

Dijelovi ranosrednjovjekovnih žvala iz Zbirke obitelji Zvijerac

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Source / Izvornik: **Vjesnik Arheološkog muzeja u Zagrebu, 2021, LIV, 267 - 278**

Journal article, Published version

Rad u časopisu, Objavljena verzija rada (izdavačev PDF)

<https://doi.org/10.52064/vamz.54.1.6>

Permanent link / Trajna poveznica: <https://um.nsk.hr/um:nbn:hr:291:919545>

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Download date / Datum preuzimanja: **2025-01-19**



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DIJELOVI RANOSREDNJOVJEKOVNIH ŽVALA IZ ZBIRKE OBITELJI ZVIJERAC

PARTS OF EARLY-MEDIEVAL BITS FROM THE ZVIJERAC COLLECTION

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UDK / UDC: 904:685.15(497.525.1 Koprivnica)"653"
Prethodno priopćenje / Preliminary communication
<https://doi.org/10.52064/vamz.54.1.6>

Ovom prigodom prezentiraju se dijelovi kovanih željeznih žvala iz Zbirke obitelji Zvijerac, pronađeni prigodom eksploatacije šljunka na Staroj šoderici sjeverno od Koprivnice. Prema očuvanim karakterističnim dijelovima, od kojih valja izdvojiti oblik i ukras na prečkama, oblike ušica za pričvršćivanje obraznog remena te povodca, kao i presjek usnoga dijela, može se zaključiti da dijelovi obiju žvala pripadaju tipu jednostavnih dvodijelnih žvala s prečkama kakve su bile u upotrebi tijekom ranoga srednjega vijeka. Uspoređuju se s najbližim analognim nalazima žvala istog vremena s područja Slovenije, ali i šire, te zajedno s ranije objavljenim arheološkim predmetima s ovog područja upućuju na primjetan intenzitet zaposjedanja ovog prostora uz rijeku Dravu tijekom ranosrednjovjekovlja.

Ključne riječi:
slučajni nalazi, oprema konja, žvale, kositrenje, rani srednji vijek

On this occasion, parts are presented of forged iron bits from the collection of the Zvijerac Family, discovered during gravel extraction at the gravel pit called Stara Šoderica, to the north of Koprivnica. According to the preserved characteristic sections, particularly the form and decoration of the cheek bars, and the form of the loops for attaching the cheek straps and reins, as well as the cross-section of the mouth section, it can be concluded that the parts of both bits belong to the type of simple two-part bits with cheek bars such as were in use during the early medieval period. They are compared with the closest analogous finds of bits from the same period in the region of Slovenia, and also beyond; and, together with earlier published archaeological artefacts from this area, they indicate a considerable intensity of settlement in this area along the River Drava during the medieval period.

Key words:
chance finds, horse equipment, bit, tinning, early medieval period

O dijelovima opreme konja i jahača iz ranoga srednjega vijeka bavili smo se prije nekoliko godina, prezentirajući slučajne nalaze željeznih žvala, nekoliko pojedinačnih i jednog para kovanih željeznih stremena iz šljunčare Jagnje(ž)đe, Jagneđe ili, kako je mještani najčešće nazivaju, Jegeniš na 13th Annual Meeting of the European Association of Archaeologists u Zadru (2012. godine), koji su naknadno objavljeni u *Vjesniku Arheološkog muzeja u Zagrebu* (2019. godine).¹ Od vremena prezentacije spomenutih

Several years ago, we discussed parts of equine and equestrian equipment from the early medieval period, presenting chance finds of iron bits, several individual forged iron stirrups, and one pair, from the gravel pit of Jagnje(ž)đe, Jagneđe or, as it is most often called by the locals, Jegeniš, in a paper at the 13th Annual Meeting of the European Association of Archaeologists in Zadar (2012), which was later published in the journal *Vjesnik Arheološkog muzeja u Zagrebu* (2019).¹ Between the presenta-

1 Sekelj Ivančan 2019.

1 Sekelj Ivančan 2019.



SLIKA 1. Karta područja sjeverne Hrvatske s označenim lokalitetima na kojima su pronađene ranosrednjovjekovne žvale: 1) jezero Jegeniš-šljunčara; 2) Prelog-šljunčara; 3) Zagreb-Kruge; 4) Brodski Drenovac-Plana; 5) Dalj-Bogaljevci; 6) Osijek-Zelena polje; 7) Bijelo Brdo-Bajer; 8) Batina-Gradac; 9) Zmajevac-Gradac; 10) Stari Jankovci-Gatina; 11) Otok-Gradina; 12) Privlaka-Gole njive; 13) Vinkovci-groblje; 14) Šaregrad-Klopore; 15) Bapska-Gradac (izradila K. Botić).

FIGURE 1. Map of the region of northern Croatia with sites marked where early-medieval bits have been discovered: 1) the Jegeniš-gravel-pit lake; 2) Prelog-gravel pit; 3) Zagreb-Kruge; 4) Brodski Drenovac-Plana; 5) Dalj-Bogaljevci; 6) Osijek-Zelena polje; 7) Bijelo Brdo-Bajer; 8) Batina-Gradac; 9) Zmajevac-Gradac; 10) Stari Jankovci-Gatina; 11) Otok-Gradina; 12) Privlaka-Gole njive; 13) Vinkovci-cemetery; 14) Šaregrad-Klopore; 15) Bapska-Gradac (made by K. Botić).

predmeta pa do danas, iz iste Zbirke obitelji Zvijerac, izdvojeni su dijelovi još dviju kovanih željeznih konjskih žvala koji se donose u ovom radu, kao prilog svečarskom broju istog časopisa, posvećenom kolegi dr. sc. Željku Demi, muzejskom i znanstvenom savjetniku povodom odlaska u zasluženu mirovinu. Nalazi potječu s područja eksploatacije šljunka na tzv. Staroj šoderici, što je oko 6–7 km jugoistočnije od približnog položaja ranije obrađenih nalaza iz Jegeniša (sl. 1: 1).² Na ovome je mjestu potrebno naglasiti da je danas to sve isto veliko jezero naziva Jegeniš i, zbog načina i dinamike rada strojeva na eksploataciji i separaciji šljunka, nije više moguće sa sigurnošću odrediti s koje točno pozicije potječe koji predmet. Također, potrebno je spomenuti da s istog prostora potječe više ranosrednjovjekovnih željeznih predmeta koje čuva Muzej grada Koprivnice ili se nalaze u spomenutoj zbirci kao što su, primjerice, ranije objavljena dva karolinška koplja s krilcima.³

O žvalama kao metalnim, obično dobro očuvanim dijelovima ulara ili oglavine konja, kojom se jedinka zauzdavala kako bi se njome lakše ovladavalo, smještenima u usnoj šupljini konja, bilo je riječi već ranije pa na ovome mjestu nije potrebno ponavljati dijelove same oglavine konja sastavljene uglavnom od isprepletenog remenja,⁴ kao niti pojedine metalne dijelove od kojih su

tion of the above items and the present day, parts of another two forged iron horse bits have been distinguished in the same collection of the Zvijerac family, and they are presented in this work, as a contribution to the celebratory issue of the above journal dedicated to our colleague Dr. Željko Demo, museum and scientific advisor, on the occasion of his well-deserved retirement. The finds come from the area of gravel extraction at the site called Stara Šoderica, which is about 6–7 km southeast of the approximate position of the earlier analysed finds from Jegeniš (Fig. 1: 1).² It is necessary to emphasize here that today this is all one large lake called Jegeniš; and, due to the manner and dynamics of machine operation in the exploitation and separation of gravel, it is no longer possible to determine with certainty which object comes from which exact position. It is also necessary to mention that several early-medieval iron objects that come from the same area are now in the Koprivnica Town Museum or part of the collection mentioned above, such as the two previously published Carolingian winged spearheads.³

Bits – as the usually well-preserved metal parts of a halter or bridle, which restrained an animal in order to control it more easily, placed in the oral cavity of a horse – have been discussed

2 Sekelj Ivančan 2019, 150, sl. 1.

3 Sekelj Ivančan 2004; 2007.

4 Měchurová 1984, 279; Garam 1987, 121–124, Taf. 19–22; Karo 2003, 9; Zábajník 2009, 56.

2 Sekelj Ivančan 2019, 150, sl. 1.

3 Sekelj Ivančan 2004; 2007.

sastavljene žvale.⁵ Također, ovdje valja spomenuti najnoviji rad slovenskih kolega Š. Karo i T. Knific koji, obrađujući 28 ranosrednjovjekovnih žvala (od toga šest cjelovito očuvanih; tri iz arheoloških istraživanja) pronađenih na osam arheoloških nalazišta u Sloveniji, donose preciznu terminologiju, kako samih uzdi tako i dijelova žvala, te njihov razvoj i tipološko-kronološke sheme na širem europskom prostoru.⁶ U opisu naših žvala oslonit ćemo se, stoga, upravo na spomenute objave, ali i na starije rekonstrukcije i interpretacije prema kojima su u vrijeme ranoga srednjega vijeka najučestalije bile u upotrebi dvije varijante jednostavnih dvodijelnih žvala, kako one s obručima tako i one s prečkama (Kirpičnikov: tipovi I-IV; Ruttkay: tip I i II; Měchurová: tip I i II).⁷ Riječ je o dijelovima jednih manjih i jednih veći žvala koje bi, prema spomenutim tipologijama, obje pripadale tipu jednostavnih dvodijelnih metalnih kovanih žvala, varijanti s prečkama. No, iako pripadaju istom tipu, odnosno varijanti, razlikuju se u detaljima koji ponekad čine i kronološku razliku.

Kod dijelova manjih žvala (sl. 2)⁸ očuvana je prečka s petljom za pričvršćivanje uzde na obraznom remenu te jedna, s njima fizički nepovezana karika, koja vjerojatno pripada unutarnjem oku istih žvala. Krak je petlje umetnut u dvije manje perforacije koje se nalaze na sredini prečke. Polukružnog je oblika, razdijeljen pravilnim ukrašenim poljima, na koja se nadovezuje neukrašen kratak vrat te vanjska neukrašena ušica pravokutna oblika, kroz koju se provlači obrazni remen. Krajevi su prečke zadebljani i ukrašeni trima udubinama. Pridružena karika na jednom je dijelu prekinuta i dio joj nedostaje, dok je na drugom zadebljana te se čini kako se na tome mjestu nadovezuje vanjsko oko položeno okomito na unutarnje, na koje se nadalje nadovezuje petlja za pričvršćivanje povodca koji služi za lakše zauzdavanje i navođenje konja. Prema tipologiji, koja je još uvijek relevantna, može ih se svrstati na sljedeći način – Ruttkay: tip I s prečkama br. 2; Měchurová: tip IA s prečkama br. 8.⁹

Kod dijelova većih žvala (sl. 3)¹⁰ sačuvana je prečka s djelomično očuvanim jednim krakom plosnate izbočine/pločice, vjerojatno pravokutnog oblika s pretpostavljenom perforacijom kroz koju se provlačio obrazni remen. Krakovi pločice, od kojih je očuvan tek gornji, dok se donji tek nazire, izlaze iz dviju perforacija na sredini prečke. Žvalama pripada i tzv. usni dio od kojeg su očuvani sljedeći fizički povezani dijelovi: 1) okrugla veća karika za povodac, koja prolazi kroz vanjsko, manje oko; 2) unutarnje, veće oko, koje se nadovezuje na vanjsko u istoj ravnini, s kojim čini oblik osmice, i kroz koje se provlači prečka; 3) dio unutarnje po-

earlier, so here it is not necessary to list again the parts of the horse harness itself, composed primarily of interconnected straps,⁴ nor the individual metal sections of which the bits were composed.⁵ It is also necessary to mention here the most recent work of our Slovenian fellows Š. Karo and T. Knific, which, while analysing 28 early-medieval bits (six completely preserved; three from archaeological excavations) found at eight archaeological sites in Slovenia, has introduced a precise terminology, both of the reins/straps themselves, as well as the parts of the bits, and their development and typological-chronological outline throughout the broader European area.⁶ The description of our bits will therefore rely specifically on the above publication, but also on earlier reconstructions and interpretations according to which, in the early medieval period, two variants of simple two-part bits were most commonly in use: those with rings and those with bars (Kirpičnikov: types I–IV; Ruttkay: types I and II; Měchurová: types I and II).⁷ Our bits consist of parts of one small and one large bit, which, according to the typologies cited, both belong to the type of simple two-part forged bits, the variants with cheek bars. However, although they belong to the same type, or rather variant, they differ in detail, which can sometimes reflect a chronological difference.

In terms of the parts of the smaller bit (Fig. 2),⁸ a cheek bar with a loop for attaching the rein to the cheek strap was preserved, along with a physically unconnected link that probably belonged to the interior loop of the same bit. One arm of the loop is inserted into two small perforations located in the middle of the cheek bar. It was semicircular in shape, divided into regular decorated fields connected to an undecorated short neck and exterior undecorated perforation of rectangular shape through which the cheek strap passed. The ends of the cheek bars are thickened and decorated with three hollows. The associated link is broken in one section, and part is missing, while in the other section it is thickened, and it seems, at that spot, the outer link was placed perpendicularly to the inner one, which is further connected to the loop for attaching the reins, which served to more easily restrain and guide the horse. According to the typology that still remains relevant, they can be classified in the following manner – Ruttkay: type I with cheek bars of no. 2; Měchurová: type IA with cheek bars of no. 8.⁹

In terms of the parts of the larger bit (Fig. 3),¹⁰ the cheek bar was preserved with a partially preserved arm of a flat protrusion/platelet, probably of rectangular shape with a hypothesized per-

5 Sekelj Ivančan 2019, 151, 153, sl. 2, 4.

6 Karo, Knific 2019, 186–189, sl. 1–2.

7 Kirpičnikov 1973, 17–18, ris. 4; Ruttkay 1976, 357–358, Abb. 75; Měchurová 1984, 267, T. 1; Bartošková 1986, 84–85; Karo 2003, 9, 18.

8 Dimenzije: dužina prečke – 9,6 cm; najveća širina prečke – 0,7 cm; ukupna širina petlje za pričvršćivanje uzde – 3,3 cm; visina polukružnog dijela petlje – 2,1 cm; visina ušice pravokutna oblika – 2 cm; unutarnji promjer karike – 1,2 cm; težina – 27+6 gr.

9 Ruttkay 1976, 357, Abb. 75; Měchurová 1984, 267, T. 1.

10 Dimenzije: dužina prečke – 17,4 cm; najveća širina prečke – 0,9 cm; unutarnji promjer karike za povodac – 2,8 cm; unutarnji promjer manjeg oka – 1,2 cm; unutarnji promjer većeg oka – 1,8 cm; očuvana dužina unutarnje poluge – 4,6 cm; težina – 71+55 gr.

4 Měchurová 1984, 279; Garam 1987, 121–124, Taf. 19–22; Karo 2003, 9; Zábajnik 2009, 56.

5 Sekelj Ivančan 2019, 151, 153, sl. 2, 4.

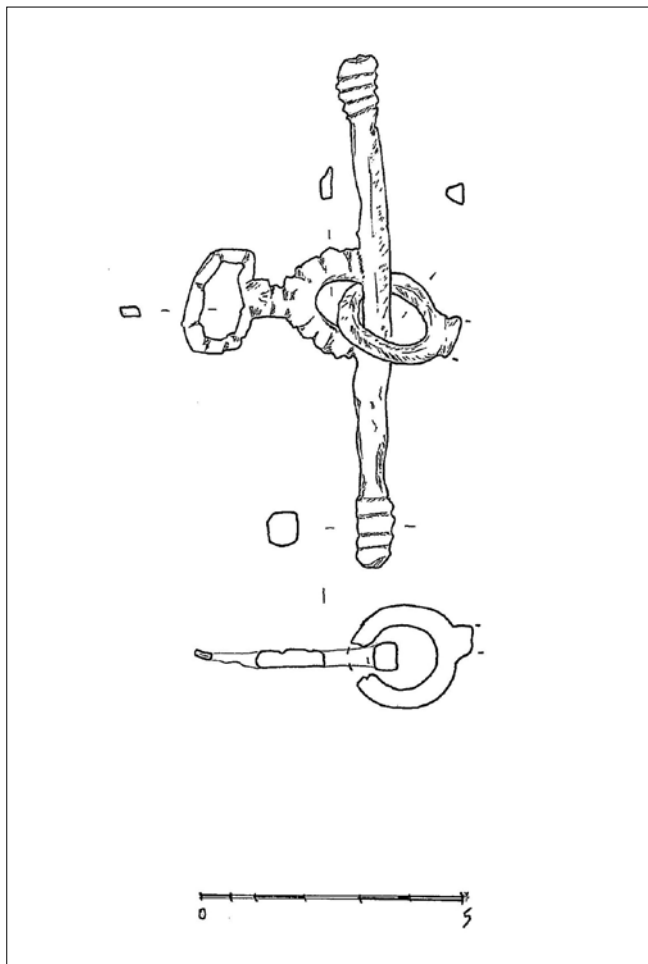
6 Karo, Knific 2019, 186–189, sl. 1–2.

7 Kirpičnikov 1973, 17–18, ris. 4; Ruttkay 1976, 357–358, Abb. 75; Měchurová 1984, 267, T. 1; Bartošková 1986, 84–85; Karo 2003, 9, 18.

8 Dimensions: length of the bar, 9.6 cm; greatest width of the bar, 0.7 cm; total width of the loop for attaching the reins, 3.3 cm; height of the semicircular part of the loop, 2.1 cm; height of the eye of rectangular shape, 2 cm; inner diameter of the link, 1.2 cm; weight, 27+6 gr.

9 Ruttkay 1976, 357, Abb. 75; Měchurová 1984, 267, T. 1.

10 Dimensions: length of the bar, 17.4 cm; greatest width of the bar, 0.9 cm; inner diameter of the link for the reins, 2.8 cm; inner diameter of the smaller eye, 1.2 cm; inner diameter of the larger eye, 1.8 cm; preserved length of the interior bar, 4.6 cm; weight, 71+55 gr.



SLIKA 2. Dijelovi manjih žvala (izradila S. Čule).
FIGURE 2. The parts of the small bit (made by S. Čule).

luge zvjezdastog presjeka koja se nadovezuje na unutarnje oko. Prečka, kvadratična presjeka, ukrašena je trima nepravilno raspoređenim pravilnim kvadratičnim i pravokutnim, manjim izbočinama, vjerojatno na obje strane jednako, što zbog oštećenja nije moguće decidirano reći. Prema tipologiji koja je još uvijek relevantna, može ih se svrstati na sljedeći način – Ruttkay: tip I s prečkama br. 3; Měchurová: tip IA s prečkama br. 6.¹¹

Ranije objavljeni primjerak cjelovitih žvala iz Jegeniša također pripada istom tipu jednostavnih željeznih dvodijelnih žvala s ravnim, ali ovdje glatkim i neukrašenim prečkama kod kojih su uzde/povodac pričvršćene direktno na žvalu (Ruttkay: tip I s prečkama br. 4; Měchurová: tip IA s prečkama br. 4).¹² Iako istoga osnovnog tipa kao žvale koje donosimo u ovom radu, upravo pojedini detalji oblikovanja njihovih dijelova čine razliku u tipologiji i kronologiji ove vrste predmeta, pri čemu je ranije objavljeni primjerak iz Jegeniša datiran oko 800. godine ili u sam početak

formation through which the cheek strap would have passed. The arms of the platelet, of which only the upper one has been preserved, while the lower one can only be glimpsed, extend from two perforations in the middle of the bar. A mouthpiece also belonged to the bit, of which the following physically connected parts were preserved: 1) a circular large link for the rein that passes through the outer, smaller loop; 2) an interior, larger loop that is connected to the outer one at the same level, together creating a figure of eight, and through which the cross bar passes; 3) part of the interior bar, of star-shaped section, that is connected to the inner loop. The cross bar of square section, decorated with three irregularly arranged small square and rectangular protrusions, was probably identical on both sides, which cannot be claimed definitively because of damage. According to the still relevant typologies, they can be classified as follows – Ruttkay: type I with cheek bars of no. 3; Měchurová: type IA with cheek bars of no. 6.¹¹

The earlier published example of a complete bit from Jegeniš also belongs to the same type of simple iron two-part bits with straight cheek bars – but here smooth and undecorated – where the reins are directly connected to the bit (Ruttkay: type I with cross bars of no. 4; Měchurová: type IA with cross bars of no. 4).¹² Although of the same basic type as the bits that are presented in this work, it is the individual details of the formation of their parts that creates differences in the typology and chronology of this type of object, so that the previously published example from Jegeniš was dated to around AD 800 or the very beginning of the 9th century,¹³ as was an identical example from Prelog (gravel pit).¹⁴ They can be joined, because of an identical form, by the find of a bit from the equestrian grave no. 88 at the site of Stari Jankovci-Gatina, a (late) Avar-period cemetery that is dated somewhat earlier, around the 750s,¹⁵ and possibly those from the site of Privlaka-Gole njive (grave no. 215), dated to the second half of the 8th century.¹⁶ Other than these three (or four) examples of almost identical bits, the other finds of this type of object on the territory of the Republic of Croatia were differently formed. For instance, the bit from Dalj-Bogaljevci, near Osijek, also dated somewhat earlier, had a chain link, in place of a cheek bar, that prevented the bit from sliding from the mouth,¹⁷ and hence represents a different variant of this type of bit, into which could (perhaps) be placed the bit from grave 4 at the site of Otok-Gradina.¹⁸ The examples from Brodski Drenovac-Plana (graves nos 13 and 14), in place of straight bars, have bars in the shape of the letter S,¹⁹ an example of which was also found in grave 16 at the site of Gradina, in Otok,²⁰ and this group could

11 Ruttkay 1976, 357–358, Abb. 75; Měchurová 1984, 267, T. 1.

12 Sekelj Ivančan 2019, 154.

11 Ruttkay 1976, 357–358, Abb. 75; Měchurová 1984, 267, T. 1.

12 Sekelj Ivančan 2019, 154.

13 Sekelj Ivančan 2019, 157.

14 Tomičić 1978, 212; Milošević (ed.) 2000, 101, sl. II. 32; Sekelj Ivančan 2019, 153–156, sl. 4.

15 Rapan Papeša, Šmalcelj Novaković 2016, 7; Dugonjić, Rapan Papeša (eds.) 2019, 120–121.

16 The bit was photographed in such a position that not all details were visible (Rapan Papeša 2009).

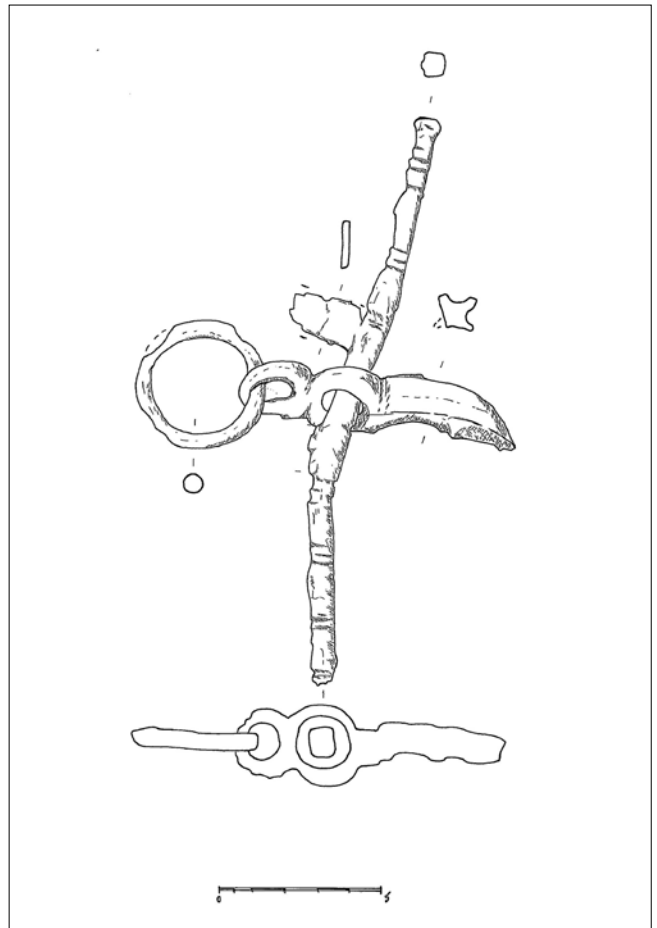
17 Bojčić 1984, 215–217, sl. 5; Milošević (ed.) 2000, 89, sl. II. 9a.

18 The bit from grave 4 at the site of Gradina, in Otok, dated by the authors to the first decades of the 8th century, or the first half of the 8th century, is presented with a photograph (Rapan Papeša, Šmalcelj Novaković 2016, gr. no. 4, cat. no. 21).

19 Milošević (ed.) 2000, 85–86, sl. II. 3a, sl. II. 4f.

20 Rapan Papeša, Šmalcelj Novaković 2016, gr. no. 16, cat. no. 7.

9. stoljeća,¹³ kao i njemu istovjetan primjerak iz Preloga (šljunčara).¹⁴ Njima se, zbog jednakog oblika, može pridružiti i nalaz žvala iz konjaničkog groba br. 88 s lokaliteta Stari Jankovci-Gatina, (kasno)avarodobnog groblja koje se datira nešto ranije, oko/iza 750. godine,¹⁵ te eventualno one s lokaliteta Privlake-Gole njive (gr. br. 215) datirane u drugu polovinu 8. stoljeća.¹⁶ Osim ova tri (ili četiri) primjerka gotovo jednako oblikovanih žvala, ostali nalazi ove vrste predmeta pronađeni na području Republike Hrvatske drugačije su oblikovani. Tako žvale iz Dalj-Bogaljevaca kod Osijeka, također datirane nešto ranije, umjesto prečki koje sprečavaju da žvala sklizne iz usta, imaju karike¹⁷ pa prema tome predstavljaju drugačiju varijantu ovog tipa žvala, u koju bi (možda) mogli uvrstiti i žvale iz groba br. 4 s lokaliteta Otok-Gradina.¹⁸ Primjerci pak iz Brodskog Drenovca-Plana (gr. br. 13 i 14), umjesto ravnih, imaju prečke u obliku slova S,¹⁹ kakav je primjerak pronađen i u grobu br. 16 na lokalitetu Gradina u Otoku,²⁰ a u ovu bi grupu mogli uvrstiti i jedne od objavljenih žvala sa zakrivljenim gornjim dijelom prečke pronađene na lokalitetu Šarengrad-Klopore (gr. br. 14).²¹ Posljednje u nizu predstavlja masivni primjerak žvala iz Zagreb-Kruga (gr. br. 4),²² koji pripada tipu Csorna,²³ inače karakterističnom za velikomoravske ostave sredine 9. stoljeća.²⁴ Potonji grobni nalazi s područja sjeverne Hrvatske smještaju se nešto ranije, u posljednju četvrtinu ili sam kraj 8. stoljeća (Gradina u Otoku, Šarengrad-Klopore),²⁵ odnosno početak 9. stoljeća (Brodski Drenovac-Plana; Zagreb-Kruga; sl. 1). Od starijih nalaza valja spomenuti ostatke žvala iz oko 1900. godine uništenoga konjaničkog groba s lokaliteta Osijek-Zelena polje,²⁶ iz iste godine na-



SLIKA 3. Dijelovi većih žvala (izradila S. Čule).
FIGURE 3. The parts of the large bit (made by S. Čule).

13 Sekelj Ivančan 2019, 157.

14 Tomičić 1978, 212; Milošević (ed.) 2000, 101, sl. II.32; Sekelj Ivančan 2019, 153–156, sl. 4.

15 Rapan Papeša, Šmalcelj Novaković 2016, 7; Dugonjić, Rapan Papeša (eds.) 2019, 120–121.

16 Žvale se donose u fotografiji na kojoj su snimljene u takvom položaju da nisu vidljivi svi detalji (Rapan Papeša 2009).

17 Bojčić 1984, 215–217, sl. 5; Milošević (ed.) 2000, 89, sl. II.9a.

18 Žvale iz groba br. 4 s lokaliteta Gradina u Otoku koje autorice datiraju u prva desetljeća 8. stoljeća, odnosno prvu polovinu 8. stoljeća donose se u fotografiji (Rapan Papeša, Šmalcelj Novaković 2016, gr. br. 4, kat. br. 21).

19 Milošević (ed.) 2000, 85–86, sl. II.3a, sl. II.4f.

20 Rapan Papeša, Šmalcelj Novaković 2016, gr. br. 16, kat. br. 7.

21 Dugonjić, Rapan Papeša (eds.) 2019, 18. S ovog lokaliteta potječe više primjeraka još neobjavljenih žvala (žvale su, osim u gr. br. 14, pronađene još u gr. br. 24, 25, 26, 39 i 52), iz do sada istraženih sedam konjaničkih ukopa (Rapan Papeša, Dizdar, Rimpf 2017, 14). Dva ukopa s konjima pronađena su i na lokalitetu Nuštar-Dvorac, no uz sebe nisu imali žvale, već samo ukrase s oglavine. Na usmenim informacija o potonjim podacima zahvaljujemo kolegici Aniti Rapan Papeša iz Gradskog muzeja Vinkovci.

22 Milošević (ed.) 2000, 110, sl. II.56d.

23 Ovaj je tip blizak žvalama iz Sebenjske ostave (Slovenija) koje A. Pleterski datira u početak 9. stoljeća i veže uz franački/germanski prostor (Pletherski 1987, 253–256).

24 Schulze-Dörrlamm 1991, 416–417, Abb. 41.

25 U vrijeme 8. stoljeća mogu se uvrstiti i žvale pronađene u konjaničkom ukopu na lokalitetu Bapska-Gradac, koje još nisu detaljnije objavljene (Dugonjić, Rapan Papeša (eds.) 2019, 111). Također, na ovome mjestu valja spomenuti, još neobjavljene, u najnovijim istraživanjima (travanj 2020. godine) pronađene žvale na lokalitetu Vinkovci-groblje, gdje su uz ukrasne elemente oglavlja konja pronađeni i funkcionalni elementi, uz spomenute žvale i stremeni i sedlo (Rapan Papeša 2020).

26 Vinski 1958, 26, 46, bilj. 116, 117, T. 12, dolje.

perhaps also be joined by one of the published bits, with a curved upper section of the cheek bar, discovered at the site of Šarengrad-Klopore (grave 14).²¹ The last in the list is represented by a massive example of a bit from Zagreb-Kruga (grave 4),²² which belongs to the Csorna type,²³ otherwise characteristic of the Great Moravia hoards of the mid-9th century.²⁴ The latter grave finds from the area of northern Croatia are classified somewhat earlier, in the last quarter, or at the very end, of the 8th century (Gradina in Otok, Šarengrad-Klopore),²⁵ or the beginning of the 9th century (Brodski

21 Dugonjić, Rapan Papeša (eds.) 2019, 18. Several examples of still unpublished bits come from this site (where, in addition to grave 14, bits were also found in graves 24, 25, 26, 39 and 52), from the seven horserider burials excavated so far (Rapan Papeša, Dizdar, Rimpf 2017, 14). Two burials with horses were also found at the site of Nuštar-Dvorac, but they contained not bits but merely harness decorations. For the information about the latter, we would like to thank Anita Rapan Papeša of the Municipal Museum Vinkovci.

22 Milošević (ed.) 2000, 110, sl. II. 56d.

23 This type is close to the bits from the Sebenje hoard (Slovenia), which A. Pleterski dated to the beginning of the 9th century and tied to the Frankish/Germanic region (Pletherski 1987, 253–256).

24 Schulze-Dörrlamm 1991, 416–417, Abb. 41.

25 The bit found in an equestrian burial at the site of Bapska-Gradac, which has not yet been published in detail, can also be placed in the 8th century (Dugonjić, Rapan Papeša (eds.) 2019, 111). The unpublished bit found at the site of Vinkovci-cemetery in the most recent excavations (April 2020) should also be mentioned here. Along with decorative elements of the horse harness, functional elements were also discovered, in addition to the bit, stirrups and a saddle (Rapan Papeša 2020).

laze iz Zmajevca-Gradac,²⁷ zatim nalaz žvala iz Batine-Gradac²⁸ te dvoje žvala uz konje pronađene tijekom arheoloških iskopavanja 1947/1948. godine na lokalitetu Bijelo Brdo-Bajer,²⁹ sve lokaliteti koji su datirani ranije od prethodno spomenutih primjeraka, u vrijeme sredine ili druge polovine 7. stoljeća.

Žvale, koje se donose u ovom radu, pripadaju tipu jednostavnih dvodijelnih žvala s prečkama, no po detaljima se razlikuju od svih do sada pronađenih žvala na području Republike Hrvatske, kao i međusobno. Prvenstveno se to odnosi na njihove dimenzije, gracilnost, odnosno masivnost, kao i na oblik ostalih sastavnih dijelova žvala koje možemo svesti na četiri glavna dijela: 1) prečke – njihovu dužinu, oblik i ukras; 2) oblik petlje za pričvršćivanje obraznog remena; 3) oblik petlje/karika za pričvršćivanje povodca; 4), presjek usnog dijela, ali i postavke unutarnjeg i vanjskog oka na dijelu žvale na koji se nadovezuje karika za povodac.

1) Dužina, oblik i ukras prečke

Funkcija prečki sastoji se u tome da žvala ne može ispasti iz usta konja te da pritiskom na obraz preko povodca usmjerava konja u željenom smjeru. Dužina prečki veoma je različita kod tipa žvala s prečkama, pa tako i kod naša dva primjerka (9,6 vs 17,4 cm), i čini se da nema veće uloge u funkcionalnom smislu, već je više estetski uvjetovana.

Oblik prečke većih žvala (sl. 3), koje do nas nisu dospjele ravne, čini se da ne možemo povezati niti s prečkama u obliku slova S, jer su lomovi linije zakrivljenosti preoštri, ali niti sa žvalama kod kojih su prečke zakrivljene na vrhovima, što je karakteristika avardobnih žvala 7. stoljeća,³⁰ jer bi u tom slučaju oba kraka bila na istoj strani. Čini se da je do iskrivljenja došlo sekundarno te da su primarno i one, kao i prečke kod manjeg primjerka (sl. 2), bile ravne.

Kod prečki obiju žvala prisutno je ukrašavanje, ali na različite načine. Kod većih žvala ukras na svakom kraku, u vidu triju zadebljanja kvadratična oblika približno jednako raspoređenih, izveden je vještinom kovanja, dok su manje žvale na krajevima prečke ukrašene skupinom od tri urezana poprečna rebra.

Drenovac-Plana; Zagreb-Kruga; Fig. 1). Earlier finds that should be noted include the remains of bits from a destroyed equestrian grave (excavated around 1900) from Osijek-Zeleno polje,²⁶ the finds from Zmajevac-Gradac of the same year,²⁷ along with the discovery of bits at Batina-Gradac,²⁸ and two bits by horse skeletons discovered during archaeological excavations in 1947/1948 at the site of Bijelo Brdo-Bajer,²⁹ all sites that are dated earlier than the examples cited above, to the period of the middle or second half of the 7th century.

The bits discussed in this work belong to the type of simple two-part bits with cheek bars, but in terms of details they differ from all bits discovered to the present in Croatia, as well as from each other. This primarily refers to the dimensions of the bits, their elegance or massiveness, as well as the shape of the other component parts of the bits, which can be reduced to four main sections: 1) the cheek bar – length, form, and decoration; 2) the form of the loop/slot for attaching the cheek strap; 3) the form of the loop/slot for attaching the reins; 4), the cross-section of the mouthpiece, and also the settings for the inner and outer eyes on the part of the bit where the link for the reins is attached.

1) Length, form and decoration of the cheek bar

The function of the cheek bar is to ensure that the bit cannot fall out of the mouth of the horse, and also, through pressure on the cheek through the reins, to direct the horse in the desired direction. The length of the cheek bars is extremely diverse among the type of bits with cheek bars, and this is the case for our two examples (9.6 vs 17.4 cm), and seemingly this plays no great role in the functional sense; rather, it is aesthetically conditioned.

It seems that the form of the cheek bars of large bits (Fig. 3) that have not been discovered in a straight form cannot be connected with cheek bars in the form of the letter S, as the breaks in the line of the curve seem too sharp, nor is this the case for bits where the cheek bars were bent at the tops, which is characteristic of Avar-period bits of the 7th century,³⁰ as both arms would, in that case, be on the same side. It seems that the distortion occurred secondarily, and that, to begin with, they were, like the cheek bars of the smaller example (Fig. 2), originally straight.

Decoration was present on the cheek bars of both bits, but in different manners. For the larger bit, the decoration on each arm, in the form of three thickenings of square form arranged fairly regularly, was made through skilful forging, while the smaller bit was decorated on the ends of the cheek bar with a group of three incised transverse ribs.

27 Vinski 1958, 26, 46, bilj. 115; Minichreiter 1987, 136–137.

28 Minichreiter 1987, 103–104.

29 Radi se o jednim žvalama uz konja bez jahača K1 (Vinski 1949, 226, 229; Ivaniček 1949, 133, 140) i jednim iz konjaničkoga groba br. 49 (Ivaniček 1949, 133, 140; Vinski 1949, 226, 229).

30 Karo, Knific 2019, 194.

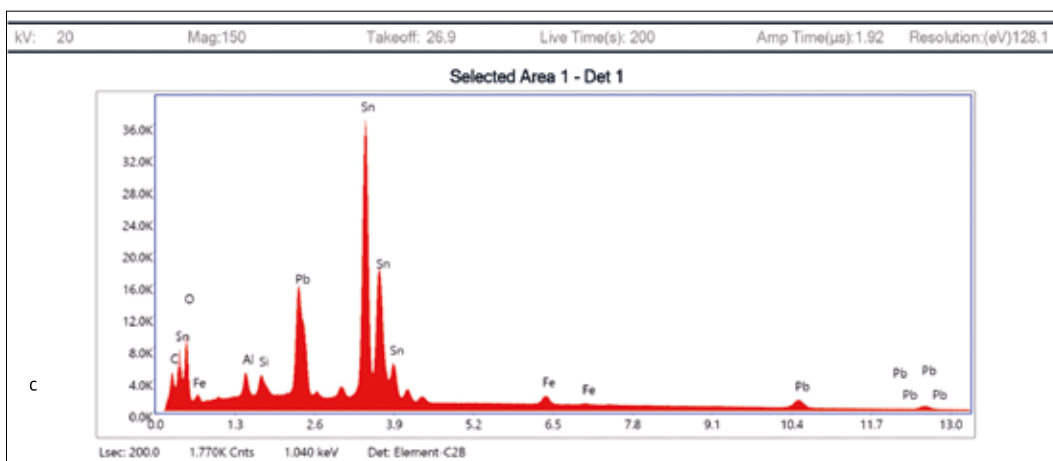
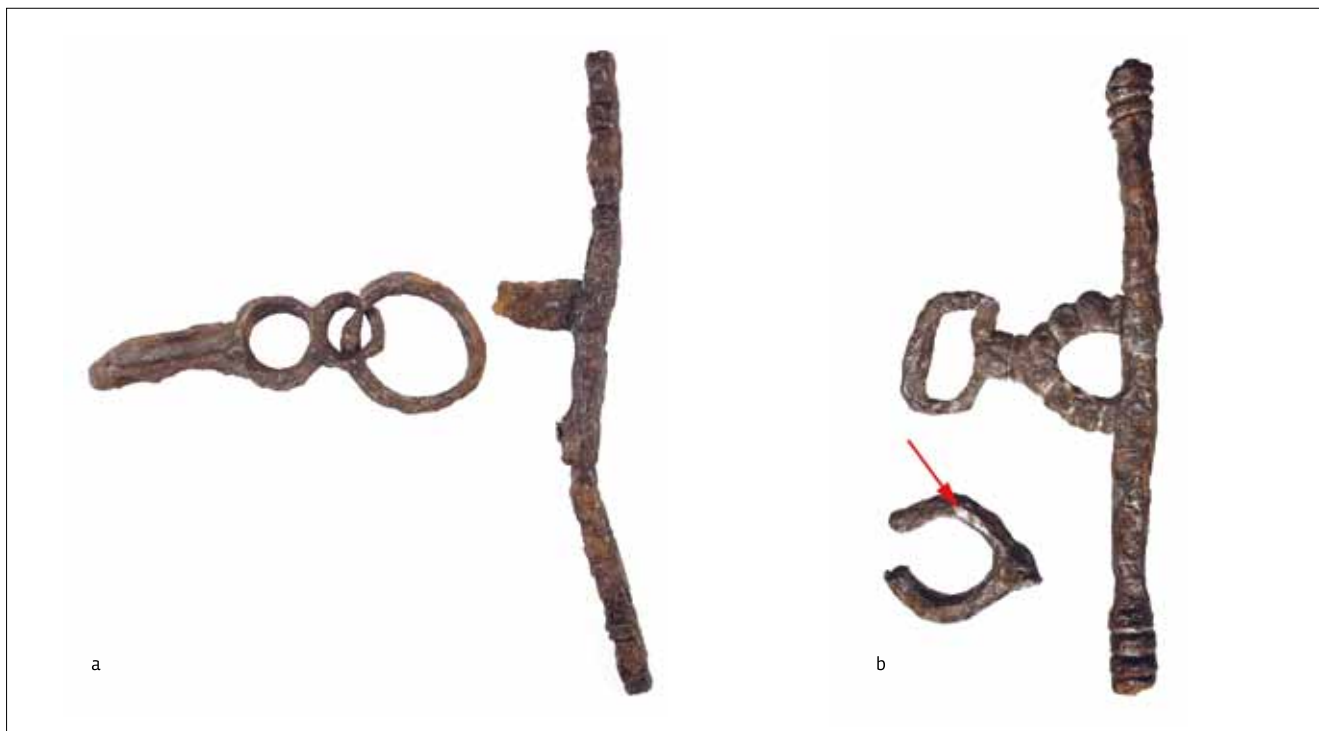
26 Vinski 1958, 26, 46, n. 116, 117, T. 12, below.

27 Vinski 1958, 26, 46, n. 115; Minichreiter 1987, 136–137.

28 Minichreiter 1987, 103–104.

29 One bit by a horse without a rider K1 (Vinski 1949, 226, 229; Ivaniček 1949, 133, 140) and one from the equestrian grave no. 49 (Ivaniček 1949, 133, 140; Vinski 1949, 226, 229).

30 Karo, Knific 2019, 194.



SLIKA 4. Dijelovi većih (a) i manjih (b) žvala s označenim mjestom na kojem je provedena analiza i EDS spektar (c) s jasno vidljivim linijama olova i kositra (snimio i izradio D. Doračić).

FIGURE 4. The parts of the large bit (a) and the small bit (b) with the analysed area marked and the EDS spectrum (c) with the clearly visible lines of lead and tin (photo and made by D. Doračić).

Tragovi platiranja slitinom kositra i olova

Na manjim su žvalama SEM-EDS metodom³¹ ustanovljeni tragovi platiranja slitinom kositra i olova (sl. 4).³² Debljina platiranog sloja iznosi cca 25 μm (sl. 5), što upućuje na podatak da je platiranje vrlo vjerojatno izvedeno postupkom uranjanja u rastaljenu slitinu kositra i olova na što ukazuju neka, već ranije provedena,

Traces of plating with an alloy of tin and lead

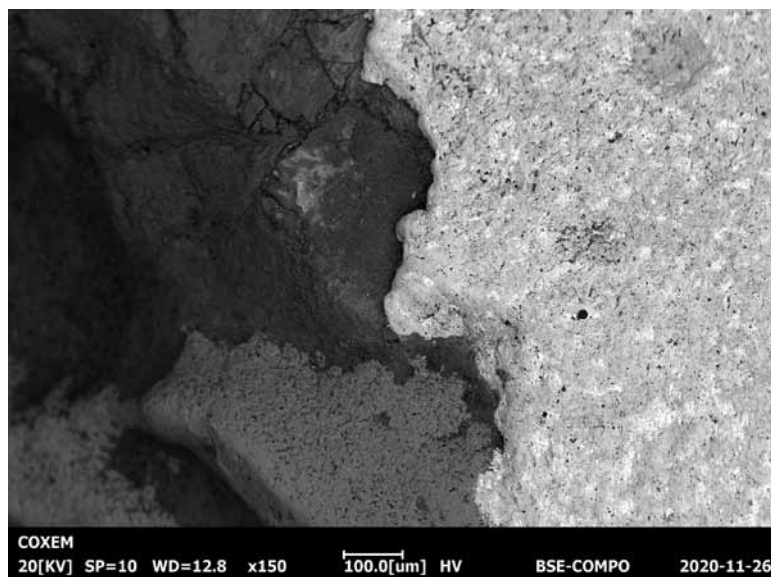
Traces of plating with an alloy of tin and lead were established on the smaller bit using the SEM-EDS method³¹ (Fig. 4).³² The thickness of the plated layer is approx. 25 μm (Fig. 5), which indicates that the plating was very likely carried out through a process of immersion in a molten alloy of tin and lead (hot-dip tinning), as

31 Skenirajuća elektronska mikroskopija s energijsko-disperzivnom spektrometrijom.

32 Pojam platiranja općenito označava proces nanošenja metalnih prevlaka na vodljivu površinu (engl. *plating*). Analizu je proveo jedan od autora u analitičkom laboratoriju Arheološkog muzeja u Zagrebu. S obzirom na to da se prvenstveno radilo o kvalitativnoj elementnoj analizi, tijekom mjerenja nisu korišteni nikakvi dodatni referentni standardni materijali. Mjerenja su provedena u vakuumu, uz radni napon od 20 kV te razlučivost detektora od oko 130 eV za detekciju Mn K linije.

31 Scanning electronic microscopy with energy-dispersive spectrometry.

32 The term plating in general refers to the process of applying a metal coating to a conductive surface. The analysis was performed by one of the authors in the analytical laboratory of the Archaeological Museum in Zagreb. Since this was primarily a qualitative elemental analysis, no additional standard reference materials were used during measurement. The measurement was carried out in a vacuum, with an operating voltage of 20 kV and detector resolution of approx. 130 eV for detection of the Mn K line.



SLIKA 5. SEM fotografija (BSE prikaz) platiranog sloja na kojem je provedena EDS analiza (svjetlije područje na desnoj strani slike; snimio D. Doračić).

FIGURE 5. SEM photograph (BSE image) of the plated layer on which EDS analysis was performed (the paler area on the right-hand side of the photo; photo by D. Doračić).

istraživanja.³³ Dekorativna i zaštitna uloga platiranja kositrom ili njegovim slitinama dobro je poznata u arheološkoj i konzervatorsko-restauratorskoj struci, o čemu svjedoče i ranije studije provedene na ranosrednjovjekovnim nalazima iz obližnjeg Torčeca,³⁴ kao i na 14 predmeta datiranih u vrijeme 9. i početka 10. stoljeća, a pronađenih na lokalitetu Gradišče nad Bašljem u Sloveniji, od kojih su kositrene i jedne žvale.³⁵ Platiranje kositrom te slitinom olova i kositra otkriveno je nedavno i na pojedinim ranosrednjovjekovnim željeznim predmetima s lokaliteta Bojna-Brekinjova Kosa,³⁶ kao i na nekim predmetima velikomoravskog vremena s područja Češke i Slovačke.³⁷ No, kako su pokazali rezultati eksperimentalnih istraživanja, platiranje olovno-kositrenom slitinom³⁸ obično rezultira sivom i ne previše sjajnom površinom, za razliku od platiranja čistim kositrom koje, ako je pravilno izvedeno, omogućuje vrlo atraktivan izgled sličan srebru.³⁹ Stoga, s velikom vjerojatnošću možemo zaključiti da se ovdje radi o jeftinijoj i dostupnijoj varijanti platiranja čija je uloga prije svega bila zaštita žvala od korozije.

Ukrašene prečke, na način kako je to prisutno na našem primjerku, s više ili manje odstupanja, u velikom su broju zastupljene upravo na području Slovenije, gdje su na lokalitetu Gradišče nad Bašljem prisutni i drugi na taj način ukrašeni (i platirani) predmeti, kao i na nalazištima Češke, Slovačke i Mađarske, gdje su datirani također u 9. i 10. stoljeće.⁴⁰

had been suggested by earlier investigations.³³ The decorative and protective role of plating with tin or its alloys is well known in the archaeological and conservation-restoration professions, as shown by earlier studies carried out on early-medieval finds from nearby Torčec,³⁴ as well as 14 objects, dated to the period of the 9th century and the beginning of the 10th, discovered at the site of Gradišče, above Bašelj in Slovenia, including one bit that was tinned.³⁵ Plating with tin and an alloy of lead and tin was also recently discovered on individual early-medieval iron objects from the site of Bojna-Brekinjova Kosa,³⁶ as well as some objects from the Great Moravia period from Czechia and Slovakia.³⁷ However, some experimental investigations have shown that plating with a lead-tin alloy³⁸ usually results in a grey surface, not particularly shiny, in contrast to plating with pure tin, which, if performed correctly, enables a very attractive appearance similar to silver.³⁹ Hence it can be concluded that, in this case, it was a cheaper and more accessible variant of plating, whose role was primarily to protect the bit from corrosion.

Decorative bars, in the manner present on our examples, with more or fewer deviations, are represented in great numbers in the area of Slovenia, where at the site of Gradišče, above Bašelj other objects were decorated (and plated) in this manner, as is also the case at sites in Czechia, Slovakia and Hungary, where they are also dated to the 9th and 10th centuries.⁴⁰

33 Ottenwelter, Leroux, Déd, 2008, 79.

34 Sekelj Ivančan, Tkalčec 2003, 15–16, 20; Doračić 2010, 401–402.

35 Karo, Knific, Milić 2001, 42, kat. br. 2; Karo, Knific 2019, 195, 204, kat. br. 7.

36 Rezultati neobjavljenih konzervatorsko-restauratorskih istraživanja provedenih od strane jednog od autora.

37 Baxa *et al.* 2010, 504–507.

38 Olovno-kositrena slitina najčešće se koristila za lemljenje i vrlo je vjerojatno bila jedna od nekoliko osnovnih sirovina koje su se mogle naći u gotovo svakoj radionici za izradu ili popravak metalnih predmeta (Jope 1956, 37–38). Nasuprot tomu, u vrijeme ranoga srednjeg vijeka, čisti je kositar zasigurno bio znatno rjeđi i skuplji materijal.

39 Ottenwelter, Leroux, Déd 2011, 209.

40 Ruttkay 1976, 357, Abb. 75, prečke br. 2; Měchurová 1984, 267, T. 1, prečke br. 8; Karo, Knific 2019, 195.

33 Ottenwelter, Leroux, Déd 2008, 79.

34 Sekelj Ivančan, Tkalčec 2003, 15–16, 20; Doračić 2010, 401–402.

35 Karo, Knific, Milić 2001, 42, cat. no. 2; Karo, Knific 2019, 195, 204, cat. no. 7.

36 Results of unpublished conservation-restoration investigation carried out by one of the authors.

37 Baxa *et al.* 2010, 504–507.

38 Lead-tin alloy was most often used for soldering and was very probably one of several basic raw materials that could be found in almost every workshop for making or repairing metal objects (Jope 1956, 37–38). In contrast to this, pure tin would certainly have been a much rarer and more expensive material in the early-medieval period.

39 Ottenwelter, Leroux, Déd 2011, 209.

40 Ruttkay 1976, 357, Abb. 75, bar no. 2; Měchurová 1984, 267, T. 1, bar no. 8; Karo, Knific 2019, 195.

2) Petlja za pričvršćivanje obraznog remena

Nadalje je važno spomenuti da manje žvale imaju ukrašenu petlju za pričvršćivanje uzde na obraznom remenu, polukružna oblika, s kratkim vratom i vanjskom ušicom pravokutna oblika kroz koju se provlači obrazni remen. Ovako su oblikovane petlje za pričvršćivanje obraznog remena najzastupljenije među slovenskim primjerima, no često su pronađene pojedinačno bez pripadajućih dijelova žvala. Moguće je da ovakva konstrukcija nije mogla izdržati jak pritisak koji je nastao pri upotrebi uzde, pa se događalo da je petlja ispala iz perforacija na prečki.⁴¹ Kod našeg primjerka, izvjesna je gracilnost petlje, ali ona se i nadalje nalazi na svojoj izvornoj poziciji, umetnuta u perforacije na prečki.

S druge strane, veće žvale imaju plosnate izbočine koje izlaze iz sredine prečke, od kojih je gornja očuvana, a donja se tek naslućuje. One su vjerojatno dio pravokutne pločice s perforacijom, kroz koju je prolazio okov sa zakovicom kojom se žvala pričvršćivala na obrazni remen, no taj dio na pločici nedostaje. Ovaj oblik pričvršćivanja žvala na obrazni remen, preko pločice (tip 3 prema Š. Karo), poznat je s prostorno najbližeg lokaliteta Ljubična nad Zbelovskom Gorom, gdje su prečke i sama pločica žvala ukrašene na isti način.⁴² Iako je kod našeg primjerka prečka ukrašena kvadratičnim zadebljanjima, ukras na plosnatim izbočinama nije vidljiv, pa se čini da izvorno nije niti postojao.

3) Petlje/karike za pričvršćivanje povodca

Iako se povodac može pričvrstiti na žvalu na dva načina: preko petlje i/ili karike, tek je na većem primjerku očuvana veća karika, dok na manjem primjerku taj dio žvala nedostaje. Karika na većim žvalama nadovezuje se na oba oka koji se nalaze u istoj ravnini čineći zajedno oblik osmice, dok manji okov sa zakovicom, koji služi za pričvršćivanje remena povodca na kariku, nedostaje. Ovaj detalj u vidu položaja unutarnjeg i vanjskog oka čini razliku više u funkcionalnom, a manje kronološkom smislu, iako pojedini autori zaključuju da se oka postavljena u obliku osmice pojavljuju među starijim oblicima i zadržavaju do 11. stoljeća, dok okomito postavljena oka prevladavaju na srednje i sjevernoeuropskim nalazištima 9. i 10. stoljeća.⁴³ Najbliži analogni primjeri dvaju oka u istoj ravnini pronalaze se na jednim cijelim i jednim djelomično očuvanim žvalama s lokaliteta Ljubična nad Zbelovskom Gorom te dijelu žvala s Velikoga Gradca pri Drežnici.⁴⁴ Kod svih spomenutih primjeraka s područja Slovenije, kao i kod našeg, karika se nadovezuje na oka postavljena u istoj ravnini (oblik osmice) iako to nije nužna karakteristika jer postoje i primjerci gdje su oka postavljena okomito jedno na drugo.

2) The loop for attaching the cheek strap

Further, it is important to mention that the smaller bit has a decorated loop, for attaching the bridle to the cheek strap, of semicircular shape with a short neck and an exterior slot of rectangular form through which the cheek strap passes. This kind of loop or slot for attaching the cheek strap is the one most commonly represented among the Slovenian examples, but they are often found individually without the accompanying parts of the bit. It is possible that such a structure could not withstand the great pressure created by the use of the bridle, so the loop probably fell out of the perforation on the cheek bar.⁴¹ The delicacy of the loop on our example is evident, but it is still located in its original position, inserted into the perforation on the cheek bar.

On the other hand, the large bit has flat protrusions arising from the centre of the bars, of which the upper one is preserved, while the lower one can only be presumed. They were probably part of a rectangular platelet with a perforation, through which a fitting with a rivet probably passed, attaching the bit to the cheek strap, but that part on the platelet is missing. This form of attaching the bit to the cheek bar, through a platelet (type 3 according to Š. Karo), is known from the spatially closest site of Ljubična, above Zbelovska Gora, where the cheek bars and the platelets themselves were decorated in the same manner.⁴² Although on our example the bars were decorated with square thickenings, the decoration on the flat protrusions was not visible, so it seems that originally it did not exist.

3) Loops/links for attaching reins

Although the rein can be attached to the bit in two manners – through a loop and/or a link – only on the larger example was a large link preserved, while this part of the bit was missing on the smaller example. The link on the larger bit is tied to both eyes that are located at the same level, together creating a figure of eight, while the smaller mount with rivet, which served for attaching the rein to the link, is missing. This detail in terms of the position of the inner and outer eyes makes a difference more in the functional sense, and less chronologically, although some authors have concluded that eyes placed in a figure of eight appear among earlier forms and are retained into the 11th century, while perpendicularly-placed eyes predominate in the central and northern sites of the 9th and 10th centuries.⁴³ The closest analogous examples of two eyes at the same level can be found on one entire bit, and one partially preserved one, from the site of Ljubična, above Zbelovska Gora and part of a bit from Veliki Gradec, near Drežnica.⁴⁴ On all the examples from Slovenia noted, as well as on our examples, the links were attached to eyes placed at the same level (figure of eight), although that is not necessarily characteristic, as examples also exist where the eyes were positioned perpendicularly, one above the other.

41 Karo, Knific 2019, 196.

42 Karo 2003, 98; Karo, Knific 2019, 196, kat. br. 17.

43 Karo, Knific 2019, 191.

44 Karo, Knific 2019, 191, 203, kat. br. 17, 20–21.

41 Karo, Knific 2019, 196.

42 Karo 2003, 98; Karo, Knific 2019, 196, cat. no. 17.

43 Karo, Knific 2019, 191.

44 Karo, Knific 2019, 191, 203, cat. nos 17, 20–21.

Od usnog dijela manjih žvala očuvan je tek dio (pridružena kari-ka), vjerojatno unutarnje oko kod kojeg je na jednoj strani prisutno zadebljanje koje ukazuje da se vanjsko oko nalazi položeno okomito na unutarnje, ali to zbog slabe očuvanosti nije moguće sa sigurnošću tvrditi te ostaje nepoznanica kako se pričvršćivao povodac na manje žvale.

4) Presjek usnog dijela

Presjek poluge u ustima konja može imati različit oblik, od okrugloga preko kvadratičnoga, pa sve do zvjezdastog. I dok manjoj žvali nedostaje dio koji konju dolazi u usta, kod većih je žvala očuvan djelomično, no vidljivo je da je dio unutarnje poluge zvjezdastog presjeka. Okrugli presjek poluge u usnom dijelu žvala, odnosno pravokutni s oblim rubovima kakav je primjerak iz Jegeniša,⁴⁵ najmanje je agresivan, mogli bismo reći ugodan je konju, i karakteristika je nomadskih naroda.⁴⁶ Onaj zvjezdastog presjeka, s druge strane, neugodan je i veoma je agresivan za jedinku koja se zauzdava, no iznimno je učinkovit jer se slabijim pritiskom dobiva veći efekt. Uvriježeno je mišljenje kako su žvale sa zvjezdastim presjekom koristili jahači-vojnici, a brojčano su najzastupljenije na području sjevera Europe, kako je to pokazano kartiranjem takvih (uglavnom grobnih) nalaza datiranih u 10. stoljeće (pokojnik s oružjem i konji) u najnovijoj studiji slovenskih kolega.⁴⁷ No rasprostranjenost zvjezdastog presjeka usnog dijela, gdje se najčešće pojavljuje s drugim tipovima žvala, nije koncentrirana samo na području sjevernonjemačkog i danskog prostora vikinškog doba, već je takav presjek prisutan i na dva, našem području bliža, slovenska lokaliteta: Gradišću nad Bašljem (četiri primjerka) i Ljubični nad Zbelovskom Gorom (četiri primjerka).⁴⁸ Na oba ova nalazišta zvjezdasti se presjek usnog dijela pojavljuje upravo na žvalama s prečkama kao i kod našeg primjerka. Slovenski kolege zaključuju kako je koncentracija tih nalaza prisutna na prostorima krajnjih sjevernih i krajnjih južnih graničnih područja franačkog kraljevstva.⁴⁹

I dok se ranije pronađene žvale s područja sjeverne Hrvatske mogu vezati uz nešto starije vrijeme, pri čemu se najkasniji datumi povezuju uz vrijeme oko 800. godine i uz prvu polovinu 9. stoljeća, naša dva primjerka s ravnim, ukrašenim prečkama (sl. 2, 4) i zvjezdastim presjekom poluge usnog dijela (sl. 3), te ostalim detaljima, pokazuju bliskost sa žvalama pronađenima na slovenskim visinskim nalazištima Gradišće nad Bašljem i Ljubična nad Zbelovskom Gorom. Oba lokaliteta imaju više horizonata naseļavanja,⁵⁰ većina nalaza dijelova žvala s njih su slučajni, ali jedne cjelovite žvale potječu iz ostave željeznih predmeta pronađene tijekom arheoloških iskopavanja provedenih 1998. godine na lokalitetu Gradišće nad Bašljem. Sloj u kojem je pronađena ostava

Only a part of the mouth section of the small bit was preserved (associated link), probably the interior eye, where on one side a thickening was present that indicates that the outer eye was placed perpendicularly to the inner one, but because of the poor preservation it is not possible to establish this securely, so that it remains unknown how the rein was attached to the smaller bit.

4) Cross-section of the mouthpiece

The cross-section of the bar in the mouth of the horse can have various forms, from circular through square to star-shaped. While the smaller bit is missing the part that goes in the mouth of the horse, it was partly preserved in the larger bit, sufficiently that it can be seen that part of the inner lever was star-shaped. A circular cross-section of the bar in the mouthpiece of the bit, or square with rounded edges, such as on the example from Jegeniš,⁴⁵ is least aggressive, and could be said to be most comfortable for the horse, and it is characteristic of nomadic peoples.⁴⁶ A star-shaped cross-section, on the other hand, is uncomfortable and very aggressive towards the animal that is being controlled, but it is exceptionally effective, as greater effect is achieved with less pressure. It is commonly thought that bits with a star-shaped section were used by cavalry soldiers, and they are numerically best represented in the area of northern Europe, as can be shown by the mapping of such (primarily grave) finds dated to the 10th century (the deceased with weapons and a horse) in the most recent study by our Slovenian fellows.⁴⁷ However, the distribution of the star-shaped cross-section of the mouthpiece, where it most often appears with other types of bits, is not concentrated merely in the region of the northern German and Danish area during the Viking Age; rather, such a cross-section is also present at two Slovenian sites near our area under consideration: Gradišče, above Bašelj (four examples) and Ljubična, above Zbelovska Gora (four examples).⁴⁸ At both of these sites a star-shaped cross-section of the mouthpiece appeared on bits with cheek bars, like our example. Our Slovenian fellows concluded that a concentration of these finds was present in the regions of the far northern and far southern border areas of the Frankish kingdom.⁴⁹

While previously-discovered bits from the area of northern Croatia could be related to a somewhat earlier period, with the latest dates tied to the time around AD 800 and the first half of the 9th century, our two examples with straight, decorated bars (Figs 2, 4) and a star-shaped cross-section of the lever of the mouthpiece (Fig. 3), as well as other details, display closeness to bits discovered at the Slovenian upland fortified sites of Gradišče, above Bašelj and Ljubična, above Zbelovska Gora. Both sites have several horizons of settlement,⁵⁰ and the majority of the finds of bit parts

45 Sekelj Ivančan 2019, 157, 171, T.1.

46 Ruttkay 1976, 357. Takvi su i svi spomenuti primjerci pronađeni na području sjeverne Hrvatske, a koji se vežu uz avarodobno vrijeme.

47 Karo 2003, 95–97; Karo, Knific 2019, 197–200, sl. 7–8, s tamo citiranom literaturom. Ovdje se donose i primjeri ukopa s parom žvala i ostale opreme konja, ali bez pokojnika, što navodi na zaključak da se radi o zaprežnim konjima (Karo, Knific 2019, 200).

48 Karo, Knific 2019, 190, 197, sl. 4, T. 1: 1–2, T. 2: 9, T. 3: 17–20. Osim slovenskih primjera, postoji još jedan primjerak iz Mađarske s nepoznatog nalazišta te je dan iz Bojne, Slovačka (Karo, Knific 2019, 197, List 1: 3, 26).

49 Karo, Knific 2019, 200.

50 Karo 2007, 47–57, 77–82; Karo, Knific 2020, 193–195.

45 Sekelj Ivančan 2019, 157, 171, T.1.

46 Ruttkay 1976, 357. All the earlier-mentioned examples that were discovered in the region of northern Croatia, and that are related to the Avar period, are of this type.

47 Karo 2003, 95–97; Karo, Knific 2019, 197–200, sl. 7–8, with the literature cited there. Examples are noted of burials with pairs of bits and other horse equipment, but without a deceased rider, leading to the conclusion that these were cart or draught horses (Karo, Knific 2019, 200).

48 Karo, Knific 2019, 190, 197, sl. 4, T. 1: 1–2, T. 2: 9, T. 3: 17–20. In addition to the Slovenian examples, one more is known from Hungary from an unknown site, and also one from Bojná, Slovakia (Karo, Knific 2019, 197, List 1: 3, 26).

49 Karo, Knific 2019, 200.

50 Karo 2007, 47–57, 77–82; Karo, Knific 2020, 193–195.

je metodom radioaktivnog ugljika široko datiran u 9. i početak 10. stoljeća, a detaljna analiza svih predmeta iz nje, koji pripadaju opremi konja i jahača, pokazala je da su ovi, iznimno kvalitetno izrađeni predmeti, mogli biti odloženi u ukop u isto vrijeme, negdje tijekom prve polovine 10. stoljeća.⁵¹

Tipološka i oblikovna bliskost slovenskih i naših žvala govori u prilog tomu da je to dio istoga kulturološkog prostora, čije izvore valja potražiti na zapadu. I dok je pri ranijoj objavi žvala iz Jegeniša⁵² moglo biti riječ o pripadniku domicilnog stanovništva ovog dijela podravlja, koji tijekom prve polovine 9. stoljeća ima neke avarodobne elemente, dijelovi obiju ovdje donesenih žvala, u kojima prepoznajemo zapadne elemente (kao što je to bio slučaj i s parom stremena kat. br. 2. A i 2. B iz Jegeniša),⁵³ ukazuju na nešto mlađe razdoblje, odnosno u obzir dolazi vrijeme čitavog 9. i prve polovine 10. stoljeća. Na ovome mjestu ponovo valja skrenuti pozornost na to da danas ne možemo sa sigurnošću reći s koje strane rijeke Drave se nalazio ovaj prostor tijekom ranoga srednjega vijeka i koliko je rijeka imala utjecaja na veći ili manji upliv zapadnih elemenata na ovo područje.⁵⁴ Neovisno o tomu, vrijeme je to, s jedne strane, franačko-slavenskih sukoba na ovim prostorima (Ljudevit Posavski, 810. – 823. i Ratimir, 829. – 838.) ali, s druge strane, i mirnijeg razdoblja (mir u Paderbornu, 845. godine) kada ovo područje dolazi pod upravu donjopanonskog kneza Pribine (do 861. godine) i kada je utjecaj sa zapada znatno veći. U prilog kontinuiteta zaposjedanja ovog prostora, bilo zbog pogodnog prelaska preko rijeke na ovome mjestu ili zbog trajnijeg naseljavanja, govore nam brojni slučajni ranosrednjovjekovni nalazi kojih se prikupilo tijekom godina eksploatacije šljunka u značajnom broju.⁵⁵ Dodaju li se tomu podaci dobiveni sustavnim arheološkim iskopavanjima u okolici naselja Torčec, gdje je zabilježeno kontinuirano naseljavanje položaja Prečno pole 1 iz starijeg razdoblja 7. i 8. stoljeća, upravo tijekom 9. i početka 10. stoljeća (faza Torčec IIIb), a koje se nastavlja i u narednom razdoblju,⁵⁶ možemo zaključiti kako je ovaj prostor uz rijeku Dravu bio intenzivno zaposjedan tijekom više stoljeća ranosrednjovjekovlja.

were made by chance, but one complete bit comes from a hoard of iron objects discovered during the archaeological excavations carried out in 1998 at the site of Gradišče, above Bašelj. The layer in which the hoard was found was radiocarbon dated broadly to the 9th century and the beginning of the 10th, and a detailed analysis of all objects from it that belong to horse and rider equipment has shown that these exceptionally well-made objects could have been placed in a burial at the same time, somewhere during the first half of the 10th century.⁵¹

The typological and formal closeness of the Slovenian bits and ours would support that they are part of the same cultural area, whose sources should be sought in the West. While in the earlier publication of bits from Jegeniš,⁵² the owner could have been a member of the local population of this part of the Drava river basin – which, during the first half of the 9th century, had certain Avar-period elements – the parts of the two bits presented here with recognizable western elements (as was the case with the pair of stirrups, cat. nos 2 A and 2 B, from Jegeniš),⁵³ would indicate a somewhat later period, specifically the entire 9th century and the first half of the 10th. It should again be noted here that today we cannot with certainty state on which side of the mobile River Drava this area was located during the early-medieval period, and how much influence the river had on the greater or lesser influx of western elements in this region.⁵⁴ Regardless of this, this was the time, on the one hand, of the Frankish-Slavic conflict in this area (Ljudevit Posavski, 810 – 823 and Ratimir, 829 – 838), but, on the other hand, a more peaceful period (the Peace of Paderborn, AD 845), when this region came under the rule of the Lower Pannonian Prince Pribina (to 861) and when influence from the west was considerably greater. Evidence for a continuity of settlement in this area, whether because of more permanent inhabitation or because of the convenient river crossing at this place, is indicated by the numerous chance early-medieval finds that were collected in considerable numbers during the years of exploitation of the gravel pits.⁵⁵ If we add to this the data acquired through systematic archaeological excavations in the vicinity of the village of Torčec, where continuous settlement was noted at the site of Prečno pole 1 from the earlier period of the 7th and 8th centuries, through the 9th century and into the 10th (Torčec IIIb phase), and which continued in the following period,⁵⁶ it can be concluded that this area along the River Drava was intensively occupied during several centuries of the Middle Ages.

51 Karo 2003, 94–97; Karo, Knific 2019, 201, 204, sl. 9, T. 1: 1.

52 Sekelj Ivančan 2019, T. 1: 1, 4: 3, kat. br. 1 i stremen s petljom kat. br. 3.

53 Sekelj Ivančan 2019, T. 2: 2A, 3: 2B.

54 Primjerice, na Jozefinskim kartama (1783. – 1784. g.) prikazano je korito rijeke Drave pozicionirano sjeveroistočno od Đelekoveca, bliže samome naselju, tik uz potok Malu Dravicu, današnju Mrtvicu, što znači da je krajem 18. stoljeća mjesto današnje šljunčare Jegeniš (i Stare Šoderice) bilo pozicionirano sjeverno od Drave koja je tekla zapadnim rubom današnjeg Jegeniša (Valentić, Horbec, Jukić (eds.) 2004, sekcija 16; Sekelj Ivančan 2019, 150, 167–168, sl. 1).

55 Primjerice, avarodobni nalazi: sablja iz Botovo-Šoderica i palaš iz šljunčare Jegeniša, koji se čuvaju u Muzeju grada Koprivnice i Arheološkoj zbirci obitelji Zvijerac (Dugonjić, Rapan Papeša (eds.) 2019, 20). Također, valja istaknuti da su, uz prethodno u tekstu navedene nalaze iz 8. i prve polovine 9. stoljeća, na ovom prostoru pronađeni i nešto mlađi nalazi (Demo 1984, 212, 216–218, 234, T. 1: 1; Sekelj Ivančan 2019, 169–170, T. 5: 4).

56 Sekelj Ivančan 2010, 126–127, 155–160, 171–173.

51 Karo 2003, 94–97; Karo, Knific 2019, 201, 204, sl. 9, Pl. 1: 1.

52 Sekelj Ivančan 2019, T. 1: 1, T. 4: 3, cat. no. 1 and a stirrup with a loop, cat. no. 3.

53 Sekelj Ivančan 2019, T. 2: 2A, T. 3: 2B.

54 For example, on maps made (in 1783 – 1784) during the reign of Joseph II, the course of the River Drava was depicted as being to the northeast of Đelekovec, near the settlement itself, just by the Mala Dravica stream, the present-day Mrtvica ('dead stream'), meaning that, at the end of the 18th century, the site of the present-day gravel pit of Jegeniš (and the Stara Šoderica gravel pit) were located north of the River Drava, which ran along the western edge of the present-day Jegeniš lake (Valentić, Horbec, Jukić (eds.) 2004, section 16; Sekelj Ivančan 2019, 150, 167–168, sl. 1).

55 For example, Avar period finds: a sabre from Botovo-Šoderica and a single-edged sabre from the Jegeniš gravel pit, which are kept in the Koprivnica Town Museum and the Archaeological Collection of the Zvijerac Family (Dugonjić, Rapan Papeša (eds.) 2019, 20). It should also be emphasized that, in addition to the finds cited in this text from the 8th century and first half of the 9th, somewhat later finds have also been discovered in this area (Demo 1984, 212, 216–218, 234, T. 1: 1; Sekelj Ivančan 2019, 169–170, T. 5: 4).

56 Sekelj Ivančan 2010, 126–127, 155–160, 171–173.

BIBLIOGRAFIJA

BIBLIOGRAPHY

- Bartošková 1986 – A. Bartošková, *Slovenské depoty železných předmětů v Československu / Slawische Hortfunde von Eisengegenständen in der Tschechoslowakei*, Studie Archeologického ústavu Československé akademie věd v Brně 13/2, 1986.
- Baxa et al. 2010 – P. Baxa, J. Hošek, E. Ottenwelter, J. Děd, Restaurátorsko-konzervátorský průzkum vybraných nálezů z lokality Kopčany, *Archeologické rozhledy* 62/3, 492–513.
- Bojčić 1984 – Z. Bojčić, Pregled istraživanja i rasprostranjenosti ranosrednjovjekovnih arheoloških nalaza u istočnoj Slavoniji i Baranji, Rezultati arheoloških istraživanja u istočnoj Slavoniji i Baranji, znanstveni skup, Vukovar 6-9. 10. 1981., *Izdanja Hrvatskog arheološkog društva* 9, 1984, 211–222.
- Demo 1984 – Ž. Demo, Srednjovjekovni mačevi u Muzeju grada Koprivnice / Medieval Swords in the Muzej grada Koprivnice, *Vjesnik Arheološkog muzeja u Zagrebu* 16–17, 1984, 211–240.
- Doračić 2010 – D. Doračić, Tehnološka opažanja tijekom konzervatorsko-restauratorske obrade metalnih predmeta iz Torčeca, in Sekelj Ivančan, T. (ed.), *Podravina u ranom srednjem vijeku. Rezultati arheoloških istraživanja ranosrednjovjekovnih nalazišta u Torčecu / Podravina in the Early Medieval Period. The Results of the Archaeological Excavations of the Early Medieval Sites at Torčec*, Monographiae Instituti archaeologici 2, Institut za arheologiju, 2010, 399–404.
- Dugonjić, Rapan Papeša (eds.) 2019 – A. Dugonjić, A. Rapan Papeša (eds.), *Avari i Slaveni / Avars and Slavs*, Arheološki muzej u Zagrebu, 2019.
- Garam 1987 – É. Garam, Pferdegräber der awarenzeitlichen Gräberfeldes in Tiszafüred. Angaben der spätawarenzeitlichen Pferdebestatungen, *Alba Regia* 23, 1987, 65–125.
- Ivaniček 1949 – F. Ivaniček, Istraživanje nekropole ranog srednjeg vijeka u Bijelom Brdu, *Ljetopis Jugoslavenske akademije znanosti i umjetnosti* 55, 1949, 111–144.
- Jope 1956 – E. M. Jope, The Tinning of Iron Spurs: A Continuous Practice from the Tenth to the Seventeenth Century, *Oxoniensia* 21, 1957, 35–42.
- Karo 2003 – Š. Karo, *Oprema konja v zgodnjem srednjem veku*, unpublished MA thesis, Univerza v Ljubljani, Filozofska fakulteta, Oddelek za arheologijo, 2003.
- Karo 2007 – Š. Karo, *Ozemlje današnje Slovenije med avarskim vojnama in madžarskim vpadi v luči arheoloških najdb*, unpublished PhD thesis, Univerza v Ljubljani, Filozofska fakulteta, Oddelek za arheologijo, 2007.
- Karo, Knific 2019 – Š. Karo, T. Knific, Zgodnesrednjeveške brzde z najdišč v Sloveniji / Bridle bits in the Early Middle Ages: evidence from Slovenia, *Arheološki vestnik* 70, 2019, 185–228.
- Karo, Knific 2020 – Š. Karo, T. Knific, Die frühmittelalterliche Militariafunde von Höhenfundorten in Slowenien, in Diesemberger, M., Eichert, S., Winckler, K. (eds.), *Der Ostalpenraum im Frühmittelalter. Herrschaftsstrukturen, Raumorganisation und archäologisch-historischer Vergleich*, Forschungen zur Geschichte des Mittelalters 23, Verlag der Österreichischen Akademie der Wissenschaften Wien, 2020, 185–209, 437–456.
- Karo, Knific, Milić 2001 – Š. Karo, T. Knific, Z. Milić, Pokositreni železni predmeti z Gradišča nad Bašljem / Tinned iron objects from Gradišče above Bašelj, *Argo* 44/2, 42–47.
- Kirpičnikov 1973 – A. N. Kirpičnikov, Snarjaženije vsadnika i verchovogo konja na Rusi IX–XIII vv, *Arheologija SSSR. Svod arheologičeskikh istočnikov* E1–36, 1973.
- Měchurová 1984 – Z. Měchurová, Součásti uzdění koně ve velkomoravském období / Die Bestandteile der Reitpferdzäumung in der mittleren Burgwallzeit, *Archaeologia historica* 9, 1984, 263–292.
- Milošević (ed.) 2000 – A. Milošević (ed.), *Hrvati i Karolinzi 2*, Muzej hrvatskih arheoloških spomenika-Split, 2000.
- Minichreiter 1987 – K. Minichreiter, Arheološko blago Baranje, *Analiz Zavoda za znanstveni rad u Osijeku Jugoslavenske akademije znanosti i umjetnosti* 5, 1987, 43–142.
- Ottenwelter, Leroux, Děd 2008 – E. Ottenwelter, M. Leroux, J. Děd, Archaeological tinned iron artefacts, in Berger, I., Stöhrlová, P.; Řezáčová, E. (eds.), *Sborník z konference konzervátorů – restaurátorů 9.–11. 9. 2008 v Přebrami*, Technické muzeum v Brně, 2008, 75–82.
- Ottenwelter, Leroux, Děd 2011 – E. Ottenwelter, M. Leroux, J. Děd, Experimental tinning of iron, an attempt to identify techniques of tinning used by ancient craftsmen, in Моця, О.П. (ed.), *Експериментальна Археологія; завдання, методи, моделювання*, Вченою радою Інституту археології НАН України, 2011, 204–217.
- Pleterski 1987 – A. Pleterski, Sebenjski zaklad / Der Hortfund von Sebenje, *Arheološki vestnik* 38, 1987, 237–330.
- Rapan Papeša 2009 – A. Rapan Papeša, Avari, in Kusin V., Šulc, B. (eds.), *Slavonija, Baranja i Srijem: vrela europske civilizacije*, Ministarstvo kulture Republike Hrvatske, Galerija Klovičevi dvori, Zagreb 2009, <http://www.bastina-slavonija.info/Pretraga.aspx?id=8546> (24 November 2020).
- Rapan Papeša 2020 – A. Rapan Papeša, Groblje u Vinkovcima. Pronaden opljačkan ratnik i njegov konj, *Glas Slavonije. Kultura*. 29. travnja 2020, <https://glas-slavonije.hr/431171/5/Pronadjen-opljackani-ratnik-i-njegov-konj>, (25 November 2020).
- Rapan Papeša, Šmalcelj Novaković 2016 – A. Rapan Papeša, P. Šmalcelj Novaković, *Kasnoavarsko groblje na Gradini u Otoku*, Gradski muzej Vinkovci, 2016.
- Rapan Papeša, Dizdar, Rimpf 2017 – A. Rapan Papeša, M. Dizdar, A. Rimpf, Rezultati zaštitnih istraživanja kasnoavarskog groblja Šaregrad-Klopore / Results of the rescue excavation on the Late Avar cemetery on the site Šaregrad-Klopore, *Annales Instituti Archaeologici* 13, 2017, 9–18.
- Ruttikay 1976 – A. Ruttikay, Waffen und Reiterausrüstung des 9. bis zur ersten Hälfte des 14. Jahrhunderts in der Slowakei II, *Slovenská archeológia* 24/2, 1976, 245–395.
- Schulze-Dörrlamm 1991 – M. Schulze-Dörrlamm, Untersuchungen zur Herkunft der Ungarn und zum Beginn ihrer Landnahme im Karpatenbecken, *Jahrbuch des Römisch-Germanischen Zentralmuseums Mainz* 35/2, 1991, 373–478.
- Sekelj Ivančan 2004 – T. Sekelj Ivančan, Ranokarolinško koplje s krilcima iz šljunčare Jegeniš kraj Koprivnice / Frühkarolingische Flügellanze aus der Kiesgrube Jegeniš bei Koprivnica, *Prilozi Instituta za arheologiju* 21, 2004, 109–128.
- Sekelj Ivančan 2007 – T. Sekelj Ivančan, Još jedan nalaz ranokarolinškog koplja s krilcima iz šljunčare Jegeniš kraj Koprivnice / Another Find of an Early Carolingian Winged Spearhead from the Gravel Extraction Plant of Jegeniš near Koprivnica, *Prilozi Instituta za arheologiju* 24, 2007, 419–427.
- Sekelj Ivančan 2010 – T. Sekelj Ivančan, *Podravina u ranom srednjem vijeku. Rezultati arheoloških istraživanja ranosrednjovjekovnih nalazišta u Torčecu / Podravina in the Early Medieval Period. The Results of the Archaeological Excavations of the Early Medieval Sites at Torčec*, Monographiae Instituti archaeologici 2, Institut za arheologiju, 2010.
- Sekelj Ivančan 2019 – T. Sekelj Ivančan, Novi ranosrednjovjekovni nalazi iz šljunčare Jegeniš pokraj Koprivnice / New Early Medieval Finds from the Jegeniš Gravel Pit near Koprivnica, *Vjesnik Arheološkog muzeja u Zagrebu* 52, 2019, 149–178.
- Sekelj Ivančan, Tkalcćec 2003 – T. Sekelj Ivančan, T. Tkalcćec, Arheološko nalazište Torčec-Cirkvišće, *Podravina, časopis za multidisciplinarna istraživanja* 2/4, 2003, 15–16, 20.
- Tomičić 1978 – Ž. Tomičić, Rezultati ranosrednjovjekovnih arheoloških istraživanja u Medimurju i varaždinskoj regiji / Ergebnisse Frühmittelalterlicher Forschungen im Medimurje und auf dem gebiet von Varaždin, *Izdanja Hrvatskog arheološkog društva* 2, *Arheološka istraživanja u sjeverozapadnoj Hrvatskoj*, 1978, 209–222.
- Valentić, Horbec, Jukić (eds.) 2004 – M. Valentić, I. Horbec, I. Jukić (eds.), *Križevačka županija. Hrvatska na tajnim zemljovidima 18. i 19. stoljeća*. Biblioteka Hrvatska povjesnica – posebna izdanja 9, Hrvatski institut za povijest, 2004.
- Vinski 1949 – Z. Vinski, Prethodni izvještaj o arheološkim značajkama elemenata materijalne kulture nadenim pri iskapanju nekropole ranog srednjeg vijeka u Bijelom Brdu u siječnju 1948. godine, *Ljetopis Jugoslavenske akademije znanosti i umjetnosti* 55, 1949, 225–238.
- Vinski 1958 – Z. Vinski, O nalazima 6. i 7. stoljeća u Jugoslaviji s posebnim obzirom na arheološku ostavštinu iz vremena prvog avarskog kaganata, *Opuscula archaeologica* 3/1, 1958, 13–67.
- Zábojník 2009 – J. Zábojník, *Slovensko a Avarský kaganát / Slovakia and the Avar Khaganate*, Studia Archaeologica et Mediaevalia 9, 2009.