THE SWORD AND SWORD-BELT IN CAROLINGIAN TIMES¹

The Warrior Burial 23 from Závada Reconsidered

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The paper analyses components of early medieval burial equipment from grave 23 in Závada, district Topoľčany/SK after restoration that took place in 2017. The grave contained a type X sword, a pair of spurs, an incomplete set of sword belt fittings and a knife. Formerly accepted dating of the items found in grave 23, based on the concept of the Blatnica-Mikulčice Horizon, determined the chronology of the grave back to the first third of the 9th century. However, based on more recent finds about the chronology of an equestrian's equipment, the chronology of the assemblage should be shifted rather to the period between the mid-9th century and the beginning of or even the mid-10th century.

INTRODUCTION

The paper analyses components of burial equipment from grave 23 in Závada (dist. Topoľčany/ SK) after restoration that took place in 2017. The assemblage is often referred to as a chronological base for selected categories of items related to the early medieval warrior's attire and weaponry. However, for some time researchers suggest that dating of the assemblage could be inadequate (most recently *Košta/Hošek 2014*, 250; *Ungerman 2011a*, 588). It seems that re-analysis of the set in the context of more recent finds could be useful and could provide some precious information. The main aim, thus, is to reconsider and possibly adjust the chronology of the items in question to the current knowledge about the Carolingian and Great Moravian times and particularly about the Carolingian war equipment.

The cemetery in Závada was excavated by D. Bialeková in 1974 and 1976 (*Bialeková* 1974; 1975; 1977a) and then published (*Bialeková* 1982). Generally, 36 graves were discovered and studied – 33 of them contained human bones or traces of burial (Fig. 1). Some part of the cemetery (maybe even its half) was destroyed by erosion, sand quarry and during a road construction. As a consequence, all the analyses can apply only to the preserved group of graves. Grave 23 (Fig. 2) was located in the central part of the area. A man aged about 30–40 was buried there. Probably, the burial pit was disturbed already in the Early Middle Ages by grave 22² and later also partly destroyed during quarrying activities in modern times. The documentation reveals that bones in the grave were moved, although still arranged in a more or less anatomic order. The sword and some strap fittings were not moved and remains of

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² Stratigraphic relations of the two objects are unclear and the documentation does not settle the issue. Bottoms of both graves were at similar depths. However, because of the character of rescue excavations, the documentation is rather parsimonious.



Fig. 1. Závada, district Topoľčany/SK. Plan of the burial ground (based on *Bialeková 1974; 1976; 1977; 1982;* redrawn by Z. Robak). Legend: a – axe; b – spurs; c – sword.

spurs were more or less in a place where the feet should be (*Bialeková 1974; 1982,* 132–134). Therefore, it seems possible that the burial was destroyed accidentally, for example during digging another grave and once the skeleton was discovered, the pit was refilled. It seems possible, thus, that the damages could be unrelated to grave 22 (if the grave is indeed younger). Modern damages affected only the north-eastern corner of the grave.

According to the catalogue attached to the report (*Bialeková* 1974) the grave contained a sword, a spur, a knife, a 'side loop', a strap-end, a fitting with a hinge (Fig. 3; 4), and some number of 'amorphous items'. All of them have been passed to restoration in the laboratory of IA SAS in Nitra in 2017. The restoration performed by M. Knoll revealed that one of those 'amorphous' items is a fragment of a yoke of a second spur (Fig. 4: 2).³ Of eight unspecified

³ The field documentation mentions (1) a partially preserved spur and (2) a fragment of a spur. Afterwards, the description was corrected crossing out the second fragment of a spur and adding a knife. Both the catalogue and the publication of 1982 mention only a knife (*Bialeková 1982*, 132). A box with artefacts kept in deposit of the IA SAS contained a knife as well as a fragment of a second spur. However, an item drawn in the field documentation resembles rather the second spur than a knife. It seems likely that the documentation was accurate (it mentions two fragments of spurs) but later, during restoration when a knife was found, a confusion crept in.



Fig. 2. Závada, district Topoľčany/SK. Grave 23 (after *Bialeková* 1974).



Fig. 3. Závada, district Topoľčany/SK. Grave 23. 1–3 – Sword belt set; 4 – sword. Iron. Drawn by Ž. Nagyová. Scale: a - 1-3; b - 4.



Fig. 4. Závada, district Topoľčany/SK. Grave 23. 1, 2 – Spurs; 3 – Knife. Iron. Drawn by Ž. Nagyová.

items, one is a piece of wood saturated with iron oxides and another one is a fragment of small iron bar covered with wood containing iron oxides. The remaining six fragments are preserved corrosion products containing small amounts of metallic iron.

CHARACTERISTIC OF THE ASSEMBLAGE

Sword

The most famous and the most frequently published item found in grave is 23 is the sword (Fig. 3: 4). Its total length (after 2017 restoration) is 911 mm. The sword has a relatively short (780 mm) and wide (6.9 mm below the guard) blade and a relatively long straight crossguard. The grip has 90 mm and its tang does not pass through a pommel. In order to perform analyses, it was necessary to take samples from both the crossguard and the pommel and therefore we should accept that the accurate dimensions of these two elements are those specified in the original publication (*Bialeková 1982*, 32; *Bialeková/Mihok/Pribulová 1998*, 38), namely 155 mm (length), 55 mm (length) and 30 mm (height). The crossguard resembles an elongated rhomboid with rounded tips. It is 17 mm wide at the tips, 24 mm in the middle and 8.5 mm thick. The pommel resembles a flat semicircle with a rhomboidal bottom (12 mm wide at the tips and 19 mm in the middle). In the intersection the pommel is rectangular. The grip is 90 mm long, 6 mm thick and 16–30 mm wide. The sword corresponds to the type X according to *J. Petersen (1919*, 158–167). The type is characterised by a singlepart, semi-circular pommel with a flat bottom and corresponds to the Geibig's type 12-I (Combination type 12 - 11 - 6 - 10; *Geibig 1991*, 56–58). According to the authors, after the restoration the sword weighed 1430 g (*Bialeková/Mihok/Pribulová 1998*, 38). Currently, it weighs 1200 g. Due to degradation processes only fragments of the scabbard made of common hornbeam (*Carpinus betulus*) preserved.

Due to their popularity, artefacts such as swords of the type X according to Petersen constitute a relatively well recognised category of items.⁴ Already J. Petersen claimed that swords with singlepart pommel began to be mass-produced around mid-9th century. He distinguished two groups of X type swords – an older and a younger – characterised by shapes of their pommels. The older group contains swords with a large, semi-circular pommel and a flat bottom. Their production started between the end of the 9th century and the beginning of the 10th century. According to Petersen such swords developed throughout the 10th century and were used until the mid-11th century (*Petersen 1919*, 159, 165). The younger group consists of swords with smaller, 'bulky' pommel conical in intersection (consistent with the Geibig's combination type 12-II).

The opinion about X type swords presented by J. Petersen 100 years ago is generally supported by the majority of contemporary researchers who date type X swords back to the period between the mid-9th century and the mid-11th century (cf. *Androščuk 2014*, 157–159; *Geibig 1991*, 145; *Košta/Hošek 2014*, 250; *Kucypera/Kurasiński/Pudło 2011*, 77). Such a wide range is a consequence of the popularity of swords with singlepart pommels. Their simplicity and functionality set standards for this type of weapon for a long time (*Košta/Hošek 2009*, 110; *2014*, 251). We should also notice that the chronology of type X swords was to a large extent influenced by assemblages from Moravia and Slovakia, including the one from Závada, which determined the 'bottom line' for all later finds (*Košta/Hošek 2009*, 110; *Kucypera/Kurasiński/Pudło 2011*, 77).

However, when we analyse individual cases then some serious doubts about the chronology arise. It is commonly accepted that grave 2 from Morkůvky (*Měřínský/Unger 1990*, 388) provides an example of an assemblage containing the type X sword. The assemblage was dated, aside from the sword, based on the presence of a spearhead with wings⁵ and an axe. The authors, however, did not hide that dating

⁴ Recently, comprehensive studies on the swords of the Carolingian period were published by: *Košta/Hošek 2014;* on type X swords: *Košta/Hošek 2009; Kucypera/Kurasiński/Pudło 2011, 75–78.*

⁵ The spearhead from grave 2 in Morkůvky could be attributed to Westphal's type II (*Westphal 2002*, 257) dated generally back to the times between the first half of the 8th century and the first half of the 9th century. However, this does not mean that the chronology of the sword should be automatically broadened. On the contrary, it rather seems that the spearhead is an archaic item. As the author of the typology of Western European spearheads noticed himself, simply there are no graves equipped with weapons dated back to the first half of the 9th century and younger, which was a consequence of changes in burial rites in the Carolingian Empire. Consequently, it cannot be ruled out that spearheads of type II were used longer. The grave contained also some unspecified fragments of spurs, of which, however, only small strap buckles preserved. An analysis of this category of finds, based on dozens of burial assemblages from entire Europe shows that in the 9th century

the assemblage from Morkůvky they relied on the then accepted chronology of swords from Závada and grave 280 in Mikulčice (*Měřínský*/*Unger 1990*, 381). According to the recent studies (*Košta/Hošek 2014*, 83–87, 270) the latter one can be dated back to around mid-9th century, although it represents the special type 11 – slightly earlier than 'classic' type X swords (*Petersen 1919*, 112). The analysis of other assemblages related to the Great Moravian culture⁶ containing swords of type X does not allow dating them back to the period before the mid-9th century (*Košta/Hošek 2009*, 110).

Dating the sword from grave 23 in Závada only based on its typological features is not easy, particularly due to the considerable variation within the type. However, although I oppose abstract typologies based on precise measurements of items to the nearest millimetre, it seems possible to capture some patterns in a sufficiently large series of items and the set of over 170 swords of type X definitely is large enough (Androščuk 2014, 76; Košta/Hošek 2009, 110, 111). In the case of the sword from Závada, there are some interesting features such as a very long crossguard (15.5 cm) characteristic of a younger group of swords of type X, but still within the range accepted for the older variation (10.5-17.7 cm). Dimensions of the crossguard (and other elements of the sword) were the reason why A. Geibig (1991, 145) and Szameit (1992, 221) rejected the dating of the sword from Závada back to the beginning of the 9th century and suggested that it should be shifted to the beginning of the 10th century instead. Additionally, E. Szameit noticed that a sword with such a long crossguard would have no analogies among Carolingian swords (of various types) dated back to the first half of the 9th century. Therefore, it is difficult to consider the sword from Závada as an example of the earliest specimens of type X swords, particularly if we notice that the dating relies only on the chronology of components of the sword set. The recent studies on Carolingian strap fittings suggest that the chronology of these items could be overestimated (see below and Robak 2013; 2017; Ungerman 2011a; 2017). Therefore, we need to conclude that there are no arguments proving that the sword was produced earlier than in the second half of the 9th century.

Sword set

The sword set found in grave 23 included three items: the fitting with a neck and a loop (described as 'side loop'), the two-part fitting with a hinge, and the strap-end (Fig. 3: 1-3; 5). The set should have included also a fitting with a loop which, however, was not found in the grave. All these items were made of iron. Surface of each of the fittings was decorated with six flattened knobs decorated with an arc-shaped, punched ornament. Space between knobs was also covered with fine, irregular punched dots and arcs. Additionally, an upper edge of the fitting with a neck and a loop was corrugated. Each of the fittings was fastened with three rivets placed at the upper edge of the plate. On the back side of the fitting with a neck and a loop as well as on the back sides of both plates of the fitting with a hinge, there was a rivet allowing fastening the items to a strap (clearly visible at X-ray image; Fig. 5). The strap-end had no such element – presumably, similarly as many



Fig. 5. X-ray image of the strap fittings from Závada. No scale.

there was a tendency to gradually miniaturise components of spur fasteners of the Carolingian type (*Robak 2013, 45, 59, 68, 79, 209*). Dimensions as well as forms of buckles from grave 2 in Morkůvky suggest that most probably (although there could be an exception to the rule) they were items typical rather for the second half of the 9th century.

⁶ In this context, the term 'Great Moravian' is used only to describe the material culture characteristic of the Slavs inhabiting what are now areas of Moravia and Slovakia between the turn of the first and second quarters of the ninth century and the first half of the tenth century, and avoiding unnecessary debates about whether it should be categorised under the early or late period (see *Robak 2013*, 199; 2017). I accept that although it is a common derivation of the historical term 'Great Moravia', which designates a political entity that existed between 833 or 846 – depending on the perspective – to 907 or 924, it is not an adequate term, as the lifespan of 'Great Moravian' material culture does not exactly match that of the political entity.

other strap-ends, it was fastened with a thin plaque. Under the rivets, there were thin pads made of copper alloys and thin, twisted iron wires imitating granulation.

As a consequence of a need to develop a new typological and chronological system for metal artefacts of the Carolingian type, sword sets of this type were recently subjected to some detailed analyses (*Robak* 2013, 149–152; *Ungerman* 2011a, 584–588; 2017). Š. Ungerman used the sword set from grave 23 in Závada to distinguish the entire type of 'Závada' sword sets. In 2013 I have included the set to type V (Fig. 6). According to Š. Ungerman, a distinctive feature of the type is the presence of a fitting with a neck and a loop and it covers sets consistent with types IV and V but also the set from Hamm-Westhafen (*Cichy* 2008, 55). Based on other elements of the assemblage, the set from Hamm-Westhafen could be dated back to the 8th century. It may seem, therefore, that the set is the oldest example of the Závada type sets. Consequently, such sets would evolve earlier than other late Carolingian sword sets (types I–III). However, since there are no similar finds from Western Europe, we should consider the set from Hamm-Westhafen as an incidental phenomenon. The innovation (using a fitting with a neck and a loop in sword set) were not yet popular in the second half of the 8th century.⁷

Sword sets of type V are known only from areas located on the eastern borders of the Carolingian world – mainly from Moravia, Slovakia, and Slovenia. Most loose finds of the fittings with a hinge, a distinctive feature of the type⁸, come from the same area (*Robak 2013*, 149–152; *2014*, Map 10–12). Consequently, we can hypothesise that this type of sword sets is a local invention, developed in the area of the Middle Danube Basin. This hypothesis is further substantiated by the fact that the fittings typical for the type V are, in most cases, decorated in a manner typical for items found only in eastern peripheries of the Carolingian culture – in today's Bohemia, Moravia, Slovakia, western Hungary, and Slovenia (*Robak 2013*, 179–182).

Sword sets of type V probably evolved from sets of type IV (that is the variation in which a roofshaped fitting was replaced with a fitting with a hinge) so the type V seems to be the youngest developmental form of a sword set of the Carolingian type (*Robak 2013*, 148–152).⁹ The issue plays a crucial role in dating grave 23 and possible application of components of the set as independent chronological determinants.

The process of technological evolution of Carolingian sword sets, particularly after a series of studies performed in recent years (*Baumeister 1998; Košta/Hošek 2008; Robak 2013; 2014; Ungerman 2011a; 2011b; 2017; Wamers 1981*), seems to be quite clear. The most popular late Carolingian sword set (type I) including, among others, a trefoil fitting and two oval fittings evolved not before the turn of the first and the second quarter of the 9th century. This conclusion is confirmed both by the chronological analysis of the assemblages, where such artefacts were found, and the analysis of assemblages containing early, not standardised forms of late Carolingian sword sets¹⁰ (*Robak 2013,* 105–111, 143; *Wamers 1981; 2005,* 54, 55). This means that sword sets with one roof-shaped fitting instead of two oval fittings (type II) evolved a bit later. And again, this hypothesis seems to be substantiated by the analysis of the source material – among roof-shaped fittings there are no specimens stylistically consistent with items produced earlier than the second third of the 9th century¹¹ (*Robak 2013,* 119–121). Therefore, if the concept of chronological and typological development of Carolingian sword sets is correct, then the invention of fittings with a hinge, as an element that evolved from roof-shaped fittings, should be linked, at the earliest, with the mid-9th century. Consequently, that would mean that sword sets of type V were used mainly in the second half of the 9th century.

⁷ At that time the most popular sword sets included, among others, two pyramidal fittings placed at both sides of a scabbard (which later evolved into an oval fitting known from type I sets – cf. *Baumeister 1998*, fig. 4; 6; *Lüppes 2010*; *Robak 2013*, 114–116) and exactly such fittings were found in grave 399 in Hamm-Westhafen. Other typical late Merovingian components of sword sets are: a strap divider, two buckles, two strap-ends and a fitting with a loop fastened to the lower part of a scabbard. The evolution of such items could be traced from early Carolingian (*Robak 2013*, 96–104) to late Carolingian sets. Except for a fitting with a neck, all components of the sword set found in grave 399 match the late Merovingian sets.

⁸ Other components were used also in sets of other types or could be unrelated to the sword set (used, for example, as elements of horse tack).

⁹ See also Ungerman 2017, 275 who presumes another way of the evolution – from fittings with a hinge to roof-shaped fittings. Unfortunately, the current state of the art does allow solving the puzzle. Sets of type IV and V were used in the same time and their stylistics could influence each other (or they both could be influenced by currently prevailing aesthetical trends).

¹⁰ Recent finds of components of early Carolingian sword set from Marquartstein in Bavaria (*Helmbrecht 2008*) dated back to about 800 support this hypothesis about the chronological and typological development of such items.

¹¹ Most specimens found in Western Europe and in Scandinavia are items decorated with an already developed plant style, typical for the middle third of the 9th century.



Fig. 6. Typology of the Carolingian sword-belt sets. 1 – Three-way strap divider; 2 – Oval fitting; 3 – Fitting with a loop; 4 – Strap-end; 5 – Buckle; 6 – Roof-shaped fitting; 7 – Fitting with a neck and a loop; 8 – Fitting with a hinge. Drawn by Z. Robak.



Fig. 7. Reconstruction of the sword fastening using of a V type sword belt-set (1^{st} option). Drawn by Z. Robak.



Fig. 8. Reconstruction of the sword fastening using of a V type sword belt-set (2^{nd} option). Drawn by Z. Robak.

Fastening method

While in the case of sword sets of types I–III the reconstruction of mounting methods does not raise any serious doubts and is additionally supported by iconographic sources (*Robak 2014*, Tab. CXII–CXVII; *Wamers 2005*, 52–55), fastening of sets of types IV and V remains unclear. Studies on the issue are difficult because burial assemblages containing sword sets of type IV and V are rare. Furthermore, there are no iconographic sources presenting similar technical solutions.¹²

It seems that the most problematic issue is the function of fittings with a neck and loop. This type of items was recently analysed in a series of studies (*Robak 2013*, 122–140; *Ungerman 2005–2006*; *2011a*, 586). The fitting could link two straps, but it remains unclear which and how. There are two possibilities. Firstly, such fittings could be used similarly as in the horse tack, namely as a buckle (Fig. 7; *Robak 2013*, 124, 125). This hypothesis is supported by the fact that so far no assemblages containing a sword set of either IV or V type contained a main strap buckle. However, if this was the case, the set should contain no strap dividers. This would not be a problem, because straps could be simply stitched. On the other hand, however, none of the four sword sets of type IV and V found in graves¹³ is complete and the preserved items are damaged and thus it is possible that buckles simply did not preserve or were never deposited in graves. Additionally, since in some cases loops of the fittings found in sets of the type IV and V are smaller than straps, it would be difficult to use them as buckle.¹⁴

 $^{^{12}\;}$ This supports the hypothesis that such sword sets were unknown in Western Europe.

¹³ Grave 316 in Rajhradice (*Staňa 2006*, 161, fig. 67: 316) contained preserved fragments of a sword set together with a sword without pommel and some other components of a warrior's attire. Unfortunately, the items were heavily damaged and thus it is difficult to determine a type of the set. The set includes five fittings decorated with a Y-shaped rib and bosses. Some of the fittings could be fragments of a broken fitting with a hinge (as the author himself suggests referring to them as "a semi-circular fitting" and adding a question mark) or a fitting with a neck, but published drawings prove to be of little help here. Additionally, the issue turns out to be even more complicated, because descriptions of items do not match numbers in the drawing. Based on the number of fittings, it seems probable that the set contains a broken fitting with a hinge, a fitting with a loop, a strap-end, and a fitting with a neck. It is possible that an item described as a "buckle with a diagonal prong' could be a second fragment of the latter.

¹⁴ Of course, it is possible that a strap-end was mounted already after a strap had been passed through a loop – but the process would be too complicated and if a strap were damaged, it would be difficult to repair it (it would be necessary to remove a riveted fitting first).

Secondly, it is also possible that fittings with a loop were used as strap dividers (Fig. 8). Although trefoil fittings were the most popular and the most common in sword sets, used throughout the Carolingian period, they were not the only possibility. There were attempts to replace trefoil fittings with other strap dividers. These attempts are confirmed by a set containing a plate with two loops on the bottom that allowed arranging straps in the shape of the letter Y or T. Based on the analysis of the source material this type of a sword set (type III) developed around mid-9th century and its application seems to be limited to north-western areas of the Carolingian Empire (Robak 2013, 146, 147; 2014, Map 13). It cannot be ruled out that around that time also in eastern peripheries there were attempts to replace trefoil fittings with fittings with a neck and loop. The attempt proved to be successful and thus the fittings became popular.

The possibility that fitting with a neck and loop was used as strap divider in a sword set of type V was experimentally tested and proved to work, although the method is rather complicated (Fig.

Fig. 9. Experimental reconstruction of the type V sword belt-set. Reconstruction performed by Z. Robak and M. Knoll.

9). It allows, however, adjusting the length of a strap wrapped around hips and linking a fitting with a neck and loop with a sword scabbard. In order to avoid twisting, in this reconstruction the lower strap was mounted slightly higher than usually reconstructions of Carolingian sword sets show. Interestingly, the reconstruction reflects images of Carolingian sword sets in codices, where the lower strap was mounted only slightly lower than the upper one, not in the lower part of the scabbard. This secures a more or less vertical position of the sword relative to the body. In order to draw a sword out it would be necessary to tilt the scabbard – similarly as the figures in the illustrations in the Stuttgart Psalter do (fol. 13r; 22r; 43r; 44v; 95r). Permanently tilted scabbard would make it difficult to move. Is the reconstruction accurate? It is hard to say for sure. Carolingian swords found in graves were deposited near the body and thus the layout of fittings is rather a consequence of wrapping the scabbard with straps before the funeral and do not reflect their original arrangement.

The location of fittings with a hinge (Fig. 3: 3) in a set seems to be less problematic. The similarity with roof-shaped fittings and the form itself suggest that it was placed across a scabbard. It should be noted, however, that it is possible to carry a sword even without any fittings and thus their function was to a large extent decorative and prestigious. If we analyse illustrations in Carolingian codices, we will see that most warriors have no decorative belts and their scabbards hang on a strap thanks to a hook (a small slit on the front side of a scabbard). The practical function of fittings with a hinge remains, however, unclear. If indeed it covered a loop in which a sword scabbard was placed, then hinges could make it simpler (allowing shaping a loop; Fig. 10: d). If a sword hang on a strap thanks to the rib, then it seems unlikely that such fittings could have any other function than decorative. The experiment revealed no additional, extraordinary properties of such fittings.

The last special fitting being an element of sword sets is a fitting with a loop placed near the narrower edge of the reverse side (Fig. 11). Such a fitting was included in all sword sets of the Carolingian type and was present also in Merovingian sets (*Baumeister 1998*, fig. 5). It was used to adjust length of the lower strap holding a sword.



Fig. 10. Fitting with a hinge – mounting options. Drawn by Z. Robak.



Fig. 11. Fitting with a loop. Drawn by Z. Robak.

Chronology of the sword set from Závada

Dating of sword sets of type IV and V and their components presented in the literature usually relates to the Great Moravian period, namely roughly between the 9th and the beginning of the 10th century (*Ungerman 2017, 268*). However, there are no reliably dated sources which could prove that such items were used already in the first half of the 9th century. We should remember that studies relying on the chronological conception of the Blatnica-Mikulčice Horizon should not be taken into account any more, at least not without prior critical review (*Robak 2017; Ungerman 2011b*).

Determining the chronology of the sword set from Závada we need to rely

on scarce assemblages (graves) containing typologically similar items. One of such assemblages is grave 71 from Rajhradice containing components of sword set of type IV and type Y sword (Staňa 2006, fig. 54). The sword itself suggests that the assemblage should be dated back (at the earliest) to the turn of the 9th and 10th century. According to the current knowledge this would be one also of the earliest assemblages with this type of sword. Type Y swords were used mainly in the 10th century but could be encountered also at the beginning of the 11th century. In Central Europe most of such swords are known from the Bohemian Basin and southern Germany. They are virtually absent in assemblages considered as Great Moravian (Hošek/Košta/Mařík 2012, 77–79; Košta/Hošek 2014, 252) and the grave from Rajhradice would be an exception. As Š. Ungerman (2017, 269) noticed, it is dated back to the turn of the 9th and 10th century due to the 'traditional' approach to the issue of the decline of the Great Moravian culture (namely to the beginning of the 10th century). It is possible that the entire assemblage is younger and comes from the first half of the 10th century, from the period after the decline of Great Moravia, when, despite the cultural regress, elements typical for the Great Moravian material culture could still be used in an unchanged form (Macháček et al. 2016, 141). Of course, burial assemblage 71 does not determine the beginning or the end of the period when sword sets of type IV or V were used, but provides a good starting point for constructing the chronology.

Two further burial assemblages (graves 54 and 316) containing elements of a sword set also come from Rajhradice (*Staňa 2006, fig. 53; 67*). Grave 316 contained a sword without a pommel, while the other contained only a knife. Both graves contained fragments of plate-rivet spurs and thus both cannot be older than the second half of the 9th century.

A half of a fitting with a fragment of a hinge or a hook has been found in grave 26/51 at the Jizdárna cemetery at the Prague Castle (*Profantová* 2005). It is unclear, however, whether the item originally was a fitting with a hinge, but it seems likely. Grave 26/51 included to the eastern group at the cemetery cannot be older than the last third of the 9th century (*Tomková/Frolík* 2005, 7–9). However, taking into account that it was a child's grave, we cannot assume that the item had any practical function and thus its value as a chronological determinant is rather limited.

The second group of items that could serve as a reference point for the set from Závada includes elements of weaponry and equestrian attire decorated with a similar style. The set from Závada was decorated with a simple pattern of small, flat bosses with hammered ornaments¹⁵. It was one of the most popular decorative motifs used for decorating strap fittings and spurs in the Great Moravian craft (*Robak 2013*, 179–185; 2015). Items decorated with small bosses are known mainly from Slovakia and Moravia, but also from Bohemia, Slovenia, Lower Austria and Hungary. Such bosses often co-occurred with plastic, convex ribs or engraved X- or Y-shaped lines (depending on the number of bosses). Their geographical distribution is consistent with locations of sword sets of types IV and V (*Robak 2013*, Map 2; 2014, Map 10; 12). Therefore, it is clear that their presence was limited to the eastern peripheries of the Carolingian Empire. Many of items decorated with this pattern are components of such sets. Although fittings from Závada lack this characteristic rib, the presence of small, flat bosses lends credence to the hypothesis that the artefacts from grave 23 should be related to this stylistic group.

Based on an analysis of a relatively large series of items decorated with bosses (*Robak 2013*, 178–185) we can try to establish at least an approximate chronology. Unfortunately, only a few of them have been found in assemblages allowing a more precise dating. This group includes a spur from grave 60 in Rajhradice as well as spur and slide found in grave 244 in Břeclav-Pohansko. This grave cut foundations of the first church fencing (*Kalousek 1971*, 143) and thus it must be younger. It comes from the times after a manor had been built – from the second half of the 9th century (*Dostál 1975*, 102, 103; *Macháček et al. 2016*, 143, 144). The grave from Rajhradice was located in the eastern corner of the cemetery (*Staňa 2006*, fig. 5), that, according to grave content, was most intensely used in the second half of the 9th century. Therefore, it seems more probable that the grave 60 comes from younger phases of the cemetery. Both assemblages could be dated back (at the earliest) to the second half of the 9th century. Furthermore, a long prick of the spur from Rajhradice suggests that grave 60 should be dated back (at the earliest) to the end of the 9th century.

The analysis of artefacts from the area of today's Slovenia shed some more light on the issue of dating of this group of fittings (see *Robak 2013*, 179–185 for details). A series of fittings decorated with a unique pattern comes from Gradišče nad Bašljem and Svete Gore nad Bistrico (Fig. 12; *Karo 2011*, fig. 8: 1–3; *Robak 2013*, tab. LXXVIII: 8a–c; LXXXI: 2). In addition to bosses their surface is decorated with ribs crowned with animal heads. The heads are oval with a clearly legible eye and an open muzzle/beak. In case of the

¹⁵ The ornament was revealed during restoration in 2015.



Fig. 12. Gradišče nad Bašljem/SI. 1–6 – Parts of two sword belt-sets. Iron. 1–3 – courtesy of T. Knific and Š. Karo; 4–6 – after *Karo* 2011.

fitting from Svete Gore nad Bistrico, the rib is additionally covered with etches giving the impression that the entire body of the animal is covered with feathers or scales.

It is not easy to decorate an iron fitting with such a motif and it requires training as well as practice. It is obvious, therefore, that a craftsman intended to obtain this particular effect. Because the technique used to 'draw' heads is nearly identical as in the case of items decorated in the Tassilo Chalice Style, it seems very probable that the Tassilo Chalice Style served as a model for a manufacturer or his customer or that the craftsman was acquainted with such items and had some practice in manufacturing similar details. However, the ornamentation patterns do not resemble any of the motifs used in the Tassilo Chalice Style. The ribs dividing the ornamented surface and decorated bosses seem to resemble elements typical for the late Carolingian plant ornamentation in its mature form. The rib resembles a simplified acanthus stem – a very popular motif, particularly in the middle third of the 9th century. Stylistically,

fittings from Slovenia combine two aesthetics, which could help to establish their chronology. The Tassilo Chalice Style emerged in the 2nd half of the 8th century and dominated in early Carolingian aesthetics in a short period, during the last third of the 8th century and possibly still during the first third of the 9th century, but they could be used longer, even until the mid-9th century.¹⁶ The beginnings of the Carolingian Renaissance and development of the late Carolingian aesthetics (with a dominant plant style) are roughly dated back to the year 800. It reached its mature form during the reign of Louis the Pious (814–840) and finally replaced the Tassilo Chalice Style (*Wamers 1994, 36; 2008, 43*). Therefore, if fittings from Slovenia are related to the Tassilo Chalice Style but exhibit some patterns characteristic of the mature plant style, then it seems likely that the fittings should be dated back to the time when both stylistics were popular – most likely around the mid-9th century or its second third.

Strap fittings decorated with X and Y-shape rib known from Moravia and Slovakia (but also from Bohemia and Hungary) are obviously related to the fittings from Slovenia. The ornament on bosses clearly suggests that all these fittings are stylistically related to each other (*Robak 2013*, fig. 44). It would be difficult, however, to determine whether they are imitations of the fittings from Slovenia or are some simplified version of the geometrical-animal ornament. It is important because if the first hypothesis is true, then the group of fittings decorated with a simplified motif could be slightly younger than the originals, if the second one is correct, then they could be synchronous. Nevertheless, if, based on stylistic-chronological analyses, we accept the hypothesis that the fashion for decorated bosses has been introduced somewhere in the eastern peripheries of the Carolingian Empire sometime around the mid-9th century, then taking into account the chronology of archaeological assemblages, the entire group of fittings with small, hammered bosses should be dated back to the period between the mid-9th century and the beginning of the 10th century. However, they could be used longer.

Additional arguments supporting this hypothesis are provided also by a stratigraphic analysis of sites where fittings with bosses were found. A good example is the Bojná-Valy hill-fort where a collection of over 160 fittings was found – 12 of them are fittings decorated with a rib and bosses. The stratigraphy of the site suggests that the items found in the cultural layer, just below the forest bedding (as in the case of many artefacts), should be related to the fall of the hill-fort, dendrochronologically dated back to the turn of the 9th and 10th century or the beginning of the 10th century (*Pieta/Robak 2017*).

A similar situation takes place in the stronghold in Pobedim where a fitting with a hinge decorated with four bosses comes from (*Robak/Knoll/Bialeková* 2013). The item has been found below a layer of debris (remains of the fortification) together with a fragment of a spur and several pieces of axe-like bars (*Bialeková* 1963, 360). Radiocarbon dating of fragments of the Pobedim¹⁷ fortifications together with a recent reanalysis of the site allow dating the site back only roughly to the 9th century, although its existence before the mid-9th century is rather doubtful (*Henning/Ruttkay* 2011, 268–270, 284; *Henning et. al.* 2017, 336, 343). Such a dating is also suggested by a typological and chronological analysis of published metal artefacts from Pobedim (*Robak* 2013, passim), since there are no items older than the turn of the first and second quarter of the 9th century.

Spurs

Grave 23 in Závada contained fragments of a pair of spurs of the Carolingian type, unfortunately badly preserved (Fig. 4: 1, 2). The specimen in a better condition included a fragment of a yoke together with a prick. The yoke was made of a tape that at the ends resembled a rod. A quadratic, 25 mm long prick (27 mm together with its base) was shaped as an inverted pyramid. In a spot where the tape turns into rods we can still see an ornament of diagonal etches. The other spur preserved only as a fragment of a yoke (tape) with an opening for a prick.¹⁸

The lack of terminals makes it impossible to determine type of spurs and thus makes their dating difficult. It seems probable that the yokes were ended with buckles, eyelets, plates with rivets or another fragment of tape with one or more rivets. All these types are present in assemblages related to the Great

¹⁶ For a review of the literature on the issue see *Robak 2015*.

¹⁷ Radiocarbon dates for Pobedim quoted in *Bialeková 1977b*, 150 and *1996*, 143 (and often repeated in the literature) were not calibrated. After calibrating dates mentioned in the latter publication (1222 ±50 and 1170 ±60 BP) we end up with the following values: (CalPal AD 68 %) 789 ±71 and 855 ±79 or (IntCal13 AD 95,4 %) 672–943 and 691–989.

¹⁸ The item was not published in *Bialeková* 1982.

Moravian culture (*Bialeková 1977b; Kavánová 2012; Kouřil 2001*), however spurs with buckles are the rarest and a finding of a quasi-eyelet spur in Bohemia is a unique one (Fig. 14; *Profantová 2016*, fig. 11: 1.1.c). At the cemetery in Závada, grave II/74 contained similar, although complete spurs. Their yokes were ended with a tape and a single rivet (Fig. 13: 1; *Bialeková 1982*, fig. 6: 1, 2). It seems possible that spurs from grave 23 looked alike.

Dating of the Great Moravian spurs whose yokes were made, either entire or in part, of tape ended with rivets is a subject of a heated scientific debate (Kavánová 2012; Košta 2008; Kouřil/Tymonová 2013, 141, 142). Spurs with yokes made of tape are relatively common finds at late Merovingian cemeteries (Stein 1967, taf. 108) and some researchers used this fact as an argument supporting the hypothesis about the connection and direct chronological link between) Western European specimens they dated back to the second half of the 8th century and Great Moravian dated back to the beginning of the 9th century or the first half of the 9th century (Bialeková 1977b, 128–131; Kavánová 2012, 181, 182). This belief is a consequence of a once accepted hypothesis that a mass inflow of Carolingian products to the Middle Danube Basin took place already at the end of the 8th century (*Bialeková 1977b*, 126). It is obvious that the chronology (similarly as the chronology of all types of spurs used in the Great Moravian culture) is still closely related to the chronological and typological concept referred to as the Blatnica-Mikulčice Horizon (Bialeková 1977b, 124, 129, 130; Kavánová 2012, 182) that cannot be supported anymore (cf. Robak 2017; Ungerman 2011b) although still serves as a convenient mental shortcut. As a result, it is commonly accepted that spurs with tape-like yokes are 'genetically' older than spurs made of rods and thus should fill the distressing gap between late Merovingian and Carolingian/Great Moravian spurs. It is believed that the lack of tape spurs dated back to the first half of the 9th century in Western Europe is a consequence of abandoning a habit to equip burials with weaponry and other items (Bialeková 1977b, 131; Kavánová 2012, 182). This picture, however, is not entirely accurate, because now that we have many archaeological assemblages we are also able to reconstruct models of weaponry and equestrian's attire of the Carolingian type adopted in Western Europe at the end of the 8th century and at least in the first quarter of the 9th century (Kleemann 2002; Pöllath 2002). And indeed there are no tape spurs there. This observation, however, can be questioned, because we still have relatively scarce information (compared to the late Merovingian period) and the picture remains incomplete. However, we do have a huge number of early and late Carolingian artefacts (Western European imports and possibly their imitations) found in today's Slovenia and Croatia, often referred to as the Biskupija-Crkvina Horizon¹⁹, that could serve as a reference point. A series of observations and conclusions about the Biskupija-Crkvina Horizon artefacts (Kleemann 2010; Robak 2013, 17–22; Wamers 1994, 35, 36) give a relatively legible picture of the chronology of the horizon that could be divided into two main phases (about 790-820 and about 820-850). Horizons attributed to the older phase of Biskupija-Crkvina Horizon seem to correspond with the last phases of burials from Western Europe containing weaponry and equipment. It allows assuming that Biskupija-Crkvina Horizon is a reliable reflection of changes in the weaponry and equestrian's attire stylistics that took place in the Carolingian Empire at the end of the 8th century and in the first half of the 9th century. It also complements the picture of the earliest wave of Carolingian imports to Moravia and Slovakia. However, the most important observation about Carolingian artefacts attributed to the Biskupija-Crkvina Horizon is the fact there are no tape spurs in this horizon at all. This fact was registered by the researchers (Bialeková 1977b, 131) but its meaning was marginalised. Usually, it was explained with some unspecified uniqueness of the phenomenon, for example a relative proximity of Bavaria where spurs with tape-like yoke were used in the second half of the 8th century (Kavánová 2012, 182).

Comparative analyses of burial assemblages with equestrian's attire of the Carolingian type relying on the comparison of assemblages from entire Europe (*Robak 2013; 2014*) show that the earliest wave of Carolingian imports to Moravia or Western Slovakia took place at the end of the first quarter of the 9th century (*Robak 2013, 166; 193, 194; 209; 2015, 324–326; 2017, 123, 124; in press*) and types of items that served as a basis to distinguish it are consistent with types registered in Western and Southern Europe. Therefore, the situation becomes complicated, because in the area of eastern peripheries of the Carolingian Empire (today's Bohemia, Moravia, Slovakia, Lower Austria, Western Hungary) there are no archaeological assemblages that could confirm the hypothesis that tape spurs were used there already at the beginning of the 9th century. Such spurs were absent in equipment of the earliest skeletal burials in Moravia and Western Slovakia dated back to the end of the first quarter of the 9th century and the second quarter

¹⁹ Labelling spurs with side rivets as the 'Biskupija-Crkvina type' in Czech and Slovak literature was unfortunate and sometimes inclines to date such items automatically back to the first half of the 9th century.



Fig. 13. Spurs with a yoke partly made of tape and fasteners. Iron. 1 – Závada/SK, grave II/74 (after *Bialeková 1982*); 2 – Pobedim-Hradištia/SK (after *Bialeková 1972*); 3 – Zalavár-Vársziget/HU, grave 1/2000 (after *Szőke 2008*); 4 – Bojná-Valy/SK, no. 445/2007; 5 – Bojná-Valy, no. 506–508/2008; 6 – Bojná-Valy, no. 718/2007 (Archives IA SAS).

of the 9th century. Such assemblages contain only spurs with side rivets or spurs with a heart-like plate with yokes made of rods (*Robak 2013, 209*).

The largest number of assemblages containing tape spurs with rivets (either with or without a separated end-plate) come from Mikulčice and only single specimens come from other Great Moravian cemeteries (*Kavánová 1986; 2012; Košta 2008; Ungerman/Kavánová 2010*). In her article about the chronology of the cemetery at the Mikulčice basilica, B. Kavánová discusses with J. Košta and tries to determine the earliest possible dating of tape spurs. However, she concludes only that *'there is no proof supporting the hypothesis that spurs with tape-like yokes were not present at the* (Great Moravian) *cemeteries before the mid-9th century'* (*Kavánová 2012,* 182). Unfortunately, it means also that there is no prove confirming that they are there. Actually, B. Kavánová herself provided arguments against her own hypothesis. Generally, we could end the debate about the chronology of such spurs with a conclusion that nearly all archaeological assemblages (graves) containing this type of spurs should be dated back to the period after the mid-9th century or, at best, to the mid-9th century. A similar conclusion was drawn by J. Košta. Finally, according to *J. Košta* (2008, 283, 287) there is no legible difference between dating of the oldest assemblages containing spurs made of a tape (entirely or in part) and dating of the oldest assemblages containing spurs made of a rod.

The analysis of archaeological assemblages containing tape spurs of the Carolingian type provides a completely new picture than it used to be believed. Analysis of assemblages (burials) with tape spurs²⁰ presented by *J. Košta* (2008) and *B. Kavánová* (2012) could be supplemented with two graves from Zalavár-Vársziget (*Szőke 2010*, 42, fig. 3; 4). Their chronology could be related to the second-third third of the 9th century (after 840). Morphologically, the spur from grave 1/2000 in Zalavár (Fig. 13: 3) provides a close analogy of the spur from Závada in terms of a form (yoke and prick) as well as a decorative pattern (etches).

If put a calliper aside for a while and forget about rigid typologies measuring spurs to the nearest millimetre²¹, the evolution of Carolingian spurs as a reflection of stylistic transformation of the period will make it clear why tape spurs were not popular (or actually disappeared) at the turn of the 8th and 9th century and in the first half of the 9th century. Tape spurs of the Merovingian period ended with plates with rivets are often decorated with engraved ornaments and luxury items are often additionally plated with silver foil with engraved motifs. This is consistent with stylistics of other components of attire, particularly strap fittings decorated with geometrical and stylised animal motifs (Salin's Style II). Wide and flat yokes were perfect backgrounds for these patterns (cf. Gußmann 1994, 118). At the same time, there are undecorated specimens most likely dedicated to poorer recipients, although most spurs had yokes made of rods.²² Since about mid-8th century equestrian's attire and equipment is decorated with knee-like thickenings. In the second half of the 8th century eyelet spurs or spurs with a long yoke made of a rod (usually triangle or semi-oval in intersection) become the basic type, because they were perfect for this type of decorations. This applies also to rarely used spurs fastened with a single rivet placed at the end of a yoke. Plate spurs gradually disappear and luxury items plated with a foil are replaced with those decorated with the chip-carving technique directly related to the Tassilo Chalice Style that emerged in the second half of the 8th century (Nawroth 2001, 213; Schulze-Dörrlamm 1998, 135, 136). Simultaneously, spurs with side rivets and those decorated with knee-like thickenings gained popularity in grave assemblages from Lower Saxon and Bavaria.

At the beginning of the 9th century eyelet spurs gradually disappear in the Carolingian Empire replaced by buckle spurs. Such spurs together with spurs with side rivets are basic determinants of the Biskupija-Crkvina Horizon. None of them are tape spurs. Instead, we can see a tendency to manufacture large spurs accompanied by relatively large fittings. A characteristic feature of such spurs is their yoke (triangle in intersection) consistent with popular leaf-shaped and U-shaped fittings.

²⁰ The information about location of the allegedly oldest set with tape spurs (*Kavánová* 2012, 180, 181) quoted following *Z. Klanica* (2006, 57) and indicating grave 190 in Čakajovce is incorrect. The source publication refers to grave 788 (*Rejholcová* 1995, 52) containing quasi-eyelet spurs and located in the vicinity of cremation graves. Grave 190 belonged to a group of graves with plate-rivet spurs (graves 189, 190, and 152). Generally, this refutes the only strong argument in favour of the hypothesis that tape spurs were present in Moravia and Western Slovakia earlier than spurs made of rod with clearly marked plates. Furthermore, this shows that it pays to verify the sources.

²¹ Personally, I doubt that in the early Middle Ages manufacturers of spurs spent time on measuring such details as a yoke arc length. Sometimes, lengths of spurs from the same set differ by several millimetres.

²² Most of Merovingian 'Schlaufensporen' referred to as tape spurs had rather triangle, slightly bolded yokes narrowing toward the eyelets instead of flat tapes. Labelling some of the specimens as 'tape' is a misuse.

It seems that the renaissance of tape yokes in Carolingian spurs was caused by a 're-invention' of the method of fastening spur straps with rivets placed at the end of the yoke. About mid-9th century spurs fastened with transverse rivets placed at the end of a yoke became more popular. Although most of such spurs are plate spurs (with a couple of rivets, rarely a single rivet) there is also another model of spurs with a tape instead of a separate plate. The similarity between rod and plate spurs is confirmed by the presence of items that combines tape (in upper parts of a yoke) and a rod crowned with a plate and rivets. There is even an item with a rod in an upper and a tape with rivets in a lower part (Fig. 13: 4).

Tracking the development of tape spurs (or mixed forms) in comparison with the most popular spurs with yokes made of a rod during the Carolingian period (second half of the 8th century – the beginning of the 10th century) leads us to the conclusion that there are no significant typological differences between them. This applies also to late Merovingian spurs that were never distinguished into plate and rod spurs (cf. *Stein 1967*, Taf. 107; 108). The fact that rods and tapes were used interchangeably (or actually hammering rods into tapes) in production of spurs of the Carolingian type proves that tape spurs were only variations of the specimens made of rods (although it is possible to separate them as an additional type or even several types). Spurs made of tape as well as of rod were subjected to identical technological changes such as elongating yokes and pricks. The typology, however, should also rely on types of fasteners, general dimensions (length to width ratio and dimensions of pricks) and finally applied decorative patterns.

Dating Carolingian plate-rivet spurs with a clearly separated plate and a horizontal row of rivets based in a chronology of assemblages containing such spurs with combination of other times, does not allow shifting their application in the Middle Danube Basin (similarly as in other European areas influenced by the Carolingian culture) to the times before the mid-9th century. Their production continues still in the Ottonian period, at least in the first half of the 10th century as specimens with a long and a very long yoke confirm (*Kind 2002; Košta 2008, 283–287; Kouřil/Tymonová 2013,* 138–144; *Macháček et al. 2016,* 114–119; *Robak 2013,* 34, 35). Since the specimen from grave 23 in Závada has a relatively short prick (25 mm), it can be assumed that it was produced in the second half of the 9th century.

Furthermore, among Great Moravian tape spurs with rivets there are no specimens with elongated prick.²³ Lengths of pricks are not even close to the limit value (ca. 3 cm) characteristic of long pricks.²⁴ The process of elongating pricks of plate-rivet spurs accelerated at the turn of the 9th and 10th century (*Kind* 2002; *Macháček et al.* 2016, 15). It seems likely, then, that the dating should be limited only to the second half of the 9th century or possibly the second half of the 9th century and the beginning of the 10th century.

Items unique for Western Slovakia and Moravia, so far, include four spurs with tape-like yokes ended with buckles. The first comes from a feature at the stronghold in Pobedim (Fig. 13: 2; *Bialeková 1977b*, 105, fig. 6: 2). It was found in a feature (*Bialeková 1972*, 124) whose chronology could be only generally related to the time when the stronghold perished, namely (according to recent analyses) to the end of the 9th century (*Henning/Ruttkay 2011*, 268–270). Similarly, it is difficult to determine chronology of a spur from Bojná (Fig. 13: 5a) found in deposit 18 at the central part of the hill-fort just below the ground surface. The horizon of hoards at the Bojná-Valy hill-fort (26 deposits found during excavations and 4 donated to museums earlier) relates to the collapse of the site – most likely in the first half of the 10th century (after 908; *Pieta 2017*, 42; *Pieta/Robak 2017*, 343–350). Unfortunately, this tells us little about the chronology of the item. The spur, however, was found together with components of fasteners (Fig. 13: 5b, 5c), possibly from the same set. Their small dimensions and shape (a D-shaped buckle and a strap-slide with an oval plate) suggest that they should be dated back to the second half of the 9th century. This would be consistent with the tendency to miniaturise such elements of spurs of the Carolingian type at that time (*Robak 2013*, 45, 59, 68, 79, 209). Another, nearly identical spur has not been published. This one, however, is a loose, surface find.

Important information useful in determining the chronology of specimens with buckles could be provided by an assemblage from grave 644 in Prušánky (*Klanica 2006*, 119, tab. 89), if only its stratigraphy were analysed. So far, however, it could be dated only generally to the Great Moravian period. Similarly as in the case of the spur from Bojná, spurs from Prušánky were accompanied by small, U-shaped strap fittings, D-shaped buckles and small strap-slides with oval plates and therefore the entire burial could be dated back at least to the second half of the 9th century.

²³ For the purpose of the present analysis, I have decided to consider spurs with pricks ranging from 3 to 4 cm as plate-rivet spurs with elongated pricks. Above this limit we speak rather of long pricks, typical for the next, Ottonian period (*Kind 2002; Macháček et al. 2016,* 115, 116).

²⁴ One of the specimens with the longest prick (27 mm) is a spur from Bojná (Fig. 13: 6; Pieta 2013, fig. 6: 11).

J. Kleemann (2002, 126) dates the first emergence of buckle spurs in Western Europe based on a specimen with a wide yoke from grave 192 in Maschen (*Wegewitz* 1968, taf. 6: 192) and relates it to the II chronological phase of the North-Western Circle, namely the years about 710–740. They gained the greatest popularity in the first half of the 9th century. In addition to spurs with side rivets they are one of the basic determinants of the Biskupija-Crkvina Horizon. Such spurs are also present in Moravia in assemblages dated back to the second quarter of the 9th century. After that time, they were replaced by spurs with a plate and a horizontal row of rivets. Although less popular after the mid-9th century (*Kouřil 2001, 251*) buckle spurs were still used. Similarly as in the case of plate-rivet spurs, they were produced still in the Ottonian times (*Kind 2002*). The gap between these two periods is filled by burials containing Carolingian weaponry from the British Isles related to the beginnings of the Scandinavian settlement in the area after the mid-9th century. The group of assemblages containing buckle spurs includes grave 5 from Cumwhitton (*Paterson et al. 2014, 101–116*) and a burial from Balladoole (*Bersul Wilson 1966, 35, 36*).

Already at first glance, the collection of tape spurs ended with buckles (and accompanying elements of fasteners) differs from buckle spurs characteristic of the first half of the 9th century decorated with knee-like thickenings known from Dalmatia and areas of Balaton (*Kouřil 2001*). Among the latter, however, there are no tape spurs. In terms of stylistics and morphology Great Moravian tape spurs (and their fasteners) resemble rather specimens with rivets and probably they were produced in parallel. Similarly as in the case of tape spurs ended with rivets, all three specimens of tape spurs with buckles (one from Pobedim and two from Bojná) have relatively short pricks.



Fig. 14. Sv. Jan pod Skalou/CZ. Spur. Iron (after *Profantová* 2016).

An absolute unique find is a spur made partly of a tape and partly of a rod with ends wrapped to the inside found at the Sv. Jan pod Skalou site in Bohemia (Fig. 14; *Profantová* 2016, fig. 8: 3). The way the yoke is made and particularly its proportion resemble tape spurs known from Great Moravian sites. The main difference is an elongated prick (about 35 mm) absent (so far) among tape spurs with buckles or plates. Taking into account that pricks became longer in the second half of the 9th century, the item could be considered as one of younger examples of tape spurs related to the Carolingian period. However, based on a single item it would be premature to draw any far-reaching conclusions.

Regardless of a type the spur from grave 23 in Závada represents, most likely it belonged to items manufactured in the second half of the 9th century. Previous finds show that at that time Carolingian spurs with yokes made (either partly or entirely) of tape were some kind of a local invention characteristic of western peripheries of the Carolingian Empire, particularly areas located in the Middle Danube Basin. The morphological and stylistic similarities suggest that they were some developmental form of platerivet spurs with yokes made of a rod. One of the reasons why tape spurs became relatively popular again (in fact

there is only 20–30 pieces, maybe a few more, therefore the number clearly contrasts with hundreds of spurs with yokes made of a rod) could be a decorative pattern applied in the Middle Danube Basin in the second half of the 9th century, namely hammered and etched geometrical motifs (*Robak 2013*, 176–179). It was much easier to apply such ornaments on a flat tape. However, it cannot be ruled out that similarly as in the case of other spurs of the Carolingian times, also tape spurs reflected some general technological and aesthetic tendencies of decorating war equipment of the Carolingian type in the second half of the 9th century. Their concentration in Great Moravia could be simply a reflection of features of the Great Moravian material culture in the second half of the 9th century and in the 10th century, namely the significant overrepresentation of weapons and items related to the equestrian's attire and equipment. This, in turn, was a consequence of applied burial rites. The fact that in nearly entire Carolingian Empire there is no equipment in graves dated back to the 9th century makes it difficult to determine whether tape spurs were typical only for the eastern peripheries of the Empire.

CHRONOLOGY OF GRAVE 23 AND THE ZÁVADA CEMETERY

Based on information obtained during the analysis of items found in grave 23 we can conclude that grave goods consisted of items that were introduced about the mid-9th century. This applies to spurs, the strap fittings set as well as the sword. Such products were popular generally in the second half of the 9th century. Of course, it is possible that before they got to the grave they had been used longer. However, taking into account the age of the deceased (30–40 year old man) it took place not later than in the first half of the 10th century. Other graves containing spurs should be dated similarly (grave II/74 and grave 18). Thus, the grave 23 should be dated back to the times between the mid-9th century and the beginning of or even the mid-10th century.

Other conclusions about the stratigraphy of the site remain valid (*Bialeková 1982*, 154). Obviously, the site is a small, possibly single-phase cemetery used for a short period of time with couple of groups of graves. Only in two cases earlier burials were damaged by newer pits. This exactly was the fate of grave 23 that was partly dug into grave 22 (or the other way around). Unfortunately, the equipment found in grave 22 provides insufficient information to determine its chronology. The formerly accepted belief that grave 23 is older could be related to the conviction that the grave goods found in it should be dated back to the first third of the 9th century. However, stratigraphy as well as planigraphy allows us only to speculate that grave 23 belongs to the oldest in the group.

Original dating of the items found in grave 23 from Závada based on the concept of the Blatnica-Mikulčice Horizon determined dating of the entire cemetery back to the period between the first third and the end of the 9th century. However, based on more recent finds about the chronology of equestrian's equipment, the chronology should be shifted rather to the period between the mid-9th century and the mid-10th century.

THE ZÁVADA CEMETERY IN THE CONTEXT OF GREAT MORAVIAN RURAL BURIAL GROUNDS

The Závada cemetery is particularly interesting because it is located closest to the Bojná agglomeration of all so far known cemeteries with warriors' graves dated back to the same period (Fig. 15). In the second half of the 9th century and at the beginning of the 10th century hill-forts Bojná I-Valy and the nearby Bojná II-Hradisko were one of the most important central points of the entire political organism referred to as Great Moravia. Previous studies show that the agglomeration was used still in the first half of the 10th century or maybe even longer (*Pieta 2017; Pieta/Robak 2017*). Apart from a small mound cemetery at the Bojná III-Žihľavník site, there are no graves that could be dated back to that period. Possibly this is only a consequence of the state of research. Taking into account dimensions of the Bojná I site and the abundance of archaeological finds we would expect to find there at least several dozens of burials containing weaponry.

In the case of Závada, a relatively small number of graves (36), modest equipment and the fact that graves were grouped indicate that it was a rather small cemetery related to a local society most likely consisted of only several families (*Bialeková 1982*, 152). Four men carrying weapons were members of three of the families. At the cemetery there are no burials that could be considered high elite, comparable to richly equipped burials from Staré Město or Mikulčice. However, decorations and equestrian's equipment have analogies among numerous finds from the nearby Bojná-Valy hill-fort. It is possible that they were produced there. In the immediate vicinity of the cemetery, however, there are no traces of fortifications or other defensive structures – only remains of an open settlement (*Ruttkay 1989*, 374, 375). Therefore, we can assume that the settlement/settlements located in today's Závada belonged to the agglomeration with its centre in Bojná.

At various Great Moravian rural cemeteries the ratio of graves with weaponry differs. In extreme cases such graves account for even half of all burials (*Procházka 2009, 91*) but generally there is no cemetery without at least one grave containing some weapon (*Štefan 2014, 152*). Most likely, apart from specific burial rites, this is a result of nearly constant wars waged by the House of Mojmir, particularly in the second half of the 9th century and forced militarisation of the entire community, which later found its reflection in burial equipment (*Hanuliak 2004, 207; Ruttkay 1982, 174; Štefan 2011, 337, 338*). However, we should notice that the ratio of burials with 'elite' equipment, such as spurs, at rural cemeteries is



Fig. 15. Southern Považský Inovec in 2nd half of the 9th and 10th century. 1 – Závada; 2 – Nemečky; 3 – Veľké Hoste; 4 – Bojná I-Valy; 5 – Bojná II-Hradisko; 6 – Bojná III-Žihľavník; 7 – Nitrianska Blatnica-Jurko; 8 – Ducové-Kostolec; 9 – Hrádok. Prepared by Z. Robak. Legend: a – Burial mounds; b – Burial ground (flat); c – Stronghold/hill-fort; d – Church/chapel.

relatively small (*Ruttkay 1982, 179; Štefan 2014, 152*), while swords are unique.²⁵ Quality of these spurs and other weaponry clearly shows that they cannot be directly compared with items used by warriors buried in Staré Město, Mikulčice, and other central Great Moravian agglomerations. It seems, that the former were rather 'affordable' options produced by local manufacturers and were not intended to ostentatiously manifest social status but simply to be useful. Usually, such graves lack also other ostentatious signs of high social status – grave goods are simple and devoid of unnecessary decorations. In addition, graves containing such equipment are not isolated but rather scattered throughout cemeteries and belong to various groups of graves, most likely related to particular families. Therefore, it would be difficult to claim that men buried there were members of a narrow, ruling elite, whose rich burials can be found in cemeteries at central strongholds (Staré Město, Mikulčice) or in the so called 'manors' and churches outside strongholds, like Modrá, Ducové etc. (*Hanuliak 2004*, 208; *Ungerman 2007*, 208–210).

In the 9th–10th century, similarly as in other periods of time, spurs and strap fittings as well as weaponry certainly were some signs of status in a community (*Ruttkay 1982*, 179; *Šalkovský 2004*, 386) and not simply of a profession. This is confirmed by finds of richly equipped children's graves. However, numerous finds of iron, simple spurs and components of strap sets from today's Moravia and Slovakia clear prove that such items were used not only by 'higher social strata', but were also available to other groups of the society.²⁶ Their owners should be considered rather as 'local elites', people, whose property or function made them important for a local community, some kind of a middle strata of the Moravian

²⁵ There remains a question, what percentage of swords (a rather precious weapon) was deposited in graves?

²⁶ Otherwise elites would account for a large group of such society and that, in turn, would make them not so special anymore If so, then the collapse of Great Moravia should not surprise us, because no social and political organism could bear the burden of such numerous elites.

community. However, it is also possible that they were 'rank-and-file' warriors²⁷ since in the case of the so called middle and lower strata of the Great Moravian society, pieces of equipment found in graves do not allow for strict divisions (*Hanuliak 2004, 205, 208*). It is much simpler in the case of burials of members of high elites.

Possibly, some of the deceased buried in rural cemeteries, such as Závada, were 'professional warriors', but in some cases it seems more probable that they were 'occasional warriors' possibly out of duty. Although we do not know the exact military organisation of Great Moravia, we can assume that obligatory military service applied to every free 'Moravian' that is to the majority of the male population. Therefore, the core of the armed force consisted of free peasants.²⁸ If a man was able to buy a horse, spurs and a sword he could only benefit from this. It is possible that in the case of offensive military operations, free peasants could contribute to buy better equipment for a warrior representing them in the fights to avoid military service. Although there are no sufficient sources proving this hypothesis, it is not completely unfounded – similar practices were then applied in nearly entire early medieval Europe.²⁹ It seems likely that the military organisation included distribution of members of troops together with their families in settlements around a central place (Ruttkay 2002, 112) in order to avoid inconveniencies of putting them up in barracks and to pass the burden onto themselves or possibly onto the local people. On the other hand it made the mobilisation quicker. It remains unclear whether such warriors were recruited among the local people or were sent to settlements surrounding a centre. In the latter case they could also serve as administrators supervising tasks ordered by the authorities (cf. Stefan 2014, 152, 155). However, there are no objects that could be considered as seats of such 'rural nobility' and comparing burial goods we can see that at that time there was no separate 'gentry', a group of people living off the properties they possessed (Macháček 2008, 610; Procházka 2009, 91; Štefan 2011, 337).

SUMMARY

In the second half of the 9th century the intense cultural development of Great Moravia resulted in emergence of stylistic patterns transforming and adapting cultural impulses coming from Western Europe. At the same time permanent armed conflicts stimulated demand for warrior's equipment satisfied mainly by local manufacturers. Such items copy forms and stylistics of Carolingian products but, particularly in today's Moravia and Western Slovakia where we can find local variations of strap fittings and spurs, with some regional features such as stylistics of decorative patterns. Local manufacturers imitated mainly forms and general stylistics of Carolingian products with some legible typological differences such as new types of sword sets unknown in Western Europe but appearing at the eastern peripheries of the Empire generally about mid-9th century. However, elite weapons such as swords were most likely still imported from Western Europe.

For many years, the chronology of type X swords and sword strap fittings was distorted by dating of the grave from Závada consistent with the conception of the Blatnica-Mikulčice Horizon. This, in turn, forced researchers to accept an early chronology of such finds without any possibility to verify the dating. Consequently, we could observe absurd situations when authors claimed that some item of the Carolingian type (spurs, swords etc.) from Moravia and Slovakia turned out to be much older than Western European or Scandinavian finds. The new dating 'rejuvenates' the Závada burial and adds several decades to its chronology. As a result, based on comparisons of large series of assemblages and

²⁷ The issue of local elites and their burials during the Great Moravian times was discussed, for example, by *Hanuliak* 2004, 208; 2005; *Ungerman* 2005.

²⁸ In the literature, people who lived off their own farm and subjected to compulsory military service are referred to as Bauernkrieger or agrarii milites (Łowmiański 1967, 430–464; Profantová 1997, 88; Štefan 2011, 337; Třeštík 2001, 50, 51).

²⁹ The Carolingian law allowed small land owners to associate in order to equip a representative of the entire group. Among the Langobards systemic features of their state allowed individual categories of free people to avoid military service. A similar system was introduced also in the Kingdom of Germany at the beginning of the 10th century, where eight *agrarii milites* permanently provided for a ninth, armed, one. Possibly a similar system was applied also by the early Piast dynasty (*Bachrach 2001*, 51–83; 2012, 70–101; *Reuter 1997; Strzelczyk 2014*, 99, 237, 238; *Wasilewski 1960*, 2, 3). This was a result of a trade-off: during war it was necessary to maintain agricultural production and obtain better rather that bigger army (*Nadolski 1956*, 17, 22, 23). As A. Nadolski observed, technological development in the Early Middle Ages soon made the costs of equipment unbearable for an average peasant family not to mention the time necessary for training an efficient warrior (about costs of equipping a warrior during the Carolingian times see: *Coupland 1990*).

supplemented with scientific analyses, the grave seems to match the general picture of the cultural development of Great Moravia. The intense development of defensive constructions in the second half of the 9th century and at the turn of the 9th and 10th century is consistent with an increased frequency of military finds dated back to that period (as contrasted with the first half of the 9th century).

The period starting from sometime at the end of the first half of the 9th century could be best described as the second, internal consolidation of tribes (or political-territorial organisations) inhabiting territories of today's Moravia and Western Slovakia. This resulted in emergence of a homogenous pre-state organisation ruled by one dynasty and a single ruler perceived by neighbours as a uniform political organism. This consolidation is confirmed in sources, for example the so called Bavarian Geographer who writes about the 'another Moravians' most likely referring to tribes inhabiting territories of today's Slovakia (*Třeštík 1997, 272; 2001, 132–135*). From that moment, when the recently emerged political organism subordinates or conquers the majority of the Carpathian Basin and even lands located in the Saale Basin, we are entitled to talk about the actual 'Great' Moravian period.

The second half of the 9th century is marked by almost permanent fights between the Moravian rulers and their neighbours related to the desire to dominate in the region and aggressive development of own realm. This could be done by means typical for all early medieval pre-state organisations, namely through constant conquest, forcing tributes and obtaining loots. As a result, the area was torn by ongoing military conflicts only temporarily interrupted by truce periods. These intensified military activities in the second half of the 9th century is well reflected in burial assemblages equipped with weapons dated back to that period and a series of loose finds of strap fittings sets or war equipment deposited independently of prevailing funeral rites. Usually, they come from inner spaces of political and economic centres such as Mikulčice, Břeclav-Pohansko, Bojná or Pobedim.

Equipment as well as parts of attire of Great Moravian warriors attributed to the horizon of Carolingian finds dated back to the second half of the 9th century and the beginning of the 10th century is characterised by some new, previously unobserved or indistinct features. First of all, the model of warrior pauperised, possibly as a consequence of calling free peasants-warriors to the army. This process, possibly related to the acceptance, popularisation and imitation of the elite fashion, is confirmed by numerous, low-quality items, particularly strap fittings and elements of sword sets made only of iron. Furthermore, some of such items have distinct stylistic features indicating that their production was regionally diversified (*Robak 2013*, 200, 201).

Luxurious imitations of Carolingian stylistics are known nearly solely from areas of political and cultural centres in Moravia where the most important representatives of elites and clergy resided, such as Mikulčice, Břeclav-Pohansko or Staré Město. Strap fittings and sets of fittings found in Slovakia, in the Middle Váh and Nitra Basins are usually local products and lack 'spectacular' features typical for specimens known from Moravia. Most of them are poor imitations of decorated, luxurious components of belt sets worn by Great Moravian and Carolingian elites. Such items were simple and made of iron and were usually decorated with schematic ornaments. There is also a small series of 'middle class' products made of bronze, silver-plated and incrusted, with more sophisticated ornamentation and even including typical Carolingian plant motifs. These, however, are unique finds. Certainly, some of them are imports from Western Europe. Unique finds from Bojná-Valy dendrochronologically dated back to the years of intense fights of Svatopluk and his sons seem to confirm the correlation between the quality and quantity of warriors' attire and the importance of the centre they resided in.

This situation could be explained by the fact that territories of today's Slovakia were a secondary centre of Great Moravia, distant from places where larger groups of nobility (including church dignitary) who were natural recipients of luxury goods lived in. Items related to a warrior's attire and equipment found there were designed rather for members of troops, hill-fort crews or middle and higher level commanders. It is even possible that such items were used by people who were not professional warriors but carried weapons on them, such as merchants. The warrior buried in Závada most likely belonged to the group related to the Bojná hill-fort, although it would be difficult to consider the burial as elite, even if it differs from other local graves significantly.

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Meč a opasok v karolínskom období

Nové vyhodnotenie bojovníckeho hrobu 23 zo Závady

Zbigniew Robak

Súhrn

Predmetom príspevku je analýza výbavy hrobu 23 zo Závady, okres Topoľčany, po opätovnej konzervácii vykonanej v roku 2017. Tento hrob, kvôli svojej výbave, sa v literatúre veľmi často používa ako referenčný nálezový celok, ktorý poskytuje základ pre stanovenie chronológie určitých kategórií pamiatok, spájaných s bojovníkom a jeho výzbrojou. Už niekoľko rokov odborníci poukazujú na neprimeranosť datovania tohto celku (*Košta/Hošek 2014, 250; Ungerman 2011a, 588*).

Pohrebisko v Závade bolo skúmane D. Bialekovou v rokoch 1974 a 1976 (*Bialeková 1974; 1975; 1977a*) a publikované v roku 1982 (*Bialeková 1982*). Nájdených a preskúmaných bolo 36 hrobov, z ktorých sa v 33 našli ľudské kosti alebo stopy pohrebu (obr. 1). Hrob 23 (obr. 2) bol umiestnený v centrálnej časti skúmanej plochy a bol v ňom pochovaný muž vo veku okolo 30–40 rokov.

Podľa katalógu, ktorý je priložený k nálezovej správe (*Bialeková 1974*), bol v hrobe nájdený meč, ostroha, nôž, "bočná prevliečka" (t. j. kovanie s krčkom a pútkom), nákončie remeňa, kovanie s pántom (obr. 3; 4) a nešpecifikovaný počet "amorfných zlomkov". Vďaka rekonzervácii hrobovej výbavy, vykonanej v roku 2017 v laboratóriu AÚ SAV v Nitre M. Knollom, bol jeden z "amorfných" objektov identifikovaný ako fragment ramena druhej ostrohy (obr. 4: 2). Z ôsmich fragmentov nešpecifikovaných zlomkov je jedno drevo nasýtené oxidmi železa a iné je fragment železnej tyčinky obklopenej vrstvou dreva nasýteného oxidmi železa. Šesť zvyšných zlomkov tvorí zakonzervované produkty korózie obsahujúce malé množstvo metalického železa.

Meč z hrobu (obr. 3: 4) možno zaradiť medzi pomerne neskoré exempláre staršej skupiny mečov typu X podľa *J. Petersena* (1919, 158–167), čo zodpovedá Geibigovemu kombinovanému typu 12-11-6-10 (*Geibig 1991*, 56–58). Garnitúra meča (obr. 3: 1–3), ktorá obsahuje kovanie s pántom, je eponimickým príkladom garnitúry typu Závada podľa *Š. Ungermana* (2011a, 584–588) a zodpovedá typu V v klasifikácii mečových garnitúr karolínskeho typu (obr. 6; *Robak 2013*, 149–152). V prípade ostrôh (obr. 4: 1–2) chýbajúce koncovky znemožňujú určiť ich typ. Charakteristická pásová forma ramien a početné analógie umožňujú dostatočne presné závery, tykajúce sa ich chronológie (obr. 12; 14).

Na základe informácií získaných pri analýze predmetov z hrobu 23 možno konštatovať, že celú výbavu tvoria typy výrobkov, ktoré sa nezačali používať skôr ako v polovici 9. storočia. Tento záver platí pre ostrohy, garnitúru kovaní, ako aj pre meč. Pôvodné datovanie predmetov z hrobu 23 zo Závady, na základe koncepcie blatnicko-mikulčického horizontu, ovplyvnilo datovanie celého pohrebiska do obdobia medzi 1. tretinou 9. storočia až po jeho záver. Na základe aktuálnych poznatkov o chronológii súčasti jazdeckej výbavy, by sa datovanie malo posunúť do obdobia od polovice 9. storočia až do začiatku alebo prvej polovice 10. storočia.

Stále však platia ostatné zistenia vyplývajúce z analýzy stratigrafickej situácie na pohrebisku (*Bialeková 1982*, 154). Zrejme sa tu zaoberáme malým krátkotrvajúcim, možno jednofázovým pohrebiskom s niekoľkými skupinami hrobov. Malé množstvo hrobov (36), relatívne chudobná výbava a ich pomerne jasné zoskupenie naznačujú, že ide o pohrebisko spojené s miestnou komunitou, pravdepodobne tvorenou niekoľkými rodinami (*Bialeková 1982*, 152). Členmi troch rodín boli štyria muži, ktorí nosili zbrane. Medzi pochovanými však nie sú žiadne hroby, ktoré by mohli byť označené ako extrémne elitné. Súčasti výstroja a jazdecká výbava však majú svoje analógie medzi početnými nálezmi na blízkom

hradisku Bojná-Valy. Mohli sa tam aj vyrábať. V bezprostrednej blízkosti pohrebiska neboli zatiaľ nájdené stopy žiadneho obranného objektu, ale iba stopy otvoreného osídlenia (*Ruttkay 1989*, 374, 375). Preto možno predpokladať, že sídlisko/sídliská v oblasti dnešnej Závady a okolia patrili k aglomeračnej zóne, ktorej centrom bolo hradisko v Bojnej.

Vidiecke veľkomoravské pohrebiská sa vyznačujú malým percentom hrobov s jazdeckou výbavou. Meče sa v nich objavujú iba sporadicky. Okrem toho hroby s takouto výbavou netvoria izolované skupiny, ale sú len rozptýlené po celom pohrebisku a patria do rôznych skupín hrobov, pravdepodobne zodpovedajúcich rodovým skupinám. Zvyčajne sa v týchto hroboch nenachádzajú žiadne iné zdanlivé znaky akéhosi "vyššieho sociálneho postavenia" – predmety sú vyrobené pomerne jednoduchým spôsobom a zbavené nepotrebných dekorácií. Preto ťažko hľadať pomedzi pochovanými členov skutočných, vysoko postavených elít, ktoré naozaj tvorili izolovanú sociálnu skupinu. V prípade hrobov na vidieckych pohrebiskách máme skôr jedincov, ktorí sa profesionálne alebo z povinnosti zaoberali bojom. Mohli byť radovými členmi družín v blízkosti hradov. Oveľa pravdepodobnejšie je, že sú to hroby mužov, ktorí žili na vlastnej pôde a ak to bolo nevyhnutné, podliehali aj vojenskej službe. Bojovník pochovaný v Závade patril pravdepodobne do skupiny pridelenej územnej organizácii, ktorá patrila blízkemu hradisku v Bojnej. Je však ťažké kvalifikovať tento hrob ako veľmožský, hoci sa nepochybne líši od hrobov, ktoré ho obklopujú.

Obr. 1. Závada, okres Topoľčany. Plán pohrebiska (podľa *Bialeková 1974; 1976; 1977; 1982;* prekreslil Z. Robak). Legenda: a – bradatica; b – ostrohy; c – meč.

- Obr. 2. Závada, okres Topoľčany. Hrob 23 (podľa Bialeková 1974).
- Obr. 3. Závada, okres Topoľčany. Hrob 23. 1–3 mečová garnitúra; 4 meč. Železo.
- Obr. 4. Závada, okres Topoľčany. Hrob 23. 1, 2 ostrohy; 3 nôž. Železo.
- Obr. 5. RTG snímka opaskových kovaní zo Závady. Bez mierky.
- Obr. 6. Typológia karolínskych mečových garnitúr. 1 rozdeľovač remeňov (trojsmerný); 2 oválne kovanie; 3 kovanie s prevliečkou; 4 nákončie remeňa; 5 pracka; 6 strechovité kovanie; 7 kovanie s krčkom a pútkom; 8 patové kovanie.
- Obr. 7. Rekonštrukcia upevnenia meča pomocou garnitúry typu V (1 variant).
- Obr. 8. Rekonštrukcia upevnenia meča pomocou garnitúry typu V (2 variant).
- Obr. 9. Experimentálna rekonštrukcia garnitúry meča typu V. Rekonštrukcia Z. Robak a M. Knoll.
- Obr. 10. Pantové kovanie možnosti upínania.
- Obr. 11. Kovanie s prevliečkou.
- Obr. 12. Gradišče nad Bašljem/SI. 1–6 súčasti dvoch mečových garnitúr. Železo. 1–3 vďaka zdvorilosti T. Knifica a Š. Karo; 4–6 podľa *Karo 2011*.
- Obr. 13. Ostrohy s oblúkom čiastočne vykonaným s pásky. Železo. 1 Závada, hrob II/74 (podľa Bialeková 1982); 2 Pobedim-Hradištia (podľa Bialeková 1972); 3 – Zalavár-Vársziget/Maďarsko, hrob 1/2000 (podľa Szőke 2008); 4 – Bojná-Valy, 445/2007; 5 – Bojná-Valy, 506–508/2008; 6 – Bojná-Valy, 718/2007.
- Obr. 14. Sv. Jan pod Skalou/Česko. Ostroha. Železo (podľa Profantová 2016).
- Obr. 15. Južný Považský Inovec v druhej polovici 9. a 10. stor. 1 Závada; 2 Nemečky; 3 Veľké Hoste; 4 Bojná I-Valy; 5 – Bojná II-Hradisko; 6 – Bojná III-Žihľavník; 7 – Nitrianska Blatnica-Jurko; 8 – Ducové-Kostolec; 9 – Hrádok. Legenda: a – mohylové pohrebisko; b – plošné pohrebisko; c – hradisko; d – kostol/kaplnka.

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