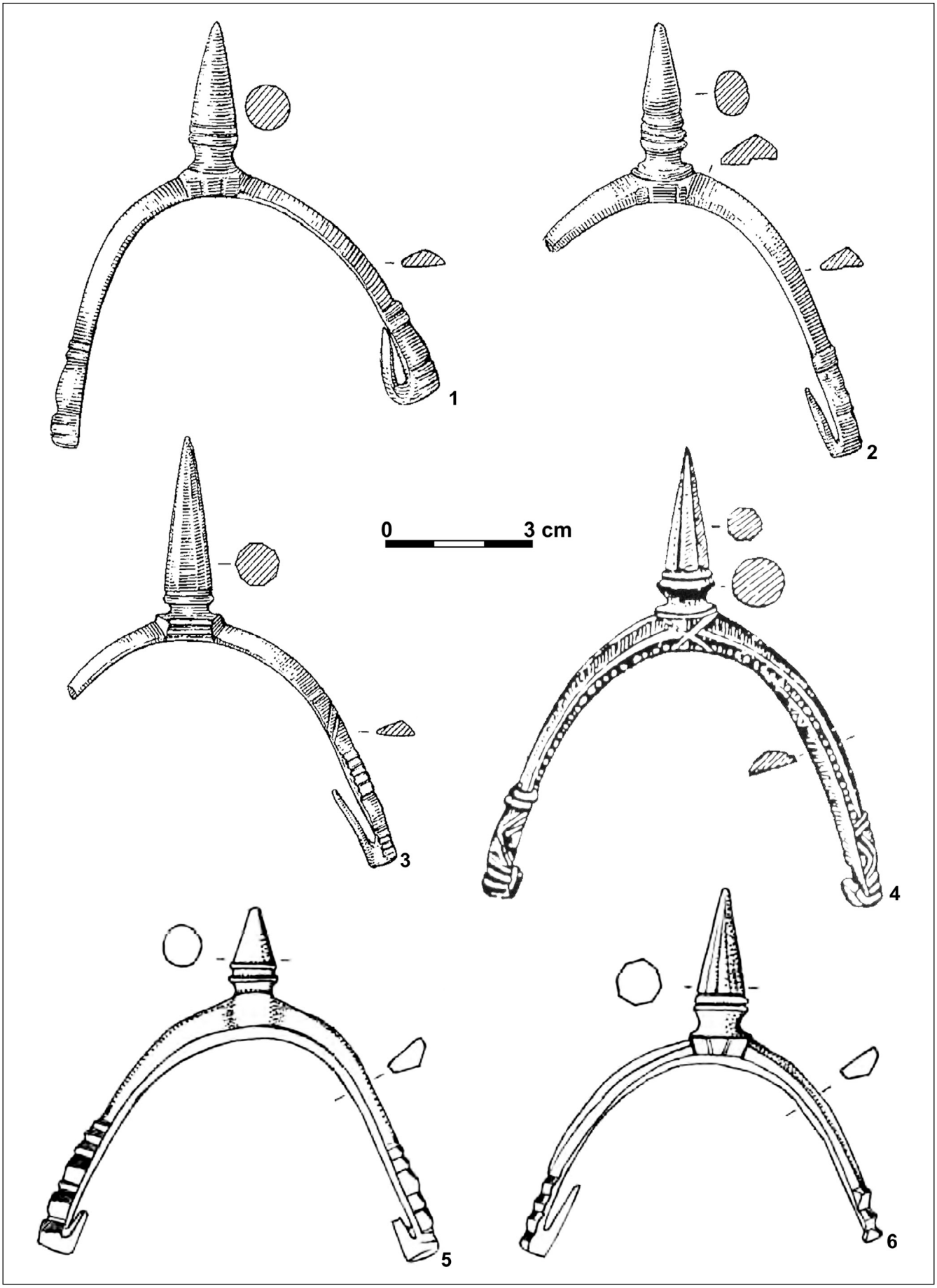

Fig. 3. Spurs of Technotype I.2 of Variant B-C: 1-3 – Uherské Hradište. After Poulik 1985, Fig. 13.3-5; 4 – Sadská. After Profantová 1993, Fig. 4.1; 5 – Sobotka-Spyšová. After Profantová 2015, Fig. 4.2; 6 – Mukov. After Profantová 2015, Fig. 4.3.

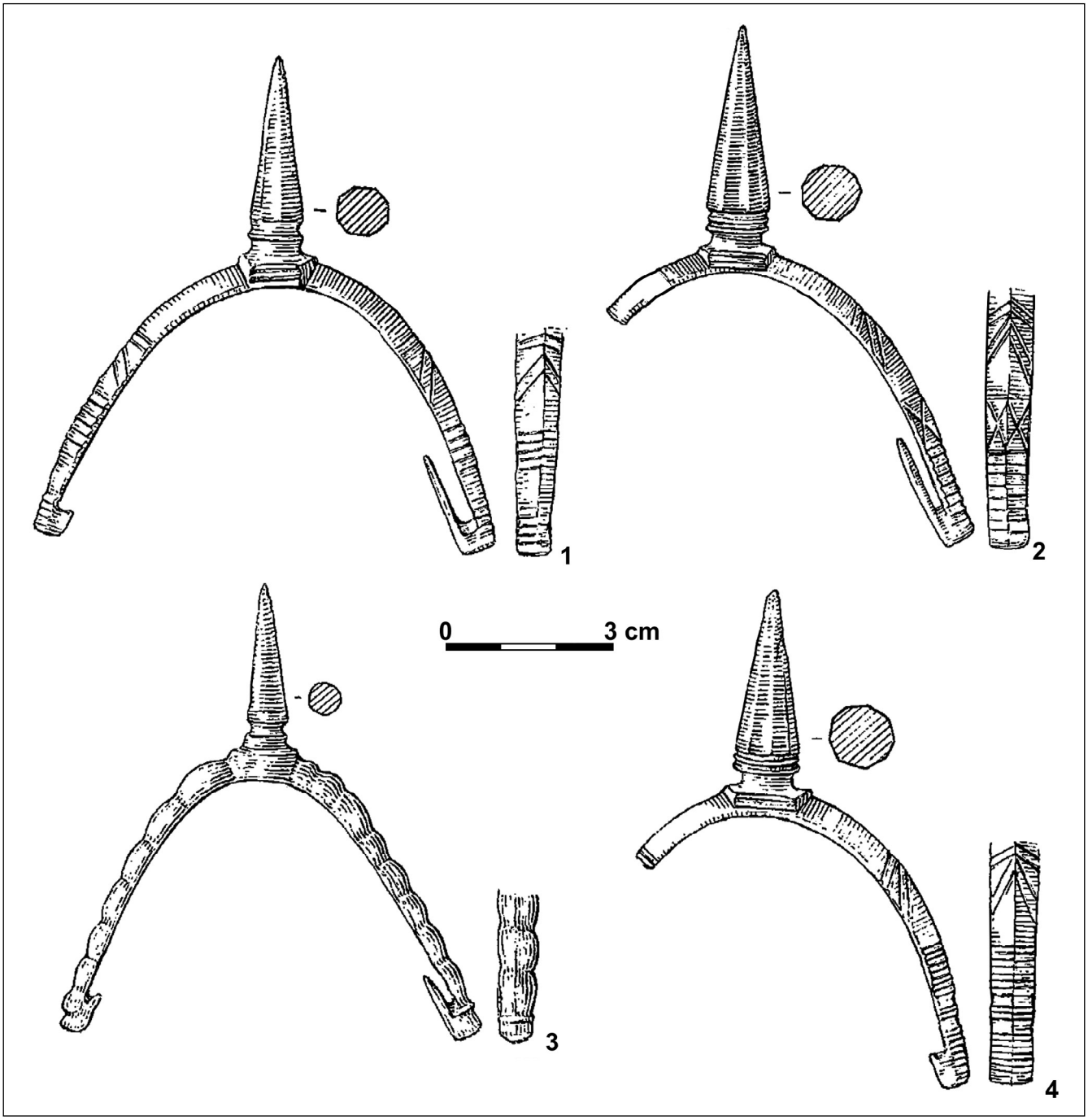

Fig. 4. Spurs of Technotype I.2 of Variant B-C from Mikulčice. After Poulik 1985, Fig. 7.

analyses the artefact from Chodlik can be dated to the same period[37]. A spur from Glienke in Mecklenburg was found in sediments of a site dated to the period from the mid-9th to the mid-10th century. According to the authors of the research, a geometrical ornament on its surface can be related to ornamentation which would allow to date the find to the second half of the 8th – the beginning of the 9th century[38]. On the other hand, the find from Pień was excavated in an embankment dating back to the 10th-10th/11th century[39]. The chronology (10th-11th century) of parts of the grave complex in Višneva (Kaup-Wiskiauty) is also similar; they included, apart from two spurs of Variant A, a pair of stirrups, 1 or 2 spearheads, a bit, an unornamented bronze bowl, a bead and a bucket[40]. The chronology of finds from Görke, Szczecin, Chodlik or Glinke falls approximately to the period from the mid-8th to the end of the 9th century. This is at variance with the findings by Żak and Maćkowiak-Kotkowska, who were of the opinion that

[37] Hoczyk-Siwkowa 2004, 24; Poleski 2013, cat. No. 21-22.
[38] Messal 2015, 147-148, Fig. 73, Tab. 102.11.
[39] Janowski 2010.
[40] Mühlen 1975, 123, No. 7; cf. Parczewski 1988, 100-101; Kotowicz 2008, 369.

these finds were produced in the period from the 6th until the beginning of the 8th century[41]. However, this dating partially meets conclusions drawn by Wachowski, who placed them in the period from the beginning of the 8th until the turn of the third and fourth quarter of the 8th century[42]. However, none of these suggestions includes spurs from Pień and Višnevo, which were excavated in assemblages dating back to the 10th-11th centuries. In the case of the first find it can also be assumed that it is earlier and that it was in secondary deposits of the embankment[43]. However, the find from Višnevo is part of a chronologically compact grave complex, which cannot be dated earlier than to the 10th century.

Similar discrepancies can also be noted in the case of Variant B-C. According to earlier findings by Żak, the period of their occurrence was to be the first half of the 6th until the beginning of the 7th century[44] or, upon later corrections, between the 7th and the beginning of the 8th century[45]. A suggestion of an even later dating was put forward by Wachowski. According to him they date back to the period from the second to the fourth quarter of the 8th century[46]. These findings are essentially consistent with contemporary opinions of Czech and Slovak scholars, who quite unanimously date hooked spurs with terminals bent inside to the 8th, or possibly to the 9th century[47]. This is relevant not only for bronze finds of Variant B-C, but also for iron finds of all variants.

Considering the above observations, we deal with a situation in which even presuming that a part of finds of Variant A is earlier than the layers in which they were excavated (e.g. Pień), they are no earlier than spurs of Variant B-C. Hence the argument of seniority: a time sequence, which was one of the pivots of the concept of the evolution of spurs in that there was a continuous lengthening of archs, does not hold.

To conclude, in the case of hooked spurs with terminals bent inside of Variants A and B-C we deal with two types which are fundamentally different with regard to technological and morphological features. These two types were distributed in two distant territories in the same or approximately the same period. Hence a question needs to be asked whether in view of the above considerations these variants still need to be considered as successive stages of evolution of hooked spurs, following each other and arising out of each other, or as two independent branches with common roots?

Regarding the origin of spurs of Technotype I, the opinions of scholars strongly differ. In a monograph of 1959 J. Żak was inclined to consider that they were made by the Germans[48]; however, 30 years later he assumed their Slavonic or West Balt provenance[49]. The matter was not resolved by Wachowski, either, as he indicated that they were produced by representatives of all those peoples. However, this scholar believed that the casting of „bronze" spurs in the Baltic zone of Feldberg-Kędrzyno was to be a result of the Balt influence, while in the territories located south of the Carpathians it was to have resulted from Carolingian influences[50]. Marek Dulinicz raised strong objections to this view. In his opinion, all spurs cast of „bronze" should be considered West European imports[51]. It needs to be noted, however, that these observations were relevant for artefacts from the territories of the Northern and Western Slavs and did not include spurs of Variant B-C. In my opinion, this hypothesis may only be viable with regard to Variant A spurs with a low arch. Works devoted to territories inhabited by the Baltic peoples do not even mention hooked spurs with terminals bent inside[52]. Few finds excavated in the Sambian Peninsula are an exception. Hence, even in the view of the high level of development of Balt metallurgy and technical potential of their production there are patterns, even iron ones, on which a possible production could be based.

In the light of the above arguments I am of the opinion that the division of hooked spurs into types whose differentiating feature is the height of the arch can only be used as a basis for the arrangement of finds. At present, there is no basis to put forward evolutionary conclusions and to build chronological sequences based on the change in this parameter. There are strong premises that in the case of spurs cast from copper alloys the existence of two two separate development lines can be considered. These lines could perhaps arise from different bronze making traditions. I believe that future research will allow to verify this assumption.

[41] Żak and Maćkowiak-Kotkowska 1988, 35-39.

[42] Wachowski 1991, 91.

[43] I made such an assumption in the course of study of a spur from Pień – cf. Janowski 2010.

[44] Żak 1959, 73-75.

[45] Żak and Maćkowiak-Kotkowska 1988, 35-39.

[46] Wachowski 1991, 91.

[47] Galuška 2013, 92-94; Profantová 2015, 287. In previous literature an assumption can be found that bronze spurs are earlier than iron ones – Galuška 2013, 23.

[48] Żak 1959, 94-96.

[49] Żak and Maćkowiak-Kotkowska 1988, 241.

[50] Wachowski 1991, 87-88.

[51] Dulinicz 2006, 136.

[52] Cf. Kulakov 1990, 35.

List of copper alloy spurs with hooked terminals bent inside

1. Brno-Líšeň (Czech Republic) – 1 find of Variant B-C? (Profantová 2016, 18, Fig. 15.3)
2. Burgstall Alteck (Austria) – 1 find of Variant B-C (Janowski 2010, note 4)
3. Chodlik (Poland) – 1 find of Variant A (Żak and Maćkowiak-Kotkowska 1988, cat. No. 70; Wachowski 1991, 103, No. 183)
4. Glienke (Germany) – 1 find of Variant A (Messal and Schmidt 2004, 215; Messal 2005, 158, Fig. 9; Janowski 2010; Messal 2015, 147-148)
5. Görke (Germany) – 1 find of Variant A (Schoknecht 1964; Żak and Maćkowiak-Kotkowska 1988, cat. No. 44; Wachowski 1991, 100, No. 2)
6. Klátova Nová Ves (Slovakia) – 1 find of Variant B-C? (Jakubčinová 2015, 94, 100, Table II: 6)
7. Kopaniewo (Poland) – 1 find of Variant A (Żak and Maćkowiak-Kotkowska 1988, cat. No. 79; Wachowski 1991, 100, No. 3)
8. Kraków-Wyciąże (Poland) – 1 find of Variant B-C (Poleski 2013, Fig. 96.13)
9. Mikulčice (Czech Republic) – at least 8 finds of Variant B-C (Wachowski 1991, 101, Nos. 68, 70, 77, 83, 84, 88; Profantová 2015, 285; 2016, Table 1)
10. Mukov (Czech Republic) – 1 find of Variant B-C (Profantová 2015, 285; Profantová 2016, 8, Fig. 4.3)
11. Olomouc-Povel (Czech Republic) – 2 finds of Variant B-C (Bláha 1988, 160, Fig. 7; Profantová 1994, 67)
12. Oradea (Romania) – 1 find of Variant B-C (Żak and Maćkowiak-Kotkowska 1988, cat. No. 126)
13. Pień (Poland) – 1 find of Variant A (Janowski 2010)
14. Roštín (Czech Republic) – 1 find of Variant B-C (Profantová 2016, 18, Fig. 15.5)
15. Sadská (Czech Republic) – 1 find of Variant B-C (Żak and Maćkowiak-Kotkowska 1988, cat. No. 39; Wachowski 1991, 102, No. 150; Profantová 2015, 285; Profantová 2016, 9, Fig. 3.b; 4.2)
16. Skorkov (Czech Republic) – 1 find of Variant B-C (Profantová 2015; Profantová 2016, 12, Fig. 7.b, 12.1)
17. Słodkówko (Poland) – 1 find of Variant A (Janowski 2016)
18. Strakonice (Czech Republic) – 1 find of Variant B-C (Profantová 1994, Fig. 5.1; Profantová 2015, 285)
19. Szczecin (Poland) – 1 find of Variant A (Cnotliwy and Rogosz 1983, 169, Fig. 145.12; Żak and Maćkowiak-Kotkowska 1988, cat. No. 114; Wachowski 1991, 100, No. 4; Świątkiewicz 2002, 79-80, Tabl. XVIII.3; Łosiński 2008, 111-112)
20. Tismice (Czech Republic) – 3 finds of Variant B-C (Profantová 2015, 285; Profantová 2016, 12, Fig. 10.1, 3-4)
21. Uherské Hradiště – Ostrov Sv. Jiří (Czech Republic) – 3 finds of Variant B-C (Wachowski 1991, 101, Nos. 89, 90, 91)
22. Višnevo (Kaup-Wiskiauty) (Russia) – 2 finds of Variant A (Mühlen 1975, 123, Table 38.7-8; Żak and Maćkowiak-Kotkowska 1988, cat. Nos. 135-136)
23. Wakendorf (Germany) – 1 find of Variant D? (Żak and Maćkowiak-Kotkowska 1988, 348)

Bibliography

Arne T.J. 1914. *La Suède et l'orient*. Uppsala.

Bezzenberger A. 1904. *Analysen vorgeschichtlicher Bronzen Ostpreußens*. Königsberg.

Bláha J. 1988. *Předběžna zpráva o objevu předvelkomoravského ústředi v Olomouci*. „Archaeologia Historica" 13, 155-170.

Błoński M. 2000. *Średniowieczne ostrogi z grodziska na Zawodziu w Kaliszu*. „Archeologia Polski" 45 (1-2), 53-92.

Cnotliwy E., Rogosz R. 1983. *Wykop VI*. In: E. Cnotliwy, L. Leciejewicz, W. Łosiński (eds.), *Szczecin we wczesnym średniowieczu. Wzgórze Zamkowe*. Wrocław, Warszawa, Kraków, Gdańsk, Łódź, 168-193.

Dulinicz M. 2006. *Frühe Slawen im Gebiet zwischen unterer Weichsel und Elbe*. Neumünster.

Frána J., Maštalka A. 1992. *Röntgenfluoreszenzanalyse von frühmittelalterlichen Bronzen aus Böhmen und Mähren*. In: F. Deim (ed.), *Awarenforschungen* 2. Wien, 779-801.

Gabriel I. 1984. *Chronologie der Reitersporen*. In: I. Gabriel (ed.), *Starigard/Oldenburg. Hauptburg der Slawen in Wagrien I, Stratigraphie und Chronologie (Archäologische Ausgrabungen 1973-1982)*. Offa-Bücher 52. Neumünster, 117-157.

Gabriel I. 1988. *Hof- und Sakralkultur sowie Gebrauchs- und Handelsgut im Spiegel der Kleinfunde von Starigard/Oldenburg*. In: M. Müller-Wille (ed.), *Oldenburg – Wolin – Staraja Ladoga – Novgorod – Kiev. Handel und Handelsverbindung im südlichen und östlichen Ostseeraum während des frühen Mittelalters*. Bericht der Römisch-Germanischen Kommission 69. Mainz, 103-291.

Galuška L. 2013. *Hledání původu. Od avarských bronzů ke zlatu Velké Moravy*. Brno.

Herrmann J. 1968. *Siedlung, Wirtschaft und gesellschaftliche Verhältnisse der slawischen Stämme zwischen Oder/Neisse und Elbe: Studien auf der Grundlage archäologischen Material*. Berlin.

Hoczyk-Siwkowa S. 2004. *Kotlina Chodelska we wcześniejszym średniowieczu. Studium archeologiczno-osadnicze*. Lublin.

Jakubčinová M. 2015. *Ostrohy s háčikmi z Bojnej*. In: K. Pieta, Z. Robak (eds.), *Bojná* 2. *Nové výsledky výskumov včasnostredovekých hradísk*. Nitra, 91-107.

Janowski A. 2010. *Dwie ostrogi z zaczepami haczykowato zagiętymi do wnętrza z miejscowości Pień na ziemi chełmińskiej*. „Acta Militaria Mediaevalia" 6, 173-183.

Janowski A. 2016. *Brązowa ostroga z ramionami haczykowato zagiętymi do wnętrza ze Słodkówka pow. stargardzki*. „Stargardia" 10, 407-413.

Kavánová B. 1976. *Slovanské ostruhy na území Československa*. Praha.

Kind T. 2007. *Westliche Einflüsse auf der östlichen Balkanhalbinsel im Spiegel der früh- und hochmittelalterlichen Reitausrüstung*. In: J. Henning (ed.), *Post-Roman Towns, Trade and Settlement in Europe and Byzantium* 2. *Byzantium, Pliska, and the Balkans*. Berlin, New York, 543-612.

Klanica Z. 1986. *Počátky slovanského osídlení našich zemí*. Praha.

Kotowicz P.N. 2006. *Przemiany w uzbrojeniu plemiennym i wczesnopaństwowym (VI-poł. XIII w.) w polskiej części dawnych księstw ruskich – wybrane przykłady*. In: *Deržava ta armiâ*. „Vìsnik Nacìonal'nogo Unìversitetu L'vìvs'ka Polìtehnìka" 571, 18-47/*Держава та армія*. „Вісник Національного Університету Львівська Політехніка" 571, 18-47.

Kotowicz P.N. 2008. *...wszystką jego broń umieścili obok niego... Pochówki wojowników (?) na wczesnośredniowiecznych, ciałopalnych cmentarzyskach kurhanowych z terenu Polski*. In: W. Dzieduszycki, J. Wrzesiński (eds.), *Epidemie, klęski, wojny*. Funeralia Lednickie 10. Poznań, 363-383.

Kulakov V.I. 1990. *Drevnosti Prussov VI-XIII vv.* Svod arheologičeskih istočnikov G 1-9, Moskva/Кулаков В.И. 1990. *Древности пруссов VI-XIII вв. Свод археологических источников* Г 1-9, Москва.

Łosiński W. 2008. *Początki wczesnośredniowiecznego Szczecina*. In: W. Łosiński, *Pomorze Zachodnie we wczesnym średniowieczu. Studia archeologiczne*. Poznań, 101-112.

Messal S. 2015. *Glienke. Eine slawische Burg des 9. und 10. Jahrhunderts im östlichen Mecklenburg*. Wiesbaden.

Mühlen B. von zur 1975. *Die Kultur der Wikinger in Ostpreußen*. Bonner Hefte zur Vorgeschichte 9. Bonn.

Parczewski M. 1988. *Początki kultury wczesnosłowiańskiej w Polsce. Krytyka i datowanie źródeł archeologicznych*. Kraków.

Poleski J. 1992. *Podstawy i metody datowania okresu wczesnośredniowiecznego w Małopolsce*. Kraków.

Poleski J. 2000. *Chronologia i periodyzacja wczesnego średniowiecza w Polsce – osiągnięcia i porażki*. In: M. Kobusiewicz, S. Kurnatowski (eds.), *Archeologia i prahistoria polska w ostatnim półwieczu*. Poznań, 423-432.

Poleski J. 2013. *Małopolska w VI-X w. Studium archeologiczne*. Kraków.

Poulík J. 1985. *Svědectví výzkumů a pramenů archeologických o Velké Moravě*. In: J. Poulík, B. Chropovský (eds.), *Velká Morava a počátky Československé státnosti*. Praha, 9-80.

Profantová N. 1990. *rec. Jan Żak – Lidia Maćkowiak-Kotkowska: Studia nad uzbrojeniem środkowoeuropejskim VI.-X. wieku. Zachodniobałtyjskie i słowiańskie ostrogi o zaczepach haczykowato zagiętych do wnętrza – Studien zur mitteleuropäischen Bewaffnung des 6.-10. Jahrhunderts. Westbaltische und slawische Hakensporen mit nach innen umgeschlagenen Enden. Poznań 1988. 419. str., 21 kreseb. Tab., 11 map a 4 obr. v textu*. „Památky archeologické" 82, 241-243.

Profantová N. 1992. *Awarische Funde aus den Gebieten nördlich der awarischen Siedlungsgrenzen*. In: F. Deim (ed.), *Awarenforschungen* 2. Wien, 605-778.

Profantová N. 1994. *K nálezům ostruh z konce 7.-9. stol. v Čechách*. In: J. Fedrich, J. Klapste, P. Vareka (eds.), *Mediaevalia Archaeologica Bohemica 1993*. Památky archeologické – Supplementum 2. Praha, 60-85.

Profantová N. 2015. *The horse harness, spurs and stirrups in Bohemia in 8th and 9th century*. In: C. Cosma (ed.), *Warriors, weapons, and harness from the 5th-10th centuries in the Carpathian Basin*. Cluj-Napoca, 281-298.

Profantová N. 2016. *Ostruhy jako doklady přítomnosti elity v 8. a 9. století v Čechách*. „Archaeologica Historica" 41 (2), 7-40.

Schoknecht U. 1964. *Einige bemerkungswerte frühgeschichtliche Neufunde aus Görke im Kreise Anklam*. „Bodendenkmalpflege in Mecklenburg" 1963, 263-269.

Snášil R. 1984: *Specializovaná řemesla z ostrovního hradiska v Uherském Hradišti a jejich přínos pro další poznání společenské diferenciace 8.-9. století*. In: E. Kordiovský, M. Zemek (eds.), *Dějiny řemesel a průmyslu na jižní Moravě*. XIII Mikulovské sympozium. Praha, 152-161.

Szymański W. 1987. *Próba weryfikacji datowania zespołu osadniczego ze starszych faz wczesnego średniowiecza w Szeligach, woj. płockie*. „Archeologia Polski" 32 (2), 349-379.

Szymański W. 2000. *Trudne problemy w poznawaniu starszych faz wczesnego średniowiecza na ziemiach polskich*. In: M. Kobusiewicz, S. Kurnatowski (eds.), *Archeologia i prahistoria polska w ostatnim półwieczu*. Poznań, 353-379.

Wachowski K. 1981. *Ziemie polskie a Wielkie Morawy. Studium archeologiczne kontaktów w zakresie kultury materialnej*. „Przegląd Archeologiczny" 29, 151-197.

Wachowski K. 1991. *Oddziaływania zachodnie na wytwórczość ostróg haczykowatych u Słowian*. „Przegląd Archeologiczny" 38, 85-107.

Żak J. 1959. *Najstarsze ostrogi zachodniosłowiańskie. Wczesnośredniowieczne ostrogi o zaczepach haczykowato zagiętych do wnętrza*. Warszawa, Wrocław.

Żak J. 1990. *O chronologii ostróg o zaczepach haczykowato zagiętych do wnętrza*. „Archeologia Polski" 35 (1), 161-162.

Żak J., Maćkowiak-Kotkowska L. 1988. *Studia nad uzbrojeniem środkowoeuropejskim VI-X wieku. Zachodniobałtyjskie i słowiańskie ostrogi o zaczepach haczykowato zagiętych do wnętrza*. Poznań.

Żołędziowski K. 2015. *Non-ferrous Metalworking from Truso. Local Production and Import*. In: O. Felczak (ed.), *The Baltic Sea – a Mediterranean of North Europe. In the Light of Archaeological, Historical and Natural Science Research from Ancient to Early Medieval Times*. Gdańsk, 77-85.

Streszczenie

Chronologia i ewolucja wczesnośredniowiecznych ostróg z zaczepami haczykowato zagiętymi do wnętrza w świetle nowych znalezisk i analiz

Artykuł jest wynikiem obserwacji prowadzonych na zbiorze 36, wykonanych ze stopów miedzi, ostróg z zaczepami haczykowato zagiętymi do wnętrza. Ta niewielka grupa przedmiotów, od momentu ukazania się w 1959 r. studium Jana Żaka, wzbudza gorące dyskusje. Badacz ten dokonał podziału ostróg na odmiany. biorąc za kryterium wysokość kabłąka, która jego zdaniem stale rosła. Ewolucja ta legła u podstaw uznania ostróg haczykowatych za precyzyjne wyznaczniki chronologii.

Przeprowadzona w niniejszym artykule analiza topografii znalezisk wykazała, że ostrogi odmian A oraz B-C występują w dwóch odrębnych, wykluczających się regionach. Na obszarze występowania ostróg odmiany A nie ma znalezisk okazów odmiany B-C rzekomo „późniejszych", z kolei na obszarze występowania odmiany B-C brak form rzekomo „wcześniejszych". W obu przypadkach stanowią one zatem „ślepe" ogniwa ewolucji nie mające form starszych ani młodszych.

Kolejnych argumentów przeciw hipotezie Żaka dostarczają wyniki analiz chemicznych, które wykazały diametralnie różny skład stopów. Ostrogi odmiany A wykonano ze stopów o cechach mosiądzów, natomiast ostrogi odmiany B-C z brązów. Jest to zapewne efektem odmiennych tradycji brązowniczych na obszarach ich występowania.

Także analiza kształtu ostróg i sposobów zdobienia oraz opracowania powierzchni, a przede wszystkim datowanie znalezisk nie dają dziś podstaw do upatrywania w nich kolejnych etapów ewolucji.

Podsumowując można stwierdzić, że w przypadku wykonanych ze stopów miedzi ostróg z zaczepami haczykowatymi zagiętymi do wnętrza odmian A oraz B-C mamy do czynienia z dwoma odmianami różniącymi się zdecydowanie pod względem cech technologicznych i morfologicznych, występującymi na dwóch rozłącznych terytoriach, w tym samym lub zbliżonym okresie. Wiele wskazuje, że należy się liczyć z istnieniem dwóch odrębnych linii rozwojowych, wyrosłych na podstawie odmiennych tradycji brązowniczych. Sądzę, że przyszłe badania pozwolą to założenie zweryfikować.