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# Fibule tipa Jezerine s prostora jugoistočne Panonije

## *Fibulae of the Jezerine-type from southeastern Pannonia*

Izvorni znanstveni rad  
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*Fibule tipa Jezerine predstavljale su jedan od najomiljenijih oblika nošnje sa samog kraja latenske kulture, odnosno stupnja LT D2. Zabilježene su na širem europskom prostoru, od zapadnog dijela mediteranskog bazena preko kontinentalne Europe sve do Baltika, a brojnija skupina potječe s prostora istočne Slavonije, Srijema i sjeverne Srbije, koji je u mlađem željeznom dobu naseljavala politička zajednica poznata iz antičkih literarnih izvora pod nazivom Skordisci. Veći dio ovih fibula pripada tipu Jezerine II koje su na prostor jugoistočne Panonije dospjele komunikacijskim putem koji je išao dolinom rijeke Save, dok manja skupina predmeta predstavlja kopije tipa Jezerine, prilagođene ukusu lokalnih korisnika. Rezultati PIXE analiza sastava slitina od kojih su lijevane fibule pokazuju prilično heterogenu sliku, upućujući na to da su jugoistočnopanonski primjerci proizvedeni u različitim radionicama smještenima od sjeverne Italije i jugoistočnoalpskog prostora preko zapadnog Balkana do južne Panonije.*

*Ključne riječi: fibule tipa Jezerine, kasni laten, jugoistočna Panonija, PIXE analize*

*The Jezerine-type fibulae are one of the most popular forms of attire from the Late La Tène period, that is, the LT D2 phase. They have been recorded in a wider European area, from the western part of the Mediterranean basin throughout all of continental Europe to the Baltic, and a large number of them originated in eastern Slavonia, Sarmatia and northern Serbia, an area that, in the Late Iron Age, was inhabited by a political group known from ancient literary sources as the Scordisci. Many of these finds can be attributed to the Jezerine-type II fibulae, which spread to southeastern Pannonia via a communication route that went through the Sava valley. A smaller group of finds includes copies of the Jezerine-type fibulae which were tailored according to the tastes of the local users. The results of the PIXE analysis of the composition of the alloy from which cast fibulae were made show quite a heterogeneous picture, indicating that the finds from southeastern Pannonia were produced in different workshops located in areas spreading from northern Italy and the southeastern Alpine region, over the western Balkans to southern Pannonia.*

*Key words: Jezerine-type fibulae, Late La Tène, southeastern Pannonia, PIXE analyses*

### UVOD

Područje jugoistočne Panonije bilo je u mlađem željeznom dobu naseljeno političkom zajednicom Skordiska koja je, prema antičkim literarnim izvorima, bila sastavljena od keltskih došljaka te autohtonoga panonskog stanovništva. Njihov složeni identitet izražavao se na različite načine, djelomično i kroz materijalnu kulturu, u kojoj se, osim predmeta karakterističnih za latenski kulturni krug, javljaju i oblici čije se podrijetlo može tražiti u stariježeljeznodobnoj tradiciji karpatskog te sjevernobalkanskog prostora, primjerice pojedinim dijelovima nošnje ili određenim oblicima keramičkih posuda. Također, od 2. st. pr. Kr. povećava se broj predmeta čije podrijetlo, u stvarnom ili konceptualnom smislu, možemo tražiti na prostoru Dakije.

Iako smješten na samom jugoistočnom rubu rasprostranja latenske kulture, ovaj je prostor bio dobro integriran

### INTRODUCTION

In the Late Iron Age, southeastern Pannonia was inhabited by a political group called the Scordisci which, according to ancient literary sources, was made up of Celtic newcomers and the indigenous Pannonian population. Their complex identity was expressed in different ways, partially through the material culture which, apart from items typical of the La Tène cultural circle, included forms whose origins can be traced back to the Early Iron Age tradition of the Carpathian basin and the northern Balkans, for example in certain elements of attire or specific shapes of pottery vessels. Additionally, since the 2<sup>nd</sup> cent. BC, there was a notable increase in the number of objects whose origin, in a real or conceptual sense, stems from the region of Dacia.

Although it was situated on the southeastern border of the La Tène culture, this area was highly integrated into the communication network of the Late Iron Age of the

u komunikacijsku mrežu mlađega željeznog doba Karpat-ske kotline tako da su intenzivni kontakti održavani sa susjednim populacijama ali i s udaljenijim krajevima. S jugoistočnoalpskim i sjevernoitalskim prostorom ove su se veze intenzivirale osnutkom Akvileje 181. god. pr. Kr. i jačanjem rimskog utjecaja u Cisalpinskoj Galiji te kasnijega, postupnog prodora na područje jugoistočnih Alpi koji je uključivao i osnivanje emporija kao što je Nauport, smještenog u današnjem selu Vrhnika u Sloveniji. Naposljetku, osvajanje Segestike 35. god. pr. Kr., ključne strateške točke, otvorilo je vrata rimskom prodoru u Panoniju i utjecalo na pojačanu komunikaciju savskom dolinom, što je uostalom posvjedočeno i u antičkim literarnim izvorima, točnije kod Strabona (4.6.10). Arheološki su ovi kontakti potvrđeni većim brojem kasnorepublikanskoga brončanog posuđa zabilježenog u naseljima i grobovima Skordiska datiranim u LT D1 stupanj (Popović 1992: 61–74; Dizdar, Radman 2004: 49–55), dok su se nešto kasnije, u stupnju LT D2, manifestirali prisutnošću određenih tipova fibula te kasnorepublikanskog novca (Popović 1987: 105–106; Rustoiu 2005: 91–92; Bilić 2012: 367, 369, Fig. 7; Dizdar, Tonc 2012).

Dio predmeta korištenih u trgovini ili razmjeni bile su i fibule tipa Jezerine. One nedvojbeno predstavljaju jedan od najpopularnijih oblika fibula završne faze latenske kulture, odnosno stupnja LT D2, čija se distribucija može pratiti na širem europskom prostoru, od zapadnog dijela mediteranskog bazena preko kontinentalne Europe sve do Baltika. S obzirom na iznimnu brojnost, bile su predmet brojnih istraživanja i analiza pa stoga smatramo da na ovom mjestu nije potrebno detaljnije ulaziti u razvoj i tehničke karakteristike oblika (vidi: Adam, Feugère 1982; Demetz 1999: 99–105 i dr.). Tipologije ove skupine fibula uglavnom se temelje na različitim ukrasavanju trakastog luka. U radu iz 1982. godine A. M. Adam i M. Feugère podijelili su ih u dvije grupe, tako da su u prvu grupu smješteni primjerci glatkog i narebrenog luka (varijanta a), dok su fibule sa složenijim ukrasom uvrštene u drugu grupu (varijanta b), koja je dalje podijeljena na podgrupu b1 s ukrasom u obliku grančice te b2 s figuralnim prikazom smještenim između dva uzdužna rebra s prikazom dvije figure na postoljima, vjerojatno Amora, između kojih se smjestio hram prostilnog tipa (Adam, Feugère 1982: 130–134). U monografiji objavljenoj nekoliko godina kasnije M. Feugère je zadržao navedenu podjelu uvrstivši u tipologiju latenskih i rimskih fibula s prostora južne Francuske fibule tipa Jezerine pod brojem 12 a1 te 12 b1 i b2 (Feugère 1985: 181, 253).

Nešto složeniju podjelu tipa Jezerine, također zasnovanu na ukrasavanju luka, a koja se uglavnom koristi u novijoj literaturi, načinio je S. Demetz (Demetz 1999: 99–101). Podijeljene su u tri grupe; u prvu su smješteni primjerci s prikazima grančice i figuralnim prikazima te glatkim lukom dok je druga grupa sa šest podtipova (IIa1 – IIc2), ovisno o presjeku luka odnosno obliku i međusobnom odnosu rebara, najbrojnija. U treću su skupinu uvršteni razni hibridni oblici, odnosno fibule Jezerine s elementima drugih tipova i obrnuto.

Što se tiče kronološkog pozicioniranja, fibule tipa Jezerine u posljednjih su šezdesetak godina kod različitih auto-

Carpathian basin, so that contacts with neighbouring and far-away populations were very intensive. Connections to the southeastern Alpine region and northern Italy intensified with the establishment of *Aquileia* in 181 BC, with the strengthening of Roman influences in *Galia Cisalpina*, and with the later, gradual, forays into the southeastern Alps which included the establishment of emporia like *Nauportus*, situated in today's village of Vrhnika in Slovenia. Finally, by taking over *Segestica*, a key strategic point, in 35 BC, the Romans were able to enter Pannonia and affect the increased communication through the Sava valley which is, after all, attested to by ancient literary sources, such as the writings of Strabo (4.6.10). From the point of archaeology, these contacts are confirmed by a large number of bronze vessels from the Late Republican period which were found in Scordiscian settlements and graves dated to the LT D1 phase (Popović 1992: 61–74; Dizdar, Radman 2004: 49–55; Rustoiu 2005: 91–92), and by certain types of fibulae and Roman Republican coins in the later, LT D2 phase (Popović 1987: 105–106; Bilić 2012: 367, 369, Fig. 7; Dizdar, Tonc 2012: forthcoming).

Jezerine-type fibulae are among finds which were used for trade or exchange, and they are certainly one of the most popular types of fibulae in the final stage of the La Tène culture, that is, the LT D2 phase. Their distribution is wide and can be traced from the western Mediterranean, throughout continental Europe, all the way to the Baltic. Considering their high frequency, they were often dealt with in research and analyses, which is why we feel that it is not necessary to go into detail about their development and the technical characteristics of their form (see: Adam, Feugère 1982; Demetz 1999: 99–105 et al.). The typologies of this group of fibulae are mostly based on different ornaments on the strap bow. In their paper from 1982, A. M. Adam and M. Feugère divided the fibulae into two groups. The first included finds with an undecorated or a ribbed bow (var. a), while fibulae with a more complex ornament were placed in the second group (var. b), which is further divided into subgroup b1 with a branch ornament, and b2 with a figural representation placed between two parallel ribs portraying two figures on pedestals, probably Amors, with a stylized temple between them (Adam, Feugère 1982: 130–134). In a monograph published several years later, M. Feugère kept the said division and included the Jezerine-type fibulae into the typology of the La Tène and Roman fibulae from southern France under number 12 a1, 12 b1 and b2 (Feugère 1985: 181, 253).

A somewhat more complex division of the Jezerine-type fibulae, also based on ornaments on the bow and frequently used in recent works, was made by S. Demetz (Demetz 1999: 99–101). The fibulae are divided into three groups. The first includes finds with branch ornaments, figural representations or a smooth bow, the other group has six subtypes (IIa1 – IIc2) separated based on bow cross-sections, that is on the shape and mutual relations between ribs. This is also the most numerous group. The third group includes various hybrid forms, that is, Jezerine-type fibulae with elements of other types, and vice versa.

Chronologically, the Jezerine-type fibulae have, in the last sixty years, been moved by various authors, from

ra “plivale” od sredine 1. st. pr. Kr. do kraja 1. trećine 1. st. (Ettlinger 1973: 42; Rieckhoff 1975: 24; Werner 1979: 143; Adam, Feugère 1982: 167; Demetz 1999: 104–105), dok se u novijim radovima jasno smještaju u LT D2 stupanj (Božič 2008: 49, 146–147; Sedlmayer 2009: 17<sup>1</sup>), istodobno s primjercima tipa Gorica, Almgren 18a, Feugere 11 i drugima, što je dosta bitno za interpretaciju primjeraka s prostora jugoistočne Panonije.

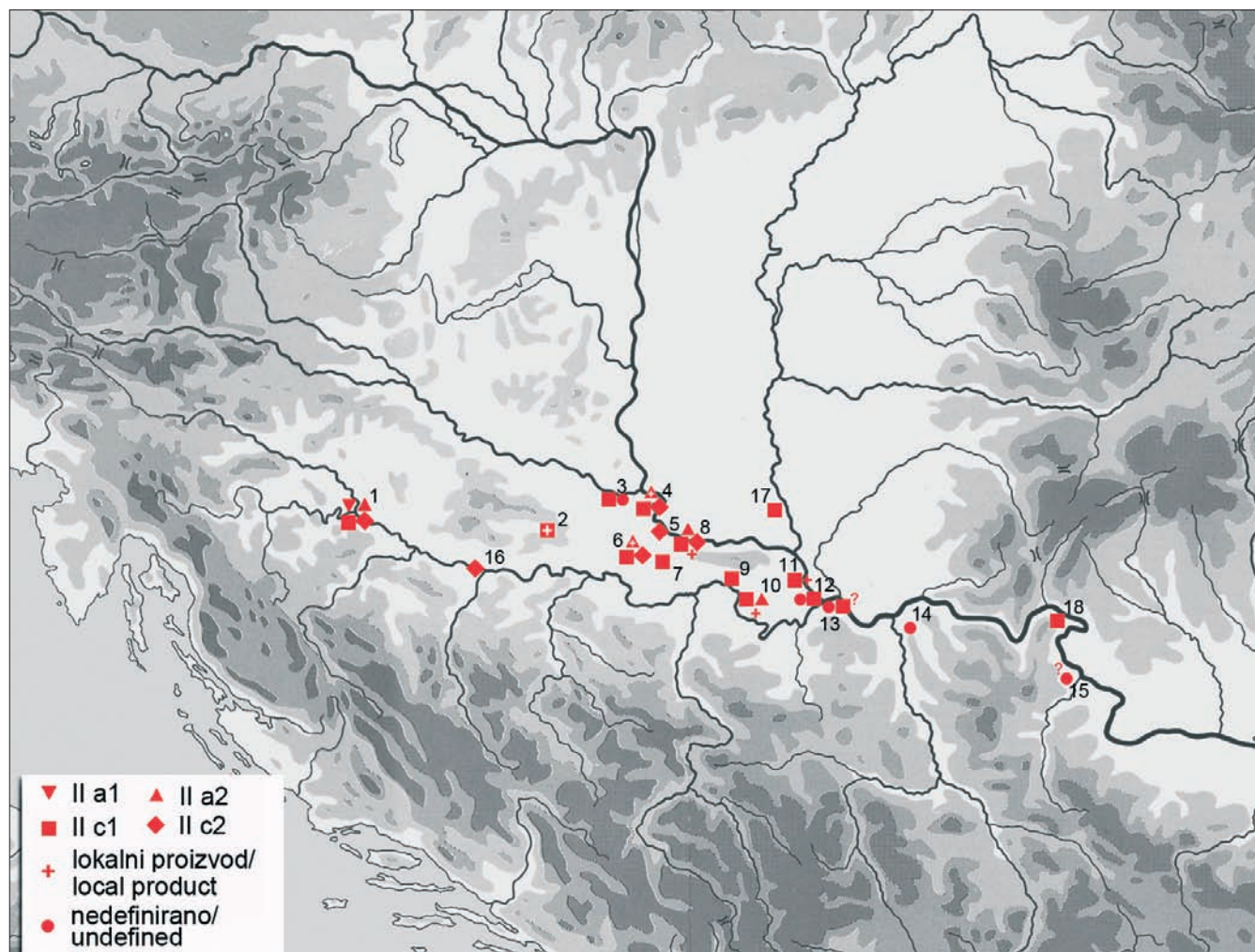
### JUŽNOPANONSKI PRIMJERCIMA

S ovog područja poznat je pedeset i jedan primjerak fibula tipa Jezerine što nije ostalo nezapaženo u literaturi

the middle of the 1<sup>st</sup> cent. BC to the end of the first third of the 1<sup>st</sup> cent. AD (Ettlinger 1973: 42; Rieckhoff 1975: 24; Werner 1979: 143; Adam, Feugère 1982: 167; Demetz 1999: 104–105). Newer papers clearly place them into the LT D2 phase (Božič 2008: 49, 146–147; Sedlmayer 2009: 17<sup>1</sup>), contemporaneous to types Gorica, Almgren 18a, Feugere 11 and some others, which is quite important for the interpretation of southeastern Pannonian finds.

### FINDS FROM SOUTHERN PANNONIA

This area has provided fifty one specimens of Jezerine-type fibulae. This fact has not gone unnoticed in the papers



Karta 1 Rasprostranjenost fibula tipa Jezerine i njihovih imitacija na prostoru južne Panonije: 1 Sisak, 2 Mali Bilač, 3 Osijek, 4 Dalj, 5 Vukovar, 6 Vinkovci, 7 Orolik, 8 Sotin, 9 Sremska Mitrovica, 10 Gomolava, 11 Novi Banovci, 12 Zemun, 13 Beograd, 14 Rečica, Požarevac, 15 Negotin, 16 Donja Dolina, 17 Čurug, 18 rimska utvrda Diana kod Kladova.

Map 1 The distribution of the Jezerine-type fibulae and their copies in southern Pannonia: 1 Sisak, 2 Mali Bilač, 3 Osijek, 4 Dalj, 5 Vukovar, 6 Vinkovci, 7 Orolik, 8 Sotin, 9 Sremska Mitrovica, 10 Gomolava, 11 Novi Banovci, 12 Zemun, 13 Beograd, 14 Rečica, Požarevac, 15 Negotin, 16 Donja Dolina, 17 Čurug, 18 Roman fort Diana near Kladovo.

koja se bavila ovim predmetima, iako su autori relevantnih radova bili upoznati s manje od pola od navedenog broja (Adam, Feugère 1982; Feugère 1985; Demetz 1999)<sup>2</sup> (karta

dealing with these finds, although the authors of relevant papers were familiar with less than half of them (Adam, Feugère 1982; Feugère 1985, Demetz 1999)<sup>2</sup> (Map 1). Consi-

1 Primjerci iz Magdalensberga datirani su u cezarejsko-ranoaugustovski horizont (Sedlmayer 2009: 17).

2 U nedavno objavljenom radu D. Glogović iznijela je popis do tada objavljenih primjeraka s prostora Hrvatske, uključujući i dio panonskih primjeraka koji su predmet ove analize (Glogović 2007).

1 The finds from Magdalensberg are dated to the Caesarean-early Augustan horizon (Sedlmayer 2009: 17).

2 In a recently published paper, D. Glogović listed all previously published specimens from Croatia, including some items from Pannonia which will be analyzed here as well (Glogović 2007).

1). S obzirom na nešto niže datiranje u starijoj literaturi, ove su fibule dovođene u vezu s osvajanjem južne Panonije od strane Rimljana te prisutnošću njihovih legija u zadnjem desetljeću 1. st. pr. Kr. i početkom 1. st. (Panonski rat, Batonov ustanak) (Adam, Feugère 1982: 152).<sup>3</sup> Činjenica je da distribucija fibula pokazuje znatnu zastupljenost na lokalitetima uz Dunav, primjerice u Dalju, Sotinu, Novim Banovcima i Beogradu, gdje su se zaista nalazili rimski garnizoni, no ti su lokaliteti redom bili i važni protopovijesni centri.<sup>4</sup> Također, većina je predmeta pronađena izvan arheološkog konteksta što dodatno otežava interpretaciju. Iznimku predstavlja nekoliko primjeraka s Gomolave koji su pronađeni u slojevima datiranim u ranorimsku fazu naselja – stupanj IVc (sl. 3:1–2) (Dautova-Ruševljan 1987: 59–61), što smatramo dvojbenim osim ako navedeni primjerci nisu nešto duže bili u upotrebi. Također, jedan primjerak potječe iz latenskog, odnosno ranorimskog naselja s lokaliteta Čurug – Stari vinogradi (sl. 3: 8), no s obzirom na to da rad u kojemu je objavljen predstavlja samo preliminarni izvještaj, točna pozicija objekta u kojemu je fibula pronađena, kao i popratni materijal, ostaju za sada nepoznati (Trifunović, Pašić 2003: 268, sl. 6: 6).

Kao što je već navedeno, novija datiranja smještaju proizvodnju i korištenje tipa Jezerine II u razdoblje između 40. i 15. god. pr. Kr. što je ipak nešto ranije od vremena masovne prisutnosti rimske vojske u jugoistočnoj Panoniji. Uzevši ovo u obzir, za pretpostaviti je da je velik broj fibula tipa Jezerine II na prostoru hrvatskog i srpskog Podunavlja ponajprije rezultat ekonomske aktivnosti, odnosno trgovine i razmjene, sa sjevernoitalskim odnosno jugoistočnoalpskim prostorom koja se odvijala dolinom rijeke Save te Dunavom dalje na istok, o čemu svjedoče i primjerci s prostora današnje Rumunjske (Rustoiu, Gheorghiu 2010: 448–449, sl. 6).<sup>5</sup> Ova komunikacija pojačana je nakon osvajanja Segestike tako da bi se najjači intenzitet mogao kronološki smjestiti između 35. god. pr. Kr. i početka Panonskog rata 12. god. pr. Kr. Kao alternativni pravac ne bi trebalo isključiti ni dravsku komunikaciju, na što upućuje primjerak tipa Gorica s lokaliteta Trnovača kod Slatine (Dizdar, Tonc 2012), kao i dva primjerka tipa Jezerine iz Osijeka (sl. 1: 3) (Patek 1942: 285, T. VIII: 11). Ovdje svakako treba uzeti u obzir i južni komunikacijski pravac koji je od istočne jadranske obale dolinom Neretve ulazio u unutrašnjost te se rijekama Vrbasom i Bosnom spuštao prema Panoniji, a na što upućuju primjerci s lokaliteta u dolini Neretve te srednjoj i istočnoj Bosni (Adam, Feugère

dering the chronology in older works, these fibulae had been connected to the Roman conquest of southern Pannonia and the presence of Roman legions in the area in the last decade of the 1<sup>st</sup> cent. BC, and the 1<sup>st</sup> cent. AD (the Pannonian War, *Bellum Batonianum*) (Adam, Feugère 1982: 152).<sup>3</sup> The distribution of fibulae shows a significant frequency along the Danube, for example in Dalj, Sotin, Novi Banovci and Belgrade, where Roman garrisons were in fact situated, but it is important to note that these were also protohistoric centres.<sup>4</sup> Also, almost all items were found without an archaeological context which additionally complicates interpretation. Several items from Gomolava are an exception (Fig. 3: 1–2). They were found in layers dated to the Early Roman phase of the settlement (IVc phase) (Dautova-Ruševljan 1987: 59–61), which we feel is doubtful unless the said finds were used for a longer period of time. Another find comes from the La Tène and Early Roman settlement at Čurug – Stari vinogradi (Fig. 3: 8). However, as it was published in a preliminary report, the exact position of the feature in which the fibula, and other material, was found is, thus far, unknown (Trifunović, Pašić 2003: 268, Fig. 6: 6).

As was stated above, newer chronologies place the manufacturing and use of the Jezerine II-type fibulae in the period between 40 and 15 BC, which means before the increased Roman military presence in southeastern Pannonia. With this in mind, it is safe to assume that Jezerine II-type fibulae in the Croatian and Serbian Danube region were primarily the result of economic activities, that is, trade and exchange with northern Italy, or the southeastern Alpine region, which was conducted along the Sava river valley, and then further east via the Danube, as testified to by finds from today's Romania (Rustoiu, Gheorghiu 2010: 448–449, Fig. 6).<sup>5</sup> This communication was made stronger after *Segestica* was conquered, so that it was probably the intense between 35 BC and the start of the Pannonian War in 12 BC. Communication via the Drava River should not be discarded as a possible alternative route, as attested to by a Gorica-type fibula from Trnovača near Slatina (Dizdar, Tonc 2012: forthcoming), and two finds of Jezerine-type fibulae from Osijek (Patek 1942: 285, Pl. VIII: 11) (Fig. 1: 3). The southern communication route should certainly not be excluded. It started on the Adriatic coast, went through the Neretva valley into the continent and followed the river Bosna towards Pannonia, as shown by finds from sites

3 Ova teza ponavlja se i u novijim radovima, primjerice u knjizi S. Petković *Rimske fibule u Srbiji od I do V veka n. e.*, u kojoj su fibule tipa Jezerine svrstane u grupu 1F, a imitacije ovog tipa s Gomolave u grupu 1B (Petković 2010: 36).

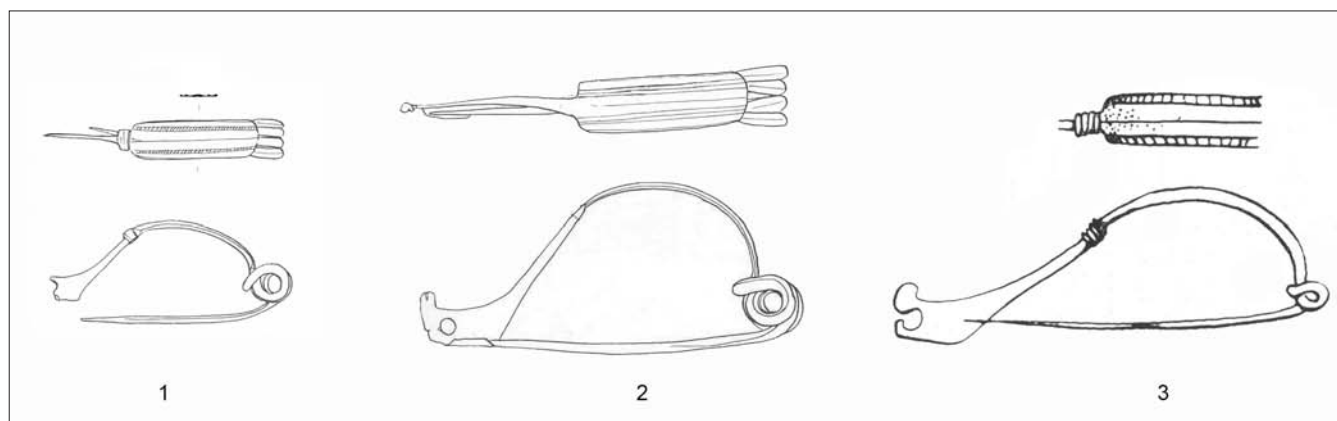
4 U ovom pogledu možda nam može pomoći slučaj Sotina gdje je u obliku površinskih nalaza prikupljeno desetak fibula tipa Jezerine na prostoru za koji se pretpostavlja da je bio naseljen u kasnom željeznom dobu, ali ne i u rimsko vrijeme. Na informaciji zahvaljujem dr. sc. Mati Ilkiću. O arheološkoj topografiji pretpovijesnih naselja na području Sotina: Ilkić 2011.

5 Autori navode, pozivajući se na M. Guština, i alternativnu mogućnost koja pretpostavlja da su ovi predmeti pristigli na prostor Dakije s rimskim vojnicima koji su na području donjeg Dunava sudjelovali u ratu protiv Dačana i Bastarna u razdoblju između 29. i 27. god. pr. Kr. (Rustoiu, Gheorghiu 2010: 449).

3 This thesis is repeated in more recent studies, for example in the book S. Petković *Rimske fibule u Srbiji od I do V veka n. e.* where the fibulae of the Jezerine-type were placed in group 1F and copies of this type from Gomolava in group 1B (Petković 2010: 36).

4 The case of Sotin can be helpful where around 10 Jezerine-type fibulae were collected as surface finds. They were located in an area where no Roman settlement was noted, but is suspected to have been settled in the Late Iron Age. I would like to thank Mate Ilkić, for this information. On the archaeological topography of prehistoric settlements around Sotin, see: Ilkić 2011.

5 The authors mention, referring to M. Guštin, an alternative possibility by proposing that these items could have reached Dacia with Roman soldiers who participated in the war against the Dacians and the Bastarna fought in the Lower Danubian region between 29 and 27 BC (Rustoiu, Gheorghiu 2010: 449).



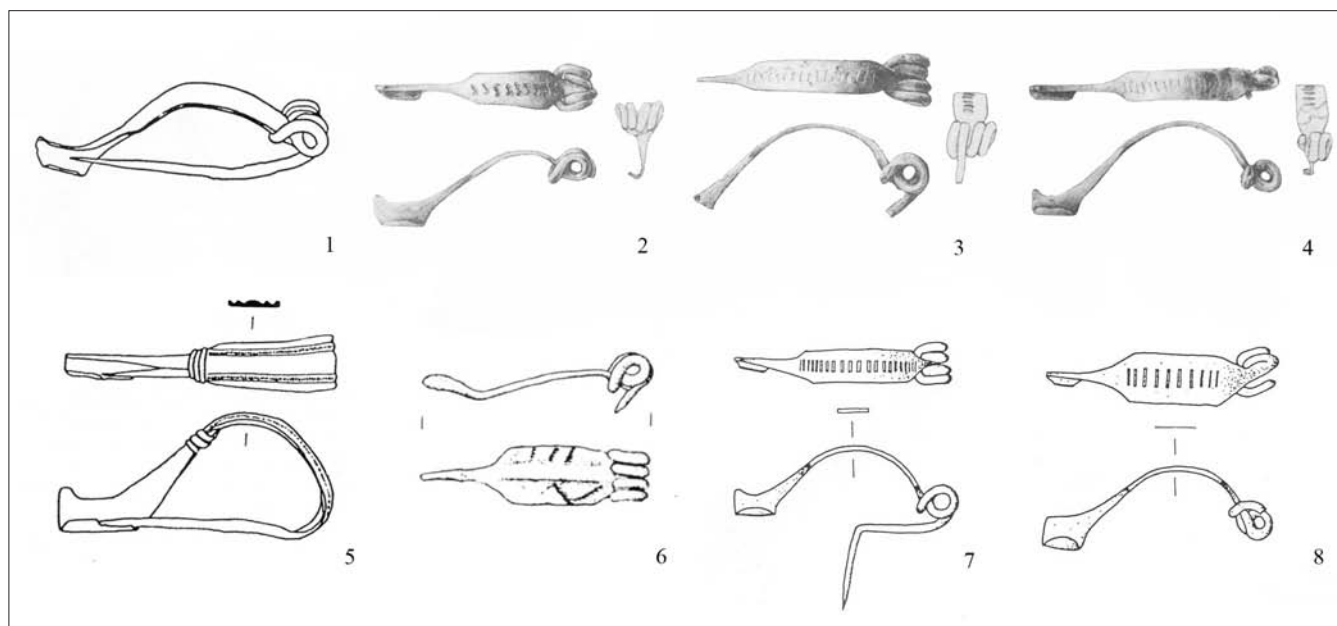
Sl. 1 Fibule iz: 1–2 Siska (Koščević 1980), 3 Osijek (Patek 1942) (bez mjerila)  
 Fig. 1 Fibulae from: 1–2 Sisak (Koščević 1980), 3 Osijek (Patek 1942) (no scale shown)

1982: 181, Fig. 13). Pretpostavlja se da su upravo ovim smjerom, generaciju ili dvije ranije, pristizale drachme Apolonije i Dirahija na prostor jugoistočne Panonije (Popović 1987: 113, sl. 29).

Južnopanonski primjerci mogu se podijeliti u dvije skupine. Prvu čine prave fibule tipa Jezerine i to druge grupe prema Demetzovoj tipologiji, u koju su smješteni primjerci s uzdužno postavljenim rebrima na luku. S druge strane, na lokalnu produkciju upućuju primjerci koji predstavljaju više ili manje vješte kopije izvornih predmeta, proizvedenih u lokalnim radionicama (Dizdar 2003: 343; Dizdar, Tonc 2012) (sl. 2).

in the Neretva valley, as well as in central and eastern Bosnia (Adam, Feugere 1982: 181, Fig. 13). It is assumed that, a generation or two earlier, drachmas from Apollonia and Dyrrachion came to southeastern Pannonia via this very route (Popović 1987: 113, Fig. 29).

The finds from southern Pannonia can be divided into two groups. The first one includes the Jezerine-type fibulae (Demetz's second group), that is, specimens with parallel ribs on the bow. On the other hand, copies made in local workshops with more or less skill indicate local production (Dizdar 2003: 343; Dizdar, Tonc 2012: forthcoming) (Fig. 2).



Sl. 2 Imitacije tipa Jezerine: 1–4 Gomolava (Dautova-Ruševljan 1987; Dautova-Ruševljan, Brukner 1992), 5 Mali Bilač (Dizdar, Potrebića 2002), 6 Vinkovci–Blato (Dizdar 2003), 7–8 Sotin–Vručak (Ilkić 1999) (bez mjerila)  
 Fig. 2 Copies of the Jezerine-type fibulae: 1–4 Gomolava (Dautova-Ruševljan 1987; Dautova-Ruševljan, Brukner 1992), 5 Mali Bilač (Dizdar, Potrebića 2002), 6 Vinkovci–Blato (2003), 7–8 Sotin–Vručak (Ilkić 1999) (no scale shown)

U rasvjetljavanju problema mjesta nastanka ovih fibula, osim tipoloških osobina pojedinih oblika fibula, mogu nam pomoći i tehnološke karakteristike koje u određenim slučajevima predstavljaju i kronološki marker, ali i upućuju

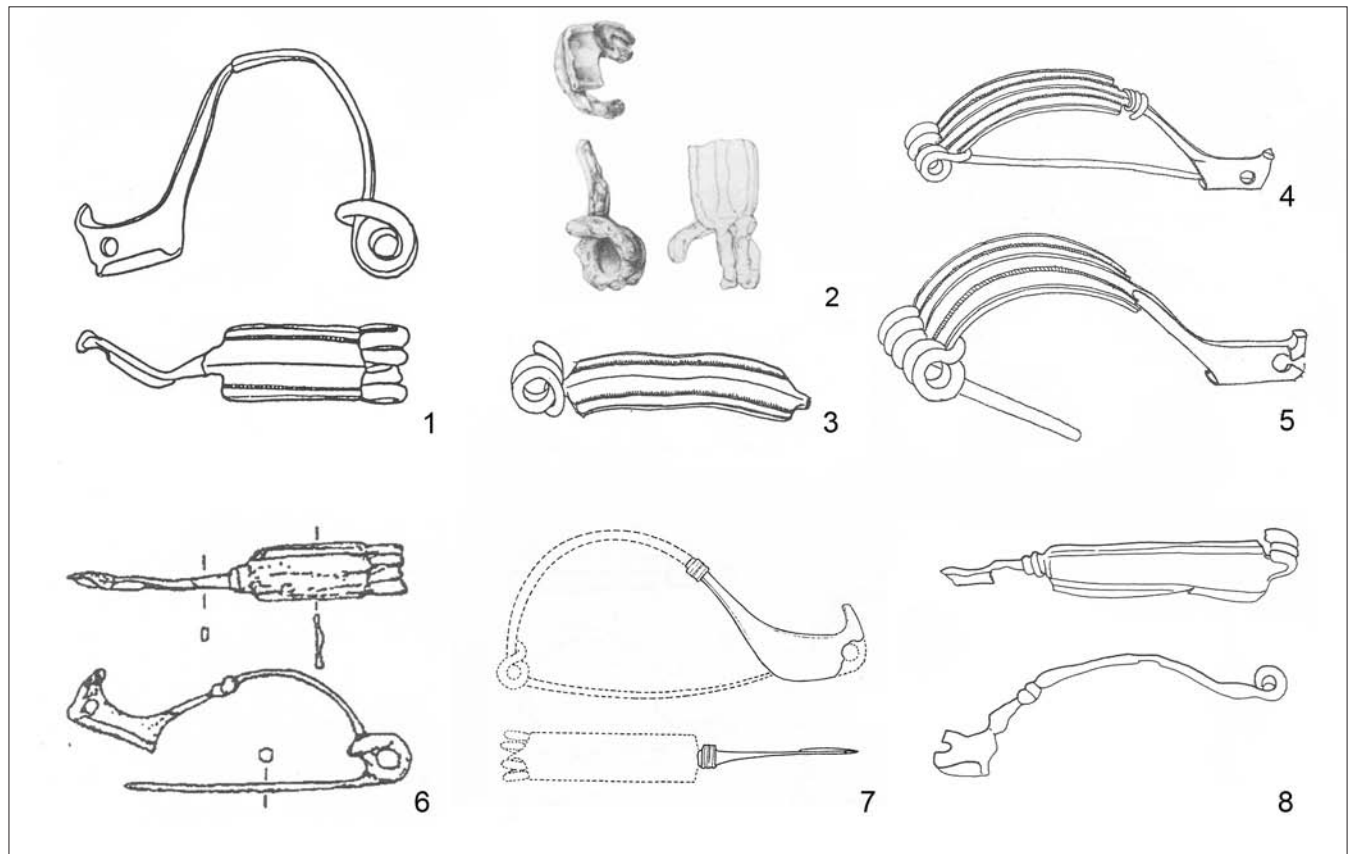
In addition to the typological characteristics of specific forms of fibulae, technological characteristics can shed some light on the problems of determining a place of origin. These characteristics can sometimes be chronological

na moguće podrijetlo pojedinih predmeta. Naime, latenske fibule uglavnom su bile izrađivane od slitine bakra i kositra te ponekad i olova, nešto rjeđe željeza, no krajem prve polovine 1. st. pr. Kr. Rimljani su na prostoru Male Azije usvojili tehnologiju lijevanja mjedi i prenijeli je u Europu (Istenič, Šmit 2007: 140). Prvi predmeti izrađeni od mjedi, uglavnom dijelovi vojne opreme, fibule, ali i novac, potječu iz pedesetih godina 1. st. pr. Kr. Analize sastava legura korištenih u lijevanju kasnolatskih fibula pronađenih na području današnje Slovenije potvrdile su ranu uporabu mjedi u izradi pojedinih tipova, primjerice fibula tipa Jezerine i Alesia koje predstavljaju sjevernoitalske odnosno rimske oblike (Istenič, Šmit 2007: 144–145, tab. 1). S druge strane, nešto stariji oblici iz LT D1b stupnja, primjerice Nauheim, *Palmettenfibel*, *Schüsselfibel* te Almgren 65, bili su izrađeni od slitine bakra i kositra, a u nekim slučajevima i olova, bez prisutnosti cinka. Samo jedan primjerak tipa Almgren 65 koji tipološki pripada mlađem podtipu bio je lijevan od legure bakra i cinka (Istenič, Šmit 2007: 145).

Fibule Jezerine I, za koje se smatra da su proizvod radionica s prostora sjeveroistočne Italije, bile su izrađene od mjedi s visokim postotkom cinka, dok je od dvadeset i pet primjeraka fibula Jezerine II čak šesnaest bilo izrađeno od slitine bakra i kositra, sedam od mjedi i dvije od slitine bakra, kositra i cinka (tzv. *gunmetal*) (Istenič, Šmit 2007: 144–145,

markers, and can also point to the possible origin of specific finds. Namely, La Tène fibulae were most commonly made from a copper and tin alloy, sometimes with lead or, more seldom, iron. However, at the end of the first half of the 1<sup>st</sup> cent. BC, the Romans acquired the technology of casting brass in Asia Minor and brought it to Europe (Istenič, Šmit 2007: 140). The first items made of brass, mostly parts of military equipment, fibulae and coins, can be dated to the middle of the 1<sup>st</sup> cent. BC. The analyses of alloys used in the casting of Late La Tène fibulae from present day Slovenia confirmed an early usage of brass in making specific types, for example Jezerine- and Alesia-type fibulae which are characteristic northern italic, that is, Roman forms (Istenič, Šmit 2007: 144–145, Tab. 1). On the other hand, slightly older forms, dated to LT D1b period, such as Nauheim, *Palmettenfibel*, *Schüsselfibel* and Almgren 65 were made from a copper and tin alloy, in some cases even lead, but certainly without zinc. The exception is one Almgren 65-type fibula which belongs to the typologically younger subtype which was made from a copper and tin alloy (Istenič, Šmit 2007: 145).

Jezerine I-type fibulae, which are thought to have been made in workshops in northeastern Italy, were made of brass with a high percentage of zinc. Out of the twenty five Jezerine II-type fibulae, sixteen were made of a copper and tin alloy, seven were made of brass and two of tin, a copper and zinc alloy (the so called *gunmetal*) (Istenič, Šmit 2007: 144–145, Tab. 1). These results led researchers to conclude



Sl. 3 Fibule tipa Jezerine s lokaliteta smještenih na prostoru Republike Srbije: 1–2 Gomolava (Dautova-Ruševljan 1987; Dautova-Ruševljan, Brukner 1992); 3–4 Zemun (Todorović 1971); 5 nepoznato nalazište – Beograd (Todorović 1971); 6 Čurug – Stari vinogradi (Trifunović, Pašić 2003); 7 Beograd (Bojović 1983); 8 rimska utvrda Diana kod Kladova (Petković 2010) (bez mjerila)

Fig. 3 Jezerine-type fibulae from the territory of Republic of Serbia: 1–2 Gomolava (Dautova-Ruševljan 1987; Dautova-Ruševljan, Brukner 1992); 3–4 Zemun (Todorović 1971); 5 unknown site – Beograd (Todorović 1971); 6 Čurug – Stari Vinogradi (Trifunović, Pašić 2003); 7 Beograd (Bojović 1983); 8 Roman fort Diana near Kladovo (Petković 2010) (no scale shown)

tab. 1). Ovi rezultati naveli su istraživače na zaključak da je produkcija ovih predmeta započeta u sjevernoitalskim radionicama, vjerojatno od 40-tih godina 1. st. pr. Kr., ali se ubrzo proširila i na jugoistočnoalpski i možda balkanski prostor (Istenič, Šmit 2007: 145). Stilski, oblik je mogao biti kopiran u lokalnim nerimskim radionicama, ali ne i tehnologija dobivanja mjedi, pa su fibule lijevane od lokalne bakrene slitine te pretopljenih rimskih predmeta što potvrđuju primjerci s manjim postotkom cinka u sastavu ili oni izrađeni od već spomenute legure bakra, kositra i cinka koja je vjerojatno nastala miješanjem bronce i mjedi. Osim slovenskih primjerala, nekoliko fibula tipa Jezerine II pronađenih na lokalitetu Magdalensberg sadrže veći postotak cinka, između 17 i 21%, na osnovi čega se može zaključiti da su proizvedene na sjevernoitalskom području što je razumljivo ako uzmemo u obzir karakter ovog naselja (Sedlmayer 2009: 95).

Navedena istraživanja kasnolatenskih fibula u Sloveniji, kao i rad o fibulama tipa Alesia s područja Slovenije iz 2005. godine (Istenič 2005; Šmit et al. 2005), predstavljali su primjer za stvaranje metodološkog okvira unutar kojeg smo pokušali odgovoriti na pitanja o podrijetlu fibula tipa Jezerine s prostora jugoistočne Panonije, uz pretpostavku da radionice na ovom prostoru, kao i one u jugoistočnim Alpama, nisu koristile mjed pa bi i u ovom slučaju sastav legure mogao upućivati na provenijenciju predmeta.

#### ANALITIČKE METODE

Od ukupno pedeset i jednog poznatog primjerala s područja južne Panonije analizirane su dvadeset i četiri fibule s devet lokaliteta smještenih u istočnoj Hrvatskoj i Srijemu.<sup>6</sup> Mjesta na kojima je provedena analiza prethodno su pripremljena uklanjanjem korozivskih produkata kako bi se otkrila metalna jezgra. Fibule su analizirane PIXE spektroskopijom na zraku direktnim izlaganjem snopa protona. Snop protona bio je promjera oko 1 mm. Kao detektor x-zraka korišten je Si(Li) detektor udaljen oko 20 mm od analizirane površine. Kvantitativna analiza rađena je GUPIX software-paketom

	Cu	Sn	Zn	Fe	Ag	Pb
Dalj (P-7296)	81,2	0,4	13,8	2,2	1,1	1,2
Dalj (P-20913)	76,9	2,7	12,9	0,6	1,8	5,0
Vinkovci – Blato (A-4543)	83,5	0,8	13,9	0,4	0,7	0,7
Sremska Mitrovica (P-20911)	79,3	0,6	18,9	0,3	0,9	-
Vukovar (P-5136)	79,7	0,4	18,2	0,3	0,8	0,6
Sotin (F-03)	82,8	0,8	16,4	-	-	-
Novi Banovci (P-20666)	84,9	-	13,1	0,3	-	1,5

Tab. 1 Rezultati analize sastava slitine od koje su izrađene fibule tipa Jezerine s visokim postotkom cinka

Tab. 1 The results of the composition analysis of the alloy used for the production of the Jezerine type fibulae with a high zinc content

i to normalizacijom na 100%, s pretpostavkom da se PIXE spektroskopijom vide svi elementi. Granica detekcije za većinu je elemenata oko 0,1%. Koncentracije su orijentacijske zbog prisutnosti prljavštine i nehomogenosti uzoraka. U većini uzoraka uočena je prisutnost silicija i kalcija koji se u

<sup>6</sup> Pripremu uzorka izvršio je Damir Doračić iz Arheološkog muzeja u Zagrebu, a analize slitine provedene su na Odjelu za eksperimentalnu fiziku pri Institutu "Ruđer Bošković". Za detaljniji opis PIXE metode primijenjene na arheološkom materijalu: Ž. Šmit et al. 2005.

that the production of these finds started in workshops in northeastern Italy, probably around 40 BC, but rapidly spread to the southeastern Alpine region and, perhaps, to the Balkans (Istenič, Šmit 2007: 145). Stylistically, the form could have been copied in local, non-Roman workshops, unlike the technology of making brass, so the fibulae had to be cast from a local copper alloy and recast Roman items, as attested to by finds with a smaller percentage of zinc or finds made from the already described alloy of copper, tin and lead which was probably obtained by mixing bronze and brass. Apart from the fibulae from Slovenia, several finds of the Jezerine II-type fibulae from Magdalensberg contain a larger percentage of zinc, between 17 and 21%. Based on this, we can conclude that these were produced in northern Italy, which is logical when we consider the character of the settlement itself (Sedlmayer 2009: 95).

The mentioned research of Late La Tène fibulae in Slovenia, as well as the paper on Alesia-type fibulae from Slovenia, published in 2005 (Istenič 2005, Šmit et al. 2005), served as examples for creating a methodological framework in which we attempted to answer the question of the origin of the Jezerine-type fibulae from southeastern Pannonia, supposing that the workshops in this area, like those in the southeastern Alps, did not use brass. If that were the case, the composition of the alloy could point to the provenance of the finds.

#### ANALYTICAL METHODS

Out of a total of fifty-one known finds from southern Pannonia, twenty-four fibulae from nine sites in eastern Croatia and Sylvania were analysed.<sup>6</sup> The places where samples for analyses were taken had previously been prepared by removing corrosive by-products in order to reveal the metal core. The fibulae were analysed by PIXE spectroscopy and were exposed to air by direct exposure to a proton beam. The beam was about 1 mm in diameter. A Si(Li) detector was used as an x-ray detector which was about 20 mm away from the surface. The quantitative analysis was made using the GUPIX software pack which was normali-

zed at 100%, supposing that the PIXE spectroscopy revealed all elements. The limit of detection for most elements is around 0.1%. The concentrations are approximations in nature due to the presence of impurities and sample non-

<sup>6</sup> Samples were prepared by Damir Doračić from the Archaeological Museum in Zagreb, and the alloy composition analyses were carried out at the Department of Experimental Physics of the Ruđer Bošković Institute. For a more detailed description of the PIXE method applied to archaeological finds, see: Ž. Šmit et al. 2005.



	Cu	Sn	Zn	Fe	Ag	Pb
Dalj (P-20914)	82,9	9,6	1,0	3,9	1,3	1,3
Vinkovci – Dirov brijeg (A-804)	85,1	8,8	3,6	0,2	2,4	-
Sotin (F-06)	94,8	-	4,1	-	-	-
Sotin (F-01)	89,8	-	4,9	5,2	-	-
Sotin (F-02)	89,4	4,6	5,0	1,0	-	-
Sotin (F-04)	96,4	-	2,5	-	-	-

Tab. 2 Rezultati analize sastava slitine od koje su izrađene fibule tipa Jezerine s niskim postotkom cinka

Tab. 2 The results of the composition analysis of the alloy used for the production of the Jezerine type fibulae with a low zinc content

	Cu	Sn	Zn	Fe	Ag	Pb
<b>Mali Bilač (P-5823)</b>	86,6	13,1	-	0,3	-	-
Dalj (P-4670)	89,2	5,9	-	0,3	3,0	1,6
Vinkovci – Blato (A-3282)	71,9	24,5	0,2	0,2	1,1	2,1
Orolik – Gradina (A-3774 prsten/ring)	38,2	54,1	0,4	1,2	1,9	3,7
Orolik – Gradina (A-3774 luk/bow)	37,4	55,9	-	1,7	5,1	-
Sotin (F-05)	85,7	13,2	-	1,1	-	-
Sotin (F-07)	60,1	37,5	-	2,3	-	-
Sotin (F-08)	85,1	12,5	-	0,3	-	1,9
Sotin (F-09)	61,1	35,0	-	-	-	3,8
Sotin (P-2867)	85,7	12,4	0,2	0,1	-	1,3
Novi Banovci (P-20664)	95,1	4,9	-	-	-	-

Tab. 3 Rezultati analize sastava slitine od koje su izrađene fibule tipa Jezerine bez ili sa zanemarivim postotkom cinka

Tab. 3 The results of the composition analysis of the alloy used for the production of the Jezerine type fibulae without zinc or with a negligible zinc content

spektru pojavljuju najvjerojatnije kao nečistoće. U spektrima se vidi vrh prisutnost argona koji potječe od prolaska snopa protona kroz zrak, ali je on u analizi tretiran kao parazitski element te ne ulazi u račun koncentracija.

### RASPRAVA

Kao što je vidljivo iz tablica 1 do 3, rezultati analiza sastava slitine od kojih su bile izrađene fibule tipa Jezerine pokazali su postojanje tri grupe s obzirom na zastupljenost cinka u sastavu. Sedam fibula izrađeno je od mjedi s većim postotkom cinka, između 12,9 i 18,9%, što bi moglo upućivati na njihovo rimsko, odnosno sjevernoitalsko podrijetlo (tab. 1). Druga skupina lijevana je od legure s manjim postotkom cinka, između 1 i 6,9%, uključujući i dva predmeta izrađena od legure bakra, kositra i cinka što je vjerojatno rezultat pretapanja predmeta od mjedi i miješanja s broncom (tab. 2). U posljednjoj, najbrojnijoj grupi nije zabilježen cink ili se javlja samo u tragovima (tab. 3). Na primjercima iz Orolika i Sotina (F-07, F-09) visok postotak kositra vjerojatno je rezultat korozivnih procesa.<sup>7</sup> Za pretpostaviti je, kao što smo vidjeli i na primjeru slovenskih fibula, da su primjerci druge i treće grupe vjerojatno proizvod lokalnih kasnolatskih radionica u kojima su, prema italiskim uzorcima, izrađivani ovi popularni predmeti. Je li riječ o prostoru jugoistočnih Alpa, zapadnom Balkanu ili srednjem Podunavlju, za sada je teško odrediti.

Tipološki, pet primjerka iz Dalja, Siska, Sotina i Vinkova-

<sup>7</sup> Slična situacija zabilježena je na nekoliko primjeraka tipa Alesia s područja Slovenije, dok je na jednom primjerku veći postotak kositra interpretiran kao pokositranje površine fibule (Šmit et al. 2005: 218–219).

homogeneity. Silicon and calcium were detected in most samples, and probably represent impurities. The spectra show the presence of argon which is a residue left from the passage of the proton beam through the object. Hence, it was treated as a parasitic element in the analysis and was not calculated in element concentrations.

### DISCUSSION

As Tables 1-3 show, the results of the analysis of alloys used in the production of Jezerine-type fibulae point to the existence of three groups of objects considering the amount of zinc in the composition. Seven fibulae are made of brass with a higher percentage of zinc, between 12.9 and 18.9%, which could point to their Roman, that is, north Italian origin (Tab. 1). The second group was cast from brass with a smaller percentage of zinc, between 1 and 6.9%, including two finds made of a copper, tin and zinc alloy, which is probably the result of recasting brass objects and mixing them with bronze (Tab. 2). The last and most numerous group includes finds where zinc was found in traces or was not found at all (Tab. 3). The high percentage of tin in the finds from Orolik and Sotin (F-07, F-09) is probably the result of corrosive processes.<sup>7</sup> It should be supposed that, as was shown by Slovenian examples, that the finds in the second and the third group were probably products of local Late La Tène workshops where these popular items were made based on models from northern Italy. At this point,

<sup>7</sup> A similar situation was noted on several Alesia-type fibulae from Slovenia, while a higher percentage of tin in one sample was explained as the result of the tinning of the surface of the fibula (Šmit et al. 2005: 218–219).

ca mogu se svrstati u tip Jezerine II a2, s lukom ukrašenim središnjim, glatkim rebrom (T. 1: 4; T. 2: 2, 5; T. 3: 7; sl. 3: 6), a fibula iz Siska sa središnjim rebrom s jedne strane ukrašenim nizom crtica pripada tipu II a1 (T. 3: 5). Primjerci iz Dalja i Siska izrađeni su od slitine bakra i kositra, dok je kod fibula iz Sotina i Vinkovaca zabilježen veći postotak cinka. Ostali primjerci pripadaju tipu IIc čiji je luk "krovastog" presjeka ukrašen uzdužno postavljenim rebri, koja mogu biti narebrena (tip IIc1) ili glatka (tip IIc2). Ove fibule zastupljene su u sve tri grupe izdvojene na osnovi sastava slitine.

Na dva primjerka iz Siska, jednog tipa IIa2 i drugog IIc2, rebra su smještena s donje strane luka, što je karakteristika najzastupljenija na fibulama iz Slovenije, s čak četiri primjerka iz Novog mesta, zatim Furlanije te na jednom primjerku iz Austrije (Božič 1993: 142; Božič 2011: 268, sl. 6.2: 18; Demetz 1999: 249, 251; Buora 2008: 100, Fig. 121–125).<sup>8</sup> Iako bi na osnovi ovih podataka bilo primamljivo pretpostaviti proizvodnju primjeraka s ovim elementom na jugoistočnoalpskom prostoru, postotak cinka od 18,2% u sastavu fibule iz Vukovara tipa IIc2 (T. III: 4), na kojoj se rebra također nalaze na donjoj strani luka, jasno upućuje na to da su one proizvedene i na području sjeveroistočne Italije.

Osim izvornih fibula tipa Jezerine II, na području jugoistočne Panonije zabilježeni su primjerci koji predstavljaju lokalne imitacije ovog tipa, a koji, više ili manje, zadržavaju osnovne elemente izvornika. Među njima moguće je izdvojiti jednu skupinu fibula sličnih karakteristika. One su malih dimenzija, oko 4 cm dužine, sa spiralom od četiri navoja spojena iznutra, trakasto raskovanim lukom i pravokutnom, neperforiranom nožicom s izbočenjem ili bez njega. Luk je gladak ili ukrašen urezivanjem. Čak pet primjeraka ovih fibula pronađeno je na Gomolavi (sl. 2: 1–4). Prva fibula ima gladak luk, na dvije se nalazi ukras u obliku niza ravnih crta, a na jednoj S-motiva. Zbog nejasnog crteža peti je primjerak teže interpretirati, no čini se da na luku ima uzdužno postavljeno rebro (Dautova-Ruševljan 1987: 61, T. 46: 6). Luk trakastog presjeka ukrašen nizom ravnih crta zabilježen je i na dva primjerka iz Sotina, s položaja Vručak, kod kojih jedna pravokutna noga završava uspravnim izbočenjem, dok je kod druge fibule nema (Ilkić 1999: 40–41, 80, T. XXIII: 8–9). Moguće je da ovaj motiv imitira male zareze kojima su ponekad ukrašena rebra na pojedinim fibulama tipa Jezerine IIa1 i IIc1, no sličan ornament crtica nalazimo na fibulama tipa Gorica (Demetz tip IIa1), primjerice s Gomolave, Podgajca i Sotina, pa postoji mogućnost da su majstori bili nadahnuti ovim istodobnim oblikom prilikom ukrašavanja lokalnih kopija tipa Jezerine (Dautova-Ruševljan 1987: T. 46: 3; Ilkić 1999: 41, 79–80, T. XXIII: 7, 11–12; Dizdar, Tonc 2012).

Ostale primjerke teže je svrstati u određene skupine s obzirom na to da svaki zapravo predstavlja individualnu interpretaciju izvornog oblika. Primjerice, fibula iz Malog Bilača (sl. 2: 5), osim grublje izrade, ima gotovo sve elemen-

it is difficult to say whether this refers to the southeastern Alps, western Balkans or south Pannonia.

Typologically, five finds from Dalj, Sisak, Sotin and Vinkovci can be placed in type Jezerine IIa2, with a smooth rib in the middle of the bow (Pl. 1: 4; Pl. 2: 2, 5; Pl. 3: 7; Fig. 2: 6) and one from Sisak in type IIa1 with the rib decorated with a row of small notches (Pl. 3: 5). The fibulae from Dalj and Sisak are made of tin and copper alloy while in the case of the items from Sotin and Vinkovci a higher percentage of zinc was identified. The rest of the finds can be placed in IIc-type, with a bow of a roof-shaped cross-section decorated with longitudinal ribs, where the lateral ones can be ribbed (IIc1-type) or smooth (IIc2-type). These fibulae belong to all three groups defined on the basis of the alloy composition.

The ribs on two fibulae from Sisak, one of the IIa2-type and the other one of IIc2-type (Pl. 3: 6–7), are located on the bottom side of the bow, which is a characteristic most frequently found on fibulae from Slovenia, then Friuli and on one find from Austria (Božič 1993: 142, Božič 2011: 268, Fig. 6.2: 18; Demetz 1999: 249, 251, Buora 2008: 100, Fig. 121–125).<sup>8</sup> Although, based on this data, it would be tempting to assume that finds with these elements were made in the southeastern Alpine region, the percentage of zinc (18.2%) in the composition of the fibula from Vukovar (IIc2-type) (Pl. III: 4), which also has ribs on the bottom side of the bow, clearly indicates that the fibulae with this feature were produced in northeastern Italy as well.

Apart from original Jezerine II-type fibulae, an additional group has been identified in southeastern Pannonia, and it represents local imitations of this type. These finds, which more or less adhere to the basic elements of the originals, are mostly smaller and rougher. Among them it is possible to single out one group of fibulae with similar characteristics. They are smaller, between 3.7 and 5.8 cm long, with a spring with four coils and internal cord, hammered bow of a strap cross-section and a rectangular and imperforate foot with a protrusion at the end or without it. The bow is smooth or decorated with incised ornaments. Five fibulae of this group have been found in the settlement of Gomolava near Hrtkovci (Fig. 2: 1–4). The first fibula have a smooth bow, two are decorated with straight lines, and the other with ornaments in the shape of the letter 'S'. Due to an unclear drawing, the fifth find is hard to interpret, but it appears that it has a longitudinal rib on the bow (Dautova-Ruševljan 1987: 61, Pl. 46: 6). Two finds from Sotin – Vručak have a bow with a strap cross-section which is decorated by a series of straight lines, and rectangular feet, one with a protrusion at the end and one without it (Ilkić 1999: 40–41, 80, Pl. XXIII: 8–9). It is possible that this motif imitates the small incisions sometimes found on the bows of some Jezerine-type fibulae IIa1 and IIc1, but a similar ornament with lines is found on Gorica-type finds (Demetz tip IIa1), for example from Gomolava, Podgajac and Sotin, so it is possible that craftsmen were inspired by this contemporary form while decorating local copies of Jezerine-type fibulae (Dautova-Ruševljan 1987: 61, Pl. 46:3; Ilkić 1999: 41, 79–80, Pl. XXIII: 7, 11–12; Dizdar, Tonc 2012: forthcoming).

<sup>8</sup> Zbog ograničenih sredstava, sastav fibula iz Siska nije analiziran PIXE metodom. Tek naknadno, neposredno prije predaje ovog rada, pojavila se mogućnost analize prijenosnim XRF uređajem, na čemu zahvaljujem kolegici Ani Franjić. Analize su pokazale da su fibule pod inventarnim brojevima A-3527 i A-3529 izrađene od slitine bakra i kositra, a kod primjerka A-3524 u sastavu je zabilježeno 7,4% cinka.

<sup>8</sup> Due to limited funds, Jezerine-type fibulae were not included in the PIXE analyses. Only later, shortly before submitting this paper, the possibility arose of conducting the analyses with a portable XRF device, and I wish to express my gratitude for this to Ana Franjić. The preliminary results of the analyses show that the items with inv.no. A-3527 and A-3529 were made of an alloy of copper and tin while 7.4 % of zinc was identified in the composition of the fibula with inv.no. A-3524.

te karakteristične za tip Jezerine, luk tipa Ilc1, prsten s tri poprečna rebra te četvrtastu nožicu bez perforacije koja završava uspravnim izbočenjem, no nema spiralu nego igla izlazi direktno iz luka, što je čini jedinstvenom među primjercima ovog tipa. Možemo pretpostaviti da je u ovom slučaju nevješti ljevač izlio prekratak komad te je pri savijanju fibule bio primoran izostaviti spiralu ili je naprosto dio namijenjen izradi igle i spirale u nekom trenutku slomljen pa je u nedostatku materijala majstor izvukao iglu direktno iz luka, izostavivši navoje. Primjerak iz Dalja ima jedno glatko rebro s donje strane luka (tip Ila2), dok se na gornjoj strani nalazi urezani cik-cak motiv. Luk prelazi u četvrtastu nogu koja završava uspravnim izbočenjem bez karakterističnog prstena, iako su na mjestu gdje bi se trebao nalaziti postavljene četiri paralelno urezane crte koje vjerojatno oponašaju njegovo postojanje (T. 1: 4). Fibula iz Novih Banovaca većih je dimenzija, čak 9 cm dužine, s lukom trakastog presjeka ukrašenim dvama uzdužno postavljenima žljebovima (T. 2: 8). Ovaj način ukrašavanja luka za sada je nepoznat na fibulama tipa Jezerine, a zajedno s malom pravokutnom nogicom bez perforacije upućuje na vjerojatnost produkcije ovog komada na prostoru jugoistočne Panonije..

Iz tablice 3 vidljivo je da su fibule iz Malog Bilača, Dalja, Novih Banovaca i Sotina (sl. 2: 5, 7–8; T. 1: 4; T. 2: 8) izrađene od slitine bakra i kositra, što bi potkrijepilo tvrdnju o njihovu nastanku u lokalnim panonskim radionicama koje u izradi predmeta od bakrene slitine nisu koristile cink. Primjerak koji iskače iz ovog okvira je fibula iz Vinkovaca s položaja Blato (sl. 3: 6) koja, unatoč izrazito gruboj izvedbi i deformiranom osnovnom obliku, sadrži čak 13,9% cinka. Moguće objašnjenje jest da je nevješti majstor izravno kopirao slomljeni primjerak pretaljivanjem u nezgrapnu kopiju.

Imitacije ovoga popularnog oblika, koje su često uključivale i određene prilagodbe ukusu korisnika koji su ih nosili, zabilježene su i na drugim mjestima. Primjerice, među prilozima u jednom paljevinskom grobu s rumunjskog lokaliteta Piatra Craivii nalazila se i jedna željezna fibula hibridnog oblika, s lukom trakastog presjeka ukrašenim središnjim rebrom i zadebljanim rubovima, slično kao kod fibula tipa Jezerine Ila2, te nogicom s trokutastim okvirom karakterističnim za kasnolatske fibule, primjerice Almgren 65 ili Nauheim I (Rustoiu, Gherghoiu 2010: 448, sl. 1–2).

## ZAKLJUČAK

Velika popularnost fibula tipa Jezerine kao dijela nošnje, podjednako muške i ženske, krajem 1. st. pr. Kr. nije zaobišla ni prostor južne Panonije. Čemu bi trebalo pripisati toliku brojnost i široku distribuciju ovog tipa, teško je odgonetnuti. Naime, Buora je pretpostavio, na osnovi analize primjerkaraka iz Italije, Slovenije i Hrvatske, da su fibule tipa Jezerine zbog svoga latenskog izgleda bile prihvatljivije konzervativnim autohtonim zajednicama nego fibule tipa Alesia sa šarnirom, no to ne objašnjava znatno manji broj drugih istodobnih tipova na nekim područjima, primjerice Gorica ili Almgren 18a, koje su također bile izrađivane u latenskoj tradiciji (Buora 1999: 135–136, 139).

S obzirom na kronološko pozicioniranje u LT D2 stupanj, relativno velik broj fibula tipa Jezerine s prostora hrvatskog i

The rest of the finds are hard to place in certain groups since every item basically represents an individual interpretation of the original. For example, almost all the elements of the fibula from Mali Bilač (Fig. 2: 5), apart from its being rough, are characteristic of the Jezerine-type, it has a type Ilc1 bow, a ring with three horizontal ribs and a square foot which ends with a straight protrusion, but it does not have a spring so the pin goes directly from the bow. This makes this fibula unique among the specimens of this type. We can assume that, in this case, a less skilful artisan made a piece that was too small, so that when he wanted to bend the fibula, he was forced to leave out the spring, or, simply, the part that was meant to become the pin and the spring got broken so the craftsman, for lack of material, made the pin directly from the bow, leaving out the spring. The find from Dalj has one smooth rib on the bottom side of the bow (type Ila2), and an incised zigzag ornament on the top part of the bow. The bow transforms into a rectangular foot which turns into a straight protrusion without the notable ring, although four parallel lines were made in its place, probably as an imitation of the ring (Pl. 1: 4). Furthermore, the fibula from Novi Banovci is quite large, 9 cm in length, and has the bow with a strap cross section decorated with two parallel, longitudinal grooves (Pl. 2: 8). This kind of bow decoration was previously unknown on the Jezerine-type fibulae, and together with the small rectangular foot that ends with a vertical protrusion, indicates probable production in southeastern Pannonia.

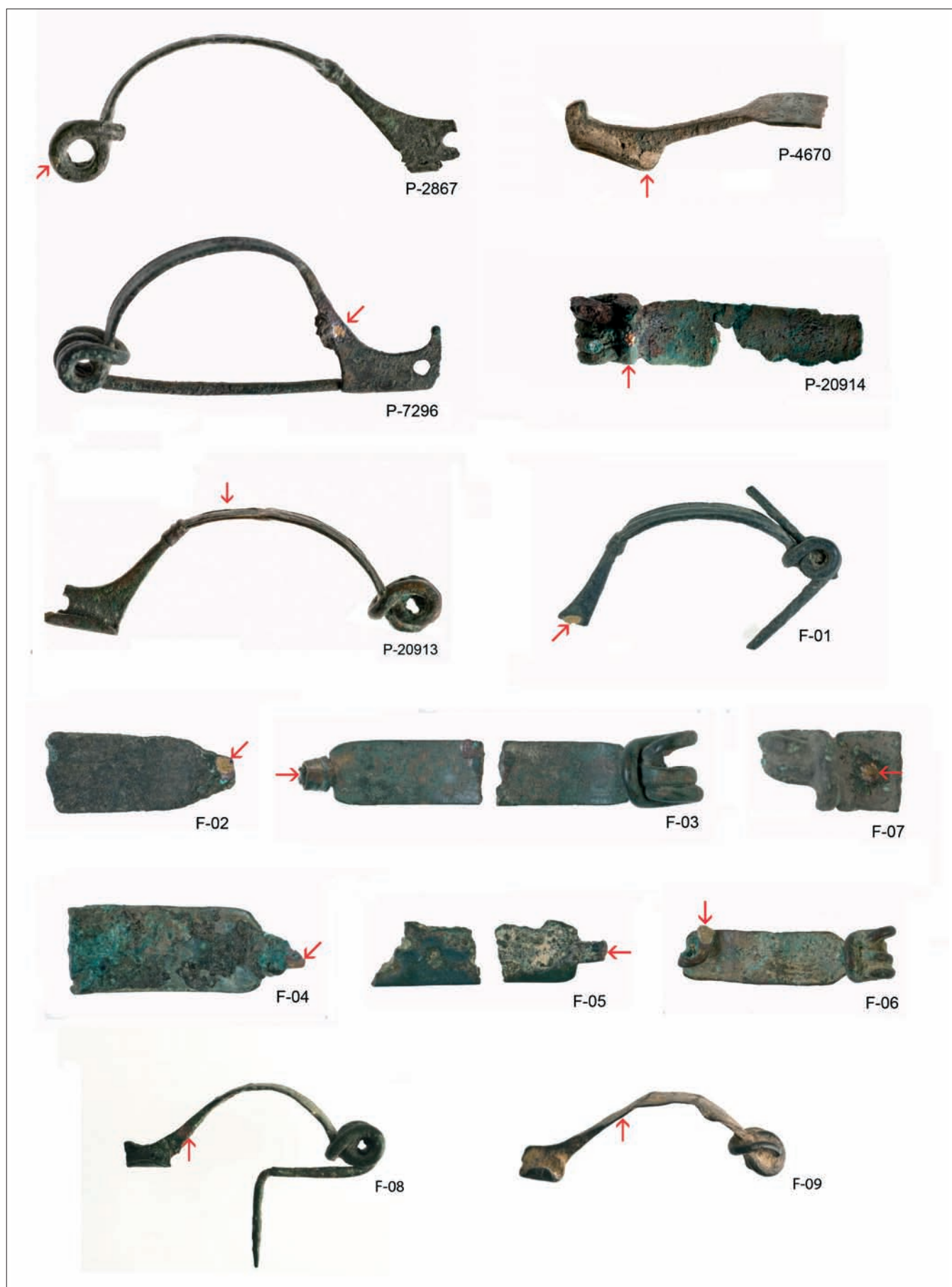
Table 3 shows that the fibulae from Mali Bilač, Dalj, Novi Banovci and Sotin (Fig. 2: 5, 7–8; Pl. 1: 4; Pl. 2: 8) are made out of a copper and tin alloy, which supports the hypothesis that they were produced in local workshops. The find which stands out is the fibula from Vinkovci, location Blato, (Fig. 3: 6), which, despite its exceptional roughness and deformed shape, contains 13.9% of zinc. A possible explanation is that an unskilled craftsman directly imitated a broken example by recasting it into a cumbersome copy.

Imitations of this popular form, which usually contained specific adjustments made to suit the taste of the people who wore them, were found in other places as well. For example, among the grave goods in one incineration grave from the site Piatra Craivii in Romania, an iron hybrid form of fibula was found which had a bow with a strap cross-section decorated by a central rib and thicker ends similar to those of the Jezerine Ila2-type fibulae, and a triangular foot typical of the Late La Tène fibulae, for example of Almgren 65 or Nauheim I-type (Rustoiu, Gherghoiu 2010: 448, Fig. 1–2).

## CONCLUSION

The great popularity of the Jezerine-type fibulae as part of both male and female attire at the end of the 1<sup>st</sup> cent. BC did not evade southern Pannonia. It is difficult to say why this type was so numerous and widely distributed. Buora supposed, based on his analyses of finds from Italy, Slovenia and Croatia, that the Jezerine-type fibulae, due to their La Tène-like appearance, were more acceptable to the conservative autochthonous populations than the Alesia-type fibulae with a hinge (Buora 1999: 135–136, 139). However, this does not explain why a significantly lesser number of other contemporary types, like the Gorica or Almgren 18a types, which were also made in the La Tène tradition, were found in some areas.

Considering the chronological positioning into the LT D2 phase, a relatively high number of Jezerine-type fibulae



Sl. 4 Strelice označavaju mjesta na kojima je provedena analiza sastava slitine  
Fig. 4 The arrows show the areas where the analyses of the alloy composition were conducted

srpskog Podunavlja nije mogao biti rezultat prisutnosti rimske vojske na ovom dijelu limesa, kako se smatralo u starijoj literaturi, nego intenzivne trgovine i razmjene sa sjevernoitaljskim i jugoistočnoalpskim prostorom koja se dodatno intenzivirala nakon rimskog osvajanja Segestike 35. god. pr. Kr., uglavnom savskom komunikacijom, a vjerojatno, u manjem opsegu, i dolinom rijeke Drave. Ovoj tvrdnji ide u prilog čak pet fibula tipa Jezerine, kao i istovremenih ili nešto starijih tipova Alesia, Gorica i Feugere 11, iz Siska te lokaliteta smještenih nizvodno niz rijeku Savu (Busuladžić 2010: 131, br. 15; Dizdar, Tonc 2012: u tisku), iako se u slučaju Siska ne može isključiti mogućnost donošenja pojedinih primjeraka od strane rimskih vojnika koji su boravili na tom prostoru od sredine tridesetih godina 1. st. pr. Kr.

Fibule s višim postotkom cinka u sastavu, a koje uglavnom pripadaju tipu Ilc iako je zabilježen i primjerak tipa Ila, zasigurno su izrađivane u sjevernoitaljskim radionicama s obzirom na to da populacije s prostora jugoistočnih Alpa, zapadnog Balkana i južne Panonije nisu svladale tehnologiju mjedi sve do uključivanja u sastav rimske države. Na ovim prostorima izrađivani su primjerci s manjim postotkom ili bez cinka u sastavu, a zabilježeni su predmeti lijevani od slitine bakra, kositra i cinka koja je nastala zajedničkim pretapanjem predmeta od bronce i mjedi. Tipološki, ove fibule pripadaju tipovima Ila i Ilc.

Postojanje proizvodnje u jugoistočnopanonskim radionicama potvrđuju imitacije koje su zasigurno u estetskom pogledu bile prilagođene ukusu lokalnih korisnika, što se, primjerice, odražavalo u veličini i karakterističnom ukrašavanju luka nizovima crtica, cik-cak i S-motiva. Zanimljivo, iako su ovi predmeti reinterpreterali popularni oblik, što im donekle umanjuje autentičnost, oni su predstavljali jedan od posljednjih oblika nošnje mlađega željeznog doba ovog prostora izrađivanih u latenskog tradiciji s obzirom na to da će uskoro lokalne populacije, uklopljene u rimske provincijalne okvire, razviti neke nove mehanizme izražavanja vlastitog identiteta.

#### ZAHVALE

U nastanku ovog rada sudjelovali su mnogi. Zahvaljujem Maji Škrivanko, dr. sc. Mati Ilkiću i dr. sc. Marku Dizdaru na omogućenom uvidu u građu i dopuštenju za provođenje analiza, Damiru Doračiću na pripremi uzoraka i posredništvu s Institutom "Ruđer Bošković", Miljenki Galić na crtežima, Igoru Krajcaru na fotografijama, dr. sc. Draganu Božiću na savjetima i konstruktivnoj kritici i na kraju Ani Đukić na engleskom prijevodu.

#### POPIS NALAZIŠTA:

1. Sisak – 5 primjeraka: Košćević 1980: 12, 45, T. 1: 1, 3
2. Mali Bilač – 1 primjerak: Dizdar, Potrebica 2002: 117, T. 7: 5
2. Osijek – 2 primjerka: Patek 1942, T. 8: 11
3. Dalj – 4 primjerka: Majnarić-Pandžić 1970: 79, T. IV: 9 i tri neobjavljene fibule
4. Vukovar – 1 primjerak: Majnarić-Pandžić 1970: 100, T. LI: 9
5. Vinkovci:

from the Croatian and Serbian Danube region could not have been the result of the presence of the Roman army in this part of the *limes*, but must have been the result of intensive trade and exchange with the area of northeast Italy and the southeastern Alpine region. The trade intensified especially after *Segestica* was conquered in 35 BC, and did so mostly via the Sava river, and possibly, on a smaller scale, through the Drava valley. The relatively high number of these fibulae, as well as the contemporaneous or somewhat earlier types like Alesia, Gorica or Feugere 11 from Sisak and the sites situated downriver on the Sava additionally speaks in favour of this claim (Busuladžić 2010: 131, no. 15; Dizdar, Tonc 2012: forthcoming). However, in the case of Sisak, it is difficult to exclude the possibility that individual finds could have been brought by Roman soldiers who stayed in the area in the mid 30's of the 1<sup>st</sup> cent. BC.

Fibulae with a higher percentage of zinc, belonging mostly to the Ilc-type, although one Ila-type find was registered, were most certainly made in workshops in northern Italy, considering that the populations from the southeastern Alps, western Balkans and southern Pannonia did not master the technology of making brass until they became part of the Roman state. In these areas, objects were made with a lesser percentage or even without zinc, and some were recorded which were made from a copper, tin and zinc alloy which was obtained by recasting and mixing items made of bronze and brass. Typologically they belong to the Ila and Ilc-types.

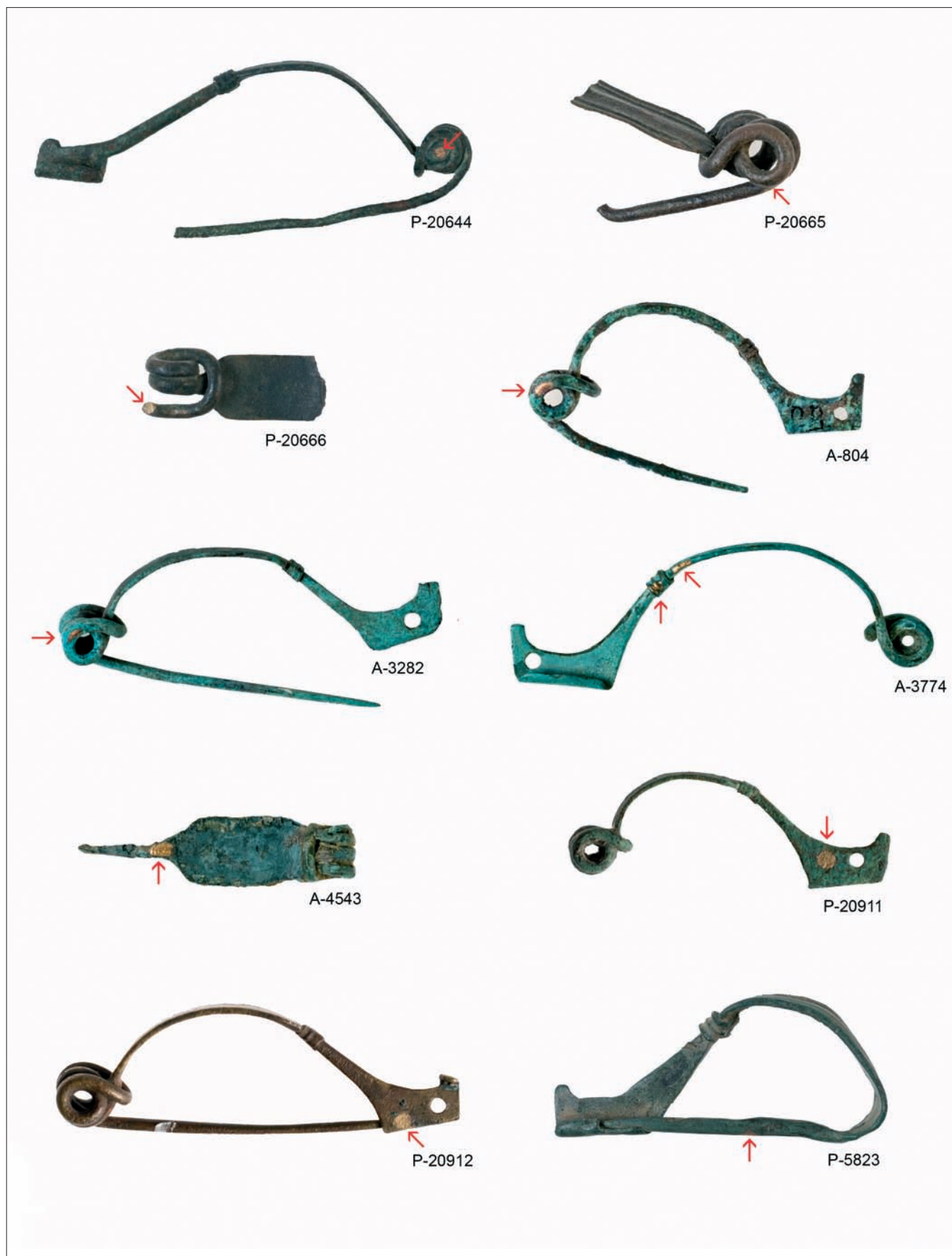
The existence of production in southeastern Pannonian workshops is also attested to by imitations which must have, aesthetically, been made so as to suit the tastes of the local users which was, for example, reflected in the size of the items as well as the characteristic decorations on the bow, that is, in the series of lines, as well as the zigzag and 'S' motifs. Interestingly enough, even though these objects reinterpret the original shape, which in a way reduced their authenticity, they represent one of the last forms of Late Iron Age attire in this area made in the La Tène tradition. Soon after, the local populations were incorporated into Roman provincial frames and developed new mechanisms of expressing their identity.

#### ACKNOWLEDGEMENTS

Many people participated in the making of this paper. I would like to thank Maja Škrivanko, Dr. Mate Ilkić, and Dr. Marko Dizdar, on making it possible for me to see their material, as well as for allowing me to analyze the finds. I would also like to thank Damir Doračić for preparing the samples and corresponding with the *Ruđer Bošković* Institute, Miljenka Galić for drawing the finds, Igor Krajcar for taking photographs, Dr. Dragan Božić for his advice and constructive criticism, and, finally, Ana Đukić for translating the text into English.

#### LIST OF SITES:

1. Sisak – 5 fibulae: Košćević 1980: 12, 45, Pl. 1: 1, 3
2. Mali Bilač – 1 fibula: Dizdar, Potrebica 2002: 117, Pl. 7: 5
2. Osijek – 2 fibulae: Patek 1942, Pl. 8: 11
3. Dalj – 4 fibulae: Majnarić-Pandžić 1970: 79, Pl. IV: 9 and three unpublished items
4. Vukovar – 1 fibula: Majnarić-Pandžić 1970: 100, Pl. LI: 9
5. Vinkovci:
- Dirov brijeg – 1 fibula: Dizdar 1999: 116, cat.no. 163



Sl. 5 Strelice označavaju mjesta na kojima je provedena analiza sastava slitine  
Fig. 5 The arrows show the areas where the analyses of the alloy composition were conducted

Dirov brijeg – 1 primjerak: Dizdar 1999: 116, kat. jed. 163  
Blato – 3 primjerka: Dizdar 1999: 120, kat. jed. 181; Dizdar 2003: 343; i jedan neobjavljeni primjerak pronađen u istraživanju 2010. godine<sup>9</sup>

6. Orolik, Gradina – 1 primjerak: Dizdar 2001: 118, T. 7: 6  
7. Sotin – 9 primjeraka: Majnarić-Pandžić 1970: 38, T. XXXVIII: 3–3a, 4; Ilkić 1999: 40, 79, T. XXIII: 1–2, 4–5 i tri neobjavljene fibule

Vručak – 2 primjerka: Ilkić 1999: 40–41, 80, T. XXIII: 8–9

9. Sremska Mitrovica – 1 neobjavljeni primjerak

10. Gomolava – 7 primjeraka: Dautova-Ruševljan 1987: 59, 61, T. 45: 4; T. 46: 1–2, 4–6, 13

11. Novi Banovci – 3 neobjavljena primjerka

12. Zemun, obala Dunava – 3 primjerka: Todorović 1968: 153–154, T. LIII: 20, T. LIV: 2; Todorović 1971: 145, br. 597, T. LXVI: 10

13. Beograd, okolica / nepoznato nalazište – 3 primjeraka: Todorović 1968: 148, T. XXV: 9; Todorović 1971: 145, br. 598, T. LXVI: 9; Bojović 1983: 19, T. I: 4

14. Rečica, Požarevac – 1 primjerak: Todorović 1968: 140, T. VI: 4<sup>10</sup>

15. nepoznato nalazište – Muzej Krajine u Negotinu – 1 primjerak: Bojović 1983: 19

16. Donja Dolina – 1 primjerak: Busuladžić 2010: 131, br. 15

17. Čurug – Stari vinograd – 1 primjerak: Trifunović, Pašić 2003: 268, sl. 6: 6

18. rimska utvrda Diana kod Kladova – 1 primjerak: Petković 2010: kat. jed. 51, T. II: 6

#### KATALOG PREDMETA:

1. A-3527 (AMZ) (T. 3: 5)

Lokalitet: Sisak

Dimenzije: dužina: 7,8 cm; visina: 3 cm; širina luka: 0,9 cm; težina: 8,48 g

Materijal: slitina bakra i kositra

Tip: IIa1

Opis: Fibula s lukom ukrašenim glatkim središnjim rebrom uz koje se s jedne strane nalazi niz urezanih crtica. Rubovi luka su zadebljani. Na prijelazu luka u nogu nalazi se prsten s tri poprečna rebra. Pravokutna noga s perforacijom završava uspravno postavljenim ovalnim dugmetom.

Literatura: Košćević 1980: 45, kat. br. 3

2. A-3527 (AMZ) (T. 3: 7)

Lokalitet: Sisak

Dimenzije: dužina: 3,4 cm; širina luka: 0,95 cm; težina: 5,07 g

Blato – 3 fibulae: Dizdar 1999: 120, cat.no. 181, Dizdar 2003: 343, and one unpublished item found in the excavation conducted in 2010<sup>9</sup>

6. Orolik, Gradina – 1 fibula: Dizdar 2001: 118, Pl. 7: 6

7. Sotin – 9 fibulae: Majnarić-Pandžić 1970: 38, Pl. XXXVI-II: 3–3a, 4; Ilkić 1999: 40, 79, Pl. XXIII: 1–2, 4–5 and three unpublished items

8. Vručak – 2 fibulae: Ilkić 1999: 40–41, 80, Pl. XXIII: 8–9

9. Sremska Mitrovica – 1 unpublished fibula

10. Gomolava – 7 fibulae: Dautova-Ruševljan 1987: 59, 61, Pl. 45: 4; Pl. 46: 1–2, 4–6, 13

11. Novi Banovci – 3 unpublished fibulae

12. Zemun, obala Dunava – 3 fibulae: Todorović 1968: 153–154, Pl. LIII: 20, Pl. LIV: 2; Todorović 1971: 145, no. 597, Pl. LXVI: 10

13. Beograd, surrounding / unknown site – 3 fibulae: Todorović 1968: 148, Pl. XXV: 9; Todorović 1971: 145, no. 598, Pl. LXVI; Bojović 1983: 19, Pl. I: 4

14. Rečica, Požarevac – 1 fibula: Todorović 1968: 140, Pl. VI: 4<sup>10</sup>

15. unknown site – The Museum of Krajina in Negotin – 1 fibula: Bojović 1983: 19

16. Donja Dolina – 1 fibula: Busuladžić 2010: 131, no. 15

17. Čurug – Stari vinograd – 1 fibula: Trifunović, Pašić 2003: 268, Fig. 6: 6

18. Roman fort *Diana* near Kladovo 1 fibula: Petković 2010: cat.no. 51, Pl. II: 6

#### CATALOGUE OF OBJECTS:

1. A-3257 (AMZ) (Pl. 3: 5)

Location: Sisak

Dimensions: length: 7.8 cm; height: 3 cm; width of the bow: 0.9 cm; weight: 8.48 g

Material: copper and tin alloy

Type: IIa1

Description: The bow of the fibula has a central rib decorated on one side with a row of notches. The foot and the bow are separated by a ring with three horizontal ribs. The rectangular foot with a perforation ends with a raised oval button.

Bibliography: Košćević 1980: 45, cat.no. 3

2. A-3257 (AMZ) (Pl. 3: 7)

Location: Sisak

Dimensions: length: 3.4 cm; width of the bow: 0.95 cm; weight: 5.07 g

Material: copper and tin alloy

Type: IIa2

<sup>9</sup> Usmeno priopćenje M. Dizdara *Kasnatensko naselje Blato u Vinkovcima – centar razmjene i trgovine* u sklopu okruglog stola pod nazivom *Mlade željezno doba između Drave i sjevernog Jadrana* održanog na Institutu za arheologiju u Zagrebu, 20. veljače 2013. godine.

<sup>10</sup> U opisu ove fibule Todorović navodi kako ima luk polukružnoga presjeka ukrašen kombinacijom paralelnih i cik-cak linija (Todorović 1968: 140, T. VI: 4). S druge strane, Petković opisuje luk ukrašen uzdužnim žljebovima između kojih su utisnute cik-cak linije (Petković 2010, 39, kat. br. 51). U svakom slučaju, ovi elementi su nekarakteriistični za fibule tipa Jezerine, a iz objavljene fotografije nije moguće provjeriti gore navedne opise.

<sup>9</sup> M. Dizdar's presentation *Kasnatensko naselje Blato u Vinkovcima – centar razmjene i trgovine* held at the round table *Mlade željezno doba između Drave i sjevernog Jadrana*, Institute of Archaeology, Zagreb February 20, 2013.

<sup>10</sup> In the description of the fibula J. Todorović (Todorović 1968: 140, Pl. VI: 4) states that it has a bow with a semicircular cross-section decorated with a combination of straight, parallel lines and zigzag lines. On the other hand, S. Petković mentions the bow decorated with grooves and impressed zigzag lines between them (Petković 2010, 39, cat.no. 51). In any case, these elements are untypical for Jezerine-type fibulae. Unfortunately, it is not possible to check the above-mentioned descriptions from the published photograph.

Materijal: slitina bakra i kositra

Tip: IIa2

Opis: Oštećena fibula sa spiralom od koje su sačuvana dva navoja, i lukom ukrašenim glatkim središnjim rebrom smještenim s donje strane luka. Rubovi luka su zadebljani. Noga i igla nedostaju.

Literatura: Košćević 1980: 45, kat. br. 4

3. A-3524 (AMZ) (T. 3: 6)

Lokalitet: Sisak

Dimenzije: dužina: 4,8 cm; širina luka: 0,9 cm; težina: 3,72 g

Materijal: slitina bakra i kositra s manjim udjelom cinka

Tip: II c2

Opis: Ulomak fibule od koje je sačuvana spirala i dio luka krovastog presjeka ukrašenog dvama glatkim, uzdužno postavljenim rebrima smještenima s donje strane luka. Rubovi luka su zadebljani. Dio luka i noga nedostaju.

Literatura: Košćević 1980: 45, kat. br. 5

4. A-3529 (AMZ) (sl. 1: 1)

Lokalitet: Sisak

Dimenzije: dužina: 5,05 cm; širina luka: 0,9 cm; visina: 2,1 cm; težina: 4,37 g

Materijal: slitina bakra i kositra

Tip: IIc1

Opis: Fibula s lukom krovastog presjeka ukrašenim dvama uzdužno postavljenim i narebrenim rebrima. Prsten ima jedno poprečno rebro. Noga je oštećena.

Literatura: Košćević 1980: 45, kat. br. 1, T. I: 1

5. A-3520 (AMZ) (sl. 1: 2)

Lokalitet: Sisak

Dimenzije: dužina: 7,8 cm; visina: 3 cm

Tip: IIc2

Opis: Fibula s lukom krovastog presjeka ukrašenim dvama uzdužno postavljenim, glatkim rebrima. Pravokutna noga s perforacijom završava oštećenim dugmetom ovalnog oblika.

Literatura: Košćević 1980: 45, kat. br. 3, T. I: 3

6. P-5823 (AMZ) (sl. 3: 5)

Lokalitet: Mali Bilač

Dimenzije: dužina: 5,5 cm; visina: 2,3 cm; širina luka: 1,1 cm; težina: 9,89 g

Materijal: slitina bakra i kositra

Tip: IIc1

Opis: Fibula s lukom krovastog presjeka ukrašenim dvama uzdužno postavljenim i narebrenim rebrima. Luk direktno, bez spirale, prelazi u iglu. Na prijelazu luka u nogu nalazi se prsten s tri poprečna rebra. Pravokutna noga završava uspravnim izbočenjem.

Literatura: Dizdar, Potrebica 2002: 117: T. 7: 5

7. A-804 (GMV) (T. 2: 10)

Lokalitet: Vinkovci – Dirov Brijeg

Dimenzije: dužina: 6,4 cm; visina: 2,4 cm; širina luka: 0,95 cm; težina: 11,84 g

Description: Part of a fibula with a damaged spring with two coils. A smooth central rib is located on the lower side of the bow. The foot and the needle are missing.

Bibliography: Košćević 1980: 45, cat.no. 4

3. A-3254 (AMZ) (Pl. 3: 6)

Location: Sisak

Dimensions: length: 4.8 cm; width of the bow: 0.9 cm; weight: 3.72 g

Material: copper and tin alloy with a smaller share of zinc  
Type: II c2

Description: Part of a fibula with the spring and a portion of the bow with a roof-shaped cross-section decorated with two smooth, lateral ribs placed on the lower side. A part of the bow and the foot are missing.

Bibliography: Košćević 1980: 45, cat.no. 5

4. A-3259 (AMZ) (Fig. 1: 1)

Location: Sisak

Dimensions: length: 5.05 cm; height: 0.9 cm; width of the bow: 2.1 cm; weight: 4.37 g

Material: copper and tin alloy

Type: IIc1

Description: A bow of a fibula with a roof-shaped cross-section decorated with two smooth, lateral ribs. The foot and the bow are separated by a ring with one horizontal rib. The foot is damaged.

Bibliography: Košćević 1980: 45, cat.no. 1, Pl. I: 1

5. A-3520 (AMZ) (Fig. 1: 2)

Location: Sisak

Dimensions: length: 7.8 cm; height: 3 cm

Type: IIc2

Description: A bow of a fibula with roof-shaped cross-section decorated with two smooth, lateral ribs. The rectangular foot with a perforation ends with a raised, slightly damaged, oval button.

Bibliography: Košćević 1980: 45, cat.no. 3, Pl. I: 3

6. P-5823 (AMZ) (Fig. 3: 5)

Location: Mali Bilač

Dimensions: length: 5.5 cm; height: 2.3 cm; width of the bow: 1.1 cm; weight: 9.89 g

Material: copper and tin alloy

Type: IIc1

Description: A bow of a fibula with a roof-shaped cross-section decorated with two ribbed, lateral ribs. The foot and the bow are separated by a ring with three horizontal ribs. The rectangular foot with a perforation ends with a raised protrusion.

Bibliography: Dizdar, Potrebica 2002: 117: Pl. 7: 5

7. A-804 (GMV) (Pl. 2: 10)

Location: Vinkovci – Dirov Brijeg

Dimension: length: 6.4 cm; height: 2.4 cm; width of the bow: 0.95 cm; weight: 11.84 g

Material: copper and tin alloy with smaller share of zinc

Type: IIc2



Materijal: slitina bakra i kositra s manjim udjelom cinka  
Tip: Ilc2

Opis: Fibula s lukom krovastog presjeka ukrašenim dvama uzdužno postavljenim, glatkim rebri. Na prijelazu luka u nogu nalazi se prsten s tri poprečna rebra. Pravokutna noga ima kružnu perforaciju i završava manjim uspravnim izbočenjem. Vrh igle nedostaje.

Literatura: Dizdar 1999: 116, kat. jed. 163

8. A-3282 (GMV) (T. 3: 1)

Lokalitet: Vinkovci – Blato

Dimenzije: dužina: 7,2 cm; visina: 2,2 cm; širina luka: 1,1 cm; težina: 8,91 g

Materijal: slitina bakra i kositra

Tip: Ilc1

Opis: Fibula s lukom krovastog presjeka ukrašenim dvama uzdužno postavljenim i narebrenim rebri. Na prijelazu luka u nogu nalazi se prsten s tri poprečna rebra. Pravokutna noga ima kružnu perforaciju i završava manjim uspravnim izbočenjem.

Literatura: Dizdar 1999: 120, kat. br. 181

9. A-4543 (GMV) (sl. 3: 6)

Lokalitet: Vinkovci – Blato

Dimenzije: dužina: 3,5 cm; širina luka: 0,9 cm; težina: 1,46 g

Materijal: slitina bakra i cinka

Tip: Ila2

Opis: Fibula s lukom ukrašenim jednim glatkim rebrom. Noga i igla nedostaju.

Literatura: Dizdar 2003: 344, T. I: 11

10. A-3774 (GMV) (T. 3: 2)

Lokalitet: Orolik – Gradina

Dimenzije: dužina: 7,9 cm; visina: 2,4 cm; širina luka: 0,95 cm; težina: 8,35 g

Materijal: slitina bakra i kositra

Tip: Ilc1

Opis: Fibula s oštećenom spiralom od koje su sačuvana dva navoja, i lukom krovastog presjeka ukrašenim dvama uzdužno postavljenim i narebrenim rebri. Na prijelazu luka u nogu nalazi se prsten sa tri poprečna rebra. Pravokutna noga s perforacijom završava uspravnim izbočenjem. Igla nedostaje.

Literatura: Dizdar 2001: 118, T. 7: 6

11. P-20913 (AMZ) (T. 1: 1)

Lokalitet: Dalj

Dimenzije: dužina: 7,2 cm; visina: 2,4 cm; širina luka: 1,4 cm; težina: 9,81 g

Materijal: slitina bakra i cinka s manjim udjelom kositra

Tip: Ilc1

Opis: Fibula s oštećenom spiralom od koje su sačuvana dva navoja, i lukom krovastog presjeka ukrašenim dvama uzdužno postavljenim i narebrenim rebri. Pravokutna noga s kružnom perforacijom je oštećena. Igla nedostaje.

Literatura: neobjavljeno

Description: A bow of a fibula with roof-shaped cross-section decorated with two smooth, lateral ribs. The foot and the bow are separated by a ring with three horizontal ribs. The rectangular foot with a perforation ends with a raised protrusion. A part of the needle is missing.  
Bibliography: Dizdar 1999: 116, cat.no. 163

8. A-3282 (GMV) (Pl. 3:1)

Location: Vinkovci – Blato

Dimensions: length: 7.2 cm; height: 2.2 cm; width of the bow: 1.1 cm; weight: 8.91 g

Material: copper and tin alloy

Type: Ilc1

Description: A bow of a fibula with a roof-shaped cross-section decorated with two ribbed, lateral ribs. The foot and the bow are separated by a ring with three horizontal ribs. The rectangular foot with a perforation ends with a raised protrusion.

Bibliography: Dizdar 1999: 120, cat.no. 181

9. A-3282 (GMV) (Fig. 3: 6)

Location: Vinkovci – Blato

Dimensions: length: 3.5 cm; width of the bow: 0.9 cm; weight: 1.46 g.

Material: copper and zinc alloy

Type: Ila2

Description: A bow of a fibula with a smooth central rib. The foot and the needle are missing.

Bibliography: Dizdar 2003: 344, Pl. I: 11

10. A-3774 (GMV) (Pl. 3: 2)

Location: Orolik – Gradina

Dimensions: length: 7.9 cm; height: 2.4 cm; width of the bow: 0.95 cm; weight: 8.35 g

Material: copper and tin alloy

Type: Ilc1

Description: Fibula with a damaged spring with three preserved coils. A bow of a roof-shaped cross-section is decorated with two ribbed, lateral ribs. The foot and the bow are separated by a ring with three horizontal ribs. The rectangular foot with a perforation ends with a raised protrusion. The needle is missing.

Bibliography: Dizdar 2001: 118, Pl. 7: 6

11. P-20913 (AMZ) (Pl. 1: 1)

Location: Dalj

Dimensions: length: 7.2 cm; height: 2.4 cm; width of the bow: 1.4 cm; weight: 9.81 g

Material: copper and zinc alloy with smaller share of tin

Type: Ilc1

Description: A bow of a fibula with roof-shaped cross-section decorated with two ribbed, lateral ribs. The damaged spring has two coils. The rectangular foot with a perforation is damaged. The needle is missing.

Bibliography: unpublished

12. P-20914 (AMZ) (Pl. 1: 2)

Location: Dalj

## 12. P-20914 (AMZ) (T. 1: 2)

Lokalitet: Dalj

Dimenzije: dužina: 4,6 cm; visina: 2,3 cm; širina luka: 1 cm; težina: 5,90 g

Materijal: slitina bakra i kositra s manjim udjelom cinka  
Tip: Ilc2

Opis: Dio fibule od koje su sačuvana spirala i veći dio luka krovastog presjeka ukrašenog dvama uzdužno postavljenim, glatkim rebrima.

Literatura: neobjavljeno

## 13. P-7296 (AMZ) (T. 1: 3)

Lokalitet: Dalj

Dimenzije: dužina: 7,6 cm; visina: 3,2 cm; širina luka: 1,2 cm; težina: 16,78 g

Materijal: slitina bakra i cinka

Tip: Ilc1

Opis: Fibula s lukom krovastog presjeka ukrašenim dvama uzdužno postavljenim i narebrenim rebrima. Nedostaje prsten na prijelazu luka u nogu. Pravokutna noga s perforacijom završava uspravnim, četvrtastim dugmetom.

Literatura: Majnarić-Pandžić 1970: 79, T. IV: 9

## 14. P-4670 (AMZ) (T. 1: 4)

Lokalitet: Dalj

Dimenzije: dužina: 3,9 cm; visina: 2,2 cm; širina luka: 1 cm; težina: 2,13 g

Materijal: slitina bakra i kositra

Tip: Ila2

Opis: Dio fibule od koje su sačuvana pravokutna noga koja završava uspravnim izbočenjem, te dio luka koji je ukrašen jednim glatkim rebrom smještenim s donje strane luka, dok se na gornjoj strani nalazi urezan cik-cak motiv. Na prijelazu luka u nogu s gornje su strane urezane četiri poprečne crte koje imitiraju prsten. Dio luka, spirala i igla nedostaju.

Literatura: neobjavljeno

## 15. P-5136 (AMZ) (T. 3: 4)

Lokalitet: Vukovar

Dimenzije: dužina: 7,3 cm; visina: 2,4 cm; širina luka: 1,1 cm; težina: 12,17 g

Materijal: slitina bakra i cinka

Tip: Ilc2

Opis: Luk fibule krovastog presjeka ukrašen je dvama uzdužnim, glatkim rebrima postavljenima s donje strane. Na prijelazu luka u nogu nalazi se prsten s jednim poprečnim rebrom. Pravokutna noga s kružnom perforacijom završava uspravno postavljenim, ovalnim dugmetom.

Literatura: Majnarić-Pandžić 1970: 100, T. LI: 9

## 16. P-2867 (AMZ) (T. 1: 5)

Lokalitet: Sotin

Dimenzije: dužina: 7 cm; visina: 1,8 cm; širina luka: 1,2 cm; težina: 8,73 g

Materijal: slitina bakra i kositra

Dimensions: length: 4.6 cm; height: 2.3 cm; width of the bow: 1 cm; weight: 5.90 g

Material: copper and tin alloy with a smaller share of zinc  
Type: Ilc2

Description: Part of a fibula with a spring and a bow with a roof-shaped cross-section decorated with two ribbed, lateral ribs. The foot and the needle are missing.

Bibliography: unpublished

## 13. P-7296 (AMZ) (Pl. 1: 3)

Location: Dalj

Dimensions: length: 7.6 cm; height: 3.2 cm; width of the bow: 1.2 cm; weight: 16.78 g

Material: copper and zinc alloy

Type: Ilc1

Description: A bow of a fibula with a roof-shaped cross-section decorated with two ribbed, lateral ribs. The rectangular foot with a perforation ends with a raised protrusion. The ring is missing.

Bibliography: Majnarić-Pandžić 1970: 79, Pl. IV: 9

## 14. P-4670 (AMZ) (Pl. 1: 4)

Location: Dalj

Dimensions: length: 3.9 cm; height: 2.2 cm; width of the bow: 1 cm; weight: 2.13 g.

Material: copper and tin alloy

Type: Ila2

Description: Part of a fibula with a smooth rib placed on the lower part of the bow. There is an incised zigzag ornament on the upper part of the bow. Four parallel, horizontal lines are incised, imitating the ring, on the transition between the bow and the foot. The rectangular foot ends with a vertical protrusion.

Bibliography: unpublished

## 15. P-5136 (AMZ) (Pl. 3: 4)

Location: Vukovar

Dimensions: length: 7.3 cm; height: 2.4 cm; width of the bow: 1.1 cm; weight: 12.17 g

Material: copper and zinc alloy

type: Ilc2

Description: A bow of a fibula with a roof-shaped cross-section decorated with two smooth, lateral ribs placed on the lower side of the bow. The foot and the bow are separated by a ring with three horizontal ribs. The rectangular foot with a perforation ends with a raised, oval button.

Bibliography: Majnarić-Pandžić 1970: 100, Pl. LI: 9

## 16. P-2867 (AMZ) (Pl. 1: 5)

Location: Sotin

Dimensions: length: 7 cm; height: 1.8 cm; width of the bow: 1.2 cm; weight: 8.73 g

Material: copper and tin alloy

Type: Ilc1

Description: A bow of a fibula with a roof-shaped cross-section decorated with two ribbed, lateral ribs. The foot and the bow are separated by a ring with three horizon-

Tip: Ilc1

Opis: Fibula s lukom krovastog presjeka ukrašenim dvama uzdužno postavljenim i narebrenim rebrima. Na prijelazu luka u nogu nalazi se prsten s tri poprečna rebra. Noga je oštećena, a igla nedostaje.

Literatura: Majnarić-Pandžić 1970: 94, T. XXXVII: 4–4a

17. F-01 (M. I.) (T. 1: 6)

Lokalitet: Sotin

Dimenzije: dužina: 5 cm; visina: 1,8 cm; širina luka: 1 cm; težina: 5,46 g

Materijal: slitina bakra i cinka

Tip: Ilc2

Opis: Fibula s lukom krovastog presjeka ukrašenim dvama uzdužno postavljenim, glatkim rebrima. Iz spirale izlazi žica okruglog presjeka. Na prijelazu luka u nogu nalazi se prsten s tri poprečna rebra. Noga i vrh igle nedostaju.

Literatura: Ilkić 1999: 40, 79, T. XXIII: 2; Ilkić 2011: 227, T. IV: 4

18. F-02 (M. I.) (T. 2: 2)

Lokalitet: Sotin

Dimenzije: dužina: 2,6 cm; širina luka: 1,1 cm; težina: 1,99 g

Materijal: slitina bakra i kositra s većim udjelom cinka

Tip: Ilc2

Opis: Ulomak luka fibule koji je po sredini ukrašen glatkim rebrom. Rubovi luka su zadebljani.

Literatura: neobjavljeno

19. F-03 (M. I.) (T. 2: 4)

Lokalitet: Sotin

Dimenzije: dužina: 6 cm; visina: 1,9 cm; širina luka: 1,1 cm; težina: 9,50 g

Materijal: slitina bakra i cinka

Tip: Ilc1

Opis: Fibula s oštećenom spiralom od koje su sačuvana tri navoja. Prelomljeni luk krovastog presjeka ukrašen je dvama uzdužno postavljenim i narebrenim rebrima. Na prijelazu luka u nogu nalazi se prsten s tri poprečna rebra. Noga i vrh igle nedostaju.

Literatura: Ilkić 1999: 40, 79, T. XXIII: 5

20. F-04 (M. I.) (T. 2: 3)

Lokalitet: Sotin

Dimenzije: dužina: 3,2 cm; širina luka: 1,2 cm; težina: 3,28 g

Materijal: slitina bakra i cinka

Tip: Ilc2

Opis: Ulomak luka fibule krovastog presjeka ukrašenog dvama uzdužno postavljenim, glatkim rebrima. Na prijelazu luka u nogu nalazi se prsten s tri poprečna rebra.

Literatura: Ilkić 1999: 40, 79, T. XXIII: 4

21. F-05 (M. I.) (T. 2: 6)

Lokalitet: Sotin

Dimenzije: dužina: 3,1 cm; širina luka: 1 cm; težina: 1,53 g

tal ribs. A part of the foot and the needle are missing.

Bibliography: Majnarić-Pandžić 1970: 94, Pl. XXXVII: 4–4a

17. F-01 (M. I.) (Pl. 1: 6)

Location: Sotin

Dimensions: length: 5 cm; height: 1.8 cm; width of the bow: 1 cm; weight: 5.46 g

Material: copper and zinc alloy

Type: Ilc2

Description: A bow of a fibula with a roof-shaped cross-section decorated with two smooth, lateral ribs. A piece of wire is coming out of the spring. The foot and the bow are separated by a ring with three horizontal ribs. The foot and the needle are missing.

Bibliography: Ilkić 1999: 40, 79, Pl. XXIII: 2; Ilkić 2011: 227, Pl. IV: 4

18. F-01 (M. I.) (Pl. 2: 2)

Location: Sotin

Dimensions: length: 2.6 cm; width of the bow: 1 cm; weight: 1.99 g

Material: copper and tin alloy with a higher share of zinc

Type: Ilc2

Description: Part of a bow with a smooth central rib. The edges of the bow are thickened.

Bibliography: unpublished

19. F-03 (M. I.) (Pl. 2: 4)

Location: Sotin

Dimensions: length: 6 cm; height: 1.9 cm; width of the bow: 1.1 cm; weight: 9.50 g

Material: copper and zinc alloy

Type: Ilc1

Description: Fibula with a damaged spring with three coils. The broken bow of a roof-shaped cross-section is decorated with two ribbed, lateral ribs. The foot and the bow are separated by a ring with three horizontal ribs. The foot and the tip of the needle are missing.

Bibliography: Ilkić 1999: 40, 79, Pl. XXIII: 5

20. F-04 (M. I.) (Pl. 2: 3)

Location: Sotin

Dimensions: length: 3.2 cm; width of the bow: 1.2 cm; weight: 3.28 g

Material: copper and zinc alloy

Type: Ilc2

Description: Part of a bow with a roof-shaped cross-section decorated with two smooth, lateral ribs. The foot and the bow are separated by a ring with three horizontal ribs.

Bibliography: Ilkić 1999: 40, 79, Pl. XXIII: 4

21. F-05 (M. I.) (Pl. 2: 6)

Location: Sotin

Dimensions: length: 3.1 cm; width of the bow: 1 cm; weight: 1.53 g

Material: copper and tin alloy

Type: Ilc1

Materijal: slitina bakra i kositra

Tip: Ilc1

Opis: Ulomak luka fibule krovastog presjeka ukrašenog dvama uzdužno postavljenim narebrenim rebrima.

Literatura: neobjavljeno

22. F-06 (M. I.) (T. 2: 1)

Lokalitet: Sotin

Dimenzije: dužina: 3,1 cm; širina luka: 0,8 cm; težina: 1,79 g

Materijal: slitina bakra i cinka

Tip: Ilc1

Opis: Fibula s lukom ukrašenim trima rebrima od kojih su ona lateralna narebrena. Noga i vrh igle nedostaju.

Literatura: Ilkić 1999: 40, 79, T. XXIII: 1

23. F-07 (M. I.) (T. 2: 5)

Lokalitet: Sotin

Dimenzije: dužina: 1,75 cm; širina luka: 1 cm; težina: 2,46 g

Materijal: slitina bakra i kositra

Tip: Ilc2

Opis: Dio fibule s oštećenom spiralom od koje su sačuvana dva navoja, i manjim dijelom luka koji ima središnje glatko rebro.

Literatura: neobjavljeno

24. F-08 (M. I.) (sl. 2: 7)

Lokalitet: Sotin – Vručak

Dimenzije: dužina: 3,7 cm; visina: 1,2 cm; širina luka: 0,55 cm; težina: 2,18 g

Materijal: slitina bakra i kositra

Tip: ?

Opis: Fibula s trakasto raskovanim lukom koji je ukrašen nizom urezanih, paralelno postavljenih, ravnih crta. Spirala se sastoji od četiri navoja povezana tetivom s unutrašnje strane. Mala pravokutna noga završava vertikalnim izbočenjem. Iglu je savijena. Literatura: Ilkić 1999: 40–41, 80, T. XXIII: 9

25. F-09 (M. I.) (sl. 2: 8)

Lokalitet: Sotin – Vručak

Dimenzije: dužina: 3,75 cm; visina: 1,2 cm; širina luka: 0,8 cm; težina: 1,94 g

Materijal: slitina bakra i kositra

Tip: ?

Opis: Fibula s trakasto raskovanim lukom koji je ukrašen nizom urezanih, paralelno postavljenih, ravnih crta. Od oštećene spirale sačuvana su tri navoja povezana tetivom s unutrašnje strane. Mala noga je pravokutnog oblika. Iglu nedostaje.

Literatura: Ilkić 1999: 40–41, 80, T. XXIII: 8

26. P-20911 (AMZ) (T. 3: 3)

Lokalitet: Sremska Mitrovica

Dimenzije: dužina: 5,3 cm; visina: 1,8 cm; širina luka: 0,95 cm; težina: 4,72 g

Materijal: slitina bakra i cinka

Description: Part of a bow with a roof-shaped cross-section decorated with two ribbed, lateral ribs

Bibliography: unpublished

22. F-06 (M. I.) (Pl. 2: 1)

Location: Sotin

Dimensions: length: 3.1 cm; width of the bow: 0.8 cm; weight: 1.79 g

Material: copper and zinc alloy

Type: Ilc1

Description: A bow of a fibula with a roof-shaped cross-section decorated with two ribbed, lateral ribs. The foot and the needle are missing.

Bibliography: Ilkić 1999: 40, 79, Pl. XXIII: 1

23. F-07 (M. I.) (Pl. 2: 5)

Location: Sotin

Dimensions: length: 1.75 cm; width of the bow: 1 cm; weight: 2.46 g

Material: copper and tin alloy

Type: Ilc2

Description: Part of a fibula with a damaged spring which has two coils. The bow of a roof-shaped cross-section is decorated with two smooth, lateral ribs. A larger part of the bow, the foot and the needle are missing.

Bibliography: unpublished

24. F-08 (M. I.) (Fig. 2: 7)

Location: Sotin – Vručak

Dimensions: length: 3.7 cm; height: 1.2 cm; width of the bow: 0.55 cm; weight: 2.18 g

Material: copper and tin

Type: ?

Description: A fibula with a hammered bow of a strap cross-section, decorated with a row of incised parallel lines. The spring consists of four coils connected with the chord from the inner side. The small rectangular foot ends with vertical protrusion. The pin is bent.

Bibliography: Ilkić 1999: 40–41, 80, Pl. XXIII: 9

25. F-09 (M. I.) (Fig. 2: 8)

Location: Sotin – Vručak

Dimensions: length: 3.75 cm; height: 1.2 cm; width of the bow: 0.8 cm; weight: 1.94 g

Material: copper and tin

Type: ?

Description: A fibula with a hammered bow of a strap cross-section, decorated with a row of incised parallel lines. The damaged spring consists of three coils connected with the chord from the inner side. The small foot has a rectangular shape. The pin is missing.

Bibliography: Ilkić 1999: 40–41, 80, Pl. XXIII: 8

26. P-20911 (AMZ) (Pl. 3: 3)

Location: Sremska Mitrovica

Dimensions: length: 5.3 cm; height: 1.8 cm; width of the bow: 0.95 cm; weight: 4.72 g

Material: copper and zinc alloy

## Tip: IIc1

Opis: Fibula s lukom krovastog presjeka ukrašenim dvama narebrenim i uzdužno postavljenim rebrima. Na prijelazu luka u nogu nalazi se prsten s tri poprečna rebra. Pravokutna noga s kružnom perforacijom završava uspravnim izbočenjem. Igla nedostaje.

Literatura: neobjavljeno

27. P-20664 (AMZ) (T. 2: 8)

Lokalitet: Novi Banovci

Dimenzije: dužina: 9 cm; visina: 2,5 cm; širina luka: 1,2 cm; težina: 18,78 g

Materijal: slitina bakra i kositra

Tip: ?

Opis: Fibula s lukom ukrašenim dvama, uzdužno postavljenim žljebovima. Na prijelazu luka u nogu nalazi se prsten s tri poprečna rebra. Pravokutna noga završava uspravnim izbočenjem.

Literatura: neobjavljeno

28. P-20665 (AMZ) (T. 2: 7)

Lokalitet: Novi Banovci

Dimenzije: dužina: 3,2 cm; širina luka: 1,2 cm; težina: 6,70 g

Materijal: slitina bakra i cinka

Tip: IIc1

Opis: Ulomak fibule od koje je sačuvana spirala i dio luka krovastog presjeka ukrašenog dvama narebrenim i uzdužno postavljenim rebrima. Dio luka, noga i vrh igle nedostaju.

Literatura: neobjavljeno

29. P-20666 (AMZ) (T. 2: 9)

Lokalitet: Novi Banovci

Dimenzije: dužina: 3,35 cm; širina luka: 1,2 cm; težina: 6,15 g

Materijal: slitina bakra i cinka

Tip: IIc1

Opis: Dio fibule sa spiralom od koje su sačuvana tri navoja, i manjim dijelom luka krovastog presjeka ukrašenog dvama narebrenim, uzdužno postavljenim rebrima.

Literatura: neobjavljeno

AMZ – Arheološki muzej u Zagrebu

GMV – Gradski muzej Vinkovci

M. I. – Zbirka Mate Ilkića (Brojevi od F-01 do F-09 korišteni su samo u ovome radu i ne predstavljaju inventarne brojeve nalaza unutar ove zbirke)

## Type: IIc1

Description: A bow of a fibula with a roof-shaped cross-section decorated with two ribbed, lateral ribs. The foot and the bow are separated by a ring with three horizontal ribs. The foot with a perforation ends with a raised protrusion. The needle is missing.

Bibliography: unpublished

27. P-20664 (AMZ) (Pl. 2: 8)

Location: Novi Banovci

Dimensions: length: 9 cm; height: 2.5 cm; width of the bow: 1.2 cm; weight: 18.78 g

Material: copper and tin alloy

Type: ?

Description: A fibula with a bow decorated with two lateral grooves. The foot and the bow are separated by a ring with three horizontal ribs. The small rectangular foot ends with a raised protrusion.

Bibliography: unpublished

28. P-20665 (AMZ) (Pl. 2: 7)

Location: Novi Banovci

Dimensions: length: 3.2 cm; width of the bow: 1.2 cm; weight: 6.70 g

Material: copper and zinc alloy

Type: IIc1

Description: A damaged fibula with a spring and a bow with a roof-shaped cross-section decorated with two ribbed, lateral ribs. A part of the bow, the foot and the tip of the needle are missing.

Bibliography: unpublished

29. P-20666 (AMZ) (Pl. 2: 9)

Location: Novi Banovci

Dimensions: length: 3.35 cm; width of the bow: 1.2 cm; weight: 6.15 g

material: copper and zinc alloy

Type: IIc1

Description: The bow of the fibula with a roof-shaped cross-section is decorated with ribbed lateral ribs. A damaged spring has three preserved coils. A part of the bow, the foot and the needle are missing.

Bibliography: unpublished

AMZ – Archaeological Museum in Zagreb collection

GMV – Vinkovci City Museum collection

M. I. – Private collection of Mato Ilkić (The numbers from F-01 to F-09 were used only in this paper and are not inventory numbers within this collection)

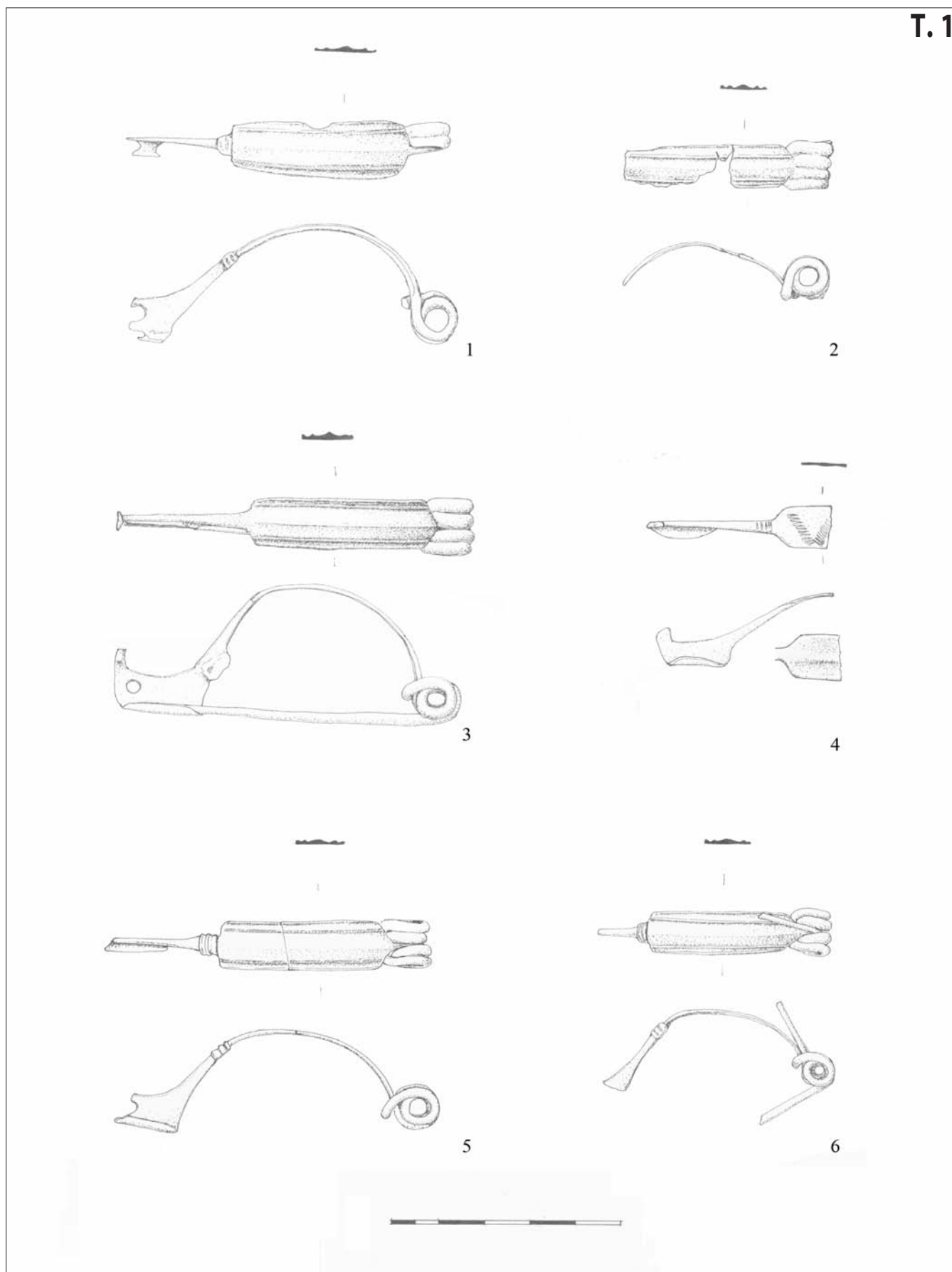
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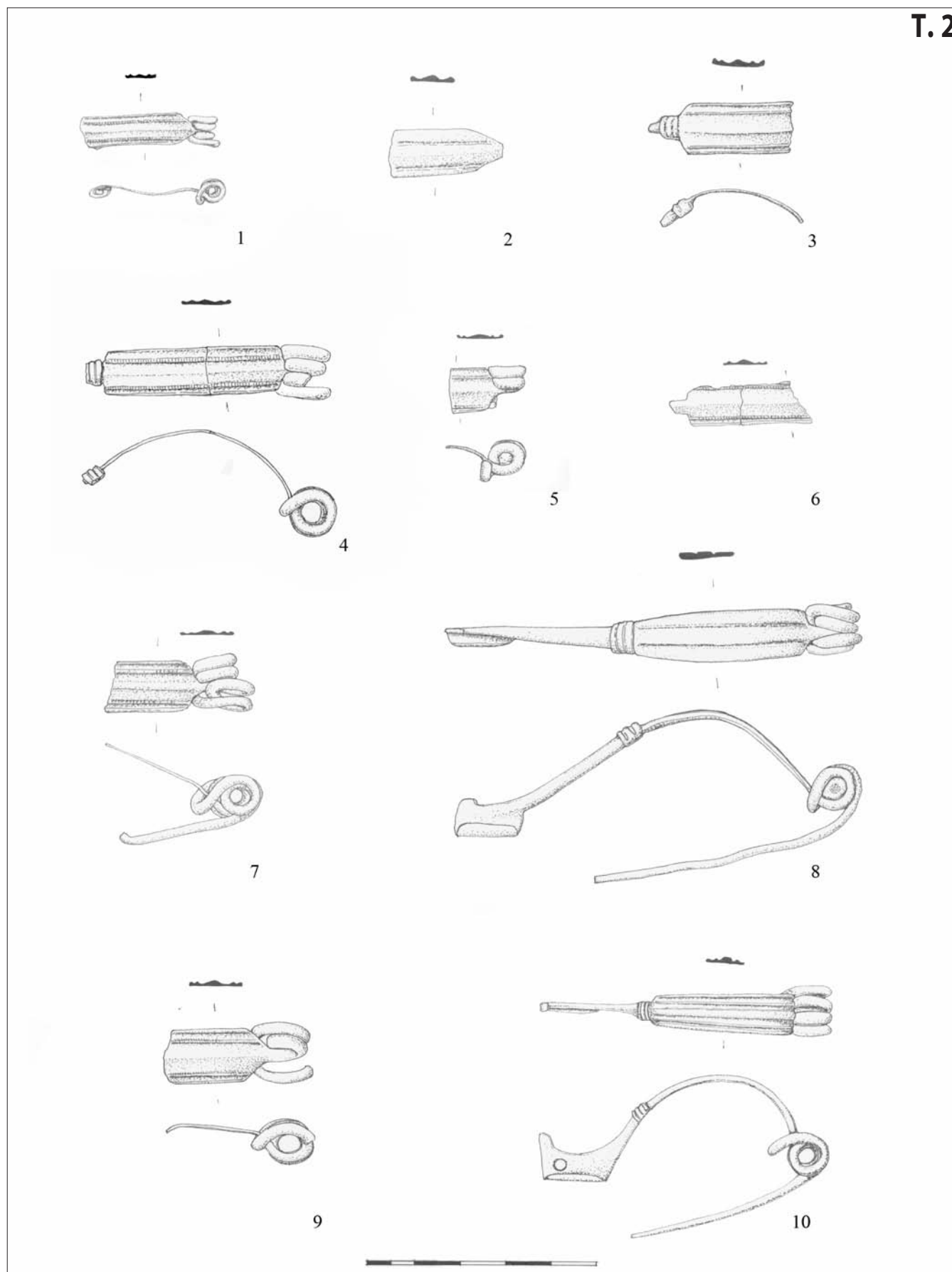
T. 1



T. 1: 1-4: Dalj; 5-6: Sotin, M 1:1

Pl. 1 1-4: Dalj; 5-6: Sotin, M 1:1

T. 2

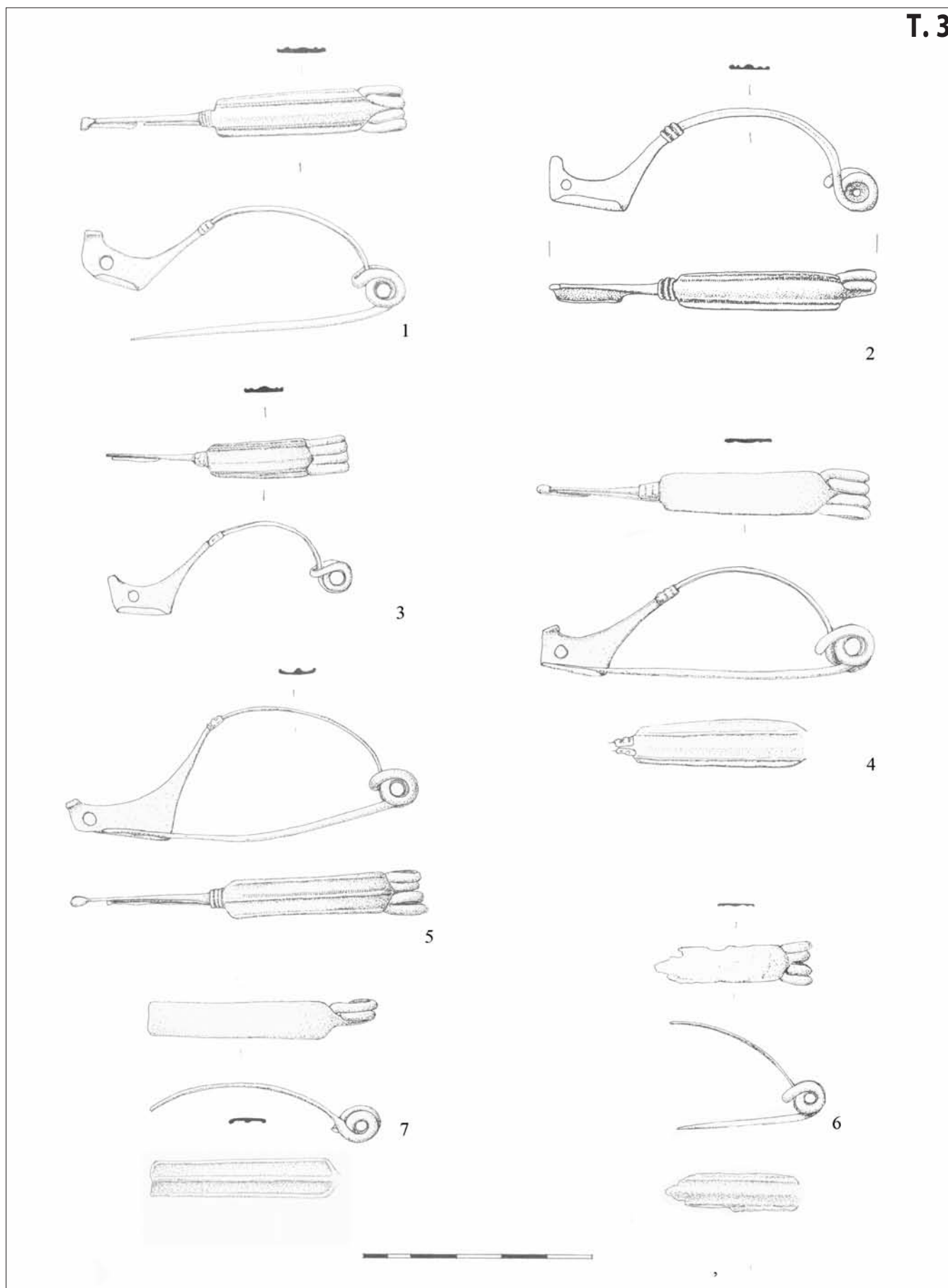


T. 2: 1–6: Sotin; 7–9: Novi Banovci; 10: Vinkovci- Divov brijeg, M 1:1

Pl. 2: 1–6: Sotin; 7–9: Novi Banovci; 10: Vinkovci- Divov brijeg, M 1:1



T. 3



T. 3: 1: Vinkovci - Blato; 72: Orolik; 3: Sremska Mitrovica; 4: Vukovar; 5-7: Sisak, M 1:1

Pl. 3: 1: Vinkovci - Blato; 72: Orolik; 3: Sremska Mitrovica; 4: Vukovar; 5-7: Sisak, M 1:1