# Đakovo-Franjevac: kasno bakrenodobno naselje

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Balen

# ĐAKOVO FRANJEVAC

## KASNO BAKRENODOBNO NASELJE
## LATE ENEOLITIC SETTLEMENT

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*Jacqueline Balen*

# *Đakovo – Franjevac • kasno bakrenodobno naselje*

## *Đakovo – Franjevac • Late Eneolithic Settlement*

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*Maja Bunčić • Ivor Janković, Petra Rajić Šikanjić • Zdravka Hincak, Damir Mihelić • Ben Stern • Kelly Reed • Milko Jakšić • Hrvoje Posilović*

*Arheološki muzej u Zagrebu, 2011.*

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Svezak VII

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# ĐAKOVO FRANJEVAC

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*Arheološki muzej u Zagrebu, 2011.*

# Sadržaj / Contents

# PREDGOVOR

Pokretnjem prvog sveska u seriji s naslovom Katalozi i monografije Arheološkog muzeja u Zagrebu (*Musei Archaeologici Zagrabiensis Catalogi et Monographiae*), tiskanog 2004. god., zagrebački Arheološki muzej dugogodišnju je bogatu izdavačku djelatnost proširio i, na neki način, sadržajno obogatio. Čini se, također, da je ta inicijativa bila poticajna još nekim srodnim ustanovama da ubrzo krenu sličnim putem. Planirajući prvi svezak u novoj seriji muzejskih izdanja nije, dakako, bilo moguće predvidjeti budućnost novopokrenute serije, poglavito u odnosu na planirani godišnji ritam objavljivanja svezaka tijekom dužeg razdoblja, a na isti je način teško bilo predvidjeti da će ta izdanja privući nesvakidašnje zanimanje stručne javnosti. Svesci koji su do sada objavljeni ili su u pripremi pokazuju, međutim, opravdanost odluke o pokrenutanju takvih specifičnih arheoloških izdanja koja su poglavito namijenjena objavljivanju muzejske spomeničke građe, odnosno monografskoj obradi pojedinih arheoloških tema. To svakako obvezuje, ali nas i ohrabruje da u takvim aktivnostima ustrajemo, unatoč aktualnim okolnostima koje nakladništvu, osobito muzejskome, nimalo nisu naklonjene.

Ovaj svezak, 7. u seriji, djelo je voditeljice muzejskog Pretpovijesnog odjela, dr. sc. Jacqueline Balen. Podsjetio bih u ovoj prigodi da je ona prethodno bila i autoricom 2. sveska u istoj seriji, monografije u kojoj je cjelovito obradila poznato neolitičko i eneolitičko naselje Sarvaš nedaleko od Osijeka, lokalitet iz kojega potječu i neki od zanimljivih nalaza pohranjeni ili izloženi u Pretpovijesnoj zbirci zagrebačkog Muzeja, odnosno u njezinom stalnom izložbenom postavu. U razmaku od samo nekoliko godina, osim niza objavljenih znanstvenih i stručnih priloga, ona je, dakle, pripremila svezak s naslovom **Đakovo-Franjevac, kasno bakrenodobno naselje**. Za razliku od prethodnoga u ovom su svesku iscrpno obrađeni i valorizirani rezultati recentnih arheoloških iskopavanja na navedenom lokalitetu što ih je osobno predvodila od veljače do srpnja 2007. god. Na tome, kao i na nekoliko susjednih lokaliteta, radovi su obavljeni u sklopu zaštitnih arheoloških istraživanja na pojedinim dijelovima trase autoceste A 5, odnosno europskog cestovnog koridora C 5. Točnije, riječ je o položajima raspoređenim na pravcu autoceste Beli Manastir-Osijek-Svilaj, odnosno dionici autoceste Osijek-Đakovo, prostoru koji pripada Đakovačko-vinkovačkom ravnjaku, ili preciznije povišenom položaju-gredi jugoistočno od Satnice Đakovačke. Zanimljivo je, također, istaknuti da je preliminarno izvješće o istraživanjima toga, kao i nekoliko su-

# FOREWORD

With the launch of the first volume in the series entitled *Catalogues and monographs of the Archaeological Museum in Zagreb* (*Musei Archaeologici Zagrabiensis Catalogi et Monographiae*) in 2004, the Archaeological Museum in Zagreb broadened, and in a manner of speaking, enriched its profuse publishing activity. It also seems that this initiative inspired several other related institutions to similar undertakings. While we were planning the first volume in the new series of the Museum's publications, we naturally could not foresee the future of the new series, as regards the planned annual publication rhythm over a longer period. It was also impossible to predict that these publications would attract such extraordinary interest among scholars. The volumes already published and those currently in preparation, however, fully justify the decision to launch such a specific series of archaeological publications, focusing primarily on monuments from the Museum's holdings or on a monographic presentation of specific archaeological topics. This certainly obligates us, but also encourages us to persist in such activities, in spite of the fact that current circumstances are hardly favourable for publishing, for museums in particular.

This, the seventh volume in the series, comes from the pen of the Head of the Prehistoric Department of the Museum, Dr. Jacqueline Balen. I would like to remind the readers that she was also the author of the 2nd volume in the same series, a comprehensive monograph of the famous Neolithic and Eneolithic settlement of Sarvaš near Osijek, the site that yielded several of the interesting finds stored or displayed in the Prehistoric Collection of the Archaeological Museum, in its permanent display. Within just a few years, in addition to a number of scientific and professional papers, she managed to prepare another volume, entitled Đakovo-Franjevac, a Late Eneolithic settlement. Unlike the previous work, this volume contains a detailed analysis and evaluation of recent archaeological excavations at that site, carried out personally by the author between February and July 2007. The excavations at that site, as well as at several other neighbouring sites, were carried out as part of salvage archaeological investigations at different sections of the route of the A5 highway of the European C5 Corridor. To be precise, the mentioned positions lie on the route of the Beli Manastir-Osijek-Svilaj highway, the Osijek-Đakovo section, an area that belongs to the Đakovo-Vinkovci plateau, namely the elevation extending southeast of Satnica Đakovačka. It is also interesting to point out that the preliminary report on these excavations together with those of several neighbouring sites, was presented at an interesting exhibition entitled »Results of Salvage Investigations on the Route of the Beli Manastir-Osijek-

sjednih lokaliteta, bilo predstavljeno u sklopu zanimljive izložbe s naslovom »Rezultati zaštitnih istraživanja na trasi autoceste Beli Manastir-Osijek-Svilaj« koja je bila priređena 2008. god. u zagrebačkom Arheološkome muzeju, a uz koju je bio tiskan i odgovarajući katalog. Na taj način i šira javnost na vrijeme je bila obaviještena o preliminarnim rezultatima provedenih istraživanja, što u velikoj mjeri opovrgava neutemeljene i nerijetko zlonamjerne primjedbe o izostaku pravodobnih informacija kojima bi trebalo upoznati širu javnost. Ondašnje nepotpune rezultate istraživanja autorica je za ovu prigodu, nakon provedenih sveobuhvatnih analiza, uspješno pretočila u cjelovitu znanstvenu studiju u kojoj su na suvremen akribičan i multidisciplinaran način prikazana sva relevantna postignuća do kojih je u ovom trenutku bilo moguće doprijeti.

Monografski prikaz istraživanja obavljenih na lokalitetu Franjevac mogao bi poslužiti kao primjer uzornog prezentiranja i znanstveno utemeljenog interpretiranja rezultata arheoloških istraživanja. Od 2008. god., odnosno od vremena održavanja spomenute izložbe, na kojoj su bili prezentirani dotadašnji djelomični rezultati istraživanja i provedenih analiza, trebalo je, dakle, pričekati još i na potpunije rezultate zahtjevnih analiza, bez kojih ne bi bilo moguće pružiti zaokruženu, znanstveno utemeljenu sliku života na istraženome području. Postupci u provođenju nekih analiza ponekad su dugotrajni i zahtijevaju mnogo vremena i truda: to je djelomice i razlog što se objavljivanje ovog sveska donekle odužilo te što je na njegovo objavljivanje trebalo pričekati duže nego je u početku bilo planirano.



Pisca ovog Predgovora, nedovoljno vičnog najsuvremenijim oblicima terenskih istraživanja, osobito kad je riječ o specifičnim metodama arheoloških iskopavanja na ravničarskim pretpovijesnim naseobinskim lokalitetima, u kojima važno mjesto pripada pripremnim radovima i korištenju sofisticiranih tehničkih pomagala, svojedobni obilazak navedenog nalazišta nije mogao ostaviti ravnodušnim. Čini se da se isto odnosi i na aktualnu publikaciju. Za nju je moguće kazati da ju rese mnoge vrline, nadasve suvremen način obrade i interpretacije otkrivenih nalaza koji su potom bili podvrgnuti različitim analizama. Takvim je pristupom autorica stekla mogućnost cjelovitog sagledavanja raznolikih aspekata života stanovništva koje je u pretpovijesno doba, na prijelazu iz 4. u 3. tisućljeće, a u manjoj mjeri i u srednjovjekovnom razdoblju, obitavalo na istraženom području. Najbolja potvrda takvom zaključku su brojne ustanove i pojedinci iz zemlje i inozemstva koji su sudjelovali u tom složenom poslu. Osim Arheološkog muzeja u Zagrebu potrebno je spomenuti suradnike iz Instituta za antropologiju u Zagrebu, Odsjeka za arheologiju Filozofskog fakulteta u Zagrebu, Zavoda za anatomiju, histologiju i embriologiju zagrebačkog Veterinarskog fakulteta, Laboratorija za interakcije ionskih snopova Instituta Ruđer Bošković u Zagrebu, Odsjeka za geologiju zagrebačkog Prirodoslovno matematičkog fakulteta, kao i iz inozemnih institucija među kojima su Univerity of Bradford – Archeological Sciences te University of Leicester. Još upečatljiviji je spisak obavljenih analiza. Detaljno su, primjerice, obrađeni litički nalazi, zatim ljudski i životinjski kosturni ostatci, kemijski su analizirani ulomci otkrivenih posuda, obavljene su važne arheobotaničke analize, kao i petrološko-geološke analize glačanih kamenih artefakata, dok su metalni nalazi bili podvrgnuti postupku PIXE spektroskopije. Takvim iznimno složenim multidisciplinarnim pristupom pribavljeni su rezultati koji su donedavno bili nedostupni, a koji omogućuju svestrano sagle-

Svilaj Highway«, mounted in 2008 in the Archaeological Museum in Zagreb and featuring a corresponding catalogue. The wider public was thus informed in a timely manner about the preliminary results of the conducted investigations, which largely refutes the unfounded and often malevolent objections about the lack of timely information to the wider public. The investigation results, incomplete at the time, have been complemented in the meantime after comprehensive analyses and reworked by the author into an integral scientific study presenting all the relevant results attainable at this moment in a modern, conscientious and multidisciplinary manner.

The monographic presentation of the investigations carried out at Franjevac can serve as a model for the presentation and scientifically grounded interpretation of the results of archaeological investigations. Since 2008, when the mentioned exhibition was displayed, including also a presentation of the partial results of investigations and analyses, it was therefore necessary to wait for the more complete results of demanding analyses, without which it would not be possible to offer a complete and scientifically backed picture of life in the investigated area. The procedures involved in some of these analyses are sometimes time-consuming and labour-intensive: this is partly the reason why the publication of this volume took some time and why we had to wait for its publication somewhat longer than initially planned.

The author of this Foreword, somewhat lacking in cutting-edge fieldwork techniques, particularly when it comes to specific methods of archaeological excavations in lowland prehistoric settlement sites, where preparation works and the use of sophisticated technical equipment plays an important role, could not remain indifferent after a tour of the site during excavation. It seems that the same could be said for the actual publication. It can be described as full of excellent qualities, above all a modern way of analysing and interpreting the discovered finds, which were then subjected to various analyses. This approach allowed the author to observe in a comprehensive way the various aspects of life of the population living in the investigated area in prehistory – at the turn of the 3rd millennium BC – as well as, to a limited degree, in the Middle Ages. The best confirmation of this conclusion are the many institutions and individuals from Croatia and abroad that participated in this complex task. In addition to the Archaeological Museum in Zagreb we should mention colleagues from the Institute of Anthropological Research in Zagreb, the Department of Prehistory of the Faculty of Philosophy in Zagreb, the Institute for Anatomy, Histology and Embryology of the Veterinary Faculty in Zagreb, the Laboratory for Ion Beam Interaction of the Ruđer Bošković Institute in Zagreb, the Department of Geology of the Faculty of Science in Zagreb, as well as foreign institutions including the Univerity of Bradford - Archeological Sciences and the University of Leicester. The list of conducted analyses is even more impressive. For instance, the lithic assemblage and human and animal osteological remains were analyzed in detail; other analyses included a chemical analysis of the fragments of discovered ceramic vessels, archaeobotanical analysis and petrological-geological analyses of stone artefacts, while metal finds were subjected to a PIXE-spectroscopy analysis. The outcome of such an exceptionally complex multidisciplinary approach was the acquisition of new data – unattainable until recently – allowing for a comprehensive consideration of various aspects of life in prehistory. It was possible, based on these discoveries, to reach relevant conclusions about the investigated site at Franjevac: it was ascertained that the site contained the remains of a large prehistoric settlement from the Late Eneolithic, but also those of a small mediaeval settlement.

davanje različitih aspekata života, u ovoj prigodi iz pretpovijesnog razdoblja. Na temelju otkrivenih nalaza bilo je, naime, moguće donositi relevantne zaključke o istraženom naselju na nalazištu Franjevac: pokazalo se, naime, da je na tom lokalitetu otkriveno pretpovijesno kasnoeneolitičko naselje znatnijega opsega, ali također i manje srednjovjekovno naselje.

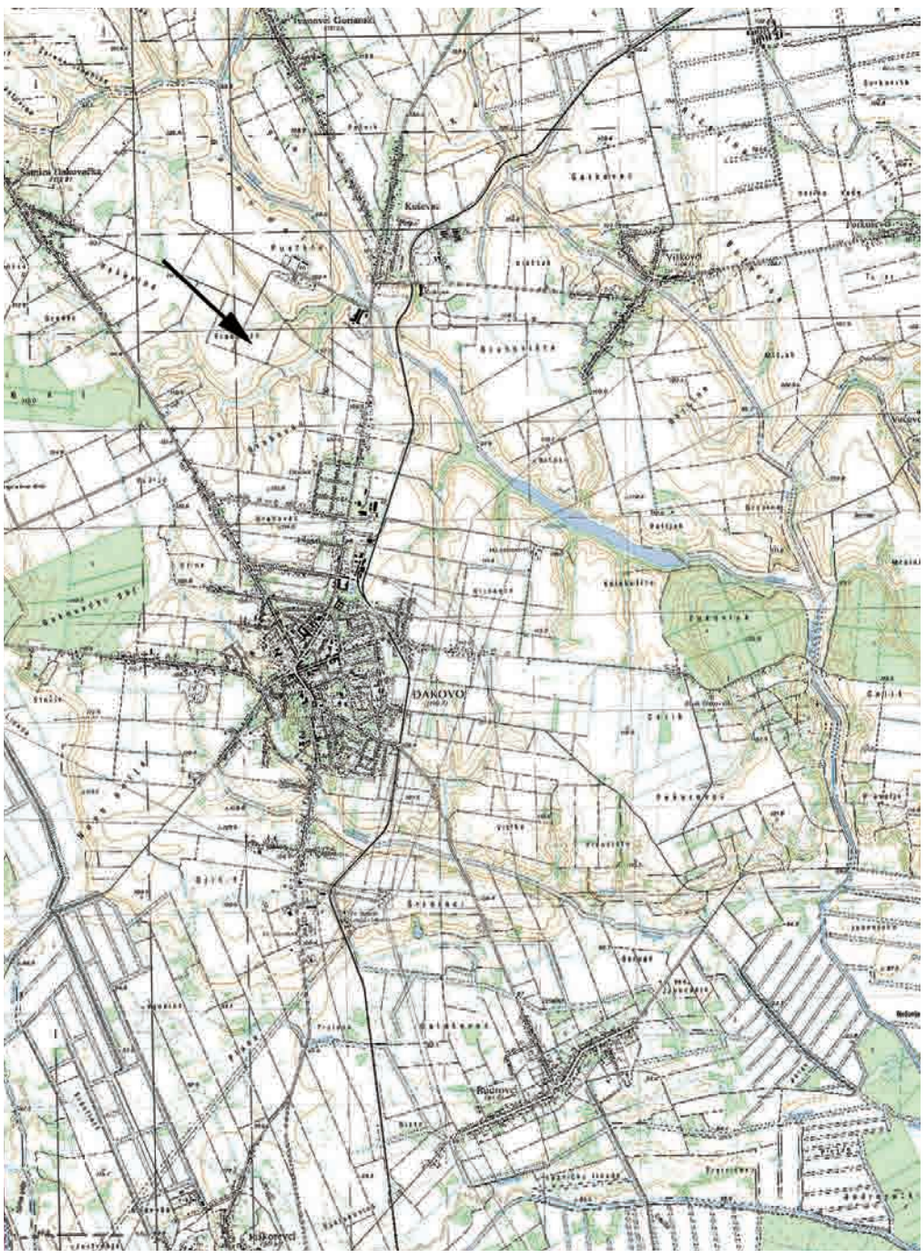
Osobita vrijednost svezaka tiskanih u seriji Katalozi i monografije svakako je njihova dvojezičnost. Osim na hrvatskom jeziku u ovoj prigodi tekstovi su objavljeni i u prijevodu na engleski jezik. Potrebno je, također, istaknuti iscrpnu dokumentaciju s detaljnim opisima i korisnim statističkim podatcima izraženim u postotcima. Iznimno vrijedan je i kataloški dio monografije opremljen odgovarajućim fotografijama, crtežima, grafikonima i drugim potrebnim elementima. Iz zaključaka proizlazi da su naselja takova tipa bila podizana u blizini vodotokova i na prirodnim uzvišenjima. Tipološke i tehnološke analize omogućile su, također, razmjerno precizno utvrđivanje karaktera nalazišta, zatim utvrđivanje korištenog sirovinskog materijala, prostornu distribuciju naselja i sl., a sve to je olakšalo donošenje zaključaka vezanim uz apsolutno datiranje naselja. Utvrđeno je, naime, da je riječ je o rasponu koji obuhvaća razdoblje od 3300.–2700. god. pr. Kr., a omogućeno je i sagledavanje običaja vezanih uz pokapanje ljudi i životinja itd. U istraženim objektima otkriveni su različiti keramički proizvodi: većinom su tamnosivih i tamnosmeđih tonova, a najzastupljeniji su oblici zdjele, kalotaste i zdjele izvučena vrata, zatim bikonične zdjele s trakastom ručkom, lonci, šalice, čaše i dr., među inim i kultni predmeti, zatim cjedila, boce i sl. Vrijedan pozornosti je podatak da su stijenke jedne posude bile premazane pčelinjim voskom što ostavlja prostor različitim tumačenjima. Otkrivene keramičke nalaze, među kojima su i predmeti za svakodnevnu uporabu – pršljenci za vretena, kalemovi, utezi, žlice i dr. – prema svim pokazateljima koristili su pripadnici kasnobakrenodobne kostolačke kulture, s kojom se djelomično preklapala glasovita vučedolska kultura. Stanovništvo je koristilo i koštane alatke, šila, spatule, motike i dr., kao i proizvode cijepane litičke industrije, sječiva, razna grebala i sl., a rjeđe i glačane kamene alatke, sjekire, bradve, dlijeta, zatim bruseve, žrvnjeve i dr. Zanimljiv je podatak da su kao sirovinu koristili prirodne valutice koje su često bile preoblikovane ili više puta dorađivane. Naposljetku je potrebno istaknuti da su rijetki bakreni nalazi iz tog lokaliteta, tri šila i tri bakrena ulomka, ujedno i jedini metalni predmeti otkriveni u naseljima kostolačke kulture u Hrvatskoj.

Dragocjeni su i rezultati osteoloških analiza obavljeni na ostatcima ljudskih i životinjskih kostiju. Saznajemo, primjerice, da su najzastupljenija životinjska vrsta bile svinje, kako divlje tako i domaće, zatim goveda, u većoj mjeri domaća a u manjoj divlja, kao i pragoveda, ali i ovce, koze, srne, jeleni i dr. Kad je o svinjama riječ vrlo je zanimljiva i pretpostavka o njihovu simboličkom značenju, odnosno o njima kao simbolima plodnosti, poglavito u kontekstu kulta Velike Majke. Nalazi ljudskih ostataka iz tri jamska objekta pokazali su da je stanovništvu bilo poznato skeletno sahranjivanje, kao i spaljivanje pokojnika, a na kostima su uočene i stanovite patološke promjene koje svjedoče o zdravstvenom stanju pokojnika. Podjednako su zanimljivi i rezultati paleobotaničkih analiza: dokazana je prisutnost kultiviranih i samoniklih biljnih vrsta, a utvrđeno je da su značajnu ulogu u prehrani stanovništva imali ratarstvo i sakupljanje plodova. Analize su pokazale da je od žitarica za potrebe ishrane stanovništvo najviše koristilo jednozrnu pšenicu, kao i druge

The fact that the edition *Catalogues and Monographs* is bilingual makes the volumes published in this series particularly valuable. In addition to appearing in Croatian, the texts published in this volume were also translated into English. It is also necessary to stress the exhaustive documentation with detailed descriptions and useful statistical data expressed as percentages. Another exceptionally valuable part of the monograph is its catalogue, with corresponding photographs, drawings, charts and other necessary elements. It is clear from the conclusion that settlements of that type were erected near watercourses and on natural elevations. Typological and technological analyses also made it possible to determine the character of the site with relative accuracy, as well as to determine the raw materials, spatial distribution and so on, which all facilitated conclusions regarding the absolute dates of the settlement: it was ascertained that it spanned the period between 3300 and 2700 BC. It was likewise possible to consider the customs pertaining to the burial of humans and animals etc. The investigated features and structures yielded various ceramic products, mostly of dark gray and dark brown hues. The most common types are hemispherical bowls and bowls with an everted rim, biconical bowls with a strap handle, pots, cups, glasses etc.; there are also cult objects, strainers, bottles etc. It merits mention that the wall of a ceramic vessel was coated with beeswax, which leaves room for different interpretations. Everything points to the conclusion that the discovered ceramic finds, consisting among other things of everyday items – spindle-whorls, spools, weights, spoons etc. – were used by the members of the Late Eneolithic Kostolac culture, partly contemporaneous with the well-known Vučedol culture. The population also used bone tools, awls, spatulae, hoes etc., as well as chipped lithic products, sidescrapers, various endscrapers and so on, and somewhat more rarely also polished stone tools, axes, adzes, chisels, grinders, querns etc. It is interesting that they used natural pebbles, often remodeled or repeatedly retouched, as raw material. Finally, we should emphasize that the few copper finds from the site, three awls and three copper fragments, are at the same time the only metal objects discovered in the settlements of the Kostolac culture in Croatia.

Another set of valuable results are those pertaining to the osteological analyses of human and animal bones. We learn, for instance, that the pig – wild as well as domestic – was the dominant animal species, followed by cattle, more domestic than wild, as well as aurochs, but also sheep, goat, doe, red deer etc. Speaking of pigs, there is a very interesting hypothesis focusing on their symbolic significance, that is, seeing them as fertility symbols, particularly in the context of the cult of the Great Mother. The finds of human remains from three pit features showed that the population was familiar with the inhumation burial, as well as with cremation, and the bones exhibited certain pathological changes bearing testimony to the health of the deceased. The results of palaeobotanical analyses are equally interesting: they demonstrated the presence of cultivated and wild plants, as well as that both farming and gathering of fruits played an important role in the diet of the population. The analyses have shown that, among cereals, the residents mainly used einkorn, as well as other cereal types, such as barley, emmer and millet, but also peas and lentils, as well as elderberry, cornelian cherry etc.

The author of the monograph, Jacqueline Balen, naturally deserves the greatest credit for the actual volume, that is, for the swift publication of results of the archaeological investigations at Franjevac. Credit is due, however, also to several other co-authors of texts from specific specialized areas – Zdravka Hincak and Damir Mihelić, Ben






vrste žitarica, primjerice ječam, dvozrnu pšenicu i proso, ali također i grašak i leću, zatim bazgu, drijen i dr.

Za aktualni svezak, odnosno za ažurnu objavu rezultata arheoloških istraživanja na lokalitetu Franjevac, najzaslužnija je, dakako, autorica monografije Jacqueline Balen. Zasluge, međutim, pripadaju i suautorima tekstova pojedinih specijaliziranih područja, Zdravki Hincak i Damiru Miheliću, Benu Sternu, Kelly Reed, Ivoru Jankoviću, Petri Rajić Šikanjić, Hrvoju Posiloviću te Maji Bunčić, kao i drugim njezinim suradnicima, svima onima koji su na bilo koji način sudjelovali u pripremi terena i analizama pronađenog materijala te oblikovanju ovog sveska, svima koji su pridonjeli realizaciji ovog vrijednog muzejskog izdanja.

Dužnost mi je naposljetku zahvaliti se i onima koji su odgovarajućom podrškom omogućili objavljivanje ovog sveska, poglavito Ministarstvu kulture RH i Gradskom uredu za obrazovanje, kulturu i šport Grada Zagreba.

Ante Rendić-Miočević

Stern, Kelly Reed, Ivor Janković, Petra Rajić Šikanjić, Hrvoje Posilović and Maja Bunčić – as well as to her other associates, all those who in one way or another participated in the fieldwork, in the analyses of the discovered assemblage, as well as in the preparation of this volume, in short, to all those who contributed to this valuable Museum publication.

Finally, it is also my duty to thank all those who supported the publication of this volume, primarily the Ministry of Culture of the Republic of Croatia and the Office for Education, Culture and Sports of the City of Zagreb.

Ante Rendić-Miočević

# Uvod

U razdoblju od 26. veljače do 26. srpnja 2007. godine provedena su zaštitna arheološka istraživanja na položaju *Franjevac.* Arheološki lokalitet (AN 26) pozicioniran je na trasi autoceste Beli Manastir – Osijek – Svilaj, dionica Osijek – Đakovo, između stacionaža 60+150 i 60+600. Ukupna istražena površina iznosila je 36.000 m$^2$.

Naručitelj zaštitnih arheoloških istraživanja na tome položaju bilo je Ministarstvo kulture, a izvršitelj zaštitnih radova koji su uključivali arheološka istraživanja i konzervaciju pokretnih arheoloških nalaza Arheološki muzej u Zagrebu. Istraživanja su financirale Hrvatske autoceste koje su investitor svih radova na trasi autoceste. U iskopavanjima su kao dio stručne ekipe sudjelovali: Ana Solter, zamjenica voditeljice iskopavanja (izrada nacrtne dokumentacije), dipl. arheolozi Andreja Kudelić i Ivan Drnić (izrada i obrada fotografija) te studenti Odsjeka za arheologiju Filozofskog fakulteta Sveučilišta u Zagrebu Petra Brkić, Pavle Dugonjić, Katarina Gerometta, Anita Ivanković, Katarina Jerbić, Snježana Smolić, Nera Šegvić, Jana Škrgulja, Ivana Turčin, Josip Zorić. Na terenu je stalno bilo prisutno 39 radnika.[1]

Pri obradi keramike sudjelovali su Petra Brkić, Ana Đukić, Silvio Stanković, Jana Škrgulja, Davor Špoljar i Josip Zorić. Konzervatorsko-restauratorske radove na keramičkim nalazima izvršili su Josip Fluksi te manjim dijelom Zrinka Znidarčić, dok su konzervaciju metalnih nalaza napravili Damir Doračić i Slađana Latinović (svi Arheološki muzej u Zagrebu). Nalaze je nacrtao Krešimir Rončević (Odsjek za arheologiju, Filozofski fakultet Sveučilišta u Zagrebu).

Litičke nalaze obradila je Maja Bunčić (Arheološki muzej u Zagrebu), analizu ljudskih kosturnih ostataka dr. sc. Ivor Janković i dr. sc. Petra Rajić Šikanjić (Institut za antropologiju u Zagrebu), životinjske kosti dr. sc. Zdravka Hincak (Odsjek za arheologiju, Filozofski fakultet Sveučilišta u Zagrebu) i dr. sc. Damir Mihelić (Zavod za anatomiju, histologiju i embriologiju, Veterinarski fakultet Sveučilišta u Zagrebu), kemijsku analizu ulomaka posuda dr. Ben Stern (Archaeological Sciences, University of Bradford), arheobotaničke analize Kelly Reed (poslijediplomski studij, University of Leicester), analizu metalnih nalaza PIXE spektroskopijom napravio je dr. sc. Milko Jakšić (Laboratorij za interakcije ionskih snopova, Institut Ruđer Bošković), dok je dr. sc. Hrvoje Posilović (Odsjek za geologiju, Prirodoslovno matematički fakultet, Zagreb) napravio petrološko-geološke analize kamenih artefakata.

[1] U broj su uračunati i radnici koji su prali keramiku, signirali nalaze te flotirali uzorke zemlje.

# Introduction

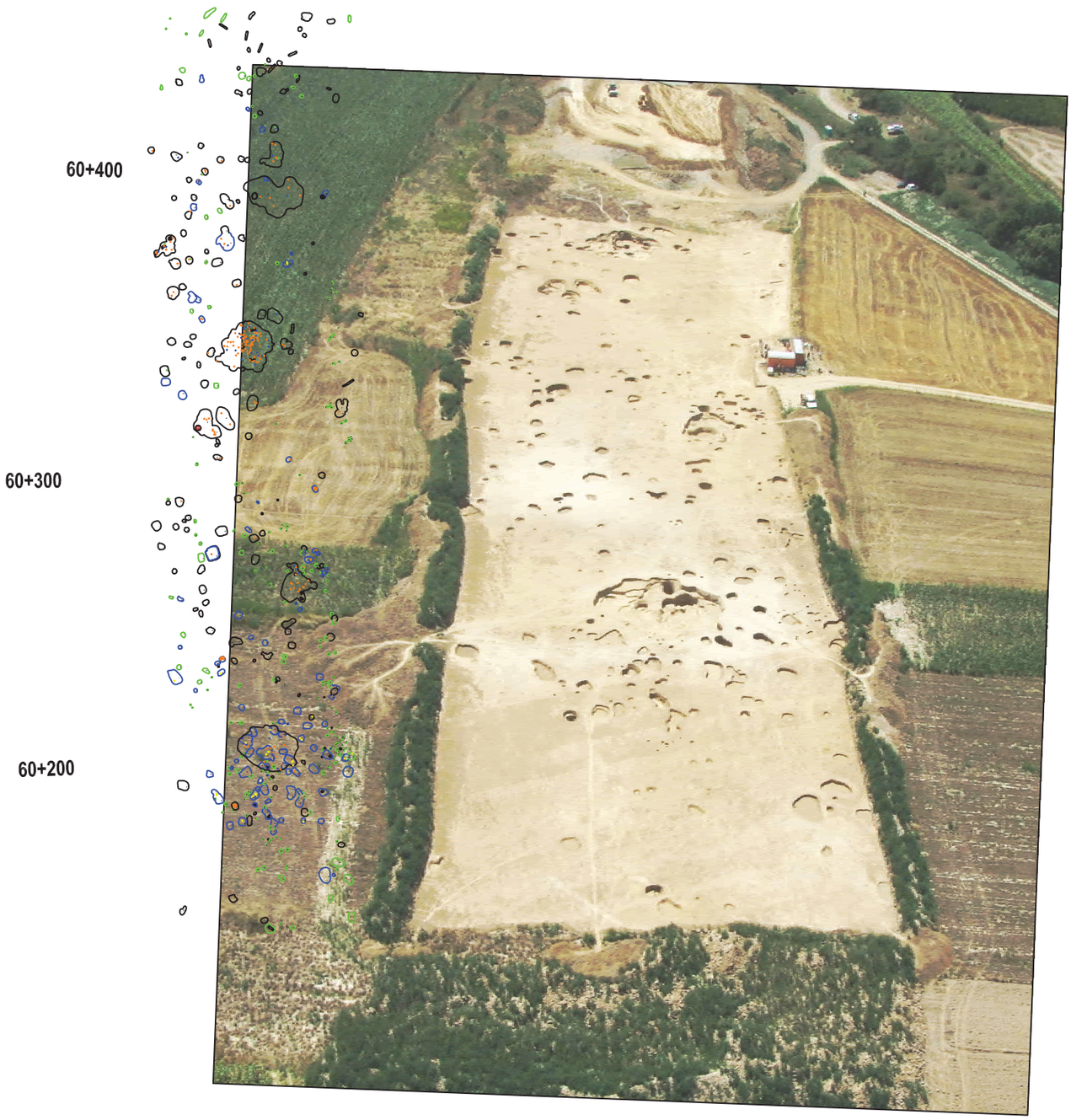
The salvage archaeological investigation at the site of *Franjevac* was carried out between 26th February and 26th July 2007. The archaeological site (AN 26) is situated on the route of the Beli Manastir – Osijek – Svilaj highway, the Osijek – Đakovo section, between marks 60+150 and 60+600. The total investigated surface is 36000 sq.m.

The salvage archaeological investigation at this site was commissioned by the Ministry of Culture, and the task that included the archaeological excavation and conservation of movable finds was carried out by the Archaeological Museum in Zagreb. The investigation was funded by the Croatian Motorways Ltd., the financier of all the works on the route of the highway. The following people took part in the investigations as members of the archaeological team: Ana Solter, vice-manager of the excavation (responsible for graphic documentation), graduate archaeologists Andreja Kudelić and Ivan Drnić (taking and processing of photographs), and undergraduate students of archaeology at the Faculty of Philosophy of the University of Zagreb, Petra Brkić, Pavle Dugonjić, Katarina Gerometta, Anita Ivanković, Katarina Jerbić, Snježana Smolić, Nera Šegvić, Jana Škrgulja, Ivana Turčin, Josip Zorić. A total of 39 workers were permanently present at the site.[1]

Petra Brkić, Ana Đukić, Silvio Stanković, Jana Škrgulja, Davor Špoljar and Josip Zorić took part in the processing of pottery finds. The conservation and restoration tasks on pottery finds were carried out by Josip Fluksi and to a small extent by Zrinka Znidarčić, while the metal finds were conserved by Damir Doračić and Slađana Latinović (all from the Archaeological Museum in Zagreb). The finds were drawn by Krešimir Rončević (Department of Archaeology, Faculty of Philosophy, University of Zagreb).

The lithic finds were analyzed by Maja Bunčić (Archaeological Museum in Zagreb), the human skeletal remains were analyzed by Dr. Ivor Janković and Dr. Petra Rajić Šikanjić (Institute of Anthropological Research in Zagreb), the animal bones by Dr. Zdravka Hincak (Department of Archaeology, Faculty of Philosophy, University of Zagreb) and Dr. Damir Mihelić (Department of Anatomy, Histology and Embryology, Veterinary Faculty, University of Zagreb), chemical analysis of pottery fragments was carried out by Dr. Ben Stern (Archaeological Sciences, University of Bradford), archaeobotanical analyses were conducted by Kelly Reed (graduate student, University of Leicester), PIXE analysis of metal finds was carried out by Dr. Milko Jakšić (Laboratory for Ion Beam Interaction, Ruđer Bošković Institute), while Dr. Hrvoje Posilović (Department of Geology, Faculty of Science, Zagreb) carried out the petrological and geological analyses of stone artefacts.

[1] The workers who were washing pottery, labelling finds and processing flotation samples are included in this number.






**Sl. 1.1** Pogled na nalazište, snimano sa sjevera i plan nalazišta s označenom stacionažom (crno: pretpovijesni objekti, plavo: srednjovjekovni objekti, zeleno: objekti bez nalaza)

**Fig. 1.1** A view of the site from the north and a site plan with route marks (black: prehistoric structures, blue: mediaeval structures, green: structures without finds)

## Položaj i opis nalazišta

Nalazište Franjevac nalazi se jugoistočno od Satnice Đakovačke na povišenom položaju – gredi koja se proteže u smjeru sjeveroistok-jugozapad. Teren na kojem se nalazi arheološki lokalitet pripada prostoru panonskog bazena, točnije Đakovačko-vinkovačkom ravnjaku. Geološke naslage koje izgrađuju teren su prapor (les) i jezersko-barski sedimenti (glinovito-pjeskoviti materijali) u izmjeni.

Uzvisina na kojoj je smješteno naselje s južne strane omeđena je niskim vodoplavnim područjem. Riječ je o jednoslojnom lo-

## The position and description of the site

The site of Franjevac lies southeast of Satnica Đakovačka on an elevation extending in the northeast-southwest direction. The terrain occupied by the archaeological site belongs to the Pannonian Basin, more precisely the Đakovo-Vinkovci Plateau. The geological deposits that build the terrain consist of loess and lacustrine-marshy sediments (clayey and sandy materials) in alternating layers.

The elevation on which the settlement lies is bordered on the south by a low alluvial zone. The site consists of a single layer with horizontal stratigraphy. The cultural layer has nowhere remained pre-

kalitetu s horizontalnom stratigrafijom. Kulturni sloj nije se očuvao niti na jednom dijelu nalazišta te je, ukoliko ga je i bilo, vjerojatno uništen poljoprivrednom obradom.

Tijekom istraživanja definirano je 1040 stratigrafskih jedinica koje su predstavljali slojevi (izorani sloj i geološki slojevi) te zapune i ukopi jamskih objekata. U provedenim zaštitnim arheološkim istraživanjima izorani sloj **SJ 001**(10 YR 4/2 dark grayish brown) skidao se strojno. Relativna debljina izoranog sloja iznosila je između 30 do 40 cm, kada se dolazilo na sterilni sloj, tj. zdravicu (masnu glinu). Na platou i na padini uočena je razlika između geoloških slojeva te su definirane 4 vrste zdravice **SJ 002** – 10 YR 5/6 yellowish brown; **SJ 442** – 10 YR 5/4 yellowish brown; **SJ 862** – 10 YR 5/6 yellowish brown – na padini ispod SJ 002; **SJ 863** – 10 YR 6/3 pale brown – na platou ispod SJ 002.

Od ukupnog broja jama najveći postotak pripadao je objektima bez nalaza keramike (223), većinu kojih su predstavljale rupe od stupova (promjera oko 1,20 metara) i kolaca (promjera od 0,40 do 0,60 metara) ispunjene rahlom, smeđom zapunom te manji izduženi objekti (kanalići) s ljepom i tragovima ugljena u sastavu. U 142 objekta pronađena je keramika pripadnika bakrenodobne, kostolačke kulture, dok je u 119 jama ustanovljen srednjovjekovni materijal.

Na temelju zaštitnih arheoloških istraživanja na nalazištu Franjevac možemo tako govoriti o postojanju jednog većeg pretpovijesnog naselja kao i o naselju iz srednjovjekovnog razdoblja. Pretpovijesno naselje proteže se između stacionaža 60+150 do 60+450. Najveća koncentracija objekata zabilježena je između stacionaža 60+300 i 60+400, odnosno na jugoistočnoj padini grede te je očito da se naselje protezalo dalje na istok. Srednjovjekovno je naselje bilo nešto manje, najveća gustoća nalaza je između stacionaža 60+150 i 60+250, odnosno na platou i to na sjeverozapadnoj strani platoa.[2]

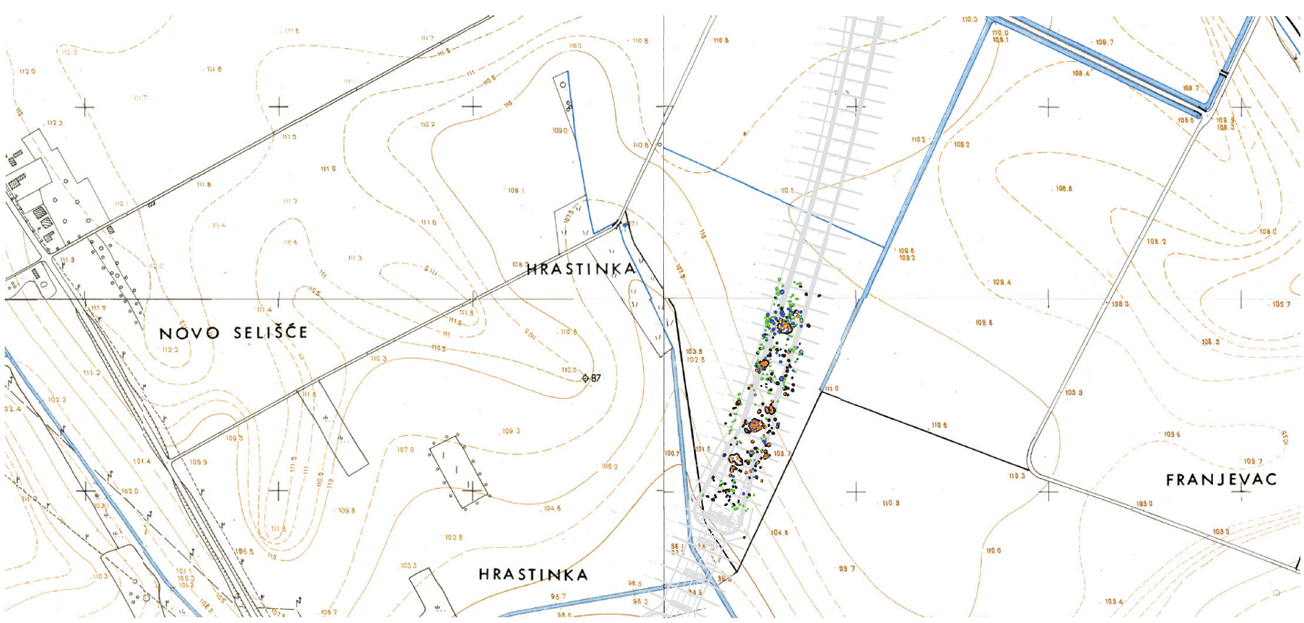
served and, even if there had been any, it was presumably destroyed by agricultural works.

A total of 1040 contexts were documented during the investigation, consisting of layers (plough-layer and geological layers) as well as fills and cuts of pit features. In the salvage archaeological investigation the humus layer **SJ 001**(10 YR 4/2 dark grayish brown) was removed by an excavating machine. The relative depth of the humus was between 30 and 40 cm, after which a sterile layer-i.e. the virgin soil (sticky clay)-was reached. A difference between the geological layers on the plateau and on the slope resulted in the definition of 4 types of virgin soil: **SJ 002** – 10 YR 5/6 yellowish brown; **SJ 442** – 10 YR 5/4 yellowish brown; **SJ 862** – 10 YR 5/6 yellowish brown – on the slope below SJ 002; **SJ 863** – 10 YR 6/3 pale brown – on the plateau below SJ 002.

Out of the total number of pits the highest percentage belonged to features without pottery finds (223), most of which were postholes (around 1.20 m in diameter) or stake-holes (with a diameter between 0.40 and 0.60 m), filled with loose, brown fills, and small elongated features (channels) with daub and traces of charcoal. A total of 142 features yielded Eneolithic pottery of the Kostolac culture, while medieval finds were discovered in 119 pits.

The results of the salvage archaeological investigations at Franjevac allow us to talk of a large prehistoric settlement, as well as of a settlement from the Middle Ages. The prehistoric settlement stretches between marks 60+150 and 60+450, with the highest concentration of features between marks 60+300 and 60+400, or on the southeastern slope of the elevation, making it plain that the settlement extended further east. The medieval settlement was somewhat smaller, with the highest density of the finds between marks 60+150 and 60+250, that is, on the plateau, on its northwestern side.[2]






**Sl. 1.2** Položaj nalazišta na trasi autoceste s ucrtanim objektima; podloga HOK 1:5000

**Fig. 1.2** Position of the site on the highway route with drawn structures, shown on a 1:5000 scale map

[2] Srednjovjekovno naselje tema je diplomske radnje Anite Ivanković te će biti objavljeno zasebno. Uglavnom je riječ o manjim i plićim otpadnim jamama te vatrištima (pećima) na otvorenom, ukopanim u plitke jame.

[2] The medieval settlement is the subject of Anita Ivanković's graduate thesis and will be published separately. It mostly consists of smaller and shallower refuse pits and open-air hearths (ovens) dug into shallow pits.

# Katalog pretpovijesnih objekata

Za svaki pretpovijesni objekt u katalogu navedeni su slijedeći podaci:

- stratigrafska jedinica (broj za zapunu i ukop jame)
- položaj jame u kvadratnoj mreži (mreža je bila postavljena u smjeru S-J, a označena je: na osi x slovima engleske abecede, prvo velikima, a zatim malima, a na osi y rednim brojevima; veličina kv. na lokalitetu iznosila je 5 x 5 m)
- početna i završna dubina jame
- boja zapune (Munsell soil colour chart)
- dimenzije jame
- nalazi u zapuni (broj ulomaka keramičkih posuda, broj cijepanih litičkih artefakata, posebni nalazi – keramički pršljenci, žlice, kalemovi, žrtvenici, kamene glačane alatke, bakrene alatke)
- ukoliko je u jami dokumentirano nekoliko zapuna, za svaku je posebno naveden njezin stratigrafski broj, boja te nalazi

# Catalogue of prehistoric structures

The following information were provided for each prehistoric structure in the catalogue:

- context (number for the fill and cut of a pit)
- position of a pit in the square grid (grid was aligned N-S, marked with the letters of the English alphabeth (first with capitals and then lower-case letters) on x-axis, and with ordinal numbers on y-axis; squares measured 5 x 5 m)
- top and bottom height/depth of a pit
- fill colour (Munsell soil colour chart)
- pit dimensions
- finds from the fill (number of shards of ceramic vessels, number of chipped lithic artefacts, special finds – ceramic spindle whorls, spoons, spools, altars, polished stone tools, copper tools)
- when several fills were identified within a single pit, context number, colour and finds were indicated for each fill

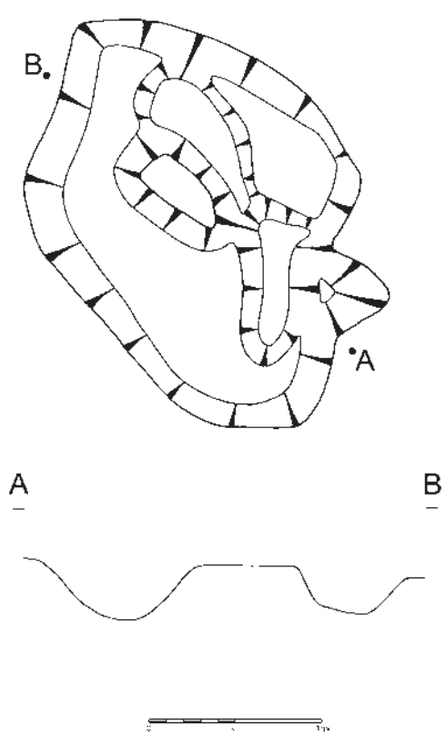
SJ 003 **004**

T/U 30/31
102,73-101,92
10 YR 4/2 dark grayish brown
3 x 0,6 m
5 ulomaka keramike



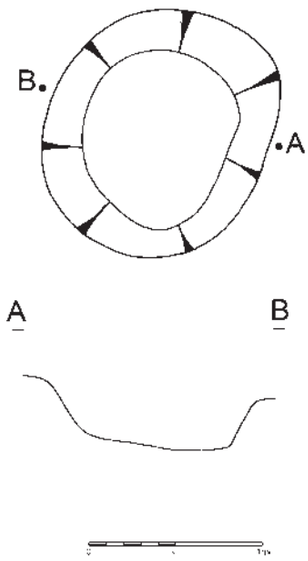

SJ 011 **012**

X/Y 33
105,50-105,10
10 YR 4/2 dark grayish brown
2,60 x 2 m
6 ulomaka keramike



SJ 017 **018** P 32
100,63-100,22
10 YR 4/2 dark grayish brown
1,40 m
22 ulomka keramike


O33 P33
O32 P32






SJ 019 **020** c/d 42/43
109,39-107,53
8,5 x 5 m
Jama nepravilna oblika s nekoliko zapuna (SJ 19, SJ 354, SJ 368, SJ 369) i tri vatrišta/peći u sastavu (SJ 351, SJ 353, SJ 356). Sva tri vatrišta sijeku zapunu SJ 354 (SJ 351 povezan je sa SJ 352, SJ 353 sa SJ 362, a SJ 356 sa SJ 355 i SJ 357), ispod kojih su ustanovljene masne glinaste zapune SJ 368 i SJ 369.

**SJ 19** 10 YR 4/1 dark gray
678 ulomaka keramike (kat. 1–3, 5, 16–19)
26 kom litike (kat. II 19–25)
Posebni nalazi: 3 pršljenka (kat. 6,7,9), keramičke žlice (kat. 8, 20), sjekira s rupom za nasad (kat. 4)

**SJ 351** 2.5 YR 5/8 red

**SJ 352** 10 YR 3/4 dark yellowish brown
20 ulomaka keramike
1 kom. litike

**SJ 353** 2.5 YR 4/6 red

**SJ 354** 10 YR 4/4 dark yellowish brown
2 kom. keramike

**SJ 355** 10 YR 3/2 very dark grayish brown
152 kom. keramike
Litika: 5 kom.
Posebni nalaz: četvrtasta posuda (kat. 10)

**SJ 356** 2.5 YR 4/4 reddish brown

**SJ 357** 10 YR 5/4 yellowish brown

**SJ 362** 10 YR 3/3 dark brown
84 kom. keramike
litika: 3 kom. (kat. II 26 )


**SJ 368** 10 YR 3/2 very dark grayish brown
57 kom. keramike
Litika: 5 kom.
Posebni nalazi: bakreno šilo, keramički kalem

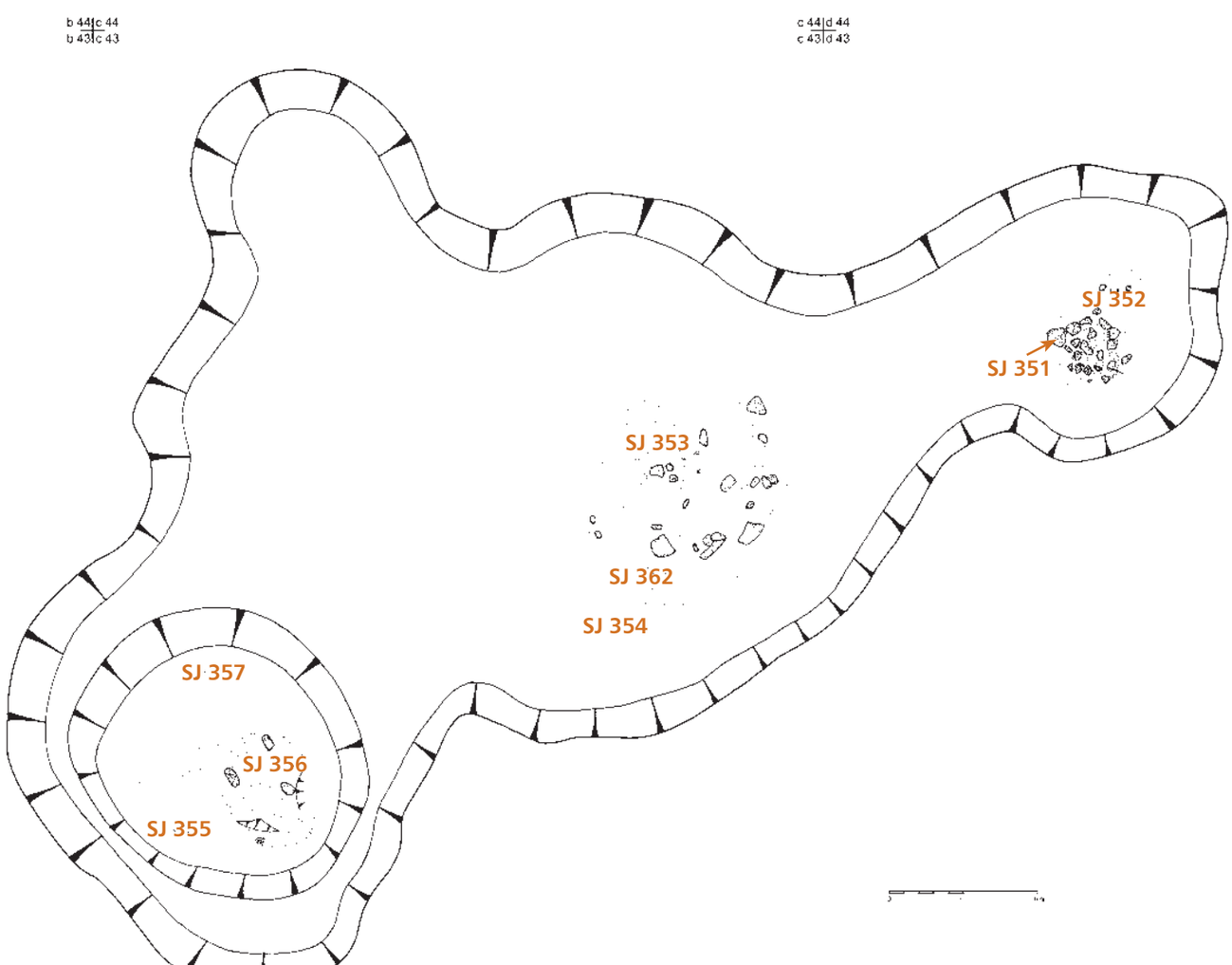
**SJ 369** 10 YR 4/2 dark grayish brown
179 kom. keramike
Litika: 12 kom. (kat. II 27)
Posebni nalazi: 2 male posudice (dj. igračke ?; kat. 12, 13), kamena glačalica (kat. 14), keramički žrtvenik (kat. 11), žlica (kat. 15)

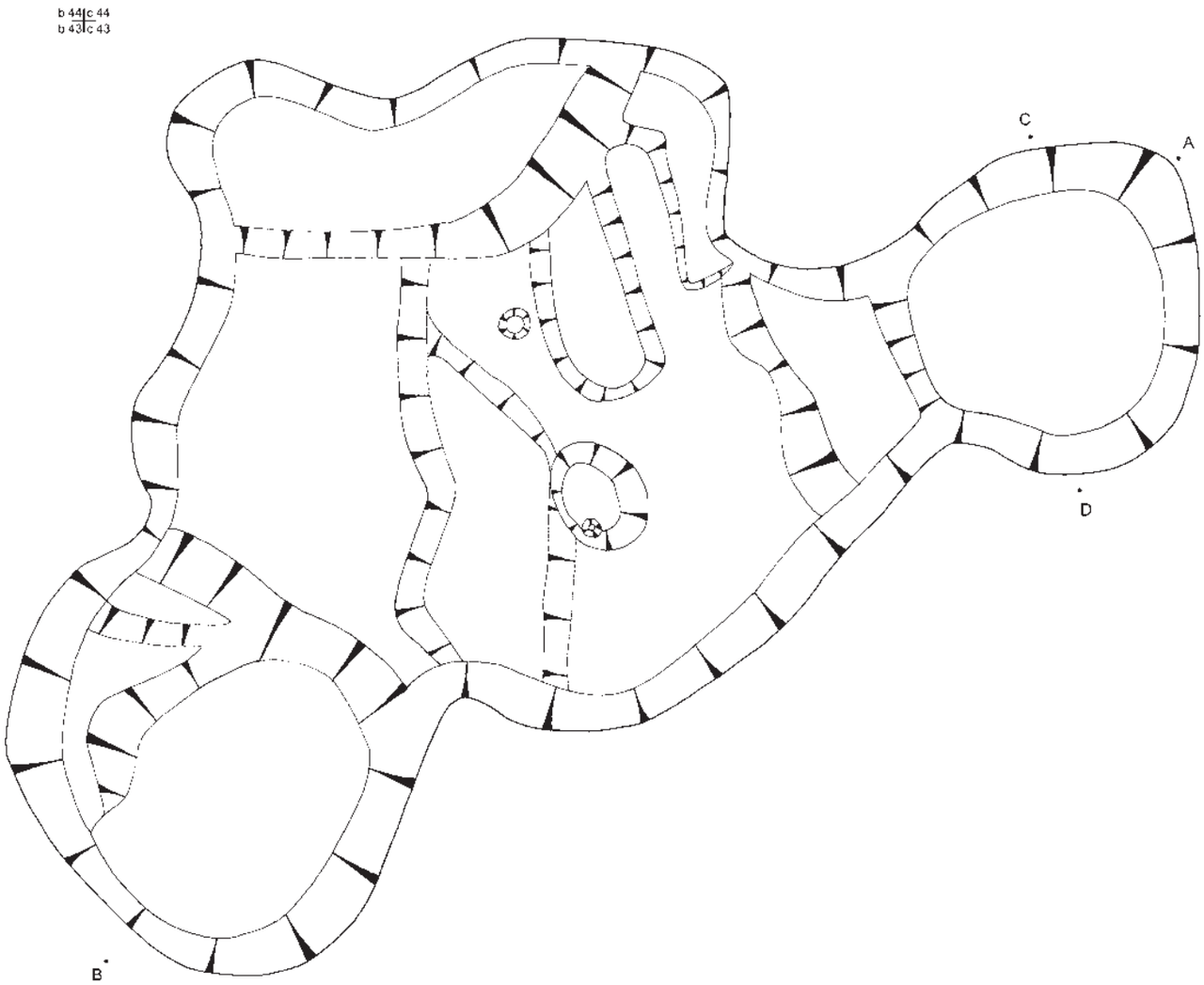
**SJ 370** 5 YR 4/4 reddish brown
3 ulomka keramike

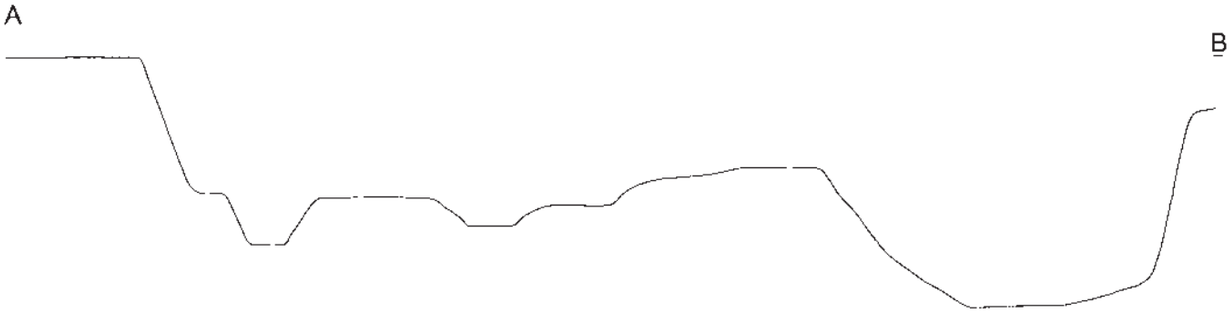
**SJ 371** 5 YR 4/6 yellowish red

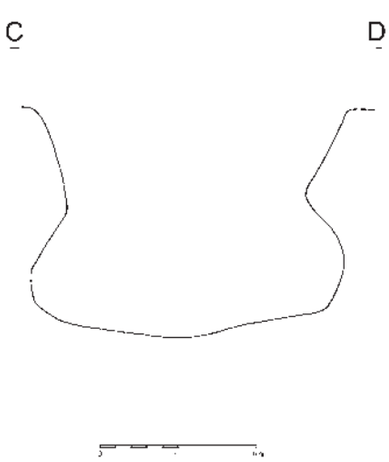
SJ 356–357





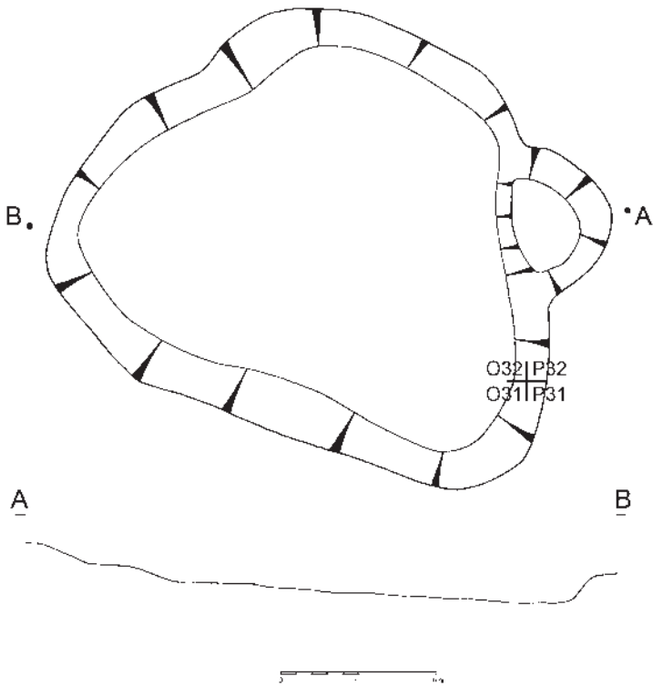

b 44 c 44
b 43 c 43
A
B
C
D


A
B


C
D

SJ 021 **022**

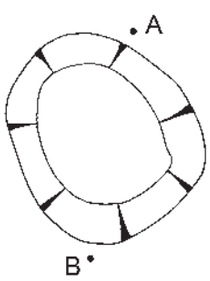
O/P 31/32
100,23-99,91
10 YR 4/2 dark grayish brown
3,70 x 3,30 m
24 ulomka keramike



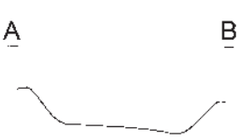



SJ 023 **024**

P 33
100,65-100,42
10 YR 4/2 dark grayish brown
1,30 x 1,10 m
5 ulomaka keramike

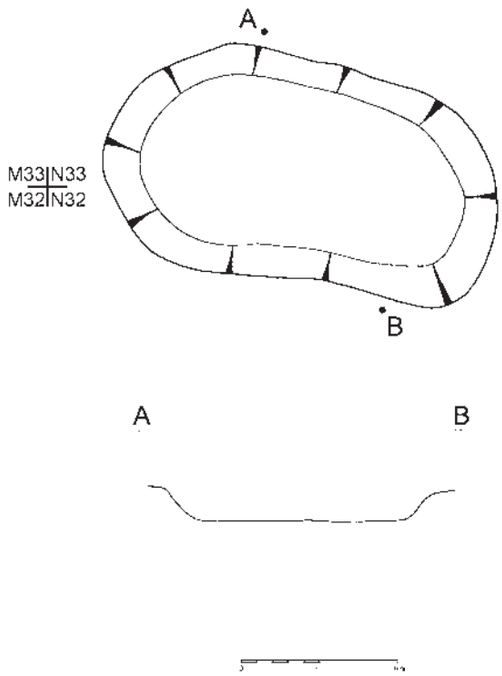



O33 P33
O32 P32




SJ 025 **026**

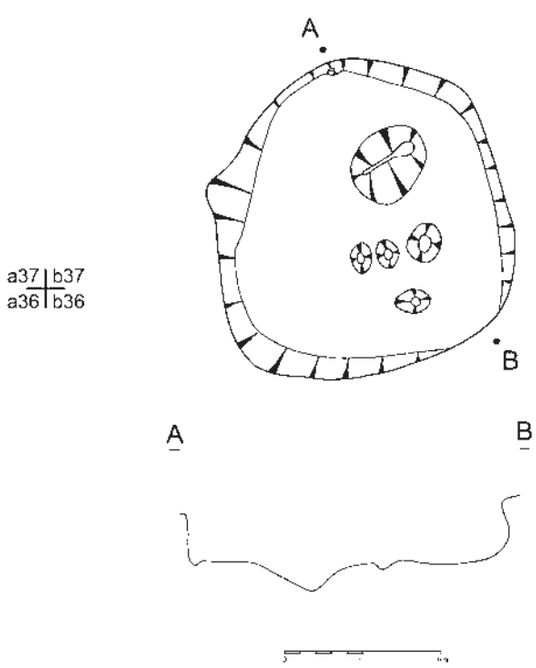
N 32/33
100,59-99,60
10 YR 4/2 dark grayish brown
2,60 x 1,50 m
1 ulomak keramike



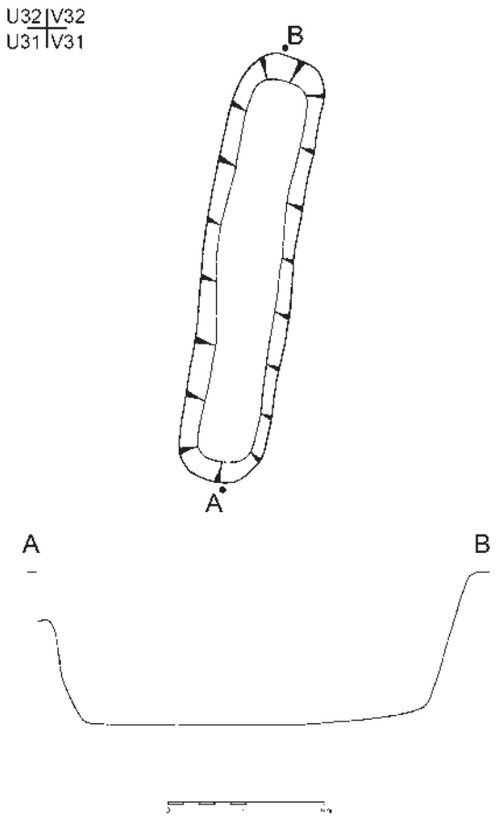

SJ 029 **030**

b 36/37
107,66-107,02
10 YR 4/2 dark grayish brown
2,06 x 1,94 m
69 ulomaka keramike (kat. 21)
Litika: 4 kom (kat. II 28, 29)
Posebni nalaz: pršljenak




SJ 031 **032**

V 31
103,66-102,71
10 YR 4/2 dark grayish brown
2,70 x 0,60 m
11 ulomaka keramike
2 komada litike (kat. II 30, 31)



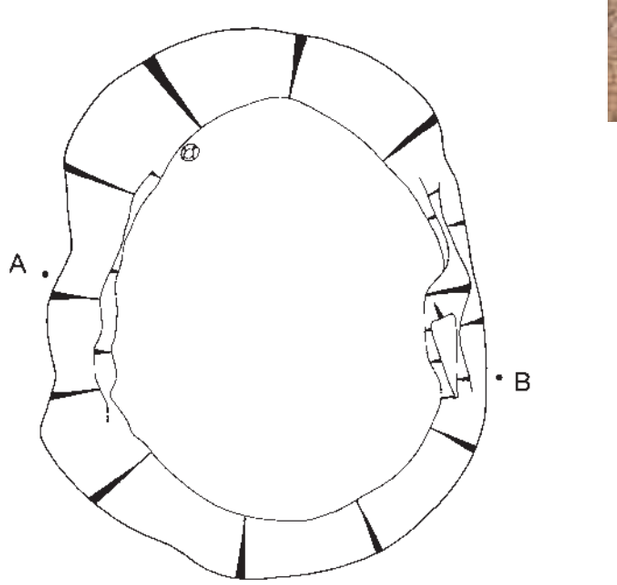


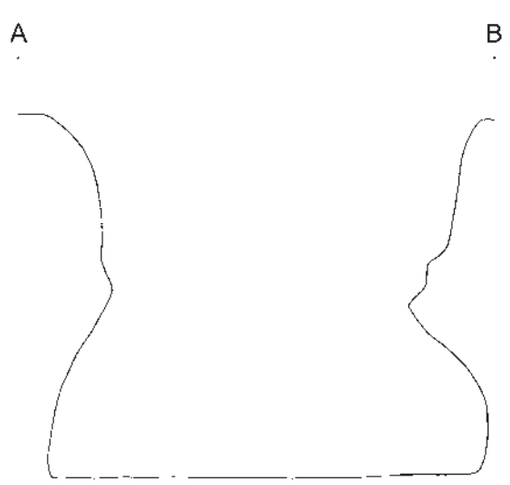

SJ 043 **044**

f 50/51
110,33-108,00
3,60 x 2,80 m
Duboka jama, širi se prema dnu. Zapunjena je sa 4 zapune (SJ 43, SJ 900, SJ 909 i SJ 920). U SJ 43 je ukopana životinja (SJ 864).

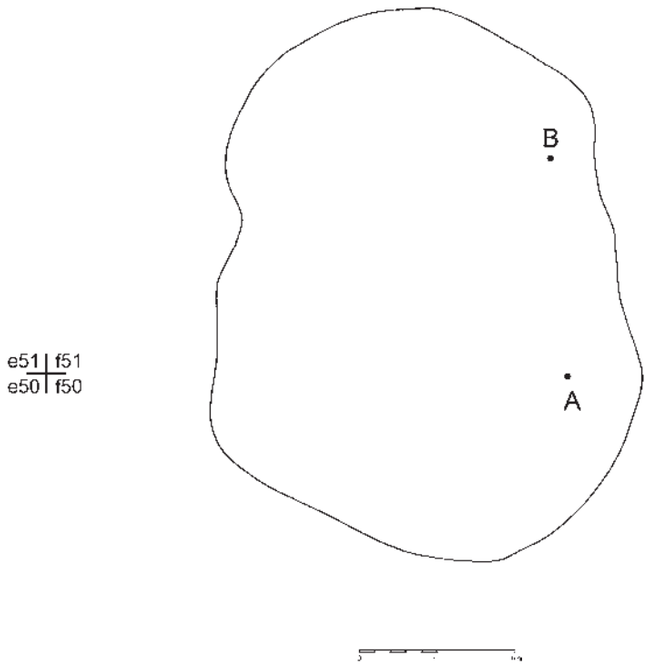
**SJ 43**

10 YR 3/1 very dark gray
187 ulomaka keramike (kat. 23–26)
Litika: 6 kom (kat. II 32)
Posebni nalazi: bakreno šilo, keramička sjekira (kat. 22)



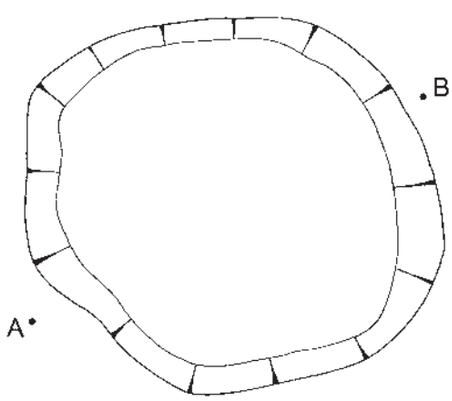



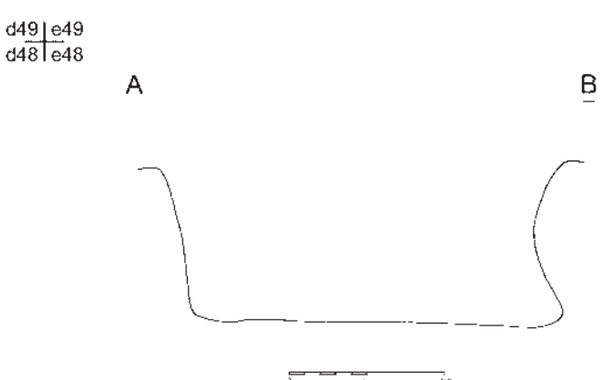
**SJ 900** 10 YR 3/2 very dark grayish brown
1 ulomak keramike
**SJ 909** 10 YR 5/4 yellowish brown
12 ulomaka keramike
**SJ 920** 10 YR 5/4 yellowish brown
1 ulomak keramike



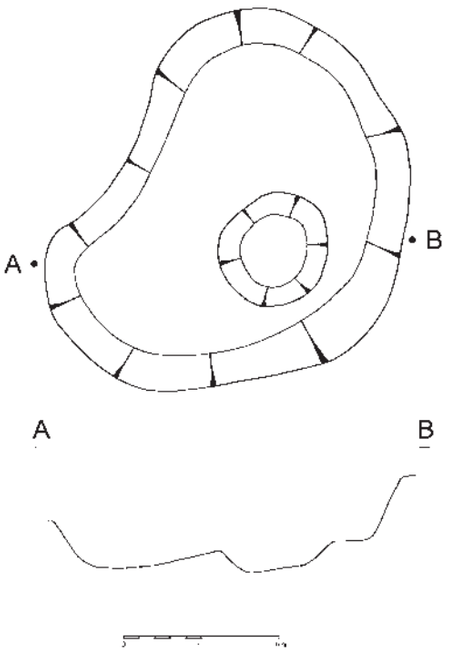

SJ 045 **046**
e 49
110,183-109,10
10 YR 4/2 dark grayish brown
2,3 x 2,5 m
61 ulomak keramike
Litika: 2 kom (kat. II 33)



SJ 047 **048**

a 41/42
108,41-107,92
10 YR 3/2 very dark grayish brown
2,50 x 2
26 ulomaka keramike



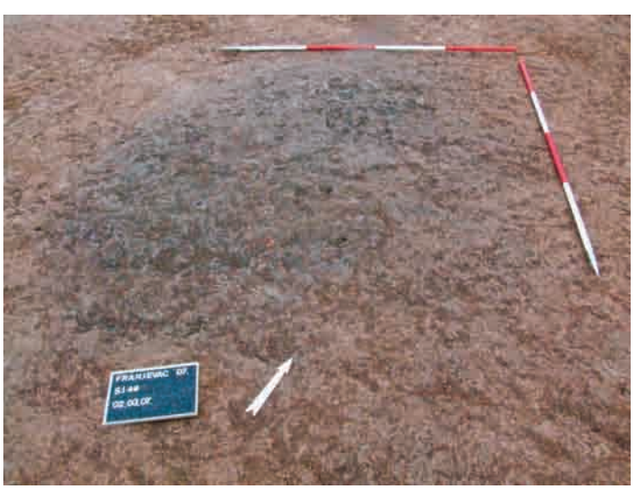

a42 | b42
a41 | b41

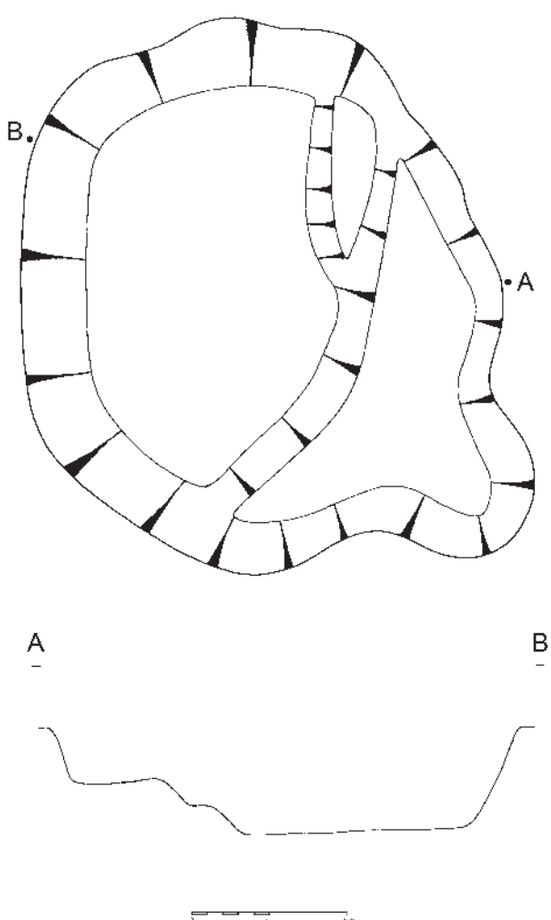


SJ 049 **050**

c 44/45
109,33-108,58
10 YR 3/2 very dark grayish brown / puno gara i lijepa u sastavu
4 x 3,10 m
278 ulomaka keramike
Litika: 17 kom (kat. II 34–38)
Posebni nalaz: keramička žlica

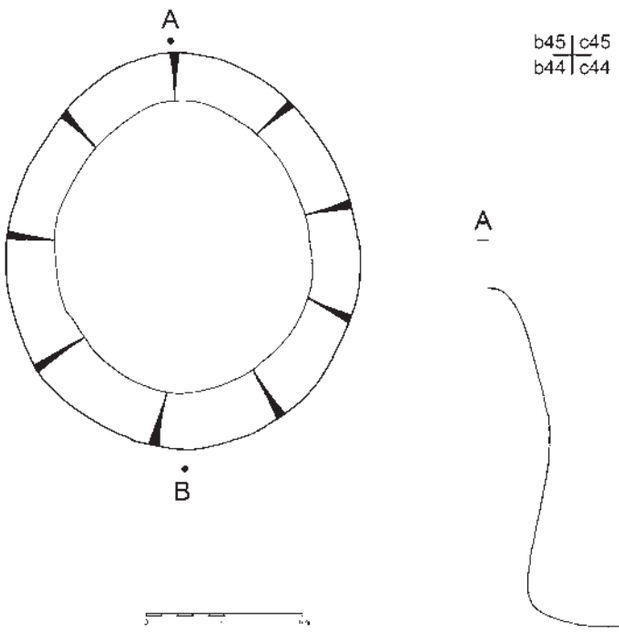
b45 | c45
b44 | c44





SJ 051 **052**

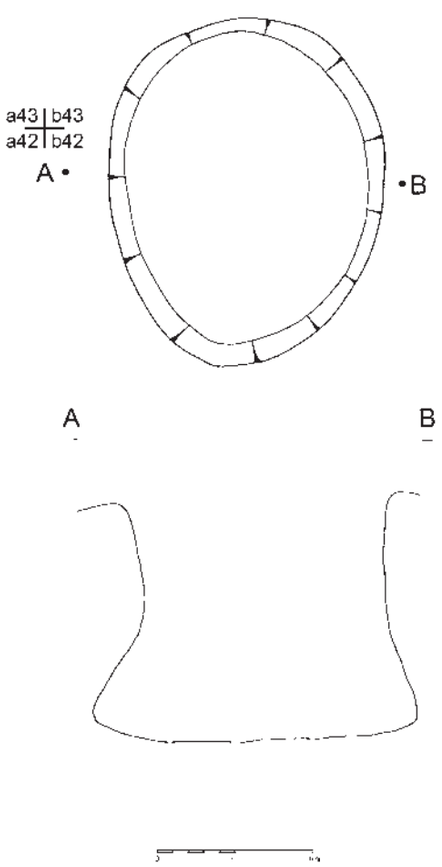
b 44
109,18-107,02
10 YR 4/2 dark grayish brown
2,5 x 2,3 m
99 ulomaka keramike (kat. 27–32)
Litika: 3 kom (kat. II 39)
Posebni nalazi: pršljenak i bakreno šilo






SJ 053 **054**

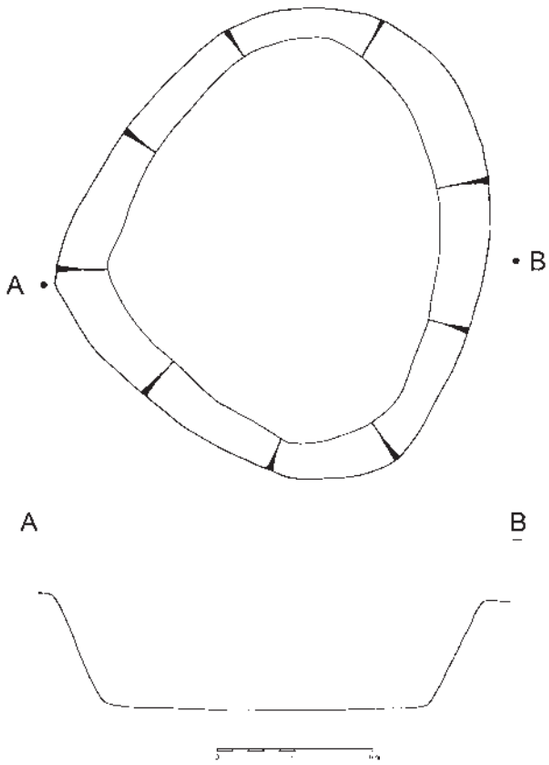
b 42/43
108,742-107,14
10 YR 3/2 very dark grayish brown / puno lijepa u sastavu
2,4 x 1,8 m
284 ulomka keramike (kat. 33–47)
Litika: 10 kom (kat. II 40–44)



SJ 057 **058**

h 59
110,66-109,90
10 YR 4/2 dark grayish brown
2,9 x 2,6 m
129 ulomaka keramike
Litika: 3 kom (kat. II 45)
Posebni nalaz: pršljenak

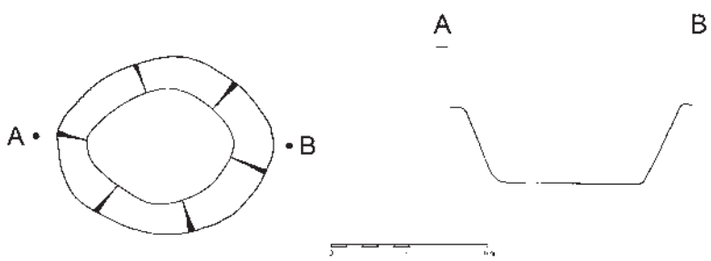
g60 | h60
g59 | h59





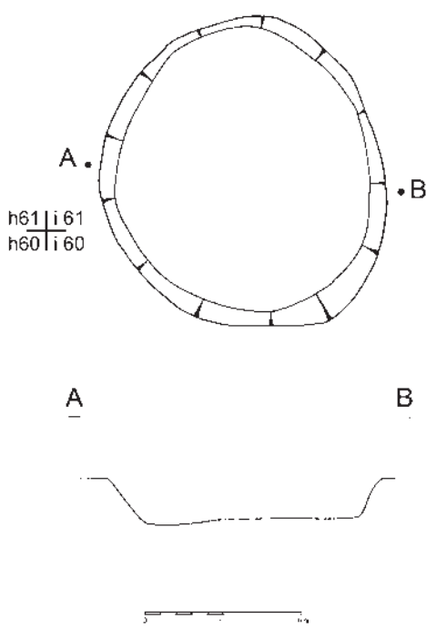

SJ 059 **060**

i 59
110,63-110,11
10 YR 4/3 brown
1,30 x 1,1 m
9 ulomaka keramike



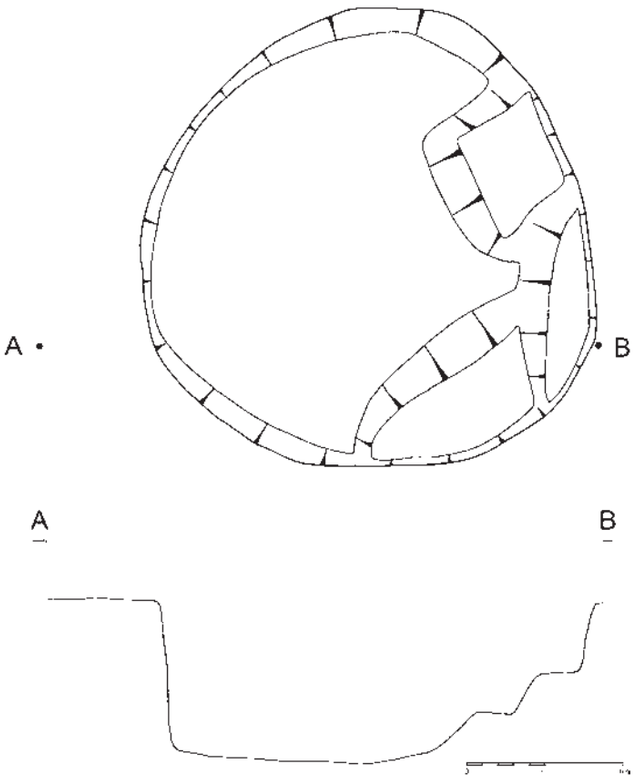

SJ 061 **062**

i 60/61
110,53-110,24
10 YR 4/3 brown
2,00 x 1,84 m
7 ulomaka keramike



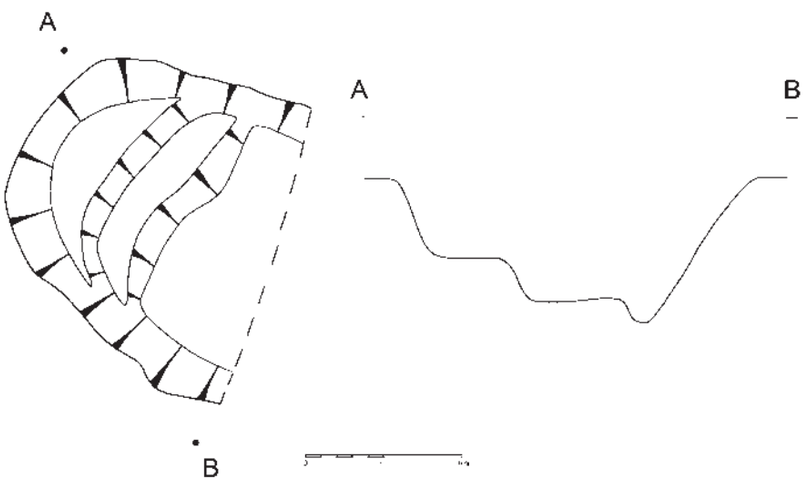
SJ 063 **064**

j 60
110,58-109,51
10 YR 4/2 dark grayish brown
2,86 x 2,80 m
166 ulomaka keramike
Litika: 2 kom




SJ 065 **066**

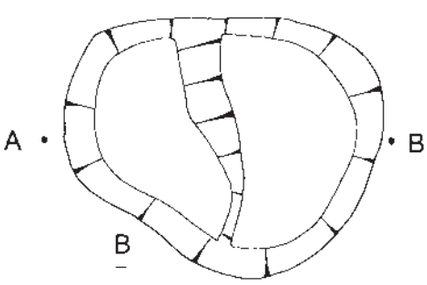
j 61/62
110,56-109,55
10 YR 4/2 dark grayish brown
1,80 x 2,00 m
17 ulomaka keramike

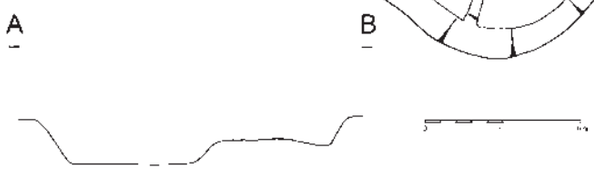





SJ 067 **068**

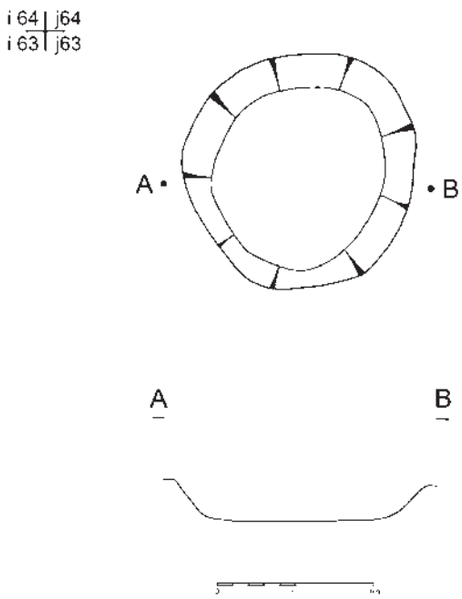
c/d 49
109,949-109,55
10 YR 4/6 dark yellowish brown
2 x 1,7 m
3 ulomka keramike

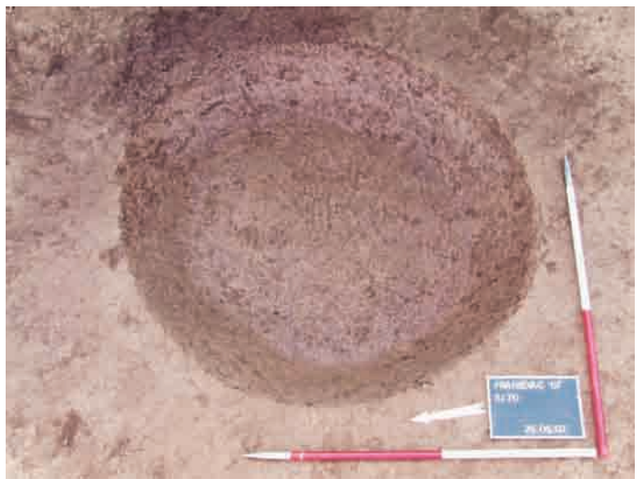



SJ 069 **070**

j 63
110,48-110,21
10 YR 4/4 dark yellowish brown
1,50 m
9 ulomaka keramike

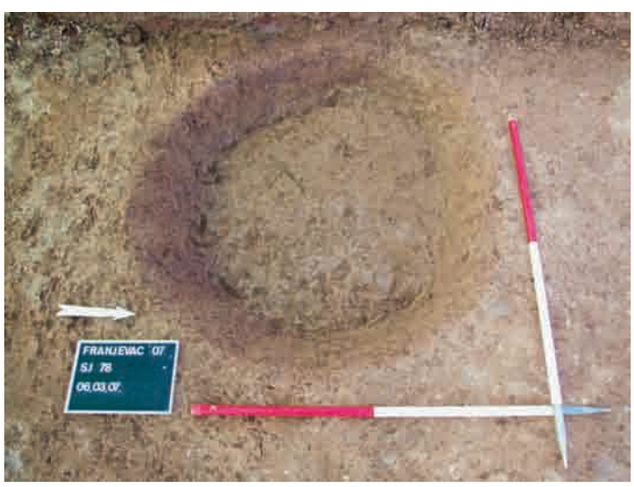


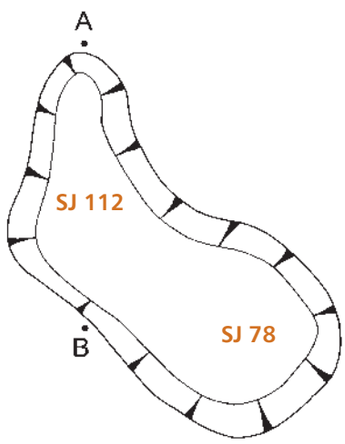



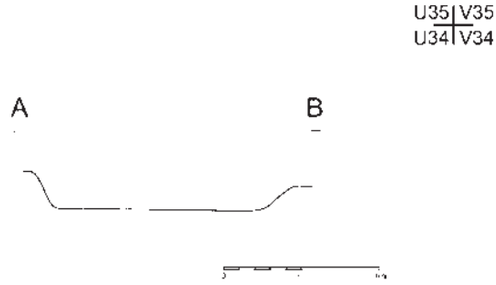


SJ 077 **078**

U 35
104,15-103,89
10 YR 3/6 dark yellowish brown
1,40 m
Presječena od SJ 111 112
2 ulomka keramike



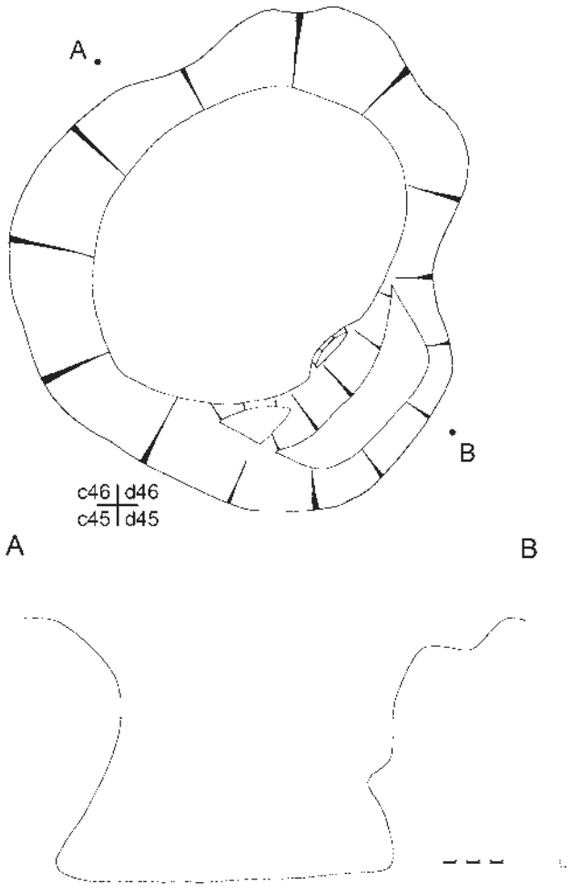



SJ 085 **086** c/d 46
109,73-107,42
4,5 x 4 m
Duboka jama koja se širi prema dnu. Imala je tri zapune (SJ 85, SJ 561 i SJ 658)

**SJ 85** 10 YR 3/2 very dark grayish brown
91 ulomak keramike
Litika: 1 kom (kat. II 46)

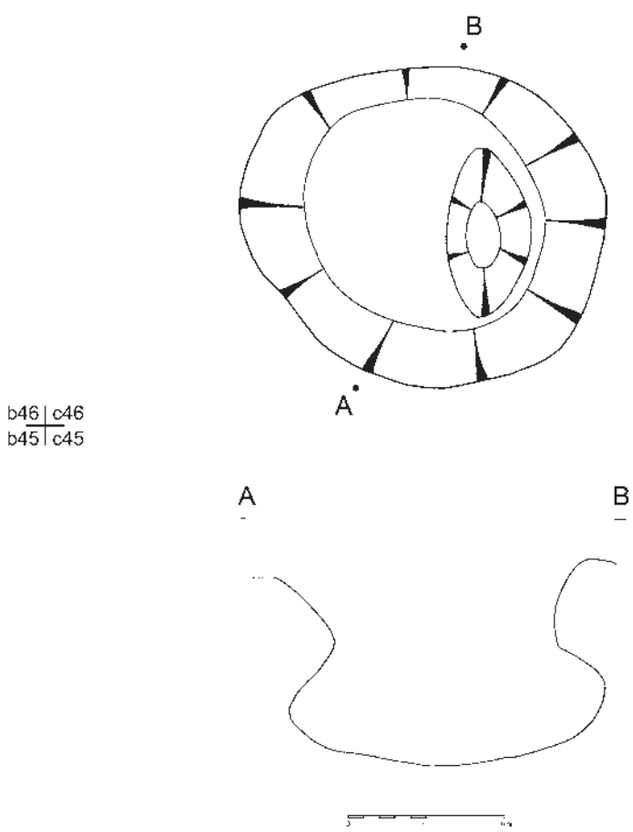
**SJ 561** 10 YR 3/1 very dark gray / puno gara i lijepa u sastavu
172 ulomka keramike (kat. 284–305)
Litika: 9 kom
Posebni nalazi: 2 pršljenka

**SJ 658** 10 YR 5/2 grayish brown / masna zapuna s puno pepela, kostiju i rogova
205 ulomaka keramike
Litika: 5 kom (kat. II 47)



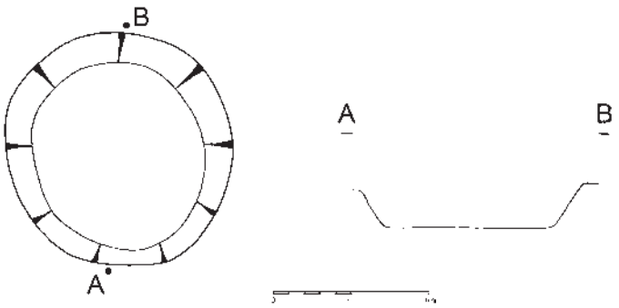


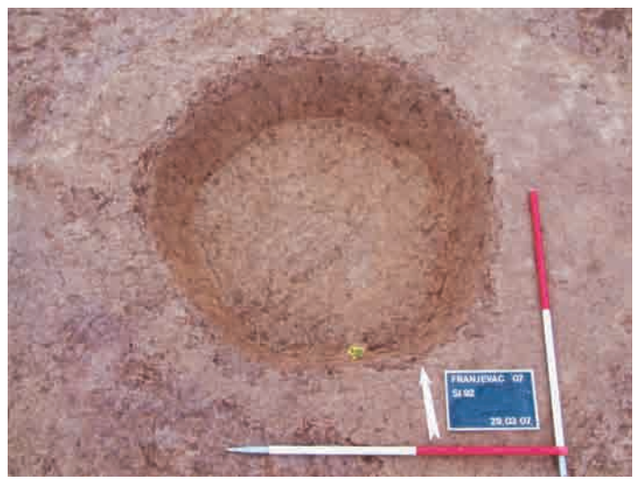

SJ 087 **088** c 46
109,60-108,14
10 YR 4/2 dark grayish brown
2,4 x 2,1 m
58 ulomaka keramike
Litika: 1 kom (kat. II 48)



SJ 091 **092**

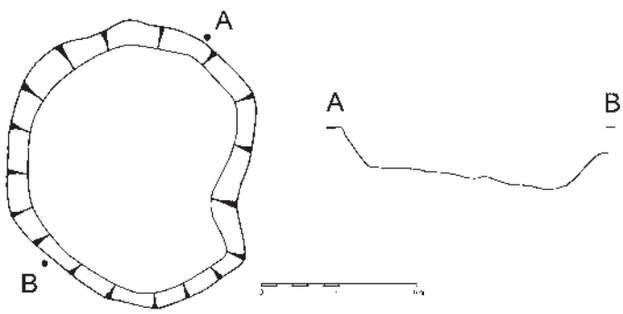
a/b 40
108,30-107,25
10 YR 4/4 dark yellowish brown
1,52 x 1,48 m
4 ulomka keramike

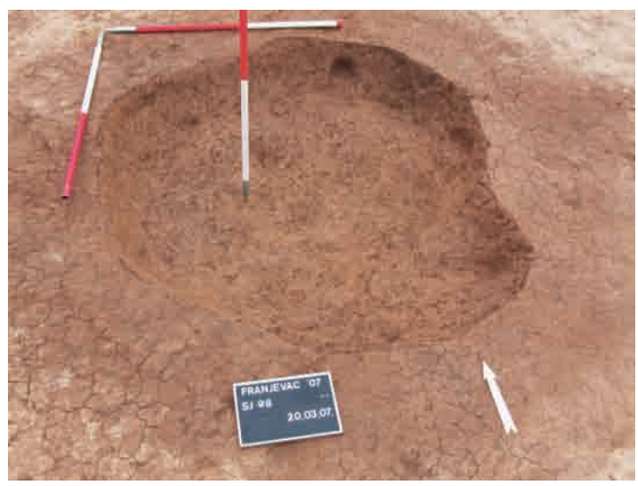


SJ 097 **098**

Z 39
107,45-107,28
10 YR 3/2 very dark grayish brown
1,90 x 1,60 m
5 ulomaka keramike

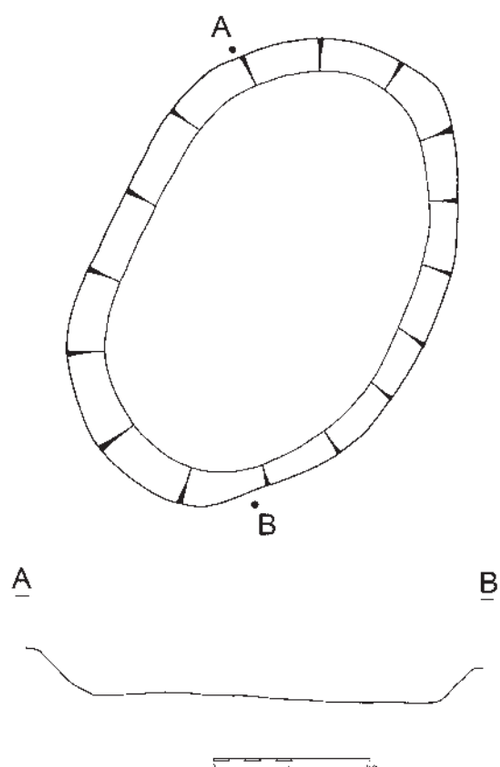




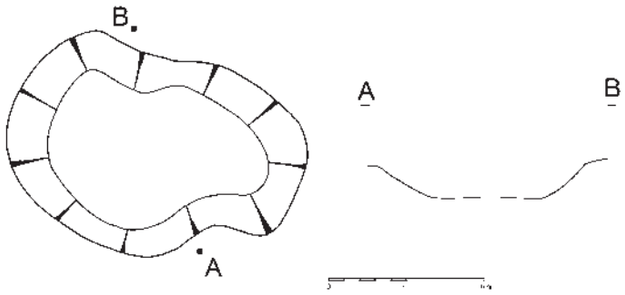
SJ 099 **100**

O 36/37
101,31-100,96
10 YR 6/6 brownish yellow
2,90 x 2,00 m
9 ulomaka keramike



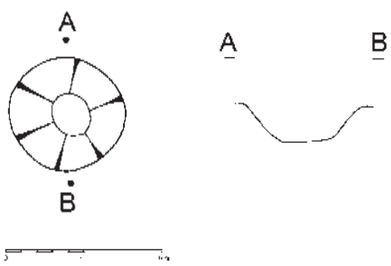
SJ 105 **106**

R/S 36
102,78-102,38
10 YR 4/4 dark yellowish brown i 5 YR 5/4 reddish brown
1,90 x 1,50 m
2 ulomka keramike




SJ 107 **108**

R 36
102,50-102,23
10 YR 4/4 dark yellowish brown
0,70 m
1 ulomak keramike

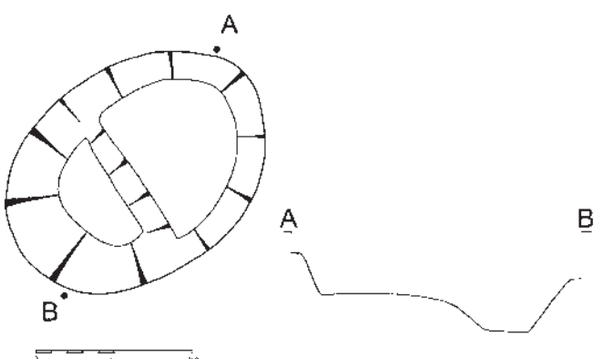






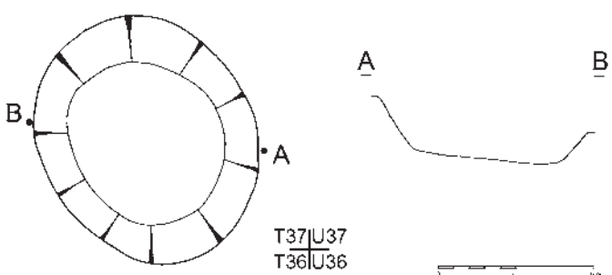
SJ 113 **114**

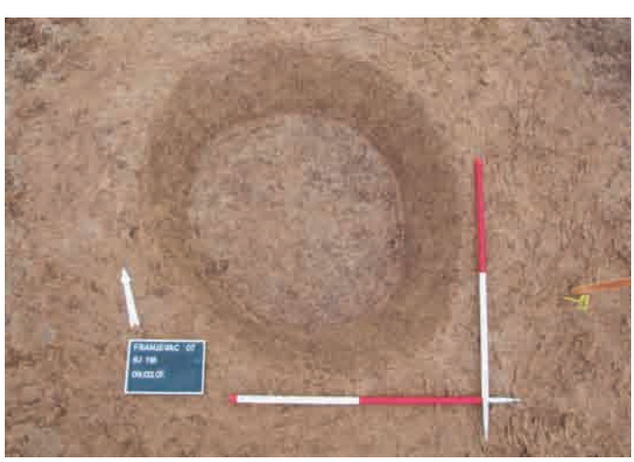
T/U 35
103,95-103,39
10 YR 2/1 black
1,80 x 1,40 m
17 ulomaka keramike




SJ 117 **118**

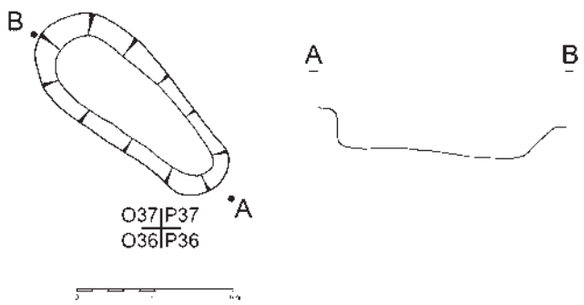
T 36/37
104,25-103,82
10 YR 3/4 dark yellowish brown
1,60 x 1,40 m
5 ulomaka keramike



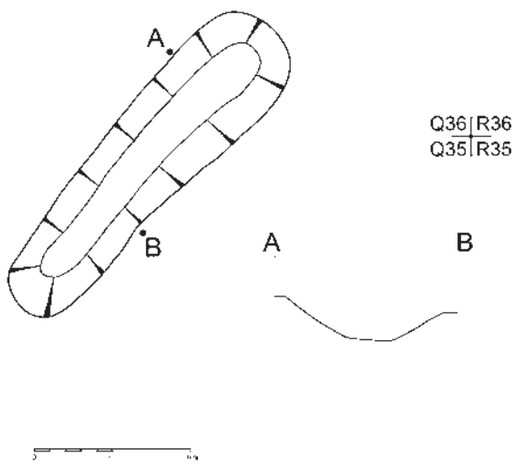
SJ 121 **122**

O/P 37
101,27-100,95
10 YR 4/4 dark yellowish brown
1,50 x 0,60 m
3 ulomka keramike




SJ 123 **124**

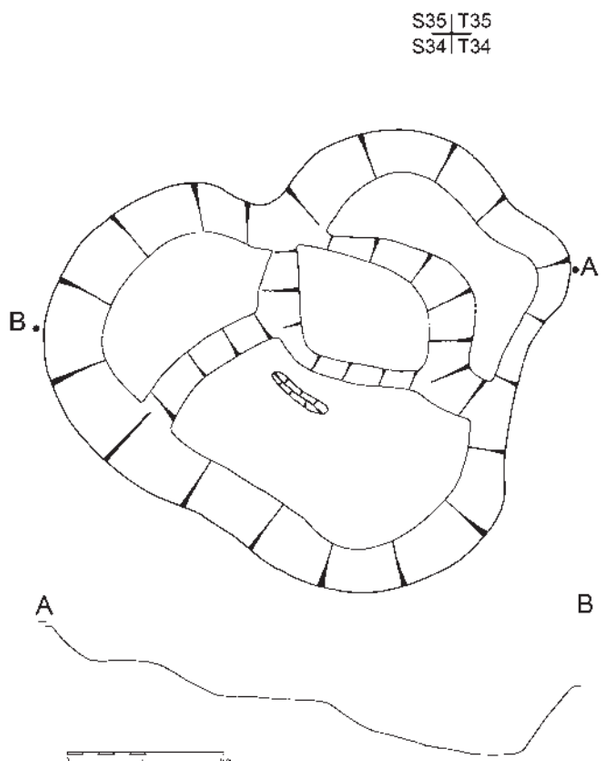
Q 35/36
101,95-101,61
10 YR 4/6 dark yellowish brown
2,40 x 0,70 m
2 ulomka keramike





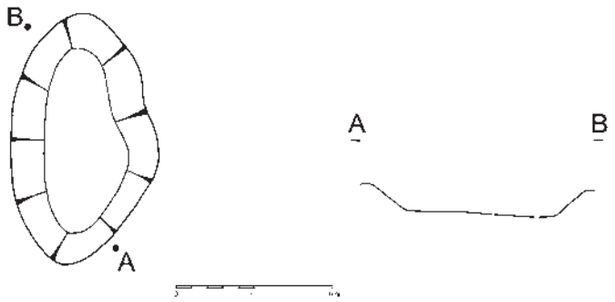

SJ 127 **128**

S/T 34
103,10-102,29
10 YR 3/2 very dark grayish brown
3,50 x 3,00 m
69 ulomaka keramike
Litika: 2 kom (kat. II 49–50)



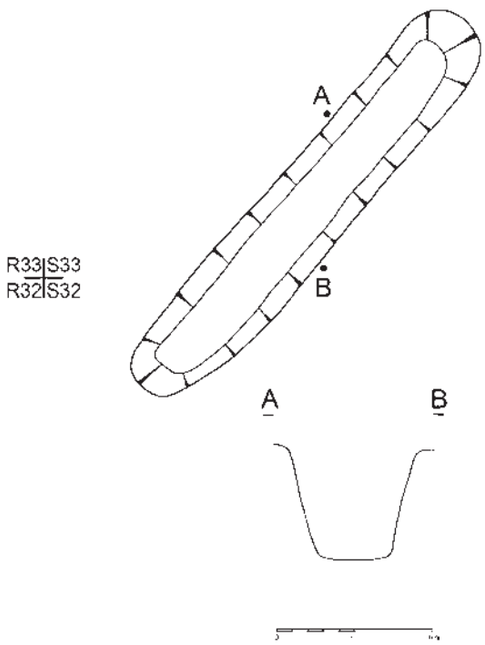
SJ 129 **130**

T 32/33
102,67-102,46
10 YR 4/4 dark yellowish brown
1,60 x 0,90 m
3 ulomka keramike



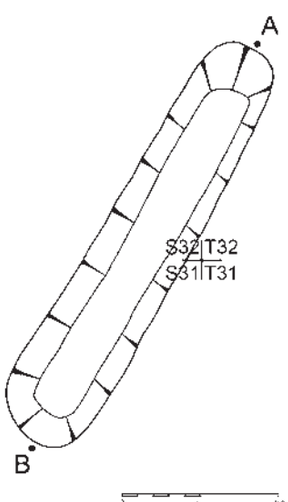

SJ 131 **132**

S 32/33
102,48-101,69
10 YR 4/2 dark grayish brown
3,10 x 0,60 m
2 ulomka keramike



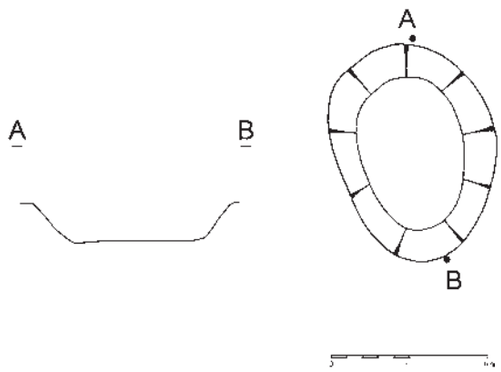

SJ 133 **134**

S/T 31/32
102,477-101,71
10 YR 4/2 dark grayish brown
2,90 x 0,60 m
9 ulomaka keramike




SJ 139 **140**

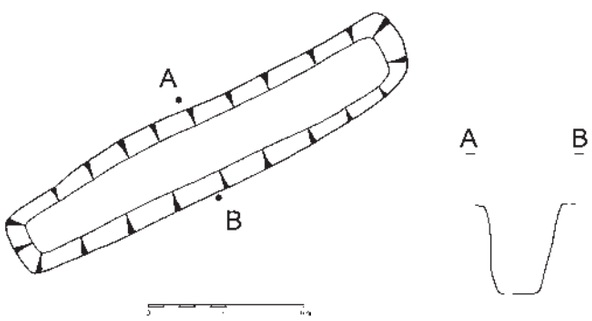
R/S 33/34
102,42-102,07
10 YR 5/4 yellowish brown
1,40 x 1,00 m
2 ulomka keramike




SJ 141 **142**

R/S 34
102,65-101,90
10 YR 4/3 brown
2,80 x 0,60 m
15 ulomaka keramike

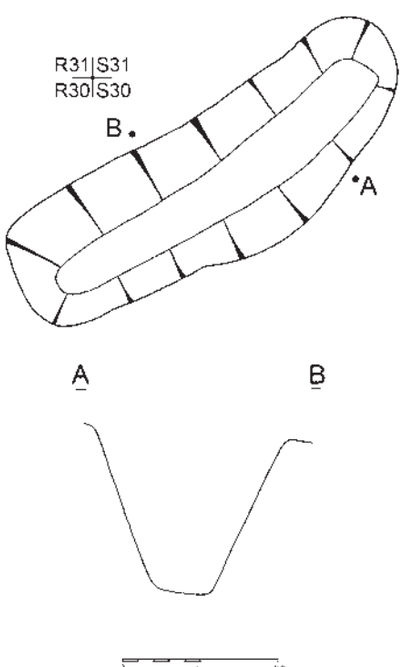
R35|S35
R34|S34





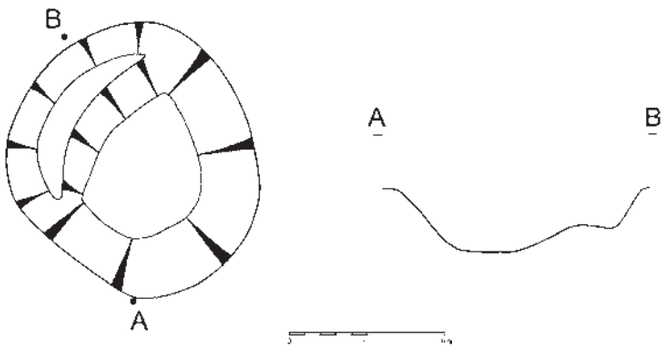

SJ 143 **144**

R/S 30/31
101,92-101,03
7.5 YR5/2 brown
2,90 x 1,00 m
4 ulomka keramike



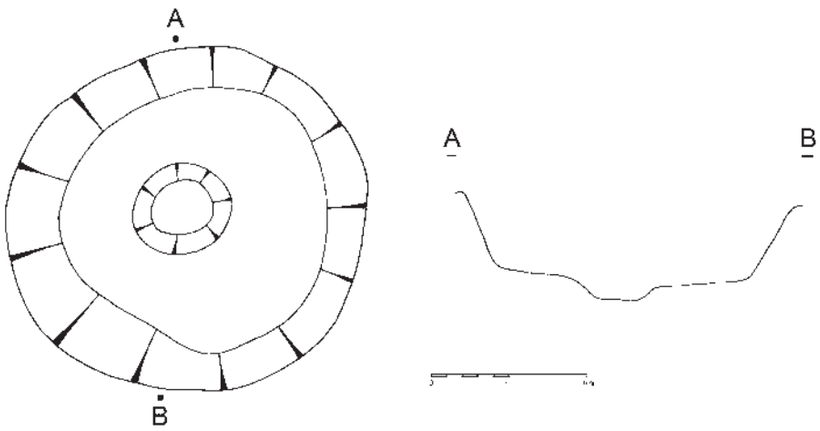
SJ 145 **146**

R 34
102,16-101,71
10 YR 3/2 very dark grayish brown
1,70 x 1,50 m
17 ulomaka keramike
Litika: 1 kom




SJ 149 **150**

T/U 34
103,75-103,04
2,30 x 2,10 m
**SJ 149** 10 YR 5/3 brown
**SJ 155** 10 YR 3/1 very dark gray
7 ulomaka keramike

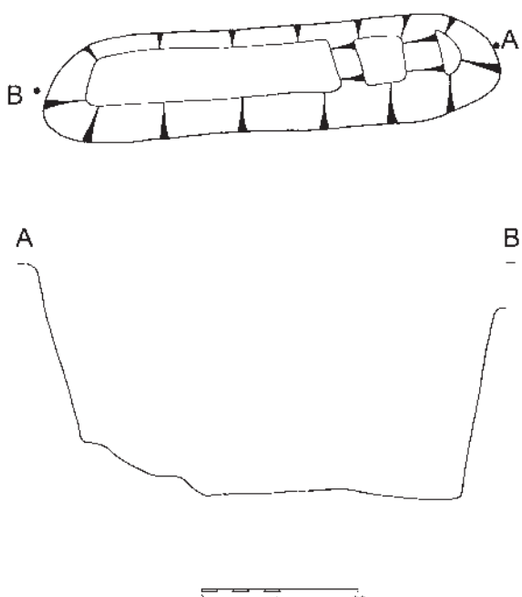



T34|U34
T33|U33



SJ 151 **152**

Q 34
101,56-100,17
10 YR 4/4 dark yellowish brown
2,80 x 0,70 m
31 ulomak keramike




Q34|R34
Q33|R33

SJ 160 **161** Y/Z/a/b 50/51/52
110,17-106,13
20,00 x 17,00 m
Veliki objekt čija je zapuna SJ 160, masna, glinasta zemlja s puno sitnih komadića lijepa u sastavu. Ispod SJ 160, pojedine jamske objekte (ćelije) ispunjavale su druge zapune.

**SJ 160** 10 YR 3/2 very dark grayish brown
17847 ulomaka keramike (kat. 48–63, 81–149, 157–158, 174–183)
Litika: 386 kom (kat. II 104–154)
Posebni nalazi: 8 glačanih kamenih alatki (kat. 69, 152, 155, 156, 160, 167),
5 žrvnjeva (kat. 154), 64 pršljenka (kat. 65, 67, 68, 70, 72, 73–79, 151, 153, 161–166, 168–173), 1 mala posudica, 3 kalema (kat. 66), 2 keramičke sjekirice (kat. 64, 159), 3 keramička grla boce (kat. 80), 2 keramičke žlice, 1 keramički privjesak, 1 keramička ukrašena pločica (kat. 150), 1 keramički valjkasti predmet (kat. 71)

**SJ 578** 5 YR 4/6 yellowish red / u kv. a 50, zapunjava jamski objekt ispod SJ 160. Debljine je cca 50 cm. U ovoj zapuni pronađen je dio lubanje djeteta.
7 ulomaka keramike

**SJ 631** 2.5 Y 6/4 light yellowish brown i 5YR 4/6 yellowish red / pepeljasti rahli tanki sloj (20 cm) u kv. Z/a 51, ispod SJ 160, a iznad SJ 659, sa sitnim kostima u sastavu.
2 ulomka keramike

**SJ 659** 2.5 Y 6/3 light yellowish brown i 10 YR 5/2 grayish brown / žuta zapuna sa sivim flekama, debljine oko 50 cm, u kv. Z 50. Nalazi se ispod SJ 631 i SJ 857, a iznad SJ 856 i 858.
746 ulomaka keramike (kat. 184, 185)
Litika: 5 kom (kat. II 97, 98)
Posebni nalazi: 4 pršljenka i jedan kameni predmet.

SJ 856 – SJ 1040



SJ 990

SJ 578

SJ 1036

**SJ 698** 2.5 YR 4/3 reddish brown / crvenkasta rahla
bez nalaza

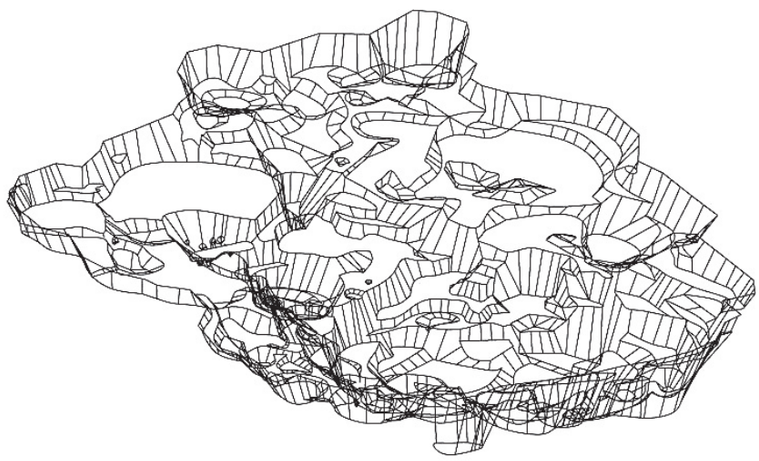
**SJ 733** 5 YR 4/6 yellowish red / u kv. b 52, ispod SJ 160
Litika: 1 kom

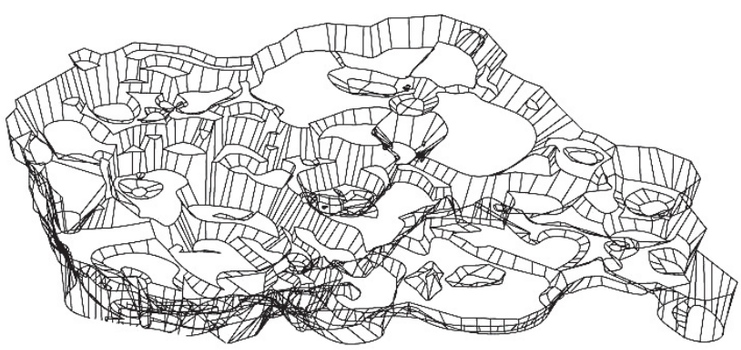
**SJ 855** 10 YR 5/4 yellowish brown
4 ulomka keramike

**SJ 856** 10 YR 4/2 dark grayish brown / u kv. Z 50, masni, kompaktni sloj sa sitnim komadićima lijepa u sastavu. U ovoj zapuni, ukopana je i lubanja (SJ 1040)
175 ulomaka keramike (kat. 186, 187)
Litika: 2 kom
Posebni nalazi: pršljenak i ulomak bakrenog bodeža

SJ 1039





**SJ 857** 5 YR 4/2 dark reddish brown / masna, crvenkastosmeđa zapuna, javlja se na manjem dijelu u južnom dijelu objekta SJ 161, u kv. Z 50, ispod SJ 160, a iznad SJ 659.
19 ulomaka keramike
Litika: 1 kom

**SJ 858** 10 YR 6/4 light yellowish brown / žuti naboj kojim je bila zatrpana jama u kojoj je nađena lubanja. Iznad se nalazi SJ 659, a ispod SJ 856.
9 ulomaka keramike

**SJ 990** 2.5 YR 4/6 red
138 ulomaka keramike
Litika: 1 kom

**SJ 1000** 2.5 YR 4/6 red / u kv. j 76, nalazi se ispod SJ 160
7 ulomaka keramike

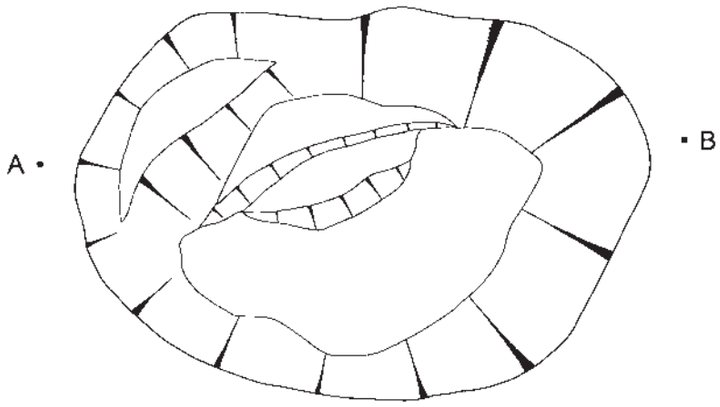
**SJ 1036** 10 YR 5/2 grayish brown / zapunjava jamski prostor u sklopu SJ 161, nalazi se ispod SJ 855.
33 ulomka keramike
Posebni nalaz: pršljenak

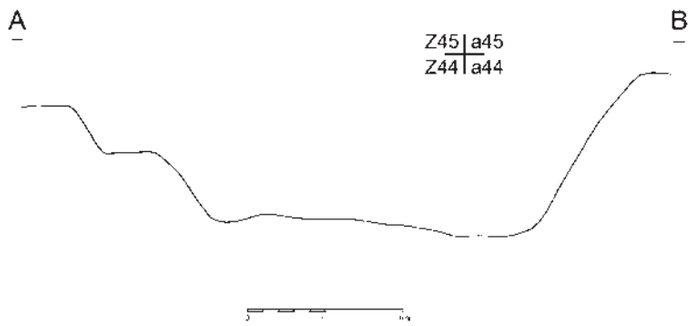
**SJ 1038** 10 YR 3/2 very dark grayish brown / gar i pepeo povezani sa SJ 659
45 ulomaka keramike (kat. 188)
Posebni nalazi:uglačani kamen (kat. 189), kamena perla (kat. 190), 3 pršljenka (kat. 191, 192)

**SJ 1039** 10 YR 2/1 black / ostaci gorena drveta, na dub. 107,34, nalazi se ispod SJ 1038
10 ulomaka keramike

SJ 171 **172**

Z/a 45
108,89-107,81
10 YR 3/4 dark yellowish brown
2,50 x 3,7 m
58 ulomaka keramike
Litika: 1 kom

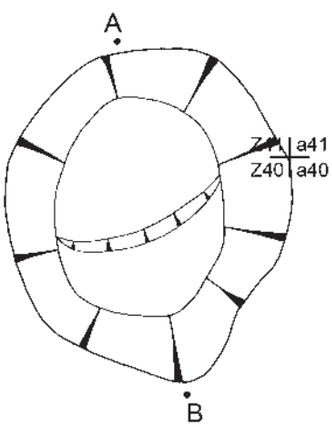


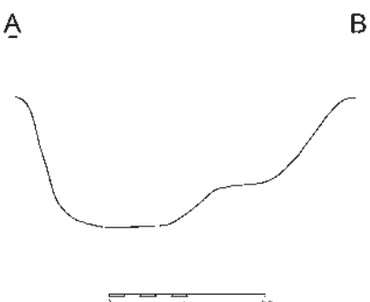





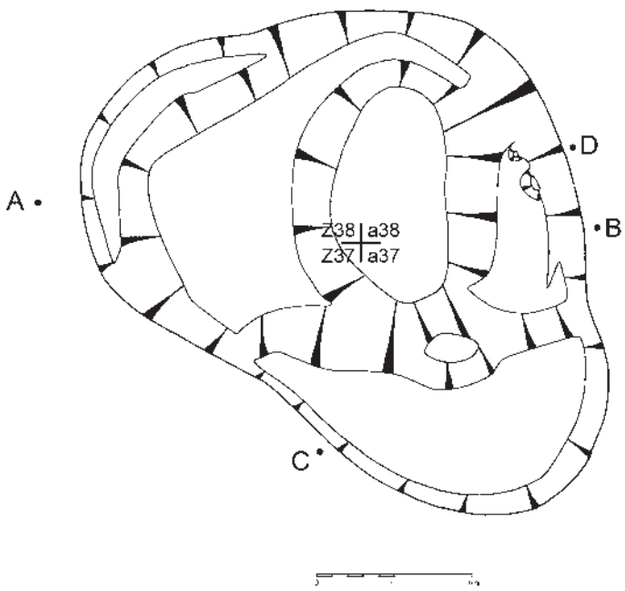

SJ 181 **182**

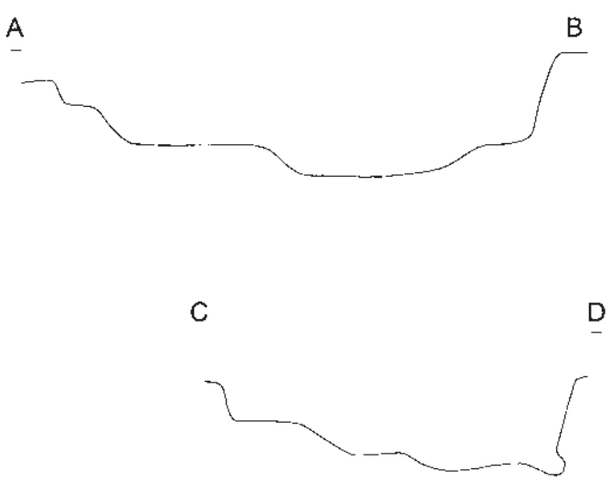
Z 40/41
108,051-107,09
10 YR 3/3 dark brown
2 x 1,80 m
56 ulomaka keramike



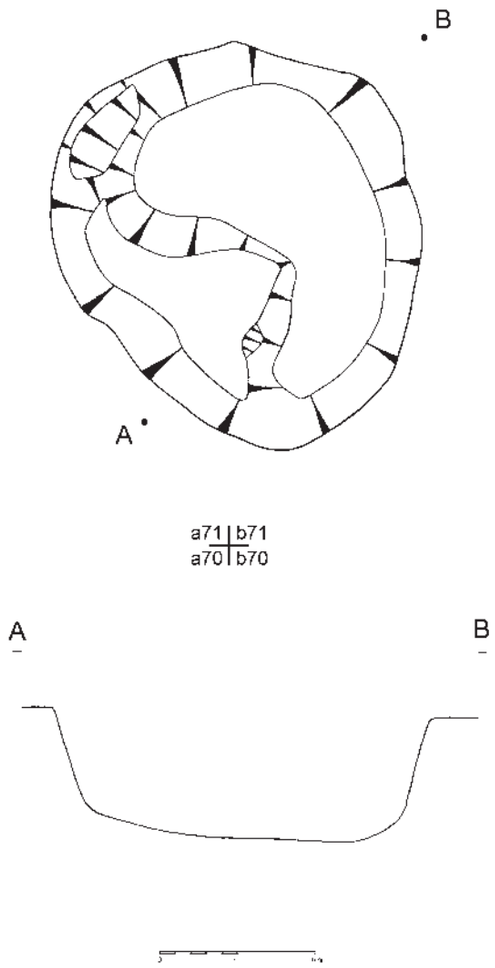

SJ 183 **184** Z/a 37/38
107,51-106,66
3,90 x 3,20 m
**SJ 183** 10 YR 3/3 dark brown
160 ulomaka keramike
Litika: 4 kom (kat. II 51–53)
Posebni nalaz: kamen
**SJ 168** 2.5 YR 5/4 reddish brown / vatrište




SJ 203 **204**

a/b 71
110,29-109,25
10 YR 3/1 very dark gray
2,60 x 2,40 m
107 ulomaka keramike
Litika: 2 kom (kat. II 54)



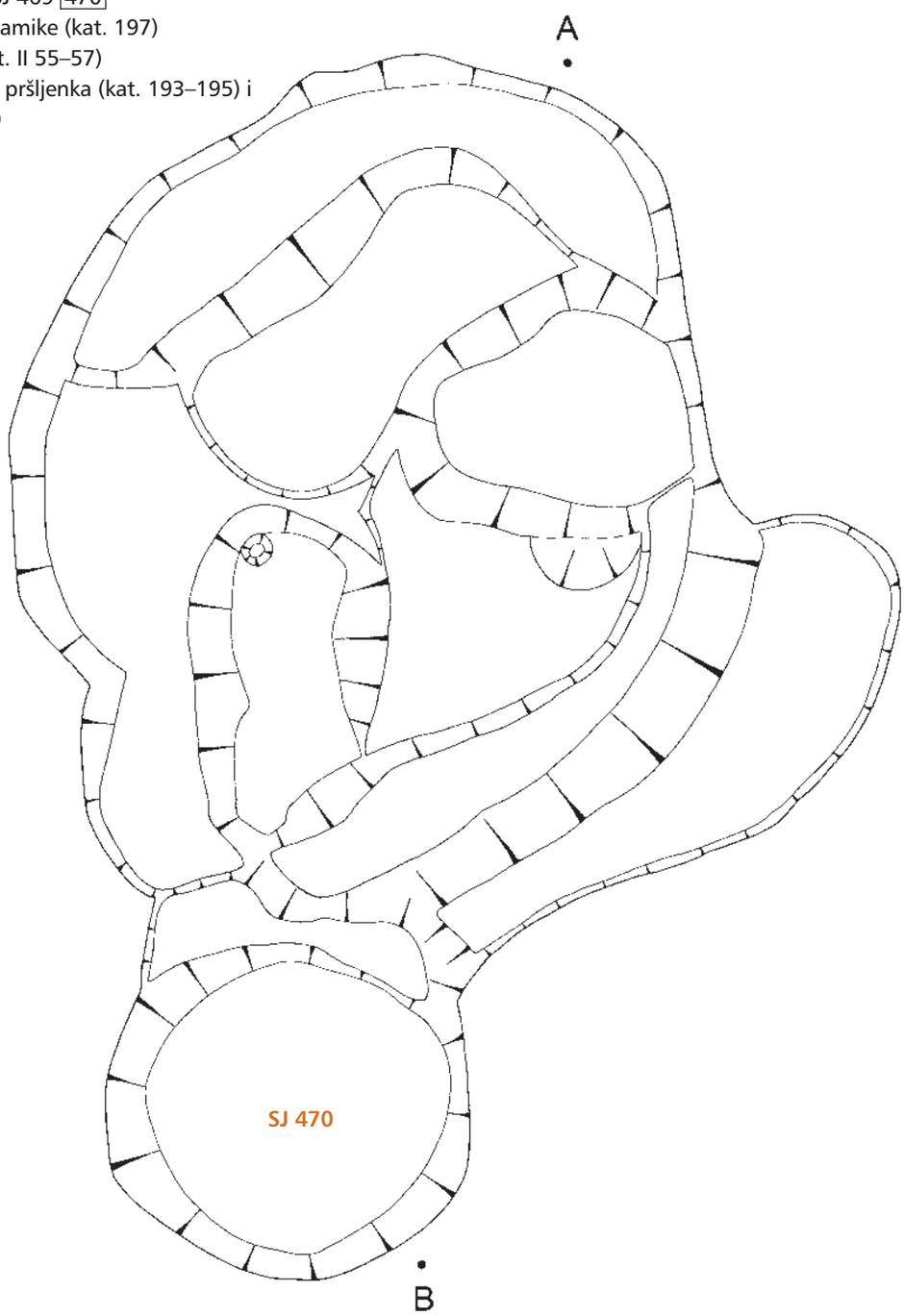



SJ 205 **206**

a 44
108,75-107,85
10 YR 4/4 dark yellowish brown
1,35 x 1,2 m
1 ulomak keramike

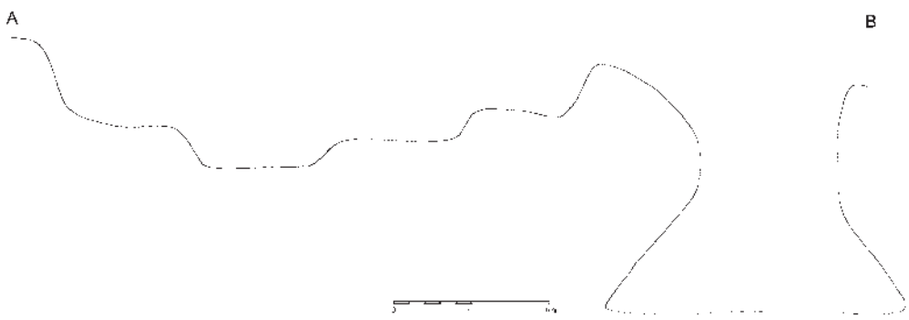
SJ 207 **208**

Y/Z 43/44
108,494-107,04
10 YR 4/4 dark yellowish brown
6,10 x 5,30 m
Na južnom dijelu na nju se nastavlja duboka jama-spremište SJ 469 470
676 ulomaka keramike (kat. 197)
Litika: 7 kom (kat. II 55–57)
Posebni nalazi: 3 pršljenka (kat. 193–195) i kamen (kat. 196)



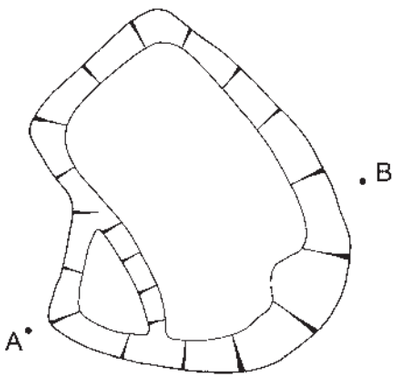



X44 | Y44
X43 | Y43



SJ 215 **216**

X 44
107,91-107,42
10 YR 4/4 dark yellowish brown
2,3 x 2 m
13 ulomaka keramike



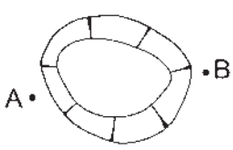


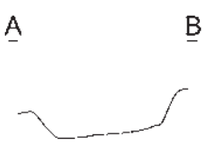
X44 | Y44
X43 | Y43



SJ 219 **220**

U 48
107,04-106,79
10 YR 4/4 dark yellowish brown
0,9 m
11 ulomaka keramike



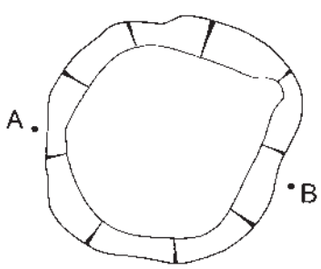




T48 | U48
T47 | U47

SJ 221 **222**

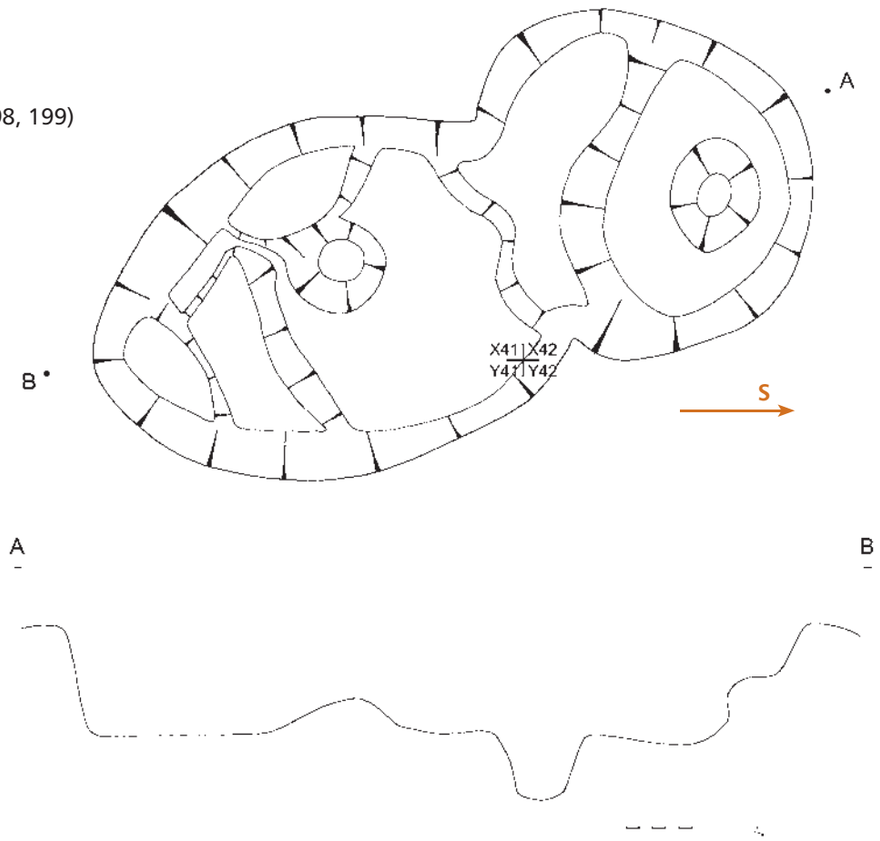
X 52
108,88-108,56
10 YR 4/2 dark grayish brown
1,8 x 1,6 m
6 ulomaka keramike

W53 | X53
W52 | X52


SJ 227 **228**

X/Y 41/42
107,512-105,97
10 YR 3/3 dark brown
5,4 x 2,3 m
134 ulomka keramike (kat. 198, 199)
Litika: 3 kom (kat. II 58)
Posebni nalaz: pršljenak

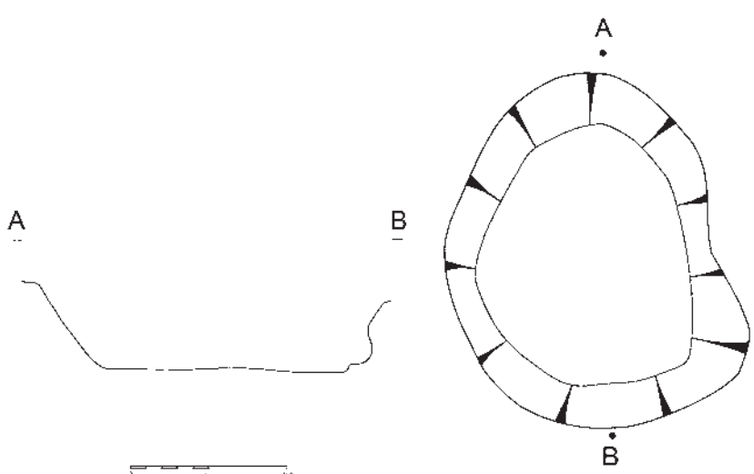





SJ 235 **236**

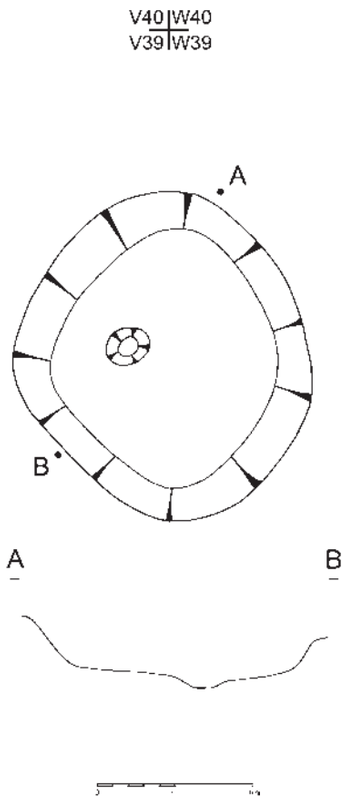
Y 39
107,25-106,65
10 YR 4/1 dark gray
2,24 x 1,80 m
37 ulomaka keramike (kat. 200)
Posebni nalazi: 2 pršljenka

X40 | Y40
X39 | Y39



SJ 237 **238**

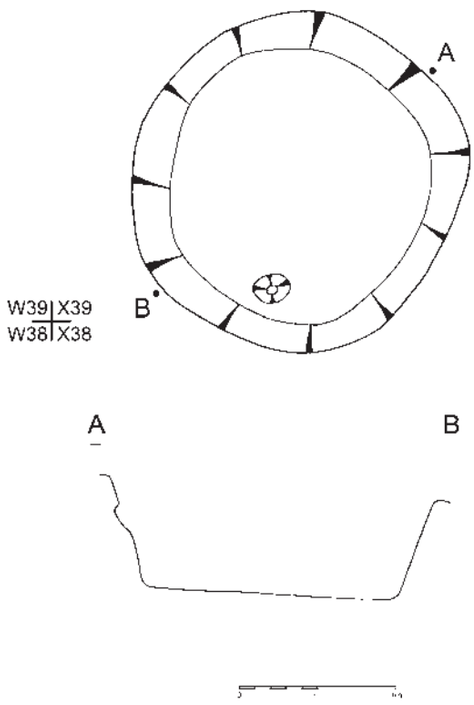
V/W 39
105,86-105,46
10 YR 4/2 dark grayish brown
2,12 x 1,90 m
42 ulomka keramike





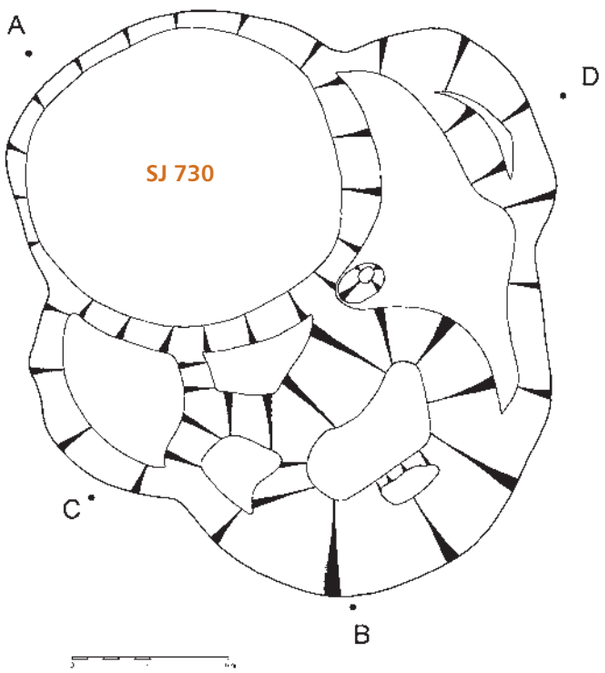

SJ 241 **242**

X 38/39
106,65-105,78
10 YR 3/2 very dark grayish brown
2,20 x 2,10 m
75 ulomaka keramike (kat. 201)
Litika: 6 kom
Posebni nalaz: pršljenak (kat. 202)

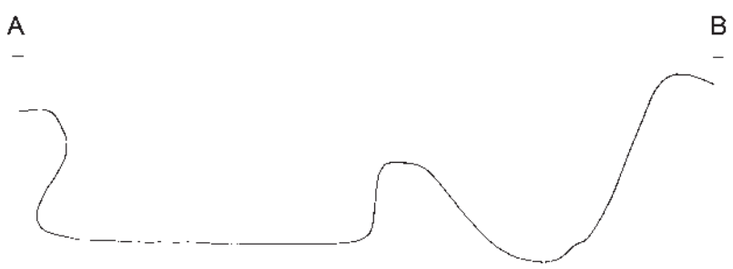


SJ 243 **244**

X 51/52
108,97-107,78
10 YR 4/2 dark grayish brown
3,7 x 2,65 m
Presječena od SJ 729 730
293 ulomka keramike
Litika: 12 kom (kat. II 60, 61)
Posebni nalazi: keramička minijaturna posuda, keramička žlica

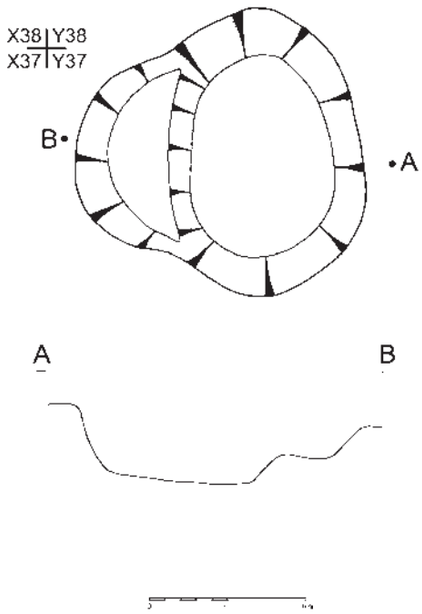



X52 | Y52
X51 | Y51




SJ 245 **246**

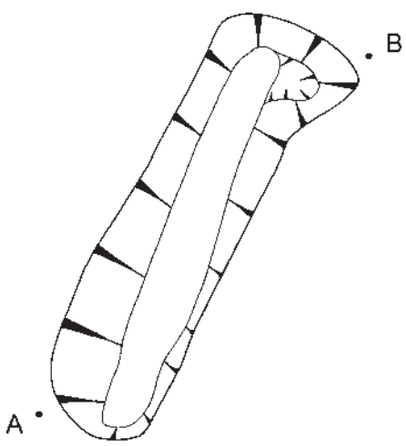
Y 37/38
106,79-106,32
10 YR 4/1 dark gray
1,90 x 1,80 m
26 ulomaka keramike
Litika: 2 kom

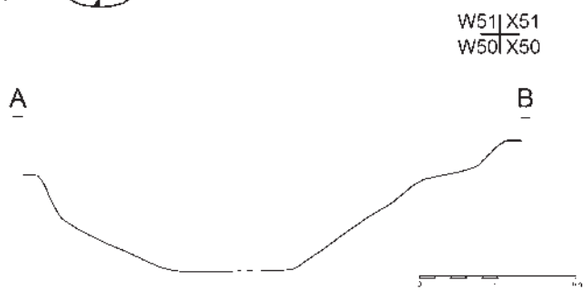





SJ 247 **248**

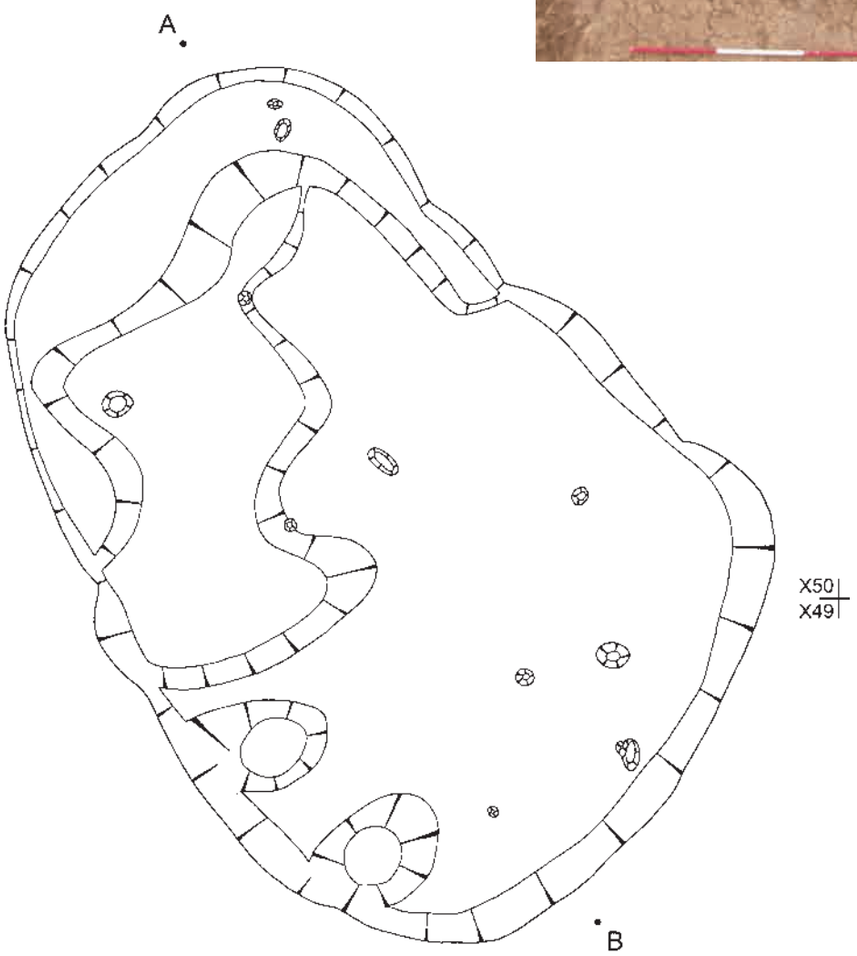
W 51
108,61-107,62
10 YR 4/2 dark grayish brown
2,9 x 1 m
5 ulomaka keramike



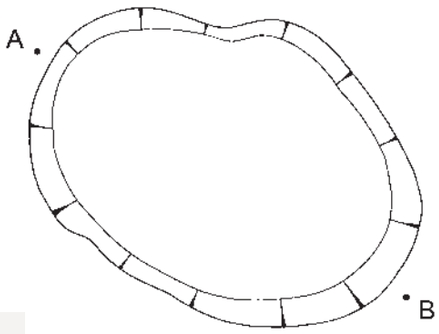
SJ 249 **250**

W/X 49/50
108,78-107,84
10 YR 3/1 very dark gray
5,3 x 3,9 m
339 ulomaka keramike
Litika: 7 kom (kat. II 62, 63)
Posebni nalaz: kamen




SJ 251 **252**

d 49/50
111,188-109,80
10 YR 5/2 grayish brown
2,6 x 1,9 m
35 ulomaka keramike
1 nalaz litike

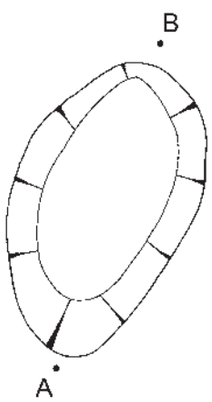


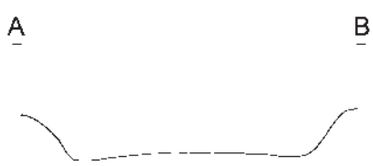

d50 | e50
d49 | e49




SJ 253 **254**

d 51
111,163-109,75
10 YR 4/3 brown
2,00 x 1,2 m
11 ulomaka keramike

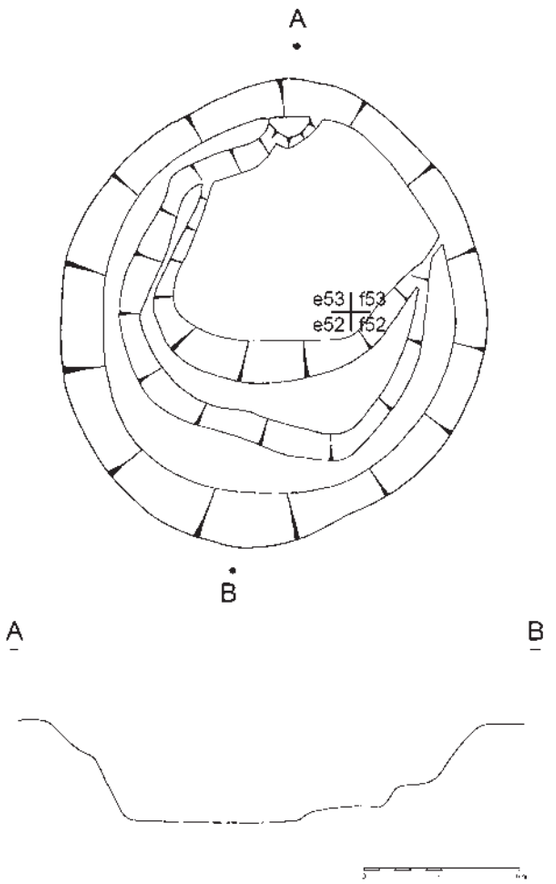



c51 | d51
c50 | d50

SJ 257 **258**

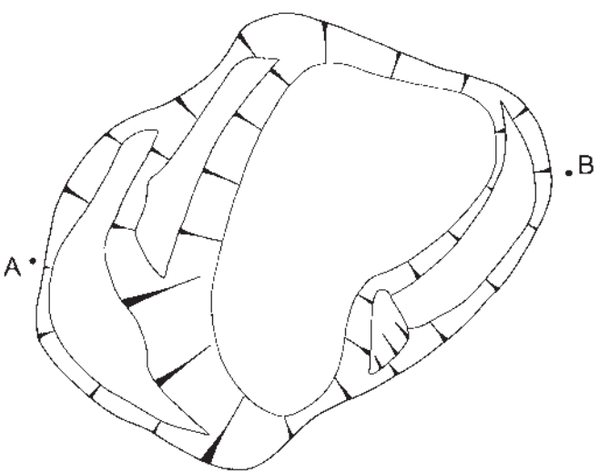
e/f 52/53
110,401-109,51
10 YR 3/2 very dark grayish brow
2,7 x 2,9 m
105 ulomaka keramike
1 nalaz litike

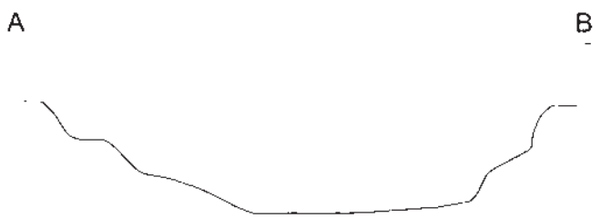





SJ 259 **260**

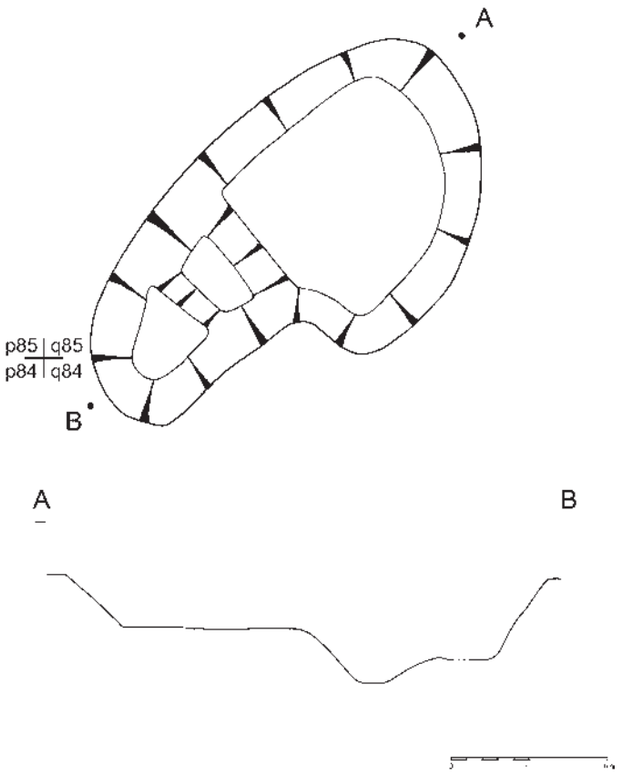
X/Y 49
108,97-108,09
10 YR 3/6 dark yellowish brown
2,90 x 3,50 m
25 ulomaka keramike
Litika: 2 kom (kat. II 64)




SJ 263 **264**

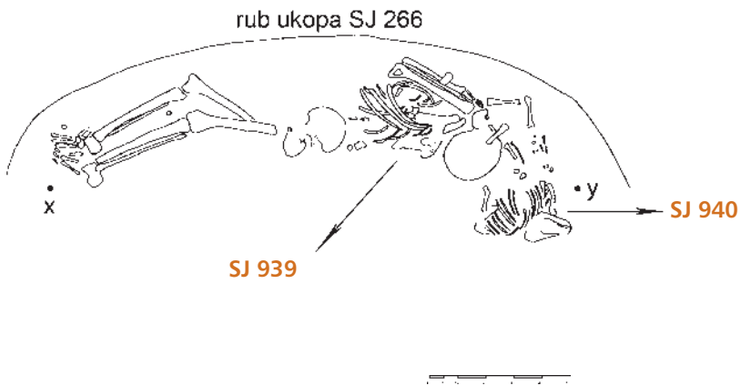
q 84/85
110,21-109,53
2.5 YR 5/4 light olive brown
3,00 x 1,70 m
1 ulomak keramike
1 nalaz litike

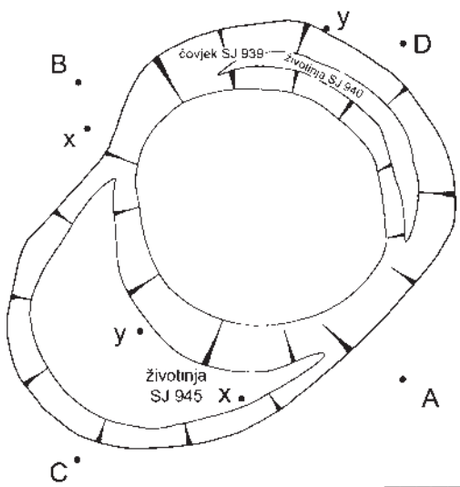





SJ 265 **266**

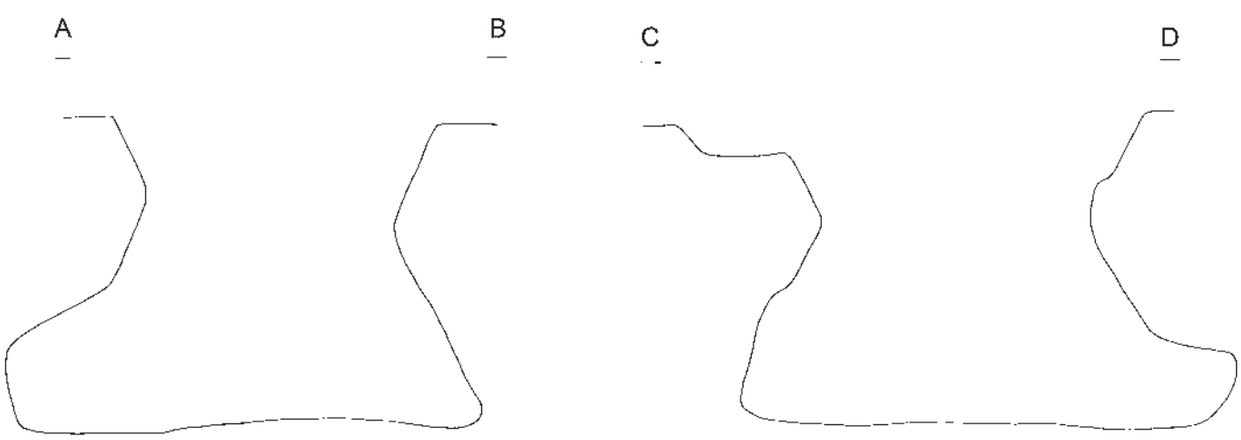
b/c 50/51
109,92-107,94 m
10 YR 4/2 dark grayish brown
3,00 x 2,10 m
Duboka jama koja se širi prema dnu. U njoj su ukopani čovjek (SJ 939) i dvije životinje (SJ 940, SJ 945).
74 ulomka keramike (kat. 203)
Posebni nalaz: pršljenak

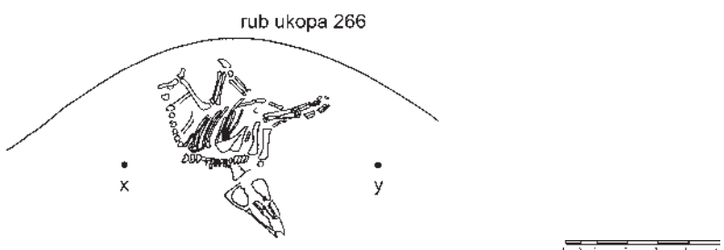



c51 | d51
c50 | d50






SJ 945

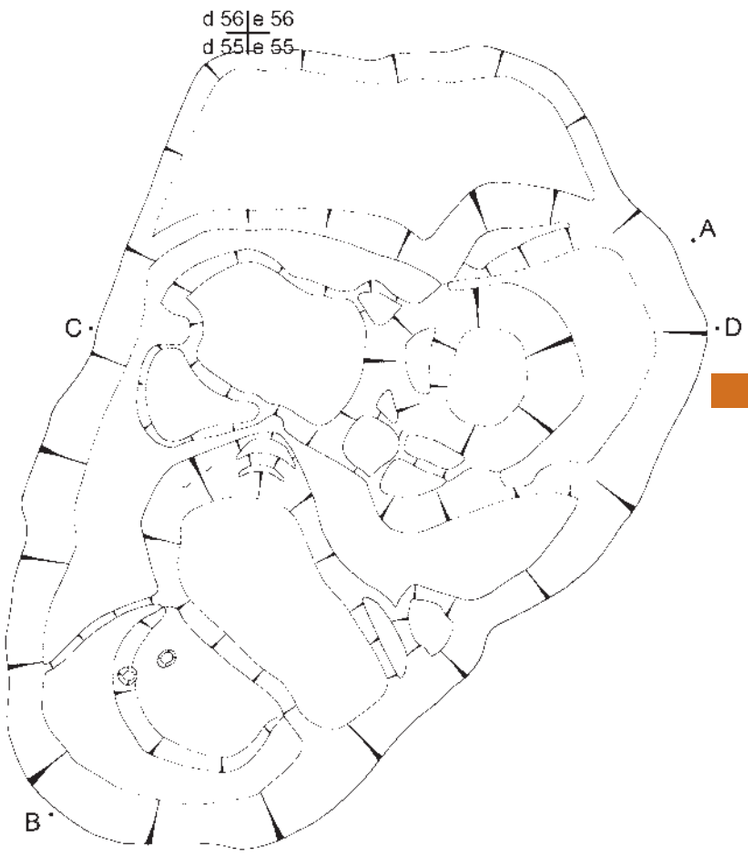
SJ 267 **268** d/e 54/55
110,49-108,22
8,00 x 6,00 m
U kv. e 55 ustanovljeno je ognjište (SJ 853), blago ukopano u zdravicu, okrugla oblika. Dno i rubovi su sasvim zapečeni, a ispuna je tamna zemlja (SJ 859).

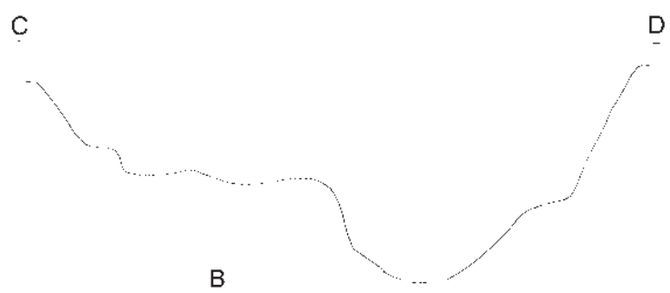
**SJ 267** 10 YR 3/3 dark brown
1346 ulomaka keramike (kat. 204, 205, 209–219)
Litika: 27 kom (kat. II 65–71)
Posebni nalazi: 2 pršljenka (kat. 207, 208), keramička žlica (kat. 206)

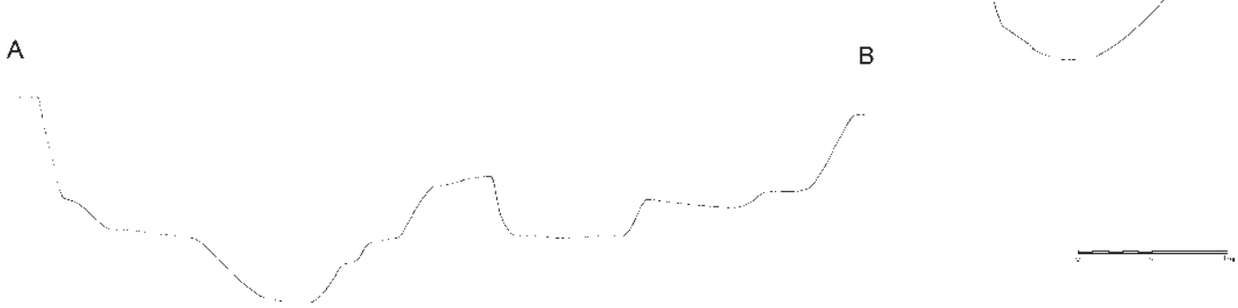
**SJ 853** 5 YR 4/4 reddish brown
242 ulomaka keramike
Litika: 9 kom (kat. II 72, 73)
Posebni nalaz: žrtvenik

**SJ 859** 10 YR 4/3 brown


SJ 853



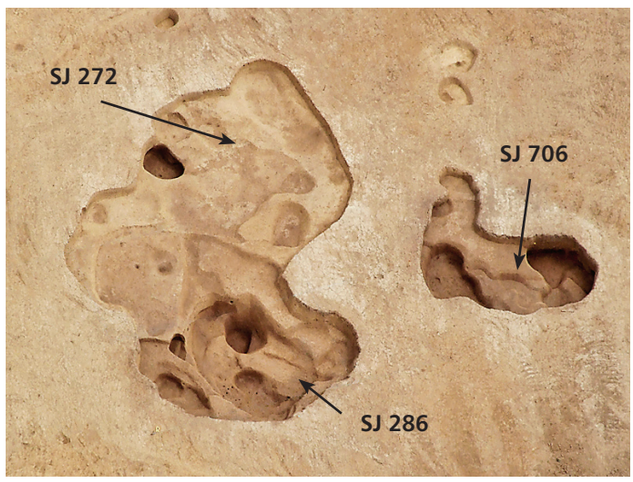



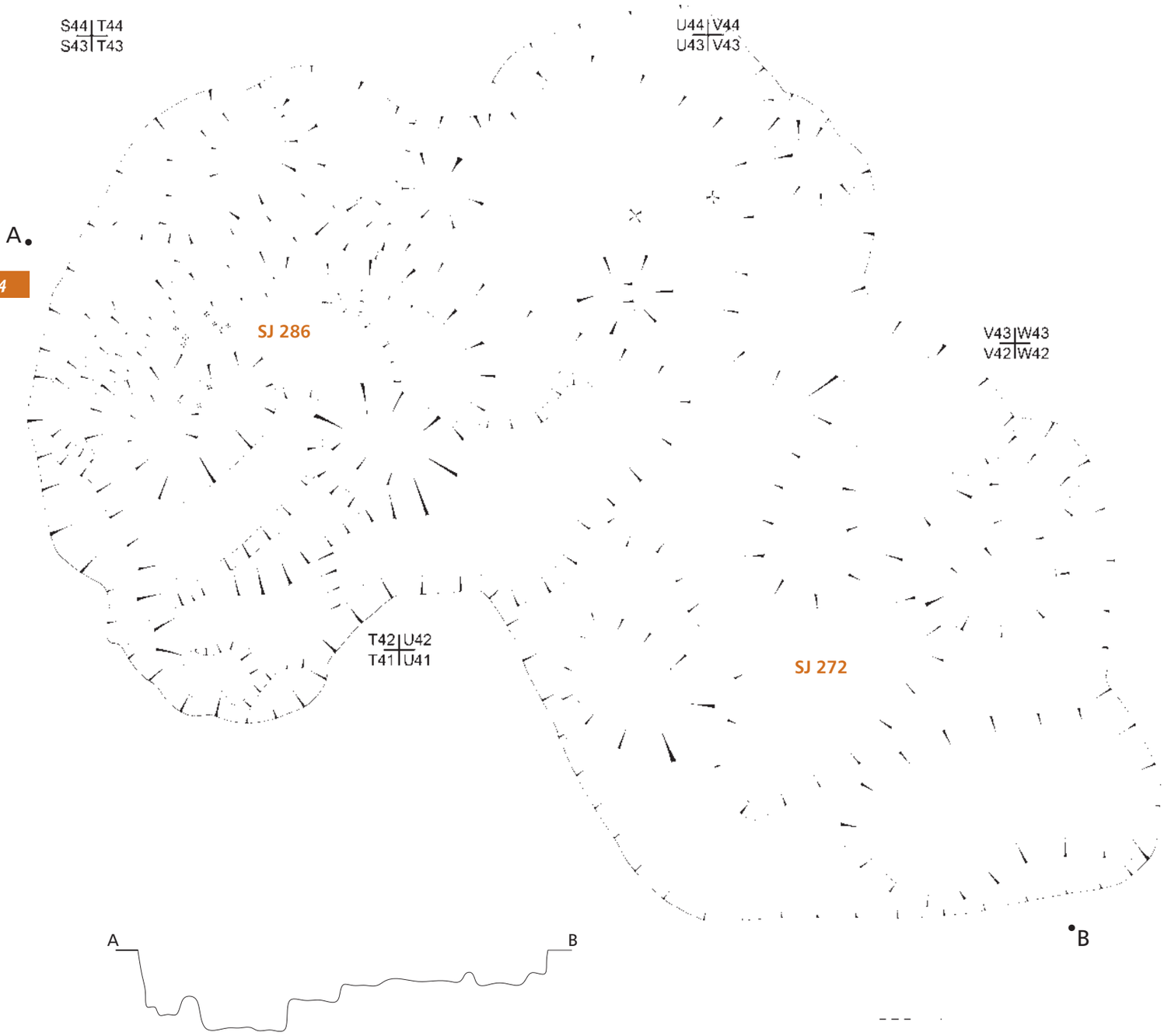
SJ 271 **272** U/V/W 41/42/43/44
106,80-105,07
20,50 x 14 m
Na objekt se nastavlja SJ 285 286. U kv. V/W 42 ustanovljen je žuti naboj, debljine 10 cm SJ 360, a ispod njega SJ 361.

**SJ 271** 10 YR 3/4 dark yellowish brown / 2586 ulomaka keramike (kat. 220–244)
Litika: 45 kom (kat. II 74–78)
Posebni nalazi: 2 kamena, 4 pršljenka, kalem i mala posudica

**SJ 360** 2.5 Y 6/6 olive yellow

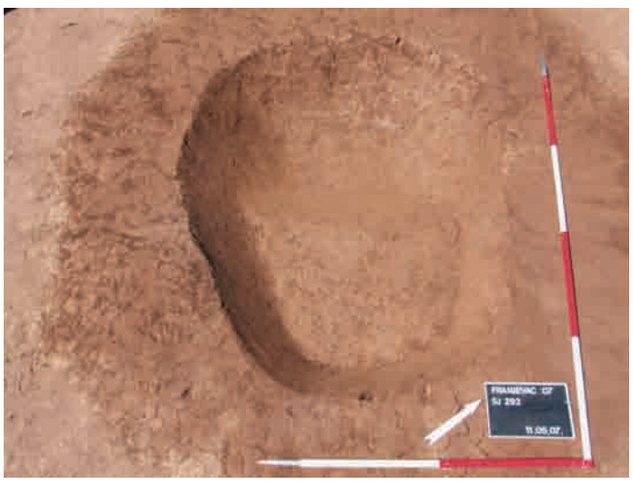
**SJ 361** 10 YR 5/3 brown
9 kom keramike

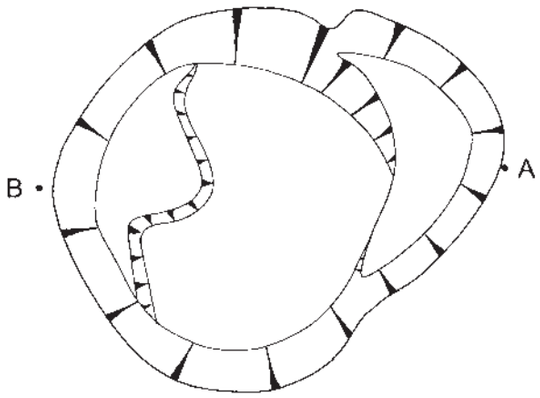


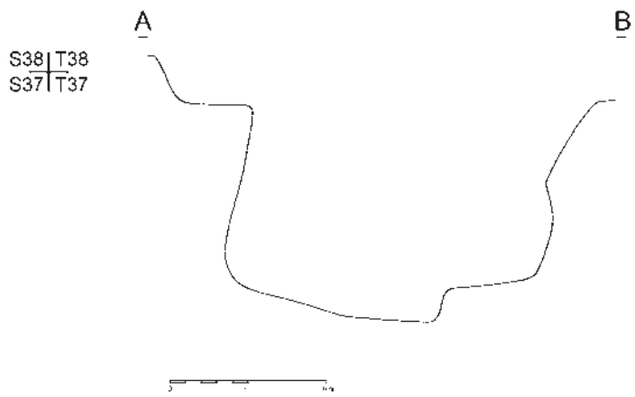



SJ 281 **282**

S/T 38
104,33-102,64
10 YR 3/4 dark yellowish brown
2,90 x 2,50 m
160 ulomaka keramike (kat. 245, 247–251)
Litika: 3 kom (kat. 80)
Posebni nalaz: žrvanj i bakreno šilo



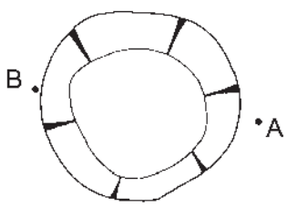





SJ 283 **284**

a 52
109,85-109,58
10 YR 4/4 dark gray
1,30 m
7 ulomaka keramike


SJ 285 **286** T/U 41/42/43
104,92-102,76
7,10 x 6,80 m
Spojena je sa SJ 271 272. Objekt ima II zapune.

vidi crtež SJ 271 272

**SJ 285** 10 YR 3/2 very dark grayish brown
390 ulomaka keramike (kat. 252–259)
Litika: 7 kom
Posebni nalazi: pršljenak

**SJ 854** 10 YR 3/3 dark brown
388 ulomaka keramike (kat. 453)
Litika: 2 kom

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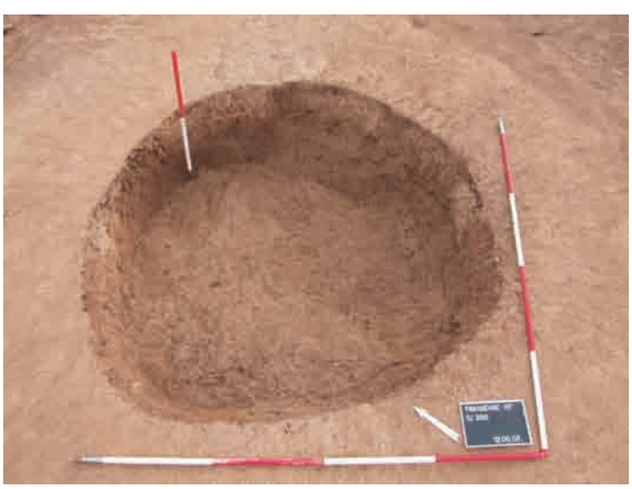
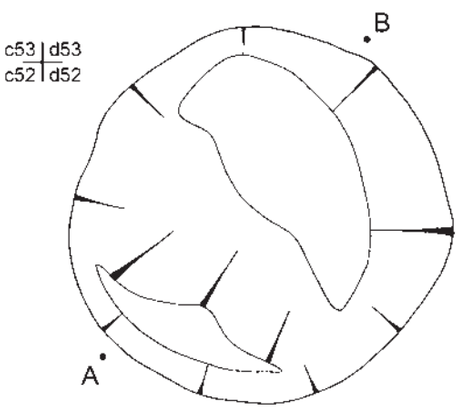
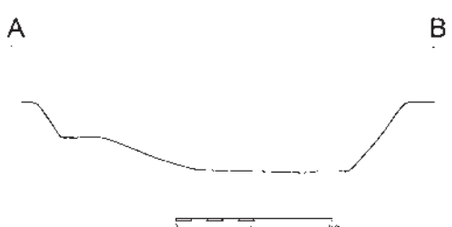
SJ 287 **288** d 52
110,22-109,69
10 YR 4/2 dark grayish brown
2,40 m
36 ulomaka keramike



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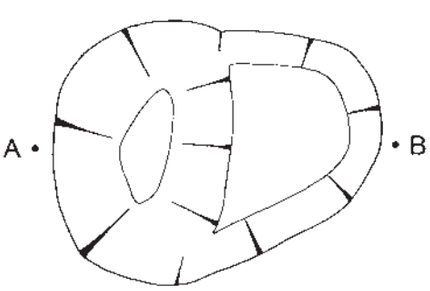
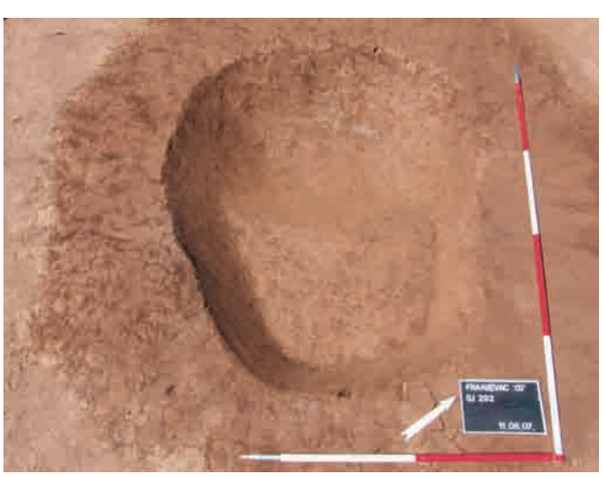
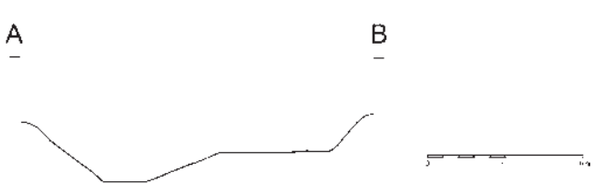
SJ 291 **292** b 53/54
110,09-109,61
10 YR 4/2 dark grayish brown
2,15 x 1,6 m
16 ulomaka keramike



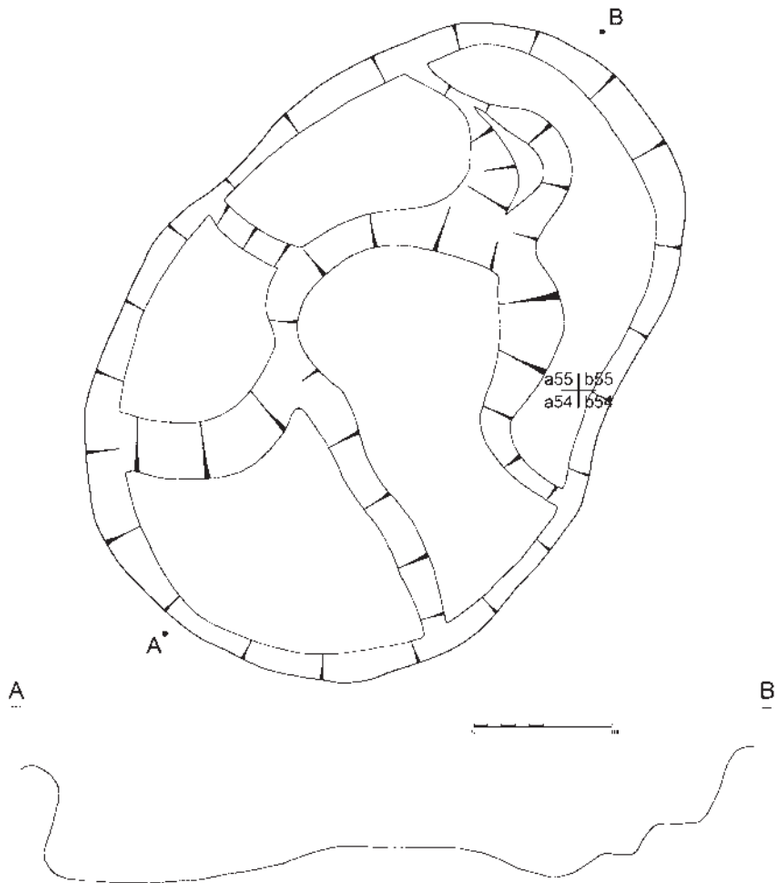

b54 | c54
b53 | c53





SJ 293 **294**

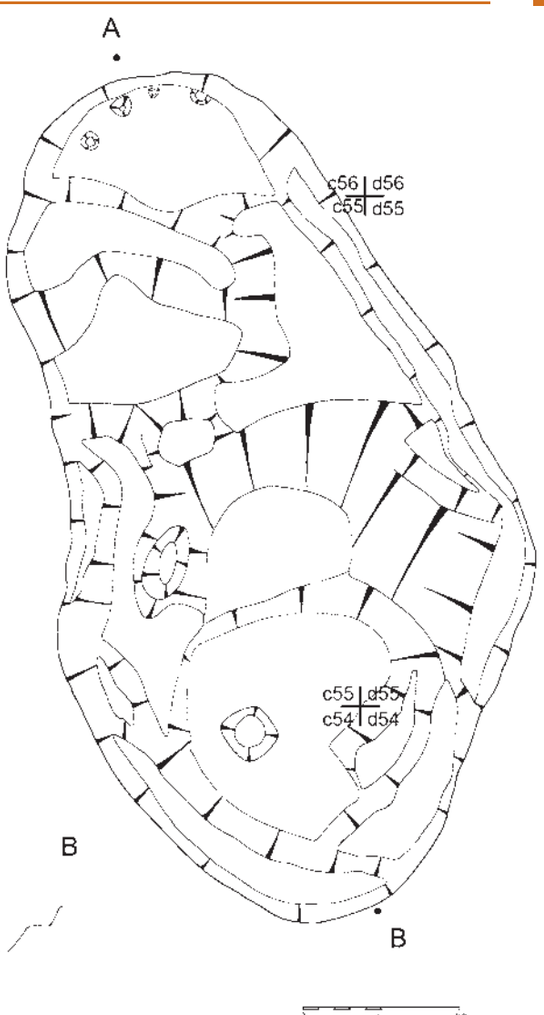
a/b 54/55
110,07-108,92
10 YR 3/2 very dark grayish brown
5,1 x 3,5 m
565 ulomaka keramike (kat. 246, 260–275)
Litika: 20 kom (kat. II 81–84)
Posebni nalazi: 2 pršljenka

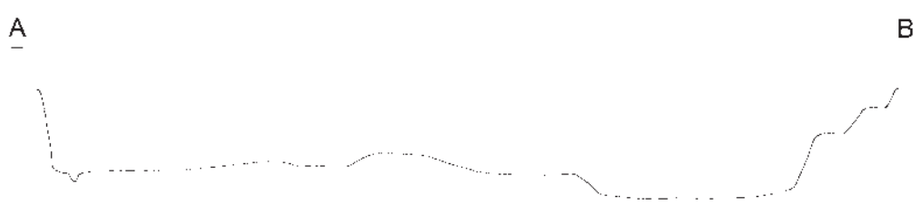





SJ 295 **296**

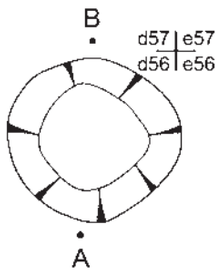
c/d 54/55/56
110,33-109,10
10 YR 4/3 brown
8,30 x 4,70 m
404 ulomka keramike (kat. 276)
Litika: 13 kom (kat. II 85, 86)
Posebni nalazi: keramička žlica i pršljenak

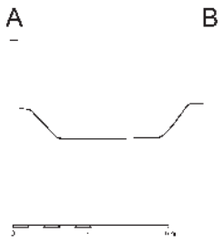


SJ 297 **298**

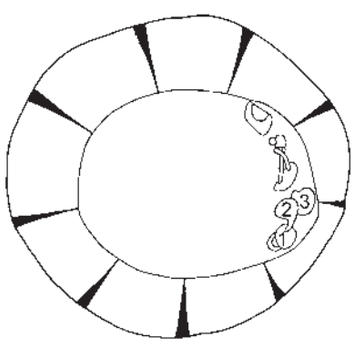
d 56
110,50-110,24
10 YR 5/4 yellowish brown
1,2 m
4 ulomka keramike

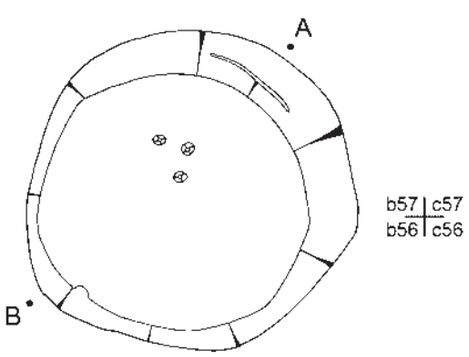


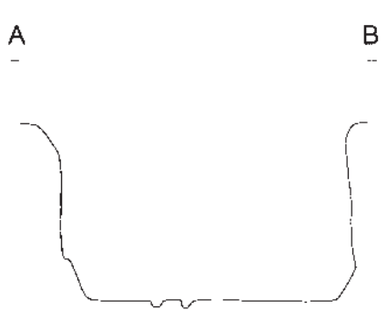




SJ 305 **306**

b 56/57
110,23-109,06
U jami su bile ukopane ljudske lubanje (SJ 850)
10 YR 5/2 grayish brown
2,2 m
80 ulomaka keramike (kat. 277)

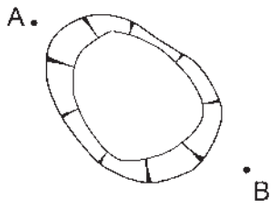


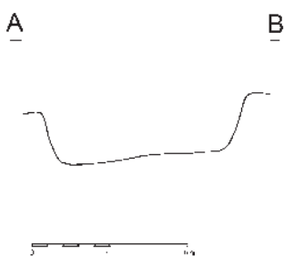




SJ 307 **308**

h 60
110,65-110,17
10 YR 5/2 grayish brown
1,26 x 0,90 m
7 ulomaka keramike

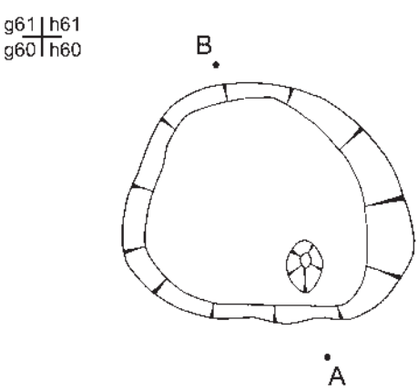



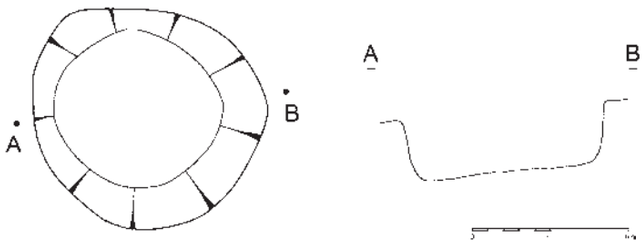



SJ 309 **310**

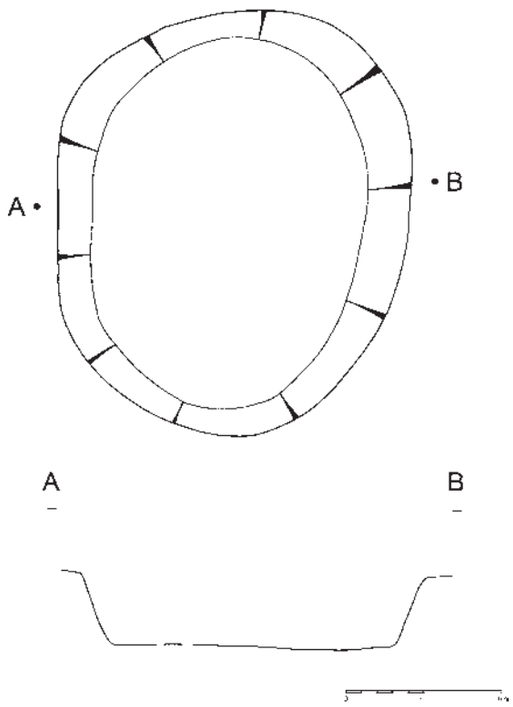
h 60
110,51-109,90
10 YR 3/4 dark yellowish brown
1,90 x 1,50 m
8 ulomaka keramike




SJ 313 **314** h 61
110,50-110,20
10 YR 3/3 dark brown
1,60 x 1,70 m
11 ulomaka keramike
**SJ 865** 5 YR 5/4 reddish brown / zapečeni naboj

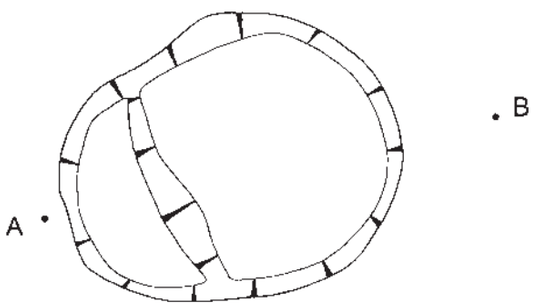


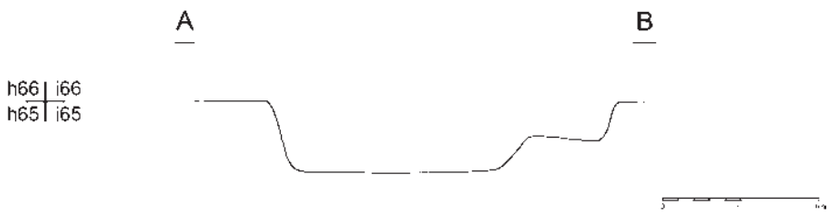

SJ 319 **320** h/i 65
110,36-109,89
10 YR 4/4 dark yellowish brown
2,20 x 2,60 m
9 ulomaka keramike
1 nalaz litike






SJ 323 **324** h/i 66
110,37-109,81
10 YR 5/4 yellowish brown
2,20 x 1,80 m
6 ulomaka keramike

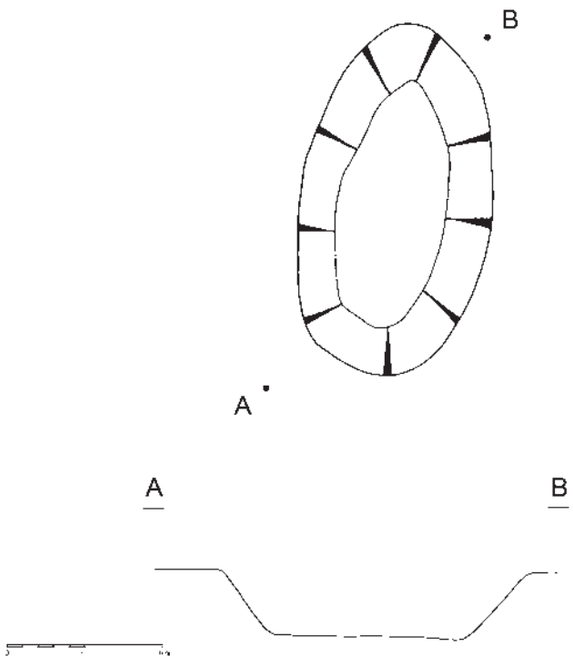


SJ 325 **326**

i 66/67
110,31–109,08
10 YR 5/4 yellowish brown
2,30 x 1,20 m
8 ulomaka keramike

h67 | i67
h66 | i66

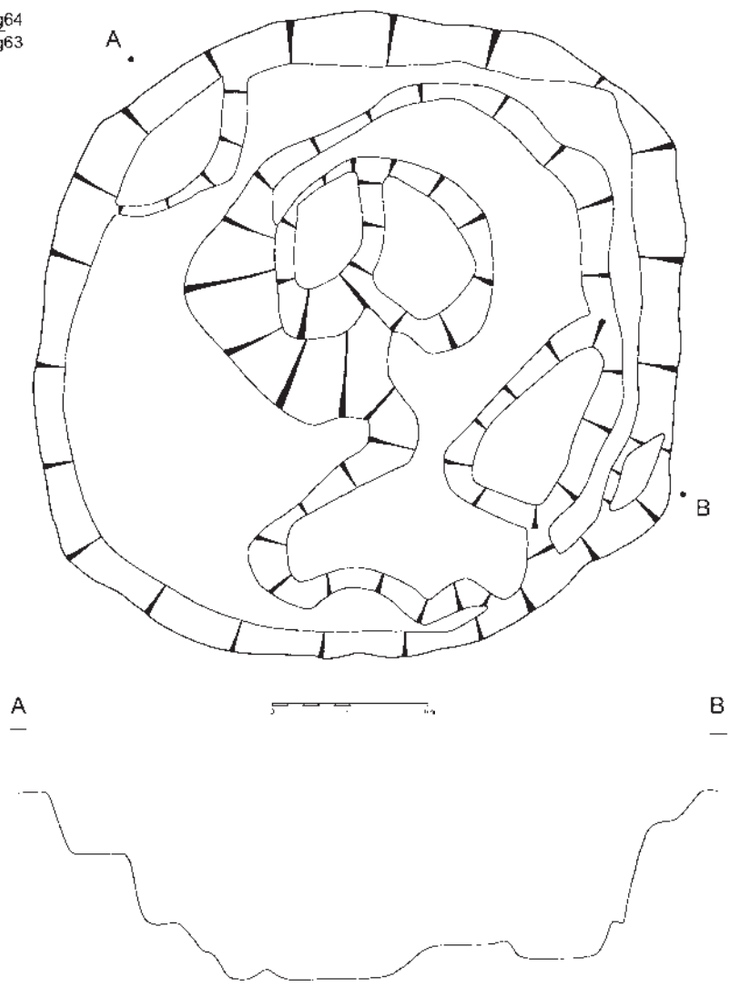





SJ 327 **328**

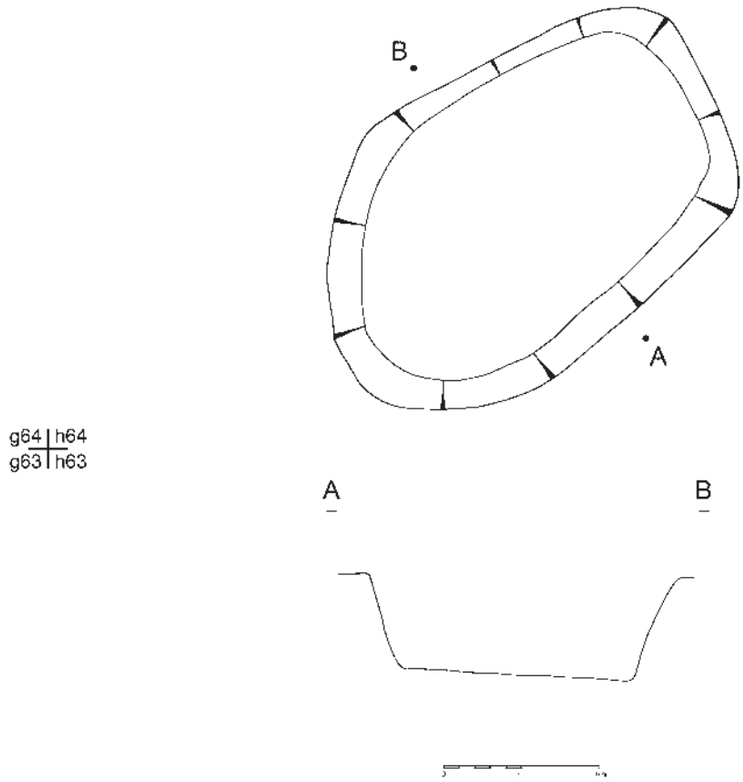
g 63
110,49–109,06
10 YR 3/6 dark yellowish brown /
4,30 x 4,60 m
Presječena od SJ 866 867
472 ulomka keramike (kat. 278–280)
Litika: 21 kom (kat. II 87, 88)
Posebni nalazi: keramički kalem,
pršljenak i žrtvenik

f64 | g64
f63 | g63



SJ 331 **332**

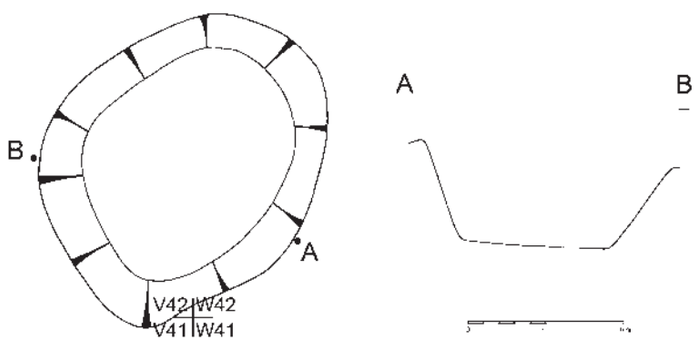
h 64
110,46–109,79
7.5 YR 4/6 strong brown
3,00 x 1,70 m
23 ulomka keramike





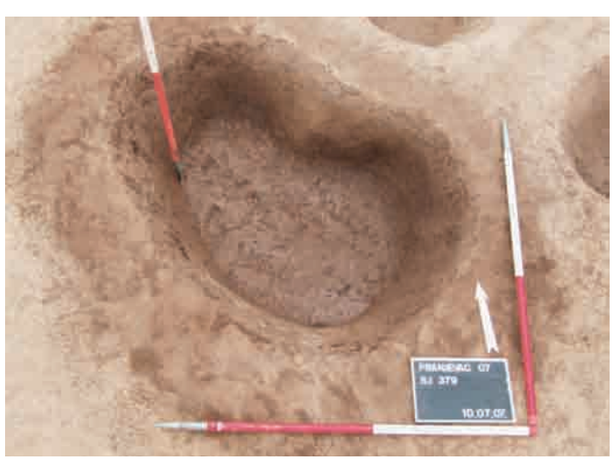

SJ 365 **366**

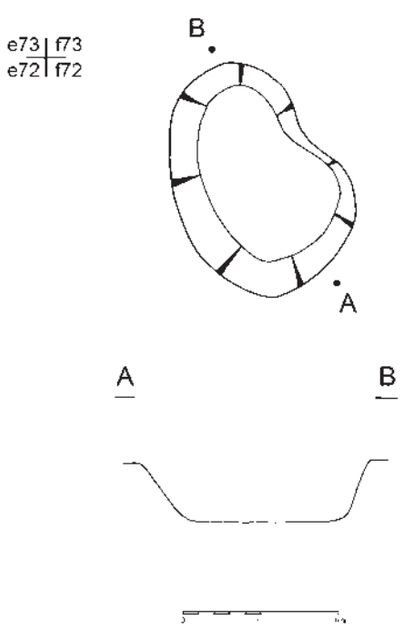
V/W 42
106,63–105,94
10 YR 3/2 very dark grayish brown
2,10 x 1,80 m
45 ulomaka keramike




SJ 378 **379**

f 72
110,37–109,92
10 YR 4/3 brown
1,50 x 1,10 m
3 ulomka keramike





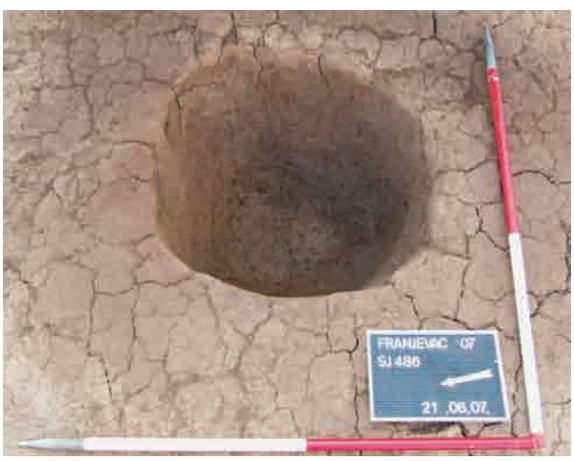
SJ 469 **470**

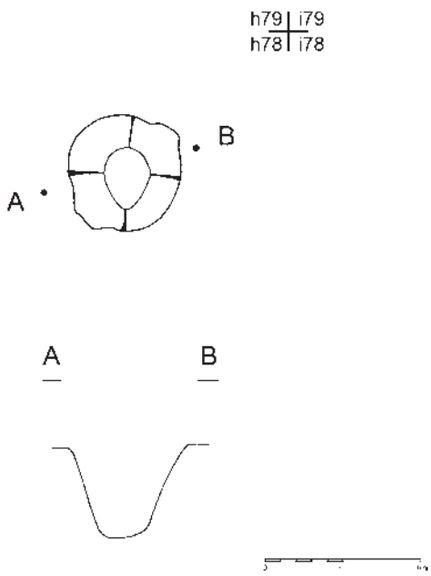
Y 43
108,121–105,84
10 YR 4/2 dark grayish brown
2,30 m
248 ulomaka keramike (kat. 281–283)
Litika: 3 kom

vidi crtež SJ 207 208

SJ 485 **486**

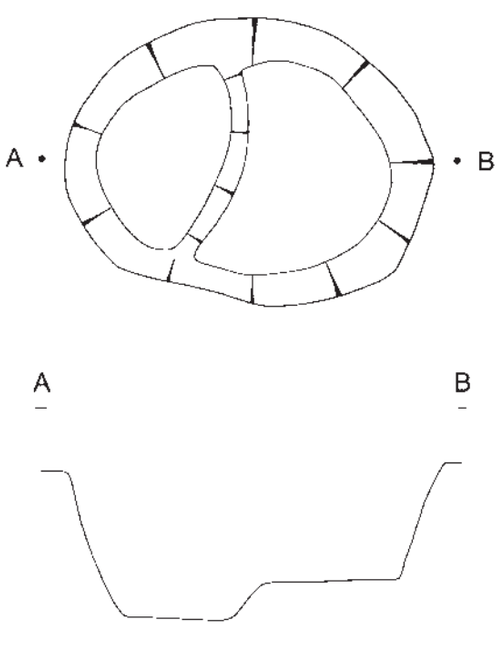
h 78
110,19–109,62
10 YR 4/2 dark grayish brown
0,70 m
7 ulomaka keramike



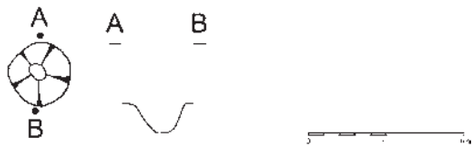

SJ 537 **538**

l 87
110,22–109,23
10 YR 4/3 brown
2,40 x 1,80 m
27 ulomaka keramike



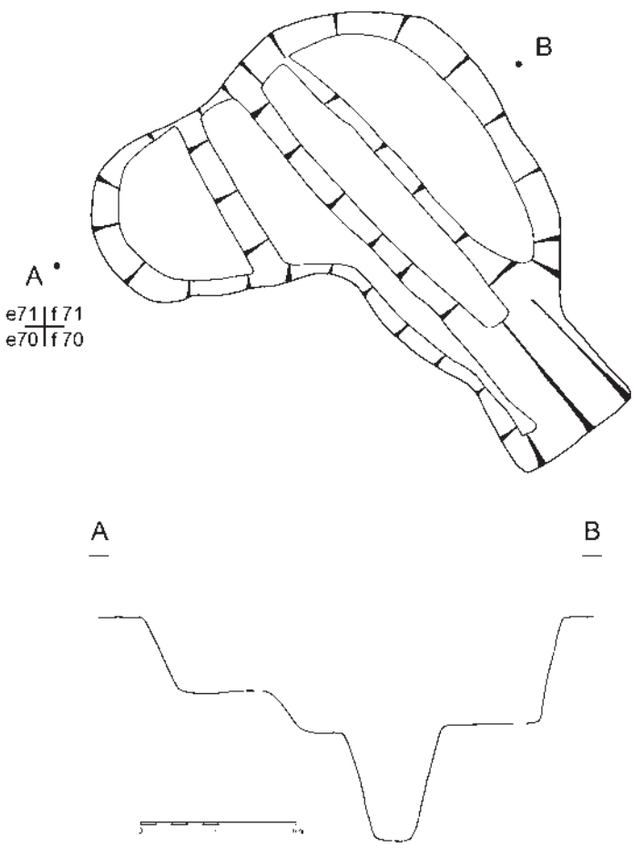
SJ 543 **544**

d 60
110,44–110,28
10 YR 4/2 dark grayish brown
0,40 x 0,42 m
1 ulomak keramike



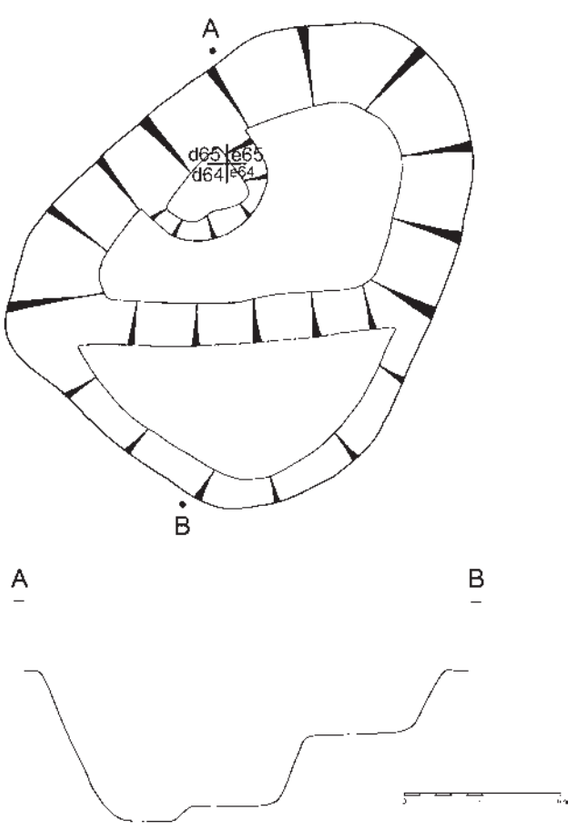

SJ 553 **554**

f 70/71
110,30–108,85
2.5 Y 4/2 dark grayish brown
2,30 x 1,80 m
43 ulomka keramike



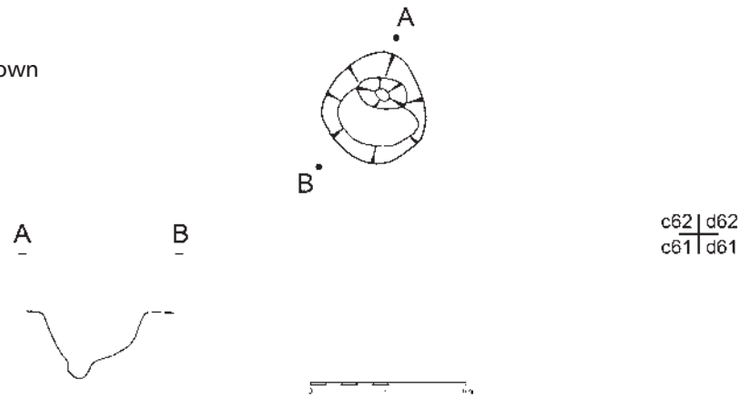

SJ 557 **558**

d/e 64/65
110,40 – 109,36
10 YR 4/2 dark grayish brown
3,20 x 2,80 m
17 ulomaka keramike



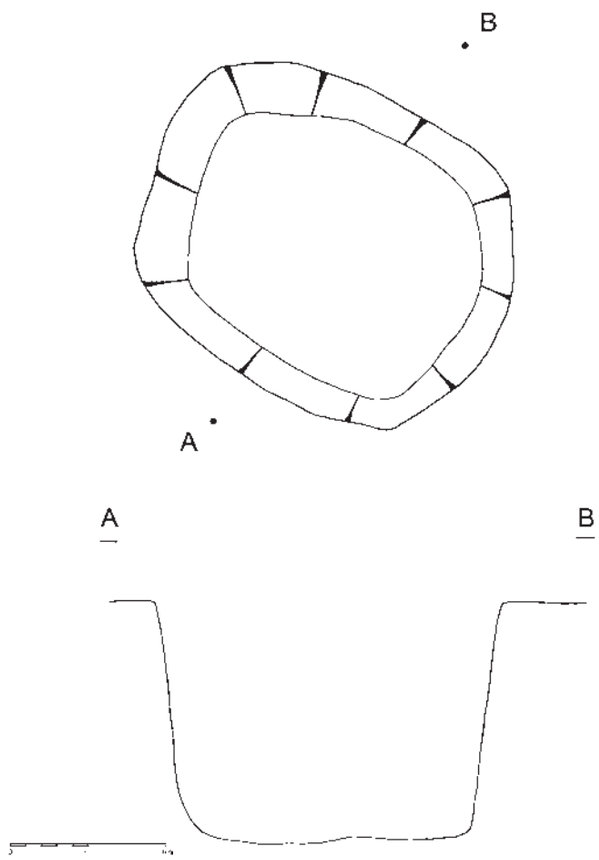
SJ 559 **560**

c 62
110,30–109,91
10 YR 4/2 dark grayish brown
0,70 m
1 ulomak keramike



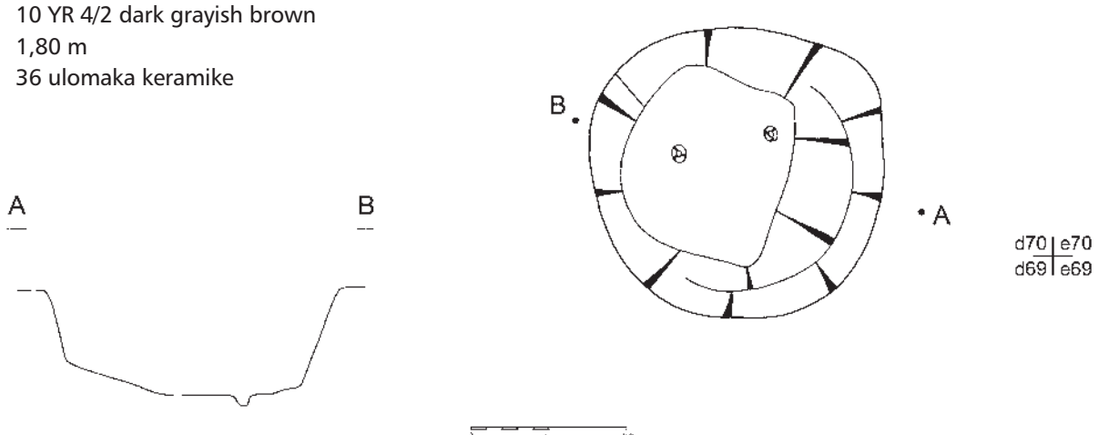

SJ 562 **563**

d 70/71
110,28–108,72
10 YR 4/2 dark grayish brown
2,50 x 2,30 m
48 ulomaka keramike
Litika: 2 kom




SJ 564 **565**

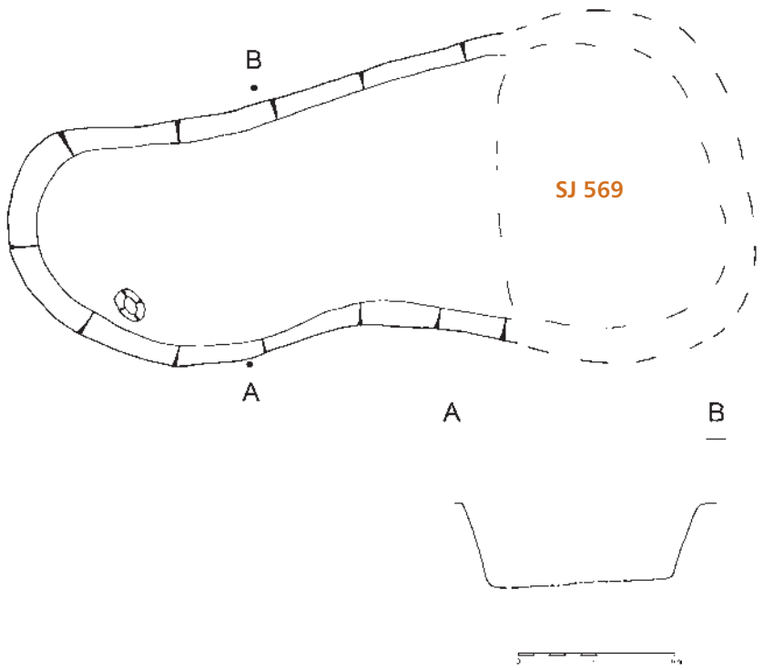
d 69/70
110,25–109,46
10 YR 4/2 dark grayish brown
1,80 m
36 ulomaka keramike



SJ 566 **567**

c/d 69
110,20–109,59
10 YR 4/2 dark grayish brown
4,60 x 1,60 m
14 ulomaka keramike

c70 | d70
c69 | d69

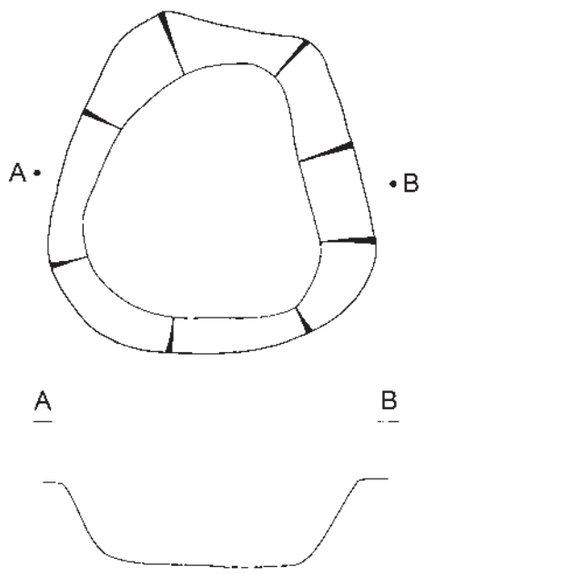





SJ 568 **569**

d 69
110,21–109,68
10 YR 4/2 dark grayish brown
2,20 x 2,10 m
28 ulomaka keramike
1 nalaz litike

d70 | e70
d69 | e69



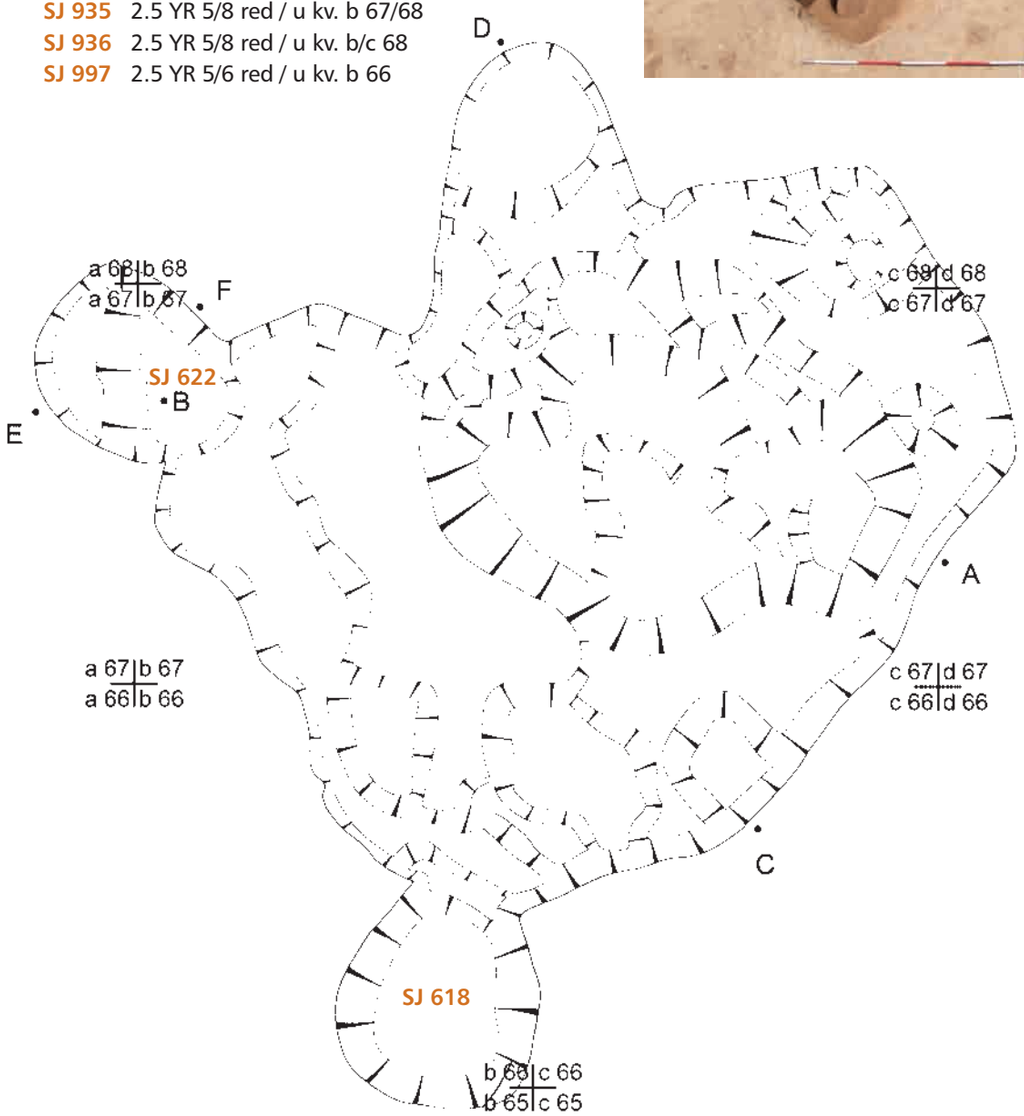
SJ 572 **573** b/c/d 65/66/67/68
110,36–108,41
10,60 m
Presječena od SJ 609 610, SJ 623 624/
povezana sa SJ 617 618, SJ 621 622.
Radi se o objektu s vatrištima

**SJ 572** 10 YR 3/2 very dark grayish brown
2939 ulomaka keramike (kat. 306–309, 318–358)
Litika: 57 kom (kat. II 91–95)
Posebni nalazi: 12 pršljenaka (kat. 310–315, 317) i jedna sjekira (kat. 316).

**SJ 935** 2.5 YR 5/8 red / u kv. b 67/68

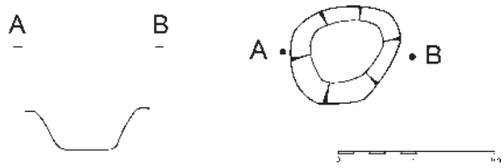
**SJ 936** 2.5 YR 5/8 red / u kv. b/c 68

**SJ 997** 2.5 YR 5/6 red / u kv. b 66



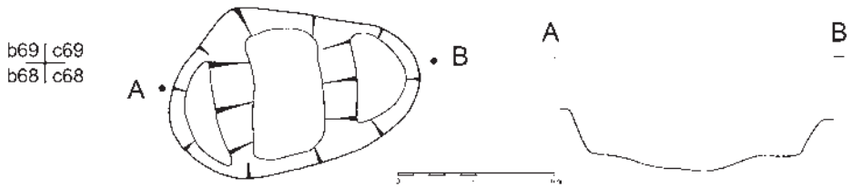

SJ 574 **575**

c 68
110,24–110,00
10 YR 5/2 grayish brown
0,70 m
2 ulomka keramike




SJ 576 **577**

c 68/69
110,28–109,90
10 YR 5/3 brown
1,60–1,10 m
2 ulomka keramike

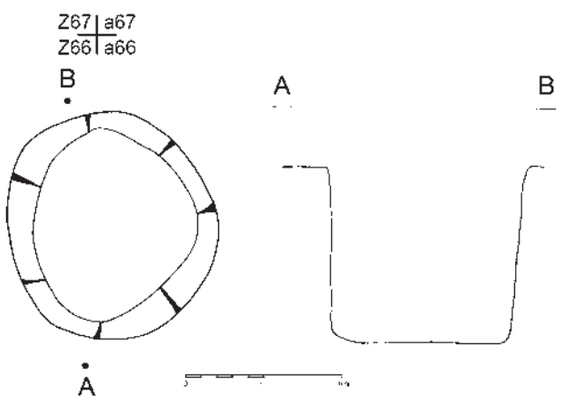



SJ 599 **600**

Z/a 66
110,32–109,04
1,50 x 1,40 m

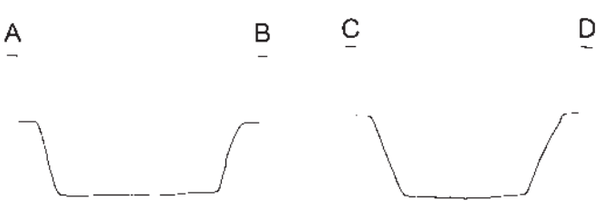
**SJ 599** 10 YR 5/2 grayish brown / zapuna s dosta lijepa u sastavu
Amfora (kat. 359) i 12 ulomaka keramike

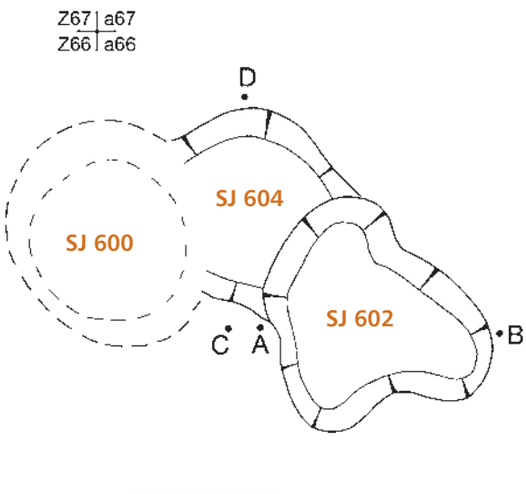
**SJ 923** 10 YR 4/3 brown
9 ulomaka keramike




SJ 603 **604**

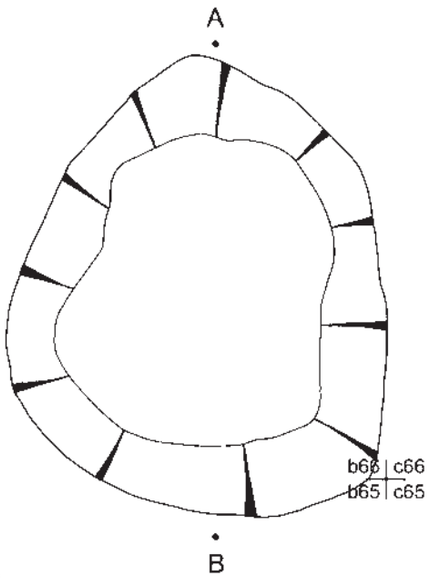
a 66
110,32–109,82
10 YR 5/2 grayish brown
1,00 m
Presječena od SJ 599 [600], 601 [602]
7 ulomaka keramike



SJ 617 **618**

b 66
110,36–109,07
10 YR 2/1 black
3 x 2,40 m
Siječe SJ 719 720
166 ulomaka keramike
Litika: 3 kom (kat. II 96)
Posebni nalazi: 2 pršljenka i 2 oblutka


SJ 621 **622**

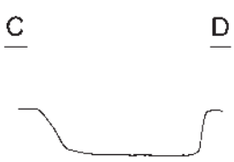
a/b 67/68
110,36–109,54
10 YR 3/2 very dark grayish brown
2,50 x 2 m
54 ulomaka keramike (kat. 360, 361)

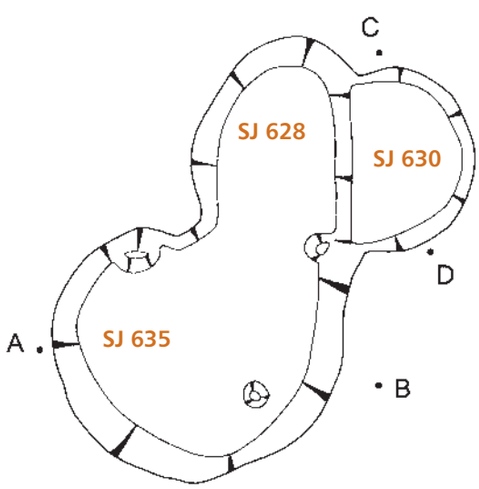
vidi crtež SJ 572 573



SJ 634 **635**

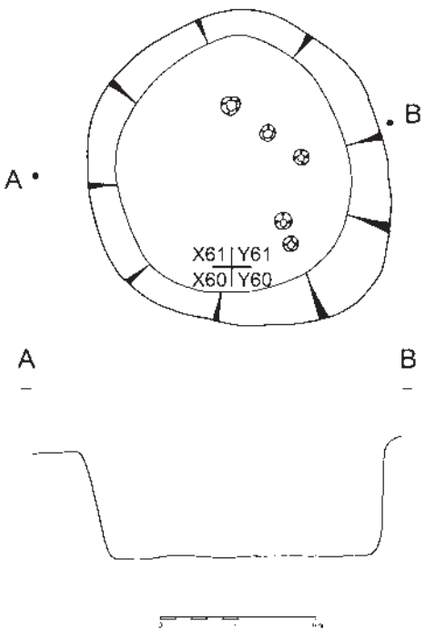
a 65
110,25–109,56
10 YR 4/3 brown
1,70 x 1,60 m
Presječena od SJ 627 628
9 ulomaka keramike

SJ 640 **641**

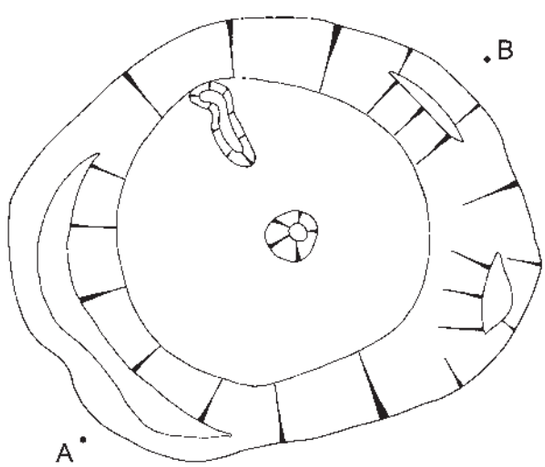
X/Y 60/61
109,98–109,21
10 YR 4/2 dark grayish brown
2,1 x 1,9 m
88 ulomaka keramike (kat. 362–364)

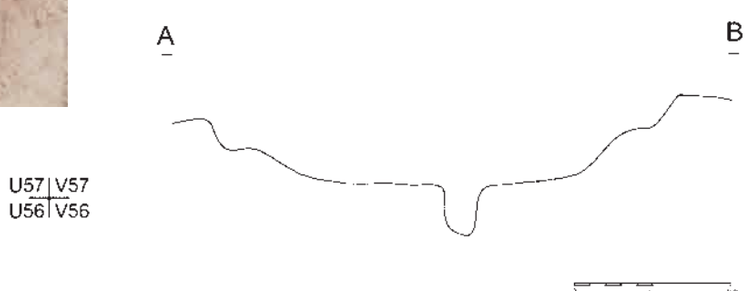





SJ 662 **663**

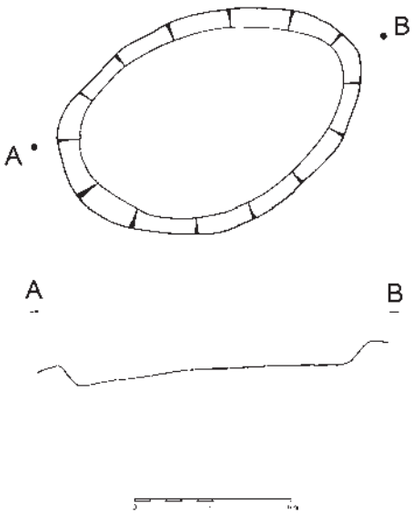
V 57
108,77–107,83
10 YR 3/2 very dark grayish brown
3,4 x 2,8 m
117 ulomaka keramike
Litika: 7 kom (kat. II 99)
Posebni nalaz: kalem



SJ 682 **683**

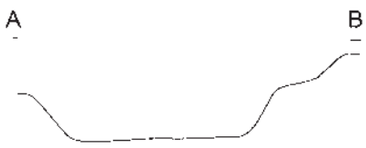
V 56/57
108,63–108,39
10 YR 3/2 very dark grayish brown
2 x 1,4 m
7 ulomaka keramike
Litika: 1 kom (kat. II 100)

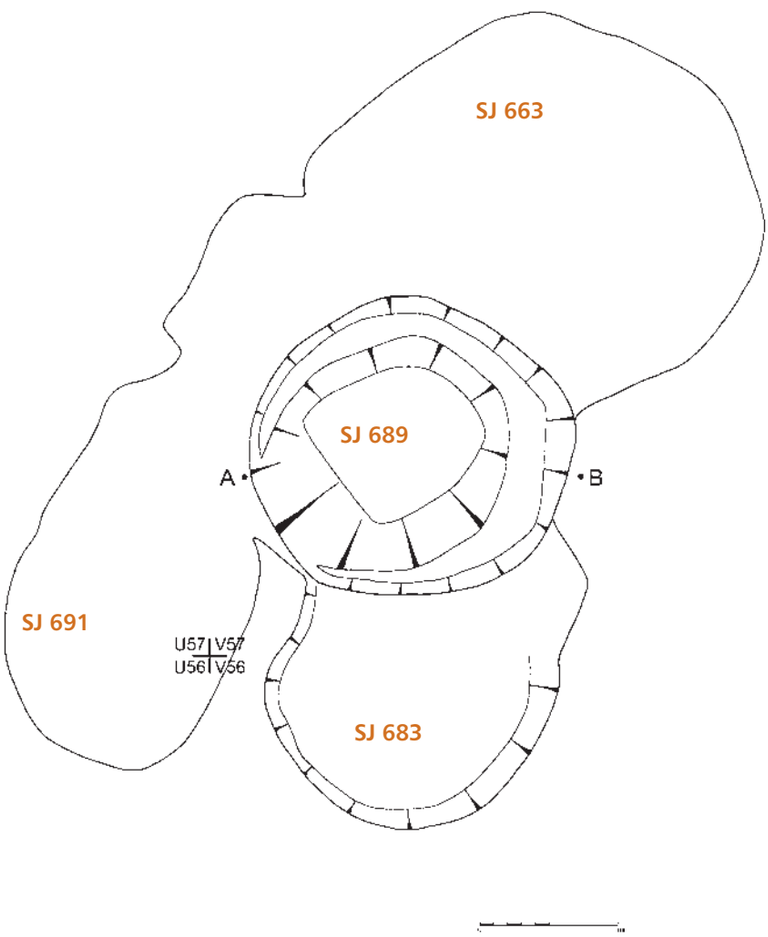





SJ 688 **689**

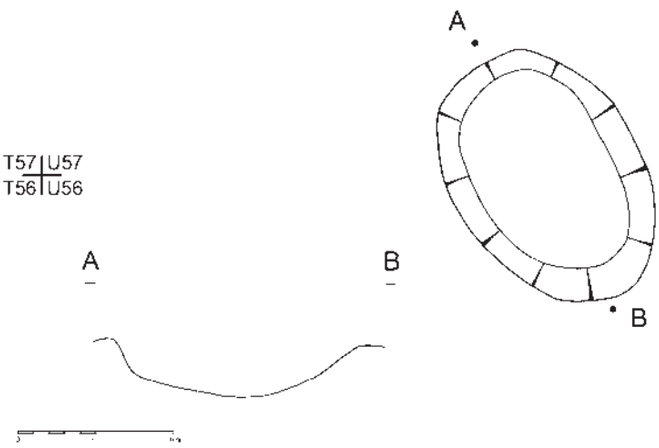
V 57
108,61–108,05
10 YR 4/3 brown
2,16 x 2,36 m
18 ulomaka keramike



SJ 690 **691**

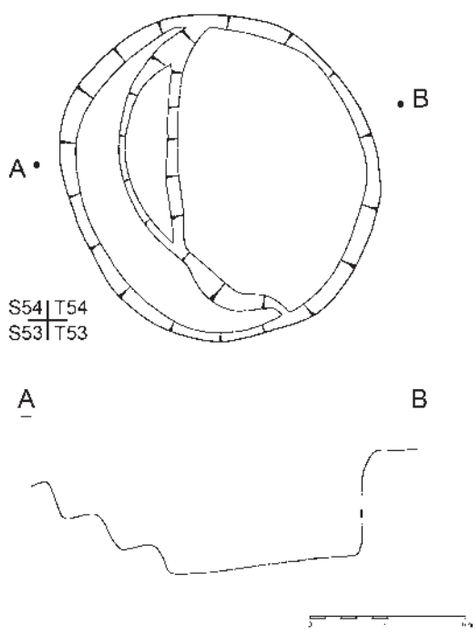
U 56/57
108,41–108,11
10 YR 4/2 dark grayish brown
1,75 x 1,2 m
18 ulomaka keramike




SJ 692 **693**

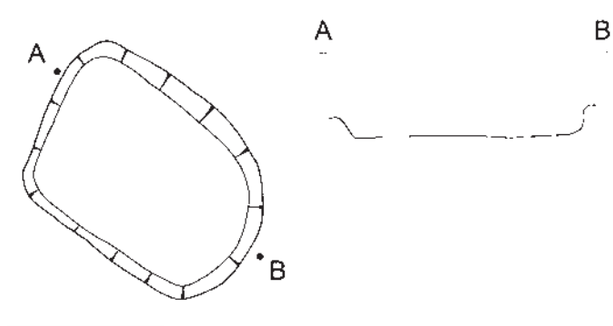
T 53/54
107,31–106,53
10 YR 4/3 brown
2,00 m
15 ulomaka keramike (kat. 365)





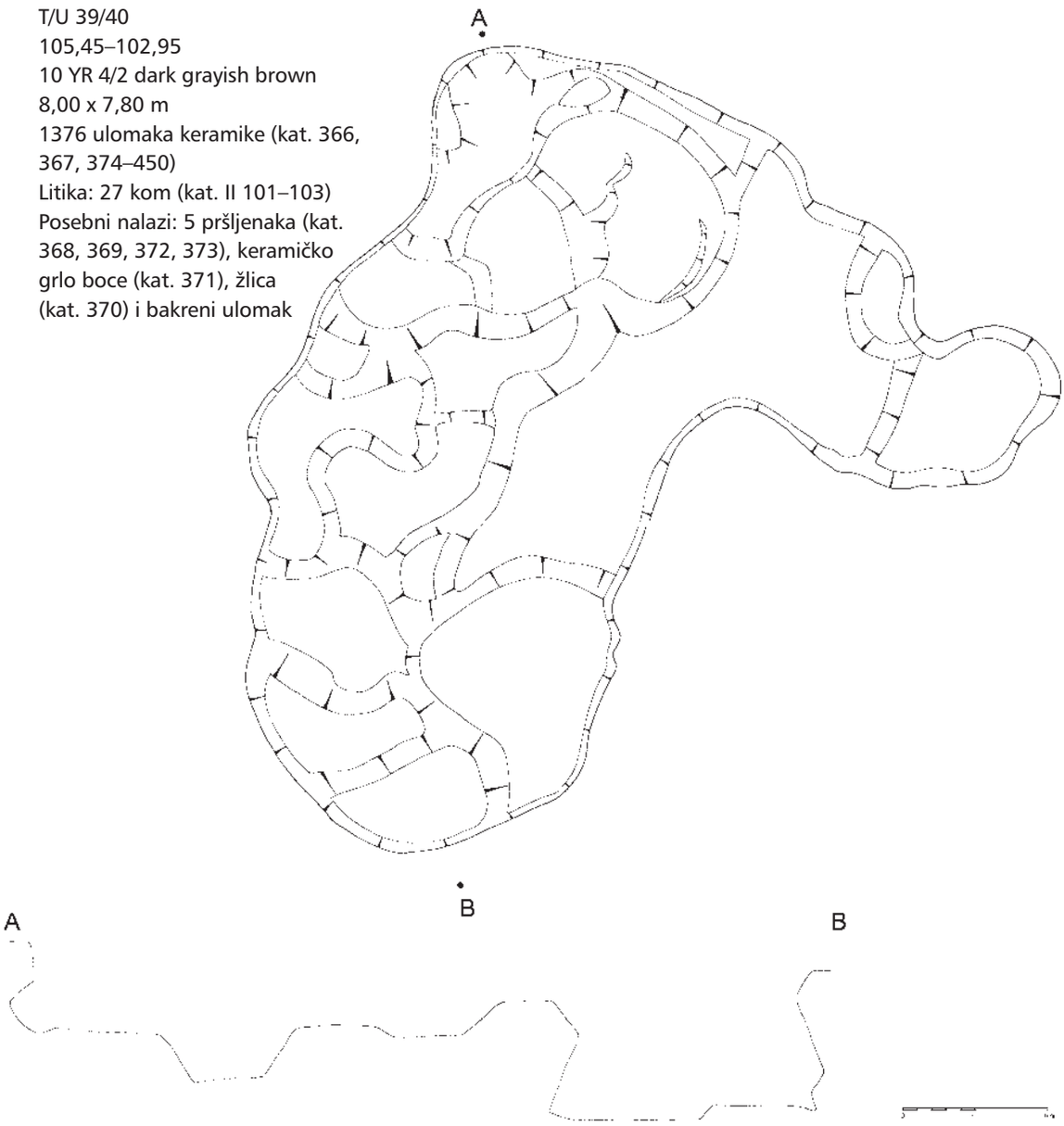

SJ 696 **697**

R/S 51/52
106,07–105,78
10 YR 4/2 dark grayish brown
1,6 x 1,3 m
6 ulomaka keramike




SJ 705 **706**

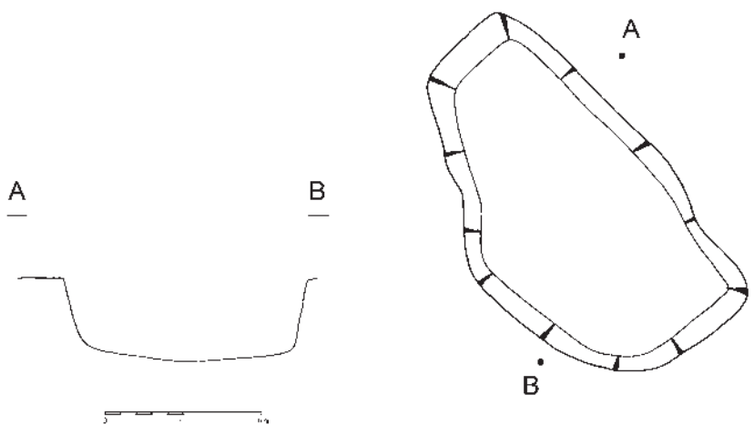
T/U 39/40
105,45–102,95
10 YR 4/2 dark grayish brown
8,00 x 7,80 m
1376 ulomaka keramike (kat. 366, 367, 374–450)
Litika: 27 kom (kat. II 101–103)
Posebni nalazi: 5 pršljenaka (kat. 368, 369, 372, 373), keramičko grlo boce (kat. 371), žlica (kat. 370) i bakreni ulomak





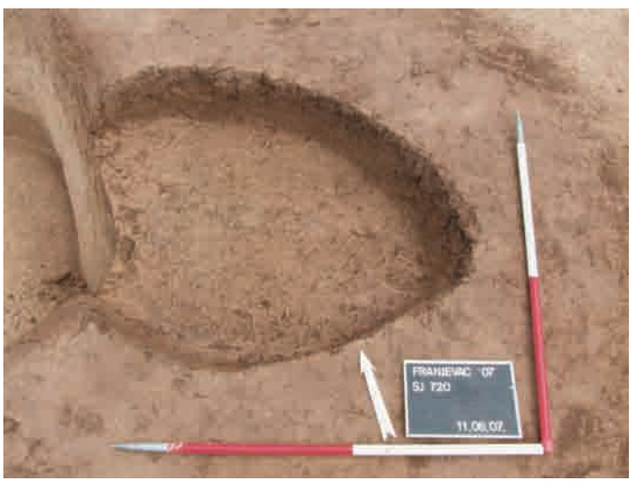

SJ 711 **712**

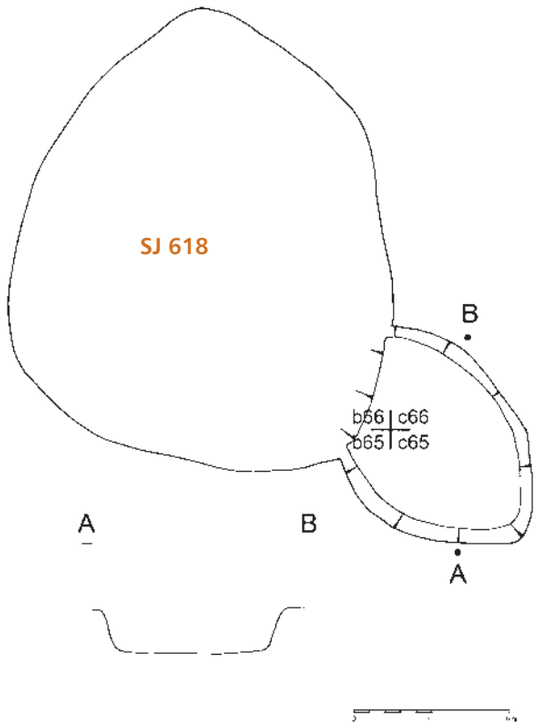
j 70
110,35–109,69
2.5 Y 6/3 light yellowish brown
2,50 x 1,40 m
9 ulomaka keramike




SJ 719 **720**

b/c 65/66
110,39–110,10
10 YR 5/2 grayish brown
1,60 x 1,10 m
Presječena od SJ 617 618
4 ulomka keramike

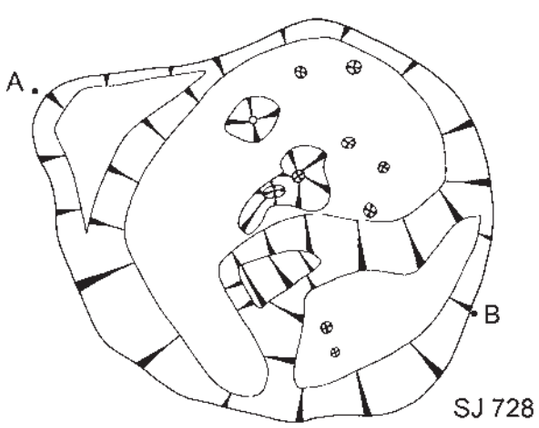







SJ 727 **728**

d 63
110,38–109,35
10 YR 5/2 grayish brown
2,60 x 2,80 m
46 ulomaka keramike
Poseban nalaz: keramička žlica





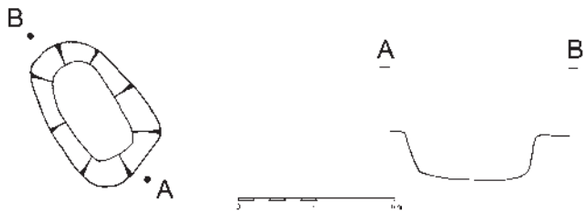
SJ 729 **730**

X 52
108,91–107,86
10 YR 4/2 dark grayish brown
2,4 m
Siječe objekt SJ 243 244
10 ulomaka keramike

vidi crtež SJ 243 244

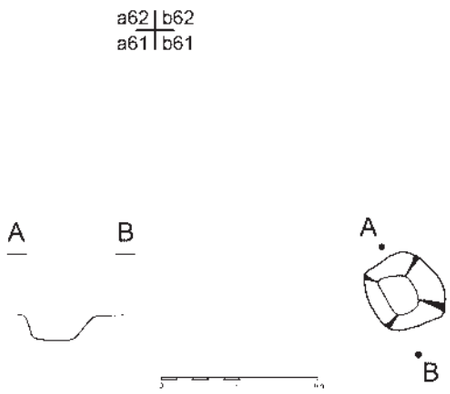
SJ 734 **735**

c 61
110,39–110,12
10 YR 5/2 grayish brown
0,95 x 0,70 m
3 ulomka keramike



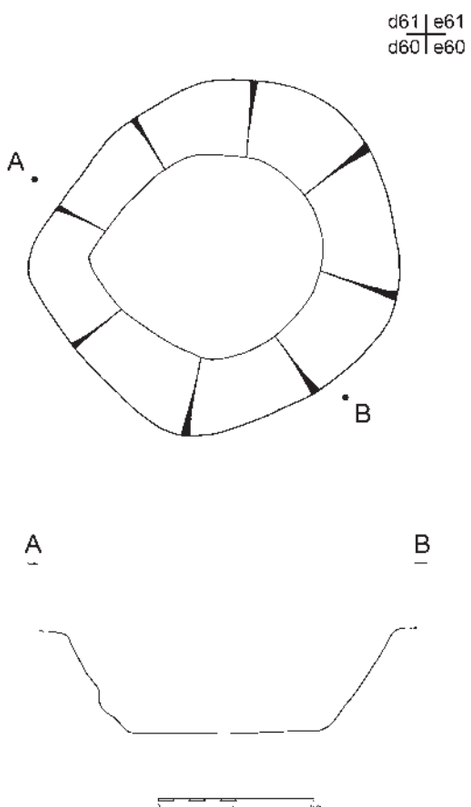

SJ 744 **745**

b 61
110,25–109,99
7.5 YR 5/1 gray
0,60 x 0,50 m
1 ulomak keramike



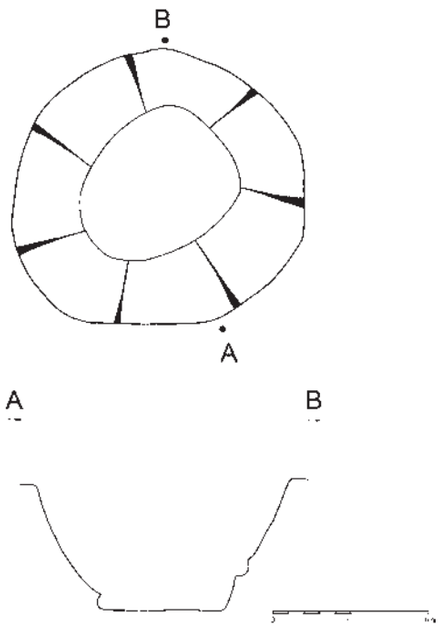

SJ 746 **747**

d 60
110,51–109,81
10 YR 4/1 dark gray
2,30 x 2,40 m
42 ulomka keramike
1 komad litike



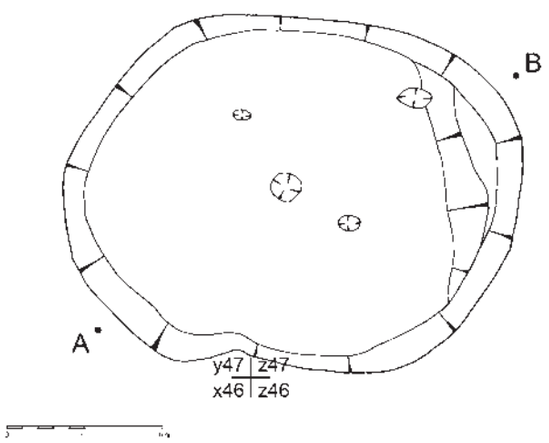
SJ 750 **751**

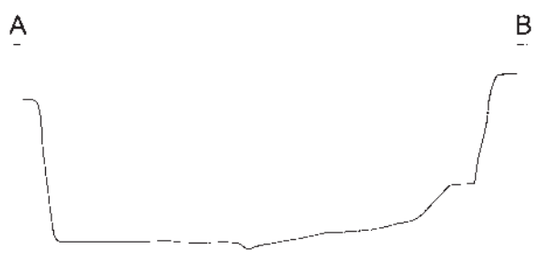
c/d 63
110,30–109,42
10 YR 5/2 grayish brown
1,90 x 1,80 m
8 ulomaka keramike




SJ 826 **827**

y/z 47
108,92–107,81
10 YR 3/2 very dark grayish brown
2,9 x 2,3 m
181 ulomaka keramike (kat. 451, 452)
Litika: 5 kom
Poseban nalaz: pršljenak



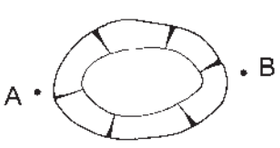

SJ 834 **835**

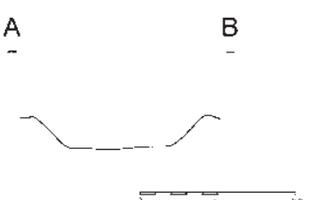
d 78
110,30–110,05
10 YR 5/2 grayish brown
0,50 m
2 ulomka keramike

vidi crtež SJ 959 960

SJ 851 **852**

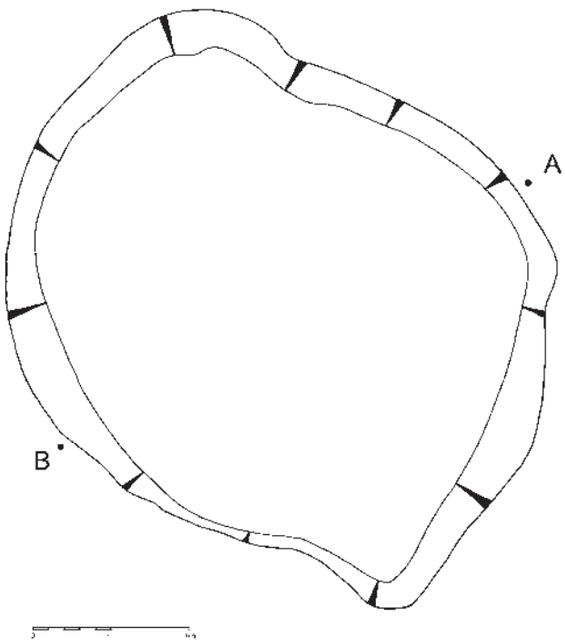
d/e 50
110,31–110,04
10 YR 4/3 brown
1,10 x 0,80 m
1 ulomak keramike
1 komad litike

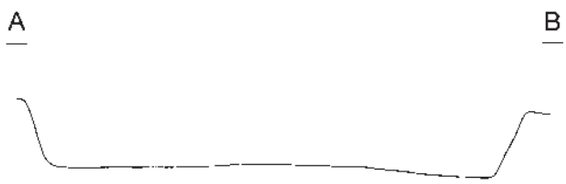


SJ 870 **871**

n 77
110,41–105,86
10 YR 4/4 dark yellowish brown
4,10 x 3,50 m
85 ulomaka keramike



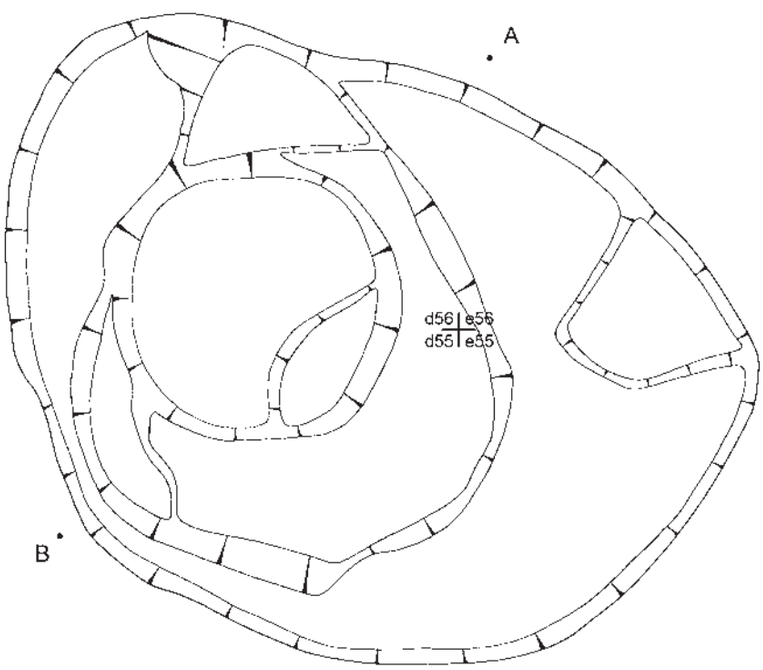



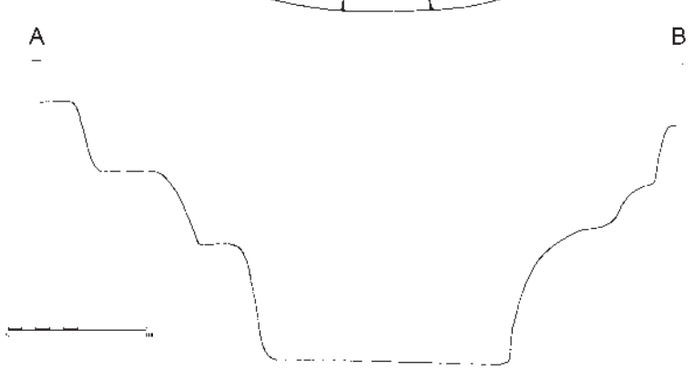

n77 | o77
n76 | o76



SJ 872 **873**

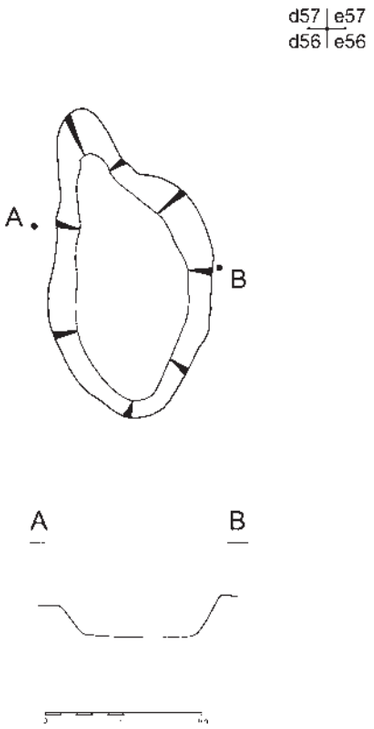
d/e 55/56
110,50–108,54
10 YR 5/2 grayish brown
5,40 x 4,40 m
177 ulomaka keramike (kat. 460)
Litika: 1 kom
Posebni nalazi: 5 pršljenaka (kat. 454–457, 459), keramička žlica (kat. 458)



SJ 874 **875**

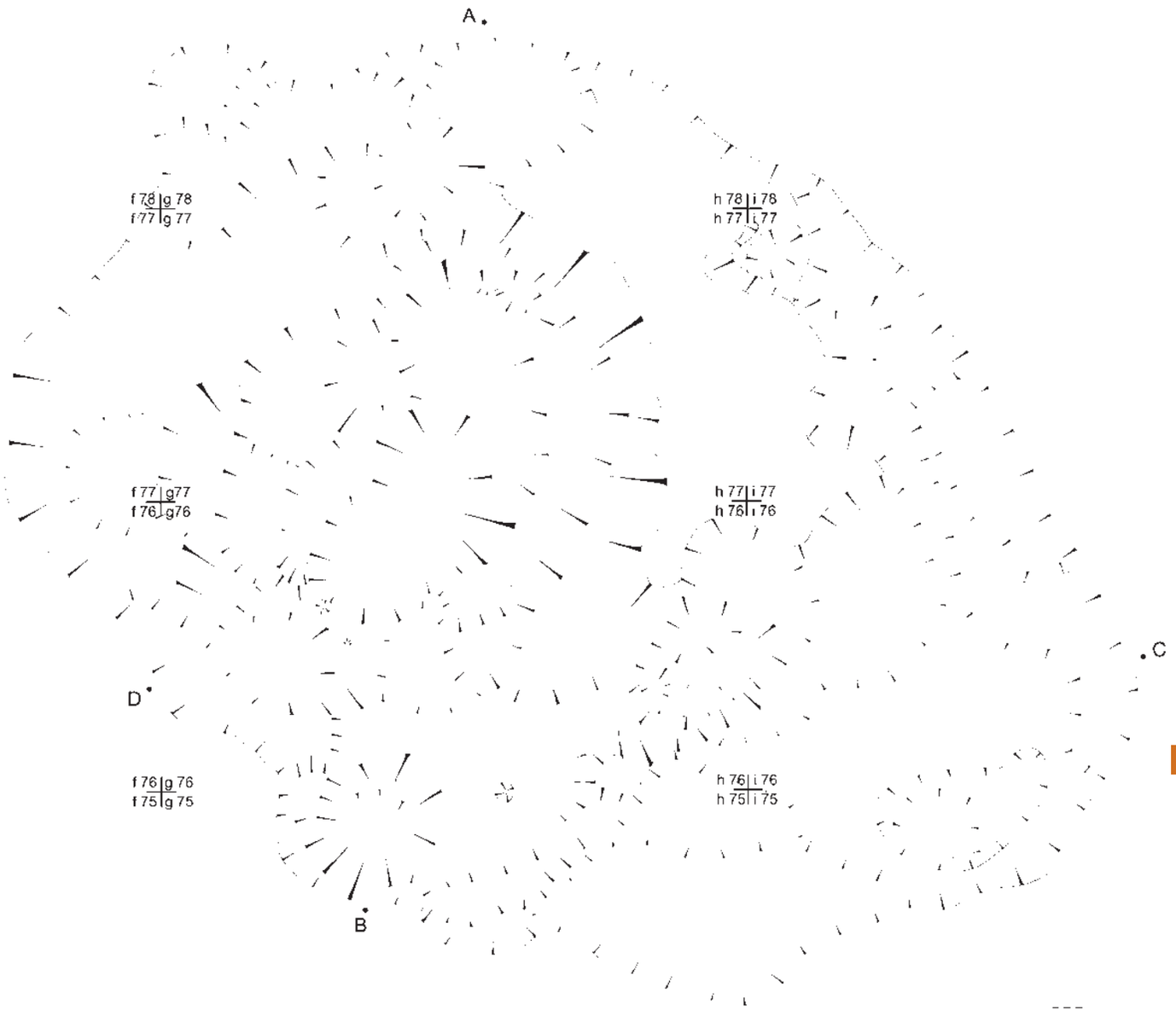
d 56
110,44–110,11
10 YR 6/2 light grayish brown
2 x 1,20 m
13 ulomaka keramike




SJ 876 **877**

f/g/h/i/j 75/76/77/78
110,29–107,27
10 YR 3/2 dark grayish brown
19,50 x 16,00 m
Presječena od 14 srednjovjekovnih jama
3007 ulomaka keramike (kat. 461–477)
Litika: 87 kom (kat. II 1–18)
Posebni nalazi: dvije kamene alatke, 11 pršljenaka, kalem, žrtvenik i grlo boce

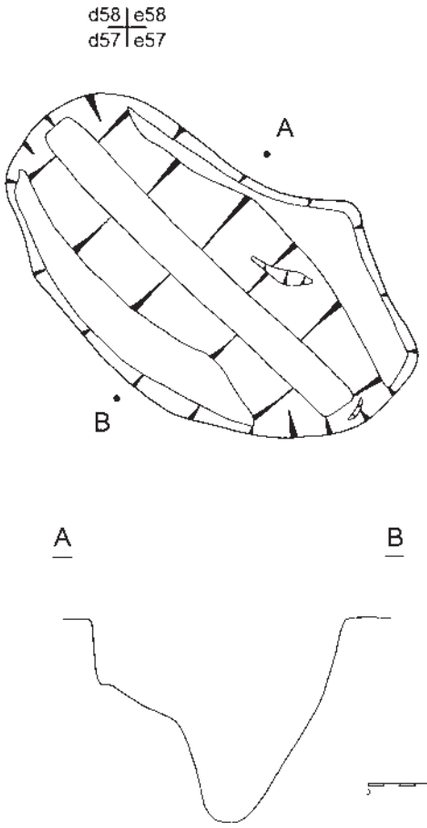

A
B
C
D
f 78 | g 78
f 77 | g 77
h 78 | i 78
h 77 | i 77
f 77 | g 77
f 76 | g 76
h 77 | i 77
h 76 | i 76
f 76 | g 76
f 75 | g 75
h 76 | i 76
h 75 | i 75

C D

A B

SJ 878 **879**

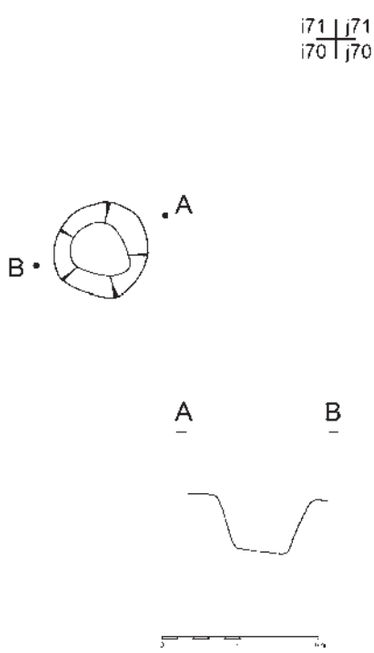
d/e 57
110,49–109,15
10 YR 4/2 dark grayish brown
2,90 x 1,80 m
10 ulomaka keramike
Poseban nalaz: pršljenak





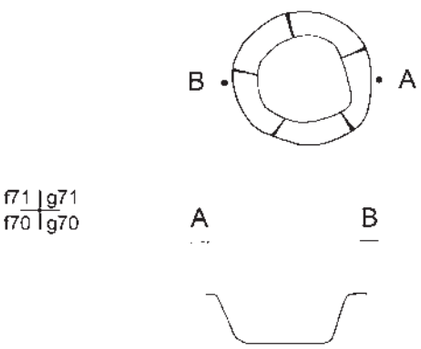

SJ 898 **899**

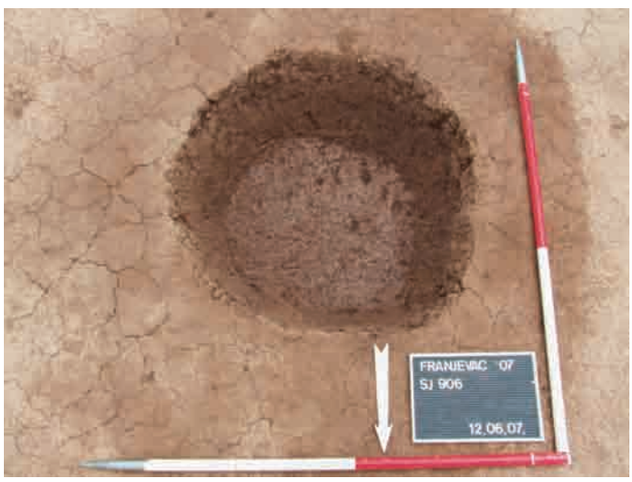
i 70
110,42–110,02
10 YR 5/2 grayish brown
0,60 m
1 ulomak keramike



SJ 905 **906**

g 71
110,36–110,16
10 YR 4/3 brown
0,90 m
3 ulomka keramike

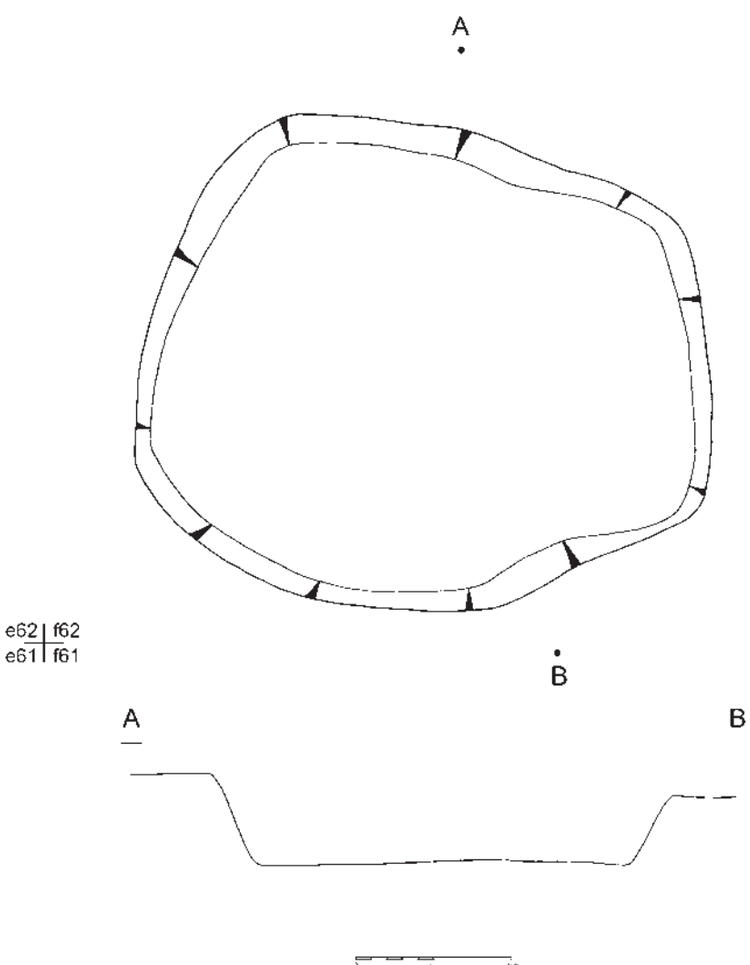




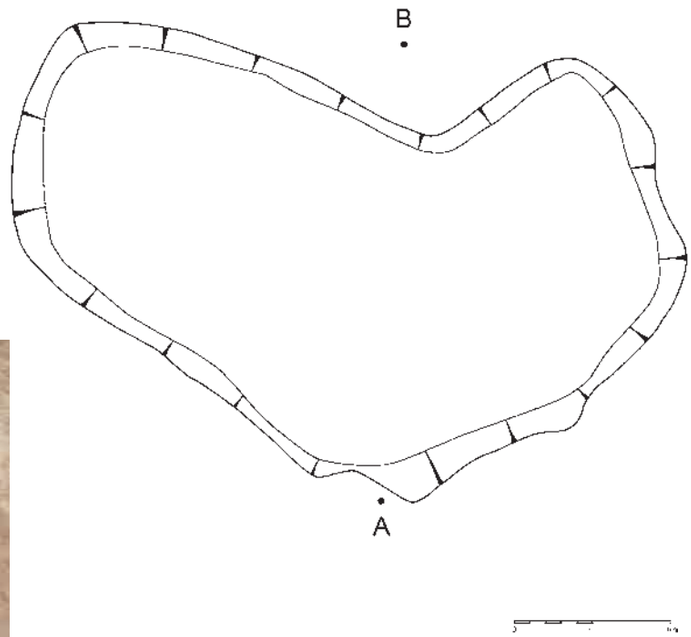

SJ 918 **919**

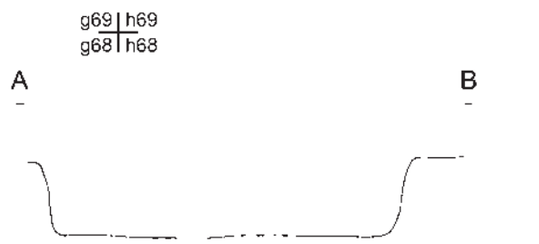
f 62
110,48–109,88
2.5 YR 4/4 reddish brown
3,70 x 3,10 m
4 ulomka keramike



SJ 921 **922**

g/h 69
110,38–109,83
7.5 YR 4/2 brown
4,40 x 2,50 m
3 ulomka keramike

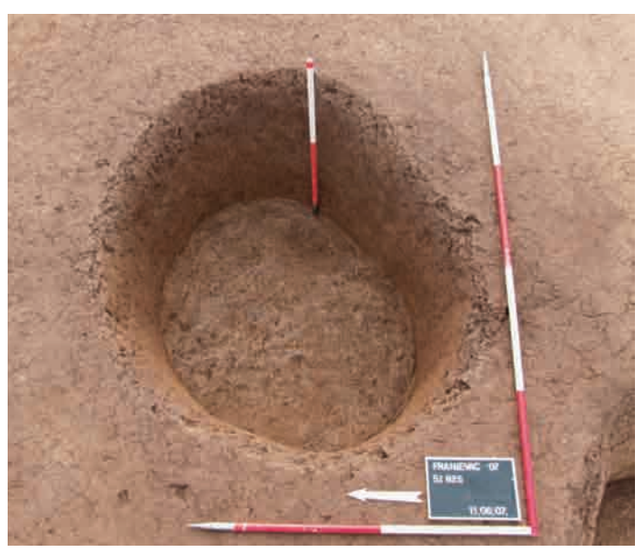


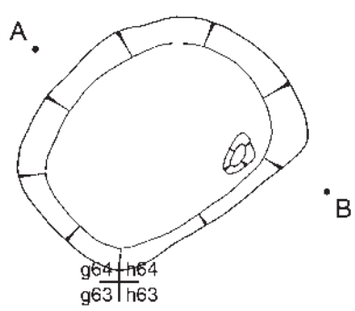



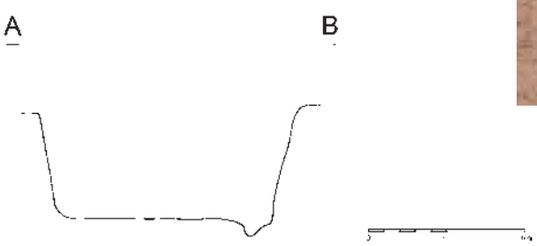



SJ 924 **925**

g/h 64
110,44 –109,60
10 YR 4/3 brown
1,70 x 1,40 m
7 ulomaka keramike

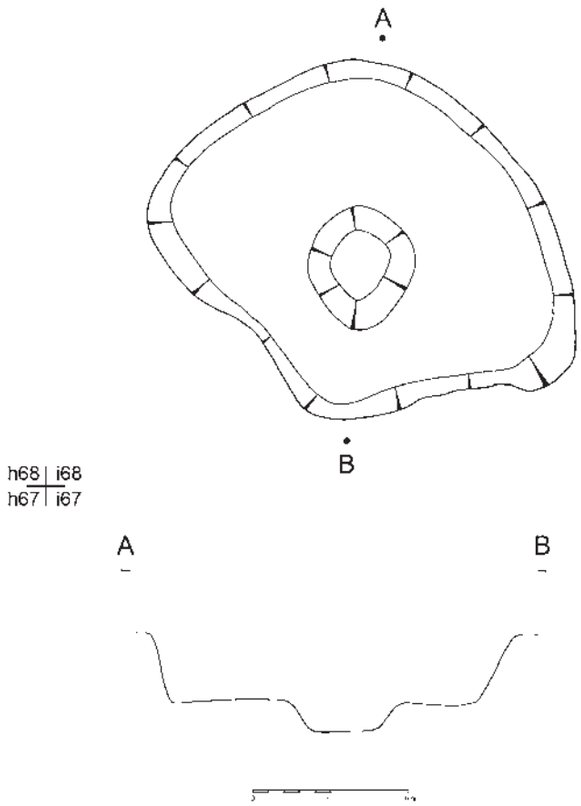




SJ 927 **928**

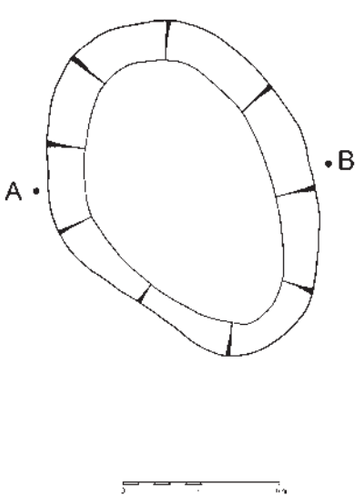
i 68
110,31–109,64
10 YR 7/2 light gray
2,90 x 2,40 m
6 ulomaka keramike





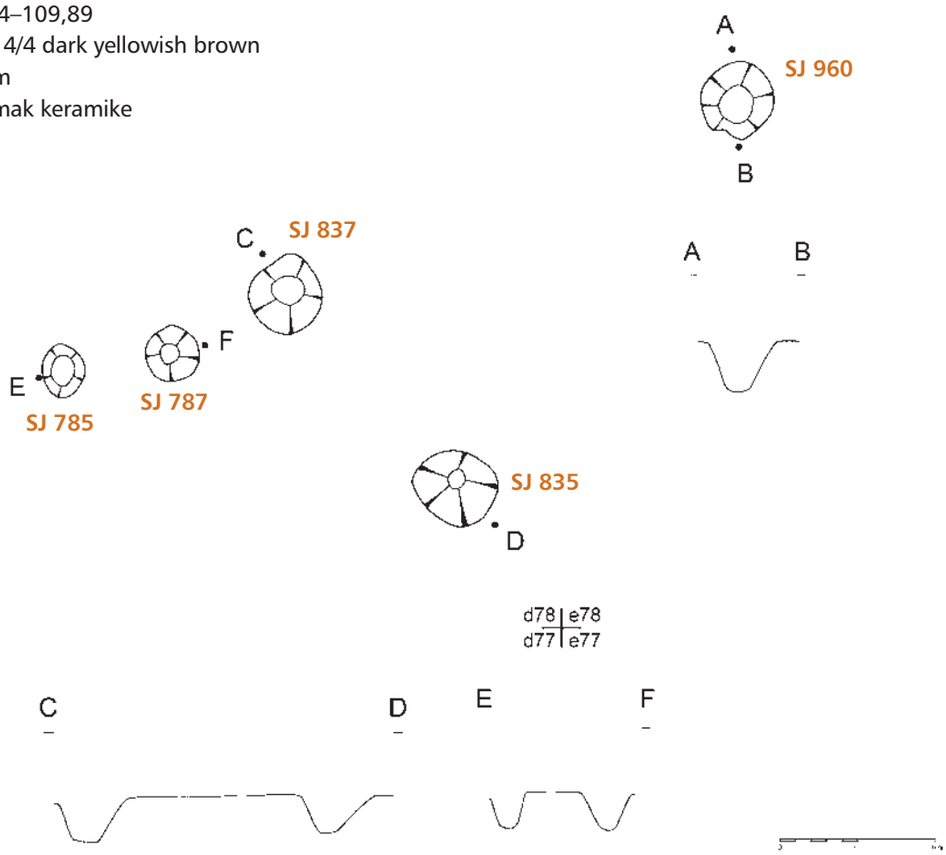

SJ 933 **934**

h 70
110,45–110,14
10 YR 4/3 brown
2,30 x 1,70 m
31 ulomak keramike
2 komada litike




SJ 959 **960**

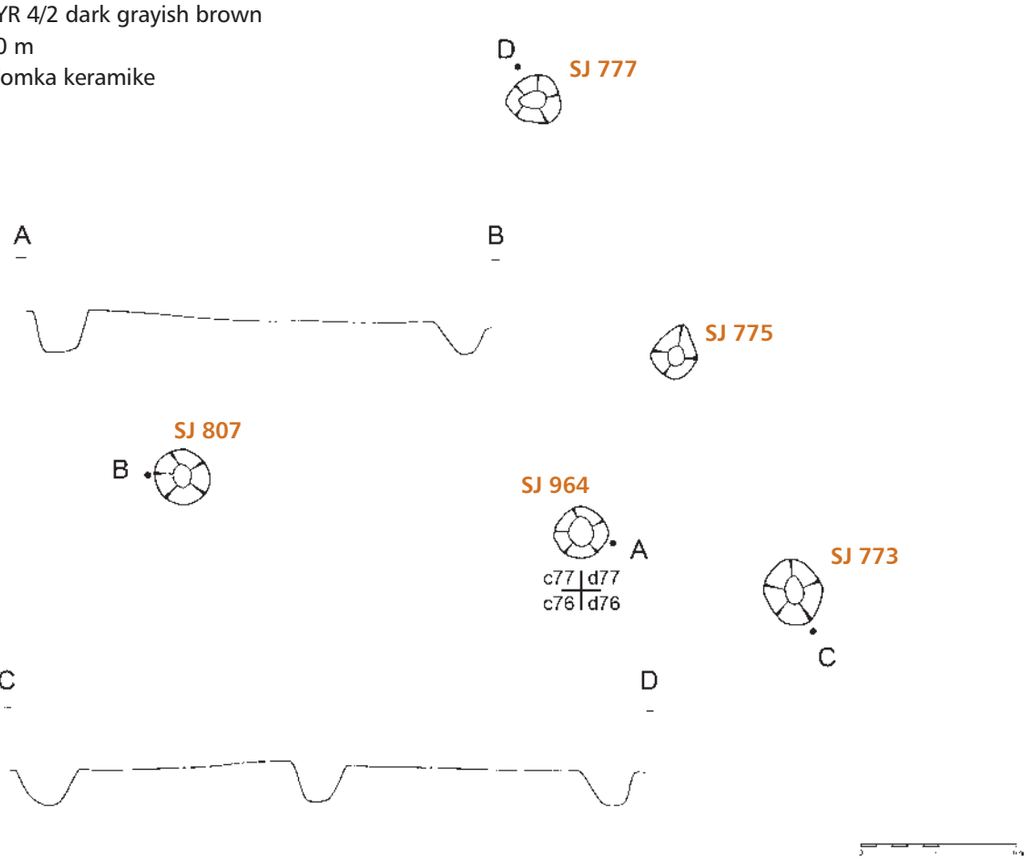
e 78
110,24–109,89
10 YR 4/4 dark yellowish brown
0,50 m
1 ulomak keramike



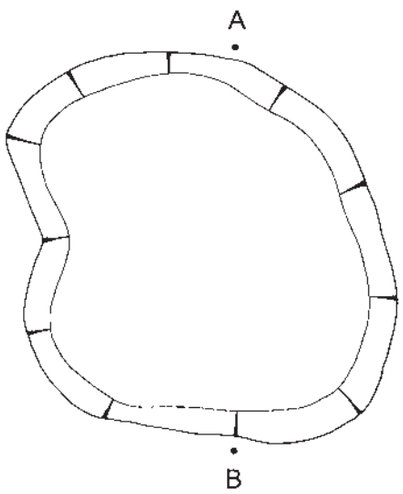



SJ 963 **964**

c/d 77
110,19–109,94
10 YR 4/2 dark grayish brown
0,40 m
2 ulomka keramike



SJ 1016 **1017** m/n 85
110,30–110,10
7.5 YR 6/6 reddish yellow
2,70 x 2,30 m
1 ulomak keramike







m85 n85
m84 n84

# Naseobinski pokazatelji

Kostolačko naselje na nalazištu Franjevac ide u red jednog od većih istraženih nalazišta te kulture u Hrvatskoj te kao takvo ima važnu ulogu u njenom sagledavanju. Od nepokretnih arheoloških nalaza uglavnom je riječ o višećelijastim objektima, ovalna ili izdužena oblika, plitkim, okruglim ili ovalnim jamama, dugačkim, uskim kanalima i stupovima. Iako je na jednom mjestu na nalazištu na osnovi iskopanih rupa od stupova moguće rekonstruirati, odnosno označiti nadzemni objekt (sl. 3.1),[1] nemoguće je sa sigurnošću reći pripada li pretpovijesnom ili srednjovjekovnom naselju, jer u zapunama stupova nije pronađena pokretna građa.



Dugački uski kanali vjerojatno su od samostojećih drvenih ograda. Jedno od tumačenja je da su takve strukture služile za štavljenje životinjske kože.[2] Na Franjevcu su svi grupirani u južnom dijelu istražene površine, pa možemo hipotetski navesti da je u tom dijelu naselja obavljana jedna takva specijalizirana djelatnost. Neke od plićih jama nepravilna oblika, u kojima je zapuna bila sivkastožuta, pjeskovita i gotovo sterilna, odnosno bez organskih sastava u njima i bez veće količine građe, možda su mogle služiti i za pripremu gline, odnosno miješanje gline za njezinu daljnju upotrebu.[3]

Ustanovljeno je i nekoliko dubokih jama koje se šire prema dnu koje su vjerojatno služile kao spremišta, odnosno mjesta za čuvanje zaliha (npr. SJ 85 86, SJ 281 282, SJ 285 286, SJ 469 470). One su naknadno (sekundarno) pretvorene u otpadne jame ili u mjesta u kojima su sahranjivani pokojnici (SJ 265 266) ili ritualno životinje (SJ 43 44). Nekoliko dubokih jama – spremišta koje se zvonoliko šire prema dnu, ili se podvlače pod rub nalazi se u sklopu većih objekata, dosta plitkih i nepravilna oblika. Npr. na veliki objekt SJ 271 272 sa zapadne strane se nastavlja SJ 285 286. U njihovoj je blizini i objekt SJ 705 706, nepravilna oblika, s dubokom jamom – spremištem na južnom dijelu. SI od ta dva objekta je i objekt SJ 207 208, na čijem južnom kraju je duboka jama SJ 469 470. U njima je i pronađena velika koncentracija botaničkih ostataka.[4]

U nekim objektima je ustanovljeno po nekoliko dublje ukopanih rupa (moguće od stupova), što nam može potvrditi postojanje lakih konstrukcija koje su ih djelomično natkrivale, pa se

[1] vidi kv. c-d/77–79, uz stacionažu 60+200.

[2] Cavulli 2010: 144.

[3] Cavulli 2010: 144.

[4] vidi prilog *Biljni ostaci.*

# Settlement evidence

The Kostolac settlement at Franjevac ranks among the largest investigated sites of this culture in Croatia, and as such plays an important role in our considerations of the Kostolac culture. The bulk of the immovable archaeological finds consist of multicellular structures of oval or elongated shape; shallow, circular or oval pits; long, narrow trenches and posts. In spite of the fact that at one place it was possible to reconstruct – i.e. identify – an above-ground structure based on the excavated post-holes (fig. 3.1),[1] it could not be ascertained whether it belongs to the prehistoric or the mediaeval settlement, as no movable archaeological material was discovered in the fills of the post-holes.

The long narrow trenches are probably the remains of self-standing timber fences. In one of the interpretations put forward these features played a role in the process of tanning animal hides.[2] All such features at Franjevac cluster in the southern part of the investigated space, so we can tentatively propose that one such specialized activity may have been conducted in that part of the settlement. Some of the shallower pits of irregular shape, filled with greyish-yellow, sandy and almost sterile soil, i.e. lacking organic components and any significant amount of archaeological material, may have served for the preparation of clay, that is, mixing of clay for further use.[3]

The investigation revealed several bell-shaped pits – those that widen towards the base – that were probably used as storage pits, that is, places were provisions were stored (e.g. SJ 85 86, SJ 281 282, SJ 285 286, SJ 469 470). These features were subsequently transformed (secondary use) into refuse pits or places for burying dead (SJ 265 266) or ritually slaughtered animals (SJ 43 44). Several deep bell-shaped pits – storages – form part of larger structures, which are shallow and of irregular plan. For example, structure SJ 285 286 abuts on the large structure SJ 271 272 on the west. Structure SJ 705 706 is situated close by. It has an irregular shape, with a deep storage pit in the southern part. Structure 207 208, with deep pit SJ 469 470 on its southern end, stands NE of these two structures. These features yielded a large concentration of botanical remains.[4]

Some structures were composed of several deeply dug pits (possibly belonging to posts), which corroborates the presence of light constructions that partially covered these structures, allowing us to conclude that these were work-related spaces. We cannot identify

[1] See sq. c–d/77–79, next to marks 60+200.

[2] Cavulli 2010: 144.

[3] Cavulli 2010: 144.

[4] see the contribution *Plant remains.*



**Sl. 3.1** Pogled na tragove mogućeg nadzemnog objekta (sačuvane su rupe od stupova) u kv. c-d/77-79

**Fig. 3.1** View of the remains of a possible above-ground structure (with preserved post-holes) in sq. c-d/77-79

može zaključiti da je vjerojatno riječ o radnim prostorima. Niti za jedan ukopani objekt ne možemo sa sigurnošću reći da je korišten kao stambeni, jer nisu pronađeni tragovi stupova uokolo objekata niti *in situ* elementi kao recimo peći ili ognjišta. Ipak, nalazi kućnoga lijepa u zapunama nekih jama potvrđuju nam postojanje čvršćih nadzemnih konstrukcija na nalazištu,[5] samo što nažalost ili su uništene naknadnim ukopavanjem ili obradom zemlje, ili nisu obuhvaćene iskopom.

Na Franjevcu se svojom veličinom ističu dva objekta veličine oko 20 x 17 metara (SJ 160 161 i SJ 876 877). Njihova namjena dosta nam je nejasna, naime niti oko jedne nisu ustanovljene rupe od stupova da bismo mogli pretpostaviti njihovo natkrivanje. Osim toga, imaju puno jamskih prostora nejednake dubine i veličine što u potpunosti odbacuje mogućnost njihova korištenja u stambene svrhe.

U literaturi se javljaju vrlo proturječni stavovi o zemuničkom načinu stanovanja, od autora koji svaki veći ukopani objekt tumače stambenim, do onih koji negiraju zemunički način stanovanja. Priklonili bismo se ovdje mišljenju autora koji kao parametre po kojima bi neki ukopani objekt bio definiran kao stambeni navode postojanje tragova arhitekture, peći ili ognjišta, uređenje unutrašnjeg prostora kao i pravilnost ukopa.[6]

[5] vidi prilog *Analiza kućnog lijepa.*

[6] Tripković 2007: 26–27.

a single sunken structure as decidedly residential, because no traces of posts surrounding the structures nor *in situ* elements such as ovens or hearths were discovered. Nevertheless, the finds of daub in the fills of certain pits do confirm the presence of solid above-ground structures at the site,[5] though, unfortunately, they were destroyed by subsequent building or farming, or remained outside the excavation limits.

Two structures at Franjevac, measuring around 20 x 17 m (SJ 160 161 and SJ 876 877), stand out in terms of size. Their function is still rather unclear, i.e. no post-holes were identified around either of the two structures, which would have allowed us to presume that they had been covered. In addition to this, they contain several pit features of uneven depth and dimensions, which disqualifies them entirely as possible residential structures.

Pit-dwelling practices are a contentious topic in the scholarly literature, from authors prone to interpret any larger sunken structure as residential, to those denying this type of dwelling completely. We would here agree with the opinion of those authors who look for traces of architecture, ovens or hearths, interior arrangements or regularity in construction as relevant parameters for defining a sunken structure as residential.[6] It is appropriate to recall here K. Vinski-Gasparini's interpretation put forward in her

[5] see the contribution entitled *Daub Analysis.*

[6] Tripković 2007: 26–27.

Možemo ovom prigodom navesti i interpretaciju K. Vinski Gasparini, prilikom objave istraživanja badenskog naselja u Belom Manastiru. Autorica je veće, nepravilne ukopane objekte pripisala jamama iz kojih se vadila glina, a ne, kao što je to uobičajeno, stambenim zemunicama.[7] Priklonila se tu mišljenju O. Pareta koji je upozorio na činjenicu da su u naseljima s nadzemnim objektima popratna pojava jame nepravilna oblika i raznih dimenzija, katkada s rupama od stupova. Smatra da se iz tih jama vadila ilovača kojom su se gradili i popravljali nadzemni objekti te također i keramika. Tragove kolaca tumači kao ogradu postavljenu iz sigurnosnih razloga. Etnografskim paralelama također je ustanovljeno da su velike nepravilne jame korištene za vađenje ilovače i za bacanje otpadaka, kruškolike jame s uskim otvorom služile su kao spremišta žitarica, dok su jame pravilnijeg tlocrta (ovalnog ili pravokutnog), s relativno ravnom podnicom, služile kao spremišta za razne usjeve. Ukopane nastambe – zemunice pravilnog su pravokutnog oblika te ukopane u zemlju cca 0,70 m.

Moguće je stoga da su neki od velikih objekata s Franjevca bili korišteni za vađenje gline, a možemo pretpostaviti da je jedan od njih (SJ 160 161) korišten i u neke kultne svrhe. Tome u prilog ide to što je uz objekt pronađena jama, vjerojatno primarno korištena kao spremište (cilindričnog je oblika), a sekundarno je poslužila kao mjesto pokopa čovjeka s dvije životinje,[8] a u samom objektu, u dva odvojena jamska prostora dva ukopa lubanja.[9] Naime, jedna lubanja (SJ 1040) postavljena je u jamu koja je zatim zatrpana tamnim, masnim slojem s dosta lijepa u sastavu (SJ 856), koji je onda preslojen žutim i crvenim sterilnim nabojima zemlje (SJ 858, SJ 698).

Vatrišta su ustanovljena u nekoliko objekta SJ 19 20, SJ 183 184, SJ 267 268 i SJ 572 573. Ipak nismo uvjerenja da su služili kao stambeni objekt nego kao radni prostori. Kao radni prostor, s velikom količinom pronađenih žitarica, ističe se i SJ 19 20. Nepravilna je oblika, dužine 7, a širine 5 metara, dubine i do 0,70 cm, orijentacije sjeveroistok-jugozapad. U objektu se nalaze 3 peći (SJ 351,353,356), odnosno mjesta na kojima su bili dosta intenzivni tragovi gorenja, koje su blago ukopane u zdravicu, svaka u zasebnom jamskom prostoru.

publication of the Baden settlement in Beli Manastir. The author interpreted the larger irregular sunken structures not in the usual way, as residential pit-houses, but as clay quarry pits.[7] In this she agreed with the opinion of O. Paret, who cautioned that pits of irregular shape and of various dimensions, sometimes with associated post-holes, occur as a regular feature in the settlements composed of above-ground structures. In her opinion, these features were pits that were quarried for clay used for building and repairing above-ground structures, as well as for making pottery. She interprets the traces of posts as belonging to a fence erected for protection. Ethnographic parallels provided additional evidence that large irregular pits were used for quarrying clay and as refuse pits; piriform pits with constricted opening were used for storing wheat, while pits of more regular plan (oval or rectangular) with relatively flat floors, were used as storages for various crops. Sunken dwellings – pit-houses, have a regular rectangular shape, and are dug into the soil around 0.70 m deep.

It is therefore possible that some of the large structures from Franjevac were used for quarrying clay, and it can also be presumed that one of them (SJ 160 161) was used for certain cult purposes. This latter suggestion is borne out by the fact that next to it stood another pit, at first probably used as a storage pit (it is of cylindrical shape), while in its secondary use it served as the burial place for a man with two animals,[8] as well as by the discovery of two buried skulls in two separate pit-shaped features within the pit itself.[9] One of the skulls (SJ 1040) was placed into a pit that was then filled with dark, sticky matrix with abundant remains of daub (SJ 856) and subsequently covered with yellow and red sterile layers of soil (SJ 858, SJ 698).

Fireplaces were documented in several structures: SJ 19 20, SJ 183 184, SJ 267 268 and SJ 572 573. We are nevertheless still inclined to consider them as working spaces rather then residential structures. Standing out from these working spaces is SJ 19 20, which yielded a large quantity of wheat remains. It has an irregular shape, it is 7 m long by 5 m wide and up to 0.70 m deep, oriented north-east-southwest. The structure contains 3 ovens (SJ 351, 353, 356) or, to be precise, areas exhibiting fairly intensive remains of burning. These features are slightly sunken into the virgin soil in three separate pit-shaped features within the structure.



[7] Vinski – Gasparini 1956: 13–17.

[8] Jama s ukopom je SJ 265 266, ljudski ukop je imenovan kao SJ 939, a životinjski kao SJ 940 i 945.

[9] SJ 578 i SJ 1040.

[7] Vinski-Gasparini 1956: 13–17.

[8] The pit with the burials is marked as SJ 265 266, human burial is marked as SJ 939, while the animal burials are SJ 940 and SJ 945 respectively.

[9] SJ 578 and SJ 1040.

# Keramičko posuđe

Kao i na ostalim kostolačkim nalazištima i na Franjevcu keramička produkcija čini najveći postotak ukupnog broja nalaza. Upravo je za kostolačku kulturu njena keramika »*osnovni kulturni i stilski determinator*«.[1] Kod keramičkih posuda prevladavaju tamniji (tamnosivi i tamnosmeđi) tonovi, s presjekom također uglavnom tamnosivih ili tamnosmeđih tonova. Na nekim ulomcima boja vanjske stijenke varira od oker do smeđih tonova (mrljasto) što je vjerojatnije posljedica gorenja u požaru nego načina pečenja. Površina posuda varira od glačane, djelomično uglačane,[2] glatke (mat) do grube. Keramika je dobre kvalitete, a najčešće je riječ o keramici normalne tvrdoće. Velika većina keramičkih ulomaka ostala je tipološki neopredijeljena, a uglavnom se radi o gruboj keramici, koja i je najbrojnija na Franjevcu. Gruba keramika je rađena uz dodatak raznih primjesa, najčešće sitnih kamenčića. Grube fakture su najčešće lonci, dok su zdjele i šalice uglavnom djelomično uglačane ili glatke površine. Jedini ukras na loncima je izveden plastičnim aplikacijama, za razliku od zdjela koje karakterizira bogat dekorativni stil, često upotpunjen bijelom inkrustacijom. Motivi su izvedeni brazdastim urezivanjem, urezivanjem, kraćim zarezivanjem, ubadanjem i žigosanjem, te su grupirani u horizontalne i vertikalne zone i polja. Žigosanje se obavljalo tupim alatkama različita presjeka: najčešće ovalnog i kružnog.

Funkcionalni oblik određen je prvenstveno u odnosu na dimenzije pojedine posude, omjere njene visine i širine te funkcionalne dodatke. U skladu s tim, na osnovi prikupljene građe, izdvojili smo četiri funkcionalna oblika posuda kostolačke kulture: zdjelu, lonac, šalicu i čašu.[3] Zdjela je najčešće široka i plitka posuda čija visina ne prelazi najveći promjer. Lonac je duboka i visoka posuda čiji je promjer ruba uglavnom manji od promjera tijela ili ramena. Šalice i čaše su posude malih dimenzija, a razlikuju se po tome što šalice imaju ručku na jednoj strani. Na osnovi analiziranja obrisa posuda ustanovljeni su tipovi unutar svakog funkcionalnog oblika, a varijante unutar tipa određene su različitim dimenzijama, sekundarnim dodacima te modifikacijama ruba. Među zdjelama mogu se izvojiti šest tipova: konične zdjele, kalotaste zdjele, zaobljene zdjele, zdjele izvučenoga vrata, bikonične i zdjele S-profilacije. Među materijalom

[1] Tasić 1979: 254.

[2] Djelomično uglačana površina znači da su tragovi glačanja vidljivi na vanjskoj površini keramike kao tanke pruge.

[3] Način na koji je napravljena klasifikacija i definicija funkcionalnih oblika i varijanti preuzet je iz rada Vrdoljak 1994: 10–15.

# Ceramic ware

The greatest proportion of all finds at Franjevac consists of ceramic ware, which is a feature that is repeatedly found on many Kostolac sites. It can be asserted that the ceramic production of the Kostolac culture is its »*basic cultural and stylistic determinant*«.[1] In ceramic vessels, darker hues—dark grey and dark brown—predominate, with cross-sections that are also mainly of dark grey or dark brown tones. On some shards the outer wall varies in colour from ochre to brown hues (patchy), presumably speaking of accidental burning rather than indicating a method of firing. Vessel surface varies from polished, partially polished,[2] smooth (matt) to coarse. The quality of the ceramics is good, and the hardness is generally normal. By far the largest part of ceramic shards have remained typologically undetermined. In most cases they belong to coarse pottery, which is the most common type at Franjevac. Coarse pottery was made with various inclusions, mostly small stones. Pots are most often of coarse fabric, while bowls and cups generally have a partially polished or smooth surface. The only decoration on pots consists of plastic applications, unlike the bowls, which are characterized by rich decorative style, often complemented with white incrustation. The motifs are executed with furrow incision and incision, short notches, stabbing and stamping, and are arranged into horizontal and vertical zones and fields. Stamping was done with blunt tools of various cross-sections: mostly oval and circular.

Functional shapes were determined primarily with regard to the size of individual vessels, their height/width ratio and functional additions. In keeping with this, based on the collected assemblage, we distinguished four functional vessel shapes of the Kostolac culture: bowl, pot, cup and glass.[3] Bowls are generally wide and shallow vessels whose height does not exceed the greatest diameter. Pots are deep and high vessels whose rim diameter is generally smaller than the diameter of the body or shoulder. Cups and glasses are small vessels distinguished from each other by the fact that cups have a handle on one side. Based on the analysis of vessel outlines, distinct types were determined within each functional shape, while variants within types were determined based on different dimensions, secondary additions and modifications of the rim. Six types can be distinguished among bowls: conical bowls, hemispherical bowls, rounded bowls, bowls with everted neck, biconical bowls

[1] Tasić 1979: 254.

[2] Partially polished surface means that traces of polishing are visible on the outer surface of the vessel as thin stripes.

[3] We have based the classification and definition of the functional shapes and variants on Vrdoljak 1994: 10–15.

**Sl. 4.1** Različiti tipovi posuđa pronađeni na Franjevcu
**Fig. 4.1** Different vessel types from Franjevac



izdvojeni su lonci S-profilacije, oni zaobljena tijela, lonci sužena te cilindrična vrata. Šalice također dolaze u dva oblika: konične šalice i šalice konkavnog tijela. Također među materijalom iz Franjevca izdvojeno je nekoliko posebnih oblika: izdužene posude, tzv. Fischbutte, četvrtaste posude i posude trbušasta tijela.

## Zdjele

Zdjele su uistinu zastupljene s najvećim brojem primjeraka te nam i to potvrđuje postavku da je osnovna odlika kostolačke kulture zdjela. Najčešće su dobre fakture, djelomično uglačane ili glatke površine te ukrašene. Ukras na zdjelama je standardiziran i rađen po jakim geometrijskim pravilima. Svi motivi dobiveni su po principu motiva reda, odnosno ubodi ili žigovi su postavljeni u horizontalne ili vertikalne linije. Uz pomoć rastera (kvadratične ćelije) dobiveni su tako motivi trake, trokuta, romba ili šahovnice. Trokuti, rombovi i cik-cak motivi dobiveni su također pomoću linija (izvedenim brazdastim ili običnim urezivanjem). U velikom je broju prisutan i krivolinijski ukras (mini-rozete) što je karakteristično za kasnu fazu kostolačke kulture, kao i dekorativna shema koja ide isključivo u vidu trake oko najširega dijela posude.

### *Konične zdjele (sl. 4.5:Z1)*

Radi se o tipu posuda koji nije izrazito brojan na Franjevcu. Riječ je o zdjelama blago uvučena ruba, s ravnim dnom, uglavnom neukrašenim (kat. 200, 205, 376).[4]

[4] Po D. Nikolić riječ je o tipu I, vidi: Nikolić 2000: 49, T.XXXIX/6.

and S-profiled bowls. Among pots we differ between S-profiled pots, pots with rounded body, pots with constricted and cylindrical necks. Cups come in two forms: conical cups and cups with concave body. Several special types were distinguished in the Franjevac assemblage: elongated vessels, the so-called Fischbutte, rectangular vessels and bellied vessels.

## Bowls

Bowls are indeed represented by the largest number of pieces, which corroborates the hypothesis that bowl is the main feature of the Kostolac culture. Bowls are generally of good fabric, have a partially polished or smooth surface, and are decorated. The ornament is standardized and follows strict geometric rules. All the motifs were executed following the linear principle, that is, the stabs or stamps form horizontal or vertical lines. The grid organization of the decoration (square cells) thus produced stripes, triangles, rhombs or a chequered pattern. Triangles, rhombs and zigzag motifs were likewise rendered with lines (executed with furrow- or normal incision). Curvilinear decoration (mini-rosettes) are very common, which is characteristic for the late phase of the Kostolac culture, as well as a decorative scheme rendered exclusively in the form of a band running around the widest part of a vessel.

### *Conical bowls (fig. 4.5:Z1)*

This is not a common type at Franjevac. These bowls have a slightly inverted rim and flat – generally unornamented – base (cat. 200, 205, 376).[4]

[4] In D. Nikolić's opinion this would be type I, see: Nikolić 2000: 49, T.XXXIX/6.

**Sl. 4.2** Tipovi zdjela

**Fig. 4.2** Bowl types



## *Kalotaste zdjele (sl. 4.5:Z2)*

Donji dio je sasvim zaobljen, tako da je nemoguće reći gdje dno počinje, a gdje završava. Neki primjerci imaju izraženu udubinu na dnu (omphalos). Taj tip zdjela u literaturi se naziva kalotastim.[5] Predstavljaju najtipičniji oblik posude unutar kostolačke kulture prisutan na gotovo svim kostolačkim nalazištima. Pod utjecajem kostolačke kulture pojavljuje se i u ranoj fazi vučedolske kulture.[6] Na osnovi ovdje obrađene građe izdvojene su dvije varijante toga tipa.

a. Izrazito plitka posuda čiji ukras pokriva 2/3 posude (kat. 2, 17, 18, 59, 198, 199).

b. Plitka posuda ravna ili izvijena ruba. Ukras izveden po sredini posude – s gornje strane je linija izvedena brazdastim urezivanjem ispod koje je ukras najčešće izveden žigosanjem. Brazdasto urezana linija očitava se u profilu posude kao utor koji vizualno odvaja vrat od tijela zdjele, a često na unutarnjoj strani kao greben (kat. 48, 49, 60, 86, 201, 283, 460).

## *Zdjele zaobljenog tijela (sl. 4.5:Z3)*

a. Radi se o jednostavnom obliku zaobljene duboke zdjele s ravnim ili uvučenim vratom te ravnim dnom.[7] Grube je fakture te neukrašena osim s plastičnim aplikacijama pod rubom (kat. 25, 308, 362).

b. S lokaliteta Franjevac potječu dvije izdužene, ovalne zdjele zaobljena tijela, blago uvučena ruba i ravna dna (kat. 204, 451). Slična je pronađena u kostolačkom horizontu IIIb1 (nastarija faza naselja) na Gomolavi.[8]

[5] Tasić 1979: 254; Nikolić 2000: 49 (tip II), T.XXXIX:8; Petrović, Jovanović 2002: 228 (tipovi 5 i 6).

[6] Dimitrijević 1979: T. XXVII:3.

[7] Benac 1962: T.III:12; Tasić 1979: T.XXVI:8.

[8] Petrović, Jovanović 2002: 112, 113, kat. 2.

## *Hemispherical bowls (fig. 4.5:Z2)*

The lower part is completely round, making it impossible to ascertain where the base begins and where it ends. Some specimens have a pronounced depression on the bottom (omphalos). The term used in the literature for this type of bowls is »hemispherical«.[5] They are the most typical vessel form in the Kostolac culture, appearing at almost all Kostolac sites. Under the influence of the Kostolac culture they appear also in the early phase of the Vučedol culture.[6] Two variants of this type were distinguished based on the assemblage analyzed here.

a. Particularly shallow vessel whose ornament covers 2/3 of the surface (cat. 2, 17, 18, 59, 198, 199).

b. Shallow vessel with a flat or everted rim. The ornament is executed across the middle of the vessel – a furrow-incised line runs above a generally stamped ornament. Furrow-incised line is seen in the vessel profile as a groove visually separating the neck from the body of the vessel, while in the inside it is often perceived as a ridge (cat. 48, 49, 60, 86, 201, 283, 460).

## *Bowls with rounded body (fig. 4.5:Z3)*

a. This is a simple form of rounded deep bowl with flat or inverted neck and flat base.[7] Its fabric is coarse. It is unornamented except for plastic applications below the rim (cat. 25, 308, 362).

b. Franjevac yielded two elongated, oval bowls with rounded body, slightly inverted rim and flat base (cat. 204, 451). A similar bowl was found in the Kostolac horizon IIIb1 (the oldest phase of the settlement) at Gomolava.[8]

[5] Tasić 1979: 254; Nikolić 2000: 49 (type II), T.XXXIX:8; Petrović, Jovanović 2002: 228 (types 5 and 6).

[6] Dimitrijević 1979: T. XXVII:3.

[7] Benac 1962: T.III:12; Tasić 1979: T.XXVI:8.

[8] Petrović, Jovanović 2002: 112, 113, cat. 2.

**Sl. 4.3** Četvrtasta posuda ukrašena brazdastim urezivanjem, SJ 355
**Fig. 4.3** Rectangular vessel with a furrow-incised decoration, SJ 355



## *Zdjele bikoničnog tijela (sl. 4.5:Z4)*

a. Konkavnog vrata, ravnog dna, ravna ili izvučena ruba. Ukras može biti na bikoničnom prijelomu u obliku rozeta ili kružnica (kat. 51, 132, 134, 157, 158, 276, 361, 453), na konkavnom, gornjem dijelu (u zonama – kat. 187, 188) ili na donjem dijelu (gusti snopovi urezanih linija – kat. 50, 62, 63, 109). Ovaj tip u najvećem postotku ima široku trakastu ili tunelastu ručku, također ukrašenu, najčešće na bikoničnom prijelomu (kat. 16, 21, 23, 53, 87, 137, 366, 367), iako ima i primjeraka gdje ručka spaja rub i rame posude (kat. 364). Za ovaj se tip smatra da je čest na lokalitetima kasne faze kostolačke kulture.[9]

b. Zdjela konična vrata s naglašenim ramenom (kat. 24, 318). Ovaj tip nije toliko čest kao pod a.

c. Zdjela cilindričnog vrata s ukrasom na prijelomu posude. Ova varijanta naročito se ističe među materijalom iz Pivnice.[10]

## *Zdjele izvučena vrata (sl. 4.5:Z5)*

Obilježje tog tipa zdjela jest blago naglašena profilacija koja diferencira vrat posude. Nakon kalotastih zdjela bez dna taj je tip dosta zastupljen na kostolačkim nalazištima.[11] Među građom iz Franjevca izdvojene su njegove četiri varijante.

a. Zdjela konična vrata i ravna dna. Ukras teče od ramena posude gotovo do dna ili u vidu trake na ramenu posude. Kod ovog tipa česta je ušica na ramenu (kat. 119, 183, 186, 280, 309, 374, 375).

b. Dublja zdjela ravna dna, blago naglašena trbuha i konična vrata (kat. 358).

[9] Nikolić 2000: 49, Tip VIII, T.XXXIX:14.
[10] Benac 1962: T.III:4,5.
[11] Petrović, Jovanović 2002: 228 (tip 1 i 2).

## *Biconical bowls (fig. 4.5:Z4)*

a. Concave neck, flat base, flat or everted rim. Decoration can be on the carination in the form of rosettes or circles (cat. 51, 132, 134, 157, 158, 276, 361, 453), on the concave, upper part (in zones – cat. 187, 188) or on the lower part (dense bundles of incised lines – cat. 50, 62, 63, 109). This type in most cases features a wide strap- or tunnel-handle, also decorated, mostly on the carination (cat. 16, 21, 23, 53, 87, 137, 366, 367) although pieces were found on which the handle connects the rim with the shoulder (cat. 364). This type is considered common on the sites of the late phase of the Kostolac culture.[9]

b. Bowl with a conical neck and pronounced shoulder (cat. 24, 318). This type is not as common as type a.

c. Bowl with a cylindrical neck and decorated carination. This variant is particularly prominent in the assemblage from Pivnica.[10]

## *Bowls with everted neck (fig. 4.5:Z5)*

The main feature of this bowl type is the gentle profilation that differentiates the neck of the vessel. This is the second most common type at the sites of the Kostolac culture after the hemispherical bowls without base.[11] Four variants of this type were distinguished in the Franjevac assemblage.

a. Bowl with a conical neck and flat base. The ornament runs from the shoulder almost to the base or in the form of a stripe on the shoulder of the vessel. A loop often figures on the shoulder of the bowls of this type (cat. 119, 183, 186, 280, 309, 374, 375).

[9] Nikolić 2000: 49, Type VIII, T.XXXIX:14.
[10] Benac 1962: T.III:4,5.
[11] Petrović, Jovanović 2002: 228 (types 1 and 2).

c. Zdjela cilindrična vrata, izvijena ruba i zaobljena trbuha (kat. 133, 203).

d. Zdjela visoka, cilindrična vrata i niskog, zaobljenog trbuha. Neukrašena je, mat ili grube fakture (kat. 26).

### *Zdjele S-profilacije (sl. 4.5:Z6)*

Vrlo su rijetke među materijalom iz Franjevca. Ovaj tip čest je na nalazištima gdje imamo miješan badenski i kostolački materijal. Ukras je najčešće pod samim rubom ili na ramenu posude, u vidu kratkih uboda ili ureza (kat. 29, 185).

## Lonci

Lonci dolaze u dvije kategorije: keramika je glatka (mat), tankih stijenki i bez primjesa, tzv. fine fakture te ona od slabo pročišćene gline, debljih stijenki, tzv. grube fakture. Među materijalom u vrlo malom broju zastupljeno je veliko posuđe za zalihe (tzv. pitosi), dok dominira standardno posuđe za svakodnevnu kućnu upotrebu (visine između 16 i 20 cm). Ukrašavanje posuda grube fakture uglavnom je u obliku plastičnih traka s otiscima vrhova prstiju ili nokta obično postavljenim ispod ruba posude (kat. 141–148, 211–239, 398–401). Prisutno je također ukrašavanje samog ruba posuda urezima (kat. 395–397, 402). Kao funkcionalno-dekorativni element (imaju funkciju drški) na loncima dosta često susrećemo plastične aplikacije izdužena oblika ukrašene otiskivanjem (kat. 89, 240–244) ili ušice (kat. 135, 181).

b. Deeper bowl with flat base, gently pronounced belly and conical neck (cat. 358).

c. Bowl with a cylindrical neck, everted rim and rounded belly (cat. 133, 203).

d. Bowl with a high, cylindrical neck and short, rounded belly. It is unornamented, of matt or coarse fabric (cat. 26).

### *S-profiled bowls (fig. 4.5:Z6)*

These bowls are very rare in the Franjevac assemblage. This type is common at sites that contain mixed material of the Baden and Kostolac cultures. The ornament is generally placed immediately below the rim or on the shoulder, in the form of short stabs or incisions (cat. 29, 185).

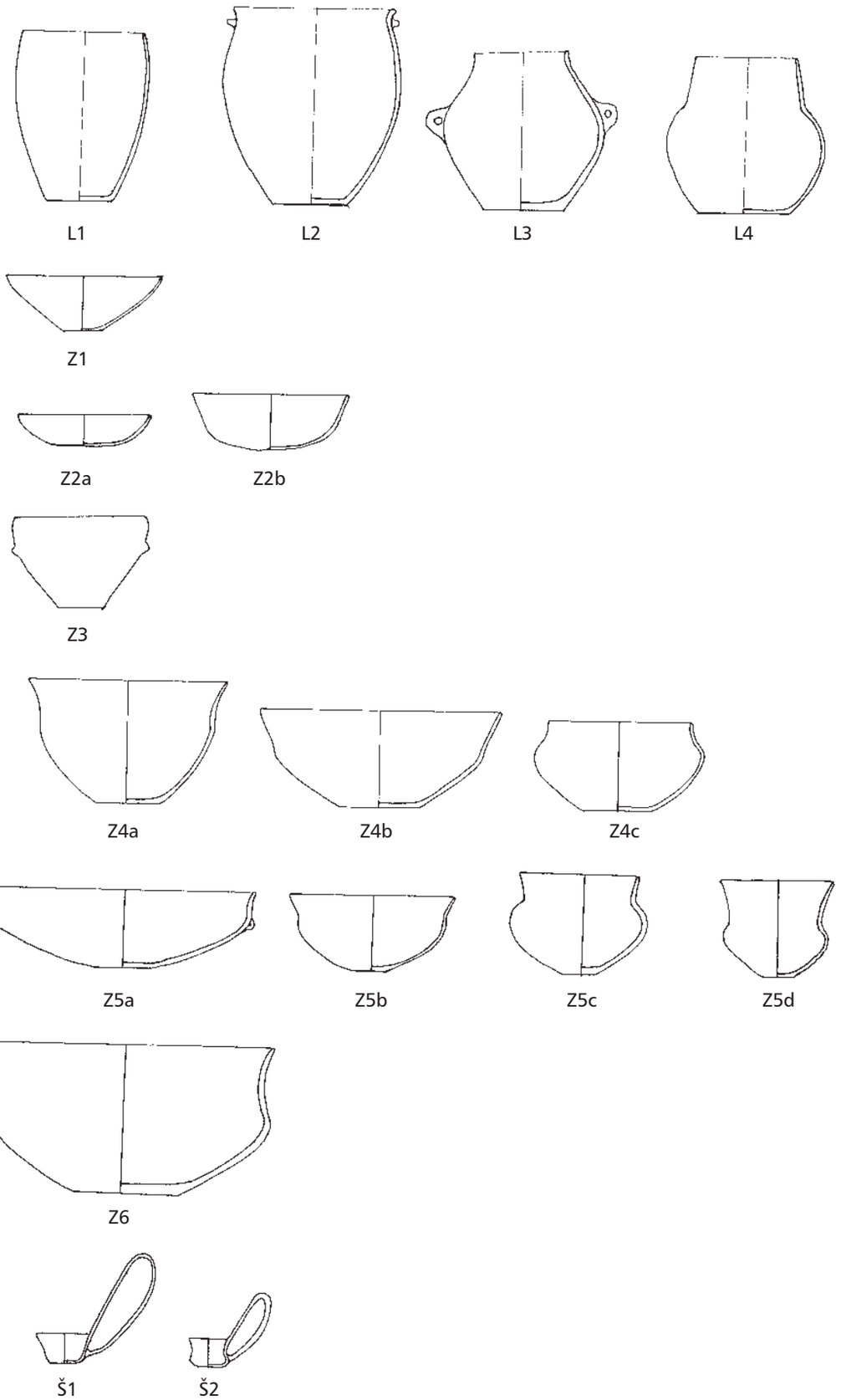
## Pots

Pots come in two categories: fine ware – smooth (matt) ceramics, with thin walls and no inclusions, and coarse ware – poorly processed clay, thick walls. There are very few large storage vessels (the so-called pithoi) in the assemblage, while the dominant form are the standard vessels for everyday use at home (between 16 and 20 cm high). Coarse vessels are generally decorated with relief stripes with fingertip or fingernail impressions, usually placed below the vessel rim (cat. 141–148, 211–239, 398–401). Rim is also sometimes decorated with incisions (cat. 395–397, 402). Pots fairly often feature functional-decorative elements (serving as handles) in the form of loops (cat. 135, 181), or elongated relief applications decorated with impressions (cat. 89, 240–244).



**Sl. 4.4** Tipovi lonaca

**Fig. 4.4** Pot types






**Sl. 4.5** Tipovi lonaca (L), zdjela (Z), šalica (Š) te pršljenaka pronađenih na Franjevcu

**Fig. 4.5** Types of pots (L), bowls (Z), cups (Š) and spindle-whorls from Franjevac

### *Lonci zaobljena tijela (sl. 4.5:L1)*

Javlja se u jednoj varijanti. Ima ravan rub i ravno dno (kat. 52, 57, 279, 360). Često pod rubom ima plastične aplikacije kao drške.

### *Lonci S-profiliranog tijela (sl. 4.5:L2)*

Ovaj tip najčešći je među loncima s Franjevca (kat. 245, 306, 307, 320, 363, 365, 452). Ima izvijeni rub i ravno dno. Kao drške služe mu funkcionalno-dekorativne aplikacije ili ušice. Ukrašen je često otiskivanjem prstom na rubu te apliciranjem i otiskivanjem na ramenu.

### *Lonci suženog vrata (sl. 4.5:L3)*

Ova varijanta ima ravni rub, ravno dno te lagano izražen uski vrat. Često se pod rubom ili na trbuhu nalaze ušice za ovjes ili ručke (kat. 1, 55, 135, 277, 359). Ovaj oblik se često u literaturi naziva amfora, a nalazimo ga na gotovo svim kostolačkim lokalitetima.[12]

### *Lonci cilindričnog vrata (sl. 4.5:L4)*

Na Franjevcu je sporadično prisutan i ovaj tip lonca. Ima cilindričan vrat i naglašeno trbušasto tijelo (kat. 281).

## Šalice (sl. 4.5:Š)

Kao najprepoznatljiviji oblik posude koji se povezuje s kostolačkom kulturom svakako je šalica s trakastom ručkom koja nadvisuje rub. Na Franjevcu su prisutna dva tipa šalica:

a. Konična šalica s ravnim dnom (kat. 56).

b. Bikonična šalica s konkavnim gornjim dijelom i niskim, spljoštenim tijelom (kat. 19, 84, 138). Ova šalica ima ureze pod rubom i na bikoničnom prijelomu.

## Čaše

Konična su tijela i ravna dna (kat. 354, 355).

## Ostali keramički oblici

### *Posude elipsoidnog presjeka – fischbutte*

Uz zdjelu i šalicu s visokom ručkom kao treći najkarakterističniji oblik kostolačke kulture smatra se posuda elipsoidnog presjeka, tzv. »fischbutte«. Posuda ima niski, uski cilindrični vrat, a na izduženom ramenu posude nalaze se ušice. Ako pri analizi oblika i klasifikaciji koristimo geometrijski pristup po kojem je oblik posude određen prvenstveno u odnosu na dimenzije te omjere njene visine i širine ovaj oblik trebali bismo pripisati zdjelama cilindrična vrata kao posljednju varijantu. Kako je ovaj oblik u literaturi, u sklopu badenske, kostolačke i vučedolske kulture, poznat pod nazivom »fischbutte« odlučili smo se da ga i u ovom radu obrađujemo zasebno kao poseban oblik. Na

[12] Schmidt 1945: T.20:3; Benac 1962: T.III:13; Tasić 1965: 185, sl.4; Petrović 1988: T.II:1,3,5; Marković 1994: T.31:4; Nikolić 2000: 48.

### *Rounded pots (fig. 4.5:L1)*

There is a single variant of these pots, with a flat rim and flat base (cat. 52, 57, 279, 360), often with relief applications-used as handles-below the rim.

### *S-profiled pots (fig. 4.5:L2)*

This is the most common pot type at Franjevac (cat. 245, 306, 307, 320, 363, 365, 452). It has everted rim and flat base. Functional-decorative applications or loops serve as handles. Often ornamented with fingertip impressions on the rim and applications and impressions on the shoulder.

### *Pots with a narrowed neck (fig. 4.5:L3)*

This variant has a flat rim, flat base and slightly pronounced narrow neck. Suspension loops or handles are often present below the rim or on the belly (cat. 1, 55, 135, 277, 359). This form is frequently referred to in the literature as an »amphora«, and is found at almost all Kostolac sites.[12]

### *Pots with a cylindrical neck (fig. 4.5:L4)*

This pot type also appears sporadically at Franjevac. It has a cylindrical neck and pronounced bellied body (cat. 281).

## Cups (fig. 4.5:Š)

Cups with strap handles rising above the rim are the most recognizable vessel form of the Kostolac culture. Two types of cups are present at Franjevac:

a. Conical cup with a flat base (cat. 56).

b. Biconical cup with concave upper part and short, flattened body (cat. 19, 84, 138). This cup has incisions below the rim and on the carination.

## Glasses

These vessels have a conical body and flat base (cat. 354, 355).

## Other ceramic forms

### *Vessels with elliptical cross-section – Fischbutte*

The third most characteristic shape of the Kostolac culture – alongside bowls and cups with a high handle – are vessels with an elliptical cross-section, the so-called »Fischbutte«. This type of vessel has a short and narrow cylindrical neck, with loops on its elongated shoulder. If we follow the geometrical principle in the analysis of forms and in classification – in which this vessel shape is determined primarily with regard to its size and the height/width ratio – this shape should be attributed to bowls with a cylindrical neck, as the last variant. However, considering that this form – appearing in the Baden, Kostolac and Vučedol cultures – is known in the literature as »Fischbutte«, we decided to treat it separately in this work as a dis-

[12] Schmidt 1945: T.20:3; Benac 1962: T.III:13; Tasić 1965: 185, sl.4; Petrović 1988: T.II:1,3,5; Marković 1994: T.31:4; Nikolić 2000: 48.

Gomolavi je nađeno nekoliko ovakvih posuda, od kojih neke na podovima kuća, pa je i njihovo kulturno opredjeljenje sigurno utvrđeno.[13] Ovaj oblik nastao je u badenskoj kulturi te se zadržava do kraja vučedolske kulture, mada u nešto izmijenjenom obliku.[14] Među objavljenom kostolačkom građom s hrvatskih nalazišta nema mnogo posuda ovoga tipa, izdvojene su među materijalom iz Vukovara (Lijeva Bara), Cerića te Osijeka.[15] Na Franjevcu je izdvojena jedna takva posuda, zaobljena trbuha, s izduženim donjim dijelom i tunelastim ušicama na ramenu (kat. 184). Uglačane je površine, tamnosive boje i neukrašena. Najbližu analogiju imamo na Gomolavi.[16] Pronađeno je još nekoliko tunelastih ušica na ramenu posuda, za koje pretpostavljamo da su također pripadale tom tipu posuda (kat. 88, 182). Ulomci ovalnih dna uglačane ili glačane površine vjerojatno su također od »fischbutta«.

## Četvrtaste posude

Među materijalom iz Franjevca pronađeno je i nekoliko fragmenata četvrtastih posuda. Radi se o tipu posude ravna dna, vertikalna niska tijela. Mat su ili uglačane površine, a ističe se jedna ukrašena brazdastim urezivanjem i s ušicama za ovjes (sl. 4.3, kat. 10). Slična, ukrašena, četvrtasta posuda potječe iz kostolačkog sloja na Gomolavi,[17] a kasnije tip četvrtastih posuda susrećemo i u vučedolskoj kulturi.

## Trbušaste posude



U Franjevcu su pronađene posude trbušasta tijela, bez vrata i uska otvora (kat. 259, 282). Radi se o tipu posude kakve su uobičajene za vučedolsku kulturu, a nazivaju se piriformne posude ili kruškolike vaze.[18]

## Minijaturne posude (kat. 12, 13, 319)

Uglavnom je riječ o lončićima (zaobljena i S-profilirana tijela), često s ušicom pod rubom.[19] Grube su ili mat površine.

## Kultni predmeti

Na temelju izgleda i načinu ukrašavanja pojedinih vrsta predmeta iz Franjevca te analogija sa sličnim nalazima, možemo pretpostaviti da su se koristili u nekim kultnim radnjama ili nas upućuju na duhovni svijet kostolačke kulture.

To prvo možemo reći za ulomak posude s likom oranta izveden brazdastim urezivanjem (sl. 4.8). Prikazi ljudskog lika, urezani, reljefni ili bojani te najčešće u obliku klepsidre, na keramičkom posuđu nalaze se u sklopu mnogih neolitičkih i eneolitičkih kultura.[20] Primjerice, na posudi iz Szelevény-Vadasa ljudski lik urezan je na četvrtastoj posudi, kakva je također pronađena u Franjevcu, a datirana je u srednje bakreno doba, odnosno Bod-

[13] Tasić 1979: 256, sl. 9:6,8, T.XXV:3.
[14] Tasić 1984: 35.
[15] Balen 2002: 155.
[16] Petrović, Jovanović 2002: 247, T.II b:2.
[17] Petrović, Jovanović 2002: 285, 286.
[18] Dimitrijević 1956: 18.
[19] vidi poglavlje *Analiza uzoraka metodom plinske kromografije,* uzorci 1–4
[20] za neke od analogija vidi Chohadzhiev 2004.

tinct form. Several vessels of this type were found at Gomolava, some of which lay on house floors, which means that their cultural attribution has been ascertained beyond doubt.[13] This type originated in the Baden culture and remained in use until the end of the Vučedol culture, albeit in a somewhat modified shape.[14] There are not many vessels of this type among the published Kostolac assemblages from Croatian sites – the only ones come from Vukovar (Lijeva Bara), Cerić and Osijek.[15] Franjevac yielded one vessel of this type, with a rounded belly, elongated lower part and tunnel-shaped loops on the shoulder (cat. 184). Its surface is polished, dark grey and undecorated. The closest analogy is known from Gomolava.[16] Several other tunnel-shaped loops on the shoulders of vessels were found, presumably also belonging to vessels of this type (cat. 88, 182). Fragments of oval bases of polished or smoothed surface probably also belong to »Fischbutte«.

## Rectangular vessels

There are several fragments of rectangular vessels in the ceramic assemblage from Franjevac. This vessel type has a flat base and short vertical body. The surface is matt or polished. One vessel of this type stands out, with suspension loops and decorated with furrow incision (fig. 4.3, cat. 10). A similar, decorated rectangular vessel comes from the Kostolac horizon at Gomolava.[17] Rectangular vessel types are later found in the Vučedol culture as well.

## Bellied vessels

Franjevac yielded bellied vessels, with restricted rim and without a neck (cat. 259, 282). This type of vessels – referred to as *piriform* or pear-shaped vases – are common in the Vučedol culture.[18]

## Miniature vessels (cat. 12, 13, 319)

These are generally small pots (with a round or S-profiled body), often with a loop below the rim.[19] Their surface is coarse or matt.

## Cult objects

Based on the appearance and the method of decoration of specific object types, as well as analogies with similar finds, we can presume that they were used in certain cult activities or, at least, speak of the spiritual world of the Kostolac culture.

This is primarily applicable to a vessel shard with a furrow-incised depiction of an orant (fig. 4.8). Representations of human figure – in relief, incised or painted, often in the shape of an hourglass – on ceramic vessels are commonly found in many Neolithic and Eneolithic cultures.[20] For instance, a human figure was incised on a rectangular vessel from Szelevény-Vadas – similar to a vessel from Franjevac – dated to the Middle Copper Age, that is, the Bodrogkeresztúr culture.[21] The most famous find from Croatia is definite-

[13] Tasić 1979: 256, sl. 9:6,8, T.XXV:3.
[14] Tasić 1984: 35.
[15] Balen 2002: 155.
[16] Petrović, Jovanović 2002: 247, T.II b:2.
[17] Petrović, Jovanović 2002: 285, 286.
[18] Dimitrijević 1956: 18.
[19] see the chapter *Analysis of samples by gas chromatography*, samples 1–4
[20] For some analogies see Chohadzhiev 2004.
[21] Rezi Kató 1998.

**Sl. 4.6** Keramička sjekira, PN 34, SJ 160
**Fig. 4.6** Ceramic axe, PN 34, SJ 160

**Sl. 4.7** Keramički predmet – žrtvenik, PN 52, SJ 369
**Fig. 4.7** Ceramic object – altar, PN 52, SJ 369

rogkeresztúrsku kulturu.[21] Najpoznatiji nalaz iz naših krajeva svakako je lik adoranta s dna posude iz Vučedola, atribuiran vučedolskoj kulturi.[22]

U Franjevcu su pronađena četiri primjerka žrtvenika (sl. 4.7, kat. 11) rogolika ili sedlasta tipa (dva su ukrašena), kao i tri keramička modela sjekira s rupom za nasad (jedna sjekira je ukrašena – kat. 22, 64, 159, sl. 4.6). S prostora Hrvatske u sklopu kostolačke kulture nalazi žrtvenika poznati su iz Cerića te Dalja – Lisove skele,[23] a čest su nalaz u sklopu vučedolske kulture,[24] kao i kadionice (kat. 472).

Posljednji nalaz iz Franjevca kojega možemo atribuirati kao kultni je ulomak perforirane drške (kat. 5). On najvjerojatnije pripada tipu kultnih posuda kakve su poznate iz Gomolave, a porijeklo vuku iz antropomorfnih posuda (sa stiliziranim rukama) badenske kulture.[25] S prostora Hrvatske sličan je nalaz posude pronađene na položaju vinograd Streim na Vučedolu, koja ima dvije velike lažne ručke čvrsto sraštene s tijelom amfore. Rupice na spoju vrata i trbuha sugeriraju da se vjerojatno posuda vješala.[26] Autorica posudu pripisuje kasnoj badenskoj kulturi, ali ima i tumačenja da je ona vučedolske provenijencije iako slični primjerci nisu dosada pronalaženi u okviru vučedolske kulture.[27] Najbliže analogije A. Durman pronalazi u Coţofeni kulturi (III) te u srednjem sloju Rachmani kulture.[28] Skloni smo posudu s Vučedola možda pripisati kostolačkoj kulturi s obzirom na to da je način ukrašavanja ipak bliži kostolačkom nego badenskom ili vučedolskom, a i zbog sličnosti s primjercima iz kostolačkog horizonta na Gomolavi, kao i s onima iz Coţofeni III kulture, koja je istovremena s kostolačkom. Kako je pronađena na samom dnu vučedolske jame (groba) sasvim je opravdana mogućnost njena nešto starija atribuiranja.

ly the orant figure from the base of a vessel from Vučedol, attributed to the Vučedol culture.[22]

Franjevac yielded four altars (fig. 4.7, cat. 11) of horn-shaped or saddle types (two of those were decorated), as well as three ceramic models of shaft-hole axes (one decorated – cat. 22, 64, 159, fig. 4.6). In Croatia, within the Kostolac culture, finds of altars are known from Cerić and from Dalj-Lisova Skela,[23] and they are common in Vučedol culture sites,[24] as well as censers (cat. 472).

The last find from Franjevac to which a cult character can be attributed is a fragment of a perforated handle (cat. 5). It most likely belongs to a type of cult vessels known from Gomolava, which draw origin from anthropomorphic vessels (with stylized arms) of the Baden culture.[25] A similar find in Croatia is that of a vessel found in Vineyard Streim at Vučedol, with two large pseudo-handles firmly fused with the body of the amphora. The perforations at the contact of the neck and belly suggest that the vessel was probably suspended.[26] The author attributes the vessel to the late Baden culture, but there are also opinions that it belongs to the Vučedol culture, despite the fact that the latter culture has so far failed to yield similar pieces.[27] A. Durman finds the closest analogies in the Coţofeni culture (III) and in the middle horizon of the Rachmani culture.[28] We are inclined to tentatively attribute the vessel from Vučedol to the Kostolac culture, considering that its method of decoration is indeed closer to the Kostolac style than to that of the Baden or Vučedol cultures, as well as due to the similarity with the pieces from the Kostolac horizon at Gomolava and with those from the Coţofeni III culture, which is contemporaneous with the Kostolac culture. In view of the fact that the vessel was found on the very bottom of a Vučedol pit (grave), its somewhat earlier attribution is fully justified.



[21] Rezi Kató 1998.
[22] Hoffiller 1933: T.IX:7.
[23] Dimitrijević 1979a: T.2:11; Balen 2002: 155.
[24] Hoti 1990.
[25] Petrović, Jovanović 2002: 72–74, 285–286.
[26] Težak-Gregl 1998: 125, sl. 46.
[27] Durman 1991: 152.
[28] Durman 1991: 152–154.

[22] Hoffiller 1933: T.IX:7.
[23] Dimitrijević 1979a: T.2:11; Balen 2002: 155.
[24] Hoti 1990.
[25] Petrović, Jovanović 2002: 72–74, 285–286.
[26] Težak-Gregl 1998: 125, sl. 46.
[27] Durman 1991: 152.
[28] Durman 1991: 152–154.

## Cjedila

Pronađen je jedan ulomak cjedila, međutim nemoguće je odrediti njegov oblik (kat. 140). S Gomolave iz kostolačkog sloja potječe cjedilo koje ima oblik plitke konične zdjele sa širokim dnom.[29]

## Žlice (kat. 8, 15, 20, 206, 370, 458)

Pronađeno je 11 čitavih ili ulomaka žlica s punom drškom. Taj tip karakterističan je i u retzgajarskoj, badenskoj i vučedolskoj kulturi.[30]

## Grla boca (kat. 80, 371)

Od materijala iz Franjevca izdvojeno je pet čitavih ili fragmentiranih predmeta – uskih šupljih grla koji se na jednom kraju konično proširuju. Česti su u vučedolskoj kulturi i u literaturi se interpretiraju kao grla za kožne mjehove.[31]

## Pršljenci (sl. 4.5:P), kalemovi i utezi

Od svakodnevnih uporabnih predmeta na Franjevcu su pronalaženi keramički pršljenci za vretena najčešće bikoničnog (102 kom.; tipovi P1a, 1b, 1c),[32] te rjeđe koničnog (11 kom.; tipovi P2a, 2b; kat. 6, 207, 373, 455, 459), zaobljenog (7 kom.; tipovi P3a, 3b; kat. 193), plosnatog (3 kom.; kat. 7, 161, 166) i okruglog (1 kom.; tip P4; kat. 171) oblika, zatim kalemovi (8 kom.; kat. 66) te veći utezi cilindrična-zvonolika (4) oblika (kat. 151).

## Strainers

A fragment of a strainer was found, but its form is impossible to ascertain (cat. 140). The Kostolac horizon at Gomolava yielded a strainer in the shape of a shallow conical bowl with a wide base.[29]

## Spoons (cat. 8, 15, 20, 206, 370, 458)

A total of 11 complete or fragmented spoons with a solid handle were found. This type is characteristic also in the Retz-Gajary, Baden and Vučedol cultures.[30]

## Bottle necks (cat. 80, 371)

The ceramic assemblage from Franjevac contains five complete or fragmented objects – narrow hollow necks with a funnel-shaped mouth. These objects, common in the Vučedol culture, are interpreted in the literature as necks for leather waterskins.[31]

## Spindle-whorls (sl. 4.5:P), spools and weights

Everyday functional items at Franjevac consist of ceramic spindle-whorls – which are mostly of biconical shape (102 pieces; types P1a, 1b, 1c),[32] but there are also conical (11 pieces; types P2a, 2b; cat. 6, 207, 373, 455, 459), round (7 pieces; types P3a, 3b, cat 193), flat (3 pieces; cat. 7, 161, 166) and circular (1 piece; type P4; cat. 171) ones – as well as spools (8 pieces; cat. 66) and larger cylindrical and bell-shaped weights (4 pieces; cat. 151).



**Sl. 4.8** Ulomak keramičke posude s ljudskim likom izvedenim brazdastim urezivanjem, SJ 51

**Fig. 4.8** Shard of a ceramic vessel with a furrow-incised human figure, SJ 51

[29] Petrović, Jovanović 2002: 274.

[30] Ovdje navodimo samo neke analogije: Čataj 2009: 41 (retzgajarska kultura); Petrović, Jovanović 2002: 30, kat. 21 (badenska kultura); Katalog Vučedol 1988: 72, kat. br. 18 (vučedolska kultura).

[31] Schmidt 1945: T. 43:2–3; Dimitrijević 1956: 20.

[32] Za 10 ulomaka nije moguće reći kojem tipu pripadaju.

[29] Petrović, Jovanović 2002: 274.

[30] We mention here only a few analogies: Čataj 2009: 41 (Retz-Gajary culture); Petrović, Jovanović 2002: 30, cat. 21 (Baden culture); Catalogue Vučedol 1988: 72, cat. no. 18 (Vučedol culture).

[31] Schmidt 1945: T. 43:2–3; Dimitrijević 1956: 20.

[32] For 10 fragments it was impossible to ascertain to which type they belong.

# Glačane kamene alatke

*Jacqueline Balen, Hrvoje Posilović*

Cjelokupni kameni materijal možemo podijeliti na glačane alatke te na cijepanu litičku produkciju.

Zanimljivo je navesti da je na nalazištu Franjevac pronađen relativno malen broj glačanih kamenih alatki za razliku od cijepane litičke građe.[1] Ukupno su pronađene 32 kamene izrađevine, od čega 22 alatke abrazivne površine: 6 ulomaka žrvnjeva (kat. 154), 7 rastirača (kat. 155) te 11 alatki koje su služile kao brusevi ili glačalice (kat. 14, 69, 156). Od alatki sa sječivom pronađene su samo tri sjekire s rupom za nasad (kat. 4, 152), dva dlijeta (kat. 160) te po jedna trapezna sjekira (kat. 316) i bradva (kat. 167).[2] Ustanovljen je samo jedan ukrasni predmet (perla) izrađen od kamena (kat. 190).

Uočljivo je da su kao sirovinski materijal korištene prirodne valutice stijena. Također, može se zaključiti da je većina alatki za vrijeme svojeg upotrebnog perioda bila više puta preoblikovana, pa ponovno korištena. Također ustanovljeno je da su dva tipa glačanih alatki sa sječivom (sjekira i bradva) korištene uglavnom kao oruđe za glačanje. Dlijeta su korištena i kao tesarsko oruđe i kao oruđe za glačanje.

## Katalog nalaza

### *1. Sjekira s rupom za nasad (kat. 4)*

PN 16, SJ 19
x = 5021795,593, y = 6531633,938, z = 109,08
duž. 6 cm, šir. 5 cm, deblj. 4,6 cm
Opis: Ulomak sjekire s rupom za nasad.

Petrološko-geološko-tehnički opis predmeta: Artefakt je izrađen od amfibolita, sastoji se od zelenkastih kristala amfibola i feldspata koji su vrlo rastrošeni. Zanimljivo je da je do intenzivnog trošenja feldspata došlo nakon izrade alata, tako da su oni danas vidljivi na površini uzorka u obliku nabubrenih minerala glina.

[1] vidi poglavlje *Izrađevine od cijepanog kamena.*
[2] prema tipološkoj podjeli Antonović 2003.

# Polished stone tools

*Jacqueline Balen, Hrvoje Posilović*

The stone assemblage can be divided into polished tools and knapped lithic artefacts.

It is interesting that only a relatively small quantity of polished stone tools were found at Franjevac, in contrast to knapped lithic artefacts.[1] A total of 32 stone artefacts were found, consisting of 22 tools with abrasive surface: 6 fragments of querns (cat. 154), 7 handstones (cat. 155) and 11 tools used as grinders or polishers (cat. 14, 69, 156). Of bladed tools, the only finds were three shaft-hole axes (cat. 4, 152), two chisels (cat. 160), a trapezoidal axe (cat. 316) and an adze (cat. 167).[2] Only a single decorative stone item (a bead) was found (cat. 190).

It is obvious that natural stone pebbles were used as the raw material. It can also be concluded that most tools were repaired and reused during the time they were used. It was also established that two types of bladed tools (the axes and the adze) were used mainly as polishing tools. Chisels were used both as carpenter's tools and polishing tools.

## Catalogue of the finds

### *1. Shaft-hole axe (cat. 4)*

PN 16, SJ 19
x = 5021795,593, y = 6531633,938, z = 109,08
L. 6 cm, W. 5 cm, Th. 4.6 cm
Description: Fragment of a shaft-hole axe.

Petrological-geological-technical description of the object: the artefact is made of amphibolite, consists of considerably weathered greenish crystals of amphibolite and feldspar. Interestingly, the intensive wear of feldspars occurred after the tool was made, so that they are now visible on the surface in the form of swollen clay minerals.

In terms of technics, amphibolite is an almost perfect material for making tools designed for enduring major impact stresses. Due to its structure without a preferred orientation or foliation, it is very

[1] see the chapter *Knapped stone artefacts.*
[2] after the typological classification by Antonović 2003.


**Sl. 5.1** Alat s označenom plohom na kojoj su pronađeni tragovi brušenog materijala (a)

**Fig. 5.1** With marked surface exhibiting marks of the ground material (a)

Tehnički gledano amfibolit je gotovo idealan materijal za izradu alata namijenjenih za podnošenje većih udarnih opterećenja. Zbog svoje strukture koja nema nikakvih preferiranih orijentacija ili folijacije, ima jako veliku elastičnost i nije podložan kalanju. Alat je izrađen kalanjem prirodne valutice amfibolita i nije naknadno znatnije dorađivan. Na prednjoj radnoj površini vide se tragovi udaranja. Nakon što je alat pri upotrebi slomljen, nastavljeno je njegovo korištenje u obliku brusa. Brusne ogrebotine prisutne su u vrlo maloj mjeri, jer je brus bio upotrebljavan na mekanijim materijalima. Treba napomenuti da su pore na jednoj od radnih površina koja je u kasnijoj fazi korištena kao brus zapunjene mekanijim materijalom koji je bio brušen, radi se o vapnencu ili pješčenjaku.



## 2. Rastirač (kat. 155)

PN 2, SJ 160
x = 5021834,509, y = 6531626,434, z = 109,688
duž. 5,7 cm, šir. 5 cm, deblj. 2,3 cm
Opis: Ulomak alatke četvrtasta oblika, raskoljena popola.

Petrološko-geološko-tehnički opis predmeta: Radi se o sedimentnoj stijeni nastaloj u gornjokrednom scaglia facijesu, to su laporovito-siltozne stijene koje sadrže sačuvane fosilne ostatke planktonskih foraminifera (globigerinida i globotruncanida). Stijena sadrži veći udio siliciklastičnog materijala granulacije praha, koji može odlično poslužiti kao brusni materijal. Među siltoznom komponentom u stijeni su najzastupljenija zrna kvarca i listići tinjaca (muskovit), koji se na presjeku stijene vidi u obliku sitnih svjetlucavih ljuskica. Karbonatni materijal nalazimo u obliku rekristaliziranih ljušturica foraminifera. Na površini artefakta mogu se razaznati brojne i guste ogrebotine preferiranih orijentacija, koje sigurno upućuju na upotrebu alata za brušenje i poliranje. Na jednoj od oštrijih radnih ploha nalaze se oštećenja u obliku plitkih kratera. Takva oštećenja karakteristična su za udaranje o neki mekaniji materijal. Alat je proizveden kalanjem prirodne valutice stijene. Na osnovi rasporeda i odnosa između brusnih i polirnih ogrebotina, kalotina stijene i pokrivenosti manganskim i željeznim oksidima, može

elastic and not susceptible to cleaving. The tool was made by splitting a natural pebble of amphibolite and it was not reworked subsequently on any major scale. Blow marks are visible on the front working surface. After the tool was broken in use, it was subsequently used as a grinder. Grind marks are present to a limited degree, because the grindstone was used on softer materials. It is necessary to mention that the pores on one of the working surfaces later used as a grindstone were filled with a softer material that was ground, which was a limestone or a sandstone.

## 2. Handstone (cat. 155)

PN 2, SJ 160
x = 5021834,509, y = 6531626,434, z = 109,688
L. 5.7 cm, W. 5 cm, Th. 2.3 cm
Description: fragment of a tool of a rectangular shape, broken in two along the middle.

Petrological-geological-technical description of the object: this is a sedimentary rock created in the upper Cretaceous Scaglia facies; these are marly-silty rocks containing preserved fossil remains of planktonic foraminifera (globigerinidae and globotruncanidae). The rock contains a large proportion of siliciclastic material of powder size, which can be used excellently as a grinding material. Of the silty component, the commonest elements are quartz grains and sheets of mica (muscovite), appearing as tiny glittering scales in the cross-section of the rock. Carbonate material is present in the shape of recrystalized shells of foraminifera. Numerous and dense scratches with preferred orientations are discernible on the surface of the artefact, a definite indication that the tool was used for grinding and polishing. Damage in the shape of shallow craters are present on one of the sharper working surfaces. Such damages characterize a punching action on a softer material. The tool was made by splitting a natural rock pebble. Based on the distribution and relationship between grinding and polishing scratches, and the coverage of manganese and iron oxides, it can be concluded that the


**Sl. 5.2** a) ogrebotine nastale upotrebom alata za brušenje, b) oštećenja nastala udaranjem.

**Fig. 5.2** a) marks caused by the use of the artefact as a grinding tool, b) damages from punching.

se zaključiti da je alat za vrijeme svojeg upotrebnog perioda bio više puta preoblikovan, pa ponovno korišten.

### 3. Sjekira s rupom za nasad (kat. 152)

PN 44, SJ 160
x = 5021829,467, y = 6531618,046, z = 108,937
duž. 3,7 cm, šir. 2,2 cm, deblj. 4,1 cm
Opis: Ulomak sjekire s rupom za nasad.

Petrološko-geološko-tehnički opis predmeta: Artefakt je izrađen od andezitne stijene, u strukturi dominiraju fenokristali bijelih do sivih zonalnih plagioklasa i u manjoj mjeri tamnih piroksena. U stijeni su vidljive vezikule milimetarskih i submilimetarskih dimenzija. Tehnički radi se o čvrstoj, ali ne i osobito tvrdoj stijeni. Opisani artefakt vjerojatno je izrađen od prirodne valutice stijene, ali za to nema dokaza jer su sve površine obrađene brušenjem. Na jednoj radnoj površini pronađeni su tragovi udaranja, alat je pri upotrebi razlomljen nakon čega više nije popravljan ni upotrebljavan.

### 4. Glačana alatka (kat. 69)

PN 48, SJ 160
x = 5021830,802, y = 6531620,682, z = 109,057
duž. 8 cm, šir. 2,5 cm, deblj. 2,1 cm
Opis: Središnji dio glačane alatke trapeznog oblika, obla presjeka.

Petrološko-geološko-tehnički opis predmeta: Sedimentna stijena – pješčenjak iz skupine kvarcnih arenita. Gotovo monomineralna stijena, sastoji se od zrna kvarca i gotovo zanemarivog udjela ostalih siliciklastita. Na poprečnom presjeku alatke vidljivi su tragovi laminacije. Na radnim površinama artefakta postoje brojni tragovi brušenja preferirane orijentacije. Zanimljivo je napomenuti da su na jednoj strani alatke tragovi brušenja puno grublji nego na drugoj. Ovakav način upotrebe brusnog kamena uobičajen je i danas, jedna strana kamena koristi se za grublje brušenje, a druga za finiju doradu brušenog materijala. Alat je prvobitno vjerojatno korišten u neizmijenjenom obliku prirodne valutice stijene. Prema rasporedu i prekidima u brusnim ogrebotinama može se reći da je naknadno razlomljen. U razlomljenom obliku alat je dobio vrlo oštre bridove koji su bili korišteni za struganje ili rezanje, navedeno se može zaključiti prema tragovima i oštećenjima na oštrim bridovima artefak-

tool was remodeled and reused on several occasions during the time it was functional.

### 3. Shaft-hole axe (cat. 152)

PN 44, SJ 160
x = 5021829,467, y = 6531618,046, z = 108,937
L. 3.7 cm, W. 2.2 cm, Th. 4.1 cm
Description: fragment of a shaft-hole axe.

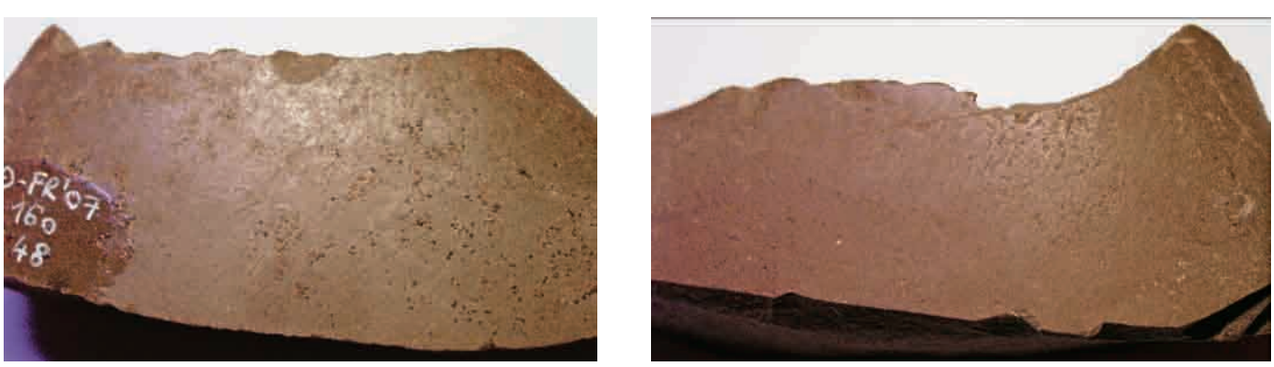
Petrological-geological-technical description of the object: the artefact was made of andesite rock, phenocrysts of white to gray zonal plagioclases and to a smaller degree of dark pyroxenes are dominant in its structure. Vesicles of milimetre or submilimetre size are visible in the rock. Technically, this is a strong, but not a particularly hard rock. The described artefact was probably made of a natural rock pebble, but this cannot be ascertained because all the surfaces were worked by grinding. One of the working surfaces exhibits traces of hitting, the tool was broken in use, and was not repaired and used subsequently.

### 4. Polished tool (cat. 69)

PN 48, SJ 160
x = 5021830,802, y = 6531620,682, z = 109,057
L. 8 cm, W. 2.5 cm, Th. 2.1 cm
Description: middle section of a trapezoidal polished tool, of a round cross-section.



Petrological-geological-technical description of the object: sedimentary rock – sandstone from the group of quartz arenites. An almost monomineral rock, it consists of quartz grains and an all but negligible share of other siliciclastic rocks. The cross-section of the tool exhibits traces of lamination. There are numerous traces of grinding with a preferred orientation on the working surfaces of the artefact. Interestingly, the traces of grinding are much coarser on one side of the tool than on the other. The way this grinding stone was used is still habitually used today, one side of the stone is used for coarser grinding, while the other is used for a finer finishing of the ground material. The tool was at first probably used in its original form of a natural stone pebble. The distribution and interruptions of grinding marks reveal that it was broken subsequently. When broken, the tool acquired very sharp edges which were used for scraping or cutting, which is inferred from traces and damages on the sharp edges of the artefact. Technically, this is an exceptionally



**Sl. 5.3** Brusne ogrebotine na suprotnim radnim plohama alata, a) grublje ogrebotine i b) finije ogrebotine
**Fig. 5.3** Rinding marks on the opposing working surfaces of the tool, a) coarser marks and b) finer marks

ta. Tehnički radi se o izuzetno čvrstoj i tvrdoj stijeni, koja bi mogla biti upravo idealan materijal za izradu alata. Zbog velikog broja tragova upotrebe ovog alata i njihove specifične organizacije, daljnjom analizom bilo bi moguće rekonstruirati točan način upotrebe, kao i pokrete koje je izvodio korisnik alata.

## 5. Sjekira s rupom za nasad

PN 79, SJ 160
x = 5021839.155, y = 6531622,901, z = 109,609
duž. 5,8 cm, šir. 4,5 cm, deblj. 3,9 cm
Opis: Ulomak sjekire s rupom za nasad.

Petrološko-geološko-tehnički opis predmeta: Sjekira je izrađena od granitne stijene, sastoji se od zrna kvarca, plagioklasa i biotita. Vjerojatno izrađena od prirodne valutice stijene, ali sve površine su obrađene brušenjem. Nakon što je alatka pri upotrebi bila razlomljena, nastavljeno je njenim korištenjem u obliku brusa. Na prednjoj radnoj površini vidljivi su tragovi udaranja, nastali primarnom funkcijom, dok su na nekim bočnim stranama pronađeni tragovi poliranja mekšeg materijala nastali nakon loma prvobitnog oblika. Vrlo gruba i zrnata površina uzorka posljedica je raspadanja mekanijih minerala plagioklasa, koji nakon ispadanja iz strukture ostavljaju šupljinu između kvarcnih zrna.

strong and hard rock, in fact and ideal material to make a tool from it. Due to the numerous traces of use of this tool, as well as their specific organization, with further analysis we could reconstruct the exact way the tool was used, as well as the motions of the user of the tool.

## 5. Shaft-hole axe

PN 79, SJ 160
x = 5021839.155, y = 6531622,901, z = 109,609
L. 5.8 cm, W. 4.5 cm, Th. 3.9 cm
Description: fragment of a shaft-hole axe.

Petrological-geological-technical description of the object: the axe was made of granite rock, consists of grains of quartz, plagioclase and biotite. It was probably made from a natural stone pebble, but all the surfaces were worked by grinding. After the tool broke in use, it continued to be used as a grinder. Traces of hitting incurred during its primary function are visible on the front working surface, while some of the lateral sides exhibit traces of polishing on softer materials, formed after the break of the original piece. Very coarse and grainy surface of the sample is a consequence of disintegration of softer plagioclase minerals, which leave voids between grains of quartz after they fall from the structure.




**Sl. 5.4** Označena ploha na kojoj su vidljivi tragovi brušenja, b) detalj plohe s ogrebotinama označen na slici a)

**Fig. 5.4** a) marked surface with visible traces of grinding, b) detail of the surface with marks, marked on figure a)

## 6. Oblutak (kat. 156)

PN120, SJ 160
x = 5021838,662 , y = 6531617,296, z = 109,255
5,6 cm x 4,5 cm x 4,1 cm
Opis: Alatka trokutastog oblika sa zaravnjenim plohama.

Petrološko-geološko-tehnički opis predmeta: Radi se o artefaktu od riolitne stijene s lijepo razvijenim vezikulama, vidljivi su fenokristali kvarca i feldspata. Stijena je u svojim vanjskim dijelovima intenzivno trošena i silicificirana, što joj daje dodatnu tvrdoću. Alat je proizveden jednostavnim odlamanjem prirodne valutice stijene, a kao radne površine korištenjem su nastali oštri rubovi (oštrina dolazi zbog silicifikacije stijene) i tupe postrane plohe na kojima su pronađene brusne ogrebotine. Uzorak danas ima grubu površinu zbog otopljenih zrna feldspata koja su podložna trošenju.

## 6. Pebble (cat. 156)

PN120, SJ 160
x = 5021838,662 , y = 6531617,296, z = 109,255
5.6 cm x 4.5 cm x 4.1 cm
Description: a triangular tool, with flattened surfaces.

Petrological-geological-technical description of the object: the artefact was made from a riolite rock with nicely developed vesicles, with visible fenocrysts of quartz and feldspar. The rock exhibits intensive weathering and silicification in its exterior parts, which lends it additional hardness. The tool was made by a simple knapping of a natural stone pebble, which produced sharp edges (sharpness comes from the silification of the rock) and blunt lateral surfaces where grinding marks were detected, which were used as working surfaces. The surface of the sample is presently coarse due to the dissolved feldspar grains, which are susceptible to weathering.

## 7. Bradva (kat. 167)

PN 157, SJ 160

x = 5021838,162, y = 6531613,098, z = 108,723

duž. 7,2 cm, šir. 4,4 cm, deblj. 1,6 cm

Opis: Ulomak alatke (bradve). Sačuvana je samo donja polovica sa sječivom. Paralelnih je bočnih strana. Nije moguće odrediti poprečni presjek.

Petrološko-geološko-tehnički opis predmeta: Stijena se može odrediti kao badenski čvrsto litificirani lapor. Na presjecima stijene vidljivi su brojni presjeci fosilnih foraminifera iz skupine globigerinida, djelomično ili potpuno otopljenih stijenki. Na uzorku se vidi laminirana struktura koja predstavlja dijelove s većim ili manjim sadržajem siltoznih čestica pogodnih za brušenje. Na bočnim stranama artefakta vidi se reljefno trošenje alata uslijed različite čvrstoće pojedinih lamina. Na kontaktu među laminama postoji limonitna mineralizacija, koja je posljedica dijagenetskih promjena u samoj stijeni. Na površini artefakta postoje nakupine manganskih i željeznih oksida crne do tamnosmeđe boje, ovi oksidi nastali su nakon prestanka upotrebe alata. S obzirom na mehaničke karakteristike radi se o vrlo mekanoj i krtoj stijeni, koja ima predefinirane plohe kalanja duž laminacija, pa je i artefakt razlomljen duž takvih laminacija. Ova stijena vjerojatno nije mogla biti upotrebljavana kao alat za udaranje ili sječenje, ali je zbog velikog sadržaja siliciklastičnog materijala mogla poslužiti kao alatka za brušenje ili struganje. Na radnoj plohi alata postoje ogrebotine nastale upotrebom artefakta za struganje. Alat je proizveden kalanjem prirodne valutice stijene, koja nije naknadno oblikovana.

## 7. Adze (cat. 167)

PN 157, SJ 160

x = 5021838,162, y = 6531613,098, z = 108,723

L. 7,2 cm, W. 4,4 cm, Th. 1,6 cm

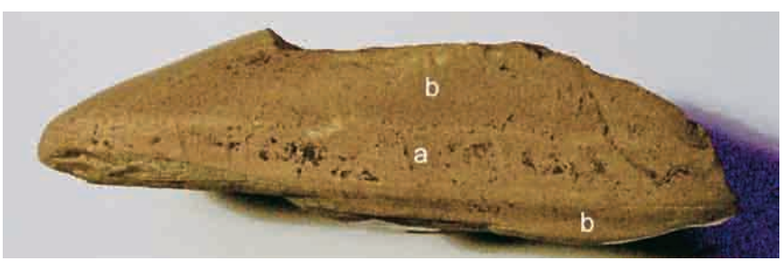
Description: fragment of a tool (an adze). Only the lower half with the blade is preserved. Its lateral sides are parallel. Cross-section cannot be determined.

Petrological-geological-technical description of the object: the rock can be determined as Badenian strongly lithified marl. Numerous cross-sections of fossil foraminifera of the globigerinidae family with partially or completely dissolved walls are visible in cross-sections of the rock. A laminated structure visible on the sample represents parts with a higher or lower content of silty particles suitable for grinding. The lateral sides of the artefact exhibit a relief weathering because of different strength of individual laminae. Limonite mineralization is present at the contact between the laminae, which is a consequence of diagenetic changes in the rock itself. Clusters of black to dark-brown manganese and iron oxides are present on the surface of the artefact. These oxides were formed after the tool ceased to be used. As for the mechanic characteristics, this is a very soft and brittle rock, with predefined cleavage planes along the laminations, which is also where the artefact broke. It is not likely that this rock was used as a hitting or cutting tool, but it may have been used for grinding or scraping due to its high siliciclastic content. Marks left on the artefact by its use as a scraper are visible on the working surface of the tool. The tool was produced by splitting a natural rock pebble, which was not worked subsequently.



**Sl. 5.5** Laminacija u stijeni od koje je izrađen alat, a) lamina s većim sadržajem siltoznog materijala, b) lamina finije granulacije.

**Fig. 5.5** Lamination in the rock of which the tool was made, a) lamina with a higher content of silty material, b) finer-grained lamina




## 8. Dlijeto

PN 209, SJ 160

x = 5021831,947, y = 6531615,138, z = 108,597

duž. 3,3 cm, šir. 2,3 cm, deblj. 2 cm

Opis: središnji ulomak dlijeta, poprečnog D presjeka, nedostaju sječivo i tjeme.

Petrološko-geološko-tehnički opis predmeta: Stijena se može odrediti kao silicificirani dolomit. Ovakav način silicifikacije karakterističan je za dijagenetske procese u kojima dolazi do silicifikacije valutice stijene od vanjskog ruba prema jezgri. Ovaj artefakt je izrađen upravo od takve valutice, u njegovoj jezgri nalazi se dolomit, koji je relativno mekana i krta stijena, a u vanjskim dijelovima dolomit je silicificiran i tako postao puno tvrđi i žilaviji materijal pogodan za izradu alata. Opisani artefakt proizveden je kalanjem prirodne valutice stijene, vidljivi su i tragovi naknadne dorade alata. Alat je upotrebljavan u formi dlijeta

## 8. Chisel

PN 209, SJ 160

x = 5021831,947, y = 6531615,138, z = 108,597

L. 3.3 cm, W. 2.3 cm, Th. 2 cm

Description: middle fragment of a chisel, with a D-shaped cross-section, the blade and the poll are missing.

Petrological-geological-technical description of the object: the rock can be determined as a silicified dolomite. This way of silicification is characteristic for diagenetic processes leading to a silicification of a rock pebble from the outer edge towards the core. This artefact was made from just such a pebble, its core contains dolomite, which is a relatively soft and brittle rock, while dolomite in the outer parts is silicified, which rendered it much harder and tougher and thus more fitting for tool making. The described artefact was made by splitting a natural rock pebble, it exhibits traces of additional retouch. The tool was used as a chisel and for fine grinding, that is,


**Sl. 5.6** a) jezgra alatke od dolomita, b) vanjski silicificirani dijelovi.

**Fig. 5.6** a) dolomite core of the tool, b) the exterior silicified parts

i za fino brušenje, odnosno poliranje. Oštri rubovi nose tragove upotrebe za rezanje. Nakon što je izgubljena prvobitna forma alata zbog njegovog pucanja, u novom obliku više nije korišten. Plitke pukotine na površini uzorka ne potječu od njegovog korištenja nego su posljedica prirodnog procesa gubitka vode iz silicificiranog materijala, pri čemu on mijenja volumen i puca.

## 9. Dlijeto (kat. 160)

PN 241, SJ 160

x = 5021833,470, y = 6531618,851, z = 108,423

duž. 7,4 cm, šir. 2,7 cm, deblj. 0,9 cm

Opis: Ulomak kamene alatke (dlijeta). Sačuvan je dio sa sječivom. Paralelnih je bočnih strana, a nije moguće odrediti poprečni presjek, jer je uzdužno raskoljena.

Petrološko-geološko-tehnički opis predmeta: Artefakt je izrađen od kvarcita, stijena je monomineralna i sastoji se od zrna kvarca. Čvrstoća i tvrdoća ove stijene je izuzetno velika, ne sadrži nikakve ravnine diskontinuiteta, pa nije podložna kalanju. Obrada ovakvog materijala je vrlo teška. Alat je izrađen odlamanjem od prirodne valutice, moguće da je i naknadno dorađen. Na površini alata vidljivi su brojni tragovi upotrebe u obliku brusnih ogrebotina i poliranja, na osnovi kojih se može zaključiti da je alat imao dvojaku funkciju, služio je kao dlijeto i za brušenje, odnosno poliranje. Na slici je strelicama označen smjer ogrebotina na plohama alata, strelica *b* pokazuje usmjerenje oštećenja nastalih pri upotrebi alata u funkciji dlijeta, strelica *c* pokazuje smjer brusnih ogrebotina. Brojnost ovih tragova i način habanja alata ukazuje da je ovaj alat bio u vrlo dugoj i intenzivnoj upotrebi. Alat je pretrpio jedno oštećenje i to dok je bio upotrebljavan u formi dlijeta, nakon čega je ponovno upotrebljavan.



polishing. The sharp edges exhibit wear caused by cutting. After the tool lost its original form through breaking, it was never used again in its new form. The shallow depressions on the surface of the sample were not caused by its use, but are a consequence of a natural loss of water from the silicified material, a process in which it changes its size and breaks.

## 9. Chisel (cat. 160)

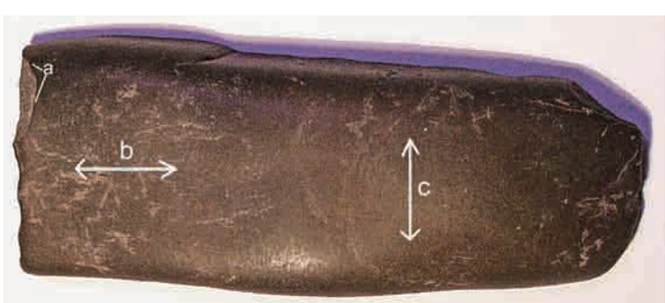
PN 241, SJ 160

x = 5021833,470, y = 6531618,851, z = 108,423

L. 7.4 cm, W. 2.7 cm, Th. 0.9 cm

Description: fragment of a stone tool (a chisel). A part with the blade is preserved. It has parallel lateral sides, but its cross-section cannot be determined because it is longitudinally cleaved.

Petrological-geological-technical description of the object: the artefact was made of quartzite, the rock is monomineral and consists of quartz grains. The strength and hardness of this rock is exceptionally great, it has no discontinuity planes, and therefore is not susceptible to cleaving. It is very difficult to process a material of this kind. The tool was knapped off a natural pebble, and was possibly retouched. There are numerous traces of wear in the form of grinding marks and polishing marks, based on which we can assume that the tool had a dual function, serving as a chisel as well as for grinding and polishing. The arrows on the figure mark the direction of the marks on the surfaces of the tool, arrow b shows the direction of the damages incurred during the use of the tool as a chisel, arrow c shows the orientation of grinding marks. The number of these marks and the manner of wear of the tool indicate that the tool was used long and intensively. It sustained a single damage, while it was used as a chisel, after which it continued to be used.




**Sl. 5.7** a) oštećenje nastalo upotrebom alata u formi dlijeta, b) i c) strelice koje pokazuju usmjerenje radnih ogrebotina na plohama alata.

**Fig. 5.7** a) damage sustained by using the tool as a chisel, b) and c) arrows showing the direction of working marks on tool surfaces.

## 10. Sjekira (kat. 316)

PN 222, SJ 572

x = 5021912,143, y = 6531628,931, z = 110,132

duž. 7,3 cm, šir. 4,3 cm, deblj. 1,4 cm

Opis: Sjekira trapeznog oblika, sa širim distalnim krajem, blago zaobljenog sječiva, djelomično oštećenog. Poprečni presjek je ovalan.

Petrološko-geološko-tehnički opis predmeta: Artefakt je izrađen od metamorfne stijene filita, a u stijeni je vidljiva karakteristična folijarna struktura svilenkastog sjaja. Tehnički, radi se o vrlo mekanoj stijeni koja se lako obrađuje, ali nije osobito pogodna za izradu alata kojim se udara ili koji se udara. Folijarna struktura čini ovu stijenu podložnom kalanju i pucanju ako se optereti duž folijacije, okomito na folijaciju stijena je znatno elastičnija i žilavija. Zbog ovakvih svojstava u prirodi se često nalaze široki plosnati odlomci filita, koji se zatim djelovanjem vode lako zaoble u valutice. Zbog folijacije na ovakvoj stijeni lako je izraditi vrlo fine i oštre rubove, ali su oni male tvrdoće, pa alat može efikasno služiti za rezanje vrlo mekanih materijala. Ovakva stijena ne sadrži siliciklastični materijal dimenzija silta pa nije pogodna za brušenje, mogla bi se koristiti za poliranje mekanijih materijala, kao što je to i bio slučaj i s opisanim alatom. Artefakt je izrađen od prirodne valutice stijene, koja je naknadno dorađena brušenjem, vidljivi su tragovi nekoliko uzastopnih popravaka alata i njegovog ponovnog korištenja. Naknadni popravci alata sastojali su se od brušenja zatupljene oštrice. Alat je pri upotrebi bio razlomljen, ali je nakon popravka ponovno korišten. Nema tragove udaranja, na radnim površinama pronađene su ogrebotine nastale brušenjem i poliranjem.

## 11. Kamena alatka

PN 291, SJ 876

x = 5021970,750, y = 6531657,212, z = 109,426

duž. 9,6 cm, šir. 4,7 cm, deblj. 2 cm

Opis: Ulomak kamene alatke blago trapeznog oblika. Poprečni presjek nije moguće odrediti jer je alatka uzdužno raskoljena.

Petrološko-geološko-tehnički opis predmeta: Radi se o čvrsto litificiranom siltoznom laporu kredne starosti, koji pripada karakterističnom scaglia facijesu sedimentacije. Sediment je fino laminiran, a pojedine lamine sadrže veći udio siltoznog materijala. Na presjecima su vidljivi vrlo loše sačuvani ostaci fosilnih foraminifera iz skupina globotruncanida i globigerinida. Na osnovi pronađenih ureza na površini uzorka moguće je zaključiti da je alat bio upotrebljavan za struganje i poliranje. Alat je izrađen kalanjem prirodne valutice duž predisponiranih ploha kalavosti.

## 10. Axe (cat. 316)

PN 222, SJ 572

x = 5021912,143, y = 6531628,931, z = 110,132

L. 7.3 cm, W. 4.3 cm, Th. 1.4 cm

Description: a trapezoidal axe with a wider distal end, a slightly rounded and partly damaged blade. Cross-section is oval.

Petrological-geological-technical description of the object: the artefact was made of metamorphic rock phyllite, visible in the rock is the characteristic foliated structure with a silky sheen. Technically, this rock is very soft and easily processed, but not particularly suitable for making a hitting tool or a tool that receives hits. The foliated structure makes this rock susceptible to cleaving and breaking if loaded parallel to the foliation, perpendicularly on the foliation the rock is much more elastic and more tough. Due to these features, wide flat sheets of phyllite are frequently encountered in nature, and are easily rounded into pebbles through the action of water. Due to foliation it is easy to make very fine and sharp edges on this rock, but they are not very hard, making the tool efficient for cutting very soft materials. A rock of this kind does not contain siliciclastic material of silt size, and is therefore not suitable for grinding; it could be used for polishing softer materials, which was in fact the case with the described tool. The artefact was made of a natural rock pebble that was subsequently retouched by grinding, it exhibits traces of several successive repairs and subsequent uses. Additional repairs on the tool consisted of grinding the blunt blade. The tool broke in use, but was reused after the repair. It does not exhibit any hit marks, the marks on the working surface were caused by grinding and polishing.

## 11. Stone tool

PN 291, SJ 876

x = 5021970,750, y = 6531657,212, z = 109,426

L. 9.6 cm, W. 4.7 cm, Th. 2 cm

Description: fragment of a stone tool of slightly trapezoidal shape. The tool is broken along the middle so it is impossible to determine a cross-section.

Petrological-geological-technical description of the object: this is a strongly lithified silty marl of Cretaceous age, which belongs to the characteristic Scaglia facies of sedimentation. The sediment is finely laminated, with certain laminae containing a larger proportion of silty material. Very poorly preserved remains of fossil foraminifera of globigerinidae and globotruncanidae families are visible in the cross-sections. Based on the incisions detected on the surface of the sample it can be concluded that the tool was used for scraping and polishing. The tool was made by splitting a natural pebble along predisposed cleavage planes.



Sl. 5.8
Fig. 5.8

# O porijeklu sirovinskog materijala opisanih artefakata

*Hrvoje Posilović*

Precizna odredba nalazišta stijena uvijek je predstavljala i još predstavlja velik problem, ne toliko zbog toga što bi bila neriješiva, koliko zbog uvriježenih načina određivanja i tipiziranja materijala u laboratoriju i na terenu. Najveći problem je u vrlo uskoj specijaliziranosti istraživača koji pristupa analizi jako raznolikog materijala. Da bi se dobili korisni rezultati neophodna su interdisciplinarna istraživanja koja sagledavaju petrološko-mineraloške značajke stijena, ali u istoj mjeri i geološku i stratigrafsku strukturu terena. Nikako se ne smiju zaobići ni dijagenetski i paleogeografski uvjeti postanka stijena, ali isto tako ni tehničke karakteristike materijala. Geokemijsko poznavanje načina trošenja i dezintegracije stijena isto tako mogu pridonijeti određivanju porijekla materijala.

Klasične mineraloško-petrografske analize predstavljaju tek početak jednog kompleksnog istraživanja. Ovakva istraživanja se često pokušavaju upotpuniti mjerenjem elemenata u tragovima i kompozitnog kemijskog sastava uzoraka na terenu i njihovog uspoređivanja sa sastavima artefakata. Ovo su vrlo dugotrajne i skupe analize koje bi u slučaju našeg prostora mogle trajati desetljećima, a bez nekog značajnijeg krajnjeg rezultata. Ovdje predstavlja problem velika facijelna raznolikost magmat-

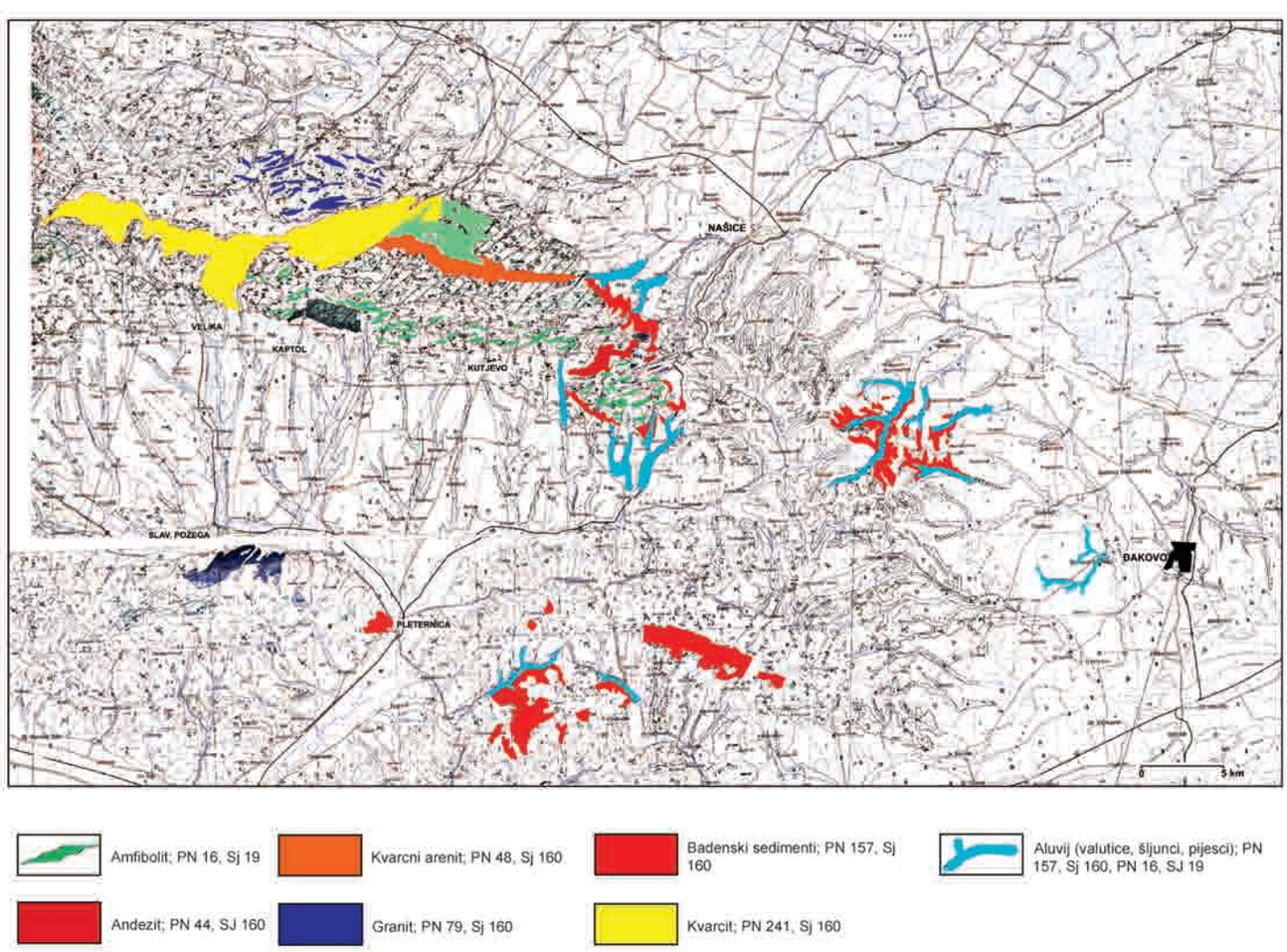
# On the origin of raw materials of described artefacts

*Hrvoje Posilović*

It has always been difficult to pinpoint the rock source sites, not because such a task would prove unsolvable, but due to customary methods of determining and typifying the assemblages in the laboratory and in the field. The biggest problem lies in the very narrow specialization of the researchers who analyze the highly diverse materials. To obtain useful results one needs to carry out interdisciplinary analyses that pay attention to petrological and mineralogical features of rocks, as much as to the geological and stratigraphic structure of the terrain. Diagenetic and palaeogeographic conditions of rock formation, as well as technical features of the material, can in no way be neglected. Geochemical knowledge about the rock weathering and disintegration can also contribute to determining the origin of the material.

Classic mineralogical-petrographic analyses are only the beginning of a complex research. Investigations of this kind are often complemented with measurements of trace elements and of the chemical composition of samples in the field and comparison thereof with compositions of artefacts. Such analyses are very time-consuming and costly and could—in the case of our territory—take decades to complete, with little to contribute as the end result. A problem in this case is the great facies diversity of igneous-sedimentary-metamorphic complexes of the Slavonian mountains, so





sko-sedimento-metamorfnih kompleksa slavonskih planina, tako da se geokemijske karakteristike stijena mijenjaju na udaljenostima od nekoliko metara.

Kod ovdje opisanih artefakata pokušalo se problemu pristupiti interdisciplinarno, tako da se za većinu artefakata uspjelo pronaći moguće zone pojavljivanja ishodišnog materijala na terenu.

Sav opisani materijal izrađen je iz tri grupe stijena: u najmanjoj mjeri magmatskih, a u najvećoj sedimentnih i metasedimentnih te u maloj mjeri metamorfnih stijena. U širem kontekstu sve opisane stijene mogu se naći na slavonskim planinama ili u njihovoj blizini, neke od stijena mogu vući porijeklo iz relativno blize bosansko-dinaridske zone.

Gotovo svi artefakti izrađeni su od prirodnih valutica stijena, dakle nisu bili uzeti s primarnih izdanaka stijena u planinama. Neka dosadašnja istraživanja ukazivala su na tu činjenicu, s tim da je uvijek naglašavano da su valutice donesene pritocima Save ili uzete iz korita gorskih potoka. Na osnovi morfologije i dijagenetskih promjena na ovdje opisanim valuticama i njihovim zonalnim alteracijama, može se reći sljedeće: a) energija vode gorskih potoka i, prije svega, put transporta nisu dovoljno veliki da izazovu formiranje takvih valutica, b) morfologija samih oblutaka prije odgovara nastanku u morskoj obalnoj zoni nego riječnim nanosima. Ovakve valutice nastajale su u geološkoj prošlosti u vrijeme transkresije badenskog mora na starije stijenske kompleksa, danas ih možemo naći uklopljene u stijene badenskih bazalnih konglomerata. Bazalni konglomerati mogli su u vrijeme pliocena ili recentno biti rastrošeni, pa su oslobođene rezistentne valutice bile samo lokalno transportirane vodenim tokovima.

Neke od opisanih sedimentnih stijena po svojoj konzistenciji su vrlo podložne trošenju i formirane su transgresijama i vrlo kratkim transportom (PN-2, PN-157, PN-291), ove stijene dolaze u asocijaciji, tako da je i njihovo ishodište vjerojatno zajedničko. Najbliži stijenski masivi nalaze se na Dilj-gori, a sastoje se od miocenskih sedimentnih stijena i magmatita (riolit) na grebenu planine.

Zanimljivo je spomenuti da su mekše nekvalitetne stijene uzimane lokalno, dok su neki tvrđi i čvršći varijeteti kao što su amfibolit, filit i granit dopremljeni iz većih udaljenosti.

Lokaliteti koji predstavljaju najvjerojatnija ishodišta materijala prikazani su na karti.

that the geochemical features of rocks change at distances as small as few metres.

In the case of the artefacts described here we approached the problem from an interdisciplinary angle, and for most artefacts we succeeded in finding the possible zones of the appearance of the origin material in the field.

The entire lithic material described here was made of three groups of rocks: igneous rocks are the least represented, with sedimentary and metasedimentary rocks accounting for the bulk of the material. Metamporhic rocks are represented to a limited degree. In the wider context, all of the described rocks can be found in the Slavonian mountains or nearby, while some of the rocks possibly originate from the relatively close Dinaric zone of Bosnia.

Almost all artefacts were made from natural rock pebbles, i.e. they were not collected from primary rock outcrops in the mountains. Some of the research carried out hitherto pointed out that fact, always stressing that the pebbles were brought by the tributaries of the Sava river or collected from the beds of mountain streams. Based on the morphology and diagenetic transformations on the here described pebbles and their zonal alterations, the following can be said: a) water energy of mountain streams and above all the transport route are not sufficiently great to produce such pebbles, b) morphology of the pebbles better corresponds to the formation in a coastal sea zone than to river alluvia. Pebbles of this kind were formed in the geological past during the transgression of the Badenian sea over the older rock complexes, and are found today incorporated into rocks of Badenian basal conglomerates. Basal conglomerates could be weathered in the Pliocene or recently, so the released resistant pebbles were transported by water courses only locally.

The consistency of some of the described sedimentary rocks makes them very susceptible to weathering and they were formed by transgressions and very brief transport (PN-2, PN-157, PN-291); these rocks appear in association, which makes it plausible that they probably share a common place of origin. The closest rock massifs are located in Mount Dilj Gora, and consist of miocene sedimentary rocks and magmatites (riolite) on the mountain ridge.

It would be interesting to mention that softer low-quality rocks were collected locally, whereas some harder and stronger varieties such as amphibolite, filite and granite were brought from greater distances.

The most likely candidates for the sources of the materials are shown on the map.

# Cijepane kamene izrađevine

*Maja Bunčić*

## Uvod

Naselje kostolačke kulture na položaju Franjevac kod Đakova, uz brojnu drugu pokretnu građu, i zanimljive nepokretne cjeline, pružilo je i iznimno vrijedan skup nalaza od cijepanog kamena. Osim brojčanog stanja, pod tim se podrazumijeva i kvaliteta izrade, visok postotak alatki i konačno, vidljivi tragovi njihove upotrebe. Također, riječ je o prvom većem litičkom skupu nalaza iz jednog kostolačkog naselja (u Hrvatskoj), a koji je, zahvaljujući monografskom pristupu obrade cjelokupnog naselja, moguće promatrati u okvirima svih ostalih aspekata bitnih za sagledavanje života jedne pretpovijesne zajednice. U istraženom dijelu naselja ukupan broj cijepanih kamenih izrađevina iznosi 938 komada, koji su pronađeni unutar 87 stratigrafskih jedinica. Riječ je o 87 različitih zapuna jama, no često je jedan ukop imao više zapuna, a osobito je to slučaj kod velikih objekata. Sukladno tome, broj jama u kojima su se nalazile spomenute izrađevine nešto je manji. Točnije, riječ je o 51 pretpovijesnom (kostolačkom) ukopu, 21 srednjovjekovnom, dok jedan nalaz (jezgra) potječe iz humusnog sloja. Budući da je na ovom lokalitetu često bio slučaj ukopavanja srednjovjekovnih jama u starije, pretpovijesne, te na temelju karakteristika te cijepane kamene građe, ti se komadi sa sigurnošću mogu pripisati kostolačkoj kulturi (kat. 59, 79, 89, 90). Izrađevine su pojedinačno obrađene na osnovi njihovih tehnoloških i tipoloških osobina.

## Analiza

### *Metoda rada*

Prvi stupanj selektiranja materijala vodio se prilikom samog prikupljanja građe na terenu, kada je svaka izrađevina dobila svoj jedinstveni broj. Prilikom detaljne obrade, i stvaranja baze podataka, nalazi su prvo promatrani u kontekstu skupa nalaza iz stratigrafske jedinice zbog eventualnog spajanja slomljenih izrađevina, posebno sječiva. Nažalost, usprkos velikom postotku slomljenih sječiva, sjedinjeno je svega nekoliko ulomaka. Svim izrađevinama (osim krhotinama) izmjerene su dužina, širina, debljina i težina. Određene su tehnološke kategorije i ti-

# Chipped stone artefacts

*Maja Bunčić*

## Introduction

In addition to a wealth of portable artefacts and interesting immovable features, the Kostolac settlement at Franjevac near Đakovo yielded an exceptionally valuable assemblage of chipped stone artefacts. The assemblage is distinctive not only for its size, but also for the quality of workmanship, high proportion of tools and, finally, for use-wear traces. Further, this is the first larger lithic assemblage from a Kostolac site (in Croatia), and owing to the comprehensive approach in the analysis of the entire settlement, it will be possible to consider it in conjunction with all other aspects of importance for the life of a prehistoric community. The investigated part of the settlement yielded a total of 938 chipped stone artefacts, discovered within 87 different contexts, i.e. 87 different pit fills. A single feature frequently had several fills, which is particularly evident in the case of larger features. In keeping with this, the number of pits that yielded the mentioned artefacts is somewhat smaller. To be precise, we are dealing with 51 prehistoric (Kostolac) features and 21 mediaeval features, while one find (a core) belongs to the humus layer. Considering that mediaeval pits at this site were frequently dug into the older, prehistoric pits – and taking into account the characteristic features of the lithic assemblage – these pieces can be securely attributed to the Kostolac culture (cat. 59, 79, 89, 90). The analysis of each artefact was carried out with regard to their technological and typological features.

## Analysis

### *Methodology*

The first phase of the selection of the material was carried out during the collection in the field by assigning a unique identifying number to each artefact. In the subsequent detailed analysis, with the creation of a database, the finds were first observed with regard to the assemblage from the same context for possible refitting of broken artefacts, blades in particular. Unfortunately, in spite of the large proportion of broken blades, only few fragments were refitted. Length, width, thickness and weight of all artefacts (except chunks) were recorded. Technological categories and types of tools were determined. Three degrees of fragmentation were proposed

povi alatki. Fragmentiranost je određivana kroz tri stupnja – cijelo, fragmentirano i fragment. Budući da je ustanovljena velika fragmentiranost sječiva, njima je bilo potrebno, zbog moguće interpretacije, odrediti i o kojem je dijelu sječiva riječ (baza, vrh, središnji dio), odnosno je li odsječena samo baza (bulbus) ili i baza i vrh itd. Naravno, bilježen je i sjaj (srpa) na sječivima. Izrađevine su također razvrstane u nekoliko osnovnih sirovinskih kategorija.

## Tehnološka analiza

Izrađevine su svrstane u šest glavnih kategorija: odbojci s okorinom, sječiva s okorinom, odbojci, sječiva, jezgre i krhotine. Inicijalno je korištena već uobičajena lista od 22 tehnološka tipa prema Šošić – Karavanić 2004. Međutim, ustanovljeno je da nekih kategorija nema, dok su neke bile zastupljene u vrlo malom broju, te je stoga ta kategorizacija svedena na minimalni broj, što se također pokazalo vrlo praktičnim i realnijim za razdoblje eneolitika, ali i jednostavnijim za komparaciju.

**Tab. 6.1** Brojčano stanje tehnoloških kategorija
**Tab. 6.1** Number of pieces by technological categories

| | |
|---|---|
| Odbojci s okorinom/ Flakes with cortex | 125 |
| Sječiva s okorinom/ Blades with cortex | 89 |
| Odbojci/ Flakes | 126 |
| Sječiva/ Blades | 470 |
| Jezgre/ Cores | 78 |
| Krhotine/ Chunks | 50 |
| UKUPNO/ TOTAL | 938 |

### *Odbojci s okorinom*

Broj pronađenih odbojaka s okorinom iznosi 125, što čini 13,33% ukupnog broja nalaza. Uzimajući u obzir postotak okorine koja prekriva površinu tada 41 komad ima više od 50% okorine, dok 84 komada imaju manje od 50% površine prekrivene okorinom. Prosječna dužina tih odbojaka iznosi 3,84 cm, širina 3,1 cm, debljina 1,03 cm, a težina 17,88 g. Prosjek je izračunat temeljem mjera 96 cjelovitih odbojaka s okorinom. Dodatno je obrađeno 17 odbojaka s okorinom. Najviše je komadića s obradom – 11 (kat. 15, 153), četiri su komadića s obradom na dva ruba (kat. 29, 62, 150) te po jedno grebalo i zarubak (kat. 77).

### *Sječiva s okorinom*

Sječiva s okorinom manje je nego odbojaka s okorinom, usprkos puno većem broju sječiva bez okorine u odnosu na odbojke. Riječ je o 89 komada, odnosno o 9,38% ukupne količine izrađevina, od kojih 18 ima više od 50% okorine, a 71 manje od 50%. Prosječna dužina tih sječiva iznosi 4,35 cm, širina 1,59 cm, debljina 1,11 cm, a težina 5,87 g. Prosjek je izračunat temeljem mjera 39 cjelovitih sječiva s okorinom. Samo su tri sječiva dužine manje od 3 cm. Sjaj srpa vidljiv je na 16 sječiva (od toga 10 na lijevom rubu, 3 na desnom, a na 3 komada orijentacija je neodrediva zbog fragmentiranosti sječiva). Obrađena su 33 sječiva. Najviše je komada s obradom – 17 (kat. 24, 52, 99) te zarubaka – 13, od kojih su 4 obični zarupci (kat. 36, 63, 136, 139), 6 ih ima obrađen jedan lateralni rub (kat. 58, 96, 119), a 3 oba ruba (kat. 18, 131). S po jednim komadom zastupljeni su trapez, komadić s cjelovitom obradom jednog ruba (kat. 117) i komad s obradom na dva ruba.

– complete, fragmented and »a fragment«. In view of the considerable fragmentation of blades, to make interpretation possible it was necessary to determine which part of a blade was preserved (base, tip, central part), that is, whether only the base (bulb of force) or both the bulb of force and the tip were missing etc. Naturally, presence of (sickle) gloss on blades was also recorded. The artefacts were classified into several basic categories of raw materials.

## Technological analysis

The artefacts were classified into six basic categories: flakes with cortex, blades with cortex, flakes, blades, cores and chunks. At first the usual list of 22 technological types after Šošić-Karavanić 2004 was used. However, it was soon established that several categories were absent, whereas several others were present with only a few pieces. Due to this, this categorization was reduced to a minimum number, which proved to be highly practical and more realistic for the Eneolithic, as well as easier to compare.

### *Flakes with cortex*

A total of 125 flakes with cortex were found, making up 13.33% of all finds. Taking into consideration the percentage of cortex covering the flake, there are 41 pieces with more than 50% of cortex, while on 84 pieces cortex covers less than 50% of the surface. These flakes are on the average 3.84 cm long, 3.1 cm wide, 1.03 cm thick and weigh 17.88 g. The mean value was calculated by measuring 96 complete flakes with cortex. Seventeen flakes with cortex were retouched. Retouched pieces are the most common type – 11 (cat. 15, 153), while four pieces have retouch on two edges (cat. 29, 62, 150). There are also an endscraper and a truncated blade (cat. 77).



### *Blades with cortex*

There are fewer blades with cortex than flakes with cortex, in spite of the fact that blades without cortex far outnumber flakes. There is a total of 89 pieces, that is, 9.38% of all artefacts, 18 of which have more than 50% cortex, while 71 have less than 50%. The average length of these blades is 4.35 cm, width 1.59 cm, thickness 1.11 cm and weight 5.87 g. The mean was calculated by measuring 39 complete blades with cortex. Only three blades are less than 3 cm long. Sickle gloss is visible on 16 blades (10 on the left edge, 3 on the right, while orientation on 3 pieces is indeterminate due to the fragmented state of the blades). Thirty-three blades are retouched. The most common categories are retouched blades – 17 (cat. 24, 52, 99) and truncated blades – 13. Of the latter, 4 are ordinary truncated blades (cat. 36, 63, 136, 139), 6 have retouch on one lateral edge (cat. 58, 96, 119), while 3 were retouched on both edges (cat. 18, 131). There is also a trapezoid, a small piece with complete retouch on one edge (cat. 117) and a piece with two retouched edges.

### *Flakes*

There are only 126 flakes without cortex, making up 13.43% of finds. This number includes three pieces which would – strictly speaking – belong to the category of platform rejuvenation flakes. Out of the total number of flakes, 31 are less than 2 cm long. The average length of these flakes is 2.58 cm, width 2.38 cm, thickness 0.84 cm and weight 5.4 g. The mean value was calculated by measuring 100 complete flakes. Twenty-four flakes were retouched. The

### *Odbojci*

Odbojaka bez okorine je svega 126, odnosno 13,43%. Ovdje su ubrojana i 3 komada koji bi, preciznije određeno, pripadali kategoriji dotjerujućih odbojaka jezgre. Od ukupnog broja 31 komad je dužine manje od 2 cm. Prosječna dužina tih odbojaka iznosi 2,58 cm, širina 2,38 cm, debljina 0,84 cm, a težina 5,4 g. Prosjek je izračunat temeljem mjera 100 cjelovitih odbojaka. Obrađena su 24 odbojka. Najzastupljeniji su komadići s obradom – 14 (kat. 57, 81), komada s obradom na dva ruba je 4 (kat. 54), a cjelovita obrada na jednom rubu prisutna je na 2 komada (kat. 79, 151). Grebala su 2, od kojih jedno ima i obradu na oba ruba (kat. 90), a ista je situacija i sa zarupcima – jedan običan i jedan s obradom na oba ruba (kat. 95).

### *Sječiva*

Sječiva su najbrojnija kategorija s ukupno 470 komada što iznosi 50,11% ukupne količine nalaza. Nešto više od trećine, 32,76% (154 kom.), je cjelovitih sječiva, dok su ostali više ili manje fragmentirani. Manji je broj onih koji imaju neka oštećenja, najčešće bočna, jer je većini fragmentiranih sječiva vrlo preciznim lomom odstranjen distalni ili proksimalni dio, odnosno oba.

Prosječna dužina sječiva iznosi 4,04 cm, širina 1,47 cm, debljina 0,42 cm, a težina 3,41 g. Uspoređujući ih s prosječnim dimenzijama sječiva s okorinom vidljivo je da su sječiva bez okorine malo kraća, ali da su im i ostale dimenzije manje nego sječivima s okorinom. Uslijed procesa odbijanja veličina jezgre se smanjuje, pa su takvi omjeri očekivani. Od cjelovitih sječiva najviše je onih kojima dužina iznosi između 3 i 5 cm – njih 117. Sječiva manjih od 3 cm je 17, dok su 22 veća od 5 cm. Obrađeno je 287 sječiva, odnosno čak 61,06%. Najučestaliji tip alatke su zarupci, 139 komada, od kojih 37 ima obrađen samo distalni, poprečni rub (kat. 7, 25, 34 i dalje), a ostali uz njega i jedan ili oba lateralna ruba (kat. 1, 3, 5, 6, 8, 9, 11, 18 i dalje). Obrađenih komadića ima 100 (kat. 20, 28, 30, 33 i dalje), a slijede komadi s obradom na dva ruba – 39 komada (kat. 2, 35, 43 i dalje). Pet je geometrijskih oblika, lunarni segmenti i trapezi (kat. 12, 16, 31, 38, 85), grebala su 3 (kat. 56, 78, 92), od kojih jedno ima obrađena i oba lateralna ruba, a s po jednim primjerkom zastupljen je komadić s cjelovitom obradom na jednom rubu. Sjaj je prisutan na 145 sječiva (30,85%), od čega je 118 obrađenih komada, odnosno alatki.

### *Jezgre*

Jezgre su zastupljene sa 78 komada, što čini 8,31% ukupnih nalaza. Najviše je jezgri za odbojke – 32, zatim miješanih – 30 (kat. 10, 40, 51, 74), dok je onih za sječiva svega 9 (68, 89, 154), a ulomaka jezgri je 7. Prosječna dužina jezgri je 4,54 cm, širina 3,97 cm, debljina 2,99, a težina 80,45 g. Više od polovice jezgri, 46 komada, ima okorinu. To ukazuje na tek dobavljenu i neiskorištenu sirovinu, a u prilog tome ide i podatak da je često odbijeno svega par komada od jezgre, dok je samo 5 jezgri vrlo malih dimenzija, odnosno prilično istrošenih s tragovima odbijanja većeg broja odbojaka, odnosno sječiva.

Usporedbom prosječnih dimenzija[1] jezgri s okorinom, i onih bez nje (tab. 6.3), očekivano u svim kategorijama jezgre s okorinom su veće.

[1] U prosjek nisu uračunati ulomci jezgara.

**Tab. 6.2** Prikaz karakteristika fragmentiranih sječiva
**Tab. 6.2** Characteristics of fragmented blades

| | |
|---|---|
| Cjelovita sječiva/ Complete blades | 154 |
| Baza/ Base | 15 |
| Vrh/ Tip | 14 |
| Medijalni dio/ Medial part | 53 |
| Baza i medijalni dio/ Base and medial part | 38 |
| Vrh i medijalni dio/ Tip and medial part | 26 |
| Odsječena baza/ Removed base | 34 |
| Odsječen vrh/ Removed tip | 85 |
| Odsječeni vrh i baza/ Removed tip and base | 29 |
| Razna oštećenja/ Various damages | 22 |
| UKUPNO/ TOTAL | 470 |

most common category are retouched flakes – 14 (cat. 57, 81); there are 4 pieces with two retouched edges (cat. 54), while complete retouch on one edge is visible on two pieces (cat. 79, 151). There are two endscrapers, one of which has retouch on both edges (cat. 90). The same is the case with truncated blades – there is an ordinary one and one with both edges retouched (cat. 95).

### *Blades*

Blades are the most common category with a total of 470 pieces or 50.11% of all finds. Around a third – 32.76% (154 pieces) – are complete, while the other pieces are fragmented to a greater or lesser degree. Few pieces exhibit any kind of damage, mostly lateral, because on most fragmented blades the distal and/or proximal parts were removed by a very precise strike.

On the average, the blades are 4.04 cm long, 1.47 cm wide, 0.42 cm thick, and weigh 3.41 g. In comparison with the average dimensions of the blades with cortex it can be seen that the former are somewhat shorter, but that the other dimensions are likewise smaller than those of the blades with cortex. The reduction process decreases the size of the core, so the observed proportions are consistent with the expectations. Most of the complete blades are between 3 and 5 cm long – a total of 117 pieces. There are 17 blades less than 3 cm long, while 22 blades were longer than 5 cm. As much as 287 or 61.06% of blades are retouched. Truncated blades are the most common tool type with 139 pieces, on 37 of which only the distal, transverse edge is retouched (cat. 7, 25, 34 etc.), while on all other pieces one or both lateral edges were also retouched (cat. 1, 3, 5, 6, 8, 9, 11, 18 etc.). There are 100 retouched small pieces (cat. 20, 28, 30, 33 etc.), 39 pieces with two retouched edges (cat. 2, 35, 43 etc.). There are five geometric shapes, lunate segments and trapezoids (cat. 12, 16, 31, 38, 85). There are 3 endscrapers (cat. 56, 78, 92), one with both lateral edges retouched. One piece has one completely retouched edge. Gloss is present on 145 blades (30.85%), out of which there are 118 retouched pieces, that is, tools.

### *Cores*

The assemblage contains a total of 78 cores or 8.31% of all finds. The most common type are cores for flakes – 32, followed by mixed cores – 30 (cat. 10, 40, 51, 74), while there are only 9 cores for blades (68, 89, 154). There are 7 core fragments. The average length of cores is 4.54 cm, width 3.97 cm, thickness 2.99 cm and weight 80.45 g. More than a half of the cores – 46 pieces – have cortex, pointing to a freshly acquired and unused raw material. In favour of this speaks also the fact that often only few pieces were removed from the core, while there are only 5 very small cores, that

**Tab. 6.3** Usporedba prosječnih dimenzija jezgri bez okorine i jezgri s okorinom
**Tab. 6.3** Comparison of average dimensions of cores without cortex and cores with cortex

| | DUŽINA/ LENGTH | ŠIRINA/ WIDTH | DEBLJINA/ THICKNESS | TEŽINA/ WEIGHT | BR. JEZGRI/ NO. OF CORES |
|---|---|---|---|---|---|
| Jezgre bez okorine/ Cores without cortex | 4,3 cm | 3,71 cm | 2,85 cm | 59, 57 g | 29 |
| Jezgre s okorinom/ Cores with cortex | 4,81 cm | 4,26 cm | 3,22 cm | 103,21 g | 42 |

**Tab. 6.4** Usporedba prosječnih dimenzija jezgri za odbojke, jezgri za sječiva i miješanih jezgri
**Tab. 6.4** Comparison of average dimensions of cores for flakes, cores for blades and mixed cores

| | DUŽINA/ LENGTH | ŠIRINA/ WIDTH | DEBLJINA/ THICKNESS | TEŽINA/ WEIGHT | UKUPAN BR. JEZGRI/ TOTAL NO. OF CORES | JEZGRE BEZ OKORINE/ CORES WITHOUT CORTEX | JEZGRE S OKORINOM/ CORES WITH CORTEX |
|---|---|---|---|---|---|---|---|
| **Jezgre za odbojke/** Cores for flakes | 4,64 cm | 4,3 cm | 3,2 cm | 88,59 g | 32 | 9 | 23 |
| **Jezgre za sječiva/** Cores for blades | 4,45 cm | 3,54 cm | 2,78 cm | 73,7 g | 9 | 5 | 4 |
| **Miješane jezgre/** Mixed cores | 4,53 cm | 4,06 cm | 3 cm | 79,05 g | 30 | 15 | 15 |

rinom imaju veće dimenzije. Redukcijom okorine najveća promjena očituje se u težini jezgre, a najmanja u njezinoj debljini. Međutim, te su razlike, posebno odnosi dužina i širina, vrlo male. Jezgre bez okorine očito su tek pripremljene za daljnji proces odbijanja i nisu iskorištene do svog maksimuma.

S obzirom na vrlo visok udio sječiva, a nizak udio jezgri za sječiva, može se zaključiti da se glavnina njih nije proizvodila na ovome mjestu. Ipak tragovi proizvodnje manjih razmjera unutar naselja mogu se potvrditi s postojećim malobrojnim jezgrama za sječiva.

S druge pak strane, jezgre za sječiva više su iskorištene od onih za odbojke i miješanih, na što ukazuju njihove manje prosječne dimenzije (tab. 6.4). Kombinirajući odnose sječiva i odbojaka s okorinom, koji su približno sličnog postotka (sječiva 9,38%, odbojci 13,33%) i njihovih jezgri, uočava se puno veća zastupljenost okorine među jezgrama za odbojke (23 od 32 = 71,87%) nego među jezgrama za sječiva (4 od 9 = 44,4%).

### *Krhotine*

Krhotine čine 5,33 % s 50 komada ukupnih nalaza.

## *Tipološka analiza*

Udio alatki vrlo je visok. Ukupno ih ima 361, odnosno 38,49% od ukupne količine nalaza. Samo ih je 41 na odbojcima (uključujući i one s okorinom, 11,36%), a ostalih 320 su na sječivima sa i bez okorine (88,64%). Kada je riječ o tipovima alatki, tu je raznolikost vrlo skromna. Najviše je zarubaka (zarubljenih sječiva) koji često, uz poprečni rub, imaju i obrađen jedan ili oba lateralna ruba. Zatim su vrlo učestali obrađeni komadići (djelomična obrada jednog ruba), a česti su i komadi s obradom na dva ruba. Malobrojni su komadići s cjelovitom obradom na jednom rubu, grebala i geometrijski oblici (trapezi i lunarni segmenti).

### *Zarupci*

Zarupci su najučestaliji tip alatki s ukupno 155 komada, odnosno 42,94%. Mogu se razvrstati u nekoliko potkategorija – »obični«, s obrađenim samo poprečnim rubom, zarupci s obrađenim jednim i oni s obrađena oba lateralna ruba. U svim navedenim potkategorijama nekoliko je dvostrukih, odnosno onih s obrađena oba poprečna ruba. Kombinacije su još brojnije promatra li se i mjesto obrade lateralnih rubova (tab. 6.2).

is, those that were quite used-up, with traces of removal of a large number of flakes or blades.

As expected, the comparison of the average dimensions[1] of the cores with cortex and those without it (tab. 6.3) has shown that the former are larger in all categories. The changes in cores brought about by the reduction of the cortex are greatest in the weight and smallest in the thickness, although these differences – particularly the ratios of lengths and widths – are very small. Cores without cortex were obviously only prepared for further reductions and were not used to the full.

Taking into consideration the high proportion of blades and the low proportion of cores for blades, it can be concluded that the bulk of the blades were not produced at this place. However, traces of small-scale production within the settlement can be confirmed by the few cores for blades that were found there.

On the other hand, cores for blades were used up more thoroughly than cores for flakes and mixed cores, as their smaller average dimensions show (tab. 6.4). A combination of the ratios of blades and flakes with cortex, whose percentages are similar (blades 9.38%, flakes 13.33%) with their cores, reveals that there is a conspicuously higher frequency of cortex among cores for flakes (23 out of 32 = 71.87%) than cores for blades (4 out of 9 =44.4%).

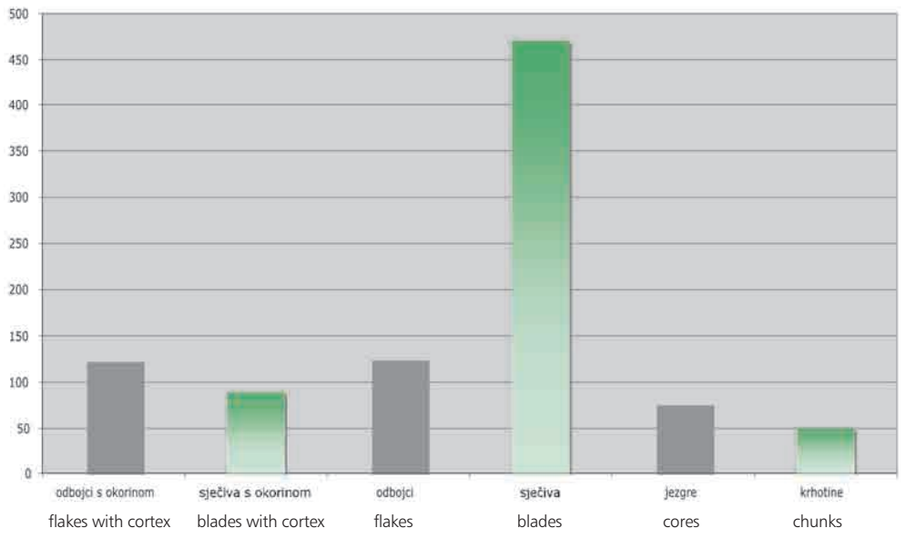
### *Chunks*

With 50 pieces, chunks make up 5.33% of all finds.

## *Typological analysis*

The proportion of tools is very high, with a total of 361 pieces or 38.49% of all finds. There are only 41 tools on flakes (including those with cortex, 11.36%), while the remaining 320 are on blades with and without cortex (88.64%). The diversity of tool types is very modest. Most tools are truncated blades, which often in addition to a transverse edge have retouch on one or both lateral edges. Retouched small pieces (partial retouch on one edge) are another very common category. Pieces with two retouched edges are also common. There are few small pieces with one completely retouched edge, endscrapers and geometric shapes (trapezoids and lunate segments).

[1] Core fragments were not included in the calculation.




**Sl. 6.1** Grafički prikaz zastupljenosti tehnoloških kategorija

**Fig. 6.1** Chart showing the frequency of technological categories



»Običnih« zarubaka je 43 (kat. 7, 25, 31, 34, 36, 38, 49, 53 i dalje), od kojih je 37 na sječivima, 4 na sječivima s okorinom te po jedan na odbojku s okorinom i odbojku. Pet sječiva ima obrađen i distalni i proksimalni poprečni rub, odnosno riječ je o dvostrukim zarupcima (kat. 98). Treba napomenuti da tri od pet nemaju cjelovitu obradu na drugom rubu, odnosno ona je tek započeta. Vjerojatno je to rezultat popravljanja sječiva uslijed loma. Zarubaka koji imaju obrađen i jedan lateralni rub ima najviše, 61, od kojih je 6 na sječivima s okorinom, a ostalih 55 su na sječivima (kat. 1, 5, 9, 17, 26, 39, 47, 50, 58, 61 i dalje). Brojniji su zarupci s obrađenim lijevim (39) nego desnim (20) rubom. Jedan ima cjelovito obrađen lijevi rub. I u ovoj potkategoriji šest je dvostrukih zarubaka, što znači da je obrada prisutna na tri ruba (kat. 13, 46, 82, 109, 137, 140). Sjaj na rubovima je također vrlo čest, vidljiv je na 30 komada, od čega na 26 zarubaka sjaj nosi obrađeni rub, na 3 komada nalazi se na suprotnom, neobrađenom rubu, dok jedan ima sjaj na oba lateralna ruba. Vrlo su brojni i zarupci koji imaju obradu i na dva lateralna ruba, njih je 51, od kojih je 1 na odbojku, 3 su na sječivima s okorinom, a 47 na sječivima. Tri su dvostruka zarupka u ovoj potkategoriji, dakle, riječ je o sječivima koji imaju obrađena sva četiri ruba (kat. 4, 59, 107). Sjaj je prisutan na 10 lijevih rubova, 8 desnih, a 4 zarupka imaju sjaj na oba ruba.

### *Komadi s obradom*

Obrađeni komadi drugi su tip alatki prema zastupljenosti s ukupno 142 komada, što iznosi 39,33%. Riječ je o jednostavnim komadima s djelomičnom obradom jednog ruba. Najviše ih je na sječivima – 100 (kat. 20, 22, 33, 44, 65, 80, 88 i dalje), na sječivima s okorinom ih je 17 (24, 52, 99), zatim 14 komada izrađeno je na odbojcima (kat. 57, 81), a 11 na odbojcima s okorinom (kat. 15, 153). Obrađivani su i desni i lijevi rubovi, dok je lijevi rub ipak u maloj prednosti po učestalosti obrade. U ovoj kategoriji alatki sjaj je vidljiv na 45 komada. Uglavnom sjaj nosi obrađeni rub (37), sjaj na suprotnom, neobrađenom rubu vidljiv je na 6 komada, dok sjaj na oba ruba imaju 2 komada.

### *Truncated blades*

This is the most common tool type with a total of 155 pieces or 42.94%. They can be divided into several subcategories – »ordinary«, with only the transverse edge retouched; those with retouch on one lateral edge, and those with retouch on both lateral edges. Each of the subcategories contains several double blades, that is those with retouch on both transverse edges. If the position of the retouch on the lateral edges is considered, the number of combinations rises even further (tab. 6.2).

There are 43 »ordinary« truncated blades (cat. 7, 25, 31, 34, 36, 38, 49, 53 etc.), 37 of which are on blades, 4 on blades with cortex, and one each on a flake and a flake with cortex. Five blades have both distal and proximal edges retouched, that is, these are double truncated blades (cat. 98). We need to stress that three out of five pieces lack complete retouch on the second edge, that is, it was only started, which is probably due to the repair of the fractured blade. The most common group of truncated blades consists of those with retouch on one lateral edge, with 61 pieces, 6 of which were made on blades with cortex, while the remaining 55 were on blades (cat. 1, 5, 9, 17, 26, 39, 47, 50, 58, 61 etc.). There are more truncated blades with retouch on the left edge (39) than those on the right edge (20). On one piece the entire left edge was retouched. In this subcategory too there are six double truncated blades, meaning that three edges were retouched (cat. 13, 46, 82, 109, 137, 140). Gloss is frequently present on the edges, it is visible on 30 pieces. On 26 of these it is present on the retouched edge, on 3 pieces it is on the opposite, unretouched edge, while on one piece gloss is present on both edges. Truncated blades with retouch on two lateral edges are also very numerous, with 51 pieces – 1 on a flake, 3 on blades with cortex and 47 on blades. This subcategory contains three double truncated blades, i.e. those with all four edges retouched (cat. 4, 59, 107). Gloss is present on 10 left edges, 8 right edges, while on 4 pieces gloss is present on both edges.

### *Retouched pieces*

Retouched pieces are the second most common tool type with 142 specimens or 39.33%. These are simple pieces with one partially retouched edge, mostly on blades – 100 pieces (cat. 20, 22, 33, 44,

### *Komadi s obradom na dva ruba*

S nešto manjim udjelom od 13,3%, odnosno 48 komada, prisutni su komadi koji imaju obrađena dva, uglavnom bočna ruba. Na sječivima ih je 39 (kat. 2, 14, 27, 35, 43 i dalje), na odbojcima sa i bez okorine 8 (kat. 29, 54, 62, 150), a jedan je na sječivu s okorinom. Kombinacije obrade su brojne, a češće je obrađena dorzalna strana. Sjaj je vidljiv na 16 komada, od čega 12 ima sjaj samo na jednom obrađenom rubu, a ostala 4 imaju sjaj na oba ruba.

### *Grebala*

Grebala su relativno rijetka, svega ih je 6 (1,66%). Tri su izrađena na sječivu (kat. 56, 78, 92), dva na odbojcima (kat. 90, 146) i jedan na odbojku s okorinom (kat. 69). Kao i kod zarubaka, i grebala također imaju svoje varijante, a u ovom slučaju riječ je o tri komada s obradom na oba lateralna ruba (kat. 56, 90, 92). Na dva grebala vidljiv je sjaj.

### *Geometrijski oblici*

Ova kategorija odnosi se na dijelove obrađenih sječiva (jedan je na sječivu s okorinom), koji imaju oblik trapeza ili polumjeseca (lunarni segmenti). Također ih je ukupno 6 (1,66%). Dva su u obliku trapeza (kat. 12, 16), tri su lunarna segmenta malih dimenzija (kat. 31, 38, 85) dok jedan ima oblik nepravilnog trapeza, a specifičan je po tome što je potpuno obrađen, kontinuirano po svim rubovima, djelomično po dorzalnoj, a djelomično po ventralnoj strani. Niti jedna od ovih alatki nema sjaj.

### *Komadi s cjelovitom obradom na jednom rubu*

Samo četiri komada (1,11%) imaju cjelovito obrađen jedan rub. Dva su izrađena na odbojcima (kat. 79, 151), a po jedan na sječivu s okorinom (kat. 117) i sječivu. Sječivo i jedan odbojak imaju obrađen desni rub na dorzalnoj strani, dok sječivo s okorinom i jedan odbojak imaju obrađen lijevi rub i to naizmjenično dorzalnu i ventralnu stranu. Tri komada imaju sjaj, i to na obrađenom rubu.

## *Tragovi upotrebe*

Dokaz o intenzivnoj upotrebi obrađenih i neobrađenih sječiva najbolje je pokazan karakterističnim sjajem srpa, najčešće na bočnim rubovima. Sjaj je vidljiv na 161 sječivu, odnosno njihovim ulomcima, što iznosi 28,8% od ukupno pronađenih. Ovaj

65, 80, 88 etc.); 17 were on blades with cortex (24, 52, 99), 14 on flakes (cat. 57, 81) and 11 on flakes with cortex (cat. 15, 153). Both left and right edges were retouched, though the former group is slightly more common. Gloss is present on 45 tools in this group, generally on the retouched edge (37). The opposite, unretouched edge is glossy on 6 tools, while 2 pieces have gloss on both edges.

### *Pieces with retouch on two edges*

Pieces that have two retouched edges, mostly lateral ones, are somewhat less common. With 48 pieces, they make up 13.3%. Thirty-nine are on blades (cat. 2, 14, 27, 35, 43 etc.), 8 on flakes with and without cortex (29, 54, 62, 150), while one is on a blade with cortex. Retouch appears in various combinations, more often on the dorsal side. Gloss is visible on 16 pieces. On 12 of these, one retouched edge has gloss, while on the remaining 4 gloss is present on both edges.

### *Endscrapers*

There are relatively few endscrapers, only 6 (1.66%). Three were made on blades (cat. 56, 78, 92), two on flakes (cat. 90, 146) and one on a flake with cortex (cat. 69). Like truncated blades, endscrapers also appear in variants – three pieces have retouch on both lateral edges (cat. 56, 90, 92). Gloss is present on two endscrapers.

### *Geometric shapes*

This category refers to parts of retouched blades (one is on a blade with cortex) in the shape of a trapezoid or a crescent (lunate segments). There are 6 such pieces (1.66%), two trapezoidal (cat. 12, 16), three in the form of small lunate segments (cat. 31, 38, 85), while one is in the shape of an irregular trapezoid. The particularity of this last piece is that it exhibits complete and continuous retouch along the length of its four edges, alternating on the dorsal and ventral sides. There is no gloss on any of these tools.

### *Pieces with one completely retouched edge*

Only four pieces (1.11%) exhibit a completely retouched edge. Two were made on flakes (cat. 79, 151), and one each on a blade with cortex (cat. 117) and a blade. The blade and one of the flakes were retouched on the right edge on the dorsal side, while the blade with cortex and the other flake have retouch on the left edge, alternating on the dorsal and ventral sides. Three pieces have gloss, all on the retouched edge.



**Tab. 6.5** Prikaz tipova alatki i njihove zastupljenosti
**Tab. 6.5** Frequency of tool types

| TIP ALATKE/ TOOL TYPE | BROJ/ NUMBER | POSTOTAK/ PERCENTAGE |
|---|---|---|
| Zarubak/ Truncated blade | 155 | 42,94% |
| Obrada – 1 rub/ Retouch – 1 edge | 142 | 39,33% |
| Obrada – 2 ruba/ Retouch – 2 edges | 48 | 13,3% |
| Grebalo/ Endscraper | 6 | 1,66% |
| Trapez i lunarni segment / Trapezoid and lunate segment | 6 | 1,66% |
| Cjelovita obrada – 1 rub/ Complete retouch – 1 edge | 4 | 1,11% |
| UKUPNO/ TOTAL | 361 | 100% |

**Tab. 6.6** Prikaz (kombinacija) mjesta obrade ruba na sječivima (sa i bez okorine)

**Tab. 6.6** Combinations in the position of retouch on blades (with and without cortex)

| MJESTO OBRADE RUBA/ POSITION OF RETOUCH ON THE EDGE | OBRADA –1 RUB/ RETOUCH – 1 EDGE | OBRADA –2 RUBA/ RETOUCH – 2 EDGES | ZARUBAK + OBRADA 1 RUB/ TRUNCATED BLADE + RETOUCH 1 EDGE | ZARUBAK + OBRADA 2 RUBA/ TRUNCATED BLADE + RETOUCH 2 EDGES |
|---|---|---|---|---|
| Desni dorzalno/ Right dorsal | 14 | | 11 | |
| Desni ventralno/ Right ventral | 19 | | 7 | |
| Lijevi dorzalno/ Left dorsal | 23 | | 15 | |
| Lijevi ventralno/ Left ventral | 24 | | 21 | |
| Desni dorzalno / lijevi dorzalno<br>Right dorsal / left dorsal | | 14 | | 17 |
| Desni dorzalno / lijevi ventralno<br>Right dorsal / left ventral | | 3 | | 3 |
| Desni dorzalno i ventralno<br>Right dorsal and ventral | 9 | | 2 | |
| Lijevi dorzalno i ventralno/ Left dorsal and ventral | 6 | | 3 | |
| Desni ventralno / lijevi dorzalno<br>Right ventral / left dorsal | | 2 | | 7 |
| Desni ventralno / lijevi ventralno<br>Right ventral / left ventral | | 5 | | 3 |
| Desni dorzalno / lijevi dorzalno i ventralno<br>Right dorsal / left dorsal and ventral | | 4 | | 2 |
| Desni ventralno / lijevi dorzalno i ventralno<br>Right ventral / left dorsal and ventral | | 1 | | 4 |
| Desni dorzalno i ventralno / lijevi dorzalno<br>Right dorsal and ventral / left dorsal | | 4 | | 10 |
| Desni dorzalno i ventralno / lijevi ventralno<br>Right dorsal and ventral / left ventral | | 1 | | 2 |
| Desni dorzalno i ventralno / lijevi dorzalno i ventralno<br>Right dorsal and ventral / left dorsal and ventral | | 6 | | 2 |
| Dorzalno (neodrediva orijentacija)<br>Dorsal (indeterminate orientation) | 7 | | 2 | |
| Ventralno (neodrediva orijentacija)<br>Ventral (indeterminate orientation) | 10 | | | |
| Dorzalno i ventralno (neodrediva orijentacija)<br>Dorsal and ventral (indeterminate orientation) | 5 | | | |
| UKUPNO/ TOTAL | 117 | 40 | 61 | 50 |



postotak uključuje i sječiva s okorinom, koja su ipak dio primarne faze proizvodnje, pa postotak sjaja na njima možda i nije toliko indikativan. Sjaj je puno češći na lijevom nego na desnom rubu. Zastupljena su i sječiva koja imaju sjaj na oba ruba, kao i sječiva kojima zbog fragmentiranosti nije moguće odrediti orijentaciju, pa tako ni rub na kojem se sjaj nalazi. Spomenuli smo već da je većina tih sječiva, osim što imaju sjaj, i dodatno obrađena.

## *Sirovinski materijal*

Na temelju pojedinih karakteristika vidljivih golim okom (boja, struktura, prozirnost, sjaj površine, okorina), izrađevine su razvrstane u nekoliko osnovnih sirovinskih kategorija.

## *Use-wear traces*

The clearest proof of intensive use of retouched and unretouched blades is the characteristic sickle gloss, generally present on lateral edges. Gloss is visible on 161 blades or fragments thereof, accounting for 28.8% of all discovered blades. This number includes blades with cortex, which belong to the primary phase of production, which renders the percentage of gloss on them perhaps a bit less indicative. Gloss is far more frequent on the left edge than on the right. There are also some blades with gloss on both edges, as well as those whose orientation and consequently also the edge is impossible to ascertain due to fragmentation. It has already been mentioned that, in addition to the presence of gloss, most of these blades were retouched.

**Tab. 6.7** Prikaz učestalosti sječiva sa i bez sjaja

**Tab. 6.7** Frequency of blades with and without gloss

| | | |
|---|---|---|
| Bez sjaja/ Without gloss | 398 | 71,2% |
| Sjaj na desnom rubu/ Gloss on right edge | 52 | 9,3% |
| Sjaj na lijevom rubu/ Gloss on left edge | 82 | 14,67% |
| Sjaj na oba ruba/ Gloss on both edges | 14 | 2,5% |
| Sjaj – neodrediv rub/ Gloss – indeterminate edge | 13 | 2,32% |
| UKUPNO/ TOTAL | 559 | 100% |

Gotovo dvije trećine izrađevina pripadaju rožnjacima koji se uglavnom razlikuju u boji – smeđa, crna, tamnozelena, sivozelena itd. (sl. 6.2). Riječ je o lokalnoj sirovini koju je bilo moguće dobaviti iz rijeka, potoka, ali i s obližnjih planina poput Dilj-gore, Papuka i Psunja.

Drugi sirovinski materijal prema zastupljenosti je sedimentna stijena tipa Scaglia (sl. 6.3). To su zavapnjeni lapori do vapnenci gornjokredne starosti. Riječ je o vrlo laganoj i mekanoj sirovini stoga i ne baš kvalitetnim materijalom za izradu kamenih alatki. Dodatna obrada na njima je često teško uočljiva. Riječ je ponovo o lokalnoj, lako dostupnoj sirovini (Dilj-gora, Papuk, Psunj, Bosna) te je stoga razumljivo što se koristila u tolikoj mjeri. Dalje, s manjim brojem izrađevina prisutan je bijeli vapnenac bogat fosilima (sl. 6.4), mramorizirani vapnenac sl. 6.5), pješčenjak te kvarcne stijene. Rijetkost i, može se reći, egzotiku, predstavljaju sječiva izrađena od lepoglavskog ahata (sl. 6.6) i jadeita (sl. 6.7).

Usprkos tome što je obavljen samo preliminaran pregled sirovinskog materijala, i da detaljniji pristup svakako ne bi bio na odmet, ipak je moguće govoriti o nekim čvrstim činjenicama. Sirovina se dobavljala iz najbliže okolice, jer je riječ o valuticama sakupljenima iz starih korita rijeka ili potoka, odnosno s planinskih područja (Dilj-gora, Papuk, Psunj). Spomenuta dva sječiva izrađena od sirovine koju nije moguće pronaći niti u široj okolici naselja, otvaraju sasvim novu temu jer svjedoče o kontaktima stanovnika ovoga naselja s nekim udaljenijim prostorima.

## *Raw material*

Based on specific macroscopic characteristics (colour, texture, opacity, surface lustre, cortex), the artefacts were divided into several basic categories of raw materials.

Almost two thirds of the artefacts belong to cherts, which differ mostly in colour – brown, black, dark green, grey-green etc. (fig. 6.2). This is a local raw material available from rivers and streams, as well as from the nearby mountains such as Dilj Gora, Papuk and Psunj.

The second most common raw material is the sedimentary rock of the Scaglia type (fig. 6.3). These are calcareous marls and limestones of Upper Cretaceous age. This material is very light and soft and therefore not particularly suitable for making stone tools. It is frequently difficult to discern retouch on these pieces. However, the fact that this is a local and easily available raw material (Dilj Gora, Papuk, Psunj, Bosnia) makes its frequent exploitation easily understandable. Further, there are few artefacts made of fossil-rich white limestone (fig. 6.4), marmorized limestone (fig. 6.5), sandstone and quartz rocks. Blades made from Lepoglava agate (fig. 6.6) and jadeite (fig. 6.7) are rare and, so to speak, exotic phenomena.

While it is true that so far only a preliminary analysis of raw materials has been done, and that a more detailed analysis would certainly be useful, we can nevertheless discuss several certain facts. Raw material was acquired from the immediate neighbourhood, in the form of pebbles collected from old beds of rivers or streams and from mountain sources (Dilj Gora, Papuk, Psunj). The two mentioned blades made of material that is not present in the wider surroundings of the settlement open an entirely new issue, as they bear testimony to the contacts of the residents of this settlement with distant areas.



**Sl. 6.2.** Rožnjaci
**Fig. 6.2** Cherts

**Sl. 6.3** Sedimentna stijena tipa Scaglia
**Fig. 6.3** Sedimentary rock of the Scaglia type



**Sl. 6.4** Bijeli vapnenac bogat fosilima
**Fig. 6.4** Fossil-rich white limestone

**Sl. 6.5** Mramorizirani vapnenac
**Fig. 6.5** Marmorized limestone

**Sl. 6.6** Lepoglavski ahat
**Fig. 6.6** Lepoglava agate

**Sl. 6.7.** Jadeit
**Fig. 6.7** Jadeite

## Prostorna distibucija

Više od trećine ukupnih nalaza pripada zapunama ukopa SJ 161 (396 kom.). Brojem rukotvorina slijede SJ 876 (87 kom.), SJ 572 (57 kom.) i zapune SJ 20 (50 kom.). Još je nekoliko srednje velikih objekata s većim skupom nalaza npr. SJ 271 (45 kom.), zapune SJ 268 (36 kom.) i SJ 705 (27). Sedam jama sadrži 10–21 kom., dok se u ostalih 35 jama, mahom manjih dimenzija, sporadično nalaze po 1 do 9 komada cijepanih kamenih izrađevina.

## Spatial distribution

More than a third of all finds belong to the fills of cut SJ 161 (396 pieces). The next most abundant contexts are SJ 876 (87 pieces), SJ 572 (57 pieces), and fills of SJ 20 (50 pieces). There are few other medium-sized features with relatively abundant assemblages, e.g. SJ 271 (45 pieces), fills SJ 268 (36 pieces) and SJ 705 (27). Seven pits yielded between 10 and 21 pieces, while the remaining 35 pits, by and large of small dimensions, sporadically contained between 1 and 9 pieces of chipped lithic artefacts.

**Tab. 6.8** Prikaz količine kamenih izrađevina u stratigrafskim jedinicama[2]
**Tab. 6.8** Quantity of stone artefacts by contexts[2]

| SJ | Ukupan broj izrađevina/ Total number of artefacts | Odbojci s okorinom/ Flakes with cortex | Sječiva s okorinom/ Blades with cortex | Odbojci/ Flakes | Sječiva/ Blades | Jezgre/ Cores | Krhotine/ Chunks | Alatke/ Tools |
|---|---|---|---|---|---|---|---|---|
| **87** | 1 | | 1 | | | | | 1 |
| **145** | 1 | | | | 1 | | | |
| **170** | 1 | | | | | 1 | | |
| **251** | 1 | 1 | | | | | | |
| **263** | 1 | | | | 1 | | | |
| **319** | 1 | | | | 1 | | | 1 |
| **329** | 1 | 1 | | | | | | |
| **568** | 1 | | | | 1 | | | |
| **682** | 1 | | | | 1 | | | 1 |
| **746** | 1 | | | | | 1 | | |
| **851** | 1 | | 1 | | | | | |
| **872** | 1 | | | | 1 | | | |
| **31** | 2 | | | | 2 | | | 2 |
| **45** | 2 | | 1 | | 1 | | | 2 |
| **63** | 2 | 1 | | 1 | | | | |
| **127** | 2 | | | | 2 | | | 2 |
| **203** | 2 | | 1 | 1 | | | | 2 |
| **245** | 2 | | | | 1 | 1 | | |
| **257** | 2 | 1 | | | 1 | | | |
| **259** | 2 | | | | 2 | | | 1 |
| **562** | 2 | 1 | | 1 | | | | 1 |
| **933** | 2 | | | | 2 | | | 1 |
| **51** | 3 | | | 1 | 2 | | | 2 |
| **57** | 3 | 1 | | | 2 | | | 2 |
| **227** | 3 | | 1 | 2 | | | | 1 |
| **281** | 3 | | 1 | | 2 | | | 1 |
| **469** | 3 | | 1 | 1 | 1 | | | |
| **617** | 3 | | 1 | | | 2 | | 1 |
| **29** | 4 | 1 | | | 2 | 1 | | 3 |
| **183** | 4 | | 1 | 1 | 1 | 1 | | 2 |
| **826** | 5 | | 1 | 3 | 1 | | | 1 |
| **43** | 6 | 1 | | 2 | 2 | | 1 | 3 |
| **241** | 6 | 3 | | 1 | 2 | | | 1 |
| **207** | 7 | 2 | | 1 | 3 | 1 | | 4 |
| **249** | 7 | 2 | 2 | | 2 | | 1 | 2 |
| **662** | 7 | | 2 | | 5 | | | 1 |
| ***286*** | 9 | 1 | 1 | 2 | 4 | 1 | | 2 |
| **53** | 10 | 1 | | | 7 | 1 | 1 | 4 |
| **243** | 12 | | 3 | 3 | 6 | | | 2 |
| **295** | 13 | 3 | | 1 | 7 | | 2 | 5 |
| ***86*** | 15 | 1 | 2 | 1 | 7 | 3 | 1 | 3 |
| **49** | 17 | | 4 | 2 | 7 | 1 | 3 | 6 |
| **293** | 20 | 2 | | 2 | 16 | | | 9 |
| **327** | 21 | 7 | 1 | 7 | 3 | 2 | 1 | 2 |
| **705** | 27 | 4 | 1 | 4 | 10 | 4 | 4 | 6 |
| ***268*** | 36 | 5 | 4 | 5 | 15 | 6 | 1 | 15 |
| **271** | 45 | 6 | 4 | 11 | 14 | 8 | 2 | 13 |
| ***20*** | 50 | 4 | 4 | 7 | 27 | 4 | 4 | 15 |
| **572** | 57 | 5 | 7 | 4 | 29 | 8 | 4 | 16 |
| **876** | 87 | 14 | 3 | 14 | 44 | 7 | 5 | 35 |
| ***161*** | 396 | 54 | 41 | 40 | 224 | 19 | 18 | 183 |

[2] Brojevi stratigrafskih jedinica (SJ) pisani u kurzivu odnose se na broj ukopa zbog jednostavnijeg uvida u zatvorene cjeline koje su se sastojale od više zapuna. Ukupno je ubrojano 911 komada, u tablici se ne nalaze izrađevine iz srednjovjekovnih objekata i humusnog sloja (ukupno njih 27)

[2] Context (SJ) numbers in italic refer to the number of a cut to facilitate insight into closed units consisting of more than one cut. A total of 911 pieces was entered; the table does not contain artifacts from mediaeval features and the topsoil (a total of 27).

Omjer broja komada najčešće je proporcionalan veličini samog objekta, iako ne nužno, ima i većih jama s manje od 10 kom., ili čak i bez, no zaista, one male koje imaju, to je maksimalno do 5 komada. Dakle, najveća je zastupljenost u velikim zemunicama, i većim jamama u njihovoj neposrednoj blizini, dok na krajnjem sjevernom i južnom dijelu iskopa, gdje su uglavnom manji objekti/stupovi, litičkih nalaza gotovo da i nema.

## Interpretacija

Stanje istraženosti, odnosno stupanj obrađenosti litičke industrije u, ne samo kasnom, nego cijelom razdoblju eneolitika, na prostoru kontinentalne Hrvatske, nezadovoljavajući je, a rezultat toga je nedovoljno poznavanje te građe i nedostatak informacija koje bi omogućile uspoređivanje rezultata u svrhu daljnjih interpretacija. Na spomenutom prostoru veća pozornost posvećena je obradi cijepanih kamenih izrađevina iz neolitičih naselja, a tome su svakako razlozi objektivni. Takvih je nalaza u neolitičkim naseljima puno više, a više je i istraženih naselja. No da je i eneolitičkim kulturama kamen i dalje iznimno važna i neophodna sirovina svjedoči ne samo ovaj, nego i drugi, nedavno istraženi eneolitički lokaliteti,[3] kao i oni ranije istraživani, poput Slavče[4] i Vučedola[5].

Jedino kostolačko nalazište u Hrvatskoj s kojeg je djelomično analiziran litički materijal je Slavča kod Nove Gradiške,[6] a to je ujedno, prema sadašnjim spoznajama, najzapadniji kostolački lokalitet u Hrvatskoj. Kostolačko naselje na Vučedolu odlikuje se velikom količinom litičkog materijala, i u zatvorenim cjelinama i u sloju. Zanimljiv nalaz svakako predstavljaju dvije nakupine jezgara posloženih u radijusu od oko 50 cm.[7] Takve, uvjetno rečeno, ostave, mogle su poslužiti kao spremišta sirovinskog materijala pripremljenog za proizvodnju, ali moguće i za njihovu distribuciju u okolna naselja. Iako vučedolska građa još nije obrađena te nije zahvalno donositi preuranjene zaključke, uočljiva je ipak razlika u odnosu naselja na Franjevcu. Valja napomenuti i da je površina iskopana na Vučedolu znatno manja od istraženog naselja na Franjevcu te stoga velika količina jezgara na malom prostoru, nasuprot njihovom relativno niskom udjelu, ali pak visokom postotku alatki na većoj površini, nesumnjivo ukazuje na različit socioekonomski karakter ta dva naselja. Daljnja istraživanja pokazat će je li to odraz bližih ležišta sirovina u slučaju Vučedola ili su pripadnici kostolačke kulture imali sustav organizacije naselja u kojima su jedni dobivali gotove proizvode, drugi prikupljali sirovinu, a treći možda proizvodili?

Gomolava – Hrtkovci svakako je najbolje, i vrlo detaljno, obrađeno kostolačko naselje kada je u pitanju cijepana litička građa.[8] Iako su se još 1987. godine autori požalili kako im je problem predstavljala činjenica što nema publiciranih radova o litičkom materijalu badenske i kostolačke kulture (s područja sjevernog Balkana i dunavskog bazena), koji bi im koristili za komparaciju nalaza,[9] situacija se niti do danas nije puno promijenila.[10]

[3] Komšo 2009.
[4] Šošić, Karavanić 2004.
[5] Balen 2005: 33.
[6] Šošić, Karavanić 2004.
[7] Balen 2005: 33.
[8] Kaczanowska, Kozlowski 1987.
[9] Kaczanowska, Kozlowski 1987: 38, 88.
[10] U monografiji *Gomolava, naselja kasnog eneolita* (Petrović, Jovanović 2002) vrlo je skromno objavljen litički materijal.

The number of pieces is generally proportional to the size of a feature/structure, albeit not necessarily: there are several large pits with less than 10 pieces or even without any; but in the case of small pits, when they contained any lithics it was up to 5 pieces. Therefore, large pit-houses and larger adjacent pits show the greatest frequency of finds, while lithic finds are almost absent in the extreme northern and southern segments of the excavation area, where small features/post-holes dominate.

## Interpretation

The state of research, that is the level of analysis of lithic industry in continental Croatia in Late Eneolithic, as well as the Eneolithic in general, is unsatisfactory. One of the results of such a situation is our insufficient knowledge about this material and lack of information that would facilitate comparison of results with the aim of further interpretations. In the mentioned area, greater attention was dedicated to the analysis of chipped stone artefacts from Neolithic settlements, which is certainly due to objective reasons. There are many more finds of this type in Neolithic settlements, and there are also more investigated settlements from that period. Nevertheless, that stone had remained an exceptionally important and indispensable raw material in the Eneolithic cultures is corroborated not only by this site, but also by other recently investigated Eneolithic sites,[3] as well as those investigated somewhat earlier, such as Slavča[4] and Vučedol.[5]

Slavča near Nova Gradiška is the only site of the Kostolac culture in Croatia whose lithic assemblage was partly analysed.[6] At the same time, according to our current knowledge this is the westernmost site of that culture in Croatia. The Kostolac settlement at Vučedol yielded abundant lithics, both in closed contexts and in the occupation horizon. Two clusters of cores set in a radius of around 50 cm are a very interesting find.[7] Such – in a manner of speaking – hoards, may have served as storages of raw material ready for production, but possibly also for distribution to neighbouring settlements. Although the Vučedol assemblage has not been analysed yet, and therefore we should not jump to conclusions, one can nevertheless perceive a distinction with regard to the settlement at Franjevac. It should be noted that the excavated surface at Vučedol is significantly smaller than that of the Franjevac settlement, so the occurrence of a large quantity of cores in a small space as opposed to their relatively small proportion in all finds, in contrast to the high percentage of tools over a wider surface, undoubtedly points to a different socio-economic character of the two settlements. Further investigations will show whether this reflects the proximity of sources of raw materials in the case of Vučedol, or the members of the Kostolac culture perhaps developed a system of organization of settlements in which one group received finished products, another one collected raw materials, while the third one were the producers?

Gomolava-Hrtkovci is certainly the best – and in great detail – analysed Kostolac settlement when it comes to chipped lithic artefacts.[8] Even though the authors complained as early as 1987 that a great problem to their work was posed by the fact that there had been no published papers on the lithic assemblages of the Baden and Kos-

[3] Komšo 2009.
[4] Šošić, Karavanić 2004.
[5] Balen 2005: 33.
[6] Šošić, Karavanić 2004.
[7] Balen 2005: 33.
[8] Kaczanowska, Kozlowski 1987.

Kostolački sloj na Gomolavi pokazuje dosta sličnosti s našim materijalom. Vrlo je visok postotak alatki – 37,5%[11] što je gotovo jednako udjelu alatki na Franjevcu (38,59%). Visok postotak alatki i sječiva ukazuju na njihov uvoz s nekog drugog mjesta, što je uočeno i u drugim slojevima lokaliteta, a povezano je s činjenicom da su ležišta kremena na velikim udaljenostima. Jezgri ima manje (4,2%) nego na Franjevcu (8,32%) i sve su za pločice.[12] Najveći broj alatki priprada grebalima i zarupcima, dok su u manjem broju zastupljena sječiva s obradom te po nekoliko komada ostalih tipova alatki.[13] Sječiva koja nisu obrađena ima 36,5%, slično kao i na Franjevcu (38,94%). Međutim na oba lokaliteta pokazalo se da neobrađena sječiva vrlo često imaju tragove upotrebe, najčešće u vidu sjaja, ogrebotina ili raznih oštećenja.[14] Također je ustanovljeno da je obrada na komadima koji imaju sjaj nastala kasnije od sjaja, kako bi neobrađena sječiva koja su bila segmeti srpa mogla biti ponovno korištena.[15]

Na Franjevcu dominiraju sječiva (50,11%) i alatke na njima, dok je proizvodnja obavljana u manjem opsegu. Uzrok tome sigurno nije nedostatak sirovinskog materijala, jer kako je već spomenuto, on potječe iz bliže okolice. Je li možda riječ o razdoblju u kojemu se naselja istih kultura razlikuju prema izrazitoj specijalizaciji za određene aktivnosti, u ovom slučaju uz poljodjelstvo, o tome će se, nažalost, moći govoriti tek u trenutku kada će biti istraženo više kostolačkih naselja u nekoj mikroregiji. Kada je riječ o tipovima alatki, vidljivo je da nema velike raznolikosti. Prevladavaju zarubljena sječiva i komadi s obradom na jednom rubu. No moguće je govoriti o kombiniranim alatkama kojima bi se mogli smatrati zarupci s obrađenim lateralnim rubovima, s obzirom na to da »obični« zarupci i komadi s obradom na jednom, odnosno dva ruba, pripadaju zasebnim tipovima alatki. Ipak, ne smije se zanemariti udio jezgri, pogotovo onih s okorinom. Taj podatak neopozivo ukazuje da se čista, neobrađena sirovina dopremala u naselje te da je u određenoj mjeri i proizvodna faza imala svoj značaj. To bi se moglo ponajprije povezati s proizvodnjom odbojaka, budući da je podjednak, iako prilično mali, broj odbojaka sa i bez okorine. Sječiva s okorinom pak, u odnosu na ona bez okorine vrlo je malo. Zapaža se i vrlo velik postotak fragmentiranih sječiva (tab. 1.1). Od ukupno 470 sječiva, samo je 39 (8,3%) onih koja su cjelovita i neobrađena. No i među njima je 6 s tragovima upotrebe u vidu sjaja ili ogrebotina uz rubove. Osim oštećenja, koja mogu biti posljedica raznih okolnosti, uglavnom je riječ o ravnim, preciznim lomovima, bilo vrha i baze ili samo jednog ili drugog.[16] Na sječivima češće nedostaje vrh nego baza, a brojni su i medijalni dijelovi sječiva, ona bez vrha i baze. Distalni dio (vrh) odsijecao se ako je primjerice bio tanak ili nepravilan, kako bi se dobio ravan, pravilan profil, a ako je bila

[11] Kaczanowska, Kozlowski 1987: 57.
[12] Kaczanowska, Kozlowski 1987: 38.
[13] Kaczanowska, Kozlowski 1987: 71.
[14] Kaczanowska, Kozlowski 1987: 62.
[15] Kaczanowska, Kozlowski 1987: 75.
[16] U Tablici 2 prikazano je brojčano stanje raznih fragmenata sječiva. Iako primjerice kod termina *baza i medijalni dio* naravno fali vrh, ipak se vodilo računa da pod terminom *odsječen vrh* smatramo da je odsječen sam vrh, dok kod baze i medijalnog dijela je ipak riječ o manjem ulomku, gdje vjerojatno nedostaje još i određen postotak medijalnog dijela. Ili pak da *medijalni dio* označava zaista manji središnji dio sječiva, dok *odsječeni vrh i baza* označava veći ulomak sječiva kojemu su isključivo vrh i baza slomljeni.

tolac cultures (from northern Balkans and the Danubian basin) that they could use for comparisons of finds,[9] the situation has not changed much to this day.[10] The Kostolac layer at Gomolava is relatively similar to our assemblage. The percentage of tools is very high – 37,5%,[11] which almost equals the proportion of tools at Franjevac (38,59%). High proportion of tools and blades suggests that they were imported from another place, which was observed also in other layers of that site, which is connected with the fact that sources of flint are situated at a great distance from the site. There are fewer cores (4,2%) than at Franjevac (8,32%), and all are for bladelets.[12] The majority of tools are endscrapers and truncated blades, while there are fewer retouched blades and only several pieces of other tool types.[13] Unretouched blades account for 36.5%, similar to the situation at Franjevac (38,94%). However, at both sites unworked blades frequently exhibit use-wear traces, mostly in the form of gloss, scratches or various types of damage.[14] It was also established that the retouch on the pieces that exhibit gloss was created after the gloss was already there, in order to reuse previously unretouched blades that were first used as segments of a sickle.[15]

The dominant type at Franjevac are blades (50.11%) and tools made on them, while production was carried out to a small extent. The lack of raw materials is certainly not a reason for that, because, as has already been said, it comes from nearby sources. Are we perhaps dealing with a period in which settlements of the same culture differ from one another by a distinct specialization for specific activities, in this case in connection with farming. Unfortunately, we shall be able to discuss this issue only once that several Kostolac settlements in a given microregion have been investigated. When it comes to tool types, the diversity is obviously not great. Truncated blades and pieces with one retouched edge are the dominant categories. It is nevertheless possible to discuss combined tools, which would include truncated blades with retouched lateral edges, considering that »ordinary« truncated blades and pieces with retouch on one or two edges belong to separate tool types. We should nevertheless not neglect the proportion of cores, especially cores with cortex. This fact definitely suggests that clean, unworked raw materials were brought to the settlement, and that the production phase also played a part in the settlement to a certain degree. This would primarily apply to the production of flakes, considering that the number of flakes with and without cortex, albeit small, is roughly equal. Blades with cortex, on the other hand, are few when compared with those without cortex. Another conspicuous feature is the very high percentage of fragmented blades (tab. 1.1). Of the total 470 blades, only 39 (8.3%) are complete and unworked. However, even among those there are 6 that exhibit use-wear traces in the form of gloss or scratches along the edges. Apart from the dam-

[9] Kaczanowska, Kozlowski 1987: 38, 88.
[10] The lithic assemblage was awareded very modest attention in the monograph *Gomolava, Late Eneolithic Settlements* (Petrović, Jovanović 2002: 277), as the emphasis was put on the ceramic ware and settlement features..
[11] Kaczanowska, Kozlowski 1987: 57
[12] Kaczanowska, Kozlowski 1987: 38.
[13] Kaczanowska, Kozlowski 1987: 71.
[14] Kaczanowska, Kozlowski 1987: 62.
[15] Kaczanowska, Kozlowski 1987: 75.
[16] Table 2 shows the number of various fragments of blades. While it is understandable that in the case of terms base and *medial part* the tip is lacking, we have been careful to apply the term *cut-off tip* for pieces on which only the tip was cut off, while *base* and *medial part* generally denote a smaller fragment, which often misses also a certain percentage of the medial part. Also, *medial part* can denote a small central part of a blade, while *cut-off tip and base* denotes a larger fragment of a blade whose tip and base only were cut-off.

bitna jednaka debljina, paralelni rubovi i ravan profil, tada su se i vrh i baza morali slomiti.[17] Tim postupcima se vjerojatno pripremalo sječivo kako bi se lakše umetnulo u srp ili privezalo na neku drugu alatku. Možda su i komadi kojima je slomljen vrh tek trebali biti zarubljeni, jer je i kod zarubljenih sječiva vidljivo da nije riječ o njihovoj punoj dužini nego da im je ranije vrh odsječen. Također, ima i nekoliko primjeraka na kojima obrada nije dovršena, pa se vidi i lom i obrada.

U odnosu na razdoblje neolitika u kojemu je kvantiteta cijepanih izrađevina u naseljima mnogo veća, eneolitik pak svoj napredak pokazuje kroz organiziraniji sustav eksploatacije, distribucije i konačno upotrebe kamenih izrađevina. Manji je broj tipova alatki, pa je sukladno tome vjerojatno i smanjen opseg različitih poslova koji su se na tom mjestu obavljali. Manje je i otpada i nije još uočena masovna proizvodnja i upotreba u istom naselju. Očigledno je pronađen potpuno drugačiji model koji je oslonjen na dobavljanje specijaliziranih alatki, odnosno gotovih sječiva koja su bila sprema za upotrebu.

# Zaključak

Proučavanje kamenih izrađevina vrlo je važno za upotpunjavanje spoznaja o načinu života nositelja kostolačke kulture u široj regiji, kao i na cijelom njezinom području rasprostiranja. Provedena analiza pokazala je intenzivnu upotrebu kamenih alatki u ovome naselju, mahom izrađenih na sječivima. Dokazi da se dio kamenih izrađevina proizvodio u naselju postoje, no ipak je očito da se glavnina proizvodila negdje drugdje. Je li riječ o nekom izdvojenom objektu, odnosno mjestu na kojem se za proizvodnju brinuo neki pripadnik ovog naselja ili je riječ o dobavljanju gotovih proizvoda (sječiva) iz nekog sasvim drugog naselja, zasad je moguće samo nagađati. Premalo je podataka da bi se moglo argumentirano govoriti o nekim sustavima razmjene i distribucije proizvoda, kao i njihovim principima. Za takve postavke potrebno je sustavno obraditi kamene izrađevine s još mnogih lokaliteta, prvenstveno u bližoj okolici. Ipak, neupitno je da je lokalno stanovništvo vješto vladalo tehnikama obrade kamena, o čemu osim jezgri svjedoči i često održavanje, odnosno popravljanje alatki. Da su sječiva bila u upotrebi dokazuje visok postotak obrađenih sječiva, na bočnim i poprečnim rubovima, koja su se na taj način ponovno osposobljavala za upotrebu. Također i sjaj na rubovima ukazuje na upotrebu sječiva kao dijelova srpa. Sve su to više nego sigurni pokazatelji da je stanovništvo bilo poljodjelski orijentirano.

Naposljetku valja još jednom naglasiti kako je sustavna obrada litičkog materijala sa svakog eneolitičkog lokaliteta iznimno potrebna kako bi rezultirala dobrom bazom podataka potrebnom za daljnje interpretacije. S obzirom na današnji stupanj poznavanja litičke industrije kostolačke kulture još uvijek nije moguće precizno reći predstavlja li situacija na Franjevcu uobičajen inventar ili ima neke svoje posebnosti. U usporedbi s kostolačkim naseljem na Gomolavi uočene su određene razlike, ali je u osnovi situacija vrlo slična.

[17] Kaczanowska, Kozlowski 2007: 240.

ages that may have occurred due to various causes, these are generally straight, precise fractures of tips or bases, or both.[16] Blades more often miss the tip than the base. Medial segments of blades – those without the tip and the base – are also numerous. The distal end (tip) was cut if it was e.g. thin or irregular, in order to obtain a straight, regular profile. When uniform thickness, parallel edges and straight profile were fundamental, both the tip and the base would be broken.[17] These procedures were presumably used to prepare a blade to facilitate its insertion into a sickle or attachment to another tool. Perhaps those pieces whose tip was broken were prepared for truncation, because in the case of truncated blades it is also obvious that that was not their full length, but that their tip had already been cut off. There are also several unfinished pieces, exhibiting traces of both fracture and retouch.

Compared with the Neolithic, when the quantity of chipped artefacts in settlements is much higher, Eneolithic shows its development through a more organized system of exploitation, distribution and, finally, use of stone artefacts. The number of tool types is smaller and, correspondingly, so is presumably the scope of different tasks performed at that place. There is also less refuse, and we still haven't observed a single settlement in which mass production and use would be in balance. Obviously an entirely different model was developed, based on the acquisition of specialized tools, that is, finished blades ready for use.

# Conclusion

Study of stone artefacts is very important for supplementing our knowledge of the way of life of the bearers of the Kostolac culture in the wider region, as well as in its entire distribution area. The analysis that was carried out demonstrated intensive use of stone tools in this settlement, by and large made on blades. There is evidence that a part of the stone artefacts were produced within the settlement, but it is nevertheless clear that the bulk of the production was carried out somewhere else. Whether this was an isolated structure, that is, a place where production was carried out and taken care of by a resident of this particular settlement, or the finished products (blades) were acquired from an entirely different settlement, we can at present only conjecture. There is too little information to discuss systems of exchange and distribution of products, as well as their underlying principles. In order to be able to put forward such hypotheses we need to systematically analyse stone artefacts from many other sites, primarily those in the vicinity. It is nevertheless beyond doubt that the local population was skilled in techniques of stone working, as testified, in addition to the cores, also by repeated maintenance and repair of tools. That blades were indeed used is substantiated by the high proportion of retouched blades, both on lateral and transverse edges, which rendered them suitable for renewed use. Edge gloss, likewise, indicates use of blades as sickle segments. These are all more than reliable indicators that the population was oriented toward farming.

Lastly, we should once again underline the utmost need for a systematic analysis of the lithic assemblage from each Eneolithic site, which would result in a proper database necessary for further interpretations. Considering the present level of understanding of the lithic industry of the Kostolac culture, we still cannot assess with precision whether the assemblage at Franjevac is a standard one, or one with certain non-standard features. Although the comparison with the Kostolac settlement at Gomolava identified certain distinctions, the two assemblages are basically very similar.

[17] Kaczanowska, Kozlowski 2007: 240.

# Bakreni predmeti

Na Franjevcu je u zapunama jama pronađeno 6 bakrenih predmeta: tri šila te tri bakrena ulomka. Šila su najbrojniji bakreni nalazi na Franjevcu, što je gotovo identično kao i u kostolačkom naselju na Gomolavi.[1] Šila iz Franjevca su četvrtastog presjeka s kratkim trnom, razlike su uočljive u dužini trna. Dva ulomka (PN 37, PN 81) najvjerojatnije također pripadaju šilima, što pretpostavljamo po širini koja je identična onoj od čitavih šila, dok jedan ulomak (PN 301) pripada bodežu. Sačuvana je zaobljena prikovna pločica s tri zakovice. Nalazi bakrenih bodeža na prostoru sjeverne Hrvatske u sklopu eneolitičkih naselja izuzetno su rijetki. Poznati su primjerci iz badenskih naselja na Vučedolu te na Sarvašu.[2] Naš primjerak ima analogije u primjerku iz Atterseea.[3] Mali listoliki bakreni bodeži razvijaju se u kasnom neolitiku, a upotrebljavaju se kroz čitavo razdoblje eneolitika, sve do u rano brončano doba.[4] Kod tih ranih bodeža razlikujemo nekoliko tipova: s trapeznom ili zaobljenom prikovnom pločicom te s trnom za nasad.[5] Vjerojatnije je da im je funkcija bila za rezanje, odnosno da su služili kao noževi, a ne kao bodeži, zbog svojih malih dimenzija.

Ovi nalazi, iako nam potvrđuju da je kostolačka populacija na Franjevcu koristila bakrene alatke i to od sulfidne rudače (u svim primjercima ustanovljen je postotak arsena), ne znače nužno postojanje metalurške radionice u okviru naselja, barem ona iskopavanjima nije dokumentirana.

[1] Petrović, Jovanović 2002: 281–284.
[2] Težak-Gregl 1987; Balen 2005a: 56.
[3] Ottaway 1976: fig.5:5.
[4] Ottaway 1976: 118.
[5] Vladar 1974: 3–4, T.1.

# Copper artefacts

A total of 6 copper artefacts were found in the fills of pits at Franjevac: three awls and three copper fragments. Awls are the most common copper finds at Franjevac, a situation almost identical to that in the Kostolac settlement at Gomolava.[1] The awls from Franjevac have a rectangular cross-section and a short tang, with visible differences in the length of the tang. Two fragments (PN 37, PN 81) almost certainly also belong to awls, judging by the fact that their width is identical to that of the complete awls, while the third fragment (PN 301) belongs to a dagger. A round hilt-attachment plate with three rivets is preserved. Copper daggers occur exceptionally rarely in Eneolithic settlements in northern Croatia. We know of the specimens from the Baden culture settlements at Vučedol and Sarvaš.[2] Our piece finds parallels in the specimen from Attersee.[3] Small leaf-bladed copper daggers developed in the Late Neolithic and remained in use throughout the Eneolith ic up until the Early Bronze Age.[4] We distinguish several types of these early daggers: with a trapezoid or round hilt-attachment plate and with a tang.[5] Their small size makes it more likely that they were used for cutting, i.e. that they were used as knifes and not as daggers.

Although these finds provide evidence that the Kostolac population at Franjevac used copper tools, and what is more, tools produced from sulphide ore (a percentage of arsenic was detected in the analysed specimens), it is not necessarily a proof that a metallurgical workshop existed within the settlement – at least, it was not documented in the excavations.

[1] Petrović, Jovanović 2002: 281–284.
[2] Težak-Gregl 1987; Balen 2005a: 56.
[3] Ottaway 1976: fig. 5:5.
[4] Ottaway 1976: 118.
[5] Vladar 1974: 3–4, T.1.

# Katalog nalaza / Catalogue of the finds

### 1. Šilo

PN 22, SJ 281
x = 5021770,450, y = 6531586,592, z = 103,466
duž. s trnom, 7,4 cm, duž. trna 0,6 cm, šir. 0,4 cm

### 1. Awl

PN 22, SJ 281
x = 5021770,450, y = 6531586,592, z = 103,466
L. with tang 7.4 cm, L. of tang 0.6, W. 0.4 cm

### 2. Bakreni ulomak

PN 37, SJ 368
x = 5021794,591, y = 6531634,021, z = 108,625
duž. 2,7 cm, šir. 0,5 cm

### 2. Copper fragment

PN 37, SJ 368
x = 5021794,591, y = 6531634,021, z = 108,625
L. 2.7 cm, W. 0.5 cm



### 3. Šilo

PN 61, SJ 51
x = 5021802,178, y = 6531627,602, z = 107,682
duž. s trnom 5,8 cm, duž. trna 1,8 cm, deblj. 0,4 cm

### 3. Awl

PN 61, SJ 51
x = 5021802,178, y = 6531627,602, z = 107,682
L. with tang 5.8 cm, L. of tang 1.8, W. 0.4 cm

### 4. Bakreni ulomak

PN 81, SJ 705
x = 5021780.535, y = 6531588.903, z = 104,381
duž. 1,6 cm, šir. 0,4 cm

### 4. Copper fragment

PN 81, SJ 705
x = 5021780.535, y = 6531588.903, z = 104,381
L. 1.6 cm, W. 0.4 cm

### 5. Šilo

PN 150, SJ 43
x = 5021834,191, y = 6531647,392, z = 108,329
duž. s trnom 9,2 cm, duž. trna 2,6 cm, šir. 0,4 cm

### 5. Awl

PN 150, SJ 43
x = 5021834,191, y = 6531647,392, z = 108,329
L. with tang 9.2 cm, L. of tang 2.6, W. 0.4 cm

### 6. Ulomak bodeža

PN 301, SJ 856
x = 5021832,564, y = 6531617,656, z = 107,039
duž. 3,3 cm, šir. 1,5 cm, deblj. 0,3 cm

### 6. Fragment of a dagger

PN 301, SJ 856
x = 5021832,564, y = 6531617,656, z = 107,039
L. 3.3 cm, W. 1.5 cm, Th. 0.3 cm



# Rezultati analize PIXE spektroskopijom

*Milko Jakšić*

## Osnovni principi PIXE spektroskopije

PIXE spektroskopija se bazira na ozračivanju uzoraka snopom protona (najčešće korištena energija protona je 3 MeV), odnosno na detekciji protonima pobuđenih karakterističnih x-zraka elemenata u uzorcima. Ukoliko se koristi Si(Li) detektor s Be prozorom, analiziraju se svi elementi teži od aluminija (Z>13).

PIXE spektar se sastoji iz niza linija elemenata prisutnih u najvećim koncentracijama u ispitivanom uzorku. U ovom slučaju detekcija je bila moguća za sve elemente do elementa Z = 47 (Ag) vidljive linije K serije, koje čine intenzivnija linija Kα koju prati prema višoj energiji slabija linija Kα. Za teže elemente spektar karakterizira multiplet L serije linija (u ovom slučaju nisu uočene linije niti jednog težeg elementa).

Intenziteti linija nisu direktno ovisni o koncentraciji, jer treba uzeti u obzir efekte smanjenja vjerojatnosti pobude s povećanjem rednog broja elementa, odnosno efekata apsorpcije x-zraka koji se smanjuju s povećanjem energije x-zraka. Zbog toga je tek djelomično moguće kvalitativno uspoređivanje visina linija samo u slučaju bliskih elementata.

# The results of a PIXE-spectroscopy analysis

*Milko Jakšić*

## Basic principles of PIXE spectroscopy

PIXE spectroscopy is based on irradiating samples by a proton beam (most often the proton energy of 3 MeV is used), that is, on detecting proton-induced characteristic X-ray elements in samples. If a Si(Li) detector with Be window is used, all elements heavier than aluminium (Z>13) are analyzed.

PIXE spectrum consists of a series of lines of elements present in greatest concentrations in the analyzed sample. In this case, it was possible to detect all the elements up to Z=47 (Ag) of the visible line of K series, which consists of the intensive Kα line, followed towards higher energy by the less intensive Kα line. For heavier elements, the spectrum is characterized by a multitude of L series of lines (no lines of any heavier element were detected in this case).

The intensities of the lines are not directly dependent on the concentration, because it has to be considered that, as the atomic number of the element increases, so the probability of excitation decreases. There is also the effect of absorption of X-rays, which declines in proportion to the increase of X-ray energy. Due to this, it is only partially possible to compare the height of the lines only in the case of close elements.

## Opis mjerenja

Uzorci su pričvršćeni na okvir i postavljeni u vakuumsku komoru za PIXE spektroskopiju. Analiza je izvršena fokusiranim snopom protona energije 2 MeV i struje oko 200 pA. Snimljeni su spektri X zraka.

Zbog lošije rezolucije detektora problem je određivanje prisutnosti elemenata koji su zastupljeni u manjem postotku. U tu grupu spadaju i nikal i cink čije se linije nalaze jako blizu linija bakra kojeg u svim uzorcima ima preko 90% i koji daje dominantne vrhove u spektru te je u ovim slučajevima teško odrediti sa sigurnošću jesu li oni zaista prisutni. Dobivene koncentracije Ni i Zn su najčešće oko granice detekcije (LOD). Linija željeza se nalazi na mjestu linije bijega karakterističnog X-zračenja silicija u detektoru (»escape line«) pa je i njegova prisutnost upitna.

U tablicama su navedene koncentracije, pogreška i granica detekcije u PPM. U zadnjem stupcu Y označava elemente koji su prisutni u uzorku, N elemente koji nisu prisutni, a ? za elemente koji mogu biti prisutni oko granice detekcije.

## Description of the measurement

The samples were attached to a frame and placed into a vacuum chamber for PIXE spectroscopy. The analysis was carried out by a focused proton beam of 2 MeV energy and a current of around 200 pA. The X-ray spectra were recorded.

Due to relatively poor resolution of the detector there was a problem with detecting the elements that were present in a very small percentage. This includes nickel and zinc, whose lines stand very close to the lines of copper, which is present in all samples with more than 90% percent and gives dominant peaks in the spectrum. It is therefore very difficult to ascertain in these cases whether those elements are indeed present or not. The obtained Ni and Zn concentrations are generally around the limits of detection (LOD). The line of iron is located at the place of the escape line of the characteristic X-radiation of silicon in the detector, which renders its presence uncertain as well.

Concentrations, errors and limits of detection in PPM are given in the tables. In the last column, Y stands for elements present in the sample, N for elements that are not present, while ? stands for elements that might be present around the limits of detection.



**PN-37**

| Element | Conc % | Err | LOD (PPM) | |
|---|---|---|---|---|
| FeK | 0.047 | 0.011 | 215 | ? |
| CoK | 0.008 | 0.014 | 233 | N |
| NiK | 0.000 | 0.000 | 1006 | N |
| CuK | 97.235 | 0.243 | 438 | Y |
| ZnK | 0.007 | 0.126 | 3833 | N |
| AsK | 1.577 | 0.095 | 745 | Y |
| SeK | 0.000 | 0.000 | 1231 | N |
| AgLA | 0.745 | 0.065 | 348 | Y |
| SnLA | 0.000 | 0.000 | 966 | N |
| SbLA | 0.338 | 0.110 | 507 | Y |
| AuLA | 0.049 | 0.093 | 1592 | N |

**PN-061**

| Element | Conc % | Err | LOD (PPM) | |
|---|---|---|---|---|
| FeK | 0.014 | 0.011 | 205 | ? |
| CoK | 0.000 | 0.000 | 341 | N |
| NiK | 0.022 | 0.038 | 598 | ? |
| CuK | 97.268 | 0.233 | 210 | Y |
| ZnK | 0.273 | 0.117 | 3652 | ? |
| AsK | 1.959 | 0.093 | 463 | Y |
| SeK | 0.030 | 0.042 | 489 | ? |
| AgLA | 0.088 | 0.049 | 357 | ? |
| SnLA | 0.000 | 0.000 | 1262 | N |
| SbLA | 0.339 | 0.129 | 991 | ? |
| AuLA | 0.000 | 0.000 | 1389 | N |

**PN-081**

| Element | Conc % | Err | LOD (PPM) | |
|---|---|---|---|---|
| FeK | 0.001 | 0.008 | 172 | N |
| CoK | 0.000 | 0.000 | 292 | N |
| NiK | 0.020 | 0.033 | 575 | ? |
| CuK | 98.171 | 0.206 | 489 | Y |
| ZnK | 0.000 | 0.000 | 5480 | N |
| AsK | 1.432 | 0.069 | 401 | Y |
| SeK | 0.028 | 0.041 | 358 | ? |
| AgLA | 0.041 | 0.027 | 278 | ? |
| SnLA | 0.100 | 0.028 | 387 | ? |
| SbLA | 0.222 | 0.050 | 524 | Y |
| AuLA | 0.000 | 0.000 | 1292 | N |

**PN-150**

| Element | Conc % | Err | LOD (PPM) | |
|---|---|---|---|---|
| FeK | 0.026 | 0.008 | 167 | ? |
| CoK | 0.000 | 0.000 | 308 | N |
| NiK | 0.000 | 0.000 | 949 | N |
| CuK | 95.487 | 0.181 | 636 | Y |
| ZnK | 0.000 | 0.000 | 5378 | N |
| AsK | 4.079 | 0.090 | 302 | Y |
| SeK | 0.053 | 0.046 | 459 | ? |
| AgLA | 0.076 | 0.034 | 280 | ? |
| SnLA | 0.000 | 0.000 | 1040 | N |
| SbLA | 0.271 | 0.090 | 1171 | ? |
| AuLA | 0.000 | 0.000 | 1554 | N |

**PN-301**

| Element | Conc % | Err | LOD (PPM) | |
|---|---|---|---|---|
| FeK | 0.083 | 0.007 | 85 | Y |
| CoK | 0.008 | 0.005 | 65 | ? |
| NiK | 0.000 | 0.000 | 235 | N |
| CuK | 97.388 | 0.402 | 216 | Y |
| ZnK | 0.264 | 0.110 | 612 | ? |
| AsK | 1.525 | 0.108 | 1127 | Y |
| SeK | 0.054 | 0.042 | 577 | ? |
| AgLA | 0.000 | 0.000 | 552529 | N |
| SbLA | 0.000 | 0.000 | 643360 | N |
| AuLA | 0.547 | 0.156 | 2203 | ? |

zakovica/rivet

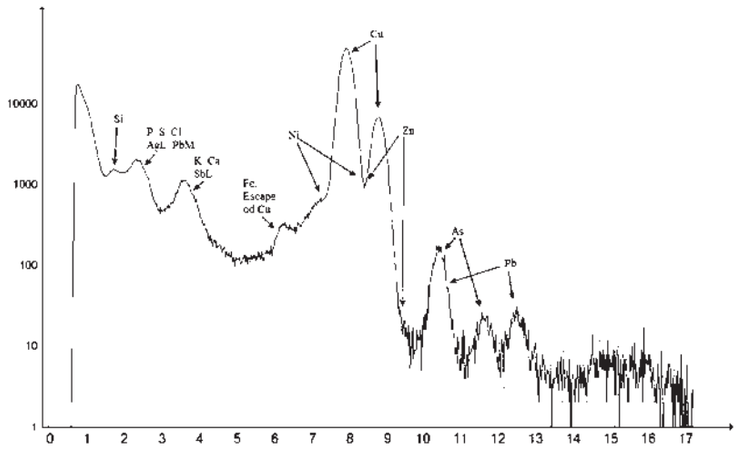
**PN-301**

| Element | Conc % | Err | LOD (PPM) | |
|---|---|---|---|---|
| FeK | 0.052 | 0.007 | 92 | Y |
| CoK | 0.010 | 0.005 | 66 | ? |
| NiK | 0.000 | 0.000 | 251 | N |
| CuK | 98.294 | 0.413 | 114 | Y |
| ZnK | 0.000 | 0.000 | 1109 | N |
| AsK | 1.136 | 0.096 | 1217 | Y |
| SeK | 0.008 | 0.035 | 606 | N |
| AgLA | 0.000 | 0.000 | 596737 | N |
| SbLA | 0.000 | 0.000 | 694662 | N |
| AuLA | 0.291 | 0.153 | 2246 | ? |

oštrica/blade

**PN-22**

| Element | Conc % | Err | LOD (PPM) | |
|---|---|---|---|---|
| FeK | 0.039 | 0.007 | 125 | ? |
| CoK | 0.000 | 0.000 | 217 | N |
| NiK | 0.054 | 0.026 | 468 | ? |
| CuK | 95.412 | 0.124 | 386 | Y |
| ZnK | 0.267 | 0.066 | 3075 | ? |
| AsK | 1.447 | 0.053 | 694 | Y |
| SeK | 0.035 | 0.026 | 281 | ? |
| AgLA | 0.109 | 0.033 | 272 | Y |
| SnLA | 0.000 | 0.000 | 947 | N |
| SbLA | 1.263 | 0.082 | 308 | Y |
| AuLA | 0.000 | 0.000 | 962 | N |
| PbLA | 1.369 | 0.148 | 4449 | ? |




**Sl. 7.1** Spektar uzorka PN-22

**Fig. 7.1.** Spectrum of sample PN-22

**Sl. 7.2** Pogled na nalazište, snimano sa zapada

**Fig. 7.2** View of the site from the west

# Biljni ostaci: preliminarno izvješće

*Kelly Reed*

Iz jama kostolačke kulture na nalazištu Franjevac prikupljeno je ukupno 29 uzoraka. Za svaki uzorak sakupljeno je 11 litara sedimenta, što je zatim obrađeno u stroju za flotaciju. Sadržaj flotacije sakupljen je u situ promjera 1 mm, a za preostatak je korišteno sito promjera 1 cm. Zrna žitarica i ostale sjemenke identificirane su uz povećanje različitog stupnja, između x4 i x40. Pri identifikaciji poslužila je suvremena referentna zbirka Sveučilišta u Leicesteru. Nagoreni biljni ostaci ustanovljeni su u ukupno 26 uzoraka.

Tab. 8.1 i 8.2 prikazuju ukupan broj biljnih ostataka s nalazišta te njihovu postotnu prisutnost s obzirom na ukupan broj uzoraka. Među nalazima prevladava jednozrna pšenica – einkorn (*Triticum monococcum*), a potom slijede u manjim količinama ječam (*Hordeum vulgare*), dvozrna pšenica – emmer (*Triticum*



# Plant macro-remains: preliminary report

*Kelly Reed*

29 samples were collected from Kostolac culture pits at Franjevac. 11 litres of soil was collected for each sample and processed using a flotation machine. The flot was collected in a 1mm mesh and a 1cm mesh was used for the residue. Cereal grains and other seeds were identified at variable magnifications of between ×4 and ×40. Identification was by reference to the modern reference collection at Leicester University. 26 of the samples contained carbonised plant macro-remains.

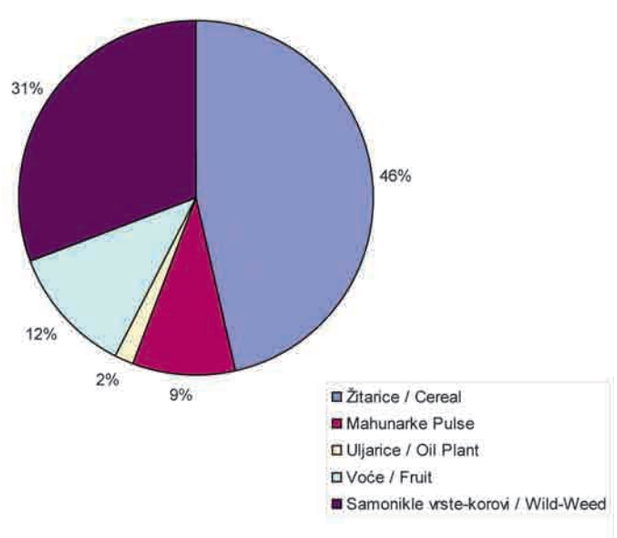
Tab. 8.1 and 8.2 show the total number of plant items present from the site and their ubiquity. The predominant crop identified was einkorn (*Triticum monococcum*), followed in smaller quantities by barley (*Hordeum vulgare*), emmer (*Triticum dicoccum*), broomcorn millet (*Panicum miliaceum*) and free-threshing wheat (*Triticum aestivum/durum*). These made up 46% of the plant remains identified


Dvozrna pšenica / Emmer (Triticum dicoccum), SJ 659, U-915


Jednozrna pšenica / Einkorn (Triticum monococcum), SJ 659, U-915


Grašak / Pea (Pisum sativum), SJ 705, U-291


Kupina / Blackberry (Rubus fruticosus), SJ 19, U-31




**Graf. 8.1** Postotni omjer biljnih ostataka na nalazištu Franjevac (žitarice – 46%; samonikle vrste/korovi – 31%; voće – 12%; uljarice – 2%; mahunarke – 9%

**Chart 8.1** Percentage presence of Plant remains at Franjevac

**Tab. 8.1** Kultivirane vrste: Ukupan broj pojedinih ostataka te postotna prisutnost unutar sakupljenih uzoraka na nalazištu Franjevac

**Tab. 8.1** Domestic Crops: Total number of plant items and ubiquity from Franjevac

| **Broj uzoraka / No. samples** | **29** | |
|---|---|---|
| **Količina uzorka (litre) / Sample vol. (litres)** | **286** | |
| **Prosječna gustoća biljnih ostataka (litra) / Average plant density per litre** | **1.45** | |
| | **Ukupan broj nalaza / Total no. items** | **Postotna prisutnost / Ubiquity (%)** |
| ZRNA ŽITARICA / GRAIN | | |
| *Hordeum vulgare* L. | 4 | 10.3 |
| *Triticum dicoccum* L. | 4 | 10.3 |
| *Triticum monococcum* L. | 35 | 44.8 |
| *Triticum mono/dicoc* | 10 | 17.2 |
| *Triticum aestivum/durum* | 1 | 3.4 |
| *Triticum* spp. | 22 | 24.1 |
| *Panicum miliaceum* L. | 4 | 10.3 |
| **Ukupno / Total** | **80** | **62.1** |
| Cerealia indet. | 253 | 89.7 |
| PLJEVA / CHAFF | | |
| *Triticum monococcum* račve klasića / spikelet fork | 6 | 6.9 |
| *T. mono/dicoc* baza pljeve / glume base | 3 | 6.9 |
| *Triticum* ssp. baza pljeve / glume base | 1 | 3.4 |
| **Ukupno / Total** | **10** | **17.2** |
| MAHUNARKE / PULSES | | |
| *Lathyrus sativus* L. | 1 | 3.45 |
| *Lens culinaris* L. | 2 | 3.45 |
| *Pisum sativum* L. | 11 | 17.2 |
| Krupne mahunarke neodred. / Large legumes indet. | 5 | 10.3 |
| **Ukupno / Total** | **19** | **24.1** |
| ULJARICE / OIL PLANTS | | |
| *Linum* cf. *usitatissimum* | 3 | 10.3 |
| **Ukupno / Total** | **3** | **10.3** |

**Tab. 8.2** Samonikle vrste: Ukupan broj pojedinih biljnih ostataka te postotna prisutnost unutar sakupljenih uzoraka na nalazištu Franjevac

**Tab. 8.2** Wild Plants: Total number of plant items and ubiquity from Franjevac

| **Broj uzoraka / No. samples** | **29** | |
|---|---|---|
| **Količina uzorka (litre) / Sample vol. (litres)** | **286** | |
| **Prosječna gustoća biljnih ostataka/litra / Average plant density per litre** | **1.45** | |
| | **Ukupan broj nalaza / Total no. items** | **Postotna prisutnost / Ubiquity (%)** |
| VOĆE / FRUITS | | |
| *Cornus mas* L. | 4 | 10.3 |
| *Physalis alkekengi* L. | 8 | 20.7 |
| *Rubus fruticosus* L. | 2 | 6.9 |
| *Rubus* sp. | 1 | 3.4 |
| *Sambucus* sp. | 2 | 6.9 |
| neodređena koštica voća / Indet fruit stone | 3 | 6.9 |
| **Ukupno / Total** | **20** | **48.3** |
| KOROV / WEEDS | | |
| *Agrostemma githago* L. | 3 | 3.45 |
| cf. *Carpinus betulus* | 1 | 3.4 |
| *Silene* sp. | 1 | 3.4 |
| *Chenopodium* sp. | 2 | 6.9 |
| *Galium* sp. | 4 | 6.9 |
| Gramineae | 6 | 17.2 |
| *Bromus* sp. | 17 | 20.7 |
| *Lolium* sp. | 1 | 3.4 |
| Panicaceae | 2 | 3.4 |
| *Phleum* sp. | 1 | 3.4 |
| *Rumex/Polygonum* sp. | 6 | 13.8 |
| *Polygonum* sp. | 4 | 13.8 |
| sitnozrne mahunarke / small seeded legumes | 3 | 6.9 |
| *Solanaceae* | 1 | 3.4 |
| *Teucrium* sp. | 1 | 3.4 |
| **Ukupno / Total** | **53** | **48.3** |
| Neodređeno / Indeterminate | 555 | 89.7 |

*dicoccum*), proso (*Panicum miliaceum*) te tvrda pšenica (*Triticum aestivum/durum*). Ovi nalazi čine 46% biljnih ostataka ustanovljenih na ovom nalazištu (graf. 8.1). Pšenična pljeva je rijetka, a slaba očuvanost omogućila je tek okvirnu naznaku prisutnosti sjemena lana (*Linum usitatissimum*). Od grahorica je ustanovljeno tek nekoliko zrna graška (*Pisum sativum*), sjetvene grahorike ili sjetvene kukavičice (*Lathyrus sativus*) te leće (*Lens culinaris*), u ukupno pet uzoraka.

S nalazišta potječe i nekoliko ostataka voća, uključujući drijen (*Cornus mas*), kupinu (*Rubus fruticosus*), crnu bazgu (*Sambucus* sp.) te mjehuricu (*Physalis alkekengi*). Vrste samoniklog bilja i korova uključuju i više trava (*Bromus* sp., *Lolium* sp. i *Phleum* sp.) te dvornika (*Polygonum* sp.). Očuvanost ostataka na nalazištu je razmjerno slaba s velikim brojem neodredivih i neodređenih biljnih ostataka.

Prisutnost kako kultiviranih tako i samoniklih biljnih vrsta u kostolačkim slojevima ukazuje na to da su i ratarstvo i sakupljanje plodova igrali važnu ulogu u prehrani žitelja nalazišta. S obzirom na ustanovljene žitarice može se pretpostaviti da je einkorn bio prevladavajuća kultura. Prikupljeni biljni ostaci iz jama ukazuju na više izvora i aktivnosti, uključujući naseobinske ostatke i ostatke pri obradbi žitarica.

from the site (Graph 8.1). The presence of glume wheat chaff was rare and poor preservation only allowed a tentative identification of linseed (*Linum usitatissimum*) to be made. Of the pulses only a few seeds of, pea (*Pisum sativum*), grasspea (*Lathyrus sativus*), and lentil (*Lens culinaris*) were identified from five of the samples.

Remains of fruits were also found at the site including cornelian cherry (*Cornus mas*), blackberry (*Rubus fruticosus*), elderberry (*Sambucus* sp.) and winter cherry (*Physalis alkekengi*). Wild/weed species included a number of grasses (*Bromus* sp., *Lolium* sp. and *Phleum* sp.) and Docks (*Polygonum* sp.). Preservation was relatively poor at the site with large number of unidentifiable cereal and Indeterminate plant remains.

The presence of both cultivated and wild plant remains from the Kostolac levels suggest that both agriculture and gathering were important subsistence economies for the site. From the cereals identified it may be surmised that the predominant crop grown at the site was einkorn. The recovery of the plant remains from pit contexts may suggest a number of sources and activities including settlement debris or crop processing waste.

# Osteološka analiza životinjskih ostataka

*Zdravka Hincak, Damir Mihelić*

Osteološkom analizom obuhvaćeno je 5427 uzoraka, od toga 4189 koštanih (77,2%) i 1238 dentalnih (22,8%) animalnih ostataka. Stupanj očuvanosti materijala je srednji do nizak. Fragmentirani uzorci obuhvaćaju 92,04% (4996 uzoraka), dok je u potpunosti očuvanih tek 7,96% (431 uzorak). Istraživani uzorci potječu iz pretpovijesnog i srednjovjekovnog sloja nalazišta Franjevac u Đakovu. [1]

Metode analize obuhvaćaju morfološke i morfometrijske metode[2] odredbe vrste, spola i starosti životinje.[3] Visina životinje u hrptu određena je prema očuvanim kostima pešća i stopalnim kostima za obično govedo (*Bos taurus, L.*) prema Calkinu. Također su analizirane patološke promjene na kostima.[4]

## Pretpovijesni sloj, kostolačka kultura

Pretpovijesni sloj obuhvaća 4457 uzoraka, od čega koštani udio obuhvaća visokih 3383 uzoraka (75,9%), a dentalni 1074 uzoraka (24,1%).

Osteološki i dentalni materijal podijeljen je u šezdeset sedam stratigrafskih jedinica. Deset najbrojnijih stratigrafskih jedinica obuhvaćaju čak 64,64% uzoraka (graf 9.1), dok je ostatak od 35,36% prikazan pod nazivom »Ostalo«. Najviši postotak zastupljenosti osteološkog materijala pokazuje SJ 160 sa 768 uzoraka (17,23%), a slijede SJ 940 s 317 uzoraka (7,11%) te SJ 945 s 294 uzoraka (6,6%). Nešto slabije su zastupljene SJ 572 s 242 uzorka (5,43%), SJ 43 s 236 uzoraka (5,3%) te SJ 265 s 224 uzoraka (5,03%). Ispod pet posto vrijednosti ističu se SJ 469 s 219 uzoraka (4,91%), SJ 864 s 213 uzoraka (4,78%), SJ 659 sa 190 uzoraka (4,26%) te SJ 271 sa 178 uzoraka (3,99%).

[1] Ispitivani uzorci obrađeni su pomoću programa ARHZOO za statističke analize osteoloških uzoraka animalnog podrijetla, informatičke tvrtke »Prospero« iz Rijeke. Fotografije su snimljene fotografskim aparatom Olympus 5050-Zoom.

[2] Von den Driesch 1976.

[3] Dyce et al. 2009; France 2009; Hillson 1992; Nickel et al. 1986; Schmidt 1972.

[4] Folpe et al. 2009.

# Osteological analysis of the faunal remains

*Zdravka Hincak, Damir Mihelić*

The osteological analysis included 5427 samples, out of which there were 4189 bone samples (77.2%) and 1238 dental animal remains (22.8%). The degree of preservation of the material was moderate to low. Fragmented samples make up 92.04% (4996 samples), while only 7.96% (431 samples) are completely preserved. The analysed samples come from the prehistoric and mediaeval horizons of the Franjevac site in Đakovo.[1]

The methodology consisted in morphological and morphometric methods[2] of determining species, sex and age of animals.[3] Animal height at the withers was determined by the preserved carpal and tarsal bones of cattle (*Bos taurus, L.*) according to Calkin. Pathological changes on the bones were also analysed.[4]

## Prehistoric horizon, the Kostolac culture

The prehistoric horizon comprises a total of 4457 samples, 3383 of which are bones (75.9%), while 1074 are dental samples (24.1%).

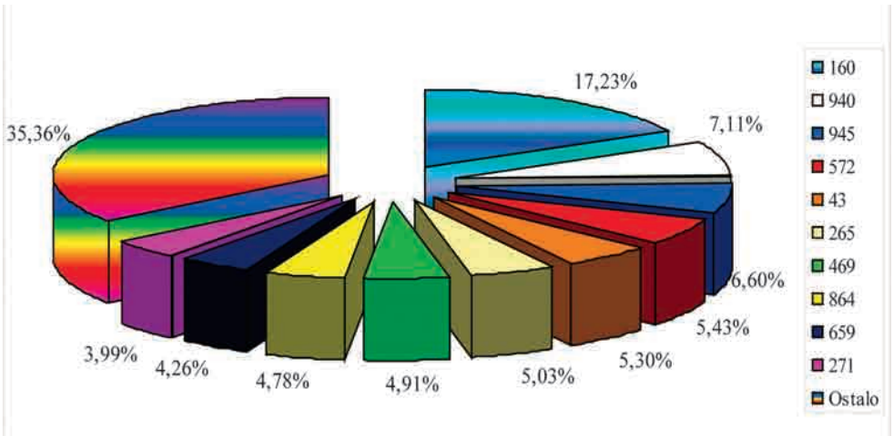
The osteological and dental assemblage comes from sixty-seven contexts. The top ten contexts by abundance account for as much as 64.64% of samples (chart 9.1), while the remaining 35.36% are shown under the heading »Ostalo« (»*Other samples*«). The highest proportion of osteological material is found in context SJ 160 with 768 samples (17.23%), followed by SJ 940 with 317 samples (7.11%) and SJ 945 with 294 samples (6.6%). Somewhat lower proportions are found in context SJ 572 with 242 samples (5.43%), SJ 43 with 236 samples (5.3%) and SJ 265 with 224 samples (5.03%). Contexts with less than five percents include SJ 469 with 219 samples (4.91%), SJ 864 with 213 samples (4.78%), SJ 659 with 190 samples (4.26%) and SJ 271 with 178 samples (3.99%).

[1] The analysed samples were processed in the program ARHZOO for statystical analyses of osteological samples or animal origin, developed by the Prospero IT Company from Rijeka. The photographs were taken with an Olympus 5050-Zoom camera.

[2] Von den Driesch 1976.

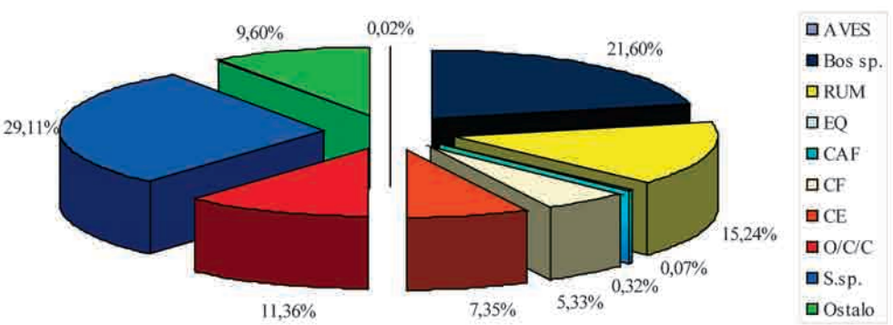
[3] Dyce et al. 2009; France 2009; Hillson 1992; Nickel et al. 1986; Schmidt 1972.

[4] Folpe et al. 2009.




**Legenda na desnoj strani grafa 1. prikazuje nazive stratigrafskih jedinica (SJ)**
Legend on the right of the chart lists context numbers (SJ)

**Graf 9.1** Prikaz osteološkog udjela najbrojnijih stratigrafskih jedinica na nalazištu Franjevac (Đakovo)
**Chart 9.1** Percentage of osteological samples in the most abundant contexts at the site of Franjevac (Đakovo)




**Legenda: Aves – ptice, Bos sp. – govedo (*Bos*), RUM – veliki preživači (*Ruminantia*), EC – *Equus caballus, L.*), CAF – dabar (*Castor fiber*), CF – pas (*Canis familiaris*), CE – jelen (*Cervus elaphus, L.*), O/C/C – ovca, koza, srna (*Ovis aries* L., *Capra hircus* L., *Capreolus capreolus L.*), S.sp. – svinja (*Sus*)**

Legend: Aves – birds, Bos sp. – cattle (*Bos*), RUM – large ruminants (*Ruminantia*), EC – *Equus caballus, L.*), CAF – beaver (*Castor fiber*), CF – dog (*Canis familiaris*), CE – red deer (*Cervus elaphus, L.*), O/C/C – sheep, goat, roe deer (*Ovis aries* L., *Capra hircus* L., *Capreolus capreolus L.*), S.sp. – pig (*Sus*)

**Graf 9.2** Zastupljenost ispitivanih životinjskih vrsta (koštani i zubni ulomci) na nalazištu Franjevac (Đakovo)
**Chart 9.2** Frequency of analysed animal species (bone and dental remains) at Franjevac (Đakovo)



Rezultati postotne zastupljenosti pojedinih životinjskih vrsta pretpovijesnog sloja na nalazištu prikazan je u grafu 9.2. Najbrojnija skupina su svinje (*Sus*) s 33,76% (sl. 9.6). Unutar toga postotka smještene su vrijednosti za divlju i domaću vrstu. Najveći dio postotne vrijednosti odnosi se na uzorke svinje za koje nije bilo moguće odrediti točnu vrstu i koji su vjerojatno ipak u najvećem postotku pripadali divljoj vrsti (*Sus scrofa ferus, L.*) s 84% (sl. 9.9). Ostaci domaćeg oblika svinja (*Sus scrofa domestica, L.*) su prisutni s 14,9%. Divlji oblici (*Sus scrofa ferus, L.*) obuhvaćaju niskih 1,1% uzoraka i gotovo svi pripadaju muškim jedinkama (vepar).

Chart 9.2 shows the percentages of individual animal species from the prehistoric horizon at Franjevac. Pigs (*Sus*) are the dominant group with 33.76% (Fig. 9.6). This figure accounts for both wild and domestic species. Although in the large majority of cases0 – 84% – it was impossible to ascertain to which of the two species a sample belongs, in all probability these indeterminate samples belong to the wild species (*Sus scrofa ferus, L.*) (Fig. 9.9). The remains of the domestic type of pig (*Sus scrofa domestica, L.*) are present with 14.9%. The wild forms (*Sus scrofa ferus, L.*) account for low 1.1% of samples and almost all belong to males (boars).

**Sl. 9.1** Desna strana donje čeljusti (mandibula) običnog goveda (Bos taurus, L.) starosne dobi približno tri i pol godine, SJ 51, kv. b 44, b 45, U-166

**Fig. 9.1** Right part of the lower jaw (mandibula) of domestic cattle (Bos taurus, L.) approximately three and a half years of age, SJ 51, kv. b 44, b 45, U-166

Skupina goveda (*Bos*) nalazi se na drugom mjestu s 21,6%. Odjeljivanje uzoraka na divlje i domaće oblike za skupinu goveda bila je uspješnija. Fragmenti divljeg goveda (*Bos primigenius, Boj.*) zastupljeni su s 5,5%. Domaći oblici zastupljeni su sa 68,2% (sl. 1), dok fragmenti kojima nije bilo moguće točno odrediti vrstu predstavljaju 26,3% (*Bos sp.*). Visina postotka kod svih skupina bila bi znatno veća da je stupanj očuvanosti uzoraka bio bolji.

Snažnije fragmentirani ulomci velikih preživača (*Ruminantia*) obuhvaćaju 15,24%. Ovoj skupini pripadaju pragovedo (*Bos primigenius, Boj.*), jelen (*Cervus elaphus, L.*) i domaće govedo (*Bos taurus, L.*).

Sljedeću skupinu po brojnosti s 11,36% čine mali preživači – ovca, koza i srna (*Capra hircus L., Ovis aries L. Capreolus capreolus L.*). Unutar skupine ovakva podjela je određena za 97% uzoraka. Od navedenih vrsta određeni su ostaci koze (*Capra hircus, L.*) s 0,6% te ostaci ovce (*Ovis aries, L.*) ili koze (*Capra hircus, L*) s 2,4% (sl. 9.2).

Visoki postotak od 9,6% pripada skupini »Ostalo« gdje se nalaze najsitniji fragmenti. Nabrojimo sastav: za 273 ulomka nije moguće odrediti pripadnost (NN), 52 ulomka pripadaju skupini malih preživača ili svinje, 8 ulomaka pripadaju preživačima, svinji ili konju te po tri ulomka pripadaju preživačima ili svinji te svinji ili jelenu.

Jelen (*Cervus elaphus, L.*) je zastupljen sa 7,35%, a konj (*Equus caballus, L.*) s 0,07%. Malobrojni su nalazi drugih divljih životinja, poput dabra (*Castor fiber, L.*) s 0,32%.

Ulomci ptica (*Aves*) obuhvaćaju 0,02%. Koštani i dentalni ostaci psa (*Canis familiarsi, L.*) obuhvaćaju 5,33%.

Najmanji broj jedinki (MNI) u kostolačkom sloju iznosi dvadeset tri. Najbrojnije su jedinke svinje (*Sus sp.*), čiji je najmanji broj utvrđen prema očuvanosti desne strane donje čeljusti (*mandibula*) iznosio devet. Četiri jedinke običnog goveda (*Bos taurus, L.*) određene su prema očuvanosti proksimalnog dijela desne

The cattle group (*Bos*) holds the second place with 21.6%. In this group, the analysis resulted in a more successful distinction between the wild and domestic forms. Fragments of wild cattle (*Bos primigenius, Boj.*) are present with 5.5%. The domestic forms are present with 68.2% (Fig. 1), while indeterminate fragments account for 26.3% (*Bos sp.*). Percentages would have been higher in all the groups if the state of preservation of the samples had been better.

Considerably fragmented bone remains of large ruminants (*Ruminantia*) account for 15.24%. This group includes aurochs (*Bos primigenius, Boj.*), red deer (*Cervus elaphus, L.*) and domestic cattle (*Bos taurus, L.*).

The next most numerous group with 11.36% is made up of small ruminants – sheep, goat and roe deer (*Capra hircus L., Ovis aries L. Capreolus capreolus L.*). Within this group this designation was applied to 97% samples. The remaining samples were determined as the remains of goat (*Capra hircus, L.*) with 0.6%, and of sheep (*Ovis aries, L.*) or goat (*Capra hircus, L*) with 2.4% (Fig. 9.2).

A high 9.6% belong to the group »Ostalo« (»*Other samples*«), which includes the smallest fragments. The composition is as follows: 273 samples could not be attributed to any species (NN), 52 samples belong to the group of small ruminants or pigs, 8 samples belong to ruminants, pig or horse, three samples belong to ruminants or pigs, and another three samples belong to pigs or red deer.

Red deer (*Cervus elaphus, L.*) is present with 7.35%, and horse (*Equus caballus, L.*) with 0.07%. There are few samples belonging to other animals, e.g. beaver (*Castor fiber, L.*) with 0.32%.

Bird remains (*Aves*) account for 0.02%. Bone and dental remains of dog (*Canis familiaris, L.*) are present with 5.33%.

Minimum number of individuals (MNI) in the Kostolac horizon is twenty-three. The most common individuals are pigs (*Sus sp.*), whose minimum number, determined by the preserved right parts of the lower jaw (*mandibula*) was 9. Four individuals of domestic cattle (*Bos taurus, L.*) were determined by the preserved proximal



**Sl. 9.2** Fragment desne strane donje čeljusti (mandibula) ovce (Ovis aries, L.) ili koze (Capra hircus, L.) starosne dobi približno tri i pol godine, SJ 160

**Fig. 9.2** Fragment of the right part of the lower jaw (mandibula) of sheep (Ovis aries, L.) or goat (Capra hircus, L.) approximately three and a half years of age, SJ 160

palčane kosti (*radius*). Tri jedinke jelena (*Cervus elaphus, L.*) određene su prema proksimalnim fragmentima palčane kosti (*radius*). Dvije jedinke psa (*Canis familiaris, L.*) određene su prema očuvanosti najdistalnijeg dijela nadlaktične kosti (*humerus*). Po jedna jedinka je određena za pragovedo (*Bos primigenius Boj*.) prema zastupljenosti petne kosti (*calcaneus*), kozu (*Capra hircus, L.*) prema očuvanoj lijevoj nadlaktici (*humerus*), konja (*Equus caballus, L.*) prema očuvanoj kosti pešća (*metacarpus*), ovcu (*Ovis aries, L.*) prema desnoj strani donje čeljusti (*mandibula*) te pticu (*Aves*) prema fragmentu kralješka.

Iako je fragmentiranost uzoraka prilično visoka, bilo je moguće odijeliti uzorke mladih od odraslih, starijih uzoraka (sl. 9.5). Mladi uzorci obuhvaćaju svega 5,6% i u visokom postotku predstavljaju ostatke domaćih životinja.

Analiza zastupljenosti ostataka domaćih i divljih životinjskih vrsta nije prikazala brojčano realno stanje na nalazištu zbog velikog postotka neodređenih uzoraka. Domaćim životinjama sigurno pripada 23,57% uzoraka, iako bi taj postotak trebao biti veći. Razlog ovakvom rezultatu je zasigurno izuzetno velik broj fragmentiranih koštanih i dentalnih uzoraka goveda i svinja.

Ostaci goveda (*Bos sp*.) predstavljaju većinom ostatke dugih kostiju. Zbog iskorištavanja koštane srži u prehrani, upravo su ti ostaci najviše uništeni. Očuvane su većinom dijafize dugih kostiju bez zglobnih dijelova epifiza. Stoga je bilo teže sa sigurnošću odrediti vrstu goveda (divlje, domaće) kojoj je uzorak pripadao.

Pokušaj odjeljivanja uzoraka svinje na divlju i domaću vrstu za materijal arheološke starosti uvijek zahtijeva posebnu pozornost. Osim fragmentiranosti uzoraka poseban je problem tip domaće svinje u arheološkim razdobljima. Razlikovanje domaćih i divljih oblika je za uzorke čeljusti ili lubanje, dugih kostiju kao i kostiju osovinskog skeleta još i moguće, no postaje nemoguće kad se odnosi na sitnije fragmente ostalih koštanih ili zubnih elemenata. Nadalje, razlike između oba oblika nisu znatne niti kad je riječ o većim ulomcima kostiju. Dobiveni prikaz omjera koji pokazuje veću zastupljenost domaćih od divljih oblika je točan, iako zbog velikog postotka neodređenih uzoraka nije precizan. Svi navedeni oblici svinja pokazuju veću sličnost s divljim oblicima, dok skraćivanje njuške još nije naglašeno.

Postotna zastupljenost pojedinih anatomskih elementa na nalazištu pokazuje značajni udio uzoraka kosti ekstremiteta (*ossa cingulum membri thoracici et pelvini*) s čak 46,53% (graf 9.3). Visoki postotak moguće je podijeliti na kosti prednje (*ossa cingulum membri thoracici)*, stražnje noge (*ossa cingulum membri pelvini*) te skupinu miješanih ulomaka ekstremiteta. Kosti prednje noge obuhvaćaju 17,4% uzoraka, a slijede kosti stražnjih nogu sa 16,7%. Čak 65,9% kostiju ekstremiteta čine članci prstiju, ali i sitniji fragmenti koje nije bilo moguće točnije odrediti i odijeliti u jednu od dviju navedenih skupina.

Uzorci prednjih nogu neznatno su zastupljenije od stražnjih. Najbrojniji su ulomci kosti nadlaktice (*humerus)* s 25,7%, fragmenti lopatice (*scapula*) s 23,46%, palčane kosti (*radius*) s 20,69% te kosti pešća (*ossa metacarpalia*) s 14,52%. Niske vrijednosti određene su za uzorke lakatne kosti (*ulna*) s 9,77% i kosti zapešća (*ossa carpi*) s 5,86%.

Kosti stražnje noge su zastupljene u tek nešto slabijem postotku, najbrojniji su fragmenti goljenice (*tibia*) s 26,74%, stopalne kosti (*ossa metatarsalia*) s 19,77% i natkoljenice (*femur*) s 15,69%. Fragmenti bočne kosti (*os coxae*) obuhvaćaju 14,53%.

parts of the right radius. Three individuals of red deer (*Cervus elaphus, L.*) were determined by the proximal fragments of the radius. Two individuals of dogs (*Canis familiaris, L.*) were determined by the preserved extreme distal part of the humerus. One individual was determined in the case of the following species: (*Bos primigenius Boj*.), by the presence of a calcaneus; goat (*Capra hircus, L.*) by the left humerus; horse (*Equus caballus, L.*) by a metacarpal bone; sheep (*Ovis aries, L.*) by the right part of the lower jaw (*mandibula*); and a bird (*Aves*) by a fragment of a vertebra.

Although the degree of fragmentation of the samples is fairly high, it was nevertheless possible to distinguish between the samples belonging to young and adult animals (Fig. 9.5). Young samples account for merely 5.6% and by and large belong to the remains of domestic animals.

A frequency analysis of the remains of domestic and wild animal species has not shown the realistic situation at the site due to the high percentage of indeterminate samples. Domestic animals are certainly present with 23.57%, although this percentage should in fact be higher. The reason for such a result certainly lies in the exceptionally high number of fragmented bone and dental samples of cattle and pigs.

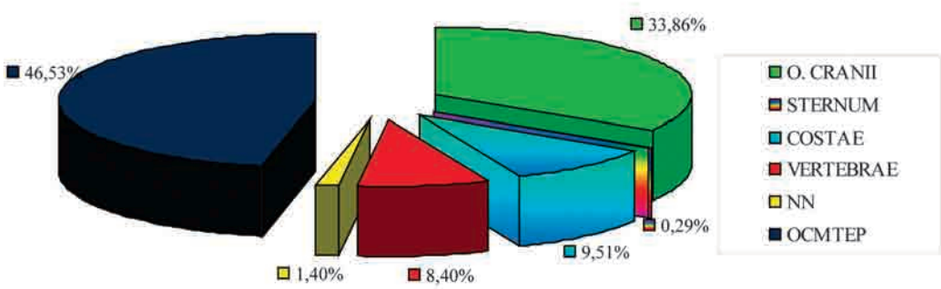
The remains of cattle (*Bos sp*.) mostly consist of the remains of long bones. Due to the extraction of bone marrow for food it is precisely these pieces that were most damaged. The diaphyses of long bones in general were preserved without epiphyseal joints. It was therefore difficult to ascertain the cattle species (wild, domestic) of a sample.

In any attempt to divide pig samples from an archaeological assemblage into the wild and domestic species the person conducting the analysis must be particularly careful. In addition to the fragmentation of samples, another problem is the type of domestic pig in various archaeological periods. Distinction between domestic and wild forms is possible in the case of jaw or skull samples, long bones and bones of the axial skeleton, but it is impossible when it comes to smaller fragments of the other bone or dental elements. Further, differences between the two forms are not significant even for larger bone fragments. The obtained figures showing that the proportion of domestic forms exceeds that of the wild ones is correct, although due to the high percentage of indeterminate samples it is not accurate. All the mentioned pig forms exhibit closer similarity with the wild forms, while the shortening of the snout is still not prominent.

The percentage of individual anatomical elements at the site shows a substantial proportion of samples of limb bones (*ossa cingulum membri thoracici et pelvini*) with as much as 46.53% (chart 9.3). This high percentage can be divided into the bones of the fore limb (*ossa cingulum membri thoracici*), hind limb (*ossa cingulum membri pelvini*) and a group of mixed samples of limb bones. Fore limb bones account for 17.4% samples, followed with hind limb bones with 16.7%. As much as 65.9% of limb bones consist of phalanges, but also of smaller fragments that could not be accurately determined and classified into either of the two groups.

Samples of fore limb bones are only slightly more numerous than those of hind limb bones. The most common fragments belong to the humerus, with 25.7%, followed by the scapula with 23.46%, radius with 20.69% and metacarpal bones with 14.52%. Low figures were recorded for the ulna (9.77%) and carpal bones (5.86%).

The percentage of hind-leg bones is only slightly lower. The most common fragments are those of the tibia with 26.74%, metatarsal




**Legenda: O.CRANII – kosti glave (*ossa cranii*), STERNUM – prsna kost, COSTAE – rebra, VERTEBRAE – kralješci, NN – neodređeno, OCMTEP – kosti prednjih i stražnjih ekstremiteta (*ossa cinguli membri thoracici et pelvini*)**

Legend: O.CRANII – head bones (*ossa cranii*), STERNUM – breastbone, COSTAE – ribs, VERTEBRAE, NN – indeterminate, OCMTEP – fore and hind limb bones (*ossa cinguli membri thoracici et pelvini*)

**Graf 9.3** Postotna zastupljenost pojedinih anatomskih elemenata na nalazištu
**Chart 9.3** Proportion of individual anatomical elements at the site



Razlog ovako visokom postotku jest znatna fragmentiranost plosnatih dijelova kosti, posebice crijevne kosti (*ilium*). Zastopalne kosti (*ossa tarsalia*) su obilno zastupljene s 20,34%, od čega čak 9,3% pripada ulomcima petne kosti (*calcaneus*), dok zastupljenost gležanjske kosti (*talus*) iznosi 6,39%. U gotovo sporadične nalaze uvrštavamo u potpunosti očuvane ivere (*patella*) s 1,16% i lisne kosti (*fibula*) s 1,74%.

Najveći postotak ulomaka ekstremiteta obuhvaća treća skupina vrlo fragmentiranih uzoraka s učestalošću od 65,9%. Unutar skupine izdvajaju se fragmenti dijafiza dugih kostiju (*ossa longa*) s 52,94%. Ostali ulomci predstavljaju miješane ostatke dugih i plosnatih kostiju (*ossa longa et plana*) s 24%, ulomke plosnatih kostiju (*ossa plana*) s 13,7%, članke prstiju (*phalanges*) sa 6,26% te miješane, sitne fragmente kostiju pesti (*ossa metacarpalia*) i stopalnih kostiju (*ossa metacarpalia*) s 3,1%.

Slijede kosti glave (*ossa cranii*) s 33,86%. Najveći postotak unutar skupine obuhvaćaju ostaci zuba (*dentes*) sa 71,5%. Ulomci kostiju glave (*ossa cranii*) predstavljaju 10,5% ulomaka, kao i ostaci donje čeljusti (*mandibula*). Gornja čeljust (*maxilla*) je slabije zastupljena s 4,3%, kao i ostaci rogova (*cornua*) s 3,2%. Treba napomenuti kako je visoki postotak kostiju glave prvenstveno posljedica visokog udjela zuba u materijalu.

Fragmenti rebara (*costae*) u cjelokupnom su uzorku zastupljeni s 9,51%, dok kralješci (*vertebrae*) zauzimaju 8,4%. Sporadični su nalazi ulomaka prsne kosti (*sternum*) s 0,26%. Prema pripadnosti pojedinom anatomskom elementu nije identificirano svega 1,4% uzoraka.

Visoka zastupljenost kostiju ekstremiteta (*ossa cingulum membri thoracici et pelvini*) s 46,53% te udio rebara (*costae*) s 9,51% i kralježaka (*vertebrae*) s 8,40% ukazuje da uzorci predstavljaju ostatke prehrane (graf 9.3).

Tjelesna visina određena je prema najvećoj dužini kosti pesti i stopalne kosti (*metatarsus*) goveda (*Bos taurus, L.*). Visina jedinke u hrptu iznosila je 1224mm, odnosno 1394mm. Brojni ostaci stopalnih kostiju (*metatarsus*) i kosti pešća (*metacarpus*)

bones with 19.77% and femur with 15.69%. Fragments of the hip bone account for 14.53%. Such a high proportion is due to the considerable fragmentation of the flat parts of the bone, ilium in particular. Tarsal bones abound, with 20.34%, of which 9.3% belongs to the calcaneus, while talus is represented with 6.39%. Kneecaps (*patella*) and fibulae, both almost completely preserved, are present only sporadically, with 1.16% and 1.74% respectively.

The largest percentage of limb-bone fragments is made up of the third group of very fragmented samples, accounting for 65.9%. Fragments of diaphyses of long bones (*ossa longa*) stand out in this group with 52.94%. The remaining fragments are mixed remains of long and flat bones (*ossa longa et plana*) with 24%, fragments of flat bones (*ossa plana*) with 13.7%, phalanges with 6.26% and mixed small fragments of metacarpal (*ossa metacarpalia*) and metatarsal bones (*ossa metacarpalia*) with 3.1%.

This is followed by head bones (*ossa cranii*) with 33.86%. The greatest proportion within this group consists of dental remains (*dentes*) with 71.5%. Fragments of head bones (*ossa cranii*) account for 10.5%, same as the remains of the lower jaw (*mandibula*). The upper jaw (*maxilla*) is less common with 4.3%, as well as the remains of horns (*cornua*) with 3.2%. It should be pointed out that the high percentage of head bones is primarily a result of the high proportion of teeth in the assemblage.

Fragments of ribs (*costae*) account for 9.51% of the total sample, while vertebrae make up 8.4%. Fragments of the breastbone (*sternum*) are sporadic, with 0.26%. Only 1.4% of samples could not be attributed to individual anatomical elements.

The high proportion of limb bones (*ossa cingulum membri thoracici et pelvini*) with 46.53% and the proportion of ribs (*costae*) with 9.51% and vertebrae with 8.40% indicates that the samples can be interpreted as food remains (chart 9.3).

Body height was determined by the greatest length of metacarpal and metatarsal bones of cattle (*Bos taurus, L.*). The height of individual animals at withers was 1224 mm, that is, 1394 mm. Numerous remains of metatarsal and metacarpal bones allowed us to de-

omogućili su odredbu visine za četrnaest uzoraka običnog goveda (*Bos taurus, L.*) prema koeficijentima za fragmentirane uzorke. Visina jedinki u hrptu nalazila se u rasponu od 1107 mm do 1509 mm, no treba uzeti u obzir da je veći dio vrijednosti u rasponu od 1200–1390 mm.

Dva u potpunosti očuvana uzorka natkoljenice (*femur*) i goljenice (*tibia*) psa (*Canis familiaris, L.*) omogućila su odredbu visine životinje u hrptu. Raspon pokriva vrijednosti od 408–451 mm.

## Patologija

Na očuvanoj distalnoj trećini stražnje i postrane površine (*facies caudalis et lateralis*) desne palčane kosti (*radius*) mladog goveda (*Bos taurus, L.*) opažaju se promjene u obliku slojevitog mrežastog sloja sivkaste boje koji se drži za temeljnu kost (sl. 9.3 i 9.4 ). Promjena je posljedica upale pokosnice (*periost*), a uzrok može biti aseptičke naravi, primjerice udarac, ili posljedica djelovanja mikroorganizama nakon uboda ili ugriza.

Dijagnoza: *aktivni periostitis*

Spaljene ili nagorene kosti predstavljene su s vrlo niskim udjelom, tek je dvanaest uzoraka nagoreno. Boja nagorenog uzorka kreće se od tamno sive do crne boje i upućuje na temperature do 250°C (SJ 43, SJ 160, SJ 355, SJ 561). Spaljenih je uzoraka znatno manje, njihova se boja nalazi u rasponu od svijetlo sive do bijele, ponekad sa »sendvič« uzorkom (SJ 160). Potonji otkriva djelovanje vrlo visokih temperatura na uzorak, no trajanje je bilo ograničeno i nedovoljno da se u potpunosti djeluje na cijeli uzorak. Vanjski dijelovi čvrste tvari (*substantia compacta*) pokazuju svijetlo sivu do bijelu boju, dok unutrašnji slojevi ostaju tamno sivi do crni. Najviša temperatura morala je dosizati 700°C. Ova-

termine height for fourteen samples of domestic cattle (*Bos taurus, L.*) according to the coefficients for fragmented samples. Individual height at withers ranged between 1107 mm and 1509 mm, but it should be noted that most values cluster between 1200-1390 mm.

Two completely preserved samples of the femur and tibia of a dog (*Canis familiaris, L.*) made it possible to determine the animal's height at withers. The range covers values between 408-451 mm.

## Pathology

On the preserved distal third of the back and lateral surface (*facies caudalis et lateralis*) of the right radius of a young cattle (*Bos taurus, L.*) there are visible changes in the form of a stratified reticulate layer of greyish colour attached to the basic bone (Fig. 9.3 and 9.4). This change is a consequence of the inflammation of the periosteum, and can be due to an aseptic cause, e.g. a blow, or due to microorganisms following a sting or bite.

Diagnosis: *active periostitis*

The proportion of completely or partially burnt bones is very low, with only twelve partially burnt samples. The colour of the burnt samples varies from dark grey to black and points to temperatures up to 250°C (SJ 43, SJ 160, SJ 355, SJ 561). The number of completely burnt samples is far smaller, their colour ranges from light grey to white, sometimes with a »sandwich« pattern (SJ 160). Such a pattern reveals that samples were exposed to very high temperature, but with limited duration, insufficient to affect the entire sample. The colour of the outer parts of the compact matter (*substantia compacta*) is light grey to white, while the interior layers remained dark grey to black. The temperature must have reached 700°C at the most. Burning of this magnitude generally appears in anatom-



**Sl. 9.3** Distalna trećina desne palčane kosti (radius) goveda (Bos taurus, L.) s vidljivim patološkim promjenama na površini kosti (aktivni periostitis), SJ 43, kv. f-51, U-567/2

**Fig. 9.3** Distal third of the right radius of cattle (Bos taurus, L.) with visible pathological changes on the surface of the bone (active periostitis), SJ 43, kv. f-51, U-567/2

**Sl. 9.4** Detalj: aktivni periostitis na površini desne palčane kosti (radius), goveda (Bos taurus, L.), SJ 43, kv. f-51, U-567/2

**Fig. 9.4** Detail: active periostitis on the surface of the right radius of cattle (Bos taurus, L.), SJ 43, kv. f-51, U-567/2

**Sl. 9.5** Zapešćajna kost (metacarpus) goveda (Bos taurus, L.) starosne dobi do dvije i pol godine, SJ 43, kv. f-51, U-581

**Fig. 9.5** Metacarpal bone of cattle (Bos taurus, L.) up to two and a half years of age, SJ 43, kv. f-51, U-581

**Sl. 9.6** Fragment lijeve gornje čeljusti (maxilla) svinje (Sus scrofa sp.) starosne dobi 6–7 godina, SJ 43, kv. f-51, U-551/1

**Fig. 9.6** Fragment of the left upper jaw (maxilla) of a pig (Sus scrofa sp.) aged 6–7 years, SJ 43, kv. f-51, U-551/1



**Sl. 9.7** Alatka-spatula od fragmenta dijafize goljenice (tibia) goveda (Bos taurus, L.), SJ 43, kv. f-51, U-542/2

**Fig. 9.7** Tool-spatula made from a fragment of the diaphysis of the tibia of cattle (Bos taurus, L.), SJ 43, kv. f-51, U-542/2

**Sl. 9.8** Alatka od jelenjeg roga (Cervus elaphus, L.), SJ 43, kv. f-51, U-551/1
**Fig. 9.8** Tool made from the horn of a red deer (Cervus elaphus, L.), SJ 43, kv. f-51, U-551/1

**SI. 9.9** Distalna trećina lijeve nadlaktične kosti (humerus) divlje svinje (Sus scrofa ferus, L.), SJ 160

**Fig. 9.9** Distal third of the left humerus of a wild pig (Sus scrofa ferus, L.), SJ 160

**SI. 9.10** Alatka-spatula od rebra velikog preživača (Ruminantia), SJ 160

**Fig. 9.10** Tool-spatula made from a rib of a large ruminant (Ruminantia), SJ 160

kva silina gorenja pretežno se javlja kod anatomskih dijelova koji nemaju prehrambenu vrijednost i koji nemaju deblje slojeve mišića, primjerice donja čeljust (*mandibula*).

Uzorci s tragovima zuba ili tragovima griženja su relativno česti i predstavljaju tragove sekundarnog djelovanja zvijeri na ostatke prehrane ljudi. Urezi nastali ljudskim djelovanjem su također česti i pretežno se nalaze na području zglobova ili dijafiza dugih kostiju. Takvi urezi predstavljaju tragove primitivnih tehnika pripreme i obrade mesa.

## Alatke

Očuvano je osam obrađenih koštanih uzoraka spatula, šila i ostataka alatki (SJ 43, SJ 160). Najatraktivnije su alatke napravljene od dijelova rogova ili parožaka jelena (*Cervus elaphus, L.*) (sl. 9.8). Uzorci spatula (sl. 9.7 i 9.10) su najbrojniji (SJ 43, SJ 160), a izrađeni su od rebara goveda (*Bos sp.*), jelena (*Cervus elaphus, L.*) ili malih preživača-ovce koze ili srne (*Ovis aries, L., Capra hircus, L., Capreolus capreolus, L.*). Šilo oblikovano iz lisne kosti svinje (*Sus scrofa sp.*) potječe iz SJ 160.

ical parts without nutritional value, lacking thick layers of muscle, for instance, the lower jaw (*mandibula*).

Samples exhibiting traces of teeth or biting are relatively common and represent traces of secondary action of predators on human food waste. Human-caused incisions are also common and predominantly occur on joints or diaphyses of long bones. Such incisions are traces of primitive techniques of preparation and processing of meat.

## Tools

A total of eight bone samples of spatulae, awls and fragmented tools have been preserved (SJ 43, SJ 160). The most attractive tools were made of horns or antlers of red deer (*Cervus elaphus, L.*) (Fig. 9.8). Spatulae (fig. 9.7 and 9.10) make up the largest group of samples (SJ 43, SJ 160). They were made of ribs of cattle (*Bos sp.*), red deer (*Cervus elaphus, L.*) or small ruminants – sheep, goat or roe deer (*Ovis aries, L., Capra hircus, L., Capreolus capreolus, L.*). An awl made from a tibia of a pig (*Sus scrofa sp.*) was found in SJ 160.

# Analiza ljudskog kosturnog materijala

*Ivor Janković, Petra Rajić Šikanjić*

## Uvod i metodologija

U dogovoru s Arheološkim muzejom u Zagrebu, Institutu za antropologiju na analizu su dostavljeni ljudski kosturni ostaci pronađeni prilikom istraživanja nalazišta Franjevac u Slavoniji. Sakupljeni materijal bio je zapakiran prema jami u kojoj je nađen i lokaciji unutar nje. Nakon pranja i sušenja materijala načinjena je osnovna dokumentacija, koja je obuhvaćala popisivanje svih prisutnih kostiju i zglobnih površina, određivanje spola i starosti u trenutku smrti, dokumentiranje stanja prisutnih zubi i vidljivih patoloških promjena nastalih za života pojedinca.

Popisivanje prisutnih elemenata početni je korak u obradi kosturnih ostataka, a pri analizi su korišteni standardizirani obrasci.[1] Nakon inventure materijala, određen je spol i dob individue za odrasle osobe te dob za dječje ostatke.

Pri određivanju spola odraslih osoba korištene su morfološke karakteristike lubanje i zdjeličnog obruča budući da je morfologija ove anatomske regije najsigurniji pokazatelj spolne pripadnosti. Pri utvrđivanju spola koristile su se odlike na preponskoj kosti: prisutnost ventralnog grebena i subpubičnog konkaviteta, te širina grebena medijalnog ruba donje grane preponske kosti.[2] Osim preponske kosti, pri utvrđivanju spola korištene su i dvije odlike na zdjeličnoj kosti: širina gornjeg velikog sjednog ureza i prisutnost predaurikularnog sulkusa.[3] Kod izoliranih lubanja za određivanje spola korištene su sljedeće morfološke odlike: razvijenost nuhalnog područja zatiljne kosti, veličina mastoidnih procesa, zaobljenost gornjih rubova orbita, izraženost supraorbitalnih lukova i oblik brade.[4]

Pri određivanju dobi odraslih osoba korištene su morfološke promjene na spojnoj ploštini preponske kosti i zglobnoj ploštini bočne kosti te sraštavanje kranijalnih šavova. Morfološke promjene na spojnoj ploštini preponske kosti smatraju se najpouzdanijim kriterijem za određivanje dobi u trenutku smrti, a na uzorku se koristila metoda prema Toddu.[5] Kao i u slučaju

[1] Buikstra, Ubelaker 1994.

[2] Phenice 1969.

[3] Bass 1971; WEA 1980.

[4] Bass 1971; WEA 1980; Schwartz 1995.

[5] Todd 1921; 1921a.



# Analysis of human osteological assemblage

*Ivor Janković, Petra Rajić Šikanjić*

## Introduction and methodology

In cooperation with the Archaeological Museum in Zagreb, the Institute of Anthropological Research carried out an analysis of human skeletal remains discovered in the investigation of the Franjevac site in Slavonia. The collected material was packed and marked according to the pit in which it was found and the position it occupied within it. After the material was washed and dried a basic documentation was prepared, consisting of a list of all present bones and articular surfaces, the determination of sex and age at death, the documentation of the condition of present teeth and visible pathological changes that occurred while the person was alive.

The initial step in the analysis of skeletal remains consists of listing the present elements, for which standardized forms were used.[1] Once the material was inventoried, the sex and age of the adults were determined, as well as the age in the case of children.

In determining the sex of the adults we used the morphological characteristics of the skull and the pelvic girdle, because the morphology of this anatomic region is the most reliable indicator of sex. For sex determination we used features on the pubic bone: the presence of the ventral arc and subpubic concavity, and the width of the ridge of the medial aspect of the ischiopubic ramus.[2] In addition to the pubic bone, two features of the hip bone were used for determining sex: the width of the superior greater sciatic notch and the presence of the preauricular sulcus.[3] In the case of isolated skulls, for determining sex we used the following morphological features: the development of the nuchal area of the occipital bone, the size of the mastoid processes, the roundness of the upper orbital edges, the prominence of supraorbital ridges and the shape of the chin.[4]

In determining the age of the adults we used morphological changes on the symphysial surface of the pubic bone and the auricular surface of the ilium, as well as fusion of the cranial sutures. Morphological changes on the symphysial surface of the pubic bone are considered the most reliable criterion for determining the age at death, and in the case of this sample we followed the meth-

[1] Buikstra, Ubelaker 1994.

[2] Phenice 1969.

[3] Bass 1971; WEA 1980.

[4] Bass 1971; WEA 1980; Schwartz 1995.

spojne ploštine preponske kosti, morfološke promjene na zglobnoj ploštini bočne kosti pokazuju promjene koje se mogu vezati za određenu dob. U analizi je korištena metoda Lovejoya i suradnika.[6] Stupanj sraštavanja kranijalnih šavova također je moguće dovesti u vezu sa starosnom dobi. Korištena metoda prema Meindlu i Loveyoju popisuje stupanj sraštavanja šavova za deset točaka vanjske površine lubanje.[7] Nakon uspoređivanja rezultata svih korištenih metoda, osoba je ubrojena u jednu od sljedećih dobnih kategorija:

- mlađa odrasla osoba (20–35 godina),
- srednja odrasla osoba (35–50 godina),
- starija odrasla osoba (50+ godina).

Pri određivanju dobi na dječjim koštanim ostacima korištene su sljedeće metode: kronologija spajanja epifiza s dijafizama i razvoj zuba. Dijafize i epifize dugih kostiju sraštaju tek prestankom rasta, a kod različitih kostiju sraštavanje se događa u različito doba te je stupanj spojenosti epifiza s dijafizama koristan pokazatelj doživljene starosti. Pri određivanju dobi korišteni su objavljeni standardi.[8] Najpouzdanija metoda za određivanje dobi djece temelji se na razvoju zubi, budući da je utjecaj okoline na njih neznatan.[9] U analizi su korištene metode koje se temelje na stupnjevanju razvoja krune i korijena mliječnih i trajnih zubi.[10] Kao i kod odraslih osoba, rezultati pojedinih analiza uspoređeni su, nakon čega je osoba ubrojena u jednu od sljedećih kategorija:

- fetalna dob – rođenje,
- rođenje – 5 godina,
- 5 – 10 godina,
- 10 – 15 godina,
- 15 – 20 godina.

Dentalne analize vrlo su važan pokazatelj pri pokušaju utvrđivanja prehrambenih navika, zdravstvenog stanja te dobi pojedine osobe. Kemijski sastav hrane može štetno utjecati na zubnu caklinu, ubrzavajući trošenje zubne površine, ali i pogodovati stvaranju patoloških promjena, kao što su karijes, apsces i kamenac. Osim navedenoga, razdoblja bolesti, kao i prehrambeni stres, također mogu ostaviti trag vidljiv u obliku hipoplastičnog defekta. Nadalje, određene radnje ponekad će rezultirati karakterističnim oštećenjima zuba i time pružiti vrijedan uvid u kulturnu praksu arheoloških populacija. Zbog navedenih razloga, posebna se pažnja posvetila analizi dentalnih nalaza.

Svi kosturni ostaci pregledani su kako bi se ustanovilo prisustvo patoloških promjena, budući da su kosti tijekom života u dinamičnom stanju rasta i resorpcije te reagiraju na stres i ostale vanjske utjecaje.[11] Trauma, bolest, prehrana i razne aktivnosti svojim djelovanjem mijenjaju ravnotežu između stvaranja kosti i resorpcije, pa utječu na promjene koje ostavljaju trag na kostima, iako je ponekad teško utvrditi točan uzrok promjena.[12] Za svaki pojedini slučaj iznesen je detaljni opis lezija i moguća dijagnoza prema postojećim standardima.[13]

od by Todd.[5] Like in the case of the symphysial surface of the pubic bone, the morphological changes on the auricular surface of the ilium exhibit changes that can be associated with a specific age.

In the analysis we followed the method by Lovejoy et al.[6] The degree of fusion of the cranial sutures can also be related to a specific age. The applied method by Meindl and Lovejoy lists the degree of fusion of the sutures for ten points on the exterior surface of the skull.[7] After the results of all used methods were compared, a person was classified into one of the following age categories:

- young adult (20–35 years)
- middle adult (35–50 years)
- late adult (50+ years)

For determining the age on the remains of children's bones we used the following methods: the chronology of diaphyseal-epiphyseal fusion and the development of teeth. The diaphysis of the long bones fuses with the epiphyses only once growth has ceased. Since different bones fuse at different times, the degree of diaphyseal-epiphyseal fusion is a useful age indicator. In determining the age we applied the published standards.[8]

The most reliable method for determining the age of children is based on the development of teeth, because the effect of environment on them is insignificant.[9] In the analyses we used methods based on the degree of development of the crown and root of deciduous and permanent teeth.[10] Like in the case of adults, the results of different analyses were compared, upon which a person was classified into one of the following categories:

- Fetal age – birth
- Birth – 5 years
- 5 – 10 years
- 10 – 15 years
- 15 – 20 years

Dental analysis is a very important indicator in the determination of dietary habits, health condition, as well as the age of a person. The chemical composition of food can have a damaging effect on tooth enamel, as it accelerates the attrition of dental surface, and can also bring about pathological changes such as caries, abscess and tartar. In addition to this, periods of disease, as well as nutritional stress, can also leave a mark in the form of a hypoplastic defect. Further, certain activities will sometime result in characteristic damages on teeth, providing valuable insight into cultural practices of archaeological populations. Due to the mentioned reasons, we dedicated special attention to the analysis of dental finds.

All the skeletal remains were examined for the presence of pathological changes, considering that during life of an individual the bones are in a dynamic state of growth and resorption, and react to stress and other influences from the environment.[11]Trauma, disease, diet and diverse activities can alter the equilibrium between the formation and resorption of bones, thereby influencing changes that leave marks on bones, even though the precise cause of change is sometimes difficult to ascertain.[12] For each case we provided a detailed description of the lesions and possible diagnosis according to the existing standards.[13]



[6] Lovejoy et al. 1985.
[7] Meindl, Lovejoy 1985.
[8] Scheuer, Black 2000.
[9] Buikstra, Ubelaker 1994.
[10] Moorrees et al. 1963; 1963a; Hillson 1996; Demirjian et al. 1973; 1980.
[11] Isçan, Kennedy 1989; White 1991.
[12] Ortner 2003; Roberts, Manchester 2005.
[13] Mann, Murphy 1990; Ortner 2003; Roberts, Manchester 2005.

[5] Todd 1921; 1921a.
[6] Lovejoy et al. 1985.
[7] Meindl, Lovejoy 1985.
[8] Scheuer, Black 2000.
[9] Buikstra, Ubelaker 1994.
[10] Moorrees et al. 1963; 1963a; Hillson 1996; Demirjian et al. 1973; 1980.
[11] Isçan, Kennedy 1989; White 1991.
[12] Ortner 2003; Roberts, Manchester 2005.
[13] Mann, Murphy 1990; Ortner 2003; Roberts, Manchester 2005.

# Analiza

Analiza osteološkog materijala s nalazišta Franjevac izvršena je prema jamama čija je prisutnost ustanovljena pri terenskom istraživanju, dok se pripadnost materijala određenoj grobnoj cjelini odredila prema oznakama zapakiranim zajedno s kostima.

Svi analizirani ukopi su kosturni. U jami SJ *266* bili su sačuvani kranijalni i postkranijalni elementi, dok su u druge dvije jame uglavnom prisutne samo kosti glave. Kosti iz jame SJ *266* bile su dobro očuvane. Lubanja u jami SJ *161* relativno je dobro očuvana, uz prisustvo određenih oštećenja vanjskog korteksa uslijed utjecaja okolišnih faktora. U jami SJ *306* sve su kosti bile fragmentirane i vanjski korteks im je bio prilično oštećen. Kod odrasle osobe iz jame SJ *306* na bedrenoj je kosti vidljiva tamna mrlja nastala nagorijevanjem, a istim je uzrokom moguće objasniti crnu boju nekoliko ulomaka kostiju glave.

## *Demografski podaci*

U analiziranom uzorku s nalazišta Franjevac prisutno je šest osoba, tri odrasle i tri dječje dobi. U kategoriju djece svrstane su sve osobe mlađe od 18 godina. Među odraslim osobama prisutne su dvije osobe muškog i jedna ženskog spola. Ženska osoba je starosti između 35 i 50 godina, mlađa muška između 2o i 35 godina, dok se starijoj muškoj osobi zbog nedostatka većine koštanih elemenata nije mogla preciznije odrediti dob. Sva tri djeteta su mlađa od 10 godina, dva u starosnoj kategoriji 5–10 godina te jedno u kategoriji 0–5 godina.



# Analysis

The analysis of the osteological assemblage from the Franjevac site was carried out with regard to the pits investigated in the excavation, while the association of the finds with a distinct burial context was determined by the labels packed together with the bones.

All of the analyzed burials are inhumations. Pit SJ *266* contained preserved cranial and postcranial elements, while the other two pits generally yielded only the bones of the head. The bones from pit SJ *266* are well preserved. The skull from pit SJ *161* is relatively well preserved, although it exhibits certain damages on the exterior cortex, brought about by environmental factors. All the bones from pit SJ *306* were fragmented and their exterior cortex is quite damaged. The dark stain visible on a femur of the adult person from pit SJ *306* was caused by burning, and the same is presumed in the case of the black colour visible on several fragments of head bones.

## *Demographic data*

The analyzed sample from Franjevac contains the remains of six persons – three adults and three children. All persons younger than 18 years of age were classified as children. Among the adults there are two males and a female. The woman is between 35 and 50 years of age, the younger man is between 20 and 35, while the age of the older man could not be ascertained with precision due to the absence of most bone elements. All three children are less than 10 years old – two belong to the age group of 5–10 years, and one to the group of 0–5 years.

| **JAMA/** PIT | **SPOL/** SEX | **DOB/** AGE |
|---|---|---|
| SJ *266* | muški / male | 20–35 |
| SJ *161* | ženski / female | 35–50 |
| SJ *161* | dijete / child | 5–10 |
| SJ *306*, lubanja 1/ skull 1 | dijete / child | 5–10 |
| SJ *306*, lubanja 2/ skull 2 | muški / male | odrasla / adult |
| SJ *306*, lubanja 3/ skull 3 | dijete / child | 0–5 |

## *Kosturni pokazatelji zdravstvenog stanja*

Bolesti, prehrana, traume i razvojni poremećaji mogu ostaviti vidljive tragove na kostima te nam time pružaju uvid u zdravstveni status osobe, ali i zajednice kojoj pripada. Na pregledanom uzorku uočeno je nekoliko patoloških promjena: linearna hipoplazija, apsces, *cribra orbitalia* i periostitis.

Na oba donja očnjaka individue iz jame SJ *266* uočen je po jedan hipoplastični defekt. Hipoplazija je razvojni defekt kojim se označava nepravilnost u strukturi cakline, nastala zbog prekida i smetnji u njezinom rastu.[14] Najčešće se javlja u obliku linearnih žljebova smanjene debljine cakline koji se protežu oko krune zuba, no mogu biti i u obliku jedne ili više jamičastih udubina.[15] Hipoplazija većinom nastaje zbog sistemskog fiziološkog stresa, no lokalizirana trauma i nasljedne anomalije također mogu prouzročiti nastanak ovog defekta.[16] Hipoplazija vidljiva na trajnim zubima smatra se izravnim pokazateljem zdravlja

[14] Aufderheide, Rodríguez-Martín 2003.

[15] Goodman, Rose 1990.

[16] Goodman et al. 1980; Goodman, Rose 1990.

## *Skeletal indicators of health*

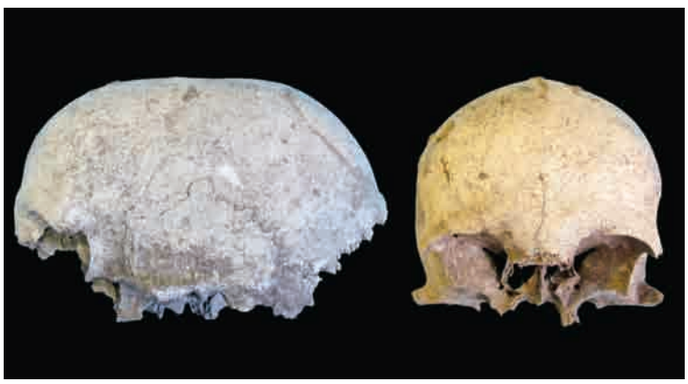
Diseases, nutrition, traumas and developmental disorders can leave visible marks on the bones, allowing insight into the health status of the person, but also of the group they are affiliated with. Several pathological changes were observed on the analyzed sample: linear enamel hypoplasia, abscess, *cribra orbitalia* and periostitis.

Both lower canines of the person from pit SJ 266 bear a visible hypoplastic defect. Hypoplasia is a developmental defect consisting of irregularities in the enamel structure caused by interruptions or disturbances in its growth.[14] It is most commonly manifested in the form of linear grooves of thinned enamel stretching around the crown of the tooth, or in the form of one or several small pit-like depressions.[15] The most common cause of hypoplasia is systemic physiological stress, but localized traumas and hereditary anomalies can also lead to this defect.[16] Hypoplasia visible on permanent teeth is considered a direct indicator of a child's

[14] Aufderheide, Rodríguez-Martín 2003.

[15] Goodman, Rose 1990.

[16] Goodman et al. 1980; Goodman, Rose 1990.



**Sl. 10.1** Jama SJ 161, lubanja 1, SJ 1040, lubanja s metopskim šavom – frontalni i lateralni prikaz

**Fig. 10.1** Pit SJ 161, skull 1, SJ 1040, the skull with the metopic suture – frontal and lateral views

**Sl. 10.2** Jama SJ 266, SJ 939, donja čeljust s trećim kutnjakom koji urasta u kost

**Fig. 10.2** Pit SJ 266, SJ 939, the mandible with the third molar growing into the bone

djeteta u dobi od rođenja do oko sedme godine života kada se zubi formiraju. Prednji zubi, sjekutići i očnjaci smatraju se najpouzdanijima za proučavanje linearne hipoplazije.[17]

Kod osobe iz jame SJ *266* prisutan je apsces na donjem desnom lateralnom sjekutiću. Apsces može nastati kada se karijes proširi i izloži pulpu zuba bakteriji, ali isto tako i uslijed velike istrošenosti zubne plohe ili traume.[18] Kada se mikroorganizmi nakupe u pulpi, dolazi do infekcije i stvaranja gnoja koji nakon nekog vremena izlazi kroz sinus, odnosno otvor u tkivu.[19]

Kod sve tri individue koje su imale dovoljno sačuvane očnice uočena je poroznost zida očnice (*cribra orbitalia*). Kod djeteta u jami SJ *161* lezija je uočena na desnoj očnici, kod djeteta u jami SJ *306* (lubanja 3) na obje očnice, a kod odrasle osobe u jami SJ *266* na obje očnice. *Cribra orbitalia* je patološka promjena koju karakterizira pojava šupljikave kosti na gornjem zidu očnica, a najčešće se pojavljuje kod djece i mlađih osoba.[20] Smatra se da nastaje zbog anemičkog stresa pretrpljenog u djetinjstvu. Anemiju uzrokuje nedostatak željeza nastao zbog njegova manjka u hrani, ali i bolesti poput gastrocrijevne ili parazitne zaraze.[21] Moguće etiologije koje dovode do anemije su složene budući da može nastati zbog jednog čimbenika, ali i njihova istovremenog uzajamnog djelovanja.[22] Stoga se lezija može smatrati individualnim otporom prema faktorima koji ju uzrokuju.[23]

Na dugim kostima nogu osobe iz jame SJ *266* uočen je periostitis. Na obje goljenične kosti duž tijela kosti i na prednjoj strani obje lisne kosti vidljivo je područje poroznosti i pojačane strijacije. Nešto pojačana strijacija također je uočena i na obje bedrene kosti. Periostitis je upala periosta, vanjskog sloja kosti, i najčešća je upala zabilježena na arheološkom materijalu.[24] Primarni periostitis može nastati kao odgovor skeleta na sistemsku, bakterijsku infekciju, a lezije mogu zahvatiti nekoliko kosti isto-

[17] Goodman, Rose 1990.
[18] Hillson 1996; Freeth 2000.
[19] Hillson 1996; Freeth 2000.
[20] Ortner 2003; Mann, Murphy 1990; Aufderheide, Rodríguez-Martín 2003.
[21] Stuart-Macadam 1992.
[22] Fairgrieve, Molto 2000.
[23] Stuart-Macadam 1992.
[24] Ortner, Putschar 1981.

health from birth to around seven years of age, when teeth are formed. Front teeth – incisors and canines – are the most reliable teeth for studying linear hypoplasia.[17]

The person from pit SJ *266* developed an abscess on the lower right lateral incisor. An abscess can form when caries progresses and exposes the pulp of the tooth to bacteria, but also due to considerable wear of dental surface or trauma.[18] When microorganisms accumulate in the pulp, this can result in infection and formation of pus, which subsequently drains through a sinus or a cavity in the tissue.[19]

Porosity of the orbital roof (*cribra orbitalia*) was observed on all three individuals with sufficiently preserved orbits. On the child in pit SJ *161* the lesion was observed on the right orbit, on the child from pit SJ *306* (skull 3) on both orbits, and in the case of the adult from pit SJ *266* also on both orbits. *Cribra orbitalia* is a pathological condition characterized by porous lesions in the orbital roof, which appears most commonly in children and young adults.[20] It is believed that *cribra* orbitalia develops due to anemic stress suffered in childhood. Anemia is caused by iron-deficient diet, but also by diseases such as gastrointestinal or parasitic infections.[21] Possible etiologies leading to anemia are complex, considering that it may develop due to a single cause, but also due to a simultaneous presence of several factors ,[22] and the lesion can therefore be considered as individual resistance to the factors causing it.[23]

Periostistis was detected on the long bones of the legs of the person from pit SJ *266*. Areas of porosity and enhanced striations are visible on both tibiae along the shaft as well as on the front of both fibulae. Fairly advanced striation was detected also on both femurs. Periostitis – the inflammation of the periosteum, the outer layer of the bone – is the most common inflammation documented on archaeological samples.[24] Primary periostitis can develop as a response of the skeleton to systemic, bacterial infection, and the

[17] Goodman, Rose 1990.
[18] Hillson 1996; Freeth 2000.
[19] Hillson 1996; Freeth 2000.
[20] Ortner 2003; Mann, Murphy 1990; Aufderheide, Rodríguez-Martín 2003.
[21] Stuart-Macadam 1992.
[22] Fairgrieve, Molto 2000.
[23] Stuart-Macadam 1992.
[24] Ortner, Putschar 1981.

vremeno.[25] Najčešće je vidljiva na goljeničnoj kosti, a ukoliko se pojavljuje na obje kosti, indikator je sistemske infekcije.[26] Sekundarni periostitis može nastati kao lokalizirani odgovor tkiva na bakterijsku infekciju nastalu zbog frakture, reza ili udarca.[27]

Kod osobe iz jame SJ *266* uočena je spondiloliza na petom slabinskom kralješku. Spondiloliza je pojava kod koje je tijelo kralješka odvojeno od stražnjeg luka, uglavnom na *pars interarticularis*.[28] Najčešće su zahvaćeni četvrti i peti, a rjeđe treći slabinski kralježak.[29] Etiologija spondilolize još je uvijek nerazjašnjena, no faktori koje valja uzeti u obzir su genetički i traumatski, pri čemu se ne smiju zanemariti ni aktivnosti koje uključuju donji dio kralješnice.[30]

Kosti i zubi pregledani su kako bi se uočilo prisustvo nemetričkih osobina (određeni detalji morfologije poput kvržica, grebena, otvora, artikularnih ploština i sl.), budući da se smatra da one mogu ukazivati na obiteljsku nasljednost i koriste se za određivanje biološke udaljenosti.[31] Genetska pozadina netetričkih odlika nije sasvim poznata, a osim naslijednih čimbenika, mogu biti uvjetovane i spolnim razlikama. Na osteološkom materijalu s lokaliteta Franjevac uočeno je nekoliko nemetričkih osobina, najviše kod osobe iz jame SJ *266*.

lesions can affect several bones at a time.[25] It is most commonly visible on the tibia, and in cases when both bones are affected, it is an indicator of systemic infection.[26] Secondary periostitis can develop as a localized response of the tissue to a bacterial infection caused by a fracture, a cut or a blow.[27]

The person from pit SJ *266* exhibited spondylolysis at the fifth lumbar vertebra. Spondylolysis is a defect in which the body of a vertebra is detached from the posterior arch, mostly at *pars interarticularis*.[28] In most cases the fourth and the fifth – in rare cases also the third – lumbar vertebrae are affected.[29] The etiology of spondylolysis is still unresolved, but the factors that have to be considered are genetic and traumatic. However, the activities that include the lower part of the spine should not be neglected either.[30]

Bones and teeth were analyzed for the presence of non-metric traits (certain details of the morphology such as cusps, ridges, cavities, articular surfaces etc.), because these are considered as possible indicators of heredity within the family and are used for determining biological distance.[31] Genetic background of non-metric traits is not entirely known, and-in addition to hereditary factors-these can be conditioned by differences between the sexes. Several non-metric traits were observed on the osteological material from Franjevac, mostly on the person from pit SJ *266*.

| **JAMA**/ PIT | **SJ *266*** | **SJ *161* odrasla**/ adult | **SJ *161* dijete**/ child | **SJ *306*, lubanja 1**/ skull 1 | **SJ *306*, lubanja 2**/ skull 2 | **SJ *306*, lubanja 3**/ skull 3 |
|---|---|---|---|---|---|---|
| **metopska sutura**/ metopic suture | + | + | – | 0 | 0 | – |
| **lamboidna pločica**/ lambdoid plate | + | + | 0 | 0 | 0 | 0 |
| **vastus notch**/ vastus notch | + | 0 | 0 | 0 | 0 | 0 |
| **lopatasti gornji sjekutić**/ shovel-shaped upper incisor | – | 0 | – | – | 0 | + |
| **Carabelijeva kvržica**/ Carabelli's cusp | – | – | – | – | 0 | + |

+ karakteristika prisutna; – karakteristika nije prisutna; 0 nema koštanog elementa / + trait present; – trait absent; 0 bone element is missing



## *Jama SJ 266*

### *SJ 939, Kv. E 51, U – 639*

**Opis ostataka.** Prisutni su sljedeći koštani elementi: čeona kost; obje tjemene kosti; zatiljna kost; obje sljepoočne kosti; gornja čeljust; donja čeljust; obje ključne kosti; obje lopatice; lijevi iver; dio križne kosti; obje zdjelične kosti; sedam vratnih kralježaka; dvanaest prsnih kralježaka; pet slabinskih kralježaka; prsna kost; dvadesetak ulomaka rebara; obje nadlaktične kosti; obje palčane kosti; obje lakatne kosti; obje bedrene kosti; obje goljenične kosti; obje lisne kosti; obje gležanjske i petne kosti; jedanaest karpalnih kostiju; deset tarzalnih kostiju; devet metakarpalnih kostiju; deset metatarzalnih kostiju; dvadeset ručnih i petnaest nožnih falangi, jedna sesmoidna kost.

Kosti su svijetložute boje, a na pojedinima su vidljive tamnije žute mrlje. Za radiokarbonsku analizu odvojeno je jedno rebro.

**Starost.** Na temelju morfoloških promjena na zglobnoj ploštini bočne kosti i spojnoj ploštini preponske kosti, te sraštavanju šavova procijenjena starost individue je između 27 i 35 godina.

[25] Ortner 2003; Mann, Murphy 1990.
[26] Ortner 2003.
[27] Ortner 2003; Mann, Murphy 1990.
[28] Mann, Murphy 1990.
[29] Ortner 2003.
[30] Larsen 1997.
[31] Buikstra, Ubelaker 1994; Mays 2000.

## *Pit SJ 266*

### *SJ 939, Kv. E 51, U – 639*

**Description of the remains.** The following bone elements are present: frontal bone; both parietal bones; occipital bone; both temporal bones; maxilla; mandible; both clavicles; both scapulae, left patella, part of the sacrum; both hip bones; seven cervical vertebrae; twelve thoracic vertebrae; five lumbar vertebrae; sternum; around twenty fragments of ribs; both humeri; both radii; both ulnae; both femora; both tibiae; both fibulae; both tali and calcanei; eleven carpal bones; ten tarsal bones; nine metacarpal bones; ten metatarsal bones; twenty hand phalanges and fifteen foot phalanges; a sesamoid bone.

Bones are of a light yellow colour, with visible darker yellow stains on certain bones. One rib was sampled for radiocarbon analysis.

**Age.** The age of the person was assessed at between 27 and 35 based on the morphological changes on the articular surface of the hip bone and the symphysial surface of the pubic bone, as well as on fusion of the sutures.

[25] Ortner 2003; Mann, Murphy 1990.
[26] Ortner 2003.
[27] Ortner 2003; Mann, Murphy 1990.
[28] Mann, Murphy 1990.
[29] Ortner 2003.
[30] Larsen 1997.
[31] Buikstra, Ubelaker 1994; Mays 2000.

Morfološke promjene na zglobnoj ploštini bočne kosti odgovaraju fazi 3 (30–34 godine), a na spojnoj ploštini preponske kosti fazi 5 (27–30 godina). Šavovi su minimalno ili znatno srasli. Medijalna epifiza lijeve ključne kosti nije sasvim srasla. Sraštavanje ove kosti većinom završava između 24. i 29. godine.[32]

**Spol.** Na temelju morfoloških odlika zdjelice i lubanje osoba je određena kao muškarac. Na preponskoj kosti nije prisutan subpubični konkavitet i greben medijalnog ruba donje grane preponske kosti, gornji veliki sjedni urez je uži, a predaurikularni sulkus nije prisutan. Mastoidni procesi sljepoočne kosti srednjih su dimenzija, rubovi očnih duplji obliji, nadočni lukovi izraženiji, a brada je četvrtastog oblika. Navedene odlike lubanje odgovaraju određenju osobe kao muškarca.

**Zubi.** Prisutne su obje čeljusti. U gornjoj čeljusti prisutni su svi zubi osim drugog desnog sjekutića, koji je ispao nakon smrti. Istrošenost zubi je mala, a nešto je veća na središnjim sjekutićima.

U donjoj čeljusti prisutni su svi zubi, osim oba druga pretkutnjaka, koji su ispali nakon smrti. Istrošenost zubi je mala, a nešto je veća na središnjim sjekutićima. Treći desni kutnjak nije iznikao i moguće je vidjeti da leži vodoravno u čeljusti. Na korijenu centralnog desnog sjekutića vidljiv je periapikalni apsces. Na oba očnjaka uočen je po jednan hipoplastični defekt.

**Patološke promjene i ne-metričke osobine.** Na čeonoj kosti prisutan je metopski šav. S obje strane lambdoidne suture prisutna je po jedna dodatna koštana pločica. Peti slabinski kralježak ima spondilolizu. Duž medijalne strane tijela obje goljenične kosti uočeno je područje pojačane strijacije, dok je na obje lisne kosti vidljivo područje pojačane strijacije na prednjoj strani kosti. Duž tijela obje bedrene kosti prisutna je slabo izražena strijacija. Na lijevoj očnici uočena je zarasla *cribra orbitalia* kao i manje područje novog sloja kosti. Poroznost je uočena na vanjskoj površini uz koronalni šav čeone kosti, uz sagitalni i lambdoidni šav obje tjemene kosti, kao i kod lambdoidnog šava na zatiljnoj kosti. Lijevom iveru nedostaje superolateralni ugao, mjesto gdje se spaja mišić *vastus lateralis*. Iako je etiologija ove pojave još uvijek nejasna, smatra se da predstavlja dodatni osifikacijski centar.[33]

## *Jama SJ 161*

### *LUBANJA 1*

### *SJ 1040, Kv. Y/Z 51, U – 921*

**Opis ostataka.** Prisutni su sljedeći koštani elementi: čeona kost; obje tjemene kosti; obje sljepoočne kosti; obje zigomatične kosti; gornja čeljust; donja čeljust.

Kosti su svijetložute boje. Za radiokarbonsku analizu odvojen je gornji desni treći kutnjak.

**Starost.** Na temelju stupnja spajanja lubanjskih šavova procijenjena je starost osobe na između 35 i 50 godina.

**Spol.** Na temelju morfoloških odlika lubanje osoba je pripisana ženskom spolu. Očnični rubovi su oštriji, a nadočni lukovi slabije izraženi.

**Zubi.** Prisutna je samo gornja čeljust. Većina alveola je prazna jer su zubi ispali nakon smrti, a prisutni su samo prvi i drugi li-

[32] Scheuer, Black 2000.

[33] Mann, Murphy 1990.

Morphological changes on the auricular surface of the ilium correspond to phase 3 (age 30–34 years), and those on the symphysial surface of the pubic bone to phase 5 (27–30 years). The degree of fusion of the sutures is minimal or considerable. The medial epiphysis of the left clavicle did not fuse completely. The fusion of this bone is generally completed between 24 and 29 years of age.[32]

**Sex.** The person was ascertained to be a man based on the morphological traits of the pelvis and the skull. The pubic bone does not exhibit a subpubic concavity and the ridge of the medial aspect of the ischiopubic ramus, the upper greater sciatic notch is narrower, and the preauricular sulcus is absent. The mastoid processes of the temporal bone are of medium size, the edges of the orbits are more round, supraorbital ridges are more pronounced, while the chin is rectangular. The described cranial features allow us to determine the person as a man.

**Teeth.** Both jaws are present. The upper jaw contains all the teeth except for the second right incisor, which fell out after death. The wear on the teeth is slight, except for the central incisors, which exhibit a somewhat greater degree of wear.

The lower jaw contains all the teeth except for both second premolars, which fell out after death. The wear on the teeth is slight, except for the central incisors, on which it is a bit more severe. The third right molar did not erupt and can be seen lying horizontally in the jaw. A periapical abscess is visible on the root of the central right incisor. Both canines exhibit a hypoplastic defect.

**Pathological changes and non-metric traits.** The metopic suture is present on the frontal bone. There is an additional bone plaque on either side of the lambdoid suture. The fifth lumbar vertebra shows signs of spondylolysis. An area of enhanced striation was observed along the medial side of the shaft of both tibiae, while both fibulae exhibit an area of enhanced striation on the front of the bone. A slight striation is present along the shafts of both femora. Healed *cribra orbitalia* was observed on the left orbit, as well as a small area of a new bone layer. Porosity was observed on the exterior surface adjacent to the coronal suture of the frontal bone, next to the sagittal and lambdoid sutures of both parietal bones, as well as next to the lambdoid suture on the occipital bone. The left patella is missing the superolateral corner, the place where the *vastus lateralis* muscle attaches. Even though the etiology of this phenomenon is still unclear, it is understood to represent an additional centre of ossification.[33]

## *Pit SJ 161*

### *SKULL 1*

### *SJ 1040, Kv. Y/Z 51, U – 921*

**Description of the remains.** The following bone elements are present: frontal bone; both parietal bones; both temporal bones; both zygomatic bones; maxilla; mandible.

The bones are of a light yellow colour. The upper right third molar was sampled for the radiocarbon analysis.

**Age.** The age of the person was assessed at between 35 and 50 based on the degree of fusion of the cranial sutures.

**Sex.** The person was determined as a female based on the morphological traits of the skull. The orbital rims are sharper, and the supraorbital ridges are less pronounced.

[32] Scheuer, Black 2000.

[33] Mann, Murphy 1990.

jevi kutnjak te drugi i treći desni kutnjak. Istrošenost zubi je umjerena.

**Patološke promjene i ne-metričke osobine.** Na čeonoj kosti vidljiv je metopski šav, a sa svake strane lambdoidnog šava prisutna je po jedna dodatna koštana pločica.

### *LUBANJA 2*

### *SJ 578, Kv. Z 50 51, U – 235*

**Opis ostataka.** Prisutni su sljedeći koštani elementi: čeona kost; lijeva strana gornje čeljusti.

Kosti su svijetložute boje.

**Starost.** Na temelju razvoja mliječnih i trajnih zubi procijenjena je starost između pet i sedam godina. Razvojni stupanj trajnih zubi i prisustvo dijela mliječnih odgovara starosnoj dobi od oko šest godina.[34]

**Spol.** Nije određen budući da je riječ o ostacima osobe dječje dobi.

**Zubi.** Prisutna je samo lijeva strana gornje čeljusti. Od mliječnih zubi prisutna su oba kutnjaka u čeljusti. Od trajnih zubi u kripti su vidljivi lateralni sjekutić kojem se samo nazire kruna i očnjak kojemu je korijen izrastao do otprilike ¼ , što bi odgovaralo dobi od šest do sedam godina.[35] U kripti je vidljiva i sasvim formirana kruna drugog trajnog kutnjaka, što dogovara dobi oko 6,5 godina (djevojčice 6,6; dječaci 6,8 godina).

**Patološke promjene i ne-metričke osobine.** Na desnoj očnici prisutna je *cribra orbitalia*.



## *Jama SJ 306*

### *LUBANJA 1*

### *SJ 850, Kv. G 56, U – 413*

**Opis ostataka.** Prisutni su sljedeći koštani elementi: ulomci tjemenih kostiju.

Kosti su svijetložute boje, jako loše očuvane, većinom mali ulomci.

**Starost.** Na temelju razvoja mliječnih i trajnih zubi procijenjena je starost od četiri do šest godina. Razvojni stupanj trajnih zubi i prisustvo dijela mliječnih odgovara starosnoj dobi od četiri do šest godina.[36]

**Spol.** Nije određen budući da je riječ o ostacima individue dječje dobi.

**Zubi.** Čeljusti nedostaju i prisutni su samo izolirani zubi. Iz gornje čeljusti prisutna su oba mliječna pretkutnjaka, a od trajnih zubi oba desna sjekutića, lijevi očnjak, prvi lijevi pretkutnjak i prvi desni kutnjak. Sjekutićima je sasvim izrasla kruna zuba i ¼ korijena, što odgovara dobi oko pet godina, dok je pretkutnjaku izrasla cijela kruna, a kutnjaku cijela kruna i korijen do polovice, što se također događa oko pete godine života. Iz donje čeljusti od mliječnih zubi prisutni su središnji lijevi sjekutić i oba lijeva pretkutnjaka, dok su od trajnih sva četiri sjekutića, oba prva pretkutnjaka te oba prva kutnjaka. Sjekutićima je ostala sačuvana samo kruna zuba, dok je dio korijena pukao te se ne

[34] Hillson 1996.
[35] Hillson 1996.
[36] Hillson 1996.

**Teeth.** Only the upper jaw is present. Most alveoles are empty because the teeth fell out after death, and only the first and second left molars and the second and third right molar are present. The wear on the teeth is moderate.

**Pathological changes and non-metric traits.** The metopic suture is visible on the frontal bone, and there is an additional bone plaque on either side of the lambdoid suture.

### *SKULL 2*

### *SJ 578, Kv. Z 50 51, U – 235*

**Description of the remains.** The following bone elements are present: frontal bone; left side of the maxilla.

The bones are of a light yellow colour.

**Age.** The age between 5 and 7 years is assessed based on the development of deciduous and permanent teeth. The developmental stage of permanent teeth and the presence of a part of deciduous teeth corresponds to an age of around six years.[34]

**Sex.** The sex was not ascertained because the remains belong to a child.

**Teeth.** Only the left side of the maxilla is present. Of the deciduous teeth, both molars are present in the jaw. Of the permanent teeth, visible in the crypt are the lateral incisor – of which only the crown is discernible – and the canine, whose root reached about ¼ of its full size, which would correspond to the age of 6–7 years.[35] Visible in the crypt is also a completely formed crown of the second permanent molar, which corresponds to an age of around 6.5 years (girls 6.6; boys 6.8 years).

**Pathological changes and non-metric traits.** *Cribra orbitalia* is present on the right orbit.

## *Pit SJ 306*

### *SKULL 1*

### *SJ 850, Kv. G 56, U – 413*

**Description of the remains.** The following bone elements are present: fragments of parietal bones.

The bones are of a light yellow colour, very poorly preserved, mostly in small fragments.

**Age.** The age is assessed at between 4 to 6 years based on the development of the deciduous and permanent teeth. The degree of development of the permanent teeth and the presence of a part of the deciduous teeth corresponds to an age between four and six years.[36]

**Sex.** The sex was not determined as the remains belong to a child.

**Teeth.** The jaws are missing and only isolated teeth are present. Both deciduous premolars from the upper jaw are present, and of the permanent teeth there are both right incisors, the left canine, the first left premolar and the first right molar. The incisors exhibit a fully developed crown and a ¼ of the root, which corresponds to an age of around 5 years; the premolar has a fully developed crown, while the molar has a complete crown and the root that grew to about half the size, which also occurs at around 5 years of age. Of the milk teeth in the lower jaw there is the cen-

[34] Hillson 1996.
[35] Hillson 1996.
[36] Hillson 1996.

**Sl. 10.3** Jama SJ 266, SJ 939, cijeli kostur
**Fig. 10.3** Pit SJ 266, SJ 939, the complete skeleton

**Sl. 10.4** Jama SJ 306, lubanja 3, SJ 850, desna očnica na kojoj je prisutna zarasla cribra orbitalia
**Fig. 10.4** Pit SJ 306, skull 3, SJ 850, the right orbit exhibiting healed cribra orbitalia

može sa sigurnošću utvrditi koliko je već izrastao. Pretkutnjacima je kruna sasvim izrasla, dok je od kutnjaka ostala samo sačuvana kruna zuba, a korijen je puknuo pa se ne može utvrditi njegova duljina.

**Patološke promjene i ne-metričke osobine.** Nisu uočeni na sačuvanom materijalu.

### *LUBANJA 2*

***SJ 850, Kv. G 56, U – 414***
***SJ 850, Kv. G 57; U – 405, U – 416***

**Opis ostataka.** Prisutni su sljedeći koštani elementi: dio zatiljne kosti; dijelovi tjemenih kostiju; dva ulomka acetabuluma; dijelovi zdjelice; proksimalni dio desne bedrene kosti; ulomak tijela nadlaktične kosti; glava nadlaktične kosti.

Duge kosti su tamnosmeđe boje, dok su kosti glave žute boje. Na bedrenoj kosti je prisutna crna mrlja nastala zbog toga što je kost nagorjela. Ulomci tjemenih kostiju glave su potpuno crni zbog djelovanja vatre. Za radiometrijsku analizu odvojen je dio glave bedrene kosti.

**Starost.** Na temelju morfoloških karakteristika prisutnih kostiju utvrđeno je da je riječ o odrasloj osobi.

**Spol.** Na temelju morfoloških odlika lubanje, razvijenosti mišićnih hvatišta i veličini bedrene kosti, osoba je muškog spola. Na zatiljnoj kosti vidljivo je vrlo razvijeno nuhalno područje. Očuvan dio bedrene kosti ima jače razvijena mišićna hvatišta, a sama je kost većih dimenzija.



**Zubi.** Nisu prisutni.

**Patološke promjene i ne-metričke osobine.** Na ulomku zatiljne kosti vidljiva je ektokranijalna poroznost.

### *LUBANJA 3*

***SJ 850, Kv. G 56/57, U – 415***
***SJ 850, Kv. G 57, U – 405***
***Sj 850, Kv. G 57; U – 416***

**Opis ostataka.** Prisutni su sljedeći koštani elementi: čeona kost; obje tjemene kosti; obje sljepoočne kosti; gornja čeljust; donja čeljust; dio desne ključne kosti; dio desne lopatice; polovica prvog i drugog vratnog kralješka; dva vratna kralješka; jedan prsni kralježak; jedan slabinski kralježak; distalni dio obje nadlaktične kosti; lijeva lakatna kost bez distalnog kraja; dio tijela desne lakatne kosti; dio tijela obje bedrene kosti; dio tijela lijeve goljenične kosti; gotovo cijela desna goljenična kost; dio tijela obje lisne kosti; šest metakarpalnih kostiju; jedna tarzalna kost; dvije distalne epifize goljeničnih kostiju.

Kosti su svijetložute boje, a po površini nekih kostiju glave vidljive su crne mrlje.

**Starost.** Na temelju sraštavanja primarnih osifikacijskih centara, razvoja mliječnih i trajnih zubi procijenjena je starost osobe na između pet i sedam godina. Bazalni dio zatiljne kosti još nije spojen s bočnim, što se događa između pete i sedme godine života.[37] Prvi trajni kutnjaci su iznikli, što se obično događa oko šeste godine života, dok bi razvoj ostalih trajnih zubi odgovaral left incisor and both left premolars, while of the permanent teeth there are all four incisors, both first premolars and both first molars. On the incisors only the crown has remained, while the root is partly broken and the degree of its development cannot be ascertained. The premolars have a fully developed crown, while the molar has a preserved crown and a broken root, whose length cannot be determined.

**Pathological changes and non-metric traits.** These were not observed on the preserved material.

### *SKULL 2*

***SJ 850, Kv. G 56, U – 414***
***SJ 850, Kv. G 57; U – 405, U – 416***

**Description of the remains.** The following bone elements are present: part of the occipital bone; parts of parietal bones; two fragments of the acetabulum; parts of the pelvis; proximal part of the right femur; a fragment of the body of a humerus; the head of a humerus.

The long bones are of a dark brown colour. A dark stain caused by burning is present on the humerus. The fragments of the parietal bones are completely blackened by fire. A part of the head of the humerus was taken for a radiometric analysis.

**Age.** The person was determined as an adult based on the morphological traits of the present bones.

**Sex.** The person was determined as male based on the morphological traits of the skull, the development of muscle insertions and the size of the humerus. The occipital bone exhibits a very developed nuchal area. The preserved portion of the humerus exhibits strongly developed muscle insertions, and the bone itself is of a large size.

**Teeth.** Not present.

**Pathological changes and non-metric traits**. Ectocranial porosity is visible on a fragment of the occipital bone.

### *SKULL 3*

***SJ 850, Kv. G 56/57, U – 415***
***SJ 850, Kv. G 57, U – 405***
***Sj 850, Kv. G 57; U – 416***

**Description of the remains.** The following bone elements are present: frontal bone; both parietal bones; both temporal bones; maxilla; mandible; a part of the right clavicle; a part of the right scapula; a half of the first and second cervical vertebrae; two cervical vertebrae; a thoracic vertebra; a lumbar vertebra; the distal parts of both humeri; the left ulna without the distal end; a part of the shaft of the right ulna; a part of the shaft of both femora; a part of the shaft of the left tibia; almost the entire right tibia; a part of the shaft of both fibulae; six metacarpal bones; a tarsal bone; two distal epiphyses of the tibiae.

The bones are of a light yellow colour, with black stains visible on the surfaces of the heads of several bones.

**Age.** The person's age was assessed at between 5 and 7 years based on the fusion of primary ossification centres and the development of milk and permanent teeth. The basal part of the occipital bone did not fuse with the lateral part, which occurs between 5 and 7 years of age.[37] The first permanent molars erupted,

[37] Scheuer, Black 2000.

[37] Scheuer, Black 2000.

rao dobi od šest do sedam godina.[38] Kod prvog vratnog kralješka još nije došlo do neurocentralnog spajanja, što se događa između pete i šeste godine života.[39]

**Spol.** Nije određen budući da je riječ o ostacima individue dječje dobi.

**Zubi.** Prisutne su obje čeljusti s miješanom denticijom. U gornjoj čeljusti od mliječnih zuba prisutna su oba očnjaka i sva četiri pretkutnjaka te oba prva trajna kutnjaka, a središnji trajni sjekutići počeli su nicati. Oba prva kutnjaka imaju prisutnu Carabelijevu kvržicu koja je nešto jače izražena na lijevom zubu. U donjoj čeljusti od mliječnih su zuba prisutna samo oba desna pretkutnjaka. Od trajnih zuba u okluziji je lijevi centralni sjekutić i oba prva kutnjaka, dok lijevi lateralni sjekutić niče. U kripti je prisutna kruna drugog desnog trajnog kutnjaka te prvog pretkutnjaka.

**Patološke promjene i ne-metričke osobine.** Na obje očnice prisutna je *cribra orbitalia*. Oba gornja središnja sjekutića imaju lopatasti oblik krune.

which usually happens around age 6, while the development of the other permanent teeth would correspond to the age between six and seven years.[38] The first cervical vertebra does not show signs of neurocentral fusion, which occurs between age 5 and 6.[39]

**Sex**. Not determined, because the remains belong to a child.

**Teeth.** Both jaws with a mixed dentition are present. In the upper jaw, both deciduous canines and all four deciduous premolars are present, as well as both permanent molars, while the central permanent incisors started to erupt. Both first molars exhibit Carabelli's cusp, with the one on the left tooth being more pronounced. The only milk teeth present in the lower jaw are the two right premolars. Of the permanent teeth, the left central incisor and both first molars are in occlusion, while the left lateral incisor is erupting. The crown of the second right permanent molar is present in the crypt, as well as that of the first premolar.

**Pathological changes and non-metric traits**. *Cribra orbitalia* is present on both orbits. Both upper central incisors exhibit a shovel-shaped crown.



[38] Hillson 1996.
[39] Scheuer, Black 2000.

[38] Hillson 1996.
[39] Scheuer, Black 2000.

# Analiza kućnog lijepa

*Hrvoje Posilović*

Radi se o dva uzorka glinenog materijala vjerojatno građevinskog lijepa. Ovaj materijal prošao je kroz uvjete znatno povišene temperature, pa bi ga se moglo zvati keramičkim ili ciglenim. Treba napomenuti da je površina oba uzorka jako erodirana i oštećena pranjem, pa je, nažalost, iz nje vrlo teško izvući korisne podatke.



### *SJ 243a*

Prvi, manji uzorak, morfološki je s jedne strane duboko profiliran, a s druge ima vrlo grubu reljefnu površinu. Osnovni matriks čini glinoviti materijal s izrazito velikim udjelom klastita dimenzija silta (vjerojatno lesnog porijekla), što ovakvu smjesu čini oštrom na dodir. U samom matriksu nije moguće zamijetiti veća mineralna zrna ili dodatak mineralne armature. Veći fragmenti karbonatnog, željezovitog i silikatnog materijala u osnovnom matriksu posljedica su procesa pečenja ili dijageneze, a ne sastava primarne smjese. U materijalu su vidljivi brojni otisci biljnog materijala koji je kao armatura dodavan u glinenu smjesu. Na nekoliko mjesta u uzorku postoje mineralizacije ko-

# The analysis of daub

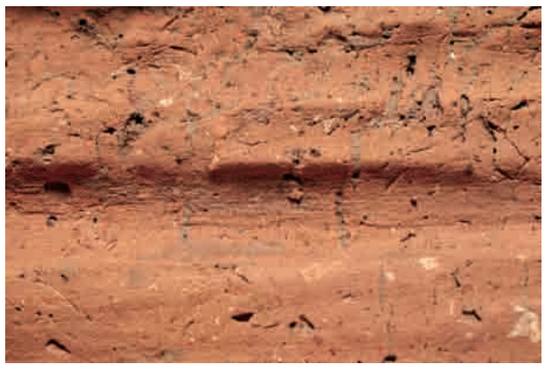
*Hrvoje Posilović*

Two samples of clay probably belonging to daub used in construction. The material was subjected to a high temperature condition which effectively transformed it into a ceramic or brick-material. It has to be stressed that the surface of both samples is considerably eroded and damaged by washing, rendering it difficult to obtain useful information from the samples.

### *SJ 243a*

The first – smaller – sample is morphologically deeply profiled on one side, while the other side exhibits a very coarse relief surface. The basic matrix consists of clay with an exceptionally large share of silt-grade clastics (probably of loess origin), rendering this mixture sharp on touch. Within the matrix itself it was not possible to observe larger-grade mineral grains or any addition of mineral armature. Larger fragments of carbonate, ferrous or silicate materials in the basic matrix are the consequence of the firing process or diagenesis and not of the composition of the primary mixture. The material contains numerous impressions of plants added to the clay mixture as armature. Mineralizations are visible on several spots on

**Sl. 11.1** SJ 243, uzorak a
**Fig. 11.1** SJ 243, sample a



**Sl. 11.2** SJ 243, uzorak b
**Fig. 11.2** SJ 243, sample b

je govore o vrlo velikoj temperaturi kojoj je taj dio uzorka bio izložen. Cijeli volumen uzorka vrlo je nejednoliko pečen i bio je izložen vrlo velikom rasponu temperatura na različitim dijelovima. Prema tome ovaj fragment nije vjerojatno pečen u namjenskoj peći nego je bio slučajno izložen temperaturi (npr. u požaru). Žljebovi na profiliranoj strani uzorka zapravo su otisci paralelno složenog šiblja ili pruća. Prema očuvanosti i strukturi na ovim profilima može se reći da je drvenasti materijal koji je bio u žljebovima izgorio, a nije npr. istrunuo. Isto tako sigurno je da ovaj komad nije jednostavno otpao s materijala koji je oblagao. Na površini spomenutih žljebova sačuvano je nešto ostataka nekadašnjeg biljnog materijala i to u obliku ugljevitih prevlaka, koje su djelomično zamijenjene silikatnim mineralizacijama.

### *SJ 243 b*

Drugi, veći uzorak, s jedne (unutrašnje) strane ima reljefni otisak u obliku dubokog žlijeba. Površina ovog žlijeba je potpuno isprana i erodirana tako da se na njoj ne vide nikakvi tragovi biljnog materijala. Osnovni matriks i struktura je potpuno ista kao i kod prethodnog, manjeg uzorka. Kao i kod prethodnog uzorka materijal je vrlo nejednoliko pečen, i to tako da su različiti dijelovi materijala bili izloženi različitim temperaturama. Zanimljiva je pojava slojevitog cijepanja i trošenja na glađoj strani uzorka. Ovdje je sačuvan mali dio originalne površine koji je bio izložen znatno većoj temperaturi nego materijal ispod nje. Ovakvo slojevito cijepanje keramičkog materijala s površinom koja je bila izložena višoj temperaturi kroz kraće vrijeme, može se iskoristiti za rekonstrukciju smjera dolaska topline prilikom pečenja. U ovom slučaju toplina je dolazila sa zaravnjene strane uzorka.

the sample, bearing testimony to the high temperature to which that part of the sample was exposed. The volume of the sample taken as a whole was very unevenly fired, with different parts exposed to a very wide range of temperatures, which makes it plausible that the fragment was not baked intentionally in an oven, but was rather accidentally exposed to high temperature (e.g. in a fire). The grooves on the profiled side of the sample are in fact impressions of parallel rows of withies. The preservation and structure of these profiles allow us to conclude that the woody material that had once filled the grooves burnt – instead of e.g. rotted – away. It is equally certain that this piece did not simply fall off the surface of the material it was applied to. A certain quantity of plant remains preserved in the shape of carbonized coatings, which were partly replaced by silicate mineralizations, are visible on the surface of the above mentioned grooves.

### *SJ 243 b*

The second – larger – sample, with a relief impression in the shape of a deep groove on one (interior) side. The surface of the groove is entirely washed away and eroded, leaving no discernible traces of plant material. The basic matrix and structure are completely the same as on the previous smaller sample. The material is likewise very unevenly fired, with different parts of the material being exposed to different temperatures. An interesting occurrence is the stratified splitting and wear on the smoother side of the sample, where only a small part of the original surface has remained preserved, which was exposed to a considerably higher temperature than the material below it. A stratified splitting of ceramic material such as this one with a surface exposed to a higher temperature over a short period can be used to reconstruct the direction from which the heat arrived during firing. In this case, the heat was coming from the flattened side of the sample.

# Analiza uzoraka metodom plinske kromatografije – masene spektrometrije

*Ben Stern*

## Priprema uzoraka

Budući da na površini ulomaka nije bilo primjetnih organskih ostataka, s unutrašnje i vanjske površine svakog ulomka odvojeni su slojevi debljine 2 mm te usitnjeni u prah pomoću električne bušilice (*Dremel*) s abrazivnom glavom. Približno 0.1 g dobivenog praha je precizno izmjereno te ekstrahirano s 3 alikvota od po ~1 ml DCM:MeOH (diklormetan:metanol 2:1, v/v), s 5-minutnom ultrasonikacijom, a zatim i centrifugiranjem da bi se pospješilo odvajanje otapala i praha (5 minuta pri 2000 okretaja po minuti). Ekstrakt je prebačen u čistu staklenu bočicu, a otapalo je odstranjeno pod strujom dušika. Višak BSTFA (bis(trimetilsilil)trifluoracetamid) s 1% TMCS (trimetilklorosilan) je pridodan da derivatizira uzorak, koji se preko noći ugrijao. Višak reagensa za derivatizaciju je odstranjen pod strujom dušika. Uzorci su otopljeni u približno 10 kapi diklormetana za analizu metodom plinske kromatografije – masene spektrometrije. Jedan pokusni uzorak je pripremljen i analiziran zajedno s uzorcima.

## Uređaj (GC-MS)

Analiza je provedena kombiniranom metodom plinske kromatografije – masene spektrometrije (GC-MS) uz pomoć Agilent 7890A Series GC uređaja za plinsku kromatografiju spojenog na 5975C Inert XL selektivni detektor masa. Injektor za potpuno unošenje uzorka i sučelje održavani su na 300°C odnosno 340°C. Kao plin nosilac korišten je helij pri konstantnom protoku. Temperatura peći programirana je od 50°C (2 min) do 350°C (10 min) pri 10°C/min. GC uređaj uključuje i HP-5MS silikatnu kolonu 15 m x 0,25 m x 0.25 $\mu$m sa 5% fazom fenil–metil–siloksana. Kolona je izravno uvedena u ionski izvor u kojem su dobiveni elektronski snopovi pri energiji elektrona 70 eV s potpunim masenim spektrom u opsegu od m/z 50 do 800.

# Analysis of samples by Gas Chromatography-Mass Spectrometry

*Ben Stern*

## Sample preparation

No visible organic residues were noted on the surfaces of the sherds, so separate 2 mm thick layers from the interior and exterior surfaces of each sherd were removed and powdered using an electric drill (*Dremel*) fitted with an abrasive bit. Approximately 0.1 g of the resultant sherd powders were accurately weighed and extracted with 3 aliquots of ~1 ml DCM:MeOH (dichloromethane:methanol 2:1, v/v), with ultrasonication for 5 min. followed by centrifugation to aid separation of the solvent and powder (5 min. at 2000 rpm). The extract was transferred to a clean glass vial and the solvent was then removed under a stream of nitrogen. Excess BSTFA (*N,O*-bis(trimethylsilyl)trifluoroacetamide) with 1% TMCS (trimethylchlorosilane) was added to derivatise the sample which was warmed overnight. Excess derivatising agent was removed under a stream of nitrogen. The samples were diluted in approximately 10 drops of DCM for analysis by GC-MS. A method blank sample was prepared and analysed alongside the samples.

## Instrumental (GC-MS)

Analysis was carried out by combined gas chromatography-mass spectrometry (GC-MS) using an Agilent 7890A Series GC connected to an 5975C Inert XL mass selective detector. The splitless injector and interface were maintained at 300°C and 340°C respectively. Helium was the carrier gas at constant flow. The temperature of the oven was programmed from 50°C (2 min) to 350°C (10 min) at 10°C/min. The GC was fitted with a 15m X 0.25mm, 0.25µm HP-5MS 5% Phenyl Methyl Siloxane phase fused silica column. The column was directly inserted into the ion source where electron impact (EI) spectra were obtained at 70 eV with full scan from m/z 50 to 800.

# Rezultati (GC-MS)

Rezultati su prikazani kao totalni ionski kromatogrami BSTFA derivatiziranog ekstrakta otapala (-Si$(CH_3)_3$ derivati). Na njima je svaka odvojena komponenta ekstrakta otapala prikazana kao izdvojeni vrh, a područje pod svakim vrhom predstavlja obilnost. Identificirane komponente su označene.

P = ftalatni plastifikator
C = masna kiselina, s brojem ugljika
C OH = dugolančani alkohol, s brojem ugljika
WE = wax ester, s brojem ugljika
● = *n*-alkan
X = analitički artefakt

# Results (GC-MS)

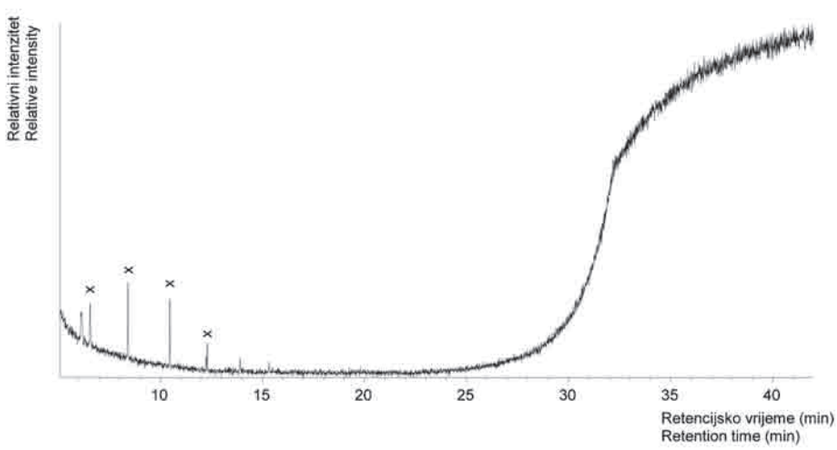
The results are presented as total ion chromatograms of the BSTFA derivatized solvent extract (-Si$(CH_3)_3$ derivatives). These show each separated component of the solvent extract as discrete peaks, the area under each peak being representative of the abundance. Where identified, components have been labelled.

P = phthalate plasticiser
C = fatty acid, with carbon number
C OH = long chain alcohol, with carbon number
WE = wax ester, with carbon number
● = *n*-alkane
X = analytical artefact

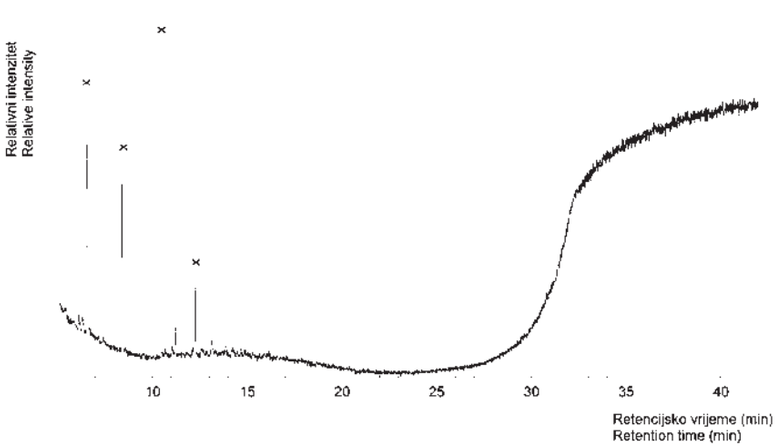
1. manji lončić sa zemljom, SJ 160
1. small pot with sediment, SJ 160



**unutarnja strana / interior**

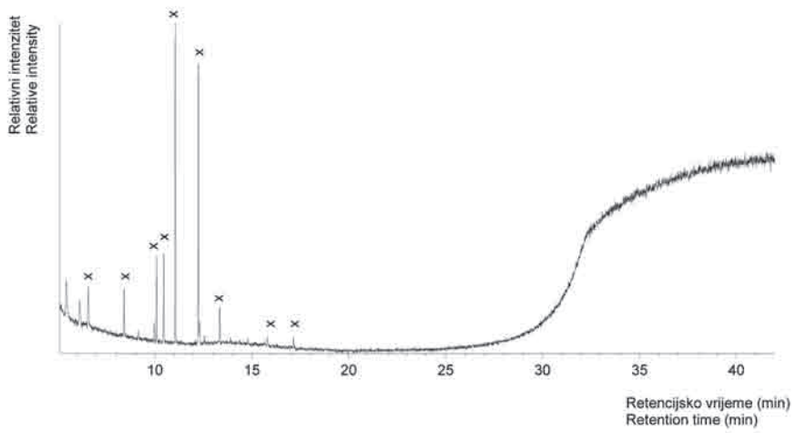



**vanjska strana / exterior**

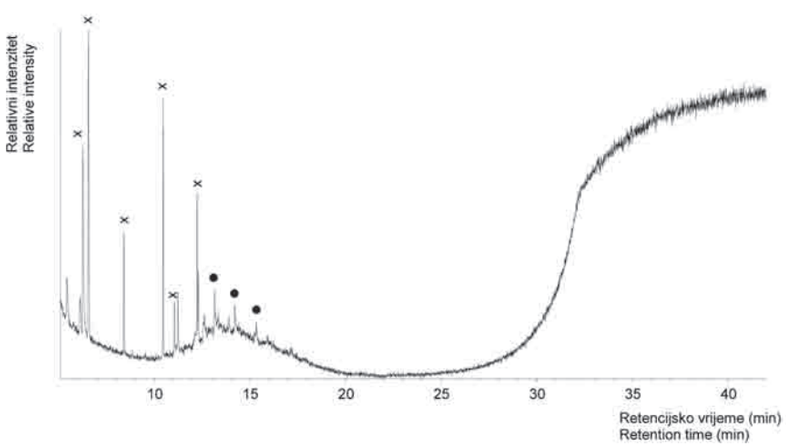


2. manji lončić s ušicama za ovjes, ispunjen zemljom, SJ 572
2. small pot with suspension loops, filled with sediment, SJ 572

**unutarnja strana / interior**

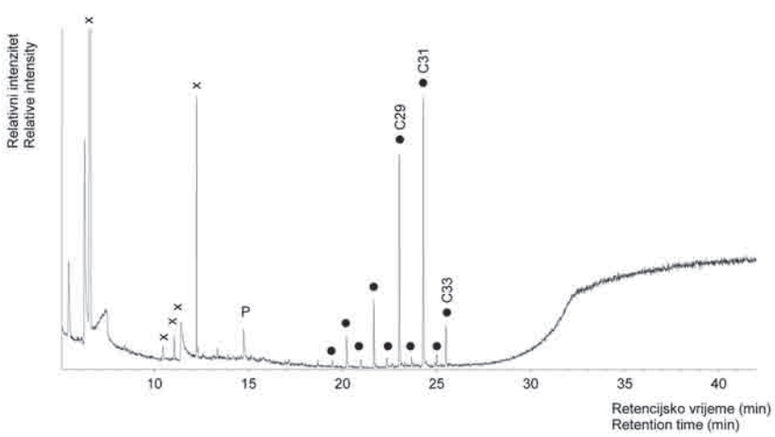



**vanjska strana / exterior**



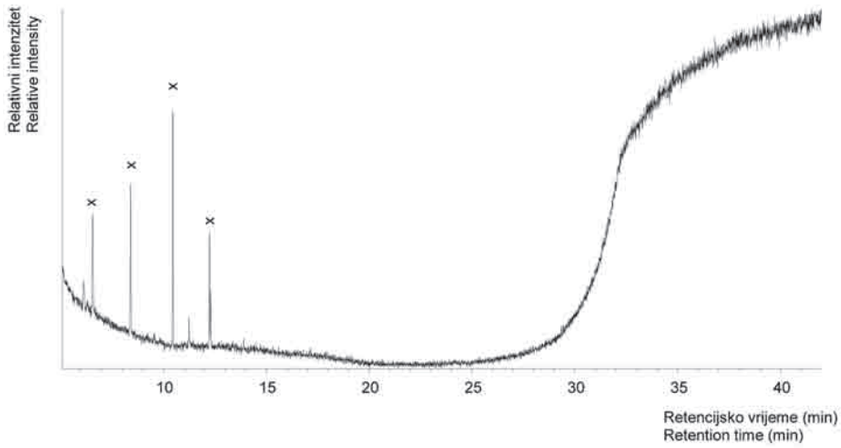



**Uzorak sedimenta iz unutrašnjosti uzorka 2 / Soil sample from sample 2 interior**

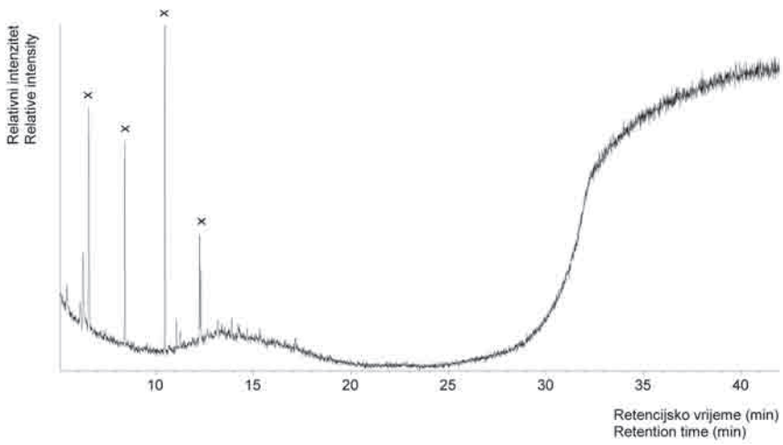


3. ulomak zaobljena lončića sa zemljom, SJ 160
3. fragment of a small round pot with sediment, SJ 160

**unutarnja strana / interior**



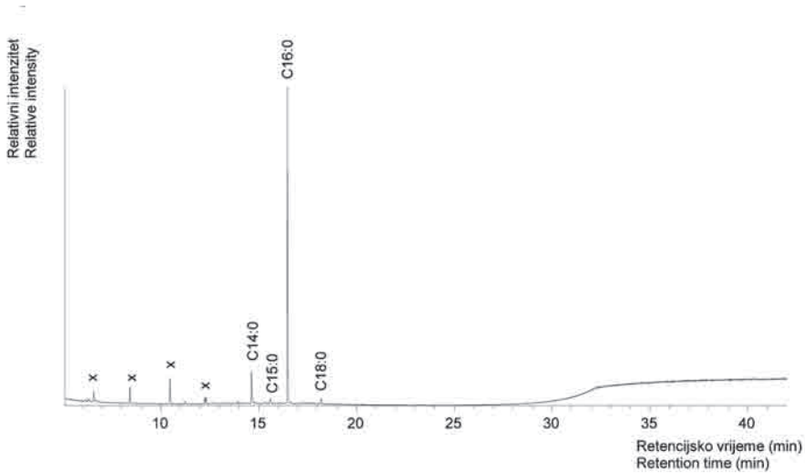

**vanjska strana / exterior**






4. zaobljena posudica sa zemljom, SJ 160
4. small round vessel with sediment, SJ 160

**unutarnja strana / interior**

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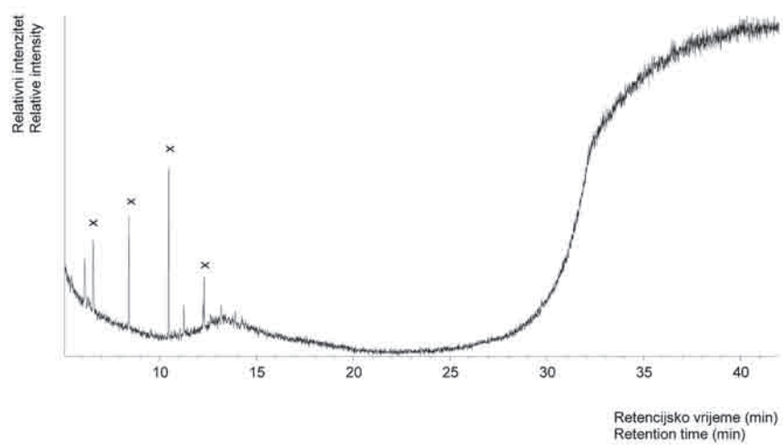
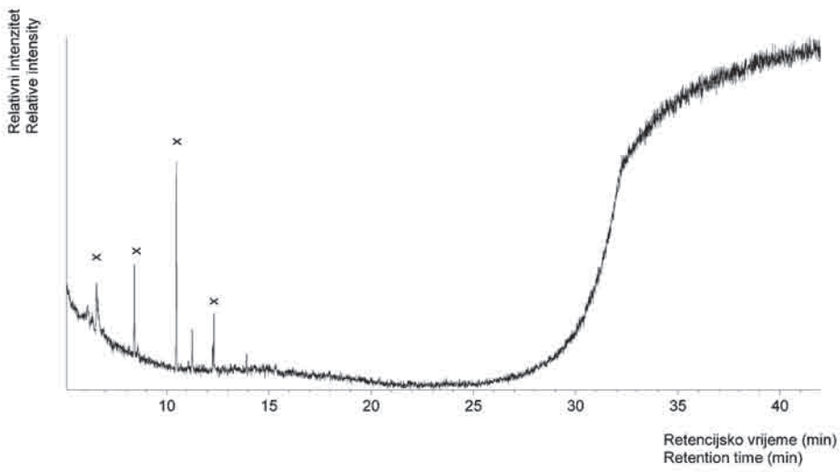
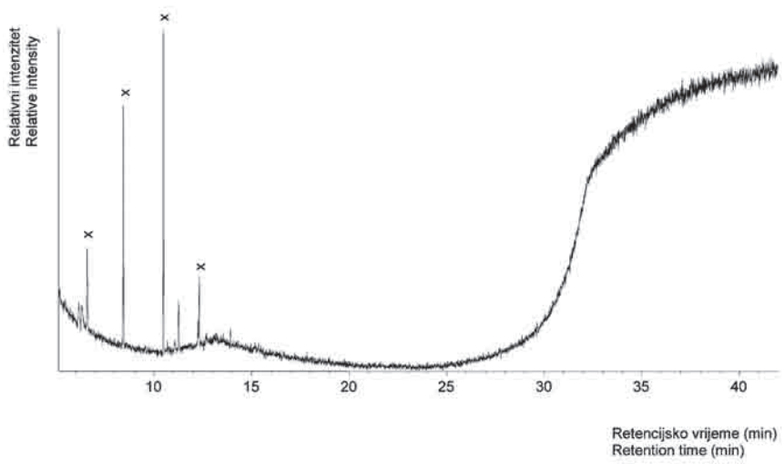


5. keramička žlica sa zemljom, SJ 160
5. ceramic spoon with sediment, SJ 160

**unutarnja strana / interior**



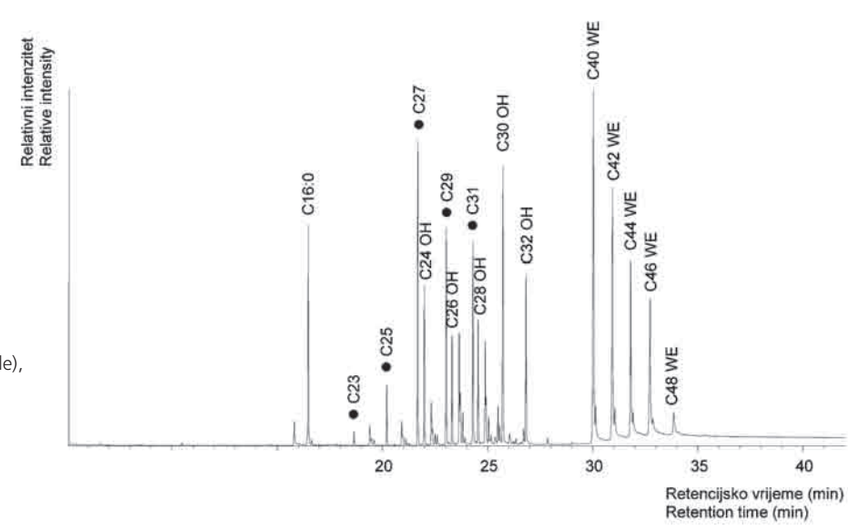

**vanjska strana / exterior**



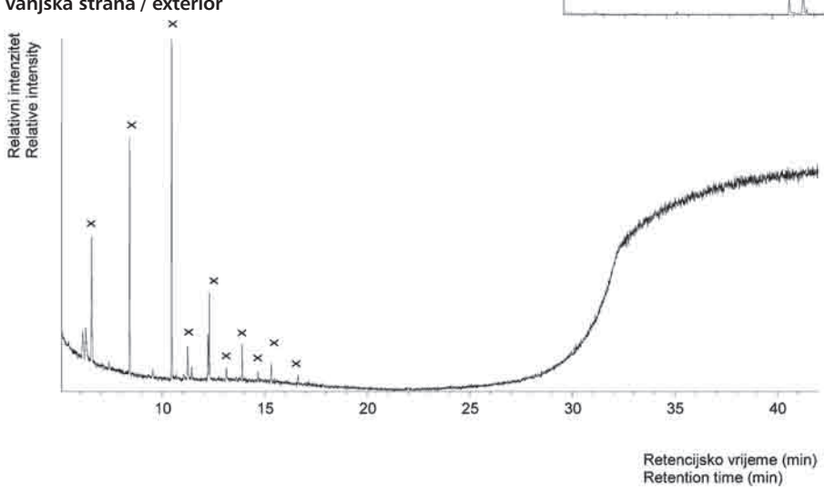



6. ulomci dna amfore (uzorak je neopran), SJ 599
6. fragments of the base of an amphora (unwashed sample), SJ 599

**unutarnja strana / interior**

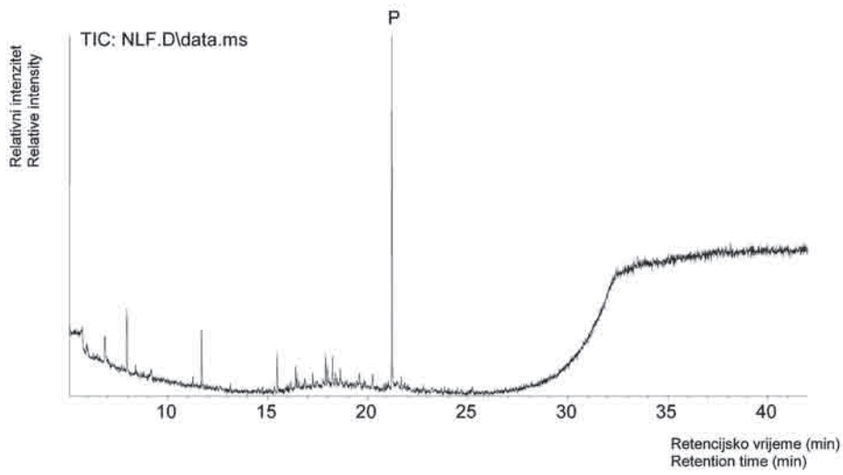



**vanjska strana / exterior**

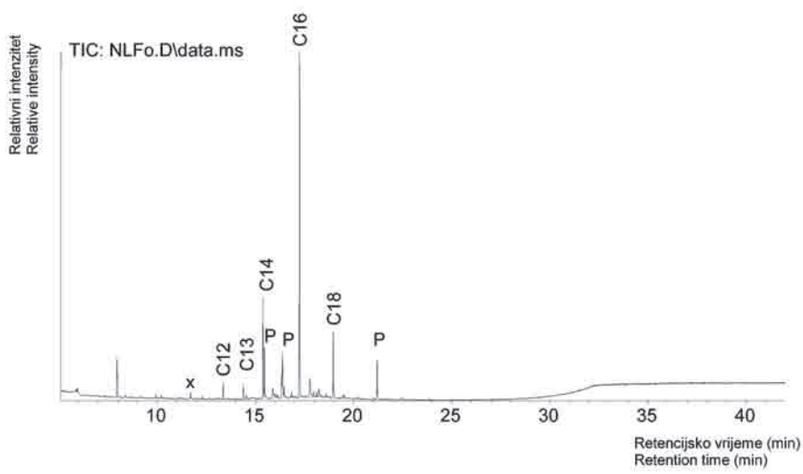


7. ulomak dna lonca (keramika je oprana), SJ 160
7. fragment of the base of a pot (washed), SJ 160

**unutarnja strana / interior**



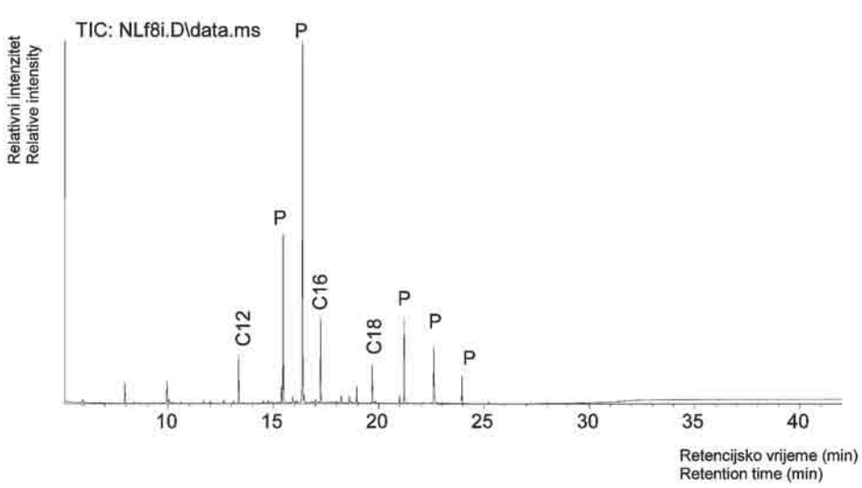

**vanjska strana / exterior**



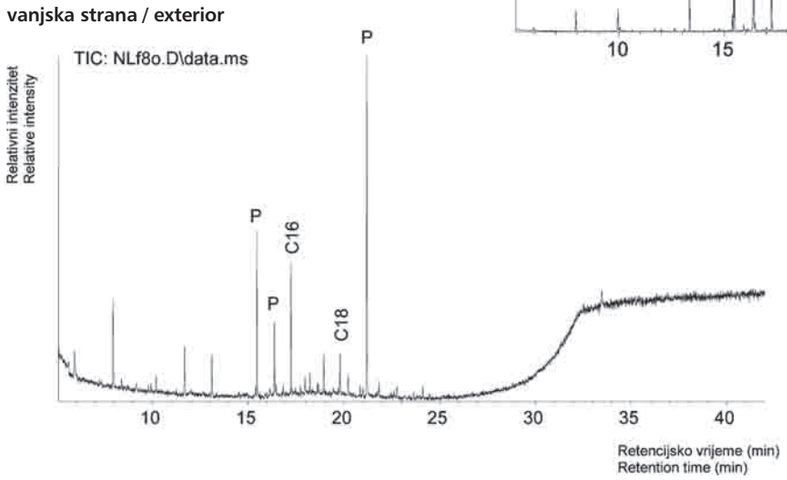



8. dno lonca (keramika je oprana), SJ 160
8. base of a pot (washed), SJ 160

**unutarnja strana / interior**

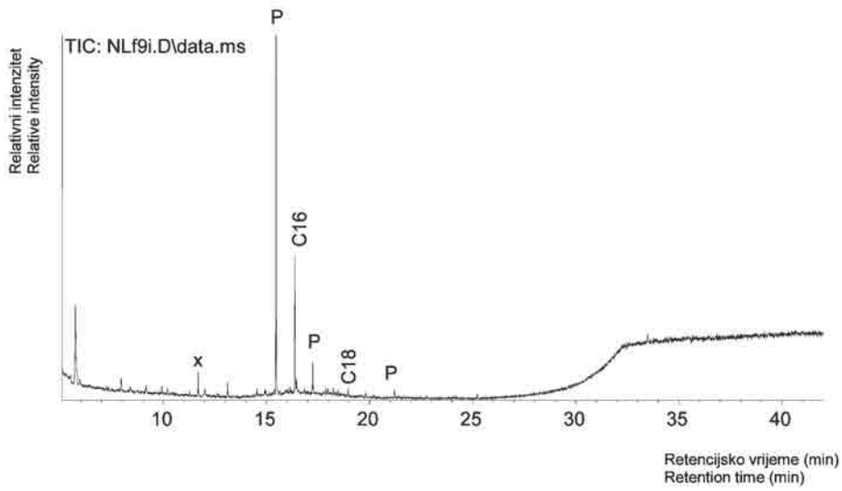



**vanjska strana / exterior**

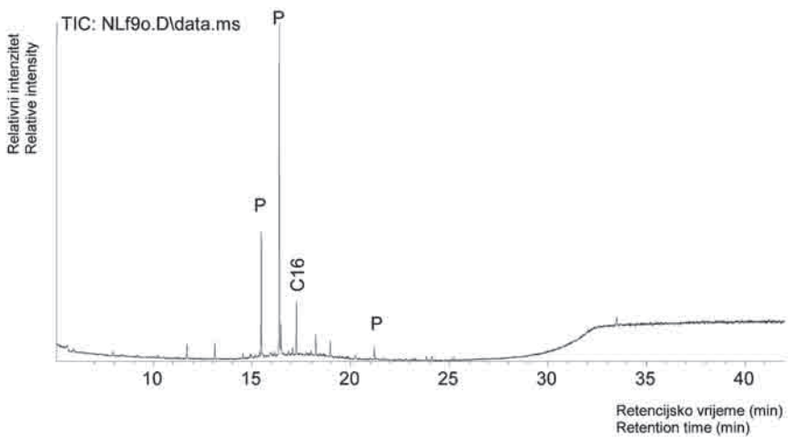


9. ulomak četvrtaste posude (karamika je oprana), SJ 160
9. fragment of a rectangular vessel (washed), SJ 160

**unutarnja strana / interior**



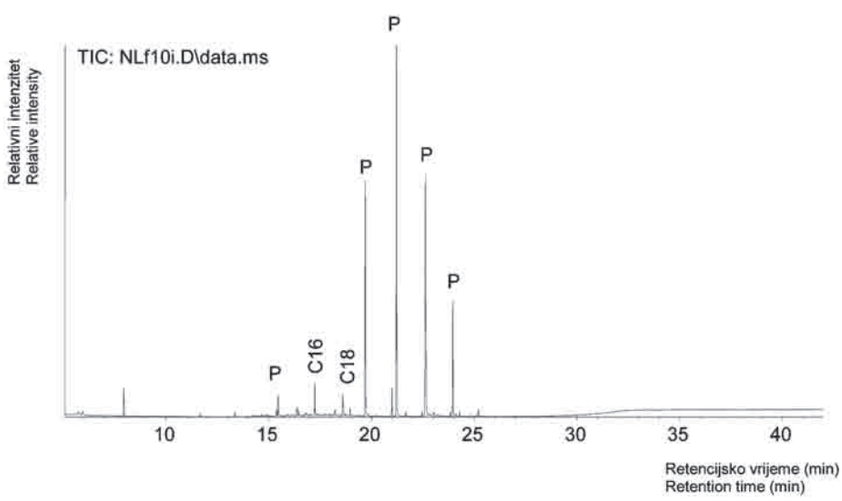

**vanjska strana / exterior**



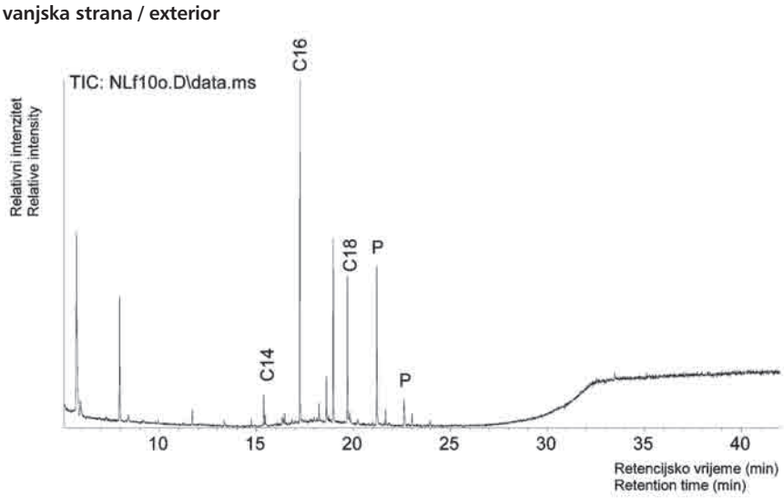



10. ulomak cjedila (keramika je oprana), SJ 160
10. fragment of a strainer (washed), SJ 160

**unutarnja strana / interior**




**vanjska strana / exterior**



# Tumačenje

Mnogi sastojci izdvojeni u tragovima pri analizi arheoloških organskih ostataka predstavljaju poznate kontaminate, poput suvremenih sintetičkih ftalata (P) ili analitičkih artefakata (x). Izvori ovih kontaminacija su brojni, a uključuju primjerice pakiranje materijala ili pripravu uzorka. Međutim, ove je kontaminacije jednostavno prepoznati te one ne ometaju analizu izvornih lipida.

Slijepa proba pripravljena i analizirana uz svaku seriju uzoraka nije prikazala značajnije vrhove. Povišenje na horizontalnoj osi između 30–42 minute zvano »*column bleed*« (»*krvarenje kolone*«) je uobičajena pojava tijekom analize, a ovdje se uočava samo zbog toga što je okomita os u slučaju nekoliko uzoraka prikazana u smanjenom mjerilu.

Samo dva uzorka dala su značajnije nalaze lipida:

Uzorak 4 (unutrašnjost) sadržavao je masne kiseline (od $C_{14}$ do $C_{18}$), a prevladavala je $C_{16:0}$. Ovakav rezultat ukazuje na prisutnost ulja ili masti. S vanjske strane posude nisu dobivene masne kiseline, što ukazuje na to da su lipidi bili izvorno prisutni u unutrašnjosti posude te prema tome nije riječ o kontaminaciji iz okolnog tla ili uslijed rukovanja nalazom. Nisu ustanovljeni nikakvi drugi biomarkeri (poput kolesterola ili fitosterola) koji bi pomogli određenju podrijetla ulja/masti kao životinjskog ili biljnog.

U uzorku 6 (unutrašnjost) ustanovljen je niz različitih tipova lipida, među kojima svi svojom obilnošću i rasporedom ukazuju na prisutnost pčelinjeg voska. Ustanovljeni su *n*-alkani (●) s rasponom broja ugljika od $C_{23}$ to $C_{31}$ pri čemu prevladavaju oni s neparnim brojem, a posebno su obilni $C_{27}$, $C_{29}$ and $C_{31}$. Ustanovljeni su dugolančani alkoholi (C OH) s brojem ugljikovih atoma od $C_{24}$ do $C_{32}$, od čega prevladavaju oni s parnim brojem. Ustanovljeni su i esteri voska od $C_{40}$ do $C_{48}$ (s $C_{16}$ karboksilnom kiselinom kao sastojkom estera). Lipidi nisu ustanovljeni na vanjskoj strani posude, što ukazuje na to da su izvorno pripadali unutrašnjosti posude.

U uzorku zemlje iz unutrašnjosti uzorka 2 ustanovljeni su *n*-alkani s rasporedom koji je različit od onoga u uzorku pčelinjeg voska. Ovakav raspored mogao bi ukazivati na prisutnost materijala koji potječe od vaskularnih biljaka, primjerice biljnog voska s lišća, koji je čest u zemlji.

Uzorci u kojima su ustanovljene samo masne kiseline (dakle, bez pčelinjeg voska) dali su obilnije rezultate u unutrašnjosti posude, što bi ukazivalo na to da su se lipidi izvorno nalazili u unutrašnjosti posude te prema tome ne predstavljaju kontaminaciju iz tla ili uslijed rukovanja uzorkom. Masne kiseline su uglavnom sveprisutne u tlu. *Uzorak 7* ima obilniji rezultat na vanjskoj stijenci, što bi moglo ukazivati na različitu očuvanost, ili na to da je posuda korištena na drugačiji način.

# Interpretation

In the analysis of archaeological organic residues at trace levels many of the components extracted are known contaminants e.g. modern synthetic phthalates (P) and analytical artefacts (x). These originate from a number of sources including packaging materials and sample preparation. However, this contamination is easy to recognise and does not interfere with the analysis of any authentic lipids.

The method blank samples prepared and analysed alongside each sample batch contained no significant peaks. The raised baseline from 30–42 minutes is termed »column bleed« a normal occurrence as part of analysis, this is only revealed here as the vertical scale has been reduced for some of the samples.

Only two samples yielded significant lipids:

Sample 4 (interior) yielded fatty acids ($C_{14}$ to $C_{18}$) with $C_{16:0}$ dominant. This indicates the presence of an oil or fat. No fatty acids were recovered from the exterior surface of this vessel, indicating that the lipids are indigenous to the interior of the vessel and therefore do not represent contamination from the burial matrix or from handling. No other biomarkers were present (such as cholesterol or phytosterols) which would have indicated the origin of the oil/fat as being animal or vegetable.

Sample 6 (interior) yielded a range of different lipid types, all of which in their abundance and distribution indicate the presence of beeswax. *n*-alkanes (●) were recovered with a carbon number range of $C_{23}$ to $C_{31}$ with the odd carbon numbers dominant and high abundances of $C_{27}$, $C_{29}$ and $C_{31}$. Long chain alcohols (C OH) were recovered with carbon numbers from $C_{24}$ to $C_{32}$ with the even carbon numbers dominant. And wax esters from $C_{40}$ to $C_{48}$ were recovered (with a $C_{16}$ carboxylic acid component of the ester). No lipids were recovered from the exterior surface of this vessel, indicating that the lipids are indigenous to the interior of the vessel.

The soil sample, taken from the interior of sample 2, yielded *n*-alkanes with a different distribution to the beeswax sample. This distribution could indicate a higher plan input, such as that from a plant leaf wax which is common in soils.

For those samples which only yield fatty acids (i.e. no beeswax) have higher yields on the interior surface which would normally indicate that the lipids are indigenous to the interior of the vessel and therefore do not represent contamination from the burial matrix or from handling. Fatty acids are generally ubiquitous in the burial environment. *Sample 7* have higher yields in the exterior, this may indicate different preservation, or that the vessel was used in different ways.

# Zaključna razmatranja

Kostolačka kultura prilično je kasno izdvojena kao zasebna kulturna pojava. To je kasnoeneolitička manifestacija koju stilski karakterizira način ukrašavanja – brazdasto urezivanje i ubadanje. Kao samostalna pojava u arheološkoj literaturi poznata je od 1953. godine,[1] a dotada je keramika kostolačkih stilskih osobina povezivana s badenskom, vučedolskom te Coţofeni kulturom.

Tijekom svog razvoja kostolačka je kultura zahvatila veliki prostor Karpatske kotline, dijelove središnjeg Balkana i rumunjsko Podunavlje. Gledajući današnje geografske odrednice, ona zahvaća područje istočne Hrvatske, središnje i istočne Srbije, sjevernu Bosnu, Rumunjsku, Mađarsku te Slovačku. Na tom prostoru N. Tasić izdvojio je nekoliko regionalnih cjelina s lokalnim specifičnim obilježjima.[2] To su u prvom redu: slavonsko-srijemska regija, zatim oblast Banata i Bačke, istočna Srbija, centralna Srbija, sjeverna Bosna, u Mađarskoj izdvojene su regije srednjeg toka Tise i područje dunavskog koljena te naposljetku slovačka i rumunjska nalazišta. Navedene regije čine širu oblast rasprostiranja kulture, odnosno uključena su i područja na kojima nije ustanovljena samostalna pojava kostolačke kulture, nego se pojavljuje u okvirima njoj suvremenih kultura (Coţofeni u Rumunjskoj i Bošaca u Slovačkoj). Područje pak, na kojem je ova kultura registrirana kao samostalna pojava, bilo na jednoslojnim ili višeslojnim nalazištima, daleko je manje i obuhvaća istočnu Slavoniju i Srijem, sjevernu Bosnu, centralnu Srbiju i Pomoravlje.

Naročito važnim za bavljenje problematikom kostolačke kulture smatramo radove nekolicine autora. U prvom redu V. Milojčića, koji je izdvojio tu kasnoeneolitičku manifestaciju, zatim A. Benca i N. Tasića koji su objavama materijala s Pivnice i Gomolave dali značajan doprinos u valorizaciji te kulture.[3] S. Dimitrijević pozabavio se pitanjem stupnjevanja kostolačke kulture te u znanstvenu uporabu unio termin »horizont Pivnica-Cerić-Ašikovci«.[4] Pitanjem kronologije kostolačke kulture bavili su se N. Tasić, B. Jovanović i B. Brukner.[5] Ipak, najpotpuniju sliku o kostolačkoj kulturi, obuhvativši čitavo područje njena rasprostiranja daje N. Tasić u *Praistoriji jugoslavenskih zemalja*. S obzirom na stanje istraživanja on prikazuje detaljan pregled istraživanja te valorizaciju nalaza.[6] Ovom prilikom navest ćemo

[1] Milojčić 1953.

[2] Tasić 1979: 237–242.

[3] Milojčić 1953; Benac 1962; Tasić 1965.

[4] Dimitrijević 1977–1978.

[5] Jovanović 1966; Tasić 1966; Tasić 1970; Brukner 1979.

[6] Tasić 1979: 235–266.

# Concluding remarks

The Kostolac culture was distinguished as a separate cultural phenomenon at a rather late stage. This Late Eneolithic culture has a characteristic decorative style – furrow incision and stabbing. It was introduced into the archaeological literature as an independent phenomenon in 1953,[1] whereas previously the ceramic ware with stylistic features characteristic of the Kostolac culture had been attributed to the Baden, Vučedol and Coţofeni cultures.

During its development, the Kostolac culture spread over a wide area of the Carpathian Basin, parts of Central Balkans and the Romanian Danubian basin. From the point of view of contemporary political geography, it covered the area of eastern Croatia, central and eastern Serbia, northern Bosnia, Romania, Hungary and Slovakia. In that area, N. Tasić distinguished several regional units with specifically local traits.[2] These are primarily: the region of Slavonia and Syrmia, the region of Banat and Bačka, eastern Serbia, central Serbia, northern Bosnia; in Hungary, the middle reach of the Tisza and the area of the Danube Bend were distinguished as individual regions; finally, there are Slovakian and Romanian sites. These regions make up the wider distribution area of the Kostolac culture, i.e. this includes also areas where the Kostolac culture does not appear on its own, but in conjunction with contemporaneous cultures (Coţofeni in Romania and Bošaca in Slovakia). On the other hand, the area where this culture was registered as an independent entity, whether on sites with a single occupation horizon or on stratified ones, is far smaller and covers eastern Slavonia and Syrmia, northern Bosnia, central Serbia and the Morava Basin (*Pomoravlje*).

Works by several authors can be considered seminal for those wishing to discuss the Kostolac culture. This primarily applies to V. Milojčić, the first to identify this Late Eneolithic phenomenon; there are then A. Benac and N. Tasić, whose respective publications of the assemblages from Pivnica and Gomolava significantly contributed to the evaluation of that culture.[3] S. Dimitrijević tackled the issue of the periodization of the Kostolac culture and introduced the term »Pivnica-Cerić-Ašikovci horizon« into scholarly use.[4] The chronology of the Kostolac culture was dealt with by N. Tasić, B. Jovanović and B. Brukner.[5] However, the most comprehensive picture of the Kostolac culture, which encompassed the entire area of its distribution,

[1] Milojčić 1953.

[2] Tasić 1979: 237–242.

[3] Milojčić 1953; Benac 1962; Tasić 1965.

[4] Dimitrijević 1977–1978.

[5] Jovanović 1966; Tasić 1966; Tasić 1970; Brukner 1979.

samo neke od recentnih radova koji se bave problemom kostolačke kulture, jer su u njima citirani i ostali radovi o toj problematici.[7]

Kostolačka kultura na području Hrvatske nije istražena u tolikoj mjeri da bi zaključci o problemima porijekla, razvoja i periodizacije bili definitivni. Slika poznavanja kostolačke kulture nije bitno drugačija od one što ju je pokazao N. Tasić dajući pregled kostolačke kulture na području čitave bivše Jugoslavije, iako danas raspolažemo puno većim brojem kostolačkih nalazišta, budući da materijal koji je s njih prikupljen, bez obzira je li riječ o slučajnim nalazima ili pak o materijalu dobivenom iskopavanjima, nije dovoljno valoriziran.[8]

Što se tiče geneze kostolačke kulture u literaturi su se javljale prilično različite teorije. Kako je isprva kostolačka kultura smatrana dijelom badenske, zaključci o porijeklu badenske kulture primjenjivali su se i na kostolačku kulturu. A. Benac je u svojim ranijim radovima zastupao teoriju o sjevernom porijeklu.[9] Na osnovi načina ukrašavanja (ubadanje) na materijalu iz Pivnice vidio je sličnost s Rössenskom i kulturom s ubodnotrakastom keramikom. N. Tasić je u svojim ranijim radovima kostolačku kulturu pokušao objasniti kao posljedicu širenja badenske kulture prema jugu i njenim jakim utjecajem na autohtonu vinčansku osnovu.[10] U svojim kasnijim radovima isti autor pak ističe pojavu različitih stranih elemenata, koji su krajem eneolitika zahvatili područje kostolačke kulture.[11] B. Jovanović smatrao je da je kostolačka kultura završni rezultat evolucije unutar badenske kulture kada su lokalne tradicije razvijene na njenom području prevladale i dovele do nastanka nove kulturne pojave.[12]

Mišljenje većine autora je da se kostolačka kultura javlja kao rezultat djelovanja badenske kulture na autohtonu neolitičku osnovu na prostoru istočne Slavonije i Srijema te da je formirana na južnoj periferiji prostiranja badenske kulture u vrijeme B-2 stupnja.[13] Kostolačka kultura tako nadživljava badensku i egzistira samostalno do vremena formiranja vučedolske kulture kojoj je poslužila kao osnova za razvoj ornamentalnog stila.

Ipak ima i autora koji smatraju da je kostolačka kultura nastala gotovo istovremeno kao i badenska, ali na različitom prostoru, odnosno da je matično područje kostolačke kulture južno od Save i Dunava, gdje nije bila zastupljena badenska kultura, te da je kao i badenska kultura nastala na osnovama Boleraz – Cernavoda III.[14]

Nakon što ju je V. Milojčić izdvojio kao samostalnu kulturnu pojavu i dao joj mjesto u kronologiji eneolitika, neki autori smatrali su je samo razvojnom fazom unutar badenske kulture. M. Garašanin dao je prijedlog podjele badenske kulture na Baden-Pecel i Baden-Kostolac i tako utvrdio svoje stajalište o nepostojanju samostalne kostolačke kulture.[15] S. Dimitrijević također isprva badensku kulturu dijeli na stariju ili badensko-pecelsku fazu (stupanj A i stupanj B) i mlađu ili badensko-kostolačku fazu te smatra da badensko-kostolačka keramika

[7] Roman 1980; Bondar 1984; Stapelfeldt 1997; Nikolić 2000.
[8] Balen 2002a.
[9] Benac 1962: 32–35.
[10] Tasić 1967: 47.
[11] Tasić 1979: 262.
[12] Jovanović 1974: 165.
[13] Dimitrijević 1979b: 230; Durman 1988: 13.
[14] Nikolić 2000: 60–63, 69.
[15] Garašanin 1959: 37–45; Garašanin 1959a: 23–27; Garašanin 1973.

was put forward by N. Tasić in the *Prehistory of the Yugoslav Lands*. Taking into consideration the state of research, he provided a detailed overview of previous investigations and evaluated the finds.[6] We shall mention here only a few recent papers dealing with the Kostolac culture, considering that they include citations of the remaining works about these issues.[7]

The Kostolac culture in Croatia has not been sufficiently investigated to allow definite conclusions regarding the issues of its origin, development or periodization. Our present picture of the Kostolac culture is not significantly different from that painted by N. Tasić in his review of this culture in the entire territory of former Yugoslavia, in spite of the fact that we now have a far larger number of sites of this culture. This is due to the fact that the material collected from these sites, regardless of whether these were chance finds or assemblages from archaeological excavations, has not been sufficiently evaluated.[8]

As regards the genesis of the Kostolac culture, fairly diverse theories have been put forward in the literature. As the Kostolac culture was at first considered a part of the Baden culture, the conclusions regarding the origin of the latter were applied to the Kostolac culture as well. In his earlier papers, A. Benac advocated the theory of a northern origin.[9] In the method of decoration (stabbing) of the material from Pivnica he saw similarities with the Rössen culture and the Stroke-Ornamented Pottery culture. N. Tasić tried to interpret the Kostolac culture in his earlier works as a consequence of the southward spread of the Baden culture and its strong influence on the autochthonous Vinča substrate.[10] On the other hand, in his later works, the same author underlined various foreign elements that appeared the territory of the Kostolac culture towards the end of the Eneolithic.[11] B. Jovanović thought that the Kostolac culture was the final result of the evolution within the Baden culture, when the local traditions that had been developing in its territory prevailed, bringing about a new cultural phenomenon.[12]

Most authors believe that the Kostolac culture appeared as a result of the influence of the Baden culture on the autochthonous Neolithic substrate in the area of eastern Slavonia and Syrmia, and that it was formed in the southern periphery of the Baden culture during its B-2 phase.[13] The Kostolac culture thus outlived the Baden culture and existed independently until the formation of the Vučedol culture, which based its ornamental style on that of the Kostolac culture.

On the other hand, there are certain authors who believe that the Kostolac culture was formed almost simultaneously with the Baden culture, but in a different area, that is, that the core area of the Kostolac culture lay south of the Sava and the Danube, where the Baden culture was never present, and that just like this culture it was formed on the Boleráz – Cernavoda III substrate.[14]

After V. Milojčić distinguished it as an independent cultural phenomenon, finding a place for it in the chronology of the Eneolithic, certain authors at first considered it as a mere phase within the

[6] Tasić 1979: 235–266.
[7] Roman 1980; Bondar 1984; Stapelfeldt 1997; Nikolić 2000.
[8] Balen 2002a.
[9] Benac 1962: 32–35.
[10] Tasić 1967: 47.
[11] Tasić 1979: 262.
[12] Jovanović 1974: 165.
[13] Dimitrijević 1979b: 230; Durman 1988: 13.
[14] Nikolić 2000: 60–63, 69.

dolazi kao import unutar vučedolske kulture.[16] Pomak naprijed učinjen je Benčevom objavom samostalnog kostolačkog naselja u Pivnici kod Odžaka te objavom N. Tasića sustavnih iskopavanja na Gomolavi.[17] Na osnovi iskopavanja na Gomolavi vođenim 1965. i 1966. godine N. Tasić iznosi stratigrafski položaj kostolačke kulture: materijal kostolačke kulture javlja se u kulturno i vremenski izdvojenim horizontima, iznad badenskog horizonta s ukopanim jamama i ispod vučedolskog horizonta. Tada i S. Dimitrijević mijenja ranije mišljenje o nepostojanju samostalne kostolačke kulture te navodi da bi se kostolačku kulturu trebalo tretirati kao samostalnu kulturnu pojavu, a ne u sklopu badenske kulture.[18] S. Dimitrijević kostolačku kulturu iskazuje u dva stupnja – rani ili A stupanj i kasni ili B stupanj. Za određenje ranog stupnja kostolačke kulture uvodi termin Pivnica – Cerić – Ašikovci i smatra da je istovremen s Badenom B2, dok za mlađi stupanj smatra da je istovremen Vučedolu B1 i da je do njega došlo kad je kostolačka kultura bila potisnuta iz Slavonije i Srijema prema Slovačkoj.[19]

Danas se u literaturi susreću dva mišljenja o periodizaciji kostolačke kulture. Oba, doduše, smatraju da su postojale tri razvojne faze. Na stratigrafiji Gomolave temelji se jedna periodizacija. Istraživanja provedena 1979. godine dokazala su da se barem na jednom dijelu toga tela može govoriti o tri faze gradnje kostolačkog naselja.[20] Nalazi s Gomolave gdje se u najstarijem kostolačkom sloju pojavljuje zajedno kostolački i badenski materijal potvrđuju da bi se trebalo računati s kontinuiranim kronološkim prijelazom iz badenske u kostolačku kulturu kao i s mogućnošću vremenskog podudaranja nestanka života kostolačke s početkom razvoja vučedolske kulture.[21] Keramički nalazi s Gomolave ukazuju na tipološku ustaljenost iako postoje tri stambene faze naselja.[22] Po toj periodizaciji zasniva se i podjela T. Stapelfeldta na 3 grupe ornamentiranja kostolačke keramike od kojih se prva veže uz badenski stil ukrašavanja, a posljednja uz vučedolski.[23] Drugo mišljenje, kao što smo to već naveli, zasniva se na tome da je matično područje kostolačke kulture centralni Balkan, zatim da se u klasičnoj fazi kostolačka kultura seli prema Slavoniji i Srijemu te da je u kasnoj fazi vidljiv utjecaj vučedolske kulture.[24]



## Apsolutno datiranje

Dobiveni apsolutni datumi za kostolačku kulturu kreću se u rasponu od 3300. do 2700. god. pr. Kr., iako neki autori navode da je zbog dva važna »koljena« u kalibracijskoj krivulji između 3300.–3100. i 2900.–2600. god. pr. Kr. moguće očekivati nešto kraće trajanje kostolačke kulture, odnosno između 3000./2900.–2800./2700.[25]

[16] Dimitrijević 1956: 35, 36; Dimitrijević 1962: 246, 250–251.

[17] Benac 1962: 21–40; Tasić 1965: 180–191.

[18] Dimitrijević 1966: 22.

[19] Dimitrijević 1977–1978: 2–7, 68.

[20] Jovanović 1974: 167; Brukner 1979: 8–13.

[21] Brukner 1979, 8–13; miješanje badenskog i kostolačkog materijala u istom sloju uočeno je u Dobanovcima, vidi: Tasić 1959: 231–232; Tasić 1969: 39.

[22] Petrović 1984: 33–34; Petrović 1986: 24.

[23] Stapelfeldt 1997.

[24] Nikolić 2000: 57–66.

[25] Bankoff – Winter 1990: 186, T.2, 189; Forenbaher 1993: 246, 247; Bojadžijev 1992: 397.

Baden culture. M. Garašanin put forward a division of the Baden culture into Baden-Pecel and Baden-Kostolac, further strengthening his view that the Kostolac culture never existed as a distinct phenomenon.[15] S. Dimitrijević at first also joined the view that the Baden culture should be divided into an earlier, or Baden-Pecel phase (phase A and phase B), and later or Baden-Kostolac phase, believing that Baden-Kostolac pottery was imported into the Vučedol culture.[16] A step forward was made with Benac's publication of the independent Kostolac settlement at Pivnica near Odžak and N. Tasić's publication of the systematic excavations at Gomolava.[17] Based on the 1965 and 1966 excavations at Gomolava, N. Tasić put forward the stratigraphic position of the Kostolac culture: the Kostolac material appears in culturally and chronologically discrete horizons, above the horizon of the Baden culture with pits, and beneath the horizon of the Vučedol culture. This was also the turning point for S. Dimitrijević, who changed his previous opinion that denied the independent existence of the Kostolac culture. He now asserted that the Kostolac culture should be treated as an independent cultural phenomenon, and not as a part of the Baden culture.[18] S. Dimitrijević divided the Kostolac culture into two phases – the early or A phase and the later or B phase. He introduced the horizon Pivnica-Cerić-Ašikovci as the defining term for the early phase of the Kostolac culture, which he considered synchronous with Baden B2, while he synchronized the later phase with Vučedol B1, believing that it was brought about when the Kostolac culture was pressed from Slavonia and Syrmia towards Slovakia.[19]

There are two opinions in the scholarly literature about the periodization of the Kostolac culture, both postulating a three-phase division. One of these periodizations is based on the stratigraphy of Gomolava. The 1979 excavations proved that at least on a part of that tell one can discuss three different occupation horizons of the Kostolac settlement.[20] The finds from Gomolava – where the earliest Kostolac horizon yielded Kostolac finds in association with the material of the Baden culture – confirm the belief that there was a continuous chronological transition from the Baden to the Kostolac culture, as well as that the time of disappearance of the Kostolac culture may have been synchronous with the beginning of the development of the Vučedol culture.[21] Ceramic finds from Gomolava suggest a typological uniformity in spite of three different occupation phases of the settlement.[22] This periodization served as the base for T. Stapelfeldt's division into 3 ornamental groups of the Kostolac pottery, the first of which is associated with the decorative style of the Baden culture, while the last is associated with the Vučedol style.[23] The second opinion, as we already mentioned, is based on the idea that central Balkans is the original core area of the Kostolac culture, that in its classical phase this culture shifted towards Slavonia and Syrmia, while the last phase is characterized by the influence of the Vučedol culture.[24]

[15] Garašanin 1959: 37–45; Garašanin 1959a: 23–27; Garašanin 1973.

[16] Dimitrijević 1956: 35, 36; Dimitrijević 1962: 246, 250–251.

[17] Benac 1962: 21–40; Tasić 1965: 180–191.

[18] Dimitrijević 1966: 22.

[19] Dimitrijević 1977–1978: 2–7, 68.

[20] Jovanović 1974: 167; Brukner 1979: 8–13.

[21] Brukner 1979, 8–13; association of the Baden and Kostolac material in the same horizon was observed in Dobanovci, see: Tasić 1959: 231–232; Tasić 1969: 39.

[22] Petrović 1984: 33–34; Petrović 1986: 24.

[23] Stapelfeldt 1997.

[24] Nikolić 2000: 57–66.

**Tab. 13.1** Apsolutni datumi kostolačke kulture
**Tab. 13.1** Absolute dates of the Kostolac culture

| Lab. broj<br>Lab. Number | Kontekst i materijal<br>Context & Material | δ 13 C | Datum (BP)<br>Date (BP) | Kalibrirani datum<br>Calibrated age range<br>2 Sigma – 95 % | Kalibrirani datum<br>Calibrated age range<br>1 Sigma – 68 % |
|---|---|---|---|---|---|
| **Vučedol – vinograd Streim, sonda V-87** | | | | | |
| Beta 201767 | jama 60, kost | –18.9 | 4350 +/– 60 | 3100–2880 | 3020–2900 |
| **Vučedol – vinograd Streim, sonda V-85 (preuzeto od Horvatinčić et al. 1990: 246, T.1)** | | | | | |
| Z-1820 | jama 32, ugljen (charcoal) | | 4370+/–140 | 3320–2790 | |
| Z-1821 | jama 103, ugljen (charcoal) | | 4500+/–150 | 3310–2920 | |
| **Đakovo – Franjevac** | | | | | |
| Beta 234048 | uzorak (sample) 158, SJ (unit) 51, ugljen (charcoal) | –26.3 | 4460+/–40 | 3340–3010<br>2970–2960 | 3320–3220<br>3180–3160<br>3120–3080<br>3060–3030 |
| Beta 238080 | uzorak (sample) 180, SJ (unit) 51, ugljen (charcoal) | –25.0 | 4420+/–50 | 3340–3210<br>3190–2910 | 3260–3250<br>3100–3000<br>2990–2930 |
| Beta 234052 | uzorak (sample) 148, SJ (unit) 160, ugljen (charcoal) | –26.0 | 4280+/–40 | 2920–2870 | 2910–2880 |
| Beta 234044 | uzorak (sample) 823, SJ (unit) 160, životinjska kost (animal bone) | –20.7 | 4440+/–40 | 3340–3210<br>3190–2920 | 3270–3240<br>3110–3020 |
| Beta 234045 | uzorak (sample) 882, SJ (unit) 160, ugljen (charcoal) | –24.1 | 4650+/–40 | 3610<br>3520–3360 | 3510–3420<br>3380–3360 |
| Beta 233118 | uzorak (sample) 235, SJ (unit) 578 (SJ (unit) *161*), životinjska kost (animal bone) | –20.6 | 4310+/–60 | 3090–3050<br>3040–2870 | 3000–2990<br>2930–2890 |
| Beta 241652 | uzorak (sample) 921, SJ (unit) 1040 (SJ (unit) *161*), zub (tooth) | –19.6 | 4210+/–40 | 2900–2840<br>2810–2670 | 2890–2860<br>2800–2760 |
| Beta 234043 | uzorak (sample) 128, SJ (unit) 371 (SJ (unit) *20*), ugljen (charcoal) | –25.2 | 4200+/–40 | 2900–2840<br>2820–2670 | 2880–2860<br>2800–2750<br>2710–2710 |
| Beta 234046 | uzorak (sample) 133, SJ (unit) 369 (SJ (unit) *20*), ugljen (charcoal) | –26.6 | 4460+/–40 | 3340–3010<br>2970–2960 | 3320–3220<br>3180–3160<br>3120–3080<br>3060–3030 |
| Beta 238078 | uzorak (sample) 126, SJ (unit) 368 (SJ (unit) *20*), ugljen (charcoal) | –25.4 | 4310+/–40 | 3020–2880 | 2920–2890 |
| Beta 234047 | uzorak (sample) 888, SJ (unit) 876, ugljen (charcoal) | –25.8 | 4420+/–40 | 3320–3220<br>3180–3160<br>3120–2920 | 3100–3010<br>2970–2960 |
| Beta 238076 | uzorak (sample) 280, SJ (unit) 249, ugljen (charcoal) | –25.8 | 4280+/–50 | 3010–2970<br>2960–2870<br>2800–2780 | 2910–2880 |
| Beta 238077 | uzorak (sample) 563, SJ (unit) 267, ugljen (charcoal) | –23.4 | 4350+/–40 | 3090–3050<br>3040–2890 | 3020–2910 |
| Beta 241653 | uzorak (sample) 405, SJ (unit) 850 (SJ (unit) *306*), ljudska kost (human bone) | –19.9 | 4210+/–40 | 2900–2840<br>2810–2670 | 2890–2860<br>2800–2760 |
| Beta 241651 | uzorak (sample) 639, SJ (unit) 939 (SJ (unit) *266*), ljudska kost (human bone) | –20.1 | 4190+/–40 | 2890–2830<br>2820–2630 | 2880–2850<br>2810–2750<br>2720–2700 |

Datumi iz Gomolave kreću se oko 3108.–2877. god. pr. Kr.,[26] datum iz Rudne glave iznosi 2910.–2880. god. pr. Kr.,[27] iz Belovoda 3130.–2920. god. pr. Kr.,[28] a s Pivnice su datumi u rasponu od 3356. do 2857. god. pr. Kr..[29] Nešto viši datumi iz Pivnice ne poklapaju se s mišljenjem nekih autora o Pivnici kao naselju kasne faze kostolačke kulture, već pokazuju dugotrajan život na tom nalazištu.

[26] Petrović-Jovanović 2002: 298.
[27] Borić 2009: 198.
[28] Borić 2009: 208.
[29] Petrović-Jovanović 2002: 298.

# Absolute dates

The absolute dates obtained for the Kostolac culture range between 3300 and 2700 BC, although certain authors assert that due to two significant »wiggles« in the calibration curve between 3300–3100 and 2900–2600 BC we should reckon with a somewhat shorter duration of the Kostolac culture, namely between 3000/2900 and 2800/2700 BC.[25]

[25] Bankoff – Winter 1990: 186, T.2, 189; Forenbaher 1993: 246, 247; Bojadžijev 1992: 397.

Na prostoru Hrvatske apsolutni datumi potječu s lokaliteta Vučedol – vinograd Streim i Đakovo – Franjevac (tab. 13.1).[30]

Dobiveni kalibrirani apsolutni datumi na osnovi dva uzorka s Vučedola iz iskopnog bloka II (sonda V-85) iz 1986. godine jesu 3300.–2900. god. pr. Kr.[31] Dobiveni kalibrirani datum iz iskopnog bloka III (V-87) iz jame 60 je 3100.–2880. god. pr. Kr. te se poklapa s datumima iz Gomolave.[32]

S nalazišta Franjevac datumi se kreću cca od 3300. do 2700. god. pr. Kr. (1 sigma ili 68% vjerojatnosti). Po tim datumima, čini nam se sasvim opravdanim mišljenje D. Nikolić o istovremenom trajanju klasične badenske i kostolačke kulture između 3300./3200. i 3000./2900. pr. Kr.,[33] iako se ne možemo složiti s njenom konstatacijom da je rana faza kostolačke kulture prisutna isključivo na prostoru južno od Save i Dunava, jer nam datumi s lokaliteta Franjevac potvrđuju da je ono bilo naseljeno pripadnicima kostolačke kulture u svojoj ranoj fazi.

Također, gledajući datume možemo zaključiti da su se kostolačka i vučedolska kultura djelomično preklapale, jer se datumi za vučedolsku kulturu kreću od cca 2900. god. pr. Kr.

## Naselja

Topografske osobine evidentiranih kostolačkih naselja pokazala su određena pravila u odabiru lokacija za podizanje naselja. Sva naselja podignuta su uz veće ili manje vodotokove koji su pružali određene preduvjete za život. Gustoća naselja pokazuje da se vjerojatno radi o manjim naseljima uz postojanje nekoliko većih kojima se kontroliralo veće područje. U slavonsko–srijemskom području naselja su podizana na prirodnim uzvišenjima u blizini rijeka. Najveći broj lokaliteta kostolačke kulture predstavljaju jednoslojna naselja s horizontalnom stratigrafijom. U manjoj mjeri ustanovljena su i naselja tel tipa kao što su Vučedol i Sarvaš. Kostolačka je kultura s nastanjivanjem telova, barem u jednoj fazi svoga postojanja, imala kontrolu nad širokim prostorom međurječja Drave, Dunava i Save.[34] Neka naselja su vjerojatno bila utvrđena što nam dokazuje i elipsoidni šanac – rov koji opasuje plato Cerića.

Nalazišta s područja Hrvatske predstavljaju u najvećoj mjeri slučajan nalaz s nekoliko ulomaka keramike ili je riječ o manjim sondažnim i zaštitnim istraživanjima. Sustavna istraživanja su vršena na Vučedolu kod Vukovara, Sarvašu kod Osijeka, Lijevoj bari u Vukovaru[35] i Slavči kod Nove Gradiške.[36]

Nažalost, najveći dio kostolačkog materijala iz Vučedola i Sarvaša potječe iz starih iskopavanja kada kostolačka kultura nije niti bila izdvojena kao kulturna pojava te je njen materijal pripisan badenskoj kulturi.[37] Stratigrafija ta dva tela primjenjiva je tek uz korekcije koje su dali S. Dimitrijević i N. Tasić.[38]

[30] Jedan datum dobiven je i s nalazišta Kaznica – Rutak (usmeno priopćenje T. Hrška iz Arheološkog muzeja u Osijeku na čemu mu najsrdačnije zahvaljujemo).

[31] Horvatinčić et al. 1990: tabla 1, tabla 2.

[32] Balen 2005: 31.

[33] Nikolić 2000: 78–79.

[34] Durman 1995: 153–158.

[35] Vinski 1955; Demo 1996, 28.

[36] Skelac 1997: 220.

[37] Schmidt 1945.

[38] Dimitrijević 1962: 253; Dimitrijević 1968: 26–27; Tasić 1970: 26–28;

The dates from Gomolava range between 3108–2877 BC,[26] a date obtained from Rudna Glava is 2910–2880 BC,[27] from Belovod 3130–2920 BC,[28] while those from Pivnica range from 3356 to 2857 BC.[29] The somewhat higher dates from Pivnica do not coincide with the opinion of certain authors that the settlement of Pivnica belonged to the late phase of the Kostolac culture, but rather demonstrate a prolonged occupation of that site.

From Croatia we have absolute dates from the sites of Vučedol-Streim Vineyard and Đakovo-Franjevac (Tab. 13.1).[30]

The calibrated absolute dates obtained from two samples from the 1986 excavations in excavation block II (trench V-85) at Vučedol are 3300–2900 BC.[31] The calibrated date from block III (V-87) from pit 60 is 3100–2880 BC, which matches the dates from Gomolava.[32]

The dates from Franjevac range approximately between 3300 and 2700 BC (1 sigma or 68% probability). These dates justify D. Nikolić's opinion about the synchronous existence of the classical Baden culture and the Kostolac culture between 3300/3200 and 3000/2900 BC,[33] although we cannot agree with her statement that the early phase of the Kostolac culture was present only in the area south of the Sava and the Danube, because the dates from Franjevac corroborate that this site was settled by the bearers of the Kostolac culture in its early phase.

Also, a look at the dates points to the conclusion that the Kostolac and Vučedol cultures partly overlapped, because the dates from the Vučedol culture start from around 2900 BC.

## Settlements

Topographic features of documented Kostolac settlements have shown certain regularities in the selection of positions for building settlements. All the settlements were built next to larger or smaller watercourses that provided certain preconditions for living. The density of settlements indicates that these were probably generally smaller settlements, with few larger ones that exerted control over a wider area. In the area of Slavonia and Syrmia the settlements were erected on natural elevations near rivers. The most common type of site of the Kostolac culture are settlements with a single occupation horizon. There are few settlements of the *tell* type, such as Vučedol and Sarvaš. By settling tell sites, the Kostolac culture exerted control over the wide territory between the Drava, Danube and Sava rivers at least in one phase of its existence.[34] Some settlements were probably fortified, as demonstrated by the elliptical ditch that surrounded the settlement plateau at Cerić.

Most of the sites in Croatia are surface scatters of ceramics or minor trial- and salvage investigation sites. Systematic investigations were carried out at Vučedol near Vukovar[35], Sarvaš near Osijek, Lijeva Bara in Vukovar and Slavča near Nova Gradiška.[36]

[26] Petrović-Jovanović 2002: 298.

[27] Borić 2009: 198.

[28] Borić 2009: 208.

[29] Petrović-Jovanović 2002: 298.

[30] One date was also obtained from the Kaznica-Rutak site (I sincerely thank T. Hršak from the Archaeological Museum in Osijek for this personal communication).

[31] Horvatinčić et al. 1990: tabla 1, tabla 2.

[32] Balen 2005: 31.

[33] Nikolić 2000: 78–79.

[34] Durman 1995: 153–158.

[35] Vinski 1955; Demo 1996, 28.

[36] Skelac 1997: 220.

Na osnovi profila koji je objavio R. R. Schmidt, N. Tasić je na Vučedolu – položaj Gradac izdvojio dva kostolačka stambena nivoa od kojih bi jedan pripadao dubinama 3,40–3,00 metara, a drugi 3,00–2,65 metara.[39] Naravno, bio je u mogućnosti napraviti tek grubu podjelu bez mogućnosti da se ona potvrdi u sigurno zatvorenim cjelinama. Čvrsti nadzemni objekti (apsidalne kuće) na Gradcu najvjerojatnije pripadaju kostolačkoj kulturi, jer je u sadržaju dviju jama koje su starije od kuće bilo nalaza kostolačke keramike, a također su na podu jedne pronađene tipične kostolačke posude.[40]

Na položaju vinograd Streim koji je iskopavan od 1984. do 1990. god. te od 2001. izdvojen je samostalni kostolački horizont gdje se materijal ne miješa niti s badenskom niti vučedolskom kulturom. Ustanovljen je intenzivan život, iako je koncentracija kostolačkih objekata (jama i kuća) puno manja od onih vučedolske i badenske kulture. Zbog puno manje koncentracije kostolačkih objekata, koji su pritom gotovo sasvim uništeni mlađim građevinskim djelatnostima (nivelacija terena od strane vučedolske populacije, gradnja kuća i iskop jama u razdoblju vučedolske kulture te jama iz razdoblja brončanog doba), dosta je teško registrirati broj građevinskih faza kostolačke kulture. Ipak, neki nam nalazi potvrđuju postojanje barem dva građevinska horizonta u sondi V-87, odnosno u III iskopnom bloku.[41]

Kostolački sloj na Sarvašu mogao bi zapravo biti Dimitrijevićev mlađi badenski građevinski sloj, odnosno sloj na dubini od 4,00 do 3,20 m.[42] O »jačini« kostolačkoga sloja na Sarvašu svjedoči i mnoštvo nalaza skupljenih prije 1942. godine, koje je djelomično objavio i V. Hoffiller.[43] Kao i na Vučedolu, Schmidt i na Sarvašu navodi postojanje apsidalne kuće koju datira u badensku kulturu. Revizijom građe na Vučedolu uspjeli smo dokazati već i starije navode nekih autora o pripadnosti vučedolskih apsidalnih kuća kostolačkoj kulturi, ali bez atribuirane keramičke građe to je za Sarvaš nemoguće tvrditi.

Većim infrastrukturalnim radovima na trasama autocesta, osim na Franjevcu, tragovi kostolačkih naselja ustanovljeni su u Petrijevcima, položaj Verušed,[44] Kaznici kod Đakovačkih Selaca[45] te Jaruge – Gođevo Berava.[46] Međutim niti jednim arheološkim radovima nisu zahvaćena cijela naselja već dijelovi, pa ne možemo odgovoriti na pitanje kako su bila organizirana naselja kostolačke kulture, tj. je li postojala specijalizacija poslova unutar naselja ili je i djelatnost bila podijeljena po domaćinstvima. Na Franjevcu je ustanovljeno određeno grupiranje dugačkih uskih kanala,[47] koji mogu sugerirati neki vid specijalizacije. Ipak, kako nam je njihova namjena nepoznata, i takva promišljanja moraju se zasada uzeti s oprezom. Također, grupiranje objekata sa životinjskim i ljudskim ukopima daje za pretpostavku da je možda dio naselja bio namijenjen kultu.

Tasić 1979: 243.

[39] Tasić 1970: 28; Tasić 1984: 33.

[40] Tasić 1979: 249; Nikolić 2000: 42–43, Balen 2002a: 44.

[41] Balen 2005.

[42] Balen 2005a.

[43] Hoffiller 1938: T.9.

[44] Filipec et al. 2009: 47.

[45] Hršak, Pavlović 2007: 17.

[46] Za podatak zahvalnost dugujem kolegici Lidiji Miklik Lozuk iz Muzeja Brodskog Posavlja.

[47] vidi poglavlje *Naseobinski pokazatelji.*

Unfortunately, the bulk of the Kostolac assemblage from Vučedol and Sarvaš comes from old excavations when this culture had still not been distinguished as an independent cultural phenomenon and its material had been attributed to the Baden culture.[37] The stratigraphy of these two *tells* is applicable only with corrections put forward by S. Dimitrijević and N. Tasić.[38] Based on a section drawing published by R. R. Schmidt, N. Tasić distinguished two residential levels of the Kostolac culture at the position of Gradac at Vučedol, one relating to depths between 3.40–3.00 metres, and the other to 3.00–2.65 metres.[39] Of course, this division could only be approximate at best, as he could not substantiate it with secure closed contexts. The solid above-ground structures (apsidal houses) at Gradac most likely belong to the Kostolac culture, because the fill of the two pits antedating the house contained finds of Kostolac pottery. Moreover, typical Kostolac vessels were found on the floor of one of the houses.[40]

An independent Kostolac horizon, with material that is not associated either with Baden or Vučedol cultures, was discovered at the position of Vineyard Streim, excavated between 1984 and 1990 and again since 2001. The horizon indicated an intensive life, in spite of the fact that the concentration of Kostolac features and structures (pits and houses) is far below than that of the Vučedol and Baden cultures. This, coupled with the fact that these structures were almost entirely destroyed by later building activities (the levelling of the terrain, building of houses and digging of pits by the Vučedol population; pits dug during the Bronze Age) renders the assessment of construction phases of the Kostolac culture fairly difficult. Nevertheless, certain finds do confirm the existence of at least two occupation horizons in trench V-87, that is, in excavation block III.[41]

The Kostolac horizon at Sarvaš might in fact be Dimitrijević's later occupation horizon of the Baden culture, that is, the horizon at the depths between 4.00 and 3.20 m.[42] The »substantiality« of the Kostolac horizon at Sarvaš is demonstrated by the wealth of finds collected before 1942 and partly published by V. Hoffiller.[43] Like at Vučedol, Schmidt stated that there was an apsidal house at Sarvaš too, which he dated to the Baden culture. Upon a review of the Vučedol assemblage we managed to prove that the attribution of the apsidal houses at Vučedol to the Kostolac culture0 – an idea advocated by certain authors in the past – was correct, but we cannot assert the same for Sarvaš without accurate attribution of the ceramic assemblage.

The investigations carried out as part of large infrastructure works at motorway routes resulted in the discovery of the remains of Kostolac settlements – in addition to Franjevac – at the position of Verušed[44] in Petrijevci, at Kaznica near Đakovački Selci[45] and at Jaruge-Gođevo Berava.[46] However, none of these investigations covered entire settlements, but only parts thereof, so we cannot answer the question about the way the settlements of the Kostol-

[37] Schmidt 1945.

[38] Dimitrijević 1962: 253; Dimitrijević 1968: 26–27; Tasić 1970: 26–28; Tasić 1979: 243.

[39] Tasić 1970: 28; Tasić 1984: 33.

[40] Tasić 1979: 249; Nikolić 2000: 42–43, Balen 2002a: 44.

[41] Balen 2005.

[42] Balen 2005a.

[43] Hoffiller 1938: T.9.

[44] Filipec et al. 2009: 47.

[45] Hršak, Pavlović 2007: 17.

[46] I thank my colleague Lidija Miklik Lozuk from the Museum of Brodsko Posavlje for this information.

# Pokapanje

S prostora Hrvatske do danas imamo sigurno posvjedočeno tek nekoliko grobova koje bismo sa sigurnošću mogli pripisati kostolačkoj kulturi. Prema trenutačnom stanju istraživanja pokazuje se da su poznati i skeletno sahranjivanje i spaljivanje pokojnika. Ista je situacija posvjedočena i na susjednim prostorima.[48] Skeletno sahranjivanje u kostolačkoj kulturi je, naime, potvrđeno pojedinačnim grobovima ukopanim unutar naselja na Gomolavi,[49] dok su na nalazištu Silajet kod Bijeljine i Padina u Gornjem Đerdapu pokojnici spaljeni.[50] To prakticiranje birituralnog sahranjivanja ukazuje na složene odnose unutar zajednice. Spaljivanje se u eneolitičkim kulturama Karpatske kotline javlja kao strana pojava. Jovanović spaljivanje u kostolačkoj kulturi dovodi u vezu s promjenama u društvenoj organizaciji, s počecima i jačanjem metalurgije.[51]

Iako postoji opravdana sumnja da dio grobova s Vučedola i Sarvaša koje je Schmidt pripisao badenskoj kulturi pripadaju kostolačkoj, nemamo sigurnih podataka kojima bismo to potvrdili.[52] Tijekom iskopavanja na Vučedolu – vinograd Streim u kostolačkom sloju također nije pronađen niti jedan grob.[53] Na lokalitetu Retfala u Osijeku 1987. godine rovom je presječen kostur djeteta u zgrčenom položaju na lijevom boku. Prekriven je bio slojem riječnih školjki uz keramičke nalaze. Kako je riječ o neukrašenoj keramici grube fakture, ne može se sa sigurnošću reći radi li se o badenskom ili kostolačkom ukopu s obzirom na to da su u slojevima posvjedočeni nalazi obje spomenute kulture.[54]



Nekoliko je ukopa pronađeno u sklopu naselja na Franjevcu. Riječ je o ukopima u tri jamska objekta: u cilindričnoj jami (SJ 265 266) dubine 2 metra, a dimenzija 3 x 2,10 m koja je vjerojatno isprva služila kao spremište, na dubini od 108,219 do 108,134 m u sjevernom dijelu jame pokopan je muškarac između 20 i 35 godina starosti (Beta 241651). Položen je na bok, ispružen, u smjeru zapad – istok. Iznad glave je pokopana jedna životinja, a druga je smještena na jugozapadnom dijelu jame, orijentacije SI-JZ.

U velikom objektu SJ 160 161, u njena dva odvojena jamska prostora pronađeni su parcijalni ukopi, kalota djeteta starosti između 5 i 10 godina (Beta 233118) te lubanja žene starosti između 35 i 50 godina (Beta 241652). Treći je ukop, također u jami (SJ 305 306), sekundarni ukop triju lubanja (Beta 241653).

Skeletni ukop ustanovljen je također u sklopu naselja na položaju Kaznica – Rutak, a zasada jedini paljevinski ukop potječe iz Iloka. Naime, tijekom zaštitnih arheoloških istraživanja dvora kneževa iločkih 2007. god. pronađene su spaljene kosti pokojnika u zdjeli, a lonac je služio kao poklopac.[55]

U kostolačkim naseljima prisutni su i ukopi životinja. U jamama na Vučedolu sahranjeni su juvenilni primjerci životinja. Radi se o psu starosti oko 3–4 mjeseca, o dva teleta te o ovci ili kozi.[56]

[48] Nikolić 2000: 45–47.
[49] Tasić 1979: 250–251.
[50] Jovanović 1976: 132–133.
[51] Jovanović 1976: 140.
[52] Tasić 1979: 250.
[53] Durman 1987: 24; Durman 1987a: 35.
[54] Šimić 1998: 235.
[55] Tomičić et al. 2008: 12.
[56] Jurišić 1990: 21, 23–24.

ac culture were organized, i.e. whether they were characterized by intra-settlement specialization or the activities were divided within households.

The presence of clusters of long narrow channels[47] at Franjevac might suggest a specialization of sorts. However, as their function is unknown, we must be careful with such considerations. Also, clustering of features with animal and human burials allows us to assume that a part of the settlement may have been reserved for cult.

# Burial

To this day there are only a few burials from Croatia that we can securely attribute to the Kostolac culture. Our current understanding of burial practices allows us to speak of both inhumation and cremation burials. The same situation has been ascertained in the neighbouring areas.[48] To be precise, inhumation burials in the Kostolac culture were confirmed by individual graves within the settlement at Gomolava,[49] while the sites of Silajet near Bijeljina and Padina in the Upper Iron Gates yielded cremation burials. Simultaneous use of both rites points to complex relationship within society.[50] Cremation was introduced into the Eneolithic cultures of the Carpathian Basin as a foreign element. Jovanović associates cremation rite in the Kostolac culture with changes in the social organization, with the beginning and development of metallurgy.[51]

In spite of a reasonable suspicion that a part of the graves from Vučedol and Sarvaš that Schmidt attributed to the Baden culture in fact belong to the Kostolac culture, we have no reliable data to substantiate this.[52] The excavations of the Kostolac horizon at Vučedol-Streim Vineyard also failed to yield a single burial.[53] A trench excavated at Retfala in Osijek in 1987 cut across a child's skeleton flexed on the left side. It was covered with a layer of river shells in association with ceramic finds. However, as the latter consisted of unornamented coarse pottery, we cannot ascertain whether this was a Baden or Kostolac burial, since the layers contained finds of both of these cultures.[54]

Several burials were discovered within the settlement at Franjevac. The burials were found in three pit-structures. The first one is a cylindrical pit (SJ 265 266) 2 metres deep and measuring 3 x 2.10 m, which originally served as storage space. At the depth between 108.219 and 108.134 m a.s.l. in the northern part of the pit lay a man between 20 and 35 years of age (Beta 241651). He was placed in extended position on a side, oriented west-east. An animal was buried above his head, while another one was placed in the southwestern part of the pit, oriented NE-SW.

Two partial burials were discovered in two separate pit spaces within the large structure SJ 160 161. One of these was the cranial vault of a child aged between 5 and 10 (Beta 233118), while the other was the skull of a woman between 35 and 50 years of age (Beta 241652). The third burial, also found in a pit (SJ 305 306), was a secondary burial of three skulls (Beta 241653).

[47] See the chapter Settlement evidence.
[48] Nikolić 2000: 45–47.
[49] Tasić 1979: 250–251.
[50] Jovanović 1976: 132–133.
[51] Jovanović 1976: 140.
[52] Tasić 1979: 250.
[53] Durman 1987: 24; Durman 1987a: 35.
[54] Šimić 1998: 235.

Također u jami s miješanim badenskim i kostolačkim materijalom je sahranjena svinja, tj. mlado prase staro 4–5 mjeseci.[57] Na Franjevcu su zabilježeni ukopi svinja: samostalno (u SJ 43 44) te dviju svinja pokopanih s čovjekom (u SJ 265 266).[58]

Tijekom eneolitika na prostoru srednje Europe zajedničko pokapanje životinja i ljudi te samostalni životinjski ukopi nisu rijetkost.[59] Nalazi životinjskih kostura mogu se tumačiti na nekoliko načina. Prvi je ritualno žrtvovanje koje rezultira samostalnim životinjskim ukopom. Za takve postupke mora se pretpostaviti i postojajne animalističkoga kulta. Drugi način je pokapanje životinja uz ljudski kostur. Takav nalaz, koji na neki način možemo tumačiti kao grobni prilog, govori o vjeri u zagrobni život, kao i o osobnom bogatstvu i značenju pojedinca u zajednici. Dakle, riječ je o svojevrsnoj društvenoj diferencijaciji u razmjerno bogatom društvu koje, pokapajući životinju, na neki način gubi hranu. Treći način je odbacivanje uginulih životinja u jame koje iz nekih razloga nisu bile pogodne za hranu. Žrtveni ukopi razlikuju se od onih namjerno bačenih, najčešće po hocker položaju nogu koji je namjero izazvan.[60]

Opće je mišljenje da je osnovno simboličko značenje svinje plodnost još od neolitika te da je ona jedan od atributa Velike Majke, odnosno božice plodnosti.[61] Koristila se kao životinja za žrtvu i štovanje. Tijekom eneolitika svinja je čest nalaz kao prilog u grobu, obično uz noge pokojnika, najčešće muškarca. U grobu ona tako može pokazivati ugled pokojnika u zajednici. Na Franjevcu su prisutna oba načina pokapanja svinja.

## Materijalna ostavština

Iako se za kostolačku kulturu može reći da je njena osnovna kulturna i stilska odrednica keramičko posuđe vrlo dobre fakture i kvalitete, ona se više povezuje s tehnikama ukrašavanja i kompozicijom ukrasa nego s oblicima. Kostolački materijal karakterizira bogat dekorativni stil, upotpunjen bijelom inkrustacijom. Motivi su izvedeni brazdastim urezivanjem, urezivanjem, kraćim zarezivanjem, ubadanjem i žigosanjem te grupirani u horizontalne i vertikalne zone i polja. Žigosanje se vršilo tupim alatkama različitog presjeka: ovalni, trokutasti, kružni, pravokutni, potkovasti.

Tipološka analiza keramičke građe s Franjevca pokazala je da je materijal identičan onome iz ostalih kostolačkih nalazišta na prostoru Hrvatske, kao i Vojvodine i središnje Srbije. Najzastupljeniji oblici su kalotasta zdjela bez izražena dna i zdjela izvučena vrata. Među materijalom su također izdvojene blago bikonične zdjele s trakastom ručkom na prijelomu, zaobljeni lonci i lonci S-profilacije, posude (amfore) s uskim otvorom i dvije ručke na trbuhu te konične i šalice konkavnog tijela s ručkom koja nadvisuje rub. Izdužene posude (Fischbutte) koje su zastupljene među materijalom iz Franjevca, poznate su i iz Vukovara (Lijeva Bara), Cerića i Osijeka.[62] Lonci su najčešće grube fakture i nisu ukrašeni, osim plastičnim aplikacijama pod

[57] Jurišić 1990: 24.

[58] Prije provedenih analiza, odnosno tijekom istraživanja, u terenskoj se dokumentaciji vodilo da je riječ o ukopima goveda i pasa, pa je i u preliminarnim izvješćima ostala takva klasifikacija, vidi Balen 2008: 10.

[59] Pleinerová 2002: 21–22; Kyselý 2002: 55–61.

[60] Jurišić 1990: 28, bilješka 12.

[61] Hoti 1993: 77–98.

[62] Balen 2002: 155.

Another inhumation burial was discovered within the settlement at the site of Kaznica-Rutak. So far the only cremation burial was found in Ilok, where the 2007 salvage investigations of the Palace of the Ilok Princes yielded cremated human bones in a bowl, covered with a pot used as a lid.[55]

Kostolac settlements yielded also animal burials. Burials of juvenile animals in pits at Vučedol include a dog between 3–4 months old, two calves and a sheep or goat.[56] Also, a pig – a piglet 4–5 months old – was found in a pit with mixed Baden and Kostolac finds.[57] Franjevac also yielded burials of pigs: an individual burial of a pig (in SJ 43 44) and the burial of two pigs accompanying the burial of a man (in SJ 265 266).[58]

Joint burial of animals and humans and individual animal burials were not a rarity in Central Europe during the Eneolithic.[59] Finds of animal skeletons can be interpreted in several ways. The first considers them as ritual sacrifices, resulting in individual animal burials. This interpretation implies the existence of animal worship. The second relates to burial of animals next to a human skeleton. Finds of this type – which can be interpreted as grave gifts in a way – speak of the belief in the afterlife, as well as of personal wealth and significance of the individual within the society. We are dealing here with social differentiation of sorts within a relatively affluent society for which the act of burial of an animal represents a loss of food. The third way involves throwing dead animals – which for some reason were unfit for food – into pits. Sacrificial burials are distinguished from burials of discarded carrions mostly by the *hocker-position* of the legs, which is intentional.[60]

It is generally held that pigs have symbolized fertility from as early as the Neolithic, and that the pig was one of the attributes of the Great Mother, that is, a goddess of fertility.[61] The pig was used for sacrifice and worship. It is frequently placed into Eneolithic graves, usually next to the legs of deceased persons, generally men, reflecting the status the person enjoyed within society. Both types of pig burials are present at Franjevac.

## Material legacy

Although high-quality pottery of good fabric is usually considered as the basic cultural and stylistic determinant of the Kostolac culture, it is more readily associated with techniques and composition of decoration than with shapes of vessels. The ceramic assemblage of the Kostolac culture is characterized by a rich decorative style, supplemented with white incrustation. Motifs are rendered in furrow incision, incision, notching, stabbing and stamping, and grouped in horizontal and vertical zones and fields. Stamping was executed with blunt tools of various cross sections: oval, triangular, circular, rectangular, horseshoe-shaped.

The typological analysis of the ceramic assemblage from Franjevac has shown that the material is identical to that from the other Ko-

[55] Tomičić et al. 2008: 12.

[56] Jurišić 1990: 21, 23–24.

[57] Jurišić 1990: 24.

[58] Prior to analyses, that is, during the excavation, these burials were documented as belonging to cattle and dogs. For this reason, they were described as such in the preliminary reports, see Balen 2008: 10.

[59] Pleinerová 2002: 21–22; Kyselý 2002: 55–61.

[60] Jurišić 1990: 28, bilješka 12.

[61] Hoti 1993: 77–98.

rubom ili plastičnim drškama. Tip lonca sa suženim otvorom (amfora) čini posudu naročito pogodnom za čuvanje tekućina. Naime, vrat služi za sprečavanje tekućine da iscuri te olakšava izlijevanje. Analiza stijenki jedne takve posude iz Franjevca,[63] pokazala je prisustvo pčelinjeg voska. Tragovi ulja ili masnoće biljnog ili životinjskog porijekla pronađeni su u maloj posudici s ušicama za ovjes.

Veliki problem u određivanju faza kostolačke kulture na prostoru Hrvatske predstavlja to što gotovo niti jedno nalazište nije sustavno iskopavano ili je pak riječ o starim iskopavanjima te je većina građe površinski prikupljena i donesena u muzeje.

Iskopavanjem u Osijeku – Retfala ustanovljena je badenska i kostolačka keramika te se navodi da nema jasnog razgraničenja među njima.[64] Na osnovi stanja istraživanja slična je situacija na još nekoliko hrvatskih nalazišta. Unutar badenskog kulturnog sloja ulomci kostolačke keramike pronađeni su na nalazištima Donja Vrba[65] i Gornja Bebrina[66] kod Slavonskog Broda, Grabrovac[67] kod Đakova, Aljmaš.[68] Naposljetku, iskopavanjima na Vučedolu – vinograd Streim ustanovljeno je miješanje badenskog i kostolačkog materijala u jednom dijelu naselja, iznad kojeg dolazi samostalni horizont kostolačke kulture.[69]

Na dijelu građe iz Sarvaša, Bogdanovaca, Grabrovca kod Đakova, Cerića te Vukovara (Lijeva Bara) ukras je sličan badenskom ukrašavanju, samo što nema karakterističnog badenskog urezivanja, nego je izveden žigosanjem ili ubadanjem.[70] Takav ukras bi, po podjeli T. Stapelfeldta pripadao grupi 1 prema njegovoj podjeli kostolačkih ukrasa: uokviren je s gornje strane, dok na donjoj nema završetka, jer se sastoji od visećih linija.[71] Materijal s nalazišta Slavča i Ašikovci te veći dio materijala iz Dalja i Cerića pripadao bi kasnoj fazi kostolačke kulture: dekorativna shema ide isključivo u vidu trake oko najšireg dijela posude što je inače karakteristika vučedolske kulture, učestao tip posude su bikonične zdjele i šalice (terine) i čest motiv na keramici je žigosana kružnica (minirozeta).[72] Materijal iz Franjevca u najvećoj mjeri karakterizira upravo klasično oblikovanje, tj. ukrašavanje posuda, kao i velik postotak bikoničnih oblika s ukrasom žigosanih kružnica na bikoničnom prijelomu, što je pak odlika kasnije faze kostolačke kulture, a potvrđeno je i apsolutnim datumima. Iako su nalazi S-profiliranih oblika zdjela rijetki, zajedno s apsolutnim datumima mogli bi upućivati naseljavanje na Franjevcu i u ranoj fazi kostolačke kulture.

Od svakodnevnih uporabnih predmeta izrađivali su se keramički pršljenci za vretena, bikoničkog i koničnog oblika, zatim kalemovi te veći utezi cilindričnog ili piramidalnog oblika koji su

[63] vidi prilog *Analiza uzoraka metodom plinske kromatografije – masene spektrometrije.*

[64] Šimić 1998: 236.

[65] Minichreiter 1991: 183–184; Lozuk 2000: 34.

[66] Dimitrijević 1971: 149, sl. 1:1–2.

[67] Pavlović, Bojčić 1981: 28; Pavlović 1984: 54, sl. 3:1–3.

[68] Šimić 2001: 74.

[69] Težak-Gregl 1985: 29; 1986: 59.

[70] Balen 2002: T.1:2–7, T.2:5, T.3:4,5 (Lijeva Bara), T.4:3 (Sarvaš), T.7:1–4; T.8:3 (Cerić), T.9:1 (Bogdanovci), T.9:2,4 (Grabrovac).

[71] Stapelfeldt 1997.

[72] Dimitrijević 1977–1978: sl.2:1–5, sl. 3:1–4; Skelac 1997: T.2:2, T.5:6; Balen 2002: T.6:6.

stolac sites in Croatia, as well as in Vojvodina and central Serbia. The most common forms are hemispherical bowls with unpronounced base and bowls with everted rim. Other distinguished types include slightly biconical bowls with a strap handle on the carination, rounded pots and S-profiled pots, vessels (amphorae) with a constricted mouth and two handles on the belly, conical cups and cups with a concave body with a handle rising above the rim. Elongated vessels (Fischbutte) present in the Franjevac assemblage are known also from Vukovar (Lijeva Bara), Cerić and Osijek.[62] Pots are generally of coarse texture and lack decoration, except for relief applications below the rim, or relief handles. The type of pot with a constricted mouth (amphora) is particularly suited for storing liquids, since the neck both prevents the liquid from slopping and facilitates pouring. Analysis of the walls of one such vessel from Franjevac[63] showed the presence of beeswax. Traces of oil or fat of vegetable or animal origin were found in a small vessel with suspension loops.

A major problem in determining the phases of the Kostolac culture in Croatia is the almost complete lack of systematic excavations; the excavations that were carried out so far either took place long time ago, or consisted of surface collection of material, which was then brought to museums.

The excavation at the Osijek-Retfala site yielded associated Baden and Kostolac ceramics, without clear distinction between the two.[64] The state of research shows a similar situation for several other sites in Croatia. Other sites that yielded fragments of Kostolac pottery within a Baden culture horizon include Donja Vrba[65] and Gornja Bebrina[66] near Slavonski Brod, Grabrovac[67] near Đakovo, and Aljmaš.[68] Finally, the excavations at Vučedol-Vineyard Streim have shown that Baden and Kostolac ceramics appear in association in a part of the settlement, topped by a horizon of independent Kostolac culture.[69]

Decoration of a part of the assemblage from Sarvaš, Bogdanovci, Grabrovac near Đakovo, Cerić and Vukovar (Lijeva Bara) resembles that of the Baden culture, although it lacks the characteristic Baden incisions, which are executed with stamping or stabbing.[70] Such a decoration would belong to group 1 in T. Stapelfeldt's classification of Kostolac decorations: it is framed on top, but not at the base, with a series of hanging lines instead of a frame.[71] The material from the Slavča and Ašikovci sites, as well as the bulk of the material from Dalj and Cerić would belong to the late phase of the Kostolac culture: the decorative scheme is executed exclusively in the form of a band encircling the vessel at the widest part, which is otherwise a feature of the Vučedol culture; the most common types are biconical bowls (tureens) and cups; stamped circle (mini-rosette) is a frequent motif on pottery.[72] One of the main features of the

[62] Balen 2002: 155.

[63] See the contribution Analysis of samples by Gas Chromatography-Mass Spectrometry.

[64] Šimić 1998: 236.

[65] Minichreiter 1991: 183–184; Lozuk 2000: 34.

[66] Dimitrijević 1971: 149, sl. 1:1–2.

[67] Pavlović, Bojčić 1981: 28; Pavlović 1984: 54, sl. 3:1–3.

[68] Šimić 2001: 74.

[69] Težak–Gregl 1985: 29; 1986: 59.

[70] Balen 2002: T.1:2–7, T.2:5, T.3:4,5 (Lijeva Bara), T.4:3 (Sarvaš), T.7:1–4; T.8:3 (Cerić), T.9:1 (Bogdanovci), T.9:2,4 (Grabrovac).

[71] Stapelfeldt 1997.

[72] Dimitrijević 1977–1978: sl.2:1–5, sl. 3:1–4; Skelac 1997: T.2:2, T.5:6; Balen 2002: T.6:6.

često nalaženi kraj ognjišta.[73] Žlice su, kao i kod badenske i vučedolske kulture, s nastavkom za držanje. Kamena i koštana produkcija pokazuje standardne oblike. Od koštanih alatki zastupljena su šila, spatule i motike za obradu zemlje. Kod cijepane litičke industrije prisutni su: jezgre, sječiva, zarupci, grebala i alatke s obradom na jednom ili oba ruba. Zanimljivo je navesti da je na nalazištu Franjevac pronađen jako mali broj glačanih kamenih alatki (zastupljene su uglavnom sjekire s rupom za nasad), za razliku od cijepane litičke građe i alatki abrazivne površine (brusevi, rastirači i žrvnjevi), koje su pronađene u velikom broju. Također je uočljivo da su kao sirovinski materijal korištene prirodne valutice stijena. Na osnovi rasporeda i odnosa između brusnih i polirnih ogrebotina, može se zaključiti da je većina alata za vrijeme svojeg upotrebnog perioda bila više puta preoblikovana, pa ponovno korištena. Velika količina cijepane litičke građe u kostolačkom sloju na Vučedolu te na Franjevcu potvrđuje nam vrlo intenzivnu obradu kamena te gotovo identičnu onoj neolitičke, sopotske kulture.

Predmeti od bakra još uvijek su rijetkost u sklopu naselja kostolačke kulture na prostoru Hrvatske, poznati su samo nalazi iz Franjevca.

O kultnim i religioznim vjerovanjima na osnovi sačuvane građe (sedlasti žrtvenici iz Cerića,[74] Dalja,[75] kao i Franjevca) te životinjskih ukopa na Franjevcu i Vučedolu možemo govoriti o postojanju kulta plodnosti i zemlje.

## Privreda

Analiza životinjskih ostataka na Franjevcu pokazala je da je prehrana bazirana na svinjama i govedima, a o ulozi svinja kako u svakodnevnom, a i zagrobnom životu svjedoče i njihovi ukopi u jamama.

Osteološke analize s kostolačkog naselja u Gomolavi pokazuju da je najveće značenje u prehrani imalo govedo, zatim ovce i koze te svinje.[76] Divlje životinje također su imale veliku ulogu u prehrani stanovnika Gomolave što pokazuje da je lov bio također važan. Najviše se lovio jelen, divlja svinja i srna.[77]

Faunistički ostaci iz jama na vinogradu Streim na Vučedolu pokazali su da je prehrana bazirana na domaćoj stoci (kosti goveda, ovce/koze, svinje i psa) te u manjoj mjeri na lovu divljih životinja (jelen, srna) i ptica.[78]

Blizina rijeke uz sva kostolačka naselja upućuje na značajnu ulogu riječne faune u prehrani. Analiza sakupljene mikrofaune s Vučedola pokazuje da u kostolačkom sloju dominiraju šaran, som, štuka, a od mekušaca školjke.[79] Školjke su osim u prehrani imale primjenu i pri ukrašavanju posuda. U kolikoj su mjeri ribe i školjke stvarno sudjelovale u prehrani teško je reći, jer sakupljeni broj ne odražava stvarni broj konzumiranih primjeraka.

Analiza paleobotaničkih uzoraka s lokaliteta Franjevac pokazala je da su nositelji kostolačke kulture u prehrani koristili

[73] Marković 1994: 105, T.31:11; Skelac 1997: T.4:1,9.
[74] Dimitrijević 1979a: T.2:11.
[75] Balen 2002: 155.
[76] Tasić 1979: 260; Blažić 1986: 42.
[77] Blažić 1986: 42.
[78] Malez 1995: 28, tab. 1; Balen 2005: 31, 34.
[79] Paunović, Lajtner 1995: 34, sl.1.

Franjevac assemblage is precisely the domination of classical forms and decorations of vessels, as well as the high percentage of biconical forms ornamented with stamped circles on the biconical carination, which is on the other hand a feature of the later phase of the Kostolac culture – a fact that was substantiated by absolute dates. Although there were only few finds of S-profiled bowls, in combination with absolute dates they might nevertheless indicate that settlement of Franjevac took place also in the early phase of the Kostolac culture.

Everyday functional objects from the site included biconical and conical ceramic spindle-whorls, spools, as well as large cylindrical or pyramidal weights, which were often found near fireplaces.[73] Spoons were shafted, like those of the Baden and Kostolac cultures. Stone and bone artefacts appear in standard shapes. Bone tools are represented with awls, spatulae and hoes for tilling the soil. Artefacts of chipped lithic industry include cores, blades, truncated blades, endscrapers and tools with retouch on one or both edges. Interestingly, Franjevac yielded a very small number of polished stone tools (mostly shaft-hole axes), unlike chipped lithic material and abrading tools (whetstones, handstones, querns), of which a large number were found. It is also evident that natural rock pebbles were used as a raw material. Based on the distribution and relationship of scratch marks from grinding and polishing, it can be concluded that most of the tools were repeatedly reshaped and then reused during the time of their use. The abundant chipped lithic assemblages from the Kostolac horizon at Vučedol and at Franjevac confirm intensive processing of stone, almost identical to that of the Neolithic Sopot culture.

Copper objects remain a rare occurrence in the Kostolac settlements in Croatia. The only finds known to date are those from Franjevac.

As regards religious beliefs, the existence of a fertility cult can be presumed based on the preserved finds (saddle-type altars from Cerić,[74] Dalj[75] and Franjevac) and animal burials at Franjevac and Vučedol.

## Economy

The analysis of the faunal remains at Franjevac has shown that the diet was based on pigs and cattle. Pig burials in pits bear witness to the role pigs played in everyday life, as well as in the afterlife.

Osteological analyses from the Kostolac settlement at Gomolava show that cattle played the key role in the diet, followed by sheep and goat, and pig.[76] Wild animals also played a significant role in the diet of the residents of Gomolava, pointing to the importance of hunting. Red deer, wild pig and roe deer were the most common hunted species.[77]

Faunal remains from the pits at Vineyard Streim at Vučedol showed that the diet was based on domestic cattle (bones of cattle, sheep/goat, pig and dog), and to a smaller extent on wild game (red deer, roe deer) and wild fowl.[78]

The fact that all Kostolac settlements were situated near rivers suggests that riverine fauna was an important source of food. The anal-

[73] Marković 1994: 105, T.31:11; Skelac 1997: T.4:1,9.
[74] Dimitrijević 1979a: T.2:11.
[75] Balen 2002: 155.
[76] Tasić 1979: 260; Blažić 1986: 42.
[77] Blažić 1986: 42.
[78] Malez 1995: 28, tab. 1; Balen 2005: 31, 34.

jednozrnu pšenicu – einkorn, ječam, dvozrnu pšenicu – emmer, proso, grašak, grahoricu, leću, a da su također sakupljali i vrstu divlje trave – ovsik, bazgu i drijen. Slični rezultati dobiveni su i s kostolačkog nalazišta u Gomolavi.[80]

Ostaci pčelinjeg voska u amfori iz Franjevca pokazuju nam da je med korišten od strane kostolačke populacije, ali ne možemo sasvim sigurno govoriti o držanju meda u amforama, jer se nalaz voska može tumačiti i premazivanjem stijenki posuda radi neporoznosti.[81] Pretpostavljamo da je kostolačka populacija do meda dolazila sakupljanjem iz prirode (tzv. *honey-hunting*), odnosno iz obližnjih šuma.[82]

O korištenju šuma od strane žitelja na položaju Franjevac može nam svjedočiti i podatak o velikom broju pronađenih svinjskih kostiju. Svinje, naime, najbolje napreduju na voću, plodovima iz šume i žitu. Njih se teško može uzgajati seleći ih se na velike udaljenosti, a kako nisu posve »isplative« za stočare, jer se uzgajaju samo zbog mesa, već za sasvim sjedilačku populaciju s razvijenom poljoprivrednom proizvodnjom,[83] smatramo da je ispravno reći, barem na našem uzorku, da se nosioci kostolačke kulture pokazuju kao primarno zemljoradnička populacija u čijoj prehrani su važnu ulogu imali i lov i sakupljanje plodova.

* * *

Istraživanja kostolačkog naselja u Franjevcu upotpunila su nam sliku koju imamo o toj kasnoeneolitičkoj manifestaciji, ali i otvorila neka pitanja – u prvom redu kronološka, u odnosu klasične badenske i kostolačke kulture i njihovom mogućem suživotu na prostoru današnje istočne Hrvatske (kako nam to apsolutni datumi sugeriraju). Za konačan odgovor u sagledavanju klasične badenske i kostolačke kulture svakako će biti potrebno napraviti:

Reviziju svih poznatih badenskih i kostolačkih nalazišta koja uključuje pregled pokretnog materijala te sondažna istraživanja s većom serijom apsolutnih datuma jer »*one date is no date*«.[84]

Detaljan pregled terena (tzv. *arheologija krajolika*) uz primjenu paleobotaničkih, arheozooloških, sedimentoloških i sl. analiza kako bi se utvrdio pravi raspored nalazišta, njhova veličina i odnos prema većim centrima.



[80] van Zeist 1979: 16, T.1; Jovanović 2004: 108–109.
[81] Heron et al. 1994: 268; Regert et al. 2001: 567.
[82] Needham, Evans 1987: 26–27.
[83] Marciniak 2005: 45.
[84] Renfrew, Bahn 2000: 143.

ysis of microfaunal samples from the Kostolac horizon at Vučedol shows predominance of carp, catfish and pike, while shells were the dominant molluscs.[79] In addition to their use in diet, shells were used in the decoration of pottery. It is difficult to ascertain the extent to which fish and shells really contributed to the diet, because the collected number does not reflect the real number of consumed pieces.

The analysis of palaeobotanical samples from Franjevac showed that the diet of the bearers of the Kostolac culture consisted of single-grain wheat – einkorn, barley, two-grain wheat – emmer, millet, peas, vetch, lentils. They also collected a type of wild grass – rye brome, elderberry and cornelian cherry. Similar results were obtained from the Kostolac site at Gomolava.[80]

Although the remains of beeswax in an amphora from Franjevac show that the Kostolac people used honey, we cannot ascertain that it was stored in amphorae, because it is possible that the vessel walls were coated with wax to render them nonporous.[81] The Kostolac population presumably acquired honey by honey-hunting in the nearby forests.[82]

Taking into consideration that pigs grow fastest when fed on fruit, forest fruits and wheat, the abundance of pig bones from Franjevac may be considered another indication of forest harvesting by the local population. Since it is difficult to breed pigs by moving them over great distances, and they are breed only for meat, they are not fully profitable for livestock herders, but only for a sedentary population with advanced farming practices.[83] We therefore consider it correct to say, at least in the case of our sample, that the bearers of the Kostolac culture manifest themselves as a primarily farming population, in whose diet hunting and gathering also played an important role.

* * *

The investigations of the Kostolac settlement at Franjevac have complemented our picture of that Late Eneolithic phenomenon, but also raised new questions, primarily those pertaining to chronology, as regards the relationship of the classical Baden culture and the Kostolac culture, as well as their possible coexistence in present-day eastern Croatia (as suggested by absolute dates). To reach a final answer in the consideration of the classical Baden culture and the Kostolac culture, it will certainly be necessary to do the following:

To review all known sites of the Baden and Kostolac cultures, including a review of movable assemblages and trial excavations with a larger series of absolute dates, since »*one date is no date*«.[84]

To carry out a detailed field survey (so-called *landscape archaeology*) in combination with palaeobotanical, archaeozoological, sedimentological and other analyses in order to ascertain the true distribution of sites, their size and relationship with larger centres.

[79] Paunović, Lajtner 1995: 34, sl.1.
[80] van Zeist 1979: 16, T.1; Jovanović 2004: 108–109.
[81] Heron et al. 1994: 268; Regert et al. 2001: 567.
[82] Needham, Evans 1987: 26–27.
[83] Marciniak 2005: 45.
[84] Renfrew, Bahn 2000: 143.

# Literatura / Bibliography


**Antonović 2003**
D. Antonović, *Neolitska industrija glačanog kamena u Srbiji*, Beograd, 2003.

**Aufderheide, Rodrígue-Martín 2003**
A. C. Aufderheide, C. Rodrígue-Martín, *Cambridge Encyclopedia of Human Paleopathology*, Cambridge University Press, Cambridge, 2003.

**Balen 2002**
J. Balen, Die Kostolac-Kultur in Kroatien, *Thraco-Dacica* XXIII, 1–2, Bucuresti, 2002, 153–170.

**Balen 2002a**
J. Balen, Topografija nalazišta kostolačke kulture u sjevernoj Hrvatskoj, *Vjesnik Arheološkog muzeja u Zagrebu* 3.s. XXXV, Zagreb, 2002, 35–52.

**Balen 2005**
J. Balen, Kostolački horizont na Vučedolu, *Opvscula Archaeologica 29,* Zagreb, 2005, 25–40.

**Balen 2005a**
J. Balen, *Sarvaš – neolitičko i eneolitičko naselje,* Katalozi i monografije Arheološkog muzeja u Zagrebu, sv. 2, Zagreb, 2005.

**Balen 2008**
J. Balen, Franjevac, *Hrvatski arheološki godišnjak* 4 (2007), Zagreb, 2008, 9–11.

**Bankoff , Winter 1990**
H. A. Bankoff, F.A. Winter, The Later Aeneolithic in Southeastern Europe, American Journal of Archaeology 94, 1990, 175–191.

**Bass 1971**
W. M. Bass, *Human Osteology*, Missouri Archaeological Society, Missouri, 1971.

**Benac 1962**
A. Benac, Pivnica kod Odžaka i neki problemi kostolačke kulture, *Glasnik zemaljskog muzeja Bosne i Hercegovine u Sarajevu* n.s. XVII, Sarajevo, 1962, 21–40.

**Blažić 1986**
S. Blažić, Domaće i divlje životinje Gomolave, u: Gomolava od praistorije do srednjeg veka, katalog izložbe, Novi Sad 1986, 42–43.

**Bojadžijev 1992**
J. Bojadžijev, Probleme der Radiokohlenstaffdatierung der Kulturen des Spätänneolithikums und der Frühbronzezeit, *Studia Praehistorica* 11–12, Sofia, 1992, 389–406.

**Bondar 1984**
M. Bondár, Neuere Funde der Kostolac – und der spätbedenen Kultur in Ungarn, *Acta Archaeologica Academiae Scientiarum Hungaricae* XXXVI, Budapest, 1984, 59–84.

**Borić 2009**
D. Borić, Absolute Dating of Metallurgical Innovations in the Vinča Culture of the Balkans, u: *Metals and Societies. Studies in Honour of Barbara S. Ottaway* (ed. T. K. Kienlin, B. W. Roberts), *Universitätsforsungen zur prähistorischen archäologie* 169, Bonn, 2009, 191–245.

**Brukner 1979**
B. Brukner, Zur Chronologie der Kostolac-Gruppe, *Archaeologica Iugoslavica* XIX (1978), 1979, 8–13.

**Buikstra, Ubelaker 1994**
J. Buikstra, D. Ubelaker, *Standards for Data Collection from Human Skeletal Remains*, Arkansas Archaeological Survey, Fayetteville, 1994.

**Cavulli 2010**
F. Cavulli, Structural evidences and interpretable features in early neolithic northern Italy, u: *Neolithic and Chalcolithic Archaeology in Eurasia: Building Techniques and Spatial Organisation* (ed. D. Gheorghiu), *Proceedings of the XV world congress (Lisbon, 4–9 september 2006), BAR International Series* 2097, 135–155.

**Chohadzhiev 2004**
S. Chohadzhiev, Three-Fingered Anthropomorphs: origins and territorial distribution, u: *Prehistoric Thrace* (ed. V. Nikolov, K. Băčvarov, P. Kalchev), Sofia-Stara Zagora, 2004, 412–420.

**Cohen, Serjeantson 1986**
A. Cohen, D. Serjeantson, *A Manual for the Identification of bird bones from archaeological sites*, published by Alan Cohen, London, 1986.

**Čataj 2009**
L. Čataj, Retz-gajary kultura, u: *Josipovac Punitovački – Veliko Polje I, zaštitna arheološka istraživanja na trasi autoceste A5, Eneolitičko, brončanodobno i srednjovjekovno naselje* (ed. L. Čataj), Zagreb, 2009: Hrvatski restauratorski zavod, 23–103.

**Demirjian et al. 1973**
A. Demirjian, H. Goldstein, J. Tanner, A New System of Dental Age Assessment, *Human Biology* 45, 1973, 211–227.

**Demirjian et al. 1980**
A. Demirjian, G.-Y. Levesque, Sexual Differences in Dental Development and Prediction of Emergence, Journal of Dental Research 59, 1980, 1110–1122.

**Demo 1996**
Ž. Demo, *Vukovar Lijeva bara*, katalog izložbe, Arheološki muzej u Zagrebu, Zagreb, 1996.

**Dimitrijević 1956**
S. Dimitrijević, Prilog daljem upoznavanju vučedolske kulture, *Opuscula archaeologica* I, Zagreb, 1956, 5–56.

**Dimitrijević 1962**
S. Dimitrijević, Prilog stupnjevanju badenske kulture u sjevernoj Jugoslaviji, *Arheološki radovi i rasprave* II, Zagreb, 1962, 239–261.

**Dimitrijević 1966**
S. Dimitrijević, *Arheološka iskopavanja na području vinkovačkog muzeja, rezultati 1957.–1965*, Vinkovci, 1966.

**Dimitrijević 1968**
S. Dimitrijević, *Sopotsko-lenđelska kultura,* Zagreb, 1968.

**Dimitrijević 1971**
S. Dimitrijević, Zu einigen Fragen des Spätneolithikums und Frühäneolithikums in Nordjugoslawien, *Actes du VIII^e Congrés International des Sciences Prehistoriques et Protohistoriques* I, Beograd, 1971, 141–172.

**Dimitrijević 1977–1978**
S. Dimitrijević, Zur frage der Genese und der Gliederung der Vučedoler Kultur in dem Zwischenstromlande Donau-Drau-Sawe, *Vjesnik Arheološkog muzeja u Zagrebu* X–XI, Zagreb, 1977–1978, 1–96.

**Dimitrijević 1979**
S. Dimitrijević, Vučedolska kultura i vučedolski kulturni kompleks, *Praistorija jugoslavenskih zemalja* III (ed. A. Benac), Sarajevo, 1979, 267–341.

**Dimitrijević 1979a**
S. Dimitrijević, Arheološka topografija i izbor arheoloških nalaza s vinkovačkog tla, *Corolla Memoriae Iosepho Brunšmid dicata*, Vinkovci, 1979, 133–282.

**Dimitrijević 1979b**
S. Dimitrijević, Badenska kultura, *Praistorija jugoslavenskih zemalja* III (ed. A. Benac), Sarajevo, 1979, 183–234.

**Durman 1987**
A. Durman, Vučedol 86 – treća sezona sustavnih istraživanja na lokalitetu »Vinograd Streim«, *Obavijesti Hrvatskog arheološkog društva* 2, Zagreb, 1987, 24–25.

**Durman 1987a**
A. Durman, »Vinograd Streim« – četvrta sezona na Vučedolu, *Obavijesti Hrvatskog arheološkog društva* 3, Zagreb, 1987, 34–36.

**Durman 1988**
A. Durman, Vučedolska kultura, u: *Vučedol treće tisućljeće p.n.e.*, katalog izložbe, Zagreb, 13–20.

**Durman 1991**
A. Durman, *Metal u prethistorijskom društvu jugoistočne Evrope*, doktorska disertacija, Zagreb, 1991.

**Durman 1995**
A. Durman, Psihologija naseljavanja telova, *Histria Antiqua* 1, Pula, 1995, 153–158.

**Dyce, Sack, Wensing 2009**
K. M. Dyce, W. O. Sack, C. J. G. Wensing, *Textbook of Veterinary Anatomy.- Saunders*, Philadelphia, Pennsylvania, 2009.

**Driesch 1976**
A. von den Driesch, *A Guide to the Measurement of Animal Bones from Archaeological Sites*, Peabody Museum Bulletin 1, Harvard, Massachusetts, 1976.

**Faigrieve, Molto 2000**
S. I. Faigrieve, J. E. Molto, Cribra Orbitalia in Two Temporally Disjunct Population Samples From the Dakhleh Oasis, *Egypt. American Journal of Physical Anthropology* 111, 2000, 319–331.

**Filipec et al. 2009**
K. Filipec, D. Roksandić, M. Šiša Vivek, M. Karneluti, *Arheološke slike iz Slavonije: arheološka istraživanja na trasi autoceste Beli Manastir – Osijek – Svilaj*, Zbirka Odsjeka za arheologiju, knjižica 1, Zagreb, 2009.

**Folpe, Inwards 2009**
A. L. Folpe, C. Y. Inwards, *Bone and Soft Tissue Pathology: A Volume in the Foundations in Diagnostic Pathology Series*, Saunders, Philadelphia, Pennsylvania, 2009.



**Forenbaher 1993**
S. Forenbaher, Radicarbon dates and absolute chronology of of the central European Early Bronze Age, *Antiquity*, vol. 67, No 255, 1993, 218–220, 235–256.

**France 2009**
D. L. France, *Human and Nonhuman Bone Identification: A Color Atlas*, CRC Press, Boca Raton, 2009.

**Freeth 2000**
C. Freeth, Dental Health in British Antiquity, u: *Human Osteology in Archaeology and Forensic Science, Greenwich Medical Media Ltd.* (ed. M. Cox, S. Mays), London, 2000, 227–237.

**Garašanin 1959**
M. Garašanin, Neolitikum und Bronzezeit in Serbien und Makedonien, 39 *Bericht der römisch – germanischen Kommission* 1958, Mainz am Rhein, 1959, 1–130.

**Garašanin 1959a**
M. Garašanin, Period prelaza iz neolita u metalno doba u Vojvodini i severnoj Srbiji, *Starinar* N.S. IX–X/1958–1959, Beograd 1959, 19–36.

**Garašanin 1973**
M. Garašanin, Badenska grupa i badensko-kostolačka varijanta, u: *Praistorija na tlu SR Srbije*, Beograd, 1973, 226–235.

**Goodman et al. 1988**
A. H. Goodman, R. B Thomas, A. C. Swedlun, G. J. Armelagos, Biocultural Perspective in Prehistoric, Historical and Contemporary Population Research, *Yearbook of Physical Anthropology* 31, 1988, 169–202.

**Goodman, Rose 1990**
A. H. Goodman, J. C. Rose, Assessment of Systemic Physiological Perturbations from Dental Enamel Hypoplasia and Associated Histological Structures, *Yearbook of Physical Anthropology* 33, 1990, 59–110.

**Heron et al. 1994**
C. Heron, N. Nemcek, K. M. Bonfield, D. Dixon, B. S. Ottaway, The Chemistry of Neolithic Beeswax, *Naturwissenschaften* 81, Springer-Verlag, 1994, 266–269.

**Hillson 1992**
S. Hillson, *Mammal Bones and Teeth: An Introductory Guide to Methods of Identification*, University College London, London, 1992.

**Hillson 1996**
S. Hillson, *Dental Anthropology*, University Press, Cambridge, 1996.

**Hoffiller 1933**
V. Hoffiller, *Corpus Vasorum Antiquorum*. fasc. I., Paris, 1933.

**Hoffiller 1938**
V. Hoffiller, *Corpus Vasorum Antiquorum*, fasc. II., Belgrade, 1938.

**Horvatinčić et al. 1990**
N. Horvatinčić, B. Obelić, D. Srdoč, A. Durman, L. Benko, A. Sliepčević, Radiocarbon and TL Dating of the Eneolithic Site Vučedol in East Croatia, Yugoslavia, *PACT* 29, 1990, 243–250.

**Hoti 1990**
M. Hoti, Novi nalazi konsekrativnih rogova na Vučedolu, *Opuscula archaeologica* 14, Zagreb, 1990, 33–42.

**Hoti 1993**
M. Hoti, Prethistorijski korijeni nekih aspekata grčke religije, doktorska disertacija, Zagreb, 1993.

**Hršak, Pavlović 2007**
T. Hršak, I. Pavlović, Kaznica – Rutak, *Hrvatski arheološki godišnjak* 3 (2006), Zagreb, 2007, 16–18.

**Isçan, Kennedy 1989**
M. Y. Isçan, K. A. R. Kennedy, Introduction, u: *Reconstruction of Life from the Skeleton* (ed. M. Y. Isçan, K. A. R. Kennedy), Alan R. Liss, New York, 1989, 1–10.

**Jovanović 1966**
B. Jovanović, B. Badensko-kostolačka grupa i hronologija eneolita u Jugoslaviji, *Starinar* n. s. XV–XVI (1964–1965), Beograd 1966, 1–11.

**Jovanović 1974**
B. Jovanović, B. Pozni eneolit, u: *Praistorija Vojvodine* (ed. A. Benac), Novi Sad, 1974, 153–183.

**Jovanović 1976**
B. Jovanović, Obredi sahranjivanja u kostolačkoj grupi, *Godišnjak centra za balkanološka ispitivanja* XIII, Sarajevo, 1976, 131–141.

**Jovanović 2004**
M. Jovanović, Žitarice u praistoriji u Podunavlju i na balkanskom poluostrvu, *Rad muzeja Vojvodine* 46, Novi Sad, 2004, 101–127.

**Jurišić 1990**
M. Jurišić, Ukopi životinja na Vučedolu, *Opuscula archaeologica* 14, Zagreb, 1990, 17–31.

**Katalog Vučedol 1988**
*Vučedol - treće tisućljeće p.n.e.,* katalog izložbe (ed. A. Durman), Muzejski prostor, Zagreb, 1988.

**Kaczanowska, Kozlowski 1987**
M. Kaczanowska, J. K. Kozlowski, Chipped stone industries from the eneolithic layers of the site Gomolava-Hrtkovci, *Acta Archaeologica Carpathica* XXVI, 1987, 37–91.

**Kaczanowska, Kozlowski 2007**
M. Kaczanowska, J. K. Kozlowski, The lithic assemblage of Szarvas 8/23, pits 3/3 1988 and 4/2 1988, u: *The excavations of early Neolithic sites of the Körös culture in the Körös valley, Hungary* (ed. J. Makkay), 2007, 237–247.

**Komšo 2009**
D. Komšo, Analiza kamenih izrađevina, u: Josipovac Punitovački – Veliko Polje I, zaštitna arheološka istraživanja na trasi autoceste A5. Eneolitičko, brončanodobno i srednjovjekovno naselje (ed. L. Čataj), Zagreb, 2009, 265–280.

**Kyselý 2002**
R. Kyselý, Osteological analysis of animals buried in Hostivice (Prague-West district) – Funnel Beaker culture (TRB) and a comparasion of animal remains from Hostivice with other contemporary finds from Czech Republic and Cental Europe, *Památky Archeologické* XCIII/1, 2002, 29–87.

**Larsen 1997**
C. S. Larsen, *Bioarchaeology*, Cambridge University Press, Cambridge.

**Lovejoy et al. 1985**
C. O. Lovejoy, R. S. Meindl, T. R. Pryzbeck, R. P. Mensforth, Chronological Metamorphosis of the Auricular Surface of the Ilium: A New Method for the Determination of Adult Skeletal Age at Death, *American Journal of Physical Anthropology* 68, 1985, 15–28.

**Lozuk 2000**
J. Lozuk, O kontinuitetu naseljavanja brodskog područja, *Zbornik radova sa znanstvenog skupa o Slavonskom Brodu u povodu 750. obljetnice prvog pisanog spomena imena Broda*, Slavonski Brod, 2000, 33–57.

**Malez 1995**
V. Malez, The findings of the bird remains of the Vučedol site, *Opvscula Archaeologica* 19, Zagreb, 1995, 27–32.

**Mann, Murphy 1990**
W. R. Mann, P. S. Murphy, Regional Atlas of Bone Disease, Charles C. Thomas, Springfield Illinois, 1990.

**Marciniak 2005**
A. Marciniak, *Placing Animals in the Neolithic, Social Zooarchaeology of Prehistoric Farming Communities*, UCL Press, London, 2005.

**Marković 1994**
Z. Marković, *Sjeverna Hrvatska od neolita do brončanog doba*, Koprivnica, 1994.

**Mays 2000**
S. Mays, *The Archaeology of Human Bones*, Routledge, London, 2000.

**Meindl, Lovejoy 1985**
R. S. Meindl, C. O. Lovejoy, Ectocranial Suture Closure: A Revised Method for the Determination of Skeletal Age at Death Based on the Lateral-Anterior Sutures, *American Journal of Physical Anthropology* 68, 1985, 57–66.

**Milojčić 1953**
V. Milojčić, Funde der Kostolacer Kultur in der Sammlung des Vorgeschichtlichen Seminars in Marburg/Lahn, *Prähistorische Zeitschrift* XXXIV/V (1949/1950), 1953, 151–158.

**Minichreiter 1991**
Minichreiter, K. 1991: Arheološka istraživanja na dijelu auto-ceste Slavonski Brod – Lipovac, *Godišnjak zaštite spomenika kulture Hrvatske*, 17, Zagreb, 1991, 179–192.

**Moorrees et al. 1963**
C. F. A. Moorrees, E. A. Fanning, E. E. Hunt, Age Variation of Formation Stages for Ten Permanent Teeth, *Journal of Dental Research* 42, 1963, 1490–1502.

**Moorrees et al. 1963a**
C. F. A. Moorrees, E. A. Fanning, E. E. Hunt, Formation and Resorption of Three Deciduous Teeth in children, *American Journal of Physical Anthropology* 21, 1963, 205–213.

**Needham, Evans 1987**
Needham, S., Evans, J. 1987: Honey and dripping: neolithic food residues from Runnymede Bridge, *Oxford journal of archaeology* 6 (1), 1987, 21–28.

**Nickel, Schummer, Seiferle 1986**
R. Nickel, A. Schummer, E. Seiferle, *The Anatomy of Domestic Animals. The Locomotor System of the Domestic Mammals,* vol.1, Verlag Paul Parey, Berlin, 1986.

**Nikolić 2000**
D. Nikolić, *Kostolačka kultura na teritoriju Srbije*, Beograd, 2000.

**Ortner 2003**
D. Ortner, *Identification of Pathological Conditions in Human Skeletal Remains*, Smithsonian University Press, Washington, 2003.

**Ottaway 1976**
B. S. Ottaway, Distribution pattern of early copper using cultures in Austria, *Istraživanja* 5, *Simpozijum o poznom eneolitu i ranom bronzanom dobu u Podunavlju*, Novi Sad, 1976, 117–122.

**Paunović, Lajtner 1995**
M. Paunović, I. Lajtner, Bedeutung der Mollusken- und Fischfauna in der Ökologie und Ökonomie der Äneolitischen siedlung Vučedol (NO Kroatien), *Opuscula archaeologica* 19, Zagreb, 1995, 33–38.

**Pavlović 1984**
I. Pavlović, Rezultati arheoloških iskopavanja na lokalitetu Grabrovac u god. 1980, *Izdanja Hrvatskog arheološkog društva* 9 (1981), *Arheološka istraživanja u istočnoj Slavoniji i Baranji*, Zagreb, 1984, 53–61.

**Pavlović, Bojčić 1981**
I. Pavlović, Z. Bojčić, Ciglana »Grabrovac«, Đakovo – prethistorijsko naselje, *Arheološki pregled* 22, Beograd, 1981, 27–28.

**Petrović 1984**
J. Petrović, Gomolava, Novi Sad, 1984.

**Petrović 1986**
J. Petrović, Srednji i pozni eneolit, u: *Gomolava od praistorije do srednjeg veka*, katalog izložbe, Novi Sad, 1986, 23–30.

**Petrović 1988**
J. Petrović, Énéolithique moyen et tardif à Gomolava, Simpozij Gomolava Ruma 1986, Novi Sad, 1988, 39–46.

**Petrović, Jovanović 2002**
J. Petrović, B. Jovanović, *Gomolava – naselja kasnog eneolita*, Novi Sad – Beograd, 2002.

**Pleinerová 2002**
I. Pleinerová, Hostivice: animal and human skeletons from an Early Eneolithic settlement, *Památky Archeologické* XCIII/1, Praha, 2002, 5–28.

**Phenice 1969**
T. Phenice, A Newly Developed Visual Method of Sexing in the Os Pubis, *American Journal of Physical Anthropology* 8, 1969, 679–684.

**Regert et al. 2001**
M. Regert, S. Colinart, L. Degrand, O. Decavallas, Chemical alteration and use of beeswax through time: accelerated ageing tests and analysis of archaeological samples from various environmental contexts, *Archaeometry* 43,4, 2001, 549–569.

**Renfrew, Bahn 2000**
C. Renfrew, P. Bahn, *Archaeology. Theories, Methods and Practice,* 3rd edition, 2000: Thames & Hudson.

**Rezi Kató 1998**
G. Rezi Kató, The Vessel from Szelevény-Vadas, *Communicationes Archaeologicae Hungariae* 1998, 5–19.

**Roberts, Manchester 2005**
C. Roberts, K. Manchester, *The Archaeology of Disease*, Cornell University Press, Ithaca, 2005.

**Roman 1980**
P. Roman, Der »Kostolacer-Kultur«-Begriff nach 35 Jahren, *Praehistorische Zeitschrift* 55/2, 1980, Berlin, 220–227.

**Scheuer, Black 2000**
L. Scheuer, S. Black, *Developmental Juvenile Osteology*, Academic Press, San Francisco, 2000.

**Schmidt 1972**
E. Schmidt, *Atlas of animal bones*, Elsavier Publishing Company, London, 1972.

**Schmidt 1945**
R. R. Schmidt, *Die Burg Vučedol*, Zagreb, 1945.

**Schwartz 1995**
J. H. Schwartz, *Skeleton Keys*, Oxford University Press, Oxford, 1995.

**Skelac 1997**
G. Skelac, Prapovijesno nalazište Slavča, *Opuscula arhaeologica* 21, Zagreb, 1997, 217–233.

**Stapelfeldt 1997**
T. Stapelfeldt, Zum Kostolacer Zierstil, *Χρόνος, Beiträge zur prähistorischen Archäologie zwischen Nord- und Südosteuropa, Festschrift für Bernhard Hänsel, Internationale Archäologie, Studia honoria* 1. Marburg, 1997, 157–163.

**Stuart-Macadam 1992**
P. Stuart-Macadam, Porotic Hyperostosis: A New Perspective, *American Journal of Physical Anthropology* 87, 1992, 39–47.

**Šimić 1998**
J. Šimić, Istraživanje lokaliteta Retfala u Osijeku, kasnobrončano doba istočne Slavonije, *Izdanja Hrvatskog arheološkog društva* 19, Zagreb, 1998, 235–242.

**Šimić 2001**
J. Šimić, Aljmaš – Podunavlje, zaštitno istraživanje višeslojnog prapovijesnog nalazišta, *Obavijesti Hrvatskog arheološkog društva* 3, Zagreb, 2001, 70–75.

**Šošić, Karavanić 2004**
R. Šošić, I Karavanić, Cijepani litički materijal s prapovijesnog nalazišta Slavča. Nova Gradiška, *Vjesnik Arheološkog muzeja u Zagrebu XXXVII, 3.s.,* Zagreb, 2004, 17–41.

**Tasić 1959**
N. Tasić, Praistorisko naselje kod Dobanovaca i prilog proučavanja badenske grupe u Vojvodini, *Starinar* n.s. IX–X (1958–1959), Beograd, 1959, 227–241.

**Tasić 1965**
N. Tasić, Pozno eneolitski, bronzanodobni i sloj starijeg gvozdenog doba na Gomolavi, iskopavanja 1965–1966, *Rad vojvođanskih muzeja* 14, Novi Sad, 1965, 177–228.

**Tasić 1966**
N. Tasić, Apparition et évolution du groupe culturel de Kostolac en Yougoslavie, *Archaeologica Iugoslavica* VII, Beograd, 1966, 19–29.

**Tasić 1967**
N. Tasić, *Badenski i vučedolski kulturni kompleks u Jugoslaviji*, Beograd – Novi Sad 1967.

**Tasić 1969**
N. Tasić, Dobanovci, Zemun – višeslojno praistorijsko nalazište, *Arheološki pregled* 11, Beograd, 1969, 39–42.

**Tasić 1970**
Tasić, Genetische Probleme der Gruppen Baden, Kostolac und Vučedol im jugoslawischen Donaugebiet und Zentralbalkan, *Balcanica* I, Beograd, 1970, 23–42.

**Tasić 1979**
N. Tasić, Kostolačka kultura, *Praistorija jugoslavenskih zemalja* III (ed. A. Benac), Sarajevo, 1979, 235–266.

**Tasić 1984**
N. Tasić, Sremsko-slavonska regija kao nosilac evolucije na relaciji Baden-Kostolac-Vučedol, *Izdanja Hrvatskog arheološkog društva* 9, Zagreb, 1984, 31–36.

**Težak-Gregl 1985**
T. Težak-Gregl, Dva nova groba badenske kulture s Vučedola, *Opuscula archaeologica* 10, Zagreb, 1985, 23–39.

**Težak-Gregl 1986**
T. Težak-Gregl, Vučedol kod Vukovara – eneolitsko naselje, *Arheološki pregled* 26 (1985), Ljubljana, 1986, 57–59.

**Težak-Gregl 1987**
T. Težak-Gregl, Prilog poznavanju metalne produkcije badenske kulture, *Opuscula archaeologica* 11–12, Zagreb, 1987, 73–81.

**Težak-Gregl 1998**
T. Težak-Gregl, Neolitik i eneolitik, u: Prapovijest, Zagreb, 1998, 57–157.

**Todd 1921**
T.W. Todd, Age Changes in the Pubic Bone. I: The Male White Pubis, *American Journal of Physical Anthropology* 3, 1921, 285–334.

**Todd 1921a**
T. W. Todd, Age Changes in the Pubic Bone. III: The Pubis of the White Female, *American Journal of Physical Anthropology* 4, 1921, 1–70.

**Tomičić et al. 2008**
Ž. Tomičić, K. Minichreiter, K. Jelinčić, K. Turkalj, G. Mahović, K. Botić, M. Dizdar, H. Kalafatić, S. Kovačević, Z. Marković, Ilok – Dvor knezova iločkih, crkva Sv. Petra apostola, kula 8 i bedemi – rezultati zaštitnih arheoloških istraživanja 2007, *Annales Instituti archaeologici* IV, Zagreb, 2008, 7–22.

**Tripković 2007**
B. Tripković, *Domaćinstvo i prostor u kasnom neolitu – vinčansko naselje na Banjici,* Beograd, 2007.

**Vinski 1955**
Z. Vinski, Prethodni izvještaj o iskapanju nekropole na Lijevoj Bari u Vukovaru 1951., 1952. i 1953. godine, *Ljetopis JAZU* 60, 1955, 231–255.

**Vinski – Gasparini 1956**
K. Vinski-Gasparini, Iskapanje prethistorijskog naselja u Belom Manastiru, *Osječki zbornik* V, Osijek, 1956, 5–36.

**Vladár 1974**
J. Vladár, *Die Dolche in der Slowakei*, Prähistorische Bronzefunde VI/3, München, 1974.

**Vrdoljak 1994**
S. Vrdoljak, Tipološka klasifikacija kasnobrončanodobne keramike iz naselja Kalnik-Igrišče (SZ Hrvatska), *Opvscula Archaeologica* 18, Zagreb, 1994, 7–81.

**WEA 1980**
Workshop of European Anthropologists, Recommendation for Age and Sex Diagnosis of Skeletons. *Journal of Human Evolution* 9, 1980, 517–549.

**White 1991**
T. White, *Human Osteology*, Academic Press, San Francisco, 1991.

**van Zeist 1979**
W. van Zeist, Ugljenisani biljni ostaci na višeslojnom nalazištu Gomolava, *Rad vojvođanskih muzeja* 23–24 (1974–1978), Novi Sad, 1979, 5–18.

# Table I Plates

Materijal na tablama te katalog koji ga prati podijeljen je u dva dijela. Prvi dio sadrži crteže keramičkog posuđa i posebnih nalaza (kao posebni nalazi na Franjevcu su izdvajani keramički pršljenci, kalemovi, žlice, žrtvenici, grla boca, sjekire, glačane kamene alatke, žrvnjevi, rastirači), dok je skup nalaza od cijepanog kamena zbog svojih specifičnosti izdvojen i zasebno katalogiziran. Cilj oba kataloga bio je dati optimalan broj nalaza u odnosu na veličinu objekta, odnosno njihovu količinu unutar pojedinih stratigrafskih jedinica.

The objects on the plates and the accompanying catalogue are divided into two parts. The first part contains drawings of ceramic vessels and special finds (the special finds at Franjevac were ceramic spindle-whorls, spools, spoons, altars, bottle necks, axes, polished stone tools, querns, handstones), while the lithic assemblage, due to its specific nature, was analyzed and catalogued separately. The aim of both catalogues was to present the optimal number of finds in relation to the size of the structure and to their number within individual contexts.

Kratice u katalogu:

- **ds** debljina stijenke
- **v** visina
- **š** širina
- **d** dužina
- **db** debljina
- **pr** promjer (kod posuda: promjer ruba)
- **pd** promjer dna
- **šr** širina ručke
- **štr** širina trbuha

Abbreviations in the catalogue:

- **wt** wall thickness
- **h** height
- **w** width
- **l** length
- **t** thickness
- **d** diameter (for vessels: rim diameter)
- **bd** base diameter
- **hw** handle width
- **bw** belly width

# Keramičko posuđe i posebni nalazi I
## *Pottery and special finds*

*Katalog nalaza I* ❙ *Catalogue of the finds I*

## KATALOG NALAZA (J.B.)

Nalazi su prikazani po stratigrafskim jedinicama, a ne po tipološkim karakteristikama. Kataloški broj odgovara broju ispod svakog pojedinog crteža.

1. SJ 19; ds-0,5 cm; pr-9 cm
   Ulomak lonca suženog vrata s ručkom na trbuhu (tip L3), mat fakture.
2. SJ 19; ds-0,5 cm; pr-27,8 cm
   Ulomak kalotaste zdjele ukrašene brazdastim urezivanjem i žigosanjem (tip Z2a), djelomično uglačane površine.
3. SJ 19; ds-0,4 cm; v-11,5 cm; pr-16,5 cm
   Zdjela izvučena vrata i niskog zaobljenog trbuha (tip Z5d), grube fakture.
4. SJ 19; PN 16; d-6 cm
   Kamena sjekira s rupom za nasad.
5. SJ 19; ds-0,5 cm; d-6 cm
   Ulomak perforirane drške, mat fakture.
6. SJ 19; PN 7; pr-4,5 cm
   Ulomak koničnog pršljenka.
7. SJ 19; PN 21; pr-7,4 cm
   Plosnati pršljenak s naglašenim središnjim dijelom.
8. SJ 19; PN 317; d-4,6 cm
   Ulomak keramičke žlice, grube fakture.
9. SJ 19; PN 3; pr-2,7 cm
   Ulomak bikoničnog pršljenka.
10. SJ 355; v-5,65 cm; r-12,6 x 10,2 cm
    Četvrtasta posuda ukrašena brazdastim urezivanjem, mat površine.
11. SJ 369; PN 52; v- 3,2 cm; d-7,8 cm; š-2,7 cm
    Keramički predmet sedlastog oblika – žrtvenik ?.
12. SJ 369; PN 45; ds-0,5 cm; v-3,7 cm; pr-5,6 cm
    Konična posudica grube fakture.
13. SJ 369; PN 42; ds-0,5 cm; v-1,6 cm; pr-3,6 cm
    Konična posudica grube fakture.
14. SJ 369; PN 46; d-8,6 cm; kamen
    Glačalica izduženog oblika i zaobljenog presjeka.
15. SJ 369; PN 51; d-4,8 cm
    Keramička žlica s odlomljenom drškom, mat fakture.
16. SJ 19; ds-0,5 cm; 9,3 x 8,5 cm
    Ulomak bikonične zdjele s trakastom ručkom (tip Z4a), mat fakture. Ukras je izveden žigosanjem.
17. SJ 19; ds-0,8 cm; 11,2 x 6,8 cm
    Ulomak kalotaste zdjele (tip Z2a?), mat fakture. Ukras je izveden brazdastim urezivanjem.
18. SJ 19; ds-0,6 cm; 6,5 x 4,4 cm
    Ulomak kalotaste zdjele (tip Z2a?), mat fakture. Ukras je izveden žigosanjem ispunjenim bijelom inkrustacijom.
19. SJ 19; ds-0,4 cm; 7 x 6,5 cm
    Ulomak bikonične šalice konkavnog gornjeg dijela i niskog tijela (tip Š2). Mat fakture, ukras je izveden ubadanjem.

## CATALOGUE OF THE FINDS (J.B.)

The finds were presented by context, not by their typological features. The number below each drawing refers to the catalogue number of the find.

1. SJ 19; wt-0.5 cm; d-9 cm
   Fragment of a pot with constricted neck with a handle on the belly (type L3), matt surface.
2. SJ 19; wt-0.5 cm; d-27.8 cm
   Fragment of a hemispherical bowl decorated with furrow-incision and stamping (type Z2a), with a partly polished surface.
3. SJ 19; wt-0.4 cm; h-11.5 cm; d-16.5 cm
   Bowl with everted neck and low rounded belly (type Z5d), coarse surface.
4. SJ 19; PN 16; l-6 cm
   Stone shaft-hole axe.
5. SJ 19; wt-0.5 cm; l-6 cm
   Fragment of a perforated handle, matt surface.
6. SJ 19; PN 7; d-4.5 cm
   Fragment of a conical spindle-whorl.
7. SJ 19; PN 21; d-7.4 cm
   Flat spindle-whorl with a prominent central part.
8. SJ 19; PN 317; l-4.6 cm
   Fragment of a ceramic spoon, coarse surface.
9. SJ 19; PN 3; d-2.7 cm
   Fragment of a biconical spindle-whorl.
10. SJ 355; h-5.65 cm; r-12.6 x 10.2 cm
    Rectangular vessel decorated with furrow-incision, matt surface.
11. SJ 369; PN 52; h- 3.2 cm; l-7.8 cm; w-2.7 cm
    Saddle-shaped ceramic object – possibly an altar (?).
12. SJ 369; PN 45; wt-0.5 cm; h-3.7 cm; d-5.6 cm
    Small coarse conical vessel.
13. SJ 369; PN 42; wt-0.5 cm; h-1.6 cm; d-3.6 cm
    Small coarse conical vessel.
14. SJ 369; PN 46; l-8.6 cm; kamen
    Elongated polisher of round cross-section.
15. SJ 369; PN 51; l-4.8 cm
    Ceramic spoon with a broken-off handle, matt surface.
16. SJ 19; wt-0.5 cm; 9.3 x 8.5 cm
    Fragment of a biconical bowl with a strap handle (type Z4a), matt surface. Decoration is stamped.
17. SJ 19; wt-0.8 cm; 11.2 x 6.8 cm
    Fragment of a hemispherical bowl (type Z2a?), matt surface. Furrow-incised decoration.
18. SJ 19; wt-0.6 cm; 6.5 x 4.4 cm
    Fragment of a hemispherical bowl (type Z2a?), matt surface. Stamped decoration filled with white incrustation.
19. SJ 19; wt-0.4 cm; 7 x 6.5 cm
    Fragment of a biconical bowl with concave upper part and short body (type Š2). Matt surface, stabbed decoration.
20. SJ 19; PN 14; l-6.4 cm
    Spoon of matt surface, the handle is missing.

20. SJ 19; PN 14; d-6,4 cm
Žlica mat fakture, drška nedostaje.

21. SJ 29; ds-0,5 cm; v-10,2 cm; pr-14 cm; šr-3,5 cm
Bikonična zdjela s trakastom ručkom na prijelomu (tip Z4a). Djelomično uglačane površine, ukras je izveden žigosanjem.

22. SJ 43; PN 319; d-6,4 cm
Keramička sjekira s lateralnim zadebljanjem ukrašena ubadanjem.

23. SJ 43; ds-0,3 cm; v-11,5 cm; pr-14,7 cm
Blago bikonična zdjela s trakastom ručkom na trbuhu i ubodnim motivom pod rubom, glatke površine.

24. SJ 43; ds-0,5 cm; v-14 cm; pr-20,9 cm
Zdjela bikonična tijela, mat površine.

25. SJ 909; ds-0,9 cm; v-38,4 cm; pr-40 cm
Zdjela zaobljena tijela s trakastom ručkom - rekonstruirana (tip Z3a). Grube površine.

26. SJ 909; ds-0,4 cm; v-8,5 cm, pr-11,5 cm
Zdjela visoka cilindrična vrata i niskog zaobljenog trbuha - rekonstruirana (tip Z5d). Mat fakture.

27. SJ 51; ds-0,5 cm
Ulomak zdjele ukrašene brazdastim urezivanjem, mat fakture.

28. SJ 51; ds-0,4 cm
Ulomak zdjele ukrašene žigosanjem, mat fakture.

29. SJ 51; ds-0,4 cm
Ulomak S-profilirane zdjele sa žigosanim ukrasom pod rubom, djelomično uglačane površine.

30. SJ 51; ds-0,6 cm
Ulomak zdjele ukrašene brazdastim urezivanjem, djelomično uglačane površine.

31. SJ 51; ds-0,5 cm
Ulomak zdjele ukrašene urezivanjem i žigosanjem, djelomično uglačane. površine.

32. SJ 51; ds-0,6 cm
Ulomak zdjele ukrašene brazdastim urezivanjem, mat površine.

33. SJ 53; ds-0,6 cm
Ulomak kalotaste zdjele ukrašene brazdastim urezivanjem, mat površine.

34. SJ 53; ds-0,5 cm
Izvučeni rub zdjele ukrašen žigosanjem, mat površine.

35. SJ 53; ds-0,7 cm
Ulomak zdjele izvučena ruba, tijelo posude ukrašeno je žigosanjem, mat površine.

36. SJ 53; ds-0,7 cm
Ulomak kalotaste zdjele ukrašene brazdastim urezivanjem i žigosanjem, djelomično uglačane površine.

37. SJ 53; ds-0,7 cm
Ulomak kalotaste zdjele ukrašene brazdastim urezivanjem i žigosanjem, djelomično uglačane površine.

38. SJ 53; ds-0,7 cm
Ulomak kalotaste zdjele ukrašene urezivanjem i žigosanjem, djelomično uglačane površine.

39. SJ 53; ds-0,5 cm
Ulomak kalotaste zdjele ukrašene brazdastim urezivanjem, djelomično uglačane površine.

40. SJ 53; ds-0,5 cm
Ulomak kalotaste zdjele ukrašene brazdastim urezivanjem i žigosanjem, djelomično uglačane površine.

41. SJ 53; ds-0,7 cm
Ulomak kalotaste zdjele ukrašene brazdastim urezivanjem i žigosanjem, djelomično uglačane površine.

42. SJ 53; ds-0,5 cm
Ulomak kalotaste zdjele ukrašene žigosanjem, djelomično uglačane površine.

21. SJ 29; wt-0.5 cm; h-10.2 cm; d-14 cm; hw-3.5 cm
Biconical bowl with a strap handle on the carination (type Z4a). With a partly burnished surface and stamped decoration.

22. SJ 43; PN 319; l-6.4 cm
Ceramic axe with a lateral thickenning, decorated with stabbing.

23. SJ 43; wt-0.3 cm; h-11.5 cm; d-14.7 cm
Slightly biconical bowl with a strap handle on the belly and stabbed motif below the rim, with a smooth surface.

24. SJ 43; wt-0.5 cm; h-14 cm; d-20.9 cm
Biconical bowl with a matt surface.

25. SJ 909; wt-0.9 cm; h-38.4 cm; d-40 cm
Rounded bowl with a strap handle – reconstructed (type Z3a). Coarse surface.

26. SJ 909; wt-0.4 cm; h-8.5 cm, d-11.5 cm
Bowl with a high cylindrical neck and short rounded belly – reconstructed (type Z5d). Matt surface.

27. SJ 51; wt-0.5 cm
Fragment of a bowl decorated with furrow-incision, matt surface.

28. SJ 51; wt-0.4 cm
Fragment of a bowl with stamped decoration, matt surface.

29. SJ 51; wt-0.4 cm
Fragment of an S-profiled bowl with stamped decoration below the rim, with a partly burnished surface.

30. SJ 51; wt-0.6 cm
Fragment of a bowl decorated with furrow-incision, with a partly burnished surface.

31. SJ 51; wt-0.5 cm
Fragment of a bowl decorated with incision and stamping, with a partly burnished surface.

32. SJ 51; wt-0.6 cm
Fragment of a bowl decorated with furrow-incision, matt surface.

33. SJ 53; wt-0.6 cm
Fragment of a hemispherical bowl decorated with furrow-incision, matt surface.

34. SJ 53; wt-0.5 cm
Everted rim of a bowl decorated with stamping, matt surface.

35. SJ 53; wt-0.7 cm
Fragment of a bowl with everted rim, the body is decorated with stamping, matt surface.

36. SJ 53; wt-0.7 cm
Fragment of a hemispherical bowl decorated with furrow-incision and stamping, with a partly burnished surface.

37. SJ 53; wt-0.7 cm
Fragment of a hemispherical bowl decorated with furrow-incision and stamping, with a partly burnished surface.

38. SJ 53; wt-0.7 cm
Fragment of a hemispherical bowl decorated with incision and stamping, with a partly burnished surface.

39. SJ 53; wt-0.5 cm
Fragment of a hemispherical bowl decorated with furrow-incision, with a partly burnished surface.

40. SJ 53; wt-0.5 cm
Fragment of a hemispherical bowl decorated with furrow-incision and stamping, with a partly burnished surface.

41. SJ 53; wt-0.7 cm
Fragment of a hemispherical bowl decorated with furrow-incision and stamping, with a partly burnished surface.

42. SJ 53; wt-0.5 cm
Fragment of a hemispherical bowl decorated with stamping, with a partly burnished surface.

43. SJ 53; wt-0.8 cm
Fragment of a hemispherical bowl decorated with stamping, with a partly burnished surface.

43. SJ 53; ds-0,8 cm
Ulomak kalotaste zdjele ukrašene žigosanjem, djelomično uglačane površine.

44. SJ 53; ds-0,6 cm
Ulomak kalotaste zdjele ukrašene urezivanjem i žigosanjem, mat površine.

45. SJ 53; ds-0,5 cm
Ulomak kalotaste zdjele ukrašene žigosanjem, mat površine.

46. SJ 53; ds-0,6 cm
Ulomak kalotaste zdjele ukrašene žigosanjem, djelomično uglačane površine.

47. SJ 53; ds-0,6 cm
Ulomak kalotaste zdjele ukrašene brazdastim urezivanjem, djelomično uglačane površine.

48. SJ 160; ds-0,6 cm; 5 x 13 cm
Ulomak kalotaste zdjele (tip Z2b). Glatke površine, ukras izveden brazdastim urezivanjem.

49. SJ 160; ds-0,5 cm; pr-19,8 cm
Ulomak kalotaste zdjele (tip Z2b). Glatke površine, ukras izveden rovašenjem.

50. SJ 160; ds-0,6 cm; pr-23,6 cm
Ulomak bikonične zdjele (tip Z4a). Glatke površine, ukras izveden urezivanjem.

51. SJ 160; ds-0,6 cm; 8 x 17 cm
Ulomak bikonične zdjele (tip Z4a). Glatke površine, ukras od urezanih linija pod rubom i žigosanih kružnica na prijelomu.

52. SJ 160; ds-0,7 cm; pd-11,2 cm
Donji dio lonca (tip L1?) grube fakture.

53. SJ 160; ds-0,5 cm; pr-10,8 cm; šr-3 cm
Ulomak bikonične zdjele (tip Z4a). Površina je mat, a ukras je izveden zarezivanjem pod rubom, a brazdastim urezivanjem na ručki.

54. SJ 160; ds-0,5 cm; pr-35 cm
Ulomak konične zdjele (tip Z1), glatke fakture.

55. SJ 160; ds-0,6 cm; štr-26 cm, 17 x 12 cm
Ulomak lonca s ručkama (tip L3), mat fature.

56. SJ 160; ds-0,4 cm; v-5,4 cm; pr-10,5 cm
Konična šalica - rekonstruirana (tip Š1), mat fakture.

57. SJ 160; ds-0,6 cm
Donji dio lonca (tip L1?), grube fakture.

58. SJ 160; ds-0,5 cm; 12x15 cm
Ulomak bikonične zdjele (tip Z4a), glatke fakture.

59. SJ 160; ds-0,8 cm; 4x10 cm
Ulomak kalotaste zdjele bez izražena dna (tip Z2a). Glatke površine, s ukrasom izvedenim urezivanjem i ubadanjem.

60. SJ 160; ds-0,3 cm; v- 4 cm; pr-20,5 cm
Kalotasta zdjela s omphalos dnom - rekonstruirana (tip Z2b). Djelomično uglačane površine, ukras je izveden žigosanim ubodima i brazdastim urezivanjem.

61. SJ 160; ds-0,4 cm
Ulomak bikonične zdjele s izduženom drškom pod rubom (tip Z4a), mat fakture.

62. SJ 160; ds-0,6 cm
Ulomak bikonične zdjele s izduženom drškom pod rubom (tip Z4a), glatke površine, s okomitim urezanim linijama na donjem dijelu tijela.

63. SJ 160; ds-0,5 cm
Ulomak bikonične zdjele (tip Z4a), glatke površine, s okomitim urezanim linijama na donjem dijelu tijela.

64. SJ 160; PN 221; d-6 cm; š-1,8
Ulomak keramičke sjekire s rupom za nasad.

65. SJ 160; PN 145; pr-3,8 cm
Pršljenak bikoničnog oblika i manjih dimenzija. Grube fakture.

44. SJ 53; wt-0.6 cm
Fragment of a hemispherical bowl decorated with incision and stamping, matt surface.

45. SJ 53; wt-0.5 cm
Fragment of a hemispherical bowl decorated with stamping, matt surface.

46. SJ 53; wt-0.6 cm
Fragment of a hemispherical bowl decorated with stamping, with a partly burnished surface.

47. SJ 53; wt-0.6 cm
Fragment of a hemispherical bowl decorated with furrow-incision, with a partly burnished surface.

48. SJ 160; wt-0.6 cm; 5 x 13 cm
Fragment of a hemispherical bowl (type Z2b). Smooth surface, with furrow-incised decoration.

49. SJ 160; wt-0.5 cm; d-19.8 cm
Fragment of a hemispherical bowl (type Z2b). Smooth surface, with scored decoration.

50. SJ 160; wt-0.6 cm; d-23.6 cm
Fragment of a biconical bowl (type Z4a). Smooth surface, with incised decoration.

51. SJ 160; wt-0.6 cm; 8 x 17 cm
Fragment of a biconical bowl (type Z4a). Smooth surface, decorated with incised lines below the rim and stamped circles on the carination.

52. SJ 160; wt-0.7 cm; bd-11.2 cm
Lower part of a coarse pot (type L1?).

53. SJ 160; wt-0.5 cm; d-10.8 cm; hw-3 cm
Fragment of a biconical bowl (type Z4a). Matt surface, decorated with notches below the rim and furrow-incision on the handle.

54. SJ 160; wt-0.5 cm; d-35 cm
Fragment of a conical bowl (type Z1) of smooth surface.

55. SJ 160; wt-0.6 cm; bw-26 cm, 17 x 12 cm
Fragment of a pot with handles (type L3), matt surface.

56. SJ 160; wt-0.4 cm; h-5.4 cm; d-10.5 cm
Conical cup – reconstructed (type Š1), matt surface.

57. SJ 160; wt-0.6 cm
Lower part of a coarse pot (type L1?).

58. SJ 160; wt-0.5 cm; 12x15 cm
Fragment of a biconical bowl (type Z4a), smooth surface.

59. SJ 160; wt-0.8 cm; 4x10 cm
Fragment of a hemispherical bowl without prominent base (type Z2a). Smooth surface decorated with incision and stabbing.

60. SJ 160; wt-0.3 cm; h- 4 cm; d-20.5 cm
Hemispherical bowl with an omphalos base – reconstructed (type Z2b). Partly burnished surface, decorated with stamped stabbings and furrow-incision.

61. SJ 160; wt-0.4 cm
Fragment of a biconical bowl with an elongated handle below the rim (type Z4a), matt surface.

62. SJ 160; wt-0.6 cm
Fragment of a biconical bowl with an elongated handle below the rim (type Z4a), of smooth surface, with incised vertical lines on the lower part of the body.

63. SJ 160; wt-0.5 cm
Fragment of a biconical bowl (type Z4a), of smooth surface, with incised vertical lines on the lower part of the body.

64. SJ 160; PN 221; l-6 cm; w-1.8
Fragment of a ceramic shaft-hole axe.

65. SJ 160; PN 145; d-3.8 cm
Small biconical spindle-whorl. Coarse surface.

66. SJ 160; PN 5; d-2.7 cm
Fragment of a spool.

66. SJ 160; PN 5; pr-2,7 cm
Ulomak kalema.

67. SJ 160; PN 231; pr-7 cm
Ulomak bikoničnog pršljenka grube fakture.

68. SJ 160; PN 117; pr-5,8 cm
Pršljenak bikoničnog oblika, grube površine.

69. SJ 160; PN 48; d-8 cm
Ulomak glačana kamena.

70. SJ 160; PN 215; 3,3 cm
Ulomak bikoničnog pršljenka.

71. SJ 160; PN 290; d-4 cm; pr-1,2 cm
Keramički predmet valjkasta oblika, grube fakture.

72. SJ 160; PN 55; pr-6 cm
Ulomak bikoničnog pršljenka.

73. SJ 160; PN 251; pr-7,7 cm
Pršljenak bikoničnog oblika.

74. SJ 160; PN 162; pr-5,8 cm
Pršljenak bikoničnog oblika.

75. SJ 160; PN 18; pr-5 cm
Pršljenak bikoničnog oblika.

76. SJ 160; PN 86; pr-6,3 cm
Pršljenak bikoničnog oblika.

77. SJ 160; PN 266; pr-7 cm
Pršljenak bikoničnog oblika.

78. SJ 160; PN 259; pr-5 cm
Bikonični pršljenak s naglašenim središnjim dijelom.

79. SJ 160; PN 232; pr-7,2
Ulomak bikoničnog pršljenka.

80. SJ 160; PN 160; d-4,5 cm
Keramičko grlo boce grube fakture.

81. SJ 160; ds-0,5 cm; 9 x 9 cm
Ulomak blago bikonične zdjele ravna ruba s urezanim okomitim linijama na donjem dijelu, mat fakture.

82. SJ 160; ds-0,6 cm; 4 x 9,5 cm
Ulomak posude ukrašen žigosanjem, mat fakture.

83. SJ 160; ds-0,5 cm; 6,5 x 10 cm
Ulomak posude ukrašen žigosanjem, mat fakture.

84. SJ 160; ds-0,3 cm; v- 6 cm; pr-9,7 cm
Bikonična šalica konkavnog gornjeg dijela i niskog tijela (tip Š2), mat fakture.

85. SJ 160; ds-0,7 cm; 5 x 9 cm
Ulomak ruba posude, mat fakture.

86. SJ 160; ds-0,3 cm; pr-21,1 cm
Ulomak kalotaste zdjele ukrašene brazdastim urezivanjem (tip Z2b), djelomično uglačane površine.

87. SJ 160; ds-0,5 cm; v- 9 cm; pr-17 cm
Blago bikonična zdjela s trakastom, ukrašenom ručkom na trbuhu, glatke površine.

88. SJ 160; ds-0,4 cm; 18 x 12 cm
Ulomak trbuha posude s tunelastom ušicom na prijelomu, mat površine.

89. SJ 160; ds-0,9 cm; 6 x 11 cm
Ulomak tijela posude s izduženom drškom ukrašenom utiskivanjem, grube površine.

90. SJ 160; ds-0,3 cm; 6,5 x 6 cm
Ulomak trbuha posude s tunelastom ručkom, mat fakture.

91. SJ 160; ds-0,7 cm; 4 x 10 cm
Ulomak donjeg dijela posude s urezanim okomitim linijama, mat fakture.

67. SJ 160; PN 231; d-7 cm
Fragment of a coarse biconical spindle-whorl.

68. SJ 160; PN 117; d-5.8 cm
Biconical spindle-whorl, coarse surface.

69. SJ 160; PN 48; l-8 cm
Fragment of a polished stone.

70. SJ 160; PN 215; 3.3 cm
Fragment of a biconical spindle-whorl.

71. SJ 160; PN 290; l-4 cm; d-1.2 cm
Cylindrical ceramic object of coarse surface.

72. SJ 160; PN 55; d-6 cm
Fragment of a biconical spindle-whorl.

73. SJ 160; PN 251; d-7.7 cm
Biconical spindle-whorl.

74. SJ 160; PN 162; d-5.8 cm
Biconical spindle-whorl.

75. SJ 160; PN 18; d-5 cm
Biconical spindle-whorl.

76. SJ 160; PN 86; d-6.3 cm
Biconical spindle-whorl.

77. SJ 160; PN 266; d-7 cm
Biconical spindle-whorl.

78. SJ 160; PN 259; d-5 cm
Biconical spindle-whorl with a prominent central part.

79. SJ 160; PN 232; d-7.2
Fragment of a biconical spindle-whorl.

80. SJ 160; PN 160; l-4.5 cm
Ceramic bottle neck of coarse surface.

81. SJ 160; wt-0.5 cm; 9 x 9 cm
Fragment of a slightly biconical bowl with a flat rim, with incised vertical lines on the lower part, matt surface.

82. SJ 160; wt-0.6 cm; 4 x 9.5 cm
Fragment of a vessel with stamped decoration, matt surface.

83. SJ 160; wt-0.5 cm; 6.5 x 10 cm
Fragment of a vessel with stamped decoration, matt surface.

84. SJ 160; wt-0.3 cm; h- 6 cm; d-9.7 cm
Biconical cup with concave upper part and short body (type Š2), matt surface.

85. SJ 160; wt-0.7 cm; 5 x 9 cm
Fragment of a vessel rim, matt surface.

86. SJ 160; wt-0.3 cm; d-21.1 cm
Fragment of a hemispherical bowl with furrow-incised decoration (type Z2b), with a partly burnished surface.

87. SJ 160; wt-0.5 cm; h- 9 cm; d-17 cm
Slightly biconical bowl with an ornamented strap handle on the belly, with a smooth surface.

88. SJ 160; wt-0.4 cm; 18 x 12 cm
Fragment of the belly of a vessel with a tunnel-shaped loop on the carination, matt surface.

89. SJ 160; wt-0.9 cm; 6 x 11 cm
Fragment of the body of a vessel with an elongated handle decorated with impressions, with a coarse surface.

90. SJ 160; wt-0.3 cm; 6.5 x 6 cm
Fragment of the belly of a vessel with a tunnel-shaped handle, matt surface.

91. SJ 160; wt-0.7 cm; 4 x 10 cm
Fragment of the lower part of the vessel with incised vertical lines, matt surface.

92. SJ 160; wt-0.6 cm; 8 x 8 cm
Fragment of a vessel with incised vertical lines, of coarse surface.

92. SJ 160; ds-0,6 cm; 8 x 8 cm
Ulomak posude s urezanim okomitim linijama, grube površine.

93. SJ 160; ds-0,8 cm; 6 x 8 cm
Ulomak donjeg dijela posude s urezanim okomitim linijama, mat fakture.

94. SJ 160; ds-0,5 cm; 10,5 x 8 cm
Ulomak donjeg dijela posude s urezanim okomitim linijama, djelomično uglačane površine.

95. SJ 160; ds-0,8 cm
Omphalos dno, mat površine.

96. SJ 160; ds-0,8 cm
Omphalos dno, grube površine.

97. SJ 160; ds-0,7 cm
Omphalos dno, grube fakture.

98. SJ 160; ds-0,4 cm; 4 x 8 cm
Ulomak trbuha posude ukrašene urezivanjem, glatke površine.

99. SJ 160; ds-0,4 cm; 3,5 x 11 cm
Ulomak trbuha posude ukrašene ubadanjem, grube fakture.

100. SJ 160; ds-0,5 cm; 5 x 7,5 cm
Ulomak trbuha posude ukrašene urezivanjem, mat površine.

101. SJ 160; ds-0,4 cm; 8 x 6 cm
Ulomak bikonične zdjele ukrašene koncentričnim kružnicama izvedenim ubadanjem, mat površine.

102. SJ 160; ds-0,2 cm; 3,5 x 5 cm
Ulomak bikonične zdjele ukrašene koncentričnim kružnicama izvedenim urezivanjem, mat površine.

103. SJ 160; ds-0,4 cm; 5 x 8,5 cm
Ulomak kalotaste zdjele ukrašene žigosanjem, mat površine.

104. SJ 160; ds-0,4 cm; 7 x 6 cm
Ulomak kalotaste zdjele ukrašene brazdastim urezivanjem, mat površine.

105. SJ 160; ds-0,7 cm; 9,3 x 8,3 cm
Ulomak posude ukrašene ubadanjem, grube fakture.

106. SJ 160; ds-0,8 cm; 7 x 8,5 cm
Ulomak posude ukrašene žigosanjem, grube fakture

107. SJ 160; ds-0,4 cm; 7 x 7,5 cm
Trbuh posude s ukrasom urezanih kružnica, mat fakture.

108. SJ 160; ds-0,5 cm; 6,5 x 7,5 cm
Rub konične posude s žigosanim ukrasom, grube fakture.

109. SJ 160; ds-0,5 cm; pr-25,9 cm
Ulomak bikonične zdjele ukrašene urezanim okomitim linijama, mat fakture.

110. SJ 160; ds-0,6 cm; 3,5 x 6,5 cm
Ulomak kalotaste zdjele ukašene žigosanjem, mat fakture.

111. SJ 160; ds-0,4 cm; 4,5 x 7 cm
Ulomak kalotaste zdjele ukašene žigosanjem, mat fakture.

112. SJ 160; ds-0,6 cm; pr-21,7 cm
Ulomak kalotaste zdjele ukrašene žigosanjem, mat fakture.

113. SJ 160; ds-0,4 cm; pr-21,8 cm
Ulomak kalotaste zdjele ukrašene žigosanjem, djelomično uglačane površine.

114. SJ 160; ds-0,4 cm; pr-21,7 cm
Ulomak kalotaste zdjele ukrašene žigosanjem, djelomično uglačane površine.

115. SJ 160; ds-0,4 cm; 3,5 x 8 cm
Ulomak kalotaste zdjele ukrašene žigosanjem ispunjenim inkrustacijom, djelomično uglačane površine.

116. SJ 160; ds-0,4 cm; 4,5 x 10,5 cm
Ulomak kalotaste zdjele ukrašene žigosanjem ispunjenim inkrustacijom, djelomično uglačane površine.

93. SJ 160; wt-0.8 cm; 6 x 8 cm
Fragment of the lower part of the vessel with incised vertical lines, matt surface.

94. SJ 160; wt-0.5 cm; 10.5 x 8 cm
Fragment of the lower part of the vessel with incised vertical lines, with a partly burnished surface.

95. SJ 160; wt-0.8 cm
Omphalos base, matt surface.

96. SJ 160; wt-0.8 cm
Omphalos base, coarse surface.

97. SJ 160; wt-0.7 cm
Omphalos base, coarse surface.

98. SJ 160; wt-0.4 cm; 4 x 8 cm
Fragment of the belly of a vessel decorated with incision, with a smooth surface.

99. SJ 160; wt-0.4 cm; 3.5 x 11 cm
Fragment of the belly of a vessel decorated with stabbing, of coarse surface.

100. SJ 160; wt-0.5 cm; 5 x 7.5 cm
Fragment of a belly decorated with incision, matt surface.

101. SJ 160; wt-0.4 cm; 8 x 6 cm
Fragment of a biconical bowl decorated with stabbed concentric circles, matt surface.

102. SJ 160; wt-0.2 cm; 3.5 x 5 cm
Fragment of a biconical bowl decorated with incised concentric circles, matt surface.

103. SJ 160; wt-0.4 cm; 5 x 8.5 cm
Fragment of a hemispherical bowl with stamped decoration, matt surface.

104. SJ 160; wt-0.4 cm; 7 x 6 cm
Fragment of a hemispherical bowl decorated with furrow-incision, matt surface.

105. SJ 160; wt-0.7 cm; 9.3 x 8.3 cm
Fragment of a vessel with stabbed decoration, coarse surface.

106. SJ 160; wt-0.8 cm; 7 x 8.5 cm
Fragment of a vessel with stamped decoration, coarse surface.

107. SJ 160; wt-0.4 cm; 7 x 7.5 cm
Belly of a vessel decorated with incised circles, matt surface.

108. SJ 160; wt-0.5 cm; 6.5 x 7.5 cm
Rim of a conical vessel with stamped decoration, coarse surface.

109. SJ 160; wt-0.5 cm; d-25.9 cm
Fragment of a biconical bowl with incised vertical lines, matt surface.

110. SJ 160; wt-0.6 cm; 3.5 x 6.5 cm
Fragment of a hemispherical bowl with stamped decoration, matt surface.

111. SJ 160; wt-0.4 cm; 4.5 x 7 cm
Fragment of a hemispherical bowl with stamped decoration, matt surface.

112. SJ 160; wt-0.6 cm; d-21.7 cm
Fragment of a hemispherical bowl with stamped decoration, matt surface.

113. SJ 160; wt-0.4 cm; d-21.8 cm
Fragment of a hemispherical bowl with stamped decoration, with a partly burnished surface.

114. SJ 160; wt-0.4 cm; d-21.7 cm
Fragment of a hemispherical bowl with stamped decoration, with a partly burnished surface.

115. SJ 160; wt-0.4 cm; 3.5 x 8 cm
Fragment of a hemispherical bowl with stamped decoration filled with incrustation, with a partly burnished surface.

**117.** SJ 160; ds-0,5 cm; 4,5 x 9 cm
Ulomak kalotaste zdjele ukrašene žigosanjem ispunjenim inkrustacijom, djelomično uglačane površine.

**118.** SJ 160; ds-0,4 cm; 4,5 x 8 cm
Ulomak kalotaste zdjele ukrašene žigosanjem ispunjenim inkrustacijom, djelomično uglačane površine.

**119.** SJ 160; ds-0,3 cm; pr-17,7 cm
Ulomak zdjele izvučena vrata s ukrasom izvedenim urezivanjem, mat fakture.

**120.** SJ 160; ds-0,3 cm; pr-21,9 cm
Ulomak kalotaste zdjele s ukrasom izvedenim urezivanjem, mat fakture.

**121.** SJ 160; ds-0,5 cm; pr-24 cm
Ulomak kalotaste zdjele s žigosanim ukrasom ispunjenim inkrustacijom, glatke fakture.

**122.** SJ 160; ds-0,5 cm; pr-22,7 cm
Ulomak kalotaste zdjele s žigosanim ukrasom ispunjenim inkrustacijom, glatke facture.

**123.** SJ 160; ds-0,4 cm; 4 x 8 cm
Ulomak kalotaste zdjele ukrašene brazdastim urezivanjem i žigosanjem, glatke fakture.

**124.** SJ 160; ds-0,5 cm; 4 x 7 cm
Ulomak kalotaste zdjele ukrašene brazdastim urezivanjem, glatke površine.

**125.** SJ 160; ds-0,5 cm; 4 x 6 cm
Ulomak kalotaste zdjele ukrašene žigosanjem i urezivanjem, glatke površine.

**126.** SJ 160; ds-0,4 cm; 4 x 9 cm
Ulomak kalotaste zdjele ukrašene dubokim urezivanjem, glatke površine.

**127.** SJ 160; ds-0,7 cm; 6,5 x 7 cm
Ulomak kalotaste zdjele ukrašene dubokim urezivanjem, glatke površine.

**128.** SJ 160; ds-0,6 cm; 5,5 x 13 cm
Ulomak izvučena vrata sa žigosanim ukrasom pod rubom, djelomično uglačane površine.

**129.** SJ 160; ds-0,6 cm; 6 x 8 cm
Ulomak izvučena vrata sa žigosanim ukrasom pod rubom, djelomično uglačane površine.

**130.** SJ 160; ds-0,4 cm; 5 x 8,5 cm
Ulomak blago bikonične zdjele izvučena ruba s urezanim kružnicama na trbuhu i žigosanim ukrasom pod rubom, mat fakture.

**131.** SJ 160; ds-0,5 cm; 4 x 5,5 cm
Ulomak izvučena vrata sa žigosanim ukrasom pod rubom, mat fakture.

**132.** SJ 160; ds-0,3 cm; pr-15,8 cm
Ulomak blago bikonične zdjele izvučena ruba s urezanim kružnicama na trbuhu i žigosanim ukrasom pod rubom, mat površine.

**133.** SJ 160; ds-0,4 cm; 9,5 x 7,5 cm
Ulomak zdjele izvučena vrata s ubodima na trbuhu i pod rubom, mat površine.

**134.** SJ 160; ds-0,3 cm; pr-9,9 cm
Ulomak blago bikonične zdjele izvučena ruba s urezanim motivima na trbuhu i pod rubom, djelomično uglačane površine.

**135.** SJ 160; ds-0,7 cm; 7 x 10 cm
Ulomak suženog otvora posude, ravnoga ruba, s tunelastom ušicom na vratu. Ukras je izveden žigosanjem i urezivanjem. Površina je mat.

**136.** SJ 160; ds-0,6 cm; 7 x 8 cm
Ulomak bikonične zdjele izvučena ruba s tunelastom ušicom pod rubom i nizom uboda, djelomično uglačane površine.

**116.** SJ 160; wt-0.4 cm; 4.5 x 10.5 cm
Fragment of a hemispherical bowl with stamped decoration filled with incrustation, with a partly burnished surface.

**117.** SJ 160; wt-0.5 cm; 4.5 x 9 cm
Fragment of a hemispherical bowl with stamped decoration filled with incrustation, with a partly burnished surface.

**118.** SJ 160; wt-0.4 cm; 4.5 x 8 cm
Fragment of a hemispherical bowl with stamped decoration filled with incrustation, with a partly burnished surface.

**119.** SJ 160; wt-0.3 cm; d-17.7 cm
Fragment of a bowl with everted rim, with incised decoration, matt surface.

**120.** SJ 160; wt-0.3 cm; d-21.9 cm
Fragment of a hemispherical bowl with incised decoration, matt surface.

**121.** SJ 160; wt-0.5 cm; d-24 cm
Fragment of a hemispherical bowl with stamped decoration filled with incrustation, smooth surface.

**122.** SJ 160; wt-0.5 cm; d-22.7 cm
Fragment of a hemispherical bowl with stamped decoration filled with incrustation, smooth surface.

**123.** SJ 160; wt-0.4 cm; 4 x 8 cm
Fragment of a hemispherical bowl decorated with furrow-incision and stamping, smooth surface.

**124.** SJ 160; wt-0.5 cm; 4 x 7 cm
Fragment of a hemispherical bowl with furrow-incised decoration, smooth surface.

**125.** SJ 160; wt-0.5 cm; 4 x 6 cm
Fragment of a hemispherical bowl with stamped and incised decoration, smooth surface.

**126.** SJ 160; wt-0.4 cm; 4 x 9 cm
Fragment of a hemispherical bowl with deep-incised decoration, smooth surface.

**127.** SJ 160; wt-0.7 cm; 6.5 x 7 cm
Fragment of a hemispherical bowl with deep-incised decoration, smooth surface.

**128.** SJ 160; wt-0.6 cm; 5.5 x 13 cm
Fragment of everted rim with stamped decoration below the rim, with a partly burnished surface.

**129.** SJ 160; wt-0.6 cm; 6 x 8 cm
Fragment of everted rim with stamped decoration below the rim, with a partly burnished surface.

**130.** SJ 160; wt-0.4 cm; 5 x 8.5 cm
Fragment of a slightly biconical bowl with everted rim, with incised circles on the belly and stamped ornament below the rim, matt surface.

**131.** SJ 160; wt-0.5 cm; 4 x 5.5 cm
Fragment of everted rim with stamped ornament below the rim, matt surface.

**132.** SJ 160; wt-0.3 cm; d-15.8 cm
Fragment of a slightly biconical bowl with everted rim, with incised circles on the belly and stamped ornament below the rim, matt surface.

**133.** SJ 160; wt-0.4 cm; 9.5 x 7.5 cm
Fragment of a bowl with everted rim, with stabs on the belly and below the rim, matt surface.

**134.** SJ 160; wt-0.3 cm; d-9.9 cm
Fragment of a slightly biconical bowl with everted rim, with incised circles on the belly and below the rim, with a partly burnished surface.

**135.** SJ 160; wt-0.7 cm; 7 x 10 cm
Fragment of constricted mouth of a vessel, with a flat rim and a tunnel-shaped loop on the neck. Decoration is stamped and incised. Matt surface.

137. SJ 160; ds-0,3 cm; 6 x 6 cm
Ulomak bikonične zdjele s trakastom ručkom na prijelomu ukrašenom urezivanjem i ubadenjem, mat fakture.

138. SJ 160; ds-0,5 cm; v- 6,5 cm
Ulomak bikonične šalice konkavnog gornjeg dijela i niskog tijela (tip Š2), mat površine.

139. SJ 160; ds-0,4 cm; pr-13 cm
Ulomak bikonične zdjele s urezima pod rubom, glatke površine.

140. SJ 160; ds-0,9 cm; 7,5 x 5 cm
Ulomak posude - cjedila?, grube fakture.

141. SJ 160; ds-0,8 cm; 5 x 9 cm
Ulomak lonca izvučena ruba s plastičnom trakom ukrašenom otiscima prstiju, grube fakture.

142. SJ 160; ds-1,2 cm; 6 x 10 cm
Ulomak lonca izvučena ruba s plastičnom trakom ukrašenom otiscima prstiju, mat fakture.

143. SJ 160; ds-1,2 cm; 3,5 x 9 cm
Ulomak lonca izvučena ruba s plastičnom trakom ukrašenom otiscima prstiju, grube fakture.

144. SJ 160; ds-1 cm; 5,5 x 6 cm
Ulomak lonca izvučena ruba s plastičnom trakom ukrašenom otiscima prstiju, grube fakture.

145. SJ 160; ds-1 cm; 8 x 15 cm
Ulomak zaobljena lonca s plastičnom trakom ukrašenom kružnim otiscima pod rubom, grube fakture.

146. SJ 160; ds-0,8 cm; 8 x 13 cm
Ulomak zaobljena lonca s plastičnom trakom ukrašenom kružnim otiscima pod rubom, grube fakture.

147. SJ 160; ds-1,3 cm; 17 x 15 cm
Ulomak zaobljena lonca s plastičnom trakom ukrašenom kružnim otiscima pod rubom, mat površine.

148. SJ 160; ds-0,8 cm; 16 x 16 cm
Ulomak zaobljena lonca s plastičnom trakom ukrašenom kružnim otiscima pod rubom, grube površine.

149. SJ 160; ds-1 cm; 17 x 19 cm
Ulomak zaobljena lonca s ručkom, mat površine.

150. SJ 160; PN 226; d-7,7 cm; š-6,6 cm; db-0,9 cm
Ulomak trokutaste pločice plosnatog oblika, mat fakture. Na obje strane ukrašena urezivanjem ispunjenim inkrustacijom.

151. SJ 160; PN 254; pr-7,9
Uteg zvonolikog oblika.

152. SJ 160; PN 44; d-3,7 cm
Ulomak kamene sjekire s rupom za nasad.

153. SJ 160; PN 298; pr-6 cm
Ulomak bikoničnog pršljenka.

154. SJ 160; PN 242; d-11 cm; š-7,6 cm
Ulomak žrvnja.

155. SJ 160; PN 2; d-5,7 cm
Kameni rastirač, četvrtastog oblika.

156. SJ 160; PN 120; d-5,5 cm
Obrađeni i zaglađeni oblutak – rastirač ?.

157. SJ 160; ds-0,4 cm; pr-9,8 cm; šr-2,5 cm
Bikonična zdjela s trakastom ručkom na prijelomu (tip Z4a), glatke površine, ukrašena žigosanjem i urezivanjem.

158. SJ 160; ds-0,3 cm; pr-8 cm; šr-2 cm
Bikonična zdjela s trakastom ručkom na prijelomu (tip Z4a), glatke površine, ukrašena žigosanjem i urezivanjem.

159. SJ 160; PN 34; d-7,7 cm
Keramička sjekira s rupom za nasad, grube fakture.

160. SJ 160 PN 241; d-7,4 cm
Dio kamenog dlijeta.

136. SJ 160; wt-0.6 cm; 7 x 8 cm
Fragment of a biconical bowl with everted rim and tunnel-shaped loop below the rim, decorated with a series of stabbings, with a partly burnished surface.

137. SJ 160; wt-0.3 cm; 6 x 6 cm
Fragment of a biconical bowl with a strap handle on the carination decorated with incisions and stabbings, matt surface.

138. SJ 160; wt-0.5 cm; h- 6.5 cm
Fragment of a biconical bowl with concave upper part and low body (type Š2), matt surface.

139. SJ 160; wt-0.4 cm; d-13 cm
Fragment of a biconical bowl with incisions below the rim, smooth surface.

140. SJ 160; wt-0.9 cm; 7.5 x 5 cm
Fragment of a vessel – possibly a strainer, coarse surface.

141. SJ 160; wt-0.8 cm; 5 x 9 cm
Fragment of a pot with everted rim with a relief band decorated with fingertip impressions, coarse surface.

142. SJ 160; wt-1.2 cm; 6 x 10 cm
Fragment of a pot with everted rim with a relief band decorated with fingertip impressions, matt surface.

143. SJ 160; wt-1.2 cm; 3.5 x 9 cm
Fragment of a pot with everted rim with a relief band decorated with fingertip impressions, coarse surface.

144. SJ 160; wt-1 cm; 5.5 x 6 cm
Fragment of a pot with everted rim with a relief band decorated with fingertip impressions, coarse surface.

145. SJ 160; wt-1 cm; 8 x 15 cm
Fragment of a round pot with a relief band decorated with circular impressions below the rim, coarse surface.

146. SJ 160; wt-0.8 cm; 8 x 13 cm
Fragment of a round pot with a relief band decorated with circular impressions below the rim, coarse surface.

147. SJ 160; wt-1.3 cm; 17 x 15 cm
Fragment of a round pot with a relief band decorated with circular impressions below the rim, matt surface.

148. SJ 160; wt-0.8 cm; 16 x 16 cm
Fragment of a round pot with a relief band decorated with circular impressions below the rim, coarse surface.

149. SJ 160; wt-1 cm; 17 x 19 cm
Fragment of a round pot with a handle, matt surface.

150. SJ 160; PN 226; l-7.7 cm; w-6.6 cm; t-0.9 cm
Fragment of a flat triangular plaque, matt surface. Both sides are decorated with incisions filled with incrustation.

151. SJ 160; PN 254; d-7.9
Bell-shaped weight.

152. SJ 160; PN 44; l-3.7 cm
Fragment of a shaft-hole stone axe.

153. SJ 160; PN 298; d-6 cm
Fragment of a biconical spindle-whorl.

154. SJ 160; PN 242; l-11 cm; w-7.6 cm
Fragment of a quern.

155. SJ 160; PN 2; l-5.7 cm
Prismatic stone grinder.

156. SJ 160; PN 120; l-5.5 cm
Worked and smoothed pebble – possibly a grinder.

157. SJ 160; wt-0.4 cm; d-9.8 cm; hw-2.5 cm
Biconical bowl with a strap handle on the carination (type Z4a), smooth surface, decorated with stamping and incision.

158. SJ 160; wt-0.3 cm; d-8 cm; hw-2 cm
Biconical bowl with a strap handle on the carination (type Z4a), smooth surface, decorated with stamping and incision.

161. SJ 160; PN 280; pr-6,6 cm
Pršljenak plosnatog oblika.

162. SJ 160; PN 236; pr-6 cm
Pršljenak bikoničnog oblika.

163. SJ 160; PN 140; pr-7,1 cm
Pršljenak bikoničnog oblika.

164. SJ 160; PN 164; pr-6,5 cm
Pršljenak bikoničnog oblika.

165. SJ 160; PN 25; pr-6 cm
Pršljenak bikoničnog oblika.

166. SJ 160; PN 60; pr-4,5 cm
Ulomak plosnatog pršljenka.

167. SJ 160 PN 157; d-7,2 cm
Kamena bradva.

168. SJ 160; PN 193; d-4,3 cm
Ulomak plosnatog pršljenka.

169. SJ 160; PN 67; pr-6,7 cm
Pršljenak bikoničnog oblika.

170. SJ 160; PN 64; pr-6,5 cm
Pršljenak bikoničnog oblika.

171. SJ 160; PN 15; pr-6 cm
Pršljenak okruglog oblika.

172. SJ 160; PN 255; pr-5,2 cm
Pršljenak bikoničnog oblika.

173. SJ 160; PN 56; 2,9 x 2,2 cm
Ulomak pršljenka.

174. SJ 160; ds-0,5 cm, 7,5 x 9 cm
Ulomak zdjele izvučena ruba s urezanim okomitim linijama na donjem dijelu, mat fakture.

175. SJ 160; ds-0,7 cm, 4,5 x 7 cm
Ulomak ruba posude s urezanim ornamentom, mat fakture.

176. SJ 160; ds-0,8 cm, 3,8 x 3,3 cm
Ulomak ruba posude, mat fakture.

177. SJ 160; ds-0,6 cm, 5 x 11 cm
Ulomak konične zdjele ukrašene žigosanjem, mat fakture.

178. SJ 160; ds-0,5 cm, 5 x 5,5 cm
Ulomak posude sužena vrata s ubodima pod rubom, mat fakture.

179. SJ 160; ds-0,5 cm
Ulomak bikonične zdjele s urezanom kružnicom, mat fakture.

180. SJ 160; PN 310; ds-0,8 cm; d-4,8 cm; š-4 cm
Ulomak keramičke žlice.

181. SJ 160; ds-0,8 cm, 4 x 5 cm
Ulomak trbuha lonca s tunelastom ušicom, mat površine.

182. SJ 160; ds-0,4 cm, 9 x 8 cm
Ulomak trbuha lonca s tunelastom ušicom, mat površine.

183. SJ 160; ds-0,3 cm v-7,5 cm; pr-22 cm
Zdjela izvučena vrata - rekonstriurana (tip Z5a), glatke površine, s ukrasom izvedenim urezivanjem i inkrustacijom.

184. SJ 659; v- 13,5 cm, pr-13,5 cm, štr-21 cm
Posuda elipsoidnog presjeka i cilindrična vrata s ušicama na ramenu, glatke površine ds-0,6 cm

185. SJ 659; ds-0,6 cm; v-13,5 cm, pr-19,5 cm
Zdjela S-profilirana tijela - rekonstruirana (tip Z6), mat površine.

186. SJ 856; ds-0,5 cm; 10 x 15 cm
Ulomak zdjele izvučena vrata (tip Z5a), glatke površine, s ukrasom izvedenim ubadanjem.

187. SJ 856; ds-0,4 cm; v-10,5 cm, pr-17,5 cm
Bikonična zdjela s trakastom ručkom koja spaja rub i rame posude – rekonstruirana (tip Z4a), djelomično uglačane površine, ukas izveden žigosanim ubodima.

159. SJ 160; PN 34; l-7.7 cm
Ceramic shaft-hole axe, coarse surface.

160. SJ 160 PN 241; l-7.4 cm
Part of a stone chisel.

161. SJ 160; PN 280; d-6.6 cm
Flat spindle-whorl.

162. SJ 160; PN 236; d-6 cm
Biconical spindle-whorl.

163. SJ 160; PN 140; d-7.1 cm
Biconical spindle-whorl.

164. SJ 160; PN 164; d-6.5 cm
Biconical spindle-whorl.

165. SJ 160; PN 25; d-6 cm
Biconical spindle-whorl.

166. SJ 160; PN 60; d-4.5 cm
Fragment of a flat spindle-whorl

167. SJ 160 PN 157; l-7.2 cm
Stone adze.

168. SJ 160; PN 193; l-4.3 cm
Fragment of a flat spindle-whorl.

169. SJ 160; PN 67; d-6.7 cm
Biconical spindle-whorl.

170. SJ 160; PN 64; d-6.5 cm
Biconical spindle-whorl.

171. SJ 160; PN 15; d-6 cm
Circular spindle-whorl.

172. SJ 160; PN 255; d-5.2 cm
Biconical spindle-whorl.

173. SJ 160; PN 56; 2.9 x 2.2 cm
Fragment of a spindle-whorl.

174. SJ 160; wt-0.5 cm, 7.5 x 9 cm
Fragment of a bowl with everted rim with incised vertical lines on the lower part, matt surface.

175. SJ 160; wt-0.7 cm, 4.5 x 7 cm
Fragment of the rim of a vessel with incised ornament, matt surface.

176. SJ 160; wt-0.8 cm, 3.8 x 3.3 cm
Fragment of a vessel rim, matt surface.

177. SJ 160; wt-0.6 cm, 5 x 11 cm
Fragment of a conical bowl with stamped decoration, matt surface.

178. SJ 160; wt-0.5 cm, 5 x 5.5 cm
Fragment of a vessel with constricted neck with stabbings below the rim, matt surface.

179. SJ 160; wt-0.5 cm
Fragment of a biconical bowl with an incised circle, matt surface.

180. SJ 160; PN 310; wt-0.8 cm; l-4.8 cm; w-4 cm
Fragment of a ceramic spoon.

181. SJ 160; wt-0.8 cm, 4 x 5 cm
Fragment of the belly of a pot with a tunnel-shaped loop, matt surface.

182. SJ 160; wt-0.4 cm, 9 x 8 cm
Fragment of the belly of a pot with a tunnel-shaped loop, matt surface.

183. SJ 160; wt-0.3 cm h-7.5 cm; d-22 cm
Bowl with everted rim – reconstructed (type Z5a), smooth surface, with incised decoration and incrustation.

184. SJ 659; h- 13.5 cm, d-13.5 cm, bw-21 cm
Bowl with elliptical cross-section and cylindrical neck with loops on the shoulder, smooth surface.

188. SJ 1038; ds-0,4 cm; v-11 cm, pr-19 cm
Bikonična zdjela - rekonstruirana (tip Z4a), djelomično uglačana. Ukrašen je gornji dio zdjele - izmjenjuju se nizovi uboda i urezivanja u poljima.

189. SJ 1038; PN 293; d-8,4 cm; š-5,9 cm
Uglačani kamen, zaravljenih ploha.

190. SJ 1038; PN 295; pr-1,4 cm
Kamena perla kružnog oblika.

191. SJ 1038; PN 294; pr-6,8 cm
Pršljenak bikoničnog oblika.

192. SJ 1038; PN 298; pr-6 cm
Pršljenak bikoničnog oblika.

193. SJ 207; PN 58; pr-7,1 cm
Pršljenak zaobljenog oblika.

194. SJ 207; PN 28; pr-6,9 cm
Pršljenak bikoničnog oblika.

195. SJ 207; PN 26; pr-6 cm
Pršljenak bikoničnog oblika.

196. SJ 207; PN 8; d-5,2 cm; š-4,7 cm
Lomljeni kamen četvrtastog oblika, s dvije glatke plohe.

197. SJ 207; ds-0,6 cm
Ulomak zdjele izvučena vrata, grube fakture.

198. SJ 227; ds-0,5 cm; v- 5,3 cm; pr-24,6 cm
Kalotasta zdjela s omphalos dnom - rekonstruirana (tip Z2a), mat površine, ukrašena brazdastim urezivanjem.

199. SJ 227; ds-0,6 cm; v- 5,5 cm; pr-23 cm
Kalotasta zdjela s omphalos dnom - rekonstruirana (tip Z2a), djelomično uglačane površine, ukrašena brazdastim urezivanjem i žigosanjem.



200. SJ 235; ds-0,5 cm; v-15,4 cm; pr-36 cm
Konična zdjela (tip Z1), grube površine.

201. SJ 241; ds-0,4 cm; v-8,5 cm; pr-28 cm
Kalotasta zdjela - rekonstruirana (tip Z2b), mat površine, s ukrasom izvedenim rovašenim linijama i žigosanjem.

202. SJ 241; PN 29, pr-6,5 cm
Pršljenak blago bikoničnog oblika.

203. SJ 265; ds-0,5 cm; v-10 cm; pr-12,5 cm
Zdjela cilindrična vrata i zaobljena trbuha - rekonstruirana (tip Z5c), djelomično uglačane površine.

204. SJ 267; ds-0,5 cm
Zdjela zaobljena tijela i ovalna dna - rekonstruirana (tip Z3b), grube površine.

205. SJ 267; ds-0,9 cm; v-12,8 cm; pr-37,6 cm
Konična zdjela (tip Z1), djelomično uglačane površine.

206. SJ 267; PN 144; d-3,7 cm
Ulomak keramičke žlice s drškom.

207. SJ 267; PN 118; pr-5,2 cm
Pršljenak koničnog oblika.

208. SJ 267; PN 119; pr-4,7 cm
Pršljenak blago bikoničnog oblika.

209. SJ 267; ds-0,6 cm; 5,7 x 4,3 cm
Ulomak ravnog ruba posude ukrašen brazdastim urezivanjem, grube fakture.

210. SJ 267; ds-0,9 cm; 8,9 x 8,2 cm
Ulomak posude ukrašen brazdastim urezivanjem, grube fakture.

211. SJ 267; ds-0,6 cm; pr-8 cm
Ulomak lonca grube fakture, ukrašen plastičnom trakom pod rubom koja je ukrašena kratkim zarezima.

212. SJ 267; ds-1 cm; pr-9cm
Ulomak lonca grube fakture, ukrašen plastičnom trakom pod rubom koja je ukrašena kratkim zarezima.

185. SJ 659; wt-0.6 cm; h-13.5 cm, d-19.5 cm
S-profiled bowl – reconstructed (type Z6), matt surface.

186. SJ 856; wt-0.5 cm; 10 x 15 cm
Fragment of a bowl with everted rim (type Z5a), smooth surface, with stabbed decoration.

187. SJ 856; wt-0.4 cm; h-10.5 cm, d-17.5 cm
Biconical bowl with a strap handle connecting the rim and the shoulder – reconstructed (type Z4a), with a partly burnished surface, decorated with stamped stabbings.

188. SJ 1038; wt-0.4 cm; h-11 cm, d-19 cm
Biconical bowl – reconstructed (type Z4a), partly burnished. The upper part of the bowl is decorated with alternating rows of stabbings and incisions in the fields.

189. SJ 1038; PN 293; l-8.4 cm; w-5.9 cm
Polished stone with flattened surfaces.

190. SJ 1038; PN 295; d-1.4 cm
Round stone bead.

191. SJ 1038; PN 294; d-6.8 cm
Biconical spindle-whorl.

192. SJ 1038; PN 298; d-6 cm
Biconical spindle-whorl.

193. SJ 207; PN 58; d-7.1 cm
Round spindle-whorl.

194. SJ 207; PN 28; d-6.9 cm
Biconical spindle-whorl.

195. SJ 207; PN 26; d-6 cm
Biconical spindle-whorl.

196. SJ 207; PN 8; l-5.2 cm; w-4.7 cm
Broken stone of prismatic shape, with two flat surfaces.

197. SJ 207; wt-0.6 cm
Fragment of a bowl with everted rim, coarse surface.

198. SJ 227; wt-0.5 cm; h- 5.3 cm; d-24.6 cm
Hemispherical bowl with omphalos base – reconstructed (type Z2a), matt surface, decorated with furrow-incision.

199. SJ 227; wt-0.6 cm; h- 5.5 cm; d-23 cm
Hemispherical bowl with omphalos base – reconstructed (type Z2a), with a partly burnished surface, decorated with furrow-incision and stamping.

200. SJ 235; wt-0.5 cm; h-15.4 cm; d-36 cm
Conical bowl (type Z1), coarse surface.

201. SJ 241; wt-0.4 cm; h-8.5 cm; d-28 cm
Conical bowl – reconstructed (type Z2b), matt surface, decorated with scored lines and stamping.

202. SJ 241; PN 29. d-6.5 cm
Spindle-whorl of slightly biconical shape.

203. SJ 265; wt-0.5 cm; h-10 cm; d-12.5 cm
Bowl with cylindrical neck and round belly – reconstructed (type Z5c), with a partly burnished surface.

204. SJ 267; wt-0.5 cm
Round bowl with oval base – reconstructed (type Z3b), coarse surface.

205. SJ 267; wt-0.9 cm; h-12.8 cm; d-37.6 cm
Conical bowl (type Z1), with a partly burnished surface.

206. SJ 267; PN 144; l-3.7 cm
Fragment of a ceramic spoon with a handle.

207. SJ 267; PN 118; d-5.2 cm
Conical spindle-whorl.

208. SJ 267; PN 119; d-4.7 cm
Spindle-whorl of slightly biconical shape.

209. SJ 267; wt-0.6 cm; 5.7 x 4.3 cm
Fragment of the flat rim of a bowl with furrow-incised decoration, coarse surface.

213. SJ 267; ds-1,1 cm
Ulomak lonca grube fakture, s plastičnom trakom pod rubom koja je ukrašena otiskom prsta.

214. SJ 267; ds-0,7 cm; pr-7 cm
Ulomak lonca grube fakture, s plastičnom trakom pod rubom koja je ukrašena kratkim zarezima.

215. SJ 267; ds-0,6 cm; pr-8 cm
Ulomak lonca grube fakture, s plastičnom trakom pod rubom.

216. SJ 267; ds-0,6 cm
Ulomak lonca grube fakture, s plastičnom trakom pod rubom koja je ukrašena kratkim zarezima.

217. SJ 267; ds-1,1 cm
Ulomak lonca grube fakture, s plastičnom trakom pod rubom koja je ukrašena otiskom prsta.

218. SJ 267; ds-1 cm
Ulomak lonca grube fakture, s plastičnom trakom pod rubom koja je ukrašena kratkim zarezima.

219. SJ 267; ds-0,8 cm
Ulomak lonca grube fakture, ukrašen plastičnom trakom pod rubom koja je ukrašena otiskom prsta.

220. SJ 271; ds-1,3 cm; pr-18 cm
Ulomak lonca grube fakture, ukrašen plastičnom trakom pod rubom koja je ukrašena utiskivanjem.

221. SJ 271; ds-0,9 cm; pr-16 cm
Ulomak lonca grube fakture, ukrašen plastičnom trakom pod rubom.

222. SJ 271; ds-1 cm
Ulomak lonca grube fakture, s plastičnom trakom pod rubom koja je ukrašena utiskivanjem.

223. SJ 271; ds-1,2 cm; pr-17 cm
Ulomak lonca grube fakture, s plastičnom trakom pod rubom koja je ukrašena utiskivanjem.

224. SJ 271; ds-0,8 cm; pr-12 cm
Ulomak lonca grube fakture, s plastičnom trakom pod rubom koja je ukrašena utiskivanjem.

225. SJ 271; ds-1,2 cm
Ulomak lonca grube fakture, s plastičnom trakom pod rubom koja je ukrašena utiskivanjem.

226. SJ 271; ds-0,9 cm; pr-16 cm
Ulomak lonca grube fakture, s plastičnom trakom pod rubom koja je ukrašena utiskivanjem.

227. SJ 271; ds-1 cm; pr-16 cm
Ulomak lonca grube fakture, s plastičnom trakom pod rubom koja je ukrašena utiskivanjem.

228. SJ 271; ds-0,8 cm; pr-14 cm
Ulomak lonca grube fakture.

229. SJ 271; ds-1,3 cm
Ulomak lonca grube fakture, s plastičnom trakom pod rubom koja je ukrašena utiskivanjem.

230. SJ 271; ds-1 cm; pr-17 cm
Ulomak lonca grube fakture, s plastičnom trakom koja je ukrašena utiskivanjem.

231. SJ 271; ds-1 cm; pr-17 cm
Ulomak lonca grube fakture, ukrašen dvostrukom plastičnom trakom.

232. SJ 271; ds-1 cm; pr-15 cm
Ulomak lonca grube fakture, ukrašen plastičnom trakom koja je ukrašena utiskivanjem.

233. SJ 271; ds-1 cm
Ulomak lonca grube fakture, ukrašen plastičnom trakom koja je ukrašena utiskivanjem.

234. SJ 271; ds-1 cm
Ulomak lonca grube fakture, ukrašen plastičnom trakom koja je ukrašena utiskivanjem.

210. SJ 267; wt-0.9 cm; 8.9 x 8.2 cm
Fragment of a vessel with furrow-incised decoration, coarse surface.

211. SJ 267; wt-0.6 cm; d-8 cm
Fragment of a coarse pot decorated with a relief band below the rim. The band is decorated with short notches.

212. SJ 267; wt-1 cm; d-9cm
Fragment of a coarse pot decorated with a relief band below the rim. The band is decorated with short notches.

213. SJ 267; wt-1.1 cm
Fragment of a coarse pot decorated with a relief band below the rim. The band is decorated with fingertip impressions.

214. SJ 267; wt-0.7 cm; d-7 cm
Fragment of a coarse pot decorated with a relief band below the rim. The band is decorated with short notches.

215. SJ 267; wt-0.6 cm; d-8 cm
Fragment of a coarse pot decorated with a relief band below the rim.

216. SJ 267; wt-0.6 cm
Fragment of a coarse pot decorated with a relief band below the rim. The band is decorated with short notches.

217. SJ 267; wt-1.1 cm
Fragment of a coarse pot decorated with a relief band below the rim. The band is decorated with fingertip impressions.

218. SJ 267; wt-1 cm
Fragment of a coarse pot decorated with a relief band below the rim. The band is decorated with short notches.

219. SJ 267; wt-0.8 cm
Fragment of a coarse pot decorated with a relief band below the rim. The band is decorated with fingertip impressions.

220. SJ 271; wt-1.3 cm; d-18 cm
Fragment of a coarse pot decorated with a relief band below the rim. The band is decorated with impressions.

221. SJ 271; wt-0.9 cm; d-16 cm
Fragment of a coarse pot decorated with a relief band below the rim.

222. SJ 271; wt-1 cm
Fragment of a coarse pot decorated with a relief band below the rim. The band is decorated with impressions.

223. SJ 271; wt-1.2 cm; d-17 cm
Fragment of a coarse pot decorated with a relief band below the rim. The band is decorated with impressions.

224. SJ 271; wt-0.8 cm; d-12 cm
Fragment of a coarse pot decorated with a relief band below the rim. The band is decorated with impressions.

225. SJ 271; wt-1.2 cm
Fragment of a coarse pot decorated with a relief band below the rim. The band is decorated with impressions.

226. SJ 271; wt-0.9 cm; d-16 cm
Fragment of a coarse pot decorated with a relief band below the rim. The band is decorated with impressions.

227. SJ 271; wt-1 cm; d-16 cm
Fragment of a coarse pot decorated with a relief band below the rim. The band is decorated with impressions.

228. SJ 271; wt-0.8 cm; d-14 cm
Fragment of a coarse pot.

229. SJ 271; wt-1.3 cm
Fragment of a coarse pot decorated with a relief band below the rim. The band is decorated with impressions.

230. SJ 271; wt-1 cm; d-17 cm
Fragment of a coarse pot decorated with a relief band decorated with impressions.

231. SJ 271; wt-1 cm; d-17 cm
Fragment of a coarse pot decorated with a double relief band.

232. SJ 271; wt-1 cm; d-15 cm
Fragment of a coarse pot decorated with a relief band decorated with impressions.

235. SJ 271; ds-1,3 cm; pr-10 cm
Ulomak lonca grube fakture, ukrašen plastičnom trakom koja je ukrašena utiskivanjem.

236. SJ 271; ds-0,9 cm
Ulomak lonca grube fakture, ukrašen plastičnom trakom koja je ukrašena utiskivanjem.

237. SJ 271; ds-0,9 cm
Ulomak lonca grube fakture. Rub lonca ukrašen je utiskivanjem.

238. SJ 271; ds-0,9 cm; pr-6 cm
Ulomak lonca grube fakture, ukrašena ruba.

239. SJ 271; ds-1 cm
Ulomak lonca grube fakture, ukrašen plastičnom trakom koja je ukrašena utiskivanjem.

240. SJ 271; ds-1 cm
Ulomak posude grube fakture s izduženom drškom.

241. SJ 271; ds-0,8 cm
Ulomak posude grube fakture s izduženom drškom ukrašenom utiskivanjem.

242. SJ 271; ds-1,2 cm
Ulomak posude grube fakture s izduženom drškom ukrašenom utiskivanjem.

243. SJ 271; ds-0,8 cm
Ulomak posude grube fakture s izduženom drškom ukrašenom utiskivanjem.

244. SJ 271; ds-0,8 cm
Ulomak posude grube fakture s izduženom drškom ukrašenom utiskivanjem.

245. SJ 281; ds-0,5 cm; v- 14,5 cm; pr-15 cm
Lonac grube fakure, S-profilirana tijela s horizontalno probušenom ušicom pod rubom - rekonstruiran (tip L2).

246. SJ 293; ds-0,4 cm; v- 14,5 cm, pr-19,8 cm
Bikonična zdjela mat površine ukrašena brazdastim urezivanjem na najširem dijelu. ds-0,4 cm

247. SJ 281; ds-0,5 cm
Ulomak zdjele s trakastom ručkom s žigosanim ukrasom pod rubom, djelomično uglačane fakture.

248. SJ 281; ds-0,5 cm
Ulomak kalotaste zdjele ukrašene brazdastim urezivanjem i žigosanjem, djelomično uglačane površine.

249. SJ 281; ds-0,5 cm
Ulomak kalotaste zdjele ukrašene brazdastim urezivanjem i žigosanjem, djelomično uglačane povšine.

250. SJ 281; ds-0,6 cm
Ulomak kalotaste zdjele ukrašene brazdastim urezivanjem i žigosanjem, djelomično uglačane površine.

251. SJ 281; ds-0,6 cm
Ulomak kalotaste zdjele ukrašene brazdastim urezivanjem, djelomično uglačane površine.

252. SJ 285; ds-0,5 cm
Ulomak bikonične zdjele sa žigosanim ukrasom na prijelomu, mat površine.

253. SJ 285; ds-0,5 cm
Ulomak zdjele s urezanim ukrasom, mat površine.

254. SJ 285; ds-0,5 cm
Ulomak zdjele ukrašene brazdastim urezivanjem, mat površine.

255. SJ 285; ds-0,8 cm
Ulomak posude sa žigosanim ukrasom, mat površine.

256. SJ 285; ds-0,5 cm
Ulomak zdjele bikonična prijeloma s kružnim ukrasom izvedenim brazdastim urezivanjem, mat površine.

257. SJ 285; ds-0,5 cm
Ulomak zdjele ukrašene brazdastim urezivanjem, mat površine.

233. SJ 271; wt-1 cm
Fragment of a coarse pot decorated with a relief band decorated with impressions.

234. SJ 271; wt-1 cm
Fragment of a coarse pot decorated with a relief band decorated with impressions.

235. SJ 271; wt-1.3 cm; d-10 cm
Fragment of a coarse pot decorated with a relief band decorated with impressions.

236. SJ 271; wt-0.9 cm
Fragment of a coarse pot decorated with a relief band decorated with impressions.

237. SJ 271; wt-0.9 cm
Fragment of a coarse pot. The rim is decorated with impressions.

238. SJ 271; wt-0.9 cm; d-6 cm
Fragment of a coarse pot with a decorated rim.

239. SJ 271; wt-1 cm
Fragment of a coarse pot decorated with a relief band decorated with impressions.

240. SJ 271; wt-1 cm
Fragment of a coarse vessel with elongated handle.

241. SJ 271; wt-0.8 cm
Fragment of a coarse vessel with elongated handle decorated with impressions.

242. SJ 271; wt-1.2 cm
Fragment of a coarse vessel with elongated handle decorated with impressions.

243. SJ 271; wt-0.8 cm
Fragment of a coarse vessel with elongated handle decorated with impressions.

244. SJ 271; wt-0.8 cm
Fragment of a coarse vessel with elongated handle decorated with impressions.

245. SJ 281; wt-0.5 cm; h- 14.5 cm; d-15 cm
Coarse pot with an S-profiled body, with a horizontally perforated loop below the rim – reconstructed (type L2).

246. SJ 293; wt-0.4 cm; h- 14.5 cm, d-19.8 cm
Biconical bowl with a matt surface, decorated with furrow-incisions on the widest part.

247. SJ 281; wt-0.5 cm
Fragment of a bowl with a strap handle with stamped decoration below the rim, with a partly decorated surface.

248. SJ 281; wt-0.5 cm
Fragment of a hemispherical bowl with furrow-incised and stamped decoration, with a partly burnished surface.

249. SJ 281; wt-0.5 cm
Fragment of a hemispherical bowl with furrow-incised and stamped decoration, with a partly burnished surface.

250. SJ 281; wt-0.6 cm
Fragment of a hemispherical bowl with furrow-incised and stamped decoration, with a partly burnished surface.

251. SJ 281; wt-0.6 cm
Fragment of a hemispherical bowl with furrow-incised decoration, with a partly burnished surface.

252. SJ 285; wt-0.5 cm
Fragment of a biconical bowl with stamped decoration on the carination, matt surface.

253. SJ 285; wt-0.5 cm
Fragment of a bowl with incised decoration, matt surface.

254. SJ 285; wt-0.5 cm
Fragment of a bowl with furrow-incised decoration, matt surface.

255. SJ 285; wt-0.8 cm
Fragment of a vessel with stamped decoration, matt surface.

**258.** SJ 285; ds-0,5 cm
Ulomak konične zdjele blago uvučena ruba, mat površine.

**259.** SJ 285; ds-0,7 cm
Ulomak trbušaste posude bez vrata, ukrašene dubokim urezivanjem pod rubom, mat površine.

**260.** SJ 293; ds-0,5 cm
Ulomak kalotaste zdjele ukrašene urezivanjem, mat površine.

**261.** SJ 293; ds-0,5 cm
Ulomak kalotaste zdjele ukrašene zarezima, mat površine.

**262.** SJ 293; ds-0,4 cm
Ulomak kalotaste zdjele ukrašene brazdastim urezivanjem, mat površine.

**263.** SJ 293; ds-0,5 cm
Ulomak kalotaste zdjele ukrašene zarezima, mat površine.

**264.** SJ 293; ds-0,4 cm
Ulomak zdjele ukrašene brazdastim urezivanjem pod rubom, mat površine.

**265.** SJ 293; ds-0,4 cm
Ulomak zdjele ukrašene brazdastim urezivanjem pod rubom, mat površine.

**266.** SJ 293; ds-0,5 cm
Ulomak zdjele ukrašene urezivanjem pod rubom, mat površine.

**267.** SJ 293; ds-0,4 cm
Ulomak kalotaste zdjele ukrašene zarezima, mat površine.

**268.** SJ 293; ds-0,5 cm
Ulomak kalotaste zdjele ukrašene urezivanjem, mat površine.

**269.** SJ 293; ds-0,5 cm
Ulomak kalotaste zdjele ukrašene zarezima, mat površine.

**270.** SJ 293; ds-0,4 cm
Ulomak zdjele ukrašene urezivanjem pod rubom, mat površine.

**271.** SJ 293; ds-0,4 cm
Ulomak kalotaste zdjele ukrašene zarezima, mat površine.

**272.** SJ 293; ds-0,4 cm
Ulomak kalotaste zdjele ukrašene brazdastim urezivanjem, mat površine.

**273.** SJ 293; ds-0,4 cm
Ulomak kalotaste zdjele ukrašene zarezima, mat površine.

**274.** SJ 293; ds-0,4 cm
Ulomak kalotaste zdjele ukrašene brazdastim urezivanjem, mat površine.

**275.** SJ 293; ds-0,4 cm
Ulomak kalotaste zdjele ukrašene brazdastim urezivanjem, mat površine.

**276.** SJ 295; ds-0,8 cm; v- 21,2 cm; pr-26 cm
Zdjela bikonična tijela s ukrasom rozeta na prijelomu - rekonstruirana (tip Z4a), djelomično uglačane površine.

**277.** SJ 305; ds-0,4 cm; v- 20,5 cm; pr-8 cm
Lonac suženog vrata s trakastom ručkom na trbuhu - rekonstruiran (tip L3), mat površine.

**278.** SJ 327; ds-0,6 cm; 16,3 x 10,5
Ulomak bikoničnog prijeloma zdjele s ukrasom kružnica izvedenim brazdastim urezivanjem, mat površine.

**279.** SJ 327; ds-0,4 cm; v- 16 cm; pr-12 cm
Lonac zaobljena tijela s drškom pod rubom - rekonstruiran (tip L1), grube fakture.

**280.** SJ 327; ds-0,7 cm; v- 6,5 cm; pr-22 cm
Zdjela izvučena vrata - rekonstriurana (tip Z5a). Mat površine, ukras izveden brazdastim urezivanjem i žigosanjem.

**281.** SJ 469; ds-0,4 cm; v- 23 cm; pr-16 cm
Lonac cilindrična vrata (L4), grube fakture.

**256.** SJ 285; wt-0.5 cm
Fragment of a biconical bowl with furrow-incised circular ornament, matt surface.

**257.** SJ 285; wt-0.5 cm
Fragment of a bowl with furrow-incised decoration, matt surface.

**258.** SJ 285; wt-0.5 cm
Fragment of a conical bowl with slightly inverted rim, matt surface.

**259.** SJ 285; wt-0.7 cm
Fragment of a bellied vessel without a neck, decorated with deep-incision below the rim, matt surface.

**260.** SJ 293; wt-0.5 cm
Fragment of a hemispherical bowl with incised decoration, matt surface.

**261.** SJ 293; wt-0.5 cm
Fragment of a hemispherical bowl decorated with notches, matt surface.

**262.** SJ 293; wt-0.4 cm
Fragment of a hemispherical bowl decorated with furrow-incision, matt surface.

**263.** SJ 293; wt-0.5 cm
Fragment of a hemispherical bowl decorated with notches, matt surface.

**264.** SJ 293; wt-0.4 cm
Fragment of a bowl decorated with furrow-incision below the rim, matt surface.

**265.** SJ 293; wt-0.4 cm
Fragment of a bowl decorated with furrow-incision below the rim, matt surface.

**266.** SJ 293; wt-0.5 cm
Fragment of a bowl decorated with incisions below the rim, matt surface.

**267.** SJ 293; wt-0.4 cm
Fragment of a hemispherical bowl decorated with notches, matt surface.

**268.** SJ 293; wt-0.5 cm
Fragment of a hemispherical bowl decorated with incisions, matt surface.

**269.** SJ 293; wt-0.5 cm
Fragment of a hemispherical bowl decorated with notches, matt surface.

**270.** SJ 293; wt-0.4 cm
Fragment of a bowl decorated with incisions below the rim, matt surface.

**271.** SJ 293; wt-0.4 cm
Fragment of a hemispherical bowl decorated with notches, matt surface.

**272.** SJ 293; wt-0.4 cm
Fragment of a hemispherical bowl decorated with furrow-incisions, matt surface.

**273.** SJ 293; wt-0.4 cm
Fragment of a hemispherical bowl decorated with notches, matt surface.

**274.** SJ 293; wt-0.4 cm
Fragment of a hemispherical bowl decorated with furrow-incisions, matt surface.

**275.** SJ 293; wt-0.4 cm
Fragment of a hemispherical bowl decorated with furrow-incisions, matt surface.

**276.** SJ 295; wt-0.8 cm; h- 21.2 cm; d-26 cm
Biconical bowl decorated with rosettes on the carination – reconstructed (type Z4a), with a partly burnished surface.

**277.** SJ 305; wt-0.4 cm; h- 20.5 cm; d-8 cm
Pot with constricted rim with a strap handle on the belly – reconstructed (type L3), matt surface.

282. SJ 469; ds-0,6 cm; v- 11,9 cm; pr-6,1 cm; štr- 16,3 cm
Trbušasta posuda bez vrata, mat površine.

283. SJ 469; ds-0,3 cm; v- 7 cm; pr-27 cm
Kalotasta zdjela - rekonstruirana (tip Z2b), djelomično uglačane površine, a ukras je izveden brazdastim urezivanjem i ubadanjem ispunjenim inkrustacijom.

284. SJ 561; ds-0,8 cm
Ulomak zdjele zaobljena tijela, mat površine.

285. SJ 561; ds-0,9 cm
Ulomak zdjele zaobljena tijela, mat površine.

286. SJ 561; ds-0,7 cm
Ulomak izvučenog ruba posude, mat površine.

287. SJ 561; ds-0,6 cm
Ulomak izvučenog ruba posude, mat površine.

288. SJ 561, ds-0,5 cm
Ulomak ruba konične zdjele, grube fakture.

289. SJ 561; ds-0,6 cm
Ulomak izvučenog ruba zdjele ukrašene brazdastim urezivanjem, grube fakture.

290. SJ 561; ds-0,5 cm
Ulomak izvučenog ruba posude, mat površine.

291. SJ 561; ds-0,8 cm
Ulomak ruba posude, grube površine.

292. SJ 561; ds-0,6 cm
Blago uvučen rub zdjele, mat površine.

293. SJ 561; ds-0,6 cm
Ulomak ruba posude, mat površine.

294. SJ 561; ds-0,6 cm
Ulomak izvučenog ruba posude, mat površine.

295. SJ 561; ds-0,7 cm
Ulomak ruba posude, mat površine.

296. SJ 561, ds-0,7 cm
Ulomak ruba posude, grube površine.

297. SJ 561; ds-0,8 cm
Ulomak ruba posude, grube površine.

298. SJ 561; ds-0,8 cm
Ulomak ruba posude, grube površine.

299. SJ 561; ds-0,6 cm
Ulomak ruba posude, grube površine.

300. SJ 561; ds-0,8 cm
Ulomak ruba posude, grube površine.

301. SJ 561; ds-1 cm
Ulomak ruba posude, grube površine.

302. SJ 561; ds-0,7 cm
Blago uvučen rub zdjele, grube površine.

303. SJ 561; ds-0,6 cm
Blago uvučen rub zdjele, grube površine.

304. SJ 561; ds-0,9 cm
Blago uvučen rub zdjele, grube površine.

305. SJ 561; ds-1,2 cm
Rub lonca s plastičnom trakom s otiscima nokta, grube površine.

306. SJ 572; ds-0,6 cm; v- 16,3 cm; pr-15,6 cm
Lonac S-profilirana tijela s drškama pravokutna presjeka (tip L2), grube površine

307. SJ 572; ds-0,8 cm; v- 17 cm; pr-17 cm
Lonac S-profilirana tijela s izduženom drškom pod rubom i ubodima na rubu (tip L2), grube fakture.

308. SJ 572; ds-0,7 cm; v- 16 cm; pr-23,5 cm
Duboka, zaobljena zdjela s drškama ukrašenim utiskivanjem (tip Z3a), grube fakture.

278. SJ 327; wt-0.6 cm; 16.3 x 10.5
Fragment of a biconical carination of a bowl decorated with furrow-incised circles, matt surface.

279. SJ 327; wt-0.4 cm; h- 16 cm; d-12 cm
Coarse pot with rounded body with a handle below the rim – reconstructed (type L1).

280. SJ 327; wt-0.7 cm; h- 6.5 cm; d-22 cm
Bowl with everted rim – reconstructed (type Z5a). Matt surface, furrow-incised and stamped decoration.

281. SJ 469; wt-0.4 cm; h- 23 cm; d-16 cm
Coarse pot with cylindrical neck (L4).

282. SJ 469; wt-0.6 cm; h- 11.9 cm; d-6.1 cm; bw- 16.3 cm
Bellied vessel without a neck, matt surface.

283. SJ 469; wt-0.3 cm; h- 7 cm; d-27 cm
Hemispherical bowl – reconstructed (type Z2b), with a partly burnished surface. It is decorated with furrow-incisions and stabbings filled with incrustation.

284. SJ 561; wt-0.8 cm
Fragment of a round bowl, matt surface.

285. SJ 561; wt-0.9 cm
Fragment of a round bowl, matt surface.

286. SJ 561; wt-0.7 cm
Fragment of the everted rim of a vessel, matt surface.

287. SJ 561; wt-0.6 cm
Fragment of the everted rim of a vessel, matt surface.

288. SJ 561. wt-0.5 cm
Fragment of the rim of a conical bowl, coarse surface.

289. SJ 561; wt-0.6 cm
Fragment of the everted rim of a bowl decorated with furrow-incisions, coarse surface.

290. SJ 561; wt-0.5 cm
Fragment of the everted rim of a vessel, matt surface.

291. SJ 561; wt-0.8 cm
Fragment of a vessel rim, coarse surface.

292. SJ 561; wt-0.6 cm
Slightly inverted rim of a vessel, matt surface.

293. SJ 561; wt-0.6 cm
Fragment of the rim of a vessel, matt surface.

294. SJ 561; wt-0.6 cm
Fragment of the everted rim of a vessel, matt surface.

295. SJ 561; wt-0.7 cm
Fragment of the rim of a vessel, matt surface.

296. SJ 561; wt-0.7 cm
Fragment of a vessel rim, coarse surface.

297. SJ 561; wt-0.8 cm
Fragment of a vessel rim, coarse surface.

298. SJ 561; wt-0.8 cm
Fragment of a vessel rim, coarse surface.

299. SJ 561; wt-0.6 cm
Fragment of a vessel rim, coarse surface.

300. SJ 561; wt-0.8 cm
Fragment of a vessel rim, coarse surface.

301. SJ 561; wt-1 cm
Fragment of a vessel rim, coarse surface.

302. SJ 561; wt-0.7 cm
Slightly inverted rim of a bowl, coarse surface.

303. SJ 561; wt-0.6 cm
Slightly inverted rim of a bowl, coarse surface.

304. SJ 561; wt-0.9 cm
Slightly inverted rim of a bowl, coarse surface.

309. SJ 572; ds-0,6 cm; v- 10 cm; pr-25,6 cm
Zdjela izvučena vrata - rekonstruirana (tip Z5a), mat površine.

310. SJ 572; PN 230; pr-6,5 cm
Ulomak pršljenka bikoničnog oblika.

311. SJ 572; PN 240; pr-7,4 cm
Pršljenak bikoničnog oblika.

312. SJ 572; PN 237; pr-7,1 cm
Pršljenak bikoničnog oblika.

313. SJ 572; PN 217; pr-6,3 cm
Ulomak pršljenka bikoničnog oblika.

314. SJ 572; PN 153; pr-6 cm
Ulomci pršljenka bikoničnog oblika.

315. SJ 572; PN 134; pr-5,7 cm
Ulomak pršljenka bikoničnog oblika.

316. SJ 572; PN 222; d-7,3 cm, š-4,3 cm
Kamena sjekira trapeznog oblika.

317. SJ 572; PN 202; pr-5,2 cm
Ulomak pršljenka bikoničnog oblika.

318. SJ 572; ds-0,7 cm; v- 6,9 cm; pr-17 cm
Zdjela bikonična tijela - rekonstriurana (tip Z4b), djelomično uglačana.

319. SJ 572; ds-1,1 cm; v- 4 cm; pr-9,5 cm
Plitka posudica grube fakture, grube facture.

320. SJ 572; ds-0,8 cm; pr-23,4 cm
Lonac S-profilirana tijela s plastičnom trakom ukrašenom urezivanjem pod rubom (tip L2), grube fakture.

321. SJ 572; ds-0,6 cm
Ulomak zdjele ukrašene brazdastim urezivanjem i žigosanjem, djelomično uglačane površine.

322. SJ 572; ds-0,6 cm
Ulomak zdjele ukrašene dubokim urezivanjem, djelomično uglačane površini.

323. SJ 572; ds-0,6 cm
Ulomak zdjele ukrašene brazdastim urezivanjem i žigosanjem, djelomično uglačane površine.

324. SJ 572; ds-0,5 cm
Ulomak zdjele ukrašene brazdastim urezivanjem i žigosanjem, djelomično uglačane površine.

325. SJ 572; ds-0,7 cm
Ulomak zdjele ukrašene brazdastim urezivanjem ispunjenim bijelom inkrustacijom, djelomično uglačane površine

326. SJ 572; ds-0,6 cm
Ulomak zdjele ukrašene brazdastim urezivanjem i žigosanjem, djelomično uglačane površine.

327. SJ 572; ds-0,5 cm
Ulomak zdjele ukrašene brazdastim urezivanjem i žigosanjem, djelomično uglačane površine.

328. SJ 572; ds-0,5 cm
Ulomak izvijena ruba s žigosanim ukrasom, mat površine.

329. SJ 572; ds-0,8 cm
Ulomak suženog otvora posude, ravnoga ruba, s tunelastom ušicom na vratu. Ukras je izvedne žigosanjem, mat površine.

330. SJ 572; ds-0,5 cm
Ulomak zdjele ukrašene žigosanjem, mat površine.

331. SJ 572; ds-0,5 cm
Ulomak zdjele ukrašene brazdastim urezivanjem ispunjenim bijelom inkrustacijom, mat površine.

332. SJ 572; ds-0,7 cm
Ulomak bikonične zdjele s kružnicama izvedenim urezivanjem, mat površine.

305. SJ 561; wt-1.2 cm
Rim of a pot with a relief band with fingernail impressions, coarse surface.

306. SJ 572; wt-0.6 cm; h- 16.3 cm; d-15.6 cm
S-profiled pot with handles of rectangular cross-section (type L2), coarse surface.

307. SJ 572; wt-0.8 cm; h- 17 cm; d-17 cm
S-profiled pot with elongated handle below the rim and stabbings on the rim (type L2), coarse surface.

308. SJ 572; wt-0.7 cm; h- 16 cm; d-23.5 cm
Deep, rounded bowl with handles decorated with impressions (type Z3a), coarse surface.

309. SJ 572; wt-0.6 cm; h- 10 cm; d-25.6 cm
Bowl with everted rim – reconstructed (type Z5a), matt surface.

310. SJ 572; PN 230; d-6.5 cm
Fragment of a biconical spindle-whorl.

311. SJ 572; PN 240; d-7.4 cm
Biconical spindle-whorl.

312. SJ 572; PN 237; d-7.1 cm
Biconical spindle-whorl.

313. SJ 572; PN 217; d-6.3 cm
Fragment of a biconical spindle-whorl.

314. SJ 572; PN 153; d-6 cm
Fragments of a biconical spindle-whorl.

315. SJ 572; PN 134; d-5.7 cm
Fragment of a biconical spindle-whorl.

316. SJ 572; PN 222; l-7.3 cm, w-4.3 cm
Trapezoidal stone axe.

317. SJ 572; PN 202; d-5.2 cm
Fragment of a biconical spindle-whorl.

318. SJ 572; wt-0.7 cm; h- 6.9 cm; d-17 cm
Biconical bowl – reconstructed (type Z4b), partly burnished.

319. SJ 572; wt-1.1 cm; h- 4 cm; d-9.5 cm
Small shallow bowl, coarse surface.

320. SJ 572; wt-0.8 cm; d-23.4 cm
S-profiled pot with a relief band decorated with incisions below the rim (type L2), coarse surface.

321. SJ 572; wt-0.6 cm
Fragment of a bowl with furrow-incised and stamped decoration, with a partly burnished surface.

322. SJ 572; wt-0.6 cm
Fragment of a bowl with furrow-incised decoration, with a partly burnished surface.

323. SJ 572; wt-0.6 cm
Fragment of a bowl with furrow-incised and stamped decoration, with a partly burnished surface.

324. SJ 572; wt-0.5 cm
Fragment of a bowl with furrow-incised and stamped decoration, with a partly burnished surface.

325. SJ 572; wt-0.7 cm
Fragment of a bowl with decorated with furrow-incisions filled with white incrustation, with a partly burnished surface.

326. SJ 572; wt-0.6 cm
Fragment of a bowl with furrow-incised and stamped decoration, with a partly burnished surface.

327. SJ 572; wt-0.5 cm
Fragment of a bowl with furrow-incised and stamped decoration, with a partly burnished surface.

328. SJ 572; wt-0.5 cm
Fragment of the everted rim with stamped decoration, matt surface.

329. SJ 572; wt-0.8 cm
Fragment of the constricted mouth of a vessel, with flat rim and a tunnel-shaped loop on the neck. Stamped decoration, matt surface.

333. SJ 572; ds-0,5 cm
Izvučeni vrat posude, bago izvijena ruba ukrašena žigosanjem, djelomično uglačane površine.

334. SJ 572; ds-0,4 cm
Izvučeni vrat posude, bago izvijena ruba ukrašena žigosanjem, djelomično uglačane površine.

335. SJ 572; ds-0,5 cm
Izvučeni vrat posude, bago izvijena ruba ukrašena žigosanjem, djelomično uglačane površine.

336. SJ 572; ds-0,5 cm
Izvučeni vrat posude, bago izvijena ruba ukrašena žigosanjem, djelomično uglačane površine.

337. SJ 572; ds-0,5 cm
Izvučeni vrat posude ukrašen žigosanjem, djelomično uglačane površine.

338. SJ 572; ds-0,5 cm
Ulomak zdjele ukrašene urezivanjem ispunjenim bijom inkrustacijom, djelomično uglačane površine.

339. SJ 572; ds-0,5 cm
Izvučeni vrat posude izvijena ruba ukrašena žigosanjem, mat površine.

340. SJ 572; ds-0,6 cm
Ulomak zdjele izvučena ruba s ukrasom izvedenim urezivanjem, mat površine.

341. SJ 572; ds-0,4 cm
Izvučeni vrat posude izvijena ruba ukrašena žigosanjem, mat površine.

342. SJ 572; ds-0,4 cm
Izvučeni vrat posude izvijena ruba ukrašena žigosanjem, mat površine.



343. SJ 572; ds-0,6 cm
Ulomak zdjele ukrašene brazdastim urezivanjem, mat površine.

344. SJ 572; ds-0,7 cm
Ulomak zdjele izvučena ruba, mat površine.

345. SJ 572; ds-0,6 cm
Ulomak zdjele s ukrasom izvedenim urezivanjem, mat površine.

346. SJ 572; ds-0,5 cm
Ulomak zdjele izvučena ruba ukrašene žigosanjem, mat površine.

347. SJ 572; ds-0,6 cm
Ulomak zdjele blago bikonična tijela i izvučena ruba ukrašena urezima, mat površine.

348. SJ 572; ds-0,6 cm
Ulomak kalotaste zdjele ukrašene brazdastim urezivanjem i žigosanjem, mat površine.

349. SJ 572; ds-0,4 cm
Ulomak ravna ruba posude, mat površine.

350. SJ 572; ds-0,6 cm
Ulomak kalotaste zdjele ukrašene brazdastim urezivanjem i žigosanjem, mat površine.

351. SJ 572; ds-0,6 cm
Ulomak kalotaste zdjele ukrašene brazdastim urezivanjem, mat površine.

352. SJ 572; ds-0,5 cm
Ulomak zdjele izvučena ruba ukrašene brazdastim urezivanjem i žigosanjem, mat površine.

353. SJ 572; ds-0,6 cm
Ulomak zdjele ukrašene brazdastim urezivanjem i žigosanjem, mat površine.

354. SJ 572; ds-0,5 cm
Ulomak čaše ukrašene brazdastim urezivanjem, mat površine.

355. SJ 572; ds-0,5 cm
Ulomak čaše ukrašene brazdastim urezivanjem, mat površine.

330. SJ 572; wt-0.5 cm
Fragment of a bowl decorated with stamping, matt surface.

331. SJ 572; wt-0.5 cm
Fragment of a bowl with decorated with furrow-incisions filled with white incrustation, matt surface.

332. SJ 572; wt-0.7 cm
Fragment of a biconical bowl with incised circles, matt surface.

333. SJ 572; wt-0.5 cm
Everted neck of a vessel, with a slightly everted rim decorated with stamping, with a partly burnished surface.

334. SJ 572; wt-0.4 cm
Everted neck of a vessel, with a slightly everted rim decorated with stamping, with a partly burnished surface.

335. SJ 572; wt-0.5 cm
Everted neck of a vessel, with a slightly everted rim decorated with stamping, with a partly burnished surface.

336. SJ 572; wt-0.5 cm
Everted neck of a vessel, with a slightly everted rim decorated with stamping, with a partly burnished surface.

337. SJ 572; wt-0.5 cm
Everted neck of a vessel, decorated with stamping, with a partly burnished surface.

338. SJ 572; wt-0.5 cm
Fragment of a bowl decorated with incisions filled with white incrustation, with a partly burnished surface.

339. SJ 572; wt-0.5 cm
Everted rim of a vessel with curved rim decorated with stamping, matt surface.

340. SJ 572; wt-0.6 cm
Fragment of a bowl with everted rim, with incised decorationd, matt surface.

341. SJ 572; wt-0.4 cm
Everted neck of a vessel with curved rim decorated with stamping, matt surface.

342. SJ 572; wt-0.4 cm
Everted neck of a vessel with curved rim decorated with stamping, matt surface.

343. SJ 572; wt-0.6 cm
Fragment of a bowl with furrow-incised decoration, matt surface.

344. SJ 572; wt-0.7 cm
Fragment of a bowl with everted rim, matt surface.

345. SJ 572; wt-0.6 cm
Fragment of a bowl with furrow-incised decoration, matt surface.

346. SJ 572; wt-0.5 cm
Fragment of a bowl with everted rim, with stamped decoration, matt surface.

347. SJ 572; wt-0.6 cm
Fragment of a bowl with a slightly biconical body and everted rim, decorated with incisions, matt surface.

348. SJ 572; wt-0.6 cm
Fragment of a hemispherical bowl decorated with furrow-incisions and stamping, matt surface.

349. SJ 572; wt-0.4 cm
Fragment of a flat rim of a vessel, matt surface.

350. SJ 572; wt-0.6 cm
Fragment of a hemispherical bowl decorated with furrow-incisions and stamping, matt surface.

351. SJ 572; wt-0.6 cm
Fragment of a hemispherical bowl decorated with furrow-incisions, matt surface.

352. SJ 572; wt-0.5 cm
Fragment of a bowl with everted rim decorated with furrow-incisi-ons and stamping, matt surface.

**356.** SJ 572; ds-0,6 cm
Ulomak kalotaste zdjele ukrašene urezivanjem i žigosanjem, mat površine.

**357.** SJ 572; ds-0,6 cm; pr-14 cm
Ulomak bikonične zdjele sa žigosanim ukrasom na prijelomu i pod rubom, mat površine.

**358.** SJ 572; ds-0,5 cm; pr-14 cm
Ulomak zdjele izvučena, konična vrata ukrašena brazdastim urezivanjem i žigosanjem (tip Z5b), djelomično uglačane površine.

**359.** SJ 599; ds-0,7 cm; v- 36,6 cm; pr-9 cm
Lonac suženog vrata s trakastim ručkama na trbuhu – rekonstruiran (tip L3), mat površine.

**360.** SJ 621; ds-0,4 cm; v- 22 cm; pr-13 cm
Lonac zaobljena tijela s drškom pod rubom – rekonstruiran (tip L1), grube površine.

**361.** SJ 621; ds-0,5 cm; v- 19 cm; pr-21,6 cm
Zdjela bikonična tijela s ukrasom rozeta na prijelomu (tip Z4a), djelomično uglačane površine.

**362.** SJ 640; ds-0,5 cm; v- 17 cm; pr-22 cm
Zaobljena zdjela s izduženom drškom – rekonstruirana (tip Z3a), mat površine.

**363.** SJ 640; ds-0,4 cm; v- 15,5 cm,; pr-14,5 cm
Lonac S-profilirana tijela s drškom pod rubom – rekonstruiran (tip L2), mat površine.

**364.** SJ 640; ds-0,7 cm; v- 10,4 cm; pr-14 cm
Bikonična zdjela s trakastom ručkom koja spaja rub s trbuhom-rekonstruirana (tip Z4a)., djelomično uglačane površine. Žigosanjem je ukrašen gornji dio posude.

**365.** SJ 692; ds-0,5 cm; v- 20 cm; pr-21 cm
Lonac S-profilirana tijela s drškom pod rubom – rekonstruiran (tip L2), mat površine.

**366.** SJ 705; ds-0,4 cm; v- 13,4 cm; pr-16 cm
Bikonična zdjela s trakastom ručkom na trbuhu (tip Z4a), mat površine. Ukras pod rubom izveden je žigosanjem.

**367.** SJ 705; ds-0,3 cm; v- 11,5 cm; pr-16 cm, šr-3,5 cm
Bikonična zdjela s trakastom ručkom na trbuhu (tip Z4a), djelomično uglačane površine. Ukras pod rubom izveden je žigosanjem.

**368.** SJ 705; PN 112; pr-6,8 cm
Pršljenak bikoničnog oblika.

**369.** SJ 705; PN 104; pr-6,4 cm
Ulomak pršljenka bikoničnog oblika.

**370.** SJ 705; PN 90; ds-0,7 cm; š-4,8 cm
Dio žlice s drškom.

**371.** SJ 705; PN 110; v-4 cm, pr-4,1 cm
Ulomak grla boce, grube fakture.

**372.** SJ 705; PN 87; d-4,3 cm
Ulomak pršljenka.

**373.** SJ 705; PN 114; pr-6,5 cm
Pršljenak koničnog oblika.

**374.** SJ 705; ds-0,5 cm; v- 6,5 cm; pr-22,5 cm
Zdjela izvučena vrata - rekonstriurana (tip Z5a), glatke površine. Rame posude ukrašeno je urezanim linijama i žigosanjem.

**375.** SJ 705; ds-0,4 cm; v- 4 cm; pr-18 cm
Zdjela izvučena vrata – rekonstriurana (tip Z5a), glatke površine.

**376.** SJ 705; ds-0,7 cm; v- 7 cm; pr-22 cm
Konična zdjela (tip Z1), mat površine.

**377.** SJ 705; ds-0,7 cm
Ulomak kalotaste zdjele ukrašene brazdastim urezivanjem i zarezima, djelomično uglačane površine.

**353.** SJ 572; wt-0.6 cm
Fragment of a bowl decorated with furrow-incisions and stamping, matt surface.

**354.** SJ 572; wt-0.5 cm
Fragment of a cup decorated with furrow-incisions, matt surface.

**355.** SJ 572; wt-0.5 cm
Fragment of a cup decorated with furrow-incisions, matt surface.

**356.** SJ 572; wt-0.6 cm
Fragment of a hemispherical bowl decorated with furrow-incisions and stamping, matt surface.

**357.** SJ 572; wt-0.6 cm; d-14 cm
Fragment of a biconical bowl with stamped decoration on the carination and below the rim, matt surface.

**358.** SJ 572; wt-0.5 cm; d-14 cm
Fragment of a bowl with everted, conical neck, decorated with furrow-incisions and stamping (type Z5b), with a partly burnished surface.

**359.** SJ 599; wt-0.7 cm; h- 36.6 cm; d-9 cm
Pot with a constricted neck with strap handles on the belly – reconstructed (type L3), matt surface.

**360.** SJ 621; wt-0.4 cm; h- 22 cm; d-13 cm
Round pot with a handle below the rim – reconstructed (type L1), coarse surface.

**361.** SJ 621; wt-0.5 cm; h- 19 cm; d-21.6 cm
Biconical bowl decorated with rosettes on the carination (type Z4a), with a partly burnished surface.

**362.** SJ 640; wt-0.5 cm; h- 17 cm; d-22 cm
Round bowl with elongated handle – reconstructed (type Z3a), matt surface.

**363.** SJ 640; wt-0.4 cm; h- 15.5 cm,; d-14.5 cm
S-profiled pot with a handle below the rim – reconstructed (type L2), matt surface.

**364.** SJ 640; wt-0.7 cm; h- 10.4 cm; d-14 cm
Biconical bowl with a strap handle connecting the rim and the belly – reconstructed (type Z4a), with a partly burnished surface. The upper part of the vessel is decorated with stamping.

**365.** SJ 692; wt-0.5 cm; h- 20 cm; d-21 cm
S-profiled pot with a handle below the rim – reconstructed (type L2), matt surface.

**366.** SJ 705; wt-0.4 cm; h- 13.4 cm; d-16 cm
Biconical bowl with a strap handle on the belly (type Z4a), matt surface. Decorated with stamping below the rim.

**367.** SJ 705; wt-0.3 cm; h- 11.5 cm; d-16 cm, hw-3.5 cm
Biconical bowl with a strap handle on the belly (type Z4a), with a partly burnished surface. Decorated with stamping below the rim.

**368.** SJ 705; PN 112; d-6.8 cm
Biconical spindle-whorl.

**369.** SJ 705; PN 104; d-6.4 cm
Fragment of a biconical spindle-whorl.

**370.** SJ 705; PN 90; wt-0.7 cm; w-4.8 cm
Part of a spoon with a handle.

**371.** SJ 705; PN 110; h-4 cm, d-4.1 cm
Fragment of a bottle neck, coarse surface.

**372.** SJ 705; PN 87; l-4.3 cm
Fragment of a spindle-whorl.

**373.** SJ 705; PN 114; d-6.5 cm
Conical spindle-whorl.

**374.** SJ 705; wt-0.5 cm; h- 6.5 cm; d-22.5 cm
Bowl with everted neck – reconstructed (type Z5a), smooth surface. The shoulder is decorated with incised lines and stamping.

**375.** SJ 705; wt-0.4 cm; h- 4 cm; d-18 cm
Bowl with everted neck – reconstructed (type Z5a), smooth surface.

**378.** SJ 705; ds-0,7 cm
Ulomak kalotaste zdjele ukrašene brazdastim urezivanjem, djelomično uglačane površine.

**379.** SJ 705; ds-0,5 cm
Ulomak kalotaste zdjele ukrašene brazdastim urezivanjem i žigosanjem, djelomično uglačane površine.

**380.** SJ 705; ds-0,5 cm
Ulomak kalotaste zdjele ukrašene brazdastim urezivanjem i žigosanjem, djelomično uglačane površine.

**381.** SJ 705; ds-0,7 cm
Ulomak kalotaste zdjele ukrašene brazdastim urezivanjem, djelomično uglačane površine.

**382.** SJ 705; ds-0,5 cm
Ulomak kalotaste zdjele ukrašene brazdastim urezivanjem i žigosanjem, djelomično uglačane površine.

**383.** SJ 705 ds-0,5 cm
Ulomak kalotaste zdjele ukrašene brazdastim urezivanjem i žigosanjem, djelomično uglačane površine.

**384.** SJ 705; ds-0,4 cm
Zdjela ukrašena ubodima pod rubom, djelomično uglačane površine.

**385.** SJ 705; ds-0,5 cm
Ulomak kalotaste zdjele ukrašene brazdastim urezivanjem i žigosanjem, djelomično uglačane površine.

**386.** SJ 705; ds-0,5 cm
Ulomak kalotaste zdjele ukrašene brazdastim urezivanjem i žigosanjem, djelomično uglačane površine.

**387.** SJ 705; ds-0,6 cm
Ulomak kalotaste zdjele ukrašene žigosanjem, djelomično uglačane površine.



**388.** SJ 705; ds-0,5 cm
Ulomak kalotaste zdjele ukrašene brazdastim urezivanjem i žigosanjem, djelomično uglačane površine.

**389.** SJ 705; ds-0,6 cm
Zdjela ukrašena ubodima pod rubom, mat površine.

**390.** SJ 705; ds-0,7 cm
Ulomak kalotaste zdjele ukrašene žigosanjem, mat površine.

**391.** SJ 705; ds-0,5 cm
Ulomak kalotaste zdjele ukrašene žigosanjem, mat površine.

**392.** SJ 705; ds-0,5 cm
Ulomak kalotaste zdjele ukrašene brazdastim urezivanjem, mat površine.

**393.** SJ 705; ds-0,7 cm
Zdjela ukrašena urezanom linijom pod rubom, mat površine.

**394.** SJ 705; ds-0,4 cm
Ulomak kalotaste zdjele, mat površine.

**395.** SJ 705; ds-0,8 cm
Ulomak lonca ukrašena ruba, grube površine.

**396.** SJ 705; ds-0,7 cm
Ulomak lonca ukrašena ruba, grube površine.

**397.** SJ 705; ds-0,8 cm
Ulomak lonca ukrašena ruba, grube površine.

**398.** SJ 705; ds-1 cm
Ulomak lonca s plastičnom ukrašenom trakom, grube površine.

**399.** SJ 705; ds-1 cm
Ulomak lonca s plastičnom ukrašenom trakom, grube površine.

**400.** SJ 705; ds-1 cm
Ulomak lonca s plastičnom ukrašenom trakom, grube površine.

**401.** SJ 705; ds-0,9 cm
Ulomak lonca s plastičnom ukrašenom trakom, grube površine.

**402.** SJ 705; ds-1 cm
Ulomak lonca ukrašena ruba, grube površine.

**376.** SJ 705; wt-0.7 cm; h- 7 cm; d-22 cm
Conical bowl (type Z1), matt surface.

**377.** SJ 705; wt-0.7 cm
Fragment of a hemispherical bowl decorated with furrow-incisions and notches, with a partly burnished surface.

**378.** SJ 705; wt-0.7 cm
Fragment of a hemispherical bowl decorated with furrow-incisions, with a partly burnished surface.

**379.** SJ 705; wt-0.5 cm
Fragment of a hemispherical bowl decorated with furrow-incisions and stamping, with a partly burnished surface.

**380.** SJ 705; wt-0.5 cm
Fragment of a hemispherical bowl decorated with furrow-incisions and stamping, with a partly burnished surface.

**381.** SJ 705; wt-0.7 cm
Fragment of a hemispherical bowl decorated with furrow-incisions, with a partly burnished surface.

**382.** SJ 705; wt-0.5 cm
Fragment of a hemispherical bowl decorated with furrow-incisions and stamping, with a partly burnished surface.

**383.** SJ 705 wt-0.5 cm
Fragment of a hemispherical bowl decorated with furrow-incisions and stamping, with a partly burnished surface.

**384.** SJ 705; wt-0.4 cm
Bowl decorated with stabbings below the rim, with a partly burnished surface.

**385.** SJ 705; wt-0.5 cm
Fragment of a hemispherical bowl decorated with furrow-incisions and stamping, with a partly burnished surface.

**386.** SJ 705; wt-0.5 cm
Fragment of a hemispherical bowl decorated with furrow-incisions and stamping, with a partly burnished surface.

**387.** SJ 705; wt-0.6 cm
Fragment of a hemispherical bowl decorated with incisions, with a partly burnished surface.

**388.** SJ 705; wt-0.5 cm
Fragment of a hemispherical bowl decorated with furrow-incisions and stamping, with a partly burnished surface.

**389.** SJ 705; wt-0.6 cm
Bowl decorated with stabbings below the rim, matt surface.

**390.** SJ 705; wt-0.7 cm
Fragment of a hemispherical bowl with stamped decoration, matt surface.

**391.** SJ 705; wt-0.5 cm
Fragment of a hemispherical bowl with stamped decoration, matt surface.

**392.** SJ 705; wt-0.5 cm
Fragment of a hemispherical bowl with furrow-incised decoration, matt surface.

**393.** SJ 705; wt-0.7 cm
Bowl decorated with an incised line below the rim, matt surface.

**394.** SJ 705; wt-0.4 cm
Fragment of a hemispherical bowl, matt surface.

**395.** SJ 705; wt-0.8 cm
Fragment of a pot with decorated rim, coarse surface.

**396.** SJ 705; wt-0.7 cm
Fragment of a pot with decorated rim, coarse surface.

**397.** SJ 705; wt-0.8 cm
Fragment of a pot with decorated rim, coarse surface.

**398.** SJ 705; wt-1 cm
Fragment of a pot with a decorative relief band, coarse surface.

403. SJ 705
Ukras na kalotastoj zdjeli izveden žigosanjem, djelomično uglačane površine.

404. SJ 705
Ukras na kalotastoj zdjeli izveden brazdastim urezivanjem i žigosanjem, djelomično uglačane površine.

405. SJ 705
Ukras na kalotastoj zdjeli izveden brazdastim urezivanjem i žigosanjem, djelomično uglačane površine.

406. SJ 705
Ukras na kalotastoj zdjeli izveden ubadanjem, djelomično uglačane površine.

407. SJ 705
Ukras na kalotastoj zdjeli izveden brazdastim urezivanjem, djelomično uglačane površine.

408. SJ 705
Ukras na kalotastoj zdjeli izveden brazdastim urezivanjem i žigosanjem, djelomično uglačane površine.

409. SJ 705
Ukras na kalotastoj zdjeli izveden brazdastim urezivanjem, djelomično uglačane površine.

410. SJ 705
Ukras na kalotastoj zdjeli izveden brazdastim urezivanjem i žigosanjem, djelomično uglačane površine.

411. SJ 705
Ukras na kalotastoj zdjeli izveden ubadanjem, djelomično uglačane površine.

412. SJ 705
Ukras na kalotastoj zdjeli izveden urezivanjem, djelomično uglačane površine.

413. SJ 705
Ukras na zdjeli izveden urezivanjem, djelomično uglačane površine.

414. SJ 705
Ukas na zdjeli izveden kratkim zarezima, djelomično uglačane površine.

415. SJ 705
Ukras na zdjeli izveden urezivanjem, djelomično uglačane površine.

416. SJ 705
Ukras na zdjeli izveden urezivanjem, djelomično uglačane površine.

417. SJ 705
Ukas na zdjeli izveden kratkim zarezima, djelomično uglačane površine.

418. SJ 705
Ukas na zdjeli izveden kratkim zarezima, djelomično uglačane površine.

419. SJ 705
Ukas na zdjeli izveden kratkim zarezima, djelomično uglačane površine.

420. SJ 705
Ukas na zdjeli izveden kratkim zarezima, djelomično uglačane površine.

421. SJ 705
Ukras na zdjeli izveden urezivanjem, djelomično uglačane površine.

422. SJ 705
Ukras na kalotastoj zdjeli izveden brazdastim urezivanjem i žigosanjem, djelomično uglačane površine.

423. SJ 705
Ukras na zdjeli izveden urezivanjem (motiv kružnice), djelomično uglačane površine.

399. SJ 705; wt-1 cm
Fragment of a pot with a decorative relief band, coarse surface.

400. SJ 705; wt-1 cm
Fragment of a pot with a decorative relief band, coarse surface.

401. SJ 705; wt-0.9 cm
Fragment of a pot with a decorative relief band, coarse surface.

402. SJ 705; wt-1 cm
Fragment of a pot with a decorated rim, coarse surface.

403. SJ 705
Stamped decoration on a hemispherical bowl, with a partly burnished surface.

404. SJ 705
Furrow-incised and stamped decoration on a hemispherical bowl, with a partly burnished surface.

405. SJ 705
Furrow-incised and stamped decoration on a hemispherical bowl, with a partly burnished surface.

406. SJ 705
Stabbed decoration on a hemispherical bowl, with a partly burnished surface.

407. SJ 705
Furrow-incised decoration on a hemispherical bowl, with a partly burnished surface.

408. SJ 705
Furrow-incised and stamped decoration on a hemispherical bowl, with a partly burnished surface.

409. SJ 705
Furrow-incised decoration on a hemispherical bowl, with a partly burnished surface.

410. SJ 705
Furrow-incised and stamped decoration on a hemispherical bowl, with a partly burnished surface.

411. SJ 705
Stabbed decoration on a hemispherical bowl, with a partly burnished surface.

412. SJ 705
Incised decoration on a hemispherical bowl, with a partly burnished surface.

413. SJ 705
Incised decoration on a bowl, with a partly burnished surface.

414. SJ 705
Decoration of short notches on a bowl, with a partly burnished surface.

415. SJ 705
Ukras na zdjeli izveden urezivanjem, djelomično uglačane površine.
Incised decoration on a bowl, with a partly burnished surface.

416. SJ 705
Incised decoration on a bowl, with a partly burnished surface.

417. SJ 705
Decoration of short notches on a bowl, with a partly burnished surface.

418. SJ 705
Decoration of short notches on a bowl, with a partly burnished surface.

419. SJ 705
Decoration of short notches on a bowl, with a partly burnished surface.

420. SJ 705
Decoration of short notches on a bowl, with a partly burnished surface.

421. SJ 705
Incised decoration on a bowl, with a partly burnished surface.

424. SJ 705
Ukras na kalotastoj zdjeli izveden žigosanjem, djelomično uglačane površine.

425. SJ 705
Ukas na zdjeli izveden kratkim zarezima, djelomično uglačane površine.

426. SJ 705
Ukras na zdjeli izveden urezivanjem, djelomično uglačane površine.

427. SJ 705
Ukras na zdjeli izveden urezivanjem, djelomično uglačane površine.

428. SJ 705
Ukras na zdjeli izveden žigosanjem, djelomično uglačane površine.

429. SJ 705
Ukras na zdjeli izveden urezivanjem, djelomično uglačane površine.

430. SJ 705
Ukras na kalotastoj zdjeli izveden brazdastim urezivanjem, djelomično uglačane površine.

431. SJ 705
Ukras na kalotastoj zdjeli izveden žigosanjem, djelomično uglačane površine.

432. SJ 705
Ukras na kalotastoj zdjeli izveden brazdastim urezivanjem, djelomično uglačane površine.

433. SJ 705
Ukras na kalotastoj zdjeli izveden brazdastim urezivanjem, djelomično uglačane površine.

434. SJ 705
Ukras na kalotastoj zdjeli izveden brazdastim urezivanjem, djelomično uglačane površine.

435. SJ 705
Ukras na zdjeli izveden urezivanjem, djelomično uglačane površine.

436. SJ 705
Ukras na kalotastoj zdjeli izveden brazdastim urezivanjem, djelomično uglačane površine.

437. SJ 705
Ukras na zdjeli izveden urezivanjem, djelomično uglačane površine.

438. SJ 705
Ukras na kalotastoj zdjeli izveden brazdastim urezivanjem, djelomično uglačane površine.

439. SJ 705
Ukras na zdjeli izveden urezivanjem (motiv kružnice), djelomično uglačane površine.

440. SJ 705
Ukras na zdjeli izveden urezivanjem (motiv kružnice), djelomično uglačane površine.

441. SJ 705
Ukras na zdjeli izveden urezivanjem i ubadanjem, djelomično uglačane površine.

442. SJ 705
Ukras na zdjeli izveden kratkim zarezima, djelomično uglačane površine.

443. SJ 705
Ukras na zdjeli izveden urezivanjem (motiv kružnice), djelomično uglačane površine.

444. SJ 705
Ukras na kalotastoj zdjeli izveden brazdastim urezivanjem i žigosanjem, djelomično uglačane površine.

422. SJ 705
Furrow-incised and stamped decoration on a hemispherical bowl, with a partly burnished surface.

423. SJ 705
Incised (circular) decoration on a bowl, with a partly burnished surface.

424. SJ 705
Stamped decoration on a hemispherical bowl, with a partly burnished surface.

425. SJ 705
Decoration of short notches on a bowl, with a partly burnished surface.

426. SJ 705
Incised decoration on a bowl, with a partly burnished surface.

427. SJ 705
Incised decoration on a bowl, with a partly burnished surface.

428. SJ 705
Incised decoration on a bowl, with a partly burnished surface.

429. SJ 705
Incised decoration on a bowl, with a partly burnished surface.

430. SJ 705
Furrow-incised decoration on a hemispherical bowl, with a partly burnished surface.

431. SJ 705
Stamped decoration on a hemispherical bowl, with a partly burnished surface.

432. SJ 705
Furrow-incised decoration on a hemispherical bowl, with a partly burnished surface.

433. SJ 705
Furrow-incised decoration on a hemispherical bowl, with a partly burnished surface.

434. SJ 705
Furrow-incised decoration on a hemispherical bowl, with a partly burnished surface.

435. SJ 705
Incised decoration on a bowl, with a partly burnished surface.

436. SJ 705
Furrow-incised decoration on a hemispherical bowl, with a partly burnished surface.

437. SJ 705
Incised decoration on a bowl, with a partly burnished surface.

438. SJ 705
Furrow-incised decoration on a hemispherical bowl, with a partly burnished surface.

439. SJ 705
Incised (circular) decoration on a bowl, with a partly burnished surface.

440. SJ 705
Incised (circular) decoration on a bowl, with a partly burnished surface.

441. SJ 705
Incised and stabbed decoration on a bowl, with a partly burnished surface.

442. SJ 705
Decoration of short notches on a bowl, with a partly burnished surface.

443. SJ 705
Incised (circular) decoration on a bowl, with a partly burnished surface.

444. SJ 705
Furrow-incised and stamped decoration on a hemispherical bowl, with a partly burnished surface.

445. SJ 705
Ukras na zdjeli izveden urezivanjem, djelomično uglačane površine.

446. SJ 705
Ukras na zdjeli izveden kratkim zarezima, djelomično uglačane površine.

447. SJ 705
Ukras na zdjeli izveden kratkim zarezima, djelomično uglačane površine.

448. SJ 705
Ukras na zdjeli izveden kratkim zarezima, djelomično uglačane površine.

449. SJ 705
Ukras na kalotastoj zdjeli izveden žigosanjem, djelomično uglačane površine.

450. SJ 705
Ukras na kalotastoj zdjeli izveden žigosanjem, djelomično uglačane površine.

451. SJ 826; ds-0,4 cm; v-18 cm, pr-32 x 19 cm
Zdjela zaobljena tijela i ovalna dna s drškom na tijelu - rekonstruirana (tip Z3b), mat površine.

452. SJ 826; ds-0,7 cm; v-12,5 cm, pr-11,3 cm
Lonac S-profilirana tijela s izduženom drškom pod rubom (tip L2), grube površine.

453. SJ 854; ds-0,6 cm; v-9,7 cm; pr-11,3 cm
Zdjela bikonična tijela s ukrasom rozeta na prijelomu i s trakastom ručkom na donjem dijelu tijela - rekonstruirana (tip Z4a), djelomično uglačane površine.

454. SJ 872; PN 199; pr-7 cm
Ulomak bikoničnog pršljenka.

455. SJ 872; PN 210; pr-6,5 cm
Pršljenak koničnog oblika.

456. SJ 872; PN 205; pr-6 cm
Ulomak bikoničnog pršljenka.

457. SJ 872; PN 204; pr-7 cm
Pršljenak bikoničnog oblika.

458. SJ 872; PN 206; d-7,5 cm; š-6 cm
Žlica s drškom, grube fakture.

459. SJ 872; PN 321; pr-7 cm
Pršljenak koničnog oblika.

460. SJ 872; ds-0,5 cm; v-6 cm; pr-24 cm
Kalotasta zdjela – rekonstruirana (tip Z2b), djelomično uglačane površine. Rame posude ukrašeno je urezivanjem i ubadanjem.

461. SJ 876; ds-0,6 cm; 8,6 x 5,8 cm
Ulomak zdjele izvučena vrata s ukrasom izvedenim žigosanjem, mat površine.

462. SJ 876; ds-0,7 cm; 7,3 x 6,4 cm
Ulomak bikonične zdjele s ukrasom rozeta na bikonitetu, mat površine.

463. SJ 876; ds-0,8 cm; 3,7 x 3,3 cm
Ulomak zdjele izvučena vrata s urezanim ukrasom, mat površine.

464. SJ 876; ds-0,5 cm; 3,1 x 3,1 cm
Ulomak ruba zdjele s ukrasom izvedenim urezivanjem, mat površine.

465. 876; ds-0,4 cm; 4,4 x 4,5 cm
Ulomak zdjele izvučena vrata ukrašena brazdastim urezivanjem, mat površine.

466. SJ 876; ds-0,6 cm; 4 x 3,3 cm
Ulomak kalotaste zdjele ukrašene urezivanjem ispunjenim inkrustacijom, mat površine.

445. SJ 705
Incised decoration on a bowl, with a partly burnished surface.

446. SJ 705
Decoration of short notches on a bowl, with a partly burnished surface.

447. SJ 705
Decoration of short notches on a bowl, with a partly burnished surface.

448. SJ 705
Decoration of short notches on a bowl, with a partly burnished surface.

449. SJ 705
Stamped decoration on a hemispherical bowl, with a partly burnished surface.

450. SJ 705
Stamped decoration on a hemispherical bowl, with a partly burnished surface.

451. SJ 826; wt-0.4 cm; h-18 cm, d-32 x 19 cm
Round bowl with oval base with a handle on the body – reconstructed (type Z3b), matt surface.

452. SJ 826; wt-0.7 cm; h-12.5 cm, d-11.3 cm
S-profiled pot with elongated handle below the rim (type L2), coarse surface.

453. SJ 854; wt-0.6 cm; h-9.7 cm; d-11.3 cm
Biconical bowl decorated with rosettes on the carination and a strap handle on the lower part of the body – reconstructed (type Z4a), with a partly burnished surface.

454. SJ 872; PN 199; d-7 cm
Fragment of a biconical spindle-whorl.

455. SJ 872; PN 210; d-6.5 cm
Conical spindle-whorl.

456. SJ 872; PN 205; d-6 cm
Fragment of a biconical spindle-whorl.

457. SJ 872; PN 204; d-7 cm
Biconical spindle-whorl.

458. SJ 872; PN 206; l-7.5 cm; w-6 cm
Spoon with a handle, coarse surface.

459. SJ 872; PN 321; d-7 cm
Conical spindle-whorl.

460. SJ 872; wt-0.5 cm; h-6 cm; d-24 cm
Hemispherical bowl – reconstructed (type Z2b), with a partly burnished surface. The shoulder is decorated with incisions and stabbings.

461. SJ 876; wt-0.6 cm; 8.6 x 5.8 cm
Fragment of a bowl with everted neck with stamped decoration, matt surface.

462. SJ 876; wt-0.7 cm; 7.3 x 6.4 cm
Fragment of a biconical bowl decorated with rosettes on the carination, matt surface.

463. SJ 876; wt-0.8 cm; 3.7 x 3.3 cm
Fragment of a bowl with everted neck with incised decoration, matt surface.

464. SJ 876; wt-0.5 cm; 3.1 x 3.1 cm
Fragment of the rim of a bowl with incised decoration, matt surface.

465. 876; wt-0.4 cm; 4.4 x 4.5 cm
Fragment of a bowl with everted neck with furrow-incised decoration, matt surface.

466. SJ 876; wt-0.6 cm; 4 x 3.3 cm
Fragment of a hemispherical bowl with incised decoration filled with incrustation, matt surface.

467. SJ 876: wt-0.8 cm; 9.7 x 4.4
Fragment of the belly of a bowl decorated with furrow-incisions, matt surface.

467. SJ 876: ds-0,8 cm; 9,7 x 4,4
Ulomak trbuha zdjele ukrašene brazdastim urezivanjem, mat površine.

468. SJ 876; ds-0,7 cm; 7,5 x 5,8 cm
Trakasta ručka ukrašena urezivanjem, grube površine.

469. SJ 876; ds-0,9 cm; 5,6 x 0,8 cm
Trakasta ručka ukrašena urezivanjem, mat površine.

470. SJ 876; ds-0,3 cm; 5,2 x 5,9 cm
Ulomak bikonične posude s brazdosto urezanim kružnicama, mat površine.

471. SJ 876; ds-0,4 cm; 5,1 x 2,2 cm
Ulomak trbuha zdjele ukrašene urezivanjem, mat površine.

472. SJ 876; ds-0,5 cm; 6,4 x 3,6 cm
Ulomak kadionice ukrašene urezivanjem, mat površine.

473. SJ 876; ds-0,6 cm; 4,1 x 3,5 cm
Ulomak trbuha zdjele ukrašene urezivanjem, mat površine.

474. SJ 876
Ukras na zdjeli izveden urezivanjem i ispunjen inkrustacijom, mat površine.

475. SJ 876
Ukras na zdjeli izveden urezivanjem i ispunjen inkrustacijom, mat površine.

476. SJ 876
Ukras na zdjeli izveden urezivanjem i ispunjen inkrustacijom, mat površine.

477. SJ 876
Ukras na zdjeli izveden urezivanjem i ispunjen inkrustacijom, mat površine.

468. SJ 876; wt-0.7 cm; 7.5 x 5.8 cm
Strap handle with incised decoration, coarse surface.

469. SJ 876; wt-0.9 cm; 5.6 x 0.8 cm
Strap handle with incised decoration, matt surface.

470. SJ 876; wt-0.3 cm; 5.2 x 5.9 cm
Fragment of a biconical vessel with furrow-incised circles, matt surface.

471. SJ 876; wt-0.4 cm; 5.1 x 2.2 cm
Fragment of the belly of a bowl with incised decoration, matt surface.

472. SJ 876; wt-0.5 cm; 6.4 x 3.6 cm
Fragment of an incense burner with incised decoration, matt surface.

473. SJ 876; wt-0.6 cm; 4.1 x 3.5 cm
Fragment of the belly of a bowl with incised decoration, matt surface.

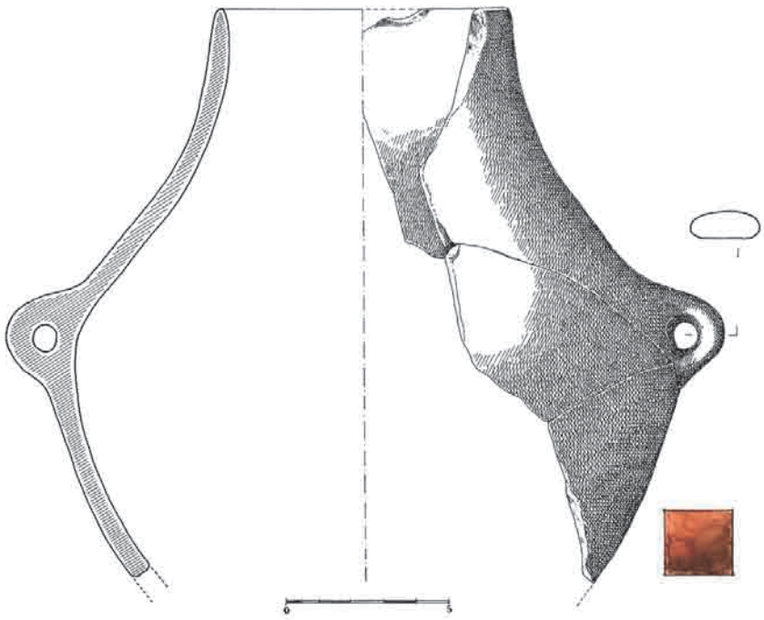
474. SJ 876
Incised decoration on a bowl, filled with incrustation, matt surface.

475. SJ 876
Incised decoration on a bowl, filled with incrustation, matt surface.

476. SJ 876
Incised decoration on a bowl, filled with incrustation, matt surface.

477. SJ 876
Incised decoration on a bowl, filled with incrustation, matt surface.

T. I-1.



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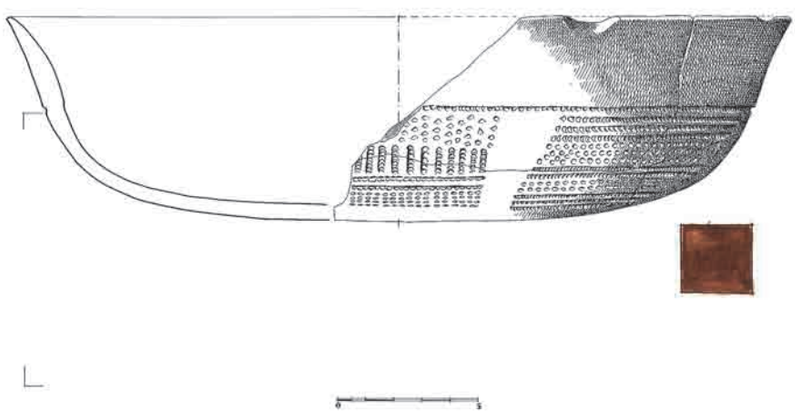

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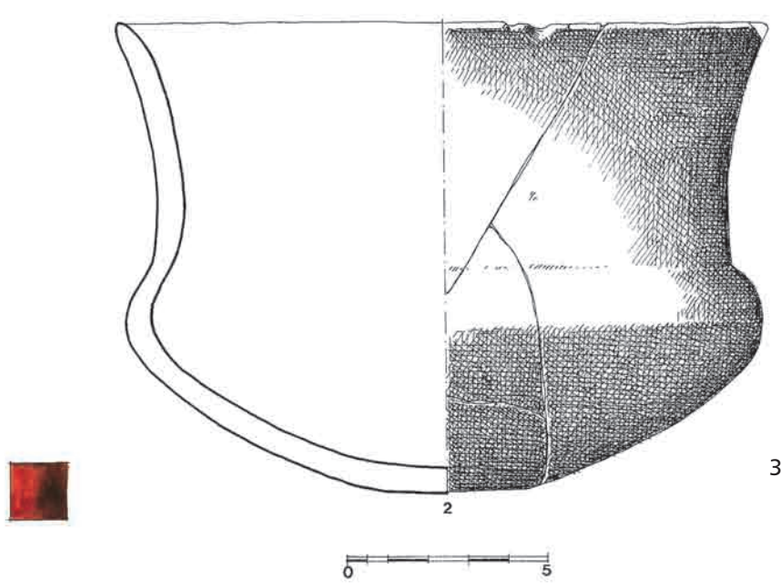


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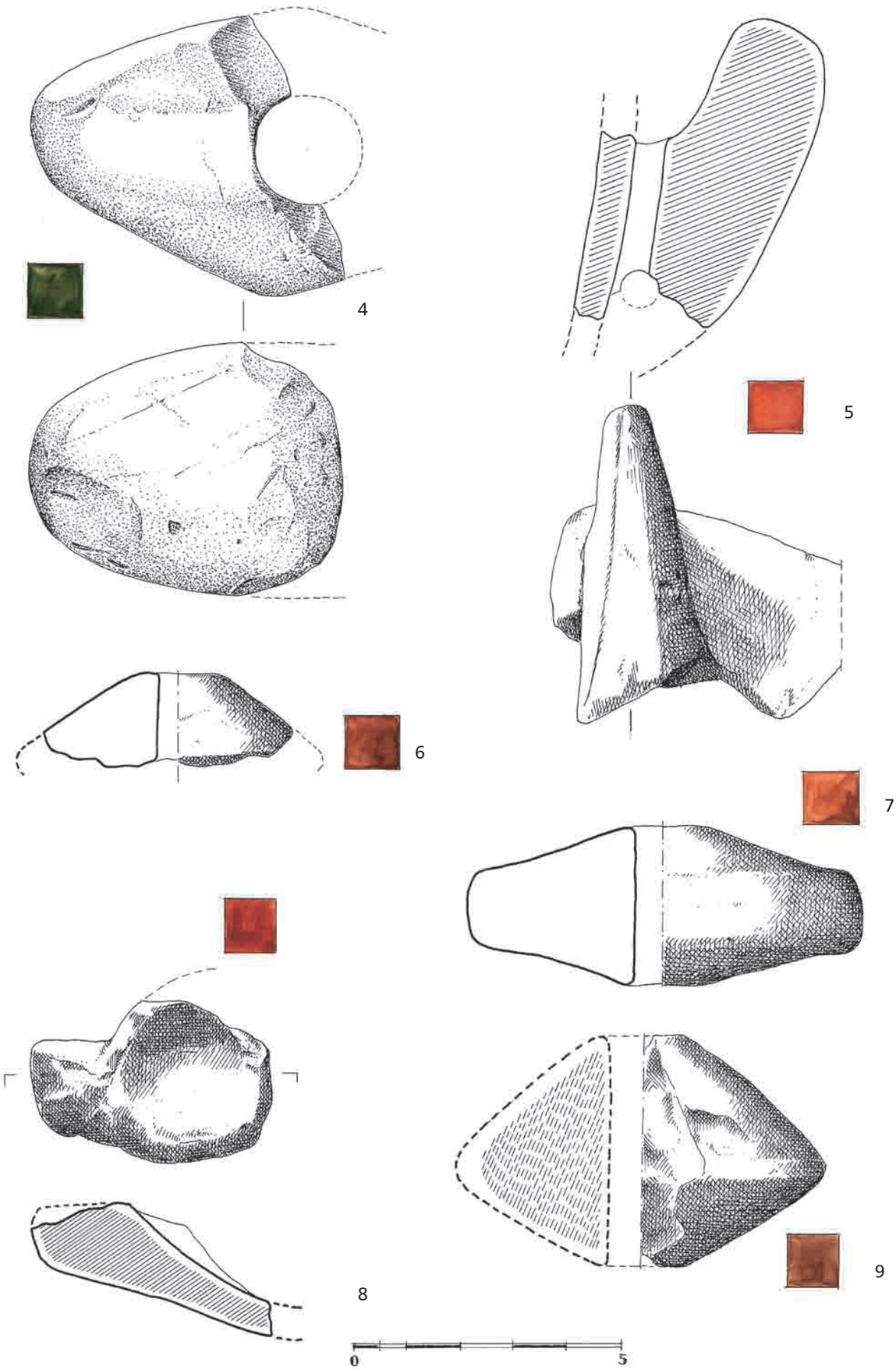

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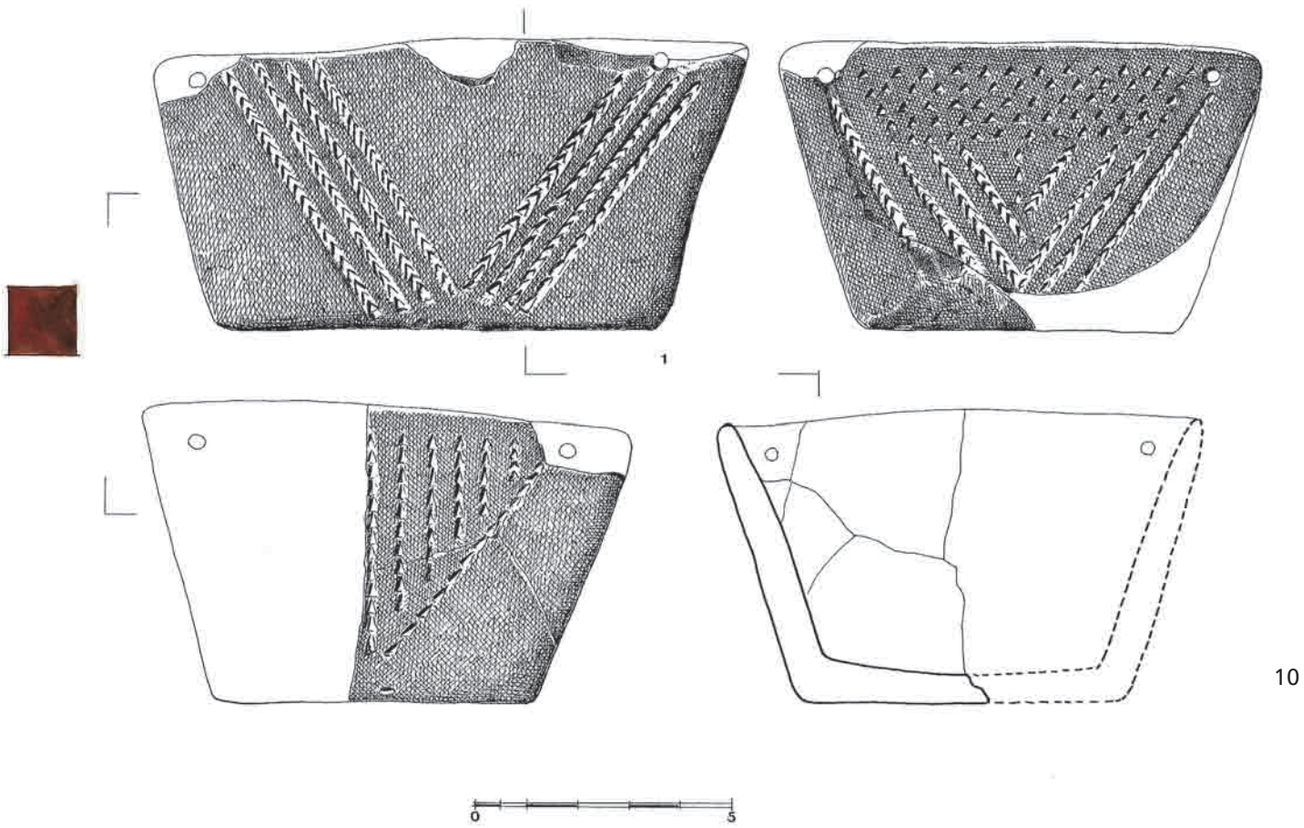


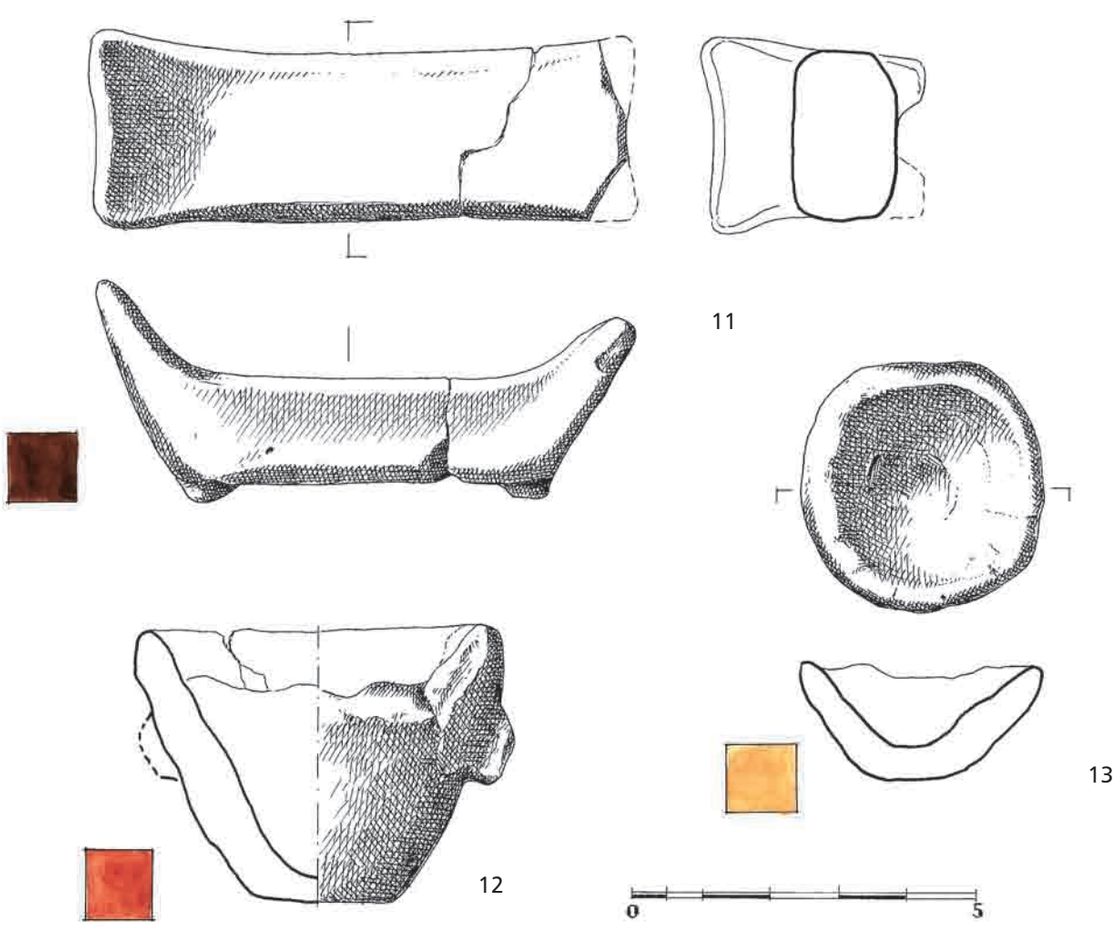

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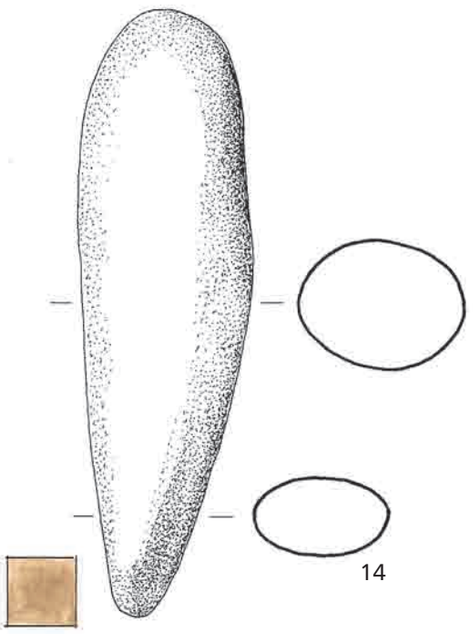

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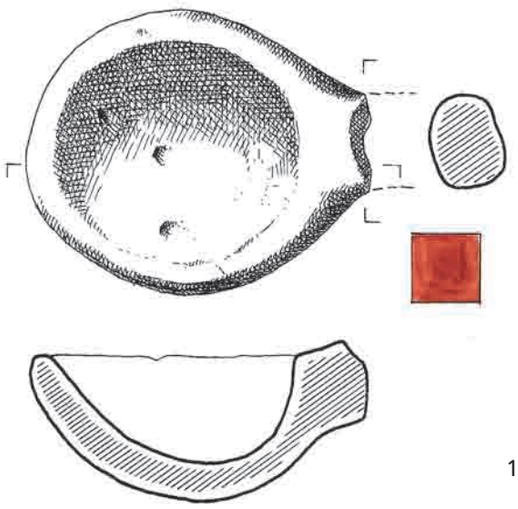

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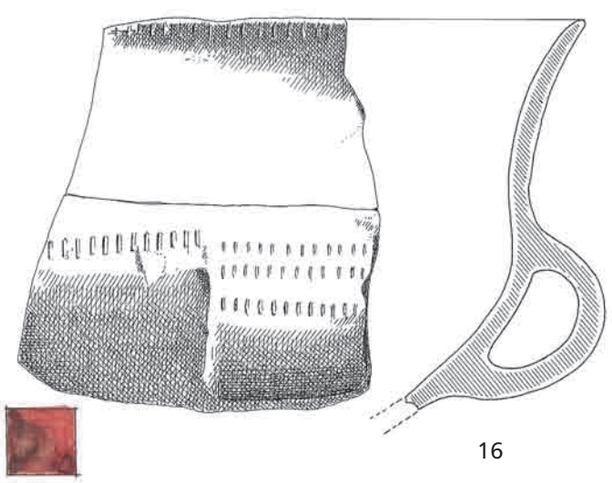

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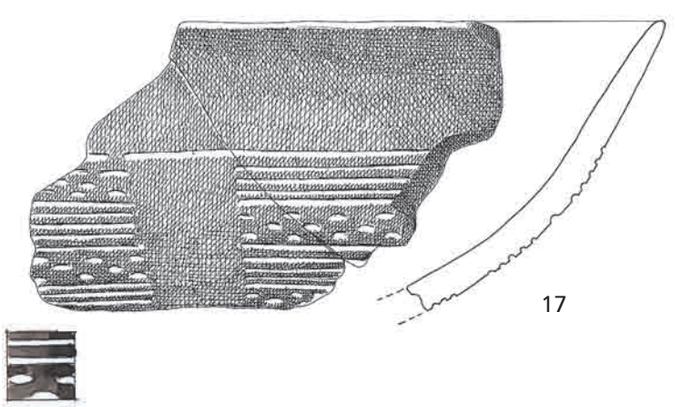

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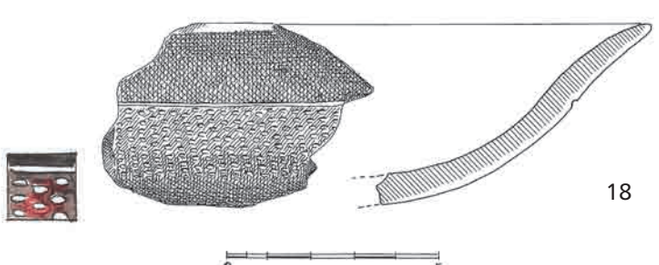

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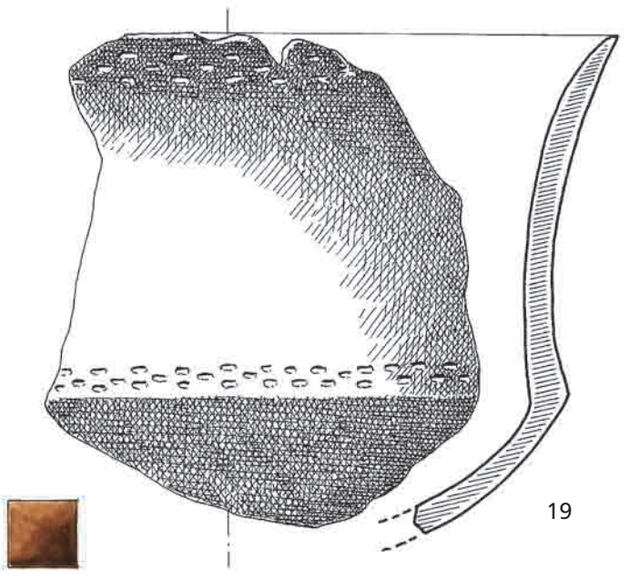

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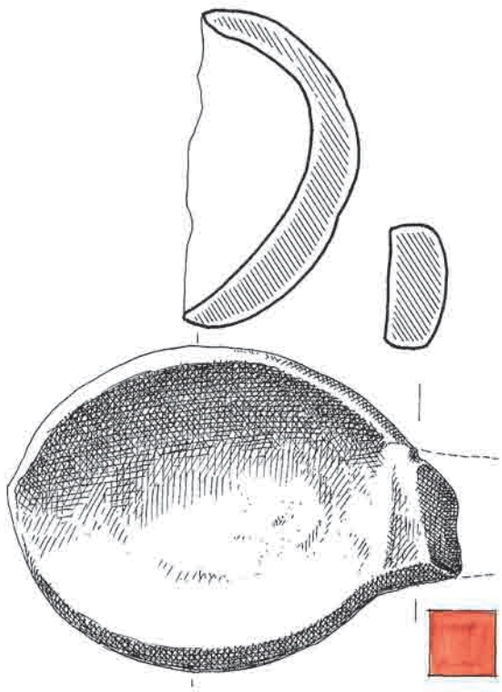

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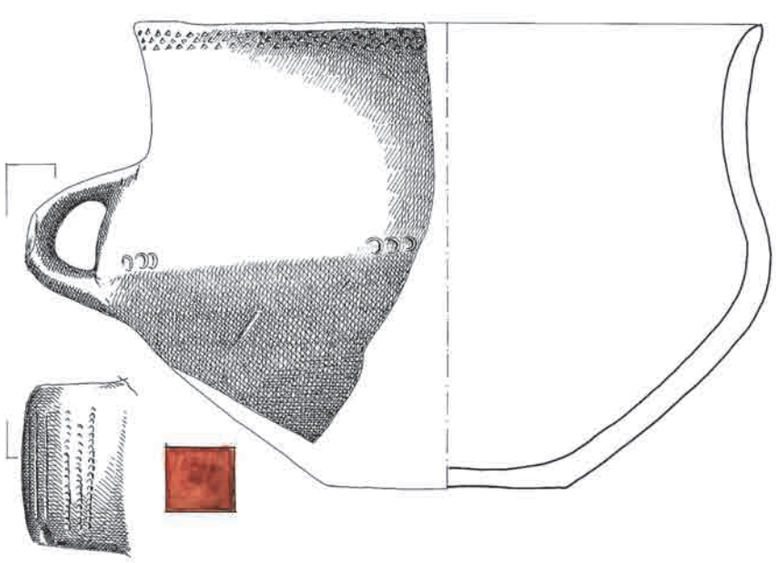

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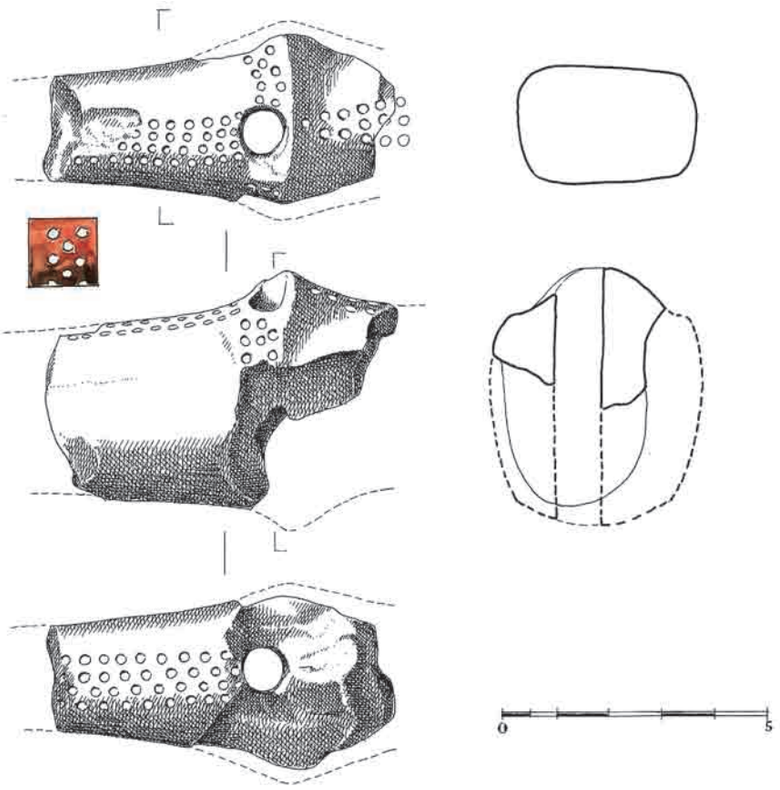


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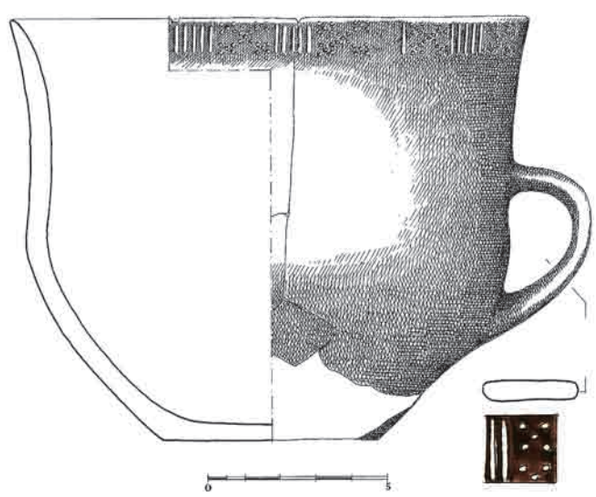


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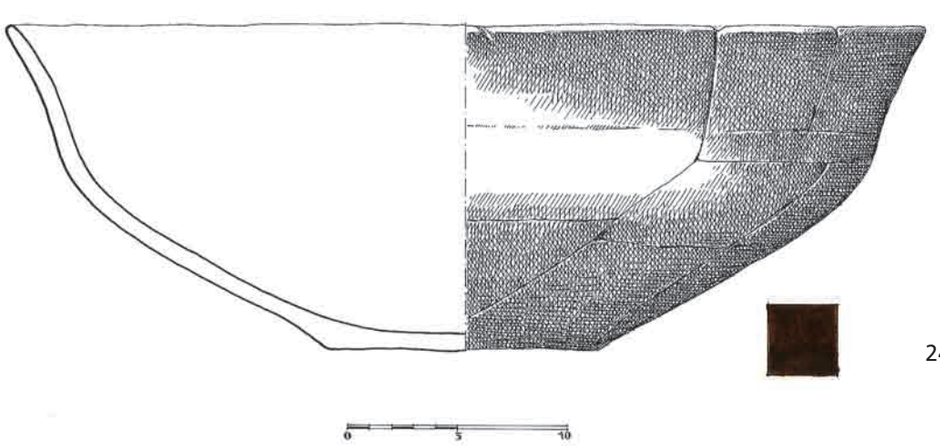


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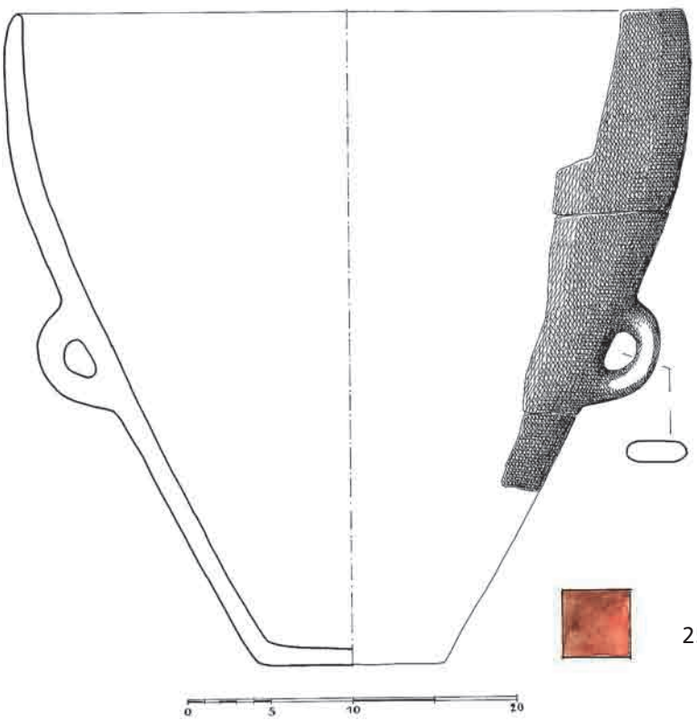


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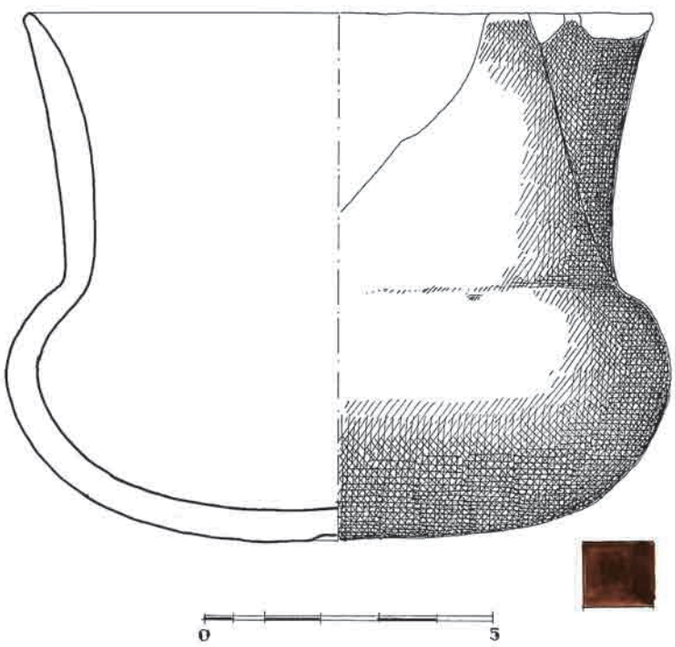


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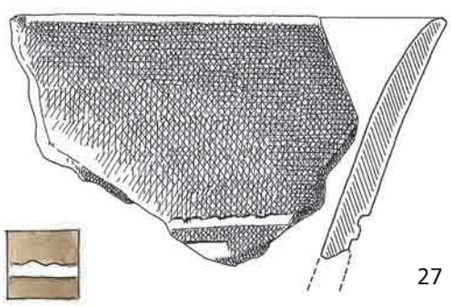

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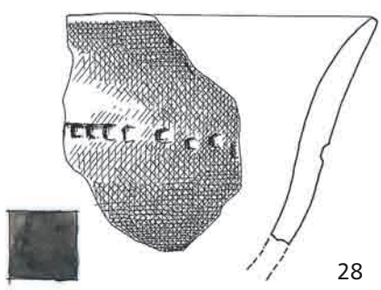

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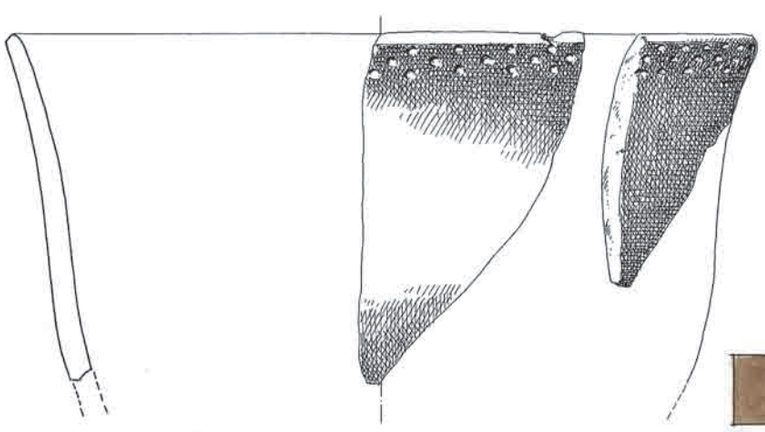

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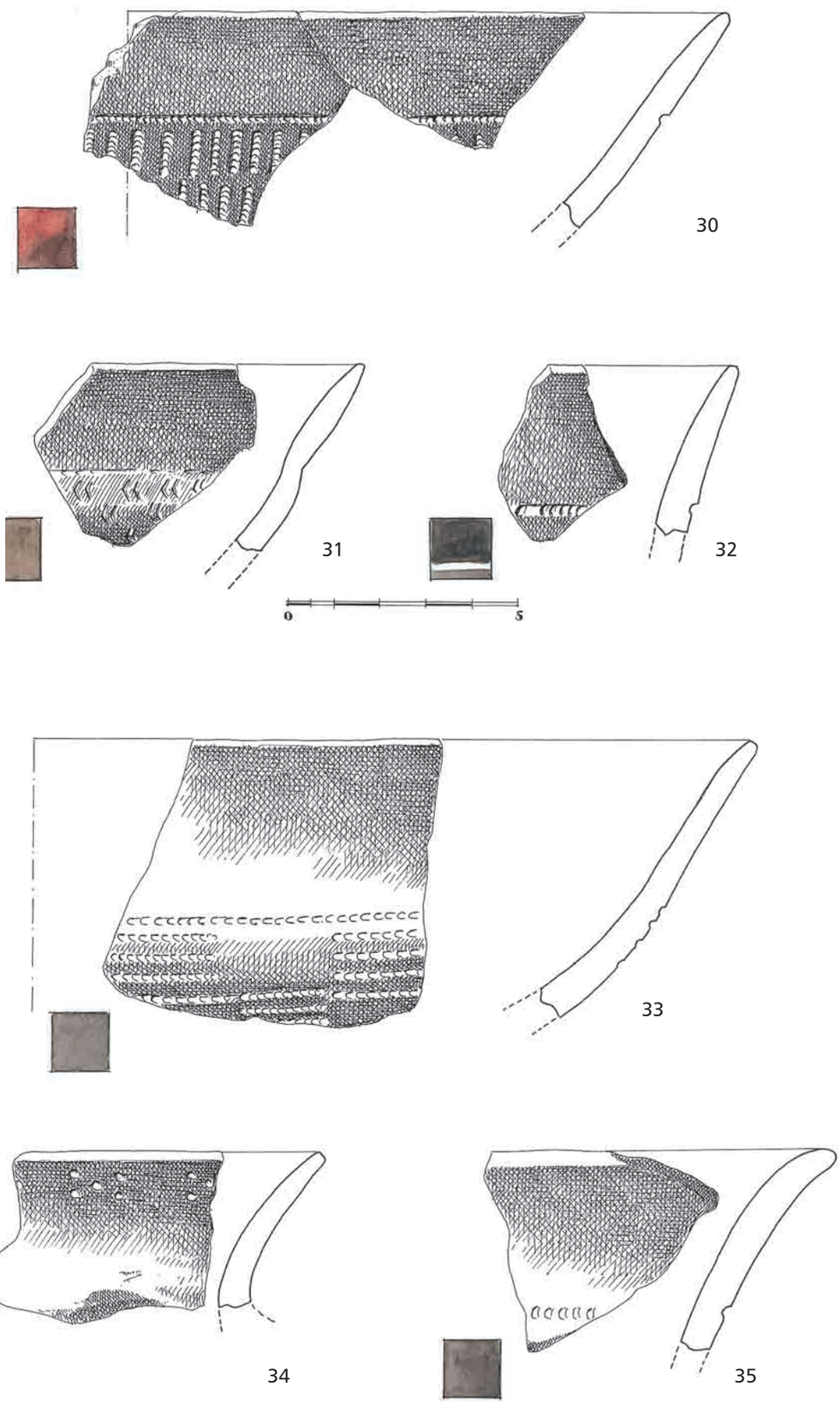

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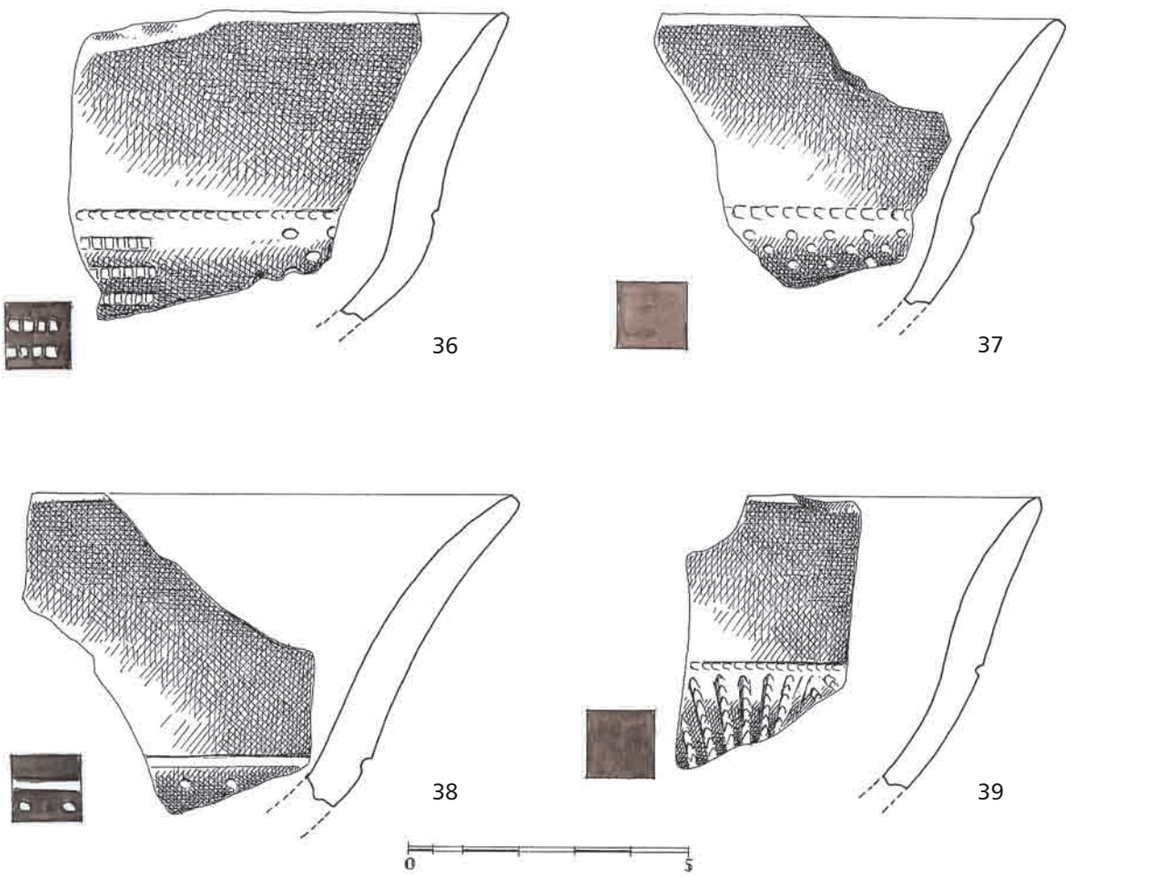


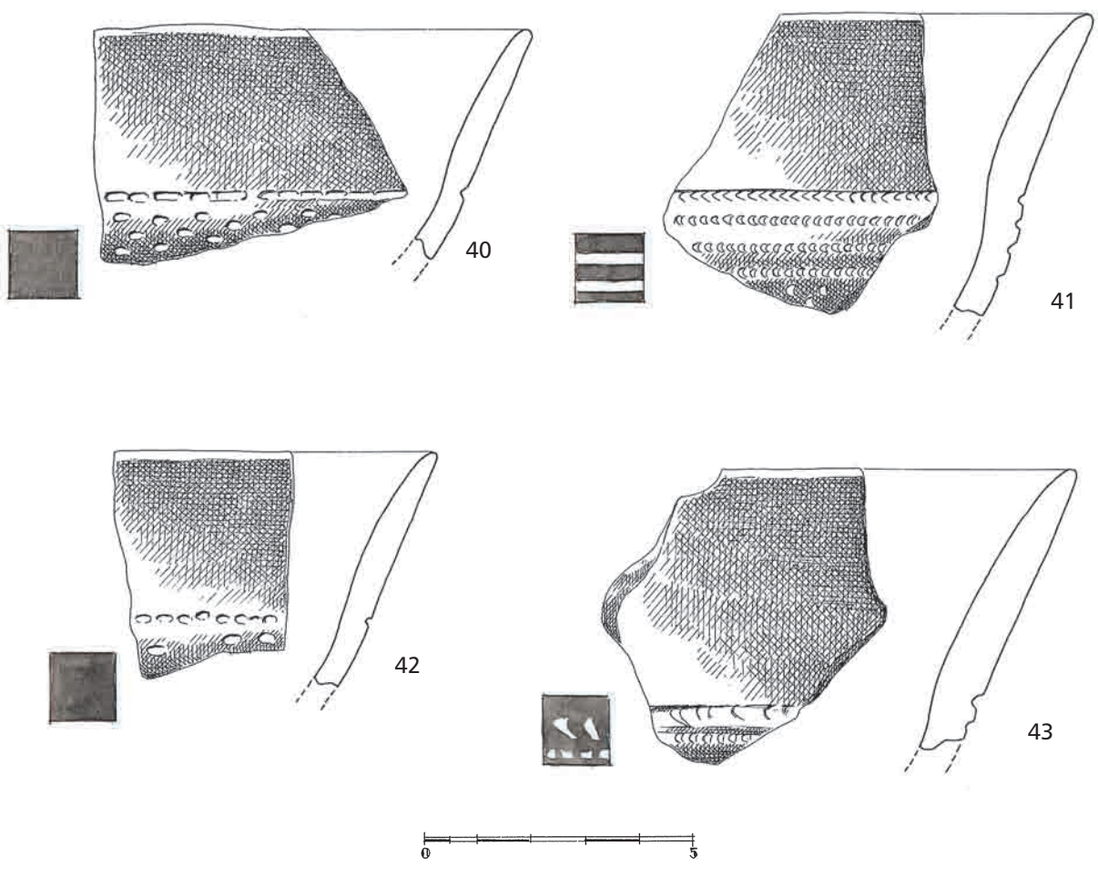

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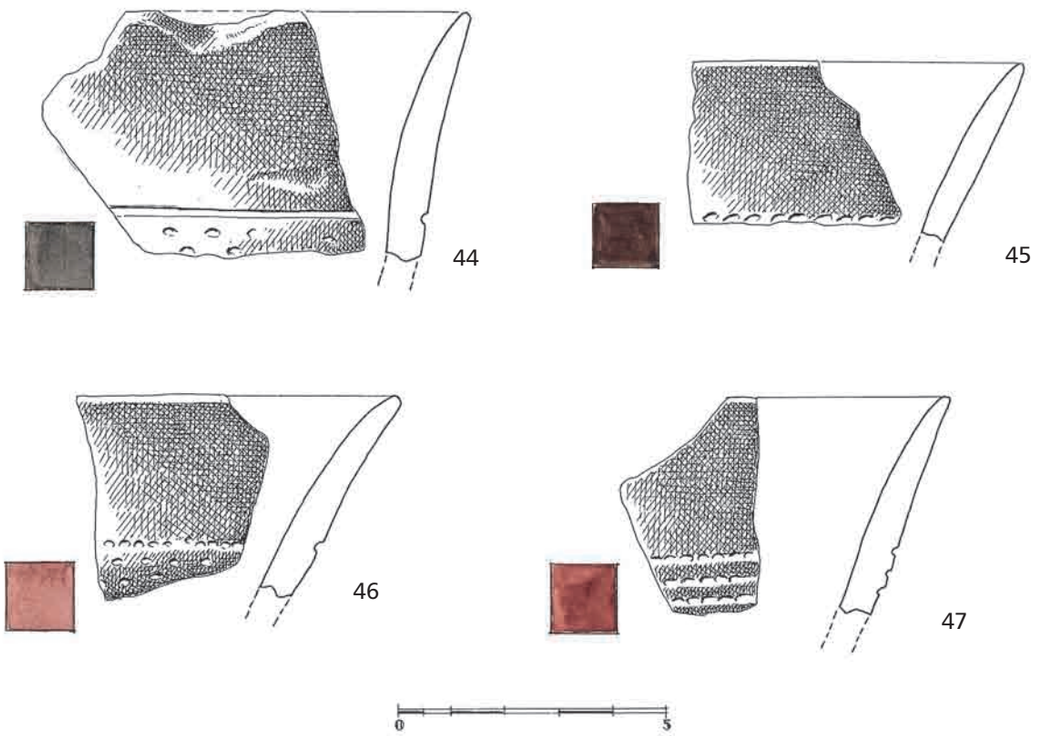


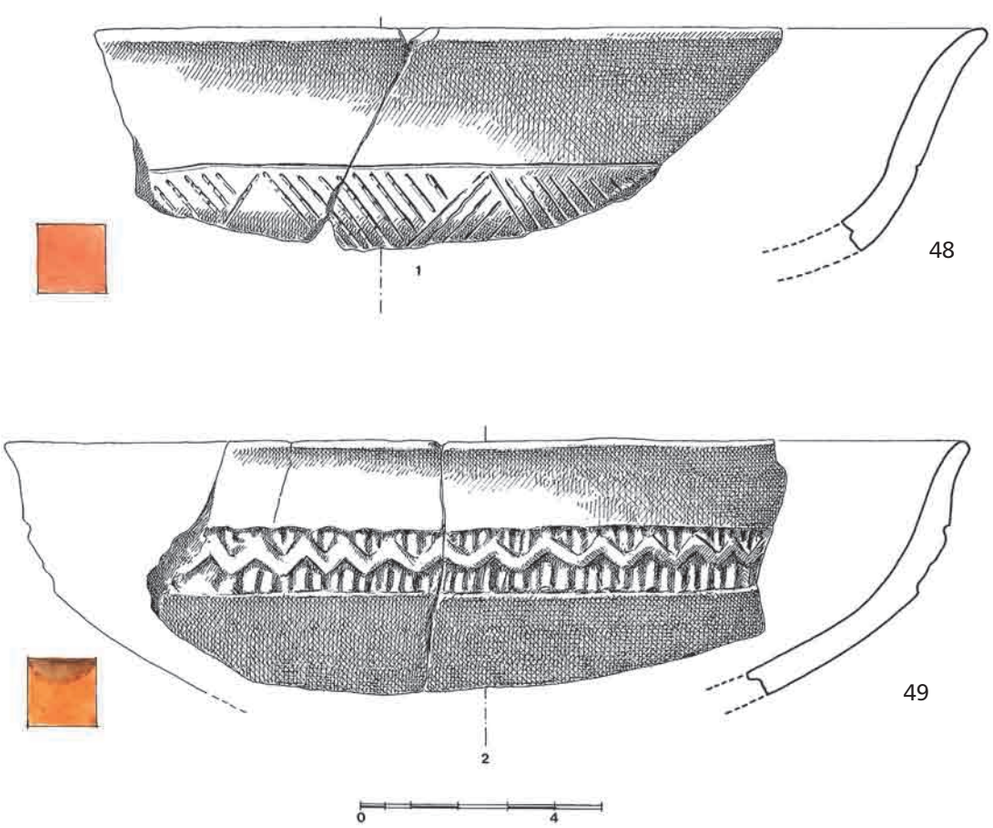

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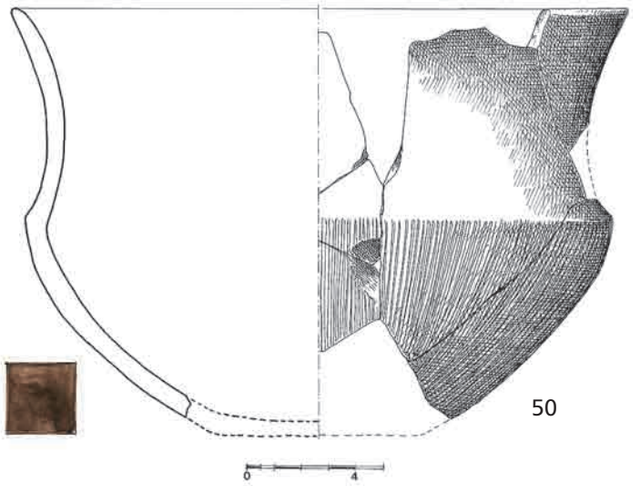


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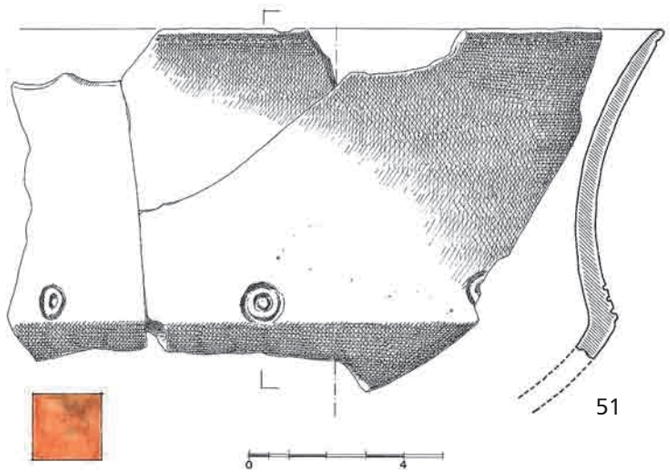


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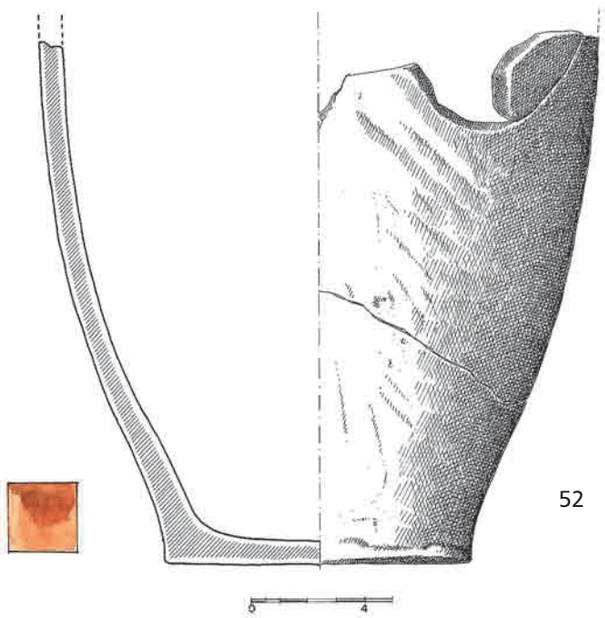


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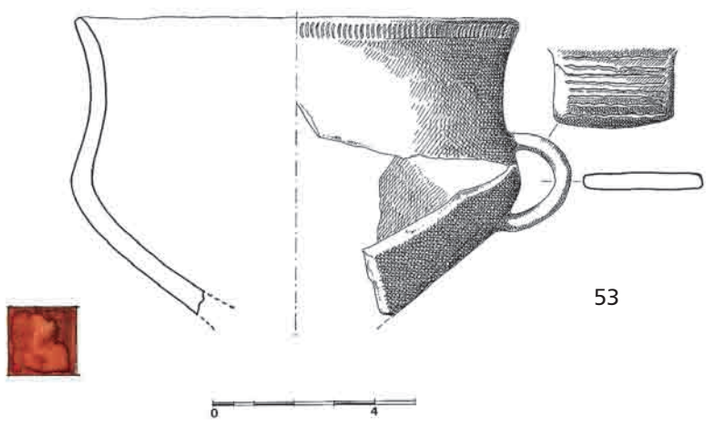


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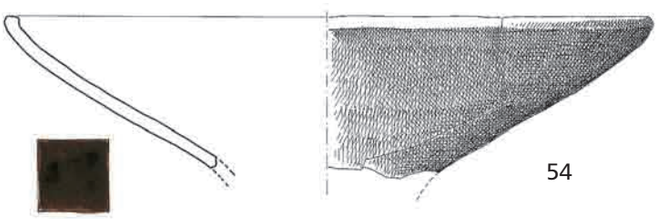

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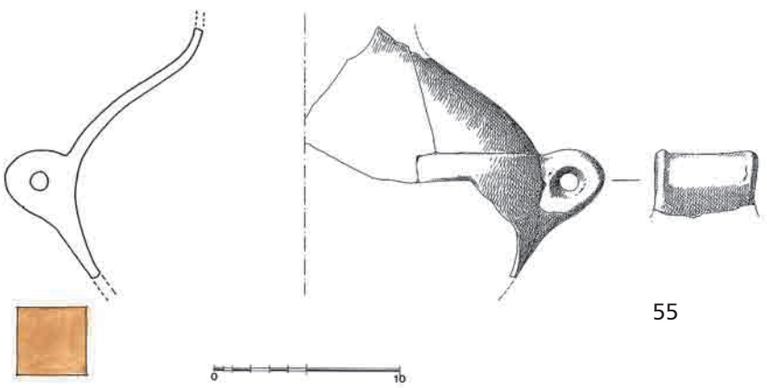


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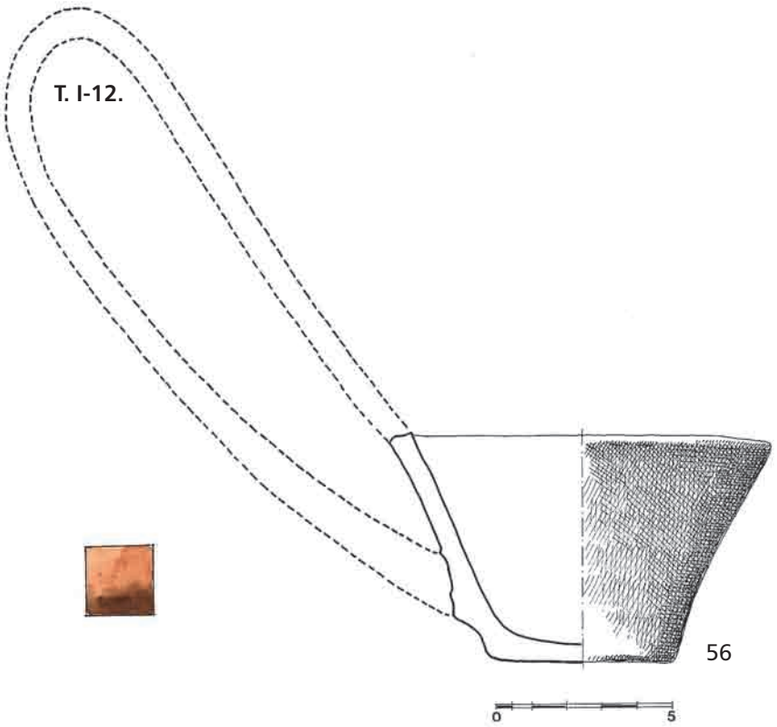


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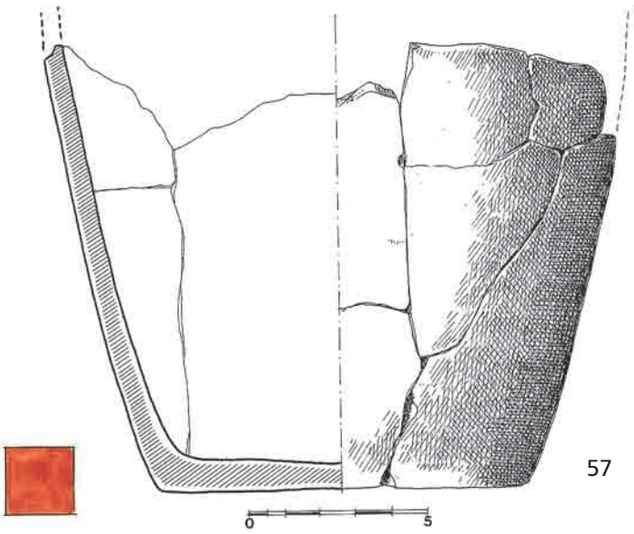


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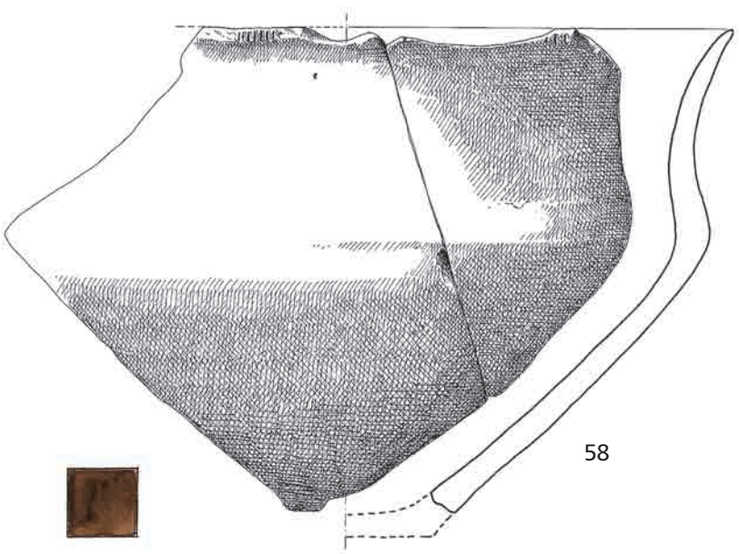

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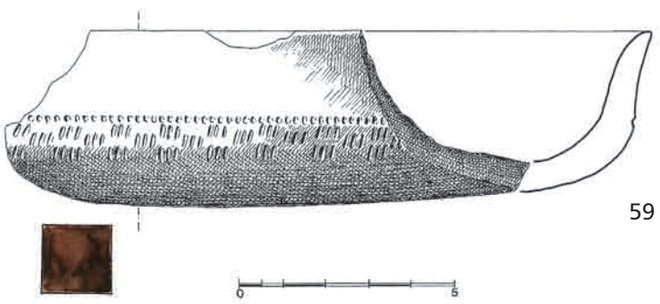


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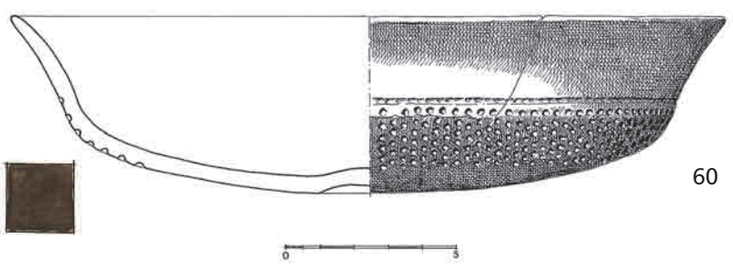


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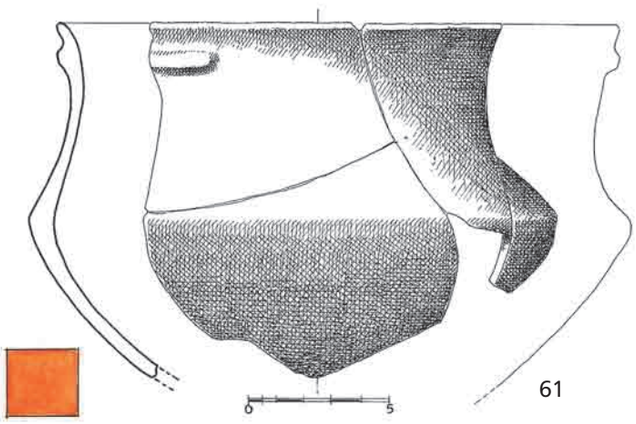


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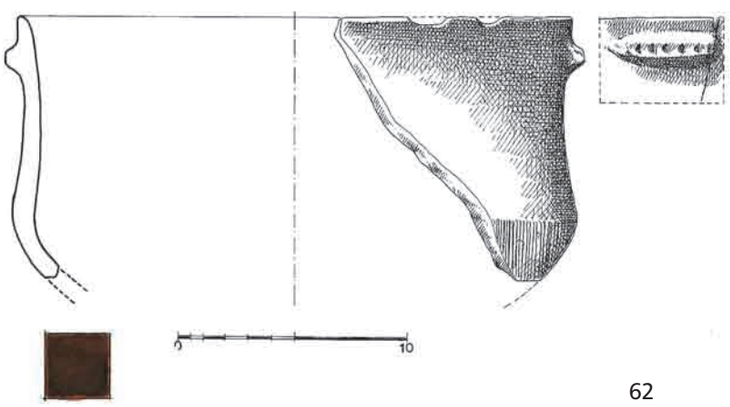


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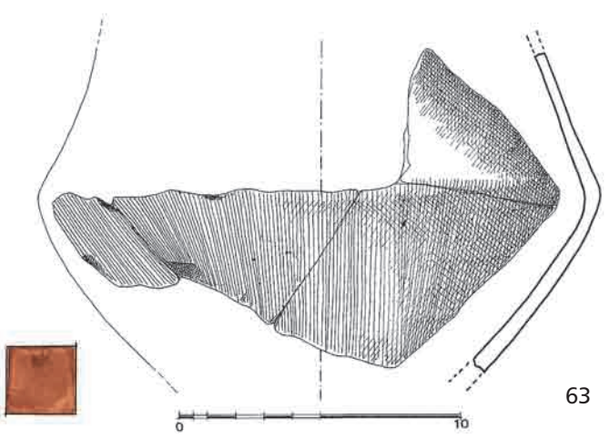


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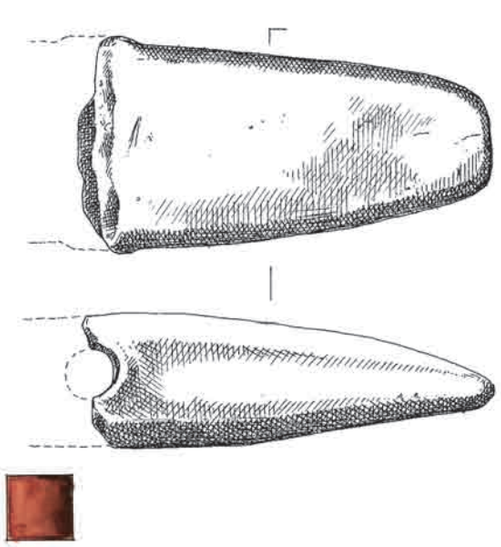

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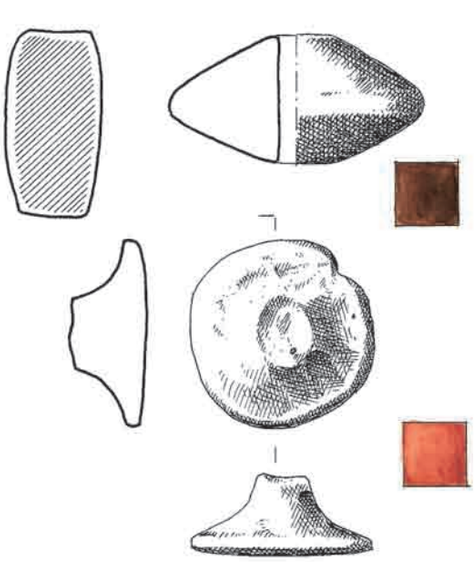

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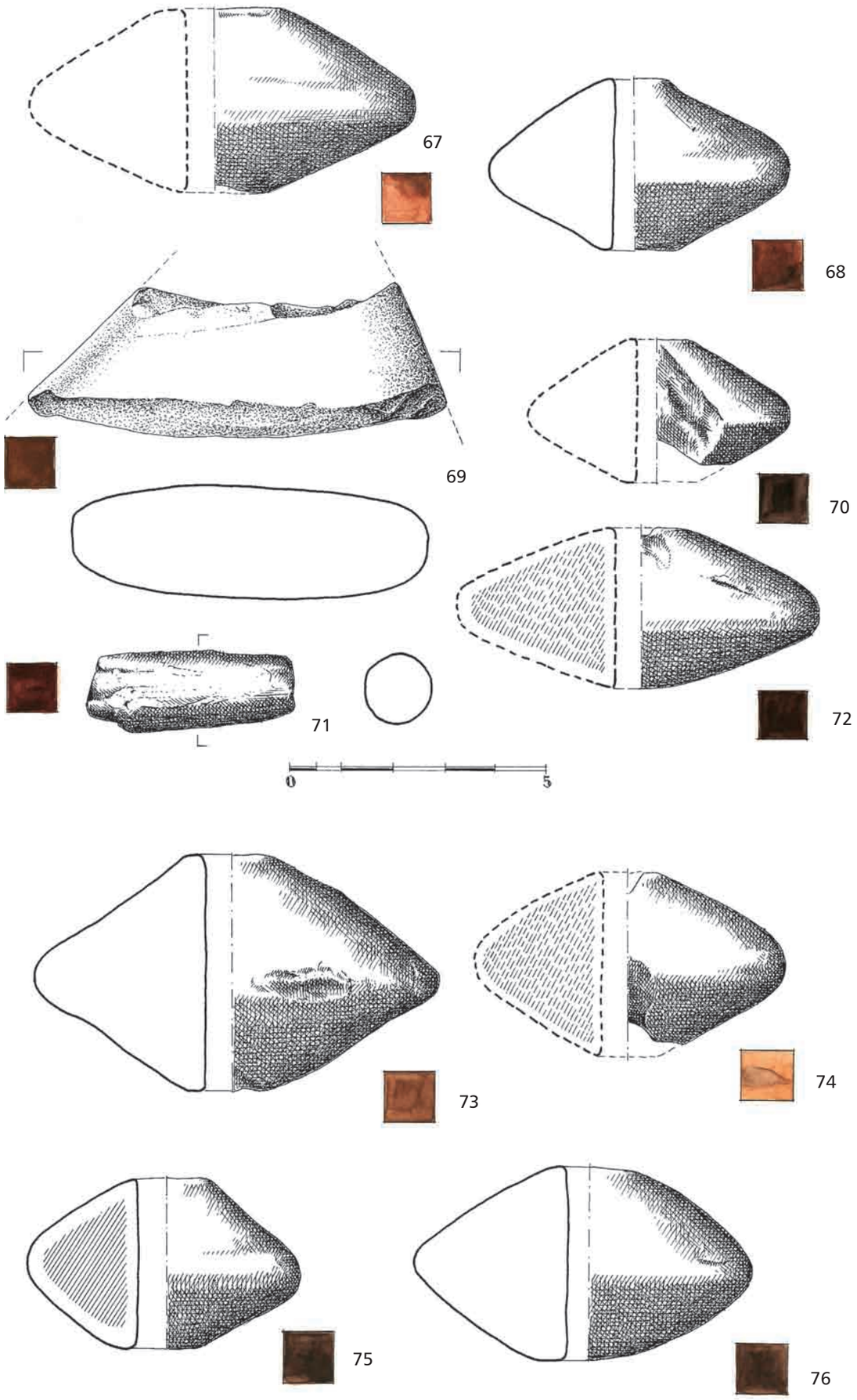

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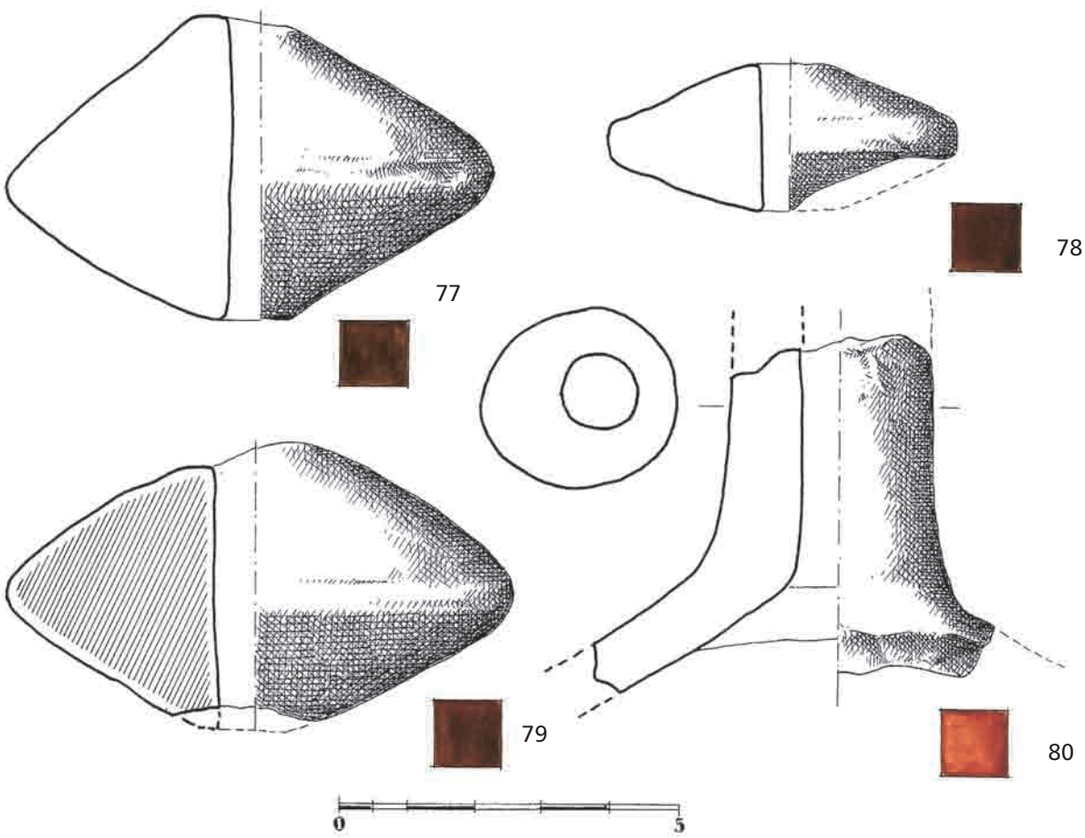


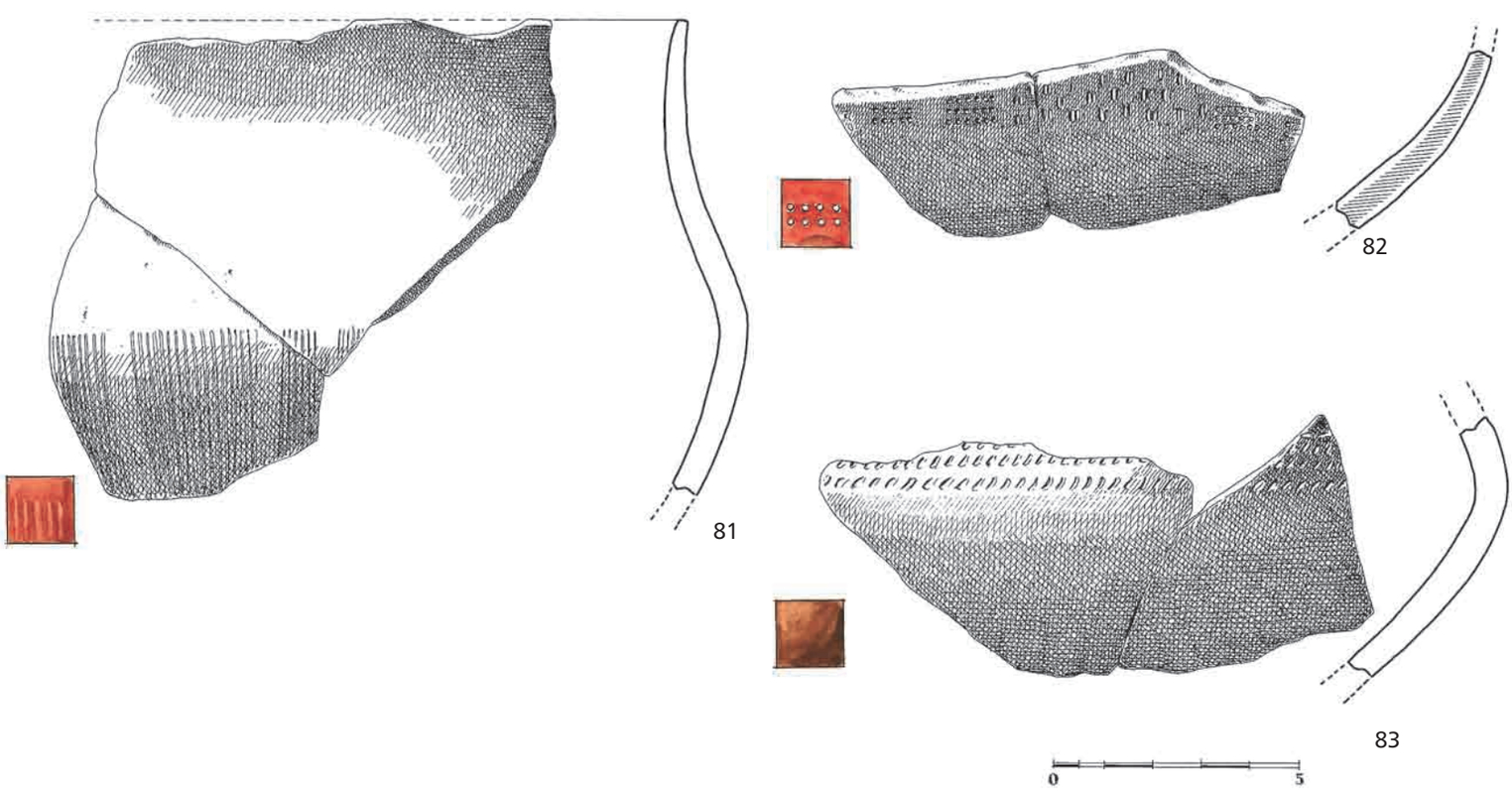

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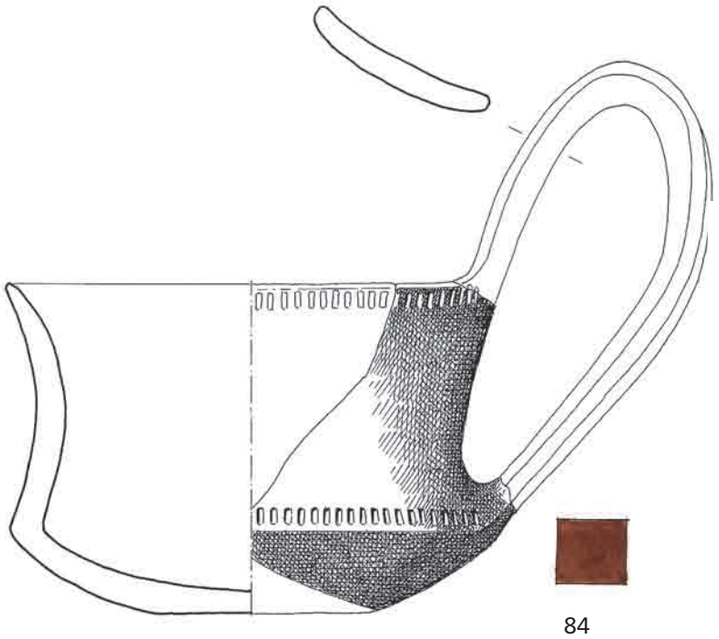

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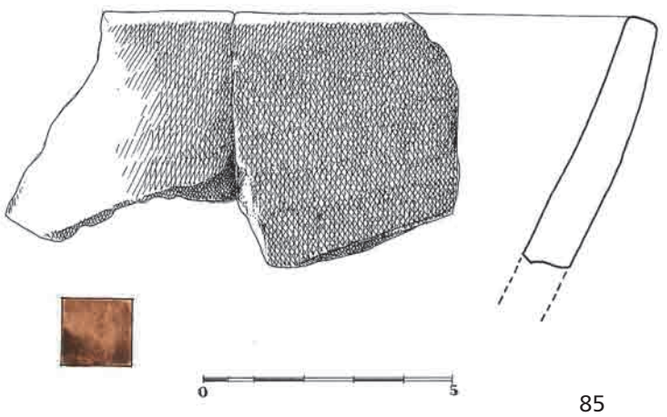

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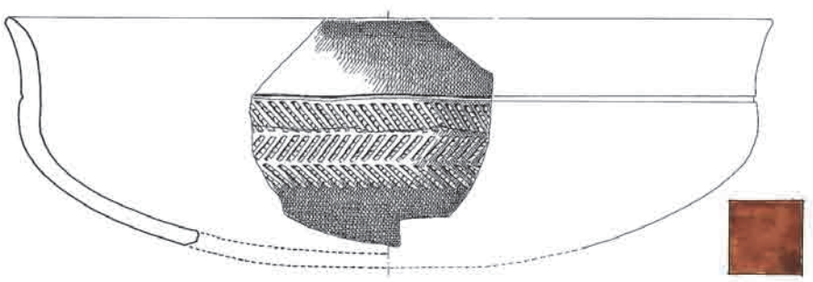

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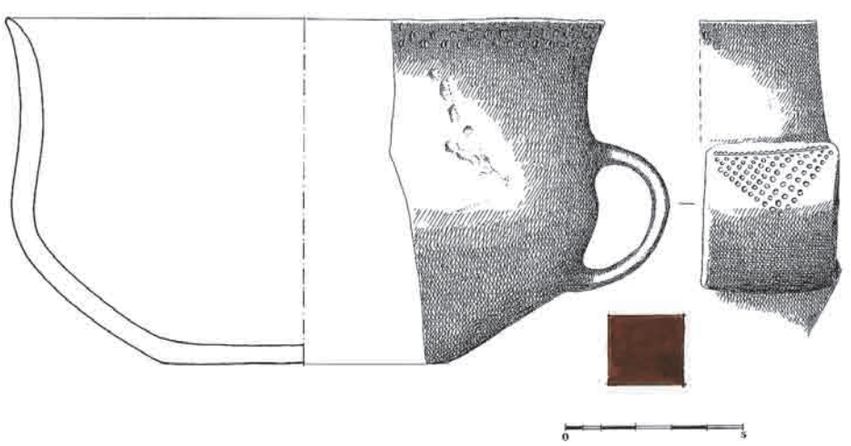

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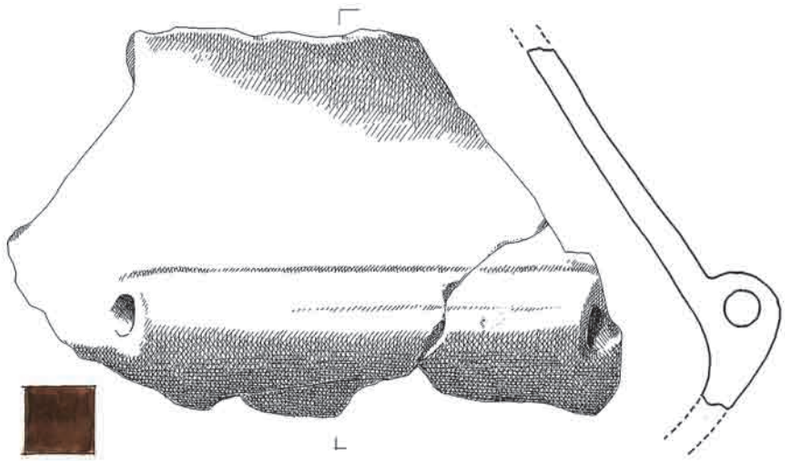

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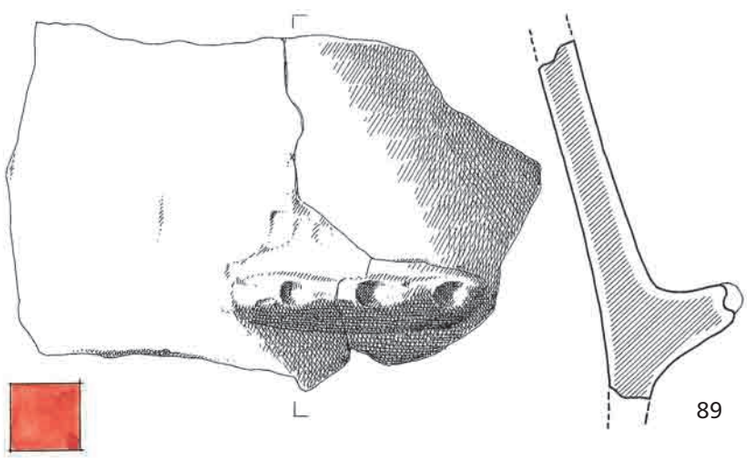

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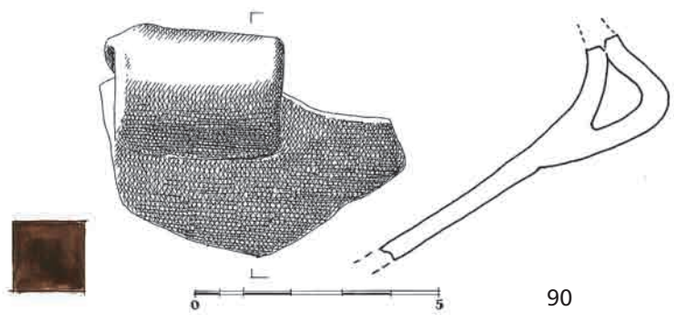

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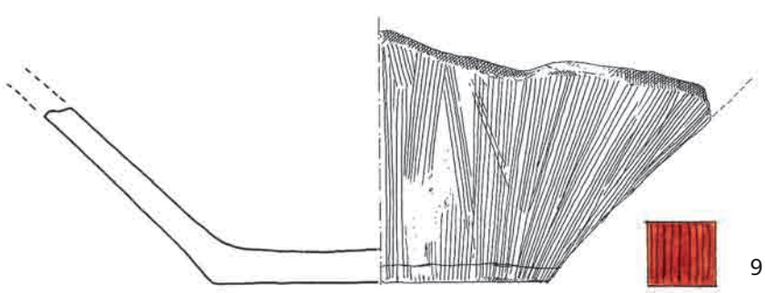

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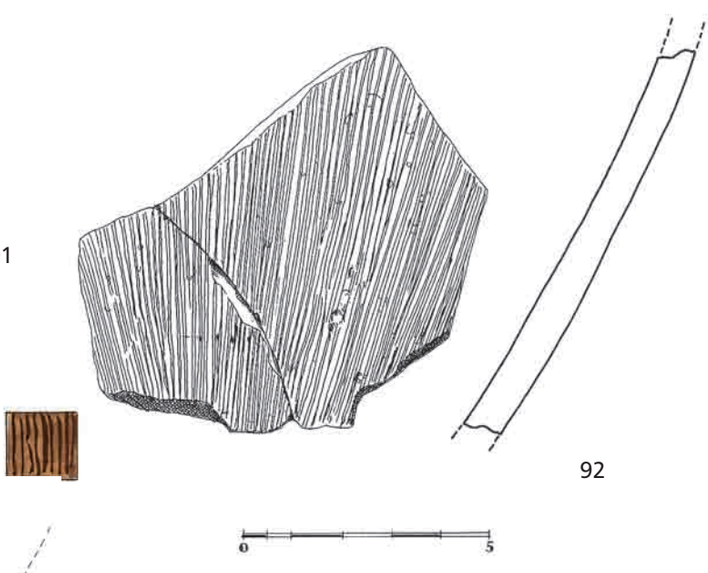

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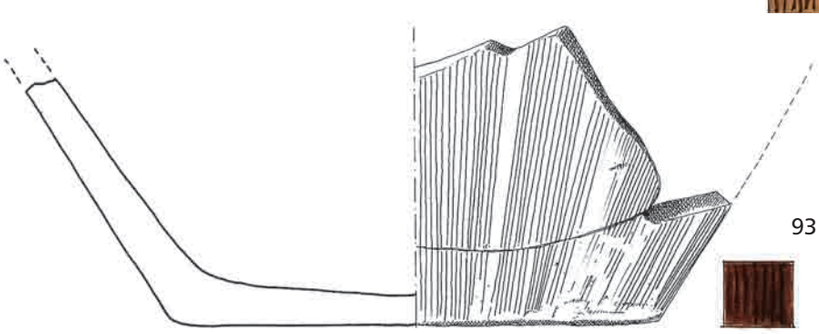

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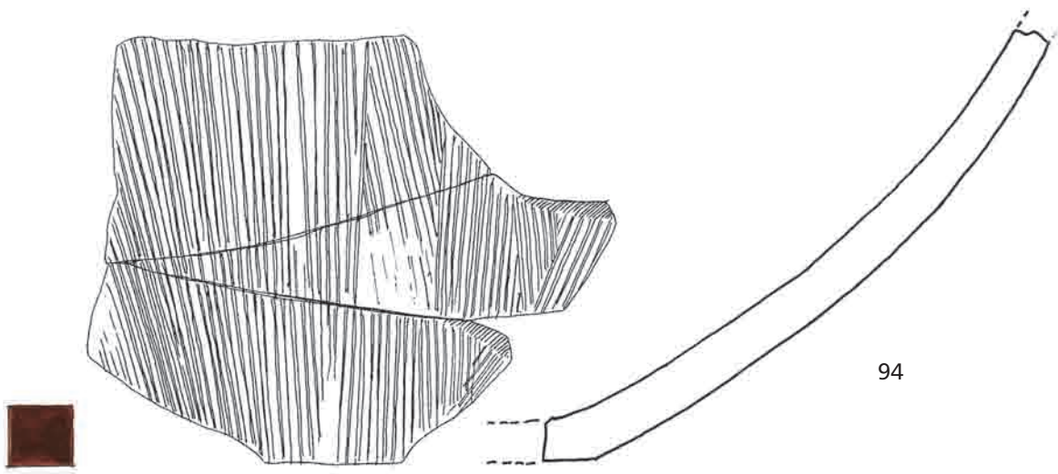

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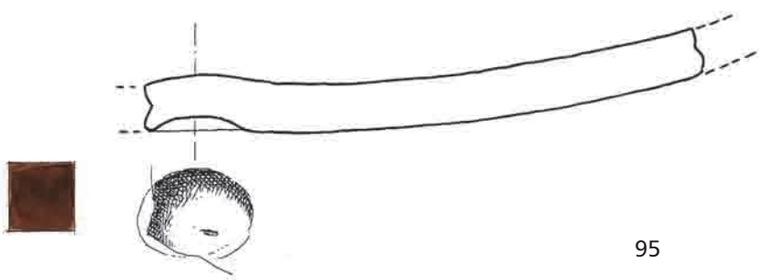

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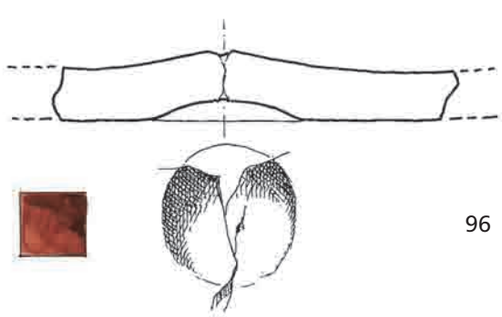

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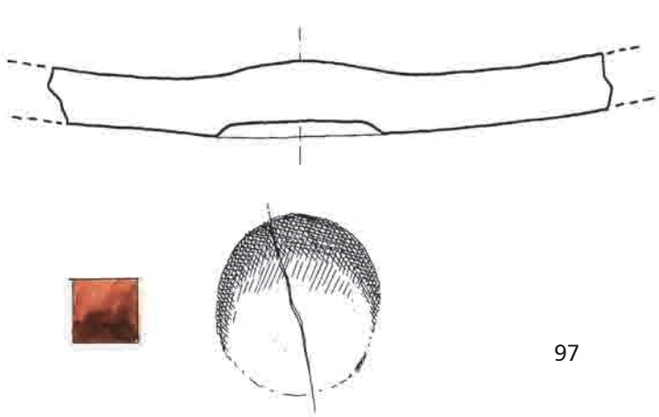

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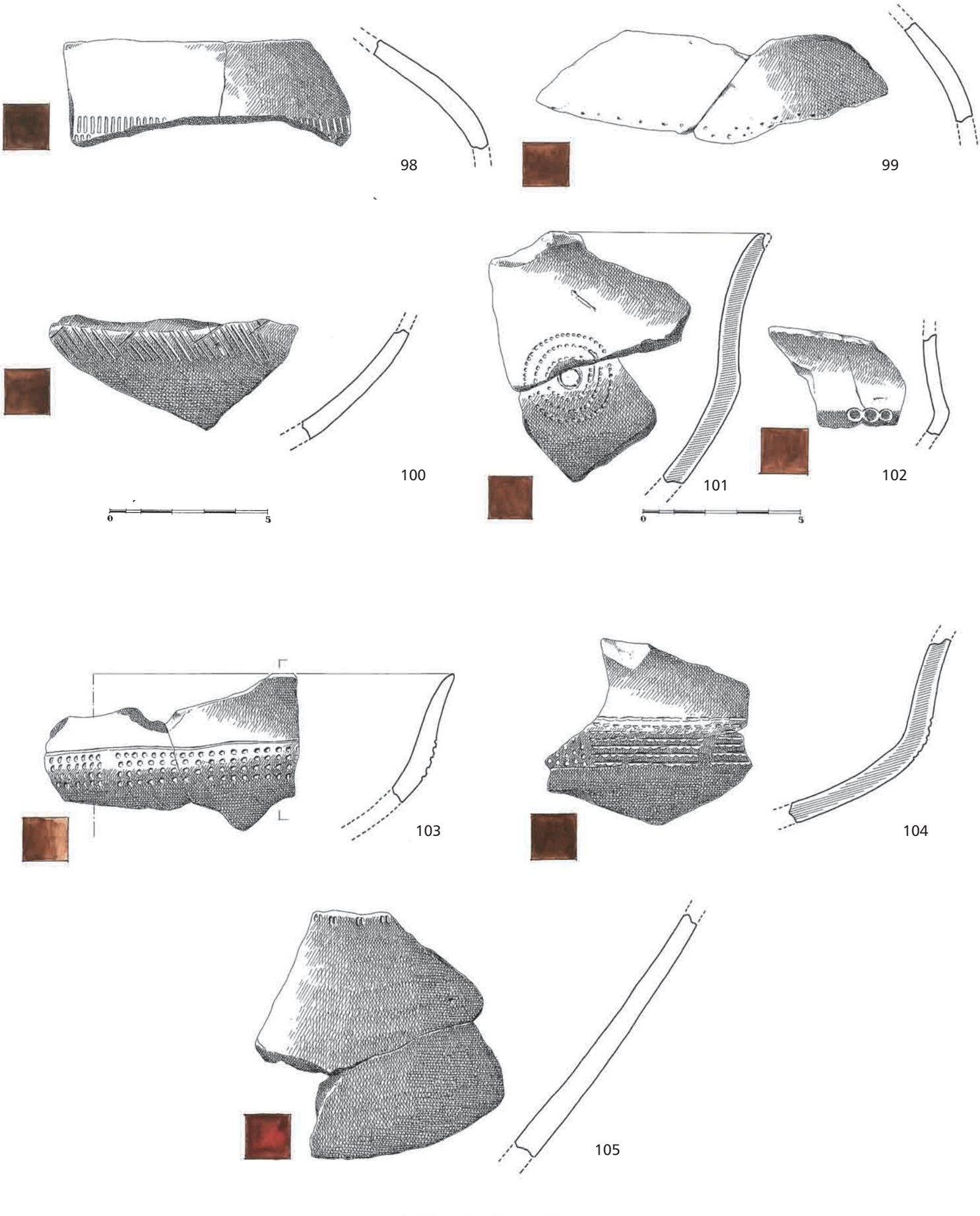

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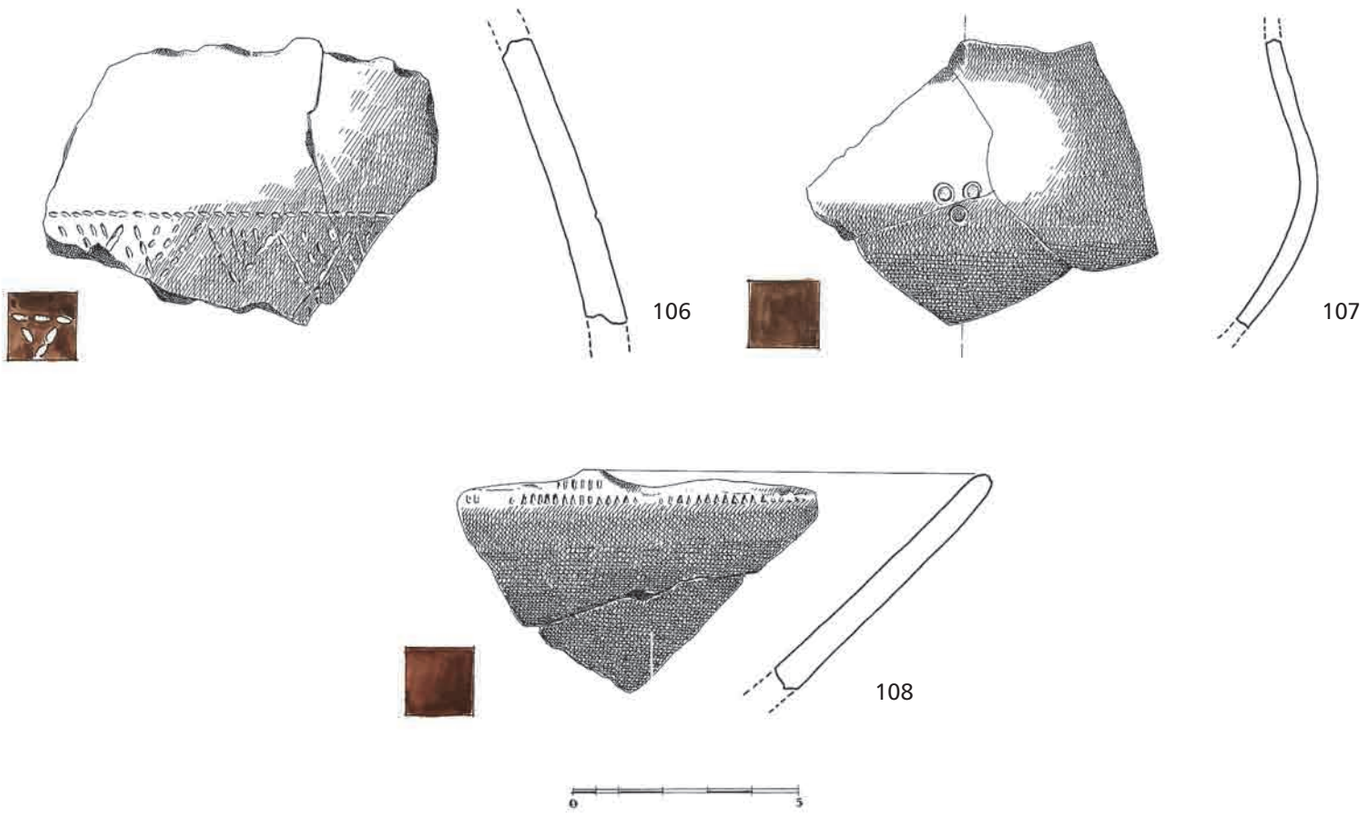

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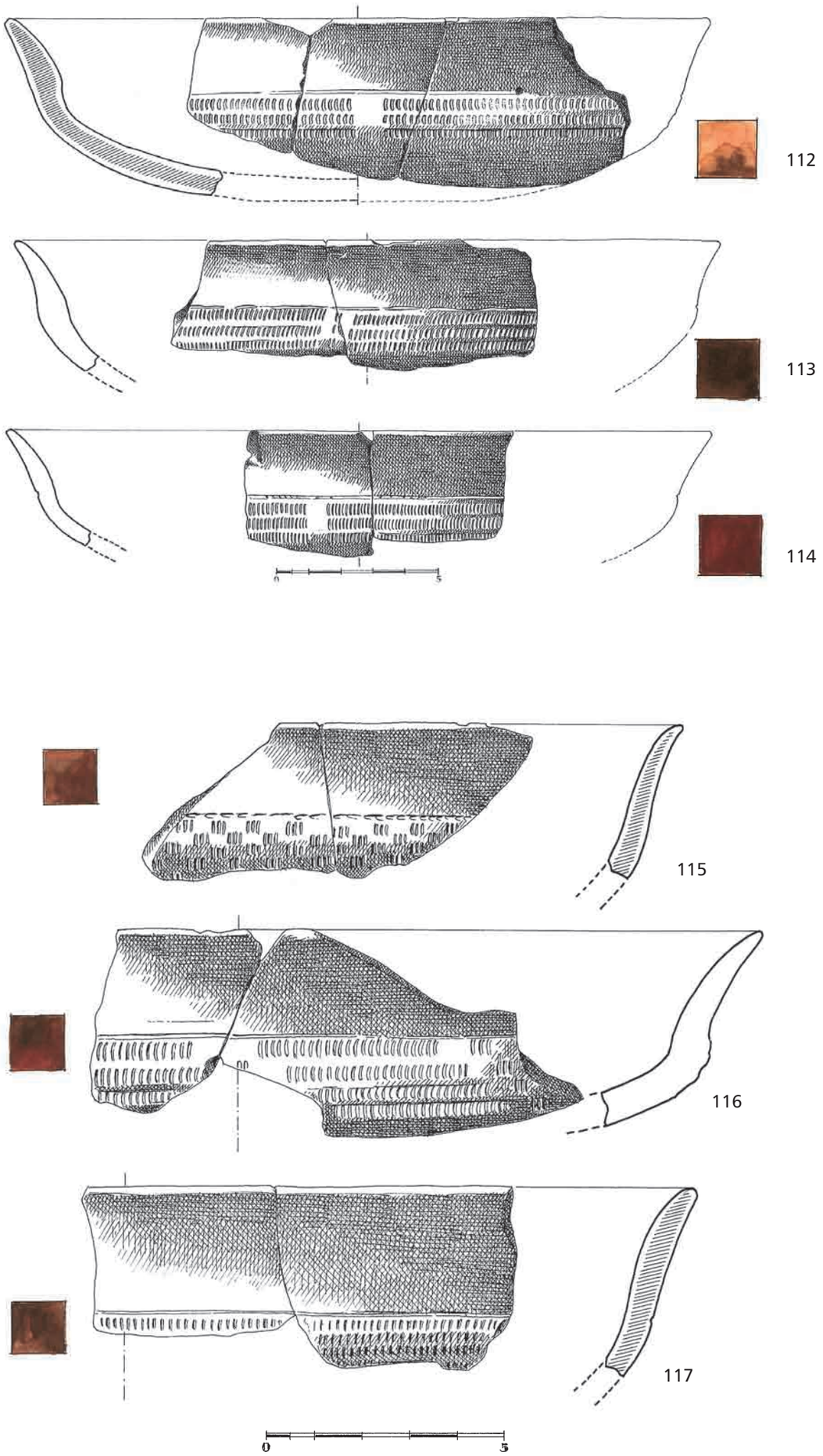

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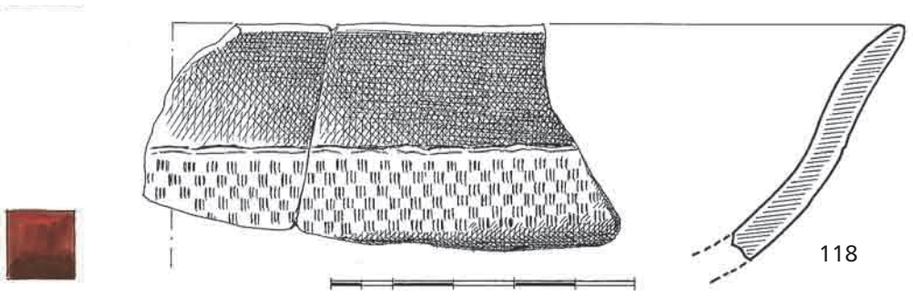

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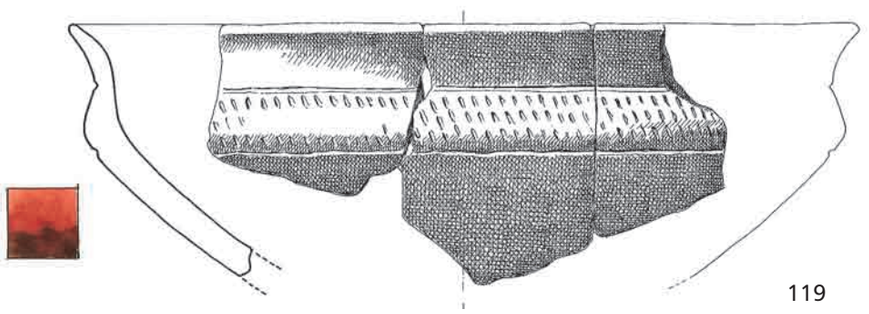

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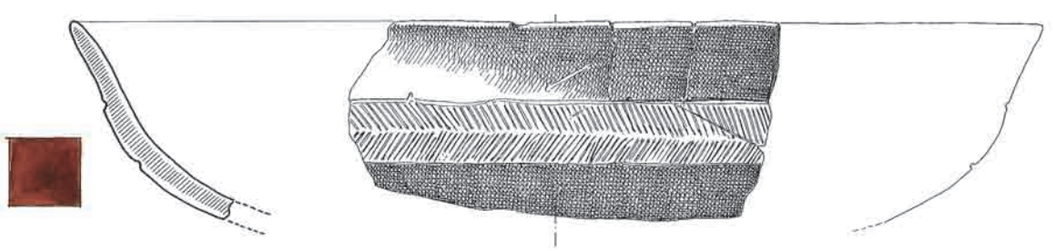

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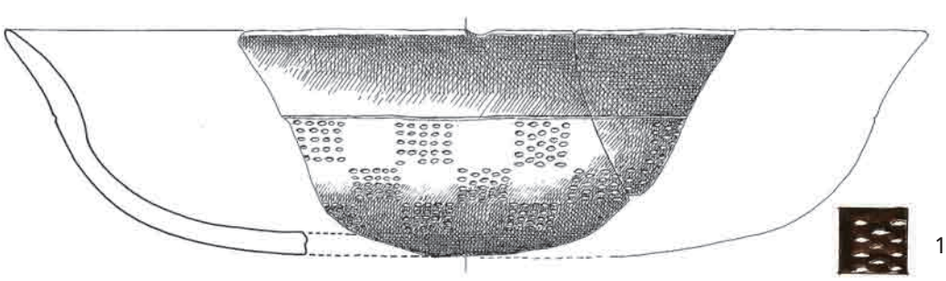

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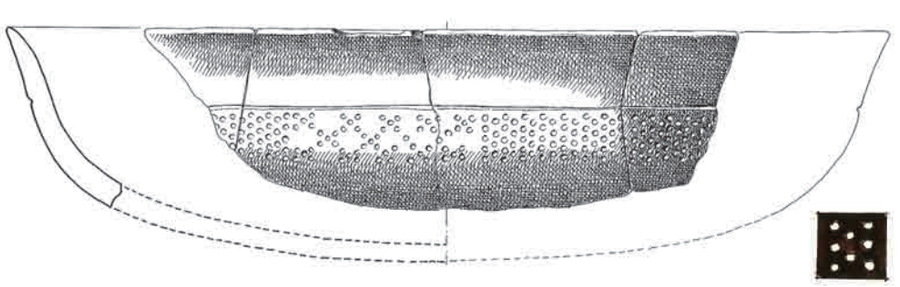

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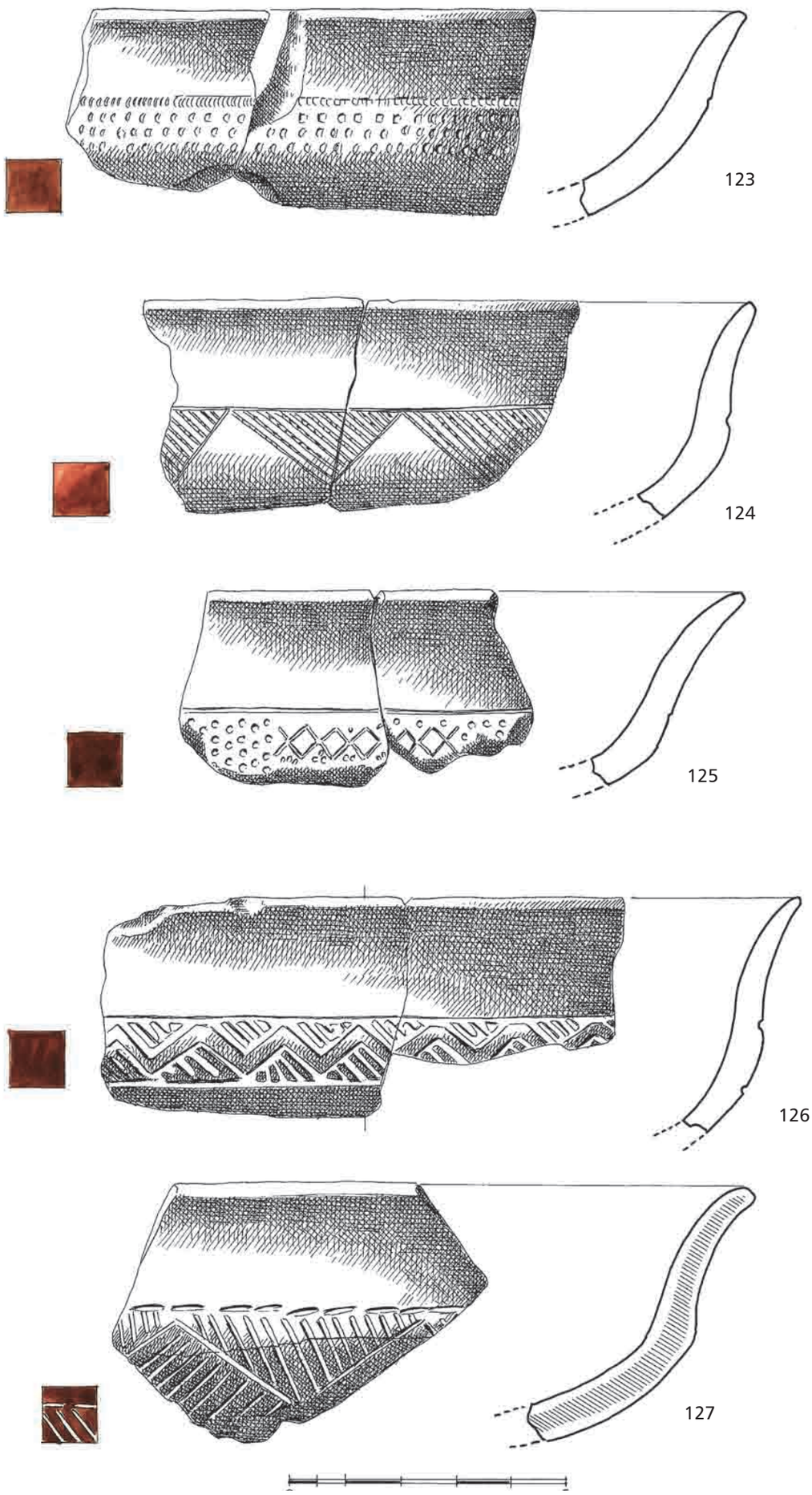

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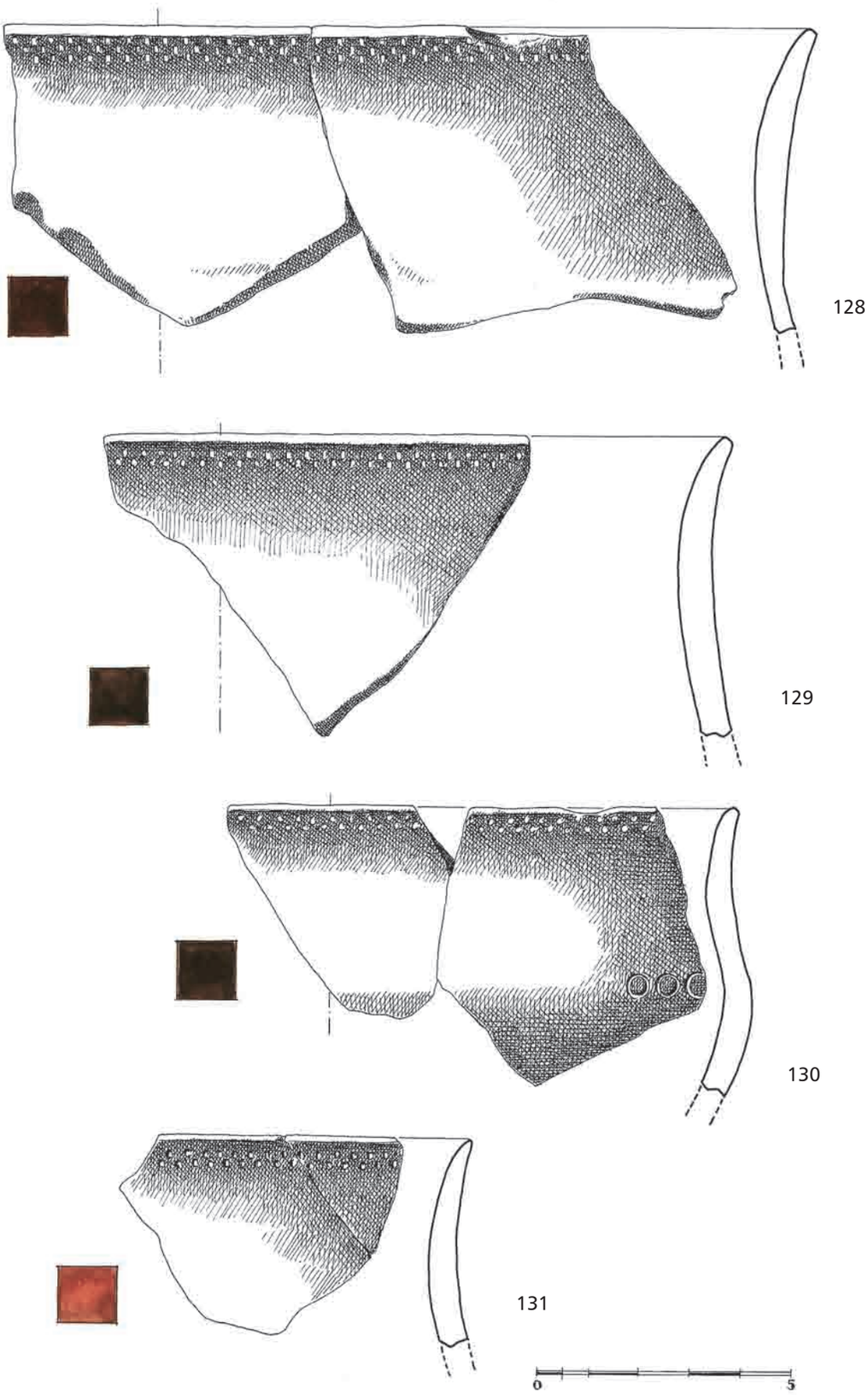

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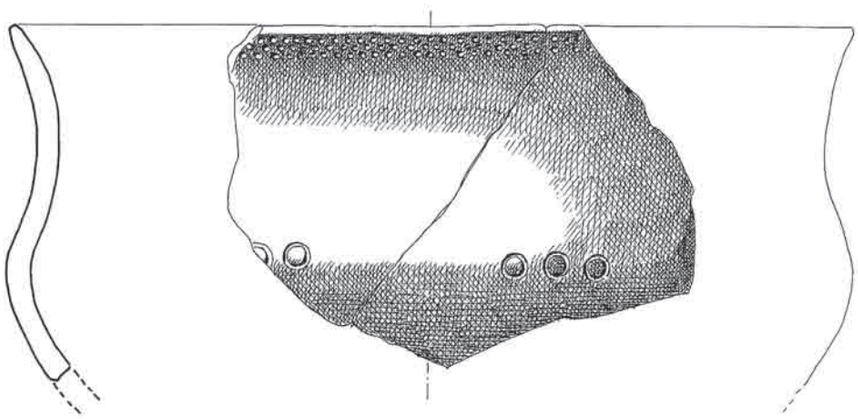

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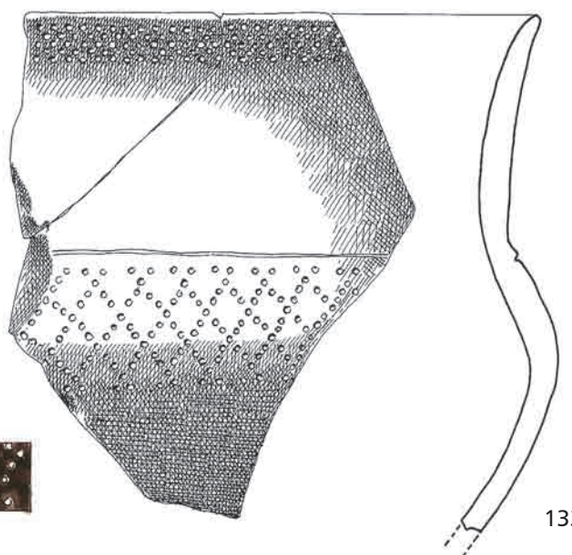

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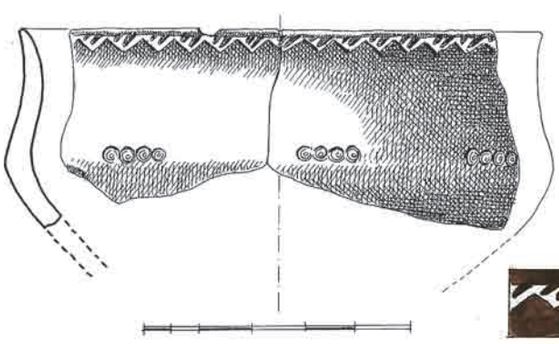

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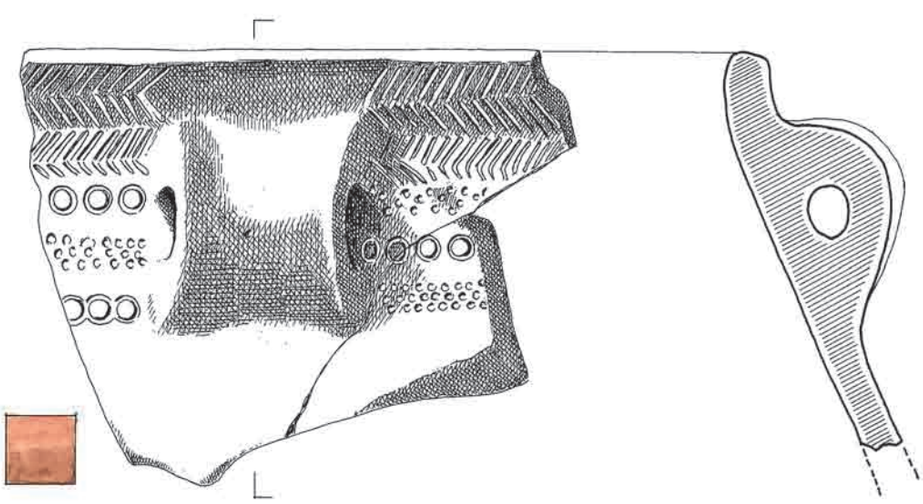



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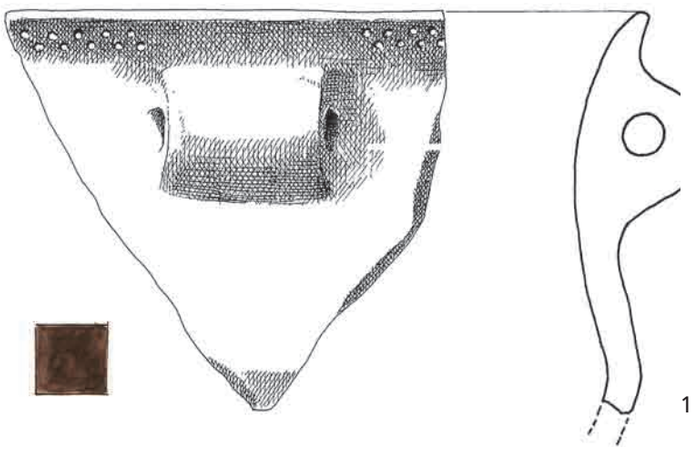

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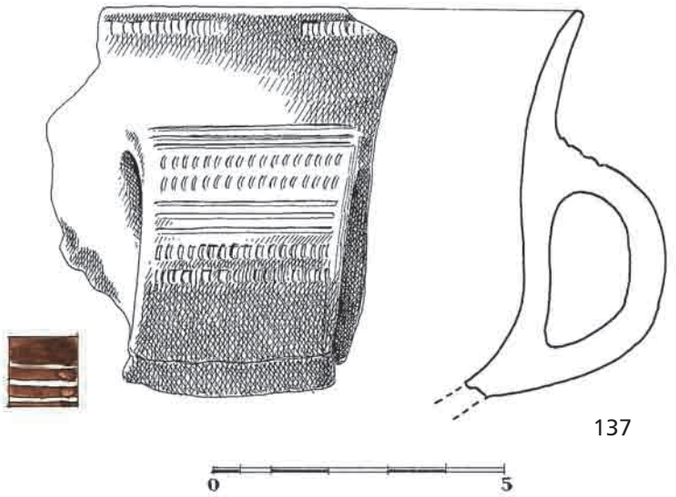

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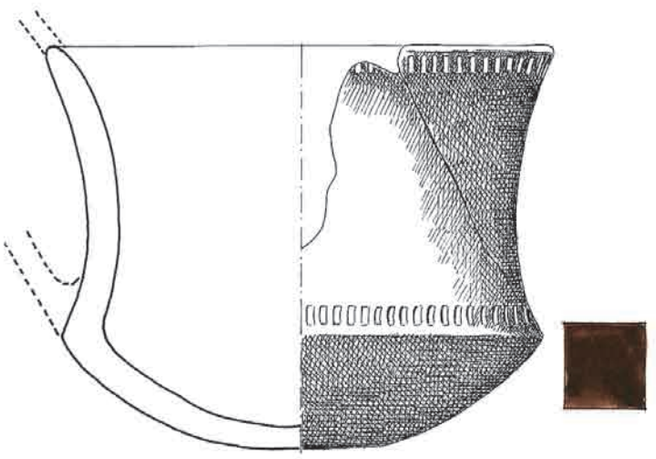

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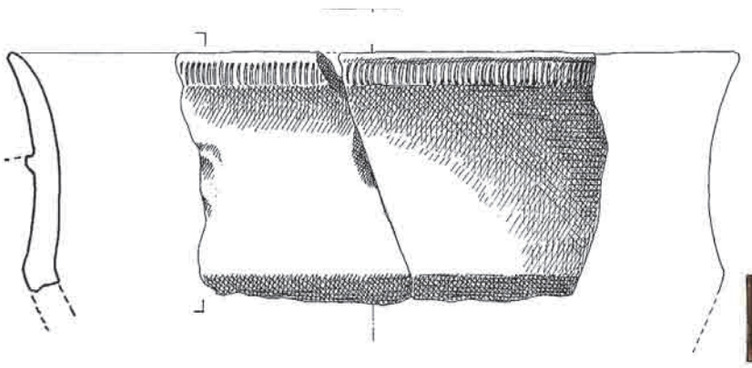

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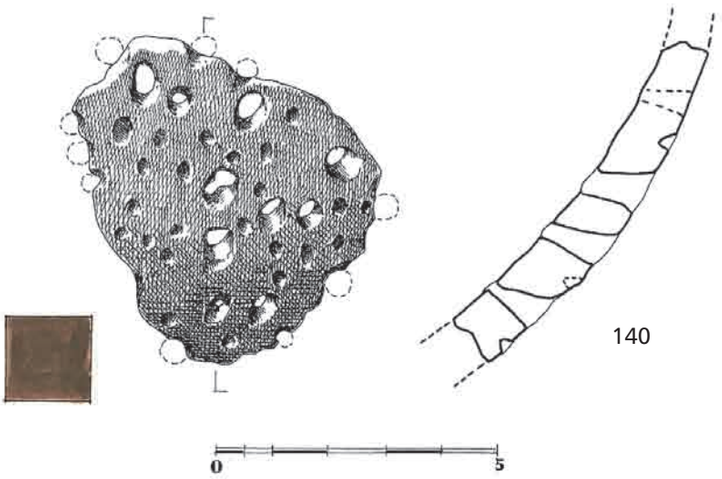

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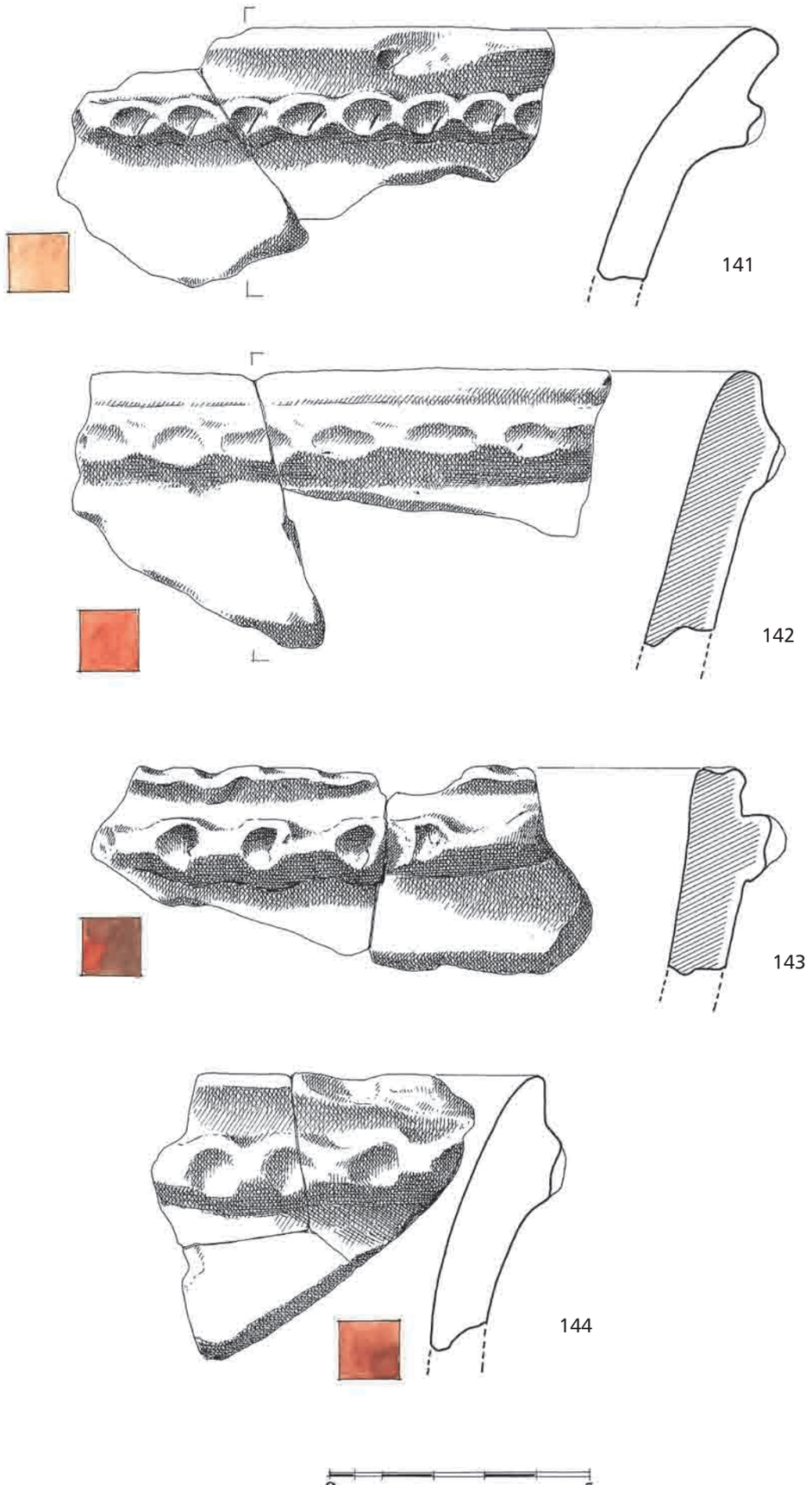

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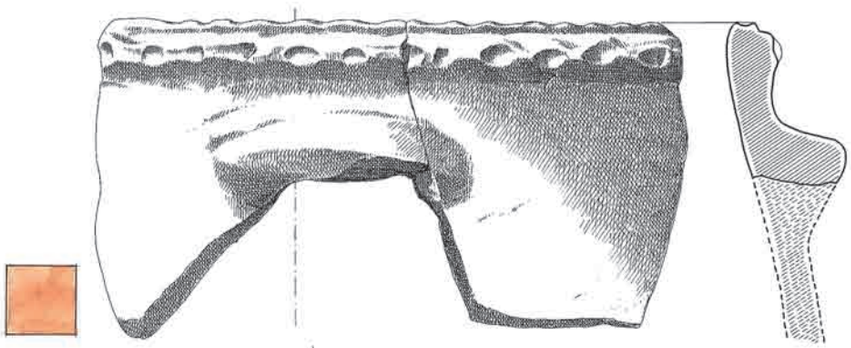

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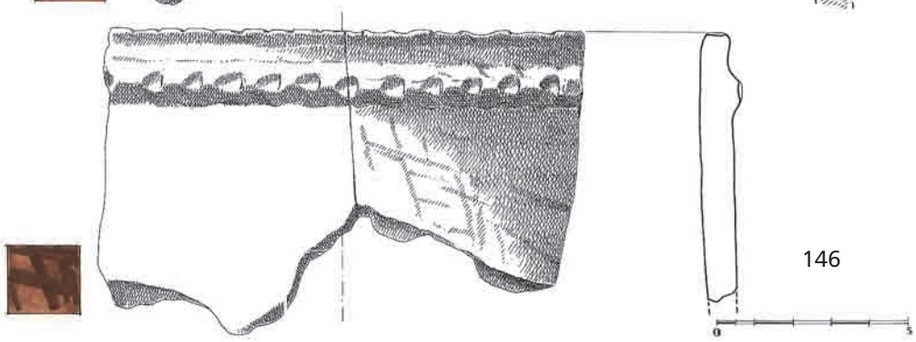

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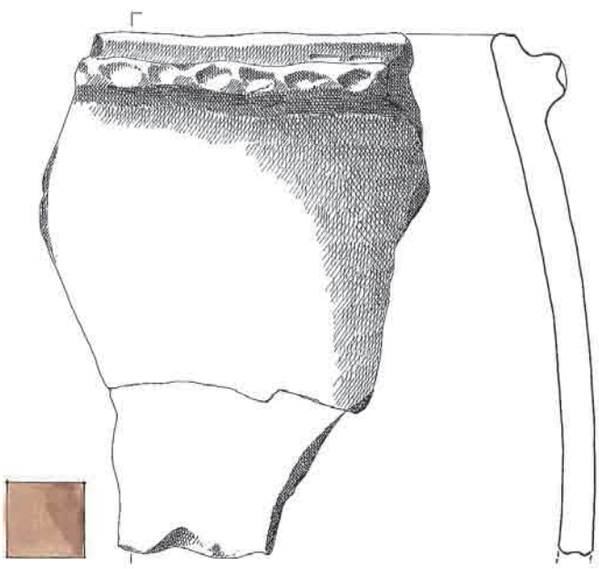

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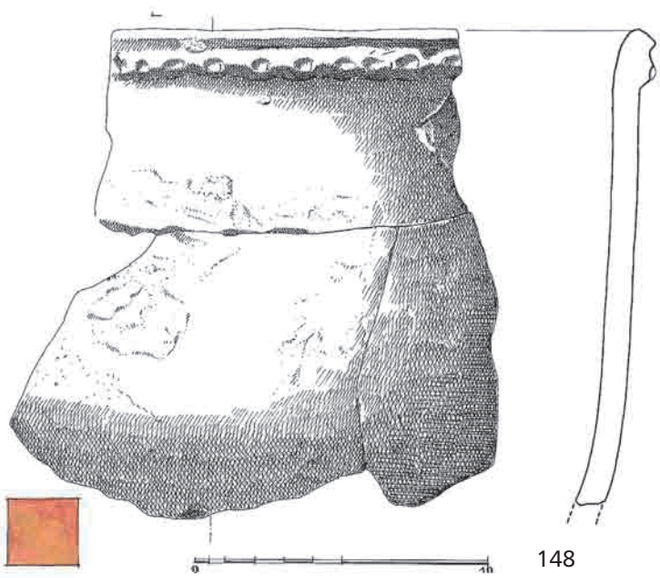

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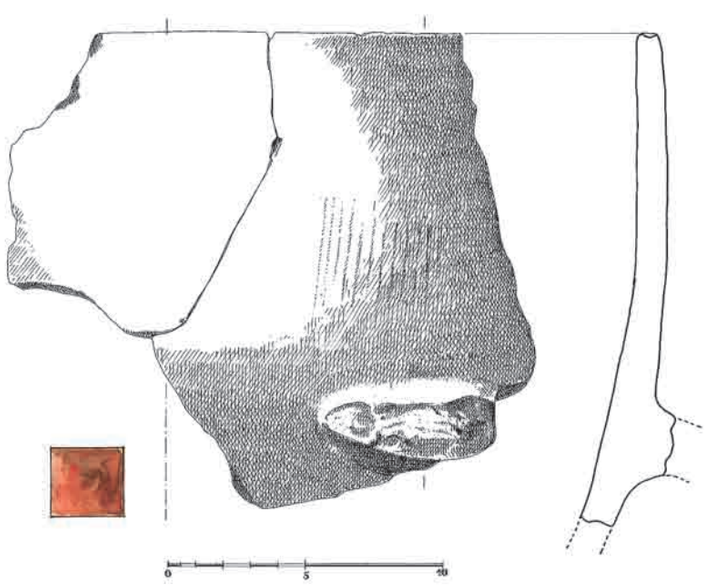

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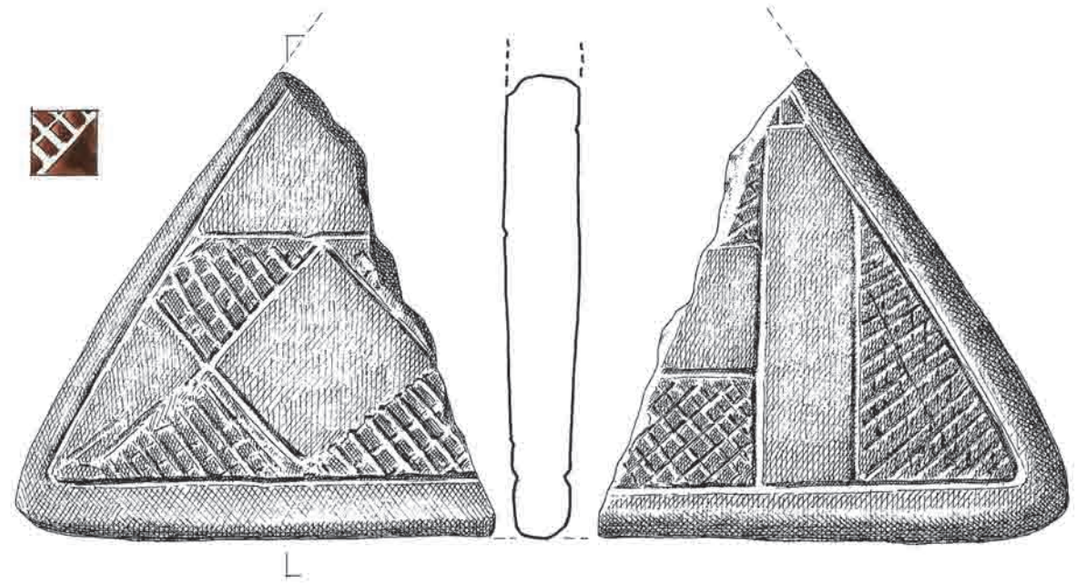

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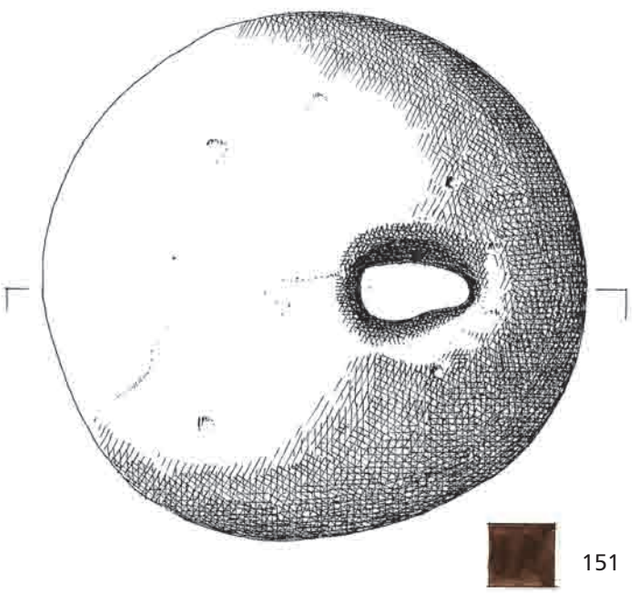

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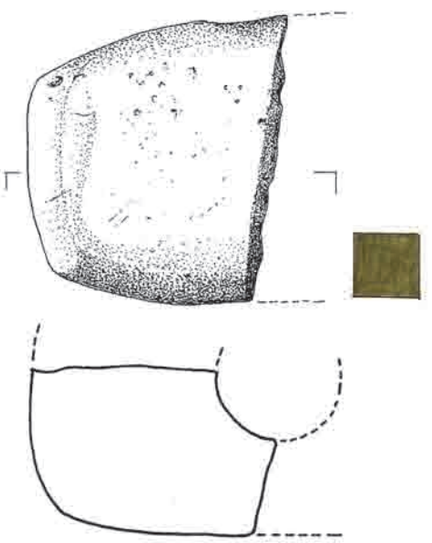

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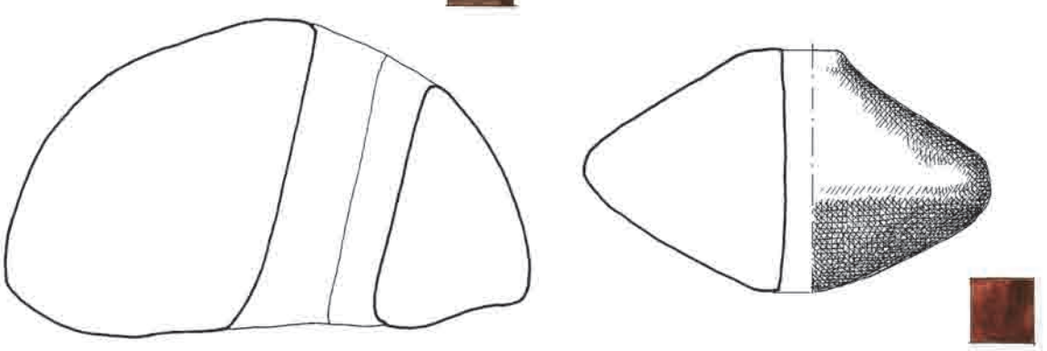

153

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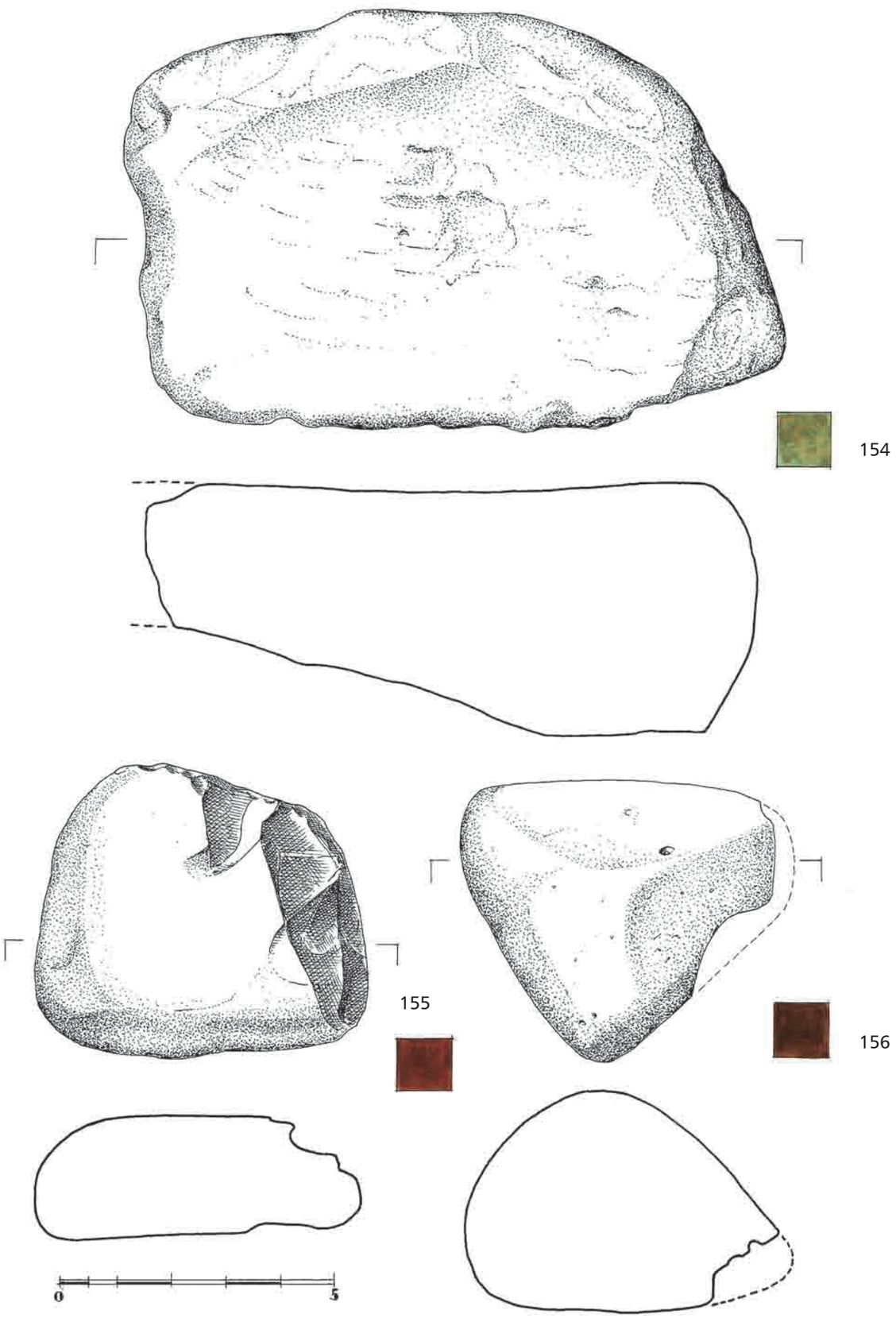
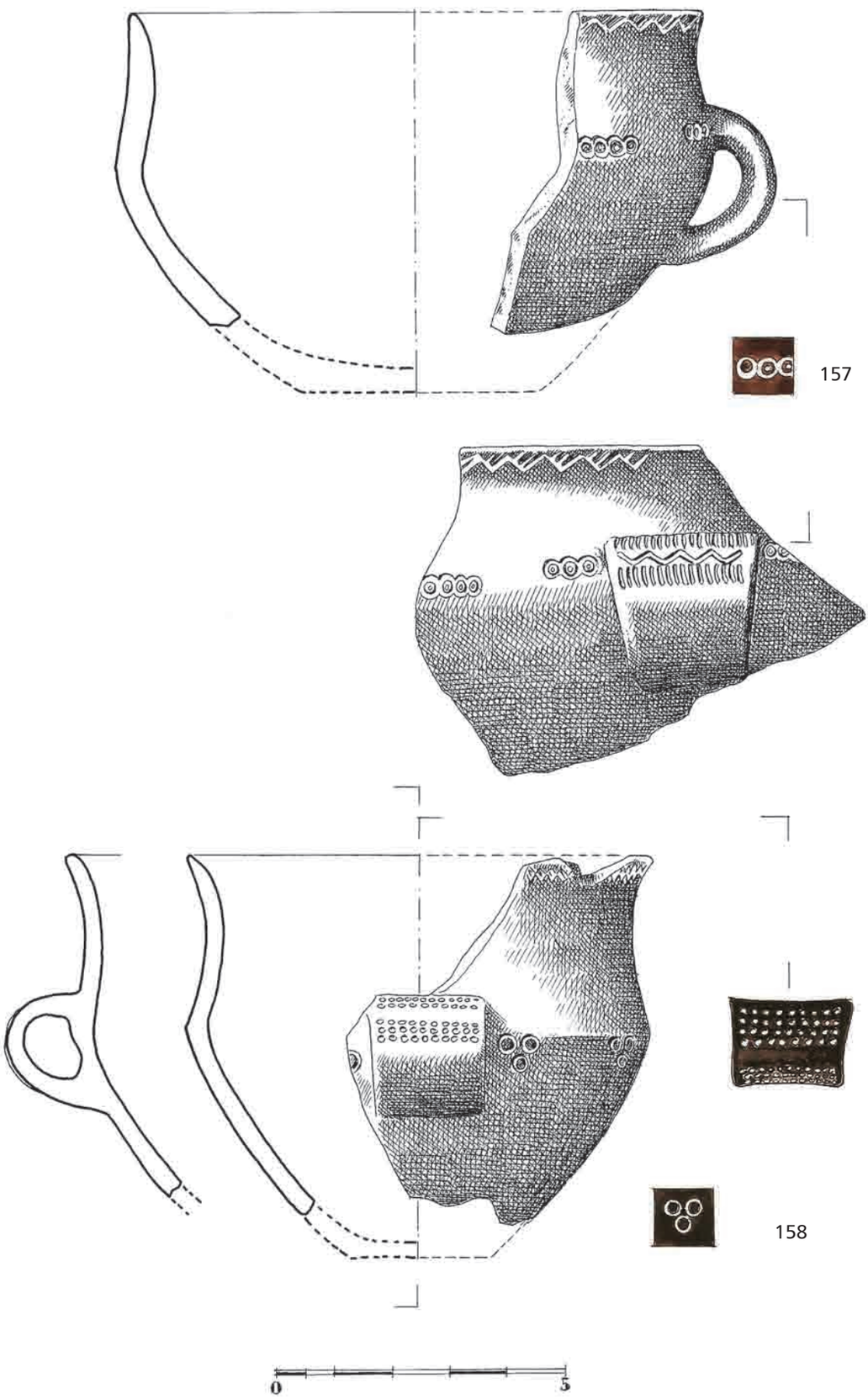


T. I-31.



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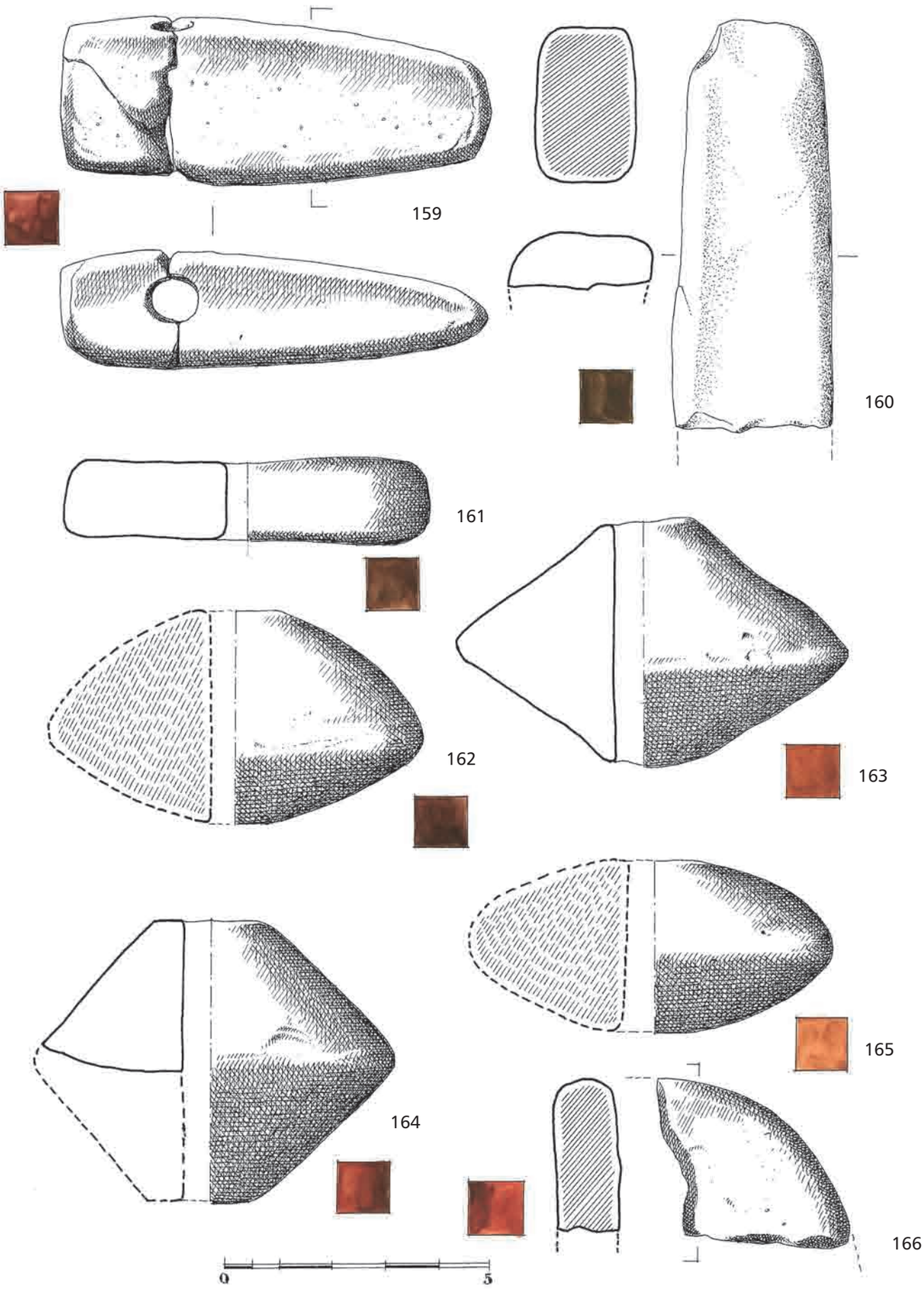

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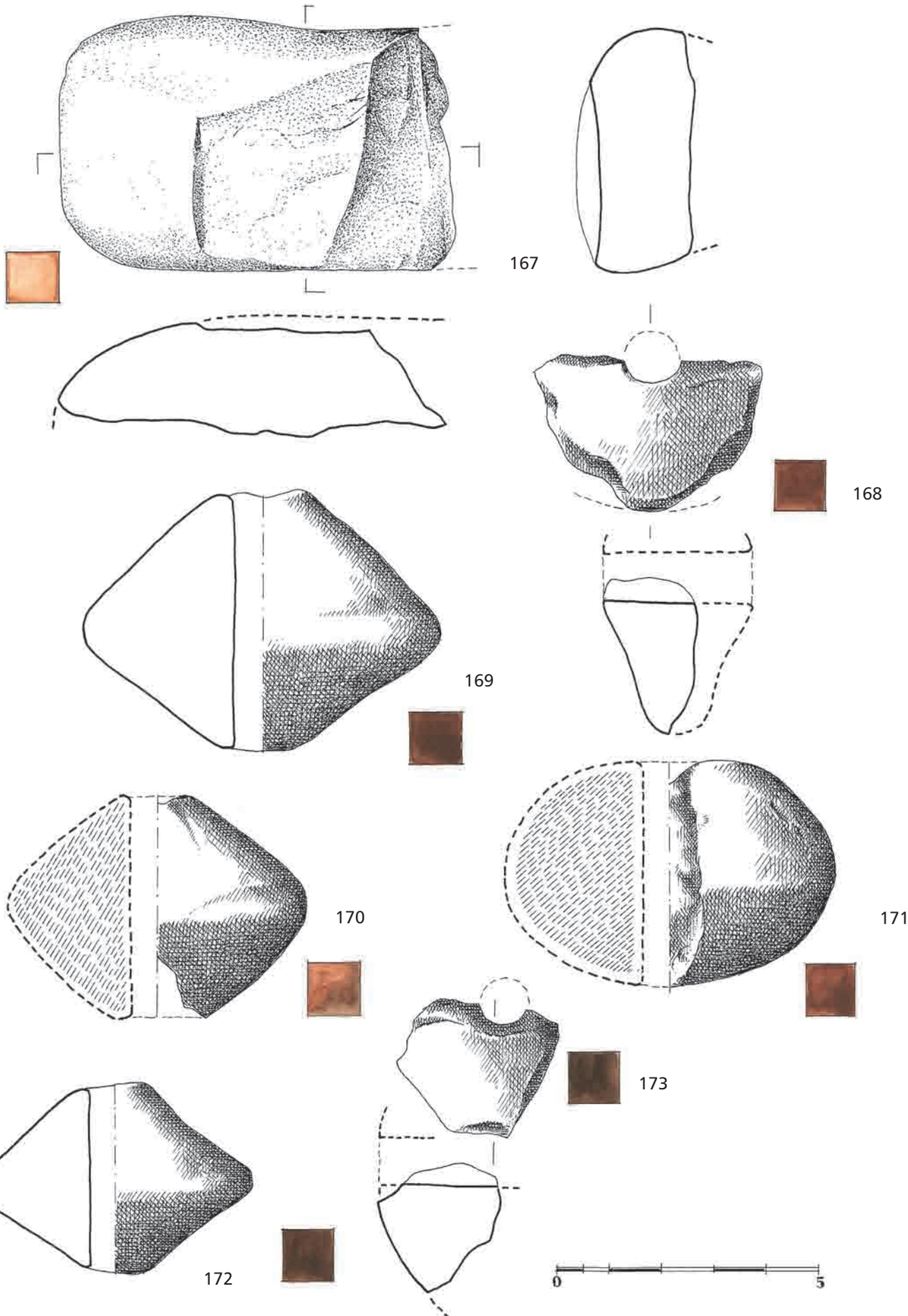

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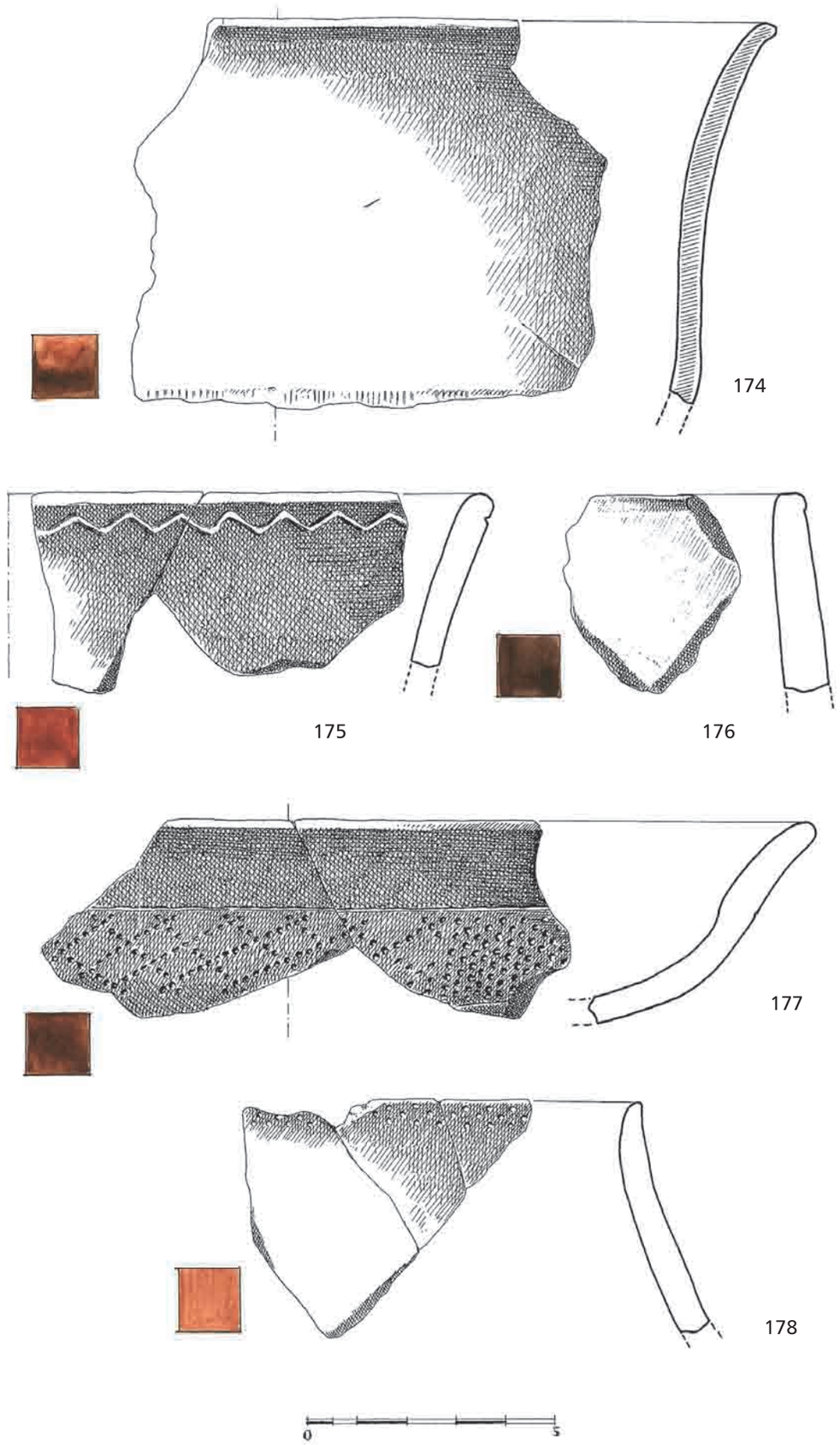

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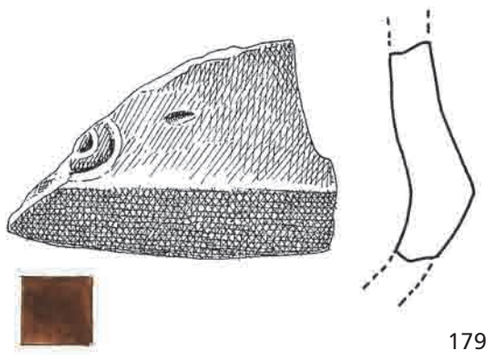

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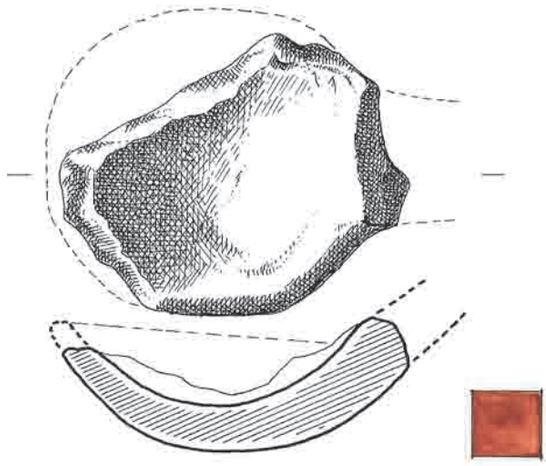

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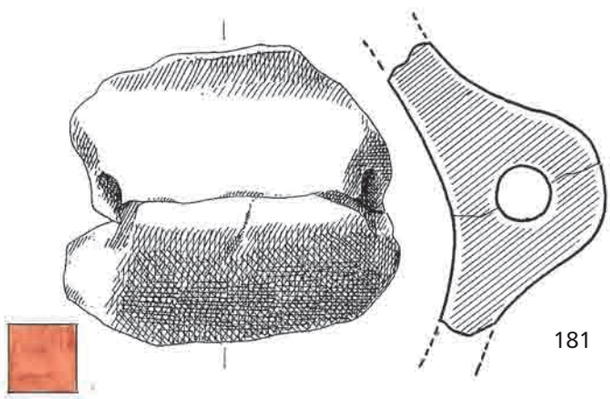

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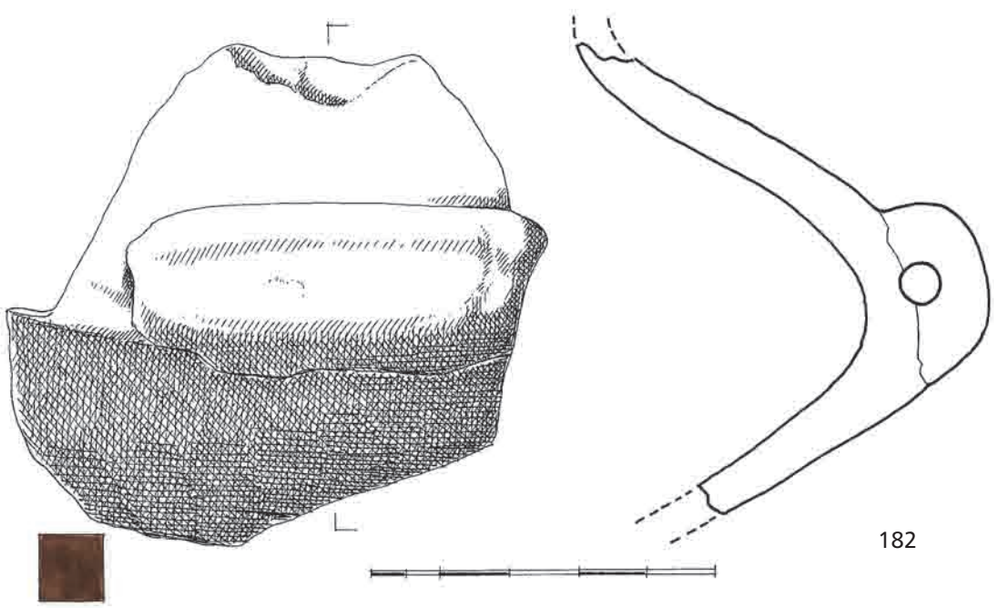

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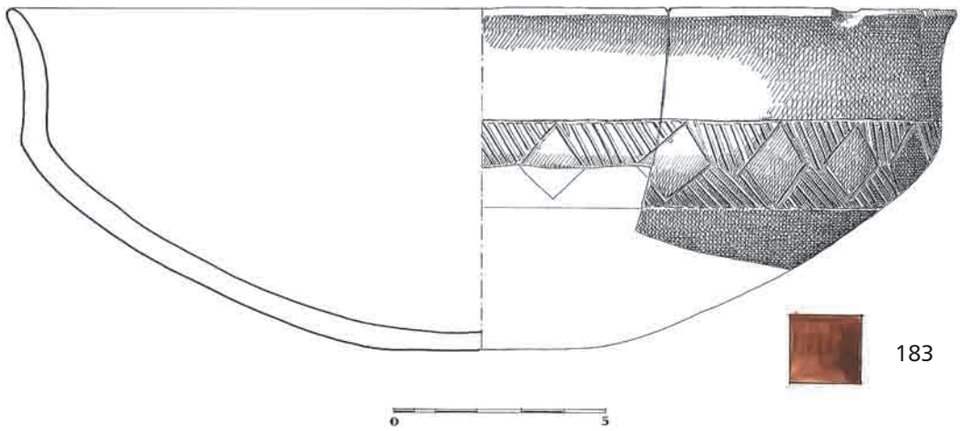


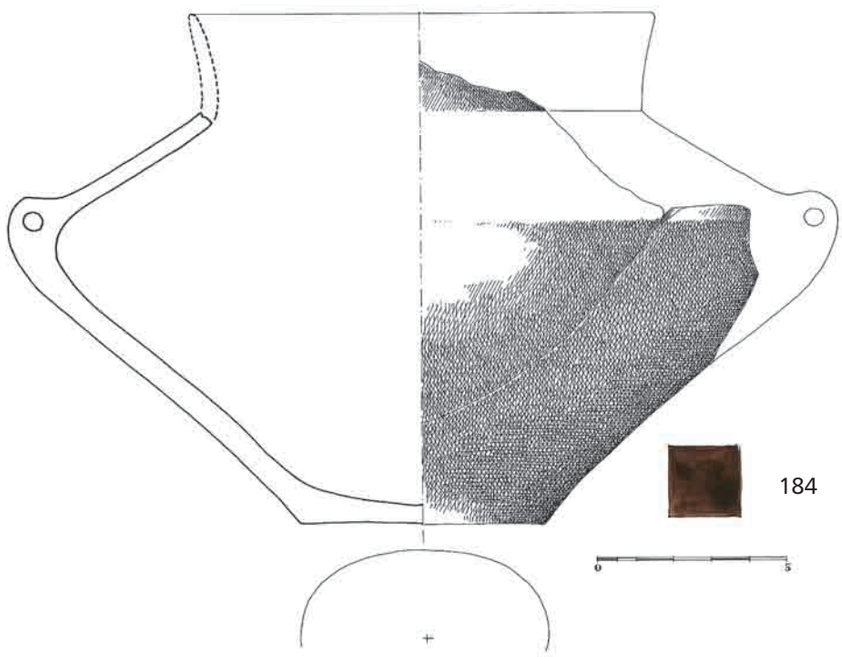


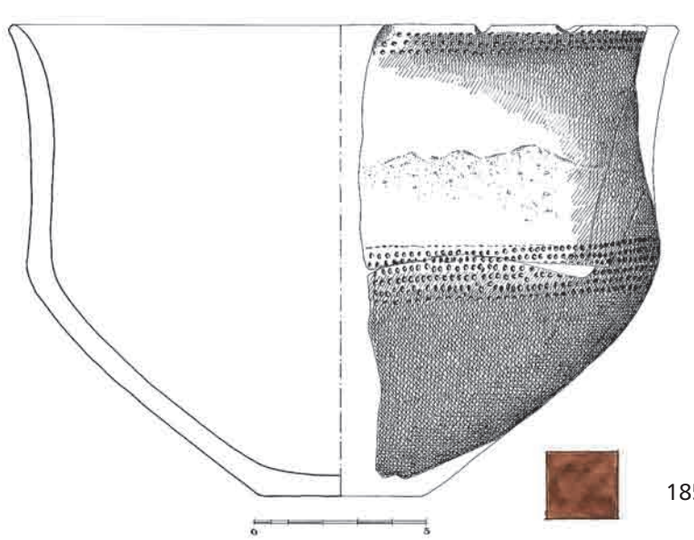

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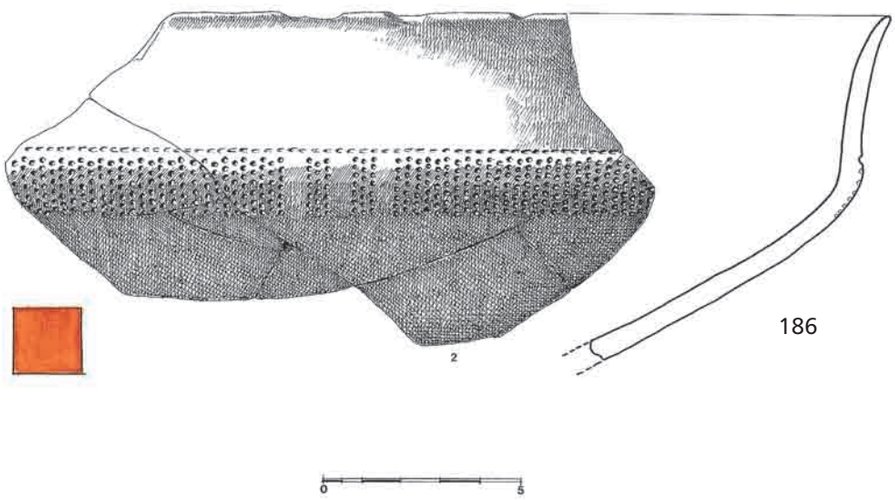

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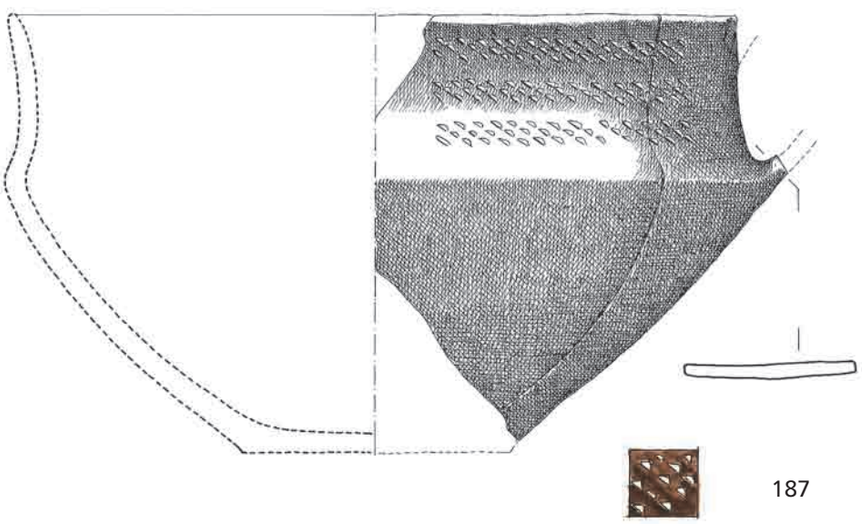

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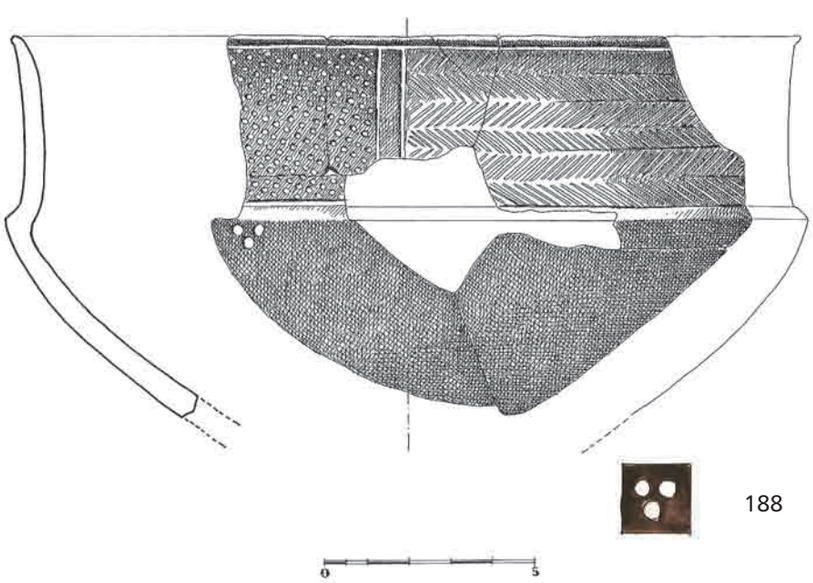

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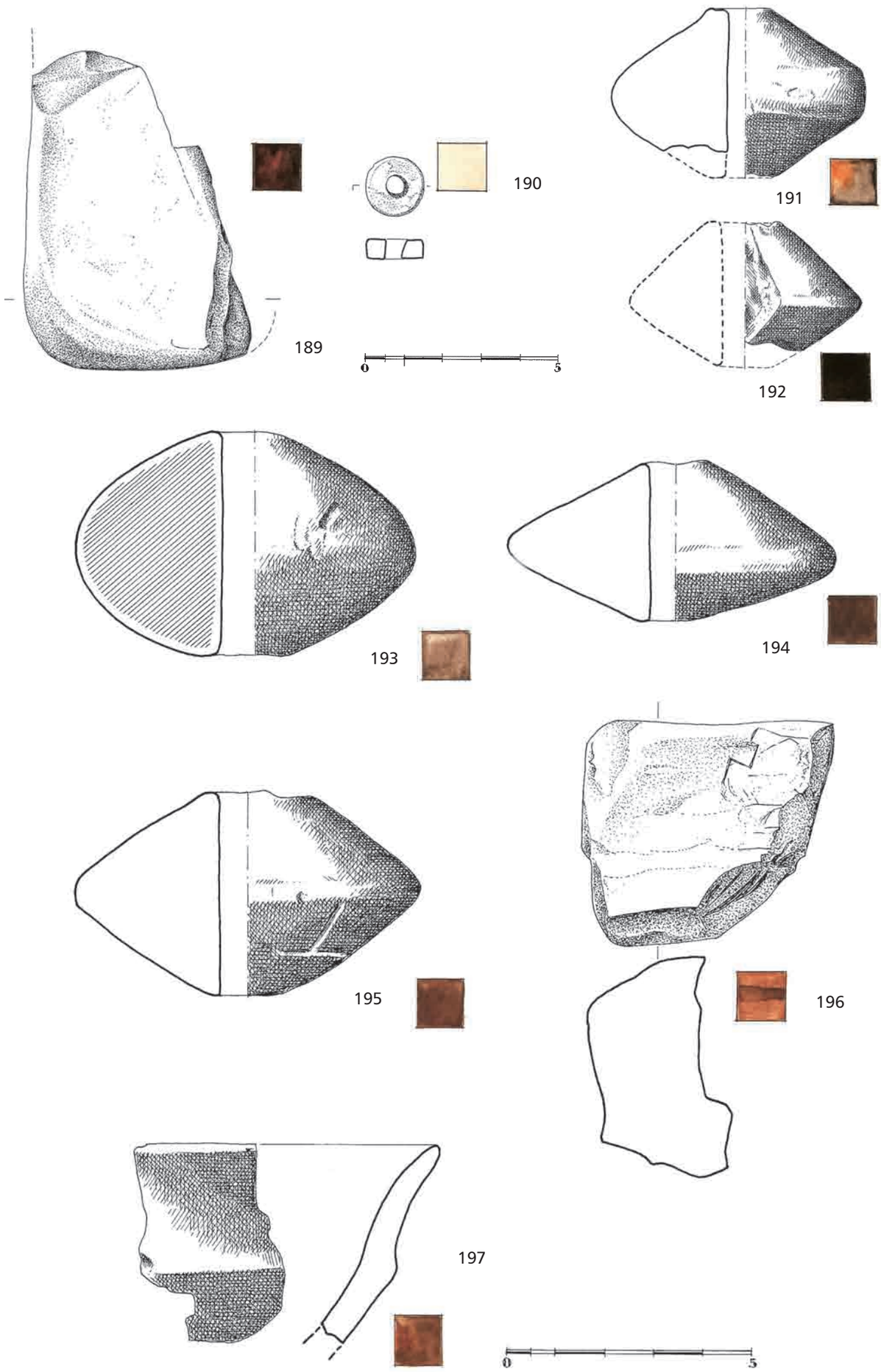

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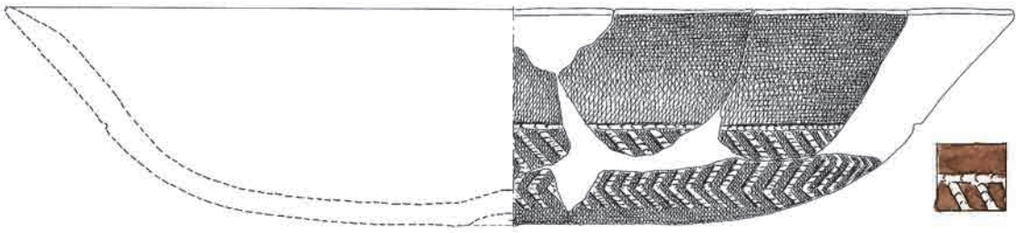

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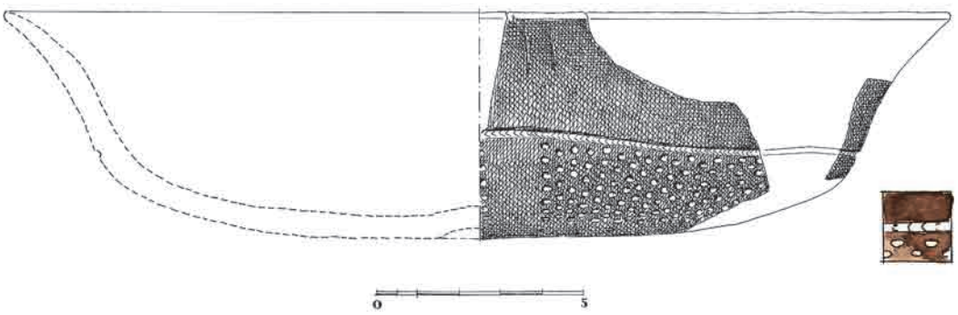


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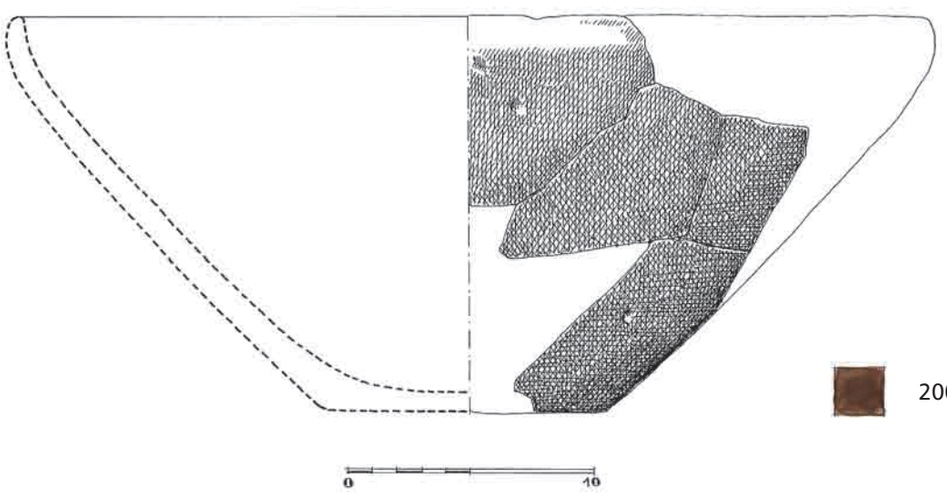


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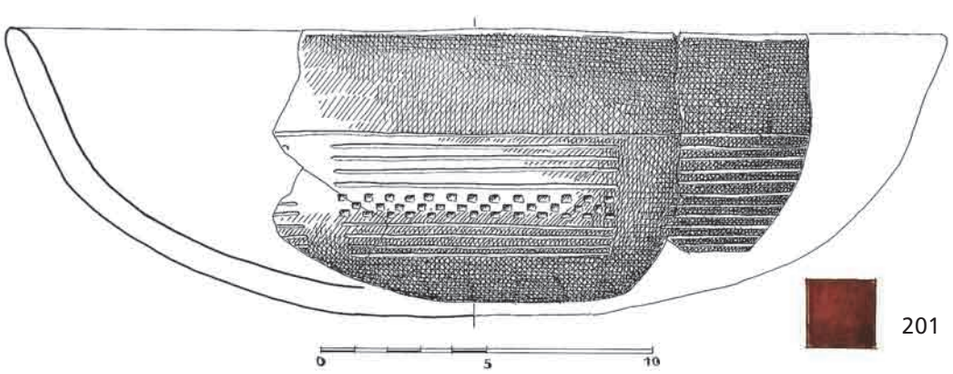


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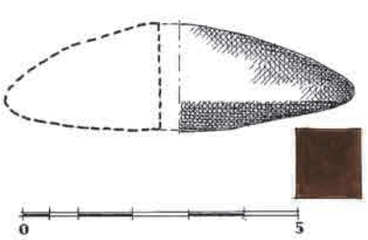


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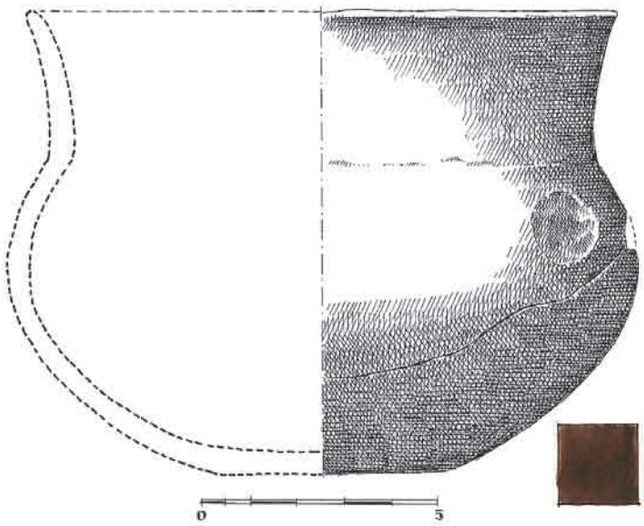


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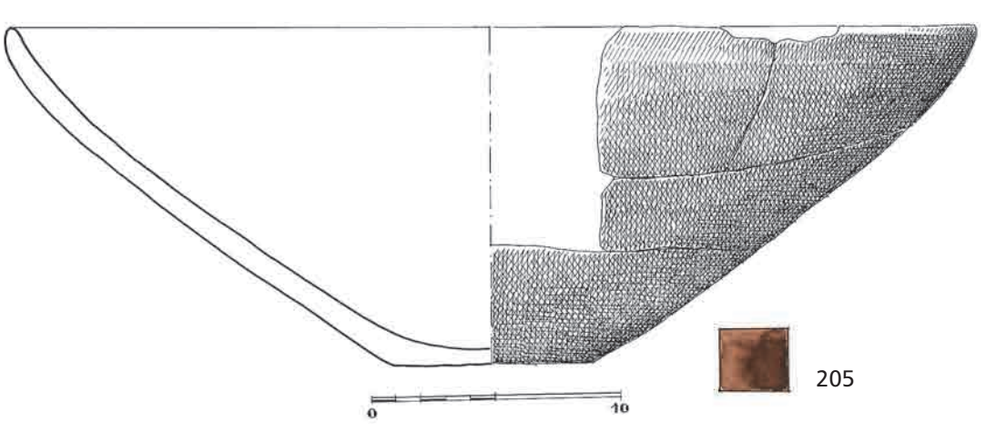
204

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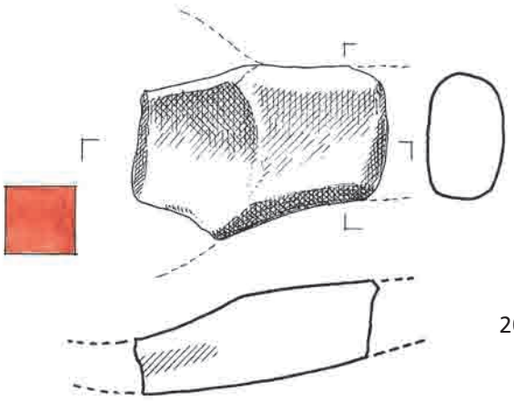

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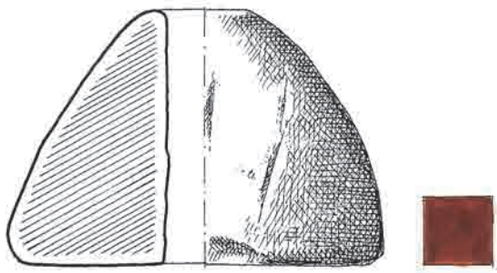

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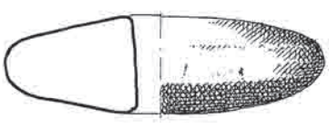

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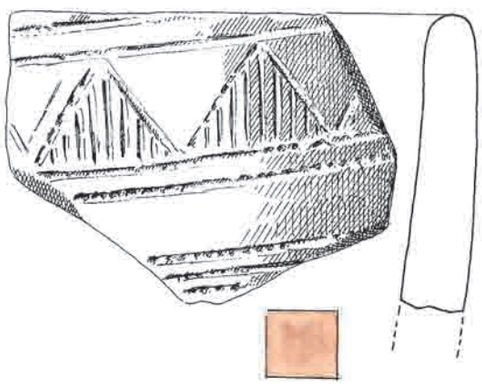

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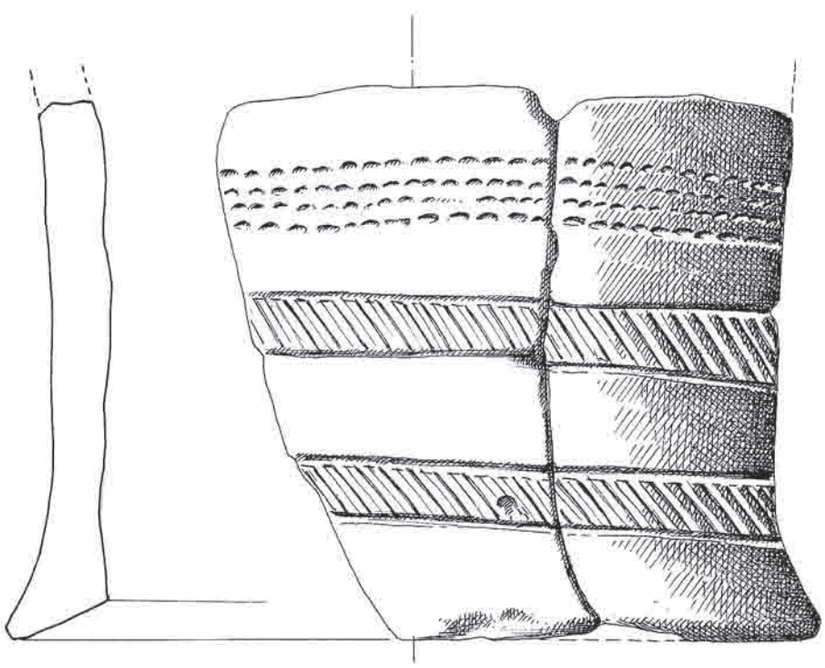

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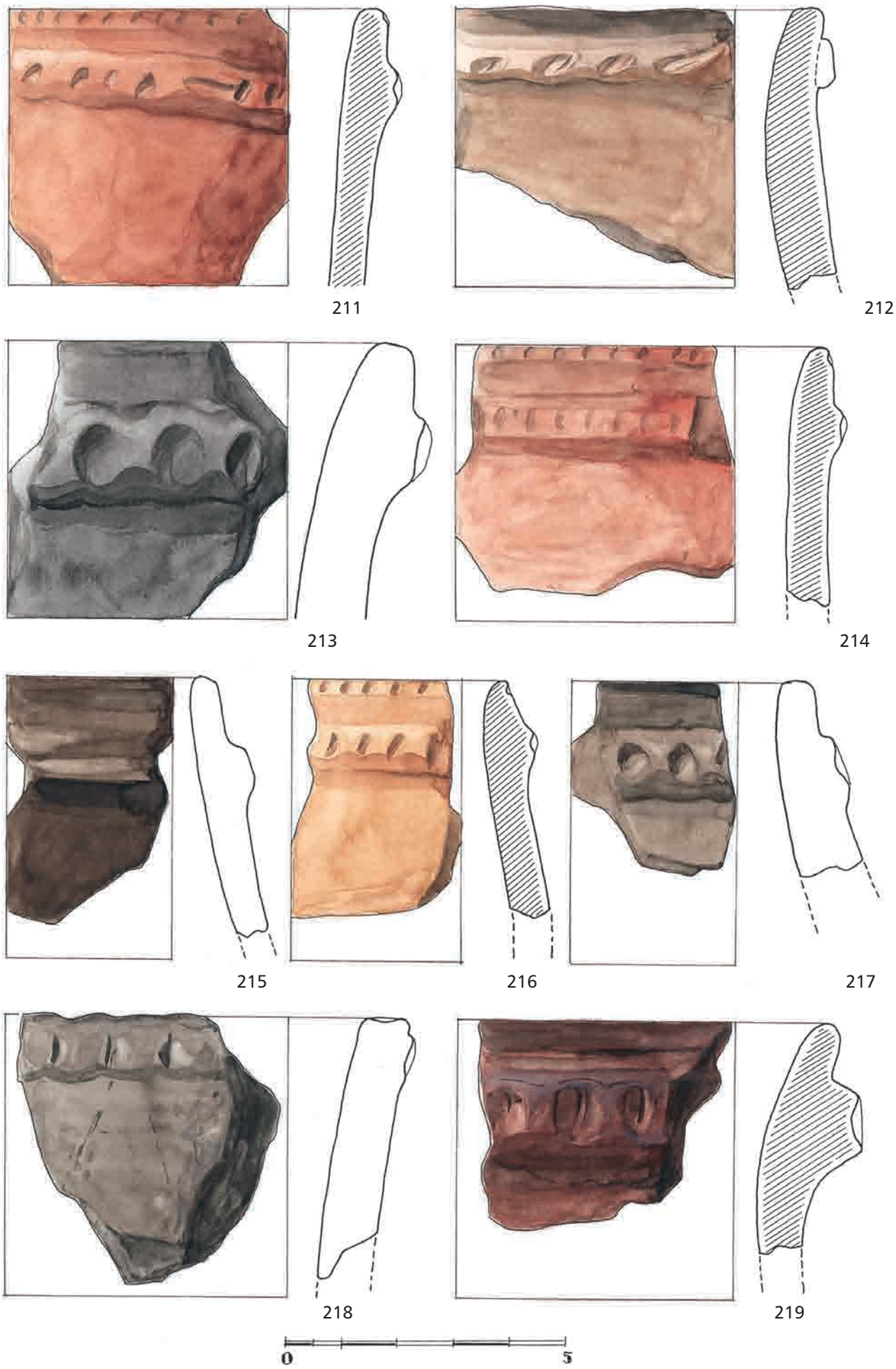

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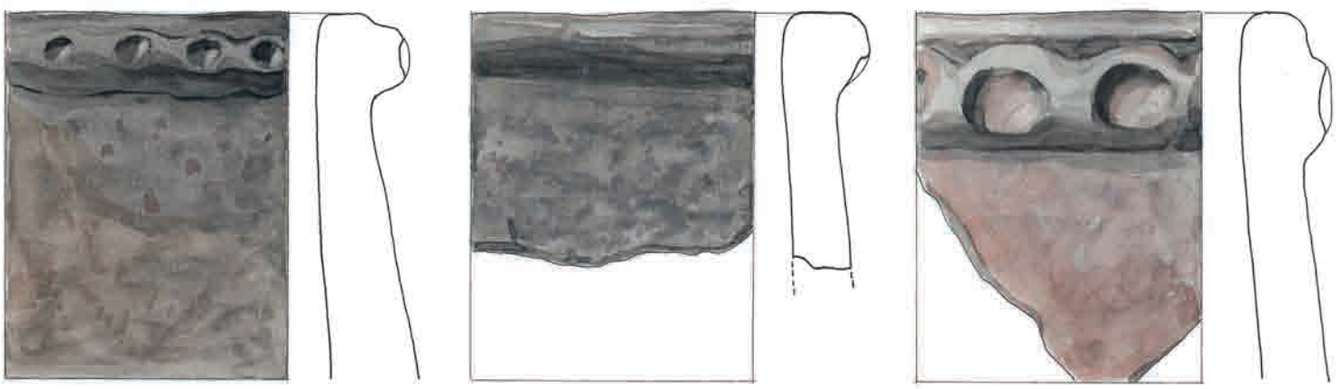

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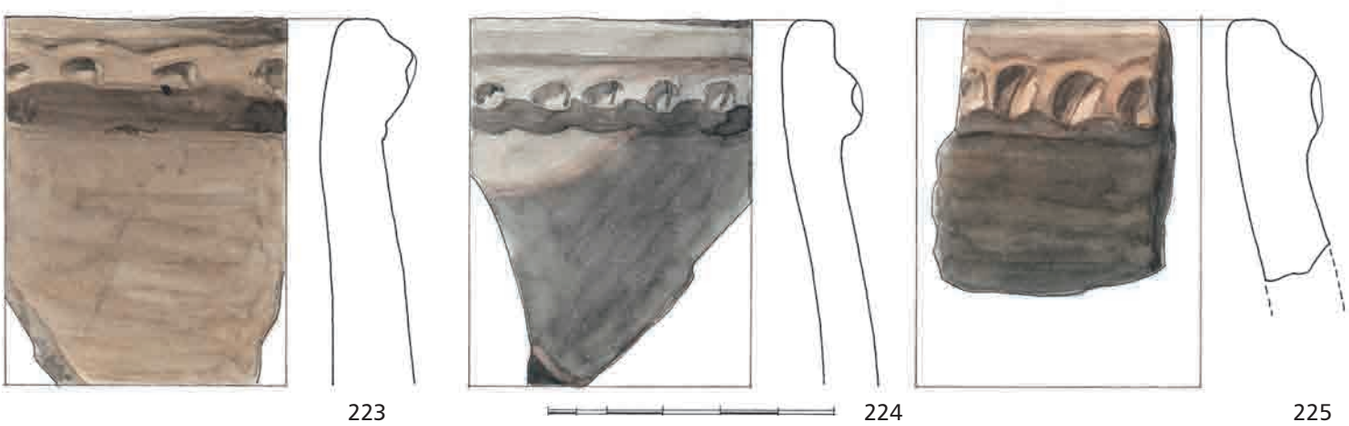

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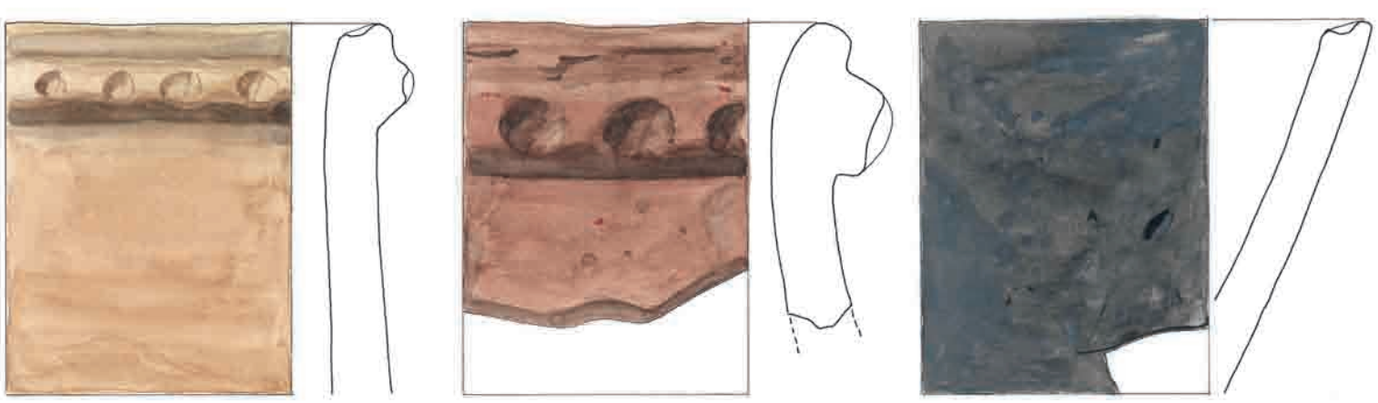

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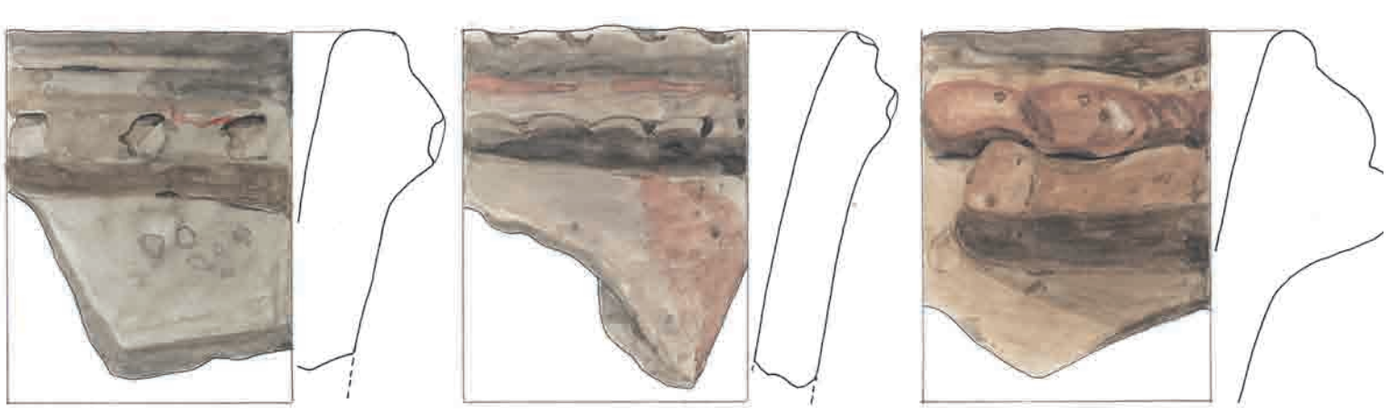

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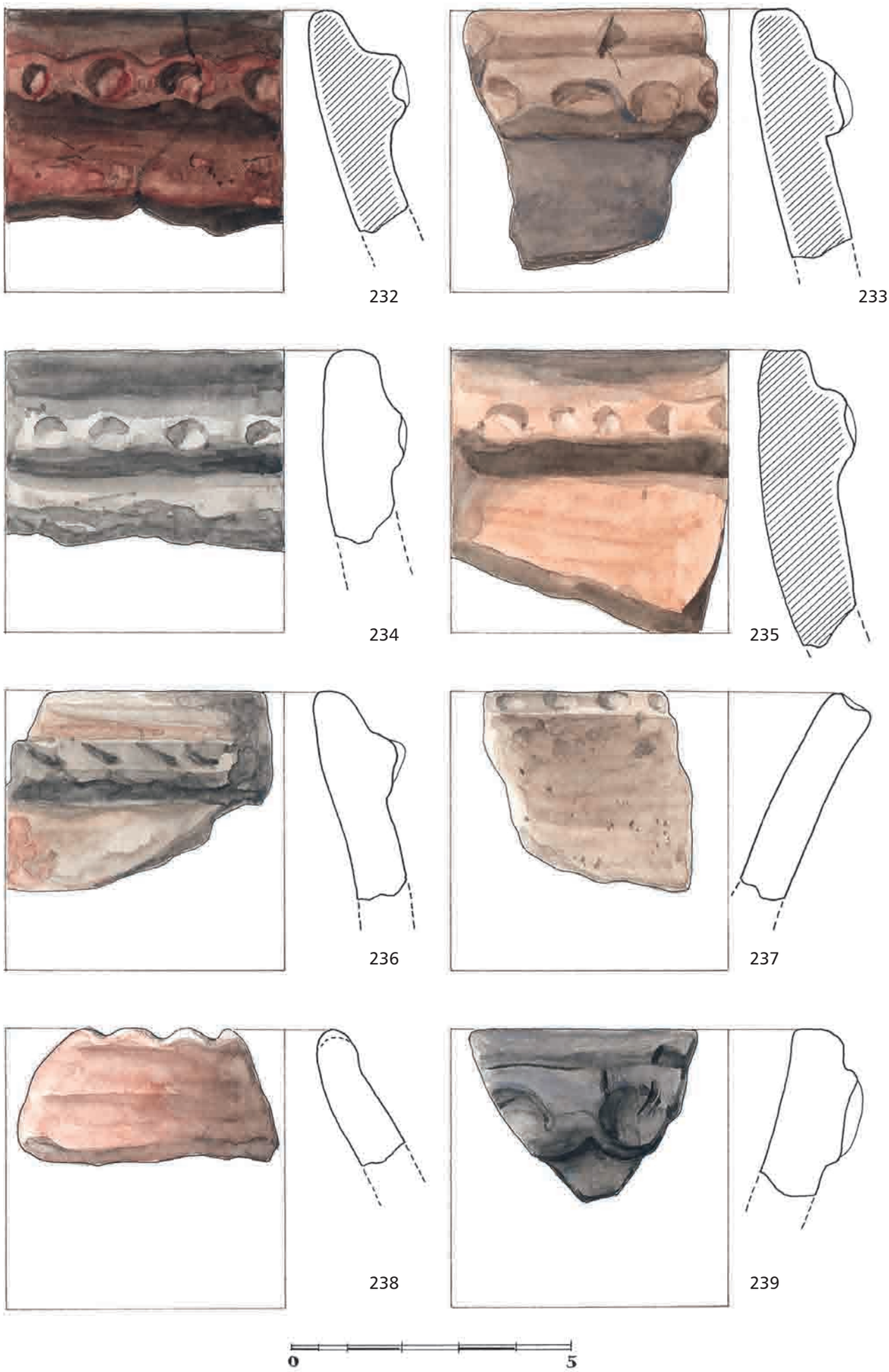

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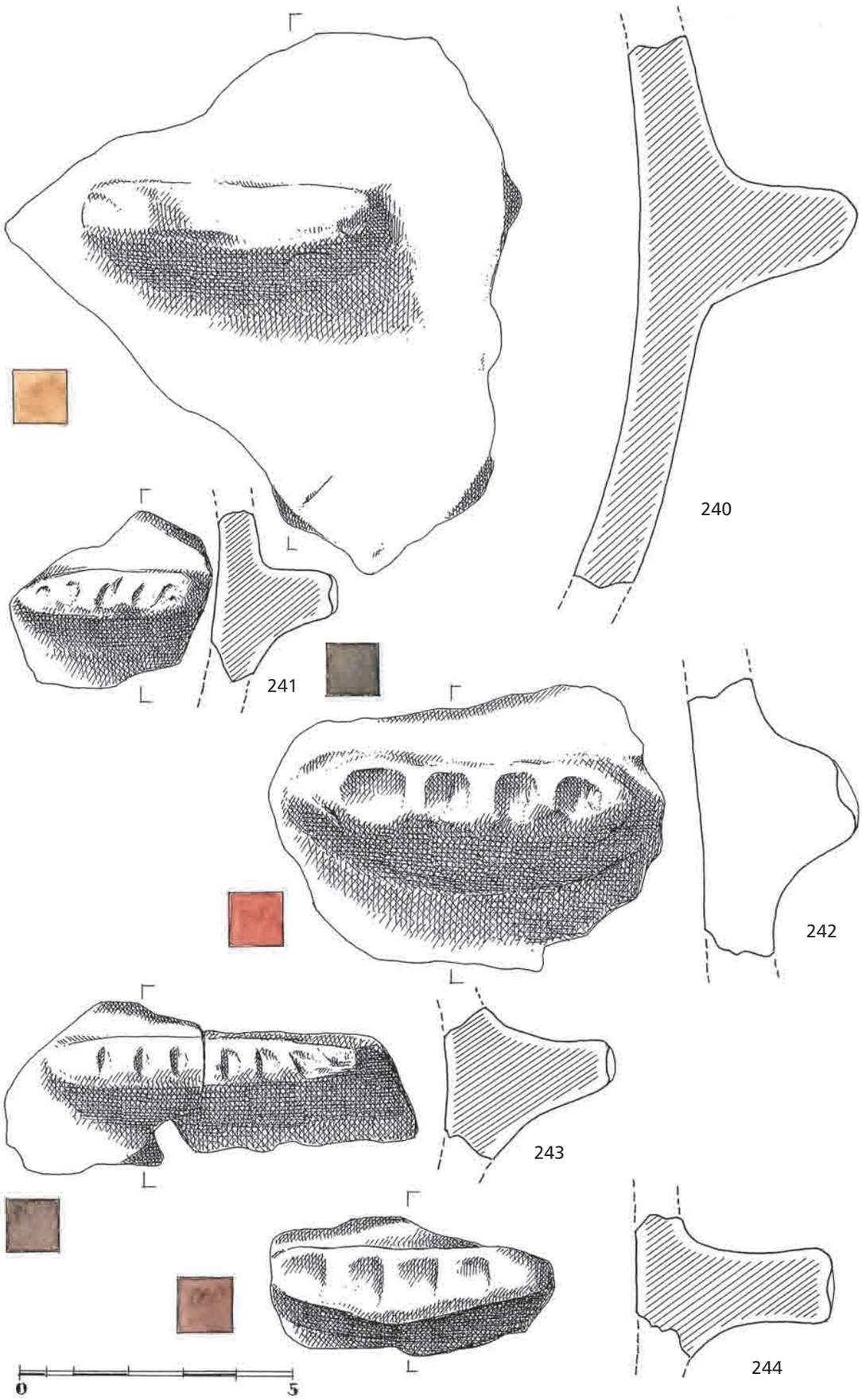

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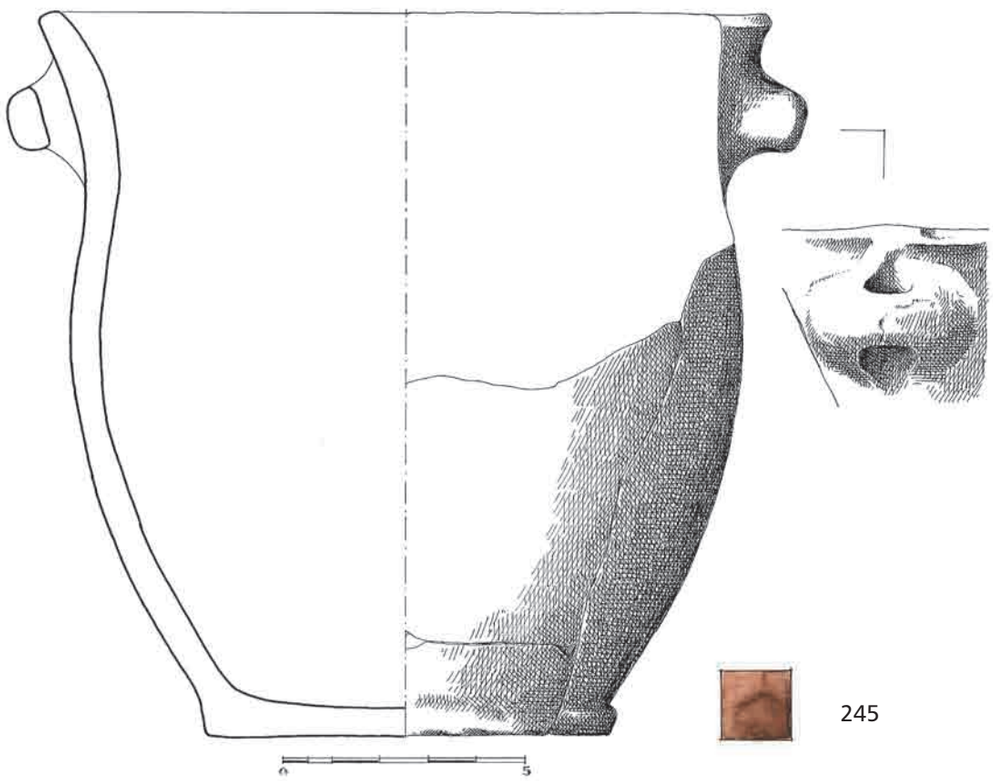


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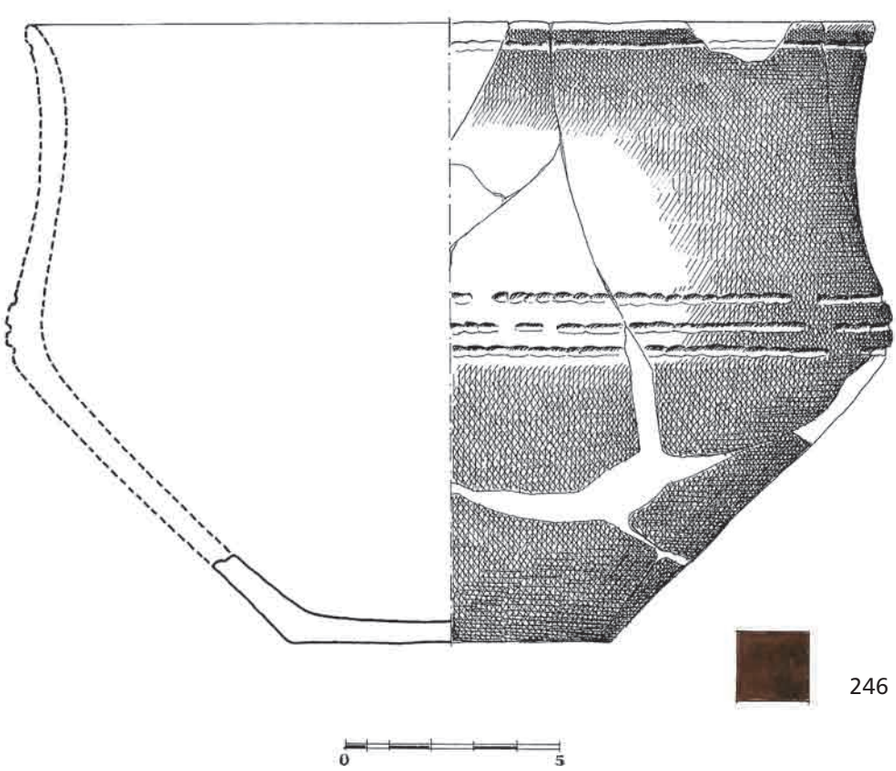


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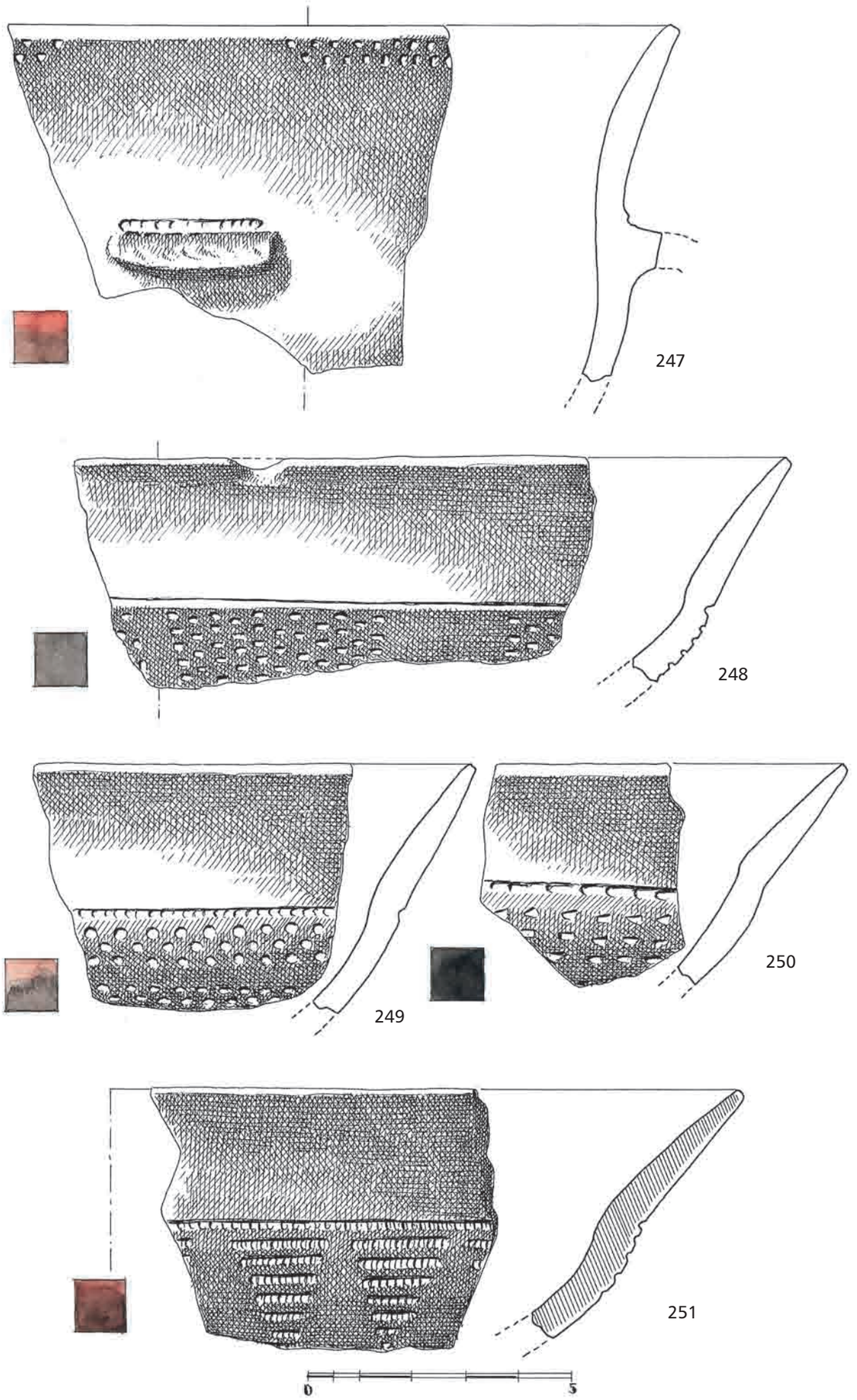

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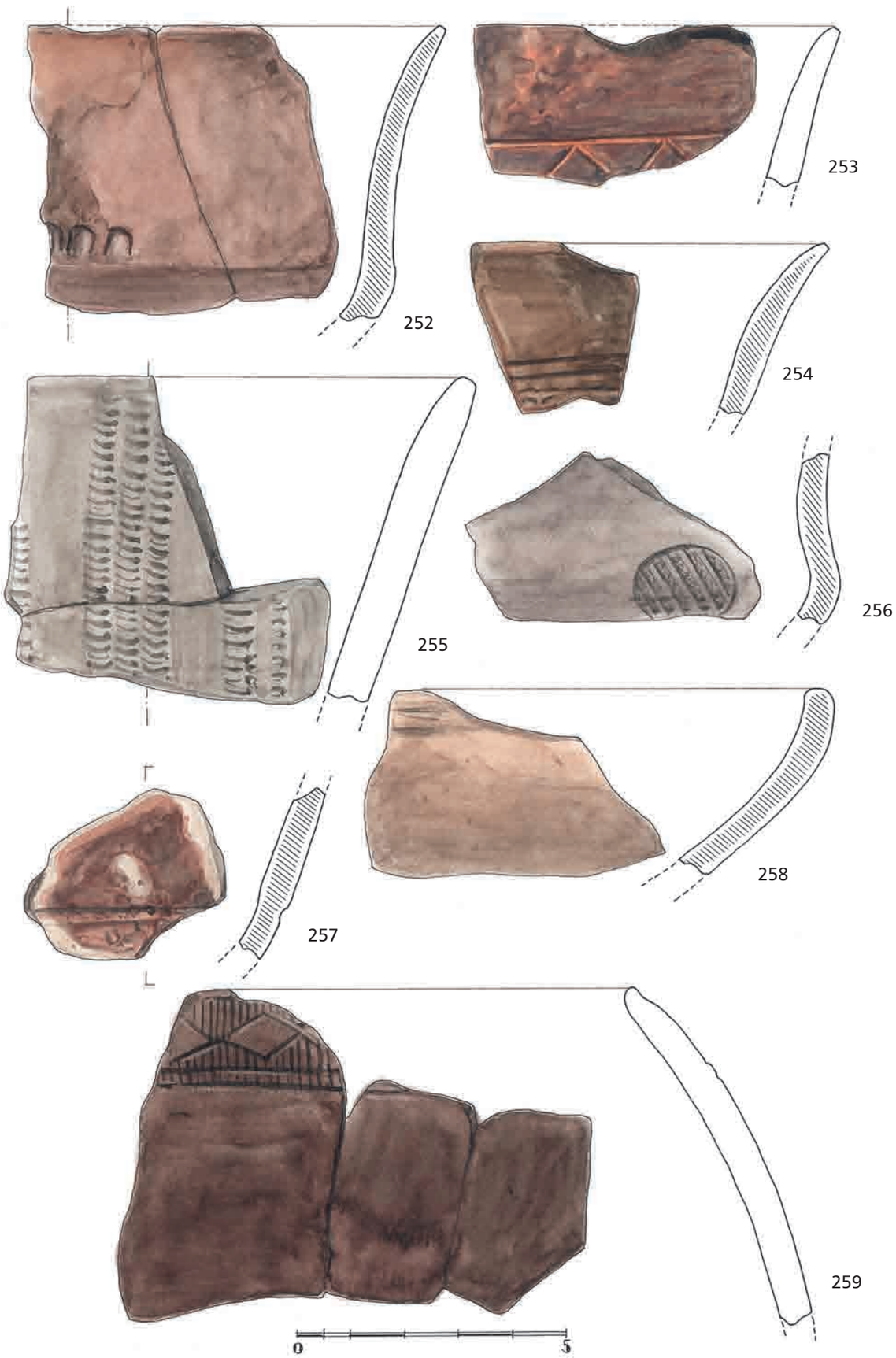
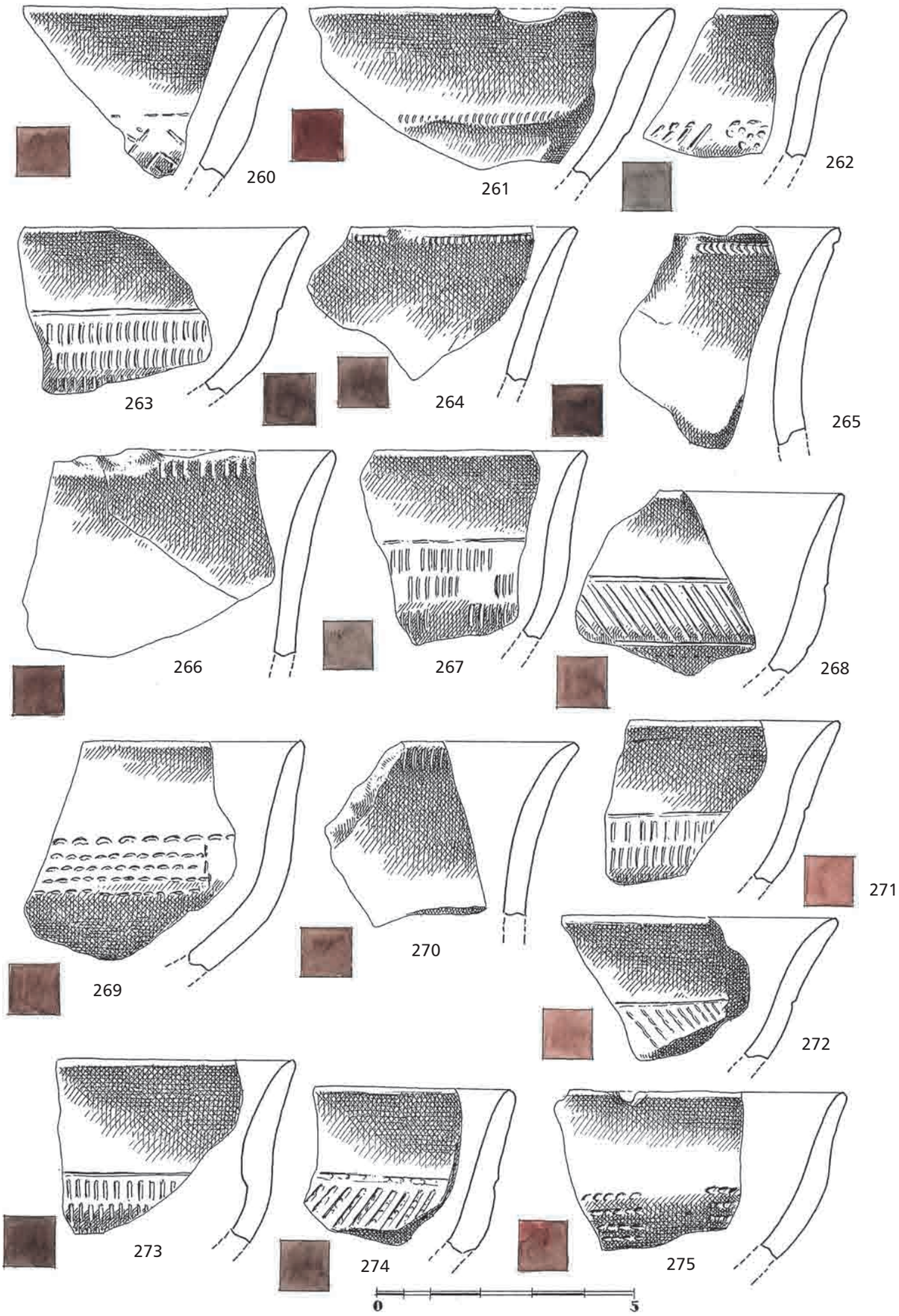


T. I-49.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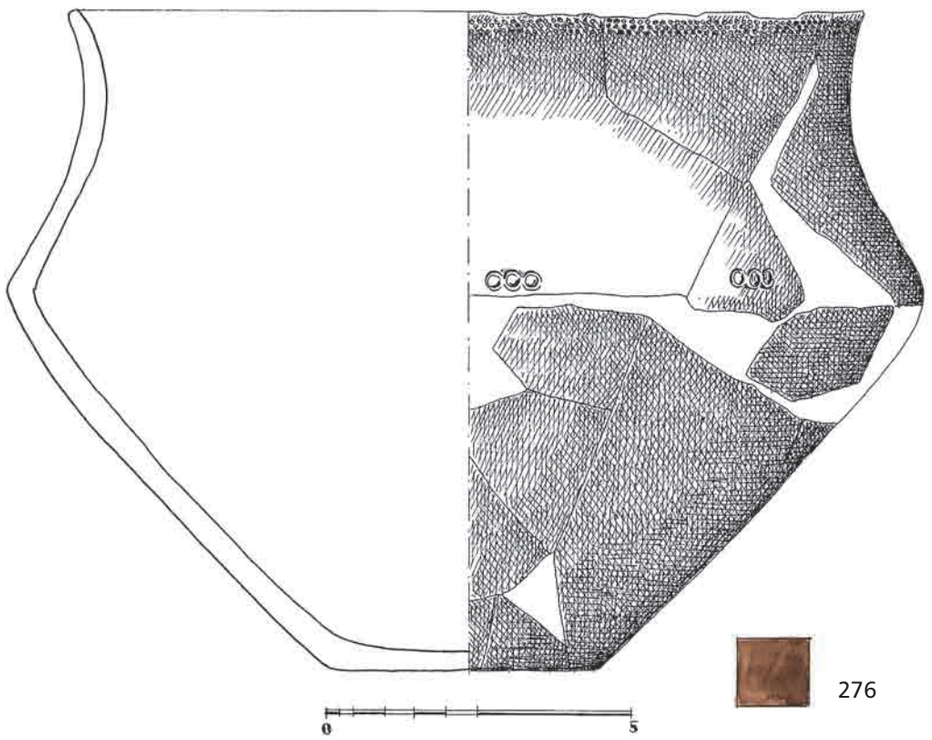
**T. I-50.**

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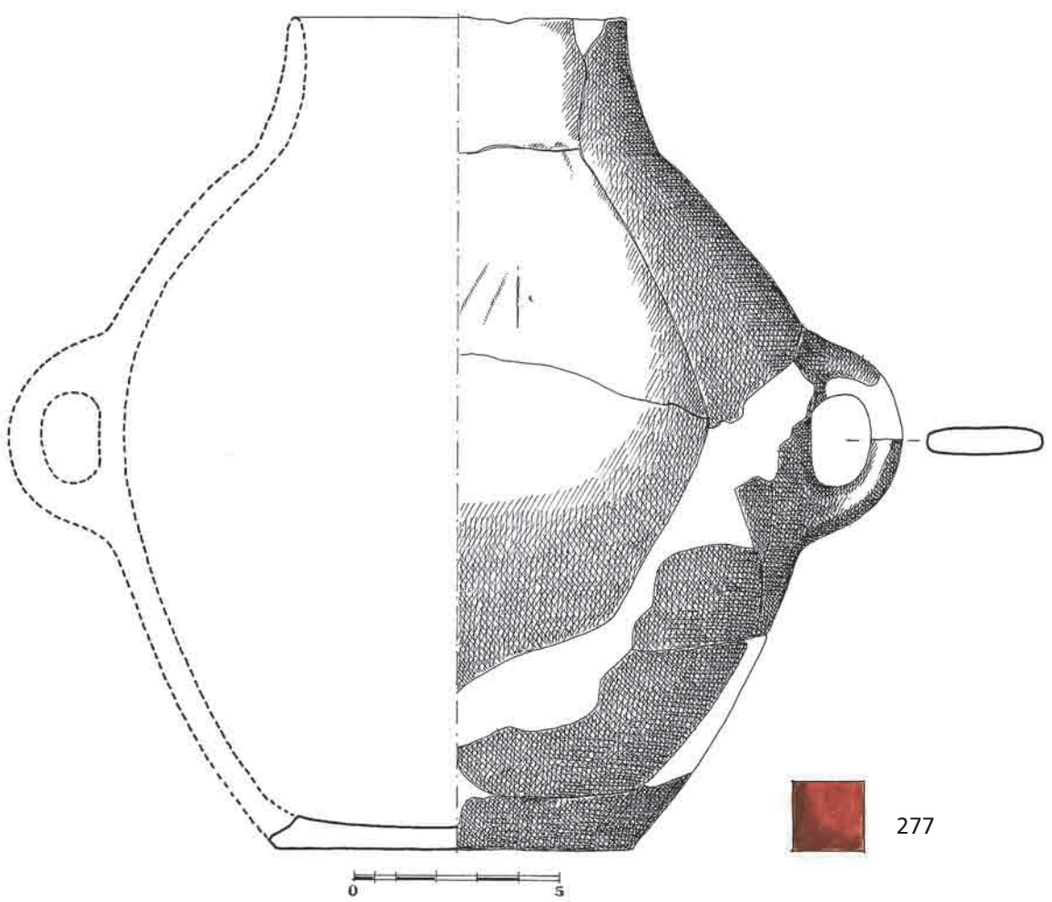


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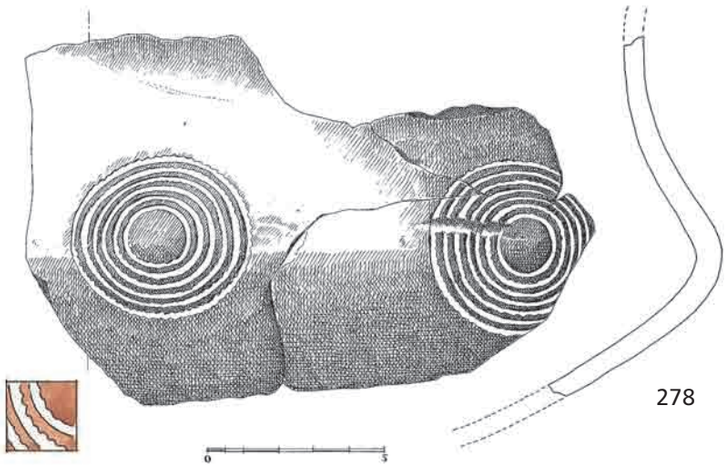
T. I-51.

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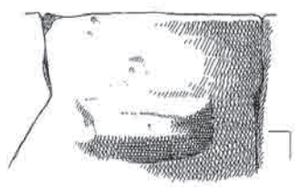

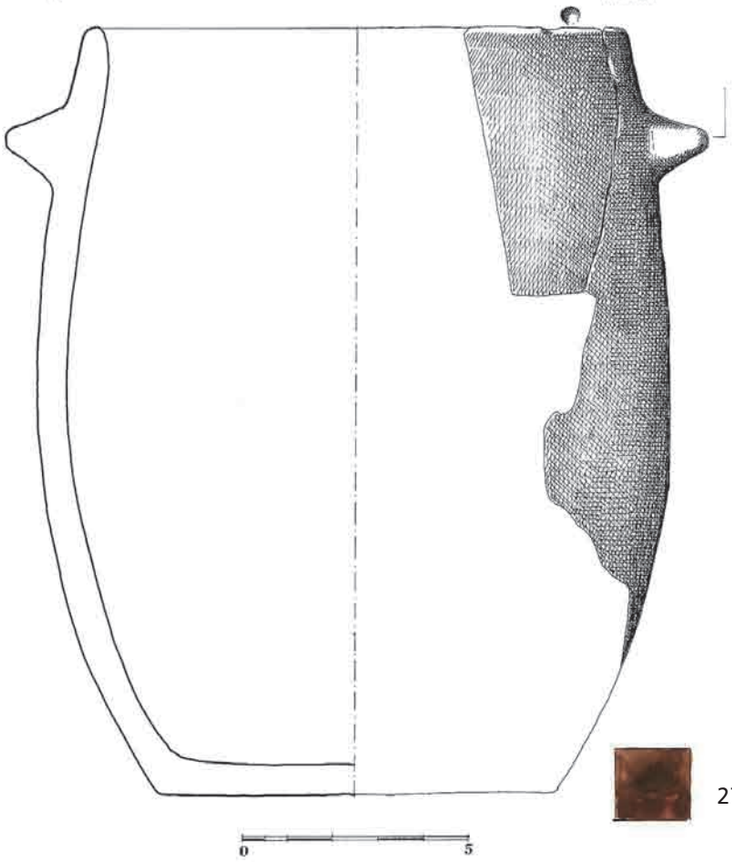


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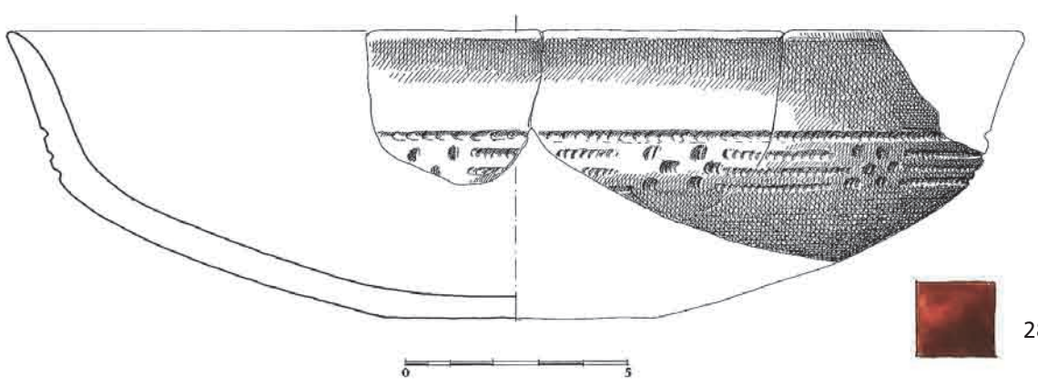


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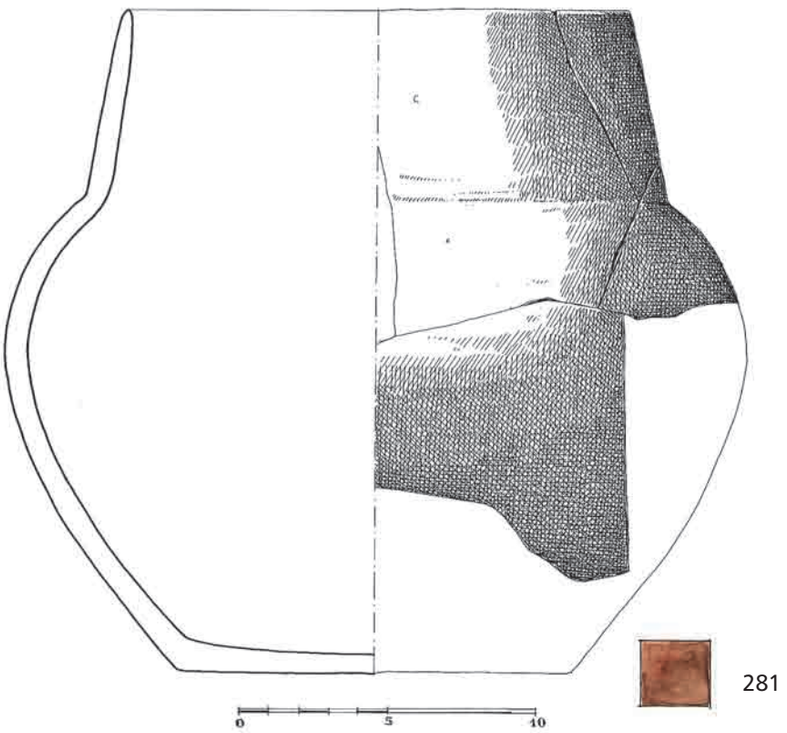


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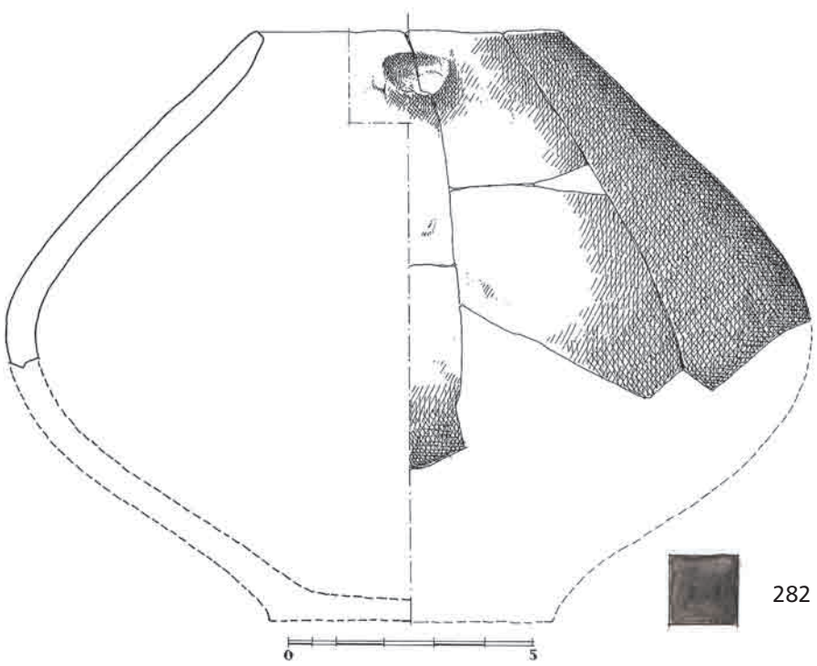


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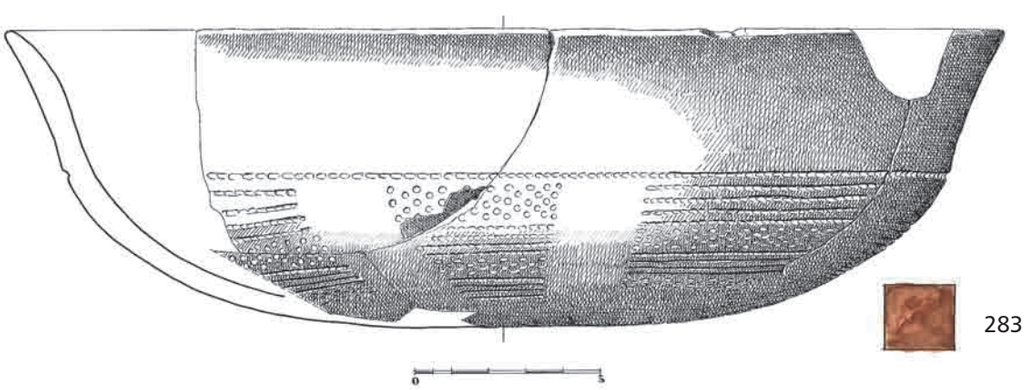


283

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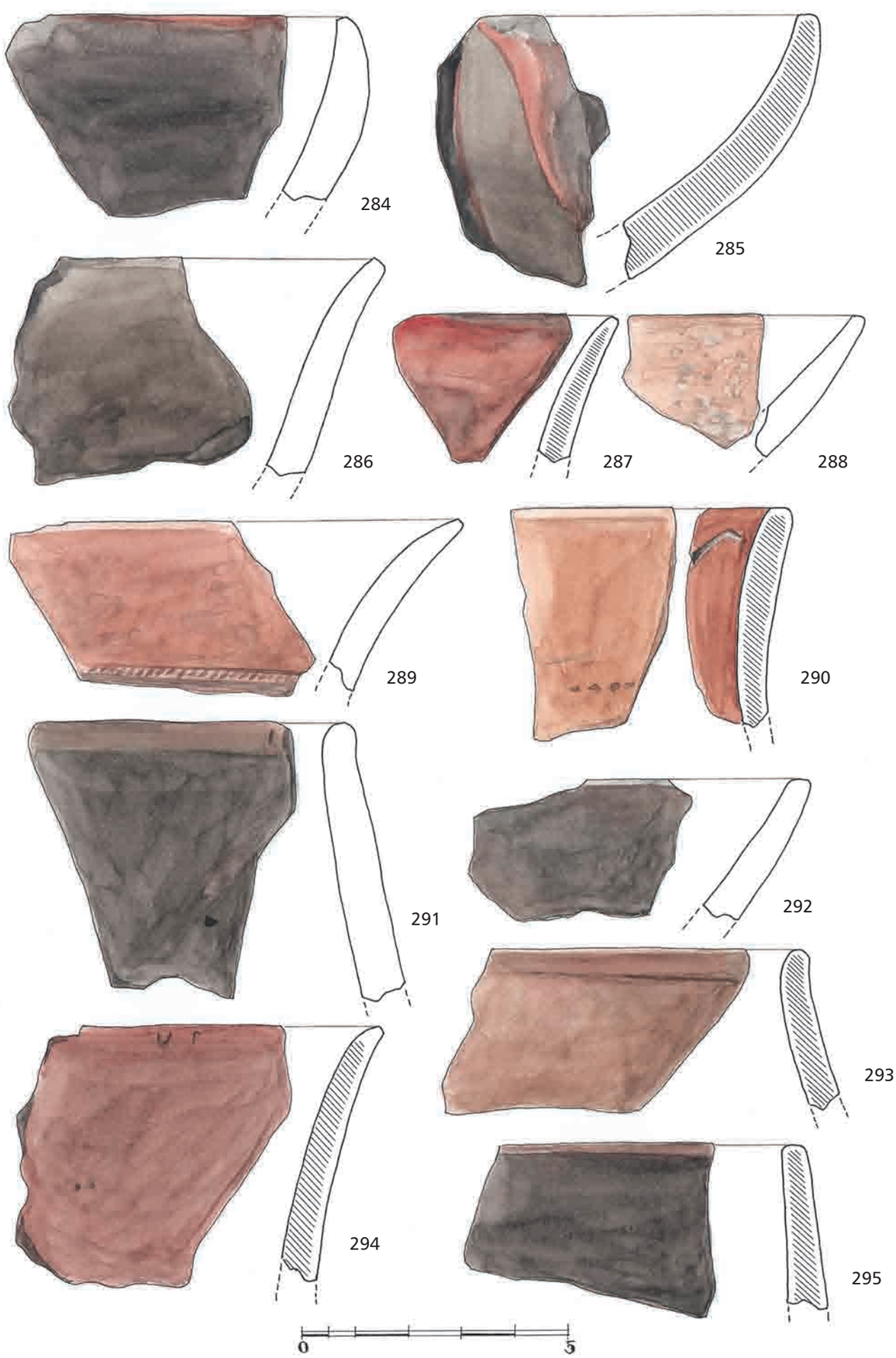

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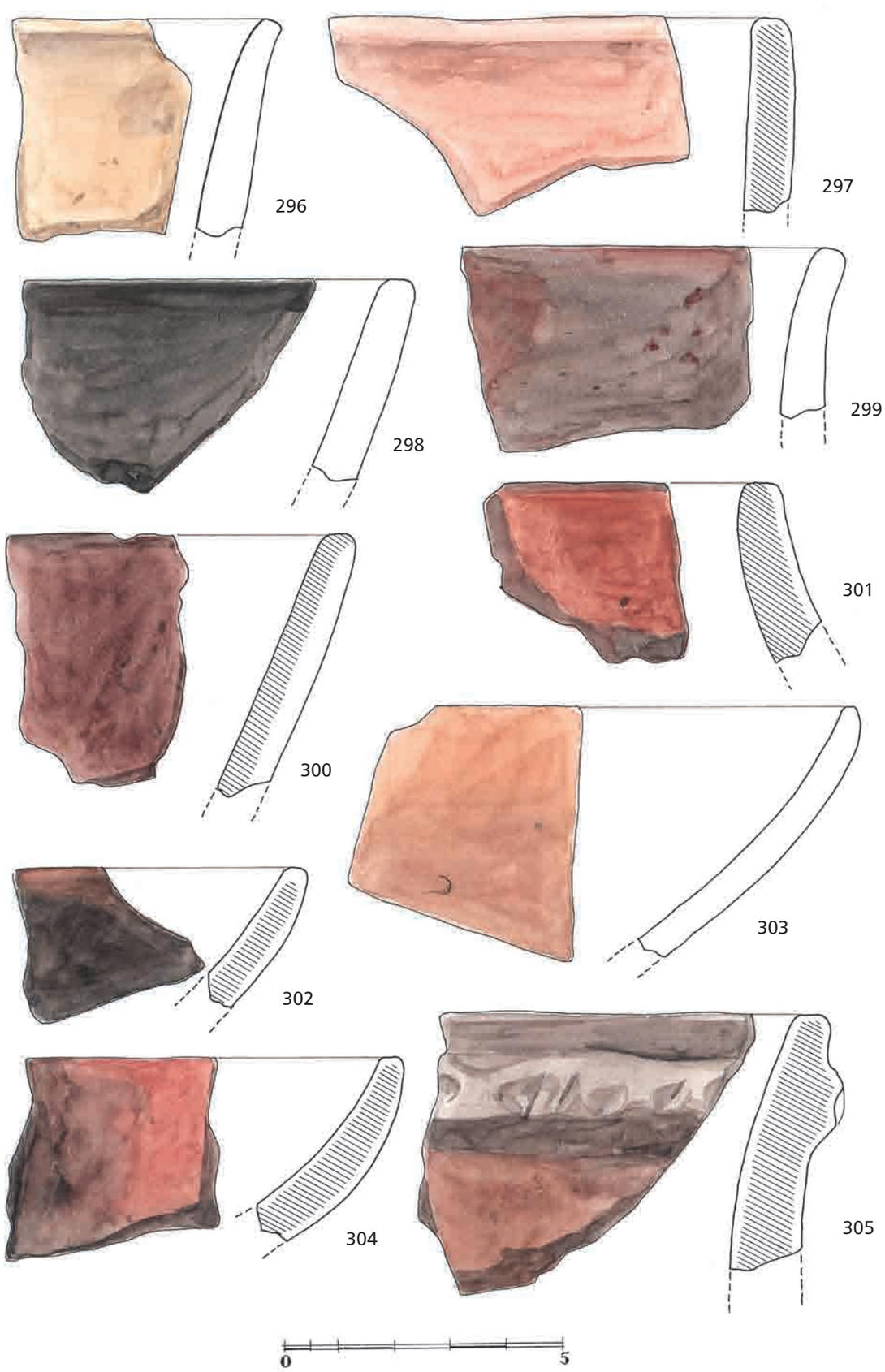
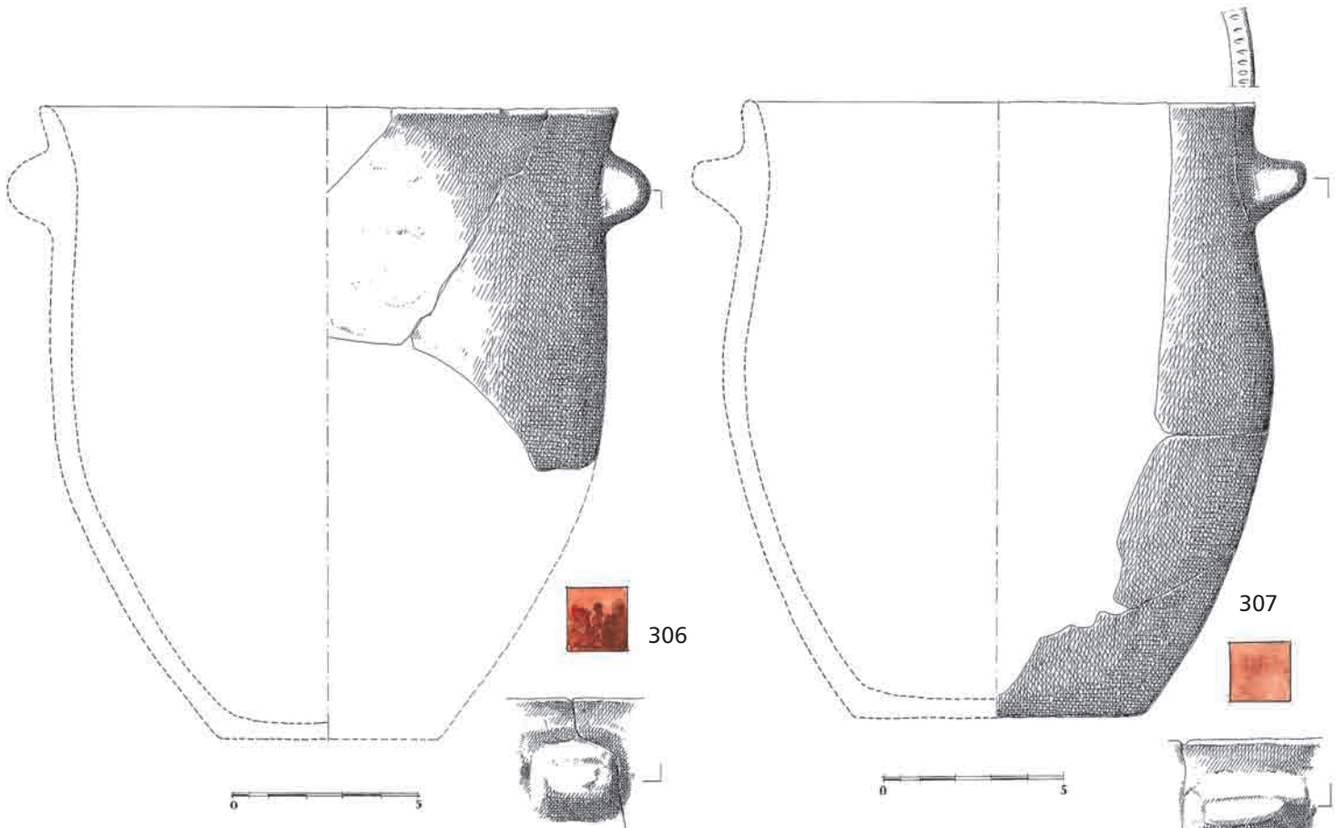
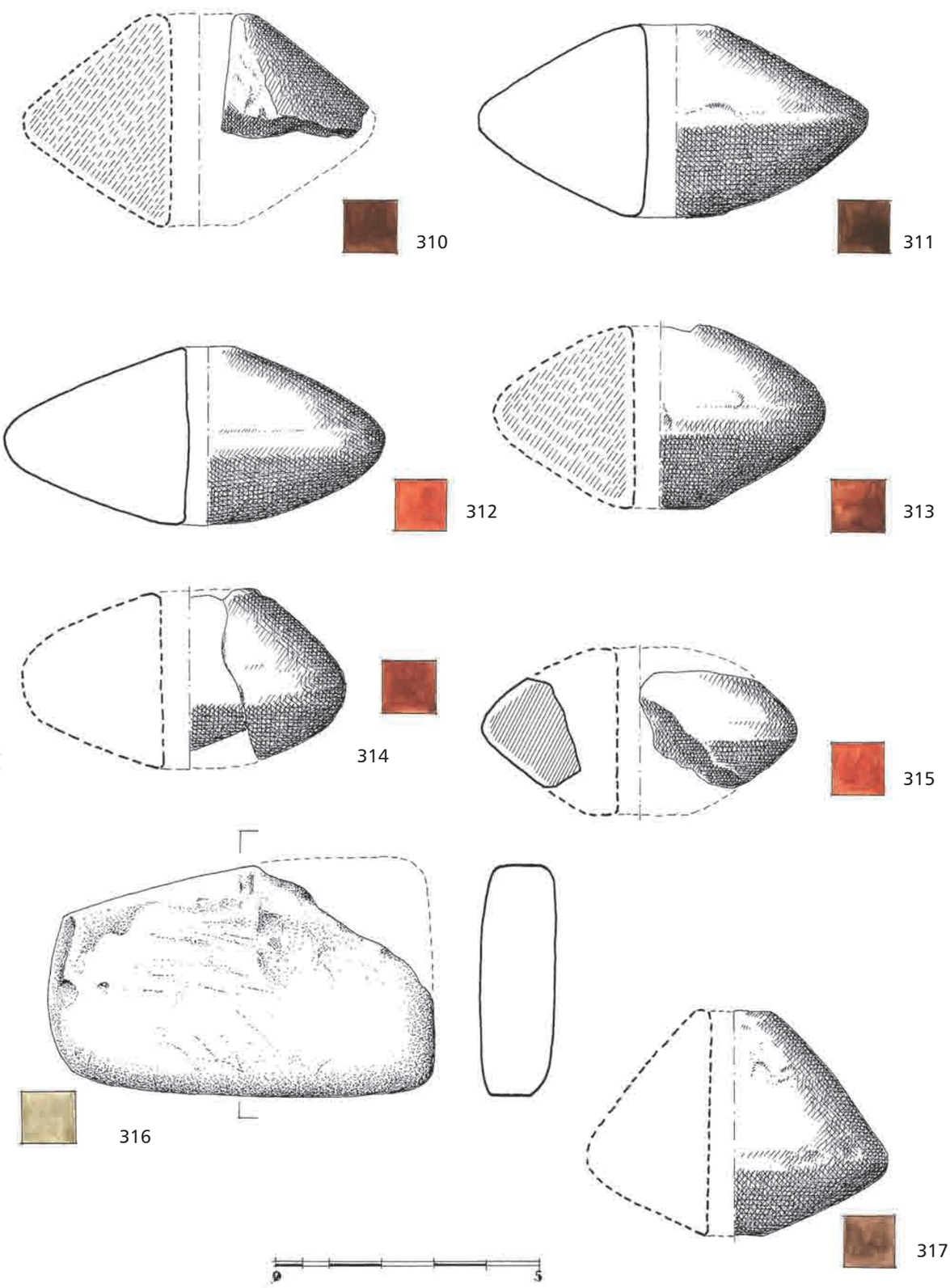


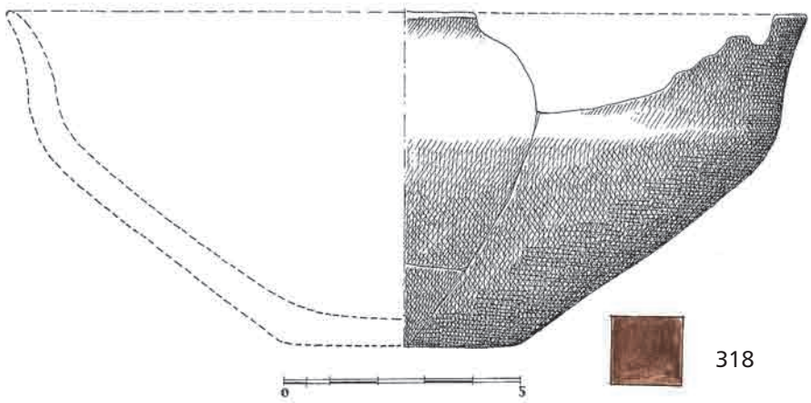
T. I-55.



**T. I-56.**



T. I-57.

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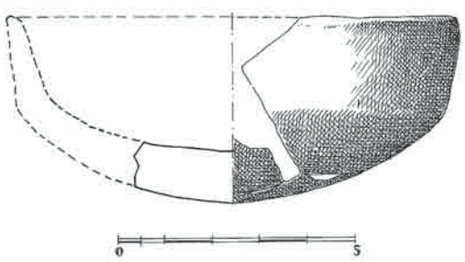


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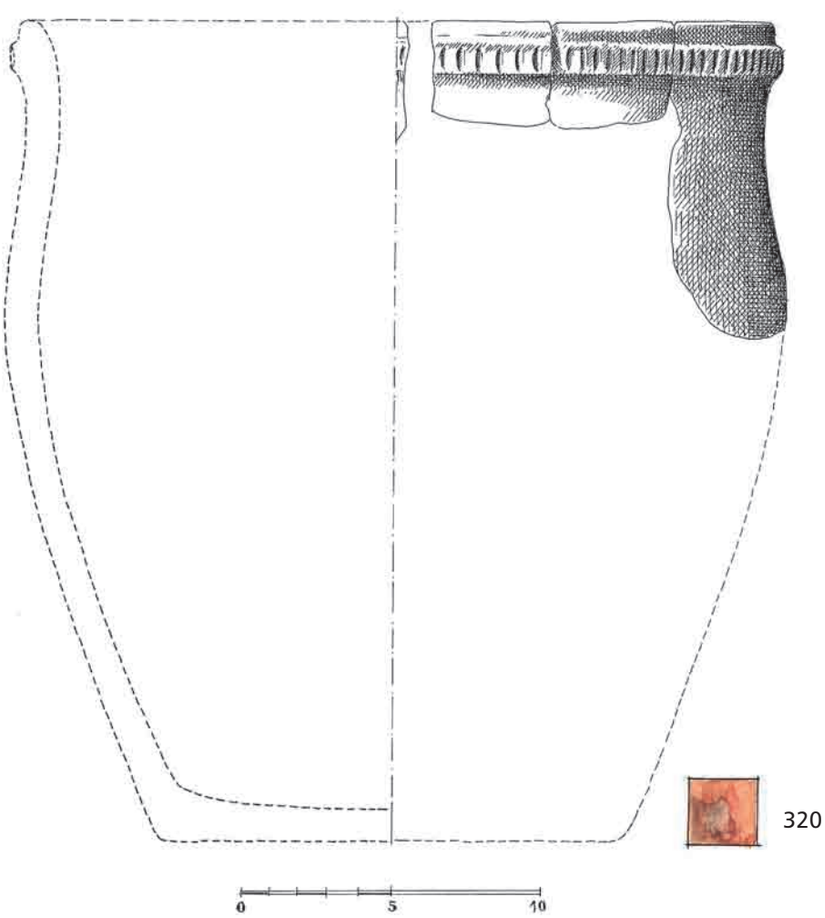


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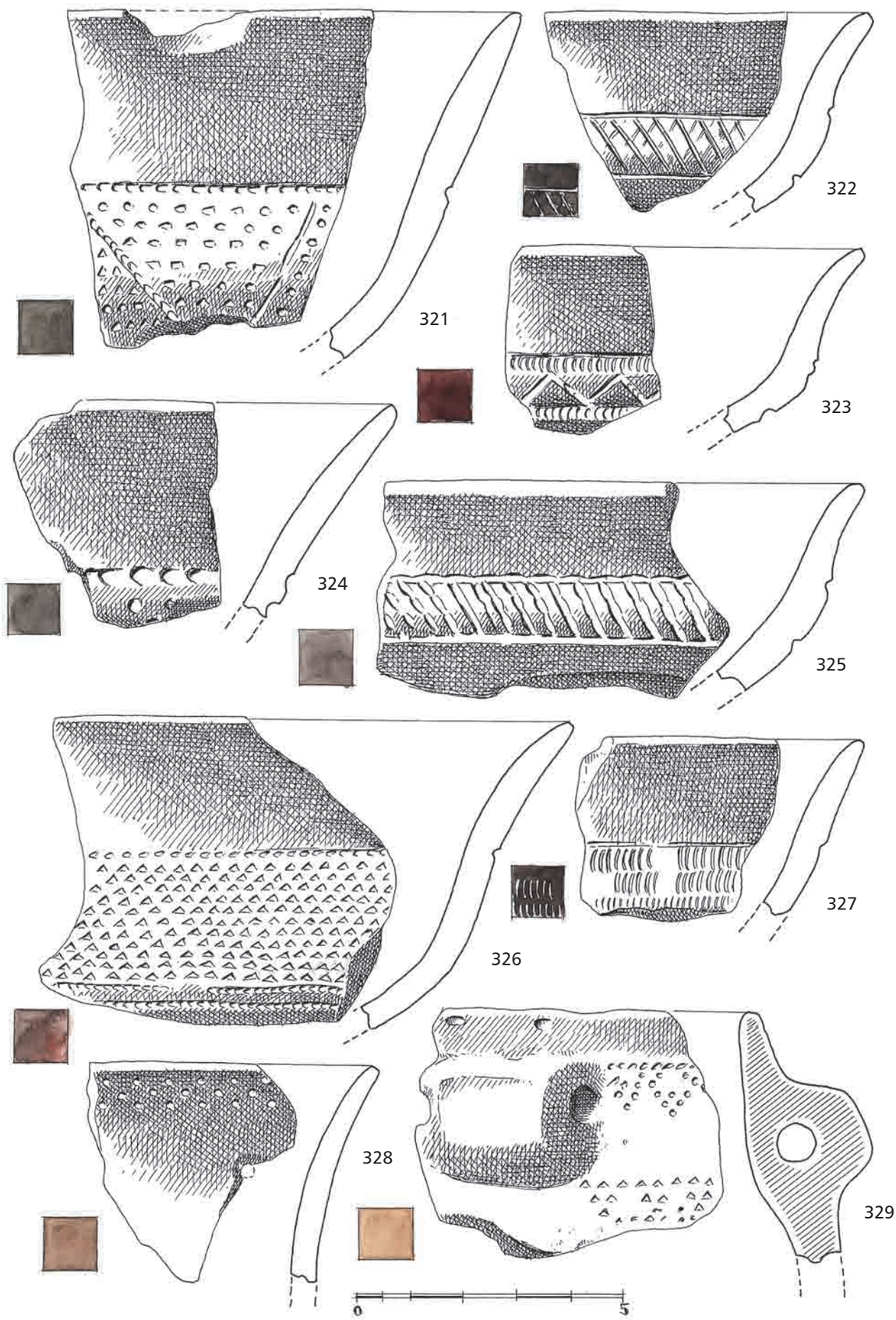
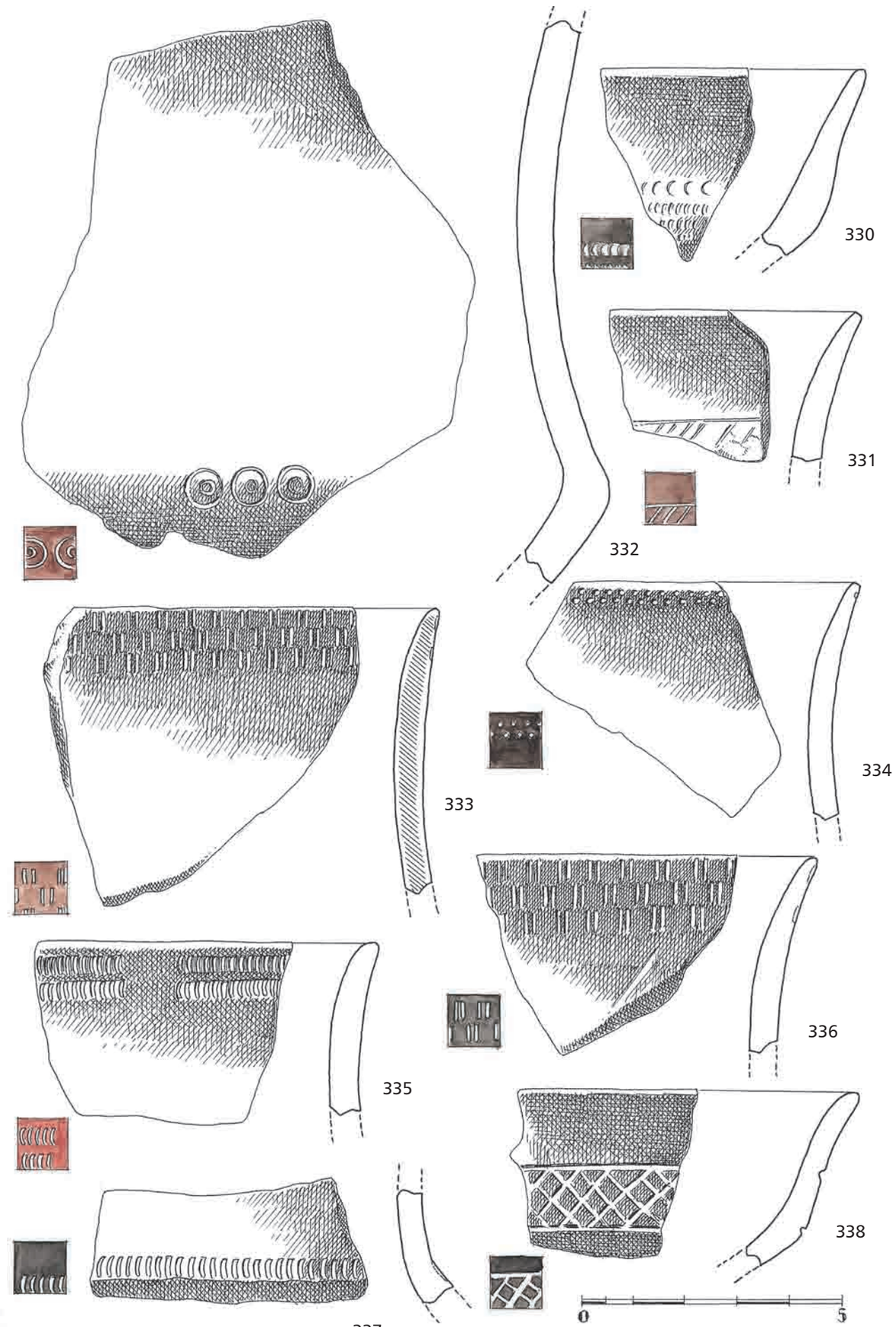
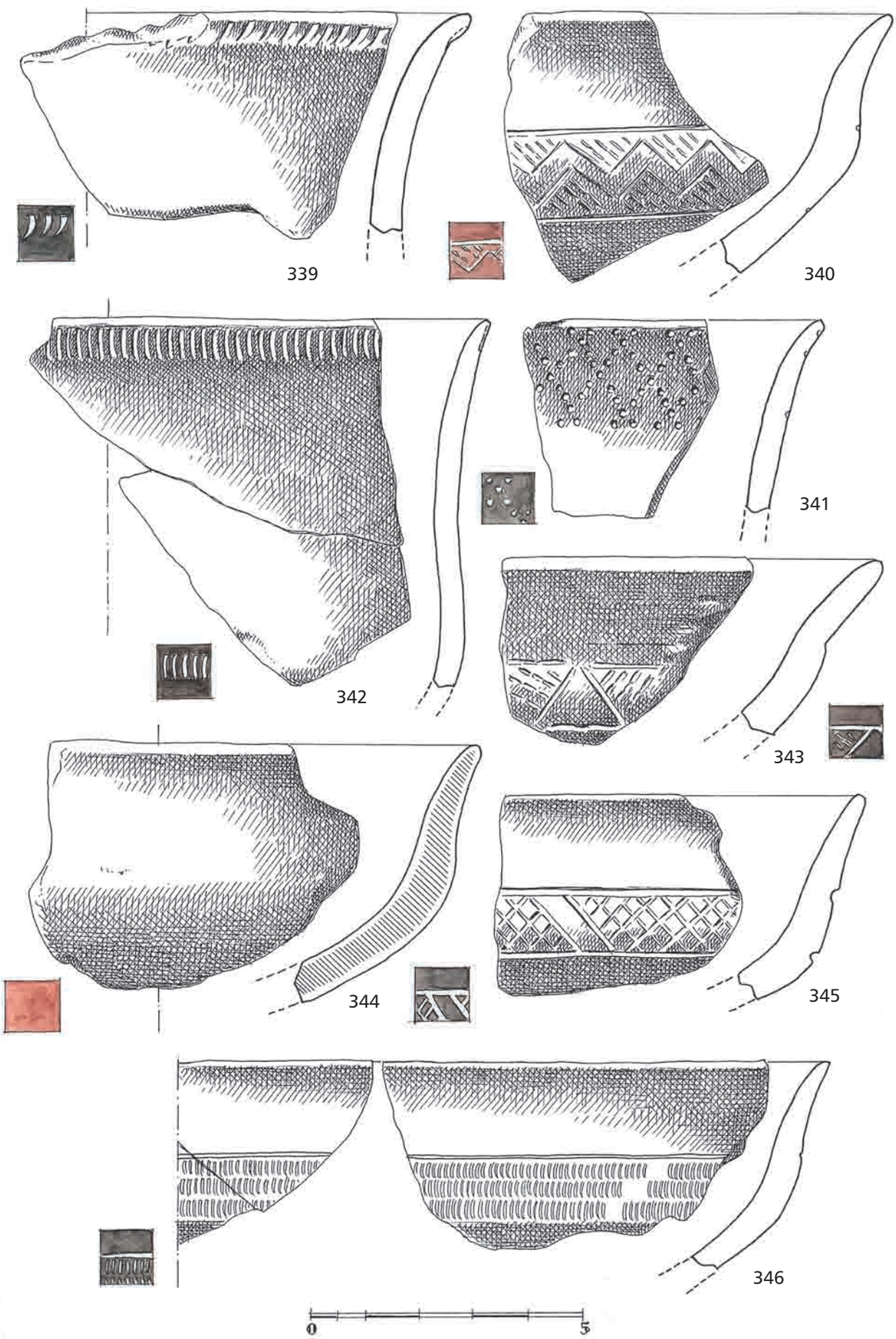


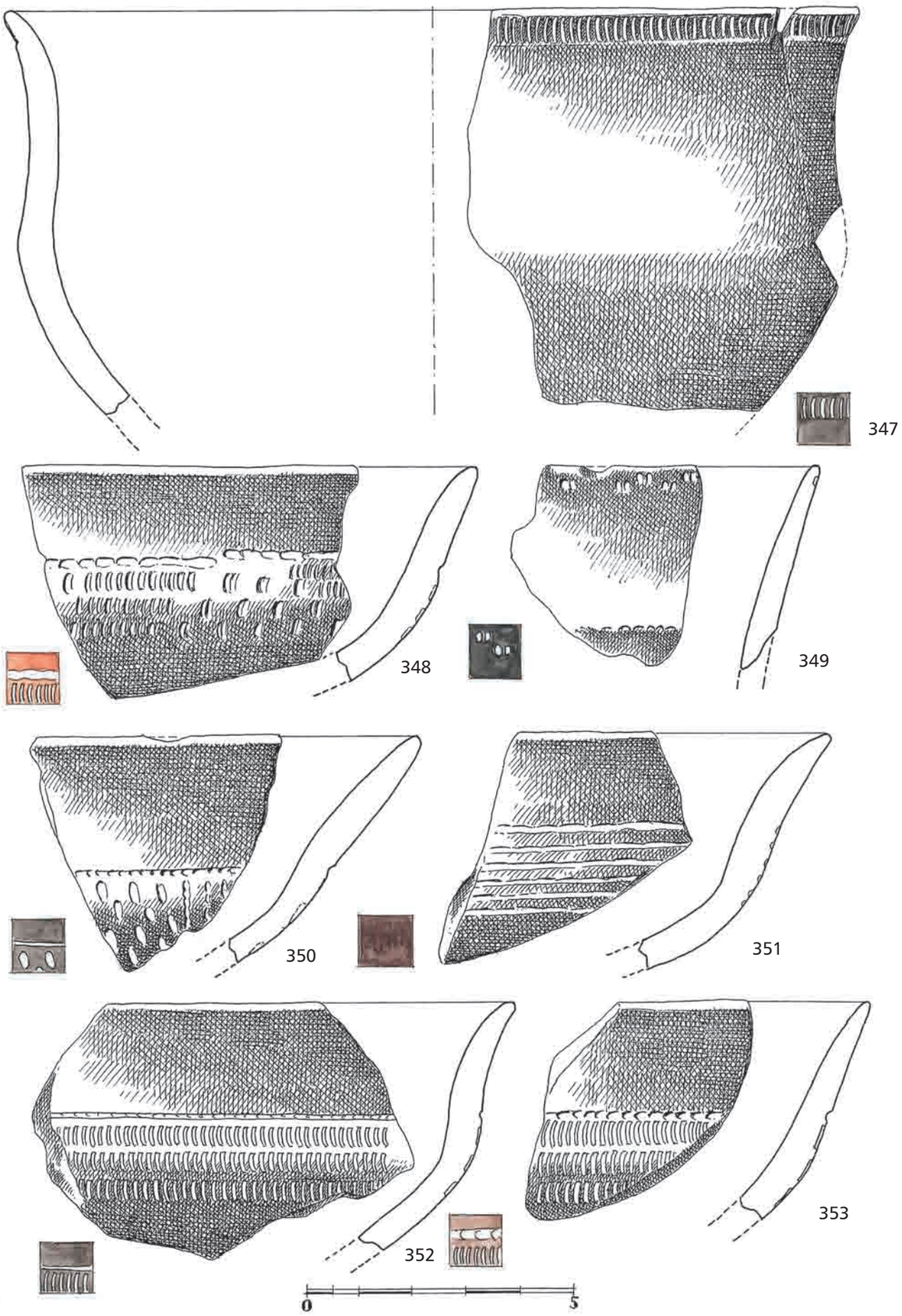
T. I-59.



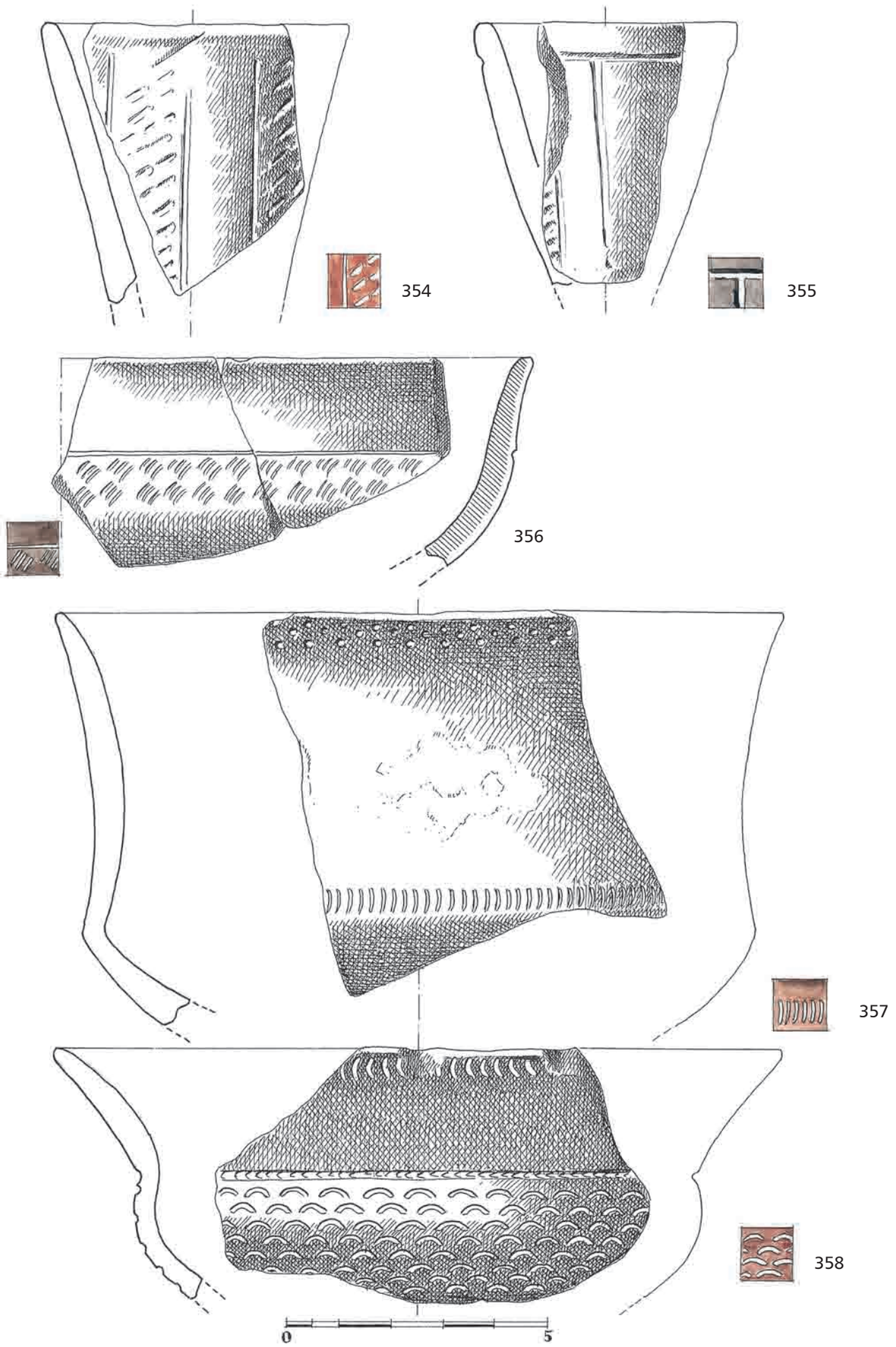
**T. I-60.**



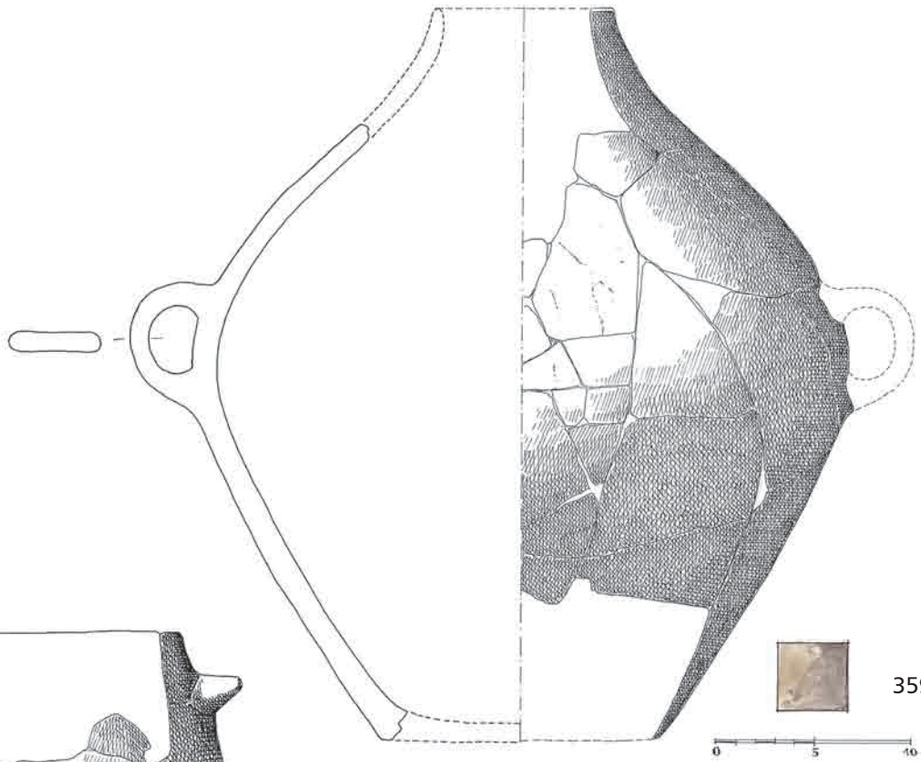
T. I-61.



**T. I-62.**



T. I-63.

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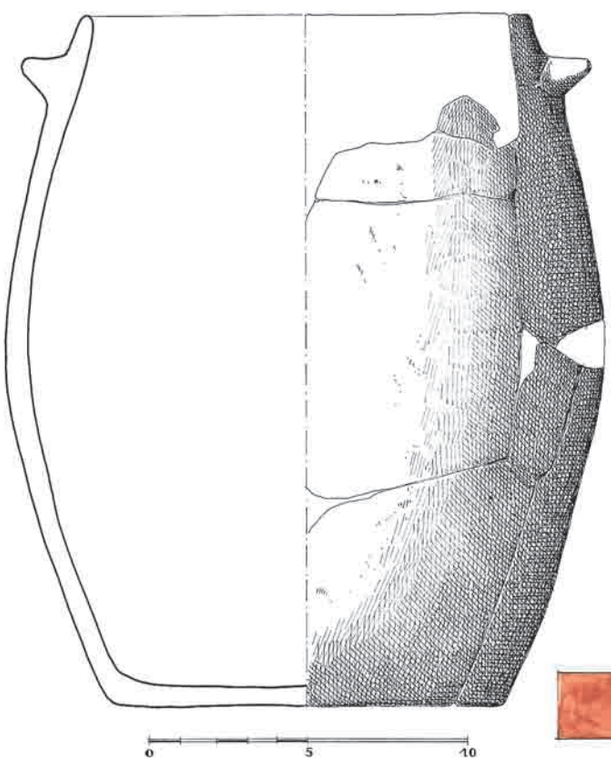


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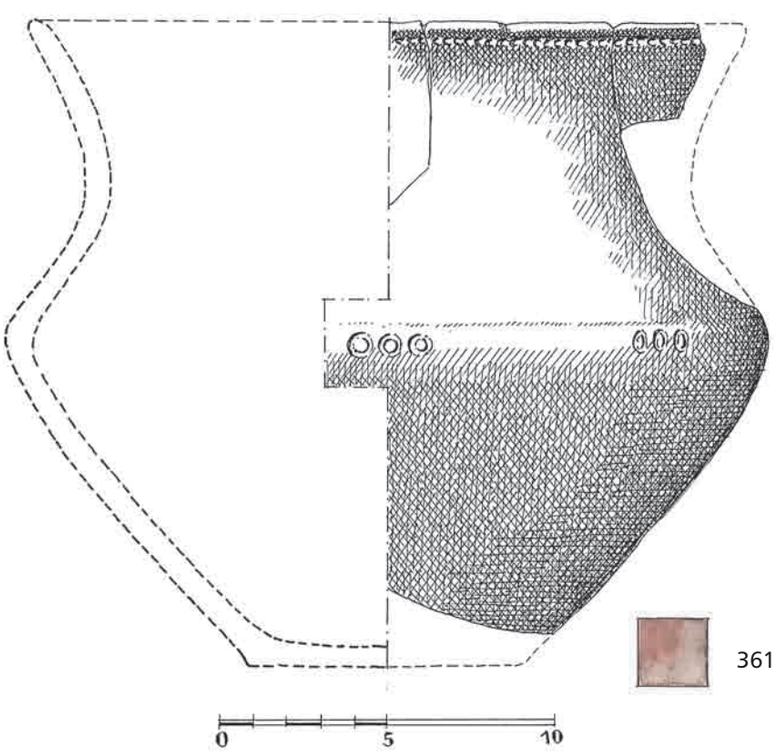


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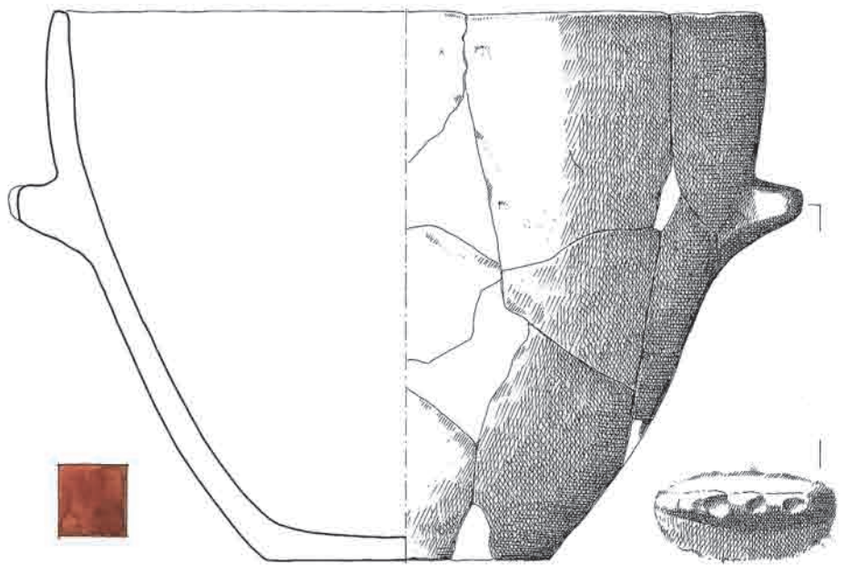

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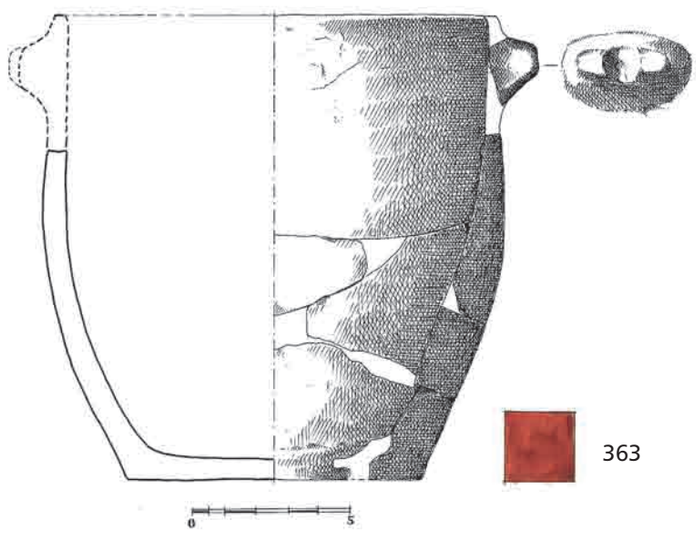

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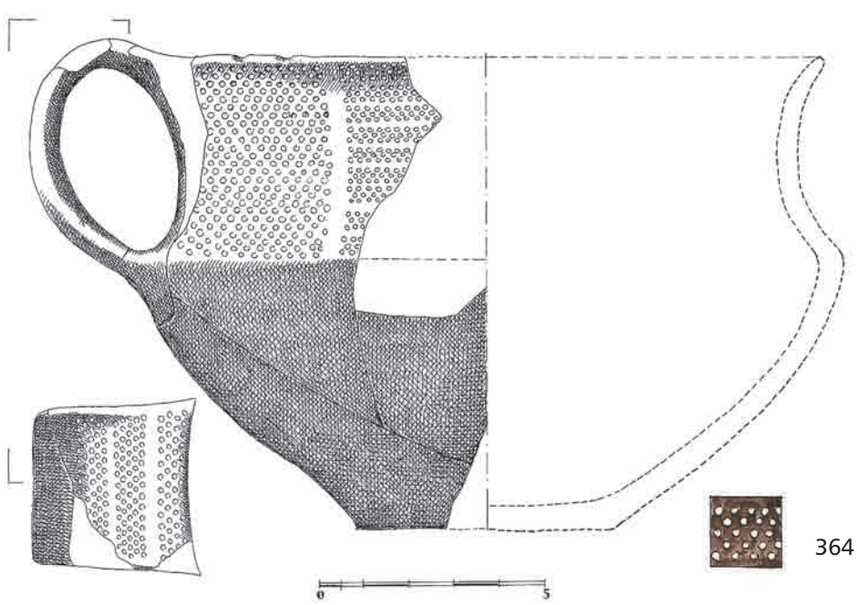

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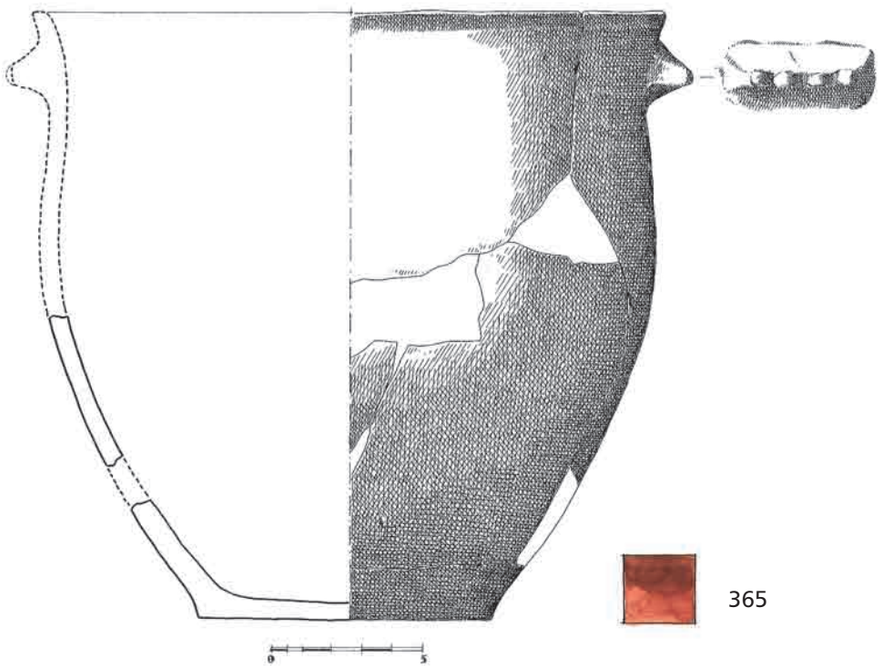


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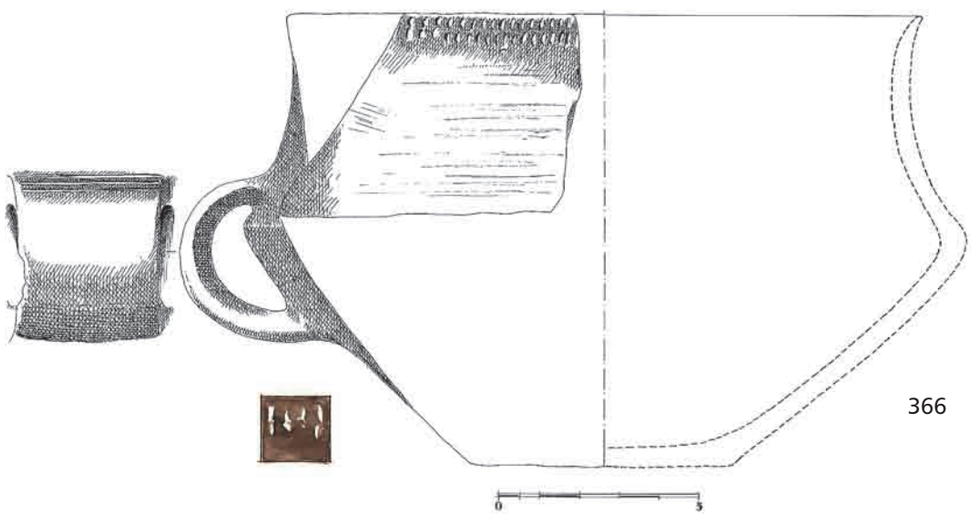


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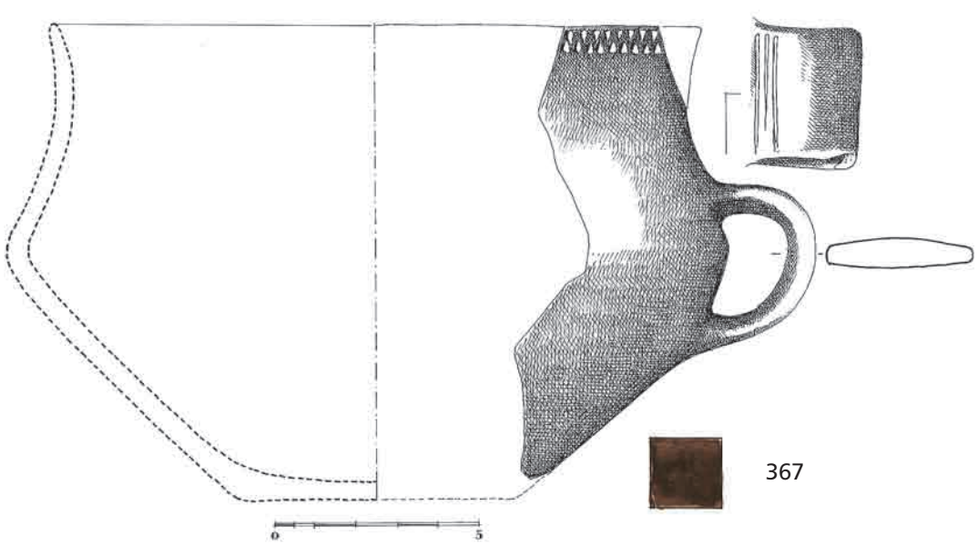


367

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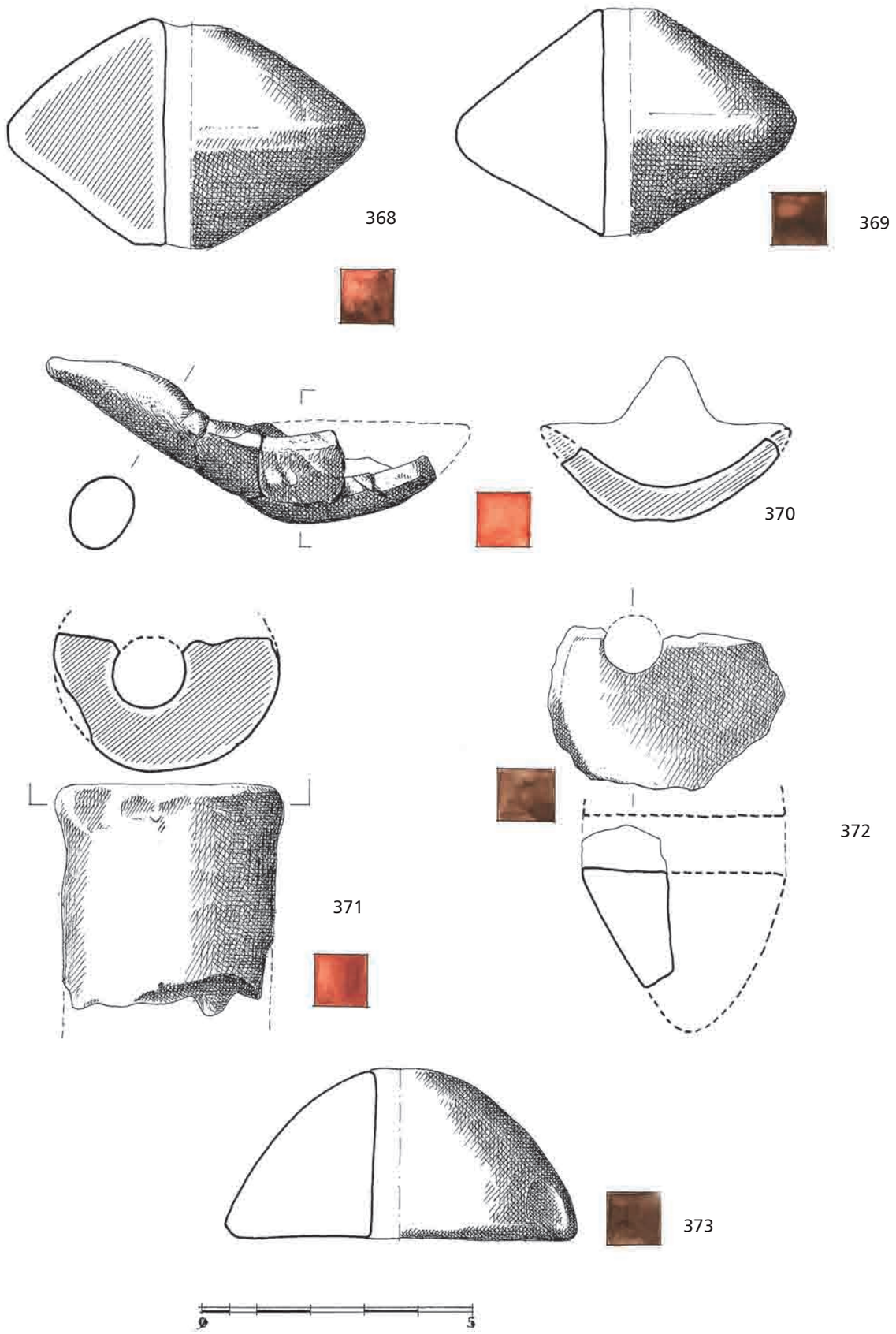
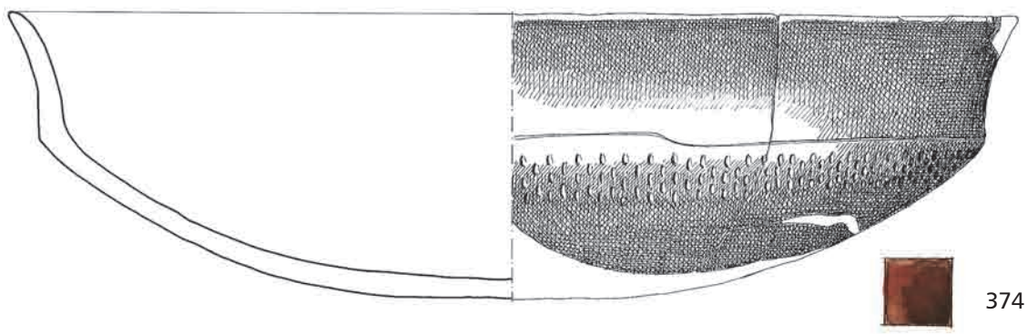
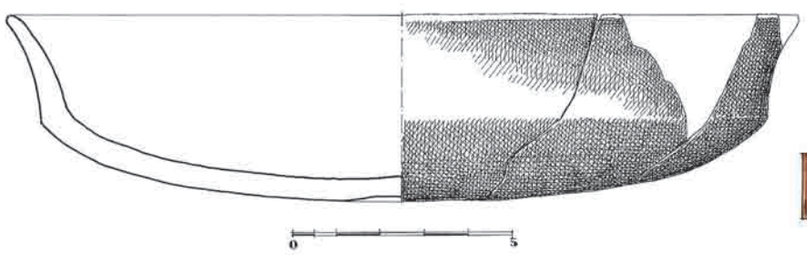


T. I-67.



374

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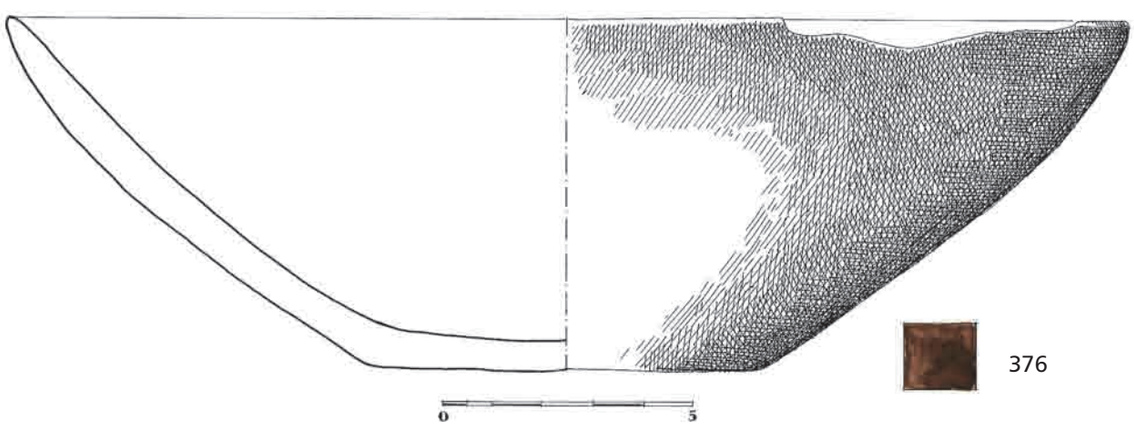


376

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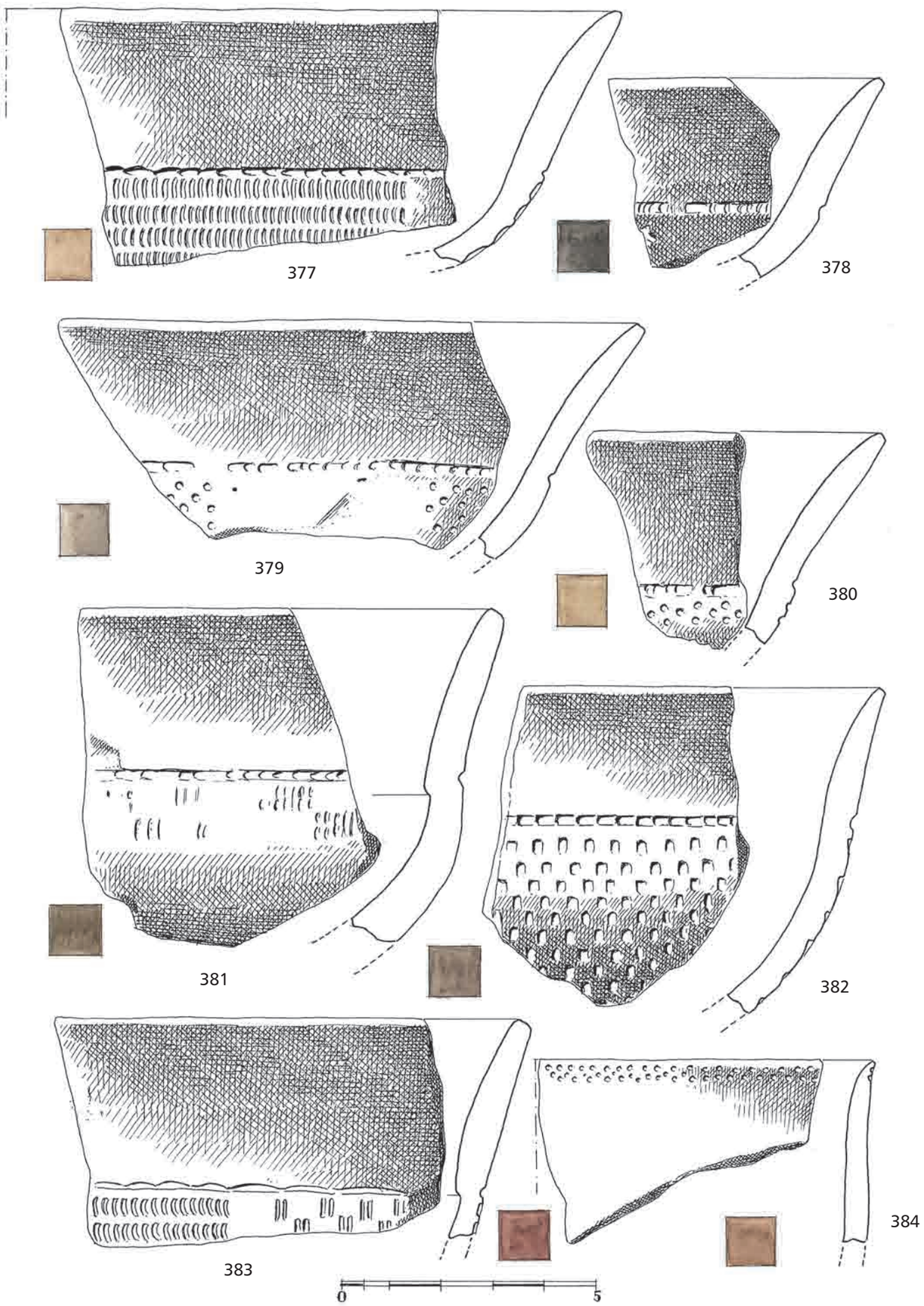
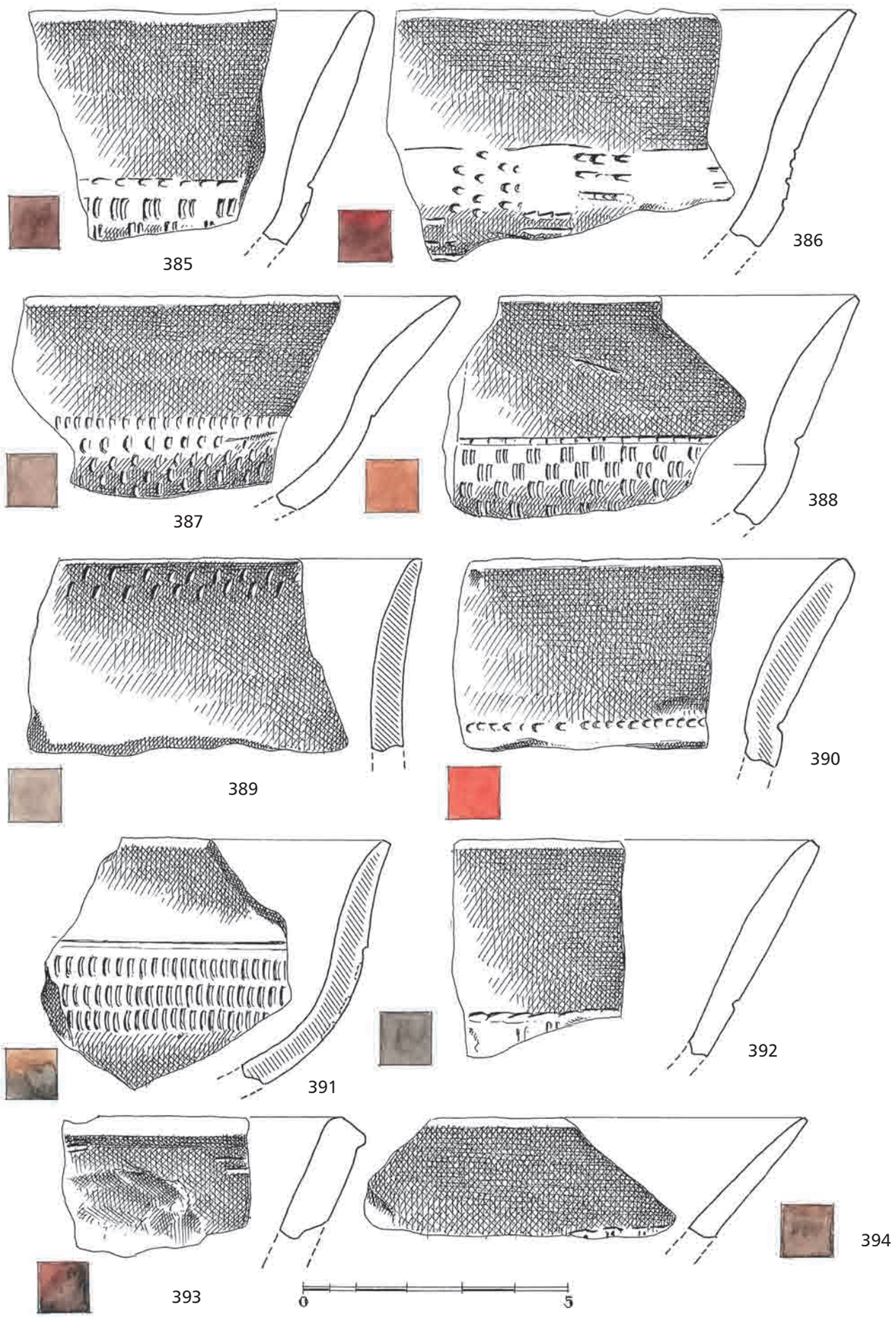


T. I-69.



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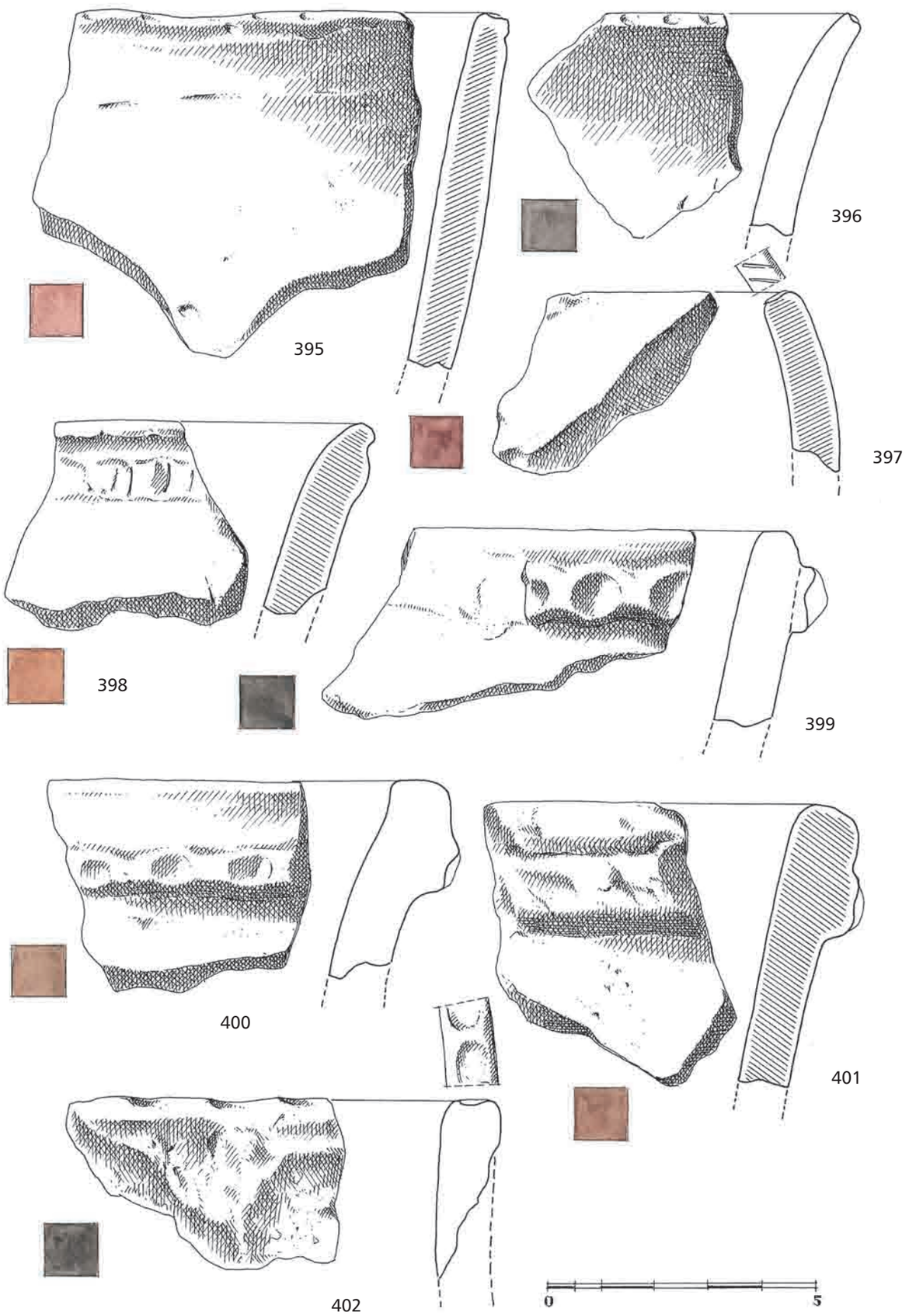

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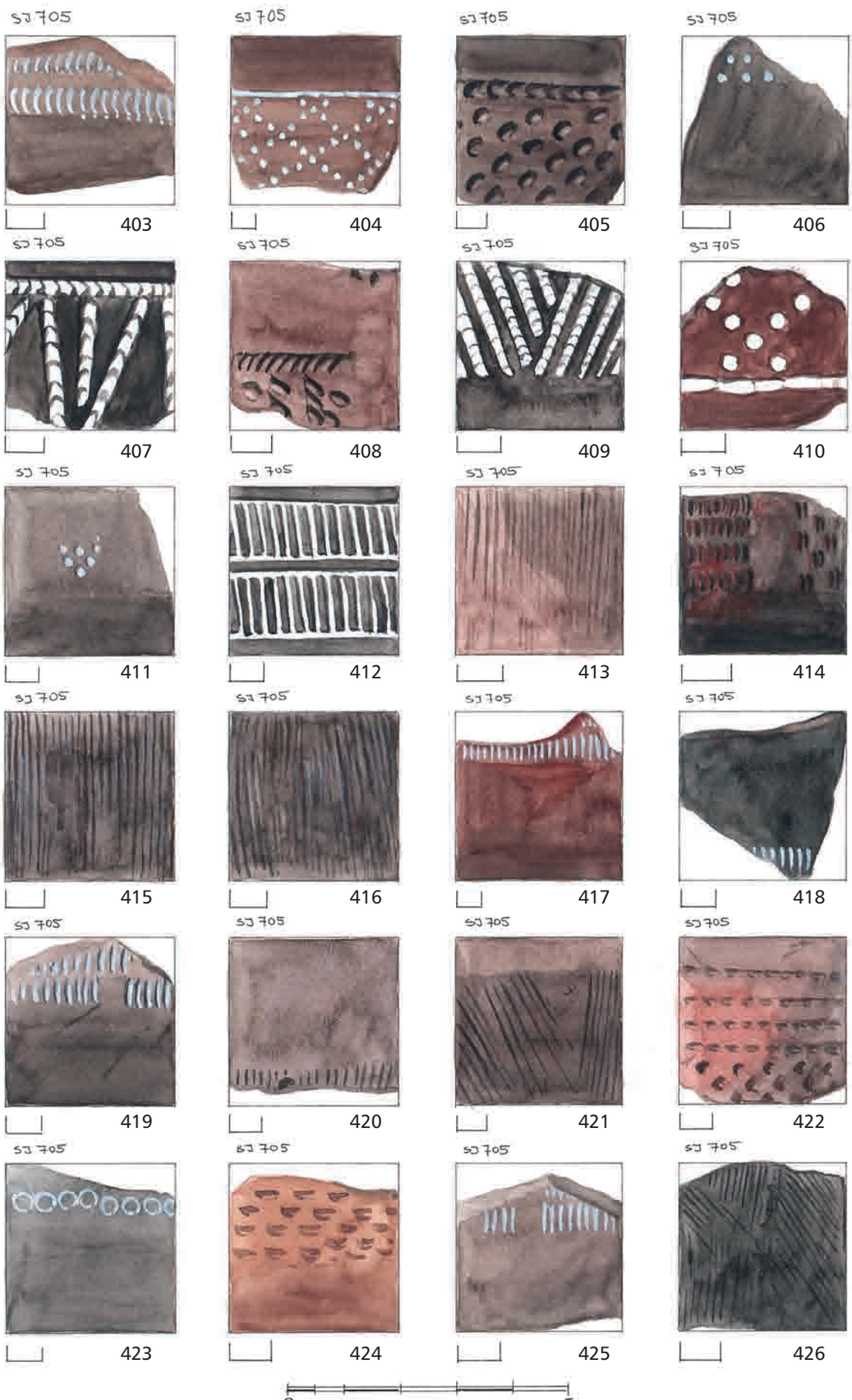
SJ 705
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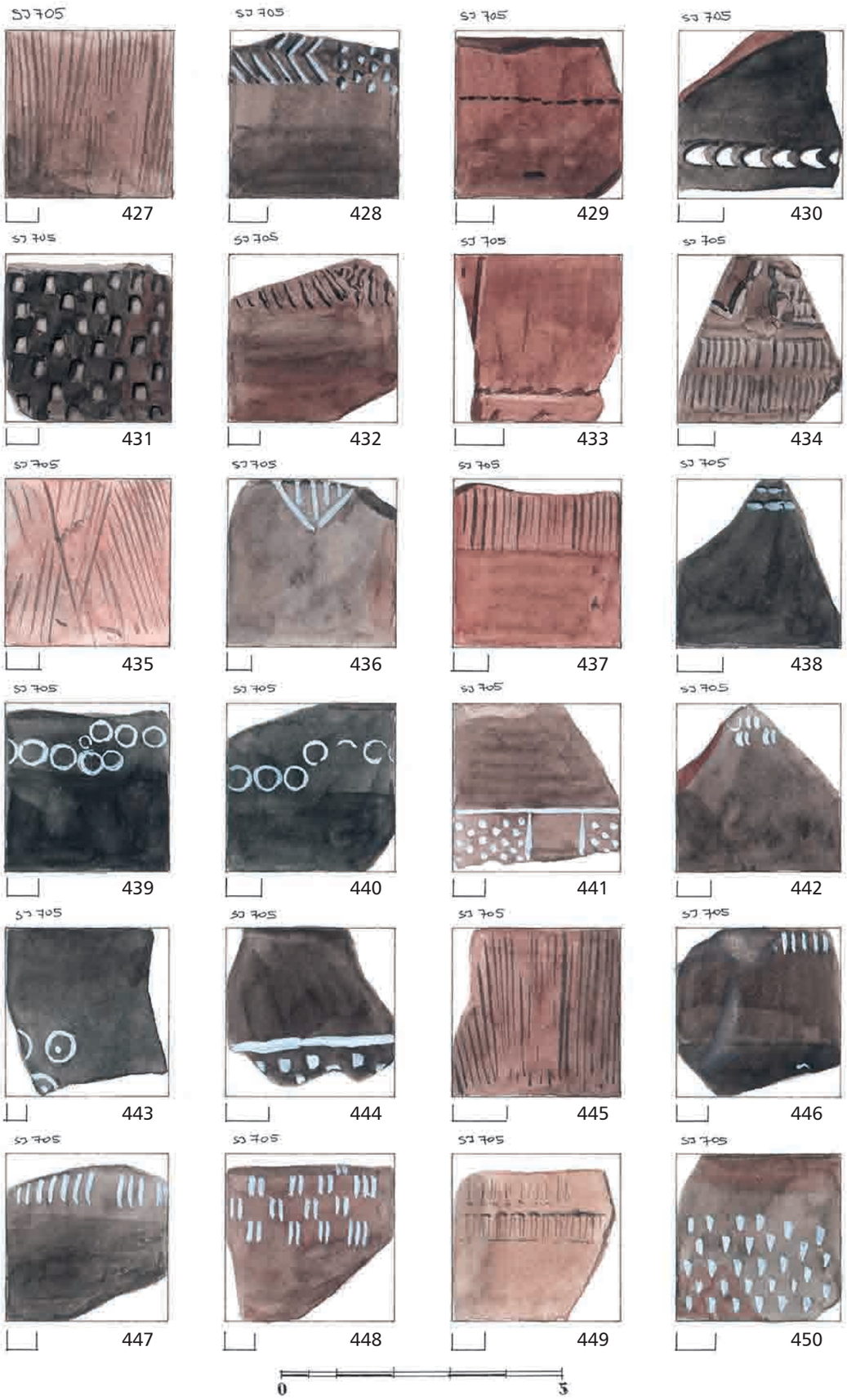
**T. I-72.**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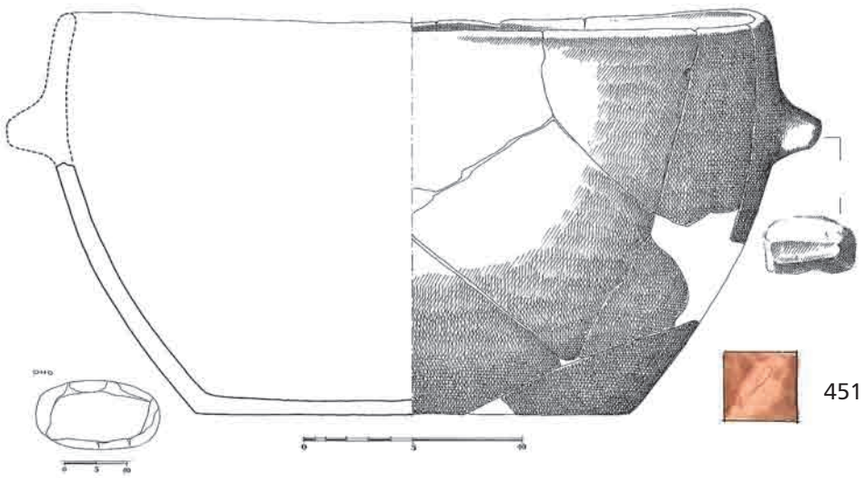
T. I-73.



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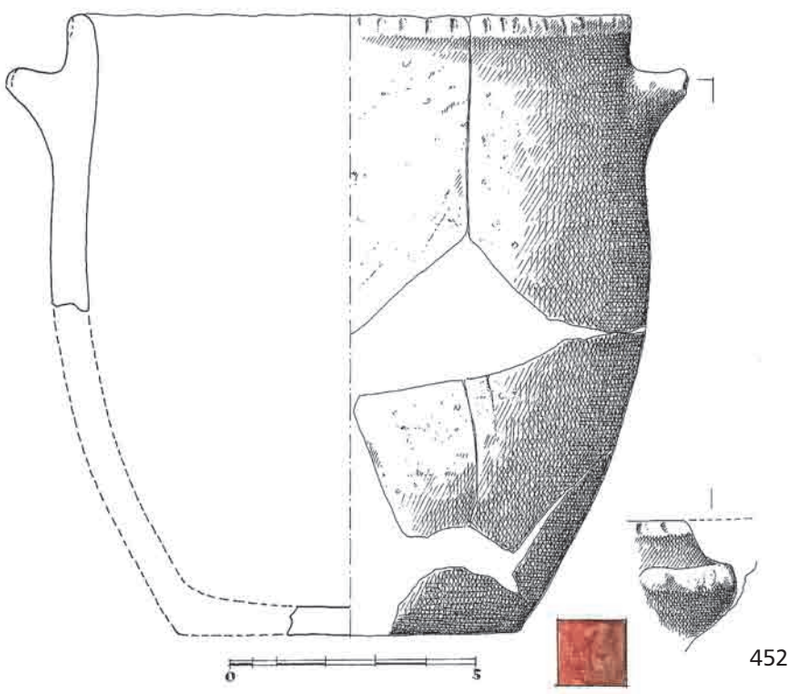

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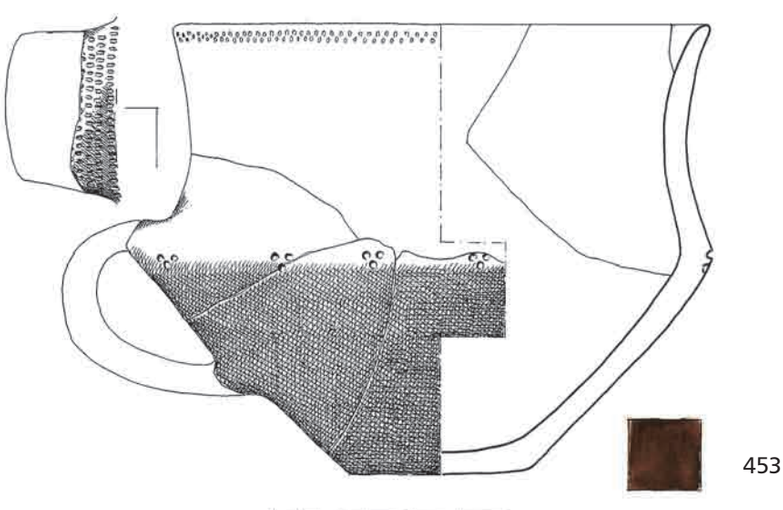
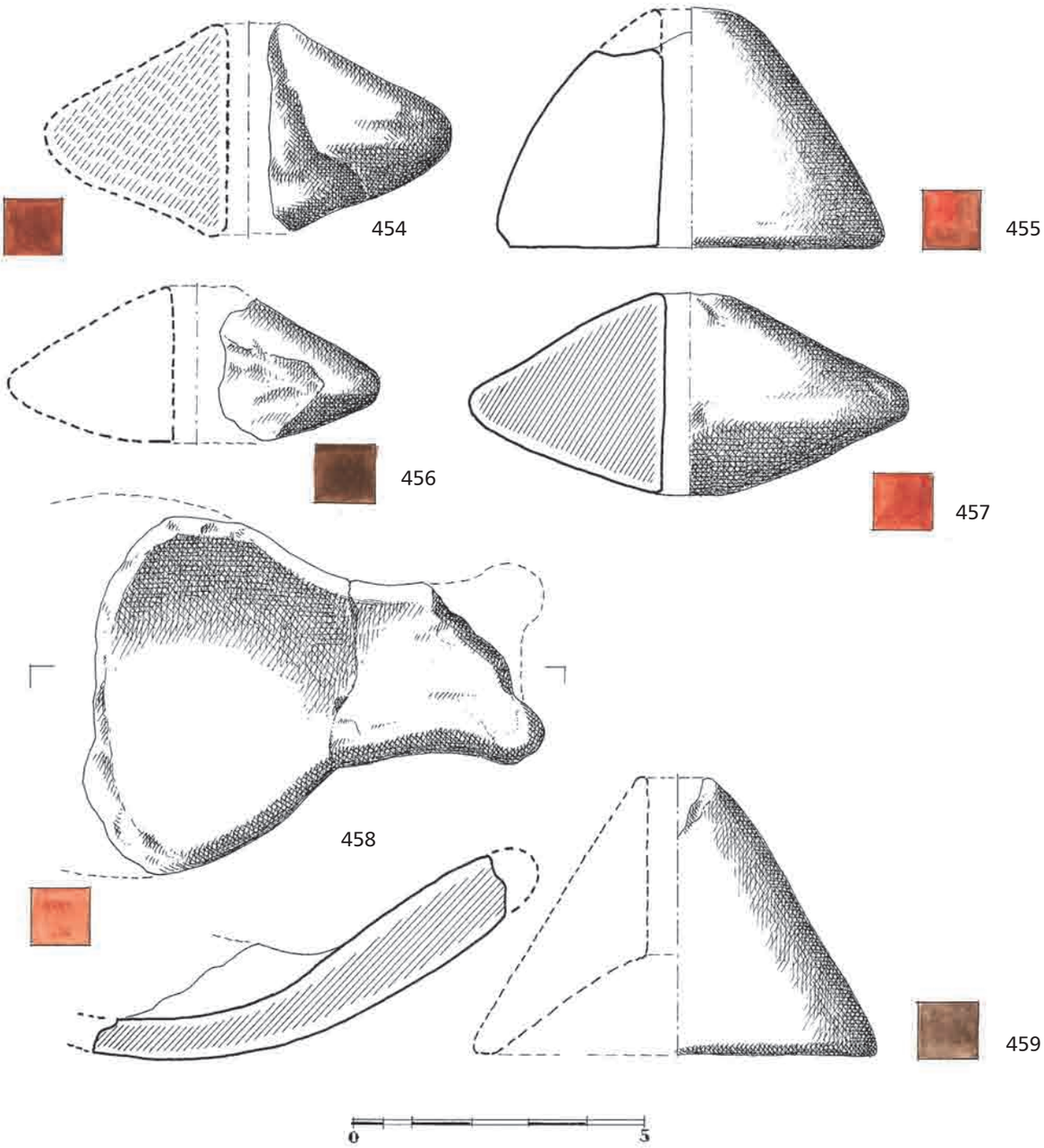
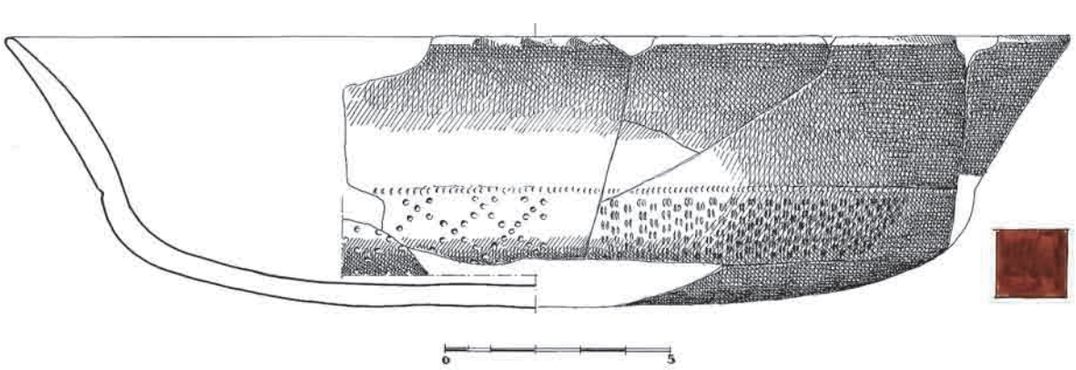


453

**T. I-74.**



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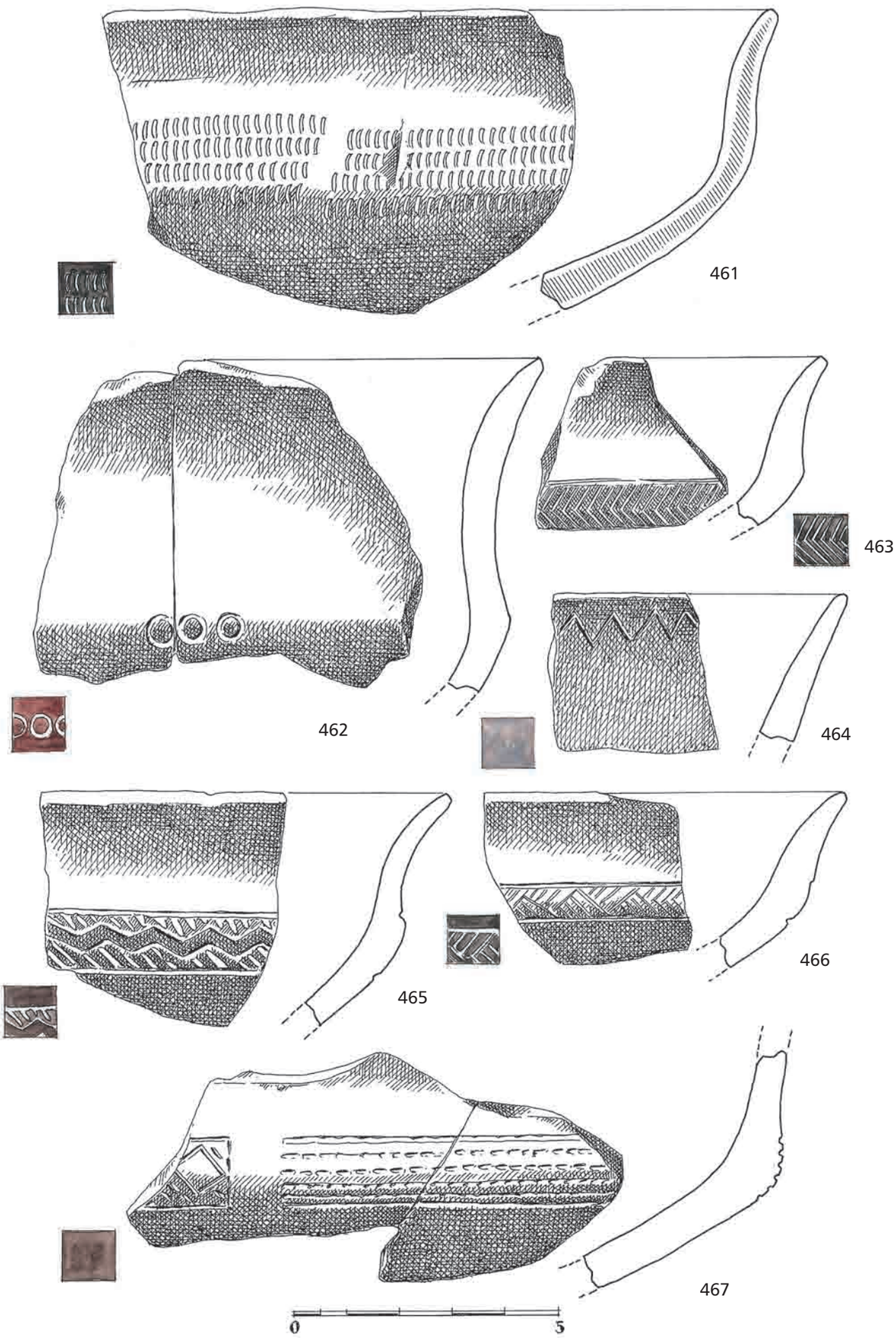
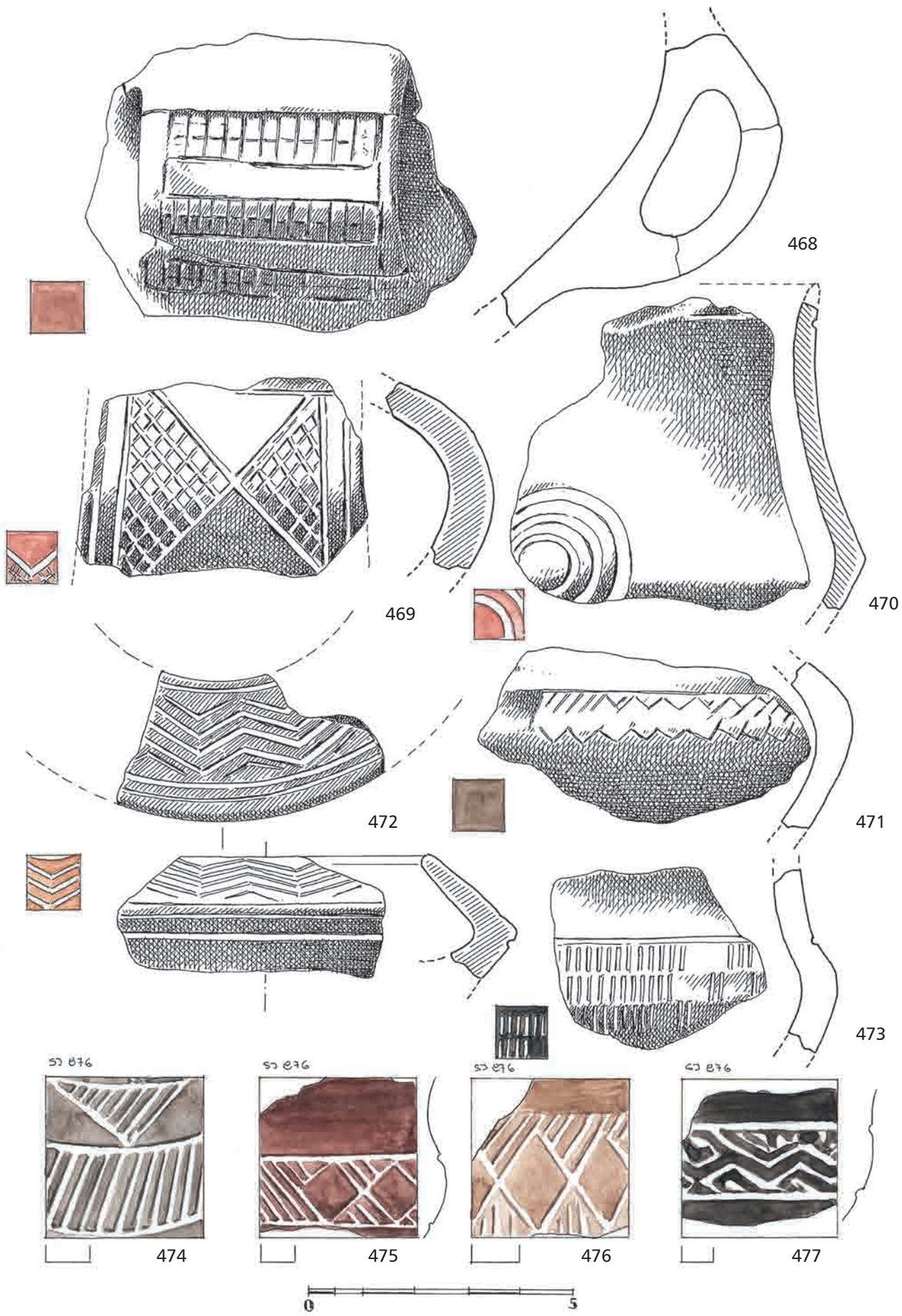


**T. I-76.**



# Cijepane kamene izrađevine I
# *Chipped stone artefacts*

*Katalog nalaza II* I *Catalogue of the finds II*

## KATALOG NALAZA (M.B.)

Već je pokazano da je skup nalaza od cijepanog kamena iz naselja kostolačke kulture na položaju Đakovo-Franjevac vrlo velik, a postotak alatki visok stoga je napravljen njihov izbor te su u katalog uvršteni gotovo svi cjeloviti primjerci alatki te poneki fragmentirani koji su važni zbog ilustracije nekih njihovih osobina. Također, osim alatki, izdvojeno je i nekoliko jezgara. Cilj je bio dati optimalan broj nalaza u odnosu na veličinu objekta te njihovu količinu unutar pojedinih stratigrafskih jedinica. Kataloški opis sastoji se od mjernih podataka te podataka o tehnološkoj kategoriji i tipu alatke, odnosno mjestu obrade. Kataloški broj odgovara broju ispod svakog pojedinog crteža.

1. SJ 876; N-1363/5; T.1; d-4,42 cm; š-1,64 cm; db-0,52 cm; t-4,82 g
   Sječivo s obradom na dorzalnoj strani lijevog lateralnog ruba i strmom obradom na distalnom rubu (zarubak i obrada na jednom lateralnom rubu). U donjoj polovici uz desni lateralni rub vidljiv je sjaj. Baza je odsječena.
2. SJ 876; N-1355/2; T.1; d-4,9 cm; š-1,86 cm; db-0,37 cm; t-5,31 g
   Sječivo s obradom na oba lateralna ruba – desni rub dorzalna i ventralna, lijevi rub dorzalna strana. Sjaj je vidljiv s dorzalne i ventralne strane lijevog lateralnog ruba i u donjoj polovici dorzalne strane desnog lateralnog ruba. Distalni dio je odsječen.
3. SJ 876; N-1183/3; T.1; d-4,68 cm; š-1,56 cm; db-0,41 cm; t-4,25 g
   Sječivo s obradom na dorzalnoj i ventralnoj strani desnog lateralnog ruba, na dorzalnoj strani lijevog lateralnog ruba i strmom obradom na distalnom rubu (zarubak i obrada na oba lateralna ruba). U donjoj polovici uz desni lateralni rub vidljiv je sjaj.
4. SJ 876; N-809/3; T.1; d-2,77 cm; š-1,42 cm; db-0,34 cm; t-2,09 g
   Ulomak sječiva s obradom na svim rubovima – desnim i lijevim lateralnim rubom na dorzalnoj strani te proksimalnim i distalnim poprečnim rubom (dvostruki zarubak i obrada na oba lateralna ruba).
5. SJ 876; N-951/1; T.1; d-3,22 cm; š-0,94 cm; db-0,43 cm; t-1,51 g
   Sječivo s obradom na dorzalnoj strani lijevog lateralnog ruba i strmom obradom na distalnom rubu (zarubak i obrada na jednom lateralnom rubu).
6. SJ 876; N-1031/2; T.1; d-6,74 cm; š-2,41 cm; db-0,67 cm; t-10,92 g
   Sječivo s obradom na dorzalnoj strani desnog lateralnog ruba, na ventralnoj strani lijevog lateralnog ruba i strmom obradom na distalnom rubu (zarubak i obrada na oba lateralna ruba). U središnjem dijelu uz desni lateralni rub vidljiv je sjaj.
7. SJ 876; N-1335/2; T.1; d-5,6 cm; š-1,65 cm; db-0,5 cm; t-5,59 g
   Sječivo spojeno od dva ulomka, obrađen je distalni rub (zarubak).
8. SJ 876; N-754/2; T.1; d-4,6 cm; š-1,66 cm; db-0,36 cm; t-3,17 g
   Sječivo s obradom na dorzalnoj i ventralnoj strani desnog lateralnog ruba, na dorzalnoj strani lijevog lateralnog ruba i strmom obradom na distalnom rubu (zarubak i obrada na oba lateralna ruba). U donjem dijelu uz desni lateralni rub s obje strane vidljiv je sjaj.
9. SJ 876; N-1391; T.1; d-3,87 cm; š-1,32 cm; db-0,47 cm; t-2,79 g
   Sječivo s obradom na ventralnoj strani lijevog lateralnog ruba i strmom obradom na distalnom rubu (zarubak i obrada na jednom lateralnom rubu). U gornjoj polovici uz lijevi lateralni rub vidljiv je sjaj.
10. SJ 876; N-809/1; T.1; d-4,98 cm; š-3,51 cm; db-2,5 cm; t-47,25 g
    Bipolarna miješana jezgra.

## CATALOGUE OF FINDS (M.B.)

It has already been pointed out that the chipped lithic assemblage from the Kostolac culture settlement at the site of Đakovo-Franjevac is very large, with a high proportion of tools. This prompted us to make a selection and include in the catalogue almost all complete tools, as well as occasional fragmented pieces in those cases when we wanted to illustrate some of their features. In addition to the tools, several cores were selected. Our objective was to present an optimal number of finds with regard to the size of a feature and their number within individual contexts. Catalogue description consists of measurement data and data about a technological category, tool type and position of retouch. Catalogue number corresponds to the number beneath each individual drawing.

1. SJ 876; N-1363/5; Pl.1; l-4.42 cm; w-1.64 cm; th-0.52 cm; w-4.82 g
   Blade with retouch on dorsal side of left lateral edge, and steep retouch on distal edge (truncated blade and retouch on one lateral edge). Gloss is visible in the lower half along right lateral edge. Base was cut off.
2. SJ 876; N-1355/2; Pl.1; l-4.9 cm; wi-1.86 cm; th-0.37 cm; we-5.31 g
   Blade with retouch on both lateral edges – right edge on dorsal and ventral side, left edge on dorsal side. Gloss is visible on dorsal and ventral sides of left lateral edge and in the lower half of dorsal side of right lateral edge. Distal part was cut off.
3. SJ 876; N-1183/3; Pl.1; l-4.68 cm; wi-1.56 cm; th-0.41 cm; we-4.25 g
   Blade with retouch on dorsal and ventral sides of right lateral edge, on dorsal side of left lateral edge, and steep retouch on distal edge (truncated blade and retouch on both lateral edges). Gloss is visible in the lower half along right lateral edge.
4. SJ 876; N-809/3; Pl.1; l-2.77 cm; wi-1.42 cm; th-0.34 cm; we-2.09 g
   Fragment of blade with retouch on all edges – right and left lateral edge on dorsal side, and proximal and distal transverse edge (double truncated blade and retouch on both lateral edges).
5. SJ 876; N-951/1; Pl.1; l-3.22 cm; wi-0.94 cm; th-0.43 cm; we-1.51 g
   Blade with retouch on dorsal side of left lateral edge and steep retouch on distal edge (truncated blade and retouch on one lateral edge).
6. SJ 876; N-1031/2; Pl.1; l-6.74 cm; wi-2.41 cm; th-0.67 cm; we-10.92 g
   Blade with retouch on dorsal side of right lateral edge, on ventral side of left lateral edge and steep retouch on distal edge (truncated blade and retouch on both lateral edges). Gloss is visible in the central part along right lateral edge.
7. SJ 876; N-1335/2; Pl.1; l-5.6 cm; wi-1.65 cm; th-0.5 cm; we-5.59 g
   Blade refitted from two fragments, retouch on distal edge (truncated blade).
8. SJ 876; N-754/2; Pl.1; l-4.6 cm; wi-1.66 cm; th-0.36 cm; we-3.17 g
   Blade with retouch on dorsal and ventral side of right lateral edge, on dorsal side of left lateral edge and steep retouch on distal edge (truncated blade and retouch on both lateral edges). Gloss is visible in the lower part along right lateral edge on both sides.
9. SJ 876; N-1391; Pl.1; l-3.87 cm; wi-1.32 cm; th-0.47 cm; we-2.79 g
   Blade with retouch on ventral side of left lateral edge and steep retouch on distal edge (truncated blade and retouch on one lateral edge). Gloss is visible in the upper half along left lateral edge.
10. SJ 876; N-809/1; Pl.1; l-4.98 cm; wi-3.51 cm; th-2.5 cm; we-47.25 g
    Bipolar mixed core.

11. SJ 876; N-1363/4; T.1; d-3,94 cm; š-1,09 cm; db-0,37 cm; t-2,57 g
Sječivo s obradom na dorzalnoj strani desnog lateralnog ruba, na dorzalnoj i ventralnoj strani lijevog lateralnog ruba i strmom obradom na distalnom rubu (zarubak i obrada na oba lateralna ruba).

12. SJ 876; N-988/2; T.1; d-2,94 cm; š-1,03 cm; db-0,3 cm; t-1,17 g
Trapez – ulomak sječiva s okorinom s obradom na oba poprečna ruba.

13. SJ 876; N-809/6; T.1; d-2,14 cm; š-1,25 cm; db-0,55 cm; t-1,74 g
Ulomak sječiva s obradom na dorzalnoj strani lijevog lateralnog ruba te proksimalnim i distalnim poprečnim rubom (dvostruki zarubak i obrada na jednom lateralnom rubu).

14. SJ 876; N-818/8; T.1; d-2,92 cm; š-1,4 cm; db-0,29 cm; t-2,18 g
Sječivo s obradom na dorzalnoj strani desnog lateralnog ruba i na ventralnoj strani lijevog lateralnog ruba (obrada na oba lateralna ruba). Uz lijevi lateralni rub vidljiv je sjaj. Odsječen je distalni dio.

15. SJ 876; N-1227/1; T.1; d-3,74 cm; š-1,83 cm; db-0,66 cm; t-6,45 g
Odbojak s okorinom s obradom na dorzalnoj strani desnog lateralnog ruba (komadić s obradom).

16. SJ 876; N-1031/5; T.1; d-1,66 cm; š-1,48 cm; db-0,41 cm; t-1,56 g
Trapez – ulomak sječiva s obradom na oba poprečna ruba i obradom na dorzalnoj i ventralnoj strani desnog lateralnog ruba.

17. SJ 876; N-1292/1; T.1; d-2,95 cm; š-1,41 cm; db-0,37 cm; t-1,6 g
Ulomak sječiva (medijalni dio) sa strmom obradom na koso odlomljenom desnom rubu i dorzalnoj strani lijevog lateralnog ruba (zarubak i obrada na jednom lateralnom rubu).

18. SJ 876; N-1218; T.1; d-3,7 cm; š-1,13 cm; db-0,36 cm; t-2,11 g
Sječivo s okorinom s obradom na dorzalnoj i ventralnoj strani desnog, dorzalnoj strani lijevog lateralnog ruba i strmom obradom na distalnom rubu (zarubak i obrada na oba lateralna ruba).

19. SJ 19; N-48/1; T.2; d-5,71 cm; š-2,1 cm; db-0,25 cm; t-5,31 g
Sječivo s obradom na dorzalnoj strani desnog lateralnog ruba, na dorzalnoj i ventralnoj strani lijevog lateralnog ruba i strmom obradom na distalnom rubu (zarubak i obrada na oba lateralna ruba). Baza i vrh su oštećeni. U gornjoj polovici uz lijevi lateralni rub s obje strane vidljiv je sjaj.

20. SJ 19; N-86/1; T.2; d-4,62 cm; š-1,6 cm; db-0,56 cm; t-4,42 g
Sječivo s obradom na ventralnoj strani lijevog lateralnog ruba (komadić s obradom). Vrh je oštećen. U gornjoj polovici uz lijevi lateralni rub vidljiv je sjaj.

21. SJ 19; N-48/2; T.2; d-4,22 cm; š-1,55 cm; db-0,37 cm; t-3,37 g
Sječivo s obradom na ventralnoj strani desnog lateralnog ruba, na dorzalnoj strani lijevog lateralnog ruba i strmom obradom na distalnom rubu (zarubak i obrada na oba lateralna ruba). Baza i vrh su oštećeni. U donjoj polovici uz desni lateralni rub vidljiv je sjaj.

22. SJ 19; N-48/5; T.2; d-2,14 cm; š-1,93 cm; db-0,48 cm; t-3,07 g
Ulomak sječiva (baza) s obradom na ventralnoj strani desnog lateralnog ruba (komadić s obradom).

23. SJ 19; N-48/3; T.2; d-3,5 cm; š-1,24 cm; db-0,35 cm; t-1,61 g
Sječivo s obradom na dorzalnoj i ventralnoj strani desnog lateralnog ruba, na dorzalnoj strani lijevog lateralnog ruba i strmom obradom na distalnom rubu (zarubak i obrada na oba lateralna ruba). U gornjoj polovici uz lijevi lateralni rub i uz distalni rub vidljiv je sjaj.

24. SJ 19; N-155/1; T.2; d-4,32 cm; š-1,2 cm; db-0,6 cm; t-4,64 g
Sječivo s okorinom s obradom na dorzalnoj strani lijevog lateralnog ruba (komadić s obradom). U gornjoj polovici uz lijevi lateralni rub vidljiv je sjaj.

25. SJ 19; N-100/4; T.2; d-4,26 cm; š-1,63 cm; db-0,49 cm; t-3,81 g
Sječivo s obradom na distalnom rubu (zarubak).

26. SJ 362; N-179/3; T.2; d-3,95 cm; š-1,25 cm; db-0,2 cm; t-1,4 g
Sječivo s obradom na ventralnoj strani lijevog lateralnog ruba i obradom na distalnom rubu (zarubak s obradom na jednom lateralnom rubu). Uz lijevi lateralni rub u gornjem dijelu vidljiv je sjaj. Baza je odsječena.

27. SJ 369; N-220/4; T.2; d-3,72 cm; š-1,8 cm; db-0,5 cm; t-4,54 g
Sječivo s obradom na dorzalnoj i ventralnoj strani desnog i ventralnoj strani lijevog lateralnog ruba (obrada na oba lateralna ru-

11. SJ 876; N-1363/4; Pl.1; l-3.94 cm; wi-1.09 cm; th-0.37 cm; we-2.57 g
Blade with retouch on dorsal side of right lateral edge, on dorsal and ventral sides of left lateral edge and steep retouch on distal edge (truncated blade and retouch on both lateral edges).

12. SJ 876; N-988/2; Pl.1; l-2.94 cm; wi-1.03 cm; th-0.3 cm; we-1.17 g
Trapezoid – fragment of blade with cortex with retouch on both transverse edges.

13. SJ 876; N-809/6; Pl.1; l-2.14 cm; wi-1.25 cm; th-0.55 cm; we-1.74 g
Fragment of blade with retouch on dorsal side of left lateral edge, and proximal and distal transverse edges (double truncated blade and retouch on one lateral edge).

14. SJ 876; N-818/8; Pl.1; l-2.92 cm; wi-1.4 cm; th-0.29 cm; we-2.18 g
Blade with retouch on dorsal side of right lateral edge and ventral side of left lateral edge (retouch on both lateral edges). Gloss is visible along left lateral edge. Distal part was cut off.

15. SJ 876; N-1227/1; Pl.1; l-3.74 cm; wi-1.83 cm; th-0.66 cm; we-6.45 g
Flake with cortex with retouch on dorsal side of right lateral edge (retouched small piece)

16. SJ 876; N-1031/5; Pl.1; l-1.66 cm; wi-1.48 cm; th-0.41 cm; we-1.56 g
Trapezoid – fragment of blade with retouch on both transverse edges and retouch on dorsal and ventral side of right lateral edge.

17. SJ 876; N-1292/1; Pl.1; l-2.95 cm; wi-1.41 cm; th-0.37 cm; we-1.6 g
Fragment of blade (medial part) with steep retouch on obliquely fractured right egde and dorsal side of left lateral edge (truncated blade and retouch on one lateral edge).

18. SJ 876; N-1218; Pl.1; l-3.7 cm; wi-1.13 cm; th-0.36 cm; we-2.11 g
Blade with cortex with retouch on dorsal and ventral side of right lateral edge, dorsal side of left lateral edge and steep retouch on distal edge (truncated blade and retouch on both lateral edges).

19. SJ 19; N-48/1; Pl.2; l-5.71 cm; wi-2.1 cm; th-0.25 cm; we-5.31 g
Blade with retouch on dorsal side of right lateral edge, on dorsal and ventral sides of left lateral edge and steep retouch on distal edge (truncated blade and retouch on both lateral edges). Base and tip were cut off. Gloss is visible in the upper half along left lateral edge on both sides.

20. SJ 19; N-86/1; Pl.2; l-4.62 cm; wi-1.6 cm; th-0.56 cm; we-4.42 g
Blade with retouch on ventral side of left lateral edge (retouched small piece). Tip is damaged. Gloss is visible in the upper half along left lateral edge.

21. SJ 19; N-48/2; Pl.2; l-4.22 cm; wi-1.55 cm; th-0.37 cm; we-3.37 g
Blade with retouch on ventral side of right lateral edge, on dorsal side of left lateral edge and steep retouch on distal edge (truncated blade on both lateral edges). Base and tip are damaged. Gloss is visible in the lower half along right lateral edge.

22. SJ 19; N-48/5; Pl.2; l-2.14 cm; wi-1.93 cm; th-0.48 cm; we-3.07 g
Fragment of blade (base) with retouch on ventral side of right lateral edge (retouched small piece).

23. SJ 19; N-48/3; Pl.2; l-3.5 cm; wi-1.24 cm; th-0.35 cm; we-1.61 g
Blade with retouch on dorsal and ventral sides of right lateral edge, on dorsal side of left lateral edge and steep retouch on distal edge (truncated blade and retouch on both lateral edges). Gloss is visible in the upper half along left lateral edge and along distal edge).

24. SJ 19; N-155/1; Pl.2; l-4.32 cm; wi-1.2 cm; th-0.6 cm; we-4.64 g
Blade with cortex with retouch on dorsal side of left lateral edge (retouched small piece). Gloss is visible in the upper half along left lateral edge.

25. SJ 19; N-100/4; Pl.2; l-4.26 cm; wi-1.63 cm; th-0.49 cm; we-3.81 g
Blade with retouch on distal edge (truncated blade).

26. SJ 362; N-179/3; Pl.2; l-3.95 cm; wi-1.25 cm; th-0.2 cm; we-1.4 g
Blade with retouch on ventral side of left lateral edge and retouch on distal edge (truncated blade with retouch on one lateral edge). Gloss is visible along left lateral edge in the upper part. Base was cut off.

27. SJ 369; N-220/4; Pl.2; l-3.72 cm; wi-1.8 cm; th-0.5 cm; we-4.54 g
Blade with retouch on dorsal and ventral side of right lateral edge and ventral side of left lateral edge (retouch on both lateral edges). Distal

ba). Distalni dio (vrh) je odsječen. Uz oba lateralna ruba cijelom dužinom vidljiv je sjaj.

28. SJ 29; N-128/2; T.2; d-3,16 cm; š-1,44 cm; db-0,35 cm; t-1,96 g
Sječivo s obradom na dorzalnoj strani desnog lateralnog ruba (komadić s obradom).

29. SJ 29; N-128/4; T.2; d-3,16 cm; š-2,05 cm; db-0,8 cm; t-4,54 g
Odbojak s okorinom s obradom na dorzalnoj strani desnog i lijevog lateralnog ruba (obrada na oba lateralna ruba).

30. SJ 31; N-2/2; T.2; d-3,6 cm; š-1,68 cm; db-0,36 cm; t-2,78 g
Sječivo s obradom na dorzalnoj i ventralnoj strani lijevog lateralnog ruba (komadić s obradom). U gornjoj polovici uz lijevi lateralni rub vidljiv je sjaj.

31. SJ 31; N-2/1; T.2; d-1,69 cm; š-1,23 cm; db-0,35 cm; t-0,91 g
Ulomak sječiva (baza) sa strmom obradom na lijevom lateralnom rubu (lunarni segment).

32. SJ 43; N-761; T.2; d-4,8 cm; š-2 cm; db-0,32 cm; t-5,17 g
Sječivo s obradom na ventralnoj strani desnog lateralnog ruba, na dorzalnoj strani lijevog lateralnog ruba i strmom obradom na distalnom rubu (zarubak i obrada na oba lateralna ruba). Uz desni i lijevi lateralni rub s obje strane vidljiv je sjaj.

33. SJ 45; N-329/1; T.2; d-3,96 cm; š-1,5 cm; db-0,36 cm; t-2,45 g
Sječivo s obradom na dorzalnoj strani lijevog lateralnog ruba i vrlo sitnoj obradi (oštećenju?) na distalnom rubu (komadić s obradom).

34. SJ 49; N-172/4; T.2; d-3,5 cm; š-1,41 cm; db-0,33 cm; t-2,03 g
Sječivo s obradom na distalnom rubu (zarubak). Uz lijevi lateralni i dio distalnog ruba vidljiv je sjaj.

35. SJ 49; N-166/1; T.2; d-3,7 cm; š-1,57 cm; db-0,42 cm; t-3,03 g
Sječivo s obradom na ventralnoj strani desnog lateralnog ruba i na dorzalnoj strani lijevog lateralnog ruba (obrada na oba lateralna ruba).

36. SJ 49; N-172/5; T.2; d-4,28 cm; š-1,55 cm; db-0,6 cm; t-4,59 g
Sječivo s okorinom s obradom na distalnom rubu (zarubak).

37. SJ 49; N-186/2; T.2; d-3,46 cm; š-1,4 cm; db-0,38 cm; t-3,01 g
Sječivo s obradom na ventralnoj strani desnog lateralnog ruba, na dorzalnoj strani lijevog lateralnog ruba i strmom obradom na distalnom rubu (zarubak i obrada na oba lateralna ruba). Uz lijevi lateralni i uz dio distalnog ruba vidljiv je sjaj.

38. SJ 49; N-166/2; T.2; d-2,47 cm; š-0,92 cm; db-0,21 cm; t-0,68 g
Ulomak sječiva (medijalni dio) sa strmom obradom na desnom lateralnom rubu (lunarni segment). Oštećen je.

39. SJ 51; N-265/1; T.2; d-4,5 cm; š-1,65 cm; db-0,45 cm; t-6,09 g
Sječivo s obradom na ventralnoj strani desnog lateralnog ruba i strmom obradom na distalnom rubu (zarubak i obrada na jednom lateralnom rubu). Baza je odsječena. U donjem dijelu uz desni lateralni rub vidljiv je sjaj.

40. SJ 53; N-292; T.3; d-4,5 cm; š-5,29 cm; db-4,3 cm; t-114,26 g
Polipolarna miješana jezgra.

41. SJ 53; N-286/3; T.3; d-4,44 cm; š-1,3 cm; db-0,83 cm; t-2,89 g
Sječivo s obradom na ventralnoj strani desnog lateralnog ruba (komadić s obradom). Distalni rub je odsječen. U donjoj polovici uz desni lateralni rub vidljiv je sjaj.

42. SJ 53; N-286/4; T.3; d-3,55 cm; š-1,16 cm; db-0,33 cm; t-1,73 g
Sječivo s obradom na ventralnoj strani desnog i lijevog lateralnog ruba i strmom obradom na distalnom rubu (zarubak i obrada na oba lateralna ruba). Uz lijevi i desni lateralni rub vidljiv je sjaj.

43. SJ 53; N-286/5; T.3; d-3,85 cm; š-1,18 cm; db-0,27 cm; t-1,4 g
Sječivo s obradom na ventralnoj strani desnog i lijevog lateralnog ruba (obrada na oba lateralna ruba).

44. SJ 53; N-286/8; T.3; d-2,97 cm; š-1,18 cm; db-0,6 cm; t-2,44 g
Sječivo s obradom na dorzalnoj strani desnog lateralnog ruba (komadić s obradom). Baza je odsječena.

45. SJ 57; N-561/1; T.3; d-3,5 cm; š-1,3 cm; db-0,4 cm; t-2,42 g
Sječivo s obradom na dorzalnoj strani desnog i lijevog lateralnog ruba i strmom obradom na distalnom rubu (zarubak i obrada na oba lateralna ruba). Baza je oštećena. Uz desni rub vidljiv je sjaj.

part (tip) was cut off. Gloss is visible along the length of both lateral edges.

28. SJ 29; N-128/2; Pl.2; l-3.16 cm; wi-1.44 cm; th-0.35 cm; we-1.96 g
Blade with retouch on dorsal side of right lateral edge (retouched small piece).

29. SJ 29; N-128/4; Pl.2; l-3.16 cm; wi-2.05 cm; th-0.8 cm; we-4.54 g
Flake with cortex with retouch on dorsal side of right and left lateral edges (retouch on both lateral edges).

30. SJ 31; N-2/2; Pl.2; l-3.6 cm; wi-1.68 cm; th-0.36 cm; we-2.78 g
Blade with retouch on dorsal and ventral sides of left lateral edge (retouched small piece). Gloss is visible in the upper half along left lateral edge.

31. SJ 31; N-2/1; Pl.2; l-1.69 cm; wi-1.23 cm; th-0.35 cm; we-0.91 g
Fragment of blade (base) with steep retouch on left lateral edge (truncated blade – lunate segment).

32. SJ 43; N-761; Pl.2; l-4.8 cm; wi-2 cm; th-0.32 cm; we-5.17 g
Blade with retouch on ventral side of right lateral edge, on dorsal side of left lateral edge and steep retouch on distal edge (truncated blade and retouch on both lateral edges). Gloss is visible along right and left lateral edges on both sides.

33. SJ 45; N-329/1; Pl.2; l-3.96 cm; wi-1.5 cm; th-0.36 cm; we-2.45 g
Blade with retouch on dorsal side of left lateral edge and with minute retouch (damage?) on distal edge (retouched small piece).

34. SJ 49; N-172/4; Pl.2; l-3.5 cm; wi-1.41 cm; th-0.33 cm; we-2.03 g
Blade with retouch on distal edge (truncated blade). Gloss is visible along left lateral edge and part of distal edge.

35. SJ 49; N-166/1; Pl.2; l-3.7 cm; wi-1.57 cm; th-0.42 cm; we-3.03 g
Blade with retouch on ventral side of right lateral edge and dorsal side of left lateral edge (retouch on both lateral edges).

36. SJ 49; N-172/5; Pl.2; l-4.28 cm; wi-1.55 cm; th-0.6 cm; we-4.59 g
Blade with cortex with retouch on distal edge (truncated blade).

37. SJ 49; N-186/2; Pl.2; l-3.46 cm; wi-1.4 cm; th-0.38 cm; we-3.01 g
Blade with retouch on ventral side of right lateral edge, on dorsal side of left lateral edge and steep retouch on distal edge (truncated blade and retouch on both lateral edges). Gloss is visible along left lateral edge and along part of distal edge.

38. SJ 49; N-166/2; Pl.2; l-2.47 cm; wi-0.92 cm; th-0.21 cm; we-0.68 g
Fragment of blade (medial part) with steep retouch on right lateral edge (truncated blade – lunate segment). Damaged.

39. SJ 51; N-265/1; Pl.2; l-4.5 cm; wi-1.65 cm; th-0.45 cm; we-6.09 g
Blade with retouch on ventral side of right lateral edge and steep retouch on distal edge (truncated blade and retouch on one lateral edge). Base was cut off. Gloss is visible in the lower part along right lateral edge.

40. SJ 53; N-292; Pl.3; l-4.5 cm; wi-5.29 cm; th-4.3 cm; we-114.26 g
Multipolar mixed core.

41. SJ 53; N-286/3; Pl.3; l-4.44 cm; wi-1.3 cm; th-0.83 cm; we-2.89 g
Blade with retouch on ventral side of right lateral edge (retouched small piece). Distal edge was cut off. Gloss is visible in the lower half along right lateral edge.

42. SJ 53; N-286/4; Pl.3; l-3.55 cm; wi-1.16 cm; th-0.33 cm; we-1.73 g
Blade with retouch on ventral side of right and left lateral edges and steep retouch on distal edge (truncated blade and retouch on both lateral edges). Gloss is visible along left and right lateral edges.

43. SJ 53; N-286/5; Pl.3; l-3.85 cm; wi-1.18 cm; th-0.27 cm; we-1.4 g
Blade with retouch on ventral side of right and left lateral edges (retouch on both lateral edges).

44. SJ 53; N-286/8; Pl.3; l-2.97 cm; wi-1.18 cm; th-0.6 cm; we-2.44 g
Blade with retouch on dorsal side of right lateral edge (retouched small piece). Base was cut off.

45. SJ 57; N-561/1; Pl.3; l-3.5 cm; wi-1.3 cm; th-0.4 cm; we-2.42 g
Blade with retouch on dorsal side or right and left lateral edges and steep retouch on distal edge (truncated blade and retouch on both lateral edges). Base is damaged. Gloss is visible along right edge.

46. SJ 85; N-297; T.3; d-3,08 cm; š-1,42 cm; db-0,38 cm; t-2,19 g
Sječivo s obradom na ventralnoj strani lijevog lateralnog ruba te obradom na proksimalnom i distalnom rubu (dvostruki zarubak s obradom na jednom lateralnom rubu). Uz lijevi rub vidljiv je sjaj.

47. SJ 658; N-371; T.3; d-3,72 cm; š-1,63 cm; db-0,4 cm; t-3,98 g
Sječivo s obradom na dorzalnoj strani lijevog lateralnog ruba i obradom na distalnom rubu (zarubak i obrada na jednom lateralnom rubu).

48. SJ 87; N-423; T.3; d-2,94 cm; š-1,9 cm; db-0,45 cm; t-3,74 g
Ulomak sječiva s okorinom (medijalni dio) s obradom na lijevom(?) lateralnom rubu (komadić s obradom). Uz lijevi rub vidljiv je sjaj.

49. SJ 127; N-25/1; T.3; d-3 cm; š-1,4 cm; db-0,4 cm; t-2,87 g
Sječivo s obradom na distalnom rubu (zarubak).

50. SJ 127; N-25/2; T.3; d-4,92 cm; š-0,4 cm; db-6,41 cm; t-2,87 g
Sječivo s obradom na dorzalnoj strani desnog lateralnog ruba i obradom na distalnom rubu (zarubak i obrada na jednom lateralnom rubu).

51. SJ 183; N-51/2; T.3; d-4,36 cm; š-1,55 cm; db-0,5 cm; t-3,39 g
Miješana bipolarna jezgra s okorinom.

52. SJ 183; N-51/1; T.3; d-4,47 cm; š-1,53 cm; db-0,43cm; t-3,53 g
Sječivo s okorinom s obradom na ventralnoj strani lijevog lateralnog ruba (komadić s obradom). Distalni dio (vrh) je odsječen. Uz lijevi lateralni rub vidljiv je sjaj.

53. SJ 183; N-67; T.3; d-4,36 cm; š-1,55 cm; db-0,5 cm; t-3,39 g
Sječivo s obradom na distalnom rubu (zarubak).

54. SJ 203; N-704; T.3; d-1,93 cm; š-0,94 cm; db-0,47 cm; t-1,01 g
Odbojak s obradom na dorzalnoj strani desnog lateralnog ruba i dorzalnoj i ventralnoj strani lijevog lateralnog ruba (obrada na oba lateralna ruba).

55. SJ 207; N-60; T.4; d-5,76 cm; š-1,6 cm; db-0,45 cm; t-4,24 g
Sječivo s obradom na distalnom rubu (zarubak). Djelomično odsječeni lateralni rubovi u gornjem dijelu.

56. SJ 207; N-46/1; T.4; d-3,7 cm; š-1,6 cm; db-0,45 cm; t-2,78 g
Sječivo s obradom na ventralnoj strani desnog, dorzalnoj i ventralnoj strani lijevog lateralnog ruba i obradom na distalnom rubu (grebalo i obrada na oba lateralna ruba).

57. SJ 207; N-167; T.4; d-3,54 cm; š-3,55 cm; db-1,35cm; t-21,12 g
Odbojak s obradom na dorzalnoj strani lijevog lateralnog ruba (komadić s obradom).

58. SJ 227; N-249/2; T.4; d-2,16 cm; š-1,1 cm; db-0,38 cm; t-1,57 g
Sječivo s okorinom s obradom na dorzalnoj strani lijevog lateralnog ruba i obradom na distalnom rubu (zarubak i obrada na jednom lateralnom rubu).

59. SJ 239; N-160; T.4; d-2,3 cm; š-0,9 cm; db-0,32 cm; t-1,1 g
Sječivo s obradom na svim rubovima - dorzalnoj i ventralnoj strani desnog i lijevog lateralnog ruba te proksimalnom i distalnom rubu (dvostruki zarubak i obrada na oba lateralna ruba).

60. SJ 243; N-462/2; T.4; d-4,43 cm; š-1,22 cm; db-0,27 cm; t-1,63 g
Sječivo s obradom na ventralnoj strani desnog lateralnog ruba (komadić s obradom).

61. SJ 243; N-473/4; T.4; d-2,92 cm; š-1,68 cm; db-0,4 cm; t-2,19 g
Sječivo s obradom na ventralnoj strani lijevog lateralnog ruba i obradom na distalnom rubu (zarubak i obrada na jednom lateralnom rubu). U donjem dijelu uz lijevi lateralni rub vidljiv je sjaj.

62. SJ 249; N-398/2; T.4; d-6,09 cm; š-5,45 cm; db-1,46 cm; t-33,89 g
Odbojak s okorinom sa sitnom obradom na dorzalnoj strani desnog i lijevog lateralnog ruba (obrada na oba lateralna ruba).

63. SJ 249; N-419; T.4; d-3,56 cm; š-1,66 cm; db-0,52 cm; t-4,37 g
Sječivo s okorinom s obradom na distalnom rubu (zarubak).

64. SJ 259; N-600/2; T.4; d-1,5 cm; š-1,4 cm; db-0,32 cm; t-0,95 g
Ulomak sječiva (distalni dio) s obradom na ventralnoj strani lijevog lateralnog ruba i obradom na distalnom rubu (zarubak i obrada na jednom lateralnom rubu).

46. SJ 85; N-297; Pl.3; l-3.08 cm; wi-1.42 cm; th-0.38 cm; we-2.19 g
Blade with retouch on ventral side of left lateral edge, and retouch on proximal and distal edges (double truncated blade with retouch on one lateral edge). Gloss is visible along left edge.

47. SJ 658; N-371; Pl.3; l-3.72 cm; wi-1.63 cm; th-0.4 cm; we-3.98 g
Blade with retouch on dorsal side of left lateral edge and retouch on distal edge (truncated blade and retouch on one lateral edge).

48. SJ 87; N-423; Pl.3; l-2.94 cm; wi-1.9 cm; th-0.45 cm; we-3.74 g
Fragment of blade with cortex (medial part) with retouch on left? lateral edge (retouched small piece). Gloss is visible along left edge.

49. SJ 127; N-25/1; Pl.3; l-3 cm; wi-1.4 cm; th-0.4 cm; we-2.87 g
Blade with retouch on distal edge (truncated blade).

50. SJ 127; N-25/2; Pl.3; l-4.92 cm; wi-0.4 cm; th-6.41 cm; we-2.87 g
Blade with retouch on dorsal side of right lateral edge and retouch on distal edge (truncated blade and retouch on one lateral edge).

51. SJ 183; N-51/2; Pl.3; l-4.36 cm; wi-1.55 cm; th-0.5 cm; we-3.39 g
Mixed bipolar core with cortex.

52. SJ 183; N-51/1; Pl.3; l-4.47 cm; wi-1.53 cm; th-0.43cm; we-3.53 g
Blade with cortex with retouch on ventral side of left lateral edge (retouched small piece). Distal part (tip) was cut off. Gloss is visible along left lateral edge.

53. SJ 183; N-67; Pl.3; l-4.36 cm; wi-1.55 cm; th-0.5 cm; we-3.39 g
Blade with retouch on distal edge (truncated blade).

54. SJ 203; N-704; Pl.3; l-1.93 cm; wi-0.94 cm; th-0.47 cm; we-1.01 g
Flake with retouch on dorsal side of right lateral edge and dorsal and ventral sides of left lateral edge (retouch on both lateral edges).

55. SJ 207; N-60; Pl.4; l-5.76 cm; wi-1.6 cm; th-0.45 cm; we-4.24 g
Blade with retouch on distal edge (truncated blade). Partly cut-off lateral edges in the upper part.

56. SJ 207; N-46/1; Pl.4; l-3.7 cm; wi-1.6 cm; th-0.45 cm; we-2.78 g
Blade with retouch on ventral side of right lateral edge, on dorsal and ventral sides of left lateral edge and retouch on distal edge (endscraper and retouch on both lateral edges).

57. SJ 207; N-167; Pl.4; l-3.54 cm; wi-3.55 cm; th-1.35cm; we-21.12 g
Flake with retouch on dorsal side of left lateral edge (retouched small piece).

58. SJ 227; N-249/2; Pl.4; l-2.16 cm; wi-1.1 cm; th-0.38 cm; we-1.57 g
Blade with cortex with retouch on dorsal side of left lateral edge and retouch on distal edge (truncated blade and retouch on one lateral edge).

59. SJ 239; N-160; Pl.4; l-2.3 cm; wi-0.9 cm; th-0.32 cm; we-1.1 g
Blade with retouch on all edges – dorsal and ventral sides of right and left lateral edges and proximal and distal edges (double truncated blade and retouch on both lateral edges).

60. SJ 243; N-462/2; Pl.4; l-4.43 cm; wi-1.22 cm; th-0.27 cm; we-1.63 g
Blade with retouch on ventral side of right lateral edge (retouched small piece).

61. SJ 243; N-473/4; Pl.4; l-2.92 cm; wi-1.68 cm; th-0.4 cm; we-2.19 g
Blade with retouch on ventral side of left lateral edge and retouch on distal edge (truncated blade and retouch on one lateral edge). Gloss is visible in the lower part along left lateral edge.

62. SJ 249; N-398/2; Pl.4; l-6.09 cm; wi-5.45 cm; th-1.46 cm; we-33.89 g
Flake with cortex with minute retouch on dorsal side of right and left lateral edges (retouch on both lateral edges).

63. SJ 249; N-419; Pl.4; l-3.56 cm; wi-1.66 cm; th-0.52 cm; we-4.37 g
Blade with cortex and retouch on distal edge (truncated blade).

64. SJ 259; N-600/2; Pl.4; l-1.5 cm; wi-1.4 cm; th-0.32 cm; we-0.95 g
Fragment of blade (distal part) with retouch on ventral side of left lateral edge and retouch on distal edge (truncated blade and retouch on one lateral edge).

65. SJ 267; N-697/2; Pl.4; l-4.4 cm; wi-1.47 cm; th-0.34 cm; we-2.55 g
Blade with retouch on dorsal and ventral sides of right lateral edge (retouched small piece).

65. SJ 267; N-697/2; T.4; d-4,4 cm; š-1,47 cm; db-0,34 cm; t-2,55 g
Sječivo s obradom na dorzalnoj i ventralnoj strani desnog lateralnog ruba (komadić s obradom).

66. SJ 267; N-563/2; T.4; d-4,36 cm; š-1,7 cm; db-0,45 cm; t-4,21 g
Sječivo s obradom na dorzalnoj strani desnog i lijevog lateralnog ruba i strmom obradom na distalnom rubu (zarubak i obrada na oba lateralna ruba).

67. SJ 267; N-563/1; T.4; d-3,86 cm; š-1,4 cm; db-0,5 cm; t-3,58 g
Sječivo s obradom na dorzalnoj strani desnog i lijevog lateralnog ruba (obrada na oba lateralna ruba).

68. SJ 267; N-697/1; T.4; d-3,56 cm; š-2,4 cm; db-1,93 cm; t-25,4 g
Bipolarna jezgra za sječiva s okorinom.

69. SJ 267; N-541/4; T.4; d-3,7 cm; š-2,8 cm; db-0,97 cm; t-11,33 g
Odbojak s okorinom s obradom na distalnom rubu (grebalo). Baza je odsječena.

70. SJ 267; N-596/1; T.4; d-3,65 cm; š-1,54 cm; db-0,37 cm; t-3,27 g
Sječivo s obradom na dorzalnoj strani desnog i lijevog lateralnog ruba (obrada na oba lateralna ruba). Distalni dio je odječen te je započeto zarubljivanje.

71. SJ 267; N-686/1; T.4; d-2,7 cm; š-1,06 cm; db-0,3 cm; t-0,98 g
Sječivo s obradom na distalnom rubu (zarubak).

72. SJ 853; N-581/2; T.5; d-5,16 cm; š-1,33 cm; db-0,4 cm; t-4,76 g
Sječivo s obradom na dorzalnoj strani desnog i dorzalnoj i ventralnoj strani lijevog lateralnog ruba (obrada na oba lateralna ruba). Uz lijevi rub u gornjem dijelu vidljiv je sjaj.

73. SJ 853; N-581/5; T.5; d-4,23 cm; š-1,21 cm; db-0,52 cm; t-3,01 g
Sječivo s obradom na ventralnoj strani lijevog lateralnog ruba (komadić s obradom).

74. SJ 271; N-337/1; T.5; d-3,7 cm; š-4,97 cm; db-3,03 cm; t-65,9 g
Polipolarna miješana jezgra.

75. SJ 271; N-410/1; T.5; d-5,27 cm; š-1,77 cm; db-0,55 cm; t-6,68 g
Sječivo s obradom na ventralnoj strani lijevog lateralnog ruba i obradom na distalnom rubu (zarubak i obrada na jednom lateralnom rubu). Uz lijevi lateralni rub vidljiv je sjaj.

76. SJ 271; N-347/1; T.5; d-4,55 cm; š-1,83 cm; db-0,36 cm; t-4,87 g
Sječivo s obradom na dorzalnoj i ventralnoj strani desnog i lijevog lateralnog ruba i strmom obradom na distalnom rubu (zarubak i obrada na oba lateralna ruba).

77. SJ 271; N-429/2; T.5; d-3,1 cm; š-1,75 cm; db-0,35 cm; t-2,14 g
Odbojak s okorinom s obradom na distalnom rubu (zarubak).

78. SJ 271; N-43/2; T.5; d-1,88 cm; š-1,6 cm; db-0,4 cm; t-1,66 g
Ulomak sječiva s obradom na distalnom rubu (grebalo).

79. SJ 277; N-163; T.5; d-2,7 cm; š-1,76 cm; db-0,77 cm; t-3,38 g
Odbojak s cjelovitom obradom na dorzalnoj strani desnog lateralnog ruba (komadić s cjelovitom obradom na jednom rubu).

80. SJ 281; N-95/1; T.5; d-3,16 cm; š-1,45 cm; db-0,52 cm; t-3,6 g
Sječivo s obradom na ventralnoj strani desnog lateralnog ruba (komadić s obradom). Uz lijevi i desni lateralni rub vidljiv je sjaj. Baza i vrh su odsječeni.

81. SJ 293; N-340/2; T.5; d-2,6 cm; š-3,26 cm; db-1,16 cm; t-10,34 g
Odbojak s obradom (komadić s obradom).

82. SJ 293; N-373/3; T.5; d-2,32 cm; š-1,14 cm; db-0,37 cm; t-1,1 g
Sječivo s obradom na dorzalnoj strani lijevog lateralnog ruba te proksimalnom i distalnom rubu (dvostruki zarubak i obradom na jednom lateralnom rubu). Uz lijevi rub vidljiv je sjaj.

83. SJ 293; N-387/1; T.5; d-4,6 cm; š-2,14 cm; db-0,57 cm; t-7,81 g
Sječivo s obradom na distalnom rubu (zarubak). Uz lijevi lateralni rub vidljiv je sjaj.

84. SJ 293; N-385/2; T.5; d-4,2 cm; š-1,4 cm; db-0,34 cm; t-2,34 g
Sječivo s obradom na dorzalnoj strani lijevog lateralnog ruba i obradom na distalnom rubu (zarubak i obrada na jednom lateralnom rubu). Uz lijevi lateralni rub vidljiv je sjaj. Uz bazu na desnoj strani je oštećeno.

66. SJ 267; N-563/2; Pl.4; l-4.36 cm; wi-1.7 cm; th-0.45 cm; we-4.21 g
Blade with retouch on dorsal side of right and left lateral edge and steep retouch on distal edge (truncated blade and retouch on both lateral edges).

67. SJ 267; N-563/1; Pl.4; l-3.86 cm; wi-1.4 cm; th-0.5 cm; we-3.58 g
Blade with retouch on dorsal side of right and left lateral edges (retouch on both lateral edges).

68. SJ 267; N-697/1; Pl.4; l-3.56 cm; wi-2.4 cm; th-1.93 cm; we-25.4 g
Bipolar core for blades with cortex.

69. SJ 267; N-541/4; Pl.4; l-3.7 cm; wi-2.8 cm; th-0.97 cm; we-11.33 g
Flake with cortex with retouch on distal edge (endscraper). Base was cut off.

70. SJ 267; N-596/1; Pl.4; l-3.65 cm; wi-1.54 cm; th-0.37 cm; we-3.27 g
Blade with retouch on dorsal side of right and left lateral edges (retouch on both lateral edges). Distal part was cut off, and truncation was commenced.

71. SJ 267; N-686/1; Pl.4; l-2.7 cm; wi-1.06 cm; th-0.3 cm; we-0.98 g
Blade with retouch on distal edge (truncated blade).

72. SJ 853; N-581/2; Pl.5; l-5.16 cm; wi-1.33 cm; th-0.4 cm; we-4.76 g
Blade with retouch on dorsal side of right lateral edge and dorsal and ventral sides of left lateral edge (retouch on both lateral edges). Gloss is visible along left edge in the upper part.

73. SJ 853; N-581/5; Pl.5; l-4.23 cm; wi-1.21 cm; th-0.52 cm; we-3.01 g
Blade with retouch on ventral side of left lateral edge (retouched small piece).

74. SJ 271; N-337/1; Pl.5; l-3.7 cm; wi-4.97 cm; th-3.03 cm; we-65.9 g
Multipolar mixed core.

75. SJ 271; N-410/1; Pl.5; l-5.27 cm; wi-1.77 cm; th-0.55 cm; we-6.68 g
Blade with retouch on ventral side of left lateral edge and retouch on distal edge (truncated blade and retouch on one lateral edge). Gloss is visible along left lateral edge.

76. SJ 271; N-347/1; Pl.5; l-4.55 cm; wi-1.83 cm; th-0.36 cm; we-4.87 g
Blade with retouch on dorsal and ventral sides of right and left lateral edges and steep retouch on distal edge (truncated blade and retouch on both lateral edges).

77. SJ 271; N-429/2; Pl.5; l-3.1 cm; wi-1.75 cm; th-0.35 cm; we-2.14 g
Flake with cortex with retouch on distal edge (truncated piece).

78. SJ 271; N-43/2; Pl.5; l-1.88 cm; wi-1.6 cm; th-0.4 cm; we-1.66 g
Fragment of blade with retouch on distal edge (endscraper).

79. SJ 277; N-163; Pl.5; l-2.7 cm; wi-1.76 cm; th-0.77 cm; we-3.38 g
Flake with complete retouch on dorsal side of right lateral edge (small piece with complete retouch on one edge).

80. SJ 281; N-95/1; Pl.5; l-3.16 cm; wi-1.45 cm; th-0.52 cm; we-3.6 g
Blade with retouch on ventral side of right lateral edge (retouched small piece). Gloss is visible along left and right lateral edges. Base and tip were cut off.

81. SJ 293; N-340/2; Pl.5; l-2.6 cm; wi-3.26 cm; th-1.16 cm; we-10.34 g
Retouched flake (retouched small piece).

82. SJ 293; N-373/3; Pl.5; l-2.32 cm; wi-1.14 cm; th-0.37 cm; we-1.1 g
Blade with retouch on dorsal side of left lateral edge and proximal and distal edges (double truncated blade and retouch on one lateral edge). Gloss is visible along left edge.

83. SJ 293; N-387/1; Pl.5; l-4.6 cm; wi-2.14 cm; th-0.57 cm; we-7.81 g
Blade with retouch on distal edge (truncated blade). Gloss is visible along left lateral edge.

84. SJ 293; N-385/2; Pl.5; l-4.2 cm; wi-1.4 cm; th-0.34 cm; we-2.34 g
Blade with retouch on dorsal side of left lateral edge and retouch on distal edge (truncated blade and retouch on one lateral edge). Gloss is visible along left lateral edge. Damaged along the base on right side.

85. SJ 295; N-646/1; Pl.5; l-2.24 cm; wi-0.7 cm; th-0.27 cm; we-0.57 g
Fragment of blade (medial part) with steep retouch on lateral edge (truncated blade – lunate segment).

85. SJ 295; N-646/1; T.5; d-2,24 cm; š-0,7 cm; db-0,27 cm; t-0,57 g
Ulomak sječiva (medijalni dio) sa strmom obradom na lateralnom rubu (lunarni segment).

86. SJ 295; N-498/1; T.5; d-4,29 cm; š-1,1 cm; db-0,41 cm; t-2,85 g
Sječivo s obradom na dorzalnoj i ventralnoj strani desnog, ventralnoj strani lijevog lateralnog ruba i strmom obradom na distalnom rubu (zarubak i obrada na oba lateralna ruba).

87. SJ 327; N-660/1; T.5; d-2,66 cm; š-1,53 cm; db-0,43 cm; t-2,27 g
Sječivo s obradom na ventralnoj strani desnog lateralnog ruba (komadić s obradom). Distalni dio je odsječen. Uz desni rub vidljiv je sjaj.

88. SJ 327; N-678/1; T.5; d-2,95 cm; š-1,52 cm; db-0,27 cm; t-1,32 g
Sječivo s obradom na dorzalnoj i ventralnoj strani desnog lateralnog ruba (komadić s obradom). Distalni dio je odsječen. Uz desni rub vidljiv je sjaj.

89. SJ 345; N-971; T.6; d-4,2 cm; š-2,74 cm; db-1,71 cm; t-30,11 g
Unipolarna jezgra za sječiva.

90. SJ 449; N-1152/1; T.6; d-2,59 cm; š-1,95 cm; db-0,94 cm; t-5,7 g
Odbojak s obradom na oba poprečna ruba i na ventralnoj strani desnog i lijevog lateralnog ruba (dvostruko grebalo i obrada na oba lateralna ruba).

91. SJ 572; N-1134/3; T.6; d-3,38 cm; š-1,37 cm; db-0,52 cm; t-3,3 g
Sječivo s obradom na ventralnoj strani lijevog lateralnog ruba (komadić s obradom). Distalni dio je odsječen.

92. SJ 572; N-724/4; T.6; d-3,7 cm; š-1,86 cm; db-0,52 cm; t-3,82 g
Sječivo s obradom na distalnom rubu i dorzalnoj strani desnog i lijevog lateralnog ruba (grebalo i obrada na oba lateralna ruba). Baza je odsječena. Uz lijevi rub cijelom dužinom vidljiv je sjaj.

93. SJ 572; N-1024; T.6; d-3,29 cm; š-1,63 cm; db-0,55 cm; t-4,14 g
Sječivo s obradom na dorzalnoj strani desnog lateralnog ruba i obradom na distalnom rubu (zarubak i obrada na jednom lateralnom rubu). Baza je odsječena. Uz lijevi lateralni rub vidljiv je sjaj.

94. SJ 572; N-718/1; T.6; d-2,89 cm; š-1,36 cm; db-0,31 cm; t-1,31 g
Sječivo s obradom na distalnom rubu (zarubak).

95. SJ 572; N-746/3; T.6; d-2,33 cm; š-1,59 cm; db-0,32 cm; t-1,58 g
Odbojak s obradom na ventralnoj strani desnog i lijevog lateralnog ruba i ventralnoj strani distalnog ruba (zarubak i obrada na oba lateralna ruba).

96. SJ 617; N-770/3; T.6; d-3,7 cm; š-1,37 cm; db-0,36 cm; t-2,65 g
Sječivo s okorinom s obradom na ventralnoj strani lijevog lateralnog ruba i obradom na distalnom rubu (zarubak i obrada na jednom lateralnom rubu). Uz lijevi lateralni rub u gornjem dijelu vidljiv je sjaj.

97. SJ 659; N-1398/1; T.6; d-3,57 cm; š-1,92 cm; db-0,53 cm; t-4,96 g
Sječivo s obradom na distalnom rubu (zarubak).

98. SJ 659; N-355/1; T.6; d-3,74 cm; š-1,74 cm; db-0,45 cm; t-3,49 g
Sječivo s obradom na distalnom i prokismalnom rubu (dvostruki zarubak).

99. SJ 662; N-826; T.6; d-4,98 cm; š-1,68 cm; db-0,47 cm; t-7,46 g
Sječivo s okorinom s obradom na ventralnoj strani desnog lateralnog ruba (komadić s obradom).

100. SJ 682; N-469; T.6; d-4,33 cm; š-0,93 cm; db-0,36 cm; t-1,79 g
Sječivo s obradom na dorzalnoj i ventralnoj strani desnog lateralnog ruba (komadić s obradom).

101. SJ 705; N-504/1; T.6; d-4,12 cm; š-1,42 cm; db-0,26 cm; t-2,26 g
Sječivo s obradom na dorzalnoj strani lijevog lateralnog ruba (komadić s obradom). Uz lijevi rub vidljiv je sjaj.

102. SJ 705; N-565/2; T.6; d-3,43 cm; š-1,49 cm; db-0,49 cm; t-2,81 g
Sječivo s obradom na ventralnoj strani desnog, dorzalnoj strani lijevog lateralnog ruba i obradom na distalnom rubu (zarubak i obrada na oba lateralna ruba).

103. SJ 705; N-578/2; T.6; d-3,18 cm; š-1,09 cm; db-0,26 cm; t-1,38 g
Sječivo s obradom na distalnom rubu (zarubak). Uz lijevi rub u gornjem dijelu vidljiv je sjaj.

86. SJ 295; N-498/1; Pl.5; l-4.29 cm; wi-1.1 cm; th-0.41 cm; we-2.85 g
Blade with retouch on dorsal and ventral sides of right lateral edge, ventral side of left lateral edge and steep retouch on distal edge (truncated blade and retouch on both lateral edges).

87. SJ 327; N-660/1; Pl.5; l-2.66 cm; wi-1.53 cm; th-0.43 cm; we-2.27 g
Blade with retouch on ventral side of right lateral edge (retouched small piece). Distal part was cut off. Gloss is visible along right edge.

88. SJ 327; N-678/1; Pl.5; l-2.95 cm; wi-1.52 cm; th-0.27 cm; we-1.32 g
Blade with retouch on dorsal and ventral sides of right lateral edge (retouched small piece). Distal part was cut off. Gloss is visible along right edge.

89. SJ 345; N-971; Pl.6; l-4.2 cm; wi-2.74 cm; th-1.71 cm; we-30.11 g
Unipolar core for blades.

90. SJ 449; N-1152/1; Pl.6; l-2.59 cm; wi-1.95 cm; th-0.94 cm; we-5.7 g
Flake with retouch on both transverse edges and ventral side of right and left lateral edges (double endscraper and retouch on both lateral edges).

91. SJ 572; N-1134/3; Pl.6; l-3.38 cm; wi-1.37 cm; th-0.52 cm; we-3.3 g
Blade with retouch on ventral side of left lateral edge (retouched small piece). Distal part was cut off.

92. SJ 572; N-724/4; Pl.6; l-3.7 cm; wi-1.86 cm; th-0.52 cm; we-3.82 g
Blade with retouch on distal edge and on dorsal side of right and left lateral edges (endscraper and retouch on both lateral edges). Base was cut off. Gloss is visible along the length of left edge.

93. SJ 572; N-1024; Pl.6; l-3.29 cm; wi-1.63 cm; th-0.55 cm; we-4.14 g
Blade with retouch on dorsal side of right lateral edge and retouch on distal edge (truncated blade and retouch on one lateral edge). Base was cut off. Gloss is visible along left lateral edge.

94. SJ 572; N-718/1; Pl.6; l-2.89 cm; wi-1.36 cm; th-0.31 cm; we-1.31 g
Blade with retouch on distal edge (truncated blade).

95. SJ 572; N-746/3; Pl.6; l-2.33 cm; wi-1.59 cm; th-0.32 cm; we-1.58 g
Flake with retouch on ventral side of right and left lateral edges and on ventral side of distal edge (truncated blade and retouch on both lateral edges).

96. SJ 617; N-770/3; Pl.6; l-3.7 cm; wi-1.37 cm; th-0.36 cm; we-2.65 g
Blade with cortex with retouch on ventral side of left lateral edge and retouch on distal edge (truncated blade and retouch on one lateral edge). Gloss is visible in the upper part along left lateral edge.

97. SJ 659; N-1398/1; Pl.6; l-3.57 cm; wi-1.92 cm; th-0.53 cm; we-4.96 g
Blade with retouch on distal edge (truncated blade).

98. SJ 659; N-355/1; Pl.6; l-3.74 cm; wi-1.74 cm; th-0.45 cm; we-3.49 g
Blade with retouch on distal and proximal edges (double truncated blade).

99. SJ 662; N-826; Pl.6; l-4.98 cm; wi-1.68 cm; th-0.47 cm; we-7.46 g
Blade with cortex with retouch on ventral side of right lateral edge (retouched small piece).

100. SJ 682; N-469; Pl.6; l-4.33 cm; wi-0.93 cm; th-0.36 cm; we-1.79 g
Blade with retouch on dorsal and ventral sides of right lateral edge (retouched small piece).

101. SJ 705; N-504/1; Pl.6; l-4.12 cm; wi-1.42 cm; th-0.26 cm; we-2.26 g
Blade with retouch on dorsal side of left lateral edge (retouched small piece). Gloss is visible along left edge.

102. SJ 705; N-565/2; Pl.6; l-3.43 cm; wi-1.49 cm; th-0.49 cm; we-2.81 g
Blade with retouch on ventral side of right lateral edge, on dorsal side of left lateral edge and retouch on distal edge (truncated blade and retouch on both lateral edges).

103. SJ 705; N-578/2; Pl.6; l-3.18 cm; wi-1.09 cm; th-0.26 cm; we-1.38 g
Blade with retouch on distal edge (truncated blade). Gloss is visible in the upper part along left edge.

104. SJ 160; N-40/1; Pl.7; l-4.83 cm; wi-1.2 cm; th-0.33 cm; we-4.32 g
Blade with retouch on dorsal side of right lateral edge, on ventral side of left lateral edge and retouch on distal edge (truncated blade and retouch on both lateral edges). Gloss is visible along left edge.

**104.** SJ 160; N-40/1; T.7; d-4,83 cm; š-1,2 cm; db-0,33 cm; t-4,32 g

Sječivo s obradom na dorzalnoj strani desnog, ventralnoj strani lijevog lateralnog ruba i obradom na distalnom rubu (zarubak i obrada na oba lateralna ruba). Uz lijevi rub vidljiv je sjaj.

**105.** SJ 160; N-932/2; T.7; d-5,07 cm; š-1,83 cm; db-0,3 cm; t-5,3 g

Sječivo s obradom na ventralnoj strani desnog, dorzalnoj i ventralnoj strani lijevog lateralnog ruba i obradom na distalnom rubu (zarubak i obrada na oba lateralna ruba). Uz lijevi rub vidljiv je sjaj.

**106.** SJ 160; N-816/1; T.7; d-5,41 cm; š-1,49 cm; db-0,36 cm; t-3,23 g

Sječivo s obradom na distalnom rubu (zarubak). Uz lijevi rub u gornjem dijelu vidljiv je sjaj.

**107.** SJ 160; N-932/6; T.7; d-4,1 cm; š-1,2 cm; db-0,38 cm; t-2,75 g

Sječivo s obradom na svim rubovima – dorzalnoj i ventralnoj strani desnog, dorzalnoj strani lijevog lateralnog ruba, te proksimalnom i distalnom rubu (dvostruki zarubak i obrada na oba lateralna ruba).

**108.** SJ 160; N-989/1; T.7; d-5,22 cm; š-1,47 cm; db-0,28 cm; t-2,25 g

Sječivo s obradom na dorzalnoj i ventralnoj strani desnog i lijevog lateralnog ruba (obrada na oba lateralna ruba).

**109.** SJ 160; N-1082/3; T.7; d-4,35 cm; š-1,5 cm; db-0,56 cm; t-3,88 g

Sječivo s obradom na dorzalnoj strani desnog (?) lateralnog ruba te proksimalnom i distalnom rubu (dvostruki zarubak i obrada na jednom lateralnom rubu).

**110.** SJ 160; N-200/1; T.7; d-4,32 cm; š-1,25 cm; db-0,36 cm; t-2,96 g

Sječivo s obradom na dorzalnoj strani lijevog lateralnog ruba i obradom na distalnom rubu (zarubak i obrada na jednom lateralnom rubu).

**111.** SJ 160; N-747/1; T.7; d-4,35 cm; š-0,54 cm; db-0,5 cm; t-4,65 g

Sječivo s obradom na ventralnoj strani desnog lateralnog ruba i obradom na distalnom rubu (zarubak i obrada na jednom lateralnom rubu). Uz desni rub vidljiv je sjaj.

**112.** SJ 160; N-245/2; T.7; d-3,71 cm; š-1,2 cm; db-0,27 cm; t-1,7 g

Sječivo s obradom na dorzalnoj strani desnog i lijevog lateralnog ruba i obradom na distalnom rubu (zarubak i obrada na oba lateralna ruba).

**113.** SJ 160; N-2../1; T.7; d-3,67 cm; š-1,52 cm; db-0,46 cm; t-4,13 g

Sječivo s obradom na dorzalnoj i ventralnoj strani desnog, ventralnoj strani lijevog lateralnog ruba i obradom na distalnom rubu (zarubak i obrada na oba lateralna ruba). Baza je odsječena. Uz desni rub s obje strane vidljiv je sjaj.

**114.** SJ 160; N-1240/2; T.7; d-4,17 cm; š-1,32 cm; db-0,31 cm; t-3,15 g

Sječivo s obradom na ventralnoj strani lijevog lateralnog ruba i obradom na distalnom rubu (zarubak i obrada na jednom lateralnom rubu). Uz lijevi rub s obje strane vidljiv je sjaj.

**115.** SJ 160; N-79/1; T.7; d-4,65 cm; š-1,42 cm; db-0,47 cm; t-3,36 g

Sječivo s obradom na dorzalnoj i ventralnoj strani desnog (?) lateralnog ruba (komadić s obradom). Baza i vrh su odsječeni.

**116.** SJ 160; N-816/11; T.7; d-4,32 cm; š-1,33 cm; db-0,52 cm; t-3,21 g

Sječivo s obradom na ventralnoj strain lijevog lateralnog ruba i obradom na distalnom rubu (zarubak i obrada na jednom lateralnom rubu).

**117.** SJ 160; N-989/3; T.7; d-4,12 cm; š-1,37 cm; db-0,38 cm; t-3,23 g

Sječivo s okorinom s cjelovitom obradom na dorzalnoj i djelomično ventralnoj strani lijevog lateralnog ruba (komadić s cjelovitom obradom na jednom rubu). Uz lijevi rub vidljiv je sjaj.

**118.** SJ 160; N-1204/8; T.7; d-3,73 cm; š-1,35 cm; db-0,42 cm; t-2,87 g

Sječivo s obradom na dorzalnoj i ventralnoj strani lijevog lateralnog ruba i obradom na distalnom rubu (zarubak i obrada na jednom lateralnom rubu). Uz lijevi rub vidljiv je sjaj.

**119.** SJ 160; N-485/1; T.7; d-4,08 cm; š-1,8 cm; db-0,63 cm; t-6 g

Sječivo s okorinom s obradom na dorzalnoj strani desnog lateralnog ruba i obradom na distalnom rubu (zarubak i obrada na jednom lateralnom rubu).

**120.** SJ 160; N-1003/5; T.7; d-5,63 cm; š-1,61 cm; db-0,39 cm; t-6,21 g

Sječivo s obradom na dorzalnoj i ventralnoj strani desnog, dorzalnoj strani lijevog lateralnog ruba i obradom na distalnom rubu (zarubak i obrada na oba lateralna ruba).

**105.** SJ 160; N-932/2; Pl.7; l-5.07 cm; wi-1.83 cm; th-0.3 cm; we-5.3 g

Blade with retouch on ventral side of right lateral edge, on dorsal and ventral sides of left lateral edge and retouch on distal edge (truncated blade and retouch on both lateral edges). Gloss is visible along left edge.

**106.** SJ 160; N-816/1; Pl.7; l-5.41 cm; wi-1.49 cm; th-0.36 cm; we-3.23 g

Blade with retouch on distal edge (truncated blade). Gloss is visible along left edge in the upper part.

**107.** SJ 160; N-932/6; Pl.7; l-4.1 cm; wi-1.2 cm; th-0.38 cm; we-2.75 g

Blade with retouch on all edges – dorsal and ventral sides of right lateral edge, dorsal side of left lateral edge, and proximal and distal edges (double truncated blade and retouch on both lateral edges).

**108.** SJ 160; N-989/1; Pl.7; l-5.22 cm; wi-1.47 cm; th-0.28 cm; we-2.25 g

Blade with retouch on dorsal and ventral sides of right and left lateral edges (retouch on both lateral edges).

**109.** SJ 160; N-1082/3; Pl.7; l-4.35 cm; wi-1.5 cm; th-0.56 cm; we-3.88 g

Blade with retouch on dorsal side of right (?) lateral edge, and on proximal and distal edges (double truncated blade and retouch on one lateral edge).

**110.** SJ 160; N-200/1; Pl.7; l-4.32 cm; wi-1.25 cm; th-0.36 cm; we-2.96 g

Blade with retouch on dorsal side of left lateral edge and retouch on distal edge (truncated blade and retouch on one lateral edge).

**111.** SJ 160; N-747/1; Pl.7; l-4.35 cm; wi-0.54 cm; th-0.5 cm; we-4.65 g

Blade with retouch on ventral side of right lateral edge and retouch on distal edge (truncated blade and retouch on one lateral edge). Gloss is visible along right edge.

**112.** SJ 160; N-245/2; Pl.7; l-3.71 cm; wi-1.2 cm; th-0.27 cm; we-1.7 g

Blade with retouch on dorsal side of right and left lateral edges and retouch on distal edge (truncated blade and retouch on both lateral edges).

**113.** SJ 160; N-2../1; Pl.7; l-3.67 cm; wi-1.52 cm; th-0.46 cm; we-4.13 g

Blade with retouch on dorsal and ventral sides of right lateral edge, ventral side of left lateral edge and retouch on distal edge (truncated blade and retouch on both lateral edges). Base was cut off. Gloss is visible along right edge on both sides.

**114.** SJ 160; N-1240/2; Pl.7; l-4.17 cm; wi-1.32 cm; th-0.31 cm; we-3.15 g

Blade with retouch on ventral side of left lateral edge and retouch on distal edge (truncated blade and retouch on one lateral edge). Gloss is visible along left edge on both sides.

**115.** SJ 160; N-79/1; Pl.7; l-4.65 cm; wi-1.42 cm; th-0.47 cm; we-3.36 g

Blade with retouch on dorsal and ventral sides of right (?) lateral edge (retouched small piece). Base and tip were cut off.

**116.** SJ 160; N-816/11; Pl.7; l-4.32 cm; wi-1.33 cm; th-0.52 cm; we-3.21 g

Blade with retouch on ventral side of left lateral edge and retouch on distal edge (truncated blade and retouch on one lateral edge).

**117.** SJ 160; N-989/3; Pl.7; l-4.12 cm; wi-1.37 cm; th-0.38 cm; we-3.23 g

Blade with cortex with complete retouch on dorsal side and partly on ventral side of left lateral edge (small piece with complete retouch on one edge). Gloss is visible along left edge.

**118.** SJ 160; N-1204/8; Pl.7; l-3.73 cm; wi-1.35 cm; th-0.42 cm; we-2.87 g

Blade with retouch on dorsal and ventral sides of left lateral edge and retouch on distal edge (truncated blade and retouch on one lateral edge). Gloss is visible along left edge.

**119.** SJ 160; N-485/1; Pl.7; l-4.08 cm; wi-1.8 cm; th-0.63 cm; we-6 g

Blade with cortex with retouch on dorsal side of right lateral edge and retouch on distal edge (truncated blade and retouch on one lateral edge).

**120.** SJ 160; N-1003/5; Pl.7; l-5.63 cm; wi-1.61 cm; th-0.39 cm; we-6.21 g

Blade with retouch on dorsal and ventral sides of right lateral edge, on dorsal side of left lateral edge and retouch on distal edge (truncated blade and retouch on both lateral edges).

**121.** SJ 160; N-404; Pl.8; l-5.67 cm; wi-1.8 cm; th-0.38 cm; we-5.62 g

Blade with retouch on dorsal side of right and left lateral edges and retouch on distal edge (truncated blade and retouch on both lateral edges). Gloss is visible along both edges.

**121.** SJ 160; N-404; T.8; d-5,67 cm; š-1,8 cm; db-0,38 cm; t-5,62 g
Sječivo s obradom na dorzalnoj strani desnog i lijevog lateralnog ruba i obradom na distalnom rubu (zarubak i obrada na oba lateralna ruba). Uz oba ruba vidljiv je sjaj.

**122.** SJ 160; N-263/1; T.8; d-4,95 cm; š-1,42 cm; db-0,44 cm; t-4,09 g
Sječivo s obradom na dorzalnoj i ventralnoj strani desnog i lijevog lateralnog ruba i obradom na distalnom rubu (zarubak i obrada na oba lateralna ruba).

**123.** SJ 160; N-212; T.8; d-4,78 cm; š-2,03 cm; db-0,48 cm; t-7,78 g
Sječivo s obradom na dorzalnoj strani desnog i lijevog lateralnog ruba i obradom na distalnom rubu (zarubak i obrada na oba lateralna ruba).

**124.** SJ 160; N-800/5; T.8; d-5,79 cm; š-1,78 cm; db-0,62 cm; t-7,01 g
Sječivo s obradom na dorzalnoj i ventralnoj strani desnog, ventralnoj strani lijevog lateralnog ruba i obradom na distalnom rubu (zarubak i obrada na oba lateralna ruba). Uz oba ruba vidljiv je sjaj.

**125.** SJ 160; N-891/2; T.8; d-6,26 cm; š-1,61 cm; db-0,5 cm; t-6,7 g
Sječivo s obradom na dorzalnoj strani desnog i dorzalnoj i ventralnoj strani lijevog lateralnog ruba (obrada na oba lateralna ruba). Uz oba ruba vidljiv je sjaj.

**126.** SJ 160; N-932/3; T.8; d-4,48 cm; š-1,72 cm; db-0,33 cm; t-3,38 g
Sječivo s obradom na dorzalnoj i ventralnoj strani desnog, dorzalnoj strani lijevog lateralnog ruba i obradom na distalnom rubu (zarubak i obrada na oba lateralna ruba). Baza je odsječena. Uz desni rub vidljiv je sjaj.

**127.** SJ 160; N-1003/6; T.8; d-4,46 cm; š-1,5 cm; db-0,46 cm; t-3,84 g
Sječivo s obradom na dorzalnoj i ventralnoj strani desnog i lijevog lateralnog ruba (obrada na oba lateralna ruba). Baza i vrh su odsječeni. Uz lijevi rub vidljiv je sjaj.

**128.** SJ 160; N-800/8; T.8; d-3,73 cm; š-1,5 cm; db-0,35 cm; t-1,85 g
Sječivo s obradom na distalnom rubu (zarubak).

**129.** SJ 160; N-1061/3; T.8; d-4,09 cm; š-1,86 cm; db-0,55 cm; t-3,17 g
Sječivo s obradom na ventralnoj strani desnog i lijevog lateralnog ruba i obradom na distalnom rubu (zarubak i obrada na oba lateralna ruba). Uz lijevi rub vidljiv je sjaj.

**130.** SJ 160; N-1204/2; T.8; d-4,56 cm; š-1,92 cm; db-0,49 cm; t-6,29 g
Sječivo s obradom na dorzalnoj strani desnog, ventralnoj strani lijevog lateralnog ruba i obradom na distalnom rubu (zarubak i obrada na oba lateralna ruba). Uz lijevi rub vidljiv je sjaj.

**131.** SJ 160; N-1169/5; T.8; d-4,3 cm; š-2,07 cm; db-0,41 cm; t-5,15 g
Sječivo s okorinom s obradom na ventralnoj strani desnog, dorzalnoj i ventralnoj strani lijevog lateralnog ruba i obradom na distalnom rubu (zarubak i obrada na oba lateralna ruba). Uz lijevi rub vidljiv je sjaj.

**132.** SJ 160; N-1003/10; T.8; d-3,66 cm; š-2 cm; db-0,41 cm; t-4,54 g
Sječivo s obradom na dorzalnoj i ventralnoj strani desnog i dorzalnoj strani lijevog lateralnog ruba (obrada na oba lateralna ruba). Distalni dio je odsječen.

**133.** SJ 160; N-305/3; T.8; d-3,3 cm; š-1,65 cm; db-0,62 cm; t-3,58 g
Sječivo s obradom na ventralnoj strani desnog lateralnog ruba i obradom na distalnom rubu (zarubak i obrada na jednom lateralnom rubu).

**134.** SJ 160; N-747/9; T.8; d-3,1 cm; š-1,55 cm; db-0,22 cm; t-1,71 g
Sječivo s obradom na ventralnoj strani lijevog lateralnog ruba i obradom na distalnom rubu (zarubak i obrada na jednom lateralnom rubu). Uz desni rub vidljiv je sjaj.

**135.** SJ 160; N-173/1; T.8; d-3,05 cm; š-0,92 cm; db-0,2 cm; t-0,83 g
Sječivo s obradom na dorzalnoj strani desnog lateralnog ruba i obradom na distalnom rubu (zarubak i obrada na jednom lateralnom rubu).

**136.** SJ 160; N-1220/3; T.9; d-5,05 cm; š-1,72 cm; db-0,6 cm; t-6,27 g
Sječivo s okorinom s obradom na distalnom rubu (zarubak). Uz lijevi rub vidljiv je sjaj.

**137.** SJ 160; N-816/3; T.9; d-4,15 cm; š-1,53 cm; db-0,36 cm; t-3,32 g
Sječivo s obradom na ventralnoj strani lijevog lateralnog ruba te proksimalnom i distalnom rubu (dvostruki zarubak i obrada na jednom lateralnom rubu). Uz oba ruba vidljiv je sjaj.

**122.** SJ 160; N-263/1; Pl.8; l-4.95 cm; wi-1.42 cm; th-0.44 cm; we-4.09 g
Blade with retouch on dorsal and ventral sides of right and left lateral edges and retouch on distal edge (truncated blade and retouch on both lateral edges).

**123.** SJ 160; N-212; Pl.8; l-4.78 cm; wi-2.03 cm; th-0.48 cm; we-7.78 g
Blade with retouch on dorsal side of right and left lateral edges and retouch on distal edge (truncated blade and retouch on both lateral edges).

**124.** SJ 160; N-800/5; Pl.8; l-5.79 cm; wi-1.78 cm; th-0.62 cm; we-7.01 g
Blade with retouch on dorsal and ventral sides of right lateral edge, on ventral side of left lateral edge and retouch on distal edge (truncated blade and retouch on both lateral edges). Gloss is visible along both edges.

**125.** SJ 160; N-891/2; Pl.8; l-6.26 cm; wi-1.61 cm; th-0.5 cm; we-6.7 g
Blade with retouch on dorsal side of right lateral edge and on dorsal and ventral sides of left lateral edge (retouch on both lateral edges). Gloss is visible along both edges.

**126.** SJ 160; N-932/3; Pl.8; l-4.48 cm; wi-1.72 cm; th-0.33 cm; we-3.38 g
Blade with retouch on dorsal and ventral sides of right lateral edge, on dorsal side of left lateral edge and retouch on distal edge (truncated blade and retouch on both lateral edges). Base was cut off. Gloss is visible along right edge.

**127.** SJ 160; N-1003/6; Pl.8; l-4.46 cm; wi-1.5 cm; th-0.46 cm; we-3.84 g
Blade with retouch on dorsal and ventral sides of right and left lateral edges (retouch on both lateral edges). Base and tip were cut off. Gloss is visible along left edge.

**128.** SJ 160; N-800/8; Pl.8; l-3.73 cm; wi-1.5 cm; th-0.35 cm; we-1.85 g
Blade with retouch on distal edge (truncated blade).

**129.** SJ 160; N-1061/3; Pl.8; l-4.09 cm; wi-1.86 cm; th-0.55 cm; we-3.17 g
Blade with retouch on ventral side of right and left lateral edges and retouch on distal edge (truncated blade and retouch on both lateral edges). Gloss is visible along left edge.

**130.** SJ 160; N-1204/2; Pl.8; l-4.56 cm; wi-1.92 cm; th-0.49 cm; we-6.29 g
Blade with retouch on dorsal side of right lateral edge, on ventral side of left lateral edge and retouch on distal edge (truncated blade and retouch on both lateral edges). Gloss is visible along left edge.

**131.** SJ 160; N-1169/5; Pl.8; l-4.3 cm; wi-2.07 cm; th-0.41 cm; we-5.15 g
Blade with cortex with retouch on ventral side of right lateral edge, on dorsal and ventral sides of left lateral edge and retouch on distal edge (truncated blade and retouch on both lateral edges). Gloss is visible along left edge.

**132.** SJ 160; N-1003/10; Pl.8; l-3.66 cm; wi-2 cm; th-0.41 cm; we-4.54 g
Blade with retouch on dorsal and ventral sides of right lateral edge and on dorsal side of left lateral edge (retouch on both lateral edges). Distal part was cut off.

**133.** SJ 160; N-305/3; Pl.8; l-3.3 cm; wi-1.65 cm; th-0.62 cm; we-3.58 g
Blade with retouch on ventral side of right lateral edge and retouch on distal edge (truncated blade and retouch on one lateral edge).

**134.** SJ 160; N-747/9; Pl.8; l-3.1 cm; wi-1.55 cm; th-0.22 cm; we-1.71 g
Blade with retouch on ventral side of left lateral edge and retouch on distal edge (truncated blade and retouch on one lateral edge). Gloss is visible along right edge.

**135.** SJ 160; N-173/1; Pl.8; l-3.05 cm; wi-0.92 cm; th-0.2 cm; we-0.83 g
Blade with retouch on dorsal side of right lateral edge and retouch on distal edge (truncated blade and retouch on one lateral edge).

**136.** SJ 160; N-1220/3; Pl.9; l-5.05 cm; wi-1.72 cm; th-0.6 cm; we-6.27 g
Blade with cortex with retouch on distal edge (truncated blade). Gloss is visible along left edge.

**137.** SJ 160; N-816/3; Pl.9; l-4.15 cm; wi-1.53 cm; th-0.36 cm; we-3.32 g
Blade with retouch on ventral side of left lateral edge and proximal and distal edges (double truncated blade and retouch on one lateral edge). Gloss is visible along both edges.

**138.** SJ 160; N-1268/2; Pl.9; l-4.13 cm; wi-1.2 cm; th-0.36 cm; we-2.74 g
Blade with complete retouch on left lateral edge and retouch on distal edge (truncated blade and complete retouch on one lateral edge). Gloss is visible along left edge.

**138.** SJ 160; N-1268/2; T.9; d-4,13 cm; š-1,2 cm; db-0,36 cm; t-2,74 g
Sječivo s cjelovitom obradom na lijevom lateralnom rubu i obradom na distalnom rubu (zarubak i cjelovita obrada na jednom lateralnom rubu). Uz lijevi rub vidljiv je sjaj.

**139.** SJ 160; N-1089/1; T.9; d-3,67 cm; š-1,56 cm; db-0,48 cm; t-3,56 g
Sječivo s okorinom s obradom na distalnom rubu (zarubak). Uz lijevi rub vidljiv je sjaj.

**140.** SJ 160; N-747/6; T.9; d-3,74 cm; š-1,54 cm; db-0,54 cm; t-3,8 g
Sječivo s obradom na dorzalnoj i ventralnoj strani desnog lateralnog ruba te proksimalnom i distalnom rubu (dvostruki zarubak i obrada na jednom lateralnom rubu). Uz desni rub vidljiv je sjaj.

**141.** SJ 160; N-200/2; T.9; d-3,02 cm; š-1,45 cm; db-0,32 cm; t-2,09 g
Sječivo s obradom na ventralnoj strani lijevog lateralnog ruba i obradom na distalnom rubu (zarubak i obrada na jednom lateralnom rubu). Uz lijevi rub vidljiv je sjaj.

**142.** SJ 160; N-630/3; T.9; d-2,88 cm; š-1,16 cm; db-0,48 cm; t-2,29 g
Sječivo s obradom na dorzalnoj i ventralnoj strani desnog i lijevog lateralnog ruba (obrada na oba lateralna ruba).

**143.** SJ 160; N-200/4; T.9; d-3,11 cm; š-0,94 cm; db-0,25 cm; t-1,11 g
Sječivo s obradom na ventralnoj strani desnog i lijevog lateralnog ruba (obrada na oba lateralna ruba). Baza i vrh su odsječeni. Uz oba ruba vidljiv je sjaj.

**144.** SJ 160; N-915/5; T.9; d-3,45 cm; š-1,57 cm; db-0,36 cm; t-2,44 g
Sječivo s obradom na ventralnoj strani desnog, dorzalnoj strani lijevog lateralnog ruba i obradom na distalnom rubu (zarubak i obrada na oba lateralna ruba).

**145.** SJ 160; N-1104/1; T.9; d-2,96 cm; š-1,93 cm; db-0,65 cm; t-3,48 g
Sječivo s obradom na distalnom rubu (zarubak). Proksimalni dio je odječen te je započeto zarubljivanje.

**146.** SJ 160; N-1021/5; T.9; d-2,6 cm; š-1,98 cm; db-0,49 cm; t-2,66 g
Odbojak s obradom na distalnom rubu (grebalo). Baza je odsječena. Uz lijevi rub vidljiv je sjaj.

**147.** SJ 160; N-1021/6; T.9; d-2,45 cm; š-1,28 cm; db-0,3 cm; t-1,37 g
Sječivo s obradom na dorzalnoj strani desnog lateralnog ruba i obradom na distalnom rubu (zarubak i obrada na jednom lateralnom rubu). Baza je odsječena.

**148.** SJ 160; N-663/6; T.9; d-2,78 cm; š-1,5 cm; db-0,33 cm; t-1,7 g
Sječivo s nepotpunom obradom na distalnom rubu (zarubak).

**149.** SJ 160; N-1117/5; T.9; d-1,6 cm; š-1,74 cm; db-0,43 cm; t-1,47 g
Ulomak sječiva s obradom na distalnom rubu i djelomičnom (započetom) obradom na proksimalnom (odsječenom) dijelu (dvostruki zarubak).

**150.** SJ 160; N-64; T.9; d-4,42 cm; š-3,03 cm; db-0,98 cm; t-11,4 g
Odbojak s okorinom s obradom na dorzalnoj strani desnog i lijevog lateralnog ruba (obrada na oba lateralna ruba).

**151.** SJ 160; N-853/8; T.9; d-2,55 cm; š-2,02 cm; db-0,48 cm; t-2,64 g
Odbojak s cjelovitom obradom na jednom rubu - na dorzalnoj i ventralnoj strani (cjelovita obrada na jednom rubu). Uz obrađeni (lijevi) rub vidljiv je sjaj.

**152.** SJ 160; N-834/6; T.9; d-3,2 cm; š-2,1cm; db-1,5 cm; t-15,57 g
Ulomak jezgre s okorinom.

**153.** SJ 160; N-757/9; T.10; d-6,64 cm; š-10,66 cm; db-1,43 cm; t-122,66 g
Odbojak s okorinom s obradom na distalnom rubu (komadić s obradom).

**154.** SJ 160; N-1056/1; T.10; d-5,76 cm; š-4,13 cm; db-3,17 cm; t-114,71 g
Bipolarna jezgra za sječiva s okorinom.

**139.** SJ 160; N-1089/1; Pl.9; l-3.67 cm; wi-1.56 cm; th-0.48 cm; we-3.56 g
Blade with cortex with retouch on distal edge (truncated blade). Gloss is visible along left edge.

**140.** SJ 160; N-747/6; Pl.9; l-3.74 cm; wi-1.54 cm; th-0.54 cm; we-3.8 g
Blade with retouch on dorsal and ventral sides of right lateral edge and proximal and distal edges (double truncated blade and retouch on one lateral edge). Gloss is visible along right edge.

**141.** SJ 160; N-200/2; Pl.9; l-3.02 cm; wi-1.45 cm; th-0.32 cm; we-2.09 g
Blade with retouch on ventral side of left lateral edge and retouch on distal edge (truncated blade and retouch on one lateral edge). Gloss is visible along left edge.

**142.** SJ 160; N-630/3; Pl.9; l-2.88 cm; wi-1.16 cm; th-0.48 cm; we-2.29 g
Blade with retouch on dorsal and ventral sides of right and left lateral edges (retouch on both lateral edges).

**143.** SJ 160; N-200/4; Pl.9; l-3.11 cm; wi-0.94 cm; th-0.25 cm; we-1.11 g
Blade with retouch on ventral side of right and left lateral edges (retouch on both lateral edges). Base and tip were cut off. Gloss is visible along both edges.

**144.** SJ 160; N-915/5; Pl.9; l-3.45 cm; wi-1.57 cm; th-0.36 cm; we-2.44 g
Blade with retouch on ventral side of right lateral edge, on dorsal side of left lateral edge and retouch on distal edge (truncated blade and retouch on both lateral edges).

**145.** SJ 160; N-1104/1; Pl.9; l-2.96 cm; wi-1.93 cm; th-0.65 cm; we-3.48 g
Blade with retouch on distal edge (truncated blade). Proximal part was cut off and truncation was commenced.

**146.** SJ 160; N-1021/5; Pl.9; l-2.6 cm; wi-1.98 cm; th-0.49 cm; we-2.66 g
Flake with retouch on distal edge (endscraper). Base was cut off. Gloss is visible along left edge.

**147.** SJ 160; N-1021/6; Pl.9; l-2.45 cm; wi-1.28 cm; th-0.3 cm; we-1.37 g
Blade with retouch on dorsal side of right lateral edge and retouch on distal edge (truncated blade and retouch on one lateral edge). Base was cut off.

**148.** SJ 160; N-663/6; Pl.9; l-2.78 cm; wi-1.5 cm; th-0.33 cm; we-1.7 g
Blade with incomplete retouch on distal edge (truncated blade).

**149.** SJ 160; N-1117/5; Pl.9; l-1.6 cm; wi-1.74 cm; th-0.43 cm; we-1.47 g
Fragment of blade with retouch on distal edge and partial (initiated) retouch on proximal (cut-off) part (double truncated blade).

**150.** SJ 160; N-64; Pl.9; l-4.42 cm; wi-3.03 cm; th-0.98 cm; we-11.4 g
Flake with cortex with retouch on dorsal side of right and left lateral edges (retouch on both lateral edges).

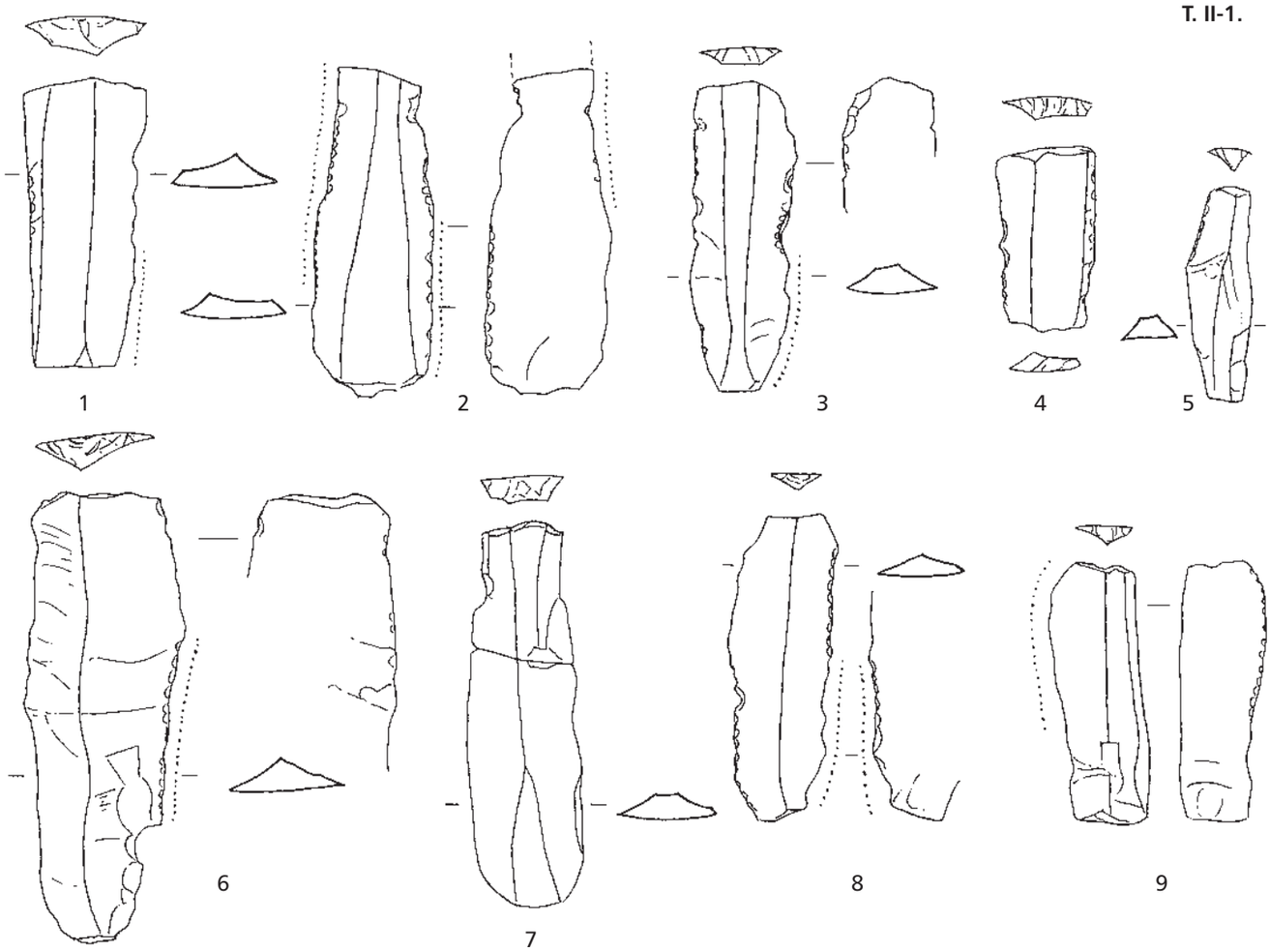
**151.** SJ 160; N-853/8; Pl.9; l-2.55 cm; wi-2.02 cm; th-0.48 cm; we-2.64 g
Flake with complete retouch on one edge – on dorsal and ventral sides (complete retouch on one edge). Gloss is visible along retouched (left) edge.

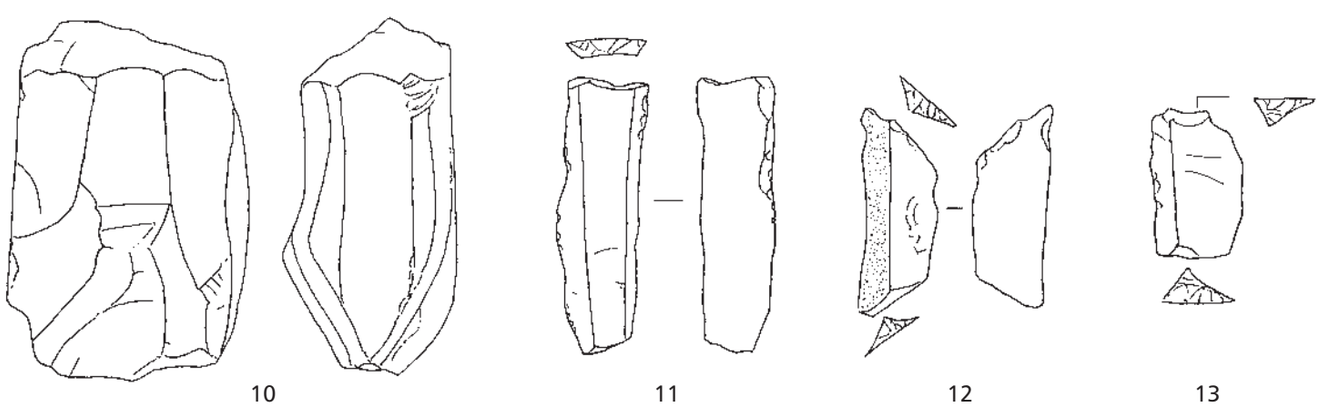
**152.** SJ 160; N-834/6; Pl.9; l-3.2 cm; wi-2.1cm; th-1.5 cm; we-15.57 g
Fragment of core with cortex.

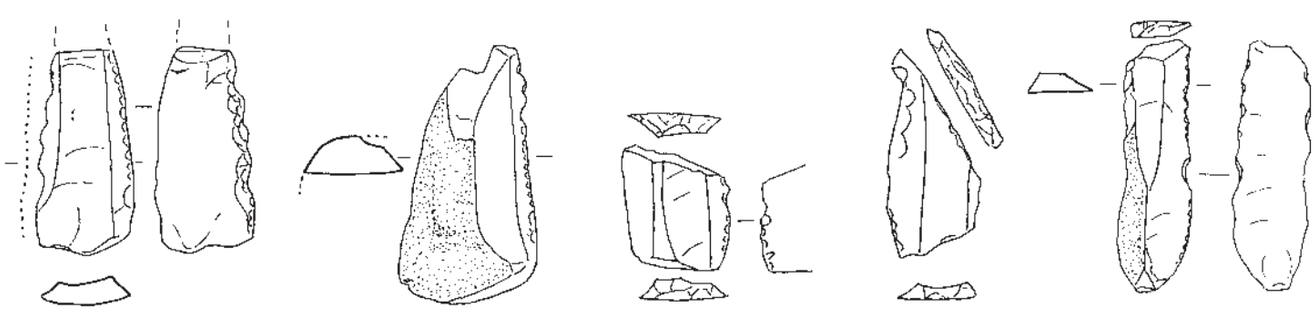
**153.** SJ 160; N-757/9; Pl.10; l-6.64 cm; wi-10.66 cm; th-1.43 cm; we-122.66 g
Flake with cortex with retouch on distal edge (retouched small piece).

**154.** SJ 160; N-1056/1; Pl.10; l-5.76 cm; wi-4.13 cm; th-3.17 cm; we-114.71 g
Bipolar core for blades with cortex.

T. II-1.

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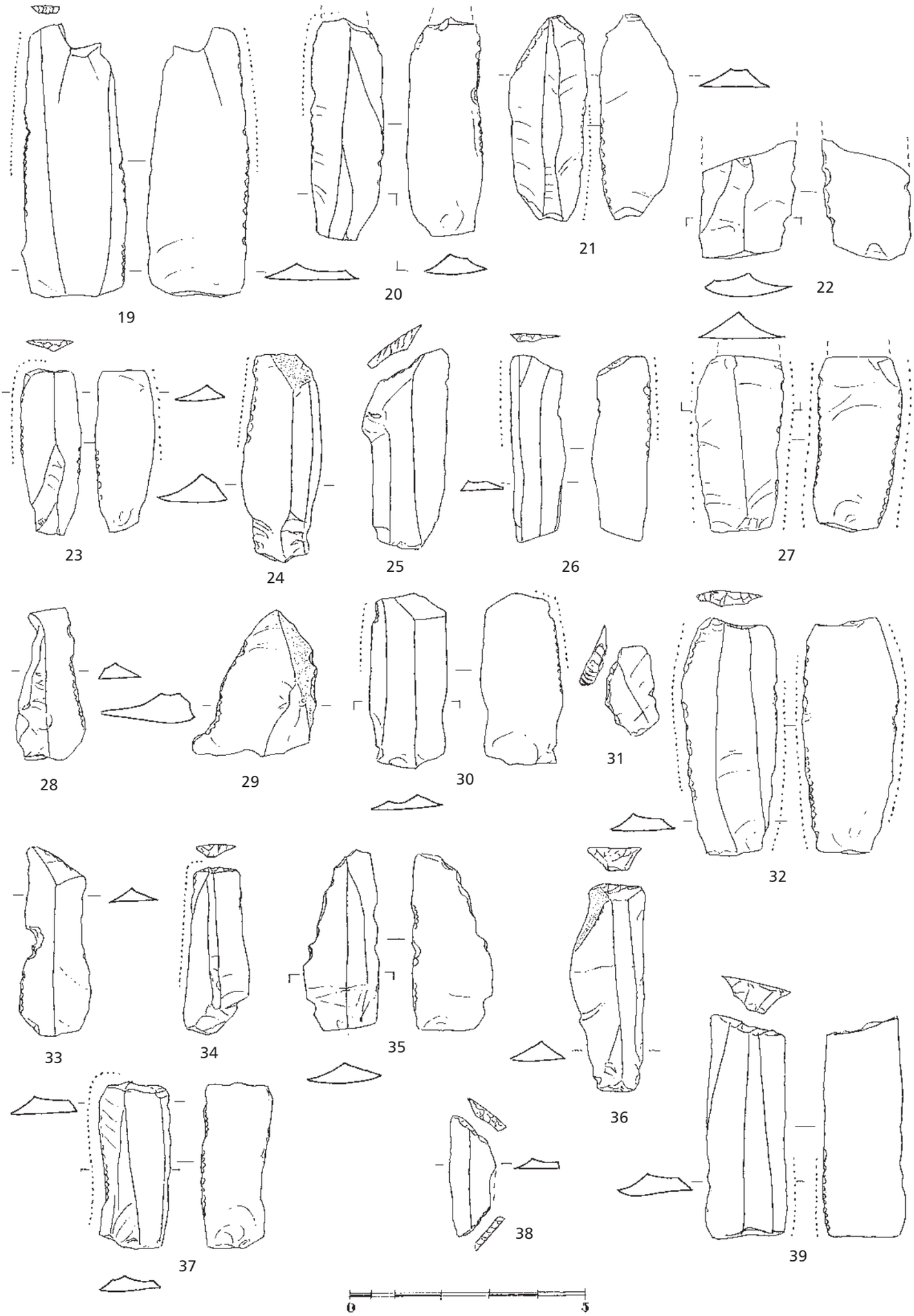

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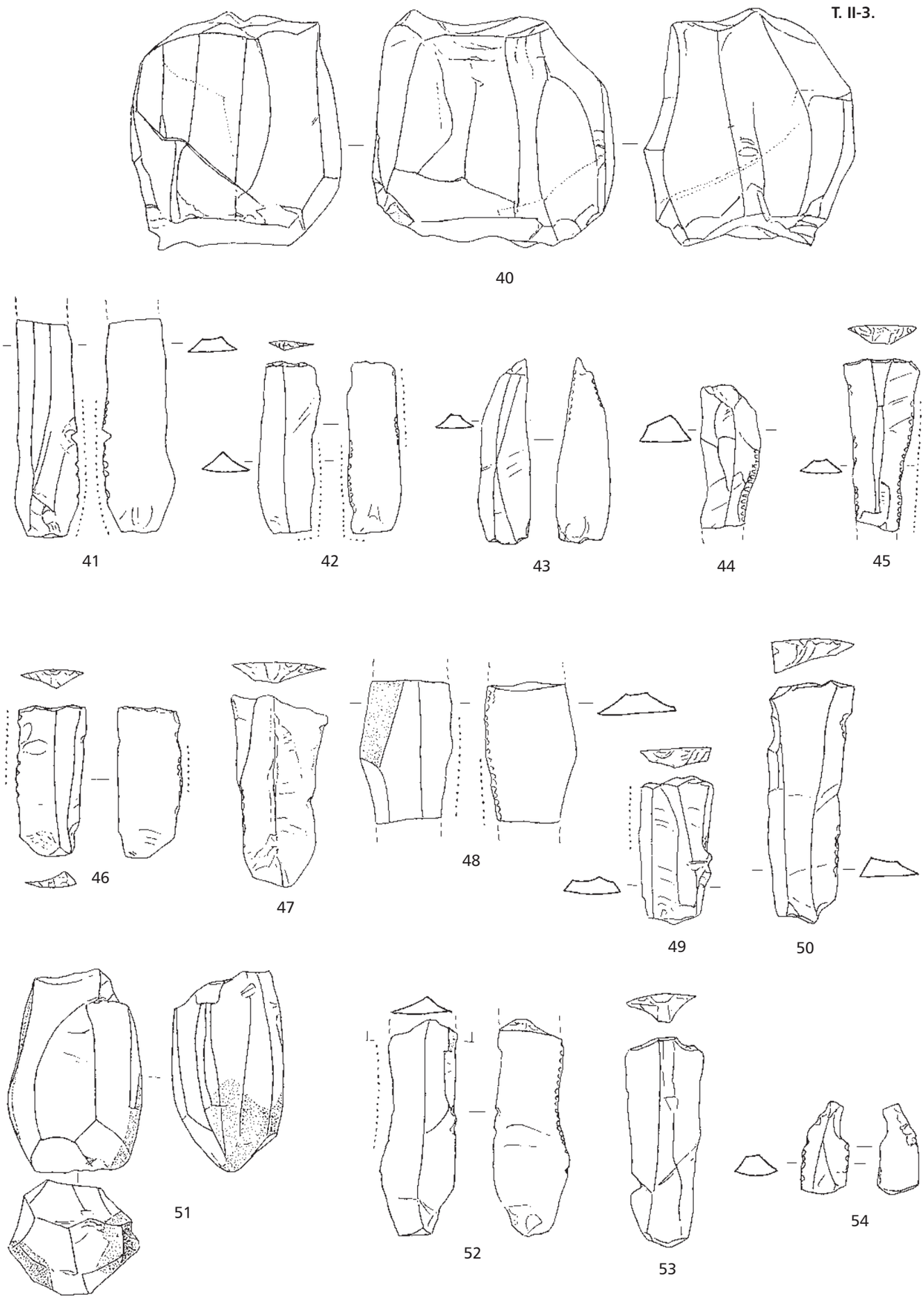

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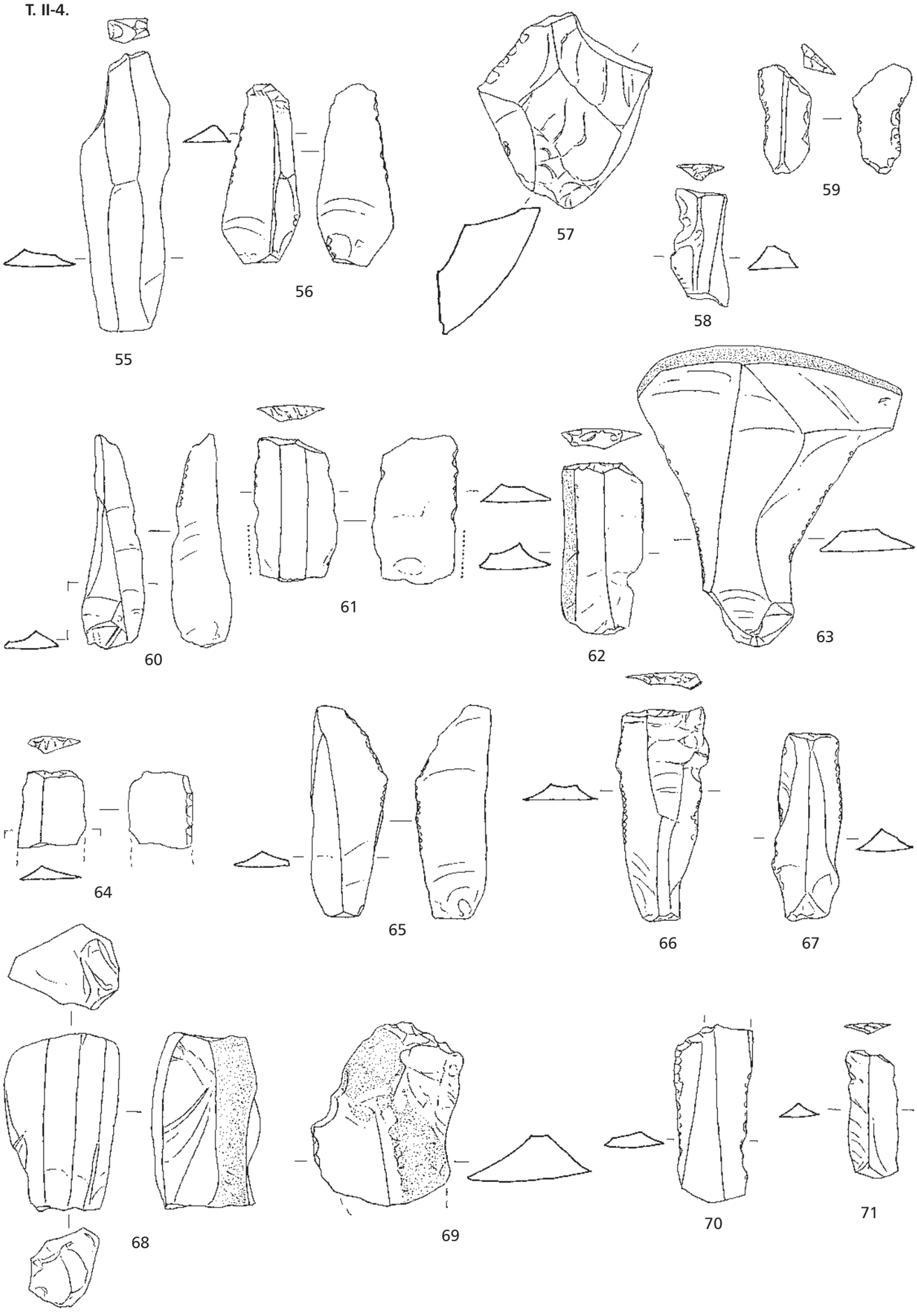

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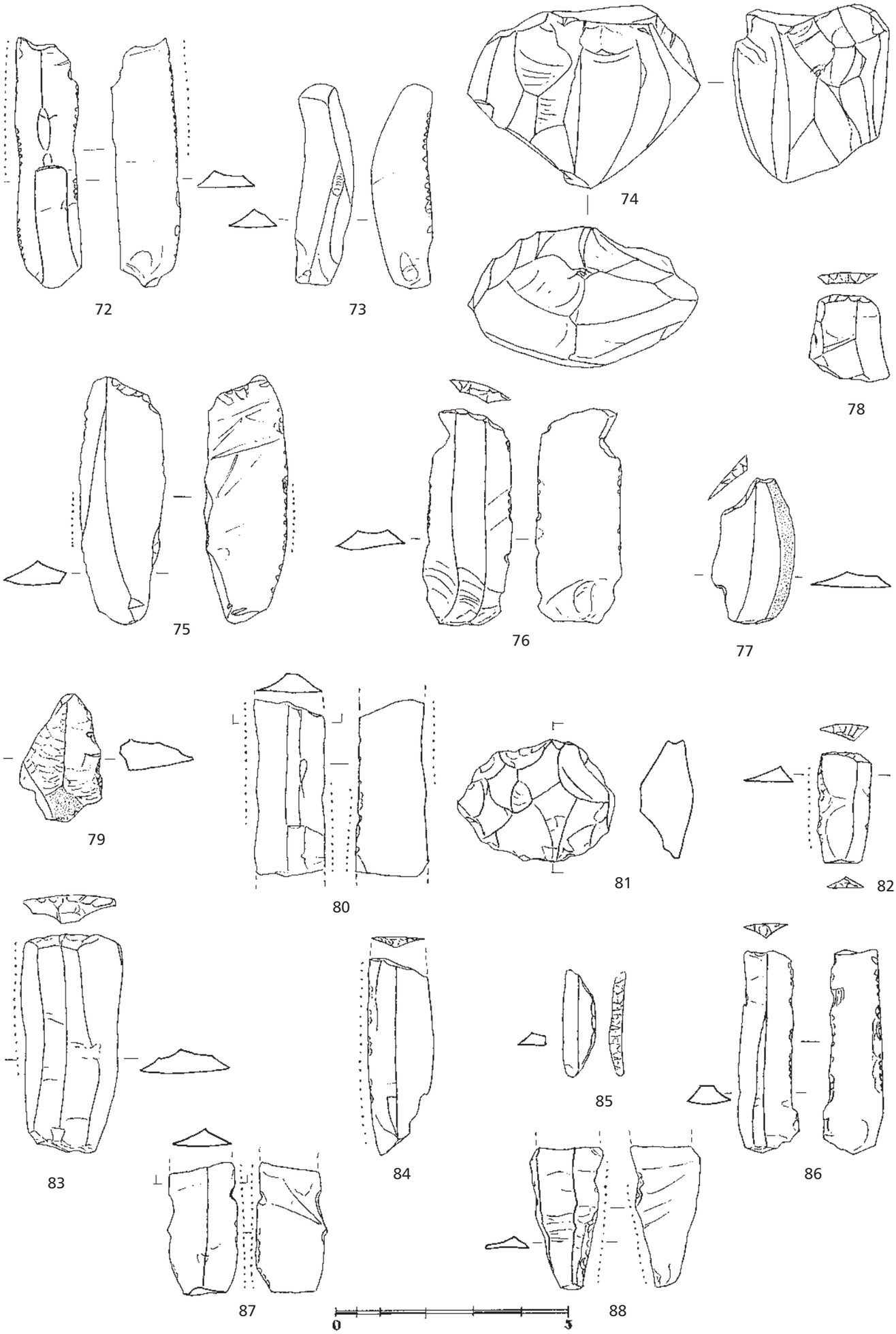

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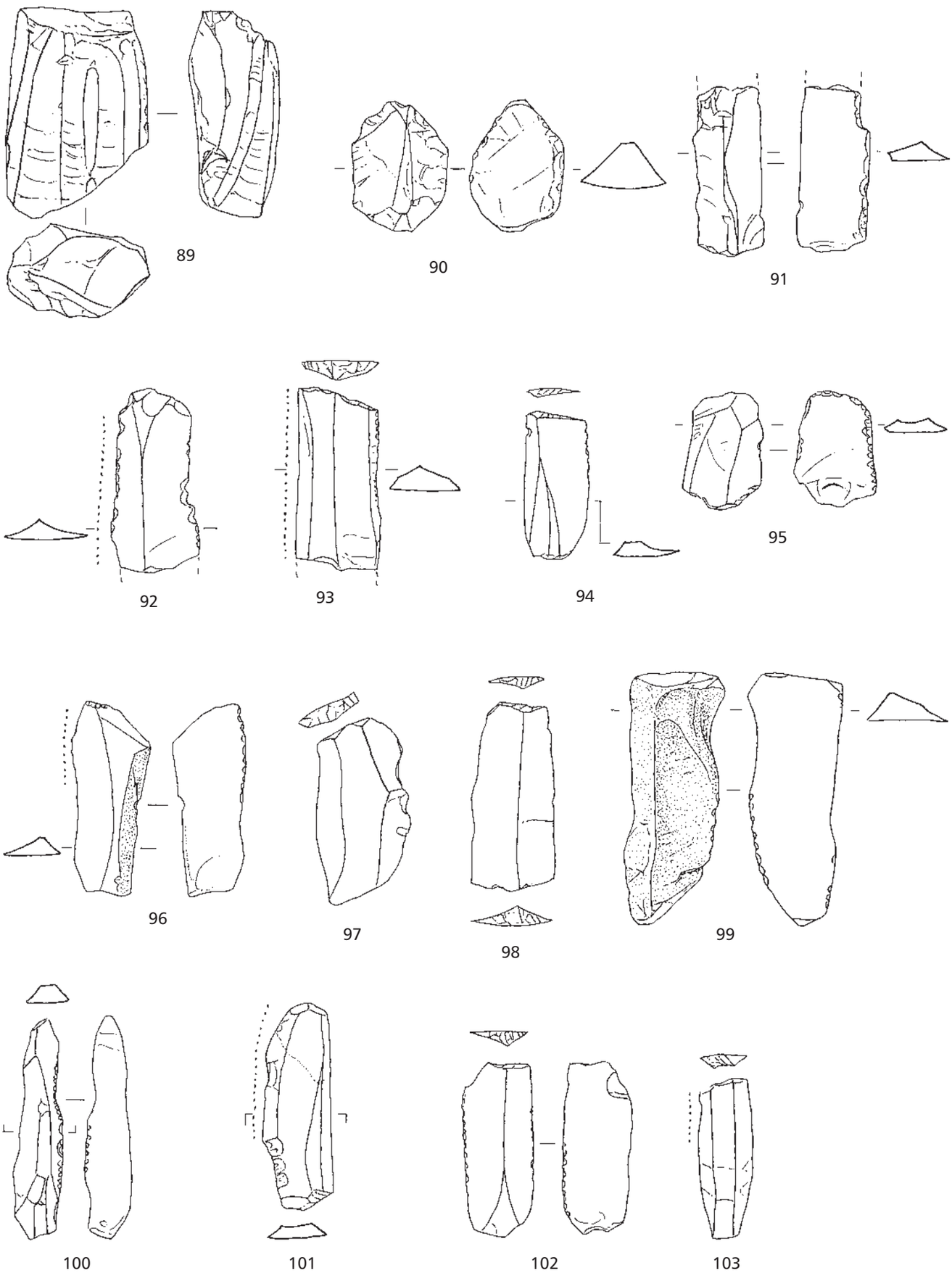

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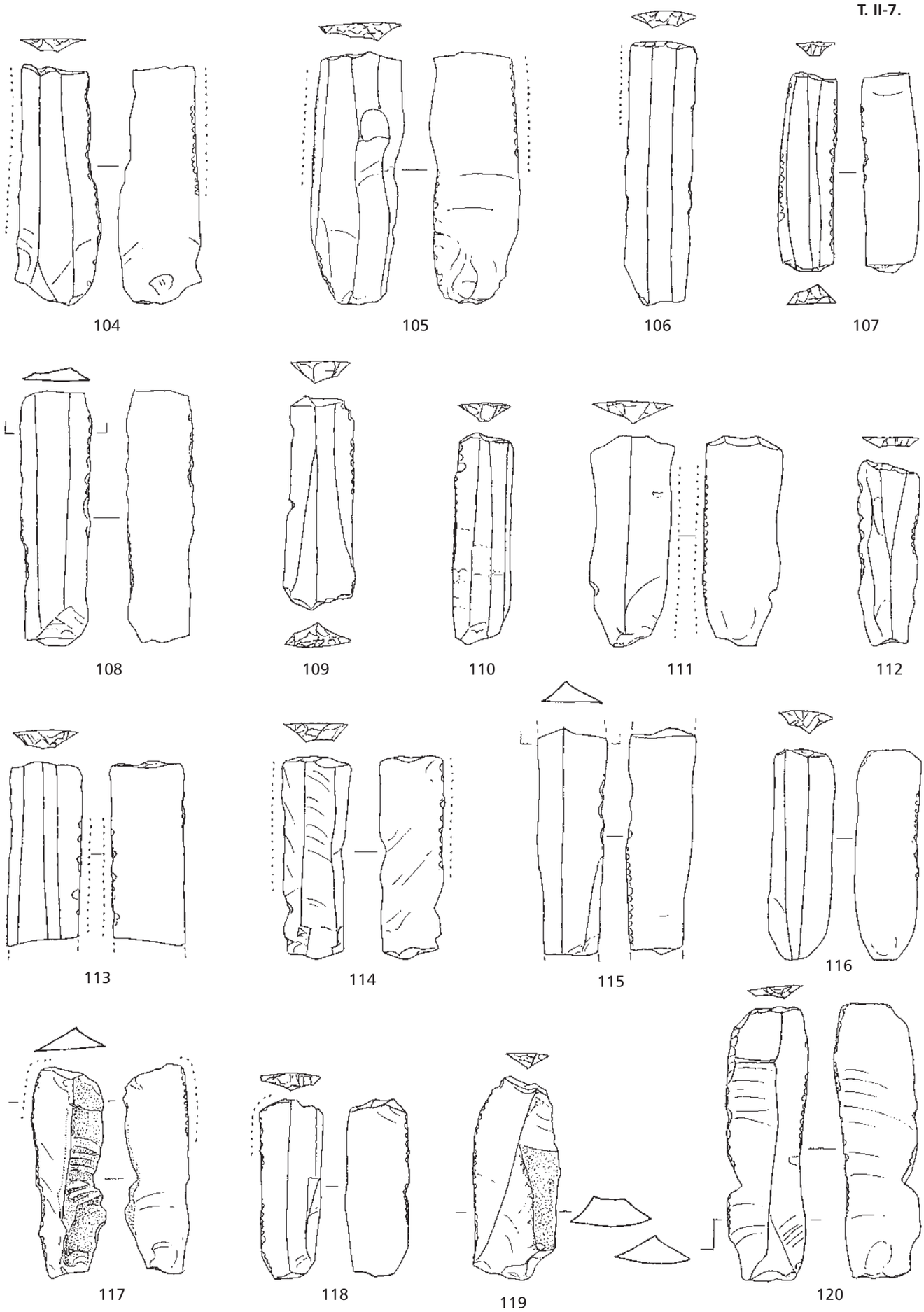
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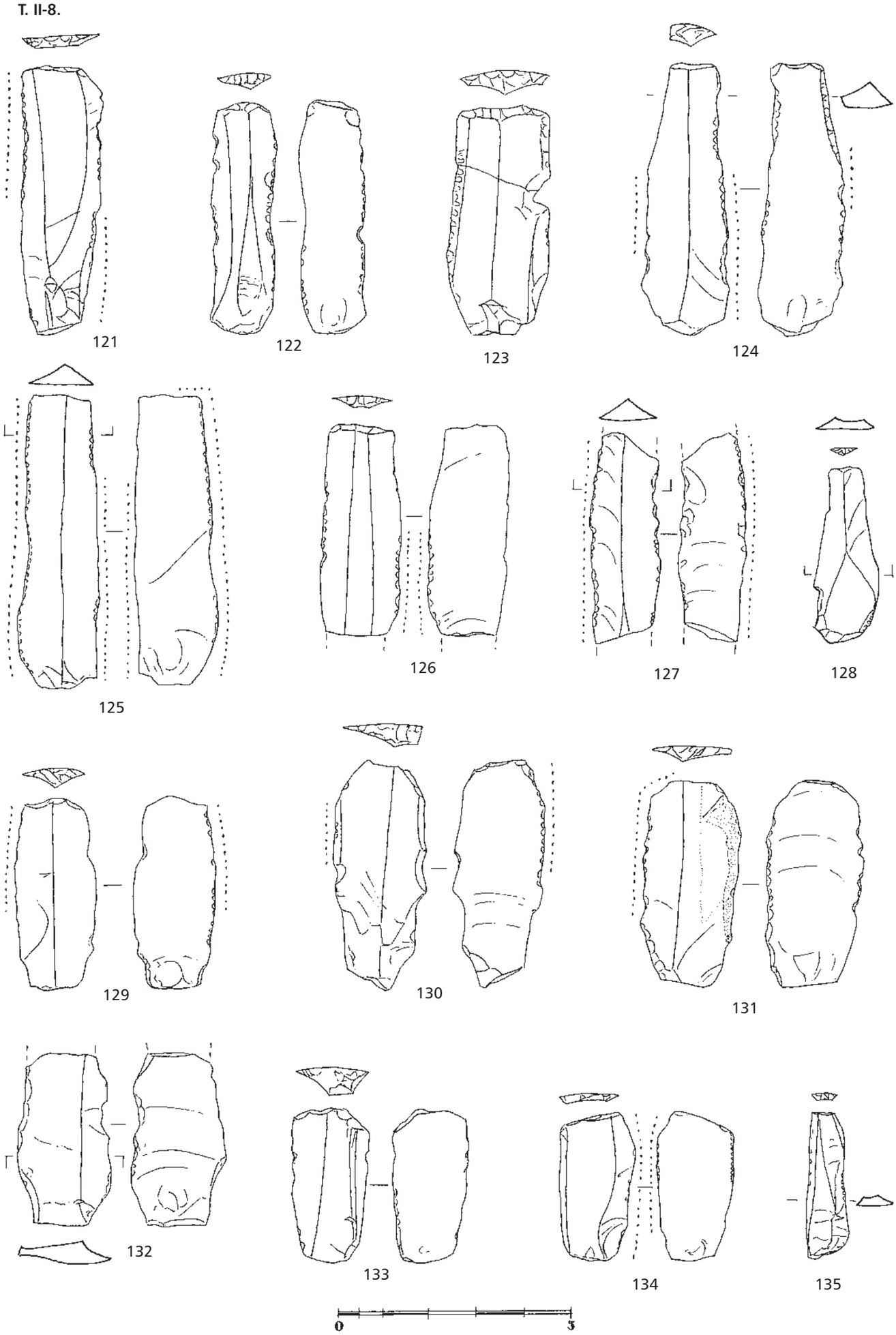

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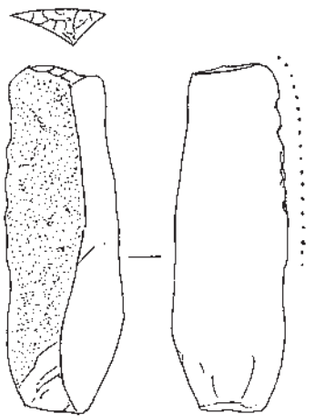
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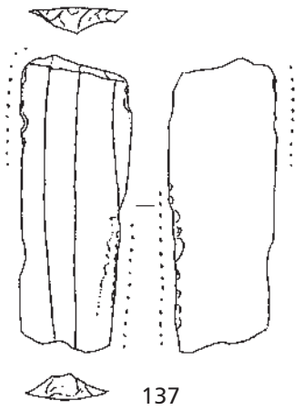
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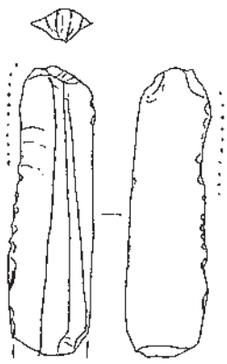
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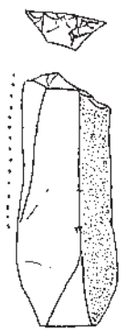
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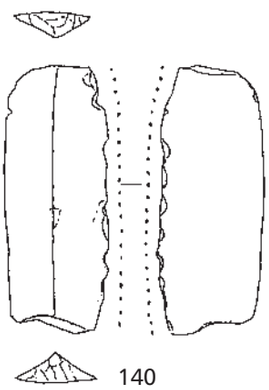
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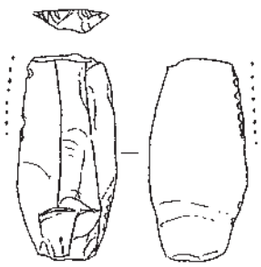
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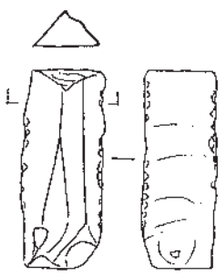
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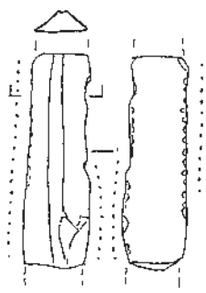
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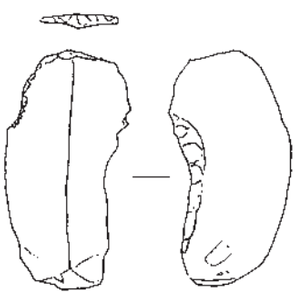
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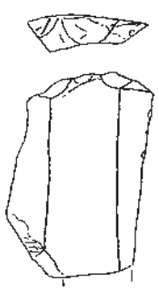
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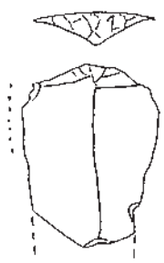
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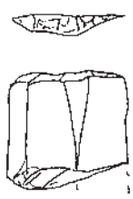
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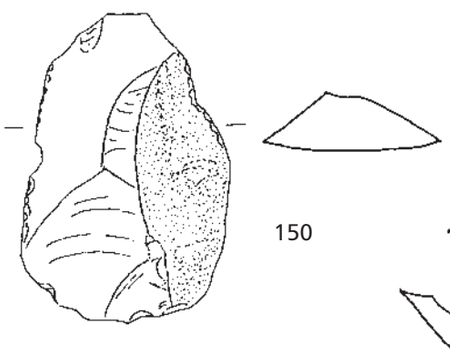
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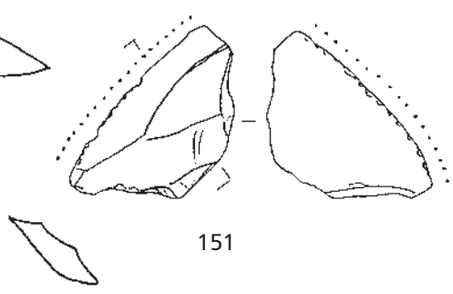
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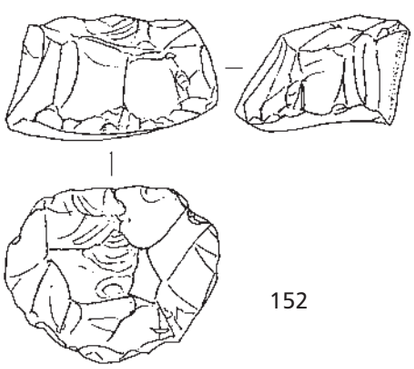
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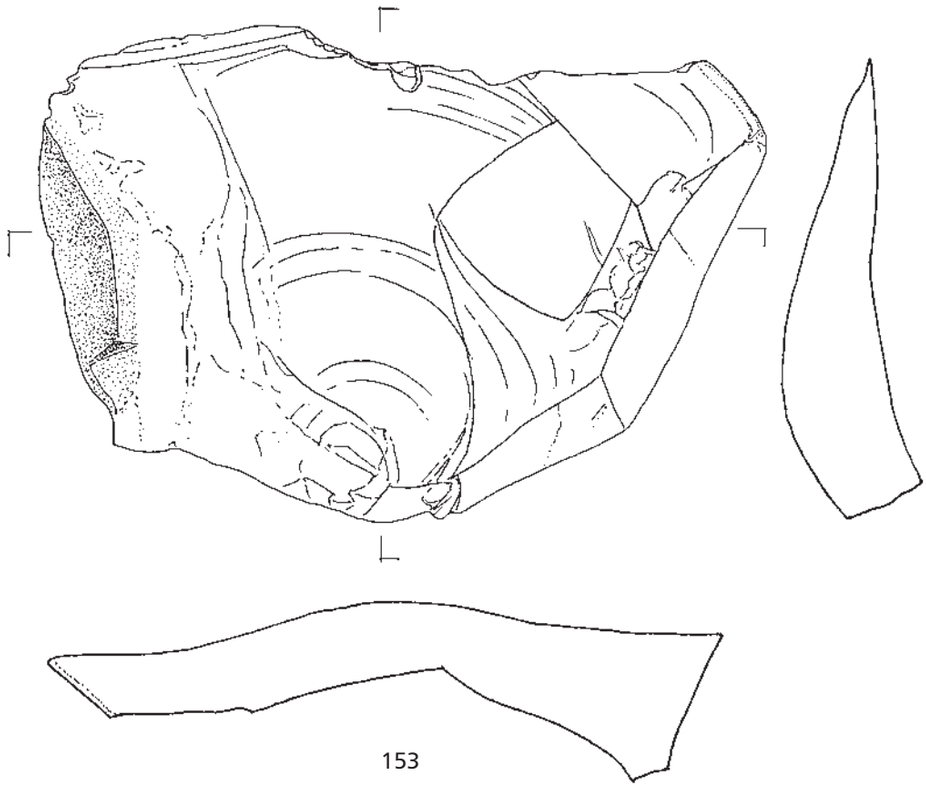

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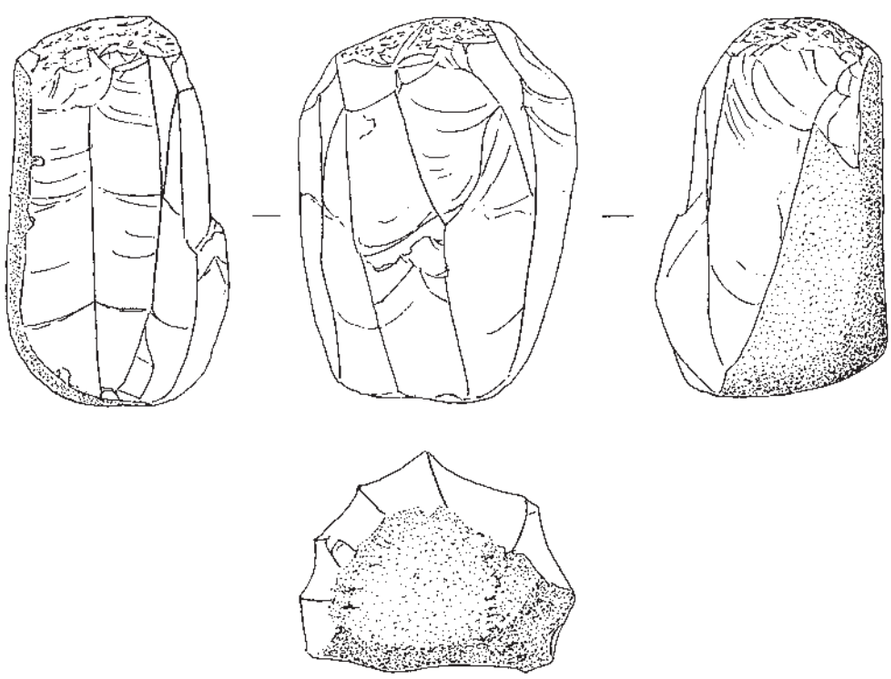

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