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ARHEOLOŠKO ISTRAŽIVANJE NA STAROM GRADU DUBOVCU 2001. GODINE

ARCHAEOLOGICAL RESEARCH AT THE OLD CASTLE OF DUBOVAC IN 2001

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U radu su objavljeni rezultati probnog sondiranja srednjovjekovne utvrde Dubovac kod Karlovca. Naglasak je postavljen na obradu prapovijesnog materijala, koji većinom datira iz prve polovice 1. tis. pr. Kr. te manjim dijelom iz 4. tis. pr. Kr. Predstavljena je stratigrafija nalazišta te tipološka i statistička analiza lončarije. Istraženi dio nalazišta smješten je na koničnu humku, koji je prirodnoga porijekla, ali je dobrim dijelom oblikovan ljudskim djelovanjem. Objekti iz prapovijesnog razdoblja naseobinske su naravi. Pronađena je i jedna starija, zidana faza utvrde, koja nije pouzdano datirana. U keramičkom materijalu utvrđene su stilske analogije sa širim krugom nalazišta završnoga stupnja brončanog doba i početka željeznog doba, naročito s Podunavljem i Podravljem. Temeljem statističke analize izdvojene su i neke tehnološke tradicije proizvodnje lončarije. Naročita pozornost posvećena je problemu prijelaza brončanog u željezno doba na području Pokuplja s obzirom na pronađene nalaze.

Ključne riječi: naselja, gradine, eneolitik, kasno brončano doba, starije željezno doba, srednji vijek, lasinjska kultura, Ha B, Pokuplje

The results of test excavations conducted at the medieval Dubovac Castle near Karlovac are presented in this work. Emphasis is placed on analysis of the prehistoric material, which largely dates to the first half of the first millennium BC and, to a lesser extent, from the fourth millennium BC. The stratigraphy of the site is presented together with typological and statistical analysis of the pottery. The researched portion of the site is situated on a conical, naturally formed mound that was also considerably shaped by human activity. The structures from the prehistoric period are mostly traces of habitats. An older, stone-built phase of the castle was also discovered which has not been reliably dated. Among the ceramic material, stylistic analogies were ascertained with the wider sphere of sites of the final phase of the Bronze Age and the onset of the Iron Age, particularly in the Danube and Drava River zones. Based on the statistical analysis, certain technological traditions of pottery production have been distinguished. Particular attention was dedicated to the problem of the transition from the Bronze to the Iron Age in the Kupa river zone, given the discovered artefacts.

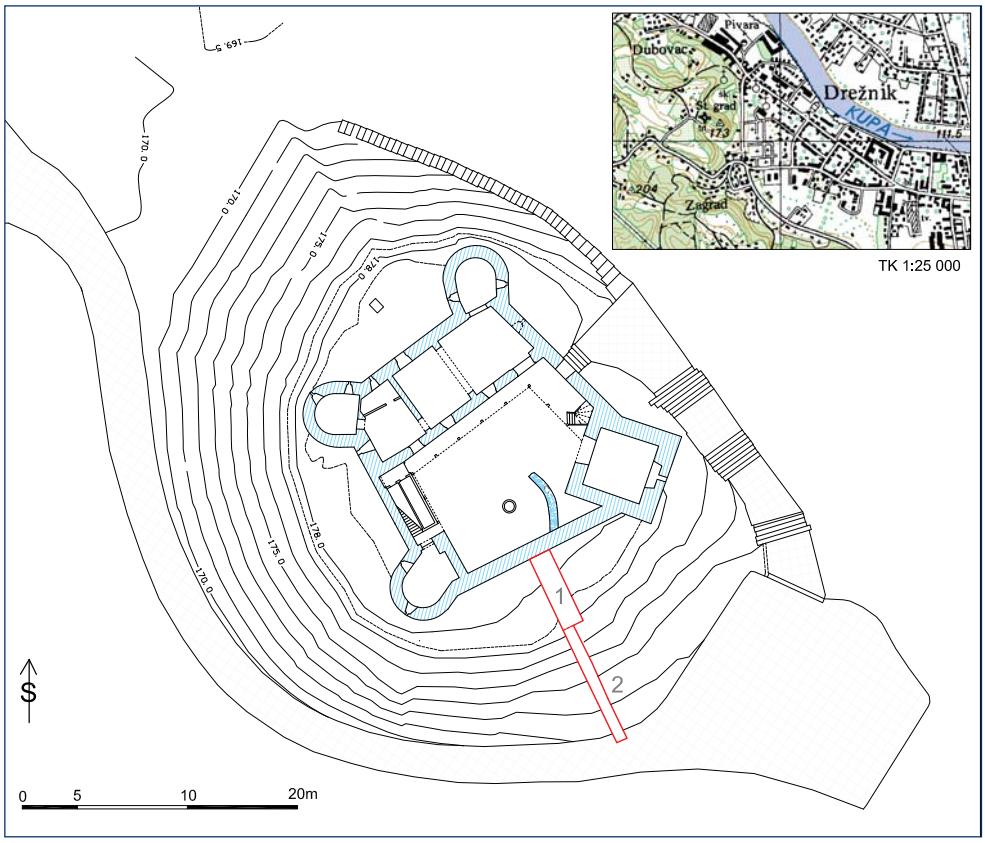
Key words: settlements, hillforts, Eneolithic, Late Bronze Age, Early Iron Age, Middle Ages, Lasinja culture, Ha B, Pokuplje

UVOD[1]

Srednjovjekovna utvrda Dubovac smještena je na obronku brijega uz Kupu, iznad istoimena trgovišta uz prijelaz preko rijeke. U blizini je u 16. st. podignut utvrđeni grad Karlovac, pa je Dubovac postao prigradsko naselje, a stari grad ostao očuvan u svojem kasnosrednjovjekovnom obliku. Postojeće zidje Dubovca zatvara blago trapezoidan prostor s velikom kvadratnom i tri polukružne kule na uglovima te datira iz vremena 15–16. st. (Kruhek 2000: 14) (sl. 1). Pisani podaci o gradu sežu do kraja 14. st., kada su zemlju oko grada od kralja Ludovika dobila braća Zudar (Sudar), a nedugo potom i samu utvrdu (Szabo 1920: 60). Stari grad smješten je na uskom, prilaznom hrptu jezičastog obronka te čuva malen naseobinski plato od svega 0,3 ha. Osobitost Dubovca koničan je humak na kojemu je utemeljen, visok od 9 m na prilaznoj strani do 4 m s unutarnje strane naselja (dvora), a promjer mu u podnožju iznosi oko 60 m (sl. 2). Na platou iza grada nalazila se i srednjovjekovna crkva Sv. Mihovila, koja datira

INTRODUCTION[1]

The medieval castle of Dubovac is situated on the slopes of a hill alongside the Kupa River, standing above a market town of the same name next to a ford over the river. The fortified city of Karlovac was built in the vicinity in the sixteenth century, so Dubovac became a suburban settlement, while the old castle has remained preserved in its late medieval form. The existing wall structure of Dubovac encloses a slightly trapezoidal area with a large quadratic and three semi-circular towers at the corners, and it dates to the fifteenth-sixteenth centuries (Kruhek 2000: 14) (Fig. 1). Written data on the castle go back to the end of the fourteenth century, when the land around it was obtained by the Zudar (Sudar) brothers from King Louis. Not long afterward, they also acquired the castle itself (Szabo 1920: 60). The old castle is situated on a narrow access ridge of a tongue-shaped hillside and it defends a small settlement plateau with a surface of only 0.3 ha. The particularity of Dubovac is the conical



Slika 1. Topografski snimak (slojnice na 1 m) (reljef: Arheoplan d.o.o., arhitektura: Interart d.o.o.).
Figure 1. Topographic plan (strata on 1 m) (relief: Arheoplan d.o.o., architecture: Interart d.o.o.).

[1] Vrijedna pomoć u pripremi ovoga rada bile su nam sugestije prof. Tihomile Težak-Gregl s Odsjeka za arheologiju zagrebačkoga Filozofskog fakulteta. Profesorica je bila i mentor diplomskog rada Z. Čučkovića o istoj temi, koji je obranjen 2004. g. Naše srdačne zahvale!

[1] Suggestions made by Prof. Tihomila Težak-Gregl from the Department of Archaeology of the Faculty of Humanities and Social Sciences in Zagreb served as invaluable assistance in the preparation of this paper. She also served as mentor for Z. Čučković's undergraduate thesis on the same topic, which was defended in 2004. We extend our sincerest thanks!

Slika 2. Pogled s jugozapada (snimio: Z. Čučković).
Figure 2. View from the south-west (photograph by: Z. Čučković).

najkasnije iz 14. st. (Kruhek 2000: 6). Utvrda je teško stradala u Drugom svjetskom ratu, a temeljito je obnovljena početkom 1960-ih, da bi 1976. g. bila prenamijenjena u manji hotel s restoranom (*idem*: 25).

Prvo arheološko istraživanje na Dubovcu provedeno je 1997. g. pod vodstvom Laze Čučkovića iz Gradskog muzeja Karlovac, kada je ispražnjena novovjekovna cisterna u dvorištu grada. Tom prilikom zabilježeni su samo novovjekovni nalazi (neobjavljeno – arhiva GMK). Uskoro je Gradski muzej Karlovac pokrenuo opsežan projekt sanacije starog grada, koji je duži niz godina pokazivao progresivna oštećenja u temeljima zidova. Jedan od uzroka propadanja bili su usijecanje prilaznog puta i drugi građevinski radovi koji su zadirali u osjetljiv humak te, vjerojatno, prirodni procesi slijeganja zemljišta na kojemu je građevina utemeljena.

Probno sondiranje provedeno 2001. g. bilo je usmjereno na dokumentiranje presjeka dubovačkog humka na mjestu koje je najmanje opterećeno, na njegovoj jugozapadnoj strani, kako bi se mogla izraditi studija sanacije i planirati daljnja istraživanja. Istraživanje je vodio Lazo Čučković iz Gradskog muzeja Karlovac. Sonda 1 postavljena je s vanjske strane utvrde, od jugoistočnog zida do podnožja humka, a iznosila je 2 m u širinu i 9 m u dužinu. Također je učinjen presjek podnožja te dijela padine humka od 1 m širine (sonda 2). Ideju za planiranje iskopavanja pružili su nalazi s drvene srednjovjekovne utvrde na obližnjoj lokaciji Budim, također podignute na umjetnu zemljanome humku (*la motte castrale*), koja je istražena prije izgradnje autoputa 1998. g. (Čučković & Križanić 2001). No Dubovac je pokazao daleko složeniju situaciju. Pronađeni su složeni naseobinski slojevi iz vremena

[2] Razdioba brončanog i željeznog doba u ovome radu postavljena je u razdoblje 10–9. st. pr. Kr., odnosno u stupanj Ha B, pa bi prvi naseobinski horizont Dubovca odgovarao završnom brončanom dobu prema uobičajenoj terminologiji. O tome će više riječi biti u zaključnome dijelu.

mound on which its foundations rest, 9 m high on the outer side and up to 4 m high on the interior, residential (manor) side, while its diameter at its base is approximately 60 m (Fig. 2). The medieval church of St. Michael, dated to the fourteenth century at the latest, was also formerly located on the plateau behind the castle (Kruhek 2000: 6). The castle also sustained heavy damage during the Second World War, and it was thoroughly renovated at the beginning of the 1960s, while in 1976 it was adapted into a small hotel with restaurant (*Idem*: 25).

The first archaeological research in Dubovac was conducted in 1997 under the supervision of Lazo Čučković from the Karlovac City Museum, at which time the Early Modern cistern in the castle's courtyard was emptied. Only Early Modern finds were recorded at the time (unpublished – Karlovac City Museum archives). Soon afterwards the Karlovac City Museum launched an extensive project to preserve and restore the old castle that had for long exhibited progressive damage in the wall foundations. One of the causes of this devastation was the paving of an access way and other construction works which encroached upon the sensitive mound and, probably, the natural processes of the terrain settlement on which the structure has its foundations.

The aim of test excavations conducted in 2001 was to document the cross-section of the Dubovac hillock at the point where it is least loaded, on its south-west face, in order to develop a strategy for its restoration and to plan further research. The research was led by Lazo Čučković from the Karlovac City Museum. Trench 1 was placed from the external side of the castle (the south-east wall) to the foot of the hillock, and it was 2 m wide and 9 m long. A cross-section of the hillock's foot and a portion of its slope was also made in a width of 1 m (trench 2). This strategy was inspired by the discovery of medieval wooden fortification at the nearby site called Budim, also erected on an artificial earthen mound (*la motte castrale*), which was examined prior to motorway construction in 1998 (Čučković & Križanić 2001). However, Dubovac showed a far more complex situation. Complex human settlement layers were discovered that dated to the older Iron Age[2] and Eneolithic, as well as an older, walled phase which could not be reliably dated. Research could not, unfortunately, be continued the next year with the opening of an appropriate, wider area. Archaeological excavations inside the courtyard

[2] The dividing line between the Bronze and Iron Ages is herein set at the tenth and ninth centuries BC, in the Ha B phase, so the first settlement horizon in Dubovac would correspond to the close of the Bronze Age according to the standard terminology. More on this in the concluding section.

starijega željeznog doba[2] i eneolitika te jedna starija, zidana faza, koju nije moguće pouzdano datirati. Istraživanje, nažalost, sljedeće godine nije bilo moguće nastaviti s primjerenim otvaranjem šire površine. S arheološkim iskopavanjem unutar gradskog dvorišta i unutar četverougaone kule nastavljeno je tek 2004. g. Nakon toga opet slijede problemi u organizaciji pa se 2008. g. započinje s iskopavanjem s vanjske strane zidina, opet na prostoru koji nije povezan s prijašnjim istraživanjima.[3]

METODOLOGIJA ISTRAŽIVANJA

Metoda istraživanja 2001. g. sastojala se u kombinaciji stratigrafskog iskopavanja i arbitrarnih režnjeva. Radi se o staroj metodi koja se duži niz godina primjenjuje na pokupskim prapovijesnim lokalitetima. Jasne interfacije poput površina od ilovače, gara ili podnica istražuju se uobičajenom stratigrafskom metodom, dok je teže uočljive slojeve pouzdanije dokumentirati kroz serije vodoravnih režnjeva. Pokušaji slijeđenja interfacija slojeva, kao npr. pražnjenje manjih ukopa, pokazali su se kao nepouzdana i destruktivna tehnika jer je i dubinu i širinu ukopa vrlo teško slijediti kroz naseobinske slojeve koji su po svemu slični njegovoj zapuni. Ti problemi naročito su izraženi kod prapovijesnih slojeva iz vremena eneolitika, čiji se obrisi uslijed kemijskih promjena u kiselom okolišu stapaju i gube. Prednost "kombinirane" metode jest detaljnost u raščlanjivanju finijih varijacija u stratigrafiji lokaliteta kakve bi bilo vrlo problematično slijediti klasičnim stratigrafskim iskopavanjem u smislu E. C. Harrisa (*single context recording*) (Harris 1989: 95ff), naročito s obzirom na organizacijske datosti istraživanja. S druge strane, upravo zbog kompleksnosti arheološkog zapisa nalazišta, naknadna korelacija dokumentiranih režnjeva sa stratigrafskim slijedom podložna je greškama te će u pravilu pokazati određenu dozu nekonzistencije. Također izostaje i dokumentacija o arheološkim interfacijama (onima koje su arbitrarno sječene), odnosno o topografiji slojeva. Očito se radi o metodi koja je usmjerena na stratigrafsku analizu pokretnog materijala i koju je svakako dobro kontrolirati pomoću kontrolnih profila, slično starim tehnikama kakve je zagovarao Mortimer Wheeler (Harris 1989: 35–36), odnosno kako je u nas počevši od kasnih 1950-ih radio Stojan Dimitrijević (npr. Dimitrijević 1968). Sličan način iskopavanja već duži niz godina uspješno primjenjuje ekipa pod vodstvom Janeza

[3] U vrijeme pisanja ovoga rada arheološko istraživanje na Starom gradu Dubovcu vodi ekipa Instituta za arheologiju iz Zagreba.

and inside the four-cornered tower were only resumed in 2004. Organizational problems arose once more after this, so excavations on the external side of the walls restarted in 2008, again at a position not connected to previously researched area.[3]

RESEARCH METHODOLOGY

The research methodology in 2001 consisted of a combination of stratigraphic excavation and arbitrary levels. This is an old method applied for many years at prehistoric sites in the Kupa River zone (Pokuplje). Clear interfaces such as surfaces composed of loam, soot or flooring are examined using the standard stratigraphic method, while the layers that can only be observed with greater difficulty are more reliably documented through a series of horizontal cuts. Attempts to follow the interfaces of the layers, for example emptying smaller pits, have proven to be unreliable and even destructive techniques, because the depth and width of the pits are rather difficult to follow through settlement layers that are in all respects similar to the fill. These problems particularly come to the fore in the prehistoric layers dating to the Eneolithic, as chemical changes in an acidic soil environment blur their contours and obscure them. The advantage of the "combined" method is the detail in the breakdown of finer variations in the site stratigraphy that would be rather difficult to follow in classical excavations in the sense specified by E. C. Harris (single context recording) (Harris 1989: 95ff), particularly with regard to the organizational circumstances of the research. On the other hand, it is precisely due to the complexity of the site that subsequent correlation of recorded cuts with the stratigraphic sequence is subject to error and will, as a rule, show a certain degree of inconsistency. Also lacking is documentation on archaeological interfaces (those that were arbitrarily cut), i.e., the topography of layers. Obviously this is a method oriented toward the stratigraphic analysis of movable materials and which should certainly be supervised with the help of control profiles, similar to the old techniques advocated by Mortimer Wheeler (Harris 1989: 35-36), or similar to the approach of Stojan Dimitrijević in 1950s (e.g. Dimitrijević 1968). A similar excavation method has already been successfully applied for a number of years by a team led by Janez Dular at the Lower Carniolan

[3] At the time of writing of this paper, archaeological research at the Old Castle of Dubovac was being conducted by a team from the Institute of Archaeology in Zagreb.

Dulara na dolenjskim halštatskim *gradiščima*.[4] Naročit problem kod istraživanja na Dubovcu slab je uspjeh u razgraničavanju prapovijesnih stratigrafskih jedinica pri vodoravnim presjecima te njihovo praćenje bilo putem uobičajene stratigrafske metode bilo putem sukcesivnih režnjeva. Tu činjenicu svakako valja imati u vidu pri analizi pokretnih nalaza. Radiokarbonska mjerenja nisu urađena.

METODOLOGIJA TIPOLOŠKE ANALIZE

Općeniti tipološki sustavi pomoću kojih bi se uspostavile regionalne krono-geografske distribucije na prostoru sjeverozapadne Hrvatske za period koji odgovara željeznodobnom Dubovcu još nisu detaljno razrađeni,[5] pa će analiza materijala nužno biti više stilska nego tipološka. No to je samo jedan od problema koje valja spomenuti kao metodološku pozadinu analize. Materijal koji će biti predstavljen objavljenjim crtežima i uključen u analizu uglavnom se probire temeljem iskustva i pretpostavki pojedinog arheologa ili pak ustaljenih konvencija. To ne znači da je kvantitativni pristup nužno bolji (iako je u ograničenu smislu objektivniji), no usporedba nalazištâ putem crteža materijala nužno je usporedba različitih impresija. U tom smislu naročit su problem tzv. dijagnostički ulomci lončarije. Radi se, *per definitio*, o ulomcima koji zbog formalnih ili dekorativnih karakteristika pružaju više informacija o dataciji ili provenijenciji. Jasno je da definicija te kategorije nalaza ne može biti strogo određena iako se u praksi odnosi na ulomke s dijelom ruba, ručke, dna ili dekoracije posude. Pojedine fakture također mogu biti svrstane u tu skupinu. Problem je prije svega varijacija udjela dijagnostičkih ulomaka s obzirom na okolnosti izrade lončarije, odnosno odlaganja keramičkih ulomaka. Neka arheološka razdoblja ili tradicije lončarske proizvodnje nisu obilježeni naročito ukrašenom lončarijom ili karakterističnim fakturama. Isto vrijedi i za kontekste poput otpadnih jama ili manjih naselja u usporedbi s grobovima ili većim naseljima. Prema tome moguće je da će te varijacije uzrokovati nesrazmjer u obradi i prezentaciji ločarije i time jednu vrstu pristranosti (*bias*) kod komparativnog pristupa.

[4] "Strukture depozitov na dolenjskih gradiščih so namreč zelo komplicirane, zato bi pri stratigrafski metodi kopanja obstajala stalna nevarnost, da bi meje med posameznimi plastmi ustvarjali, namesto da bi im sledili" (Dular & Tecco-Hvala 2007: 28)

[5] Treba svakako spomenuti rad S. Vrdoljak (1995) na tipologiji materijala Kalnika, iako se radi o analizi usmjerenoj na jedno nalazište, a obrađeni materijal većim je dijelom nešto starijeg datuma od željeznodobne faze Dubovca.

Hallstatt hillforts.[4] A specific problem encountered during the research at Dubovac is meagre success in delimiting the prehistoric stratigraphic units along the horizontal cross-sections and following them either by standard stratigraphic methods or by successive cuts. This fact should certainly be borne in mind when analyzing the movable finds. Radiocarbon dating was not done.

METHODOLOGY OF THE TYPOLOGICAL ANALYSIS

The general typological frameworks which would help in the establishment of a regional chrono-geographic distribution in the territory of north-western Croatia for the period that corresponds to Iron Age Dubovac have not yet been developed in detail,[5] so the analysis of the materials will necessarily be more stylistic than typological. But this is only one of several problems which should be mentioned as the methodological background for analysis. The material usually presented by publication of drawn plates and analysed subsequently is normally selected based on the experience and assumptions of individual archaeologists or on accepted conventions. This does not mean that the quantitative approach is necessarily better (although to a limited degree it is more objective), but the comparison of sites by comparison of drawings of small finds is necessarily a comparison of different impressions. In this sense, the so-called diagnostic potsherds present a particular problem. These are by definition fragments which, due to formal or decorative characteristics, provide better information on dating or provenance. Clearly, this category of finds cannot be strictly defined, even though in practice it pertains to sherds bearing a part of the rim, handle, base or decoration. Individual fabrics may also be included in this group. The problem lies above all in the variation of ratios of diagnostic sherds given the circumstances of the crafting of pottery and the discarding of potsherds. Some archaeological periods or pottery production traditions are not

[4] "The structure of the deposits at the Lower Carniolan hillforts is quite complicated, which is why the application of stratigraphic method of excavation presented a liability that boundaries between individual sediments would be created rather than just being followed" (Dular & Tecco-Hvala 2007: 28; translation by E. Bosnar).

[5] The work by S. Vrdoljak (1995) on the typological of pottery from Kalnik must be mentioned, even though this was an analysis oriented toward a single site, and the analyzed materials are largely date to the period older than the Iron Age phase at Dubovac.

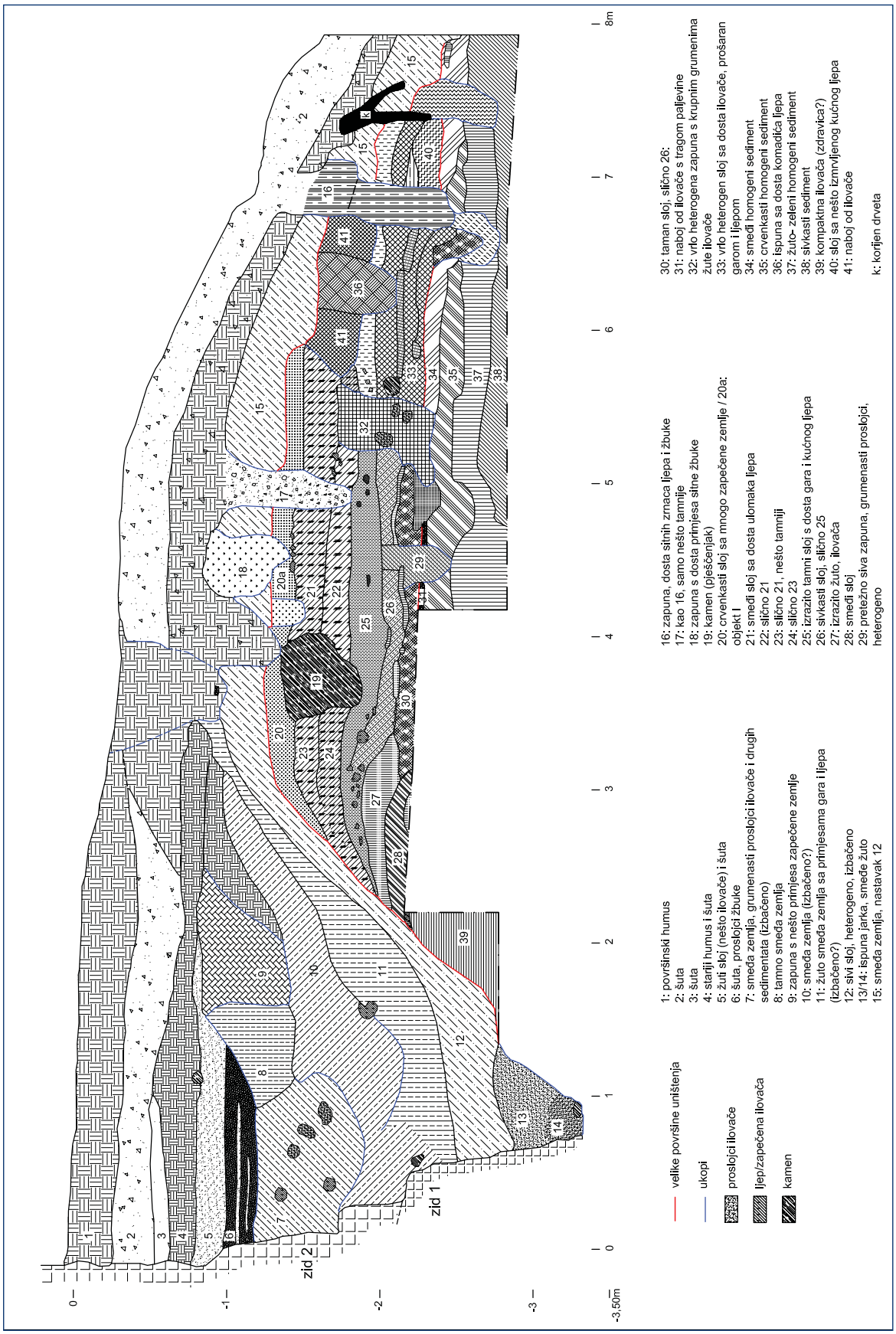
Stilske sličnosti i razlike nije jednostavno tumačiti bez poznavanja mehanizama koji su ih uvjetovali – lokalni razvoj, vanjski utjecaji ili promjene u funkciji nalazišta? Na to se nadovezuje problem razdvajanja kronologije i kulturne analogije: datiranje na temelju stilskih karakteristika materijala nije moguće pretpostaviti bez razumijevanja načina i brzine razmjene stilova i obratno. Te su dileme znatno izraženije kod keramičkih artefakata nego kod metalnih, koji su razmjenjivani ili trgovani preko većih udaljenosti u kraćem vremenu. U tom smislu S. Karavanić navodi primjer sa švicarskih sojeničarskih naselja u kojima se unatoč iznimno detaljnim dendrokronološkim podacima pokazalo problematično tipološko razdvajanje lončarije u Müller-Karpe–Reineckeove stupnjeve kasnog brončanog doba – "(…) Ha A2, B1, B2, B3 ne bi [se] smjeli više označavati kao kronološke faze, nego različiti stilovi koji se neprekinuto, s većim preklapanjima razvijaju" (Karavanić 2000: 11).

Kao i kod analize grobnih cjelina za usporedbu naseobinskog materijala od središnje je važnosti definicija arheološkog konteksta. U stvari, jedino je kontekste moguće međusobno uspoređivati, i to putem njihova sadržaja, funkcije, datacije, geografskog položaja ili nekog drugog podatka. U tom smislu naročit je problem oslanjanje na grobne cjeline pri obradi naseobinskog materijala iako su one u pravilu dobro datirane, a nalazi nerijetko sačuvani u cjelosti. Za očekivati je da će grobni prilozi, barem kad je riječ o lončariji, imati biografiju različitu od svakodnevnih predmeta, a na mnogo primjera moguće je dokazati da se radi o namjenski izrađenim predmetima. Valja spomenuti Dubovcu vremenski i geografski bliske nalaze iz Trešćerovca, Krupača ili Velike Gorice (Vinski-Gasparini 1973: T. 100–106), u vezi s kojima je N. Majnarić-Pandžić već ranije uočila: "Tipovi i ukrasi posuda [s Belaja kod Karlovca] mogu se samo općenito vezati s grobnim prilozima iz nekropola u Trešćerovcu, Krupačama i Ozlju, a razlog leži i u tome što belajska naseobinska keramika predstavlja znatno raznovrsnije tipove negoli je to slučaj s uniformnom keramikom **rađenom** za ukop" (Majnarić-Pandžić 1986: 33; istaknuli autori). Konceptu konzervativnosti u grobnom ritualu, suočen s problemom zakasnjela odražavanja promjena uporabnog (svakodnevnog) konteksta u grobnim prilozima, pažnju je posvetio i B. Čović (1980: 70; 1987a: 615). Od nešto manjeg značaja jest problem izvorne namjene naseobinskog konteksta, s obzirom na opću razinu detaljnosti trenutno dostupnih podataka s arheoloških istraživanja. Velika naselja – zbog različita načina života, odnosno specifične namjene – mogu imati različite tipološke sekvence od manjih, a slično vrijedi i za usporedbe pojedinih stratigrafskih konteksta.

characterized by particularly decorated pottery or typical fabrics. The same applies to contexts such as waste pits or smaller settlements in comparison to graves or larger settlements. Therefore, it is possible that these variations will cause a discrepancy in the analysis and presentation of pottery and thereby a certain bias in the comparative approach.

The stylistic similarities and differences cannot be simply interpreted without knowledge of the mechanisms that conditioned them: local development, external influences or changes in the function of the site. This is in turn linked to the problem of determining chronologies and cultural analogies: dating based on stylistic features of the material cannot be firmly established without an understanding of the modes and speed of changes in style and vice versa. These dilemmas are considerably more marked in the context of the study of ceramic artefacts than of metal products, which were exchanged or traded over far greater distances over shorter periods. In this sense, S. Karavanić cited the example from Swiss pile dwelling settlements in which, despite an exceptionally detailed dendrochronological dating sequence, has shown considerable problems in the application of pottery typological framework related to Müller-Karpe-Reinecke phases of the late Bronze age: "(…) Ha A2, B1, B2, B3 [should] no longer be designated as chronological phases, but rather different styles which continually develop with greater overlaps" (Karavanić 2000: 11; translation by E. Bosnar).

Considering the analysis of grave units, the definition of the archaeological context is of central importance for comparison with the settlement assemblages. In fact, only the contexts themselves can be compared, in terms of their content, function, dating, geographic position or some other data. In this sense, a particular problem is dependence on grave units when analyzing settlement materials, even though they are generally more precisely dated and artefacts that they contain are quite often preserved in their entirety. It can be supposed that grave goods, at least when speaking of pottery, will have a different 'biography' than everyday items. Furthermore, in many instances it is possible to prove that they were items crafted for the funerary ritual specifically. Worth mentioning are the finds from Trešćeovac, Krupače or Velika Gorica (Vinski-Gasparini 1973: P. 100-106) which are chronologically and geographically close to Dubovac, and about which N. Majnarić-Pandžić has observed previously: "The types and ornaments on vessels [from Belaj near Karlovac] may only be associated with the grave goods from the necropoles in Trešćerovac, Krupače and Ozalj in general terms, and the reason



Slika 3. Istočni presjek sonde 1 (izradio: Z. Čučković).

Figure 3. Eastern cross-section of test trench 1 (made by: Z. Čučković).

STRATIGRAFIJA I POKRETNI NALAZI

Sonda 1

Eneolitik

Iskopavanje u sondi 1 iz 2001. g. samo je na prostoru uz gradski zid dosegnulo sterilnu, izrazito žutu ilovaču koja je protumačena kao zdravica (sl. 3: 39). U produžetku sonde, u smjeru ruba dubovačkog humka, istraživanje je zaustavljeno na relativnoj dubini od –2,60 m, unutar eneolitičkog horizonta. Daljnji nastavak istraživanja nije bio moguć zbog znatna premašivanja financijskih okvira probnog istraživanja. Slojevi s eneolitičkom lončarijom vrlo su teško razlučivi, sivožute boje, prošarani mjestimice sitnim komadićima gara i ljepa te konzistencije poput rahlije ilovače. Malobrojni keramički nalazi zbog kemijskoga sastava tla izgrizeni su do neprepoznatljivosti. Na kontaktu sa željeznodobnim slojevima uočeno je nešto zapečene zemlje te mrlje tamnijih slojeva, što je protumačeno kao tragovi uništenog naseobinskog objekta. Na sl. 4 prikazana je zabilježena situacija. Čini se da je riječ o naseobinskom objektu koji je povezan s rupama za stupce promjera oko 40 cm uočenima ispod nagorenog sloja.

Malen broj nalaza lončarije u odnosu na količinu sedimenta te nedostatak tragova struktura u dubljim slojevima upućuju na zemljane radove koji su prethodili naseljavanju. Tom je prilikom vrh prirodnog uzvišenja proširen, a pobočje možda i dodatno iskošeno.

Od lončarije najstarije naseobine na Dubovcu izdvojena su samo dva ornamentirana ulomka te

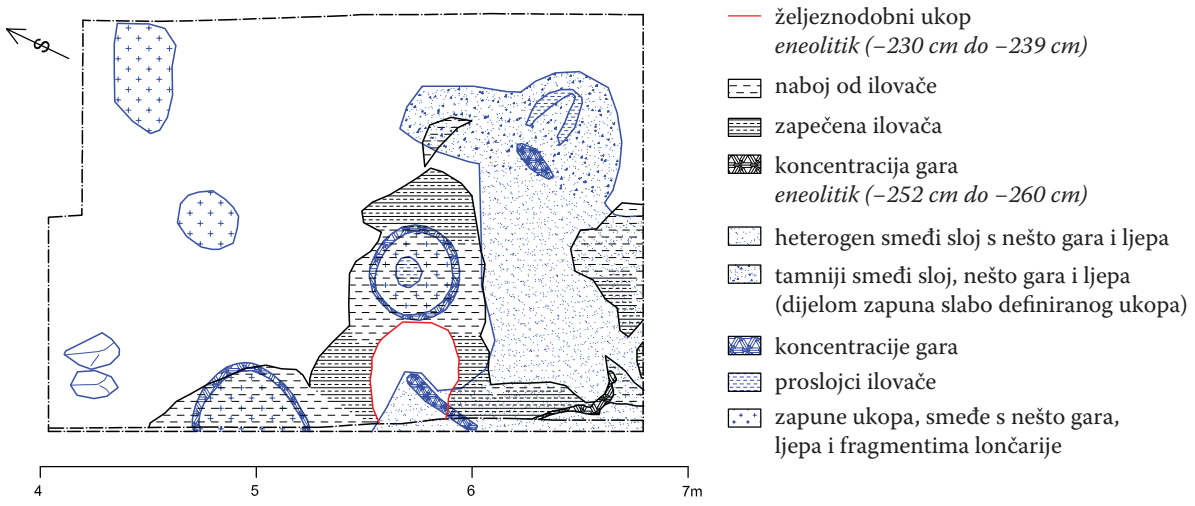
STRATIGRAPHY AND MOVABLE FINDS

Test trench 1

Eneolithic

Excavations in test trench 1 from 2001 reached sterile, markedly yellow loam which was interpreted as virgin soil only in the vicinity of the castle wall (Fig. 3: 39). In the extension of the test trench in the direction of the edge of Dubovac mound, the research halted at a relative depth of -2.6 m, inside the Eneolithic horizon. The continuation of research was not possible due to the cost overruns given the financial framework for the test research. The layers

lies in the fact that the Belaj settlement pottery consists of considerably more diverse types than in the case of uniform pottery **made specifically** for burials" (Majnarić-Pandžić 1986: 33; emphasis by Z. Čučković, translation by E. Bosnar). Confronted with the problem of delayed reflection of changes of the "life assemblage" in grave goods, B. Čović (1980: 70; 1987a: 615) emphasized the concept of conservatism in a grave rituals. The original purpose of the settlement context also has to be considered although it may be of somewhat lesser importance, given the general level of detail of currently available data from archaeological research. Large settlements – due to the different lifestyles and specific purposes – may have different typological sequences than smaller ones, and the same applies to comparisons of individual stratigraphic contexts.



Slika 4. Eneolitički horizont, sonda 1 (izradio: Z. Čučković).
Figure 4. Eneolithic horizon, test trench 1 (drafted by: Z. Čučković).

jedan fragment čepasta oblika, svi kao rezidualni nalazi iz mlađih, željeznodobnih slojeva (T. 1: 2–4). Uzrok takvoj situaciji izrazita je kiselost tla u najdubljim slojevima, koja je poprilično nagrizla keramičke nalaze, tako da su se bolje očuvali oni koji su prije tri tisućljeća izbačeni prilikom ukopavanja rupa ili jaraka. Od nalaza željeznodobnog horizonta osim ornamentom razlikuju se i fakturom s puno zaobljenih zrnaca kremenog pijeska, što je već primijećeno na Kiringradu (Balen-Letunić 1987: 6) i u Ozlju (Težak-Gregl 1993: 167). Ukras "riblje kosti" spada u Dimitrijevićevu kasnu ili baroknoklasičnu fazu lasinjske kulture (Dimitrijević 1979: 159). Sličan ornament zabilježen je i u Dubrancu u Vukomeričkim goricama (Balen 1998: 19, T. I: 1–3) te na obližnjem Kučeru uz rijeku Dobru (Bekić 2007: 291, T. 1: 2).

Željezno doba

Stratigrafska sekvenca željeznodobnog Dubovca sastoji se od oko 1 m složenih naseobinskih slojeva koje je na temelju ostataka stambenih objekata moguće raščlaniti u tri horizonta. S obzirom na to da je riječ o uskoj probnoj sondi, nije moguće predvidjeti u kojoj mjeri ti nalazi odgovaraju općoj slici razvoja naselja.

Naseobinski horizont I

Slojevi iz razdoblja željeznog doba počinju dobro zapečenim podnicama položenima izravno na pretpostavljenu zdravicu (sl. 3: 39) i na slojeve s eneolitičkim materijalom te upućuju na zahvat niveliranja koji je uništio dio eneolitičkog horizonta. U tom smislu moguće je da je gornji dio slojeva s eneolitičkim materijalom neposredno uz rub humka nastao prilikom pripreme terena u vrijeme željeznog doba (npr. sl. 3: 34), iako zasad nedostaju podaci u tom smislu. Dvije dobro očuvane podnice pouzdano svjedoče o stambenim objektima. Prva je (sl. 3: 31) položena na zdravicu, žutu ilovaču, koja se uslijed visoke temperature pretvorila u čvrst komad zapečene zemlje. Uz vanjski rub humka otkrivena je zapečena podnica koja je bila izrađena od gline pomiješane s riječnim oblucima, u blizini koje su pronađeni veći ulomci keramičkog posuđa, slično "potaracanim podovima" zabilježenima na obližnjem Belaju i Kalakači (Perc 1963: 378; Majnarić-Pandžić 1986: 30). Dobro očuvani dijelovi najdubljih željeznodobnih podnica ostavljeni su *in situ* kako bi se mogli bolje vrednovati u budućim istraživanjima.

Slijede slojevi bogati naseobinskom lončarijom (sl. 3: 20–26, 30, 33), koji su u dubljim dijelovima razgraničeni tankim proslojcima žute ilovače. Radi

containing Eneolithic pottery are difficult to discern, having a grey-yellow colour, interspersed with tiny pieces of soot and daub and with the consistency of more friable loam. Few ceramic finds that were found have been severely corroded due to the soil's chemical composition. On the contact surface with Iron Age layers, some charred soil and spots of darker layers were observed, which was interpreted as traces of a destroyed habitat. The situation thus recorded is shown in Fig. 4. It would appear that this was a habitat associated with the post holes roughly 40 cm in diameter below the charred layer.

The small number of pottery finds compared to the quantity of the sediment and the absence of any trace of structures in the deeper layers indicate earthworks which preceded settlement. On this occasion, the top of the natural mound was expanded, while the sides may have even been given a sharper slant.

Among the pottery from the oldest settlement at Dubovac, there are only two ornamented sherds and one cork-shaped sherd, all residual finds from the younger, Iron Age layers (P. 1: 2-4). The reason for this situation is the exceptional acidity of the soil at the deepest layers, which has considerably corroded the ceramic pieces, so those that were removed during excavation of a pit or ditch three millennia ago were better preserved. Besides the ornamentation, they also differ from the finds of the Iron Age horizon in terms of fabric, with a considerable amount of rounded flint sand grains, which has already been observed in Kiringrad (Balen-Letunić 1987: 6) and Ozalj (Težak-Gregl 1993: 167). The "fishbone" decoration falls into Dimitrijević's late or baroque/classical phase of the Lasinja culture (Dimitrijević 1979: 159). A similar ornament was also recorded in Dubranac in the Vukomerec hills (Balen 1998: 19, P. I: 1-3) and at nearby Kučer along the Dobra River (Bekić 2007: 291, P. 1: 2).

Iron Age

The stratigraphic sequence of Iron Age Dubovac consists of approximately 1 m of compacted settlement layers which, based on the remains of residential structures, may be broken down into three horizons. Given that this was a narrow test trench, it is impossible to predict the extent to which these finds correspond to the general picture of the settlement's development.

Settlement horizon I

The layers from the Iron Age begin with well-baked flooring laid directly on presumed virgin soil (Fig. 3:

se o podnicama različitih nadzemnih objekata ili pak popravcima podova unutar pojedinih nastambi. Naboji ilovače često se nejasno preslojavaju, raspršeni su u rijetkim krpicama te ne prekrivaju jasno omeđene, ujednačene površine, pa nije moguće ništa zaključiti o izgledu objekata kojima pripadaju. Posve sigurno bi otvaranje šire površine nalazišta pružilo jasniju sliku. Jedinstvenu cjelinu čini oko 40 cm debela nakupina gara, kućnog ljepa i mnoštva lončarije, konveksna u presjeku, koja je najvjerojatnije ostatak urušena nadzemnog objekta. Da je riječ o trajnoj nastambi, svjedoče nalazi utega za tkalački stan te ulomci velike posude za pohranu namirnica, pitosa promjera 70 cm ili više (sl. 5), koji se uslijed visoke temperature deformirao. Pronađeno je i nekoliko ulomaka koji vjerojatno pripadaju rešetki manje pokretne peći. Stanje u kojemu su objekt i nalazi u njemu zatečeni svakako upućuje na destrukciju u požaru. Čini se da ta nastamba, kao ni ostali objekti iznad nje, nije imala kvalitetnije konstruiranu podnicu. Od konstrukcije objekta zabilježen je jedino slabo vidljiv niz stupaca promjera 10 cm na razmaku od 0,5 m ili više, koji su s vanjske strane držali pokrov od gusto postavljenih oblica, no zbog širine iskopa nije moguće rekonstruirati tlocrt. U kućnom ljepu koji potječe sa zidova objekta pronađen je otisak oblog kolca širine 4 cm.

Slika 5. Ulomci velikog lonca za pohranu (snimio: Z. Čučković).
Figure 5. Fragments of a large storage pot (photograph by: Z. Čučković).

Materijal starije željeznodobne faze valja tretirati kao cjelinu, iako je, kako je već napomenuto, moguće razdvojiti dvije stratigrafski diferencirane skupine nalaza. Radi se cjelinama koje su po funkciji (naseobinski objekti), a moguće i po dataciji, vrlo bliske. Vrijedi ipak obratiti pažnju na nekoliko precizno stratigrafski dokumentiranih nalaza koji stoje na početku željeznodobne stratigrafske sekvence. To su ulomci T. 2: 1, 2, 4; T. 3: 3, 7; T. 4: 1. Veći

39) and on layers with Eneolithic material, and they indicate levelling work which devastated a part of the Eneolithic horizon. In this sense, it is possible that the upper portion of the layers with Eneolithic material situated along the edge of the hillock were created during levelling of the terrain in the Iron Age (e.g. Fig. 3: 34), although thus far data in this regard are absent. Two well preserved floors firmly attest the existence of residential structures. The first (Fig. 3: 31) is set on sterile soil, yellow loam, which was transformed into a piece of baked earth as a result of high temperatures. A baked floor was discovered along the external edge of the hillock, which was made from clay mixed with riverine cobblestones, near which larger pieces of a ceramic vessel were found, similar to the "terrazzoed floors" recorded at nearby Belaj and Kalakača (Perc 1963: 378; Majnarić-Pandžić 1986: 30). The well-preserved portions of the deepest Iron Age floors were left *in situ* so that they can be better evaluated in future research.

The following sequence is composed of layers rich in settlement pottery (Fig. 3: 20-26, 30, 33), which are separated in the deeper portions by thin interstitial layers of yellow loam. These were the floors of different ground-level structures, or the repaired floors in individual dwellings. The packed layers of loam often intermingle ambiguously, and they are scattered in sparse patches and do not cover clearly bounded, uniform surfaces, so it is impossible to draw any conclusions on the appearance of the structures to which they belong. The opening of a wider surface at the site would certainly provide a clearer picture. A feature comprising 40-cm thick deposit of soot, household daub and a number of pottery fragments, convex in cross-section, is probably the remainder of a collapsed above-ground structure. Loom weights and pieces of a large food storage vessel, a pithos with a diameter of 70 cm or more (Fig. 5) that was deformed as a result of high temperatures, indicate that this was a permanent habitat. Several fragments were also found which probably belonged to the grill of a smaller movable oven. The condition in which the structure and the items therein were found indicate destruction caused by a fire. It would appear that this dwelling, like the structures above it, did not have very well made flooring. Of the structure's architectural elements, only a scarcely visible row of posts 10 cm in diameter at intervals of 0.5 cm or more has been recorded; on the outside they bore a cover made of densely placed stakes, but the width of the excavation trench did not allow for a reconstruction of the floor layout. A rounded 4-cm wide stake imprint

komadi (T. 2: 1, 2) pronađeni su vodoravno položeni na najstarijoj podnici, podsjećajući na "potaracane podove" kakvi su pronađeni na Belaju i Kalakači (Perc 1963: 378; Majnarić-Pandžić 1986: 30). Ta skupina nalaza ujedno je znatno slabije fragmentirana od prosjeka, što svjedoči o manjem stupnju perturbacija početnih željeznodobnih slojeva.

Karakteristika su ovog konteksta ulomci slabije raščlanjenih formi tipičnih za razdoblje starije kulture polja sa žarama. Posude s ljevkasto izvučenim obodom (T. 2: 1, 2) susreću se na mnoštvu naselja Ha A, poput Kalnika (Vrdoljak 1995: 30, tip B6c), zagrebačkog Gradeca (Balen-Letunić 1996: sl. 3) i Olorisa iz ranije faze KŽP, na kojemu se pojavljuju gotovo isključivo zdjele tog tipa (Horvat-Šavel 1989: 137). Ulomak grube fakture (T. 2: 4) mogao bi se uvrstiti u kakterističnu keramiku S-profila stila Ha B, slično tipovima B6d ili A6d s Kalnika (Vrdoljak 1995: 31, T. 12: 2). Tendencija zaobljavanja profila posuda i napuštanja jako proširenih oboda lonaca i zdjela jasno je vidljiva i na ljevkasto proširenim ulomcima, koji se stoga moraju uvrstiti u tipološki mlađu grupu.

Dobro očuvana zdjela (T. 3: 7) zbog svojeg loptastog oblika i vrlo slabo naglašenog ruba usporediva je s tipom A6c s Kalnika, iako ju možda ne bi trebalo poistovjetiti s tom skupinom jer se u kalničkome primjeru radi o znatno većim komadima (Vrdoljak 1995: 27). Tipološki razvoj kuglastih posuda može se pratiti od II. stupnja KPŽ na nekropoli Vrapče u Zagrebu (Vinski-Gasparini 1973: 155, T. 24:1), a naseobinske paralele pruža stupanj Ha B Ormoža (Lamut 1989: T.17:13).

Preostale posude iz ovog horizonta ne mogu se opredijeliti ranije od Ha B. Zdjela s gotovo okomitim urezima na obodu (T. 4: 1) tipičan je predstavnik mlađe KPŽ, s analogijama u Donjoj Dolini u fazi Ib (Marić 1964: T. IV: 9), u Ormožu također u Ha B (Lamut 1989: T. 2: 6) te u horizontu B gradine Pod (Čović 1965: T. XII: 1). Važno je što se takvo ukrašavanje vrlo rijetko pojavljuje na Kalniku, na kojemu se lončarija uglavnom može opredijeliti u stupanj Ha A (Vrdoljak 1995: 30, T. 18: 2).[6]

Ulomak sa žlijebljenim girlandama (T. 3: 3) moguće je dosta pouzdano tipološki odrediti. Prije svega valja uočiti da je motiv girlandi izveden u tehnici širokog žlijebljenja, za razliku od ostalih ulomaka sa sličnim ornamentom iz mlađeg dijela horizonta I, kod kojih je primijenjeno urezivanje (T. 3: 1, 2, 4). Radi se o svojevrsnom lajtmotivu jednog kulturnog

[6] U posljednjim kampanjama obnovljenog sustavnog istraživanja na Kalniku iz 2007. i 2008. g. na lokaciji različitoj od istraživanja 1987–1990. g. pronađen je i razmjerno bogat sloj s dosta lončarije razdoblja Ha B, no kako je riječ o istraživanju u tijeku, materijal je još na obradi (Karavanić 2009).

was found in the household daub which originated on the structure's walls.

The older Iron Age material should be treated as a whole, even though – as already noted – it is possible to distinguish two stratigraphically differentiated groups of finds. These are units which are very similar in terms of function (residential structures) and possibly also dating. Attention should nonetheless be accorded to several precisely stratigraphically documented finds at the start of the Iron Age stratigraphic sequence. These are the fragments under P. 2: 1, 2, 4; P. 3: 3, 7; P. 4: 1. The larger pieces (P. 2: 1, 2) were found lying horizontally on the oldest flooring, recalling the "terrazzoed floors" found at Belaj and Kalakača (Perc 1963: 378; Majnarić-Pandžić 1986: 30). This group of finds is also considerably less fragmented than the average, which testifies to a smaller degree of perturbation of the initial Iron Age layers.

Sherds of less articulated forms typical of the older Urnfield culture are characteristic of this context. Vessels with funnel-drawn rims (P. 2: 1, 2) are encountered at many Ha A settlements, such as Kalnik (Vrdoljak 1995: 30, type B6c), Gradec in Zagreb (Balen-Letunić 1996: Fig. 3) and Oloris, at which bowls of this type appear almost exclusively (Horvat-Šavel 1989: 137). A sherd with coarse facture (P. 2: 4) may be included among the typical S-profile ceramics of the Ha B style, similar to types B6d or A6d from Kalnik (Vrdoljak 1995: 31, P. 12: 2). The tendency of rounding vessel profiles and abandonment of expanded pot and bowl rims is clearly visible in the funnelled expanded sherds, which must therefore be classified into a typologically younger group.

A well-preserved bowl (P. 3: 7), due to its globular shape and poorly emphasized rim, is comparable to type A6c from Kalnik, although it should not necessarily be equated with this group, because the Kalnik sample consists of considerably larger pieces (Vrdoljak 1995: 27). The typological development of globular vessels may be followed from phase II of the Urnfield culture at the Vrapče necropolis in Zagreb (Vinski-Gasparini 1973: 155, P. 24:1), while parallels from habitation sites are provided by the Ha B phase at Ormož (Lamut 1989: P.17:13).

The remaining vessels from this horizon cannot be classified earlier than Ha B. The bowl with almost vertical cuts on the rim (P. 4: 1) is a typical example of the later Urnfield culture, with analogies in Donja Dolina in phase Ib (Marić 1964: P. IV: 9), also in Ha B in Ormož (Lamut 1989: P. 2: 6), and in the horizon B at the Pod hillfort (Čović 1965: P. XII: 1). It should be noted that such ornamentation

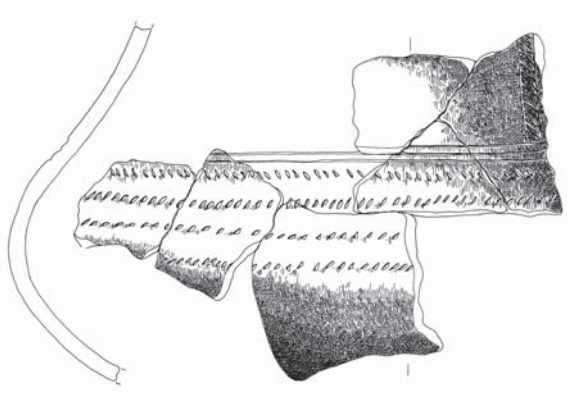
kompleksa koji se protezao od Vojvodine i Baranje preko cijele Transdanubije do obronaka Alpa. Taj konglomerat, poznat još i kao grupa Val-Dalj-Ruše-Stillfried-Podol-Chotin, formira se oko 1000. g. pr. Kr., na prijelazu Ha A/B (Vinski-Gasparini 1973: 150). Bosutska grupa obiluje sličnim primjercima (Vasić 1987: 539), a u nekropoli u Pobrežju taj ornament prisutan je u više cjelina s početka stupnja Ha B (Pahič 1972: 15).

Sada o ostatku nalaza iz naseobinskog horizonta I. Grublji, trbušasti lonci s ukrasom vodoravnog žlijebljenja i utiskivanja nokta ili nekog predmeta (T. 5: 1–3), zajedno s istim tipom iz Belaja, koji je ukrašen žlijebljenim girlandama (Majnarić-Pandžić 1986: 33), svoju najbolju analogiju pronalaze na Kalakači (Medović 1978: T. 77). Bliske paralele ukrasu ravne aplicirane trake na velikom pitosu (sl. 5) možemo pronaći u keramici ljubljanske grupe (Dular 1978a: 107) te u grobovima prvog stupnja iz Podzemelja, koji se već mogu opredijeliti u početak željeznog doba (Dular 1975: T. 1: 2). Oblikom je ova posuda srodna brojnim pitosima grupe Bosut IIIa, koji, doduše, obično nisu ukrašeni ravnom trakom (Medović 1978: T. 22, 23).

very rarely appears at Kalnik, at which the pottery can largely be classified into phase Ha A (Vrdoljak 1995: 30, P. 18: 2).[6]

The sherd with grooved garlands (P. 3: 3) can be typologically determined with considerably certainty. In the first place, it is worthwhile noting that the garland motifs were rendered in wide grooving technique, as opposed to the remaining sherds with similar ornamentation from the younger portion of horizon I, on which incising was applied (P. 3: 1, 2, 4). This is a something of a leitmotif of a cultural complex that extended from Vojvodina and Baranja across the entire Transdanubia to the foothills of the Alps. This conglomerate, also known as the Val-Dalj-Ruše-Stillfried-Podol-Chotin group, was formed at approximately 1000 BC, at the Ha A/B transition (Vinski-Gasparini 1973: 150). The Bosut group abounds in similar examples (Vasić 1987: 539), while in the necropolis in Pobrežje this ornament is present in several units from the onset of phase Ha B (Pahič 1972: 15).

And now about the remainder of finds from the settlement horizon I. The best analogy to the bulbous pots ornamented with horizontal grooving and



Slika 6. Lonac ukrašen dubokim urezivanjem (polumjer trbuha = 19 cm) (crtež: I. Miletić).

Figure 6. Pot decorated with deep incisions (radius of belly = 19 cm) (drawing: I. Miletić).

Slika 7. Trbušasti lonac iz Plevena, sjeverna Bugarska (promjer ≈ 30 cm) (Hänsel 1976: T. 20: 8).

Figure 7. Bulbous pot from Pleven, northern Bulgaria (diameter ≈ 30 cm) (Hänsel 1976: P. 20: 8).

Jedan od kvalitetnijih keramičkih nalaza s Dubovca trbušast je, dobro uglačan lonac (sl. 6) ukrašen "kapljastim urezima" (Popović 1981: T. 2: 4, 5; Pavišić 1993: 176) i slabo izraženim fazetama na ramenu te motivom "jeline grančice" koji oblikuje metope na vratu. Urezivanje na vratu posude vrlo je oštro i duboko (brazdasto urezivanje), pa pretpostavljamo da je bilo zapunjeno inkrustacijom. Izvrsna analogija dubovačkog komada jest bosutska grupa ranog željeznog doba, odnosno horizont Bosut IIIa. Podudarnost je očita već na prvi pogled:

imprints of fingernails or other items (P. 5: 1–3), together with the same type from Belaj, which is ornamented with grooved garlands (Majnarić-Pandžić 1986: 33), can be found at Kalakača (Medović 1978: P. 77). Close parallels to the ornament of horizontal applied bands on the pithos (Fig. 5) can be found in

[6] During the last campaign of renewed systematic research in Kalnik in 2007 and 2008 at a site different than that covered in the 1987-1990 research, a relatively rich layer was found containing a considerable amount of Ha B pottery, but since this research is ongoing, the material is still being processed (Karavanić 2009).

grubo kapljasto urezivanje, motiv grančice na vratu i slabo izraženo fazetiranje trbuha posude (Medović 1978: 43ff, T. 9: 1, 3; T. 23: 2). Svakako valja spomenuti analogije u keramičkim nalazima slične forme, ukrašenima brazdastim urezivanjem, iz donjeg Podunavlja (Govora u Olteniji, grupa Čerkovna u središnjoj i sjevernoj Bugarskoj), na što je već upozorio D. Oman (1981: 150) dopuštajući kao alternativno objašnjenje i mogućnost ponovnog pojavljivanja eneolitičke tradicije. B. Teržan (1990: 23) naglašava stilske srodnosti lončarije iz ruške nekropole s donjim Podunavljem te značaj tih podudarnosti u kontekstu pojave željeznih predmeta u ranom Ha B. Ta zaista neobična srodnost vidljiva je i pri usporedbi dubovačkog lonca s primjerkom iz Plevena u sjevernoj Bugarskoj koji pripada kulturnoj provinciji žigosane i urezivanjem ukrašene keramike istočne Europe iz 11–10. st. pr. Kr. (sl. 7) (Hänsel 1976: 113). U Bosni se grubi kapljasti ornament pojavljuje kao preteča pseudovrpčastog utiskivanja već u horizontu C-1 gradine Varvara, no fazetiranje na trbuhu javlja se tek u Varvari C-3 (Ha B), iako u znatno naglašenijoj varijanti (Čović 1983: 402, T. 59: 3).

Još tri ulomka s ukrasom girlandi dodatno potvrđuju iznimne veze željeznodobnog horizonta na Dubovcu s Podunavljem (T. 3: 1–3). Za vrijeme mlađe kulture polja sa žarama ukras girlandi proširio se sve do Rajne (Müller-Karpe 1980: T. 444: G–J), a ranu pojavu razvijenog ukrasa girlandama imamo u žarnoj nekropoli u Csorni na Tisi (Müller-Karpe 1980: T. 367: D-13). Kad je riječ o girlandama s Dubovca, nema sumnje u njihovu vezu s grupom Bosut IIIa (Medović 1978: T. 36: 6; T. 40: 3; T. 38: 3; T. 39: 2, 3; T. 41: 5; Popović 1981: T. 2: 2; T. 5: 6; T. 10: 7; T. 11: 6; T. 41: 11–23). Na relaciji između bosutske i pokupske grupe girlande su dokumentirane u Iloku (Ložnjak 2002a: T. 3: 4), I. horizontu Visa kod Dervente (Marić 1961: T. 1: 3; T. 2: 10, 11), horizontu B Pivnice (Čović 1965: T. 3: 11, 13), Zecovima II i I (Benac 1959: T. 19: 2, T. 20: 3).

Vodoravno fazetiranje rubova i ramena zdjela s uvučenim obodom, poput ulomka T. 4: 3, pojavljuje se kroz cijelu kulturu polja sa žarama, a tipično je za beierdorfsko-velatičku grupu (Vrdoljak 1995: 28). Na Kalniku je to najčešći oblik dekoriranja oboda zdjela (*ibid.*). Doduše, na Varvari, koja je stratigrafski pouzdano dokumentirano kasnobrončanodobno naselje, taj način ukrašavanja pojavljuje se tek u horizontu C-3, što odgovara stupnju Ha B (Čović 1983: 402). Malo pažljivijim pregledom kasnobrončanodobnog keramičkog materijala može se uočiti da se naš primjerak zbog svojeg četvrtastog presjeka oboda ne uklapa dobro u širu grupu takvih

Ljubljana group ceramics (Dular 1978a: 107) and in the graves of the first phase from Podzemelj, which may be classified to the beginning of the Iron Age (Dular 1975: P. 1: 2). In terms of shape, this vessel is similar to numerous pithoi from the Bosut IIIa group, which, however, were not normally decorated with straight bands (Medović 1978: P. 22, 23).

One of the higher-quality ceramic finds from Dubovac is a bulbous, well-burnished pot (Fig. 6) ornamented with "teardrop incisions" (Popović 1981: P. 2: 4, 5; Pavišić 1993: 176) and vaguely rendered facets at the shoulder and a "fir branch" motif which forms metopes at the neck. The incisions at the vessel's neck are very sharp and deep (furrowing), so we assume that it was filled with incrustation. An excellent analogy to the Dubovac piece is the Bosut group from the early Iron Age, i.e., the Bosut IIIa horizon. The correspondence is apparent already at the first glance: the coarse teardrop incisions, the branch motif at the neck and the vaguely rendered faceting on the vessel's belly (Medović 1978: 43ff, P. 9: 1, 3; P. 23: 2). Certainly worth mentioning are the analogies in the ceramic finds with similar forms, ornamented by furrowing, from the lower Danubian Basin (Govora in Oltenia, the Čerkovna group central and northern Bulgaria), which had already been pointed out by D. Oman (1981: 150), who also allowed for the possibility of the reappearance of an Eneolithic tradition as an alternative explanation for such finds in Slovenia. B. Teržan (1990: 23) emphasized the stylistic similarities between the pottery from the Ruše necropolis and the lower Danubian Basin and the significance of this correspondence in the context of the appearance of iron items in the early Ha B. This truly unusual similarity is also visible in the comparison of the Dubovac pot and the example from Pleven in northern Bulgaria, which belongs to the cultural province of the stamped and incision-decorated ceramics from Eastern Europe, dated to the eleventh-tenth centuries BC (Fig. 7) (Hänsel 1976: 113). In Bosnia, the coarse teardrop ornament appears as a predecessor to false band impressions already in the C-1 horizon of the Varvara hillfort, but faceting on the belly only appeared in Varvara C-3 (Ha B), although in a considerably more elaborated variant (Čović 1983: 402, P. 59: 3).

Another three sherds with garland ornaments additionally confirm the exceptional links between the Iron Age horizon at Dubovac and the Danubian Basin (P. 3: 1-3). During the younger Urnfield culture, the garland ornament spread up to the Rhine (Müller-Karpe 1980: P. 444: G-J), while the early appearance of a well-developed garland ornament was found in the Urnfield necropolis in Csorna

nalaza. Radi se naime o tipu koji je karakterističan za nalazišta sjeverne Bosne, i to naročito Vis I.[7] (Marić 1961: 156, sl. 6: e, h), a pojavljuje se i u Donjoj Dolini u horizontu I.a (*idem*: 26, T. 2: 8). Sličan komad pronađen je i u nekropoli u Lijevoj Bari, gdje je svrstan među nalaze stupnja Ha B (Vinski-Gasparini 1983: 614, T. 91: 14). Ishodište tog oblika može se vezati uz kasno brončano doba središnje Bosne, koje je vrlo prepoznatljivo po svojim ukrašenim i zadebljanim obodima (Čović 1965: 27ff).

Vrlo je zanimljiv fazetirani ulomak T. 4: 4, kojemu nismo pronašli izravne paralele. Po svojem prijelomu on je identičan nalazima starije KPŽ s Kalnika koji imaju karakteristično stanjenje oboda (tip B3d) (Vrdoljak 1995: T. 16; T. 17), ali je žlijebljenje kojim je ukrašen potpuna novina, tim više što je ono izvedeno preko fazetiranja. Slični se komadi pojavljuju u prvom stupnju Ormoža (Lamut 1989: 237, T. 5: 15)

Metopna organizacija ukrasa na rubovima zdjela (T. 4: 6; T. 6: 3) vezana je uz razvitak "pseudoturbanastog" ukrašavanja, odnosno napuštanje tehnike širokog fazetiranja. To, naravno, ne znači da metopna shema nije bila u upotrebi i ranije, ali u tom slučaju u kombinaciji s nekom drugom tehnikom, poput lažnog vrpčastog otiskivanja u Varvari B (Čović 1983: 400). Dakle pojavu metopnih oboda na zdjelama uvučenog oboda možemo očekivati tek nakon usvajanja žlijebljenog ukrasa, što je potvrđeno njihovom pojavom tek u sloju C-3 Velike Gradine u Varvari (*idem*: 402). U Ha B datirane su i metopno ukrašene zdjele iz grobova u Ozlju (Balen-Letunić 1981: 17), a čini se da su tipološki nešto mlađe, na što navode i predložene analogije u Trešćerovcu i Krupačama opredijeljene u Ha B2 (Dular 1978: 39; Vinski-Gasparini 1983: 590).[8]

Ulomak T. 3: 5 vjerojatno je dio vrata posude, što sličnim cik-cak ornamentom potvrđuju ukrašene posude bosutske grupe stupnja IIIa, a postoje i cilidrični podlošci za posuđe slične forme (Medović 1978: T. 9: 2; Popović 1981: T. 3: 3). Identičan ornament urezan je i na zdjeli iz Kiringrada (Balen-Letunić 1987: T. 1: 5). Fragment poklopca ili peke s ručkom (T. 6: 5) usporediv je s nalazima iz naselja u Ormožu (Lamut 1989: T. 22: 5) i Podzemelju (Dular 1978: T. 42: 2).

Brončano dlijeto (T. 1: 1) također se može ubrojiti u stupanj Ha B Dubovca, iako dolazi iz ukopa koji je uočen tek na razini najdublje zapečene podnice

[7] Preuska je Marićeva (1961: 167) datacija Visa I. samo u Ha A. Upravo u tom horizontu ima mnoštvo ornamenata Ha B (lažno vrpčasto urezivanje, girlande, cik-cak linije), a isto vrijedi i za sljedeći stupanj (Marić 1961: 157). Na paralele u bosutskoj grupi ukazao je Popović (1981: 31), ali uz previše isključivosti.

[8] U ranijem radu Vinski-Gasparini (1973: 155) Krupače i Trešćerovac datira u Ha B1.

on the Tisza (Müller-Karpe 1980: P. 367: D-13). When speaking of garlands from Dubovac, there is no doubt of their ties to the Bosut IIIa group (Medović 1978: P. 36: 6; P. 40: 3; P. 38: 3; P. 39: 2, 3; P. 41: 5; Popović 1981: P. 2: 2; P. 5: 6; P. 10: 7; P. 11: 6; P. 41: 11-23). In the zone between the Bosut and Kupa groups, garlands have been documented in Ilok (Ložnjak 2002a: P. 3: 4), horizon I at Vis, near Derventa (Marić 1961: P. 1: 3; P. 2: 10, 11), horizon B at Pivnica (Čović 1965: P. 3: 11, 13), and Zecovi II and I (Benac 1959: P. 19: 2, P. 20: 3).

The horizontal faceting of the edges and shoulders of bowls with inwardly drawn rims, such as the sherd on P. 4: 3, appeared throughout the Urnfield culture, and it was typical of the Beierdorf-Velatice group (Vrdoljak 1995: 28). At Kalnik, this was the most common form of bowl rim decoration (*Ibid.*). However, at Varvara, which is a stratigraphically well documented Late Bronze Age settlement, this ornamentation technique appeared only in horizon C-3, which corresponds to phase Ha B (Čović 1983: 402). A slightly more attentive review of Late Bronze Age ceramics shows that our example, due to the rectangular cross-section of the rim, does not fit well into the wider group of such finds. This is a type that is characteristic of northern Bosnia sites, particularly Vis I.[7] (Marić 1961: 156, Fig. 6: e, h), and it also appears in Donja Dolina in horizon I.a (*Idem*: 26, P. 2: 8). A similar piece was also found in the necropolis in Lijeva Bara, where it was classified among the finds of phase Ha B (Vinski-Gasparini 1983: 614, P. 91: 14). The source of this form may be linked to the Late Bronze Age in central Bosnia, which is very recognizable for its ornamented and thickened rims (Čović 1965: 27ff).

The faceted sherd, P. 4: 4, for which we found no direct parallels, is quite interesting. Its profile is identical to finds of the older Urnfield culture from Kalnik which exhibit a typical thinning of the rim (type B3d) (Vrdoljak 1995: P. 16; P. 17), but the grooving with which it is ornamented is a novelty, all the more so since it is rendered through faceting. Similar pieces appeared in the first phase at Ormož (Lamut 1989: 237, P. 5: 15).

The metopic organization of ornaments at the edges of one bowl (P. 4: 6; P. 6: 3) is tied to the development of "pseudo-turban-shaped" ornamentation, i.e., the abandonment of the wide faceting technique. This, naturally, does not mean that the metope scheme

[7] The dating of Vis I to only Ha A by Marić (1961: 167) is too narrow. It is precisely this horizon that has a multitude of Ha B ornaments (false band incisions, garlands, zigzag lines), and the same applies to the next phase (Marić 1961: 157). Parallels to the Bosut group were pointed out by Popović (1981: 31), but with too many exclusions.

Slika 8. Brončano dlijeto in situ (mjerilo: 1 m) (snimio: Z. Čučković).
Figure 8. Bronze chisel in situ (scale: 1 m) (photograph by: Z. Čučković).

(sl. 8). Slično je dlijeto pronađeno u horizontu C-2 Velike Gradine u Varvari (Čović 1983: T. 58: 11), u Donjoj Dolini Ib (Marić 1964: 24, T. I: 26), a jedan identičan primjerak u Zecovima III (Benac 1959: T. 17: 14). Nešto izduženiji oblici dlijeta pojavljuju se još ranije u ostavi Bingula-Divoš iz II. stupnja KPŽ, ali njihov tijek pratimo i kasnije, npr. ostava Beravci iz IV. stupnja KPŽ prema K. Vinski-Gasparini (1973: T. 84: 14; T. 108: 16). Čini se da su raniji oblici nešto vitkiji od našeg primjerka, ali treba imati na umu da su to prije svega funkcionalni predmeti bez ikakve dekoracije i stoga tipološki slabo osjetljivi. Kako bilo, dlijeta su karakteristika kasnog brončanog doba (Benac 1959: 44), što upućuje na složeniju gradnju u drvu.

Naseobinski horizont II

Sljedeći horizont također je izdvojen na temelju stratificiranih ostataka urušenih građevina. Pri vrhu nalazio se sloj pun gara, pomiješan nešto niže s ulomcima kućnog ljepa i fragmentima keramike (sl. 9). Ispod toga pronađeni su znatniji komadi kućnog ljepa, jedan s utorima šiblja, i krupniji dijelovi posuda, a pri dnu se pružaju tragovi greda, od kojih je jedna široka 10 cm, smjera paralelnog sa sondom. Zanimljiva je pojava manje količine neobrađenog kamena na toj dubini, s jednim pozamašnim primjerkom koji je vidljiv i u presjeku (sl. 3: 19), ali ne postoje naznake konkretne kamene konstrukcije. U svakom slučaju, bilo je to doba intenzivnije graditeljske djelatnosti, o čemu uz kamenje svjedoče i veće rupe za kolce (sl. 3: 32, sl. 10). U njima su na udaljenosti od oko 80 cm bili postavljeni stupci promjera 20 cm, okruženi s još 10 cm ilovače. Smjer pružanja konstrukcije prati rub humka. Valja napomenuti da od tri dokumentirane rupe jedna nije imala vidljiv naboj od ilovače te je uočena tek u nižim slojevima, kad je boja zapune došla do izražaja. Dimenzije i

was not in use even earlier, but in this case it was in combination with some other technique, such as the false cord impressions, as in Varvara B (Čović 1983: 400). Thus, the appearance of metopic rims on bowls with inwardly drawn rims can be expected only after the adoption of groove ornaments, which has been confirmed by the appearance of "methopic bowls" in layer C-3 of Velika Gradina in Varvara (*Idem*: 402). The metopically ornamented bowls from graves in Ozalj have also been dated to the Ha B (Balen-Letunić 1981: 17), and it would appear that they are typologically somewhat younger, which is also indicated by the proposed analogies in Trešćerovac and Krupače placed in Ha B2 (Dular 1978: 39; Vinski-Gasparini 1983: 590).[8]

A sherd, P. 3: 5, is probably a part of a vessel's neck, which is confirmed by the similar zigzag ornamentation on the ornamented vessels of the Bosut group's phase IIIa, although cylindrical vessel bases with similar forms have also been found on Bosut sites (Medović 1978: P. 9: 2; Popović 1981: P. 3: 3). An identical ornament was also engraved on a bowl from Kiringrad (Balen-Letunić 1987: P. 1: 5). The lid or baking lid fragment with handle (P. 6: 5) is comparable to finds from the settlement in Ormož (Lamut 1989: P. 22: 5) and Podzemelj (Dular 1978: P. 42: 2).

The bronze chisel (P. 1: 1) can also be dated to the Ha B phase of Dubovac, even though it came from a hole fill observed only at the level of the deepest burnt floor (Fig. 8). A similar chisel was found in horizon C-2 at Velika Gradina in Varvara (Čović 1983: P. 58: 11), in Donja Dolina Ib (Marić 1964: 24, P. I: 26), and an identical example was recovered in Zecovi III (Benac 1959: P. 17: 14). A somewhat more oblong form of chisel appeared even earlier in the Bingula-Divoš hoard from phase II of the Urnfield culture, but their use can also be followed later, e.g. the Beravci hoard from phase IV of the Urnfield culture according to K. Vinski-Gasparini (1973: P. 84: 14; P. 108: 16). It would appear that the earlier forms are somewhat slimmer than our example, but it should be borne in mind that these are functional artefacts normally without decoration and therefore may not be very sensitive typologically. In any case, chisels were characteristic of the late Bronze Age (Benac 1959: 44), which indicates the importance of more complex construction techniques involving lumber.

Settlement horizon II

The next horizon was also defined on the basis of stratified remains of a collapsed building. Near the

[8] In an earlier work, Vinski-Gasparini (1973: 155) dated Krupače and Trešćerovac to the Ha B1.

Slika 9. Tamni sloj naseobinskog horizonta II tijekom istraživanja; povišena nakupina ljepa ostatak je horizonta III (mjerilo: 1 m) (snimio: Z. Čučković).

Figure 9. Dark layer of settlement horizon II during the course of research; the raised deposit of daub is a remainder of horizon III (scale: 1 m) (photograph by: Z. Čučković).

Slika 10. Rupe za stupce (mjerilo: 1 m) (snimio: Z. Čučković).

Figure 10. Post-holes (scale: 1 m) (photograph by: Z. Čučković).

raspored ukopa te smještaj konstrukcije vrlo su slični mnogo kasnijim srednjovjekovnim palisadama, te se interpretacija u tom smislu čini prihvatljivom. Treba ipak uočiti da nisu zabilježene razlike u stratifikaciji između prostora izvan i unutar konstrukcije, kakve bi se mogle očekivati kod dugotrajnijeg vijeka gradnje, te nadalje da je njezin položaj udaljen 2 m od danas očuvanog ruba željeznodobnog sloja, koji je izvorno morao biti i nešto prostraniji.

Zdjele uvučenog oboda iz tog horizonta nastavljaju se na prijašnje tipove (T. 7: 1, 2; T. 8: 1), ali pokazuju i određene novine. Tako primjerice ulomku s okomitom ušicom (T. 7: 3) vrlo dobru analogiju pronalazimo u četvrtom horizontu Brinjeve Gore (Oman 1981: T. 30: 2).

Vodoravno fazetirana zdjela T. 7: 5 ne može se uspoređivati s ranijim primjercima, poput onog iz prijašnjeg horizonta, kojima je osnovna karakteristika usko fazetiranje koje ne prelazi rame posuda, a obično je popraćeno zadebljanjem oboda. U ovom slučaju riječ je o širokom fazetiranju koje se spušta na rame posuda, a pojavljuje se u Varvari C-3 (Čović

top there was a layer full of soot, mixed somewhat lower with fragments of household daub and potsherds (Fig. 9). Below this, considerably more pieces of household daub were found, one with wattle marks, as well as larger parts of vessels, while toward the bottom traces of wooden beams were observed, of which one is 10 cm wide, lying in a direction parallel to the test trench. Interesting is the appearance of a small quantity of unworked stone at this depth, along with one sizeable example that is also visible in the cross-section (Fig. 3: 19). However, traces of an actual stone structure were not documented. In any case, this was a time of more intense construction activity, which is also demonstrated by several larger post holes (Fig. 3: 32, Fig. 10). In them, posts measuring 20 cm in diameter were placed at intervals of roughly 80 cm and surrounded by an additional 10 cm of loam. The structure followed the edge of the mound. It should be noted that one of three documented holes did not have a visible layer of loam, and was only observed in the lower layers, when the colour of the fill became more distinguishable. The dimensions and arrangement of the holes, as well as the location of the structure, are very similar to palisade constructions from the medieval phase (*cf. infra*) and an interpretation along these lines would appear acceptable. It should be noted, however, that no difference was recorded between the stratigraphy of the space outside and inside the structure, which should be expected if the construction stood for longer period, and furthermore its position is 2 m from the currently preserved edge of the Iron Age layer, which originally had to be somewhat more spacious.

Bowls with inwardly drawn rims from this horizon draw on previous types (P. 7: 1, 2; P. 8: 1), but also exhibited certain innovations. A very good analogy to the sherd with vertical eyelet (P. 7: 3) can be found in the fourth horizon of Brinjeva Gora (Oman 1981: P. 30: 2).

The horizontally faceted bowl, P. 7: 5, cannot be compared to earlier examples, such as those from the preceding horizon, on which the basic characteristic is narrow faceting which does not pass over the vessel's shoulder, and which is normally accompanied by a thickening of the rim. In this case, faceting is rather broad and descends along the vessel's shoulder. Similar types appear in Varvara C-3 (Čović 1983: 402, P. 59: 4, 6, 7). Analogies also exist in the necropolis in Dalj, dated to the Ha B1, but with an extended duration into the high Iron Age (Vinski-Gasparini 1983: 607, P. 91: 5). Dular (1982: 75, P. 26: 250-252) stressed that in neighbouring Lower Carniola bowls with wide horizontal facets were typical of the beginning of the Iron Age in

1983: 402, T. 59: 4, 6, 7). Analogije postoje i u nekropoli u Dalju, datiranoj u Ha B1, ali s produljenim trajanjem do u razvijeno željezno doba (Vinski-Gasparini 1983: 607, T. 91: 5). Dular (1982: 75, T. 26: 250–252) ističe da su u susjednoj Dolenjskoj zdjele sa širokim vodoravnim fazetama karakteristične za početak željeznog doba u stupnju Podzemelj I i II. U Rušama se taj tip, koji je u grobovima 39, 86 i 137 vrlo sličan dubovačkim nalazima, na temelju računalne analize može opredijeliti u mlađi stupanj Ha B (Kärner 1989: sl. 8: 12, 18; sl. 9: 2). Na kultnom mjestu na Turskoj Kosi taj je tip ukrašavanja datiran u stupanj Ha B3, odnosno u početni stupanj svetišta (Čučković 1989: 440, T. 3: 7).

Kao novost javljaju se zdjele uvučenog i zaravnjenog oboda, kakve će se još više pojavljivati u horizontu III (T. 7: 7). Analogije tom tipu pronašli smo u Kalakači i Ormožu II (Medović 1978: T. 32: 1; Lamut 1989: T. 17: 5).

Lonci sa zadebljanjem i žlijebljenim ukrasom na ramenu predstavljaju novinu, i to vrlo značajnu (T. 7: 6). Takvo ukrašavanje proširilo se na sve vrste posuda u stupnju II naselja u Ormožu, što bi odgovaralo vremenu između tzv. Ha B3 i ranog Ha C (Lamut 1989: 242), tako da ovaj komad već najavljuje sljedeći naseobinski horizont. Vrlo sličan ulomak pronađen je u 53. sondi na Pošteli, najvjerojatnije iz horizonta I (Ha B3/C) (Teržan 1990: T. 5: 53), a taj tip prisutan je i u Belaju (Majnarić-Pandžić 1986: sl. 8: 1).

Donosimo još nekoliko predmeta vezanih uz tkalačku radinost (T. 8: 3–5). Zanimljivost je pojava manjeg piramidalnog utega, koji je možda prethodnik ukrasnog primjerka iz kasnijeg horizonta (T. 10: 6). Pršljen ukrašen udubljenjima vrlo je sličan jednom ulomku iz Kiringrada (Balen-Letunić 1987: T. 10: 3), a predmet sličan kalemu paralele ima u II. horizontu gradine Zecovi (Benac 1959: T. 17: 5).

Fragment s rupicom (T. 8: 6) teško da je dio popravljene posude kakve se često mogu pronaći među finijom keramikom iz neolitika ili eneolitika. Radi se o jednostavnom, prosječno debelom komadu, koji je vjerojatno služio kao privjesak ili uteg.

Naseobinski horizont III

Najmlađi otkriveni prapovijesni slojevi (sl. 3: 20, 21) velikim su dijelom uništeni što srednjovjekovnim što recentnim prokopima. Poput starijih slojeva, i tu je izišla na vidjelo nakupina kućnog ljepa (sl. 3: 20a). U komadima ljepa, okomito na pružanje sonde, pronađen je otisak četvrtaste grede širine oko 15 cm. Vjerojatno se radi o izvaljenu zidu nekog objekta čiji ostaci leže izvan obuhvata iskopavanja. Ispod nakupine ljepa pojavili su se tragovi greda istog smjera kao navedeni utori. U toj ili nešto mlađoj

Podzemelj phases I and II. In Ruše, this type, whose examples from graves 39, 86 and 137 are very similar to the Dubovac finds, can be dated to the later Ha B phase based on a computer analysis (Kärner 1989: Fig. 8: 12, 18; Fig. 9: 2). At the cult site in Turksa Kosa, this type of ornamentation has been dated to phase Ha B3, i.e., the initial phase of the shrine (Čučković 1989: 440, P. 3: 7).

Bowls with inwardly drawn rims that are flattened on the inner edge appeared as a novelty, and they would appear even more in horizon III (P. 7: 7). We found analogies to this type in Kalakača and Ormož II (Medović 1978: P. 32: 1; Lamut 1989: P. 17: 5).

Pots with thickened and grooved ornamentation on the shoulder are a novelty, and that a significant one (P. 7: 6). Such ornamentation spread to all types of vessels in phase II of the settlement in Ormož, which would correspond to the time between the so-called Ha B3 and early Ha C (Lamut 1989: 242), so that this piece already heralds the following settlement horizon of Dubovac. A very similar sherd was found in test trench 53 in Poštela, most likely from horizon I (Ha B3/C) (Teržan 1990: P. 5: 53), while this type is also present in Belaj (Majnarić-Pandžić 1986: Fig. 8: 1).

We also present several items associated with weaving (P. 8: 3-5). Interesting is the appearance of a small pyramidal weight, which may be a predecessor of a decorative example from an earlier horizon (P. 10: 6). A spindle whorl decorated with dimples is similar to a fragment from Kiringrad (Balen-Letunić 1987: P. 10: 3), while an item resembling a spool has parallels in horizon II of the Zecovi hillfort (Benac 1959: P. 17: 5).

It is unlikely that the sherd with a small hole (P. 8: 6) is a part of a repaired vessel as in the case of the finer ceramics of the Neolithic or Eneolithic. This is a coarse piece of average thickness, which probably served as a pendant or weight.

Settlement horizon III

The most recent discovered prehistoric layers (Fig. 3: 20, 21) were largely destroyed either by medieval or more recent construction works. Like in the older layers, deposits of household daub also became visible here (Fig. 3: 20a). The imprint of a rectangular, roughly 15-cm wide beam was found among the pieces of daub, perpendicular to the length of the test trench. This was probably a collapsed wall of a structure, the remains of which lie outside of the excavated area. Below the daub deposits, traces of a wooden beam appeared having the same orientation as the aforementioned imprints. Large post-holes (Fig. 3: 36) surrounded by a wide band of packed

fazi naselja iskopane su velike rupe za stupce (sl. 3: 36) okružene širokim pojasom nabijene ilovače (sl. 3: 41). Konstrukcija s ilovačom, kakva se već pojavila u nižim slojevima, svakako govori u prilog prapovijesnoj dataciji, iako su stratigrafski podaci koji bi to potvrdili uništeni. Opseg zahvata od gotovo 1 m širine s rupama koje su mogle držati stupce do 35 cm promjera upućuje na ozbiljnu konstrukciju, te ga tumačimo kao trag drvene palisade, unatoč tomu što je znatno slabije dokumentiran od primjera iz ranijeg horizonta. Problem ostaje datacija jer slojevi iz kojih je struktura ukopana nisu očuvani. Može se nagađati da je riječ o nekoj mlađoj željeznodobnoj fazi naselja, iako bi dubina ukopa od oko 80 cm odgovarala i najmlađem dokumentiranom prapovijesnom sloju.

Već na prvi pogled uočljiva je osobitost keramičkog materijala najmlađeg dubovačkog prapovijesnog horizonta. Široko žlijebljenje i kaneliranje pojavljuje se u novim dekorativnim shemama, a u keramičkom repertoaru porastao je udio posuđa s ručkom (sl. 16: 1). Nema sumnje da te karakteristike obilježavaju starije željezno doba (Ha C) (Dular 1982: 23; Vinski Gasparini 1987: 200; Teržan 1990: 35). Također su značajne opće promjene u lončariji koje pokazuje kvantifikacija: rubovi se stanjuju, ukrašavanje urezivanjem na zdjelama sve je rjeđe, a vidljiva je slabije izražena tendencija smanjivanja prosječne veličine posuda (sl. 15, sl. 16).

Ulomak T. 9: 4, ukrašen finim paralelnim valovnicama, zajedno s još nekoliko sličnih komada izdvaja se iz cjelokupna dubovačkog materijala po svom ornamentu i fakturi. Ti su nalazi od finije, pročišćene gline, a tehnika njihova pečenja razlikuje se od uobičajene, što je vidljivo iz dvoslojnog presjeka kakav se na Dubovcu pojavljuje jedino na tim komadima. Jezgra i vanjske stijenke posude tamnosive su, a unutrašnjost je vrlo svijetla, žućkasta. Kvalitetnija siva faktura primijećena je i na jednom identičnom fragmentu iz Belaja (Majnarić-Pandžić 1986: 32), koji uz još nekoliko primjeraka iz Kiringrada tvori vrlo zanimljivu tipološku grupu kojoj zasad nismo pronašli odgovarajuće analogije (Balen-Letunić 1987: T. 3: 3, 5, 6).[9] Problem je u tome što je ta kombinacija ukrasa (češljasta valovnica i žlijebljenje) razmjerno rijetka na pokupskome prostoru, dok keramička forma, pogotovo jednog ulomka s ljevkasto proširenim obodom iz Kiringrada, podsjeća na raščlanjene oblike željeznog doba, npr. Medovićev (1978: T. 125: 49) tip 49 iz stupnja Bosut IIIc, odnosno na ulomak s Dubovca na T. 9: 1. Već je ranije D. Balen-Letunić (1987: 5, T. 3: 5) na jednom

loam (Fig. 3: 41) were dug during this or a somewhat younger phase. Construction using loam, as already observed in the lower layers, may indicate prehistoric dating, but the stratigraphic data which would confirm this have been destroyed. The extent of this feature, with almost 1 m wide holes that may have held poles with a diameter up to 35 cm, indicates a serious construction, and we interpret it as the vestige of a wooden palisade, despite the fact that it is much more poorly documented than the example from the earlier horizon. Dating remains a problem, because the layers from which the structure was dug in have not been preserved. One may speculate that this was some younger Iron Age phase of the settlement, although the depth of the holes of approximately 80 cm would also correspond to the youngest documented prehistoric layer.

The specificity of the ceramics of the youngest Dubovac prehistoric horizon becomes apparent at the first glance. The wide grooving and fluting has appeared in new decorative schemes, while in the ceramic repertoire the share of vessels with handles has grown (Fig. 16: 1). There can be no doubt that these characteristics mark the older Iron Age (Ha C) (Dular 1982: 23; Vinski Gasparini 1987: 200; Teržan 1990: 35). Significant general changes in pottery assemblage have appeared, as visible in quantification as well: edges are thinned, ornamentation by incising on bowls has become rarer, and certain tendency of reducing the average size of vessels became apparent (Fig. 15, Fig. 16).

The sherd, P. 9: 4, ornamented with fine parallel wave patterns, together with several similar pieces, stands apart from the rest of the Dubovac material in terms of its ornamentation and fabric. These are finds made of refined clay, and their firing technique differs from the standard, which is visible in the double-layered cross-section which appears in Dubovac only on these pieces. The core and external walls of the vessel are dark grey, while the interior is lighter and yellowish. Higher-quality grey facture has also been observed on an identical sherd from Belaj (Majnarić-Pandžić 1986: 32), which together with several other examples from Kiringrad forms a very interesting typological group to which we have not been able to find suitable analogies thus far (Balen-Letunić 1987: P. 3: 3, 5, 6).[9] The problem is in the fact that this combination of ornaments (combed wave pattern and grooving) is relatively rare in the Kupa River zone, while the ceramic form, particularly of a piece with a spout-shaped extension on the rim from

[9] Paralele iz Bosut IIIa na koje pomišlja N. Majnarić-Pandžić nisu u potpunosti odgovarajuće, što napominje i sama autorica (Majnarić-Pandžić 1986: 41).

[9] The parallels from Bosut IIIa considered by N. Majnarić-Pandžić are not entirely appropriate, which she noted herself (Majnarić-Pandžić 1986: 41).

od spomenutih kiringradskih fragmenata naglasila pojavu motiva visećih trokuta produženog vrha, kakav je karakterističan za metalne predmete perioda Ha B2–B3. Polazeći od te datacije pažnju možemo usmjeriti na novosti u arheološkom materijalu koje u Podunavlju donosi basarapska grupa, odnosno početak željeznog doba u užem smislu. Prije svega, usavršena je tehnologija pečenja, što je rezultiralo pojavom kvalitetne sive lončarije karakteristične za starije slojeve stupnja Basarabi bosutske grupe (Medović 1978: 30; Popović 1981: 28). Dubovcu najbliže naselje na kojemu je dokumentiran tipičan basarapski ornament jest Sv. Marija Okićka, gdje je pronađen ulomak lonca stožastog vrata s ukrasom tekuće spirale (Ložnjak 2002: 317, T. 5: 9). Na Kalakači je zapažen porast udjela posuda manjih dimenzija, koje su ujedno i najčešće ukrašene (Medović 1978: 29). Od novih oblika posebno treba istaknuti pojavu ljevkasto proširenog oboda s račlanjenim ramenom na zdjelama i loncima (Dumitrescu 1968: 222, sl. 26; Medović 1978: T. 48: 4; T. 56: 3, 4; T. 57: 1–6). Takve posude prilično su brojne u II. horizontu Visa kod Dervente (Marić 1961: 158). Ornament na šalicama iz Dubovca (T. 9: 3) te pogotovo jednog ulomka iz Kiringrada (Balen-Letunić 1987: T. 3: 3) može se usporediti s lošije izvedenim žigosanim tekućim spiralama basarapskog horizonta bosutske grupe (Medović 1978: T. 70: 5; Popović 1981: T. 43: 2, 23), a treba uočiti i paralele u Sloveniji, i to u I. stupnju Poštele, gdje je vrlo sitna valovnica urezana na unutarnjoj strani ljevkasto proširenog vrata (Teržan 1990: T. 4: 9), te u "S"-spirali drugog stupnja Ormoža (Lamut 1989: T. 23: 9). Treba ipak naglasiti da pokupska grupa u mnogočemu odudara od prosjeka bosutske grupe u stupnju IIIb, prije svega po žlijebljenom ukrasu, ali i u karakterističnoj izvedbi valovnice te u vrlo skromnom proširivanju oboda.

Ukras bradavicama na ulomku T. 9: 2 provlači se kroz cijelu KPŽ, ali dobre analogije našim primjercima pronalazimo i u Sloveniji, i to u I. horizontu Poštele i Rifniku II (Teržan 1990: 31, sl. 1: 10; 56, sl. 10: 16). Slične bradavice zabilježene su i u Starom Čiču (Balen-Letunić 1996: sl. 1: 3). Zanimljivo je da se ukras bradavicama pojavljuje tek potkraj Ha B u nekropoli Ormožu, što se može dovesti u vezu sa slično ukrašenim komadima iz istoimene naseobine II. stupnja (Lamut 1989: 239; Tomanič-Jevremov 1989: 289, 293). Čini se da taj ornament na lokalitetima bez jače tradicije u Ha A nanovo dolazi u modu tek na samom kraju Ha B, u što bi se uklapao i Dubovac.

Ulomak s trokutastom bradavicom omeđenom plitkim žlijebljenjem tipološki se može jasno odrediti. Radi se o tipičnom ornamentu Ha C, kakav je uobičajen u dolenjskoj skupini ranog željeznog doba, ali i šire. Najbolju paralelu možemo pronaći

Kiringrad, recalls the articulated forms of the Iron Age, e.g. Medović's (1978: P. 125: 49) type 49 from the Bosut IIIc phase, or the sherd from Dubovac on P. 9: 1. D. Balen-Letunić (1987: 5, P. 3: 5) has already stressed the significance of the appearance of the motif of hanging triangles with extended tops on one of the aforementioned Kiringrad sherds, which is an ornament typical of metal items from the Ha B2-B3 periods. Departing from this dating, we can turn attention to the novelty in the archaeological material brought to the Danubian Basin by the Basarabi group, i.e., the beginning of the Iron Age in the narrow sense. Above all, the firing technology was perfected, which resulted in the appearance of better quality grey pottery typical of the older layers of the Basarabi phase of the Bosut group (Medović 1978: 30; Popović 1981: 28). The closest settlement to Dubovac in which a typical Basarabi style ornament was recorded is Sveta Marija Okićka, where a sherd of a conical neck with a flowing spiral ornament was found (Ložnjak 2002: 317, P. 5: 9). An increase in the proportion of vessels of smaller dimensions has been observed at Kalakača as well, which were also the most frequently ornamented ones (Medović 1978: 29). Considering new forms, the appearance of rims with spouted rims and articulated shoulders on bowls and pots should be noted (Dumitrescu 1968: 222, Fig. 26; Medović 1978: P. 48: 4; P. 56: 3, 4; P. 57: 1-6). Such vessels were rather numerous in horizon II at Vis, near Derventa (Marić 1961: 158). The ornament on cups from Dubovac (P. 9: 3) and particularly on one sherd from Kiringrad (Balen-Letunić 1987: P. 3: 3) may be compared to the more poorly rendered stamped flowing spirals of the Basarabi horizon of the Bosut group (Medović 1978: P. 70: 5; Popović 1981: P. 43: 2, 23), and parallels should also be noted in Slovenia, in phase I of Poštela, where a tiny wave pattern engraved on the internal side of a neck with spouted extension was documented (Teržan 1990: P. 4: 9), and in the "S"-spirals of the second phase at Ormož (Lamut 1989: P. 23: 9). It should nevertheless be stressed that the Pokuplje group in many ways differs from the Bosut group average in phase IIIb, above all in terms of the grooved ornament, but also in the characteristic rendering of the wave pattern and in the very modest expansion of the rim.

The wart-like ornament seen on the sherd on P. 9: 2 appears throughout the Urnfield culture, but good analogies to our examples can also be found in Slovenia, in horizon I at Poštela and in Rifnik II (Teržan 1990: 31, Fig. 1: 10; 56, Fig. 10: 16). Similar wart-like ornaments have also been recorded in Staro Čiče (Balen-Letunić 1996: Fig. 1: 3). It is interesting that wart-like ornaments appeared only at

u obližnjem Budinjaku, u poznatom kneževskom ukopu koji je čvrsto datiran u Podzemelj II, odnosno Ha C1 (Škoberne 1999: 67, T. 13: 2), a od slovenskih lokaliteta tu su Podzemelj (Dular 1982: 23), Ormož III (Lamut 1989: T. 28: 10) i Poštela II (Teržan 1990: T. 11: 5). U grupi Martijanec-Kaptol kaneliranje je uz bojenje jedna od osnovnih karakteristika razvijenog ili horizonta II, čiji je početak smješten u drugu polovicu 7. st. pr. Kr. (Vinski-Gasparini 1987: 200), što se podudara sa stupnjem 2a grupe Donja Dolina-Sanski Most (Čović 1987: 240).

Kad je riječ o bojenoj keramici, donosimo jedan ulomak zdjele sa stožastim vratom na kojem su vidljivi tragovi crnog premaza (sl. 11). Slikanje crvenom i crnom bojom karakteristika je stupnja Ha C na istočnoalpskome prostoru (Teržan 1990: 35) te grupe Martijanec-Kaptol najkasnije od polovice 7. st. pr. Kr. (Vinski-Gasparini 1987: 200). Taj tip posude vrlo je čest u naseljima s materijalom Ha B i Ha C, s time da je reljefno naglašavanje prijelaza vrata u rame više karakteristično za mlađi dio tog raspona, npr. Ormož II (Lamut 1989: T. 15: 2), a naročito pojava oslikavanja, npr. Poštela II (Teržan 1990: 32, sl. 2: 5). Od analogija u nekropolama spomenimo grob s dvopetljastom željeznom lučnom fibulom iz Poštele koja se može datirati u drugu polovicu 8. st. pr. Kr., a u kojem se nalazio sličan tip posude (Teržan 1990: 63, T. 58: 9).

Slika 11. Ulomak s tragom crnog oslikavanja (snimio: Z. Čučković).

Figure 11. Sherd with trace of black decorative paint (photograph by: Z. Čučković).

Nagla pojava manjih šalica s jednom ručkom jedna je od uočljivijih karakteristika horizonta (sl. 16: 1). Šalice T. 11: 1–3 tek u tragovima imaju nešto od bikoničnog "KPŽ"-presjeka u svojoj formi i mogu se usporediti budinjačkom nekropolom (Škoberne 1999: T. 13: 1; 2004: 157) i s tumulom IV iz Kaptola (Vinski-Gasparini 1987: T. 20: 10). U Dolenjskoj se takve šalice pojavljuju od stupnja Podzemelj I (Dular 1982: T. 22: 186–190), a vrlo česte su i u mlađim

the end of the Ha B in the Ormož necropolis, which may be linked to the ornamented pieces from phase II in the eponymous settlement (Lamut 1989: 239; Tomanič-Jevremov 1989: 289, 293). It would appear that the ornament at sites without a stronger Ha A tradition became fashionable again at the very end of the Ha B, and Dubovac would fit into this group.

The sherd with a triangular wart-like ornament bordered by shallow grooving can by clearly determined typologically. This is a typical Ha C ornament, customary in the Lower Carniola group of the Early Iron Age, but also beyond. The best parallel may be found in nearby Budinjak, in the well-known chieftain's burial which has been firmly dated to Podzemelj II, i.e., Ha C1 (Škoberne 1999: 67, P. 13: 2), while among the Slovenian sites there is also Podzemelj (Dular 1982: 23), Ormož III (Lamut 1989: P. 28: 10) and Poštela II (Teržan 1990: P. 11: 5). In the Martijanec-Kaptol group, fluting, together with painting, is one of the basic features of the developed phase, or horizon II, whose start has been placed in the latter half of the seventh century BC (Vinski-Gasparini 1987: 200), which corresponds to phase 2a of the Donja Dolina-Sanski Most group (Čović 1987: 240).

Considering painted pottery, we present here a sherd of bowl with conical neck on which the traces of black paint are visible (Fig. 11). Painting in red and black is typical of phase Ha C in the eastern Alpine zone (Teržan 1990: 35) and the Martijanec-Kaptol group, typically dated at the mid-seventh century BC at latest (Vinski-Gasparini 1987: 200). This vessel type is very frequent in settlements containing Ha B and Ha C material, although the relief emphasis of the transition of the neck into the shoulder is more typical of the more recent portion of this range, e.g. in Ormož II (Lamut 1989: P. 15: 2), and particularly the appearance of decorative painting, e.g. in Poštela II (Teržan 1990: 32, Fig. 2: 5). Among the analogies in necropoles, we note here the grave containing a double-loop iron arched fibula from Poštela, which may be dated to the latter half of the eighth century BC, in which a similar vessel type was found (Teržan 1990: 63, P. 58: 9).

The sudden appearance of smaller cups with single handles is one of the distinguishing features of this horizon (Fig. 16: 1). The cups on P. 11: 1-3 have only vestiges of the biconical "Urnfield culture" cross-section in their shape, and they may be compared to those from the Budinjak necropolis (Škoberne 1999: P. 13: 1; 2004: 157) and tumulus IV from Kaptol (Vinski-Gasparini 1987: P. 20: 10). In Lower Carniola, such cups appear only in Podzemelj phase I (Dular 1982: P. 22: 186-190), and they are quite frequent in the later phases of the Ljubljana

fazama ljubljanske nekropole (Dular 1982: sl. 13: 14). Trakaste ručke s naglašenim rubovima (T. 11: 1) tipične su za Ha C (Raunig 1996: 47, T. 2: 12–14).

Postupno napuštanje ukrašavanja rubova zdjela (T. 10: 1, 4, sl. 16: 3) nije specifičnost samo Dubovca, već je zabilježeno i na višeslojnom lokalitetu Brinjeva Gora. U posljednjem, 5. horizontu tog nalazišta nema više nijedne zdjele s urezanim ili žlijebljenim rubom, a od ukrasa na zdjelama koriste se bradavice ili linije urezane na ramenu (Oman 1981: 147). Za starije željezno doba karakteristično je i gubljenje naglašenog ramena na zdjelama, zbog čega im presjeci postaju polukružni (T. 10: 1) (Medović 1978: 36, T. 86: 2; Teržan 1990: T. 37: 1–20), a poneke imaju vodoravnu ušicu, poput komada T. 10: 4 (Gabrovec 1987: T. 1: 9). Tendencija zaobljavanja formi jasno je izražena već u stupnju Ha B3 nekropole u Ormožu (Tomanič-Jevremov 1989: T. 14: 2).

Za zdjelu s masivnom jezičastom drškom i vodoravnim kanelurama (T. 9: 1) nismo pronašli dobre paralele u naseljima Ha C. Svojim oblikom bliža je grupi Bosut IIIc, koja ima dosta tipova s ljevkasto proširenim vratom i jako puno kaneliranih ukrasa (Medović 1978: T. 98, 99). Više od opće podudarnosti ne može se utvrditi. Inače je kaneliranje karakteristika 7. st. pr. Kr. u grupama Martijanec-Kaptol i Donja Dolina-Sanski Most (Čović 1987: 240; Vinski-Gasparini 1987: 199), dok se u Sloveniji u većoj mjeri koristi već u stupnju Podzemelj (Dular 1982: 23, 142).

Ulomci zdjela sa žlijebljenim rubom (T. 10: 2, 3) i zaravnjenim obodom (T. 9: 6) te lonca sa žlijebljenim i zadebljalim ramenom (T. 10: 5) nastavljaju se na prethodni horizont, što ujedno potvrđuje tipološki kontinuitet željeznog doba na Dubovcu.

Mali ornamentirani uteg (T. 10: 6) nije novost na ovom području. Dva primjerka ukrašena žigosanjem, od kojih jedan sa sličnim zrakastim motivom, pronađena su na Kiringradu (Balen-Letunić 1987: T. 10: 11, 12). Plošnost i uzdužan smještaj rupe za vješanje na dubovačkom primjerku govore u prilog njegovoj ukrasnoj, možda apotropejskoj namjeni (Stipčević 1981: 31, T. 15: 3). Moguće je da su neki od tih predmeta bili nošeni oko vrata, ako je na taj način moguće protumačiti grube prikaze nakita na antropomorfnim figuricama s Turske Kose, a na istom su lokalitetu pronađeni i antropomorfno dekorirani glineni tkalački utezi iz 8–6. st. pr. Kr. (Čučković 1991: 79–81). Kod dubovačkog primjerka zanimljiva je uporaba pravog vrpčastog ukrasa. Taj ukras ne stoji u tipološkom slijedu žigosanih linija i girlandi bosutske grupe, već se može povezati s "gradinskom vrpcom" bosanskih i ličkih nalazišta.

necropolis (Dular 1982: Fig. 13: 14). The ribbon-like handles with ribbed edges (P. 11: 1) are typical of Ha C (Raunig 1996: 47, P. 2: 12-14).

The gradual abandonment of ornamentation of bowl rims (P. 10: 1, 4, Fig. 16: 3) is not specific to Dubovac alone; it has been recorded at the multi-layered Brinjeva Gora site as well. In the final, fifth horizon at this site, there are no longer any bowls with engraved or grooved rims, while warts or lines engraved on the shoulders are used as ornaments on bowls (Oman 1981: 147). Also typical of the Early Iron Age is the loss of the prominent shoulder on bowls, rendering their profiles semi-circular (P. 10: 1) (Medović 1978: 36, P. 86: 2; Teržan 1990: P. 37: 1-20). Sometimes they have a horizontal eyelet, such as the piece on P. 10: 4 (Gabrovec 1987: P. 1: 9). The tendency of rounding of the vessel profile has become clearly visible in phase Ha B3 of the necropolis in Ormož, as well. (Tomanič-Jevremov 1989: P. 14: 2).

We found no clear parallels to the bowl with massive tongue-like handle and horizontal flutes (P. 9: 1). Its shape puts it closer to the Bosut IIIc group, which has a considerable number of types of spouted neck expansions and a lot of fluted ornaments (Medović 1978: P. 98, 99). No more than general similarity can be ascertained. Fluting is otherwise typical of the seventh century BC in the Martijanec-Kaptol and Donja Dolina-Sanski Most groups (Čović 1987: 240; Vinski-Gasparini 1987: 199), while in Slovenia it was already largely in use in the Podzemelj phase (Dular 1982: 23, 142).

The sherds with a grooved edge (P. 10: 2, 3) and flattened rim (P. 9: 6) and the pot with grooved and rounded shoulder (P. 10: 5) illustrate a continuation of the preceding horizon, which also confirms the typological continuity of the Iron Age at Dubovac.

The small ornamented weight (P. 10: 6) is not a novelty in this region. Two examples decorated by stamping, of which one has a similar radial motif, were discovered in Kiringrad (Balen-Letunić 1987: P. 10: 11, 12). The flatness and lengthwise placement of the hole for hanging on the Dubovac example indicate its decorative and perhaps even apotropaic purpose (sensu Stipčević 1981: 31, P. 15: 3). It is possible that some of these items were either worn around the neck, if it is possible to interpret the coarse portrayals of personal ornaments on the anthropomorphic figurines from Turska Kosa in this way. Anthropomorphically decorated clay loom weights dating from the eighth to sixth centuries BC were also found at this site (Čučković 1991: 79-81). Considering the Dubovac example, the use of the genuine cord-impressed ornament is interesting. This ornament is not a part of the typological

Napomenuli smo ranije da Bosna poznaje vlastitu tradiciju i razvoj lažnog vrpčastog ornamenta, ali problem odnosa te tradicije i podunavskih kultura nije potpuno jasan, pogotovo ne na područjima gdje se ti kulturni krugovi prožimaju. U svakom slučaju, pravi vrpčasti ornament preteže nad lažnim na Kekića Glavici, gdje se pojavljuje u girlandama starijeg horizonta, da bi svoj procvat doživio tek krajem željeznog doba (Čović 1962: 50). Na Kiringradu je zabilježen samo lažni, žigosani vrpčasti ukras, koji prevladava i na okolnim područjima (Balen-Letunić 1987: 4).

Srednji vijek

Potkraj srednjeg vijeka pred gradskim bedemom izvršeni su opsežniji zemljani radovi kojima je produbljen jarak neposredno uz zidine te ujedno povišen nasip na rubu humka (sl. 3: 12, 15), čime su uništeni svi tragovi mlađi od starijeg željeznog doba. Vjerojatno je u sklopu istog zahvata na zemljanom bedemu postavljena dvostruka palisada (sl. 3: 16, 17) (ukop 16 preslojen je nedovoljno definiranim recentnim prokopom), što je s jarkom od oko 2 m dubine ispod zidanog bedema tvorilo učinkovitu obranu. Palisada na rubu humka (sl. 3: 16) bila je napravljena od većih kolaca širine 15–20 cm, zabijenih u razmaku od 80 cm, koji su držali ogradu od tanjeg kolja.

Povijesni izvori svjedoče o nizu turskih napada na Dubovac od 1511. do 1578. g. Posebno je zanimljiva opsada iz 1511. g., poznata iz spisa Bernardina Frankopana, za koju je zabilježeno da je propala zato što su se Turci pripremili na opsjedanje drvenog grada da bi tek na licu mjesta ustanovili da se radi o kamenoj utvrdi (Kruhek 2000: 14). Moguće je da je riječ o obilatoj upotrebi drvene gradnje, upravo onako kako svjedoče otkrivene palisade.

Građevna faza bez pouzdane datacije

U temeljima istočnog zida Dubovca pronađen je ostatak ranije gradnje čiji je materijal izvađen prije ili prilikom spomenute obnove, moguće u vezi s izgradnjom jugoistočnoga dijela utvrde. Radi se o zidu koji se pruža pod blagim otklonom od pravca današnjeg zida i koji je u potpunosti recikliran osim u onom segmentu koji je inkorporiran u temelj (sl. 3: zid 1, sl. 12). Svi slojevi koji su bili vezani uz tu gradnju uništeni su, pa je datacija znatno otežana. Odnos očuvanog zida prema jarku iz kojeg je povađen kamen navodi nas na pomisao da je riječ o segmentu ugla, iako bi u ovom slučaju trebalo otvoriti širi prostor za pouzdanije tumačenje. Više je mogućnosti za datiranje zida. Ako je riječ o ranijoj srednjovjekovnoj fazi grada, ona je morala biti bitno različita od današnjeg tlocrta pa je krajem srednjeg vijeka kameno zide

sequence of stamped lines and garlands of the Bosut group (labelled as "false cord-impressed ornaments"), it can rather be linked to the "hillfort cord" of the Bosnian and Lika sites. We have already mentioned that Bosnia has its own tradition and development of false cord-impressed ornaments, but the problem of the relationship between this tradition and the Danubian culture is not entirely clear, particularly not in the areas where these cultural spheres overlapped. At any rate, the genuine cord-impressed ornament predominates over the false variant at Kekića Glavica, where it appeared in garlands of the older horizon, only to experience its bloom at the end of the Iron Age (Čović 1962: 50). In Kiringrad only the false, stamped cord ornament has been recorded, and it predominates in adjacent areas as well (Balen-Letunić 1987: 4).

Middle Ages

Toward the end of the Middle Ages, extensive earth-moving works were done in front of the defensive walls, which deepened the moat next to the walls, while the embankment at the edge of the mound was elevated at the same time (Fig. 3: 12, 15), thereby destroying all traces younger than the older Iron Age. A double palisade was probably installed on the earthen ramparts during these same works (Fig. 3: 16, 17: trench 16 is overlaid with an insufficiently defined recent digging), which, together with the approximately 2 m deep moat below the stone-built rampart formed an effective defence. The palisade at the edge of the mound (Fig. 3: 16) was made of larger, 15-20 cm wide posts, placed at 80 cm intervals, which held a fence made of thinner posts.

Historical sources testify to a series of Ottoman assaults on Dubovac from 1511 to 1578. Particularly interesting is the siege of 1511, about which Bernard Frankopan wrote that it had failed because the Ottomans had made preparations to lay siege to a wooden fortification, only to find that it was stone fortification at the site itself (Kruhek 2000: 14). It is possible that an abundance of lumber was used in the construction of the castle, to which these discovered palisades may testify.

Construction phase without certain dating

The remains of earlier construction works were discovered in the foundations of the eastern wall of Dubovac; its materials were removed prior to or during the aforementioned renovation, possibly in connection with the construction of the south-eastern section of the castle. This is a wall which extends at slight angle from the direction of the present wall and which is entirely reused (robbed), except in the

Slika 12. Kasnosrednjovjekovni obodni zid s temeljnom stopom ispod kojega se nalazi ostatak ranije gradnje; također je vidljiv ukop za zid iz kojega je naknadno povađen kamen (mjerilo: 1 m) (snimio: L. Čučković).

Figure 12. Late medieval peripheral wall with its footing, below which are remains of an earlier structure; the trench for a wall from which stone was subsequently excavated is also visible (scale: 1 m) (photograph by: L. Čučković).

bilo povađeno umjesto da bude uklopljeno u novu gradnju. Druga je mogućnost izgradnja iz rimskog razdoblja, koje je na Dubovcu posvjedočeno s nekoliko rezidualnih ulomaka lončarije te ranijim slučajnim nalazima koji se čuvaju u Gradskom muzeju Karlovac.[10] Kako bilo, treba uočiti da je razina temeljenja spomenute gradnje puna 2 m ispod razine najviših prapovijesnih slojeva, što upućuje na snažnu i visoku konstrukciju koja nije mogla biti zanemarena u vrijeme srednjovjekovne pregradnje Dubovca krajem 15. ili početkom 16. st. Prema tome čini se da je riječ o građevini koja je bila u vrlo lošem stanju, možda reciklirana tijekom srednjeg vijeka, u vremenu koje je prethodilo spomenutoj pregradnji, pa stoga nije pružala naročite pogodnosti zbog kojih bi joj se plan iz 15. ili 16. st. prilagodio. Predlažemo stoga dataciju znatno raniju od 15. st., moguće iz rimskog razdoblja.

[10] U arheološkim iskopavanjima kod južne dubovačke kule iz 2008. g. također je pronađena manja količina rimskog materijala u zapuni širokog srednjovjekovnog ukopa. Po svemu sudeći riječ je o nastavku spomenutog jarka s palisadama pa ni tu nije prisutna izvorna stratigrafija iz koje nalazi potječu. Objavljena je brončana kovanica iz prve polovice 3. st. (Čučković 2009).

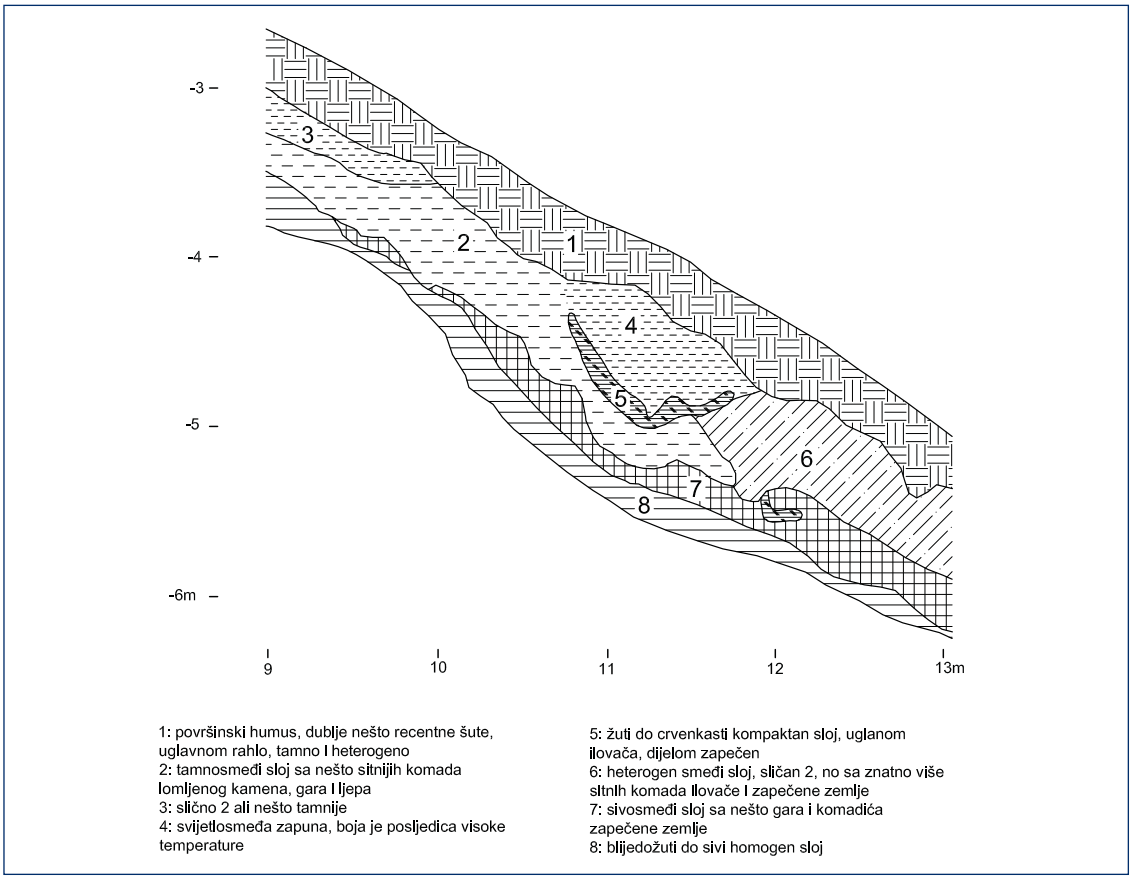
segment incorporated into the foundation of the present wall (Fig. 3: wall 1, Fig. 12). All layers related to these construction works are destroyed, so their dating is rather difficult. The position of the preserved wall in relation to the moat from which the stone was removed leads us to believe that this was a segment of the corner, even though in this case a much wider space would have to be opened for a more reliable interpretation. There are several possibilities for dating the wall. If it is a part of an earlier medieval phase of the castle, that phase had to be considerably different from the current ground layout, so that at the end of the Middle Ages the stone walls had to be removed instead of incorporated into the new structure. Another possibility is a construction from the Roman era, to which several residual potsherds and earlier chance finds, held in the Karlovac City Museum, testify.[10] In any case, it should be noted that the level of the foundations of this building is a full 2 m below the level of the highest prehistoric layers, which indicates sturdy and high construction that could not have been neglected at the time of the medieval reconstruction of Dubovac at the end of the fifteenth or in early sixteenth century. Thus, it would appear that this was a building that was in very poor condition, perhaps reused during the Middle Ages, at a time preceding the aforementioned reconstruction, so it did not offer particular advantages for adaptations in the layouts of the fifteenth or sixteenth century. We therefore propose dating considerable earlier than the fifteenth century, possibly from the Roman era.

Test Trench 2

One small, 1 m wide test trench was cut on the lateral face and foot of the mound, in the extension of test trench 1. The finds from this excavation are rather difficult to interpret, as most of the layers were created by terrain sliding downward from the top of the mound, which need not have anything to do with the original deposition of the archaeological materials, i.e., the majority of archaeological finds are in secondary position (at minimum).

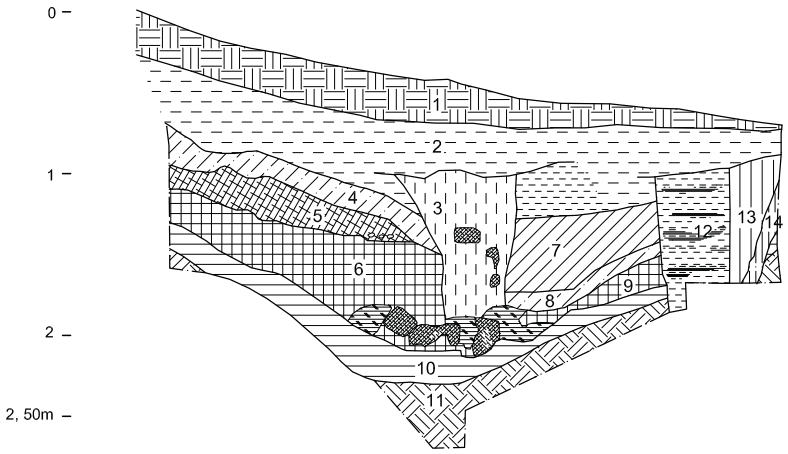
Shallow pits containing a considerable quantity of charred earth, apparently the traces of some burned structure dating to the medieval or subsequent period, were recorded on the lateral face. The deepest

[10] A small quantity of Roman finds were also found in the fill of the wide medieval pit during the archaeological excavations conducted at the south tower of Dubovac in 2008. By all indications, this is an extension of the aforementioned moat with palisades, so the original stratigraphy from which the finds originated is not present here, either. A coin from the first half of the third century, found in 2008 season has been published recently published (Čučković 2009).



1: površinski humus, dublje nešto recentne šute, uglavnom rahlo, tamno I heterogeno
2: tamnosmeđi sloj sa nešto sitnijih komada lomljenog kamena, gara I ljepa
3: slično 2 ali nešto tamnije
4: svijetlosmeđa zapuna, boja je posljedica visoke temperature
5: žuti do crvenkasti kompaktan sloj, uglanom ilovača, dijelom zapečen
6: heterogen smeđi sloj, sličan 2, no sa znatno više sitnih komada llovače I zapečene zemlje
7: sivosmeđi sloj sa nešto gara i komadića zapečene zemlje
8: blijedožuti do sivi homogen sloj

Slika 13. Presjek pobočja humka (izradio: Z. Čučković).
Figure 13. Cross-section of the lateral face of the hillock (made by: Z. Čučković).



1: površinski humus, sitan kamen i recentna šuta, rastresito
2: tamnosmeđi sloj sa dosta ulomaka cigle, nešto žbuke I gara
3: zapuna ukopa za stupac, slično 2, all nešto svijetlije, obrls slabo vidljlv
4: kompaktan sloj svijetlije smeđe boje, u sastavu nešto malo ulomaka zapečene zemlje
5: tamnosmeđi, kompaktan sloj sa dosta usitnjenih fragmenata zapečene zemlje, pri dnu se nalazi proslojak crne boje sa mnogo gara
6: heterogen sloj čija boja varira od tamnije do svijetlije smeđe, nije ga moguće raščlaniti, pri dnu se nalazi nakupina neobrađenog kamena i izmješane ilovače
7: zbijen sloj svijetlije smeđe do žućkaste boje sa znatnim udjelom ilovače
8: slično 7, ali sa zamjetnim udjelom sitnih čestica zapečene zemlje
9: nastavak sloja 6, dosta organskog materijala
10: crvenkasta, pjeskovita ilovača sa fino laminiranim proslojcima debljine 1-3cm pri dnu
11: žuta pjeskovita ilovača, vrlo zbijeno, bez kulturnog materijala
12-14: zapune ukopa za stupac. 12 sadrži vrlo jasne vodoravne proslojke žute ilovače u heterogenoj, tamnosmeđoj matrici

kamen

ilovača i ljep

Slika 14. Presjek podnožja humka (izradio: Z. Čučković).
Figure 14. Cross-section of the foot of the hillock (made by: Z. Čučković).

Sonda 2

Jedna manja probna sonda širine 1 m postavljena je na pobočje i u podnožje humka, u produžetku sonde 1. Nalaze iz tog iskopa vrlo je teško protumačiti jer je većina slojeva nastala osipavanjem vršnog dijela humka, koje ne mora imati nikakvu vezu s izvornom depozicijom arheološkog materijala, tj. arheološki su nalazi u (najmanje) sekundarnom položaju.

Na pobočju su zabilježeni plitki ukopi sa znatnom količinom spaljene zemlje, čini se, tragovi nekih spaljenih struktura koje datiraju iz srednjovjekovnog ili kasnijeg razdoblja. Samo bi se najdublji kulturni sloj (sl. 13: 7) mogao opredijeliti u prapovijesno razdoblje, no budući da je riječ o osutu sedimentu, njegovo tumačenje nije moguće bez boljih podataka o stratigrafiji lokaliteta. Sloj 8 (sl. 13) bez nalaza je, a po boji i konzistenciji sličan je najdubljim eneolitičkim sedimentima iz sonde 1.

Stratifikacija u podnožju humka također je uglavnom obilježena taloženjem osuta materijala, a izuzetak su dva ukopa za veće stupce, od kojih je onaj južni (sl. 14: 12–14), sudeći po jasno omeđenim proslojcima u zapuni, znatno mlađeg postanka, najvjerojatnije iz vremena nakon srednjeg vijeka. Ukop za stupac u sredini jarka također je ukopan iz mlađih slojeva te ga valja datirati u približno isto razdoblje. Bez detaljnijeg istraživanja nije moguće dokazati povezanost ukopa stupaca u jarku sa sličnim strukturama na obodu humka. Obris žute, pjeskovite ilovače, koja je protumačena kao zdravica, čini se kao tipičan jarak, no jasnih tragova usijecanja nema. Sljedeći sloj (sl. 13: 10) u svojem se najnižem dijelu sastoji od fino laminiranih slojeva crvenkaste, pjeskovite ilovače bez tragova organskog materijala, što upućuje na vrlo polagano, ujednačeno taloženje ili razvrstavanje čestica u vlažnoj okolini. I taj sloj ujednačeno prati topografiju žute ilovače te bi po tome prije upućivao na dugotrajnu, prirodnu transformaciju tla nego tipičnu zapunu jarka. Ako je riječ o antropogenom taloženju, nedostatak organskog materijala u sloju dopušta dataciju jedino u eneolitički period, što uslijed nedostatka sitnih nalaza nije moguće dokazati. Jarak u podnožju humka može nastati otjecanjem vode koja se tu nakuplja zbog topografije nalazišta (doduše, valja imati na umu da je cijeli teren donekle oblikovan srednjovjekovnom i kasnijom izgradnjom).

Prva nedvojbeno antropogena zapuna te tvorevine nastala je neko vrijeme nakon osnivanja željeznodobnog naselja (sl. 14: 6, 9). Krupni komadi kamena pomiješani s dijelomično zapečenim nabojem od ilovače upućuju na urušavanje neke konstrukcije, a zanimljivo je da su stratigrafski stariji od ostalih željeznodobnih slojeva, što znači da je destrukcija prethodila tipičnom zasipavanju sipkim materijalom. Budući da donja interfacija

cultural layer (Fig. 13: 7) can be classified in the prehistoric period, but since this is a relocated sediment, its interpretation is impossible without data on the site's stratigraphy. Layer 8 (Fig. 13) contains no finds, but its colour and consistency is similar to the deepest Eneolithic sediments in test trench 1.

The stratification at the foot of the hillock is also characterized by the sedimentation of loose material, with the exception being two holes for large posts, of which the southern one (Fig. 14: 12-14), judging by its clearly delineated embedded layers in the backfill, emerged at a considerably more recent date, probably from some time after the Middle Ages. The post hole in the middle of the moat was also dug out of younger layers, so it should be dated to roughly the same period. Without more detailed research, it is impossible to prove the connection between the post-hole in the moat and similar structures at the edge of the hillock. The configuration of the surface of yellow, sandy loam, which has been interpreted as sterile soil, would appear to indicate a typical moat, but there are no clear traces of cutting into the terrain. The next layer (Fig. 13: 10) consists in its lowest portion of finely laminated layers of reddish, sandy loam with no traces of organic material, which indicates very slow, uniform sedimentation in a damp environment. This layer also uniformly follows the yellow loam topography, and this would indicate a long-term, natural transformation of the soil rather than the typical filling of the moat. If this is a case of anthropogenic sedimentation, the lack of organic material in the layer allows for dating only to the Eneolithic, which cannot be proven due to the absence of small finds. The channel at the foot of the hillock may have emerged as a result of flowing water, which collects here due to the find site's topography (to be sure, it should be kept in mind that the entire terrain was shaped to some extent by medieval and later construction works).

The first unambiguously anthropogenic fill of this structure emerged at some time after the establishment of the Iron Age settlement (Fig. 14: 6, 9). The large pieces of stone mixed with a partially baked packed layer of loam indicates the collapse of some structure, and it is interesting that they are stratigraphically older than the remaining Iron Age layers, which means that this destruction preceded the typical deposition of loose material. Since the lower interface of the layer does not cut into layer 10, intentional deepening of the feature cannot as yet be reliably ascertained.

More recent layers in the sequence of the trench slid in from the dwelling space. They are composed of heterogeneous sediment 50 to 60 cm thick in

željeznodobnog sloja ne siječe sloj 10, namjerno ukopovanje još uvijek se ne može pouzdano utvrditi.

Slijede slojevi koji su spuznuli iz naseljenog prostora, heterogeni sediment debljine 50 do 60 cm u kojemu je pronađeno nešto ulomaka prapovijesne fakture. Pri vrhu prapovijesne zapune zabilježen je sloj debljine oko 15 cm, koji je sadržavao mnogo sitnih ulomaka kućnog ljepa i gara, vrlo slično urušenim objektima koji su zabilježeni u naselju. Vrijedi uočiti diskontinuitet slojeva 6 i 4 (sl. 14), koji upućuje na to da se prije ukopavanja spomenutih stupaca tuda pružao plići jarak, no koji je u vrijeme njihova postavljanja bio već potpuno zatrpan.

STATISTIČKA ANALIZA

Brojnost dijagnostičkih ulomaka lončarije iz vremena starijeg željeznog doba omogućuje primjenu kvantitativnih metoda. Za razliku od stilske i formalne analize, koja se najčešće primjenjuje radi uspostavljanja kronoloških poveznica na regionalnoj ili široj razini, kvantifikacija omogućuje bolji uvid u unutarnji razvoj naselja pa se ti različiti pristupi izvrsno nadopunjuju.

Za potrebe kvantifikacije zabilježene su nominalne varijable na uzorku od 292 dijagnostička ulomka (tipovi posuda/predmeta, vrste oboda, vrste ukrasa) te metrijske varijable na podskupu od 197 ulomaka rubova (težina, promjer otvora, udio mjerenog ulomka u izvornom promjeru otvora, debljina stijenke, debljina oboda). Na uzorku rubova zabilježena je i tehnika pečenja te morfologija oboda. Ulomci velikog pitosa (sl. 5) nisu uključeni u analizu jer po svim karakteristikama odstupaju od ostatka lončarije. Kvantificirana lončarija razvrstana je u četiri stratuma (*stratified sampling*) koji odgovaraju mlađem i starijem segmentu prvog željeznodobnog horizonta (I.a, I.b) te drugom i trećem horizontu (tab. 1). Takav način podjele materijala, koji podjednake količine nalaza svrstava u skupine različita (odnosno nepoznata) vremenskog trajanja, predstavlja specifičan (i tendenciozan) uzorak koji naglašava pravilnost i kontinuitet u razvoju Dubovca. Za svaku statističku analizu potrebno je na odgovarajući način uzorkovati populaciju te vjerojatno ne postoji idealan način prikazivanja kronološke varijabilnosti lončarije.

Stratum	Dijagnostičkih komada	Ulomaka rubova
I.a	73	54
I.b	82	47
II	68	54
III	69	42

Tablica 1.

which some sherds of prehistoric fabric were found. A layer approximately 15 cm thick was recorded near the top of the prehistoric fill which contained a number of small fragments of household daub and soot, very similar to the collapsed structures recorded in the settlement. Worthwhile noting is the discontinuity of layers 6 and 4 (Fig. 14), which indicates that prior to burial of the aforementioned posts, a shallow ditch passed through here, but which had already been completely filled by the time of their placement.

STATISTICAL ANALYSIS

The number of diagnostic potsherds from the older Iron Age allows for the application of quantitative methods. As opposed to stylistic and formal analyses, which are most often applied to establish chronological ties at the regional or broader level, quantification facilitates a better insight into the internal development of a settlement, so these different approaches complement each other ideally.

For the purpose of quantification, nominal variables were recorded based on a sample of 292 diagnostic potsherds (vessel/item types, rim types, ornament types) and metric variables in a sub-group of 197 rim sherds (weight, diameter of mouth, share of measured sherd in the original mouth diameter, thickness of wall, thickness of rim). The firing technique and rim morphology were also recorded in the rim sample. The sherds of a large pithos (Fig. 5) were not included in the analysis because it stands apart completely from the remaining pottery. The quantified pottery was classified into four strata (stratified sampling) which correspond to the younger and older segment of the first Iron Age horizon (I.a, I.b) and the second and third horizons (table 1). This manner of dividing the materials, which places equal quantities of finds into groups with different (or unknown) chronological durations, constitutes a specific (and tendentious) sampling which is (over)emphasizing the regularity and continuity of development of Dubovac. Each statistical analysis requires sampling of the population in a specific manner, and there is probably no ideal way to represent the chronological variability of pottery.

Stratum	Diagnostic pieces	Rim sherds
I.a	73	54
I.b	82	47
II	68	54
III	69	42

Table 1.

Osnovne podatke o metrijskim varijablama donosimo putem tzv. dijagrama pravokutnika (*box-and--whisker*). Ukratko, podaci su grupirani u četiri razreda (*quartiles*) u kojima se nalazi po 1/4 opservacija (tj. ulomaka lončarije) razvrstanih po veličini. U prvoj se nalaze najmanje vrijednosti, a u četvrtoj najveće, koje odgovaraju "repovima" na dijagramu. Središnja polovica opservacija u pravokutniku je razdovojena središnjom vrijednosti (*median*), koja se može bitno razlikovati od prosjeka. Takav dijagram vrlo je vrijedna pomoć u vizualnoj analizi podataka prije primjene složenijih statističkih metoda. Duljina repova odražava raspon vrijednosti koje su znatno udaljene od središnjice, a one iznimno visoke ili niske prikazane su točkom ili križićem (*outliers*). Tim putem moguće je vizualizirati homogenost statističke populacije, odnosno izlučiti ekstremne vrijednosti ako je to opravdano. Asimetrija unutar pravokutnika odražava odstupanje distribucije vrijednosti od tzv. normalne distribucije, koja se može prikazati pravilnom zvonastom ili Gaussovom krivuljom. Riječ je vrlo važnu podatku za izbor odgovarajuće statističke metode jer one često pretpostavljaju određenu pravilnost u smislu normalne distribucije unutar statističke populacije (Shennan 1988: 44–46).

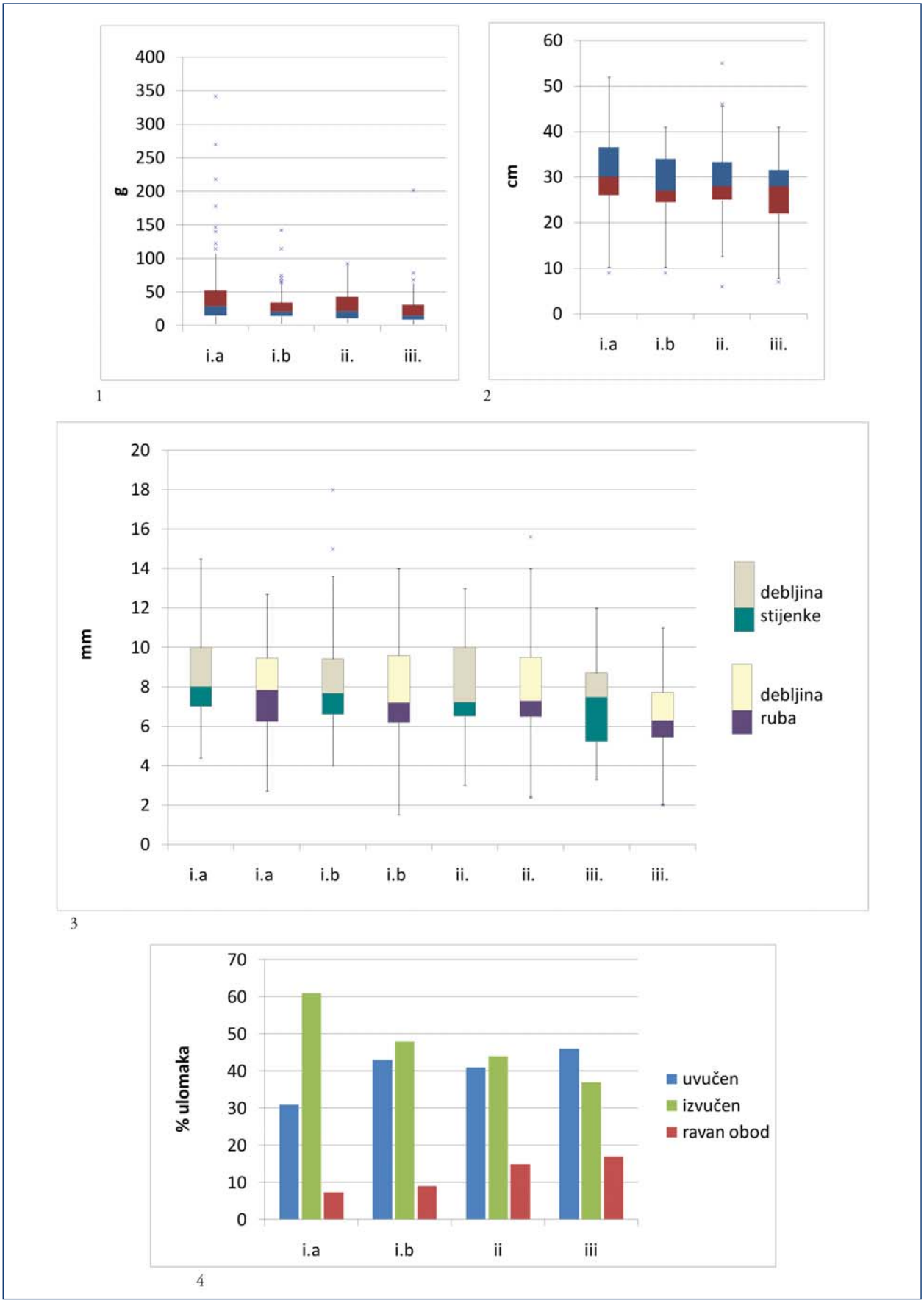
Pregledom dijagrama (sl. 15) uočljive su asimetrije kod većeg dijela metrijskih varijabli te mjestimice izražen utjecaj ekstremnih vrijednosti. Prosječne vrijednosti nekih distribucija mogle bi biti vrlo varljive. Karakterističan otklon od simetrije normalne vrijednosti razumljiv je s obzirom na način izrade i uporabe lončarije; ako je za dvostruko veću posudu potrebna otprilike dvostruko deblja stijenka (točan iznos nije bitan), onda će se vrijednosti nekog kuhinjskog seta zgusnuti oko manjih iznosa (npr. 5–10 mm za uobičajene posude od 20–30 cm promjera), dok će iznosi za one veće biti raspršeni čak i ako su brojčano ravnopravne manjima.

Vrlo vrijedan podatak za početak analize cjelokupnog nalazišta jest stupanj usitnjenosti nalaza. Usitnjavanje ili fragmentiranost izravno upućuje na formacijske procese (Schiffer 1983: 686). Doduše, ta mjera ne može se nedvosmisleno objasniti; značajnija usitnjenost može biti posljedica niza aktivnosti koje su predmet dovele u arheološki kontekst, zatim mehaničkih i formalnih karakteristika predmeta, ili pak naknadnih transformacija arheološkog konteksta uslijed mehaničkih ili kemijskih utjecaja. U svakom slučaju, krupniji nalazi lončarije upućuju na bolju razinu očuvanosti, a time i pouzdanosti konteksta, naročito ako je povezan s dokumentiranim strukturama. Promjene u tehnologiji izrade lončarije koje su zabilježene kroz stratigrafski slijed željeznodobnog Dubovca

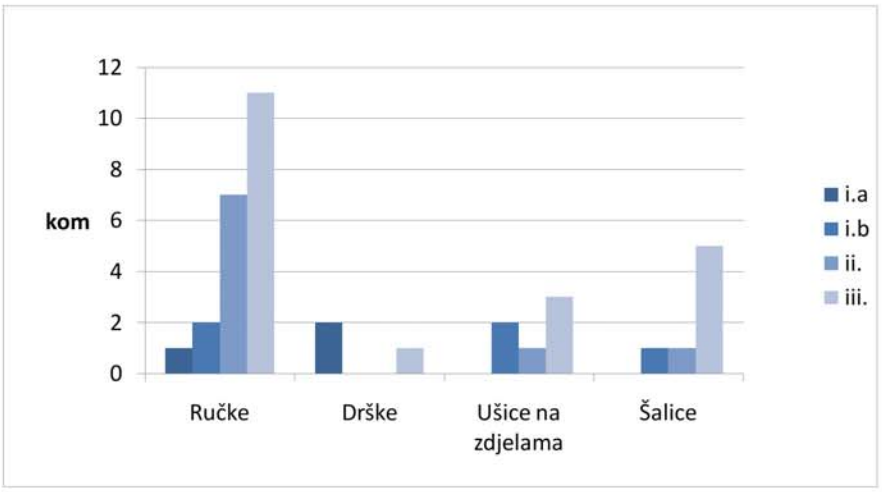
The basic data on metric variables are presented by means of box-and-whisker diagram. In short, the data are grouped into four classes (quartiles), each encompassing one fourth of the observations (i.e., potsherds). The first contains the smallest values, and the fourth contains the highest, which correspond to the diagram's 'whiskers'. The central half of observations in the box-and-whisker diagram is divided by the median, which may differ considerably from the average. Such a diagram is a valuable aid in visual analysis of data prior to application of more complex statistical methods. The length of the 'whiskers' reflects the range of values which are considerably distant from the median, while those that are exceptionally high or low (the "outliers") are depicted with a dot or circle. In this way, it is possible to visualize the homogeneity of the statistical population, and isolate the outlying values if justified. The asymmetry inside the box diagram reflects the deviations in the distribution of values from the so-called normal distribution, which may be depicted with a regular bell or Gauss curve. This is very important information for the selection of the appropriate statistical method, for these often require certain regularity in the sense of normal distribution within a statistical population (Shennan 1988: 44-46).

A preview of the diagram (Fig. 15) shows asymmetries among most of the metric variables and the occasionally strong influence of extreme values. The average values of some distributions may be quite deceptive. A characteristic deviation from the normal value ("skewness") is understandable given the manner of producing and using pottery; if a vessel that is twice as large requires walls that are roughly twice as thick (the precise amount is unimportant), then the values of some kitchenware set will cluster around smaller amounts (e.g. 5-10 mm for ordinary vessels that are 20-30 cm in diameter), while the amounts for the larger ones will be scattered even if they are numerically equal with their smaller counterparts.

The degree of fragmentation of the finds is a very valuable piece of data for the first step in the analysis of the site. Fragmentation values point directly to formational processes (Schiffer 1983: 686). However, this measure cannot be explained unequivocally; greater fragmentation may be the result of a series of activities which brought an artefact into its archaeological context, but also of the mechanical and formal characteristics of the artefact, or even of subsequent transformations of the archaeological context as a result of mechanical or chemical influences. At any rate, larger pottery fragments indicate a better degree of preservation, and also the reliability of the context, especially if



Slika 15. Statistika. 1) Težina ulomaka rubova; 2) Promjer otvora; 3) Debljine stijenki i oboda (rubovi); 4) Oblici oboda.
Figure 15. Statistics. 1) Weight of rim sherds; 2) Mouth diameter; 3) Thickness of walls and rims; 4) Rim shapes.



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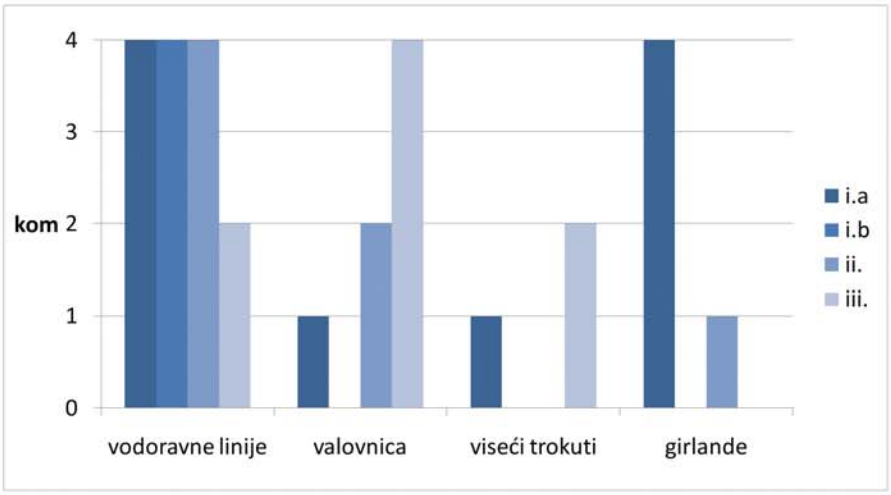

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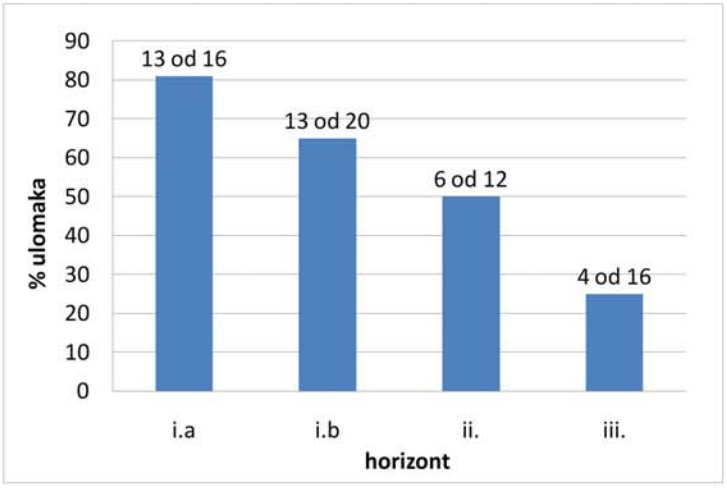


3

Slika 16. 1) Ručke, drške, ušice i šalice; 2) Urezani i žlijebljeni ornamenti; 3) Udio ulomaka s urezivanjem ili žlijebljenjem na obodu u uzorku zdjela s uvučenim obodom.

Figure 16. 1) Handles, eyelets and cups; 2) Incised and grooved ornaments; 3) Ratio of sherds with engraving or grooving on the rim in the sample of bowls with inwardly drawn rims.

ne mogu prouzročiti značajnije razlike u otpornosti materijala. Primjese su uglavnom slične, a i eventualne promjene u temperaturi pečenja nisu bitno mijenjale strukturu keramike koja u svim slojevima na dodir pokazuje slične karakteristike. Značajnija odstupanja mogla bi uslijediti prije svega zbog promjena u oblicima posuda, naročito uslijed razlika u prosječnoj debljini stijenki. Kretanje tih vrijednosti vidljivo je na dijagramu 3 (sl. 15), koji prikazuje razmjerno ujednačene distribucije vrijednosti. Isto vrijedi i za težinu fragmenata, koju rabimo kao grubi ekvivalent stupnju fragmentiranosti, s time da je u prvom stratumu vidljiv značajan utjecaj ekstremnih vrijednosti (sl. 15: 1). Pokušaji podrobnijih analiza (*t-test*) također ukazuju na to da nijedan od stratuma ne odstupa od općeg stupnja fragmentacije lončarije. Situacija u prvom stratumu odgovara bolje očuvanoj skupini krupnih nalaza s podnice naseobinskog objekta. Analizirani materijal bitno je usitnjen pa upozorava na složene i intenzivne formacijske procese nalazišta, što se odrazilo i u slabijem uspjehu u spajanju keramičkih ulomaka (npr. 82% ulomaka oboda unutar populacije obodâ bez spoja je).

Iz distribucija općih karakteristika lončarije – poput debljine stijenke i oboda te širine otvora posuda – vidljive su promjene u oblicima i veličini posuda (sl. 15: 2, 3). Od svih distribucija samo se jedna može izdvojiti kao donekle različita – debljina oboda u najmlađem stratumu. I debljina stijenke ima neobičan raspored u istom stratumu, no ne pokazuje statistički značajnu razliku od ostalih uzoraka. Primjenom *t-testa*[11] (Sinopoli 1991: 192–193) na varijablu debljine oboda ustanovljeno je da se ona u III. stratumu značajno razlikuje od svakog od ostalih stratuma.[12] Prema tome može se zaključiti da je stanjenje ruba keramičkih posuda jasno izražena stilska karakteristika najmlađe faze željeznodobnog naselja.

Varijacije u oblicima posuda analizirane su kroz distribucije tri tipa oboda: uvučeni (većinom zdjele), izvučeni (uglavnom lonci, nešto zdjela) te ravni (većinom lonci, šalice). Detaljniju klasifikaciju nije moguće izraditi zbog visoka stupnja fragmentiranosti ulomaka, uslijed čega je izbor pouzdanih komada vrlo sužen. Na dijagramu 4 (sl. 15) vidljivo je postupno povećanje udjela oblika s uvučenim

linked with documented structures. The changes in pottery production technology as recorded through the stratigraphic sequence of Iron Age Dubovac could not have lead to considerable differences in the durability of the materials. The temper in the paste is generally similar, and even potential changes in firing temperatures did not significantly alter the structure of the ceramic, which exhibits similar tactile characteristics in all layers. Significant discrepancies may ensue primarily as a result of changes in vessel shapes, particularly as a result of differences in the average thickness of vessel walls. The trends in these variables are visible in diagram 3 (Fig. 15), which shows a relatively uniform distribution of values. The same applies to the weight of the sherds, which we have used as a rough equivalent to the degree of fragmentation, although the considerable influence of extreme values is apparent in the first stratum (Fig. 15: 1). Attempts at more detailed analyses (*t*-test) also indicate that none of the strata deviates from the general degree of pottery fragmentation. The situation in the first stratum corresponds to the better preserved group of finds from the floor of the residential structure. In sum it can be concluded that the analyzed material has been considerably fragmented, pointing to complex and intense formational processes at the site, which has also been reflected in the limited success in reassembling potsherds (e.g. 82% of the rim sherds inside the rim population cannot be connected to any others).

Based on the distribution of main pottery characteristics – such as thickness of the rims and walls and width of the vessel mouths – changes in the shapes and sizes of vessels can be discerned (Fig. 15: 2, 3). Only one distribution stands out as somewhat different: the rim thickness in the youngest stratum. Wall thickness has unusual values in the same stratum also, but it does not show a statistically significant difference from the remaining samples. The application of *t*-test[11] (Sinopoli 1991: 192-193) to the rim thickness variable established that in stratum III it differs considerably from the remaining strata.[12] Thus, it can be concluded that the thinning of the ceramic vessel rims is clearly articulated stylistic feature of the latest phase of the Iron Age in the settlement.

[11] Odstupanje od normalne distribucije nije toliko izraženo da značajno utječe na primijenjeni test, što je provjereno i dodatnom primjenom tzv. ne-parametrijskih metoda (test Mann-Whitney).

[12] Rezultati *t-testa* s konvencionalnim limitom (α = 0,05), koji dopušta 5% vjerojatnosti da je uzorak III. u stvari potekao iz iste populacije kao i ostali uzorci, iznose:

α = 0,05	III : I.a	III : I.b	III : II
P	0,0017	0,0096	0,0060

[11] Deviations from the normal distribution are not such marked as to significantly influence the applied test, which has been verified by additional application of the so-called parametric method (Mann-Whitney test).

[12] The t-test results with a conventional limit (α = 0,05), which allows for a 5% probability that sample III actually came from the same population as the other samples, is:

α = 0.05	III : I.a	III : I.b	III : II
P	0.0017	0.0096	0.0060

obodom, što se prije svega odnosi na karakteristične duboke zdjele (npr. T. 4, T. 7), te lončarije s ravnim, neizrazitim ušćem, dok se sve manje rabe posude izvučenog oboda, poput KPŽ-formi sa široko razgrnutim ušćem (T. 2.). Statistički test metodom χ^2 (Sinopoli 1991: 202) primijenjen je na usporedbu prva dva tipa, dok je skupina ravnih oboda izlučena jer sadrži brojčano premalen uzorak. Vrijednost P iznosi 0,231, što valja tumačiti kao vjerojatnost od 23% da bi se takav obrazac pojavio slučajno, tj. kada bi ulomci potjecali iz iste populacije. Stoga nije moguće podržati hipotezu da se tipovi posuda klasificirani prema morfologiji oboda pravilno smjenjuju kroz kronološki razvoj populacije pronađene lončarije. To jest međuodnos udjela spomenutih tipova oboda nije moguće uporabiti kao pouzdan kronološki marker iako dobiveni rezultat nije potpuno beznačajan, što je vidljivo i na grafičkom prikazu.

Od ukrašenih ulomaka jedino su ulomci karakterističnih zdjela s uvučenim obodom prisutni u broju koji omogućuje statistički prikaz, pa je ostatak izlučen, te je na taj način izbjegnut problem usporedbe različitih ukrasa s različitih, slabo zastupljenih tipova posuda (sl. 16: 3). Tendencija napuštanja običaja ukrašavanja rubova zdjela urezivanjem vrlo je jasna, no test χ^2 daje čak 32% vjerojatnosti da bi se takav obrazac pojavio slučajno, unutar jedinstvene populacije. Problem je dijelom u malenu uzorku, koji tek zadovoljava uvjete za test, ali rezultat svakako upozorava na vjerojatnost da promjene u ukrašavanju posuđa ovise o još nekim čimbenicima osim o stratumu u kojemu su zabilježene (statistički gledano). Tako npr. u analizu nije moguće uvrstiti ostale vrste ukrasa poput fazetiranja ili kaneliranja, jer su zastupljeni u premalenoj količini, a čije bi uračunavanje moglo poboljšati konačni rezultat.

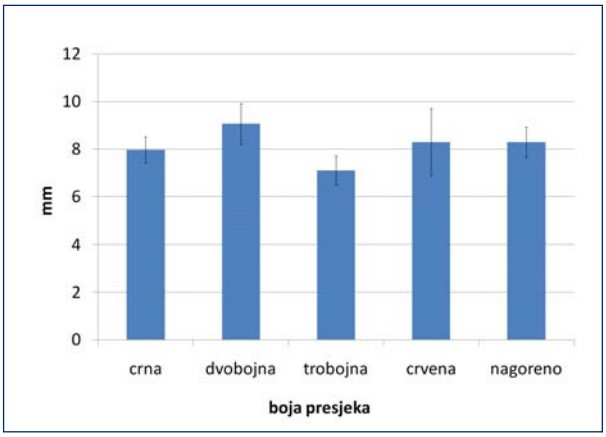
Preostala dva grafikona kvalitativnih varijabli prikazuju distribucije ručki i sličnih aplikacija za rukovanje posuđem te ukrasa izvedenih urezivanjem i žlijebljenjem (sl. 16: 1, 2). Uzorak je vrlo malen te ga nije moguće statistički analizirati iako pruža vrijedne podatke za tipološko razmatranje.

Statistička analiza koja je pružila vrlo zanimljive rezultate odnosi se na tehnološke karakteristike lončarije. Na uzorku rubova zabilježena je složenost presjeka lončarske mase, i to kao: a) crni, b) dvobojni, c) "sendvič"-presjek s tri ili više slojeva različite boje, d) crveni (oksidirani) i e) nepouzdani, tj. boja je izmijenjena naknadnim paljenjem, u pravilu snažnom oksidacijom. Radi se vrlo jednostavnom i nedvosmislenom postupku, za razliku od složenijih mjera poput sastava primjesa, tvrdoće ili temperature pečenja, koje iziskuju detaljno poznavanje lokalne tehnologije. Značajan udio ulomaka s tragom naknadnog gorenja (oko 35% ili više u proučenom

Variations in vessel shapes were analyzed through the distribution of three rim types: inwardly drawn (mostly bowls), outwardly drawn (mainly pots, some bowls) and straight (mostly pots, cups). A detailed classification cannot be made due to the high degree of fragmentation of the pieces, so that the selection of reliable pieces is very limited. On diagram 4 (Fig. 15), the gradual increase in the proportion of inwardly drawn rims is apparent, and this primarily pertains to the characteristically deep bowls (e.g. P. 4, P. 7.). The same applies to pottery with straight, non-prominent mouths, while vessels with outwardly drawn rims, such as the Urnfield culture shapes with broad outwardly folded mouths (P. 2) were used at progressively lower rates. The statistical χ^2 test (Sinopoli 1991: 202) was applied for a comparison of the first two types, while the group with flat rims was isolated because it provides too small sample. The P value is 0.231, which should be interpreted as a probability of 23% that such a formula would appear coincidentally, i.e., when the sherds would originate in the same population. Therefore, it is not possible to uphold the hypothesis that vessel types classified according to rim morphology alternate regularly throughout the chronological development of the population of discovered pottery. That is, the correlation between proportions of the aforementioned rim types cannot be used as a reliable chronological marker, even though the result obtained is not entirely insignificant, which is visible in the chart as well.

Among the ornamented sherds, only those of typical bowls with inwardly drawn rims are present in a number which allows statistical presentation, so the remainder was set aside, thus circumventing the problem of comparing different ornaments from different, poorly represented vessel types (Fig. 16: 3). The tendency of abandoning the practice of ornamenting bowl rims by engraving is apparent, but the χ^2 test gave as much as 32% probability that such a pattern would appear by chance, within a uniform population. The problem lies partially in the small sample, which barely fulfils the conditions for the test, but the result certainly points to the probability that changes in vessel ornamentation depend on some other factors besides the stratum in which they were recorded (considered statistically). Thus, for example, the other types of ornaments such as faceting and fluting could not have been included in the analysis, because their quantities are too small, although their incorporation could improve the final result.

The remaining two charts of qualitative variables show the distribution of handles and similar appliqués for handling vessels and ornaments made by



Slika 17. Debljina stijenke u odnosu na boju presjeka (rubovi).
Figure 17. Thickness of walls in relation to cross-section colour (rims).

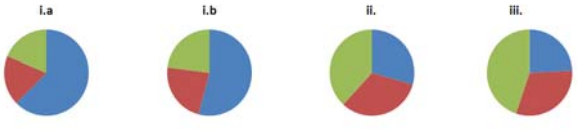
uzorku) može uzrokovati različite oblike pristranosti (*bias*) zbog specifičnog konteksta u kojemu se taj proces odvijao. Naime pojedini oblici bili su namijenjeni uporabi na otvorenom ognjištu, što može stvoriti naročite obrasce varijabilnosti, iako je uzorak rubova u tom smislu mnogo pouzdaniji od uzorka dna ili trbuha. Također valja pretpostaviti da je značajna oksidacija moguća pri pečenju lončarije, no čini se da je pretežno redukcijski način pečenja u izradi proučene lončarije pravilo. Nešto više o problemima određivanja utjecaja naknadnog gorenja donosimo u posljednjem odlomku, prije kataloškog opisa lončarije.

Za početak valja ispitati mogućnost da razlike u boji odgovaraju pojedinim tehnološkim skupinama, fakturama, i to tako da se usporede s ostalim varijablama. Pretpostavka je da će svaka faktura imati više individualnih karakteristika, poput temperature pečenja, sastava primjesa, oblika posuđa i sl., koje će se u prosjeku razlikovati od ostalih skupina. Od mjerenih varijabli čini se da je za usporedbu najpouzdanija debljina stijenke jer ona nije uvjetovana formacijskim procesima ili manjim stilskim promjenama poput debljine ruba. I zaista, grafikon na sl. 17 prikazuje vrlo jasne razlike između prve tri kategorije, dok je distribucija vrijednosti crvenog presjeka slična populaciji nagorenih ulomaka, pa su te dvije skupine izlučene iz daljnje analize. Na dijagramu je naznačen interval pouzdanosti koja obuhvaća raspon unutar kojega se može očekivati 95% nasumičnih vrijednosti iz mjerene populacije (Šimundić 2008). Sličan izračun primjenjuje se za procjenu, odnosno objavljivanje datuma C-14. Budući da nalazi nisu stratigrafski razvrstani, uzorak rubova uvećan je s 23 rezidualna ulomka. Metodom *t-testa* utvrđeno je da razlike u debljinama stijenki između crnih i višebojnih ulomaka zadovoljavaju uvjet statistički značajne

engraving or grooving (Fig. 16: 1, 2). The sample is very small, and it cannot be statistically analyzed, even though it provides valuable data for typological consideration.

The statistical analysis of technological features of the pottery produced very interesting results. The colour of cross-section of the pottery fabric was recorded in the sample of rims, as follows: a) black, b) bicolour, c) "sandwich" cross-section with three or more layers of different colours, d) red (oxidised), i.e. the colour was altered by subsequent firing, and e) uncertain. This is a very simple and straightforward procedure, as opposed to more complex measures such as composition of the temper, hardness or firing temperature, which require thorough knowledge of the local technologies. A considerable portion of the sherds with traces of subsequent burning (approximately 35% or more in the studied sampling) may cause certain types of bias due to the specific context in which this process took place. Namely, individual vessel shapes were intended for use over open hearths, which may create particular variability patterns, even though in this respect the sample of rims is much more reliable than sample of bases or bellies. One must also suppose that considerable oxidation is possible during the firing of pottery, but it would appear that reduction firing predominated in the production of the pottery examined herein. We shall consider the problem of determining the influence of subsequent firing in greater detail the next section, prior to the catalogue description of the pottery.

The possibility that differences in colour correspond to individual technological groups, fabrics, should be tested by comparing it to other variables. The hypothesis is that each fabric will have several individual characteristics, such as firing temperature, temper composition, vessel shape and so forth, which will differ on average from the other groups. Since the finds are not stratigraphically sorted in the used sample, the rim population has been enlarged by 23 residual sherds. Of the measured variables, it would appear that wall thickness is the most reliable for comparison, as it is not dictated by formational processes or small stylistic changes such as rim thickness. And indeed, the chart on Fig. 17 demonstrates very clear differences between the first three categories, while the distribution of values with red cross-section is similar to the population of burnt sherds, so these two groups were excluded from further analysis. The diagram specifies the confidence interval, which encompasses the range within which 95% of random values from the measured population can be expected (Šimundić 2008). A similar computation is applied for the estimation and publishing



Slika 18. Međuodnos tri vrste fakture po statističkim stratumima (■ crna, ■ dvobojna, ■ višebojna).

Figure 18. Correlation between three fabric types according to statistical strata (■ black, ■ bicolour, ■ multi-coloured).

različitosti (za α = 0,05; P = 0,046). Dvobojni presjeci jasno odskaču od ostatka lončarije, a i statistički test *ANOVA* ispunjava uvjete za značajnu razliku između prve tri kategorije presjeka (P = 0,0012). Nesumljivo je dakle da varijacije boje u presjeku lončarske mase imaju veze i s ostalim karakteristikama lončarije te da postoje uvjeti za razmatranje najmanje tri različite tehnološke skupine lončarije. Kategorija crvenih presjeka po svemu sudeći odgovara skupini nagorenog posuđa, što je uočeno i prilikom kabinetske obrade materijala.

of C-14 dates. The *t*-test method established that the differences in wall thicknesses between black and multi-coloured sherds meet the requirement of statistically significant differences (for α = 0.05; P = 0.046). Bicolour cross-sections clearly deviate from the remainder of the pottery, and even the ANOVA statistical test meets the requirement for significance variation between the first three cross-section categories (P = 0.0012). There can thus be no doubt that variations in colour in the cross-section of the pottery fabric are linked to the remaining pottery characteristics and that there is some safe ground for the consideration of a minimum of three technological pottery groups. The red cross-section category by all indications corresponds to the burnt vessel group, which was also observed during laboratory processing of the finds.

The classification of pottery fabrics into four statistical strata has also yielded very good results. Particularly notable is the difference between strata I.b and II and the gradual increase in the proportion

Slika 19. Crna faktura (snimio: Z. Čučković).

Figure 19. Black fabric (photograph by: Z. Čučković).

Slika 20. Višebojna faktura (snimio: Z. Čučković).

Figure 20. Multi-coloured fabric (photograph by: Z. Čučković).

Razvrstavanje faktura u četiri statistička stratuma također daje vrlo dobre rezultate. Na sl. 18 naročito je uočljiva razlika između stratuma I.b i II. te postupno povećanje udjela složenijih tehnika pečenja kroz stratigrafski slijed. Statistička analiza metodom χ^2 daje vjerojatnost P = 0,059 (6%) da takav obrazac može potjecati iz jedinstvene populacije, što je vrlo blizu konvencionalnom limitu α = 0,050. Čini se da možemo zaključiti da je zaista riječ o tradicijama lončarske proizvodnje koje se smjenjuju kroz povijest željeznodobnog Dubovca.

Budući da podrobnije analize nisu urađene, naše je znanje o fakturama dubovačke lončarije vrlo slabo.

of more complex firing techniques through the stratigraphic sequence (Fig. 18). Statistical analysis via the χ^2 method generated a probability of P = 0.059 (6%) that this pattern may have originated in a unified population, which is very close to the conventional limit of α = 0.050. It would appear that we may conclude that these were genuine pottery production traditions which succeeded one another over the course of thevIron Age at Dubovac.

Since more meticulous analyses have not been conducted, our knowledge on the fabrics of Dubovac pottery is rather deficient. The black and multi-coloured pottery normally belong to finer wares,

Crna i višebojna lončarija tipično pripadaju osrednjoj i finijoj robi, iako po prosječnim debljinama stijenke samo višebojna pokazuje izraženo odstupanje od ostatka lončarije. Crni tip potječe iz starije tradicije, a prepoznatljiv je po zagasitoj, često potpuno crnoj boji. Ukrašavanje je često bilo izvedeno urezivanjem te ponekad ispunjeno inkrustacijom koja se nije sačuvala (npr. sl. 22). Višebojni tip "sendvič"-presjeka mlađa je tradicija. Tipična boja lončarske mase jest tamna u jezgri i svijetla, smeđa do crvenkasta prema stijenkama, no s obzirom na to da je riječ o složenijem procesu, česte su različite kombinacije boja, ponekad bez svjetlijeg sloja prema jednoj od stijenki ili s različitim nijansama sive ili tamnosmeđe. Naročita karakteristika tog tipa jest tanak uglačani sloj mrke boje kojim su prevučene površine posude. Obje fakture sadrže manje količine organskog materijala, no kod crne nije rijetkost pojava pougljenjenih organskih tvari. Temeljna je primjesa u lončarskoj masi drobljena keramika, ponekad popraćena zaobljenim zrncima kremenog pijeska, što je inače karakteristika eneolitičkih primjeraka. Fini pijesak pojavljuje se samo na nekoliko ulomaka III. horizonta, a u mlađim slojevima nešto su češći i tragovi kvarca ili tinjca, iako je drobljena keramika i dalje osnovna primjesa. Budući da nije lako prepoznatljiv među ostalom lončarijom, dvobojni tip definiran je tek nakon statističke analize. Vidljivo je da je riječ o debljim komadima, pa vjerojatno pripadaju skupini nešto grublje lončarije. Moguće je da je riječ o grubljoj kuhinjskoj lončariji koja je nagorjela prilikom uporabe jer su boje presjeka u pravilu crvenkaste ili žute (oksidirane) na vanjskoj površini posude, te stoga nismo sigurni koliko ti ulomci odražavaju boju izvorne (proizvodne) fakture. Valja napomenuti da termin *faktura* rabimo zbog jednostavnosti te da nipošto ne držimo da je riječ o radioničkim fakturama već o različitim tehnološkim tradicijama, a u slučaju dvobojnog tipa možda samo o posebnom uporabnom kontekstu.

Interpretacija statističkih rezultata u pravilu je vrlo osjetljiv poduhvat. Izbor uzorka (i to počevši od planiranja i metode istraživanja!) te problem njegove reprezentativnosti u odnosu na ciljanu populaciju (koju najčešće nije moguće jasno definirati) već unaprijed znatno ograničavaju domet statističkih metoda u arheologiji. Valja također istaknuti nejasnu i nepouzdanu narav arheološkog konteksta. Temeljni je problem točna i precizna interpretacija stratigrafskog konteksta – slojevi su nastajali unutar i izvan naseobinskih objekata, destrukcijom objekata ili postupnom akumulacijom, nalazi su deponirani kao primarni ili sekundarni otpad itd. Iskopavanje na Dubovcu samo je djelomice utvrdilo takve varijacije,

although in terms of average wall thickness, only the multi-coloured one exhibit a marked deviation from the remaining pottery. The black type, which originated in an older tradition, is recognizable by its dark, often entirely black colour. The ornamentation was often rendered by engraving, and sometimes filled with incrustation which has not been preserved (e.g. Fig. 22). The multi-coloured "sandwich" cross-section type is a younger tradition. The typical colour of the pottery mass is dark at the core and light, brown to reddish, toward the walls, but since this is a rather complex process, different combinations of colours are frequent, sometimes without a lighter layer toward one of the walls or with different nuances of grey or dark brown. A particular feature of this type is a thin burnished layer of dark colour covering the vessel's surface. Both fabrics contain small quantities of organic material, but for the black variety the appearance of carbonized organic matter is not rare. The basic temper in the clay paste is crushed ceramic, sometimes accompanied by rounded grains of flint sand, which is otherwise a characteristic of Eneolithic examples. The fine sand appears in only a few sherds in horizon III, and in younger layers traces of quartz or mica are somewhat more frequent, even though crushed ceramic remained the basic temper. As it was not readily distinguishable in laboratory work, the bicolour type was defined only after statistical analysis. It is apparent that these are thicker pieces, so they probably belong to a group of somewhat coarser pottery. It is possible that this is coarser kitchen pottery which was charred during use because as a rule the colour of the cross-section is reddish or yellow (oxidised) on the external surfaces of vessels, so we are not certain as to the extent to which these sherds reflect the colour of the original (production) firing. Worth noting is that we are using the term *fabric* due to its simplicity, and by no means do we claim that these are workshop wares but rather different technological traditions, while in the case of the bicolour type it may be a matter of a specific use context.

Interpretation of statistical results is generally a very sensitive undertaking. The selection of samples (beginning with excavation planning and methods!) and the problem of its representativeness in relation to the target population (which most often cannot be clearly defined) already limits the range of statistical methods in archaeology from the very start. The ambiguous nature of the archaeological context also bears significance. The fundamental problem is the accurate and precise interpretation of the stratigraphic context: the layers were formed inside and outside of the structures, through destruction of buildings or by gradual accumulation, the finds

no one zbog manje količine materijala, odnosno manjeg iskopavanja, nisu mogle biti uvrštene u kvantifikaciju. Kako bilo, čini se da drastičnih promjena u razvoju željeznodobnog naselja nije bilo. Kroz cijelo razdoblje potvrđeni su tipični naseobinski objekti (doduše, često uništeni u požarima), a statistička analiza pokazuje kontinuirane i razmjerno slabo izražene promjene u sastavu keramičkog inventara. Držimo stoga da kvantitativna analiza u slučaju Dubovca ipak odražava varijacije koje se mogu tumačiti širim kulturno-povijesnim kontekstom. Nadalje, uzevši u obzir znatnu razinu rezidualnosti nalaza te probleme s tehnikom iskopavanja, što je u oba slučaja uzrokovalo određenu stopu miješanja starijih i mlađih nalaza, tê su varijacije vjerojatno bile manje postupne, odnosno manje pravilne nego što to analiza prikazuje. Jedan izvor problema jest i malena količina dijagnostičkih ulomaka, naročito onih s dekoracijom, koji bi u slučaju većeg istraživanja mogli ponuditi kvalitetniji uzorak.

Temelj izložene statističke analize usporedba je jednostavne, deskriptivne metode koja se oslanja na grafički prikaz i složenog izračuna kojim je provjeren značaj zabilježenih varijacija za predviđanje karakteristika cijele populacije te, u konačnici, analognih populacija na drugim nalazištima. Izdvojili smo dva slučaja u kojima je analiza pokazala statistički značajan obrazac – kod debljine oboda te u tehnološkoj tradiciji proizvodnje lončarije – dok su ostale varijacije, iako znatno uočljivije pri kabinetskoj obradi materijala, poput pojave različitih ornamenata ili oblika posuda, daleko ispod uobičajene razine statističkog značaja. Površno bi se rezultati statističke metode mogli protumačiti kao neuspjeh tipološkog razmatranja, no samo ako se zanemare sve implikacije kvantitativnog pristupa. Taj je namijenjen obradi velike količine podataka o kojima je pojedinačno malo poznato i koji su međusobno jednake važnosti. Kao što je već napomenuto, s arheološkog gledišta ključan je koncept arheološkog konteksta, u kojemu nije važna samo sveukupna količina nekog podatka, odnosno prosjek neke vrijednosti. Kvantifikacija se mora oslanjati na kontekst, a njezina je vrijednost u slučaju kad je kontekst cijelo nalazište vrlo ograničena. Međuodnos pojedinih tipova oblika ili ukrasa te kvantitativnih podataka također može biti vrlo zanimljiv, kao npr. usvajanje novog stila zdjela s uvučenim obodom u mlađem horizontu Dubovca koje prati opća tendencija stanjivanja rubova.

Analiza dubovačke lončarije prije svega upućuje na potrebu integriranja tehnoloških podataka u tipologiju lončarije. Glavna prednost proučavanja tehnologije jest njezina praktičnost; 67% obrađene

were deposited as primary or secondary waste, etc. Excavations at Dubovac only partially determined such variations, but due to small quantities of material, i.e., the small scope of the excavations, they could not be included in the quantification. In any case, it would appear that there were no drastic changes in the development of the Iron Age settlement. Typical settlement structures have been confirmed over the course of the entire period (albeit often destroyed in fires), while statistical analysis shows continual and relatively modestly expressed changes in the composition of the ceramics inventory. We therefore maintain that the quantitative analysis in the case of Dubovac nonetheless reflects the variations that may be interpreted by the broader cultural/historical context. Furthermore, taking into account the considerable residual level of the finds and the problems surrounding the excavation technique, which in both cases caused a certain degree of blending of older and younger finds, these variations were less gradual, or less regular than shown by the analysis. A source of problems was also the small quantity of diagnostic potsherds, particularly those with decoration, which could have provided a better sample in case of broader research.

The basis of the presented statistical analysis is a comparison of a simple, descriptive method which draws on a graphic depiction and of a complex computation used to verify the significance of the recorded variations to predict the characteristics of the entire population and, ultimately, of analogous populations at other sites. We have distinguished two cases in which analysis has shown a statistically significant pattern: rim thickness and the technological tradition of pottery production – while the remaining variations, although observable in laboratory analysis of the materials, such as the appearance of different vessel ornamentation or shapes, are far below the standard level of statistical significance. At first glance, the results of the statistical method may be interpreted as a failure of typological analysis, but only if the implications of the quantitative approach are ignored. The latter is intended for the analysis of large quantities of data on which little is known individually and which are of equal importance. As already noted, from the archaeological standpoint the concept of archaeological context is crucial, rather than total quantity of certain trait or the average of a specific measure. Quantification must depend on context, and its value is very limited in cases when the context is an entire site. The correlation between individual types of vessel shapes or ornaments and quantitative data may also be quite interesting, such as, for example, the adoption of the new style of bowl

lončarije ima dostatno očuvanu izvornu boju, a gotovo na svim ulomcima moguće je zabilježiti podatke o lončarskoj masi. Udio dijagnostičkih ulomaka nije izračunat, ali vjerojatno se kreće oko 3–4% ili manje.

KRONOLOGIJA I ZAKLJUČAK

Eneolitik

Prvo naseljavanje Dubovca koje je zabilježeno prilikom istraživanja 2001. g. seže u razdoblje eneolitičke lasinjske kulture. Iako je očuvanost nalaza i čitljivost stratigrafije prilično slaba, može se zaključiti da su na dubovačkom humku u to vrijeme stajale konstrukcije vjerojatno naseobinske namjene. Tlocrt i ostali detalji nisu pouzdano utvrđeni, prije svega zbog veličine iskopa. S obzirom na zapreminu slojeva u dubljem dijelu eneolitičkog horizonta te na analogije s obližnjim nalazima uz rijeku Dobru pretpostavljamo da je već u to vrijeme poduzeto nasipavanje zemlje preko već postojećeg prirodnog uzvišenja kako bi se poboljšala njegova defenzivna ili neka druga naročita namjena. Jedino uporište za dataciju pružaju dva rezidualna ulomka iz željeznodobnih slojeva koja se mogu opredijeliti u kasniju fazu lasinjske kulture. Naseljavanje visinskih položaja u Pokuplju je dokumentirano u kasnom stupnju lenđelske kulture u Ozlju (Čučković 1993; Težak-Gregl 1993), a slična je situacija i u susjednoj Beloj Krajini, gdje tipične datacije počinju od prijelaza neolitika na eneolitik, koje se datira u razmeđe 5. i 4. tis. pr. Kr., dok većina materijala ima odlike lasinjske kulture, odnosno eneolitika (4. tis. pr. Kr.) (Dular 2001: 96). Lokaliteti eneolitičke lasinjske kulture na karlovačkome prostoru nerijetko su tipične prapovijesne gradine, u mnogo slučajeva naseljene i u vrijeme brončanog i željeznog doba. Nedaleko od Dubovca, na strmu brežuljku Mali Kučer uz rijeku Dobru,[13] nedavno je istraženo nalazište lasinjske kulture koje je također markirano raspoznatljivim humkom sa zaravnjenim vrhom (Bekić 2007). Osim topografijom nalazište je Dubovcu vrlo slično i po nalazima lončarije ukrašenima motivom riblje kosti te po fakturi keramike. S obzirom na izrazite sličnosti u prostornome konceptu za ta dva lokaliteta može se pretpostaviti posebna skupina pokupskih eneolitičih nalazišta iz vremena lasinjske kulture s umjetnim humkom na izrazito defenzivnoj poziciji.

[13] Nalazište je zapravo dio brda Kučer, a toponim Mali Kučer predložio je L. Bekić (2007: 290, n. 14).

with an inwardly drawn rim in the younger horizon at Dubovac which follows the general tendency of thinning of rims.

An analysis of the Dubovac pottery primarily points to the need for integration of technological data in the pottery typology. The primary advantage of studying technology is its practicality; 67% of the analyzed pottery has a sufficiently preserved original colour, and data on the pottery mass can be registered on almost all sherds. The share of diagnostic potsherds has not been computed, but it probably runs at roughly 3-4% or less.

CHRONOLOGY AND CONCLUSION

Eneolithic

The earliest creation of permanent settlement at Dubovac recorded during research in 2001 dates to the period of the Eneolithic Lasinja culture. Although the state of preservation of finds and the legibility of the stratigraphy are rather poor, it may be concluded that during this era there were structures, probably used as dwellings, on the Dubovac hillock. The layout and other details of the settlement have not been determined with certainty, primarily due to the small area of the excavation. Given the volume of the layers in the deeper portion of the Eneolithic horizon and the analogies with nearby finds along the Dobra River, we assume that even at that time soil was deposited over the already existing natural rise in order to improve its defensive or some other particular purpose. The only firm basis for dating is provided by two residual sherds from the Iron Age layers which can be classified to an earlier phase of the Lasinja culture. The settlement of elevated positions in the Pokuplje has been documented in the late phase of the Lengyel culture in Ozalj (Čučković 1993; Težak-Gregl 1993), and the situation is similar in neighbouring White Carniola, where the typical dating begins from the Neolithic-Eneolithic transition, which has been dated to the turn of the fifth to the fourth century BC, while most of the material bears the features of the Lasinja culture, i.e., the Eneolithic (fourth millennium BC) (Dular 2001: 96). The sites of the Eneolithic Lasinja culture in the Karlovac area are often typical prehistoric hillforts, in many cases settled during the Bronze and Iron Ages. Not far from Dubovac, on the steep hill called Mali Kučer near the Dobra River,[13] a Lasinja culture

[13] The site is actually part of the hill called Kučer, and the toponym Mali Kučer was proposed by L. Bekić (2007: 290, n. 14).

Željezno doba

Podizanje utvrđenog naselja početkom 1. tis. pr. Kr. bio je planiran zahvat koji je iskoristio već postojeće zemljane strukture. S obzirom na to da je tom prilikom izbrisan stratigrafski zapis između eneolitičkog i željeznodobnog horizonta, nije isključeno da je Dubovac bio naseljen i u nekom drugom prapovijesnom razdoblju. Kako nikakvi rezidualni nalazi takove datacije nisu pronađeni, a i s obzirom na to da su naselja iz vremena ranog i srednjeg brončanog doba u Pokuplju zasad nepoznata, pretpostavljamo da je ipak riječ i o stvarnom hijatu. Pronađene željeznodobne strukture po svemu sudeći pripadaju nadzemnim stambenim objektima, a osim više utega za tkalački stan tragovi neke specifične djelatnosti nisu uočeni. Osobitost Dubovca jest intenzitet izgradnje na vrhu humka, zbog kojega je nastao bogat kulturni sloj sličan duboko statificiranim nalazištima Bosne ili Podunavlja.

Na karlovačkome prostoru dosad je registriran veći broj kasnobrončanodobnih utvrđenih lokaliteta (gradina) s karakterističnim umjetnim humkom na pristupnoj strani, kao npr. Turska Kosa i Točak kod Veljuna (Čučković 1989: 438; 1993: 169). Imajući u vidu nedostatak istraživanja moguće je samo nagađati jesu li te konstrukcije osim obrambene imale i neku sekundarnu funkciju, imajući u vidu povišenu koncentraciju arheoloških nalaza u njihovim ispunama. I Dubovac se može uklopiti u tu skupinu naselja, jer ga također štiti umjetno podignut humak iza kojega je formiran karakterističan naseobinski plato, no valja naglasiti da ne postoje podaci o humku usporedivih dimenzija koji je bio naseljen i utvrđen poput dubovačkoga. Tomu je vjerojatno pogodovala specifična topografija, koja je dijelom prirodna, a dijelom formirana još u vrijeme eneolitika. Valjalo bi stoga pomišljati i na specifičnu varijantu kasnobrončanodobne gradine, ali i na mogućnost različitih funkcija koničnih zemljanih stuktura koje se u gradinskim lokalitetima pojavljuju već od eneolitika.

Po arheološkim nalazima i po svojoj graditeljskoj tradiciji željeznodobnom Dubovcu najsrodniji je obližnji Belaj. Ondje je otkopana prepečena podnica dodatno učvršćena fragmentima grube keramike te pripadajuće ognjište. Sa strana podnice bili su ukopani drveni stupci koji svjedoče o "nadzemnim kućama solidne konstrukcije" (Majnarić-Pandžić 1986: 30). Uporaba odbačene lončarije u konstrukciji podnica zabilježena je i u Kalakači (Medović 1978: 17, T. 133/2). Istraživanja na zagrebačkom Gradecu u najstarijim slojevima prapovijesne naseobine otkrila su ostatke velike pravokutne nadzemne kuće s podovima popločenima oblucima i jednu zemunicu s utezima tkalačkog stana, a oboje se

site was recently examined which is also marked by a recognizable mound with a flattened top (Bekić 2007). Besides the general topography, the site is very similar to Dubovac in terms of the finds of pottery ornamented with the fishbone motif and the pottery fabric. Given the marked similarity in their topographic layout, one may assume that these two sites belong to a separate group of Pokuplje (the basin of the Kupa river) Eneolithic settlements dated to the period of the Lasinja culture, characterized by artificial mounds at defensive positions.

Iron Age

The erection of a fortified settlement at the onset of the first millennium BC was a planned undertaking which took advantage of the already existing earthen structure. Since at this point the stratigraphic record between the Eneolithic and the Iron Age was erased, one cannot exclude the possibility that Dubovac was settled even during some other prehistoric era. Since no residual finds with such dating were found, and given that the settlements dated to the Early and Middle Bronze Age in the Pokuplje are as yet unknown, we have assumed that this is a genuine hiatus. The discovered Iron Age structures by all accounts belong to above-ground habitats. Besides several loom weights, no traces of any specific activities were registered. A specific aspect of Dubovac is the intensity of construction atop the mound, which led to the formation of rich cultural layers similar to the deeply stratified hillfort sites in Bosnia or the Danubian Basin.

Thus far a considerable number of Late Bronze Age fortified sites (hillforts) with typical artificial mounds on the accessible side have been registered in the wider Karlovac area, such as, Turska Kosa and Točak near Veljun (Čučković 1989: 438; 1993: 169). Given the lack of research, one may only speculate as to whether these structures had, besides defence, some secondary function considering the increased concentration of archaeological finds in their sediment. Dubovac can also be included in this group of settlements, since it was also defended by an artificially raised mound behind which a typical residential plateau was formed, but it should be stressed that there are no data on existence of a mound of comparable dimensions that was settled and fortified like Dubovac. This aspect was probably influenced by the specific topography, which was partially natural and partially formed during the Eneolithic. Thus it would be worthwhile to consider a specific variant of a Late Bronze Age hillfort, as well as the possibility of different functions of conical earthen structures which began to appear at hillfort sites already during the Eneolithic.

datira u Ha C (Majnarić-Pandžić 1994: 3–6). Vrlo zanimljiva gradina Trsište u Trošmariji na Dobri, također iz starijeg željeznog doba, iznjedrila je ostatke kuća od suhozida i podnicu od sitnog kamenja premazanog glinom (Balen-Letunić 1988: 161). Od udaljenijih lokaliteta svakako je najinteresantniji Ormož na lijevoj obali Drave, koji je u vrijeme stupnja Ha B bio opasan širokim niskim obrambenim nasipom visine 1,20 m s jarkom iste dubine. Naselje je štitila i palisada s unutarnje strane nasipa visoka najmanje 1,70 m i 10 m udaljena od jarka. Unutar naseobine, koja je bila uređena po ortogonalnom planu, izgrađene su nadzemne kuće različitih veličina i namjena, s podnicama od nabijene ilovače i popločene fragmentima keramike (Perc 1963: 378; Lamut 1989: 235).

Kulturni materijal starijeg naseobinskog horizonta, većinom lončarija, pokazuje stilske karakteristike koje se u nekim oblicima oslanjaju na lokalnu tradiciju iz ranijeg razdoblja, ali sveukupan dojam ostvaruju urezivanjem ukrašeni komadi s paralelama u podunavskim kulturama, naročito bosutskoj grupi, te Podravlju. Početak stupnja IIIa bosutske grupe (horizont Kalakača) valja datirati oko 1000. g. pr. Kr., odnosno u skladu s Reineckeovim Ha B (Vasić 1987: 544; Teržan 1990: 40).[14] Na slovenskim nekropolama (Pobrežje, Ruše) jasno je raspoznatljiv val istočnih utjecaja oko 1000. g. pr. Kr., koji označava početak stupnja Ha B, dok se usporedo s time pojavljuje velik broj utvrđenih naselja (Gabrovec 1983: 61). Budući da stilske karakteristike lončarije odgovaraju stupnju Ha B, željeznodobni horizont na Dubovcu ne može biti stariji od prijelaza 11/10. st. pr. Kr. Problem je što nisu urađena radiokarbonska mjerenja kod kojih, doduše, valja očekivati nešto starije rezultate od tradicionalnih kronologija, kao što je npr. zabilježeno u Italiji, a situaciju dodatno pogoršava i anomalija u koncentraciji atmosferskog C-14 u razdoblju nakon početka 8. st. pr. Kr. (Nijboer *et al.* 2000).

Drugi naseobinski horizont izdvojen je prema stratigrafskim podacima, no ne sadrži naročito raspoznatljiv keramički materijal. Njegov je značaj prije svega u položaju između stupnjeva Ha B i Ha C na Dubovcu, što upućuje na kronološko određenje u drugu polovinu 9. ili prvu polovinu 8. st. pr. Kr. U to vrijeme mogu se datirati i tragovi vrlo čvrste gradnje od drvenih stupaca koji podsjećaju na palisadu, no moguća su i drugačija tumačenja. Također se na humku pojavljuju veći komadi kamena, ali nisu zabilježeni tragovi konkretne konstrukcije.

In terms of archaeological finds and its architectural tradition, nearby Belaj is the most similar to Iron Age Dubovac. At that site, burnt flooring additionally reinforced by sherds of coarse ceramic was found along with the accompanying hearth. Wooden posts were erected next to the flooring, testifying to "above-ground houses of solid construction" (Majnarić-Pandžić 1986: 30). The use of discarded pottery in the construction of flooring has also been recorded at Kalakača (Medović 1978: 17, P. 133/2). Research at Zagreb's Gradec in the oldest layers of the prehistoric settlement has uncovered the remains of a large rectangular above-ground house with floors lined with cobblestones and a dugout containing loom weights, and both date to the Ha C (Majnarić-Pandžić 1994: 3-6). The interesting Trsište hillfort in Trošmarija, on the Dobra river, also dating to the older Iron Age, yielded the remains of a drystone house with flooring made of tiny stones coated with clay (Balen-Letunić 1988: 161). Among the more distant sites, certainly the most interesting is Ormož on the left bank of the Drava River, which during phase Ha B was encircled by a wide low defensive 1.2 m high embankment with a moat of the same depth. The settlement was also defended by palisades inside the embankment, which were 1.7 m high and placed 10 m aside the moat. Inside the settlement, which was arranged in an orthogonal layout, above-ground houses were built which had varying sizes and purposes, with flooring made of packed loam and tiled with potsherds (Perc 1963: 378; Lamut 1989: 235).

The cultural materials of the older settlement horizon, mostly pottery, exhibit the stylistic features which in some forms depended on the local tradition from an earlier period, but the overall impression is dominated by pieces decorated by engraving with parallels in the Danubian cultures, particularly the Bosut group, and the groups of Drava river zone. The beginning of phase IIIa of the Bosut group (Kalakača horizon) should be dated to approximately 1000 BC, to comply with Reinecke's Ha B (Vasić 1987: 544; Teržan 1990: 40).[14] At Slovenian necropoles (Pobrežje, Ruše), a wave of eastern influences is clearly apparent at roughly 1000 BC, which designates the beginning of phase Ha B, while a high number of fortified settlements appeared concurrently (Gabrovec 1983: 61). Since the stylistic features of the pottery correspond to phase Ha B, the Iron Age horizon at Dubovac cannot be older than the turn of the eleventh into the tenth century BC. A problem is that no radiocarbon dating was done, although in this case results somewhat older

[14] Medović (1978) i Popović (1981) horizont Kalakača datiraju u Ha B2, Garašanin (1983) u Ha A2–B1.

[14] Medović (1978) and Popović (1981) dated the Kalakača horizon to Ha B2; Garašanin (1983) to Ha A2-B1.

Na početku trećeg horizonta stoji grupa ulomaka koji se mogu usporediti sa stilom tzv. basarapskog horizonta. Mora se naglasiti da su to posude lokalnog obilježja, ali i da je tehnologija njihove izrade novina koja može upućivati na određene kulturne promjene. O postojanju izravnih kontakata s Podunavljem u to vrijeme svjedoče urne iz Borštека u Metlici, 30-ak km uzvodno Kupom, posebice ona s urezanim ornamentom u obliku malteškog križa (Dular 1979: 80). Neke stilske karakteristike lončarije, npr. pojavljivanje vrpčastog ukrasa, odaju utjecaje s područja Dinarida, što predstavlja bitnu razliku od prethodnog perioda. Čini se da se u ovome periodu može računati na drvenu palisadu na rubu humka, iako je arheološki zapis znatno oštećen kasnijim aktivnostima pa stratigrafski položaj ostataka konstrukcije nije moguće točno rekonstruirati.

Tipološki najmlađi nalazi prapovijesnog Dubovca nesumljivo pripadaju razvijenom stupnju Ha C, što upućuje na datiranje horizonta III u Ha C1, s donjom granicom negdje u prvoj polovici 7. st. pr. Kr. Još jednom valja istaknuti da je taj horizont omeđen prostranom interfacijom uništenja te da daljnji razvoj željeznodobnog Dubovca nije stratigrafski dokumentiran. S obzirom na nedostatak rezidualnih nalaza u mlađim slojevima koji bi pripadali nastavku željeznog doba u stupnju Ha D čini se da ipak treba pomišljati na opadanje intenziteta naseljavanja još tijekom stupnja Ha C, slično Belaju, na kojemu je pronađen tek jedan nalaz iz stupnja Ha D (Majnarić-Pandžić 1986: 33), ili Ormožu, koji je također znatno oslabio nakon početka ili prve polovice 7. st. pr. Kr. da bi do prijelaza u 6. st. pr. Kr. potpuno opustio (Lamut 1989: 244).

Dubovac u kontekstu prijelaza brončanoga na željezno doba

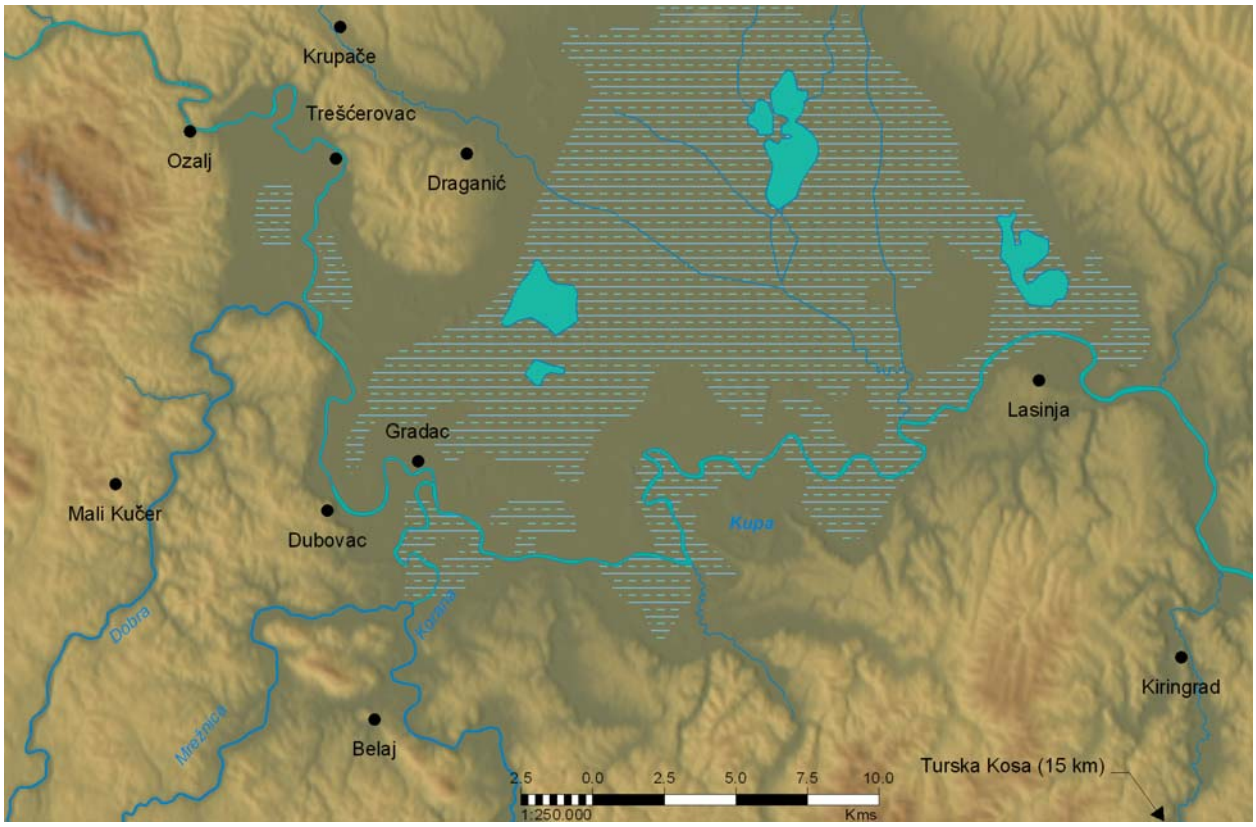
Na prostoru zapadne Panonije vrijeme oko prijelaza drugoga na prvi milenij prije Krista (1050–1000. g. pr. Kr.) značajna je prekretnica u razvoju brončanodobnih kulturnih grupa. Sličan materijal koji se pojavljuje u nekropolama omogućuje definiranje širokog kulturnog kompleksa Val-Dalj-Ruše-Stillfried-Podol-Chotin (Vinski-Gasparini 1973: 151). Novonastale kulturne grupe na mnogim područjima ocrtavaju kulturni krajolik željeznog doba, npr. daljska i bosutska u Podunavlju, ljubljanska u Sloveniji, gotovo sve grupe Dinarida i Primorja (japodska, liburnska, histarska itd.). Razvoj Pokuplja krajem brončanog doba ne odudara od te sheme, što nas je navelo na to da nalazišta 10. i 9. st. pr. Kr. pod nazivom grupa Karlovac kao svojevrstan prijelazni period uključimo u početni stupanj kolapijanske grupe željeznog doba (Čučković 2004: 176). Ta

than the traditional chronology could be expected, as, for example, recorded in Italy, and the situation is additionally exacerbated by anomalies in the concentration of atmospheric C-14 during the period following the beginning of the eighth century BC (Nijboer *et al.* 2000).

Second settlement horizon was defined based on stratigraphic data, but it does not contain any distinctive ceramic materials. Its significance above all lies in its position between phases Ha B and Ha C at Dubovac, which indicates a chronological position in the latter half of the ninth century or first half of the eighth century BC. Traces of very solid construction consisting of wooden posts recalling a palisade can also be dated to this time, although different interpretations are possible. Larger pieces of stone also appeared on the hillock, but no traces of specific structures were registered.

A group of sherds stand at the beginning of the third horizon which may be compared to the style of the so-called Basarabi horizon. It should be stressed that these are vessels with local features, but the technology of their production is a novelty which may indicate certain cultural changes. The urns (especially one with an engraved ornament in the form of a Maltese cross) from Borštek in Metlica, approximately 30 km upstream on the Kupa River, testify to the existence of direct contacts with the Danubian Basin (Dular 1979: 80). Certain stylistic features of the pottery, such as the appearance of band ornaments, reflect influences from the Dinaric zone, which is significant difference from the preceding period. It would appear that during this period wooden palisades at the edges of hillock can be hypothesized, even though the archaeological record has been damaged by subsequent activities, so the stratigraphic position of the remains of a structure interpreted along these lines cannot be accurately reconstructed.

The typologically younger finds from prehistoric Dubovac certainly belong to the developed Ha C phase, which indicates dating to horizon III in the Ha C1, with a lower threshold somewhere in the first half of the seventh century BC. Once more, it bears mentioning that this horizon is delimited by a spacious interface of devastation, and that the further development of Iron Age Dubovac has not been stratigraphically documented. Regarding the absence of residual finds in later layers that would testify to the continuation of the Iron Age in phase Ha D, it would appear that a decline in intensity should be considered already during phase Ha C, similar to Belaj, at which only one find from phase Ha D was discovered (Majnarić-Pandžić 1986: 33), or Ormož, which also diminished considerably after the beginning or first half of the seventh century BC, only to



Slika 21. Nalazišta karlovačkog Pokuplja koja se spominju u tekstu (izradio: Z. Čučković).
Figure 21. Archaeological sites of the Karlovac Pokuplje mentioned in the text (made by: Z. Čučković).

se kronološka podjela uglavnom oslanja na kronologiju japodske grupe, koja prvu fazu željeznog doba smješta u 9. st. pr. Kr. (Drechsler-Bižić 1987: 399). Riječ je o vremenu prve pojave željeznih predmeta u mnogim nekropolama središnje Europe, od kojih vrijedi izdvojiti Ruše (Teržan 1990: 23), pa je vrijeme stupnja Ha B u mnogočemu prijelazno razdoblje u kojemu su se postupno i s različitim ritmom razvijale kulturne karakteristike koje se mogu opredijeliti u željezno doba u užem smislu.

S obzirom na stanje istraženosti Pokuplja stvaranje određene skice razvoja početkom 1. tis. pr. Kr., makar i najsumarnije, nezahvalan je zadatak. Može se uočiti razlika između prostora uzvodno od Karlovca, na kojemu su još od vremena Š. Ljubića poznate nekropole mlađe KPŽ, Trešćerovac i Ozalj (Ljubić 1885) te Krupače (Brunšmid 1899), i područja nizvodno, s kojega dominira materijal iz naselja Kiringrad i Belaj (sl. 21). Ta podjela možda ima neki stvaran značaj jer lončarija s izrazitim podunavskim stilskim utjecajima nije u istoj mjeri zastupljena na nalazištima obližnje Bele Krajine u vrijeme mlađe KPŽ kao što je slučaj na karlovačkom području, za razliku od nekropola pod tumulima koje, kako stvari stoje, ne možemo uvrstiti u sliku istočne kolapijanske grupe. Tek kada se pronađu

be fully abandoned by the time of the transition to the sixth century BC (Lamut 1989: 244).

Dubovac in the context of the transition from the Bronze to the Iron Age

In the territory of western Pannonia the time around the turn of the second to the first millennium BC (1050-1000 BC) was a major turning point in the development of Bronze Age cultural groups. Similar materials which appeared in necropoles allowed for definition of the broad Val-Dalj-Ruše-Stillfried-Podol-Chotin cultural complex (Vinski-Gasparini 1973: 151). The newly-emergent cultural groups in many regions shaped the cultural landscape of the subsequent Iron Age, such as the Dalj and Bosut groups in the Danubian Basin, the Ljubljana group in Slovenia, and almost all groups in the Dinaric and Adriatic Littoral zones (Iapode, Liburnian, Histrian, etc.). Development of the Pokuplje at the end of the Bronze Age does not diverge from this scheme, which led us to include the sites of the tenth and ninth centuries BC encompassed by the term Karlovac group as a sort of transitional period into the initial phase of the Colapiani group of the Iron Age (Čučković 2004: 176). This chronological division generally rests on the chronology of the

grobne cjeline s prostora nizvodno od Karlovca, bit će moguće provjeriti njihov odnos s nalazima ozaljskog kraja, odnosno Bele Krajine. Nekropola u Turskoj Kosi, koja počinje žarnim ukopima krajem razdoblja Ha B i nastavlja biritualno kroz starije željezno doba, cijelo vrijeme bez priloga oružja, u potpunosti se uklapa u tradiciju sjeverozapadne Bosne i japodske grupe (neobjavljeno). Nepouzdani su podaci o ranom tumulu iz Draganića, gdje se takav ukop pretpostavlja samo na temelju slučajnog nalaza brončanog mača iz druge polovice 9. ili početka 8. st. pr. Kr. (Škoberne 2004: 154), i iz Ozlja, gdje je Šime Ljubić zabilježio veliki razoreni tumul sa žarnim ukopima, što kasnija istraživanja nisu uspjela potvrditi (Balen-Letunić 1981: 11).

O naseljima je već bilo dosta riječi. Belaj ima Dubovcu vrlo sličan materijal s identičnim paralelama u Podunavlju, a čini se da mu je i vijek trajanja podudaran. Kiringrad moguće ima kontinuitet iz razdoblja Ha A, sudeći prema slučajnim nalazima zdjela sa širokim, kosim kanelurama ("turbanasti obod") (Balen-Letunić 1987: 3). Valja napomenuti da su spomenuti kiringradski nalazi razmjerno nepouzdani, tim više što se radi o tek nekoliko fragmenata bez točnijih podataka o nalazištu, dok se većina ostalih nalaza može opredijeliti u raspon od Ha B do latena te u eneolitik (*ibid.*). Jedini pouzdani tragovi obitavanja u vrijeme Ha A dolaze s prostora Korduna, i to iz ostava Siča (Perkić & Ložnjak-Dizdar 2005), Malička (Balen-Letunić 1985) i Lisine (Vinski-Gasparini 1973: 140, T. 97). Slučajni metalni nalazi iz Krnjaka, datirani oko 1000. g. pr. Kr., moguće potječu iz uništene nekropole (Čučković 1984: 12; Perkić & Ložnjak-Dizdar 2005: 42). Vrlo malen broj nalaza iz razdoblja Ha A s tipičnih visinskih položaja mogao bi upućivati na pretežno nizinski obrazac naseljavanja, kakav je počeo izlaziti na vidjelo s velikim zaštitnim istraživanjima, npr. kod Velike Gorice (Burmaz & Bugar 2007).

Neobično je da se klimatska pozadina početka željeznog doba vrlo rijetko susreće u arheološkim radovima s prostora Hrvatske i Slovenije, iako su iskopavanja Donje Doline odavno upozorila na iznimnu ranjivost kasnobrončanodobnih naselja vezanih uz riječne tokove. Kulturni slojevi starijeg, brončanodobnog naselja u Donjoj Dolini prekriveni su s oko 1 m riječnog sedimenta unutar kojega su razlučeni periodi aluvijalnog taloženja bez ikakvih arheoloških tragova i razdoblja ponovnog zaposjedanja položaja, premda sa znatno manje nalaza u odnosu na izvorno naselje (Marić 1964: 9). Ti događaji mogu se povezati s osnivanjem novog, sojeničkog naselja početkom 8. st., upravo u vrijeme vrhunca klimatskih oscilacija (Marić 1964: 31; Čović 1987: 240). Iapode group, which puts the first phase of the Iron Age in the ninth century BC (Drechsler-Bižić 1987: 399). This was the time of the first appearance of iron artefacts in many central European necropoles, of which Ruše is worth mentioning (Teržan 1990: 23), so that the period of Ha B phase was in many ways the transitional period which saw the development – gradual and at varying paces – of the cultural features which can be classified as Iron Age in the narrower sense.

Given the state of research of the Pokuplje, an attempt of an outline of the cultural development at the onset of the first millennium BC, even in the most rudimentary form, would be an unrewarding task. A difference is apparent when comparing the area upstream from Karlovac, at which the earlier Urnfield culture necropoles were already known at the time of Š. Ljubić, namely Trešćerovac, Ozalj (Ljubić 1885) and Krupače (Brunšmid 1899), with the area downstream, dominated by the material from the settlements at Kiringrad and Belaj (Fig. 21). This division may have some actual significance, because pottery with Danubian stylistic influences is not present to the same degree at the sites in nearby White Carniola during the late Urnfield culture as is the case in the Karlovac area, as opposed to the necropolises under tumuli which, as matters now stand, cannot be included in the picture of the eastern Colapiani group. Only when grave contexts in the area downstream from Karlovac are documented will it be possible to verify their relationship to the finds from the Ozalj area and White Carniola. The necropolis in Turska Kosa, which began with urn burials at the end of the Ha B period and continued biritually through the Early Iron Age, the entire timespan without weapons as goods, fits ideally into the tradition of north-west Bosnia and the Iapodic groups (unpublished). The data on an early tumulus from Draganići are unreliable, as this type of burial has been assumed there only on the basis of the chance find of a bronze sword from the latter half of the ninth or early eighth century BC (Škoberne 2004: 154), as well as the data from Ozalj, where Šime Ljubić registered a large devastated tumulus with urn burials, which later research has not been able to verify (Balen-Letunić 1981: 11).

Settlements have already been discussed at considerable length. Belaj has material very similar to that of Dubovac, with identical parallels in the Danubian Basin, and it would appear that their duration corresponded. Kiringrad possibly has continuity from the Ha A period, judging by the chance finds of bowls with wide, diagonal flutes ("turban rim") (Balen-Letunić 1987: 3). It is worth mentioning the Kiringrad finds are relatively unreliable, all the more so since they encompass only several sherds

Naime negdje u to vrijeme nastupilo je iznenadno zahladnjenje nakon dugog toplog razdoblja koje je pogodovalo razvoju kulturnog kompleksa KPŽ. Izmjena klimatskih uvjeta bila je toliko drastična da ju neki nazivaju *Hallstatt disaster* (Behringer 2010: 60). U klimatologiji je ta promjena označena prijelazom subboreala u subatlantik, s izrazito hladnim periodom od 8. do 6. st. pr. Kr (Roberts 1998: 162). Za razliku od Mediterana, koji je ranije trpio zbog sušnog, toplog razdoblja, naglo zahladnjenje u kontinentalnoj je Europi imalo uglavnom poguban učinak, naročito na nizinske zajednice, čija su naselja danas vrlo često zatrpana slojevima aluvija. Osim bujanja rijeka subatlantik je uzrokovao spuštanje linije drveća u planinama za 300–400 m te nestanak visokogorskih pašnjaka i dulje zadržavanje snijega (Behringer 2010: 58–59). S obzirom na to da je Pokuplje i danas izrazito plavno područje (sl. 21), poput većeg dijela posavskog sliva, može se pretpostaviti da je tim promjenama bilo znatno pogođeno. Reorganizacija sustava naseljavanja u Dolenjskoj (Dular 1993), s kojom se podudara i vrijeme značajnijeg naseljavanja brdovitih predjela Banije i Korduna (Čučković 2004: 178), dogodila se nedugo nakon nagle promjene klimatskih prilika pa nije neosnovano i u tome potražiti jedan od pokretača izmjene naseobinskih obrazaca.

Palinološka istraživanja u Hrvatskoj pokazuju naglo širenje bukovih šuma u središnjoj Hrvatskoj u vrijeme prijelaza subboreal/subatlantik, povezano sa sniženjem prosječne temparature i povećanjem vlažnosti (Šoštarić 2004: 363). Na temelju dostupnih palinoloških uzoraka, od kojih većina potječe s prostora od Gorskog kotara preko Pokuplja do zagrebačkog područja, R. Šoštarić zaključuje da je sve do subatlantika središnja Hrvatska bila većinom prekrivena šumama, odnosno da je antropogeni utjecaj bio minimalan (*ibid.*). Neke oscilacije u polenskim distribucijama, primjerice iz tresetišta u Blatuši kod Topuskog i Dubravici uz Sutlu, mogu se protumačiti kao ekstenzivno iskorištavanje šuma za ispašu stoke (*idem*: 364).

U posljednje vrijeme se sve više raščišćava slika diskontinuiteta između starije i mlađe kulture polja sa žarama, naročito u pogledu sustava naseljavanja (Teržan 1999: 125; Karavanić 2000: 127), a N. Majnarić-Pandžić (1994: 10) naglašava da se slično može primijetiti i u metalnim nalazima. Visinska naselja, gradine, s lončarijom Ha B-karakteristika izuzetno su česta; mogu se brojiti u stotinama na brežuljkastom prostoru između Drave, Save i Kupe. Intenziviranje naseljavanja gradinskih položaja obilježje je početka 1. tis. pr. Kr. u većem dijelu središnje Europe (Coles & Harding 1979: 535; Harding 1994: without more detailed data on the find site, while most of the remaining finds can be placed within the range from the Ha B to the La Tène as well as into the Eneolithic (*Ibid.*). The only reliable traces of settlement in the Ha A come from the Kordun region, from the hoards of Siča (Perkić & Ložnjak-Dizdar 2005), Malička (Balen-Letunić 1985) and Lisine (Vinski-Gasparini 1973: 140, P. 97). The chance metal finds from Krnjak, dated to roughly 1000 BC, possibly originated in a destroyed necropolis (Čučković 1984: 12; Perkić & Ložnjak-Dizdar 2005: 42). A very small number of finds from the Ha A period from elevated positions may indicate a predominantly lowland settlement pattern, which began to emerge with the large rescue excavations, e.g. at Velika Gorica (Burmaz & Bugar 2007).

Oddly enough the consideration of climatic background of the beginning of the Iron Age is rarely encountered in archaeological works from Croatia and Slovenia, even though the excavations of Donja Dolina have long ago indicated the exceptional vulnerability of Late Bronze Age settlements placed beside river courses. The cultural layers of the older, Bronze Age settlement in Donja Dolina are covered with approximately 1 m of river sediments inside which periods of alluvial sedimentation were discerned without any archaeological traces and periods of renewed occupation, although with considerably fewer finds in comparison to the original settlement (Marić 1964: 9). These events can be linked to the establishment of new pile-dwelling settlement at the beginning of the eighth century BC, precisely at the time when climatic oscillations reached their climax (Marić 1964: 31; Čović 1987: 240). It was sometime during this period that sudden cooling occurred after a long warm period which was favourable to the development of the Urnfield cultural complex. The climate change was of such magnitude that some call it the Hallstatt disaster (Behringer 2010: 60). In climatology, this change has been designated as the transition from the Subboreal to the Subatlantic, with an exceptionally cold period from the eighth to sixth centuries BC (Roberts 1998: 162). As opposed to the Mediterranean, which had earlier endured a dry, warm period, the drastic cooling of the climate in continental Europe had a generally devastating impact, particularly on lowland communities, and their settlements are today quite often buried in layers of alluvium. Besides the flooding of rivers, the Subatlantic also caused a lowering of the treeline in mountains by 300-400 m, and the disappearance of high-altitude pastures along with the longer persistence of snow cover (Behringer 2010: 58-59). Since even today the Pokuplje is a known flood zone (Fig. 21), like most of the Sava drainage basin, one may

305), odnosno panonskog prostora (Teržan 1990: 152). Naročito je dobro dokumentirana dinamika naseljavanja u Dolenjskoj, gdje su dugogodišnja istraživanja mješovite ekipe pod vodstvom J. Dulara utvrdila vrlo pravilan ritam osnivanja visinskih naselja tijekom kasnobrončanodobnog razdoblja (Ha B) te njihovo napuštanje i podizanje novih željeznodobnih centara u drugoj polovici 8. st. pr. Kr. (Dular & Tecco-Hvala 2007: 135).[15] Vrlo značajan problem u tumačenju tih obrazaca u smislu demografskih kretanja jest nedostatak podataka o ostalim vrstama naselja. Tek sa zaštitnim istraživanjima na autocestama izlazi na vidjelo gustoća naseljavanja na otvorenom, ponekad iz razdoblja koja nisu zastupljena na visinskim naseljima, primjerice Rogoza kod Maribora, naseljena u ranoj i srednjoj fazi KPŽ te na prijelazu Ha B3/Ha C (Strmčnik-Gulič 1999: 124), ili već spomenuto naselje kod Velike Gorice.

Pažljiva iskopavanja halštatskih nekropola tumula konačno su i u sjeverozapadnoj Hrvatskoj utvrdila jasan kontinuitet u razvoju grobnog rituala iz razdoblja kasne kulture polja sa žarama. Riječ je prije svega o Budinjaku, na kojemu je dokumentiran razvoj pogrebnih običaja od tipične ravne nekropole s paljevinskim ritusom s kraja 10. ili početka 9 st. do željeznodobnih skeletnih ukopa pod tumulom koji traju do sredine 6. st. pr. Kr. (Škoberne 2004: 140, 144). Slična situacija dokumentirana je na Hribu u Metlici, gdje je pri zaštitnom iskopavanju pod vodstvom Boruta Križa ispod željeznodobnog tumula pronađena žarna nekropola (Grahek 2004).

Početak 1. tis. pr. Kr. (10–9. st.) doba je prve šire pojave željeznih predmeta u središnjoj Europi (Karavanić 2000: 77). Jedno je od ključnih nalazišta Ruše, gdje se željezo pojavljuje već u ranoj fazi nekropole, tj. za ranog Ha B (Teržan 1990: 23). Jedan željezni ulomak pronađen je i u grobu 7 velikogoričke nekropole, datiran u Ha B1, te moguće u grobu E 1910, ali valja biti oprezan jer riječ je o iskopavanju s početka 20. st. (Karavanić 2000: 89). Tek u 8. st. pr. Kr. dolazi do nagla povećanja broja željeznih predmeta u nekropolama na široku prostoru zapadnog Balkana i Panonije. Ta slika naizgled je konzistentna, no B. Čović upozorio je na važan metodološki nedostatak. Naime grobni prilozi pripadaju prije svega ritualnom kontekstu pa ih nije moguće tumačiti kao izravan odraz uporabnog konteksta. Nije

[15] Kritike na račun Dularova modela koje upućuju na postojanje izuzetaka poput visinskih naselja s kontinuitetom iz brončanog u željezno doba ili onih s datacijama od razdoblja Ha A ne mijenjaju osnovnu sliku kulturne dinamike (Teržan 1999: 108). Dular i Tecco-Hvala (2007: 135) također upozoravaju na mogućnost povremenog naseljavanja brončanodobnih gradina koje je vezano uz razvijene nizinske zajednice, no zbog nedostatka preciznih podataka tu hipotezu nije moguće provjeriti.

assume that it was greatly beset by these changes. The reorganization of the settlement system in Lower Carniola (Dular 1993), which also coincided with the time of significant settlement of the upland tracts of Banija and Kordun (Čučković 2004: 178), occurred not long after the sudden changes in climate, so considering climatic dynamics as one of the drivers of changes in settlement patterns is not without basis.

Palynological research in Croatia has shown very rapid spread of beech forests in central Croatia during the Subboreal/Subatlantic, tied to the decline of average temperatures and increased moisture (Šoštarić 2004: 363). Based on available palyonological samples, of which most originate in the region from Gorski Kotar through the Pokuplje to the Zagreb environs, R. Šoštarić concluded that until the Subatlantic, Croatia was largely covered by forests, and that the anthropogenic influence was minimal (*Ibid.*). Some oscillations in pollen distribution, for example from the peat bogs in Blatuša near Topusko and Dubravica on the Sutla River, may be explained as transient use of forests for pasturing livestock (*Idem*: 364).

In recent years, the discontinuities between the Early and Late Urnfield culture have been increasingly clarified, particularly with reference to the settlement system (Teržan 1999: 125; Karavanić 2000: 127), and N. Majnarić-Pandžić (1994: 10) stressed that something similar may be noted in the context of metal finds as well. Hilltop settlements, hillforts, with pottery bearing Ha B-characteristics are quite common; they can be counted in the hundreds in the hilly tracts between the Drava, Sava and Kupa Rivers. The intensification of hillfort settlement is a feature of the first millennium BC in most of central Europe (Coles & Harding 1979: 535; Harding 1994: 305), and the Pannonian zone (Teržan 1990: 152). The settlement dynamics in Lower Carniola are particularly well documented, as long-time research led by J. Dular have ascertained a regular rhythm of establishment of elevated settlements during the Late Bronze Age (Ha B) and their abandonment and the establishment of new Iron Age centres in the latter half of the eighth century BC (Dular & Tecco-Hvala 2007: 135).[15] A very significant problem in the interpretation of these patterns in the sense of demographic trends

[15] Criticism of Dular's model, which points to the existence of exceptions such as elevated settlements with continuity from the Bronze into the Iron Age or those with dating from the Ha A period do not alter the fundamental picture of the cultural dynamics (Teržan 1999: 108). Dular and Tecco-Hvala (2007: 135) also warned of the possibility of occasional settlement of Bronze Age hillforts related to developed lowland communities, but this hypothesis could not be verified due to a lack of data.

riječ samo o pažljivu izboru predmeta (npr. izbjegavanje polaganja oružja u mnogim kulturnim skupinama), već i tendenciji konzervativnosti u konstrukciji zagrobnog svijeta u odnosu na onaj živih. U stvari, povezanost početka prilaganja željeznih predmeta s promjenama u grobnom ritusu, kao što je početak "aristokratskog" pokopavanja pod tumulom u Dolenjskoj ili prva pojava oružja u nekropoli na Glasincu, ukazuje na to da je dugotrajan proces usvajanja željeza u kulturni kontekst već završen, a njegov odraz u arheološkom kontekstu omogućen je tek uslijed izmjenjenih pogrebnih običaja (Čović 1980: 76). Metalurgija željeza, nadalje, bila je potaknuta potpuno izmijenjenim gospodarskim odnosima koji su krajem 2. tis. pr. Kr. nastupili u cijeloj Europi. U vremenu od polovice 11. do polovice 10. st. pr. Kr. prestalo je iskorištavanje bakrene rude na više brončanodobnih rudišta u istočnim Alpama, a u ostavama iz istog razdoblja pronađene su zaista neobične slitine (Gleirscher 2006: 89). Naročito je važna ostava Kanalski Vrh s južnog pobočja Julijskih Alpa, u kojoj je ustanovljeno više različitih slitina, od kojih neke sadrže vrlo malo kositra i mnogo arsena, antimona i nikla, a sastav ponekih ingota zapravo je otpadni materijal jako loše kvalitete (Trompuž-Orel & Heath 2001: 150–151). Nečista sirovina s dosta olova česta je karakteristika materijala s početka Ha B i drugdje u Europi (*ibid.*). Zamiranje metalurške aktivnosti dokumentirano je i u brončanodobnoj radionici u Mačkovcu u vremenu nakon stupnja Ha A1, što S. Karavanić (2006: 49) također povezuje s općim značajkama nadolazećeg razdoblja mlađe kulture polja sa žarama. Za razliku od Slovenije i Hrvatske u Bosni su na više lokaliteta utvrđeni tragovi autohtone metalurgije već od početka 9. st. Riječ je o nizu nalazišta (Pod kod Bugojna, Varvara, Kopilo kod Zenice, Vis kod Dervente) na kojima su pronađeni troska ili komadi rude, a željezni predmeti pojavljuju se na Glasincu kao nakit otprilike u isto vrijeme (Čović 1980: 74–76).

Prapovijesno naselje na Dubovcu pruža sliku jednog prijelaznog perioda koji je u kontekstu kolapijanske grupe označen kao početak željeznog doba. Iako je razgraničavanje kulturnih perioda dobrim dijelom semantički problem – jer podrazumijeva komadanje kontinuirana povijesnog razvoja – ako je koncept razgraničenja željeznog i brončanog doba i dalje od koristi, valja ga uskladiti s novim arheološkim nalazima. Riječ je prije svega o postavljanju naglaska na naseobinske lokalitete umjesto na funeralne tipokronologije, koje već zbog svojeg konteksta nastanka postavljaju određene metodološke probleme (usp. *supra*). Učestali pokušaji "podizanja" željeznodobnih kronologija (npr. Teržan

is the lack of data on other types of settlement. It was only after rescue research had been conducted along motorway routes that the settlement density in flat areas became apparent, sometimes from periods not recorded on the hilltop settlements, such as Rogoza near Maribor, settled in the early phase of the Urnfield culture and at the Ha B3/Ha C transition (Strmčnik-Gulič 1999: 124), or the already mentioned settlement near Velika Gorica.

Careful excavation of Hallstatt tumulus necropoles finally confirmed clear continuity in burial rituals in north-west Croatia during the late Urnfield culture, as well. Primarily this pertains to Budinjak, at which the evolution of funerary ritual was documented from the typical flat necropolis with incineration rites dated to the end of the tenth or early ninth century BC to the Iron Age skeletal burials beneath tumuli which lasted until the mid-sixth century BC (Škoberne 2004: 140, 144). A similar situation was documented at Hrib in Metlika, where an Urnfield necropolis was found beneath an Iron Age tumulus during rescue research led by Borut Križ (Grahek 2004).

The beginning of the first millennium BC (10th–9th cent. BC) was an era that saw the first widespread appearance of iron items in central Europe (Karavanić 2000: 77). One of the key sites is Ruše, where iron appeared already in the early phase of the necropolis, i.e., during the early Ha B (Teržan 1990: 23). One iron fragment was found in grave 7 of the Velika Gorica necropolis, dated to the Ha B1, and possibly in grave E 1910, but some caution should be exercised because these are excavations that were conducted at the beginning of the twentieth century (Karavanić 2000: 89). The number of iron artefacts in necropoles over a broad swath of the western Balkans and Pannonia increased suddenly only in the eighth century BC. This development seems to provide quite consistent picture, but B. Čović pointed out earlier to a fundamental methodological flaw. The grave goods first and foremost belong to a ritual context, so they cannot be interpreted as a direct reflection of a use context. This is not just a matter of the careful selection of items (e.g. the avoidance of depositing weapons in many cultural groups), but also the tendency toward conservatism in the notion of the afterlife in comparison to the living world. In fact, the link between the beginning of placement of iron items with changes in funerary rites, such as the beginning of "aristocratic" interments under tumuli in Lower Carniola or the first appearance of weapons in the necropolis in Glasinac, indicate that the long-lasting process of adopting iron in the cultural context had already been completed, and its reflection in the archaeological context was made possible only as a result

1990) također ukazuju na pretjerano naglašavanje kulturnih promjena u 8. st. pr. Kr., iako nastavljanje tradicije oslanjanja na grobne nalaze, najčešće slabo potkrijepljene radiokarbonskim datacijama, teško može riješiti problem (spomenimo kritiku visoke kronologije C. F. E. Parea od strane N. Majnarić-Pandžić (2002)). Jedino promatranje naseobinske dinamike, odnosno nalaza iz naseobinskog konteksta, datiranih ne samo tipološki nego i suvremenim fizičkim metodama, može osigurati čvršću osnovu za promatranje kulturnog razvoja. Dubovac na primjer pruža dojam nesumnjiva kulturnog kontinuiteta mlađe KPŽ i starijeg željeznog doba, što je na prostoru zapadne Panonije zapravo čest slučaj. U tom smislu valja promatrati i novije nalaze iz nekropola u Budinjaku i na Hribu kod Metlike (usp. *supra*). Stara teza, koja potječe još od Moritza Hoernesa iz 1905. g., koji je u ruškoj nekropoli vidio početak željeznog doba, zaista je još uvijek aktualna (Gabrovec 1989: 119).

TABLE

Napomena: Prilikom opisivanja ulomaka lončarije pokušali smo obratiti pažnju na boju lončarske mase s obzirom na rezultate kvantitativne analize (usp. *supra*) te na sastav primjesa. Pritom valja istaknuti utjecaj naknadnog gorenja, koje je u značajnoj mjeri prisutno u većem dijelu naseobinskih slojeva (sl. 22). Kod dobra dijela ulomaka izlaganje temperaturi nakon razbijanja posude vidljivo je po promjenama na mjestima loma, no valja očekivati da se fragmentacija nastavila i nakon izgaranja te će mnogi nagoreni ulomci imati svježe lomove. Također je problematično utvrditi slučajeve izloženosti temperaturi tijekom uporabe te namjernog ili nehotičnog oksidiranju tijekom pečenja. Ako naknadno gorenje definiramo kao izrazitu oksidaciju, čini se da se ipak u pravilu radi o tragovima uporabe (kuhanje) ili izlaganja temperaturi nakon odbacivanja. Karakteristični su tragovi svijetla boja (siva, blijedožuta, crvena), površina trošna ili izbrazdana plitkim pukotinama (poput korice kruha), krhka faktura, porozna struktura te deformacije, kao npr. kod posude za skladištenje na sl. 5 ili na sl. 22. Valja uočiti da nagoreni ulomci u pravilu imaju uništen površinski sloj, koji je vrlo često izvorno bio uglačan, pa se čini da je glačanje bilo znatno više zastupljeno nego što je moguće zabilježiti. Naročit je problem utjecaj gorenja na vidljivost primjesa u lončarskoj smjesi. Naime kod ulomaka crne fakture primjese često nisu vidljive ili barem nisu dobro uočljive. Naknadna oksidacija naprotiv djeluje poput kontrastnog sredstva i otkriva znatne udjele

of altered funerary customs (Čović 1980: 76). The metallurgy of iron, furthermore, was prompted by the thoroughly altered economic relations that emerged throughout Europe at the end of the second millennium BC. From the mid-eleventh to mid-tenth centuries BC, the exploitation of copper ore at many Bronze Age mining sites in the eastern Alps halted, and some truly unusual alloys can be found in the hoards of that period (Gleirscher 2006: 89). The Kanalski Vrh hoard from the southern face of the Julian Alps is particularly important as several different alloys were ascertained in it, of which some contain very small quantities of tin and considerable quantities of arsenic, antimony and nickel, while the composition of some ingots is actually waste material of very poor quality (Trompuž-Orel & Heath 2001: 150-151). Impure raw materials containing much lead are a common feature of the materials from the beginning of the Ha B elsewhere in Europe as well (*Ibid.*). Dying out of metallurgical activities has also been documented in the Bronze Age workshop in Mačkovac in the period after phase Ha A1, which S. Karavanić (2006: 49) also associated with the general features of the coming period of the Later Urnfield culture. As opposed to Slovenia and Croatia, traces of indigenous metallurgy have been ascertained at several sites in Bosnia already from the beginning of the ninth century BC. These are a series of sites (Pod near Bugojno, Varvara, Kopilo near Zenica, Vis near Derventa) at which slag and pieces of ore were found, while iron items appeared at Glasinac as jewellery at roughly the same time (Čović 1980: 74-76).

The prehistoric settlement at Dubovac offers a glimpse of a transition period which in the context of the Colapiani group has been designated as the beginning of the Iron Age. Even though the demarcation between cultural periods is largely a semantic problem – because it implies partitioning continuous historical development – if the concept of the division between the Iron and Bronze Ages continues to be useful, it should be reconsidered in the light of new archaeological finds. This is above all a matter of placing a stronger emphasis on settlement sites rather than on funerary typo-chronologies which are prone to certain methodological problems (cf. *supra*). The frequent attempts to "elevate" Iron age chronologies (e.g.. Teržan 1990) also indicate excessive emphasis on cultural changes in the eighth century BC, although the continuation of the tradition of focusing on grave finds, most often poorly backed by radiocarbon dates, can scarcely solve the problem (worth mentioning is the criticism of the C.F.E. Pare's high chronology by N. Majnarić-Pandžić (2002)). Only the observation of settlement dynamics, i.e., finds from the

drobljene keramike i organske tvari, što ima značajan utjecaj pri obradi materijala. Bilo kakvo bilježenje tehnoloških karakteristika lončarije bez procjene tafonomskih procesa ili uporabnog konteksta ne može biti zadovoljavajuće.

Nalaze je 2004. g. nacrtala Ivana Miletić.

Slika 22. Ulomci naknadno izgorene lončarije (snimio: Z. Čučković).

Figure 22. Sherds of subsequently burned pottery (photograph by: Z. Čučković).

settlement context, dated not only typologically but also by modern physical methods, can ensure a firm basis for the consideration of cultural development. Dubovac, for example, offers an impression of undoubted cultural continuity of the late Urnfield culture and the Early Iron Age, which is actually common in the territory of western Pannonia. The more recent finds from the necropolises in Budinjak and Hrib at Metlika (cf. *supra*) should be viewed in this context as well. The old hypothesis, which originated back in 1905 with Moritz Hoernes, who saw the Ruše necropolis as the onset of the Iron age, is indeed still stimulating (Gabrovec 1989: 119).

PLATES

Note: In the description of potsherds we attempted to focus attention on the colour of the cross-section of pottery fabric, considering the results of quantitative analysis (cf. *supra*), and on the composition of temper. Here, the influence of subsequent burning should be stressed, as it was observed in a high frequency in most of the settlement layers (Fig. 22). For many of the sherds, the exposure to temperature after the breakage of the vessels is visible in terms of changes at the fractured edges, but it is to be expected that the fragmentation continued even after burning and that many burnt sherds will have fresh fractures. Distinguishing the cases of exposure to temperature during use and intentional or unintentional oxidation during firing is also problematic. However, if subsequent burning is defined as exceptional oxidation, it would appear that as a rule these are traces of use (cooking) or exposure to temperature after discarding rather than in the process of production. Traces of light colours (grey, pale yellow, red), worn surfaces or furrowed with shallow fissures (similar to bread crusts), fragile structure, porous fabric and deformations, such as, for example, on the storage vessels on Fig. 5 or Fig. 22, are all characteristic. It is worth noting that burnt sherds generally have a destroyed surface layer, which was quite often initially burnished, so it would appear that polishing was considerably more present than it is possible to observe. A particular problem is the impact of burning on the visibility of temper in pottery mixture. It is often not visible or at least not readily apparent on sherds of black fabric. Subsequent oxidation, on the other hand, acts as a contrast agent and reveals considerable proportions of gorg and organic matter, which exerts a considerable influence in the analysis of the material. Any sort of recording of the technological features of pottery without an assessment of the taphonomic processes or usage context cannot be satisfactory.

The finds were drawn in 2004 by Ivana Miletić.

Tabla 1. Metal, keramika (eneolitik, željezno doba)

1. Brončano dlijeto s tuljcem za nasad. Vrh oruđa odlomljen je, a otvor tuljca ojačan prstenastim zadebljanjem.

2. Ulomak ukrašen urezanim motivom riblje kosti. Jezgra je tamnosmeđa, boja površine varira od smeđe to tamnosive. Faktura sadrži dosta zrnaca kremenog pijeska.

3. Ulomak ukrašen motivom riblje kosti. Boja siva do tamnosiva u jezgri i na površini. U fakturi su vidljivi krupni komadi kremenog pijeska (1–2 mm).

4. Čepasti fragment (?). Površina je jako trošna, boja crna do svijetložuta, u fakturi su prisutni zaobljeni komadi kremena veličine 1–2 mm i dosta drobljene keramike.

Plate 1. Metal, ceramic (Eneolithic, Iron Age)

1. Bronze chisel with haft socket. Tip of the implement broken off, and opening of socket reinforced with ringed thickening.

2. Sherd decorated with engraved fishbone motif. Core dark brown, surface colour varies from brown to dark grey. Temper contains considerable quantity of flint sand grains.

3. Sherd decorated with fishbone motif. Gray to dark grey in core and on surface. Large flint sand grains (1-2 mm) visible in the paste.

4. Cork-shaped sherd (?). Surface very worn, colour black to light yellow, rounded 1-2 mm pieces of flint and considerable quantity of crushed ceramic present in the paste.

Tabla 2. Keramika (željezno doba, horizont I)

1. Posuda (zdjela?) ljevkasto proširenog oboda. Jako nagoreno, dosta pukotina, moguće deformirano. Jezgra tamnosiva (izvorno crna), površina crvenkasta do plavkastosiva. U fakturi primjese drobljene keramike i organske tvari.

2. Lonac s ljevkasto proširenim obodom. Naknadno goreno, boja jezgre nije vidljiva, površina crvenkasta do siva. U fakturi ima nešto malo drobljene keramike, na dva mjesta vidljiva je pougljenjena organska tvar.

3. Posuda (lonac?) ljevkasto proširenog oboda. Jezgra i površina ulomka jednolične su crne boje. Jasno je vidljivo glačanje površine, no primjese nisu uočljive, osim nešto drobljene keramike.

4. Lonac proširenog oboda. Donekle nagoreno, moguće izvorno karakteristične crne fakture (jezgra je crne boje, površina uglavnom blijedosmeđa, mjestimice crna). Vidljivi su tragovi modeliranja na površini posude.

Plate 2. Ceramics (Iron Age, horizon I)

1. Vessel (bowl?) with spouted rim. Very charred, with many fissures, possibly deformed. Core dark grey (originally black), surface reddish to bluish grey. Grog and organic temper in the paste.

2. Pot with spouted rim. Subsequently burned, core colour not visible, surface reddish to grey. Small quantity of grog in clay matrix, carbonized organic matter visible at two spots.

3. Vessel (pot?) with spouted rim. Core and surface of sherd uniformly black. Polishing of surface clearly visible, but temper not noticeable, except grog.

4. Pot with expanded rim. Somewhat charred, possibly originally typical black fabric (core is black, surface generally pale brown, black at places). Visible traces of modelling on vessel's surface.

Tabla 3. Keramika (željezno doba, horizont I)

1. Ulomak ukrašen plitkim urezivanjem. Ujednačeno siva boja jezgre i površine. Unutrašnjost zaglađena, ali bez sjaja glačanja. Malen udio drobljene keramike u fakturi.

2. Ulomak ukrašen urezivanjem. Jezgra tamnosiva, slijedi sloj svijetlocrvene boje, dok je površina posude siva. U fakturi ima nešto malo drobljene keramike.

3. Ulomak ukrašen žlijebljenjem. Jezgra svijetlocrvena kao i vanjska površina, dok je unutrašnjost mrka (sivosmeđa). Vidljivo nešto krupnijih primjesa drobljene keramike.

Plate 3. Ceramics (Iron Age, horizon I)

1. Sherd decorated with shallow engraving. Core and surface uniformly grey. Inside smoothed, but without lustre of polishing. Small share of grog in the paste.

2. Sherd decorated with engraving. Core dark grey, followed by light red layer, while vessel's surface is grey. Small quantity of grog in the paste.

3. Sherd decorated with grooving. Core light red like external surface, while interior is dark (grey-brown). Coarser grog temper visible.

4. Sherd of small pot decorated by engraving. Core and surface colour do not differ and vary from dark

4. Ulomak manjeg lonca ukrašen urezivanjem. Boja jezgre i površine ne razlikuju se i variraju od mrke do crne. Primjese su slabo vidljive, osim porozne strukture koja upućuje na organske tvari u smjesi.

5. Ulomak vrata posude ili valjkastog podloška ukrašen češljastim urezivanjem. Jezgra i vanjština tamnosive do crne, unutarnja površina svijetlosiva. U fakturi ima dosta organske tvari i vrlo malo drobljene keramike i sitnog pijeska. Ornament je usko, duboko urezan te je izvorno mogao biti zapunjen inkrustacijom.

6. Posuda blago izvijenog oboda. Karakteristična crna faktura s tragovima zaglađivanja, naročito iznutra. Primjese su slabo vidljive, moguće nešto drobljene keramike. Na trbuhu posude trag je nepravilnog dubljenja lončarske mase, moguće rovašenje.

7. Loptasta zdjela. Jezgra crne boje, površine u nijansama žućkaste, crvenkaste i sive. Na svježem prijelomu vidljivo je da je posuda nagorjela nakon razbijanja. Primjese nisu jasno vidljive.

8. Loptasta zdjela/lončić. Jako nagorena, deformirana posuda. Površina je trošna, boje od izrazito crvene do plavkastosive. U fakturi je vidljivo nešto drobljene keramike.

to black. Temper difficult to discern, except porous structure which indicate organic matter in mass.

5. Sherd of vessel neck or cylindrical mat decorated with comb-like engraving. Core and exterior dark grey to black, interior surface light grey. Considerable quantity of organic matter and miniscule amount of grog and fine grain sand in the paste. Ornament narrow and deeply engraved, may have originally been filled with incrustation.

6. Vessel with lightly curved rim. Typical black fabric with traces of smoothing, particularly inside. Temper difficult to discern, possibly some grog. Trace of uneven depressing of pottery mass, possible notching, on belly's surface.

7. Spherical bowl. Core black, surface yellowish, reddish and grey in nuances. Fresh break shows that vessel was burned after breakage. Temper not clearly visible.

8. Spherical bowl/small pot. Very burned, deformed vessel. Surface worn, colour markedly red to bluish grey. Some grog visible in the paste.

Tabla 4. Keramika (željezno doba, horizont I)

1. Jako nagorena zdjela uvučenog oboda ukrašena žlijebljenjem, izvana sivoplave do crvenkaste boje, iznutra crno, začađeno. U fakturi ima nešto drobljene keramike.

2. Također nagorena zdjela uvučenog oboda, crvenkaste boje. U fakturi je vidljivo dosta fino drobljene keramike.

3. Zdjela uvučenog oboda ukrašena fazetiranjem. Boja je ujednačena, tamnosiva u jezgri i na stijenkama. Primjese drobljene keramike i nešto vapnenca u fakturi.

4. Zdjela uvučenog oboda ukrašena fazetiranjem i žlijebljenjem. Jezgra je tamna do crna, uz stijenke se nalazi tanak sloj svijetle boje, a površine posude tamnosmeđe su (mrke). Posuda je fino uglačana, gotovo polirana.

5. Zdjela uvučenog oboda ukrašena žlijebljenjem. Jezgra je blijedocrvenkasta, prema vanjskoj površini sivkasta. Vanjska površina siva je do crna, dok je posuda iznutra zagasite, crne boje. Površine su uglačane, a u primjesi je vidljivo nešto sitno drobljene keramike.

6. Zdjela uvučenog oboda ukrašena metopno organiziranim žlijebljenjem. Karakteristične crne fakture, posuda je uglačana izvana i iznutra. U primjesi je vidljiva samo pougljenjena organska tvar.

Plate 4. Ceramics (Iron Age, horizon I)

1. Very burned bowl with inwardly drawn rim decorated by grooving, grey blue to reddish outside, black and sooty inside. Some grog in the paste.

2. Another burned bowl with inwardly drawn rim, reddish. Considerable quantity of finely grog visible in the paste.

3. Bowl with inwardly drawn rim decorated by faceting. Colour uniform, dark grey in core and on walls. Grog and some limestone temper in the paste.

4. Bowl with inwardly drawn rim decorated by faceting and grooving. Core dark to black, thin layer of light paint along walls, while vessel's surfaces are dark brown (tawny). Vessel is finely burnished, almost polished.

5. Bowl with inwardly drawn rim decorated by grooving. Core pale reddish, grey toward external surface. External surface grey to black, while vessel is dark, black colour inside. Surfaces are burnished, some finely grog visible in temper.

6. Bowl with inwardly drawn rim decorated by metopically arranged grooving. Typical black fabric, vessel is burnished inside and out. Only carbonized organic matter visible in temper.

Tabla 5. Keramika (željezno doba, horizont I)

1. Manja posuda (lonac?). Jezgra je sive boje prema unutrašnjosti i svijetlocrvene prema vanjskom dijelu posude. Unutrašnjost je mrka, a vanjska površina posude tamnosmeđa i uglačana.

2. Manji trbušasti lonac. Jezgra i dio unutrašnjosti koji nosi tragove glačanja zagasito su crni, vanjska površina smeđa do mrka. U fakturi je vidljivo nešto malo drobljene keramike.

3. Lonac ili dublja zdjela izvučenog oboda. Jezgra i unutrašnjost zagasito su crni, vanjska površina smeđesiva (moguće izvorno crne boje). U fakturi vrlo malo drobljene keramike.

4. Nagoren ulomak veće posude izvučenog oboda. Boja varira od mrke do crvenkastosive. U fakturi vidljive primjese drobljene keramike.

5. Nagoren ulomak većeg lonca izvučenog oboda. Uglavnom je sive boje, osim jednog dijela karakteristične zagasitocrne boje s tragovima glačanja. U fakturi ima nešto drobljene keramike, na jednom mjestu vidljiva je pougljenjena organska tvar, a ima i nekoliko zrnaca tinjca ili kvarca.

Plate 5. Ceramics (Iron Age, horizon I)

1. Small vessel (pot?). Core grey toward interior and light red toward vessel's external surface. Interior tawny, while vessel's external surface is dark brown and burnished.

2. Small belly-shaped pot. Core and part of interior bearing traces of polishing are deep black, external surface brown to tawny. Small quantity of grog visible in the paste.

3. Pot or deeper bowl with outwardly drawn rim. Core and interior deep black, external surface brown grey (possible originally black). Very small quantity of grog in the paste.

4. Charred sherd of larger vessel with outwardly drawn rim. Colour varies from tawny to reddish grey. Grog temper visible in the paste.

5. Charred sherd of larger vessel with outwardly drawn rim. Mostly grey, except portion with typical deep black with traces of polishing. Some grog in the paste, carbonized organic matter visible in one place, and there are some traces of mica or quartz grains.

Tabla 6. Keramika (željezno doba, horizont I)

1. Pršljen. Jezgra je crne boje, a površina varira od tamnosive do žućkaste. U fakturi ima dosta fino drobljene keramike.

2. Zdjela uvučenog oboda ukrašena žlijebljenjem. Crna faktura s vidljivim zaglađivanjem s unutarnje strane. Primjese nisu vidljive, osim nešto šupljina od organskih tvari.

3. Zdjela uvučenog oboda ukrašena metopno organiziranim žlijebljenjem. Jezgra tamnosiva, prema vanjskoj stijenci prelazi u svijetlocrvenu, a prema unutrašnjoj u smeđu. Boja površine mrka je (tamnosmeđa) s obje strane. U fakturi ima nešto drobljene keramike i kremenog pijeska.

4. Jako nagoren ulomak crvenkaste boje. U fakturi ima nešto drobljene keramike.

5. Jako nagoren ulomak zdjele zadebljanog, uvučenog oboda. Mjestimice su prisutne plitke pukotine. Boja blijedo žuta do siva. U fakturi ima mnogo drobljene keramike i nečistoće.

Plate 6. Ceramics (Iron Age, horizon I)

1. Spindle whorl. Core black, surface varies from dark grey to yellowish. Finely grog in the paste.

2. Bowl with inwardly drawn rim decorated by grooving. Black fabric with visible smoothing on internal side. Temper not visible, except cavities made by organic matter.

3. Bowl with inwardly drawn rim decorated with metopically arranged grooving. Core dark grey, transitions to light red toward external wall, and to brown toward internal wall. Surface colour is tawny (dark brown) on both sides. Some grog and flint sand in the paste.

4. Very burned reddish sherd. Some grog in the paste.

5. Very charred sherd of bowl with thickened, inwardly drawn rim. Shallow fissures present at places. Colour pale yellow to grey. The paste contains a lot of grog and impurities.

Tabla 7. Keramika (željezno doba, horizont II)

1. Zdjela uvučenog oboda ukrašena metopno organiziranim žlijebljenjem. Karakteristična crna faktura s tragovima glačanja s unutarnje strane. Primjese nisu raspoznatljive, osim nešto sitnih šupljina od organskog materijala.

2. Zdjela uvučenog oboda ukrašena plitkim žlijebljenjem. Jezgra je crne boje, a prema stijenkama

Plate 7. Ceramics (Iron Age, horizon II)

1. Bowl with inwardly drawn rim decorated with metopically arranged grooving. Typical black fabric with traces of polishing on inside. Temper not discernable, except for tiny cavities due to organic matter.

2. Bowl with inwardly drawn rim decorated by shallow grooving. Core black, while the paste becomes

faktura postaje svijetlocrvena. Vanjske površine s obje strane prevučene su tankim tamnosmeđim slojem s nešto sjaja od zaglađivanja. U fakturi ima mnogo drobljene keramike i malo kremenog pijeska.

3. Zdjela s uvučenim obodom i okomitom ušicom. Boja jezgre u presjeku je potpuno crna, kao i dio unutrašnje površine, gdje se vide i slabi tragovi zaglađivanja. Vanjska površina siva je do smećkasta. U fakturi ima drobljene keramike te organskih tvari.

4. Ručka. Jako nagoreno, iznutra je ulomak tamnosive, a izvana žućkaste do crvenkaste boje. U primjesi ima nešto drobljene keramike.

5. Zdjela uvučenog oboda. Jezgra je u presjeku crvenkaste boje, a vanjska površina sive je boje s tragovima zaglađivanja. U fakturi ima drobljene keramike.

6. Ulomak ramena (stožastog?) lonca. Predmet je nagorio. Jezgra je sivkasta (izvorno crne boje), vanjska površina plavo-siva do crvenkasta, unutrašnjost siva. U fakturi ima sitnih ulomaka drobljene keramike te vrlo malo finog pijeska.

7. Zdjela uvučenog oboda. Jezgra je svjetlije, crvenkaste boje, a površine tamne do crne. Na dijelu vanjske površine vidljiv je trag zaglađivanja. U fakturi ima nešto primjesa drobljene keramike.

light red toward walls. External surface on both side covered with think dark brown layer with some lustre from burnishing. Much grog and small quantity of flint sand in the paste.

3. Bowl with inwardly drawn rim and vertical eyelet. Colour of core entirely black in cross section, like part of internal surface, where slight traces of burnishing visible. External surface is grey to brownish. Grog and organic matter in the paste.

4. Handle. Very charred, inside the sherd is dark grey, while outside it is yellowish to reddish. Some grog in temper.

5. Bowl with inwardly drawn rim. Core reddish in cross-section, while external surface is grey with traces of burnishing. Grog in the paste.

6. Sherd of shoulder of (conical?) pot. Item is charred. Core is greyish (originally black), external surface is blue-grey to reddish, interior is grey. Tiny fragments of grog and very small quantity of fine-grain sand in the paste.

7. Bowl with inwardly drawn rim. Core is lighter, reddish, surfaces are dark to black. Traces of burnishing visible on part of external surface. Some grog as temper in the paste.

Tabla 8. Keramika (željezno doba, horizont II)

1. Zdjela uvučenog oboda. Jezgra i unutarnja površina crne boje, izvana tanak sloj tamnosmeđe do crne boje. Posuda je fino uglačana. U fakturi je vidljivo nešto malo primjesa drobljene keramike.

2. Bikonični pršljen. Boja je sivkasta do crna, a u fakturi ima mnogo drobljene keramike.

3. Piramidalni uteg. Boja je svijetložuta do crvenkasta, a u fakturi nisu uočene značajnije primjese.

4. Pršljen sa četiri dekorativna udubljenja. Boja je svijetložuta do sivkasta. U fakturi nisu uočene značajnije primjese.

5. Predmet u obliku kalema. Boja je siva do crvenkastosiva, čini se, od naknadnog gorenja. U fakturi ima gotovo 50% drobljene keramike.

6. Ulomak posude s rupicom. Jezgra je tamnosive boje, a vanjske površine svijetlocrvene. Ulomak je naknadno nagorio. U fakturi ima dosta fino drobljene keramike.

Plate 8. Ceramics (Iron Age, horizon II)

1. Bowl with inwardly drawn rim. Core and internal surface black, thin layer of dark brown to black on exterior. Vessel is finely polished. Some small grog temper visible in the paste.

2. Biconical spindle whorl. Greyish to black, much grog in the paste.

3. Pyramidal weight. Light yellow to reddish, no significant temper observed in the paste.

4. Spindle whorl with four decorative notches. Light yellow to greyish. No significant temper observed in the paste.

5. Spool-shaped item. Gray to reddish grey colour due to, it would appear, subsequent burning. Almost 50% grog in the paste.

6. Sherd of bowl with small hole. Core is dark grey, external surface is light red. Sherd was subsequently burned. Considerable finely grog in the paste.

Tabla 9. Keramika (željezno doba, horizont III)

1. Zdjela ljevkasto proširenog oboda. Posuda je donekle naknadno nagorjela. Jezgra i unutarnja površina crne su boje, izvana tamnosmeđe do crne (mrke). U fakturi ima dosta drobljene keramike.

Plate 9. Ceramics (Iron Age, horizon III)

1. Bowl with spouted rim. Vessel was subsequently burned to an extent. Core and internal surface black, dark brown to black (tawny) on exterior. Considerable quantity of grog in the paste.

2. Lonac s naglašenim prijelazom vrata u rame, ukrašen bradavičastom aplikacijom. Jezgra je tamnosive do crne boje, unutrašnjost crna, a vanjska površina tamnosiva do tamnosmeđa. U fakturi ima drobljene keramike, vrlo finog pijeska i pougljenjene organske tvari. Zbog pijeska površina je hrapava, bez tragova glačanja.

3. Malena posuda (šalica?). Jezgra je sivkasta, prema vanjskoj površini boja prelazi u crvenkastu, a površina je s obje strane prevučena mrkim (tamnosmeđim) slojem. U fakturi je vidljivo dosta fino drobljene keramike.

4. Posuda ukrašena valovnicama i žlijebljenjem. Jezgra i vanjska površina ujednačene su sive boje, a unutrašnjost posude blijedožuta. U fakturi ima dosta tragova organske tvari, pijeska i drobljene keramike.

5. Lonac s naglašenim prijelazom vrata u rame, ukrašen trokutastom bradavicom. Jezgra je crna (tamna), a prema površini boja prelazi u crvenkastosmeđu. Vanjske površine prevučene su smeđim do mrkim slojem. U fakturi ima nešto drobljene keramike. S unutarnje strane posude ima tragova zaglađivanja.

6. Zdjela uvučenog i zaravnjenog oboda. Jezgra i unutrašnjost posude tamnosivi su, vanjski sloj je svijetlocrven do siv (nagoreno?). U fakturi je vidljivo mnogo primjesa drobljene keramike veličine do 3 mm te veći komadi kremenog pijeska.

2. Pot with prominent transition from neck to shoulder, decorated with wart-like appliqué. Core dark grey to black, interior black, and external surface dark grey to dark brown. Grog, very fine sand and carbonized organic matter in the paste. Sand makes surface rough, without traces of polishing.

3. Small vessel (cup?). Core is greyish, colour transitions to reddish toward external surface, surface on both sides coated with tawny (dark brown) layer. Considerable quantity of finely grog visible in the paste.

4. Vessel decorated with wave patterns and grooving. Core and external surface are uniformly grey, interior of vessel is pale yellow. Considerable traces of organic matter, sand and grog in the paste.

5. Pot with prominent transition from neck to shoulder, decorated with triangular protrusion. Core black (dark), transitions to reddish brown toward surface. External surfaces coated with brown to tawny layer. The paste contains some grog. Traces of burnishing on inside of vessel.

6. Bowl with inwardly drawn and flattened rim. Vessel's core and interior dark grey, external layer light red to grey (charred?). Considerable fillers of crush ceramic up to 3 mm in size and larger grains of flint sand visible in the paste.

Tabla 10. Keramika (željezno doba, horizont III)

1. Zdjela uvučenog oboda. Jezgra je mrke boje, unutrašnjost mrka do smeđa, a vanjski dio nešto tamniji, ponegdje crn. Vidljivi tragovi modeliranja, nije glačano. U fakturi ima dosta primjesa drobljene keramike.

2. Zdjela uvučenog oboda, ukrašena finim žlijebljenjem. Jezgra je svijetlosive boje, prema površini prelazi u crvenkastu, dok su površine posude prevučene mrkim slojem. Iznutra je vidljivo glačanje, a rub je fino zaravnjen. U fakturi ima dosta primjesa drobljene keramike.

3. Zdjela uvučenog oboda ukrašena žlijebljenjem. Jezgra je tamnosiva do crna, prema obodu i unutrašnjosti faktura je tamnosmeđa (mrka), a prema vanjskom dijelu svijetlocrvena. Posuda je prevučena smeđesivim, uglačanim slojem. U fakturi ima nešto drobljene keramike i organske tvari.

4. Zdjela uvučenog oboda s tunelastom ušicom. Jezgra je svijetlosiva, a površine mrke. Vidljivo je nešto primjesa sitno drobljene keramike.

5. Lonac stožastog vrata s naglašenim ramenom ukrašenim žlijebljenjem. Jezgra je tamnosiva,

Plate 10. Ceramics (Iron Age, horizon III)

1. Bowl with inwardly drawn rim. Core is tawny, interior tawny to brown, external surface somewhat darker, black at places. Visible traces of modelling, not polished. Considerable grog temper in the paste.

2. Bowl with inwardly drawn rim, decorated with fine grooving. Core is light grey, transitions to reddish toward surface, while vessel's surfaces are coated with tawny layer. Polishing visible on inside, edge is finely flattened. Considerable grog temper in the paste.

3. Bowl with inwardly drawn rim decorated by grooving. Core dark grey to black, the paste dark brown (tawny toward rim and interior, and light red toward exterior. Vessel is coated with dark grey, polished layer. Some grog and organic matter temper in the paste.

4. Bowl with inwardly drawn rim and shafted eyelet. Core light grey, surfaces tawny. Some tiny grog temper visible.

5. Pot with conical neck and prominent shoulder decorated by grooving. Core dark grey, colour transition to light red toward surface. Interior coated

a prema površini boja prelazi u svijetlocrvenu. Unutrašnjost je prevučena tankim slojem tamnosmeđe boje, fino uglačanim, dok je sličan sloj s vanjske strane uglavnom erodirao. U fakturi ima nešto fino drobljene keramike, malo pijeska i dosta organske tvari koja je mjestimice pougljenjena.

6. Piramidalni uteg sa zrakastim ukrasom izvedenim otiskivanjem uzice. Jezgra je tamnosmeđe do mrke boje, a vanjska površina crna do smećkasta. Vidljivi su tragovi modeliranja, nema glačanja. U fakturi ima nešto drobljene keramike.

7. Bikonični pršljen. Boja je crvenkastosmeđa do mrka. U fakturi ima mnogo primjesa fino drobljene keramike te organskih tvari koje su mjestimice pougljenjene.

with thin layer of dark brown paint, finely polished, while similar layer on external side generally eroded. Some finely grog, small quantity of sand and considerable organic matter, carbonized at places, in the paste.

6. Pyramidal weight with radial ornament rendered by impressing string. Core is dark brown to tawny, and external surface is black to brownish. Traces of modelling visible, no polishing. Some grog in the paste.

7. Biconical spindle whorl. Reddish brown to tawny. The paste contains considerable temper of finely grog and organic matter that is carbonized at places.

Tabla 11. Keramika (željezno doba, horizont III)

1. Šalica s ručkom iznad ruba. Jezgra je crvenkasta, vanjski slojevi sivkasti do žućkasti (nagoreno). U fakturi ima mnogo drobljene keramike.

2. Šalica s ručkom iznad ruba. Jezgra je crvenkaste boje, prema površini prelazi u tamnosmeđu. Ručka je svijetlocrvene boje. U fakturi ima nešto drobljene keramike.

3. Vrč ili šalica s trakastom ručkom iznad ruba. Jezgra je tamna do crna, a prema površini prelazi u žućkastu. Unutrašnjost je prevučena tankim slojem crne boje s tragovima glačanja, dok je vanjska površina sivkasta do mrka. U fakturi ima nešto drobljene keramike.

4. Posuda (šalica?) s ručkom. Jezgra je svijetle, žućkaste boje, a površine smeđe do mrke. U fakturi ima nešto drobljene keramike.

Plate 11. Ceramics (Iron Age, horizon III)

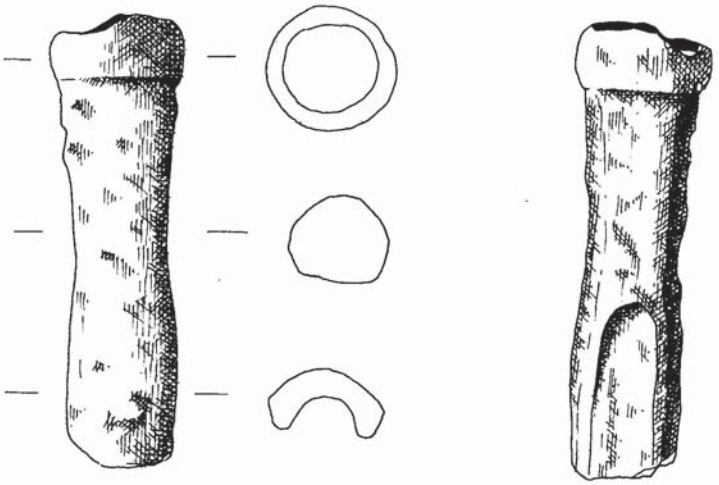
1. Cup with handle above rim. Core reddish, external layers greyish to yellowish (charred). Considerable quantity of grog in the paste.

2. Cup with handle above rim. Core reddish, transitions to dark brown toward surface. Handle light red. Some grog in the paste.

3. Jug or cup with band-shaped handle above rim. Core dark to black, transitions to yellowish toward surface. Interior coated with thin layer of black with traces of polishing, while exterior is greyish to tawny. Some grog in the paste.

4. Vessel (cup?) with handle. Core lighter, yellowish colour, surfaces brown to tawny. Some grog in the paste.

T. 1



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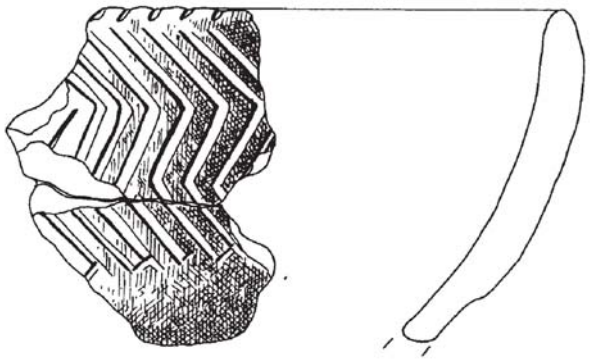

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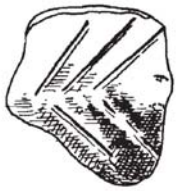

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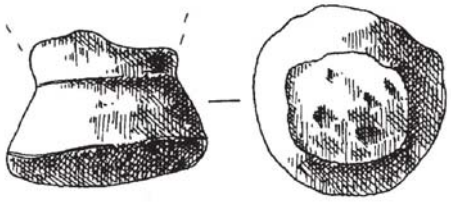
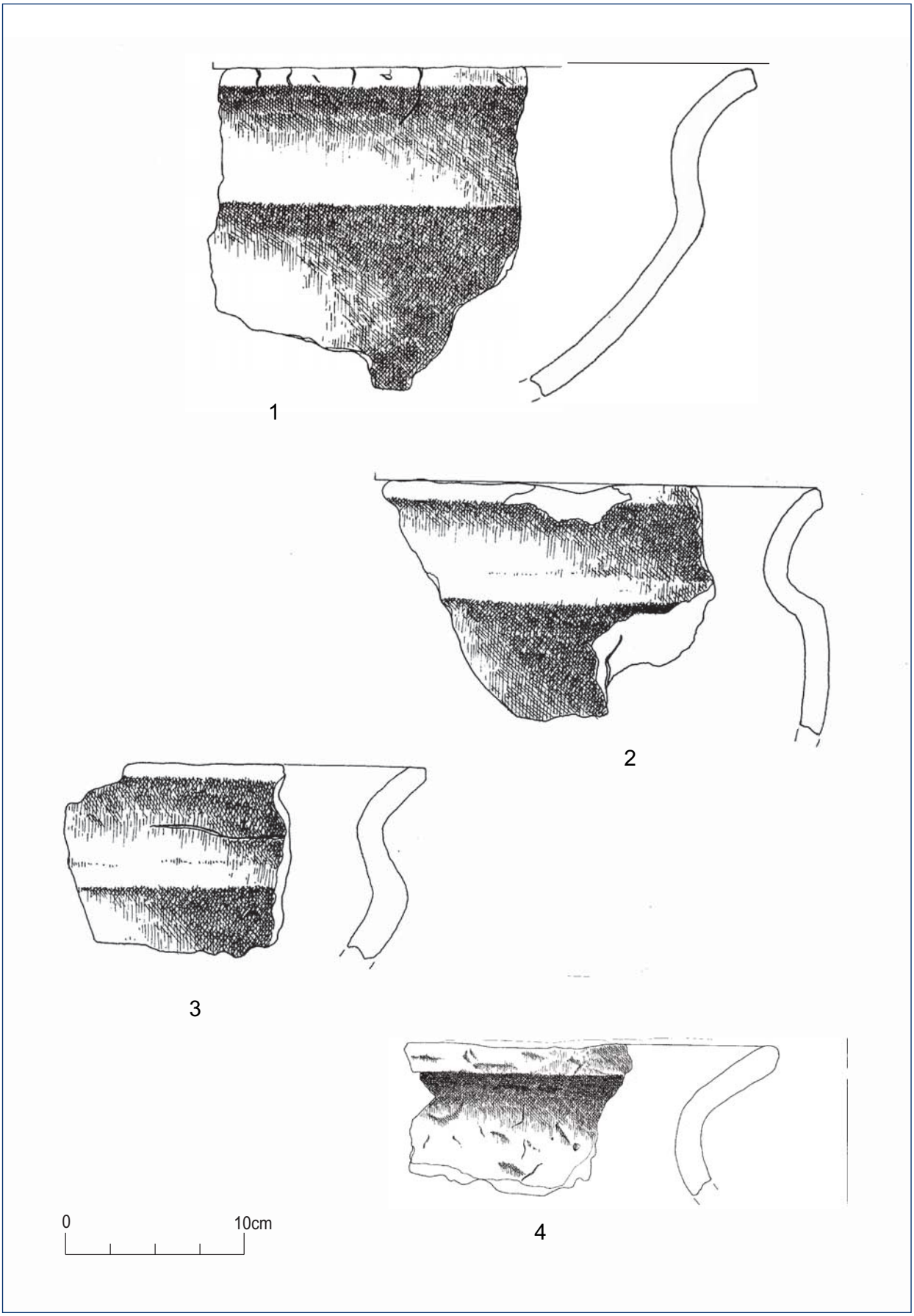


4

0 5cm

T. 2



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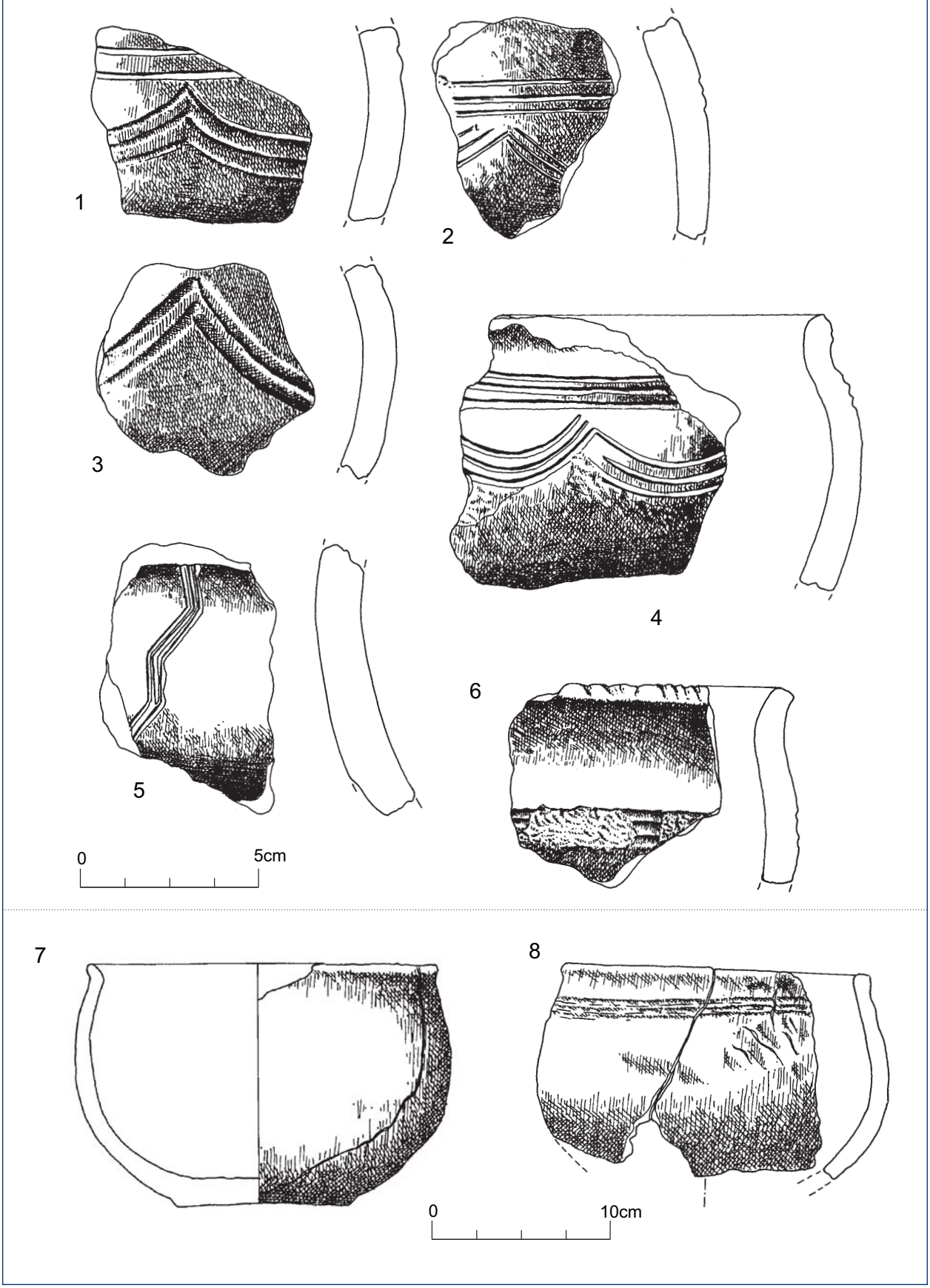

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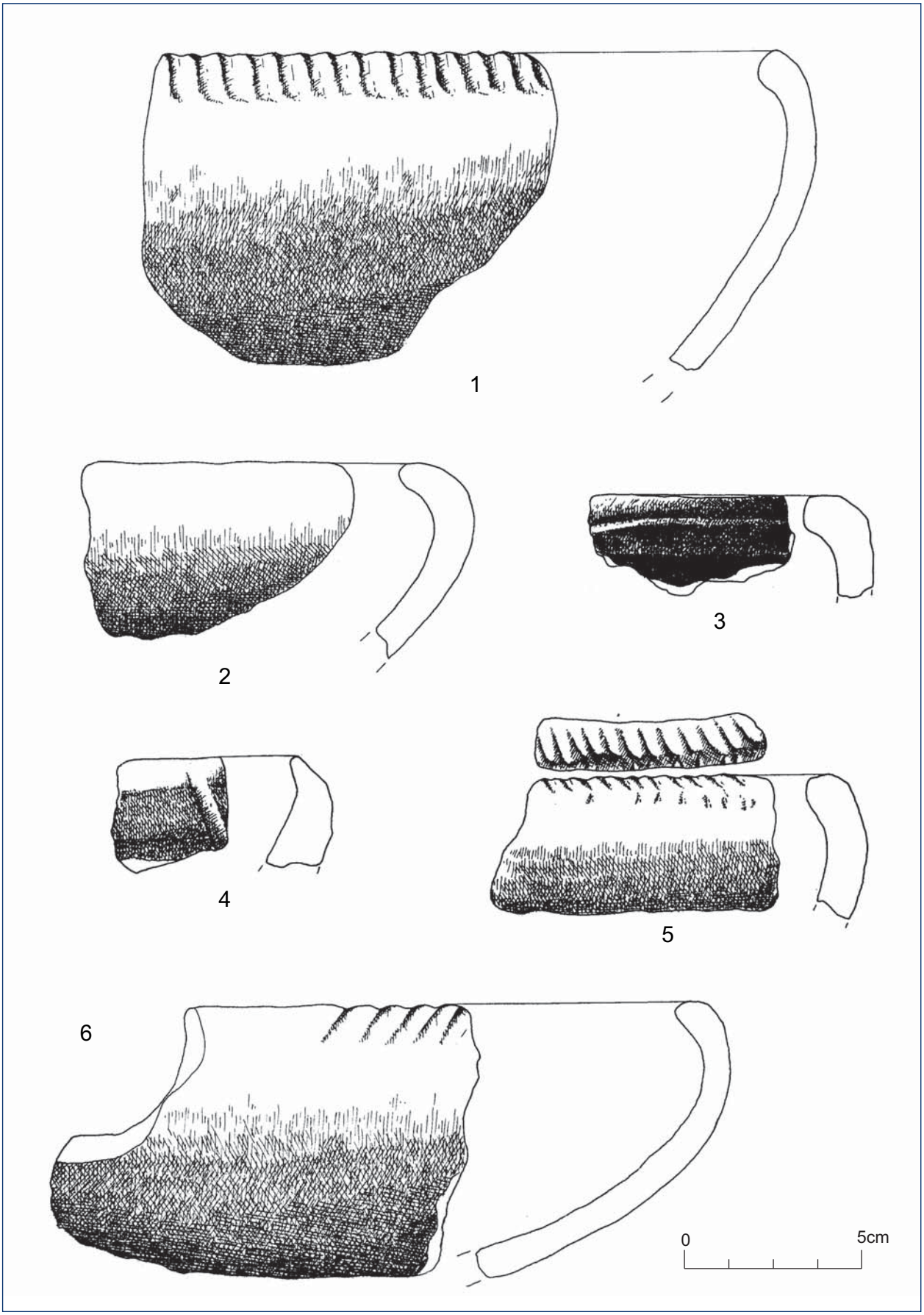

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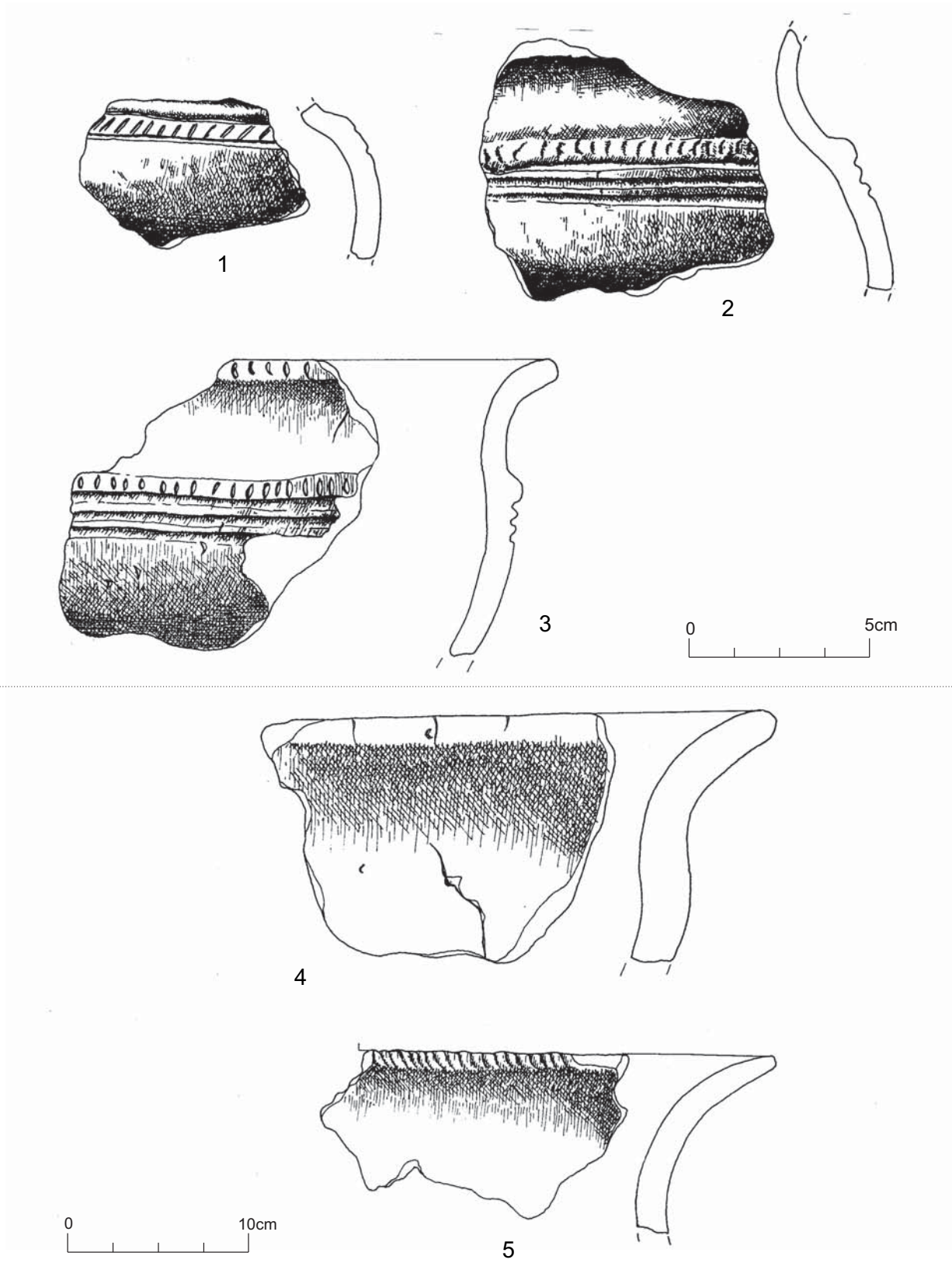

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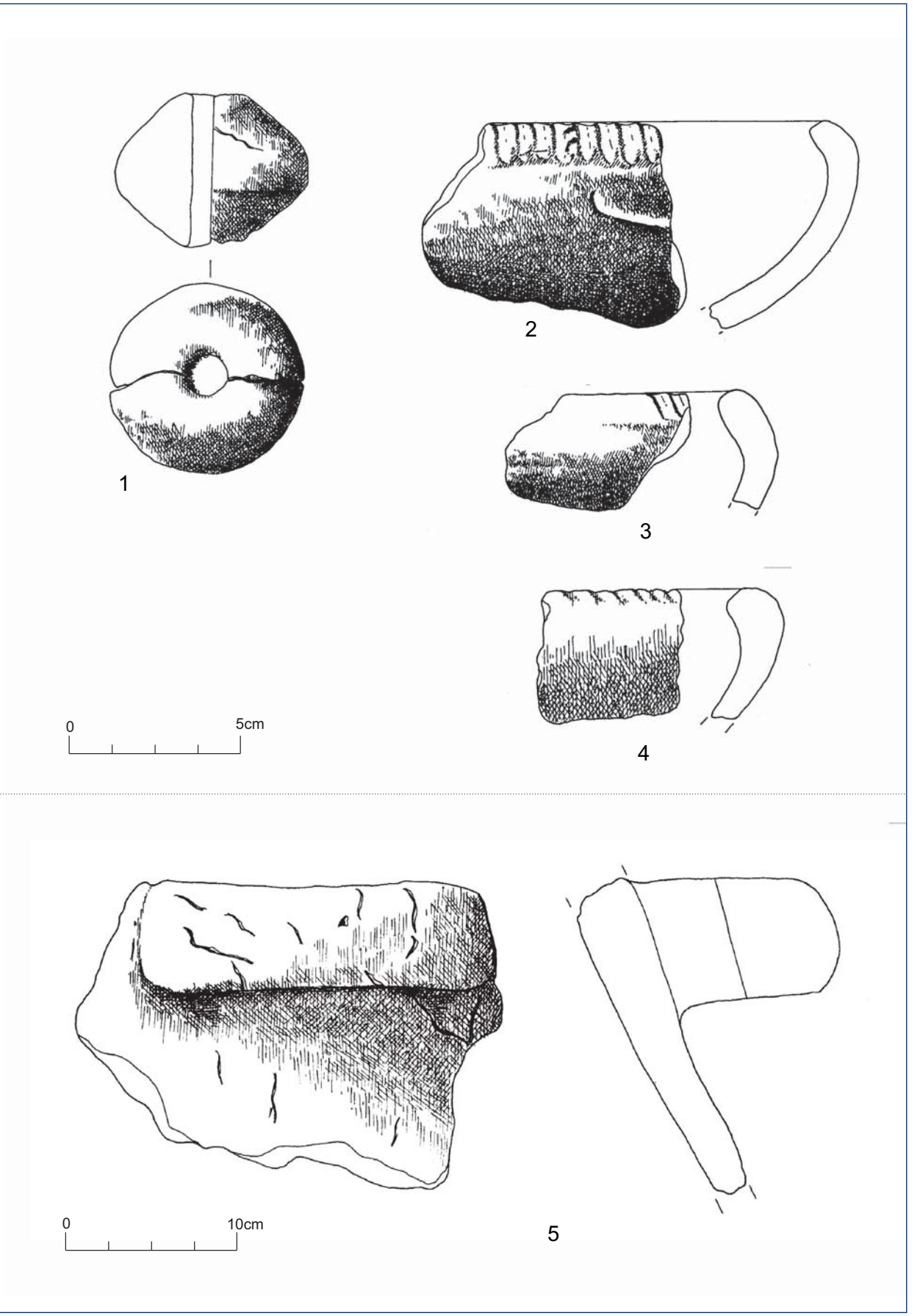

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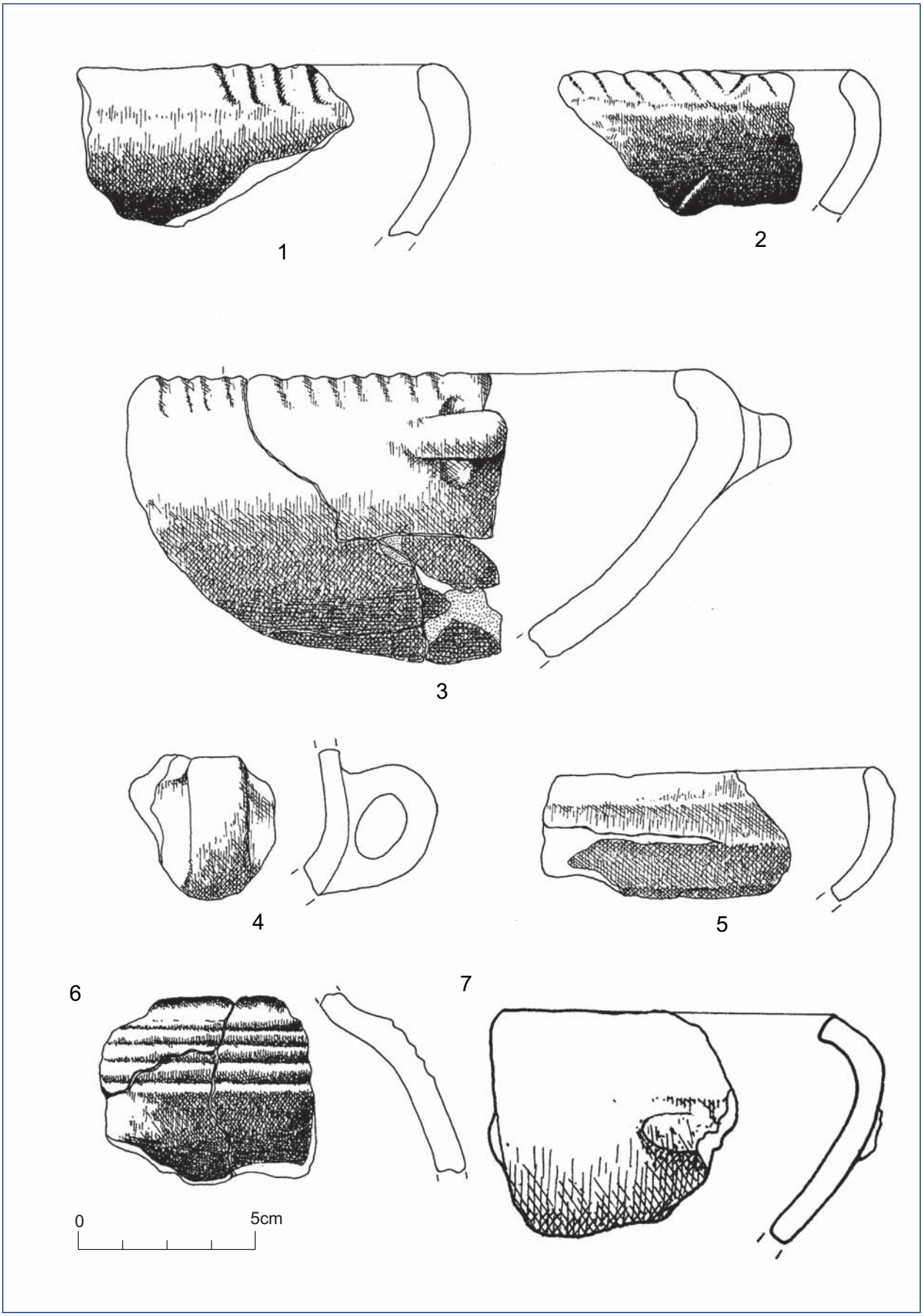

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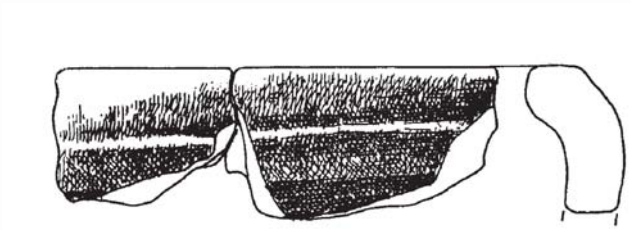

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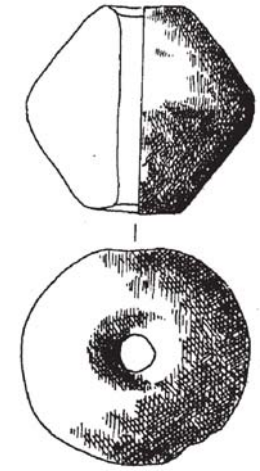

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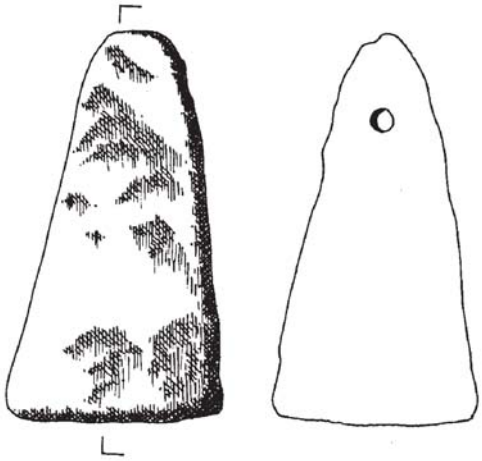

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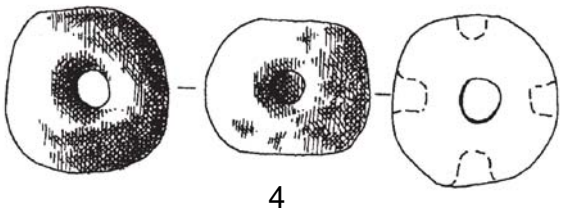

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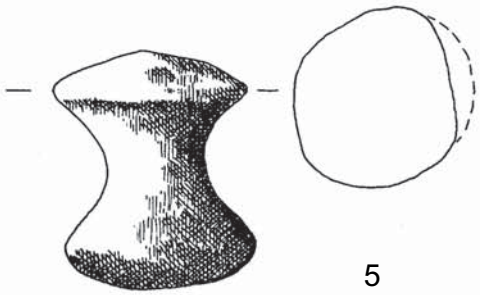

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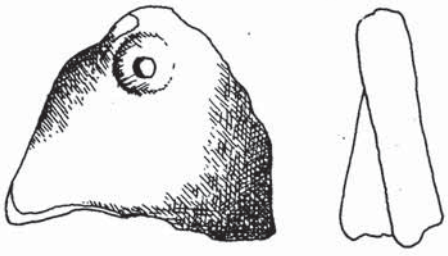

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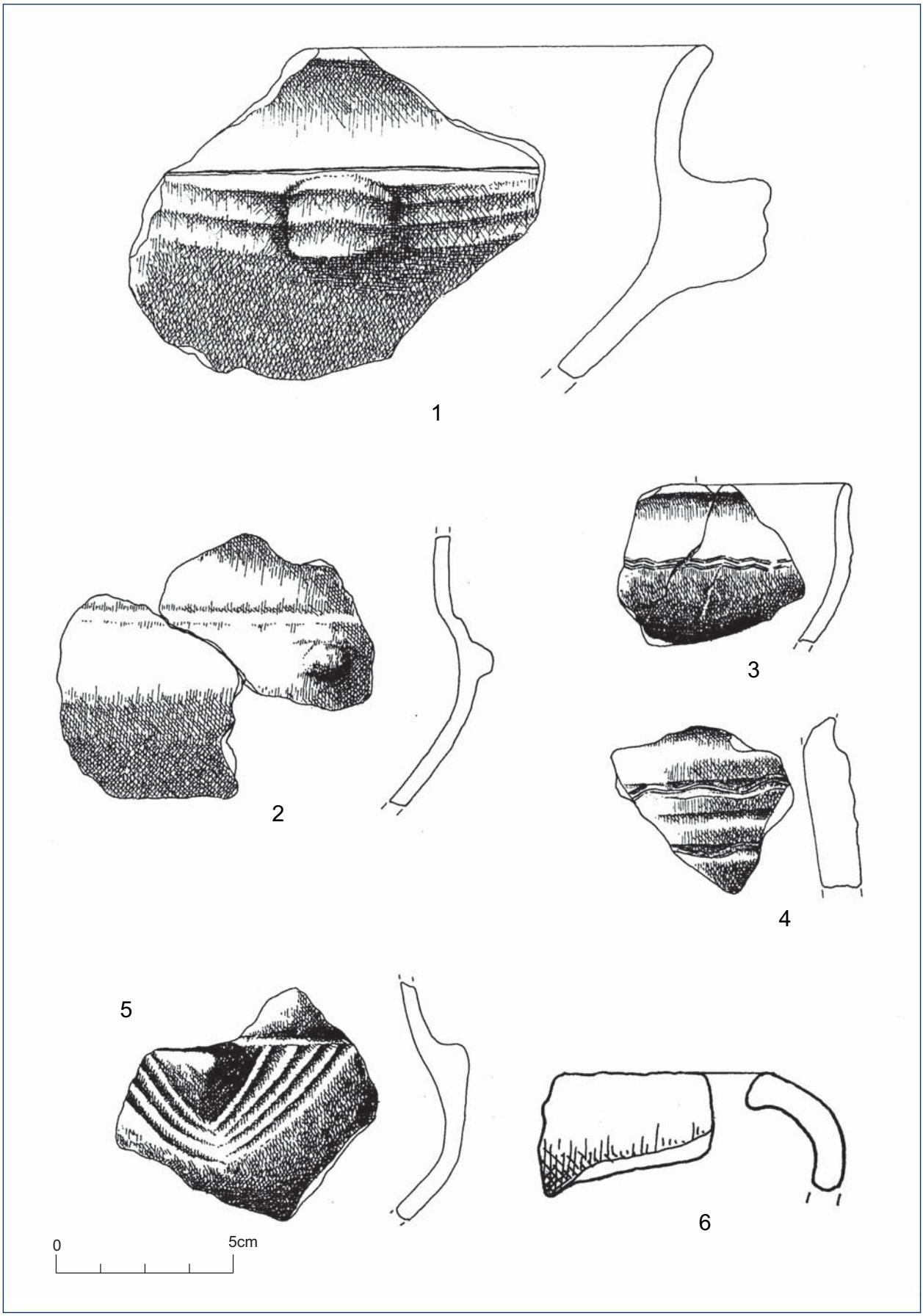

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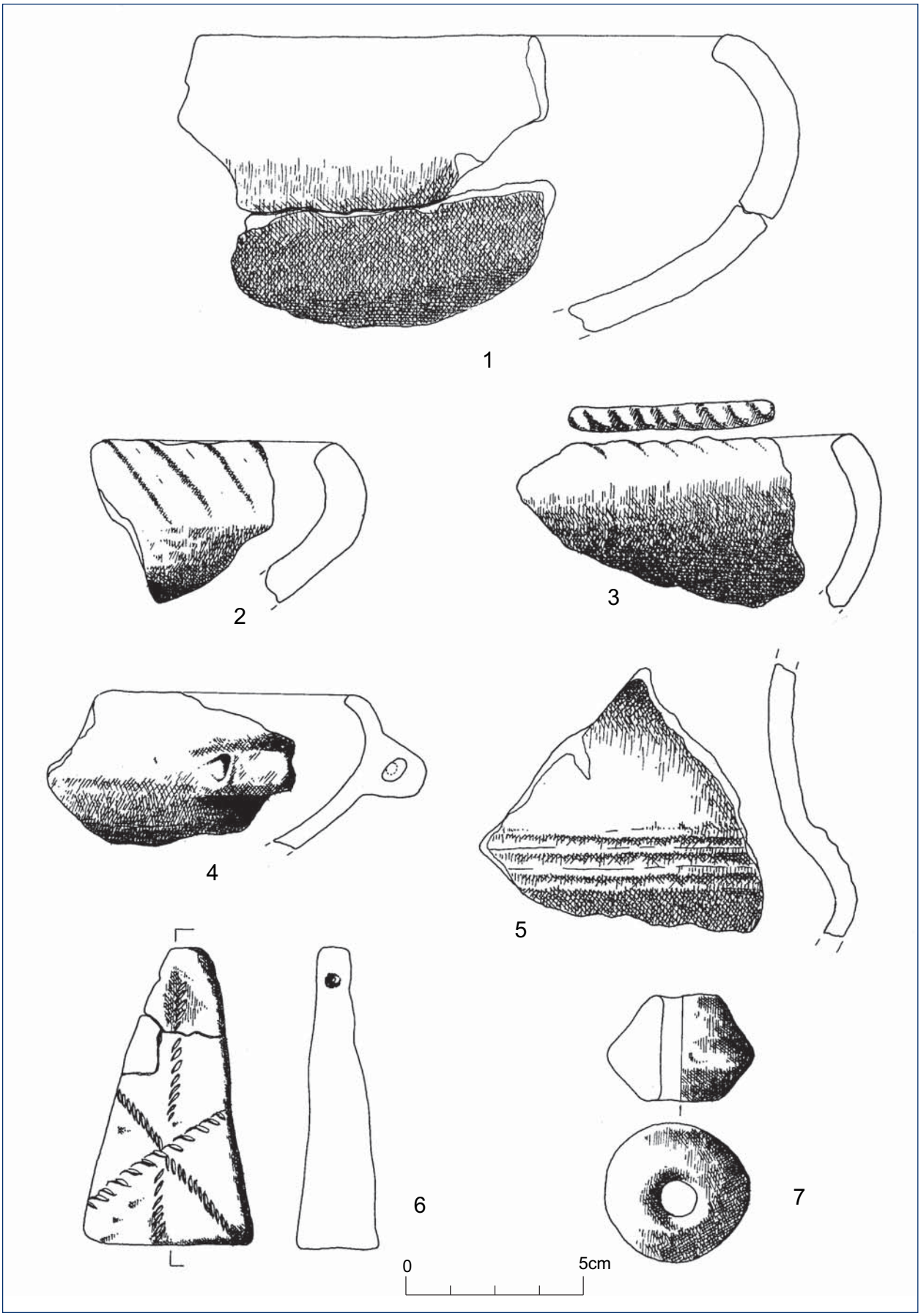
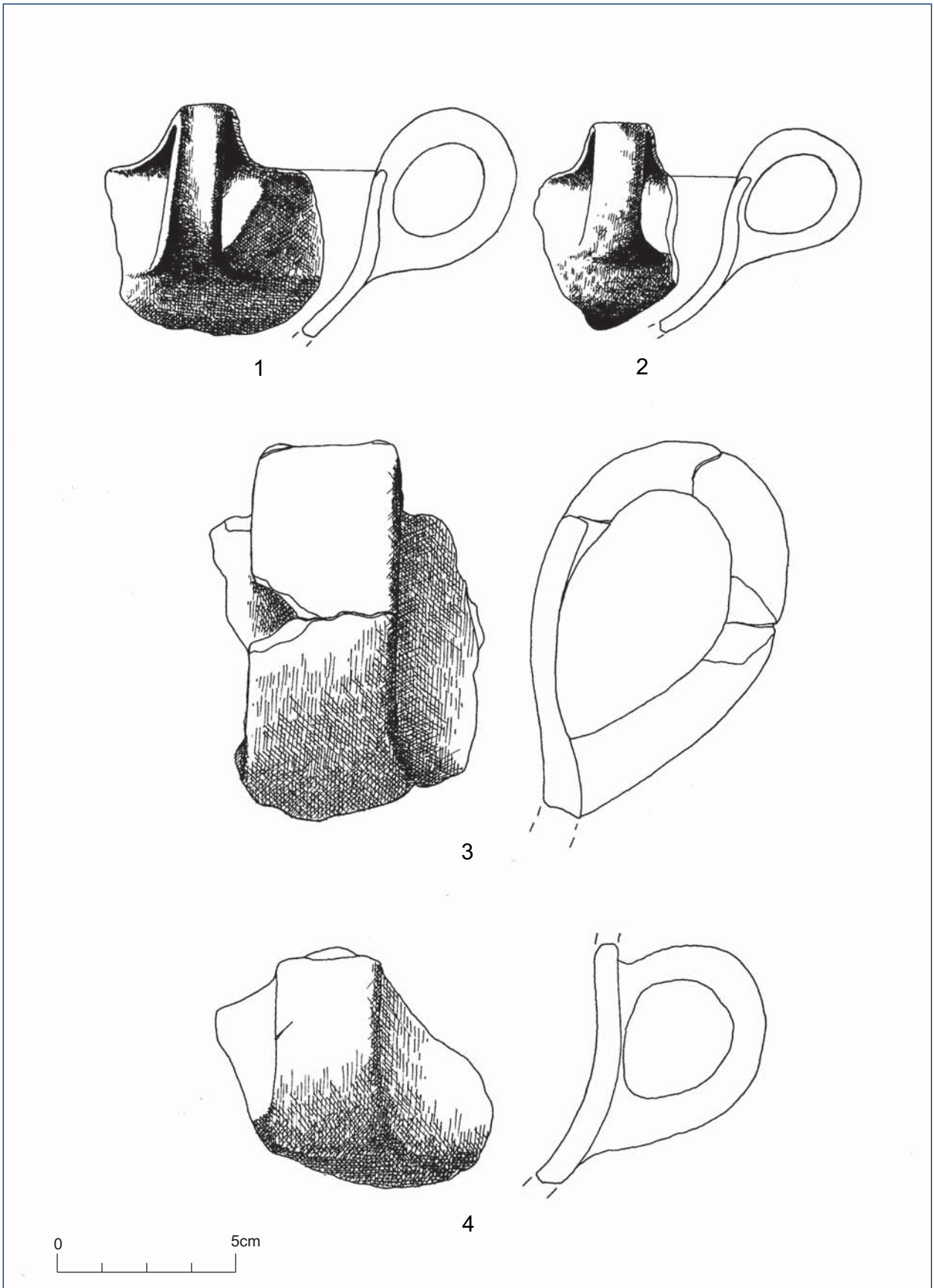


T. 11



KRATICE / ABBREVIATIONS

AV	*Arheološki vestnik*, Ljubljana.
GZM	*Glasnik Zemaljskog muzeja*, Sarajevo.
OA	*Opuscula archaeologica*, Zagreb.
PJZ 3	A. Benac (ed.), *Praistorija jugoslavenskih zemalja III. Eneolit*, Sarajevo, 1979.
PJZ 4	A. Benac (ed.), *Praistorija jugoslavenskih zemalja IV. Bronzano doba*, Sarajevo, 1983.
PJZ 5	A. Benac (ed.), *Praistorija jugoslavenskih zemalja V. Željezno doba*, Sarajevo, 1987.
VAMZ	*Vjesnik Arheološkog muzeja u Zagrebu*, Zagreb.

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