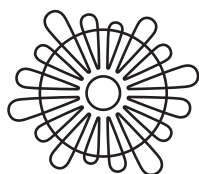


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# BERIŠ KOD LJUBUŠKOG (ZAPADNA HERCEGOVINA) – PRIMJER MIKRONEOLITIČKOG NALAZIŠTA –

## BERIŠ NEAR LJUBUŠKI (WESTERN HERZEGOVINA) – A CASE STUDY OF A MICRO-NEOLITHIC SITE –

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### KLJUČNE RIJEČI:

Beriš, zapadna Hercegovina, srednji neolitik

*U članku se donose rezultati iskopavanja koja su 2016. provedena na neolitičkom nalazištu Beriš kod Ljubuškog (zapadna Hercegovina). Nalazište karakteriziraju skromna prostornost, tanak depozit, niska razina naseobinskih ostataka, ali i tipična litička i keramička građa srednjeg neolitika, koja svojom strukturom predočava sve vrste aktivnosti karakteristične za prostorno znatno veća nalazišta naseobinskog karaktera. Polazeći od tih činjenica, u članku se raspravlja o kulturnoj i relativno kronološkoj dimenziji nalazišta, te njegovoj posebnosti među drugim istodobnim nalazištima i značenju mikronalazišta u cjelini neolitika na području istočnog Jadrana i njegova zaleđa.*

### KEY WORDS:

Beriš, western Herzegovina, Middle Neolithic

*The paper presents results of the excavations conducted in 2016 at the Neolithic site of Beriš near Ljubuški (western Herzegovina). The site is characterized by modest spatiality, thin deposit, scarce settlement remains, as well as typical lithic and ceramic finds of the Middle Neolithic that in their structure illustrate all kinds of activities characteristic of spatially much bigger sites of residential character. Starting from these premises the paper discusses cultural and relative chronological dimension of the site, its specific traits among other synchronous sites and importance of a micro-site within the Neolithic as a whole in the region of the eastern Adriatic and its hinterland.*

Oslonac na mjesta dugogodišnjih, a nerijetko i višegeneracijskih prebivanja neolitičkih zajednica, odnosno velika i dobro uslojena nalazišta s bogatom i raznovrsnom građom, konstanta je istraživačkih strategija u povijesti proučavanja tog perioda prapovijesti na području istočnog Jadrana i njegova zaleđa.

Takvoj strategiji niti je moguće niti je potrebno stavljati bilo kakav prigovor. Štoviše, tijekom ranijeg dijela istraživačke povijesti, takav je pristup bio neizbježan radi potrebe upoznavanja opće razvojne dinamike, definiranja kulturnih pojava i fenomena, određivanja njihovih prostornih i vremenskih odnosa, odnosa s drugim istodobnim manifestacijama na susjednim područjima i drugih pitanja, a u kasnijim fazama radi temeljnog spoznavanja, razumijevanja i interpretiranja obrazaca u naseljavanju i korištenju prostora, dinamika u privrednim strategijama i materijalnoj produkciji, varijabilnosti u oblikovanju kulturnih krajolika i drugih aspekata neolitičkog svijeta istočnojadranskog prostora i njegova zaleđa. Na temelju takve istraživačke prakse i postignutih rezultata razvijeni su interpretativni obrasci i usvojene paradigme o životu, aktivnostima, socijalnoj strukturi i unutarnjim odnosima neolitičkih zajednica. Razumije se, tu na umu imam ozbiljne znanstvene priloge potvrđenih poznavatelja neolitika Jadrana, a nikako trećerazredne istupe s deficitima u poznavanju problematike i devijantnim normativnim vrijednostima.<sup>1</sup>

Međutim, jedan dio neolitičkih nalazišta ostao je u potpunoj sjeni te strategije. To su prostorno skromna, gotovo nevidljiva nalazišta koja, čak i kada su registrirana, nisu pobuđivala nikakav ozbiljan istraživački interes, ne samo zbog njihovih nisko procijenjenih potencijala nego i zbog toga što se već svojom pojavnošću nisu uklapala u model stabilnih neolitičkih aglomeracija. Time je i njihovo značenje za cjelinu neolitičkog svijeta praktički svedeno na razinu marginalnih, gotovo slučajnih pojava ili

Relying on places of lengthy and often multigenerational occupation of the Neolithic communities, that is big and well-layered sites with rich and diverse finds has been a constant in research strategies in the history of studies of this prehistoric period in the region of the eastern Adriatic and its hinterland.

Such strategy should not and cannot be contested. Furthermore in the early part of the research history such approach was inevitable because it was necessary to comprehend general developmental dynamics, to define cultural phenomena and occurrences, to determine their spatial and chronological relations, and relations with other synchronous manifestations in neighbouring regions and other questions. In later phases this approach was used for basic comprehension, understanding and interpretation of patterns of settling and use of space, dynamics in economic strategies and material production, variability in shaping cultural landscapes and other aspects of the Neolithic world of the eastern Adriatic region and its hinterland. On the basis of such research practice and achieved results, interpretative models were developed and paradigms were accepted about life, activities, social structure and inner relations of the Neolithic communities. It goes without saying that I refer to serious scholarly contributions of established experts on the Adriatic Neolithic, and not second-rate attempts deficient in basic understanding and with deviant normative values.<sup>1</sup>

However some Neolithic sites have been neglected due to such strategy. These sites are modest in terms of space, almost invisible, and even when they were recorded they did not arouse any significant research interest, not only because of unfavourable estimate of their potentials but also because they did not correspond to the model of stable Neolithic agglomerations. In that way their importance for the entirety of the Neolithic world was practically reduced to the level of marginal, al-

<sup>1</sup> M. BLEČIĆ KAVUR, D. KOMŠO, 2015, 86.

<sup>1</sup> M. BLEČIĆ KAVUR, D. KOMŠO, 2015, 86.



KARTA 1. *Bosna i Hercegovina, zemljopisna mapa* (Google Maps).

MAP 1 *Geographical map of Bosnia and Herzegovina* (Google Maps).

anomalija. Jedno od takvih je i Beriš, nalazište u neposrednoj blizini Ljubuškog (Karta 1).

Ljubuški i njegovo šire okruženje u arheološkoj je literaturi dobro poznato po dosta velikom broju prapovijesnih, antičkih i srednjovjekovnih nalazišta,<sup>2</sup> ali do otkrića Beriša među njima nije bilo poznato ni jedno koje bi pripadalo neolitiku. Nalazište su otkrili Tino Tomas i Mirko Rašić, asistenti na Odjelu za arheologiju Filozofskog fakulteta u Mostaru, a potpisani autor istraživao 2016. u okviru terenske nastave studenata arheologije na istom Odjelu.<sup>3</sup>

most random phenomena or anomalies. One of such sites is Beriš, located in immediate vicinity of Ljubuški (Map 1).

Ljubuški and its wider surroundings are well known in the archaeological literature for a large number of prehistoric, ancient and medieval sites,<sup>2</sup> but Beriš is the first Neolithic site in this region. The site was discovered by Tino Tomas and Mirko Rašić, assistants at the Department of Archaeology of the Faculty of Philosophy in Mostar, and the author led the excavations in 2016 within field practice of the archaeology students from the same Department.<sup>3</sup>

<sup>2</sup> Za iscrpan pregled arheoloških nalazišta na širem području Ljubuškog usporediti: Arheološki leksikon BiH, Tom 3, 320–338, Sarajevo, 1988.

<sup>3</sup> U istraživanju su sudjelovali: dr. sc. Dario Vujević, doc. na Odjelu za arheologiju Sveučilišta u Zadru, Tino Tomas, Mirko Rašić i Nina Čuljak, asistenti na Odjelu za arheologiju Filozofskog fakulteta u Mostaru, te 20 studenata arheologije na istom Odjelu. Svim sudionicima zahvaljujem na vrijednom radu i znatnom doprinosu uspješno provedenom istraživanju.

<sup>2</sup> For a comprehensive overview of the archaeological sites in the wider Ljubuški region cf: Arheološki leksikon BiH, Tom 3, 320–338, Sarajevo, 1988.

<sup>3</sup> The excavations were participated by Dario Vujević, PhD, assistant professor at the Department of Archaeology of the University of Zadar; Tino Tomas, Mirko Rašić and Nina Čuljak, assistants at the Department of Archaeology of the Faculty of Philosophy in Mostar, and 20 students of archaeology from the same Department. I would like to thank them all for their hard work and significant contribution to successfully conducted excavations.

## REZULTATI ISTRAŽIVANJA

Neolitičko nalazište Beriš smješteno je u istočnom dijelu Ljubuškog polja, udaljeno oko 2,5 km od gradske periferije, a pozicionirano gotovo uza samu desnu obalu Vrioštica, jednog od triju vodotoka koji protječu kroz polje, među kojima je najveći i najvažniji Trebižat (Sl. 1-2).

S iznimkom položaja neposredno uz vodotok, što je općenito bila dosta česta praksa pri pozicioniranju neolitičkih aglomeracija u ambijentima koji su pružali takve mogućnosti, u svim ostalim odrednicama Beriš pokazuje velika odstupanja od brojnih drugih nalazišta ovog perioda.

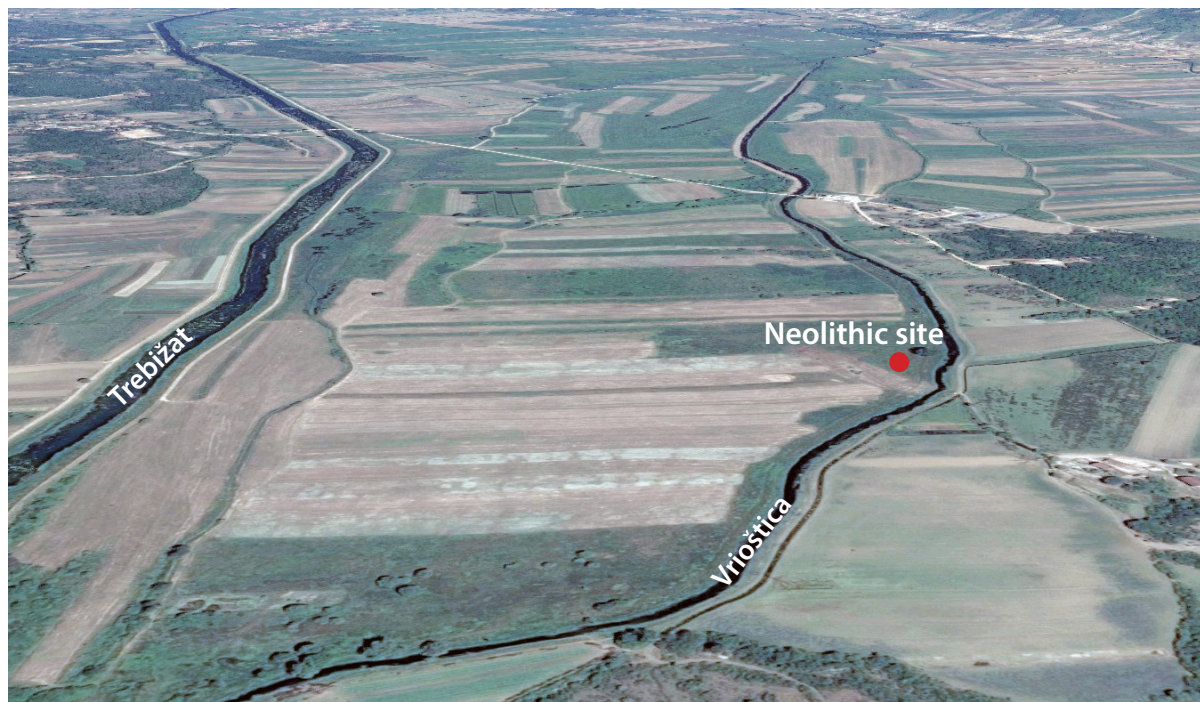
To se prije svega odnosi na iznimno skromnu površinu koju nalazište zauzima, a koju je na temelju aktualnog stanja moguće procijeniti tek na 500 – 600 m<sup>2</sup>. Ostavljajući mogućnost da su poljodjelske ili kakve druge aktivnosti u recentnijoj prošlosti mogle djelomice utjecati na smanjivanje izvorne površine, te dopuštajući mogućnost da je ona mogla biti čak i dvostruko veća od aktualne, za konstataciju o njegovoj iznimno skromnoj veličini to

## RESEARCH RESULTS

The Neolithic site of Beriš is located in the eastern part of Ljubuško polje (*field of Ljubuški*), some 2.5 km from the town periphery, positioned next to right bank of Vrioštica, one of the three watercourses running through the field, Trebižat being the biggest and the most important (Fig. 1-2).

With the exception of the position next to a watercourse which was generally quite frequent practice in positioning Neolithic agglomerations in ambiances that offered such possibilities, in all other characteristics Beriš exhibits significant deviations in relation to numerous other sites of this period.

This refers primarily to exceptionally modest surface of the site, that can be estimated at 500-600 m<sup>2</sup> on the basis of current condition. Even if we consider a possibility that agricultural or some other activities in the recent past might have partially affected reduction of the original surface, and even if it was twice as big as the current one, this does not affect the statement about its exceptionally modest size. Namely the majority of archaeological



SLIKA 1. *Beriš kod Ljubuškog – topografski položaj neolitičkog nalazišta (Google Earth).*

FIGURE 1 *Beriš near Ljubuški – topographic position of the Neolithic site (Google Earth).*



SLIKA 2. Beriš kod Ljubuškog – zračna snimka neolitičkog nalazišta i istraženih površina (foto: M. Rašić).  
 FIGURE 2 Beriš near Ljubuški – aerial view of the Neolithic site and excavated areas (photo: M. Rašić).

nema nikakvog većeg značenja. Naime, najveći dio arheološke građe, čija disperzija najbolje predočava veličinu nalazišne površine, pronađena je na prostoru koji je s istočne strane limitiran tokom Vrioštice, a s južne i zapadne zatvoren izoliranom vapnenačkom formacijom koja tvori najviši i najizrazitiji dio nalazišnog mikoreljefa, i na svojem se najvišem dijelu za oko 2 m izdiže iznad okolnog prostora (Sl. 2). Prvotno je ta visinska razlika morala biti još naglašenija s obzirom na činjenicu da je na istočnoj strani zdravica ustanovljena na dubini od oko 0,50 m, a na zapadnoj na dubini od oko 1,50 m.

Sudeći prema nalazima i drugim arheološ-

finds whose dispersion is the best illustration of the size of the site surface, was recovered in the area bordered by the course of Vrioštica, and on southern and western sides closed by an isolated limestone formation that constitutes the highest and the most prominent part of this site's microrelief, that rises about 2 m above the surrounding area in its highest part (Fig. 2). Originally this altitude difference had to be even more pronounced since bedrock was hit at the depth of 0.50 m on the eastern side, and at the depth of 1.50 m on the western side.

Judging from the finds and other archaeological indicators, concentrated in the mentioned

kim indikatorima, koncentriranim na navedenom prostoru nepravilna trokutastog oblika i prosječne širine oko 25 m između vapnenačke formacije i korita Vrioštice, čini se da je on bio i osnovni dio nalazišne površine. S obzirom na međusobne odnose vapnenačke formacije i riječnog korita, eventualno znatnije povećanje nalazišne površine bilo bi moguće očekivati samo na sjevernu stranu uz tok Vrioštice. Međutim, ni višestrukim potpovršinskim pregledom šireg prostora u tom pravcu nisu ustanovljene nikakve indikacije koje bi tu mogućnost potvrđivale, pa je posve vjerovatno da nalazišna površina ni u toj njegovoj dimenziji nije bitno veća od one prethodno navedene.

Istraživanjem je obuhvaćena ukupna površina od 90 m<sup>2</sup> u dva odvojena bloka otvorena istočno i zapadno od vapnenačke formacije: 50 m<sup>2</sup> u bloku A i 40 m<sup>2</sup> u bloku B. Takav raspored istraživačkih površina sugerirala je opća situacija na nalazištu i građa prikupljena tijekom prethodno provedenog potpovršinskog pregleda.

Međutim, rezultati dobiveni u dvama otvo-

area of roughly triangular shape and average width of about 25 m between the limestone formation and bed of Vrioštica, it seems that it represented the basic part of the site surface. Considering mutual relations of the limestone formation and river bed, possible more significant increase of the site surface could be expected only on the northern side along the Vrioštica course. However not even repeated subsurface inspections of wider area in this direction offered any indication that might confirm this possibility so it is more than likely that the site surface in this dimension is not much bigger than the previously mentioned size.

Total area of 90 m<sup>2</sup> was excavated in two separate blocks opened east and west of the limestone formation: 50 m<sup>2</sup> in block A and 40 m<sup>2</sup> in block B. Such distribution of excavation areas was suggested by the general situation at the site and finds collected in previously conducted subsurface inspection.

However the results obtained in two open blocks are far from similar. What is more they



SLIKA 3. Blok B; dio podnice nastambe, detalj (foto: M. Rašić).

FIGURE 3 Block B; part of the dwelling floor, detail (photo: M. Rašić).

renim blokovima nisu ni približno slični. Štoviše, posve su suprotstavljeni, ali to razilaženje uopće ne otežava, nego, naprotiv, olakšava analizu i izvođenje zaključaka o nekim aspektima nalazišne cjeline.

Blok A u arheološkom je smislu vrlo siromašna istraživačka cjelina. Premda je dosegnuta dubina od prosječnih 1,50 m, ni u jednom dijelu sloja nije bilo moguće uočiti bilo kakvu konzistentnu formaciju koja bi odgovarala kulturnom depozitu. Štoviše, opće odlike sloja upućuju na formaciju koja je nastajala postupno i to primarno kao posljedica prirodnih procesa. Naravno, pritom nije moguće posve isključiti manji udio antropogenih djelovanja, ali samo u obliku rijetkih ili povremenih praksi koje su u cjelini aktivnosti na tom mjestu imale sporedno značenje. Kao vjerojatna potvrda te mogućnosti djeluju i rijetki primjeri arheološke građe, prije svega arheozooloških i keramičkih nalaza neujednačeno raspoređenih i u okomitoj i u vodoravnoj dimenziji istraživane površine. S obzirom na takav karakter sloja, posve je razumljivo što na toj po-

are quite opposite but this divergence does not aggravate the analysis, quite the contrary it facilitates it as well as making conclusions about some aspects of the site as a whole.

Block A represents a very poor research whole in archaeological terms. Although the depth of 1.50 m was reached a consistent formation that might correspond to a cultural deposit could not be recognized in any part of the layer. General characteristics of the layer indicate a formation that was formed gradually and primarily as a consequence of natural processes. It is impossible to completely exclude certain anthropogenic activities, but only as rare and occasional practices that were of secondary importance within all activities at this place. Rare archaeological finds seem as a probable confirmation of this possibility, primarily archaeozoological and ceramic finds unevenly distributed in vertical and horizontal dimension of the excavated area. Having in mind such character of the layer it is understandable that no object or construction was recorded in this part of the site.



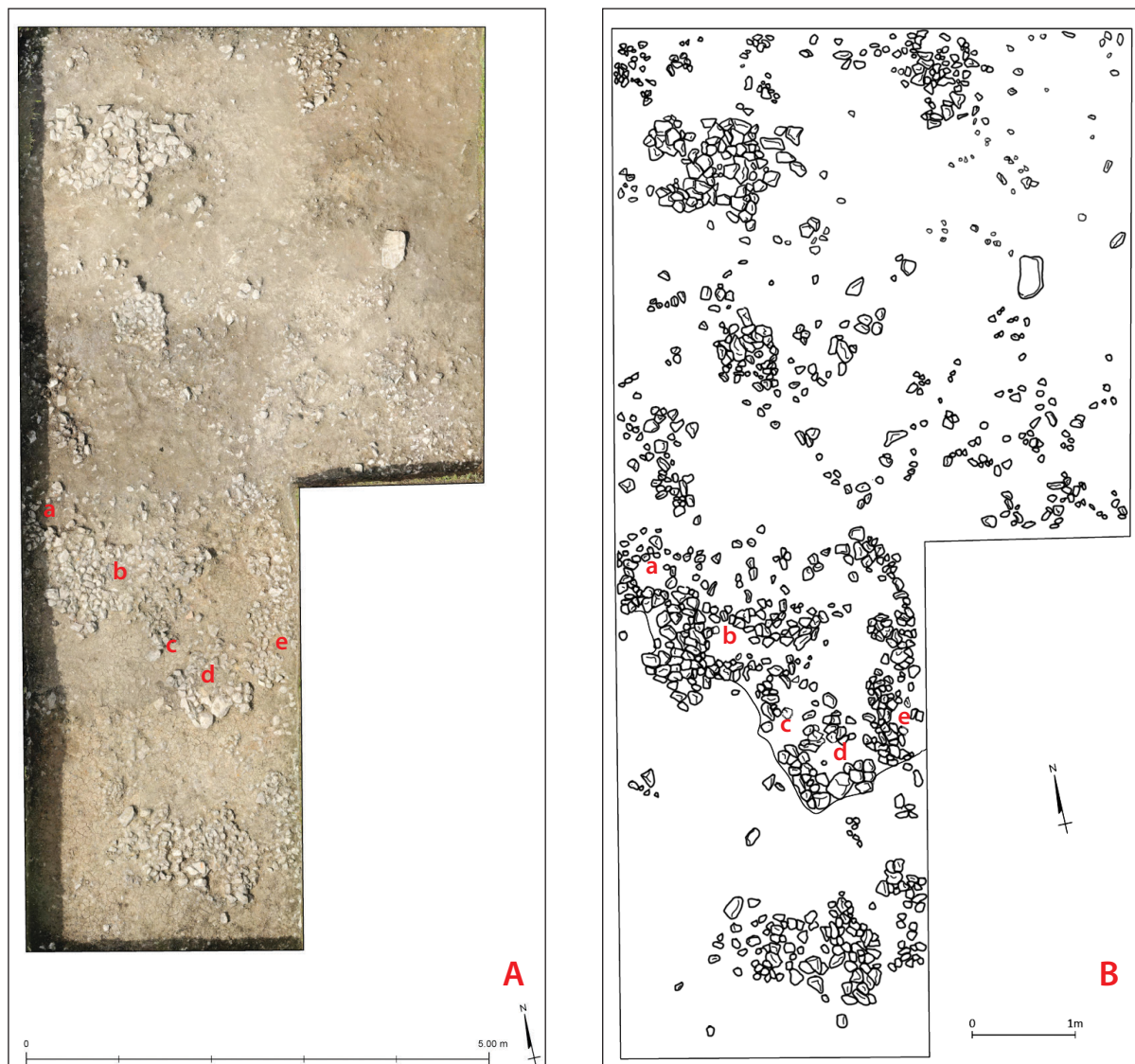
SLIKA 4. Blok B; dio podnice nastambe, detalj (foto: M. Rašić).

FIGURE 4 Block B; part of the dwelling floor, detail (photo: M. Rašić).

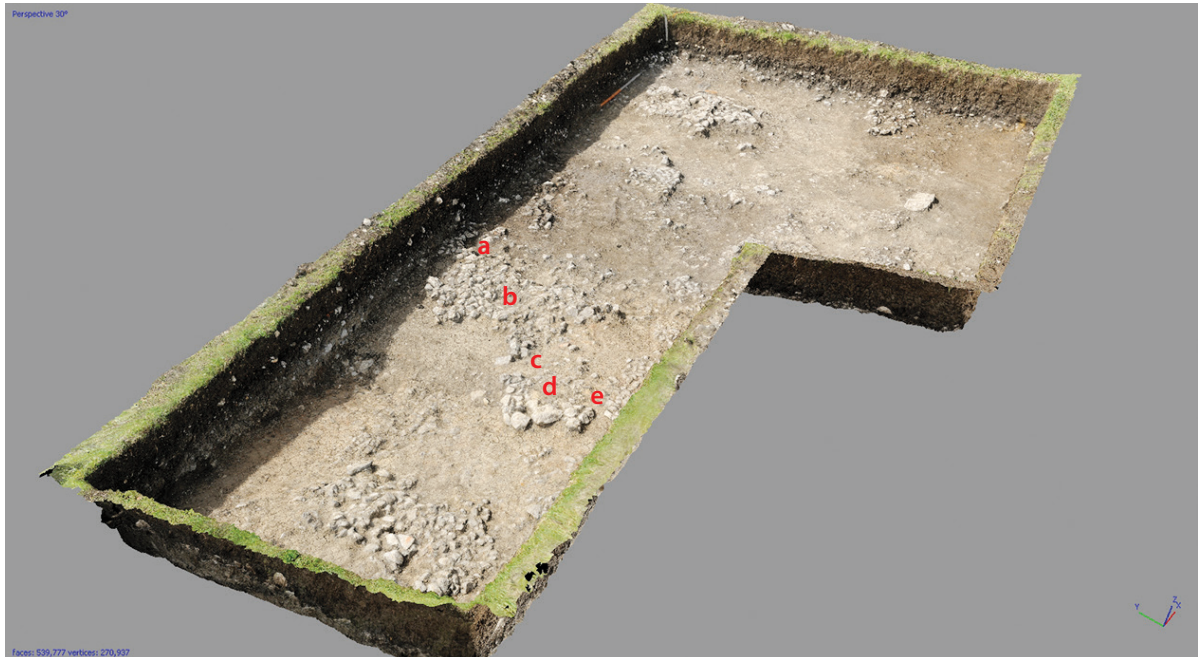
vršini nije ustanovljeno postojanje bilo kakvog objekta ili konstrukcije.

Za razliku od prethodnoga, ukupno dosegnuta dubina u bloku B iznosila je prosječnih 0,40 – 0,45 m od čega je gornjih 0,20 – 0,25 m pripadalo humusnom i subhumusnom sloju. Međutim, u tom je bloku sigurno ustanovljeno postojanje depozita koji konzistencijom i sadržajem odgovara depozitima kakvi su kao posljedica svakodnevnih aktivnosti i praksi formirani na stabilnim neolitičkim aglomeracijama. Iz prethodno navedenoga posve jasno je vidljivo da je taj depozit na Berišu tanak jer mu pripada donjih 0,20/0,25 – 0,40/0,45 m, ali je bitno to što je sadržavao izrađevine od lo-

As opposed to the previous block, depth reached in block B was 0.40-0.45 m on average of which upper 0.20-0.25 m belonged to humus and sub-humus layer. However in this block presence of deposit was definitely attested that corresponds in its consistency and contents to deposits formed as a consequence of everyday activities and practices in stable Neolithic agglomerations. It is clear from the aforementioned that this deposit in Beriš is thin as lower 0.20/0.25-0.40/0,45 m belong to it, but it is important that it contained artifacts of chipped and polished stone, pottery and some finds that do not belong to the repertory of utilitarian objects. This will be explained in



SLIKA 5A-B. Blok B; dio podnice nastambe s označenim jamama za stupove (foto: M. Rašić; crtež: D. Vujević).  
 FIGURE 5A-B Block B; part of the dwelling floor with marked post hole (photo: M. Rašić; drawing: D. Vujević).



SLIKA 6. Blok B; dio podnice nastambe, digitalni model (foto i obrada: M. Rašić).

FIGURE 6 Block B; part of the dwelling floor, digital model (photo and processing: M. Rašić).



SLIKA 7. Blok B; dio podnice nastambe s tragovima gorenja (foto: M. Rašić).

FIGURE 7 Block B; part of the dwelling floor with traces of burning (photo: M. Rašić).

mljenog i glačanog kamena, keramičku građu, pa i nalaze koji ne pripadaju repertoaru utilitarnih predmeta. To će biti vidljivo u daljnjem izlaganju.

Osim toga, u tom su bloku ustanovljeni i

further discussion Remains of building activities were also recorded in this block in form of compact surfaces with small rocks rammed into clayey base (Fig. 3-4). Since stone edges are not worn and rounded but irregular and

ostatci graditeljskih aktivnosti u obliku kompaktnih površina sa sitnim kamenjem nabijenim u glinastu podlogu (Sl. 3-4). Budući da rubovi kamenja nisu istrošeni i zaobljeni, nego su nepravilni i oštri, isključena je mogućnost njihove slučajne ili nekim prirodnim procesima uvjetovane koncentracije, pa je posve vjerojatno kako je riječ o planski provedenim aktivnostima radi formiranja hodne površine unutar nekog jednostavnog nadzemnog objekta. Na tu vjerojatnost upućuje i više ovalnih praznina u kompaktnim površinama sa sitnim kamenjem koje bi mogle odgovarati ležištima stupova (Sl. 5-6). Čini se da raspored i međusobni odnosi tih praznina ocrtavaju kut jednog pravokutnog objekta, u čijoj su unutrašnjosti ustanovljene i manje površine s vidljivim tragovima gorenja.

## 1. IZRAĐEVINE OD LOMLJENOG I GLAČANOG KAMENA

### a) *Izrađevine od lomljenog kamena*

Nalazi od lomljenog kamena zastupljeni su skromnim brojem. Skupinu te vrste nalaza tvori tek tridesetak primjeraka, uključujući i one prikupljene izvan istraživanih površina, koji pripadaju različitim proizvodnim kategorijama. S obzirom na to, raspoloživi nalazi relevantni su samo za konstataciju o postojanju aktivnosti povezanih s proizvodnjom oruđa i alata, ali zbog potpunog nedostatka niza tehnoloških kategorija iz lanca operacija (*chaîne opératoire*) i većeg broja oruđa, taj uzorak nije solidna osnova za ozbiljniju analizu tehnoloških i funkcionalnih kategorija u litičkoj industriji Beriša. Ipak, ovdje treba navesti da je u ukupnom skupu tih nalaza moguće izdvojiti sljedeće kategorije: sirovine, krhotine i lomljeninu (svi odbojci bez obradbe, odbojčići od obradbe i sječiva).

Sirovinsku osnovu svih litičkih nalaza činile su lokalne rožnjačke valutice koje su mogle biti prikupljene u koritima i Vrioštice i Trebižata, a jedan ulomak takve jezgre zastupljen je

sharp, possibility of their accidental concentration or their association with some natural processes can be ruled out so it is more than likely that they suggest planned activities undertaken to form a walking surface within a simple above-ground structure. This possibility is indicated by several voids in compact surfaces with small rocks that might be postholes (Fig. 5-6). It seems that distribution and mutual relations of these voids delineate a corner of a rectangular object in whose interior are smaller surfaces with visible traces of burning.

## 1. CHIPPED AND POLISHED STONE ARTIFACTS

### a) *Chipped stone artifacts*

Chipped stone artifacts are scarcely represented. Only about thirty examples constitute this group, including the ones collected outside of the excavated areas that belong to different production categories. In that regard available finds are relevant only for a statement about presence of activities related to production of tools and implements, but due to complete lack of a series of technological categories from *chaîne opératoire* and bigger number of tools, this sample does not represent a solid basis for a more serious analysis of technological and functional categories in the lithic industry of Beriš. However here we need to mention that in the total assemblage of these finds following categories can be differentiated: raw material, chunks and debitage (flakes, retouch flakes and blades).

Raw material basis of all lithic finds consisted of local chert pebbles that may have been collected in the beds of Vrioštica and Trebižat, and one such core fragment is represented in the available lithic material (T. I, 3).

Represented by diverse but completely amorphous pieces of broken chert, chunks constitute a dominant technological category in the lithic material from Beriš. They come in different sizes, and since they are not re-

i u raspoloživoj litičkoj građi (T. I, 3).

Zastupljene raznolikim ali posve bezobličnim komadima razlomljenog rožnjaka, krhotine čine dominantnu tehnološku kategoriju u litičkoj građi Rivina. Različitih su veličina, a s obzirom na to da na njima nema nikakve obradbe ni izvođenja kakvih alata, njihova je vrijednost ograničena samo na ilustraciju proizvodnog procesa u pripremanju jezgri na samom nalazištu.

Premda zastupljen sa skromnih devet primjeraka, drugi najvažniji skup nalaza od lomljenog kamena čine odbojci i sječiva (T. I, 4-7; T. II, 1-5). Većina raspoloživih primjeraka ušćuvana je u svojoj izvornoj veličini koja se kreće između 40 i 80 mm (T. I, 5, 7; T. II, 2-5). Na mjerljivim dijelovima korpusa odbojci imaju različite širine, ali je ona proporcionalna duljinama i kreće se između 8 i 22 mm. Za tri primjerka ušćuvana u svojem proksimalnom i medijalnom, odnosno distalnom i medijalnom segmentu točnu duljinu nije moguće utvrditi, ali je malo vjerojatno da bi znatnije odstupala od navedenih vrijednosti (T. I, 4, 6; T. II, 1). Većina raspoloživih primjeraka ima trapezoidan presjek, a samo je kod jednog trokutast (T. I, 4).

S obzirom na skroman broj nalaza, o oruđima unutar ove tehnološke kategorije nije moguće iznijeti nikakve sistematizirane podatke. U raspoloživoj građi samo je jedan primjerak s obradbom svih rubova. Obradba proksimalnog ruba provedena je na šest odbojaka (T. I, 4-7; T. II, 2-3). Među njima su i tri primjerka s izravnom obradbom izvedenom isprekidano na jednom lateralnom rubu (T. I, 6-7; T. II, 3). Zarubak je izveden samo na jednom primjerku (T. II, 4). Iskrzani lateralni rubovi na dvama odbojnicima, koji bi dimenzijama odgovarali sječivima, sugeriraju postupak izradbe sječiva, ali je riječ samo o oštećenjima nastalima zbog njihove uporabe pri nekim radnim operacijama (T. I, 4-5).

Jedino pravo oruđe izvedeno je na izduženom odbojku čiji se rubovi prema distalnom dijelu primiču i formiraju šiljati vrh. Na svim

touched or used as tools their value is limited to illustration of the production process in core preparation at the site.

Although represented with modest 9 examples, second most important assemblage of chipped stone finds consists of flakes and blades (T. I, 4-7; T. II, 1-5). Most available finds were preserved in their original size ranging from 40 to 80 mm (T. I, 5, 7; T. II, 2-5). On their measurable parts flakes have different widths but they are proportionate to lengths varying from 8 to 22 mm. For three examples preserved in their proximal and medial parts, or distal and medial segments exact length could not be determined, but it is unlikely that it was significantly different from the mentioned measurements (T. I, 4, 6; T. II, 1). Most available finds have trapezoid cross-section, and it is triangular in only one case (T. I, 4).

Considering the modest number of finds, no systematized information can be offered within this technological category. In available material only one example has retouch on all edges. Proximal edge was retouched on six flakes (T. I, 4-7; T. II, 2-3). Among them are three pieces with direct retouch, that is also discontinuous on one lateral edge (T. I, 6-7; T. II, 3). Truncation can be found in only one case (T. II, 4). Worn lateral edges on two flakes, that correspond to blades by their dimensions, suggest a procedure of blade production, but actually it is only usewear (T. I, 4-5).

The only proper tool was made on an elongated flake whose edges converge towards the distal part forming a pointed tip. Discontinuous direct retouch is executed on all edges (T. II, 5). Leaf-shaped form and size of the flake, and especially of its tip, make this find closer to points than borers in functional terms.

Two examples of arrows belong to a separate group. Although the procedure of bifacial surface retouch was executed on both finds, it seems these are two different types.

A better preserved example is leaf-shaped with slightly rounded lateral edges that grad-

rubovima provedena je isprekidana izravna obradba (T. II, 5). S obzirom na listoliki oblik i veličinu odbojka, a posebno vrha, u funkcionalnom smislu taj je nalaz puno bliži šiljcima nego svrdlima.

Posve zasebnu cjelinu čine dva primjerka strelica. Premda je jednak postupak bifacijalne površinske obradbe proveden na obama nalazima, čini se kako je riječ o dvama različitim tipovima.

Bolje ušćuvani primjerak listolika je oblika s blago zaobljenim lateralnim rubovima koji se postupno primiču prema distalnom dijelu i formiraju vrh. Premda je baza oštećena, ipak se uočava kako se lateralni rubovi na sličan način primiču i u tom dijelu artefakta, samo je taj prijelaz vezan za znatno kraći dio lista (T. II, 6). S obzirom na to, gornji dio te strelice nije mogao imati trn i krilca, već je mogao biti polukružno završen ili formirati oblik nepravilnog romba.

Drugi primjerak, s ušćuvanim dijelom lista i vrhom, ima gotovo ravne lateralne rubove koji formiraju trokutasti oblik sa šiljatim vrhom, dok bi prema proksimalnom dijelu morali prelaziti u oblik relativno pravilnog romba ili formirati krilca s trnom (T. II, 7).

### ***b) Izrađevine od glačanog kamena***

Izrađevine od glačanog kamena zastupljene su nalazima cjelovitih i oštećenih primjeraka sjekira i dljijeta. Svi nalazi te vrste izrađeni su od sitnozrnog pješčenjaka, a sudeći prema cjelovito ušćuvanim i manje oštećenim primjercima, pripadaju kalupastom tipu s masivnim korpusima i naglašenim hrptom na prijelazu u oštricu. Koliko je moguće suditi na temelju njihove ušćuvanosti, većina primjeraka oblikovana je simetrično s paralelnim lateralnim stranama i bez proširenja oštrice (T. III, 1-3). Manja oštećenja oštrica vidljiva na dobro ušćuvanim nalazima mogla su nastati pri njihovoj uporabi, ali jednako tako mogu biti i posljedica postdepozicijskih procesa. Na primjercima kod kojih donji dio korpusa nije ušćuvan, o oštećenjima

ually taper to distal end, forming a tip. Although the base was damaged, it is noticeable that lateral edges converge in a similar way in this part of the artifact, only this transition is related to much shorter part of the leaf (T. II, 6). Therefore the upper part of that arrow could not have had a tang and barbs but it might have been shaped as a semicircle or irregular rhomb.

The second example with preserved part of the leaf and tip, has almost lateral edges forming a triangular shape with a pointed tip while proximal part should be in shape of a relatively regular rhomb or forming barbs and tang (T. II, 7).

### ***b) Polished stone artifacts***

Polished stone artifacts are represented with finds of complete and damaged axes and chisels. All finds of this type were made of fine-grained sandstone, and judging from fully preserved and less damaged examples they belong to flat axes with massive bodies and emphasized spine at transition to blade. From what can be concluded from their preservation, most examples were shaped symmetrically with parallel lateral sides, without expansion of the blade (T. III, 1-3). Smaller damages on blades visible on well preserved finds could be a consequence of their use, but they could also be related to postdepositional processes. On the examples on which lower side of the body was not preserved, damage related to use cannot be discussed. As opposed to axes two examples of chisels have slightly emphasized trapezoidal form, and due to correspondence in form of the ventral and dorsal side their bodies are proportionally more massive (T. III, 4-5). A heavily damaged example is difficult to determine typologically. Lateral constrictions on both sides of the proximal part suggest hammer-shaped form which would allow an assumption about form of a hammer-axe, but since the base was not preserved, and there are no traces of perforating the medial segment

uzrokovanim uporabom nije uopće moguće govoriti. Za razliku od sjekira, dva primjerka dlijeta imaju blago naglašen trapezoidni oblik, a zbog oblikovnih podudarnosti ventralne i dorsalne strane, i korpusi su im proporcionalno masivniji (T. III, 4-5). Jedan jako oštećeni primjerak tipološki je teže odrediti. Obostrana lateralna suženja na proksimalnom dijelu sugeriraju čekićastu formu što bi dopuštalo pretpostavku o obliku sjekire-čekića, ali s obzirom na to da donji dio korpusa nije uščuvan, a na medijalnom segmentu nema vidljivih tragova perforiranja, ta mogućnost ostaje upitna (T. III, 6).

Ovoj skupini nalaza pridružena su i dva primjerka satirača, odnosno kugli od krupnozrnog pješčenjaka s izrazito istrošenim dijelovima zaobljenih površina koje očito predočavaju njihovu uporabu u kombinaciji sa žrvnjevima (T. III, 7-8). Međutim, žrvnjevi nisu pronađeni.

### c) Druge izrađevine od kamena

Druge izrađevine od kamena predočava samo jedan, ali posve poseban nalaz (T. X, 6a-b). Riječ je o predmetu od svjetlosmeđeg kalcita, nepravilnog oblika s jednom relativno ravnom, djelomice odlomljenom plohom na kojoj je izveden niz relativno pravilno raspoređenih poprečnih ureza. Površine svih bočnih strana posve su neravne i grube, a izgleda da je to njihov originalni oblik. Manji dio predmeta odlomljen je točno po jednom od ureza izvedenih na ravnoj plohi, ali je nemoguće utvrditi kada je do toga došlo: u postupku njegova izvođenja ili pri kasnijoj uporabi zbog slabljenja strukture materijala.

## 2. IZRAĐEVINE OD KOSTI

Predmeti od kosti zastupljeni su minimalnim brojem funkcionalno neodredivih nalaza. Jedan od njih uopće ne pripada dovršenim izrađevinama. Riječ je o dugoj kosti s epifizom i uzdužno rascijepljenim te ravno odrezanim

this remains an open possibility (T. III, 6).

This group also comprises two examples of pestles, that is balls made of coarse-grained sandstone with extremely worn parts of rounded surfaces that obviously illustrate their use in combination with querns (T. III, 7-8). However querns have not been found.

### c) Other stone artifacts

Other stone artifacts refer to only one but quite special find (T. X, 6a-b). It is an object made of light brown calcite, of irregular form with one relatively flat, partially broken surface on which a row of relatively regularly distributed incisions was executed. Lateral sides are uneven and coarse, and it seems it is their original form. A smaller part of the object was broken off exactly on one of the incisions made on flat surface, but it is impossible to determine when that happened: in the process of making or later while it was used due to wearing of the material structure.

## 2. BONE ARTIFACTS

Bone objects are represented with a minimal number of functionally indeterminable finds. One of them does not even belong to finished artifacts. It is a long bone with an epiphysis and longitudinally split and straightly cut part of diaphysis. Three parallel grooves are visible on the preserved part of diaphysis, formed probably in an intention of obtaining smaller segments of the bone (T. II, 8). The other find is preserved only partially, and it belonged to an object made of longitudinally split diaphysis with a round perforation (T. II, 9.).

## 3. CERAMIC FINDS

### a) Ceramic vessels

Ceramic finds are the best represented category of finds in Beriš, although their number does not correspond to finds of the same type

dijelom dijafize. Na ušćivanom dijelu dijafize vidljiva su tri usporedna žlijeba, nastala vjerojatno u namjeri dobivanja manjih segmenata kosti (T. II, 8). Drugi je nalaz ušćivan samo djelomice, a pripadao je predmetu izrađenom od uzdužno rascijepljene dijafize s kružnom perforacijom (T. II, 9).

### 3. KERAMIČKI NALAZI

#### a) *Keramičke posude*

Keramički nalazi najzastupljenija su skupina građe na Berišu, premda je i njihova brojnost u nerazmjeru s istovrsnim nalazima na drugim neolitičkim nalazištima. S obzirom na to, ovdje nije moguće provesti uobičajenu tehnološku klasifikaciju, a ni relevantnu analizu kvantitativnih odnosa. Taj bi pokušaj ovdje imao krajnje formalnu dimenziju kakvu nisam spreman prihvatiti.

Gledano u cjelini, keramički nalazi tvore koherentnu tehnološku cjelinu u kojoj postoje stanovita kvalitativna nijansiranja, ali bez izrazio grubih i izrazito finih keramičkih kategorija. Ulomci pripadaju dobro pečenim posudama svjetlijih nijansi smeđe i crvenkastosmeđe, rijetko sive i tamnosive boje, a u recepturi smjese korištene za njihovu izradbu nema izrazito velikih razlika. Najveća razlika vidljiva je u granulaciji primjese vapnenca čiji oštri rubovi, vidljivi i u presjecima i na površinama stijenki, ne upućuju na prirodne, nego na namjerno dodane primjese. Kod većine posuda vidljive su i krupnije i sitnije primjese, a samo kod manjeg broja zastupljene su one sitnije granulacije.

Većina raspoloživih ulomaka pripada sredšnjim dijelovima recipijenata pa preciznije determiniranje vrsta i oblika posuda nije pouzdano. Premda pojedinačni primjerci nedvojbeno pripadaju većim posudama na niskim nogama ili stopama (T. IX, 1-2), većina raspoloživih ulomaka s ušćivanim gornjim dijelovima stijenki i oboda upućuje na posude manjih dimenzija. Međutim, zbog variranja u pojedino-

from other Neolithic sites. Therefore usual typological classification is not possible in this case, nor the relevant analysis of quantitative relations. An attempt to do that would result in an utterly formal dimension that I am not willing to accept.

Generally ceramic finds constitute a coherent technological whole with certain qualitative nuances but without distinctly coarse or fine ceramic categories. The sherds belong to well fired vessels in light tones of brown and reddish-brown, rarely grey or dark grey. There are no big differences in the mixture used for their production. The biggest difference is visible in granulation of limestone inclusions whose sharp edges visible in cross-sections and on wall surfaces suggest not natural but deliberately added inclusions. On most vessels large and small inclusions are visible, and only few vessels have inclusions of fine granulation.

Most available finds belong to middle parts of vessels so that determining of types and forms is uncertain. Although individual examples definitely belong to large vessels on low legs or bases (T. IX, 1-2), most available finds with preserved upper parts of walls and rims suggest smaller vessels. However due to variations in details, in their mutual associating into groups of identical or very similar forms it is not always possible to determine full correspondence in all typological elements. However if we apply the criterion of the lowest variability, determinable fragments could be ascribed to some of the following vessel types:

- deep terrine with slightly narrowed upper part of the vessel and flat or slightly everted rim (T. IV, 1-3; T. VIII, 7);
- deep vessels with spherical body and high, slightly everted neck (T. IV, 5, 8);
- deep vessels with spherical body and high vertical neck (T. IV, 6-7; T. VI, 3; T. VIII, 3-4);
- deep vessels with spherical body and short inverted neck (T. VI, 6);
- hemispherical vessels with gentle "S" pro-

stima, pri njihovu međusobnom povezivanju u skupine istih ili vrlo srodnih oblika, nije moguće uvijek utvrditi potpunu podudarnost u svim tipološkim elementima. Ipak, primjenjujući kriterij najmanje varijabilnosti, određive ulomke moguće je pripisati sljedećim tipovima posuda:

- duboke terine s blago suženim gornjim dijelom recipijenta i ravnim ili blago izvijenim obodom (T. IV, 1-3; T. VIII, 7);
- duboke posude s loptastim recipijentom i višim blago izvijenim vratom (T. IV, 5, 8);
- duboke posude s loptastim recipijentom i kratkim okomitim vratom (T. IV, 6-7; T. VI, 3; T. VIII, 3-4);
- duboke posude s loptastim recipijentom i kratkim uvučenim vratom (T. VI, 6);
- poluloptaste posude blagog „S“ profila (T. V, 2; T. VI, 7; T. VIII, 2, 6);
- poluloptaste posude sličnog profila s naglašenim trbuhom (T. VI, 7; T. VIII, 5);
- tanjure i plitice (T. VII, 6; T. VIII, 1).

Tipološku jednostavnost prati i likovna jednostavnost u tehnici izvođenja ukrasa, u izboru motiva i njihovih kompozicija. To je vrlo lako uočiti već i pri površnom pregledu ilustrativnih priloga koji predočavaju cjelokupan fundus ukrašenih ulomaka. Likovnu jednostavnost ponajprije određuje tehnička strana ukrasa, odnosno činjenica da u njihovom izvođenju nema gotovo nikakvih razlika. Svi ukrasi izvedeni su tehnikom urezivanja, a jedina vidljiva razlika ograničena je na finoću instrumenata korištenih pri njihovom izvođenju. Najveći broj ukrasa izveden je oštrim i tankim instrumentom, a samo je na pojedinačnim primjercima upotrijebljen robusniji instrument (T. V, 1, 3-5). S druge strane, većina ukrasa izvedena je prilično neuredno i površno, bez pretenzija k finijim rješenjima i složenijim kompozicijama.

Unatoč tomu, kao i činjenici da na nekim ulomcima uopće nije moguće pouzdano razaznati izvedene motive (T. VIII, 2-4), ukrase

file (T. V, 2; T. VI, 7; T. VIII, 2, 6);

- hemispherical vessels with similar profile and emphasized belly (T. VI, 7; T. VIII, 5);
- plates and platters (T. VII, 6; T. VIII, 1).

Typological simplicity is accompanied by visual simplicity, both in techniques of ornament execution and in the selection of motifs and their compositions. It is easily noticeable already from a superficial overview of illustrative contributions that present the entire repertory of decorated fragments. Visual simplicity is primarily determined by technical side of decorations, that is the fact that there are almost no differences in their execution. Technique of incising was applied for all ornaments, and the only visible difference was limited to fineness of instruments used in their execution. The biggest number of ornaments was executed by sharp and thin instruments, only in few cases a more robust implement was used (T. V, 1, 3-5). On the other hand, most ornaments were rendered quite sloppily and superficially without pretensions to finer solutions and more complex compositions.

Despite that, and the fact that the executed motifs can hardly be discerned on some fragments (T. VIII, 2-4), decorations on pottery from *Beriš* can be classified into two basic groups: one with linear and the other with curvilinear motifs. Since limited amount of material once again poses limitations to any quantitative analyses, I will only mention as an illustration that the number of fragments with linear decorations is several times bigger than the ones with curvilinear motifs. However this circumstance should be interpreted with caution as it might represent actual situation in the ornamental system of *Beriš* but it could also be a consequence of accidental relations in the available sample.

Among the linear decorations the simplest motif were parallel horizontal lines incised on the shoulder segment of the vessel, executed on one fragment (T. VI, 5). Zig-zag lines are represented by only one fragment as well as a

na keramici s Beriša moguće je svrstati u dvije osnovne skupine: jednu s pravocrtnim i drugu s krivocrtnim motivima. Budući da ograničena količina građe i ovdje postavlja ograničenja bilo kakvim kvantitativnim analizama, ovdje ću samo kao ilustraciju navesti da broj ulomaka s pravocrtnim ukrasima višestruko nadilazi broj ulomaka na kojima su izvedeni krivocrtni. Ipak, tu okolnost treba uzeti sa stanovitom rezervom. Ona može predočavati realitete u ukrasnom sustavu Beriša, ali može biti i posljedica slučajnih odnosa u raspoloživom uzorku.

Među pravocrtnim ukrasima najjednostavniji je motiv usporednih vodoravnih linija urezanih na ramenom segmentu posude, izveden na jednom ulomku (T. VI, 5). Samo s jednim ulomkom zastupljen je motiv cik-cak linija, te snop neuredno izvedenih okomitih linija kombiniranih s nekim uglatim, teško odredivim motivom (T. V, 6-7). Uvjerljivo najbogatiji primjer ukrašavanja u ovoj skupini predočava ulomak s višestrukim, gusto izvedenim izlomljenim linijama na ramenom segmentu posude (T. IV, 7). Međutim, budući da na ušćivanom ulomku nije vidljivo razvijanje ukrasa prema trbušnom dijelu posude, ne treba isključiti mogućnost da je riječ o višestrukim izlomljenim trakama ili nekom geometrijskom liku. To tim prije jer je na jednom od raspoloživih ulomaka motiv uske cik-cak trake posve jasno vidljiv (T. VII, 4). Možda su slični motivi izlomljenih traka samo u gruboj izvedbi činili ukrase na još nekoliko ulomaka (T. V, 1-5). Nasuprot tomu, na jednom ulomku s djelomice vidljivom uskom trakom nije moguće razaznati motiv, ni naslutiti kompoziciju kojoj bi pripadao ili je tvorio (T. VII, 5).

Pravi geometrijski likovi zastupljeni su na desetak ulomaka, a gotovo jedini ukras u toj skupini čine motivi trokuta ispunjenih nizom usporednih linija. Obično je riječ o nizu visećih trokuta povezanih u vodoravne nizove (T. IV, 1-4, 5, 8; T. VII, 2). Međutim, na jednom je ulomku ta uobičajena kompozicija zamijenjena nizom visećih i nizom stojećih trokuta

bunch of sloppily executed vertical lines combined with some angular, hardly recognizable motif (T. V, 6-7). Definitely the richest example of decoration in this group is found on a fragment with multiple, densely executed broken lines on the shoulder segment of the vessel (T. IV, 7). However since ornaments do not spread toward the vessel belly it is possible that the ornament consisted of multiple broken lines or some geometric figure, all the more since a motif of narrow zig-zag line is clearly visible on one of available sherds (T. VII, 4). Perhaps similar motifs of broken lines decorated several more fragments, only in coarser execution (T. V, 1-5). As opposed to this on one fragment with partially visible narrow band not even a motif could be recognized, nor the composition it created or it might have belonged to (T. VII, 5).

Proper geometric motifs are found on some ten sherds, and almost only ornament in this group are motifs of triangles filled with a row of parallel lines. Usually it is a row of hanging triangles connected in horizontal rows (T. IV, 1-4, 5, 8; T. VII, 2). However on one fragment this common composition was replaced by a row of hanging and a row of standing triangles separated by an empty interspace (T. VII, 3). It seems that a similar solution was executed on one more fragment on which triangles were filled with pricking (T. VI, 2). More complex combination with mutual connecting of several differently oriented triangles is also represented on only one fragment (T. IV, 6). Finally, a very unusual combination was performed on one fragment with triangles forming a mirror image and filled with net pattern combined with broken lines (T. VI, 1).

As opposite to this, motif of rhomb in a complex composition with multiple zig-zag lines was executed on only one fragment (T. V, 9). A motif of parallelogram decorates only one sherd, belonging to one of the most complex and best ornaments in technical terms (T. V, 8).

Curvilinear ornaments are represented by

razdvojenih praznim međuprostorom (T. VII, 3). Izgleda da je slično rješenje provedeno na još jednom ulomku na kojem su trokuti ispunjeni ubadanjem (T. VI, 2). Složenije rješenje s međusobnim povezivanjem više različito orijentiranih trokuta također je zastupljeno samo na jednom ulomku (T. IV, 6). Napokon, na jednom je ulomku izvedena vrlo neobična kompozicija sa zrcalno postavljenim trokutima ispunjenim mrežastim uzorkom, a kombiniranim s uskim izlomljenim trakama (T. VI, 1).

Nasuprot tomu, motiv romba u složenijoj kompoziciji s višestrukim cik-cak linijama izveden je samo na jednom ulomku (T. V, 9). Također, samo na jednom ulomku izveden je i motiv paralelograma koji spada među nekoliko najsloženijih i tehnički najboljih ukrasa (T. V, 8).

Premda zastupljeni znatno manjim brojem ulomaka, krivocrtni ukrasi djeluju raznovrsnije. Takvom dojmu pridonosi činjenica da u toj skupini ukrasa nema podudarnih motiva, nego se svaki od njih iskazuje kao posebno likovno rješenje.

Pravi krivocrtni ukras i najlikovniji u toj skupini primjerak je spiralnog motiva s gusto izvedenim zavojnicama koji, čini se, pripada složenoj kompoziciji spiralnih motiva s međuprostorima gusto ispunjenim usporednim linijama i trakama (T. VI, 4). Premda djeluje kao apstrakcija, izgleda da je istovrstan ukras nevjesto izveden na još jednom ulomku (T. VII, 1). Uspoređen s prvim, drugi primjer pravog krivocrtnog ukrasa predočava znatno jednostavniju kompoziciju sa spiralnim motivom široko razmaknutih zavojnica i bez ispunjenih spiralnih međuprostora. Izgleda da je na ukrasnoj površini bilo izvedeno nekoliko samostalnih i ravnomjerno raspoređenih ili tangentama povezanih spiraloidnih motiva (T. VI, 3). Na jednom ulomku lučno izvedena široka traka slična girlandi, ispunjena mrežastim uzorkom vjerojatno je tvorila kompoziciju u kojoj se isti motiv ritmički ponavlja po opsegu posude (T. VI, 6). Najjednostavniji motiv u

much smaller number of fragments but they seem more diverse. Such impression is intensified by the fact that there are no corresponding motifs in this group but every one of them presents a unique visual creation.

Genuine curvilinear decoration, also visually most appealing, in this group is an example of a spiral motif with densely executed spirals that seemingly belong to a complex composition of spiral motifs with interspaces densely filled with parallel lines and bands (T. VI, 4). Although it looks like an abstraction, it seems that an identical ornament was made on another fragment (T. VII, 1). The second example of a proper curvilinear ornament is illustrated by a much simpler composition if compared to the first example as it is decorated with a motif with spirals wide apart and without filled spiral interspaces. It seems that several independent spiral-like motifs that were evenly distributed or connected with tangents were executed on ornamental surface (T. VI, 3). On one sherd a wide arched band looking like a garland, filled with net pattern probably formed a composition in which the same motif repeated rhythmically on the vessel circumference (T. VI, 6). The simplest motif in this group are garlands made between two horizontal bands incised on the transition from neck to shoulder and on belly of the vessel (T. VI, 7). Finally in a wide ornamental field consisting of two horizontal lines incised on the transition from neck to shoulder and belly of the vessel, a narrow wavy line was made filled with short notches, that evidently decorated the entire circumference of the vessel (T. VI, 8).

#### *b) Other ceramic finds*

Assemblage of ceramic finds from *Beriš* is enriched by two special groups that do not belong to utilitarian objects. The first group consists of six fragments that belong to vessels on four legs that are usually referred to as cult rhyta. Considering evident differences in

ovoj skupini ukrasa čine girlande izvedene između dviju vodoravnih traka urezanih na prijelazu vrata i ramena te trbuhu posude (T. VI, 7). Napokon, u širokom ukrasnom polju, koje tvore dvije vodoravne linije urezane na prijelazu vrata i ramena te trbuhu posude, izvedena je uska valovita traka ispunjena kratkim zarezima, koja je očigledno tekla po cijelom opsegu posude (T. VI, 8).

### *b) Ostali keramički nalazi*

Skupu keramičkih nalaza s Beriša pripadaju još dvije posebne cjeline koje ne pripadaju predmetima utilitarnog karaktera. Prvu cjelinu čini ukupno šest ulomaka koji pripadaju posudama na četiri noge koje se obično nazivaju kulturni ritoni. S obzirom na očigledne razlike u tipološkim pojedinostima i ukrašavanju, svi pripadaju različitim primjercima ove vrste nalaza. Pronađena je jedna drška i pet primjeraka nogu. Drška je masivna, trokutastog presjeka i bez ukrasa, a zbog svoje veličine ne odgovara ni jednom primjerku nogu (T. IX, 5). Među pronađenim primjercima nogu, tri pripadaju prednjem dijelu ritona (T. IX, 4; T. X, 1, 3). Od preostala dva primjerka koja pripadaju stražnjem dijelu ritona jedan je sačuvan u cjelini, a drugi s ostatcima recipijenta samo djelomice (T. IX, 3; T. X, 2). Od ukupnog broja nalaza tipološku bliskost pokazuju tri primjerka koja predočavaju sličnu valjkastu formu. Jedan od njih ima blago proširenu bazu u obliku stopice (T. X, 1). Samo jedan primjerak nogu ima izrazio zadebljan gornji i sužen donji dio korpusa (T. IX, 4). Ukrašavanje je provedeno na trima primjercima, a ukras izveden urezivanjem čini spiraloidni motiv na jednome, motiv višestrukih uglatih traka ispunjenih poprečnim crtama na drugome, te vjerojatno njemu sličan ukras na trećem nalazu (T. IX, 3-4; T. X, 1).

Drugu, malobrojniju cjelinu čine jedna fragmentirana i jedna cjelovito uščuvana keramička pločica sa žlijebom izvedenim po dužoj osi njihovih središnjih dijelova (T. X, 4-5).

typological details and decoration they all belong to different examples of this type of finds. One handle was found and five examples of legs. The handle is massive, with triangular cross-section and unornamented, and due to its size it is obvious that it does not belong to any of the leg specimens (T. IX, 5). Among the recovered legs, three belong to the front part of rhyton (T. IX, 4; T. X, 1, 3). Out of the remaining two examples that belong to the back part of rhyton, one is fully preserved, and the other only partially, with body remains (T. IX, 3; T. X, 2). Out of the total number of finds typological similarities can be found on three examples having similar cylindrical form. One of them has slightly expanded base in shape of a ring base (T. X, 1). Only one example of legs has distinctly thickened upper and narrowed lower part of the body (T. IX, 4). Three examples are decorated and the incised ornament consists of spiral-like motif on one specimen, motif of multiple angular bands filled with transversal lines on the second find, and probably similar decoration on the third find (T. IX, 3-4; T. X, 1).

The second group consists of one fragmented and one fully preserved ceramic plaque with a groove made on the longer axis of their middle parts (T. X, 4-5).

## DISCUSSION AND CONCLUSION

Even a superficial overview of the material presented here allows a statement about close connections of Beriš with the Danilo cultural ambience in which very good parallels can be found for typological and stylistic characteristics of most finds. Only chipped stone artifacts leave some room for doubt, not because they are much different than the corresponding material from the other sites of this culture but because of limited possibilities of mutual comparisons caused by their modest number in Beriš. However despite these limitations certain examples were classified to the stand-

## RASPRAVA I ZAKLJUČAK

Već i površan pregled ovdje predočene građe dovoljan je za konstataciju o bliskoj povezanosti Beriša s danilskim kulturnim ambijentom u kojem je bez poteškoća moguće pronaći vrlo dobre analogije za tipološka i stilska obilježja većine nalaza. Manju i posve uvjetnu rezervu u tom smislu moguće je zadržati tek za nalaze od lomljenog kamena, ali ne zato što pokazuju kakve bitne razlike prema odgovarajućoj građi s nalazišta te kulture, nego zbog ograničenih mogućnosti međusobnog uspoređivanja uvjetovanih njihovom skromnom zastupljenošću na Berišu. Ipak, unatoč tim ograničenjima, pojedine primjerke je bez rezervi moguće uvrstiti u standardni repertoar danilskih pojava te vrste. To se ponajprije odnosi na primjerak listolikog šiljka (T. II, 5)<sup>4</sup>, a potom i na dva primjerka strelica (T. II, 6-7) koje su u danilskoj kulturi dosta česta pojava.<sup>5</sup> S druge strane, pojava te vrste nalaza u neolitikom istočnog Jadrana i njegova zaleđa povezana je upravo s danilskom kulturom.

Zbog velikih sličnosti na širokoj prostornoj i vremenskoj razini, masivne izradevine od glačanog kamena, odnosno kamene sjekire, nemaju nikakvo posebno značenje za utvrđivanje kulturne dimenzije nalazišta. Međutim, ovdje je potrebno spomenuti da je njihovo najranije pojavljivanje na jadranskom području u vezi upravo sa srednjim neolitikom, da se tijekom njegova trajanja produkcija bitno uvećava, pa ta vrsta građe na većini nalazišta danilske kulture čini vrlo brojno zastupljen dio inventara.<sup>6</sup> Zbog toga je i broj u kojem su zastupljeni na Berišu posve primjeren toj činjenici, a i drugim poveznicama s tom kulturom, vidljivim u ostalim vrstama nalaza.

U vezi s drugim nalazima od kamena poseb-

ard repertory of the Danilo phenomena of the same kind without any doubt. This primarily refers to an example of the leaf-shaped point (T. II, 5)<sup>4</sup>, and then also two finds of arrows (T. II, 6-7) that are quite common in the Danilo culture.<sup>5</sup> On the other hand emergence of this type of finds in the Neolithic of the eastern Adriatic and its hinterland is related exactly to the Danilo culture.

Massive artifacts made of polished stone, that is stone axes, have no special importance in determining the cultural dimension of the site owing to great similarities on a wide spatial and chronological level. However here we should mention that their earliest emergence in the Adriatic area is associated exactly with the Middle Neolithic and that their production significantly rised in that period, so that this category of finds is usually very well represented at most sites of the Danilo culture.<sup>6</sup> Therefore their number in Beriš corresponds to that fact, as well as to other links with that culture, visible in other types of finds.

In regard to other stone finds special attention should be paid to an object made of calcite with multiple incisions executed on its flattened surface.

Two very similar finds, one ceramic and the other made of fine-grained sandstone are known from the Danilo site of Barice near Benkovac.<sup>7</sup> Although the authors refer to them as pintaderas,<sup>8</sup> it is unlikely that they actually are that type of object because none of them, just like the find from Beriš, shows typological characteristics of common finds of pintaderas from a series of other sites. However this typological deviation is less important than the fact that the pattern made

<sup>4</sup> Z. BRUSIĆ, 2008, T. LII.

<sup>5</sup> Š. BATOVIĆ, 1979, 536, T. LXXXI, 1, 5; Z. BRUSIĆ, 2008, 58, T. LII; D. VUJEVIĆ, K. HORVAT, 2012, 34, T. II, 2; K. HORVAT, D. VUJEVIĆ, 2017, T. I, 17-19.

<sup>6</sup> Š. BATOVIĆ, 1979, 537, T. LXXXII; D. VUJEVIĆ, K. HORVAT, 2012, 36, T. III, T. IV; K. HORVAT, D. VUJEVIĆ, 2017, 49, T. 2.

<sup>4</sup> Z. BRUSIĆ, 2008, T. LII.

<sup>5</sup> Š. BATOVIĆ, 1979, 536, T. LXXXI, 1, 5; Z. BRUSIĆ, 2008, 58, T. LII; D. VUJEVIĆ, K. HORVAT, 2012, 34, T. II, 2; K. HORVAT, D. VUJEVIĆ, 2017, T. I, 17-19.

<sup>6</sup> Š. BATOVIĆ, 1979, 537, T. LXXXII; D. VUJEVIĆ, K. HORVAT, 2012, 36, T. III, T. IV; K. HORVAT, D. VUJEVIĆ, 2017, 49, T. 2.

<sup>7</sup> D. VUJEVIĆ, K. HORVAT, 2012, T. II, 6a-c, T. XII, 1.

<sup>8</sup> D. VUJEVIĆ, K. HORVAT, 2012, 35, 50-51.

no se treba zadržati na predmetu od kalcita s višestrukim urezima izvedenim na njegovoj zaravnjenoj plohi.

Dva vrlo slična nalaza, jedan keramički, a drugi od sitnozrnog pješčenjaka, poznata su s danilskog naselja Barice u Benkovcu.<sup>7</sup> Premda ih autori nazivaju pintaderama<sup>8</sup>, malo je vjerojatno da je riječ upravo o toj vrsti predmeta jer se ni jedan od njih, jednako kao ni nalaz s Beriša, u tipološkom pogledu ni izdaleka ne približava uobičajenim i poznatim oblicima pintadera s niza drugih nalazišta. Međutim, to je tipološko odstupanje manje važno od činjenice da uzorak izveden na njihovim plohamo ni u jednom od svojih aspekata nema nikakvog dodira s uzorcima izvedenim na drugim nalazima. Naime, teško je i zamisliti da bi utiskivanjem ili otiskivanjem instrumenta s tako jednoličnim i likovno siromašnim uzorkom, kakav je na svim trima primjercima, bilo moguće postići neki stupanj dekorativnosti koja bi se makar minimalno približila estetici ukrasa na keramici danilske kulture, a pogotovo bogatstvu i raznovrsnosti motiva na brojnim primjercima pintadera s drugih područja. Štoviše, teško je predočiti bilo kakvu dekorativnost negativna postignutog prenošenjem takvog uzorka na ma kakav medij. S druge strane, u jednoličnosti takvog uzorka još je teže vidjeti bilo kakvu individualiziranost koja je jedna od temeljnih karakteristika te vrste nalaza, a pogotovo naznaku onog simboličkog smisla kakav je moguće pronaći na drugim primjercima pintadera, uključujući i poznate nalaze te vrste s jadranskog područja. Naime, već stariji primjerci s Crnog vrila<sup>9</sup> i pećine Zemunice<sup>10</sup> u objema mogućim dimenzijama – ukrasnoj i simboličkoj – daleko nadilaze sva tri ovdje navedena nalaza. Ista konstatacija vrijedi i za oba istarska nalaza, jedan s Limske gradine<sup>11</sup> i drugi

on their surfaces is not related in any of its aspects to patterns executed on the other finds. Namely it is difficult even to imagine that by impressing or imprinting an instrument with such dull and visually plain pattern, as found on all three artifacts, certain degree of decorativeness could be achieved that would at least come close to the aesthetics of ornamentation on pottery of the Danilo culture, and in particular to the richness and diversity of motifs on a number of examples of pintaderas from other regions. Furthermore it is difficult to present any kind of decorativeness of the negative achieved by transferring this pattern on any medium. On the other hand, in the monotony of such pattern it is even harder to see any kind of individuality that is one of basic characteristics of this type of finds, and in particular of the symbolical meaning that can be found in other examples of pintaderas, including the known specimens of the kind from the Adriatic region. Namely older examples from Crno vrilo<sup>9</sup> and the cave of Zemunica<sup>10</sup> in both possible dimensions – decorative and symbolical – exceed by far all three finds mentioned here. The same statement is valid for both Istrian finds, one from Limska gradina (hillfort)<sup>11</sup> and the other from the Jačmica cave<sup>12</sup> that probably belong to the Danilo culture, and in particular for the pintadera from Ravlića pećina.<sup>13</sup> Since multiple parallel lines do not seem to be adequate for function ascribed to pintaderas for the reasons I have already mentioned, including the differences on the interpretative level,<sup>14</sup> I am more inclined to look for some other purpose for all three finds. In that sense I find two facts

<sup>7</sup> D. VUJEVIĆ, K. HORVAT, 2012, T. II, 6a-c, T. XII, 1.

<sup>8</sup> D. VUJEVIĆ, K. HORVAT, 2012, 35, 50–51.

<sup>9</sup> B. MARIJANOVIĆ, 2009, 74, T. XXVIII, 4a-b.

<sup>10</sup> R. ŠOŠIĆ KLINDŽIĆ, T. TEŽAK GREGL, 2013, Sl. 1-2.

<sup>11</sup> K. MIHOVILIĆ et al., 2002, 19, Sl. 1.

<sup>9</sup> B. MARIJANOVIĆ, 2009, 74, T. XXVIII, 4a-b.

<sup>10</sup> R. ŠOŠIĆ KLINDŽIĆ, T. TEŽAK GREGL, 2013, figs. 1-2.

<sup>11</sup> K. MIHOVILIĆ et al., 2002, 19, fig. 1.

<sup>12</sup> D. KOMŠO, P. MIRACLE, 2005, 151.

<sup>13</sup> B. MARIJANOVIĆ, 2008, T. I.

<sup>14</sup> J. MELLART, 1967, 209, 220; J. MAKKAY, 1984, 91; C. PERLÈS, 2001, 252; M. BUDJA, 2003, 119; M. M. G. P. AKKERMANS, M. VERHOEVEN, 1995; K. BAČVAROV, 2003, 82; R. SKEATES, 2007, 186, 195; G. NAUMOV, 2008, 69-73, 74-77; B. MARIJANOVIĆ, 2008, 141-149; etc.

iz pećine Jačmica<sup>12</sup>, koji vjerojatno pripadaju danilskoj kulturi, a pogotovo za pintaderu iz Ravlića pećine.<sup>13</sup> Budući da mi se iz navedenih razloga višestruki usporedni urezi ne čine smisljenim za funkcije kakve se pripisuju pintadera, uključujući tu i razlike na interpretativnoj razini<sup>14</sup>, za sva tri nalaza skloniji sam tražiti neku drugu svrhu. U tom smislu sugestivnim držim dvije činjenice: jedna je međusobna tipološka bliskost svih triju primjeraka, a druga podudarnost višestrukih usporednih ureza, nešto više naglašenih i na primjerku s Beriša i na keramičkom primjerku s Barica. Promatrane zajedno, ove činjenice upućuju na instrumente prikladne nekim praktičnim svrhama. U tom bi smislu i njihova tipološka bliskost najprije mogla upućivati na funkcionalnu prilagođenost istovrsnoj namjeni, u kojoj višestruki usporedni urezi na njihovim plohama nemaju karakter uzoraka koji se kao ukrasni ili simbolički elementi prenose na drugi medij, nego su i oni dio potpune funkcionalne prilagodbe determinirane prirodom predmeta i njihovih praktičnih namjena. S obzirom na relativno plitke i uske ureze, posve je jasno da njihova namjena ne bi mogla biti povezana s nekim grubim, nego finijim aktivnostima kao što su npr. razdvajanje, zatezanje ili učvršćivanje uzica izrađenih od nekih organskih materijala. Međutim, cjelinu praktične operacije s kojom bi ovi nalazi mogli biti povezani u ovom trenutku ne mogu predložiti.

Većinu zastupljenih oblika posuda – duboke terine s blago suženim gornjim dijelom recipijenta i ravnim ili blago izvijenim obodom (T. IV, 1-3; T. VIII, 7), duboke posude s loptastim recipijentom i višim blago izvijenim vratom (T. IV, 5, 8), duboke posude s loptastim recipijentom i kratkim okomitim vratom (T. IV, 6-7; T. VI, 3; T. VIII, 3-4), posude na niskim

particularly suggestive; the first is typological similarity of all three examples, and the second is correspondence of multiple parallel incisions, somewhat more pronounced on the example from Beriš and on the ceramic artifact from Barice. Observed as a whole these facts suggest instruments intended for certain practical functions. In that sense their typological correspondence might primarily indicate their functional adaptation for identical function in which multiple parallel incisions on their surface do not constitute a pattern that is transferred to other medium as a decorative or symbolical element, but they are a part of complete functional adjustment determined by the nature of the objects and their practical functions. Considering relatively shallow and narrow incisions, it is clear that their function could not have been associated with some hard but fine activities such as e.g. separating, pulling or fastening strings made of some organic materials. However at the moment I cannot suggest complete practical operation that these finds might be associated with.

Most of the represented vessel forms – deep terrines with slightly narrowed upper part of the vessel and flat or slightly everted rim (T. IV, 1-3; T. VIII, 7), deep vessels with spherical body and higher slightly everted neck (T. IV, 5, 8), deep vessels with spherical body and short vertical neck (T. IV, 6-7; T. VI, 3; T. VIII, 3-4), vessels on low feet or ring bases (T. IX, 1-2), plates and platters (T. VII, 6; T. VIII, 1) etc. – can easily be recognized in the rich ceramography of the Danilo culture.<sup>15</sup>

Identical statement is valid for a fair portion of ornaments, and in particular for the ones with geometric motifs – triangles filled with a row of parallel lines (T. IV, 1-4, 5, 8; T. VII, 2), rhomb in a more complex composition with multiple zig-zag lines (T. V, 9), parallel-

<sup>12</sup> D. KOMŠO, P. MIRACLE, 2005, 151.

<sup>13</sup> B. MARIJANOVIĆ, 2008, T. I.

<sup>14</sup> J. MELLART, 1967, 209, 220; J. MAKKAY, 1984, 91; M. M. G. P. AKKERMANS, M. VERHOEVEN, 1995; C. PERLÈS, 2001, 252; M. BUDJA, 2003, 119; K. BAČVAROV, 2003, 82; R. SKEATES, 2007, 186, 195; G. NAUMOV, 2008, 69-73, 74-77; B. MARIJANOVIĆ, 2008, 141-149 itd.

<sup>15</sup> Š. BATOVIĆ, 1979, fig. 25, T. LXXXIV; Z. BRUSIĆ, 2008, T. XIV, T. XXIII, T. XCV; D. VUJEVIĆ, K. HORVAT, 2012, T. VII, 1-3, 6; K. HORVAT, D. VUJEVIĆ, 2017, figs. 3-4, T. VIII-X.

nogama ili stopama (T. IX, 1-2), tanjuri i plitice (T. VII, 6; T. VIII, 1) itd. – moguće je bez poteškoća prepoznati u bogatoj keramografiji danilske kulture.<sup>15</sup>

Posve ista konstatacija vrijedi i za dobar dio ukrasa, a posebno one s geometrijskim motivima – trokuta ispunjenih nizom usporednih linija (T. IV, 1-4, 5, 8; T. VII, 2), romba u složenijoj kompoziciji s višestrukim cik-cak linijama (T. V, 9), paralelograma (T. V, 8). Danilskom ukrasnom stilu pripadaju i motiv cik-cak linija (T. V, 6) te višestruke, gusto izvedene izlomljene linije na ramenom segmentu posude (T. IV, 7).<sup>16</sup> Nedvojbeno najbliži klasičnim danilskim ukrasima primjerak je složeno komponiranih spiralnih motiva s gusto izvedenim zavojnicama (T. VI, 4).

Navedenim poveznicama Beriša s danilskom kulturom treba dodati nalaze ritona, pločice sa žlijebom koje su jedna od njezinih specifičnosti na sjevernodalmatinskom području, te predmet od kalcita s višestrukim urezima na zaravnjenoj plohi koji izravne analogije ima na istom tom prostoru. Međutim, unatoč tim primjerima povezanosti s danilskom kulturom, Beriš ipak nema značenje njezina tipičnog predstavnika, nego i znatno jednostavnije i znatno siromašnije pojave u okviru tog kulturnog ambijenta. Jednostavnost i siromaštvo ne očituje se samo u redukciji ukrasnih motiva i njihovih kompozicija na keramičkim posudama, nego i u potpunom nedostatku slikanja kao jedne od najdekorativnijih pojava u danilskoj kulturi. Te bi činjenice, s jedne strane, bilo moguće promatrati kao prirodnu posljedicu razlika u ukupnoj materijalnoj produkciji koja postoji između velikih i dugotrajnih naselja danilske kulture i vremenski znatno kraćeg naselja kakvo je Beriš. Međutim, s druge strane, u tom se kontekstu ne smije se izgubiti iz

ogram (T. V, 8). The Danilo decorative style also comprises motifs of zig-zag lines (T. V, 6) and multiple, densely executed broken lines on the shoulder segment of the vessel (T. IV, 7).<sup>16</sup> A fragment with elaborately composed spiral motifs with densely executed spirals is definitely closest to the Danilo ornaments (T. VI, 4).

Mentioned connections of Beriš with the Danilo culture are further enriched by the finds of rhyta, a plaque with a groove as one of its specific traits in the northern Dalmatian region, and an artifact of calcite with multiple incisions on a flattened surface that has analogies in the same area. However despite these examples of connections with the Danilo culture, Beriš is not a typical representative of this culture but a much simpler and poorer phenomenon within this cultural ambience. Simplicity and pooriness are not reflected only in the reduction of decorative motifs and their compositions on ceramic vessels but also in the complete lack of painting as one the most decorative phenomena in the Danilo culture. These facts, on one hand, could be perceived as a natural consequence of differences in the total material production that are present between the big and long-lasting settlements of the Danilo culture and chronologically much shorter-lasting settlement as Beriš. However on the other hand, in that context we must not lose sight of a possibility that it could be a consequence of differences in developmental dynamics in the narrow coastal zone and wider hinterland region. Such possibility is suggested by the differences that are present in Herzegovina in number and character of the Early and Late Neolithic sites on one hand and the ones belonging to the Danilo culture on the other hand, but also a part of ornaments that are close to corresponding phenomena outside that cultural ambience.

<sup>15</sup> Š. BATOVIĆ, 1979, Sl. 25, T. LXXXIV; Z. BRUSIĆ, 2008, T. XIV, T. XXIII, T. XCV; D. VUJEVIĆ, K. HORVAT, 2012, T. VII, 1-3, 6; K. HORVAT, D. VUJEVIĆ, 2017, Sl. 3-4, T. VIII-X.

<sup>16</sup> Z. BRUSIĆ, 2008, T. XX, T. LXXII, T. LXXIV, T. IX; D. VUJEVIĆ, K. HORVAT, 2012, T. IX; K. HORVAT, D. VUJEVIĆ, 2017, T. 9.

<sup>16</sup> Z. BRUSIĆ, 2008, T. XX, T. LXXII, T. LXXIV, T. IX; D. VUJEVIĆ, K. HORVAT, 2012, T. IX; K. HORVAT, D. VUJEVIĆ, 2017, T. 9.

vida ni mogućnost da to može biti i posljedica različitosti u razvojnim dinamikama na užem obalnom i širem zaobalnom području. Takvu mogućnost sugeriraju i razlike koje u Hercegovini postoje u broju i karakteru nalazišta ranog i kasnog neolitika na jednoj strani, i onih koja pripadaju danilskoj kulturi na drugoj, ali i jedan dio ukrasa koji su bliski odgovarajućim pojavama izvan tog kulturnog ambijenta.

Činjenica je, naime, da je neke među navedenim primjerima ukrašavanja – npr. motiv trokuta ispunjenih nizom usporednih linija – moguće jednako uspješno usporediti i sa sličnim pojavama u Gudnji,<sup>17</sup> nalazištu s užeg obalnog područja koje ne pripada danilskom kulturnom ambijentu, nego s korčulanskim nalazištima – Vela spila, Jakasova špilja i Žukovica<sup>18</sup> – predočava poseban kulturni fenomen u srednjem neolitiku na području istočnog Jadrana. Analogije u Gudnji postoje i za neke druge ukrase na keramici Beriša:

- niz visećih i stojećih trokuta razdvojenih praznim međuprostorom (T. VII, 3);<sup>19</sup>
- spiralni motiv široko razmaknutih zavojnica bez ispunjenih spiralnih međuprostora (T. VI, 3);<sup>20</sup>
- uska valovita traka ispunjena kratkim zarezima (T. VI, 8);<sup>21</sup>
- motiv girlande izvedene između dviju vodoravnih traka urezanih na prijelazu vrata i ramena i truhu posude (T. VI, 7);<sup>22</sup>
- motivi izlomljenih, grubo urezanih traka (T. V, 1-5).<sup>23</sup>

Sa sličnim motivom iz Gudnje mogla bi se usporediti i široka, lučno izvedena traka slična girlandi (T. VI, 6).<sup>24</sup>

Navedene sličnosti s nalazima iz Gudnje pri-

The fact is that some of the mentioned decoration examples, such as a motif of triangles filled with a row of parallel lines – could be just as successfully compared to similar examples from Gudnja,<sup>17</sup> a site from the narrow coastal zone that does not belong to the Danilo cultural ambience, but it represents a separate cultural phenomenon in the Middle Neolithic in the eastern Adriatic region together with the sites from Korčula: Vela spila, Jakasova špilja and Žukovica.<sup>18</sup>

There are analogies in Gudnja for some other ornaments on the pottery from Beriš:

- a row of hanging and standing triangles separated by empty interspaces (T. VII, 3)<sup>19</sup>;
- spiral motif consisting of spirals set wide apart without filled spiral interspaces (T. VI, 3)<sup>20</sup>;
- narrow wavy band filled with short notches (T. VI, 8)<sup>21</sup>;
- motif of a garland executed between two horizontal bands incised on the transition from neck to shoulder and on belly of the vessel (T. VI, 7)<sup>22</sup>;
- motifs of broken, coarsely incised bands (T. V, 1-5).<sup>23</sup>

A wide arched band similar to a garland could be compared to a similar motif from Gudnja (T. VI, 6).<sup>24</sup>

Mentioned similarities with the finds from Gudnja support quite consistently previously mentioned limitation in associating Beriš exclusively with the Danilo culture. Namely due to its connections with Gudnja, Beriš is included into a wider context of similar phenomena at several sites that do not belong to the Dani-

<sup>17</sup> B. MARIJANOVIĆ, 2005, T. VII, 4-5 i T. VIII, 3-4.

<sup>18</sup> B. ČEČUK, 1980; B. ČEČUK, D. RADIĆ, 2005.

<sup>19</sup> B. MARIJANOVIĆ, 2005, T. IX, 1.

<sup>20</sup> B. MARIJANOVIĆ, 2005, T. XIV, 6.

<sup>21</sup> B. MARIJANOVIĆ, 2005, T. XIII, 5-6.

<sup>22</sup> B. MARIJANOVIĆ, 2005, T. V, 2.

<sup>23</sup> B. MARIJANOVIĆ, 2005, T. IX, 5 i T. X, 1-2.

<sup>24</sup> B. MARIJANOVIĆ, 2005, T. V, 2.

<sup>17</sup> B. MARIJANOVIĆ, 2005, T. VII, 4-5 and T. VIII, 3-4.

<sup>18</sup> B. ČEČUK, 1980; B. ČEČUK, D. RADIĆ, 2005.

<sup>19</sup> B. MARIJANOVIĆ, 2005, T. IX, 1.

<sup>20</sup> B. MARIJANOVIĆ, 2005, T. XIV, 6.

<sup>21</sup> B. MARIJANOVIĆ, 2005, T. XIII, 5-6.

<sup>22</sup> B. MARIJANOVIĆ, 2005, T. V, 2.

<sup>23</sup> B. MARIJANOVIĆ, 2005, T. IX, 5 and T. X, 1-2.

<sup>24</sup> B. MARIJANOVIĆ, 2005, T. V, 2.

lično dobro podupiru prethodno navedeno ograničenje pri povezivanju Beriša isključivo s danilskom kulturom. Naime, svojom povezanošću s Gudnjom, Beriš se istodobno uključuje u jedan širi kontekst sličnih pojava na više nalazišta koja nisu dio danilske kulture, nego pripadaju različitim kulturnim ambijentima. Tu na prvom mjestu mislim na srednji neolitik Vele špilje na Korčuli,<sup>25</sup> a potom na pojave na krajnjem jugu istočnog jadranskog područja i njegovu zaleđu, te na širem jonskom području i Sjevernoj Makedoniji: Cetush II, Cakran, Dunavec I, Kolshu II, Blaz III, Reštani.<sup>26</sup> Sličnosti keramografskih pojava među neolitičkim kulturama rasprostranjenim na južnojadranskom i jonskom području i njihovim širim zaleđima već su odavno poznate, a na njih je u različitim problemskim kontekstima upozorilo više autora, možda najeksplicitnije albanski autori M. Korkuti, Zh. Andrea i F. Prendi,<sup>27</sup> te A. Benac koji je uvjerljivo predočio postojanje sličnosti na vrlo širokom sredozemnom području, u čiji kontekst ulaze i nalazi srednjeg neolitika u Bosni, te nalazišta u Pelagoniji i ohridskom području.<sup>28</sup> Objavljivanje nalaza iz Gudnje tu je povezanost učinilo još vidljivijom.<sup>29</sup>

Na današnjoj razini istraženosti Beriš je tek drugo istraživano, ali istodobno i prvo objavljeno nalazište srednjeg neolitika u Hercegovini. Znatno ranije istraživano naselje Čairi u Stocu, koje je osim nalaza tog vremenskog odsjeka neolitika sadržavalo i depozit *impresso* keramičke kulture, nije nikada objavljeno, a posve površne informacije dostupne arheološkoj javnosti odnose se samo na nalaze ranog neolitika.<sup>30</sup> Budući da su mi svi nalazi s Čaira poznati iz iscrpne autopsije, s potpunom sigurnošću i znanstvenom odgovornošću

lo culture but to different cultural ambiances. I refer primarily to the Middle Neolithic from Vela špilja on the island of Korčula,<sup>25</sup> and then also phenomena in the southern periphery of the eastern Adriatic region and its hinterland, and wider Ionian region and North Macedonia: Cetush II, Cakran, Dunavec I, Kolshu II, Blaz III, Reštani.<sup>26</sup> Similarities in pottery characteristics among the Neolithic cultures from the southern Adriatic and Ionian region and their wider hinterlands have been recognized for quite some time, and they have been emphasized by several authors in different contexts, perhaps most explicitly by the Albanian authors M. Korkuti, Zh. Andrea, and F. Prendi,<sup>27</sup> and A. Benac who plausibly presented similarities in a very broad Mediterranean region, context of which encompasses the Middle Neolithic finds from Bosnia, and sites in Pelagonia and the region of Ohrid.<sup>28</sup> Publications of finds from Gudnja made these connections even more recognizable.<sup>29</sup>

At this level of exploration Beriš represents only the second excavated site (but at the same time the first published) of the Middle Neolithic in Herzegovina. The site of Čairi in Stolac, that was excavated much earlier, contained not only the finds of this chronological segment of the Neolithic but also a deposit of the *Impresso Ware* culture. However this site has never been published, and quite superficial information available to the archaeological public refer only to the Early Neolithic finds.<sup>30</sup> Since I have examined all the finds from Čairi I can state with absolute certainty and scientific responsibility that there is a high degree of correspondence between these two sites in all kinds of ceramic material and

<sup>25</sup> B. ČEČUK, D. RADIĆ, 2005.

<sup>26</sup> B. MARIJANOVIĆ, 2005, 47-48.

<sup>27</sup> M. KORKUTI, Zh. ANDREA, 1975, 83; F. PRENDI, 1976, 58-60.

<sup>28</sup> A. BENAC, 1977, 45-55; A. BENAC, 1979, 458-459, 465-466; A. BENAC, 1989, 10 i dalje.

<sup>29</sup> B. MARIJANOVIĆ, 2005, 47-48.

<sup>30</sup> V. ATANACKOVIĆ-SALČIĆ, 1973, 17-18; V. ATANACKOVIĆ-SALČIĆ, 1976, 25-26, T. XI, 1.

<sup>25</sup> B. ČEČUK, D. RADIĆ, 2005.

<sup>26</sup> B. MARIJANOVIĆ, 2005, 47-48.

<sup>27</sup> M. KORKUTI, Zh. ANDREA, 1975, 83; F. PRENDI, 1976, 58-60.

<sup>28</sup> A. BENAC, 1977, 45-55; A. BENAC, 1979, 458-459, 465-466; A. BENAC, 1989, 10. ff;

<sup>29</sup> B. MARIJANOVIĆ, 2005, 47-48.

<sup>30</sup> V. ATANACKOVIĆ-SALČIĆ, 1973, 17-18; V. ATANACKOVIĆ-SALČIĆ, 1976, 25-26, T. XI, 1.

moгу tvrditi kako između tih dvaju nalazišta postoji visok stupanj podudarnosti u svim vrstama keramičke građe, te da ta podudarnost podjednako uključuje njezina tipološka i ukrasna svojstva. Jednako kao i na Berišu, i među ukrasima na keramičkim nalazima s Čairi prevladava pravocrtnost i jednostavnost u izboru motiva, nema složenih kompozicija ni primjera s velikim likovnim ili artistskim dometom, a urezivanje je i tamo jedina ukrasna tehnika. Posebno je indikativno što ni na Čairima, jednako kao i na Berišu, nema nikakve naznake o ukrašavanju keramike slikanjem. Na današnjoj razini poznavanja neolitika u jadranskom zaleđu, izgleda da je odsutnost tog tehničkog postupka pri ukrašavanju keramike u Hercegovini konstanta sve do kasnog neolitika. Jedini primjer slikanja na keramičkim nalazima ranog i srednjeg neolitika u Hercegovini predočava ulomak iz ranoneolitičkog sloja Hateljske pećine, ali on je tamo posljedica nekih drugih odnosa među neolitičkim zajednicama tog vremenskog odsjeka neolitika. U vezi s tim ulomkom nedavno su, posve izvan konteksta kojim su se bavili, M. Blečić Kavur i D. Komšo iznijeli eksplicitne kvalifikacije ovdje potpisanog autora.<sup>31</sup> Međutim, kako je riječ o autorima čija je relevantnost za problematiku neolitika na Jadranu, a pogotovo njegovu hercegovačkom zaleđu, proporcionalna relevantnosti njihovih bibliografija na tu temu, bilo kakva diskusija o tome bila bi krajnje besmislena.

Kulturna pripadnost i relativnokronološka pozicija nalazišta na Berišu samo su jedna od pitanja koja se otvaraju njegovim otkrićem. Jednako važno, a u svakom slučaju mnogo intrigantnije jest pitanje njegova stvarnog karaktera. Drugim riječima, pitanje jest je li ovdje riječ o nalazištu koje ilustrira samo jednu prilično beznačajnu epizodu u prostorno-naseobinskim dinamikama neolitičkog svijeta ili pak o nalazištu koje predočava poseban obrazac u ponašanju jedne neolitičke zajednice,

that this correspondence includes equally its typological and decorative characteristics. Just like in Beriš, ornaments on pottery finds from Čairi are dominated by linearity and simplicity in selection of motifs, there are no complex compositions or examples with high visual or artistic achievements, and incising is the only decorative technique at this site as well. It is particularly indicative that there are no traces of decorating the pottery by painting neither in Čairi nor in Beriš. At the current level of understanding the Neolithic in the Adriatic hinterland, it seems that the absence of this technical procedure in pottery decoration was a constant in Herzegovina until the Late Neolithic. The only example of painting on pottery finds from the Early and Middle Neolithic in Herzegovina is found on a fragment from the Early Neolithic layer of Hateljska pećina, but this piece is a consequence of some other relations between the Neolithic communities of this chronological segment of the Neolithic. In relation to this fragment, M. Blečić Kavur and D. Komšo expressed explicit qualifications of the author of this paper, completely out of context that they dealt with.<sup>31</sup> However since relevance of these authors with regard to problems of the Neolithic on the Adriatic, and in particular in its Herzegovinian hinterland is proportional to the relevance of their bibliographies on this subject, any kind of discussion would be pointless.

Cultural attribution and relative chronological position of the site in Beriš are only some questions opened with its discovery. The question of its actual character is just as important, and definitely more intriguing. In other words the question is if this is a site that illustrates only one rather irrelevant episode in the spatial and settlement dynamics of the Neolithic world or a site that represents a special pattern in the behaviour of one Neolithic community, its social organization, economic strategy and spatial use. Following facts should be consid-

<sup>31</sup> M. BLEČIĆ KAVUR, D. KOMŠO, 2015, 86.

<sup>31</sup> M. BLEČIĆ KAVUR, D. KOMŠO, 2015, 86.

njezinoj socijalnoj organizaciji, privrednoj strategiji i iskorištavanju prostora. Pri odgovoru na to pitanje potrebno je uzeti u obzir sljedeće činjenice.

Prvo. Prostorna skromnost Beriša očigledno pokazuje kako na tom mjestu nije prebivala i svoje aktivnosti prakticirala nikakva veća nego tek malobrojna neolitička zajednica. Međutim, veličina zajednice, njezina struktura i unutar-nji odnosi pripadaju području socijalnih odnosa i dinamika na široj društveno-prostornoj razini i sami po sebi nikako ne impliciraju ni karakter prebivanja ni njegovu vremensku dimenziju, a pogotovo ne određuju vrstu ili tip nalazišta.

Drugo. Minimalno formiran depozit i skromnija graditeljska aktivnost, vrlo vjerojatno jednokratnog karaktera i bez obnavljanja, sami po sebi ne upućuju na dugotrajno, nego vremenski ograničeno prebivanje na tom mjestu, ali nikako ne sugeriraju i zaključak da je u prostorno-naseobinskim dinamikama neolitičkih zajednica ovog područja Beriš tek privremena i vrlo kratkotrajna postaja zajednice koja na tom mjestu nije provela nikakav oblik praktičnih naseobinskih aktivnosti.

Treće. Da bi isključivanje naseobinske dimenzije ovog nalazišta bilo posve pogrešno, pokazuju i ustanovljene graditeljske aktivnosti, unatoč njihovoj očiglednom odstupanju od naseobinskih struktura i s njima povezanih pojava uobičajenih na mjestima dugotrajnijeg ili višegeneracijskog života populacijski većih neolitičkih zajednica. Naime, postojanje graditeljske aktivnosti koja nadilazi razinu elementarnog zaklona, dostatnog samo za kratkotrajno zadržavanje, ne upućuje na pasivnu uvjetovanost ili slučajnost pri odabiru, nego sugerira namjeru zajednice, bez obzira na njezinu veličinu, da na izabranom mjestu i aktivno prebiva.

Četvrto. Na naseobinsku dimenziju Beriša upućuju i druge aktivnosti koje predočava prethodno opisana arheološka građa. Naime, neovisno o malobrojnosti, struktura arheološke građe prikupljene na Berišu ne pokazuje

ered in answering that question:

Firstly. Spatial modesty of Beriš indicates that a small-numbered Neolithic community resided and practiced their activities at this place. However the size of the community, its structure and inner relations belong to the field of social relations and dynamics on a wider social and spatial level and in themselves they do not imply the character of dwelling or its chronological dimension, and in particular they do not determine the kind or type of the site.

Secondly. Minimally formed deposit and modest building activity, probably used on one occasion, without renewals, do not indicate long-term but chronologically limited habitation at this place, but they definitely do not suggest a conclusion that in spatial and settlemental dynamics of the Neolithic communities of this region Beriš represents only a temporary and very short-lasting station of a community that did not practice any form of practical settlement activities.

Thirdly. Exclusion of the settlement dimension of this site would be incorrect as indicated by the recorded building activities despite their deviation from settlement structures and associated phenomena common at places of lengthy or multigenerational habitation of bigger Neolithic communities. Namely presence of building activity that exceeded the level of an elementary shelter, sufficient only for short-term stay, does not indicate passive conditionality or coincidence in selection, but it suggests the intention of a community, regardless of its size, to actively reside at the chosen spot.

Fourthly. Settlement dimension of Beriš is indicated by other activities illustrated by previously described archaeological material. Namely regardless of small number, structure of archaeological material collected in Beriš does not show deficit in basic categories of finds common in much bigger and longer-lasting agglomerations. This fact, in itself, suggests distinct correspondence between the practical

deficit u osnovnim kategorijama nalaza uobičajenih na znatno većim i dugotrajnijim aglomeracijama. Ta činjenica, sama po sebi, sugerira i izrazitu podudarnost između praktičnih aktivnosti na Berišu i aktivnosti kakve su se provodile na dugotrajnim naseljima, dok su kvantitativne razlike samo ilustracija razlika u njihovim intenzitetima i trajanju. Naime, posve je prirodno da materijalna produkcija na velikim i dugotrajnim aglomeracijama s brojnijom populacijom znatno nadilazi produkciju na nalazištima kakvo je Beriš.

Peto. Masivne izrađevine od glačanog kamena vrlo su dobra ilustracija istovrsnih praktičnih aktivnosti s kojima se uporaba tih izrađevina povezuje na znatno većim nalazištima, a njihova zastupljenost u proporcionalno velikom broju na Berišu te aktivnosti ne predočava u minimalnom nego u vrlo intenzivnom obliku.

Šesto. Osim predmeta povezanih sa svakodnevnim praktičnim aktivnostima, na nalazištu je prikupljeno i više ulomaka kulturnih ritona na četiri noge koji čine vrlo brojno zastupljen dio arheološke građe na većini nalazišta danilske kulture. Množina u kojoj su na tim nalazištima obično zastupljeni dopušta vrlo utemeljenu pretpostavku o duboko ukorijenjenoj ritualnoj praksi koja nije ekskluzivno povezana s ustaljenim ili posebnim prigodama, nego čini dio učestalog, gotovo svakodnevnog ritualnog ponašanja u danilskim društvenim zajednicama. Da je na Berišu pronađen samo jedan primjerak ritona, to bi možda moglo biti sugestivno za zaključak o jednokratnom činu koji je u zajednici, nakratko zaustavljenoj na tom mjestu, proveden u obliku ritualne prakse i procedura povezanih s njezinim trenutnim potrebama. Međutim, činjenica da na Berišu nije pronađen samo jedan, nego više primjeraka ritona, među kojima postoje i veća tipološka nijansiranja, vrlo sugestivno upućuju na višekratno prakticiranje rituala s kojim su povezani, što bi i u tom primjeru, analogno pojavama na većim i znatno dugotrajnijim danilskim naseljima, trebalo ilustrirati posve prirodan oblik

activities in Beriš and activities performed in long-lasting settlements while the quantitative differences are just an illustration of differences in their intensities and durations. Namely it is quite natural that material production at big and long-lasting agglomerations with large populations is considerably bigger than at sites such as Beriš.

Fifthly. Massive artifacts of polished stone are a very good illustration of identical practical activities associated with these implements at much bigger sites, and their share in proportionally big number at Beriš presents these activities not in a minimal but very intensive form.

Sixthly. Except for objects related to everyday practical activities, several fragments of cult rhyta on four legs were also found at the site as a traditionally well represented category of archaeological material at most sites of the Danilo culture. Their multitude at these sites allows a well-supported hypothesis about deeply ingrained ritual practice that was not exclusively related to usual or special circumstances, but it constitutes a part of frequent, almost everyday ritual behaviour in the Danilo social communities. If only one example of rhyton was found in Danilo, this might have been suggestive for a conclusion about a one-time act that was performed in a community, stopping shortly at this spot, in form of a ritual practice and procedures associated with the needs of the community at that moment. However the fact that several rhyta were found in Beriš, exhibiting considerable typological differences, indicate very suggestively to repeated practicing of the rituals they were related to, which should in this case as well, parallel to phenomena at bigger and longer-lasting Danilo settlements, illustrate quite natural form of ritual behaviour in spatial frameworks chosen for more permanent active habitation.

The context of the settlement dimension of Beriš is enriched by two more intriguing objects: one complete and one partially preserved

ritualnog ponašanja u prostornim okvirima izabranim za trajnije aktivno prebivanje.

U kontekst naseobinske dimenzije Beriša ulaze još dva intrigantna predmeta: jedna cjelovita i jedna djelomice ušćuvana pravokutna pločica sa žljebovima izvedenim po sredini njihovih obiju širih ploha. Njihova intrigantnost uvjetovana je prije svega dosadašnjim malim brojem primjeraka poznatih isključivo na ograničenom području sjeverne Dalmacije (Smilčić, Danilo, Barice u Benkovcu)<sup>32</sup>, potom odsutnošću konteksta koji bi sugerirali smisao njihove svrhe i namjene, njihovim oblikovnim varijabilnostima te, napokon, našim ograničenjima u spoznavanju razloga ili možda ideja koje stoje u osnovi njihove produkcije. S nalazima na Berišu ta se intrigantnost nimalo ne smanjuje nego još i povećava, jer se dosad teritorijalno ograničenoj pojavi pridružuju i nalazi iz znatno južnijeg dijela jadranskog zaleđa. Ovdje se, međutim, ne namjeravam baviti tom problematikom jer bi, po mojem mišljenju, u nedostatku novih elemenata koji bi omogućili kvalitativan pomak u njihovu interpretiranju, takva rasprava bila posve jalova. Umjesto toga, ovdje ću se zadržati samo na konstataciji da uz ostale već navedene razloge i ovi nalazi, karakteristični za nekoliko velikih i stabilnih neolitičkih aglomeracija, podupiru tvrdnju o naseobinskom karakteru nalazišta na Berišu.

Zbog svih navedenih razloga, smatram da nalazište na Berišu nije moguće promatrati ni kao slučajnu pojavu ni kao beznačajnu anomaliju, nego kao poseban oblik naseobinskih realiteta neolitičkog stanovništva šireg jadranskog područja, uvjetovanih varijabilnostima topografskih, pedoloških, hidrografskih, vegetacijskih i inih raznolikosti okruženja u kojem obitavaju, čijim međudjelovanjem u kultur-

rectangular plaque with grooves executed in the middle of both their wider surfaces. They are intriguing primarily because of previous small number of such objects known only in the limited region of northern Dalmatia (Smilčić, Danilo, Barice in Benkovac),<sup>32</sup> then absence of context that might suggest the meaning of their purpose and function, their morphological variabilities, and finally our limitations in comprehending the reasons or perhaps ideas behind their manufacture. This intrigue is not resolved with the finds from Beriš, on the contrary, since a territorially limited phenomenon is enriched by finds from more southerly part of the Adriatic hinterland. However here I do not intend to deal with this subject because such discussion would be futile in absence of new elements that might enable qualitative advancement in their interpretation. Instead of that, I will only state that these finds, alongside already mentioned reasons, characteristic of several big and stable Neolithic agglomerations, support a statement about the settlement character of the site in Beriš.

Due to all the aforementioned reasons I believe that the site of Beriš cannot be observed as an accidental phenomenon or an irrelevant anomaly but as a special form of settlement realities of the Neolithic population of the wider Adriatic region, caused by variabilities of topographic, pedologic, hydrographic, vegetational and other variabilities of the surrounding in which they lived, and whose interaction in the cultural landscape resulted in phenomena that differ greatly from one another in form, function, size and shapes.

The site in Beriš definitely has a settlement dimension in the Neolithic sense although by its size, spatial organization and duration it

<sup>32</sup> Za pregled nalaza te vrste usporediti: D. VUJEVIĆ, K. HORVAT, 2013, 95–112. Povezivanje danilskih pločica s nekim nalazima na Butmiru ne držim realnim. Nasuprot labavoj poveznici koju čine samo žljebovi, izvedeni na pločicama i butmirskim nalazima, stoje velike oblikovne razlike jer su butmirski primjerci znatno masivniji i uopće nemaju oblik pločica nego su puno bliži kvadru ili paralelepipedu.

<sup>32</sup> For an overview of finds of this kind cf. D. VUJEVIĆ, K. HORVAT, 2013, 95–112. In my opinion associating Danilo plaques with some finds from Butmir does not seem realistic. There is a loose connection consisting of only grooves made on plaques and Butmir finds in contrast to big morphological differences since Butmir examples are far more massive and not in form of plaques but much closer to cuboid or parallelepiped.

nom krajoliku nastaju pojave koje se formom, namjenom, veličinom i oblicima međusobno veoma razlikuju.

Nalazište na Berišu zasigurno ima naseobinsku dimenziju u neolitičkom smislu premda se svojom veličinom, prostornom organizacijom i trajanjem ne uklapa u paradigmu o tipičnim neolitičkim zajednicama i njihovim aglomeracijama. S druge strane, budući da zajednica kojoj je ono pripadalo nije mogla biti veća od dvije, tri neolitičke obitelji, postojanje takvih naseobina sugerira stanovit oblik fragmentiranosti neolitičkog svijeta, uvjetovan bilo zahtjevima i ograničenjima ambijentalnih posebnosti bilo njihovim potencijalima, koja dovodi do formiranja manjih društvenih skupina s vlastitim i neovisnim privrednim strategijama.

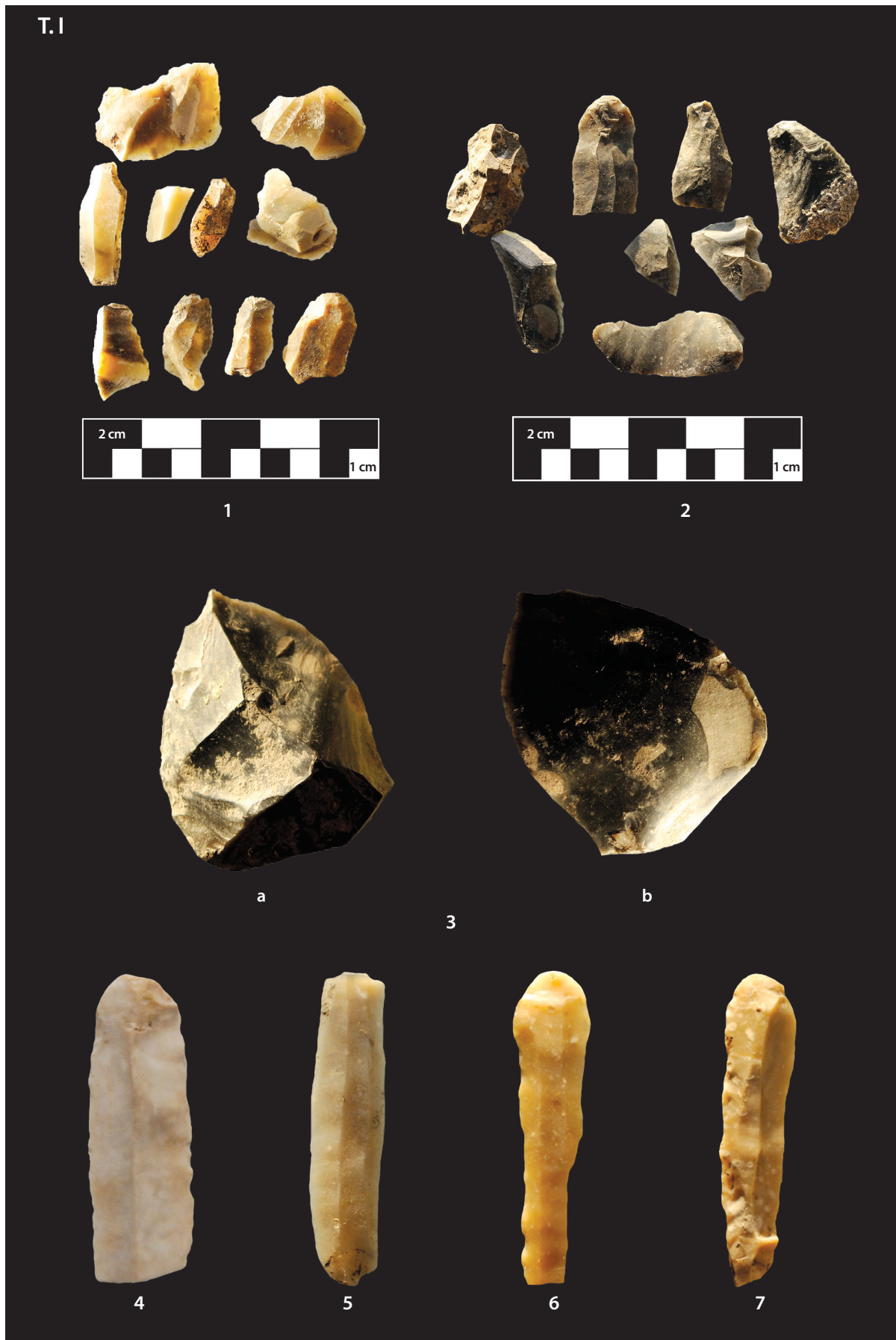
does not correspond to a paradigm of typical Neolithic communities and their agglomerations. On the other hand, since the community to which it belonged could not have been bigger than two or three Neolithic families, presence of such settlements suggests a certain form of fragmentation of the Neolithic world, caused by either entails and limitations of ambiental particularities or their potentials leading to formation of smaller social groups with their own and independent economic strategies.

*Translation: Marija Kostić*

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T. III



a

1



b



a

2



b



a

3



b



4



a

5



b



a

6



b



7



8



T.V



a

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b



2



3



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6



7



8



9

T.VI



T.VII



1



2



3



4



5



a



b



c

6

T. VIII



a



b

1



a



b

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a



b

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b

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b

5



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b

6



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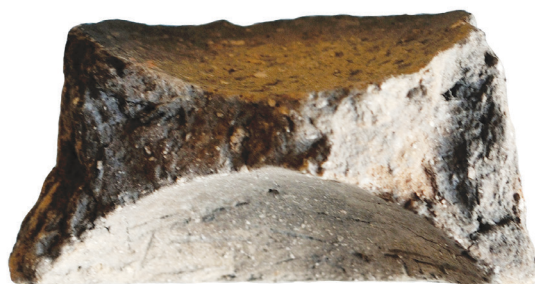
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T. IX



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6



# PODMORSKI NALAZI U MULINAMA NA OTOKU UGLJANU

## UNDERWATER FINDS IN MULINE ON THE ISLAND OF UGLJAN

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**KLJUČNE RIJEČI:**

*Muline, otok Ugljan, amfore, terra sigillata, istočna B keramika, afrička keramika, svjetiljke, staklene čaše*

*U članku su obrađeni podmorski arheološki nalazi nađeni ispred gospodarskog kompleksa u Mulinama na sjeverozapadnom dijelu otoka Ugljana. Riječ je o nalazima, prije svega keramičkih ulomaka te nešto stakla, prikupljenim tijekom kratkih sondažnih arheoloških istraživanja provedenih 1997. godine. Najveći broj pripada dijelovima amfora, ali su pronađeni i ulomci finijih sigilatnih ili grubljih kuhinjskih keramičkih posuda, nekoliko ulomaka tegula, dva ulomka uljanica i jedan pršljen. Nažalost, velik broj nalaza nije moguće tipološki odrediti jer je riječ tek o ulomcima trbuha i tijela amfora koji ne pružaju dovoljno podataka za detaljniju klasifikaciju. U radu je predstavljen samo dio primjeraka koji su sa sigurnošću determinirani, a njihovom je klasifikacijom određen vremenski okvir kojem pripada i čitav antički i kasnoantički kompleks.*

**KEY WORDS:**

*Muline, Ugljan island, amphorae, terra sigillata, eastern B pottery, African pottery, lamps, glasses*

*The article deals with underwater archaeological finds discovered in front of a complex of outhouses in Muline in the north-western part of the island of Ugljan. The finds include mostly pottery fragments and some glass collected during brief archaeological trial trenching conducted in 1997. The majority of fragments are amphora shards, but fragments of fine sigillata as well as coarse kitchenware were also found, along with several tegulae fragments, two oil lamp fragments and a whorl. Unfortunately, a large number of finds cannot be typologically classified, as they represent amphora belly and body fragments that do not provide sufficient data for more detailed classification. The paper presents only part of the specimens which it was possible to classify with certainty. Their classification determines the time frame to which the entire Antiquity and Late Antiquity complex belongs.*

Jedan od većih sjevernodalmatinskih otoka – Ugljan,<sup>1</sup> smješten u zadarskom arhipelagu, bogat je arheološkim nalazima koji sežu još u razdoblje prapovijesti,<sup>2</sup> a preko antičkih i srednjovjekovnih nastavljaju se sve do danas<sup>3</sup>. Prve potpunije podatke o arheološkim nalazima na otoku donio je don Amos R. Filipi<sup>4</sup>, premda je ostatke iz rimskog razdoblja na njegovoj zapadnoj strani krajem 19. stoljeća zabilježio Frane Bulić<sup>5</sup>. Najvažniji antički lokalitet svakako su Muline. Zabilježeni ostatci bili su povod prvim arheološkim istraživanjima koja je pedesetih i šezdesetih godina 20. stoljeća proveo akademik Mate Suić.<sup>6</sup> Tijekom druge faze istraživana je i prostrani kompleks (Sl. 1) čiji su se zidovi pružali sve do mora, a pronađeni elementi upućivali su na zaključak da je riječ o gospodarskoj vili (*villa rustica*) koja je služila za obradu maslina<sup>7</sup>, čime se poslije podrobnije bavio Boris Ilakovac<sup>8</sup>, precizno utvrdivši njezine konstruktivne elemente i način funkcioniranja.<sup>9</sup> Potaknuta kopnenim istraživanjima<sup>10</sup>

One of the larger northern Dalmatian islands, Ugljan,<sup>1</sup> located in the Zadar archipelago, is rich in archaeological finds dating back to prehistoric times,<sup>2</sup> the periods of Classical Antiquity and the Middle Ages, until the present day<sup>3</sup>. Although remains from the Roman period on the western side of the island were recorded by Frane Bulić at the end of the 19<sup>th</sup> century<sup>4</sup>, the first more complete information on archaeological finds on the island were provided by Don Amos R. Filipi<sup>5</sup>. The most important Classical Antiquity site is certainly Muline. The recorded remains were the reason for the first archaeological campaign in the 1950s and 1960s by Mate Suić, Member of the Academy.<sup>6</sup> During the second phase, the spacious complex was also excavated (Fig. 1).

Its walls extended all the way to the sea, and its uncovered construction elements suggest a countryside commercial villa (*villa rustica*) used for olive processing<sup>7</sup>. Later, B. Ilakovac dealt with the site in more detail<sup>8</sup> and precisely determined its structural elements and mode of functioning.<sup>9</sup> Driven by excavations on the

<sup>1</sup> J. FARIČIĆ, D. MAGAŠ, 2007.

<sup>2</sup> Š. BATOVIĆ, 1973; Š. BATOVIĆ, 1974, 21–34.

<sup>3</sup> Godine 1994. održan je niz predavanja, a nakon skoro deset godina objavljeni su radovi s tog skupa, najprije kao redovan tekuci svezak „Zadarske smotre“ u izdanju Matice hrvatske, a potom i kao zaseban zbornik s naslovom „Otok Ugljan“. Isto se tako i niz znanstvenika sa Sveučilišta u Zadru u sklopu svoje edicije onomastičkih istraživanja (Biblioteka *Onomastica Adriatica*) u publikaciji „Toponimija otoka Ugljana“ iz 2007. godine bavio ovim otokom. Ipak, glede arheološke problematike ovog dijela otoka Ugljana nisu spomenuti noviji rezultati, prvi nakon istraživanja Mate Suića (o tome u spomenutoj publikaciji S. ČAČE, 2007, 47–56).

<sup>4</sup> A. R. FILIPI, 1961/1962.

<sup>5</sup> F. BULIĆ, 1886, 87.

<sup>6</sup> Istraživanjima je izdvojeno više segmenata koji su do danas ostali nezaobilazni reperi arheologije ovog prostora. Riječ je o ostatcima trobrodne starokršćanske bazilike, memorije i mauzoleja (M. SUIĆ, 1960, 230–249).

<sup>7</sup> M. SUIĆ, 1960, 235–236.

<sup>8</sup> B. ILAKOVAC, 1998, 1–2; S. GLUŠČEVIĆ, 2006, 170–171; B. ILAKOVAC, 2007.

<sup>9</sup> Tijekom 1998. godine oko 1 km istočnije od Mulina obavljena su istraživanja na lokalitetu Gospodska gomila gdje je ustanovljena *villa maritima*, koja je također imala manju luku te postoji mogućnost da je bila u vezi s kompleksom gospodarske vile u Mulinama (S. GLUŠČEVIĆ, 1999, 49–53).

<sup>10</sup> U cjelokupnoj literaturi u kojoj se spominju Muline, odnosno pogon za proizvodnju ulja i vina, dobiva se dojam da je istraženi prostor jedini dio te *villae rustice*. Riječ je, me-

<sup>1</sup> J. FARIČIĆ, D. MAGAŠ, 2007.

<sup>2</sup> Š. BATOVIĆ, 1973; Š. BATOVIĆ, 1974, 21–34.

<sup>3</sup> In 1994, a series of lectures was held, and after almost ten years, the symposium papers were published, first as a regular volume of *Zadarska smotra* [“The Zadar Review”], published by Matica Hrvatska, and then also as a separate collection entitled *Otok Ugljan* [“The Island of Ugljan”]. In addition, a number of researchers from the University of Zadar dealt with this island in their edition of onomastic studies (*Biblioteka Onomastica Adriatica*) in the 2007 publication *Toponimija otoka Ugljana* [“The Toponymy of the Island of Ugljan”]. However, there has been no mention of the more recent findings related to archaeological issues concerning this part of the Island of Ugljan, which have been the first such results after Suić’s archaeological campaign (for more on this, see S. ČAČE, 2007, 47–56 in the mentioned publication).

<sup>4</sup> F. BULIĆ, 1886, 87.

<sup>5</sup> A. R. FILIPI, 1961/1962.

<sup>6</sup> In the campaign, several segments were identified that have remained indispensable benchmarks in the archaeology of the area. These are the remains of a three-nave Early Christian basilica, a *memoria* and a mausoleum (M. SUIĆ, 1960, 230–249).

<sup>7</sup> M. SUIĆ, 1960, 235–236.

<sup>8</sup> B. ILAKOVAC, 1998, 1–2; S. GLUŠČEVIĆ, 2006, 170–171; B. ILAKOVAC, 2007.

<sup>9</sup> In 1998, an archaeological campaign was conducted at the Gospodska Gomila site about 1 km east of Muline, where



**SLIKA 1.** Pogled iz zraka na gospodarski kompleks u Mulinama s dijelom luke. U manjem krugu položaj Gospodske gomile (foto: S. Gluščević).

**FIGURE 1** Aerial view of the complex of outhouses in Muline with part of the port. Outlined in the smaller circle is the location of the Gospodska Gomila complex (photo by: S. Gluščević).

i važnošću proizvodnog pogona, krajem devedesetih godina 20. stoljeća obavljena su kraća podmorska arheološka istraživanja u plitkom moru ispred samog kompleksa.<sup>11</sup>

Tijekom nekoliko radnih dana u lipnju i srpnju 1997. godine, četveročlana ekipa Arheološkog muzeja Zadar<sup>12</sup> pokušala je utvrditi postoje li ostatci luke, kakva je stratigrafska slika podmorja ispred gospodarskog kompleksa i u kojoj se mjeri materijal u njima poklapa s vremenskim okvirom u kojem su nastajali najprije proizvodni pogon<sup>13</sup>, a zatim mauzolej, martirij i bazilika. Međutim, tijekom nekoliko desetljeća upravo je taj dio između gospodarskog objekta i mora nasut (velikim dijelom i odlaganjem materijala tijekom istraživanja proizvodnog pogona), napravljena je cesta, a onda i dva mula te su iz tog razloga i rezultati istraživanja bili vrlo neizvjesni. U sklopu istraživanja snimljene su pojedine točke kako bi se barem donekle naznačio areal rasprostiranja eventualne antičke rive ili privezišta, a pritom su ucrtavane i sonde u kojima se radilo.

Istraživanjem su otvorene tri sonde na dubini od otprilike 2 m<sup>14</sup> na prostoru na kojem je uočeno veće kamenje koje je na neki način činilo neprekinuti niz. Jedna sonda bila je po-

đutim, samo o jednom, i to o manjem dijelu cjelokupnog kompleksa. U prilog tomu govore ostatci zidova koji su bili vidljivi i tijekom istraživanja pedesetih i šezdesetih godina 20. stoljeća (tim više je nerazumljivo njihovo nespominjanje), ali i naknadni radovi i geofizička istraživanja (S. GLUŠČEVIĆ, 2011) kojima su nađeni segmenti pojedinih zidova, ali i nekih drugih objekata. O tome je u pripremi poseban rad (usporedi Sl. 2).

<sup>11</sup> Za kratka sedmodnevna sondažna istraživanja sredstva je osigurala Općina Preko na čemu valja zahvaliti tadašnjem vrlo agilnom načelniku Mladenu Lucinu.

<sup>12</sup> Uz voditelja istraživanja Smiljana Gluščevića i dvoje apsolutno arheologije tadašnjeg Filozofskog fakulteta u Zadru, kao voditelj tehničke dokumentacije sudjelovao je i B. Ilakovac.

<sup>13</sup> Suić je čitav pogon datirao u 1. stoljeće, dok je Ilakovac smatrao kako nije mogao nastati prije početka 2. stoljeća po Kr.

<sup>14</sup> S obzirom na dubinu, očito je da je riječ o prostoru koji se nalazio na razmeđu nekadašnjeg kopna i mora, odnosno u najplićem dijelu luke, što je povezano s oscilacijama morske razine u vrijeme antike općenito, pa tako i na našoj obali (E. FUASCHE et. al., 2006; S. FAIVRE et. al., 2010, 91–99).

mainland<sup>10</sup> and the importance of the production facility, in the late 1990s, a brief underwater archaeological campaign was conducted in the shallow sea in front of the complex itself.<sup>11</sup>

In the course of several workdays in June and July 1997, a four-member team of the Archaeological Museum Zadar<sup>12</sup> tried to determine if there were remains of a port, what the stratigraphic picture of the underwater area in front of the complex of outhouses was, and to what extent the material in them overlapped with the timeframe in which first the production facility<sup>13</sup>, and then obviously the mausoleum, martyrium and basilica came into existence. However, over several decades, precisely the part between the outhouses and the sea was filled – largely also with material disposed during the excavations at the production facility. Subsequently, a road, and then two moles were constructed, so that the exploration results were very uncertain. As part of the campaign, individual points were recorded to indicate, at least to some extent, the distribution area of an assumed Antiquity waterfront or mooring site, while at the same time trial trenches were designed.

As part of the campaign, three approximate-

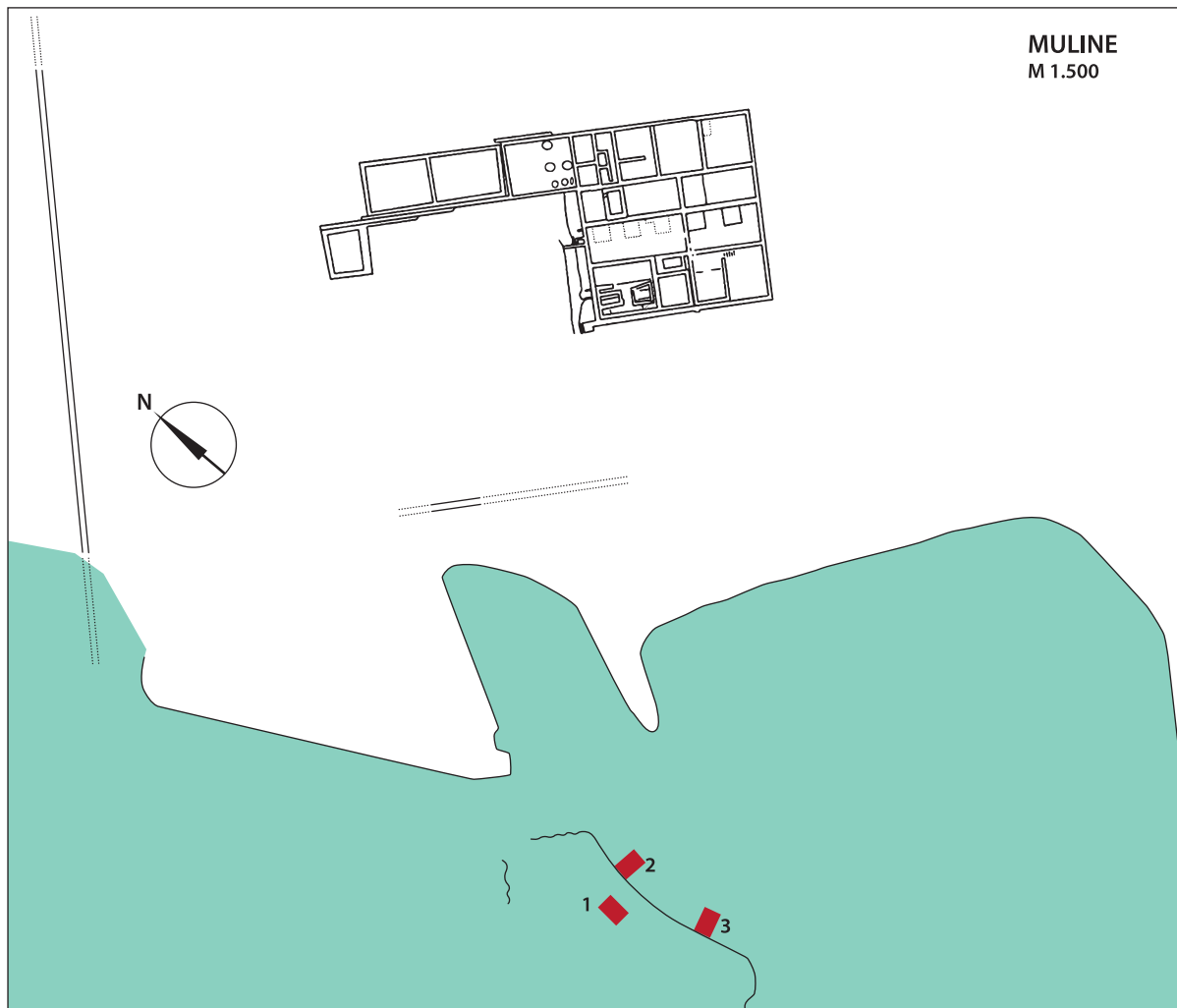
a *villa maritima* was identified, which also had a smaller port and was possibly connected with the commercial villa complex in Muline (S. GLUŠČEVIĆ, 1999, 49-53).

<sup>10</sup> Literature that mentions Muline, i.e. facilities for oil and wine production, suggests that the surveyed area made up the whole *villa rustica*. However, it is only one small part of the entire complex. This assumption is supported by the remains of walls that were already detected in the archaeological campaigns of the 1950s and 1960s (making it even more puzzling that they were not mentioned), but also in subsequent campaigns and geophysical explorations (S. GLUŠČEVIĆ, 2011), which uncovered segments of individual walls, as well as some other structures. A special paper is being prepared to present these findings (cf. Fig. 2).

<sup>11</sup> The funds for a brief, seven-day trial trenching project were provided by the municipality of Preko thanks to the very resourceful mayor of that time, Mladen Lucin.

<sup>12</sup> Along with the campaign leader Smiljan Gluščević and two graduate students of archaeology at the Faculty of Philosophy and Social Sciences in Zadar, Boris Ilakovac also participated in the campaign managing technical documentation.

<sup>13</sup> Suić dated the entire complex to the 1<sup>st</sup> century AD, while Ilakovac believed that it could not have been established before the beginning of the 2<sup>nd</sup> century AD.



SLIKA 2. Podmorska istraživanja u Mulinama – položaj sonde u odnosu na gospodarski kompleks (prema S. Gluščević; crtež: I. Čondić).

FIGURE 2 Underwater explorations in Muline – location of trial trenches in relation to the complex of outhouses (according to S. Gluščević, drawing by: I. Čondić).

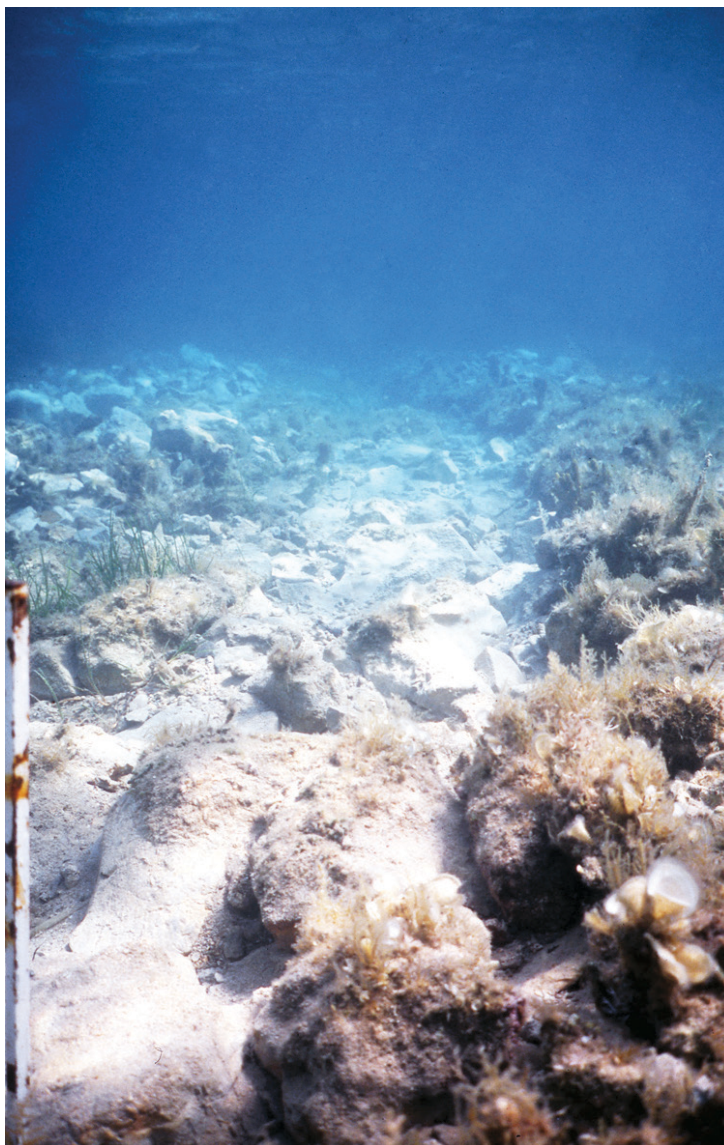
stavljena s vanjske strane kamene formacije, druga s unutrašnje strane niza kamenja za koji se pretpostavljalo da bi mogao biti lice antičkog objekta te je naknadno otvorena i treća sonda (Sl. 2). Namjera je bila očistiti dio tog prostora kako bi se utvrdilo je li zaista riječ o dijelu određene strukture, a zatim definirati debljinu kulturnog sloja. Nakon što je očišćeno površinsko kamenje, za koje je bilo sve manje indicija da čini dio određenog objekta (Sl. 3), nastavilo se čistiti u dubinu.

U gotovo čitavoj visini sonde prevladavala je ogromna količina kamenja različite veličine<sup>15</sup>,

<sup>15</sup> Da bi se upoće moglo mamutirati, jedna je osoba stalno morala odnositi veliku količinu kamena koji nije mogao

ly 2 m deep trial trenches were dug<sup>14</sup> in a zone where large stones had been noticed which in a way formed a continuous series. The first trial trench was dug outside a rock formation, the second inside a series of stones that was thought to be the face of an Antiquity structure, and subsequently a third trench was dug (Fig. 2) The intention was to clear some of the space to determine if it really was part of a particular structure and then to define the thick-

<sup>14</sup> Considering the depth, this was obviously once the demarcation between what was then the land and sea, in the shallowest part of the port, which is associated with sea level oscillations in Classical Antiquity in general, including the present-day Croatian coast (E. FUASCHE et al., 2006; S. FAIVRE et al., 2010, 91-99).



SLIKA 3. Dio blago zakrivljenog kamenog niza na kojem je započelo istraživanje (foto: S. Gluščević).

FIGURE 3 Part of the slightly curved series of stones from which the campaign began (photo by: S. Gluščević).

a u dubljim su se slojevima pijeska, mulja te amornog krupnijeg i sitnijeg kamenja počeli pojavljivati keramika i staklo. Na samom je dnu bilo ostataka grančica, drveta s ponekom šišarkom, ljuskom oraha i sl. (Sl. 4).<sup>16</sup> Isto tako otprilike od polovice pa do dna sonde, kojoj je dno bilo na 120 cm, brojni su ostatci ježinaca, volaka, poneka ljuštura kopitnjaka, kamenica, rjeđe dagnji te drugih puževa i školjaka.

proći kroz mamut.

<sup>16</sup> Nedovoljno oštra snimka napravljena je analognim fotoaparatom, a poslije je digitalizirana.

ness of the cultural layer. After the clearing away of the surface stones – and it gradually became clear that they most probably had not been part of a particular structure (Fig. 3) – the clearing continued further downwards.

Almost for the entire height of the trial trenches, a huge amount of stones of varying size prevailed<sup>15</sup>, and then, in the deeper layers of sand, silt and amorphous large and fine stones, pottery and glass began to appear. At the very bottom there were remains of twigs, wood with an occasional cone, walnut shell, and the like (Fig. 4)<sup>16</sup>. The situation was similar from about halfway down to the bottom of the trial trench whose bottom was at a depth of 120 cm, but there were also numerous remains of sea urchins and murexes, as well as occasional shells of *spondylus gaederopus*, oysters, and, less frequently, of mussels, but also of other snails and bivalvia.

The campaign provided only a basic insight into the stratigraphic situation, but, given the small size of the digs, no concrete conclusions could be drawn (Fig. 5). For such conclusions it will be necessary to substantially expand the campaign onto a

much wider area. In addition, what was apparently once an embankment extending from the top of the inner mole towards the coast at an angle of approximately 45° should also be explored (see Fig. 1).

However, by classifying only a portion of the unearthed archaeological material<sup>17</sup>, it is possi-

<sup>15</sup> To enable dredging, one person had to constantly carry away large amounts of stones that could not pass through the dredge.

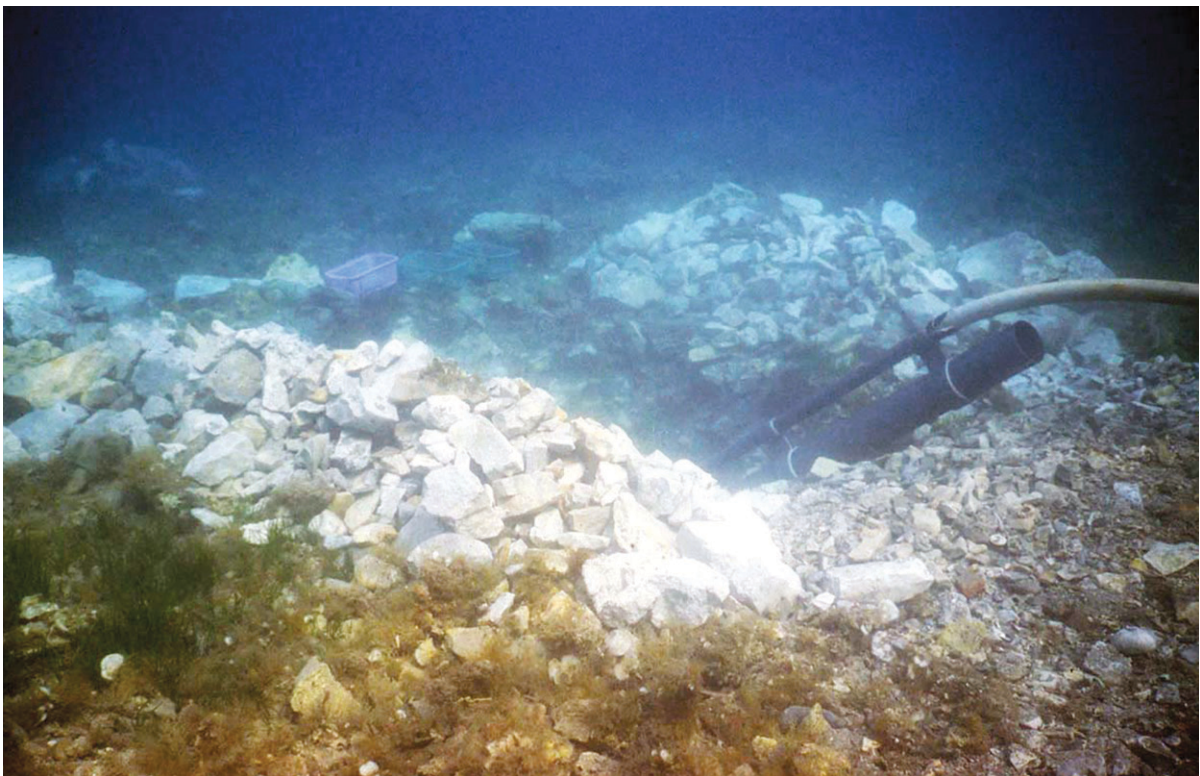
<sup>16</sup> An insufficiently sharp shot was taken with an analogue camera and later digitised.

<sup>17</sup> Initially, a total of 138 fragments of material were processed, but for this occasion, due to limited space, only 22



SLIKA 4. Donji dio sonde u kojoj su vidljivi ostatci granja i drveta (foto: S. Gluščević).

FIGURE 4 Lower part of the trial trench with visible remains of twigs and wood (photo by: S. Gluščević).



SLIKA 5. Pogled na istraživanje u sondi 1 (foto: S. Gluščević).

FIGURE 5 View of the dig in trial trench 1 (photo by: S. Gluščević).

Istraživanjima je dobiven samo osnovni uvid u stratigrafsku sliku, no konkretnije zaključke, s obzirom na veličinu zahvata, nije bilo moguće donijeti (Sl. 5). Za takve zaključke trebat će znatno dopuniti istraživanja na značajno širem prostoru. Također, valjalo bi provjeriti očito nekada postojeći nasip koji od vrha unutrašnjeg mulića, otprilike pod kutom od 45° ide u pravcu obale (vidi Sl. 1).

Ipak, klasifikacijom samo dijela pronađenog arheološkog materijala<sup>17</sup>, moguće je odrediti barem okvirne datume kojima pripadaju istraživane strukture i čitav kompleks izvan mora. Osim primjeraka koje možemo sa sigurnošću determinirati (amfore, finija i grublja keramika i staklo), postoji i velik broj onih kod kojih to nije moguće jer je riječ tek o ulomcima koji pripadaju trbusima ili tijelima amfora različite fature, boje i kvalitete i koji ne pružaju dovoljno podataka za detaljniju klasifikaciju. Velik broj tih ulomaka na različite načine nabren, pa je za neke bez sumnje moguće tvrditi da je riječ o bizantskim tipovima amfora. Iz tog se razloga u radu donosi tek mali broj ulomaka relevantnog materijala, dok će šira obrada biti napravljena na drugom mjestu.<sup>18</sup>

Među izdvojenim nalazima amfora najranije datiramo ulomak koji vrlo vjerojatno pripada amfori tipa *Dressel 2-4*<sup>19</sup> (Kat. br. 1). Riječ je o ulomku bifidne ručice s djelomično sačuvanom bazom koju vjerojatno ne bi trebalo datirati prije početka 2. stoljeća. Osnovno obilježje ovih amfora, osim tijela, upravo su bifidne ručice te, iako postoje i druge s jednako oblikovanim ručicama, s obzirom na učestalost i rasprostranjenost upravo ovog tipa na nalazištima širom Jadrana, možemo pretpostaviti da je riječ o amfori tipa *Dressel 2-4*. Kao najrašire-

ble to at least approximately date the explored structures, as well as the entire complex outside the sea. In addition to specimens that can be classified with certainty (amphorae, fine and coarse pottery and glass), there are many artefacts that cannot be categorised because they are but fragments of bellies or bodies of amphorae of different fabric, colour and quality, and do not provide sufficient information for a more detailed classification. Many of these fragments are ribbed in different ways, so some can doubtlessly be categorised as Byzantine amphorae types. Therefore, in this paper, only a small number of fragments of relevant material are described, while a broader categorisation will be published elsewhere.<sup>18</sup>

Among the selected amphora finds, the earliest dated is a fragment that most likely belongs to the Dressel 2-4 amphora type<sup>19</sup> (Cat. No. 1). It is a fragment of a bifid handle with a partially preserved base that should probably be dated not earlier than the beginning of the 2<sup>nd</sup> century. The main characteristics of these amphorae, apart from their body, are particularly the bifid handles and, although there are also others with similarly shaped handles, given the frequency and distribution of this type at sites throughout the Adriatic, we can assume that this was a Dressel 2-4 type amphora. As the most widespread type of amphorae in the early Empire in the western Mediterranean, they developed out of Koan prototypes of Hellenistic date<sup>20</sup>, and were used for the transport of wine, although dates were also found in some amphorae<sup>21</sup>. Their production began in

finds were selected.

<sup>17</sup> Prvotno je obrađeno ukupno 138 ulomaka, no za ovu su prigodu, zbog ograničenog prostora, izdvojena samo 22 nalaza.

<sup>18</sup> U Arheološkom muzeju Zadar postoji znatan dio materijala nađen kopnenim istraživanjima pedesetih i šezdesetih godina 20. stoljeća koji vremenski apsolutno korespondira s ovim nađenim u moru.

<sup>19</sup> D. P. S. PEACOCK, D. F. WILLIAMS, 1986, 105-106; T. BEZECZKY, 2013, 129-130.

<sup>18</sup> The Archaeological Museum Zadar holds a considerable amount of material unearthed in excavations conducted in the 1950s and 1960s on the mainland that wholly corresponds with the material found in the sea in terms of chronology.

<sup>19</sup> D. P. S. PEACOCK, D. F. WILLIAMS, 1986, 105-106; T. BEZECZKY, 2013, 129-130.

<sup>20</sup> D. VRSALOVIĆ, 1979, 358-360; D. VRSALOVIĆ, 1979a, T. 93: 3-5; D. P. S. PEACOCK, D. F. WILLIAMS, 1986, 10; M. JURIŠIĆ, 2000, 24; A. STARAC, 2008, 92-93; T. BEZECZKY, 2013, 129.

<sup>21</sup> M. JURIŠIĆ, 2000, 12.

niji tip amfora u ranom Carstvu na zapadnom Mediteranu, nastale su na tradiciji koanskih helenističkih amfora,<sup>20</sup> a rabile su se za transport vina, premda su u nekima pronađene i datulje<sup>21</sup>. Počele su se proizvoditi u Egeji (otok Kos – Koan tip) krajem 1. stoljeća pr. Kr., a proizvodnja, koja traje do 2.-3. stoljeća<sup>22</sup>, razvila se na prostoru čitavog Carstva, od Italije (*Campania, Latium, Etruria*)<sup>23</sup>, Galije, Retije, Hispanije (*Baetica*) do Britanije, ali i područja istočnog Jadrana, gdje je proizvodni centar bio u Crikvenici<sup>24</sup>. Zabilježene su na velikom broju lokaliteta širom zapadnog Mediterana, sve do Crvenog mora,<sup>25</sup> a vrlo su česte i na jadranskim podmorskim<sup>26</sup> i kopnenim lokalitetima.<sup>27</sup>

Amfori tipa *Forlimpopoli*<sup>28</sup> (Kat. br. 2), odnosno amfori ravnog dna koja se u starijoj literaturi naziva i amforom scolica ili jajolika tijela, u nekim klasifikacijama poznatom kao *MR amphora 13* (3. – 4. stoljeće)<sup>29</sup>, pripada dio ravnog, s unutrašnje strane blago udubljenog dna. Proizvodnja je počela u 1. stoljeću na prostoru sjeveroistočne Italije te se pretpostavlja da su u trgovini vinom zamijenile amfore tipa *Dressel 6A*.<sup>30</sup> Proizvodnja i distribucija s

the Aegean (the island of Cos – Koan type) in the late 1<sup>st</sup> century BC and throughout the 2<sup>nd</sup> century and into the 3<sup>rd</sup> century<sup>22</sup>, and it spread throughout the empire, from Italy (*Campania, Latium, Etruria*)<sup>23</sup>, Gaul, Retius, Hispania (*Baetica*) to Britain, but also to the territories of the eastern Adriatic, where the production centre was in Crikvenica<sup>24</sup>. They have been recorded at many sites throughout the western Mediterranean, appearing as far away as the Red Sea,<sup>25</sup> and are very common in both Adriatic underwater<sup>26</sup> and land sites.<sup>27</sup>

A fragment of a flat amphora base slightly flaring outwards belongs to the *Forlimpopoli* amphora type<sup>28</sup> (Cat. No. 2). Other namings for these flat-bottomed amphorae were amphorae with a heart-shaped or ovoid body, as well as MR 13 amphorae (3<sup>rd</sup>-4<sup>th</sup> centuries).<sup>29</sup> Their production began in the 1<sup>st</sup> century in what is now north-eastern Italy, and it is assumed that, in the wine trade, they replaced the Dressel 6A amphorae type.<sup>30</sup> Over time, their production and distribution spread and lasted until the 3<sup>rd</sup> century, and our specimen might belong to that later period of the 2<sup>nd</sup> and 3<sup>rd</sup> centuries. The production centre of the variant that, according to its character-

<sup>20</sup> D. VRSALOVIĆ, 1979, 358–360; D. VRSALOVIĆ, 1979a, T. 93: 3–5; D. P. S. PEACOCK, D. F. WILLIAMS, 1986, 10; M. JURIŠIĆ, 2000, 24; A. STARAC, 2008, 92–93; T. BEZECZKY, 2013, 129.

<sup>21</sup> M. JURIŠIĆ, 2000, 12.

<sup>22</sup> T. BEZECZKY, 2013, 129.

<sup>23</sup> A. STARAC, 2008, 93.

<sup>24</sup> G. LIPOVAC-VRKLJAN, 2011, 5–11.

<sup>25</sup> M. BELTRÁN LLORIS, 1970, 362–367; M. JURIŠIĆ, 2000, 12–14, Map 22.

<sup>26</sup> D. VRSALOVIĆ, 1979, 357–360; M. JURIŠIĆ, 2000, 12–14; I. KONCANI UHAČ, 2007, 365; S. GLUŠČEVIĆ, 2010, 164–165. Premda Jurišić navodi dvadesetak nalaza, Starac smatra da „distribucija tih amfora u Istri i na sjevernom Jadrano nije osobito gusta“ (A. STARAC, 2008, 93).

<sup>27</sup> Dio amfore *Dr. 2-4* upotrijebljen je kao dio pokrivala groba 8 na nekropoli u Kaljskoj ulici u Zadru, dok je u grobu 12 bila u funkciji urne (S. GLUŠČEVIĆ, 1990, T. 19: 2, T. 21: 1; G. LIPOVAC-VRKLJAN, 2011, 6).

<sup>28</sup> Na temelju nalaza s istoimenog nalazišta u Italiji, napravljena je i prva tipologija, koja je poslije nadopunjena. O tome T. ALDINI, 1978, 236–245; A. STARAC, 1994/1995, 139–140; T. ALDINI, 1999, 23–56; M. JURIŠIĆ, 2000, 20–21; D. ROMANOVIĆ, S. GLUŠČEVIĆ, 2015, 143, bilj. 17.

<sup>29</sup> J. A. RILEY, 1979, 197–199.

<sup>30</sup> M. A. CIPRIANO, M. B. CARRÈ, 1989, 88; D. ROMANOVIĆ, S. GLUŠČEVIĆ, 2015, 144, bilj. 19.

<sup>22</sup> T. BEZECZKY, 2013, 129.

<sup>23</sup> A. STARAC, 2008, 93.

<sup>24</sup> G. LIPOVAC-VRKLJAN, 2011, 5–11.

<sup>25</sup> M. BELTRÁN LLORIS, 1970, 362–367; M. JURIŠIĆ, 2000, 12–14, Map 22.

<sup>26</sup> D. VRSALOVIĆ, 1979, 357–360; M. JURIŠIĆ, 2000, 12–14; I. KONCANI UHAČ, 2007, 365; S. GLUŠČEVIĆ, 2010, 164–165. Although Jurišić mentions some twenty finds, Starac believes that “the distribution of these amphorae in Istria and the northern Adriatic is not particularly dense” (A. STARAC, 2008, 93).

<sup>27</sup> Part of a Dressel 2-4 amphora was used as part of the cover of grave 8 at the necropolis in Kaljska Ulica in Zadar, while in grave 12 it had the function of an urn (S. GLUŠČEVIĆ, 1990, T. 19: 2, T. 21: 1; G. LIPOVAC-VRKLJAN, 2011, 6).

<sup>28</sup> Based on finds from the site in Italy bearing the same name, the first typology was made, which was later completed. For more on this, see T. ALDINI, 1978, 236–245; A. STARAC, 1994–1995, 139–140; T. ALDINI, 1999, 23–56; M. JURIŠIĆ, 2000, 20–21; D. ROMANOVIĆ, S. GLUŠČEVIĆ, 2015, 143, n. 17.

<sup>29</sup> J. A. RILEY, 1979, 197–199.

<sup>30</sup> M. B. CIPRIANO, M. A. CARRÈ, 1989, 88; D. ROMANOVIĆ, S. GLUŠČEVIĆ, 2015, 144, n. 19.

vremenom se širila i trajala je sve do 3. stoljeća, a tom kasnijem razdoblju, od 2. do 3. stoljeća, mogao bi pripadati i naš primjerak. Proizvodni centar varijante koja se po svojim karakteristikama može izdvojiti kao poseban tip zabilježen je i u Crikvenici.<sup>31</sup> Na istočnoj obali Jadrana pronađene su na više lokaliteta<sup>32</sup> među kojima treba izdvojiti antičku luku u Zatonu<sup>33</sup> te svakako brodolom kod otoka Ilovika<sup>34</sup>, što je za sada u Jadraniu jedini brodolom u kojem su ove amfore bile glavni teret.

Nekoliko ulomaka iz Mulina klasificirano je kao tip *Agora M 45*<sup>35</sup> (Kat. br. 3, 4). Riječ je o manjoj amfori jajolika tijela s uskim vratom i jednom ručicom, koja završava otvorenom šupljom nogom čiji se oblik tijekom vremena mijenjao. Proizvodni centri ovog tipa bili su na prostoru Male Azije i Egipta, datiraju se u vrijeme od sredine 1. do 4. stoljeća, a njihovim je razvojem nastao tip LR 3<sup>36</sup>, kojim nešto izmijenjena amfora dobiva i drugu ručicu. Primjerci pronađeni u Mulinama, dio oboda s ručicom i noga, vjerojatno odgovaraju kasnijoj razvojnoj fazi. Inače su raniji primjerci često bili finije glačani, a kasniji grublje obrađeni, sivocrnih tonova s dosta primjesa mice, što je slučaj i kod naših nalaza. U Mulinama je također pronađen velik broj dijelova tijela istih amfora, no zbog velike fragmentarnosti nije bilo moguće rekonstruirati ni jedan dio. Distribucija ovih amfora bila je najraširenija na istočnom Mediteranu,<sup>37</sup> a na području istočnog Jadrana slični su primjerci pronađeni u Zatonu.<sup>38</sup>

Izdvojeno je i nekoliko djelomično oštećenih

istics, can be distinguished as a special type, was also recorded in Crikvenica.<sup>31</sup> Several sites have been found on the eastern Adriatic coast<sup>32</sup>, including the ancient port in Zaton<sup>33</sup> and certainly the shipwreck off Ilovik island<sup>34</sup> so far the only shipwreck in the Adriatic with these amphorae as the main cargo.

Several fragments from Muline were classified as *Agora M 45* type<sup>35</sup> (Cat. Nos. 3, 4). It is a small amphora with an ovoid body and a narrow neck, one handle, and an open hollow foot, and its form changed over time. The production centres of this type were in the territory of Asia Minor and Egypt, dating from the middle of the 1<sup>st</sup> century to the 4<sup>th</sup> century. Their form later developed into Late Roman 3,<sup>36</sup> in which the slightly modified amphora received a second handle. The specimens found in Muline, part of the rim with a handle and a foot, probably correspond to the later development stage. Otherwise, earlier specimens were often rather smoother, and later specimens were coarser, grey-black in colour, and with a myriad of inclusions of mica, as is also the case with our finds. In Muline, numerous body fragments of the same amphorae have also been found, but as a result of their fragmentation, no parts could be reconstructed. These amphorae were most common in the eastern Mediterranean<sup>37</sup>, while in the eastern Adriatic similar specimens were found in Zaton.<sup>38</sup>

Several partially damaged feet were extracted and two almost entirely preserved upper parts

<sup>31</sup> G. LIPOVAC-VRKLJAN, 2011, 3–18.

<sup>32</sup> M. JURIŠIĆ, 2000, 20–21, Plate 7, Fig. 3: 2, Fig. 10: 1–3, Map 29.

<sup>33</sup> D. ROMANOVIĆ, S. GLUŠČEVIĆ, 2015, 141–190.

<sup>34</sup> M. ORLIĆ, 1986, 17–19.

<sup>35</sup> H. ROBINSON, 1959, 88, T. 20: M 45; T. BEZECZKY, 2013, 70–71.

<sup>36</sup> D. P. S. PEACOCK, D. F. WILLIAMS, 1986, 188–190, Class 45.

<sup>37</sup> T. BEZECZKY, 2013, 70–71.

<sup>38</sup> U Zatonu je pronađena jedna gotovo cjelovita amfora ovog tipa (neobjavljena) te dosta ulomaka tijela i nogu. Cjelovitu amforu iz Zatonu, uz primjerke s Brijuna, spominje T. Bezczky (T. BEZECZKY, 2013, 71, bilj. 247).

<sup>31</sup> G. LIPOVAC-VRKLJAN, 2011, 3–18.

<sup>32</sup> M. JURIŠIĆ, 2000, 20–21, Plate 7, Fig. 3:2, Fig. 10: 1–3, Map 29.

<sup>33</sup> D. ROMANOVIĆ, S. GLUŠČEVIĆ, 2015, 141–190.

<sup>34</sup> M. ORLIĆ, 1986, 17–19.

<sup>35</sup> H. ROBINSON, 1959, 88, T. 20: M 45; T. BEZECZKY, 2013, 70–71.

<sup>36</sup> D. P. S. PEACOCK, D. F. WILLIAMS, 1986, 188–190, Class 45.

<sup>37</sup> T. BEZECZKY, 2013, 70–71.

<sup>38</sup> In Zaton, an almost complete amphora of this type (unpublished) and many body and foot fragments were found. The complete amphora of Zaton, with specimens from Brioni, is mentioned by T. Bezczky (T. BEZECZKY, 2013, 71, n. 247).

nogu te dva gotovo u cijelosti sačuvana gornja dijela amfora tipa *Spatheion*<sup>39</sup>, odnosno LR 8<sup>40</sup> (Kat. br. 5 i 6) čija proizvodnja započinje tijekom kasnog 4. stoljeća te traje do sredine 5. stoljeća.<sup>41</sup> Centri proizvodnje bili su na prostoru sjeverne Afrike, današnjeg Tunisa (vjerojatno i na prostoru Kartagene u Španjolskoj), a rabile su se najčešće za prijenos maslina i ulja, no vino i garum, odnosno riblji umak<sup>42</sup> također ne možemo isključiti. Postoji više varijanti koje su se mijenjale tijekom vremena i često ih je teško razlikovati.<sup>43</sup> Ponekad imaju i bjelkasti (bjelkastozelenkasti) premaz, a upravo su takve pronađene i u Mulinama. Rasprostranjene su na širokom prostoru Mediterana sve do Crnog mora,<sup>44</sup> no na području istočnog Jadrana nisu pretjerano čest nalaz, ali možemo spomenuti one pronađene u lastovskom akvatoriju kod otoka Prežbe,<sup>45</sup> plićini Lučnjak kod Korčule,<sup>46</sup> Savudriji kod Umaga<sup>47</sup> i Postirama na otoku Braču<sup>48</sup>.

Pronađen je veći broj djelomično sačuvanih ručica amfora različite boje i fature te dosta grube površine (Kat. br. 7). Sve su ručice blago tordirane i imaju dublje ili pliće kanelire. Činjenica je da na temelju samo fragmentarno sačuvanih primjera ne možemo sa sigurnošću

of the *Spatheion* amphorae type<sup>39</sup> and Late Roman 8 amphorae type<sup>40</sup> (Cat. Nos. 5 and 6) whose production began during the late 4<sup>th</sup> century and lasted until the mid-5<sup>th</sup> century<sup>41</sup>. The production centres were in north Africa, what is now Tunisia (and probably also in Carthage in Spain), and were mostly used to transport olives and oil, but other contents such as wine or garum fish sauce<sup>42</sup> cannot be excluded either. There are several variants that changed over time and are often difficult to distinguish.<sup>43</sup> Sometimes they also have a whitish (whitish-greenish) coating, which is also the case with those unearthed in Muline. They are widespread throughout the Mediterranean as far as the Black Sea<sup>44</sup>, but they are not an overly common find in the eastern Adriatic. However, mention can be made of those found in the Lastovo waters off the island of Prežba<sup>45</sup>, in the Lučnjak shallows off Korčula<sup>46</sup>, in Savudrija near Umag<sup>47</sup> and in Postira on the island of Brač<sup>48</sup>.

A number of partially preserved amphorae handles of different colour and fabric and a fairly coarse surface were found (Cat. No. 7). All handles are slightly spirally twisted, and with deep or shallow canelures. It is not possible with certainty to draw any conclusions on

<sup>39</sup> D. P. S. PEACOCK, D. F. WILLIAMS, 1986, 202–203; T. BEZECZKY, 2013, 183–184.

<sup>40</sup> J. A. RILEY, 1979, 226–228.

<sup>41</sup> D. P. S. PEACOCK, D. F. WILLIAMS, 1986, 202–203; T. BEZECZKY, 2013, 183–184.

<sup>42</sup> I. BORZIĆ, 2012, 66, bilj. 4 i 72, bilj. 24.

<sup>43</sup> Osnovno obilježje ovih amfora jest izduženo usko tijelo koje se nastavlja u dugu konično oblikovanu nogu, kratke ovalne ručice te više ili manje izvijen, različito profiliran obod koji se nastavlja na vrat koji također može biti različite širine. Izrađene su od tvrdo pečene gline crvenkastih tonova.

<sup>44</sup> T. BEZECZKY, 2013, 184, bilj. 750.

<sup>45</sup> Pronađeni dijelovi su konzervirani, a amfora je rekonstruirana (preuzeto sa: <http://www.h-r-z.hr/index.php/djelatnosti/konzerviranje-restauriranje/podvodna-arheologija/341-restauriranje-i-konzerviranje-amfore-tipa-spatheion>; 29. 4. 2017.).

<sup>46</sup> V. ZMAIĆ, I. MIHOLJEK, 2013, 165.

<sup>47</sup> I. KONCANI UHAČ et al., 2012, 577.

<sup>48</sup> Na tom su lokalitetu pronađeni dijelovi minijturnih primjeraka ovog tipa amfora koji pripadaju kasnijem razdoblju (K. JELINČIĆ, LJ. PERINIĆ MURATOVIĆ, 2011, 191–194, bilj. 9).

<sup>39</sup> D. P. S. PEACOCK, D. F. WILLIAMS, 1986, 202–203; T. BEZECZKY, 2013, 183–184.

<sup>40</sup> J. A. RILEY, 1979, 226–228.

<sup>41</sup> D. P. S. PEACOCK, D. F. WILLIAMS, 1986, 202–203; T. BEZECZKY, 2013, 183–184.

<sup>42</sup> I. BORZIĆ, 2012, 66, n. 4, 72, n. 24.

<sup>43</sup> The basic characteristics of these amphorae are an elongated narrow body that ends in a long, conically shaped foot, short ovoid handles, and a more or less everted, differently profiled rim that is set on a neck of varying width. They are made of hard fired clay, reddish in colour.

<sup>44</sup> T. BEZECZKY, 2013, 184, n. 750.

<sup>45</sup> The found parts were conserved and the amphora was reconstructed (retrieved from: <http://www.h-r-z.hr/index.php/djelatnosti/konzerviranje-restauriranje/podvodna-arheologija/341-restauriranje-i-konzerviranje-amfore-tipa-spatheion>, 29 April 2017).

<sup>46</sup> V. ZMAIĆ, I. MIHOLJEK, 2013, 165.

<sup>47</sup> I. KONCANI UHAČ et al., 2012, 577.

<sup>48</sup> Also found at this site were parts of miniature specimens of this type of amphorae belonging to a later period (K. JELINČIĆ, LJ. PERINIĆ MURATOVIĆ, 2011, 191–194, n. 9).

zaključivati kojem tipu amfora pripadaju, no svakako ih možemo povezati s nekom od kasnoantičkih amfora, poput tipa LR 1,<sup>49</sup> istočnomediteranskom amforom čija se proizvodnja stavlja između 4. i 7. stoljeća, a najčešće su od 5. do 6. stoljeća.<sup>50</sup> Karakteriziraju ih upravo tako oblikovane ručice, cilindričan vrat i kruškoliko narebreno tijelo te, iako se pojavljuju u više varijanti, uglavnom nema razlika u dataciji.<sup>51</sup> Na prostoru naše obale amfore ovog tipa dosta su česte,<sup>52</sup> a među nalazima možemo spomenuti one iz podmorja otoka Ilovička i Svetog Petra<sup>53</sup> te novootkrivene bizantske utvrde na otoku Pagu<sup>54</sup>.

Kako bi se očuvala kvaliteta proizvoda u amforama, one su morale biti začepjene na odgovarajući način. Poznato je više načina izrade takvih zatvarača, od onih izrađenih od organskog materijala, koji uglavnom nisu sačuvani, do različitih vrsta keramičkih čepova.<sup>55</sup> Oni su u grlo amfore uglavnom bili učvršćivani voskom, glinom ili smolom.<sup>56</sup> Pločasti keramički čepovi najčešće su izrađivani u jednodijelnim ili dvodijelnim kalupima ili na lončarskom kolu, no postojali su i zatvarači nešto grublje izrade koji su se izrezivali od ulomaka stijenci samih amfora ili nekih drugih keramičkih posuda.<sup>57</sup> U repertoaru materijala pronađenog tijekom podvodnih arheoloških istraživanja u Mulinama pronađena su dva poklopca za amfore od kojih jedan pripada pločastoj varijanti kružnih poklopaca izrađivanih na kolu<sup>58</sup> (Kat. br. 8), dok drugi, djelomično oštećen pločasti

the type of amphorae based only on specimens preserved in fragments, but it is certainly possible to associate them with some Late Antiquity amphorae, such as type LR 1<sup>49</sup>, an eastern Mediterranean amphora whose production is dated between the 4<sup>th</sup> and 7<sup>th</sup> centuries, and which are most frequent throughout the 5<sup>th</sup> and the 6<sup>th</sup> centuries.<sup>50</sup> They are characterised by equally shaped handles, a cylindrical neck and a pear-shaped ribbed body, and although they appear in several variants, there are generally no differences in their dating.<sup>51</sup> Amphorae of this type are quite common on the Croatian coast.<sup>52</sup> Finds worth mentioning are certainly those from the underwater regions off the islands of Ilovik and Sveti Petar<sup>53</sup> and the newly discovered Byzantine fortification on the island of Pag<sup>54</sup>.

In order to preserve the quality of amphorae contents, they had to be appropriately sealed. There are many known ways of producing amphora stoppers, from those made of organic material, which have mostly not been preserved, to various types of pottery plugs.<sup>55</sup> They were mostly sealed into the mouth of amphorae with wax, clay or resin.<sup>56</sup> Ceramic disc plugs were mostly made in one-piece or two-piece moulds or on a potter's wheel, but there were also closing devices of slightly coarser workmanship that were cut from wall fragments of amphorae or other ceramic vessels.<sup>57</sup> Among the repertoire of materials found during underwater archaeological excavations in Muline, two amphora plugs were found, one

<sup>49</sup> D. P. S. PEACOCK, D. F. WILLIAMS, 1986, 185–187; T. BEZECZKY, 2013, 158–159.

<sup>50</sup> J. A. RILEY, 1979, 212–216; T. BEZECZKY, 2013, 159, bilj. 622.

<sup>51</sup> J. A. RILEY, 1979, 212–216.

<sup>52</sup> D. VRŠALOVIĆ 1979, 398–399, 130, T. 111: 5; A. STARAC, 2008, 101, bilj. 75; K. JELINČIĆ, LJ. PERINIĆ MURATOVIĆ, 2011, 191–192; I. MIHAJLOVIĆ, 2013, 38; V. ZMAIĆ, I. MIHOLJEK, 2013, 165.

<sup>53</sup> J. BEZAK, 2014, 33, sl. 17, 21.

<sup>54</sup> S. GLUŠČEVIĆ, D. GROSMAN, 2016, 140.

<sup>55</sup> M. BELTRÁN LLORIS, 1970, 70–87.

<sup>56</sup> B. MAURINA, 1995, 248; N. LETE, 2005, 5–7; J. VIŠNJIĆ, 2009, 133.

<sup>57</sup> N. LETE, 2005, 9; J. VIŠNJIĆ, 2009, T. 8: 4–7.

<sup>58</sup> J. VIŠNJIĆ, 2009, T. 8: 2.

<sup>49</sup> D. P. S. PEACOCK, D. F. WILLIAMS, 1986, 185–187; T. BEZECZKY, 2013, 158–159.

<sup>50</sup> J. A. RILEY, 1979, 212–216; T. BEZECZKY, 2013, 159, n. 622.

<sup>51</sup> J. A. RILEY, 1979, 212–216.

<sup>52</sup> D. VRŠALOVIĆ 1979, 398–399; 130, T. 111, 5; A. STARAC, 2008, 101, n. 75; K. JELINČIĆ, LJ. PERINIĆ MURATOVIĆ, 2011, 191–192; I. MIHAJLOVIĆ, 2013, 38; V. ZMAIĆ, I. MIHOLJEK, 2013, 165.

<sup>53</sup> J. BEZAK, 2014, 33, Figs. 17, 21.

<sup>54</sup> S. GLUŠČEVIĆ, D. GROSMAN, 2016, 140.

<sup>55</sup> M. BELTRÁN LLORIS, 1970, 70–87.

<sup>56</sup> B. MAURINA, 1995, 248; N. LETE, 2005, 5–7; J. VIŠNJIĆ, 2009, 133.

<sup>57</sup> N. LETE, 2005, 9; J. VIŠNJIĆ, 2009, T. 8: 4–7.

poklopac odgovara varijanti izrađenoj u jednodijelnom kalupu (Kat. br. 9). Na prostoru Jadrana slični su nalazi zabilježeni na brojnim lokalitetima.<sup>59</sup>

Iako je pronađen samo jedan ulomak keramike koji pripisujemo istočnoj *sigillati*, upravo je on jedan od najvažnijih nalaza, jer je ujedno i najstariji na ovom lokalitetu. Riječ je o ulomku konične zdjelice prema van izvijenog oboda tipa *Hayes 75*<sup>60</sup> (Kat. br. 10) istočne *sigillate B2* produkcije<sup>61</sup>, koja odgovara drugoj fazi proizvodnje, čiji su centri bili na prostoru Male Azije,<sup>62</sup> a datira se u razdoblje od 75. godine do prve četvrtine 2. stoljeća<sup>63</sup>. U drugoj fazi proizvodnje istočna *sigillata* gubi na kvaliteti, glina je grublje fature, premaz nešto slabije kvalitete, oblici postaju jednostavniji, a pečate majstora zamjenjuju palmete i rozete. Kvaliteta opada i majstori više ne imitiraju aretinske radionice.<sup>64</sup> Istočna je *sigillata* vrlo raširena na Jadranu, gdje je pronađena na različitim podvodnim i kopnenim lokalitetima, a nalazište s najvećom zabilježenom koncentracijom keramike te produkcije jest brodolom kod rta Izmetište (Pakleni otoci) iz 2. stoljeća,<sup>65</sup> jedini brodolom u kojem je ovaj tip *sigillate* bio primarni teret,<sup>66</sup> među čijim su nalazima pronađeni i ostatci zdjela forme *Hayes 75*.

Proizvodnja afričke *terre sigillate* razvijala se tijekom čitave antike, a puni zamah dobiva krajem 2. stoljeća, kada se, zahvaljujući gospodarskom razvoju Afrike, širi Mediteranom,<sup>67</sup> gdje je najzastupljenija bila u razdoblju između 2. i 7. stoljeća.<sup>68</sup> U Mulinama je izdvojeno

belonging to the disc variant of round wheel-made plugs<sup>58</sup> (Cat. No. 8), and the other, a partly damaged disc plug corresponding to the variant made in a one-piece mould (Cat. No. 9). In the Adriatic, similar finds were recorded at numerous sites.<sup>59</sup>

Although only one fragment of the pottery attributed to the eastern *sigillata* has been unearthed, it is one of the most significant finds, as it is also the oldest at this site. It is a fragment of a *Hayes 75* type conical bowl with an everted rim<sup>60</sup> (Cat. No. 10) of the eastern *sigillata B2* production<sup>61</sup>, which corresponds to the second production stage, the centres of which were in Asia Minor<sup>62</sup>, and is dated to the period from 75 AD to the first quarter of the 2<sup>nd</sup> century<sup>63</sup>. In the second production stage, the quality of eastern *sigillata* dropped, its clay had a coarser fabric, and its gloss was of a slightly lower quality, its forms became simpler, and craftsmen stamps were replaced by palmettes and rosettes. Quality declined and the craftsmen no longer imitated Arretine workshops.<sup>64</sup> Eastern *sigillata* used to be very widespread in the Adriatic, where it was found at various underwater and land sites, and the site with the highest concentration of pottery of that production type is the 2<sup>nd</sup> century shipwreck off Cape Izmetište (Pakleni Otoci)<sup>65</sup>, the only shipwreck with this type of *sigillata* as the primary cargo<sup>66</sup>, and with the remains of *Hayes 75* bowls among the finds.

The production of African *terre sigillata* developed throughout Classical Antiquity and went into full swing towards the end of the

<sup>59</sup> M. ORLIĆ, 1986, 22–23, sl. 18: 1, 3; Z. ŠIMIĆ-KANAET, 2003, 127, 159–160, T. 20; M. TOPIĆ, 2004, 312, T. 101, 456–459, T. 102, 460–463; T. ŠALOV, 2010, 365–366, T. VI–VII, T. VIII, 61–62; I. ŠUTA, 2012, 84–85; V. ZMAIĆ, I. MIHOLJEK, 2013, 180, Tabla 2 i dr.

<sup>60</sup> J. W. HAYES, 1985, 68, T. XV, 8.

<sup>61</sup> J. W. HAYES, 1985, 49–52.

<sup>62</sup> R. MAKJANIĆ, 1983, 51; Z. ŠIMIĆ-KANAET, 2010, 26.

<sup>63</sup> J. W. HAYES, 1985, 51–52.

<sup>64</sup> R. MAKJANIĆ, 1983, 54; M. JURIŠIĆ, 2000, 30.

<sup>65</sup> A. J. PARKER, 1992, 298.

<sup>66</sup> M. JURIŠIĆ, 2000, 32.

<sup>67</sup> A. CARANDINI, 1981, 11; Z. ŠIMIĆ-KANAET, 2010, 27.

<sup>68</sup> A. CARANDINI, 1981, 11–19; J. MARDEŠIĆ, 1994, 265–270.

<sup>58</sup> J. VIŠNJIĆ, 2009, T. 8: 2.

<sup>59</sup> M. ORLIĆ, 1986, 22–23, Fig. 18: 1, 3; Z. ŠIMIĆ-KANAET, 2003, 127, 159–160, T. 20; M. TOPIĆ, 2004, 312, T. 101/456–459, T. 102, 460–463; T. ŠALOV, 2010, 365–366, T. VI–VII, T. VIII, 61–62; I. ŠUTA, 2012, 84–85; V. ZMAIĆ, I. MIHOLJEK, 2013, 180, Plate 2, etc.

<sup>60</sup> J. W. HAYES, 1985, 68, T. XV, 8.

<sup>61</sup> J. W. HAYES, 1985, 49–52.

<sup>62</sup> R. MAKJANIĆ, 1983, 51; Z. ŠIMIĆ-KANAET, 2010, 26.

<sup>63</sup> J. W. HAYES, 1985, 51–52.

<sup>64</sup> R. MAKJANIĆ, 1983, 54; M. JURIŠIĆ, 2000, 30.

<sup>65</sup> J. A. PARKER, 1992, 298.

<sup>66</sup> M. JURIŠIĆ, 2000, 32.

pet ulomaka sigilatne afričke keramike (Kat. br. 11-15).<sup>69</sup> Među izdvojenim se primjercima pojavljuju zdjele afričke A/D<sup>70</sup> i D produkcije<sup>71</sup>. Izrađene su od fino pročišćene gline s premazom, na nekima je prisutan pečatni ukras, a na pojedinima su vidljivi tragovi gorenja. Jedan ulomak otvorene zdjele ravnog dna datiran u razdoblje od početka do sredine 3. stoljeća, klasificiran je kao tip *Hayes 32*<sup>72</sup> (Kat. br. 11) i odgovara afričkoj produkciji A/D, koja je distribuirana područjem Tunisa, Italijom, a sporadično istočnim Jadranom, Grčkom i Sirijom.<sup>73</sup> Formi *Hayes 61B*<sup>74</sup> pripisujemo tri ulomka *terre sigillate* (Kat. br. 12-14) afričke D (D<sup>1</sup>, D<sup>2</sup>) produkcije<sup>75</sup>, čiji su centri proizvodnje bili na prostoru sjevernog Tunisa i Kartage, a datiraju se u vrijeme između 400. i 450. godine.<sup>76</sup> Među njima svakako treba istaknuti primjerak s pečatnim ukrasom borove grančice<sup>77</sup> (Kat. br. 12) datiran na prijelaz 4. i 5. stoljeća (350. – 420. g.). Isti se ukras pojavljuje u različitim inačicama,<sup>78</sup> a najkarakterističniji je za afričku keramiku kasne antike. Sličan je pečat i na ulomku dna posude čiji je oblik teško točno definirati (Kat. br. 15), no prema ukrasu koji nosi moguće je približno odrediti tip i produkciju. Riječ je o palmeti i dvjema rozetama. Varijante ukrasa poput ovog primjera javljaju se na nekoliko različitih vrsta afričke keramike D produkcije, a riječ je o otvorenim formama, tanjurima i zdjelama s nogom ili bez noge<sup>79</sup> (*Hayes 59A-B*, *Hayes 60*, *Hayes 61A*, *Hayes 63*, *Hayes 67*)<sup>80</sup> pa nije moguće defini-

2<sup>nd</sup> century, when, owing to Africa's economic development, it expanded to the Mediterranean<sup>67</sup>, where it was most widespread between the 2<sup>nd</sup> and 7<sup>th</sup> centuries<sup>68</sup>. In Muline, 5 fragments of African sigillata pottery have been identified (Cat. Nos. 11-15)<sup>69</sup>. Among the identified specimens were African A/D<sup>70</sup> and D bowls<sup>71</sup>. They were made of fine, purified clay with a gloss, some with a stamped decoration, and some showing traces of burning. One fragment of an open bowl with a flat base dating from the beginning to the middle of the 3<sup>rd</sup> century was classified as type *Hayes 32*<sup>72</sup> (Cat. No. 11) and corresponds to African A/D production, which was distributed in the Tunisia region, Italy, and sporadically in the eastern Adriatic, Greece and Syria<sup>73</sup>. Three fragments of terra sigillata (Cat. Nos. 12-14) of African D (D<sup>1</sup>, D<sup>2</sup>) production<sup>74</sup>, the production centres of which were located in northern Tunisia and Carthage, dated from between 400 and 450 AD<sup>75</sup> are attributed to Hayes 61B<sup>76</sup>. Among them, a specimen with pine-twig stamped decoration stands out<sup>77</sup> (Cat. No. 12), which was dated to the turn of the 4<sup>th</sup> and 5<sup>th</sup> centuries (350-420 AD). The same decoration appears in different variants,<sup>78</sup> and is typical of African pottery of Late Antiquity. There is a similar stamp also on a fragment of a base of a vessel whose shape is difficult to define (Cat. No. 15), but whose type and production are evident from the decoration: a

<sup>69</sup> I kataloški broj 20 pripada ovoj skupini, ali kako je vjerojatno izgubljen, naveden je poslije.

<sup>70</sup> A. CARANDINI, S. TORTORELLA, 1981b, 52-53.

<sup>71</sup> A. CARANDINI, S. TORTORELLA, 1981c, 78-81.

<sup>72</sup> J. W. HAYES, 1972, 55, fig. 9; A. CARANDINI, S. TORTORELLA, 1981b, 56, T. XXV, 4, 8.

<sup>73</sup> A. CARANDINI, S. TORTORELLA, 1981b, 52-53.

<sup>74</sup> J. W. HAYES, 1972, 100-105, fig. 16-17; A. CARANDINI, S. TORTORELLA, 1981c, 83-85.

<sup>75</sup> A. CARANDINI, S. TORTORELLA, 1981c, 78-79.

<sup>76</sup> J. W. HAYES, 1972, 107.

<sup>77</sup> J. W. HAYES, 1972, 218, 223, fig. 38, style A (ii).

<sup>78</sup> J. W. HAYES, 1972, 230, fig. 38; A. CARANDINI, S. TORTORELLA, 1981c, 79, 127-128.

<sup>79</sup> A. CARANDINI, S. TORTORELLA, 1981c, 127.

<sup>80</sup> J. W. HAYES, 1972, 96-97, 100-105, 109, 112-116, 218;

<sup>67</sup> A. CARANDINI, 1981, 11; Z. ŠIMIĆ-KANAET, 2010, 27.

<sup>68</sup> A. CARANDINI, 1981, 11-19; J. MARDEŠIĆ, 1994, 265-270.

<sup>69</sup> Catalogue number 20 also belongs to this group but, since it was probably lost, it is listed later.

<sup>70</sup> A. CARANDINI, S. TORTORELLA, 1981b, 52-53.

<sup>71</sup> A. CARANDINI, S. TORTORELLA, 1981c, 78-81.

<sup>72</sup> J. W. HAYES, 1972, 55, Fig. 9; A. CARANDINI, S. TORTORELLA, 1981b, 56, T. XXV, 4, 8.

<sup>73</sup> A. CARANDINI, S. TORTORELLA, 1981b, 52-53.

<sup>74</sup> A. CARANDINI, S. TORTORELLA, 1981c, 78-79.

<sup>75</sup> J. W. HAYES, 1972, 107.

<sup>76</sup> J. W. HAYES, 1972, 100-105, Fig. 16-17; A. CARANDINI, S. TORTORELLA, 1981c, 83-85.

<sup>77</sup> J. W. HAYES, 1972, 218, 223, Fig. 38, style A (ii).

<sup>78</sup> J. W. HAYES, 1972, 230, Fig. 38; A. CARANDINI, S. TORTORELLA, 1981c, 79, 127-128.

rati kojem obliku pripada ovaj ulomak. Kao analogne primjerke možemo spomenuti one pronađene na lokalitetima u Trstu,<sup>81</sup> Rijeci,<sup>82</sup> na Pagu<sup>83</sup> i u Saloni<sup>84</sup>.

Među višenamjenskim kuhinjskim posuđem afričke produkcije<sup>85</sup> iz Mulina, izdvojena su dva primjerka. Prvi je gotovo u cijelosti sačuvana zdjela klasificirana kao tip *Hayes 197*<sup>86</sup> (Kat. br. 16), jedan od najčešćih oblika tzv. *casserole*, datiran u kraj 2. ili početak 3. stoljeća, čija se proizvodnja razvila na području sjevernog Tunisa u širem periodu, od prve polovice 2. stoljeća do prijelaza iz 4. u 5. stoljeće.<sup>87</sup> Ono što je specifično za ovu bikoničnu zdjelu visokog gornjeg konusa jest bifidan obod,<sup>88</sup> koji je služio za bolje prijanjanje poklopca tijekom kuhanja (na našem primjerku to nije vidljivo), narebrena površina donjeg konusa i žlijebljena unutrašnjost vertikalnih stijenki gornjeg konusa te pepeljastosiva patina na površini nastala kao rezultat procesa pečenja. Drugi nalaz definiran je kao poklopac tipa *Hayes 96*<sup>89</sup> (Kat. br. 17) i datira se od sredine 2. do sredine 3. stoljeća. Među lokalitetima istočne obale Jadrana na kojima su pronađeni slični primjerci kuhinjskog posuđa afričke produkcije možemo spomenuti podmorje otočića Babuljaša<sup>90</sup> i brodolom kod otoka Mljeta<sup>91</sup> te brodolom kod rta Izmetište na Paklenim otocima<sup>92</sup>.

U Mulinama su pronađena tri ulomka svjetiljki, od kojih su ovdje izdvojena dva. Kod

palmette and two rosettes. Decoration variants like this one occur on several different types of pottery of African D production which include open shapes, dishes and bowls with or without a foot<sup>79</sup> (Hayes 59A-B, Hayes 60, Hayes 61A, Hayes 63, Hayes 67)<sup>80</sup> and therefore it is impossible to define the shape of the vessel to which this fragment belongs. As analogies, certainly worth mentioning are those specimens found at sites in Trieste<sup>81</sup>, Rijeka<sup>82</sup>, on Pag<sup>83</sup> and in Salona<sup>84</sup>.

Among the multifunctional cookware of African production<sup>85</sup> from Muline, two specimens were singled out. The first is an almost entirely preserved bowl classified as Hayes 197<sup>86</sup> (Cat. No. 16), (Cat. No. 16), one of the most frequent shapes – a casserole, dated to the end of the 2<sup>nd</sup> or the beginning of the 3<sup>rd</sup> century, the production of which developed in the area of northern Tunisia over a broad period of time, from the first half of the 2<sup>nd</sup> century to the turn of the 4<sup>th</sup> and the 5<sup>th</sup> centuries<sup>87</sup>. What is specific about this biconical bowl with a high upper cone is its bifid rim<sup>88</sup> that served to better seal the lid during cooking (which is not visible in our specimen), the ribbed surface of the lower cone and the grooved interior of the vertical walls of the upper cone, as well as the ash-grey patina on the surface resulting from the firing process. The second find was defined as a *Hayes 96* type cover<sup>89</sup> (Cat. No. 17) and dated from the mid 2<sup>nd</sup> to mid 3<sup>rd</sup>

A. CARANDINI, S. TORTORELLA, 1981c, 82–85, 88, 127, T. XXXII, 10–13, T. XXXIII, T. XXXIV, T. XXXV, T. XXXVII, 9–11, T. XXXVIII, 1–4.

<sup>81</sup> E. ZULINI, 2007, 51–52, Tav. 9: 44–45.

<sup>82</sup> T. PERCAN, 2009, 76–77, 85–86, T. 6: 3–4.

<sup>83</sup> S. GLUŠČEVIĆ, 1989, 76–78, sl. 2: 4.

<sup>84</sup> J. MARDEŠIĆ, 1994, 266–267, kat. br. 6. datiran u razdoblje između 350. i 420. godine.

<sup>85</sup> S. TORTORELLA, 1981, 208–211.

<sup>86</sup> J. W. HAYES, 1972, 209; S. TORTORELLA, 1981, 219, fig. 267, TAV. CVII: 7.

<sup>87</sup> J. W. HAYES, 1972, 209; S. TORTORELLA, 1981, 219.

<sup>88</sup> Prstenasto zadebljanje oboda povećava se prema kraju produkcije, što nam omogućava točniju dataciju.

<sup>89</sup> J. W. HAYES, 1972, 208–209.

<sup>90</sup> M. PEŠIĆ, 2016, 20.

<sup>91</sup> I. RADIĆ, M. JURIŠIĆ, 1993, 131, 1–6.

<sup>92</sup> B. ILAKOVAC, 1968, 188–190; M. JURIŠIĆ, 2000, 36, fig. 23–24.

<sup>79</sup> A. CARANDINI, S. TORTORELLA, 1981c, 127.

<sup>80</sup> J. W. HAYES, 1972, 96–97, 100–105, 109, 112–116, 218; A. CARANDINI, S. TORTORELLA, 1981c, 82–85, 88, 127, T. XXXII, 10–13, T. XXXIII, T. XXXIV, T. XXXV, T. XXXVII, 9–11, T. XXXVIII, 1–4.

<sup>81</sup> E. ZULINI, 2007, 51–52, Tav. 9: 44–45.

<sup>82</sup> T. PERCAN, 2009, 76–77, 85–86, T. 6: 3–4.

<sup>83</sup> S. GLUŠČEVIĆ, 1989, 76–78, Fig. 2: 4.

<sup>84</sup> J. MARDEŠIĆ, 1994, 266–267, Cat. No. 6, dated between AD 350 and 420.

<sup>85</sup> S. TORTORELLA, 1981, 208–211.

<sup>86</sup> J. W. HAYES, 1972, 209; S. TORTORELLA, 1981, 219, Fig. 267, TAV. CVII: 7.

<sup>87</sup> J. W. HAYES, 1972, 209; S. TORTORELLA, 1981, 219.

<sup>88</sup> The ring-shaped thickening of the rim increased towards the end of the production, which allows for a more accurate dating of the artefacts.

<sup>89</sup> J. W. HAYES, 1972, 208–209.

prvog je primjerka sačuvan ukrašeni disk (Kat. br. 18) kojem u dostupnoj literaturi nismo uspjeli pronaći analogije. Međutim, sudeći po tipu ukrasa, dopušteno je pretpostaviti kako je riječ o nekoj od istočnomediteranskih radionica, vjerojatno iz Palestine ili Sirije.<sup>93</sup> Prvi analogni primjerak (Q2321) datira se u 5.-6. stoljeće, dok je drugi (Q2348) s većim otvorom za fitilj datiran u 5. stoljeće. Oba primjera spominjemo zbog ornamentike koja upućuje na moguće podrijetlo. Drugi primjerak iz Mulina je dio ramena ukrašenog motivom kružnice i trokuta (Kat. br. 19), a pripisujemo ga tipu *Hayes 2a-b* koji se datira u 5.-6. stoljeće i pripada tipu ranokršćanskih svjetiljki razvijenih u radionicama sjeverne Afrike.<sup>94</sup>

Tijekom radova iza mamuta je nađen i ulomak polukružno formirane sigilatne zdjele s gusto formiranim ukrasom ureza s unutrašnje strane<sup>95</sup> (Kat. br. 20). Riječ je o zdjelama različite veličine, od onih manjih do vrlo velikih. Na osnovi ulomka nemoguće je znati kojoj od varijanti pripada, ali najvjerojatnije je riječ o afričkoj sigilatnoj zdjeli Hayesove forme 91 ili 92. I jedan i drugi tip javljaju se oko sredine 5. stoljeća, a trajanje tipa 91 proteže se čak do sredine 7. stoljeća. Ipak, na osnovi ukrasa može se pomišljati na njihovu atribuciju tipu *Hayes 91*, podtipu A ili B, odnosno tipu 92<sup>96</sup>, premda je mala vjerojatnost s obzirom na to da je riječ o tanjim stijenjkama.

Pri istraživanju u Mulinama pronađeno je nekoliko ulomaka staklenih čaša. Izrađene su u nijansama svjetloplave i zelene boje, a stijenke su iznimno fine i tanke. U radu se donose

century. Among sites on the east Adriatic coast with finds of similar kitchenware examples of African production, certainly worth mentioning are the underwater site off the islet of Babuljaš<sup>90</sup>, the shipwreck off the island of Mljet<sup>91</sup>, and the shipwreck off Izmetište Cape in the Pakleni Otoci island group<sup>92</sup>.

In Muline, three lamp fragments have been found, two of which are dealt with in this paper. Of the first specimen, a decorated disc (Cat. No. 18) has been preserved, for which no analogies have been found in available literature. However, the decoration type suggests an eastern Mediterranean workshop, probably from Palestine or Syria.<sup>93</sup> The first analogous specimen (Q2321) was dated to the 5<sup>th</sup> or 6<sup>th</sup> century and the second (Q2348), with a larger wick opening, to the 5<sup>th</sup> century. Both specimens are mentioned here because of the ornaments suggesting their possible origin. The second specimen is a fragment of a shoulder ornamented with a circle and triangle motif (Cat. No. 19), attributed to the Hayes 2a-b type, dated to the 5<sup>th</sup> and 6<sup>th</sup> centuries, and belonging to the early Christian lamp type developed in north African workshops.<sup>94</sup>

In the course of dredging, a fragment of a semi-circular sigillata bowl with dense incised decorations on the inside was also unearthed<sup>95</sup> (Cat. No. 20). The bowls are of different sizes, from smaller to very large ones. The fragments do not suggest the variant to which it belongs, but it is most likely an African sigillata bowl Hayes 91 or 92. Both types occurred around the middle of the 5<sup>th</sup> century, and type 91

<sup>93</sup> D. M. BAILEY, 1988, 286: Q2321, Q2348.

<sup>94</sup> O tim svjetiljkama na prostoru Liburnije pisano je u S. GLUŠČEVIĆ, 1996/1997. U Arheološkom muzeju Zadar čuva se više od stotinu starokršćanskih svjetiljki, a među njima samo jedna ima identično ukrašeno rame (J. VUČIĆ, 2009, 13, bilj. 37, 24).

<sup>95</sup> Ulomak je, nažalost, koliko mi je poznato, izgubljen, ali u „Dnevniku istraživanja“ postoji tekst i skica rekonstrukcije koju donosimo.

<sup>96</sup> J. W. HAYES, 1972, 140–145, fig. 26: A, B. Valja upozoriti kako se vrlo sličan ukras nalazi i na tipu *Hayes 53B* koji se datira između 370. i 430. godine (J. W. HAYES, form 53, 78–82, fig. 13: form 53B), premda je riječ o polukružnim zdjelama vrlo tankih stijenki.

<sup>90</sup> M. PEŠIĆ, 2016, 20.

<sup>91</sup> I. RADIĆ, M. JURIŠIĆ, 1993, 131, 1-6.

<sup>92</sup> B. ILAKOVAC, 1968, 188-190; M. JURIŠIĆ, 2000, 36, Figs. 23-24.

<sup>93</sup> J. A. BAILEY, 1988, 286: Q2321, Q2348.

<sup>94</sup> For more on these lamps on the territory of Liburnia, see S. GLUŠČEVIĆ, 1996/1997. The Archaeological Museum Zadar holds more than a hundred early Christian lamps, of which only one has an identically decorated shoulder (J. VUČIĆ, 2009, 13, n. 37, 24).

<sup>95</sup> Unfortunately, as far as is known at this point, the fragment was lost, but in the Excavation Log there is a text and a sketch of the reconstruction which is shown in this paper.

tri ulomka (Kat. br. 21-23). Čaše ovog tipa javljaju se već sredinom ili krajem 3. stoljeća, najkarakterističnije su za 4. stoljeće, ali ima ih i početkom 5. stoljeća.<sup>97</sup> Među našim je nalazima najzanimljiviji primjerak ukrašen brušenim cik-cak ukrasom (Kat. br. 23). Ulomak staklene čaše s drugom vrstom cik-cak ukrasa i s razvijenijom ornamentikom pronađen je u luci Resnik kod Trogira,<sup>98</sup> a na našoj obali analogne primjerke ovog tipa čaša nalazimo u Aseriji,<sup>99</sup> ali i drugdje.

Iako su sondažna podmorska istraživanja u Mulinama bila vrlo kratka, donijela su priličan broj arheoloških nalaza. Upravo su ti sitni nalazi iznimno važni, jer njihova datacija pruža mogućnost stvaranja vremenskog okvira kojem pripada istraživani rimski gospodarski kompleks. Stoga je, s obzirom na datirani materijal, moguće kazati kako život na prostoru Mulina počinje na samom kraju 1. ili radije na početku 2. stoljeća, a da mu je trajanje najvjerojatnije ograničeno krajem 6. ili najkasnije samim početkom 7. stoljeća.

lasted for as long as the middle of the 7<sup>th</sup> century. However, the ornaments suggest type Hayes 91, subtype A or B, or type 92<sup>96</sup>. Nevertheless, this is not very likely given that the walls are rather thin.

In the course of the Muline campaign, several fragments of glasses were unearthed. They were produced in shades of light blue and green, with extraordinarily fine and thin walls. In the paper, three fragments are shown (Cat. Nos. 21-23). Glasses of this type occurred as early as the middle or the end of the 3<sup>rd</sup> century, were most typical in the 4<sup>th</sup> century, but were also found in the early 5<sup>th</sup> century.<sup>97</sup> The most interesting among our finds is a specimen decorated with a ground zigzag decoration (Cat. No. 23). The fragment of a glass with another type of zigzag ornament and with more elaborate ornamentation was unearthed in the port of Resnik near Trogir,<sup>98</sup> while analogous specimens of this type of glass on the Croatian Adriatic coast are found in Asseria<sup>99</sup>, and also elsewhere.

Although the underwater trial trenching campaign in Muline was very short, it produced quite a number of archaeological finds. These very small finds are highly significant because their dating provides the opportunity to determine a timeframe for the Roman commercial and production facilities that are under examination. The dated material suggests that life in the area of Muline began at the end of the 1<sup>st</sup> century or perhaps at the beginning of the 2<sup>nd</sup> century, and lasted until the end of the 6<sup>th</sup> century or no later than the beginning of the 7<sup>th</sup> century.

**Translation: Nina Matetić Pelikan**  
(*Etnotrend d. o. o.*)

**Proof-reading: Stephen Hindlaugh**

<sup>97</sup> S. GLUŠČEVIĆ, 1995, 166, bilj. 8.

<sup>98</sup> S. GLUŠČEVIĆ, 1995, 166: 24, 181, T. 4: 24.

<sup>99</sup> S. GLUŠČEVIĆ, 1995, 169, bilj. 38.





<sup>96</sup> J. W. HAYES, 1972, 140-145, Fig. 26: A, B. It should be noted that a very similar decoration is found on the Hayes 53B type, dated between AD 370 and 430 (J. W. HAYES, Form 53, 78-82, Fig. 13: Form 53B), although these are semi-circular bowls with very thin walls.

<sup>97</sup> S. GLUŠČEVIĆ, 1995, 166, n. 8.





<sup>98</sup> S. GLUŠČEVIĆ, 1995, 166:24, 181, T. 4:24.





<sup>99</sup> S. GLUŠČEVIĆ, 1995, 169, n. 38.




KATALOG / CATALOGUE<sup>100</sup>

<p><b>Kat. br. 1</b>          Ulomak baze i tijela bifidne ručice amfore. Glina crvenkastonarančaste boje (5YR 5/6, 5/8).          Sačuvana visina: 9,1 cm; širina: 4,2 x 2,3 cm.</p> <p><b>Cat. No. 1</b>          Base and body fragment of a bifid amphora handle. Reddish-orange clay (5YR 5/6, 5/8).          Preserved height 9.1 cm, width 4.2 x 2.3 cm.</p>	
<p><b>Kat. br. 2</b>          Ulomak ravnog dna amfore s koničnim tijelom.          Glina narančastosivih tonova (5YR 6/8, 7.5YR 6/6).          Sačuvana visina: 12,5 cm; sačuvana širina: 15 cm; promjer dna: 11,3 cm; debljina stjenke: 0,5 – 0,6 cm.</p> <p><b>Cat. No. 2</b>          Fragment of a flat base of an amphora with a conical body.          Orange and grey clay (5YR 6/8, 7.5YR 6/6).          Preserved height: 12.5 cm, preserved width: 15 cm, base diameter: 11.3 cm, wall thickness: 0.5-0.6 cm.</p>	
<p><b>Kat. br. 3</b>          Ulomak gornjeg dijela amfore s prstenastim obodom i trakastom narebrenom ručicom.          Glina sivosmeđe boje (2.5Y 6/4, 5/3) s vidljivim primjesama mice.          Sačuvana visina: 8,6 cm; sačuvana širina: 7,5 cm; promjer oboda: 3,4 cm; širina ručice 3,1 x 1,1 cm; debljina stjenke: 0,5 cm.</p> <p><b>Cat. No. 3</b>          Fragment of the upper part of an amphora with a ring-shaped rim and a ribbon-shaped ribbed handle.          Greyish brown clay (2.5Y 6/4, 5/3) with visible inclusions of mica.          Preserved height: 8.6 cm, preserved width: 7.5 cm, rim diameter: 3.4 cm, handle width 3.1 x 1.1 cm, wall thickness: 0.5 cm.</p>	
<p><b>Kat. br. 4</b>          Dio noge amfore prstenasto zadebljana vrha s uvučenom sredinom.          Glina sive boje (5Y 6/1, 6/2) s vidljivim primjesama mice.          Visina: 4,6 cm; širina: 2,6 cm; promjer noge: 2,4 cm; debljina stjenke: 0,5 cm.</p> <p><b>Cat. No. 4</b>          Part of an amphora foot with a ring-shaped thickened top with an inverted central part.          Gray clay (5Y 6/1, 6/2) with visible inclusions of mica.          Height: 4.6 cm, width: 2.6 cm, foot diameter: 2.4 cm, wall thickness: 0.5 cm.</p>	




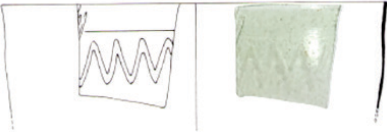
<sup>100</sup> Fotografije i crteži: S. Gluščević.  
 Photos and drawings: S. Gluščević.

<p><b>Kat. br. 5</b> Djelomično sačuvani gornji dio amfore zaobljenog ramena i cilindričnog narebrenog vrata. Izdužena ručica nepravilnog ovalnog presjeka završava na ramenu. Glina crvenkastonarančaste boje (5YR 7/4, 5Y 8/2; presjek 2,5YR 5/6) s nešto primjesa vidljivih u presjeku i na površini. Visina: 31,5 cm; sačuvana širina 17 cm; promjer vrata: 8,5 cm; visina ručice: 1,8 cm; dimenzije ručice: 2,7 – 3,5 x 1,8 – 2 cm; debljina stjenke: 0,6 – 0,8 cm.</p> <p><b>Cat. No. 5</b> Partially preserved upper part of an amphora with a rounded shoulder and cylindrical ribbed neck. An elongated handle with an irregular oval cross section, ending at the shoulder. Reddish-orange clay (5YR 7/4, 5Y 8/2; cross section 2.5YR 5/6) with some inclusions visible in the cross section and on the surface. Height: 31.5 cm, preserved width 17 cm, neck diameter 8.5 cm, handle height 1.8 cm, handle size: 2.7-3.5 x 1.8-2 cm, wall thickness: 0.6-0.8 cm.</p>	
<p><b>Kat. br. 6</b> Djelomično sačuvan gornji dio amfore sa zadebljanim izvijenim obodom, izduženim cilindričnim vratom, djelomično sačuvanom ručicom i početkom zaobljenog ramena. Glina narančaste boje (5YR 6/6, 5YR 6/8) s nešto primjesa vidljivih u presjeku i na površini. Visina: 25,5 cm; promjer oboda: 11,5 cm; sačuvana širina: 14 cm; dimenzije ručice: 3,2 x 2,2 cm; debljina stjenke: 0,9 x 1,1 cm.</p> <p><b>Cat. No. 6</b> Partially preserved upper part of an amphora with a thickened everted rim, an elongated cylindrical neck, a partially preserved handle and the beginning of a rounded shoulder. Orange clay (5YR 6/6, 5YR 6/8) with some inclusions visible in the cross section and on the surface. Height: 25.5 cm, rim diameter: 11.5 cm, preserved width: 14 cm, handle size: 3.2 x 2.2 cm, wall thickness: 0.9 x 1.1 cm.</p>	
<p><b>Kat. br. 7</b> Dio tordirane profilirane ručice amfore. Glina u tonovima sive i žute boje (10YR 7/3, 5Y 5/1), grube fakture s vidljivim primjesama. Dužina: 9,9 cm; promjer ručice: 3,1 x 2,3 cm.</p> <p><b>Cat. No. 7</b> Part of a spirally twisted profiled amphora handle. Clay in shades of grey and yellow (10YR 7/3, 5Y 5/1), coarse fabric with visible inclusions. Length: 9.9 cm, handle diameter: 3.1 x 2.3 cm.</p>	
<p><b>Kat. br. 8</b> Pločasti poklopac amfore izrađen na kolu s izdignutim umbom. Glina narančastosive boje (10YR 6/2, 6/3). Pravilnog kružnog oblika s izvučenom ručno formiranom jakom bradavičastom ručicom nepravilnog oblika. Visina: 3,8 cm; promjer: 8,4 – 8,9 cm; debljina: 0,5 – 1 cm.</p> <p><b>Cat. No. 8</b> Wheel-made amphora disc plug made with a raised boss. Orange-grey clay (10YR 6/2, 6/3). Regular circular shape with an everted manually shaped strong knob-shaped handle of irregular shape. Height: 3.8 cm, diameter: 8.4-8.9 cm, thickness: 0.5-1 cm.</p>	

<p><b>Kat. br. 9</b> Ulomak pločastog poklopca amfore izrađenog u kalupu s bazom umba. Glina narančastosive boje (10YR 6/2, 6/3). Sačuvana visina: 1,5 cm; sačuvani promjer: 10 cm; debljina: 0,7 – 1 cm.</p> <p><b>Cat. No. 9</b> Fragment of an amphora disc plug worked in a mould with boss base. Orange-grey clay (10YR 6/2, 6/3). Preserved height: 1.5 cm, preserved diameter: 10 cm, thickness: 0.7-1 cm.</p>	
<p><b>Kat. br. 10</b> Ulomak konične zdjelice s prema van izvijenim obodom. Glina blijedonarančaste boje (7.5YR 6/6) s vidljivim primjesama mice. Sačuvana visina: 2,9 cm; sačuvana širina: 6,8 cm; rekonstruirani promjer oboda: 9,6 cm; debljina stjenke: 0,2 – 0,5 cm.</p> <p><b>Cat. No. 10</b> Fragment of a small conical bowl with an everted rim. Pale orange clay (7.5YR 6/6) with visible inclusions of mica. Preserved height: 2.9 cm, preserved width: 6.8 cm, reconstructed rim diameter: 9.6 cm, wall thickness: 0.2-0.5 cm.</p>	
<p><b>Kat. br. 11</b> Ulomak zadebljalog i zaravnjenog oboda plitke polukružne zdjele. Glina narančaste boje (5YR 6/6) s crvenkastonarančastim premazom (2.5YR 5/6). Prijelaz iz oboda u tijelo naglašen, rubom oboda teče plitka kanelira. Sačuvana visina: 3,5 cm; širina: 9,5 cm; rekonstruirani promjer oboda: 20 cm; debljina stjenke: 0,4 cm.</p> <p><b>Cat. No. 11</b> Fragment of a thickened and flattened rim of a shallow semi-circular bowl. Orange clay (5YR 6/6) with a reddish-orange gloss (2.5YR 5/6). Accentuated transition from the rim to the body, with a shallow cannellure along the lip of the rim. Preserved height: 3.5 cm, width: 9.5 cm, reconstructed rim diameter: 20 cm, wall thickness: 0.4 cm.</p>	
<p><b>Kat. br. 12</b> Djelomično sačuvana zdjela koničnog tijela s ravnim dnom i naglašenim zakošenim obodom. Na unutrašnjoj površini dna dvije plitke kanelire, pečatni ukras palmete i rozete. Uz obod vidljivi tragovi gorenja. Fino pročišćena glina narančaste boje (5YR 6/6) s premazom u nešto tamnijem tonu (2.5YR 6/8). Visina: 5,6 cm; sačuvana širina: 15 cm; rekonstruirani promjer oboda: 26 cm; debljina stjenke: 0,6 cm.</p> <p><b>Cat. No. 12</b> Partially preserved bowl with a conical body, a flat base and an accentuated bevelled rim. Two shallow cannellures on the inside surface of the base, stamped palette and rosette decorations. Traces of burning visible along the rim. Fine purified clay of orange colour (5YR 6/6) with a slightly darker gloss (2.5YR 6/8). Height: 5.6 cm, preserved width: 15 cm, reconstructed rim diameter: 26 cm, wall thickness: 0.6 cm.</p>	

<p><b>Kat. br. 13</b> Djelomično sačuvana polukružna zdjela s naglašenim obodom. Na unutrašnjoj površini ispod oboda je jedna vodoravna kanelira. Na tijelu tragovi gorenja. Fino pročišćena glina blijede narančaste boje (5YR 6/6) s premazom u istom tonu. Sačuvana visina: 2,9 cm; širina: 4,8 cm; rekonstruirani promjer oboda: 33 cm; debljina stjenke: 0,6 – 0,7 cm.</p> <p><b>Cat. No. 13</b> A partially preserved semi-circular bowl with an accentuated rim. A horizontal cannellure on the inside surface beneath the rim. Traces of burning on the body. Fine purified clay of pale orange (5YR 6/6), with a gloss of the same colour. Preserved height: 2.9 cm, width: 4.8 cm, reconstructed rim diameter: 33 cm, wall thickness: 0.6-0.7 cm.</p>	
<p><b>Kat. br. 14</b> Djelomično sačuvana zdjela polukružnog tijela s naglašenim prema unutra zakošenim obodom. Fino pročišćena glina crvenkastonarančaste boje (2.5YR 6/8) s premazom u nešto tamnijem tonu (2.5YR 5/8). Sačuvana visina: 12,5 cm; širina: 23,5 cm; rekonstruirani promjer oboda: 42 cm; debljina stjenke: 0,8 – 0,9 cm.</p> <p><b>Cat. No. 14</b> A partially preserved bowl with a semi-circular body and an accentuated rim bevelled inwards. Fine purified clay of reddish-orange (2.5YR 6/8) with a slightly darker gloss (2.5YR 5/8). Preserved height: 12.5 cm, width: 23.5 cm, reconstructed rim diameter: 42 cm, wall thickness: 0.8-0.9 cm.</p>	
<p><b>Kat. br. 15</b> Ulomak dna tanjura-zdjele nepoznatog oblika. Na unutrašnjoj površini tragovi triju plitkih kanelira i pečatni ukras palmete i rozeta. Fino pročišćena glina narančaste boje (2.5YR 6/8). Sačuvana visina: 5,6 cm; širina: 1,3 cm; rekonstruirani promjer dna: 13 cm; debljina stjenke: 0,5 – 0,6 cm; Ø rozete: 1,3 – 1,4 cm.</p> <p><b>Cat. No. 15</b> Fragment of a base of a plate-bowl of unknown shape. The inside surface with traces of three shallow cannellures and a stamped palmette and rosette decoration. Fine purified clay of orange colour (2.5YR 6/8). Preserved height: 5.6 cm, width: 1.3 cm, reconstructed base diameter: 13 cm, wall thickness: 0.5-0.6 cm, rosette diameter: 1.3-1.4 cm.</p>	

<p><b>Kat. br. 16</b>          Gotovo u cijelosti sačuvana cilindrično oblikovana zdjela narebrenog tijela naglašenog prema van izvijenog zadebljanog oboda. Dno polukružno i ostrim ramenom odvojeno od tijela. Tijelo prekriveno jakim tragovima gareži.          Glina narančastosmeđe boje (5YR 6/4, 6/8).          Sačuvana visina: 9,4 cm; širina: 19,5 cm; promjer oboda: 20 cm; promjer dna: 19 cm; debljina stjenke: 0,6 cm.</p> <p><b>Cat. No. 16</b>          Almost entirely preserved cylindrically shaped bowl with a ribbed body and an accentuated, everted, thickened rim. Semi-circular base, separated from the body by a sharp shoulder. Body covered with strong traces of soot.          Orange-brown clay (5YR 6/4, 6/8).          Preserved height: 9.4 cm, width: 19.5 cm, rim diameter: 20 cm, base diameter: 19 cm, wall thickness: 0.6 cm.</p>	
<p><b>Kat. br. 17</b>          Necjelovito sačuvan polukružni poklopac zadebljanog oboda. Na unutrašnjoj površini i na obodu vidljivi tragovi gorenja.          Glina narančasto-smeđe boje (7.5YR 5/4, 5/6), grube fature.          Sačuvana visina: 7,4 cm; sačuvana širina: 15 cm; rekonstruirani promjer oboda: 35 cm; debljina stjenke: 0,9 – 1 cm.</p> <p><b>Cat. No. 17</b>          Partially preserved semi-circular cover with a thickened rim. Traces of burning visible on the inside surface and the rim.          Orange-brown clay (7.5YR 5/4, 5/6), coarse fabric.          Preserved height: 7.4 cm, preserved width: 15 cm, reconstructed rim diameter: 35 cm, wall thickness: 0.9-1 cm.</p>	
<p><b>Kat. br. 18</b>          Ulomak diska uljanice s ukrašenim diskom.          Glina narančaste boje (5YR 6/6) s crvenkastim premazom (5YR 5/6).          Sačuvana dužina: 4,4 cm; sačuvana širina: 3,8 cm; debljina stjenke: 0,4 – 0,6 cm.</p> <p><b>Cat. No. 18</b>          Fragment of a decorated oil lamp disc.          Orange clay (5YR 6/6) with a reddish gloss (5YR 5/6).          Preserved length: 4.4 cm, preserved width: 3.8 cm, wall thickness: 0.4-0.6 cm.</p>	
<p><b>Kat. br. 19</b>          Ulomak ramena uljanice na kojem je plastični ukras koncentričnih krugova i trokuta.          Glina narančaste boje (5YR 6/6) s crvenkastim premazom (5YR 5/6).          Sačuvana dužina: 2,6 cm; sačuvana širina: 2 cm; debljina stjenke: 0,4 – 0,5 cm.</p> <p><b>Cat. No. 19</b>          Shoulder fragment of an oil lamp with a plastic decoration in the form of concentric circles and triangles.          Orange clay (5YR 6/6) with a reddish gloss (5YR 5/6).          Preserved length: 2.6 cm, preserved width: 2 cm, wall thickness: 0.4-0.5 cm.</p>	

<p><b>Kat. br. 20</b> Urezima ukrašeni ulomak sigilatne zdjele polukružno formiranog tijela. Bez ostalih podataka. (crtež iz „Dnevnika istraživanja“, skica: S. Gluščević).</p> <p><b>Cat. No. 20</b> An incised fragment of a sigillata bowl with a semi-circular body. No other information available. (Drawing from the Excavation Log, by S. Gluščević)</p>	
<p><b>Kat. br. 21</b> Ulomak blago prema van izvijenog oboda čaše izrađene od stakla zelenkaste boje. Sačuvana visina: 2 cm; sačuvana širina: 4 cm; rekonstruirani promjer oboda: 8 cm; debljina stjenke: 0,1 – 0,2 cm.</p> <p><b>Cat. No. 21</b> Fragment of a slightly everted rim of a glass made of greenish glass. Preserved height: 2 cm, preserved width: 4 cm, reconstructed rim diameter: 8 cm, wall thickness: 0.1-0.2 cm.</p>	
<p><b>Kat. br. 22</b> Ulomak blago prema van izvijenog oboda čaše izrazito tankih stijenki, izrađene od stakla blijede zelenkaste boje. Sačuvana visina: 2,4 cm; sačuvana širina: 3 cm; rekonstruirani promjer oboda: 9 cm; debljina stjenke: 0,05 – 0,1 cm.</p> <p><b>Cat. No. 22</b> Fragment of a slightly everted rim of a glass with extremely thin walls, made of pale glass, of pale greenish colour. Preserved height: 2.4 cm, preserved width: 3 cm, reconstructed rim diameter: 9 cm, wall thickness: 0.05-0.1 cm.</p>	
<p><b>Kat. br. 23</b> Ulomak prema van blago izvijenog oboda čaše izrađene od stakla blijedo zelenkaste boje. Ispod oboda ukras brušenog cik-cak motiva. Sačuvana visina: 3 cm; sačuvana širina: 3,1 cm; rekonstruirani promjer oboda: ??; debljina stjenke: 0,1 cm.</p> <p><b>Cat. No. 23</b> Fragment of a slightly everted rim of a glass made of pale greenish glass. Decoration of brushed zigzag motif below the rim. Preserved height: 3 cm, preserved width: 3.1 cm, reconstructed rim diameter: ??, wall thickness: 0.1 cm.</p>	

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# STAROKRŠĆANSKE STAKLENE SVJETILJKE

## EARLY CHRISTIAN GLASS LAMPS

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### KLJUČNE RIJEČI:

starokršćanske staklene svjetiljke, držači fitilja, polikandila, monokandila

Staklene svjetiljke važan su dio materijalne kulture starokršćanskih lokaliteta. Predstavljaju gotovo neizostavan dio liturgijskog namještaja crkvenih prostora od druge polovice 4. stoljeća o čijoj važnosti svjedoče brojni tekstovi i likovni prikazi. Osim oko crkvenih objekata, svjetiljke su čest nalaz i na nekropolama, gdje su osim funkcionalnog mogle imati i simbolički karakter. Unutar istraživanja javljaju se različiti oblici koji se mogu podijeliti u pet osnovnih oblika: svjetiljke u obliku šalice/zdjelice (Uboldi I), konične svjetiljke (Uboldi II), svjetiljke koje završavaju dnom s ispupčenjem (Uboldi III), svjetiljke u obliku lijevka (Uboldi IV) te svjetiljke u obliku kaleža (Uboldi V), uglavnom datiranih od kraja 4. do 8. stoljeća. Staklene svjetiljke sastojale su se od staklenog recipijenta punjenog vodom i slojem ulja na kojem je mogao plutati fitilj. U odnosu na glinene i metalne uljanice, staklene su predstavljale znatan napredak jer su s istom količinom ulja omogućavale dvostruko više svjetla. Rezultat je to prozirnih stjenki kroz koje se sjaj plamena lako širio. Paralelno s širenjem uporabe staklenih svjetiljki razvijaju se i dijelovi koji su zajedno sa staklenim recipijentima činili dio rasvjetnog uređaja. Osim staklenih dijelova, elementi rasvjetnog uređaja bili su i držači fitilja te metalni elementi (monokandila i polikandila) koji su omogućavali vješanje svjetiljki.

### KEY WORDS:

Early Christian glass lamps, wick holders, polycandela, monocandela

Glass lamps are important element of Early Christian material culture. They are almost inevitable part of liturgical furnishings of church interiors from the second half of the fourth century onwards. Their significance is attested by numerous historical sources and visual depictions. They are common find in the churches and necropolae where they can have symbolic meaning also. Their typology can be divided into five basic forms: cup/bowls (Uboldi I), conical lamps (Uboldi II), lamps with base knob (Uboldi III), funnel-shaped lamps (Uboldi IV), chalice-shaped lamps (Uboldi V), mostly dated from the end of the 4th century to the 8th century. Glass lamps consisted of glass vessels filled with water and oil layer with a floating wick which could be made of flax or cotton fibres or obtained from some other plant fibres. They represented a technological advancement in comparison to clay and metal oil lamps since oil and water, together with transparent vessel, enabled much stronger light with the same amount of oil used. In addition to glass parts, elements of lighting device also comprised wick holders and metal elements (monocandela and polycandela) that enabled suspension of lamps.

## UVOD

Staklene svjetiljke jedna su od najvažnijih karakteristika materijalne kulture kasne antike. Korištene su za osvjetljavanje javnih i privatnih prostora od zapadnog do istočnog Mediterana i u njegovu zaleđu od 4. do 8. stoljeća, a pojedini oblici će se uz određene modifikacije rabiti tijekom dužeg perioda. Širenjem uporabe staklenih svjetiljki krajem 4. stoljeća dolazi do znatnih promjena u načinu osvjetljavanja. Bile su tehnološki napredak jer su ulje i voda s prozirnim recipijentom omogućavali bitno jače svjetlo od glinenih i metalnih uljanica. Razvojem tehnike slobodnog puhanja staklo postaje jeftinije te se počinje sve češće upotrebljavati i u svakodnevnom životu.<sup>1</sup> Tako dolazi do razvoja staklenih svjetiljki, a time i ostalih dijelova koji su omogućavali njihovo funkcioniranje.<sup>2</sup> Staklene svjetiljke, kao takve, važne su u arheološkom kontekstu jer su jedan od najčešćih staklenih nalaza unutar starokršćanskih objekata. One su u crkvama, uz prozorsko staklo, gotovo jedini stakleni materijal.<sup>3</sup>

Tekstovi kršćanskih autora prvi donose podatke o različitim oblicima rasvjete osvrćući se često na simboličku ulogu svjetlosti. Staklene svjetiljke bile su dio liturgijskog namještaja velikih bazilika i manjih crkava, a uključivale su veliki broj elemenata za osvjetljenje. Pisane dokaze o njihovoj upotrebi donose brojni povijesni izvori od kojih su u ovom slučaju najvažniji popisi crkvenih inventara i djela crkvenih otaca.<sup>4</sup>

Neiscrpan izvor informacija, *Liber Pontificalis*, donosi podatke o nazivima lusteri, svjetiljki i svijećnjaka, o njihovoj hijerarhiji unutar crkvenog prostora i donacijama zaslužnim za njihovu opskrbu. Lusteri i svjetiljke od pleme-

<sup>1</sup> M. UBOLDI, 1995, 94; M. TOPIĆ, 1999, 96.

<sup>2</sup> Ovaj rad temelji se na diplomskom radu *Starokršćanske staklene svjetiljke* autorice Petre Nikolić. Rad pod mentorstvom doc. dr. sc. Josipe Barake Perice obranjen je 28. veljače 2018. na Odjelu za arheologiju Sveučilišta u Zadru.

<sup>3</sup> M. UBOLDI, 1995, 95.

<sup>4</sup> P. CHEVALIER, 1999, 162-165.

## INTRODUCTION

Glass lamps are one of the most important characteristics of the material culture of Late Antiquity. They were used for lighting public and private spaces from the western to eastern Mediterranean and its hinterland from the 4th to the 8th century, and some forms remained in use, with certain modifications, for a longer period. Lighting concepts changed significantly after the spread of use of glass lamps by the end of the 4th century. They represented a technological advancement since oil and water together with transparent vessel enabled much stronger light in comparison to clay and metal oil lamps. Owing to development of free blowing technique glass became cheaper and its use in everyday life became common.<sup>1</sup> That was the beginning of the development of glass lamps, and consequently other parts that enabled their functioning.<sup>2</sup> Glass lamps as such are important in archaeological context since they represent one of the most frequent glass finds in the Early Christian structures. They are almost only glass objects in churches in addition to windowpanes.<sup>3</sup>

Christian authors were the first to write about different lighting forms often paying attention to symbolical meaning of light. Glass lamps were a part of liturgical furnishings in big basilicas and small churches, and they included a number of lighting elements. Written evidence on their use is found in many historical sources, in this case the most important being the church inventory records and the works of the church fathers.<sup>4</sup>

*Liber Pontificalis* as an inexhaustible source of information offers data on names of chandeliers, lamps and candle holders, their hierar-

<sup>1</sup> M. UBOLDI, 1995, 94; M. TOPIĆ, 1999, 96.

<sup>2</sup> This paper is based on the graduation thesis *Early Christian glass lamps* by the author Petra Nikolić. The thesis under the mentorship of Josipa Baraka Perica, PhD, assistant professor, was defended on February 28, 2018, at the Department of Archaeology of the University of Zadar.

<sup>3</sup> M. UBOLDI, 1995, 95.

<sup>4</sup> P. CHEVALIER, 1999, 162-165.

nitih metala ili mjedi bili su jedan od najčešćih elemenata crkvenog namještaja koji su osvjetljavali ne samo prostore oltara u crkvama nego i baptisterije i kripte.<sup>5</sup>

Osim činjenice da su lusteri od plemenitih metala ili brončani elementi monokandila bili skupi, održavanje tih rasvjetnih tijela i njihova opskrba uljem također je zahtijevala velika sredstva koja su u velikom broju slučajeva omogućavali vjernici svojim donacijama. Za ovakve informacije posebice su dragocjene oporuke vjernika što upućuje na očito veliku važnost osvjetljavanja unutar crkava. U testamentu iz Bologne, datiranom u drugu polovicu 6. stoljeća doznajemo o donaciji sto zlatnih solidusa za osvjetljenje *svih svetih crkava Božjih* na otoku Mljetu. Također se spominje sto zlatnih solidusa namijenjenih, između ostalog, i za održavanje svjetiljki *svetih crkava* na prostoru oko Salone.<sup>6</sup> U apostolskim kanonima se čak vjernicima zabranjuje da krađu ulje ili vosak iz crkava što svjedoči kako korištenje uljanica nije mogao svatko priuštiti.<sup>7</sup>

Rasvjetne uređaje spominju još i Pavao Silencijar (*De Ceremoniis*<sup>8</sup>), Prudencije (*Cahtemerimon V*) te sv. Paulin iz Nole (*Carmina natalica, VII*).<sup>9</sup>

Osim u pisanim povijesnim izvorima, o uporabi ove vrste osvjetljenja doznajemo i s mozaika unutar starokršćanskih crkava, a najstarije potvrde uključuju mozaike crkve sv. Jurja (Galerijeva rotunda) u Solunu te mozaici u trijumfalnom luku u crkvi sv. Marije Velike u Rimu (Sl. 1).<sup>10</sup>

Najraniji oblici staklenih svjetiljki bile su zdjele s ravnim dnom i trima ručkama pomoću kojih su se mogle vješati. Širenjem uporabe staklenih svjetiljki krajem 4. stoljeća počinju se razvijati i raznovrsni oblici. Staklene svjetiljke sastojale su se od staklenog recipijenta

chly in the church space and donations used for their supply. Chandeliers and lamps made of precious metals or brass were one of the most common elements of the church furniture that lighted not only altar spaces in churches but also baptisteries and crypts.<sup>5</sup>

Except for the fact that chandeliers made of precious metals or bronze elements of monocandela were expensive, maintenance of these lighting devices and their supply with oil was also costly and usually funded by believers' donations. Wills of believers are especially important with regard to information of this type suggesting evidently big importance of lighting the church interiors. In the testament from Bologna, dated to the second half of the 6th century, we learn about a donation of a hundred gold solidi intended for lighting *all holy churches of God* on the island of Mljet. A hundred golden solidi are also mentioned that were intended, among other things, for maintenance of lamps of *holy churches* in the Salona region.<sup>6</sup> The Apostolic Canons prohibited believers from stealing oil or wax from churches testifying to the fact that use of oil lamps was not widely affordable.<sup>7</sup>

Lighting devices are also mentioned by Paul de Silentiary (*De Ceremoniis*<sup>8</sup>), Prudentius (*Cahtemerimon V*) and Saint Paulinus of Nola (*Carmina natalica, VII*).<sup>9</sup>

In addition to written historical sources, the use of this kind of lighting can also be found in mosaics in the early Christian churches, and the oldest confirmations include the mosaics of the church of Saint George (Rotunda of Galerius) in Thessaloniki and the mosaics of the triumphal arch in the church of Santa Maria Maggiore in Rome (Fig. 1).<sup>10</sup>

The earliest forms of glass lamps were bowls with flat base and three handles for suspen-

<sup>5</sup> P. CHEVALIER, 1999, 162.

<sup>6</sup> G. MARINI, 1805, 121.

<sup>7</sup> P. CHEVALIER, 1999, 162-165.

<sup>8</sup> Za engleski prijevod vidi: W. R. LETHABY, H. SWAINSON, 1984, 35 i d.

<sup>9</sup> M. UBOLDI, 1995, 94.

<sup>10</sup> M. UBOLDI, 1995, 95.

<sup>5</sup> P. CHEVALIER, 1999, 162.

<sup>6</sup> G. MARINI, 1805, 121.

<sup>7</sup> P. CHEVALIER, 1999, 162-165.

<sup>8</sup> For English translation see: W. R. LETHABY, H. SWAINSON, 1984, 35ff.

<sup>9</sup> M. UBOLDI, 1995, 94.

<sup>10</sup> M. UBOLDI, 1995, 95.



SLIKA 1. Mozaik na trijumfalnom luku crkve sv. Marije Velike, Rim, detalj s prikazom monokandila (preuzeto iz V. JOVIĆ GAZIĆ, B. ŠTEFANEC, 2018, 33).

FIGURE 1 Mosaic of the triumphal arch in the church of Santa Maria Maggiore in Rome, detail with a depiction of a monocandela (after V. JOVIĆ GAZIĆ, B. ŠTEFANEC, 2018, 33).

različitih oblika koji se punio vodom i slojem ulja na kojem je mogao plutati fitilj. Fitilj je mogao biti od lanenog ili pamučnog vlakna ili dobiven iz nekih drugih biljnih vlakana. Fitilj je mogao plutati na površini tekućine, biti pričvršćen na komad pluta ili drva ili poduprt držačima fitilja različitih oblika i materijala.<sup>11</sup> Dok su se metalne i glinene svjetiljke cijele punile uljem, staklene svjetiljke bile su punjene vodom na kojoj je plutao sloj ulja. Osim što je ovaj način bio ekonomičniji, davao je i bolje rezultate u osvjetljavanju jer je omogućavao duplo jače svjetlo.<sup>12</sup> Staklene svjetiljke su, za razliku od prethodnih rasvjetnih uređaja, duže gorjele te nisu stvarale sjene, tako da je osvjetljenje površine bilo kvalitetnije. Istraživanja pokazuju kako je efikasnost osvjetljavanja ovisila o faktorima poput: količine vode, oblika recipijenta te visine na kojoj su svjetiljke bile

various forms started to develop with the expansion of the use of glass lamps at the end of the 4th century. Glass lamps consisted of glass vessels in various shapes filled with water and oil layer with a floating wick which could be made of flax or cotton fibres or obtained from some other plant fibres. The wick could float on the surface of the liquid, be attached to a piece of cork or wood, or supported by wick holders made of different materials and in various shapes.<sup>11</sup> While metal and clay lamps were filled with oil, glass lamps were filled with water with oil layer floating on top. Furthermore, this method was more economical and gave better lighting results because it provided twice as much light.<sup>12</sup> Glass lamps, unlike the clay lamps, had longer burning time and did not create shadows, so the surface brightness was higher. Studies show that the efficiency of lighting depended on factors

<sup>11</sup> M. UBOLDI, 1995, 93.

<sup>12</sup> E. M. STERN, 1999, 479-480.

<sup>11</sup> M. UBOLDI, 1995, 93.

<sup>12</sup> E. M. STERN, 1999, 479-480.

postavljene.<sup>13</sup>

Još jedan od važnih faktora kod kvalitete osvjetljavanja jest i korištena vrsta ulja. Primjerice, ricinusovo ulje, koje spominje već Plinije Stariji kao izrazito korisno u osvjetljavanju,<sup>14</sup> pokazalo je bolje rezultate od maslinova ulja.<sup>15</sup> *Liber Pontificalis* spominje čestu uporabu nardova ulja, *oleum nardium pisticum*,<sup>16</sup> dok nalazi svjetiljki s tragovima ulja u Francuskoj svjedoče o uporabi orahova ulja te životinjske masti na tom području u srednjem vijeku.<sup>17</sup>

Svijeće se u ovom periodu nisu upotrebljavale u tolikom opsegu jer su bile skupe, a njihova će se uporaba raširiti tek u 7. stoljeću.<sup>18</sup>

Svjetiljke su se mogle rabiti kao samostalni rasvjetni uređaji, kada je oblik svjetiljke imao stabilno dno, a mogle su i biti dio metalnih uređaja polikandila i monokandila. Metalni uređaji služili su za vješanje jedne svjetiljke (monokandila) ili većeg broja uljanica (polikandila).

Hodočasnica Egerija pri posjetu Svetoj zemlji 380. godine spominje važnu simboličku i praktičnu ulogu koju igraju svjetiljke u liturgiji u Jeruzalemu, osobito tijekom slavlja Uskrsa.<sup>19</sup> Svjetiljke su se, osim u praktične svrhe osvjetljavanja crkava noću, rabile i simbolički.<sup>20</sup> Svjetlost je predstavljala definiciju, aklamaciju i simbol božanstvenosti.<sup>21</sup> Pozicija svjetiljki unutar crkvene arhitekture služila je za naglašavanje oltara ili grobova mučenika, kao suprotnost ostalom, mračnom dijelu građevine, ali i za osvjetljavanje ikona ili prolaza u bazilikama što još uvijek možemo vidjeti u nekim pravoslavnim crkvenim građevinama. Da bi se postigla maksimalna osvjetljenost, uljanice su se vješale pred oltarom ili pod krovom ciborija

such as the amount of water, the vessel shape and the height at which lamps were placed.<sup>13</sup>

Another important factor related to the quality of illumination was the type of oil used. For example, castor oil, which is mentioned by Pliny the Elder as exceptionally useful in lighting,<sup>14</sup> has shown better results than olive oil.<sup>15</sup> *Liber Pontificalis* mentions the frequent use of nard oil, *oleum nardium pisticum*,<sup>16</sup> while the finds of lamps from France with traces of oil testify to use of walnut oil and animal fat in that region in the Middle Ages.<sup>17</sup>

The candles were not used that much in this period because they were expensive, and their use will expand only in the 7th century.<sup>18</sup>

The lamps could be used as freestanding lighting devices when they had a stable base or they could have been a part of the metal devices called polycandelon and monocandelon. These metal devices were used to hang a single lamp (monocandelon) or a number of oil lamps (polycandelon).

Pilgrim Egeria, while visiting the Holy Land in the year 380, mentioned an important symbolic and practical role of the liturgical lamps in Jerusalem, especially during the Easter celebration.<sup>19</sup> In addition to the practical purposes of illuminating churches at night, the lamps also had a symbolical function.<sup>20</sup> Light was the definition, acclamation, and symbol of divinity.<sup>21</sup> The position of lamps within church architecture was used to emphasize altars or graves of martyrs, as opposed to the other, darker part of the building, as well as to illuminate icons or passages in the basilicas, which is still the case in some Orthodox churches. To achieve maximum illumination,

<sup>13</sup> D. MOULLOU et al., 2012, 110.

<sup>14</sup> Plinije Stariji, *Historia Naturalis* 15.7., Za engleski prijevod vidi: J. BOSTOCK et al., 1855, knjiga 15, poglavlje 7.

<sup>15</sup> E. M. STERN, 1999, 479.

<sup>16</sup> M. UBOLDI, 1995, 93–94.

<sup>17</sup> D. FOY, G. SENNEQUIRE, 1989, 343–344.

<sup>18</sup> T. MILAVEC, 2017, 199–200.

<sup>19</sup> Usp. A. MCGOWAN, P. F. BRADSHAW, 2018, 115.

<sup>20</sup> LEKSIKON, 2000, 589.

<sup>21</sup> M. XANTHOPOULOU, 2010, 70.

<sup>13</sup> D. MOULLOU et al., 2012, 110.

<sup>14</sup> Pliny the Elder, *Historia Naturalis* 15.7., for English translation see: J. BOSTOCK et al., 1855, book 15, chapter 7.

<sup>15</sup> E. M. STERN, 1999, 479.

<sup>16</sup> M. UBOLDI, 1995, 93–94.

<sup>17</sup> D. FOY, G. SENNEQUIRE, 1989, 343–344.

<sup>18</sup> T. MILAVEC, 2017, 199–200.

<sup>19</sup> Cf. A. MCGOWAN, P. F. BRADSHAW, 2018, 115.

<sup>20</sup> LEKSIKON, 2000, 589.

<sup>21</sup> M. XANTHOPOULOU, 2010, 70.

(obično bi se stavljao jedan u sredini i četiri na lukovima ciborija), porticima atrija, prolazima arkada, a oltar je obično bio flankiran velikim oltarnim svijećnjacima.<sup>22</sup>

Prvi su se proučavanjem pozicija svjetiljki unutar crkve bavili D. Keller i J. Lindblom koji su se uhvatili ukoštac s poznatim izvorima i ustanovili kako su polikandila vjerojatno korištena za osvjetljavanje broda crkve, a monokandila, s ručkama za vješanje, za osvjetljavanje oltara, baptisterija ili grobova mučenika, ali i kao „vječno svjetlo“.<sup>23</sup> Tina Milavec s druge strane, proučavajući podatke o crkvama u jugoistočnim Alpama, dolazi do zaključka da su svjetiljke pretežito pronađene u prezbiteriju građevine, a rijetko u brodu. Slična situacija je i s prozorskim staklom iz čega zaključuje da je taj dio crkve, koji je bio osvjetljen prirodnim svjetlom, bio dodatno naglašen umjetnim, čime je kreiran kontrast između prostora oko oltara i ostatka crkve.<sup>24</sup>

Zanimljiva situacija javlja se u samostanskom kompleksu u Jabal Harunu blizu Petre u Jordanu.<sup>25</sup> Naime, ulomci staklenih svjetiljki, zajedno s drugim ulomcima stakla pronađeni su na mjestima koja su imala funkciju odlagališta, dok je vrlo mali broj ulomaka pronađen na prostoru same bazilike. Moguće je pretpostaviti da su pri promjeni namještaja u crkvi uklonjene sve svjetiljke i zakopane u otpadnoj jami. Ulomci pronađeni unutar bazilike zajedno s držačima fitilja također su pronađeni na području apsida i u pastoforijama te u kapeli i to razrađeniji lusteri i veće pojedinačne svjetiljke, ali i sobama i hodnicima samostanskog kompleksa za koje su korišteni uobičajeni lusteri te manje pojedinačne svjetiljke za osvjetljavanje.<sup>26</sup>

Brojni ulomci svjetiljki pronađeni su pri istraživanju nekropola. Međutim, u većini slučajeva podaci s istraživanja ne dopuštaju

oil lamps were hanging in front of the altar or under the roof of ciborium (one was usually placed in the middle and four in the ciborium arches), atrium porticoes, arcade passages, and the altar was usually flanked with large altar candle holders.<sup>22</sup>

D. Keller and J. Lindblom were the first scholars to study the position of the lamps inside the church. They analyzed familiar sources and found that polycandela were probably used to illuminate the church nave, and the monocandela, with handles for hanging, for illuminating altars, baptisteries, or graves of martyrs and as “eternal light”.<sup>23</sup> T. Milavec, on the other hand, studying the information about the churches in the southeastern Alps concluded that the lamps were mostly found in the building presbytery, and only rarely in the nave. Situation is similar with the window glass. Therefore, the author concluded that this part of the church, which was illuminated by natural light and additionally accentuated by artificial light, created a contrast between the space around the altar and the rest of the church.<sup>24</sup>

An interesting situation can be found in the monastery complex at Jabal Harun near Petra in Jordan.<sup>25</sup> Namely, fragments of glass lamps, together with other glass fragments, were found at sites that functioned as landfill, while a very small number of fragments were found in the basilica itself. We can assume that all the lamps were removed and buried in the waste pit when the furniture in the church was changed. Fragments found inside the basilica along with the wick holders were also found in the area of the apse and pastophoria, and in the chapel; those were more elaborate chandeliers and larger single lamps. Same finds were also recovered from the rooms and halls of the monastery complex where usual chandeliers and smaller individual lamps were used for

<sup>22</sup> LEKSIKON, 2000, 588.

<sup>23</sup> D. KELLER, 2010, 266–268.

<sup>24</sup> T. MILAVEC, 2017, 211.

<sup>25</sup> Za više informacija vidi: J. LINDBLOM, 2005, 207.

<sup>26</sup> J. LINDBLOM, 2005, 208–209.

<sup>22</sup> LEKSIKON, 2000, 588.

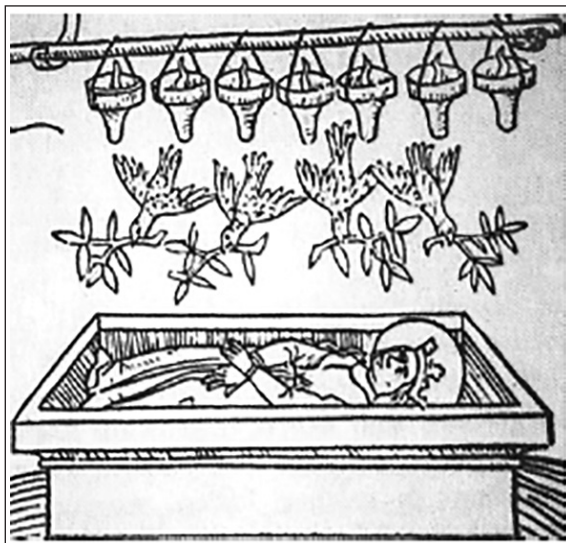
<sup>23</sup> D. KELLER, 2010, 266–268.

<sup>24</sup> T. MILAVEC, 2017, 211.

<sup>25</sup> For more information see: J. LINDBLOM, 2005, 207.

interpretaciju specifične upotrebe svjetiljki. Dakle, ne možemo sa sigurnošću tvrditi jesu li bile korištene kao zavjetni predmeti, kao oznaka grobova, ili su pak ti dijelovi jednostavno ostatci iz građevina u blizini nekropola.<sup>27</sup>

Svjetlost je igrala važnu ulogu i u funeralnim ceremonijama. Svjetiljke su neprekidno gorjele tijekom različitih rituala funeralne ili memorijske službe, ali su bile i obješene iznad grobova svetaca i mučenika (Sl. 2).<sup>28</sup> U bizantskim izvorima spominje se posebni svećenik *ecclesiarch*<sup>29</sup> čija je glavna zadaća danonoćna briga o svjetiljkama iznad grobova svetaca i mučenika. Ovi su svećenici bili zaduženi i za brigu o grobnim kapelama osnivača samostana, kako klerika, tako i laika.<sup>30</sup> Iz izvora doznajemo kako je svećenik koji je vodio brigu o grobnoj kapeli sv. Sabe, utemeljitelja glasovitog samostana Mar Saba 478. godine, bio zadužen osim za brigu o mijenjaju ulja i fitilja svjetiljki i za izvođenje memorijske službe.<sup>31</sup>



SLIKA 2. Grob sv. Katarine, drvorez; prikaz svjetiljki koje su se vješale iznad grobova mučenika (preuzeto iz R. STUPPERICH, 2009, 23).

FIGURE 2 Tomb of St. Catherine, woodcut; depiction of the lamps hung above martyrs' graves (after R. STUPPERICH, 2009, 23).

<sup>27</sup> M. UBOLDI, 1995, 96.

<sup>28</sup> D. KOTOULA, 2013, 185–188.

<sup>29</sup> *Pantokrator Typikon*, 81, redovi 874–878.

<sup>30</sup> D. KOTOULA, 2013, 188.

<sup>31</sup> *BMAD*, 2000, 1311–1318.

lighting.<sup>26</sup>

Numerous lamp fragments were found in the excavations of necropoles. However in most cases research information does not allow interpretation of the specific use of lamps meaning that we cannot state with certainty if they were used as votive objects, grave marks, or they are simply remains from the buildings in the vicinity of the necropoles.<sup>27</sup>

Lighting played an important role in funerary ceremonies. Lamps were constantly burning during various rituals of funerary or memorial services, but they were also hung above the graves of saints and martyrs (Fig. 2).<sup>28</sup> In the Byzantine sources, a special priest called *ecclesiarch*<sup>29</sup> is mentioned whose main task was to take care of the lamps above the graves of saints and martyrs. These priests were also in charge of the grave chapels of the monastery founders, both clerics and laymen.<sup>30</sup> We can read in the sources that the priest who maintained the grave chapel of St Saba, the founder of the famous Saba Monastery in 478, was in charge of changing oil and wick in lamps, but he also performed memorial service.<sup>31</sup>

Miraculous properties were ascribed to lamp oils from famous sanctuaries.<sup>32</sup> For instance, oil from lamps above the grave of St Menas was used for healing and to help women with infertility, but it was also sold as a pilgrims' souvenir.<sup>33</sup> Presence and independence of a monastery community depended on the cult of a martyr, as practice founded in the first years of Christianity.<sup>34</sup>

An interesting local find was recovered from the islet of Majsan where hundreds of fragments of bases of glass chalices were found

<sup>26</sup> J. LINDBLOM, 2005, 208–209.

<sup>27</sup> M. UBOLDI, 1995, 96.

<sup>28</sup> D. KOTOULA, 2013, 185–188.

<sup>29</sup> *Pantokrator Typikon*, 81, lines 874–878.

<sup>30</sup> D. KOTOULA, 2013, 188.

<sup>31</sup> *BMAD*, 1311–1318.

<sup>32</sup> For more information see: M. XANTHOPOULOU, 2010, 65–70.

<sup>33</sup> D. MONTERRAT, 1995, 438.

<sup>34</sup> D. KOTUOLA, 2013, 188.

Uljima svjetiljki u poznatim svetištima pripisivala su se čudesna svojstva.<sup>32</sup> Tako se ulje svjetiljki iznad groba sv. Mene rabilo u ljevakovite svrhe i služilo za pomoć ženama kod neplodnosti, ali se prodavalo i kao suvenir za hodočasnike.<sup>33</sup> O kultu mučenika, praksi utemeljenoj tijekom prvih godina kršćanstva, često je ovisilo postojanje, ponekad čak i samostalnost samostanske zajednice.<sup>34</sup>

Zanimljiv podatak s našeg područja jest nalaz s otočića Majsana gdje su uz memoriju i okolne prostorije pronađene stotine ulomaka postolja staklenih kaleža.<sup>35</sup> Smatram kako ovdje postoji mogućnost da je riječ o uljanicama koje su bile vješane iznad groba mučenika upravo zbog konteksta i brojnosti nalaza.

Još jedna od mogućih funkcija jest korištenje prigodom funeralnih banketa. Kao potvrda ovoj interpretaciji može poslužiti staklena građa s nekropole Cornus na Sardiniji gdje su se staklene svjetiljke u nekim slučajevima nalazile zajedno sa stolnom i kuhinjskom keramikom i ostacima životinjskih kostiju.<sup>36</sup> Među materijalom s ove nekropole fragmenti koničnih svjetiljki mogli su imati funkciju oznake na grobu.<sup>37</sup>

## TIPOLOGIJA STAKLENIH SVJETILJKI I ELEMENTI RASVJETNOG UREĐAJA

Cjeloviti primjeri svjetiljki vrlo se rijetko pronađu tijekom arheoloških istraživanja. Posljedica toga su poteškoće u razlikovanju svjetiljki od ostalog staklenog materijala. Osim toga, problem je i što se jednaki oblici posuda upotrebljavaju za različite funkcije. Oblici se vrlo malo razlikuju (vrsta stakla, obrada oboda, oblik ručke), tako da je vrlo teško identi-

next to *memoria* and adjoining rooms.<sup>35</sup> I believe that these might be oil lamps hung above the martyr's grave exactly because of the context and multitude of finds.

Another possible function is their use in funerary banquets. Confirmation of this interpretation can be found in glass material from Cornus necropolis in Sardinia where glass lamps were found, in certain cases, with tableware, kitchenware and animal bone remains.<sup>36</sup> Fragments of conical lamps from this necropolis could have functioned as grave marks.<sup>37</sup>

## TIPOLOGY OF GLASS LAMPS AND ELEMENTS OF LIGHTING DEVICE

Complete examples of lamps are rarely found in the archaeological excavations. Therefore it is difficult to differentiate glass lamps from other glass finds. Furthermore the problem is that identical forms of vessels are used for different functions. Forms differ only slightly (glass type, rim modelling, handle shape), so it is very difficult to identify lamps if we only have tiny glass fragments.<sup>38</sup>

On the basis of current state of research, it is difficult to set typology based on morphological characteristics since these objects were used in Late Antiquity, and then with few variations throughout the Middle Ages. Therefore most typologies were based on stratigraphic situation during the excavations. Production technique of glass lamps is very simple so it is likely that their function was purely practical as opposed to chandeliers that also had an artistic function.<sup>39</sup>

One of the oldest typologies of glass lamps was made by G. M. Crowfoot and D. B. Harden on the basis of finds from the site of Karanis

<sup>32</sup> Za više informacija vidi: M. XANTHOPOULOU, 2010, 65–70.

<sup>33</sup> D. MONTSERRAT, 1995, 438.

<sup>34</sup> D. KOTUOLA, 2013, 188.

<sup>35</sup> C. FISKOVIĆ, 1983, 77.

<sup>36</sup> D. STIAFFINI, 1985, 55–63.

<sup>37</sup> M. UBOLDI, 1995, 96–97.

<sup>35</sup> C. FISKOVIĆ, 1983, 77.

<sup>36</sup> D. STIAFFINI, 1985, 55–63.

<sup>37</sup> M. UBOLDI, 1995, 96–97.

<sup>38</sup> M. UBOLDI, 1995, 100–103.

<sup>39</sup> M. UBOLDI, 1995, 103–104.

ficirati svjetiljke kada smo suočeni sa sitnim ulomcima stakla.<sup>38</sup>

Prema trenutnom stanju istraživanja, postavljeni tipologiju na temelju morfoloških značajki vrlo je teško jer je riječ o predmetima koji se rabe u kasnoj antici, a zatim s vrlo malo varijacija tijekom cijelog srednjeg vijeka. Iz toga razloga, većina je tipologija postavljena na temelju stratigrafske situacije tijekom iskopavanja. Tehnika proizvodnje staklenih svjetiljki je vrlo jednostavna pa je vjerojatno kako je njihova funkcija bila čisto praktična za razliku od lusteri koji su imali i umjetničku funkciju.<sup>39</sup>

Jednu od najstarijih tipologija staklenih svjetiljki izradili su G. M. Crowfoot i D. B. Harden na temelju nalaza s lokaliteta Karanis u Egiptu. Njihova tipologija dijeli svjetiljke u pet skupina. Prvoj skupini pripadaju konične svjetiljke i forme koje su iz njih razvijene, a datirane su u razdoblje od 4. do 6. stoljeća. Drugoj skupini pripadaju svjetiljke u obliku polukružne zdjele i forme koje su se iz njih razvile, trećoj skupini svjetiljke u obliku šalice/zdjelice i forme razvijene iz njih. U četvrtoj su grupi svjetiljke tipa pehara, a petoj skupini pripadaju tzv. svjetiljke koje su služile kao svijetljaci, međutim, one ne pridaju staklenim svjetiljkama.<sup>40</sup>

Od ostalih autora koji su se bavili tipologijom staklenih svjetiljki svakako treba spomenuti D. Foy,<sup>41</sup> koja daje tipologiju na temelju nalaza s prostora sjeverne Francuske, A. Turno na temelju nalaza s lokaliteta Novae u Bugarskoj<sup>42</sup> te A. von Salderna za nalaze s lokaliteta *Sardis*.<sup>43</sup>

Ovaj rad oslanja se na tipologiju M. Uboldi koja se sastoji od pet glavnih oblika svjetiljki sa svojim podtipovima. Postavljena je na temelju nalaza s prostora cijele Italije zbog čega joj dajem prednost u odnosu na druge tipologije

in Egypt. Their typology divides lamps into five groups. The first group comprises conical lamps and derived forms, dating to the period from the 4th to 6th century. The second group includes lamps in shape of a hemispherical bowl and derived forms. Lamps in shape of a cup/small bowl and derived forms constitute the third group. Chalice-shaped lamps are in the fourth group, and so-called lamps used as candle holders constitute the fifth group, but they do not belong to glass lamps.<sup>40</sup>

Out of other authors dealing with typology of glass lamps, D. Foy<sup>41</sup> should definitely be mentioned, offering typology on the basis of finds from northern France, as well as A. Turno for the finds from the site of Novae in Bulgaria,<sup>42</sup> and A. von Saldern for the finds from the site of *Sardis*.<sup>43</sup>

This paper uses typology by M. Uboldi that consists of five main lamp types with additional subtypes. It was conceived on the basis of finds from entire Italy which is why I prefer it to other typologies which are usually based on finds from individual sites.

## UBOLDI TYPE 0 / BOWL LAMPS

Uboldi's typology starts with hemispherical shallow bowls, with flat base and curved walls, type Isings 116 (Fig. 3). They are included in the typology, but marked with 0 because it is not certain that they were used as glass lamps.<sup>44</sup> This vessel form was widely used in western and eastern Europe in the second half of the 4th and early 5th century.<sup>45</sup> Although uncertain about its function, Crowfoot and Harden also introduced this type in their typology under group 2 because these lamps are very similar, both in technique and decoration, to lamps recovered in Karanis which made them

<sup>38</sup> M. UBOLDI, 1995, 100–103.

<sup>39</sup> M. UBOLDI, 1995, 103–104.

<sup>40</sup> G. M. CROWFOOT, D. B. HARDEN, 1931, 196–208.

<sup>41</sup> D. FOY, 1995, 187–242.

<sup>42</sup> A. TURNO, 1989, 163–170.

<sup>43</sup> A. VON SALDERN, 1980, 38–60.

<sup>40</sup> G. M. CROWFOOT, D. B. HARDEN, 1931, 196–208.

<sup>41</sup> D. FOY, 1995, 187–242.

<sup>42</sup> A. TURNO, 1989, 163–170.

<sup>43</sup> A. VON SALDERN, 1980, 38–60.

<sup>44</sup> M. UBOLDI, 1995, 104.

<sup>45</sup> C. ISINGS, 1957, 143–147.

koje se najčešće temelje na nalazima s pojedinačnih lokaliteta.

### UBOLDI TIP 0/SVJETILJKE U OBLIKU ZDJELE

Uboldi započinje tipologiju polukružnim plitkim zdjelama, ravnog dna i zakrivljenih stjenki, tipa Isings 116 (Sl. 3). Uvrštava ih u tipologiju, međutim, označava ih nulom zato što dvoji jesu li ove posude zaista služile kao staklene svjetiljke.<sup>44</sup> Ovaj oblik posuda je u drugoj polovici 4. i početkom 5. stoljeća u zapadnoj i istočnoj Europi bio široko rasprostranjen.<sup>45</sup> Crowfoot i Harden su također u svojoj klasifikaciji uveli ovaj tip pod skupinu 2 premda ni oni nisu bili sigurni u njegovu funkciju. Uvrstili su ovaj oblik u tipologiju jer jako sličice, tehnikom i dekoracijom, svjetiljkama pronađenim u Karanisu zbog čega su pretpostavili da su mogle imati funkciju svjetiljki. Ne postoje ni pisani ni slikani izvori koji bi potkrijepili ovu tvrdnju. Ono što ne ide u prilog interpretaciji posuda kao uljanica jest činjenica kako bi u tom slučaju kod ovih posuda postojala kontinuirana opasnost od prolijevanja jer je posuda zbog nedostatka težine u donjem dijelu bila nestabilna. Također, ako je unutar njih korištena druga posuda s uljem i fitiljem, opet postoji problem nestabilnosti posude i time mogućnost izlijevanja ulja.<sup>46</sup> Usprkos navedenom, ne treba odbaciti mogućnost da su posude takve vrste mogle poslužiti kao svjetiljke.

Opisani primjerci su plitke zdjele, a smatram kako bi se ovoj skupini mogle pripisati i zdjele dublje varijante s izvijenim obodom, tipa Isings 96, koje su mnogo zastupljenije i koje su pojedini autori interpretirali kao posude koje su služile kao svjetiljke.<sup>47</sup> A. C. Antonaras spominje ih među nalazima s prostora Soluna među kojima su zastupljeni primjerci s ručkama i bez ručki. Prema tome, vjerojatno su bile

assume they might have functioned as lamps. This thesis is confirmed neither in written sources nor in painting. The interpretation is contested by the fact that there was a constant danger of spilling as the vessel was unstable due to insufficient weight in the lower part. Furthermore, even if another vessel with oil and wick was used inside of them, this does not eliminate the problem of instability and possible oil spilling.<sup>46</sup> Despite all the aforementioned, it is still possible that this type of vessels might have been used as lamps.

Described examples are shallow bowls, and I believe that deeper bowl with an everted rim (type Isings 96) could also be ascribed to this group. They are far more numerous and they have already been interpreted as vessels used as lamps by certain authors.<sup>47</sup> A. C. Antonaras mentions them among finds from Thessaloniki where examples with and without handles were recorded. Accordingly they were probably hung inside of monocandelon or polycandelon.<sup>48</sup> One of the most famous examples of this vessel type is a complete vessel, exhibiting quite elaborate craftsmanship, inserted in the monocandelon kept in the Corning Museum of Glass (Corning, NY) (Fig. 4).<sup>49</sup>

### UBOLDI TYPE I / LAMPS

Lamps in shape of a cup/small bowl, type Isings 134, mostly have curved walls with thickened, everted rim and concave base.<sup>50</sup> On most examples three small bent handles were applied under the rim or in the middle of the body. Applied handles suggest that this type might have been used as a freestanding lamp or a lamp inserted in polycandelon or monocandelon. Uboldi divided this type into five subtypes with minor variations in vessel shape and number and shape of the handles (Fig.

<sup>44</sup> M. UBOLDI, 1995, 104.

<sup>45</sup> C. ISINGS, 1957, 143–147.

<sup>46</sup> G. M. CROWFOOT, D. B. HARDEN, 1931, 200.

<sup>47</sup> A. VON SALDERN, 1980, 45–46.

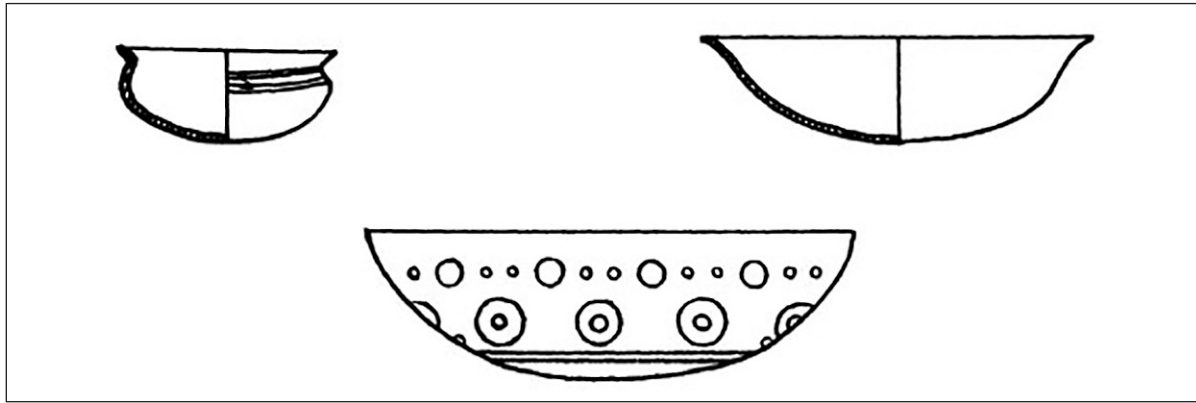
<sup>46</sup> G. M. CROWFOOT, D. B. HARDEN, 1931, 200.

<sup>47</sup> A. VON SALDERN, 1980, 45–46.

<sup>48</sup> A. C. ANTONARAS, 2006, 25.

<sup>49</sup> D. WHITEHOUSE, 1997, 192.

<sup>50</sup> C. ISINGS, 1957, 162.



SLIKA 3. Svjetiljke tipa zdjele (preuzeto iz G. M. CROWFOOT, D. B. HARDEN, 1931, pl. XXIX).

FIGURE 3 Bowl lampss (after G. M. CROWFOOT, D. B. HARDEN, 1931, pl. XXIX).

vješane ili unutar monokandila ili unutar polikandila.<sup>48</sup> Jedan od najpoznatijih primjeraka ovakvog tipa posude je cjeloviti primjerak, poprilično raskošne izvedbe, umetnut unutar monokandila koji se čuva u *Corning Museum of Glass* (Corning, NY) (Sl. 4).<sup>49</sup>



SLIKA 4. Svjetiljka tipa polukružne zdjele iz *Corning Museum of Glass* (preuzeto iz D. WHITEHOUSE, 1997, 192).

FIGURE 4 Hemispherical lamp from the *Corning Museum of Glass* (after D. WHITEHOUSE, 1997, 192).

#### UBOLDI TIP I/SVJETILJKE U OBLIKU ŠALICE/ZDJELICE

Svjetiljke tipa šalice/zdjelice, oblika Isings 134, uglavnom su zakošenih stjenki sa za-

5). It is assumed that their provenance can be found in the Near East at the end of the 4th century.<sup>51</sup> In the remaining parts of the Mediterranean they are dated mostly to the same period. In Gerasa they are dated to the late 4th and the 5th century,<sup>52</sup> and in Italy from the second half of the 4th and early 5th century until the 7th century,<sup>53</sup> in Bulgaria also to the 4th and 5th centuries.<sup>54</sup> Examples from Bosnia and Herzegovina are also corresponding in terms of dating.<sup>55</sup> Ivo Fadić states that in Croatia they can be dated without particular context to the time span from the late 4th to 6th century.<sup>56</sup>

#### UBOLDI TYPE II / CONICAL LAMPS

Conical lamps are found across the Roman Empire and they are usually dated from the 4th to 6th century. This is one of the simplest types of glassware. We could say that they are, in a certain way, a prototype of other late antique forms related to sacral buildings. Paul de Silentiary in his hymn of praise of the magnificence of reopened Hagia Sophia in Constantinople during Justinian in the year 563, offers an extensive description of the entire church

<sup>48</sup> A. C. ANTONARAS, 2008, 25.

<sup>49</sup> D. WHITEHOUSE, 1997, 192.

<sup>51</sup> G. M. CROWFOOT, D. B. HARDEN, 1931, 205.

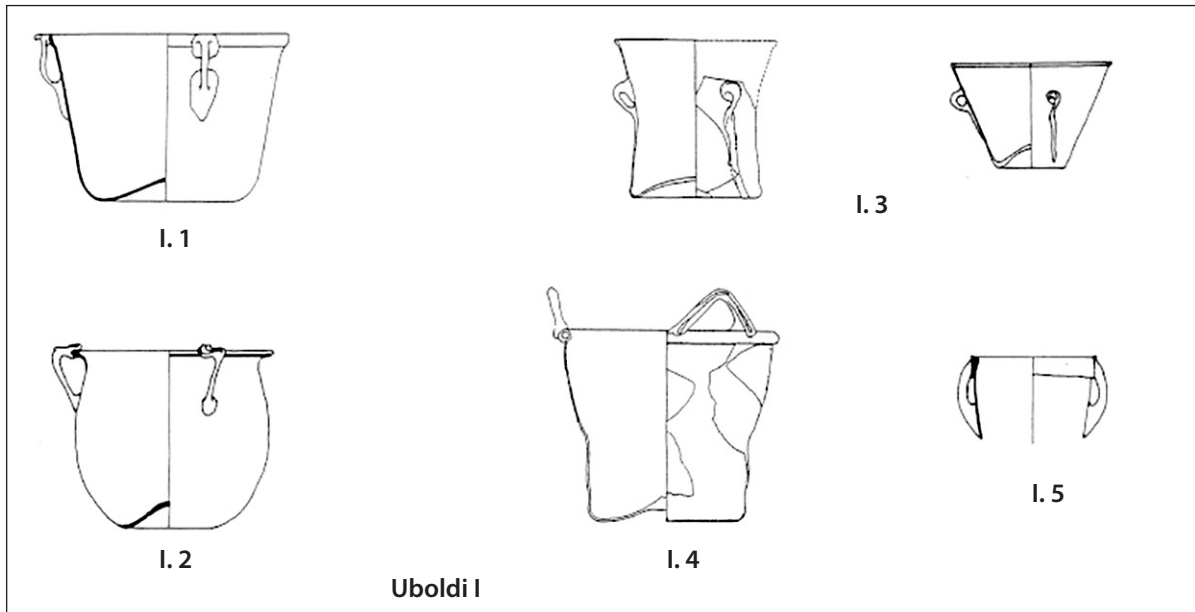
<sup>52</sup> C. ISINGS, 1957, 162.

<sup>53</sup> S. H. AUTH, 1976, 151.

<sup>54</sup> A. TURNO, 1989, 167.

<sup>55</sup> I. MARIJANOVIĆ, 1990, 109.

<sup>56</sup> I. FADIĆ, 1994, 225-226.



SLIKA 5. Svjetiljke u obliku šalice/zdjelice, Uboldi tip I (preuzeto iz M. UBOLDI, 1995, 106–111).  
 FIGURE 5 Lamps in shape of a cup/small bowl, Uboldi type I (after M. UBOLDI, 1995, 106–111).

debljanim izvijenim obodom i konkavnim dnom.<sup>50</sup> Kod većine primjeraka ispod oboda ili na sredini tijela aplicirane su tri male koljenaste ručke. Aplicirane ručke upućuju na to da je ovaj tip mogao služiti ili kao slobodnostojeća svjetiljka ili kao svjetiljka umetnuta unutar polikandila ili monokandila. Uboldi je ovaj oblik podijelila u pet podtipova s manjim varijacijama u obliku posude te broju i obliku ručki (Sl. 5). Pretpostavlja se da podrijetlo vuku s Bliskog istoka s kraja 4. stoljeća.<sup>51</sup> U ostalim dijelovima Sredozemlja se također datiraju otprilike u isto vrijeme. U Gerasi se datiraju na kraj 4. i u 5. stoljeće,<sup>52</sup> u Italiji su datirane od druge polovice 4. i početka 5. stoljeća sve do 7. stoljeća,<sup>53</sup> u Bugarskoj također u 4. i 5. stoljeće,<sup>54</sup> a vremenski se podudaraju i primjerci iz Bosne i Hercegovine.<sup>55</sup> Ivo Fadić navodi da ih se i u Hrvatskoj bez posebnog konteksta nalaza može datirati od kraja 4. do 6. stoljeća.<sup>56</sup>

and its furniture.<sup>57</sup> As for the lighting, he mentions long chains hanging from a high cornice and holding a circular form with suspended perforated silver discs for inserting glass lamps. His description of lamps indicates that these were exactly conical lamps. Oil lamps of this type might have been used inside polycandelson or individually hung on chains, as monocandelson. In the 6th century this form was adapted by adding a vertical tube for wick.<sup>58</sup>

Several examples of conical lamps recovered from the site of Karanis contained traces of oil and soot suggesting they were used as lamps. These examples could have been placed in wooden holders in shape of tripods, of the type found in Karanis,<sup>59</sup> used either as lamps or beakers for drinking. The 4th century mosaic from the Hammat synagogue in Tiberias also testifies to their use as lamps depicting seven conical lamps on menorah branches (Fig. 6).<sup>60</sup> A proof that they were used as beakers for drinking is found in an inscription *accipe*

<sup>50</sup> C. ISINGS, 1957, 162.

<sup>51</sup> G. M. CROWFOOT, D. B. HARDEN, 1931, 205.

<sup>52</sup> C. ISINGS, 1957, 162.

<sup>53</sup> S. H. AUTH, 1976, 151.

<sup>54</sup> A. TURNO, 1989, 167.

<sup>55</sup> I. MARIJANOVIĆ, 1990, 109.

<sup>56</sup> I. FADIĆ, 1994, 225–226.

<sup>57</sup> Cf. W. R. LETHABY, H. SWAINSON, 1894.

<sup>58</sup> G. M. CROWFOOT, D. B. HARDEN, 1931, 200–202.

<sup>59</sup> E. MAGUIRE, H. MAGUIRE, M. J. DUNCAN-FLOWRES, 1989, 62.

<sup>60</sup> G. M. CROWFOOT, D. B. HARDEN, 1931, 200–202; *ANCIENT GLASS*, 1998, 24.

## UBOLDI TIP II/KONIČNE SVJETILJKE

Konične svjetiljke pronalaze se diljem Rimskog Carstva i uobičajeno se datiraju od 4. do 6. stoljeća. Ovaj tip svjetiljki jedan je od najjednostavnijih tipova staklenog posuda. Moglo bi se reći da su one, na neki način, prototip ostalim kasnoantičkim oblicima koji su povezani sa sakralnim objektima. Pavao Silencijar u svojoj odi za ponovno otvaranje Sv. Sofije u Konstantinopolu za vrijeme Justinijana 563. godine, daje opširan opis cijele crkve i njezina namještaja.<sup>57</sup> Kod osvjetljenja spominje dugačke lance koji su visjeli iz visokog vijenca i podržavali veliku kružnu formu iz koje su bili obješeni perforirani srebrni diskovi u koje su se umetale staklene svjetiljke. Prema opisu svjetiljki koji donosi smatra se da je najvjerojatnije riječ upravo o koničnim svjetilkama. Uljanice ovoga tipa također su se mogle rabiti ili unutar polikandila ili pojedinačno vješane pomoću lanca, odnosno kao monokandila. U 6. stoljeću dolazi do adaptacije ovog oblika time što mu se dodaje vertikalna cijev za držanje fitilja.<sup>58</sup>

Nekoliko primjeraka koničnih svjetiljki pronađenih na lokalitetu Karanis sadržavalo je tragove ulja i mrlje čađe koji upućuju na njihovu uporabu kao svjetiljki. Ovi primjeri su vjerojatno mogli biti postavljeni u drvene statuve u obliku tronošca kakvi su pronađeni u Karanisu,<sup>59</sup> bilo da su se upotrebljavale kao svjetiljke ili kao čaše za piće. Mozaik iz 4. stoljeća iz sinagoge Hammat u Tiberiasu također svjedoči o njihovoj uporabi kao svjetiljki prikazujući sedam koničnih svjetiljki na granama menore (Sl. 6).<sup>60</sup>

Dokaz kako su korištene kao čaše za piće jest natpis *accipe calice pie zes* ugraviran oko

*calice pie zes* around the rim on the find from Vojvodina, but also in the depictions from the 4th century tombs in Thessaloniki and Osenovo near Varna, as well as in glass plaques from Beit She'arim in Israel that bear incised depictions of conical beakers used by the Jews in the water blessing ceremony.<sup>61</sup> Another interesting interpretation of the function of the conical type, incited by the discovery from Karanis, is that they were used in games.<sup>62</sup> Namely, four gaming dice were found in one of conical vessels so it is possible they were used for games at one point.<sup>63</sup> Uboldi classified conical lamps into three subtypes. They are all basically of the same form, differing only in base modelling. Lamps of type II.1 have flat bottom that makes an almost stable base, type II.2 has pointed or thickened base while type II.3 has a bottom that consists of unevenly modelled base applied on a finished vessel (Fig. 7).<sup>64</sup>

## UBOLDI TYPE III / LAMPS WITH BASE KNOB

Unfortunately lamps with base knob are usually evidenced only by fragments that relate to the lower part of the vessel. Uboldi distinguishes two types of late antique lamps with this kind of base. The first one, that has a rather big knob, is earlier. It is referred to as a lamp with a button-shaped ending in the literature. The second, later form has much smaller knob, and a drop-shaped ending, thence the name. Modelling of the base suggests that both types were almost definitely used for inserting into polycandelon or for individual suspension. Knob on the base can be flattened, but it is never a stable base for a lamp enabling its unsupported standing on the surface.<sup>65</sup>

<sup>57</sup> Usp. W. R. LETHABY, H. SWAINSON, 1894.

<sup>58</sup> G. M. CROWFOOT, D. B. HARDEN, 1931, 200–202.

<sup>59</sup> E. MAGUIRE, H. MAGUIRE, M. J. DUNCAN-FLOWRES, 1989, 62.

<sup>60</sup> G. M. CROWFOOT, D. B. HARDEN, 1931, 200–202; *ANCIENT GLASS*, 1998, 24.

<sup>61</sup> A. MINČEV, P. GEORGIEV, 1981, 11–12; V. SARANOVIĆ-SVETEK, 1986, 6; V. SARANOVIĆ-SVETEK, 1986, 61; D. PAPANICOLA BAKIRTZI, 2002, 532–533.

<sup>62</sup> D. B. HARDEN, 1936, 155.

<sup>63</sup> A. C. ANTONARAS, 2006, 23–24.

<sup>64</sup> M. UBOLDI, 1995, 115.

<sup>65</sup> T. MILAVEC, 2012, 98.



SLIKA 6. Mozaik sinagoge Hammat u Tiberiasu (preuzeto iz ANCIENT GLASS, 1998, 24).

FIGURE 6 Mosaic from the Hammat synagogue in Tiberias (after ANCIENT GLASS, 1998, 24).

oboda na nalazu iz Vojvodine, ali i prikazi u grobnicama iz 4. stoljeća u Solunu i Osenovu blizu Varne te na staklenim pločama iz Beth She'arima u Izraelu koje imaju urezane prikaze koničnih čaša kojima su se židovi koristili u ritualu blagoslivljanja vode.<sup>61</sup> Još jedna zanimljiva interpretacija funkcije koničnog tipa, potaknuta otkrićem iz Karanisa, jest da su služile u igrama.<sup>62</sup> Naime, četiri kocke za igru pronađene su unutar jedne od koničnih posuda tako je moguće da su u jednom trenutku poslužile i u tu svrhu.<sup>63</sup> Konične svjetiljke Uboldi je podijelila u tri podtipa. Sva tri tipa u osnovi su istog oblika, ali se razlikuju po obliku dna. Svjetiljke tipa II.1 imaju ravno dno koje tvori gotovo stabilnu bazu, tipa II.2 imaju šiljasto ili zadebljano dno dok tip II.3 ima bazu koja se sastoji od neravnomjerno oblikovanog dna nanesenog na već gotovu posudu (Sl. 7).<sup>64</sup>

The first type with a knob is known as Uboldi type III.1, dated to the 5th century (Fig. 8).<sup>66</sup> They are quite similar to the conical examples of type Uboldi type II.3, however they can be distinguished from parts of the previous group on the basis of a more rounded and wider body in the lower part. Another recognizable element is manner of modeling, knob as a base was not added separately, but it is a part of the lamp body, while it was subsequently added on the conical ones.<sup>67</sup> A complete example was found in Obrenovac<sup>68</sup> in Serbia that is ascribed to another variant (with drop-shaped ending) by some authors (Fig. 9).<sup>69</sup> However on the basis of study of the material I believe it is more likely that this is the type with button-shaped ending as knob is more massive on this specimen than on forms with drop-shaped ending.

The second type of lamp has a cylindrical body with a drop-shaped ending (Uboldi III.2), and

<sup>61</sup> A. MINČEV, P. GEORGIEV, 1981, 11–12; V. SARANOVIĆ-SVETEK, 1986, 6; V. SARANOVIĆ-SVETEK, 1986, 61; D. PAPANICOLA BAKIRTZI, 2002, 532–533.

<sup>62</sup> D.B. HARDEN, 1936, 155.

<sup>63</sup> A. C. ANTONARAS, 2008, 23–24.

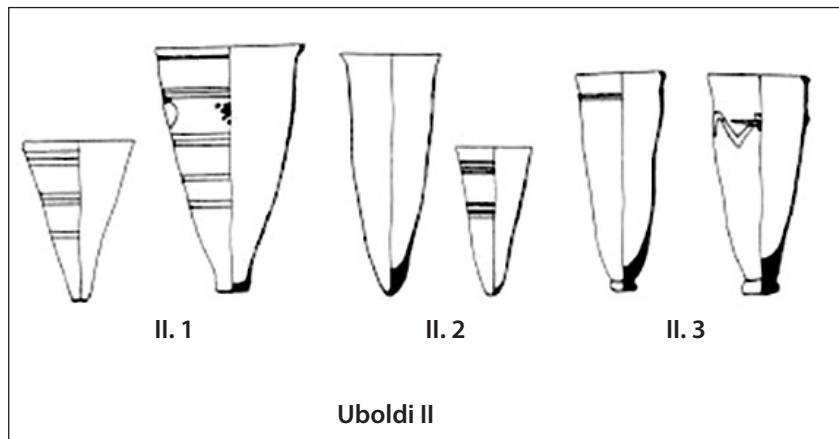
<sup>64</sup> M. UBOLDI, 1995, 115.

<sup>66</sup> M. UBOLDI, 1995, 116–119.

<sup>67</sup> M. UBOLDI, 1995, 116–117.

<sup>68</sup> Cf. M. RUŽIĆ, 1994.

<sup>69</sup> T. MILAVEC, 2012, 99.



SLIKA 7. Konične svjetiljke, Uboldi tip II (preuzeto iz M. UBOLDI, 1995, 111).  
 FIGURE 7 Conical lamps, Uboldi type II (after M. UBOLDI, 1995, 111).

### UBOLDI TIP III/SVJETILJKE S DNOM KOJE ZAVRŠAVA ISPUPČENJEM

Nažalost, svjetiljke s dnom koje završava ispupčenjem potvrđuju u većini slučajeva samo fragmenti koji se odnose na donji dio posude. Uboldi izdvaja dvije vrste kasnoantičkih svjetiljki s ovakvim dnom. Prva ima dosta veliko ispupčenje i datira se ranije, a u literaturi se javlja pod nazivom svjetiljka sa završetkom u obliku gumba. Drugi oblik ima mnogo manje ispupčenje, javlja se kasnije te ima kapljicastr završetak po kojem je i dobio ime. Oba su se tipa, zbog načina na koje je oblikovano dno, gotovo sigurno rabila za umetanje u polikandila ili za pojedinačno vješanje. Ispupčenje na dnu ponekad može biti lagano spljošteno, ali nikada ne čini stabilnu bazu kako bi svjetiljka mogla samostalno stajati na površini bez potpore.<sup>65</sup>

Prvi oblik s gumbom poznat je kao tip Uboldi III.1 i datira se u 5. stoljeće (Sl. 8).<sup>66</sup> Dosta su slične koničnim primjercima Uboldi II.3 tipa, međutim, možemo ih razlikovati od dijelova prethodne skupine na temelju toga što je kod ovih sa završetkom u obliku gumba tijelo mnogo zaobljenije i šire u donjem dijelu od koničnih. Još jedan prepoznatljiv element je način izrade, gumb kao dno nije dodan zasebno, već je dio tijela svjetiljke, dok je kod

Uboldi dates it to the period from the beginning of the 5th century and throughout the 6th century (Fig. 10).<sup>70</sup> The first complete example of this type of oil lamps was found in the early Christian basilica at the site of Turbe Varošluk in Bosnia.<sup>71</sup> The biggest problem is the fact that only drop-shaped base is usually found at most sites leading to problems in interpretation. Namely, almost identical drop-shaped ending is also found on balsamaria Isings type 9 which are amphora-shaped, coming in variants with or without handles. They are dated to the early Roman period but they are obviously present in later period as well. In Italy they are found among glass finds in tabernae close to the Temple of Magna Mater in Rome where they are dated to the 5th or very beginning of the 5th century since complete vessels with bases, rims and typical handles were preserved.<sup>72</sup> Usually balsamaria are rather small, with elongated body and sometimes hardly visible drop-shaped base. The fragments interpreted as late antique in the literature are usually somewhat bigger and more massive. However when drop-shaped bases are all that we have, it is difficult to determine the vessel function. Therefore probably the best approach is to rely on the context of the find whenever possible.<sup>73</sup>

Lamps with drop-shaped ending were most-

<sup>65</sup> T. MILAVEC, 2012, 98.

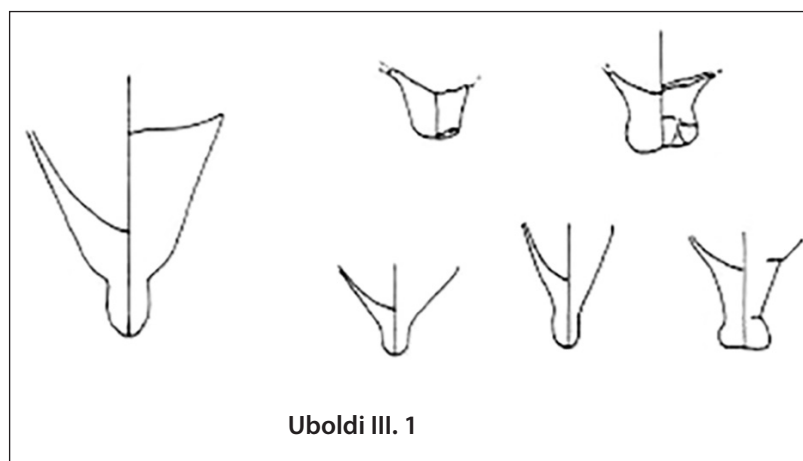
<sup>66</sup> M. UBOLDI, 1995, 116–119.

<sup>70</sup> M. UBOLDI, 1995, 119–120.

<sup>71</sup> I. MARIJANOVIĆ, 1990, 126.

<sup>72</sup> T. MILAVEC, 2012, 99.

<sup>73</sup> T. MILAVEC, 2012, 98–99.



SLIKA 8. Svjetiljke sa završetkom u obliku gumba, Uboldi tip III.1 (preuzeto iz M. UBOLDI, 1995, 118).

FIGURE 8 Lamps with base knob, Uboldi type III.1 (after M. UBOLDI, 1995, 118).

koničnih on naknadno dodan.<sup>67</sup> Cjeloviti primjerak pronađen je u Obrenovcu<sup>68</sup> u Srbiji koji neki autori pripisuju drugoj varijanti, s kapljičastim završetkom (Sl. 9).<sup>69</sup> Međutim, na temelju uvida u građu, smatram kako je vjerojatnije riječ o tipu sa završetkom u obliku gumba jer je kod ovog primjerka ispupčenje masivnije, nego što je to slučaj kod oblika s kapljičastim završetkom.

Drugi tip svjetiljke ima cilindrični recipijent sa kapljičastim završetkom (Uboldi III.2), a Uboldi ga datira od početka 5. stoljeća do kraja 6. stoljeća (Sl. 10).<sup>70</sup> Prvi cjeloviti primjerak ovog tipa uljanica pronađen je u starokršćanskoj bazilici na lokalitetu Turbe Varošluk u Bosni.<sup>71</sup> Najveći problem jest činjenica da se na većini nalazišta pronađe samo kapljičasto dno što dovodi do problema interpretacije. Naime, gotovo identičan kapljičasti završetak javlja se i na balzamarijima tipa Isings 9. Balzamariji su amforastog oblika sa kapljičastim završetkom i uskim otvorom, a javljaju se u varijantama s ručkama i bez njih. Datiraju se u rani rimski period, međutim, očito se javljaju i poslije. U Italiji su pronađeni među staklenim

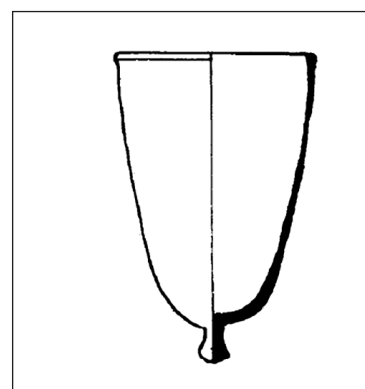
<sup>67</sup> M. UBOLDI, 1995, 116–117.

<sup>68</sup> Usp. M. RUŽIĆ, 1994.

<sup>69</sup> T. MILAVEC, 2012, 99.

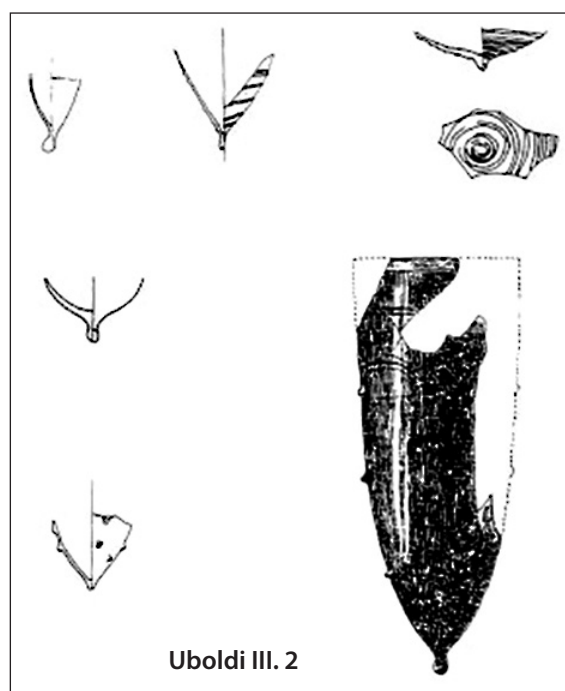
<sup>70</sup> M. UBOLDI, 1995, 119–120.

<sup>71</sup> I. MARIJANOVIĆ, 1990, 126.



SLIKA 9. Svjetiljka sa završetkom u obliku gumba iz Obrenovca, Srbija (preuzeto iz T. MILAVEC, 2012, 99).

FIGURE 9 Lamp with base knob from Obrenovac, Serbia (after T. MILAVEC, 2012, 99).



SLIKA 10. Svjetiljke s kapljičastim završetkom, Uboldi tip III.2 (preuzeto iz M. UBOLDI, 1995, 118).

FIGURE 10 Lamps with a drop-shaped ending, Uboldi type III.2 (after M. UBOLDI, 1995, 118).

ly found in the western Mediterranean (Italy, France, Croatia, and Bosnia and Herzegovina) while only few examples were found in the east (Egypt, Ephesus and Sardis) which made D. Foy conclude that was a western type of lamp that was evidently, in her opinion, influenced

nalazima u tabernama blizu hrama Magne Mater u Rimu gdje su datirani u 5. stoljeće ili sam početak 5. stoljeća s obzirom na to da su sačuvane cijele posude s bazama, obodima i tipičnim ručkama.<sup>72</sup> Uobičajeno su balzamariji manji s izduženim tijelom i ponekad teško vidljivim kapljičastim dnom. Ulomci koji su u literaturi interpretirani kao kasnoantički su uglavnom malo veći i masivniji. Međutim kada smo ograničeni samo na kapljičasta dna, teško je točno odrediti funkciju posude. Upravo je zato možda najbolje rješenje osloniti se na kontekst nalaza kada je poznat.<sup>73</sup>

Svjetiljke s kapljičastom bazom pronađene su uglavnom na zapadnom Mediteranu (u Italiji, Francuskoj, Hrvatskoj te Bosni i Hercegovini), dok je samo nekoliko primjeraka pronađeno na istoku (Egipat, Efez i Sardis) zbog čega D. Foy smatra da je to zapadni tip svjetiljke koji je, kako tvrdi, očigledno pod utjecajem merovinške produkcije stakla.<sup>74</sup> To se može vidjeti u oblicima i po dekoraciji s bijelim staklenim nitima na materijalu iz južne Francuske datiranom od sredine 5. do sredine 6. stoljeća.<sup>75</sup>

#### UBOLDI TIP IV/SVJETILJKE U OBLIKU LIJEVKA

Svjetiljke u obliku lijevka su svjetiljke s posudom širokog recipijenta, zadebljanog oboda i uskog cilindričnog završetka koji je uglavnom šupalj, a ponekad i s punim završetkom. Kod svjetiljki u obliku lijevka nalazimo i primjerke koji su na sebi imali aplicirane ručke pa su se u tom slučaju vjerojatno upotrebljavali i lančići pomoću kojih su se vješale. Prema tome, ovaj tip svjetiljki mogao se rabiti unutar polikandila, monokandila ili su se mogle držati u ruci. Dijele se u tri podtipa prema načinu oblikovanja cilindričnog završetka koji može biti šupalj (Uboldi IV.1), ispunjen (Uboldi IV.2) ili

<sup>72</sup> T. MILAVEC, 2012, 99.

<sup>73</sup> T. MILAVEC, 2012, 98–99.

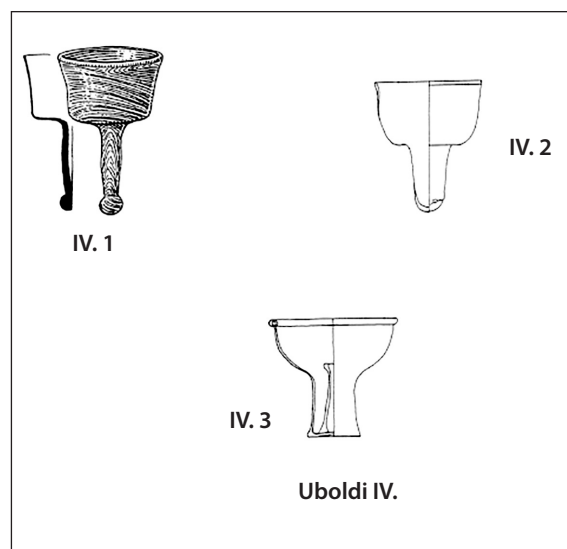
<sup>74</sup> D. FOY, 1995, 217.

<sup>75</sup> T. MILAVEC, 2012, 100.

by the Merovingian glass production.<sup>74</sup> This is reflected in forms and decoration with white glass threads on the material from southern France dated from the mid-5th to mid-6th century.<sup>75</sup>

#### UBOLDI TYPE IV / FUNNEL-SHAPED LAMPS

Funnel-shaped lamps have wide body, thickened rim and narrow cylindrical ending that is usually hollow, but it can also be solid. In this group there are examples with applied handles probably implying use of suspension chains. Apparently this type could have been used inside polycandelon, monocandelon or held in hand. They are divided in three subtypes on the basis of modelling of the cylindrical ending forming a stable base (Uboldi IV.3) (Fig. 11).<sup>76</sup> Probably their origin should be sought in Palestine. They are dated from the 5th century onwards.<sup>77</sup> They were used, with certain form modifications, until the 17th century, as confirmed by the examples recovered in Bu-



SLIKA 11. Svjetiljke u obliku lijevka, Uboldi tip IV (preuzeto iz M. UBOLDI, 1995, 122).

FIGURE 11 Funnel-shaped lamps, Uboldi type IV (after M. UBOLDI, 1995, 122).

<sup>74</sup> D. FOY, 1995, 217.

<sup>75</sup> T. MILAVEC, 2012, 100.

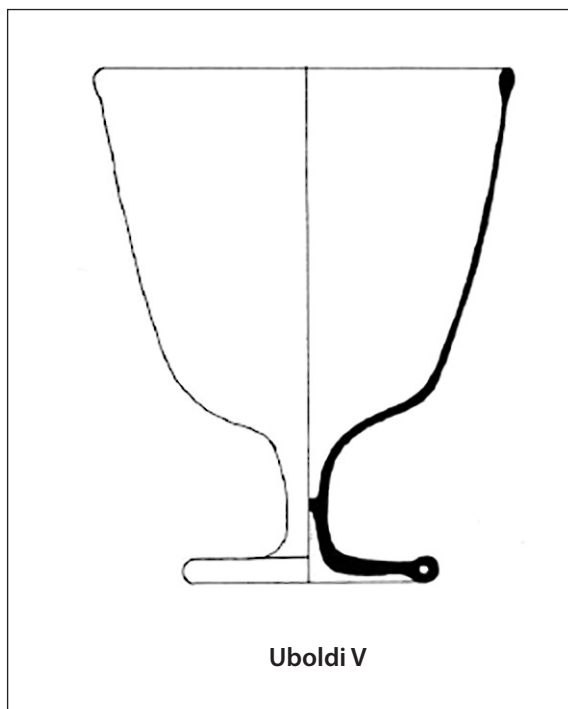
<sup>76</sup> M. UBOLDI, 1995, 120-124.

<sup>77</sup> A. C. ANTONARAS, 2005, 26.

sa šupljim završetkom koji tvori stabilno dno (Uboldi IV.3) (Sl. 11).<sup>76</sup> Pretpostavlja se da im podrijetlo treba tražiti u Palestini, a datiraju se od 5. stoljeća nadalje.<sup>77</sup> Susrećemo ih, uz određene modifikacije oblika, sve do 17. stoljeća što potvrđuju primjerci otkriveni u Budimu u Mađarskoj.<sup>78</sup>

#### UBOLDI TIP V / SVJETILJKE U OBLIKU KALEŽA

Uboldi tip V se sastoji od recipijenta u obliku slova „V“ ili „U“ ili u obliku tulipana koji se nalazi na cilindričnoj stabljici koja završava kružnom stopicom (Sl. 12). Obod je najčešće prstenastog oblika, zadebljan i šupalj. U literaturi se spominju kao sredozemni tip kasnoantičkog staklenog posuđa koji je s različitim modifikacijama preživio tijekom srednjeg vijeka.<sup>79</sup>



SLIKA 12. Svjetiljka u obliku kaleža, Uboldi tip V (preuzeto iz I. FADIĆ, 1994, 214).

FIGURE 12 Chalice-shaped lamps, Uboldi type V (after I. FADIĆ, 1994, 214).

<sup>76</sup> M. UBOLDI, 1995, 120–124.

<sup>77</sup> A.C. ANTONARAS, 2008, 26.

<sup>78</sup> I. FADIĆ, 2005, 227–229.

<sup>79</sup> I. FADIĆ, 1994, 228–229.

dim in Hungary.<sup>78</sup>

#### UBOLDI TYPE V / CHALICE-SHAPED LAMPS (STEMMED GOBLETS)

Uboldi type V consists of a body in shape of the letter V or U or it has a form of tulip on a cylindrical stem ending in a circular ring base (Fig. 12). The rim is usually annular, thickened and hollow. In the literature it is mentioned as a Mediterranean type of late antique glassware that survived into the Middle Ages with various modifications.<sup>79</sup>

Except for being used as lighting devices or chalices for drinking, it is widely believed that these chalice-shaped vessels might have been used for liturgical purposes. According to I. Fadić, examples of eucharistic chalices were represented by more elaborate examples, decorated, among other, with gilt spiral ornament.<sup>80</sup> Use of glass chalices was prohibited in the synodal sermon *Admonitio synodalis* from the mid-9th century.<sup>81</sup> To the best of my knowledge, it is impossible to determine if there were some decrees about the material of the eucharistic chalice even earlier. However S. J. Braun states that there was a misinterpretation of sources that were taken as evidence of the use of glass chalices in the Eucharist. According to him, *Liber Pontificalis* mentions use of glass patens in liturgy which was often associated with the use of glass chalices. These are two different vessels used for different functions, and the glass chalices had a disadvantage of being more prone to breaking and spilling holy contents.<sup>82</sup> Therefore I would consider the possibility that the glass chalices were not used in liturgy.

Chalice-shaped lamps (Isings type 111) are not divided into subtypes by Uboldi, although some authors (G. M. Crowfoot, D. B. Harden, A. C. Antonaras) propose such division, on

<sup>78</sup> I. FADIĆ, 2005, 227–229.

<sup>79</sup> I. FADIĆ, 1994, 228–229.

<sup>80</sup> I. FADIĆ, 2005, 228.

<sup>81</sup> J. BRAUN, 1932, 39–40.

<sup>82</sup> J. BRAUN, 1932, 33.

Osim što su služile kao rasvjetna tijela i kao pehari za piće, uvriježeno je mišljenje kako su se ove posude u obliku kaleža mogle upotrebljavati i u liturgijske svrhe. Prema I. Fadiću primjerke euharistijskih kaleža predstavljali su raskošnije izvedeni primjerci, ukrašeni, između ostalog, spiralnim pozlaćenim ukrasom.<sup>80</sup> Sinodalnom odredbom *Admonitio synodalis* iz sredine 9. stoljeća uporaba staklenih kaleža u obredu euharistije je zabranjena.<sup>81</sup> Koliko je poznato, ne može se utvrditi jesu li postojale odredbe o materijalu euharistijskog kaleža i prije. Međutim, J. Braun navodi kako je došlo do pogrešnog tumačenja izvora koji su uzimani kao dokazi za uporabu staklenih kaleža u euharistiji. Kako navodi, u *Liber Pontificalis* se spominje uporaba staklenih plitica u bogoslužju što se često povezivalo s uporabom staklenih kaleža. Riječ je o dvama različitim recipijentima koji su se rabili u različite svrhe, a i opasnost od razbijanja i izlivanja svetog sadržaja veća je kod staklenih kaleža nego plitica.<sup>82</sup> Zbog svega navedenog, ostavila bih otvorenom mogućnost da se stakleni kaleži možda ipak nisu upotrebljavali u bogoslužju.

Uboldi svjetiljke tipa kalež (tip Isings 111) ne dijeli u podtipove, iako ih neki autori (G. M. Crowfoot, D. B. Harden, A. C. Antonaras) na temelju toga je li noga koherentna ili aplicirana na tijelo, cilindrična ili kružna, razvrstavaju u podtipove. A. C. Antonaras smatra kako su u svojoj osnovi razvijene kao stolno posude, ali se ipak zbog učestalosti neobrađenog oboda i velikog broja primjeraka pronađenih tijekom iskopavanja starokršćanskih bazilika čini gotovo sigurnim da su također bili široko korišteni kao slobodnostojeće svjetiljke.<sup>83</sup> Ovaj je tip bio široko rasprostranjen po cijelom Mediteranu. Jedan je od najčešćih tipova staklenih posuda između 5. i 8. stoljeća na istočnom i središnjem Mediteranu. Javljaju se i u varijanti s trima malim vertikalnim ruč-

the basis of foot characteristics: if it is coherent or applied on the body, cylindrical or circular. C. Antonaras believes that they were basically developed as tableware, but still it seems almost certain they were used as freestanding lamps due to frequency of unworked rim and their big number recovered in the excavations of the early Christian basilicas.<sup>83</sup> This type was widely distributed across the entire Mediterranean being one of the most common types of glassware between the 5th and 8th century in the eastern and central Mediterranean. There are also variants with three small vertical handles positioned high on the body and around the rim. Accordingly they could have been used as freestanding lamps or inserted in a monocandelon.<sup>84</sup>

In addition to the context of the early Christian churches, these finds also originate from the catacombs (in Syracuse, 4th/5th century),<sup>85</sup> and several fragments were found in the mithraeum under the church of St. Prisca in Rome dated to the 4th century by Isings.<sup>86</sup>

## ELEMENTS OF LIGHTING DEVICE

The term lighting device refers to all elements enabling proper functioning of glass lamps. Thus, in addition to glass parts, elements of lighting device also comprised wick holders and metal elements (monocandela and polycandela) that enabled suspension of lamps.

Wick holders are poorly represented in publications which might be related to not recognizing their function when collecting archaeological material. Relatively recently, D. Foy dealt with wick holders and presented typologically forms recognized among finds from

<sup>80</sup> I. FADIĆ, 2005, 228.

<sup>81</sup> J. BRAUN, 1932, 39–40.

<sup>82</sup> J. BRAUN, 1932, 33.

<sup>83</sup> A. C. ANTONARAS, 2008, 24.

<sup>83</sup> A. C. ANTONARAS, 2006, 24.

<sup>84</sup> A. C. ANTONARAS, 2006, 24.

<sup>85</sup> C. ISINGS, 1957, 139.

<sup>86</sup> C. ISINGS, 1957, 139.

kama pozicioniranim visoko na tijelu i uokolo oboda. Prema tome, mogle su služiti ili kao slobodnostojeće svjetiljke ili umetnute unutar monokandila.<sup>84</sup>

Osim što su uglavnom pronalazeni u kontekstu starokršćanskih crkava, nalaze ovakvih oblika možemo pratiti i u katakombama (u Sirakuzi, 4./5. st.),<sup>85</sup> a nekoliko je fragmenata pronađeno u mitreju ispod crkve sv. Priske u Rimu koje Isings datira u 4. stoljeće.<sup>86</sup>

## ELEMENTI RASVJETNOG UREĐAJA

Pod terminom rasvjetni uređaj podrazumijevaju se elementi koji su omogućavali rad staklenih svjetiljki. Dakle, osim staklenih dijelova, elementi rasvjetnog uređaja bili su i držači fitilja te metalni elementi (monokandila i polikandila) koji su omogućavali vješanje svjetiljki.

Držači fitilja su slabo zastupljeni u publikacijama što može biti posljedica neprepoznavanja njihove funkcije tijekom prikupljanja arheološkog materijala. Relativno nedavno, D. Foy se pozabavila držačima fitilja i tipološki predstavila oblike koji se javljaju među materijalom s arheoloških istraživanja.<sup>87</sup> Foy donosi raznovrsne primjerke držača fitilja načinjene od keramike, metala i stakla.

Keramički držači fitilja predmeti su koničnog ili polukružnog presjeka (široki od 2,5 do 4 cm, visine rijetko iznad 2 cm) sa središnjim otvorom na vrhu. Uglavnom se dovode u vezu sa svjetiljkama u obliku lijevka jer su im oblikom najpogodnije što naravno ne isključuje mogućnost da su se rabili i za druge vrste svjetiljki jer se na lokalitetima nalaze i uz druge svjetiljke. Ovu vrstu držača fitilja Foy datira u 5. i 6. stoljeće (Sl. 13).<sup>88</sup>

Metalni držači fitilja mogli su biti brončani,

the archaeological excavations.<sup>87</sup> Foy presents various examples of wick holders made of ceramic, metal and glass.

Ceramic wick holders have conical or semi-circular cross-section (2.5 to 4cm wide, rarely over 2cm high) with central opening at the top. They are usually associated with funnel-shaped lamps because they suit them best with their form, but that does not exclude the possibility of use in some other lamp types as they are found at sites with other lamps. This wick holder is dated to the 5th and 6th centuries by Foy (Fig. 13).<sup>88</sup>

Metal wick holders might have been made of bronze, copper, lead or iron. In this group Foy differentiates between three different forms. The first type includes holders made of coiled metal band 15cm long. The band was wound into a cylinder up to  $\frac{3}{4}$  of its length, branching in continuation in one or two extensions. They were very popular at the sites in the Near East from the 6th to 8th century. The wick was in the cylindrical part of the holder, and branches (one or two) were used to attach the holder on the lamp rim (Fig. 14).<sup>89</sup> Tripod-shaped holders are one of variations of metal holders that were analyzed separately by Foy (Fig. 15). Their modelling is similar to the previous group, consisting of three or four bands everted at the bottom. These objects are perforated along the cylinder, and this was probably done to soak wick properly in oil.<sup>90</sup> The third Foy's form refers to wick holders about 15cm long, made of band tapering from the center to the ends and curving in order to stay attached to the lamp (Fig. 16). This type was usually made of lead. In the middle they had an oval or round perforation into which a wick was inserted. Foy believes that these metal holders were more suitable for glass lamps as they placed wick deep in the oil. The research has shown that these artifacts in the 6th

<sup>84</sup> A. C. ANTONARAS, 2008, 24.

<sup>85</sup> C. ISINGS, 1957, 139.

<sup>86</sup> C. ISINGS, 1957, 139.

<sup>87</sup> Usp. D. FOY, 2011.

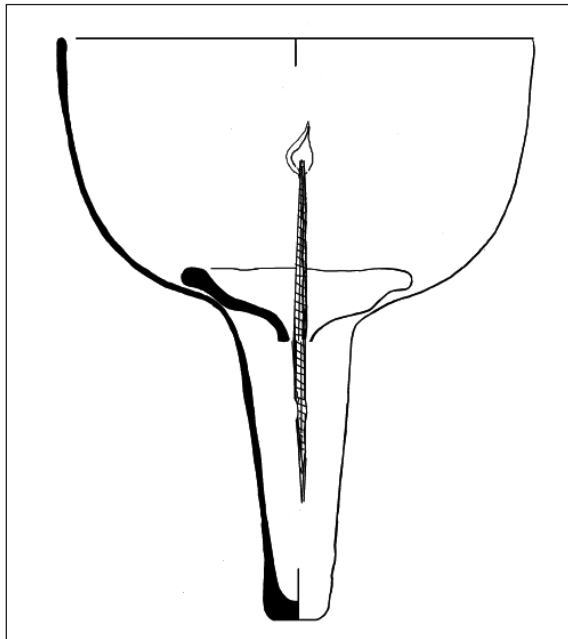
<sup>88</sup> D. FOY, 2011, 212-215.

<sup>87</sup> Cf. D. FOY, 2011.

<sup>88</sup> D. FOY, 2011, 212-215.

<sup>89</sup> D. FOY, 2011, 215-217.

<sup>90</sup> D. FOY, 2011, 217-219.



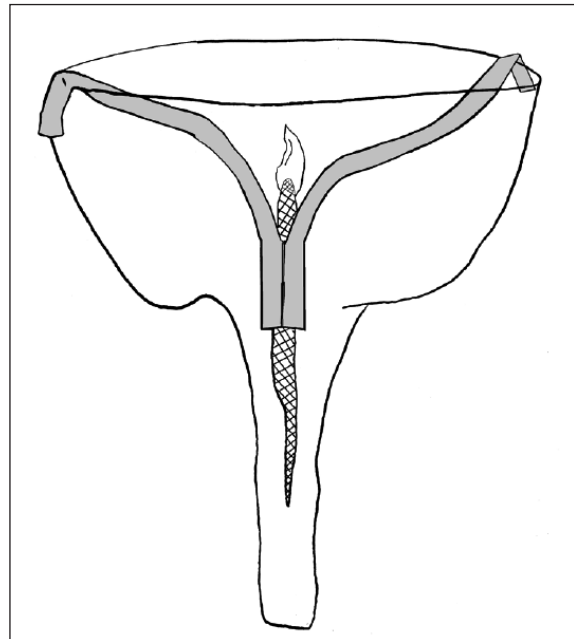
SLIKA 13. Rekonstrukcija izgleda keramičkog držača unutar svjetiljke u obliku lijevka (preuzeto iz D. FOY, 2011, 211).

FIGURE 13 Reconstruction of the shape of a ceramic wick holder within a funnel-shaped lamp (after D. FOY, 2011, 211).

bakreni, olovni ili željezni. Među njima Foy izdvaja tri različita oblika. Prvi su oblikovani od namotane metalne vrpce duge 15 cm. Vrpca je namotana u cilindar do  $\frac{3}{4}$  svoje dužine, a potom se rastvarala u jednu ili dvije grane. Na lokalitetima na Bliskom istoku bili su iznimno popularni od 6. do 8. stoljeća. Fitolj je bio smješten u cilindrični dio nosača, a grane (jedna ili dvije) služile su da bi se nosač pričvrstio za rub svjetiljke (Sl. 14).<sup>89</sup> Držači u obliku tronošca jedna su od varijacija metalnih držača koje Foy posebno izdvaja (Sl. 15). Slične su izrade kao prethodni, sastoje se od triju ili četiriju kratkih traka koje su pri dnu izvijene prema van. Ovi su predmeti perforirani duž cilindra, a smatra se da je to učinjeno kako bi fitilj bio natopljeniji uljem.<sup>90</sup> Kao treći oblik Foy spominje držače fitilja duljine 15-ak cm, izrađene od trake koja se od središta prema krajevima stanjuje i zakrivljuje kako bi se mogli držati za lampu (Sl. 16). Ova vrsta je uglavnom na-

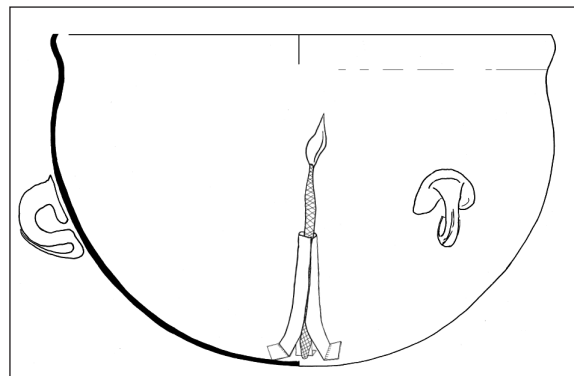
<sup>89</sup> D. FOY, 2011, 215–217.

<sup>90</sup> D. FOY, 2011, 217–219.



SLIKA 14. Rekonstrukcija izgleda brončanog držača fitilja unutar svjetiljke u obliku lijevka (preuzeto iz D. FOY, 2011, 220).

FIGURE 14 Reconstruction of the shape of a bronze wick holder within a funnel-shaped lamp (after D. FOY, 2011, 220).



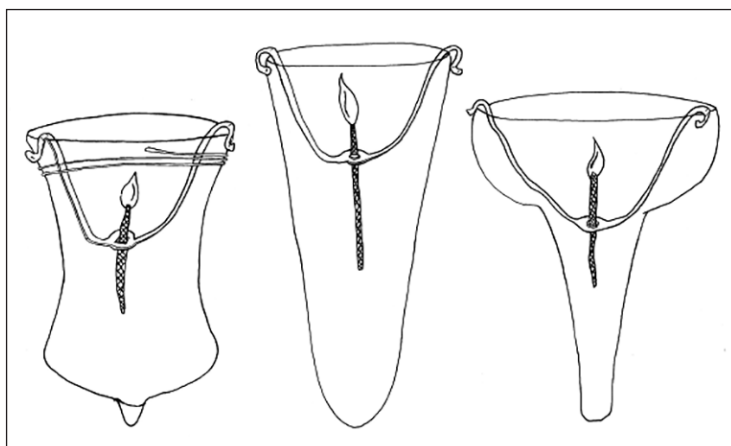
SLIKA 15. Rekonstrukcija izgleda metalnog držača fitilja u obliku tronošca (preuzeto iz D. FOY, 2011, 237).

FIGURE 15 Reconstruction of the shape of a metal tripod-shaped wick holder (after D. FOY, 2011, 237).

century belonged to lighting devices in most sacral and funerary buildings in the western Mediterranean (some 20 places in Africa, Catalonia, Provence and Italy, mostly in Sardinia and Sicily).<sup>91</sup>

The last type, representing a more developed form of wick holder are glass holders. This

<sup>91</sup> D. FOY, 2011, 221.



SLIKA 16. Rekonstrukcija izgleda olovnih držača fitilja unutar staklenih svjetiljki (preuzeto iz D. FOY, 2011, 237).

FIGURE 16 Reconstruction of the shape of lead wick holders within glass lamps (after D. FOY, 2011, 237).

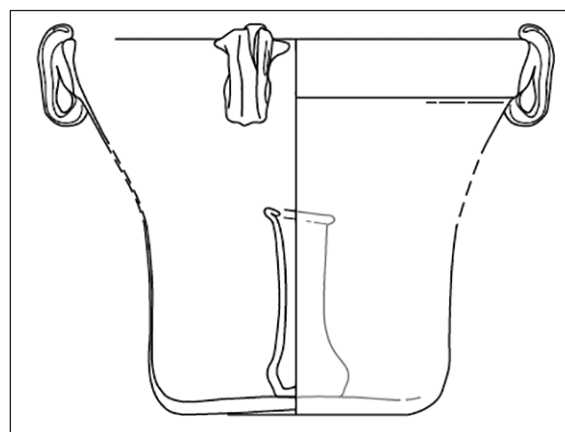
pravljena od olova. Na sredini su perforirani ovalno ili kružno i u tu se perforaciju umeće fitilj. Foy vjeruje kako su ovi metalni držači bili bolji za korištenje kod staklenih lampi jer su mogli fitilj dovoljno duboko uroniti u ulje. Istraživanja su pokazala kako su ovi predmeti u 6. stoljeću činili dio rasvjete većine sakralnih i pogrebnih građevina na zapadnom Mediteranu (20-ak mjesta u Africi, Kataloniji, Provansi i Italiji, uglavnom na Sardiniji i Siciliji).<sup>91</sup>

Zadnja vrsta, koja predstavlja razvijeniji oblik držača fitilja jesu stakleni držači. Ova vrsta držača bila je sastavni dio posude, a riječ je o vertikalnoj cijevi pričvršćenoj u središnjem dijelu dna svjetiljke (Sl. 17). Ove vertikalne cijevi u svojoj osnovi su cilindričnog oblika, ali su mogle biti različitih profila. U vertikalnu cijev stavljao bi se loj, vosak ili gaza natopljena uljem. Uglavnom ih pronalazimo unutar svjetiljki tipa zdjelice/šalice koje su imale tri ručke koje povezuju obod i trbuh svjetiljke. Materijalni ostatci svjetiljki s ovakvim držačima, prema informacijama koje donosi D. Foy, za sada su potvrđeni samo na lokalitetima Bliskog istoka.<sup>92</sup>

Osvjetljavanje staklenim svjetiljkama kao što je već napomenuto, moglo se ostvariti svjetiljkama koje su imale stabilno dno i time se mogle upotrebljavati kao samostalna rasvjetna tijela.<sup>93</sup> U slučaju da oblik dna nije omogućavao

kind of holder was a part of the vessel. It consisted of a vertical tube attached in the central part of the lamp base (Fig. 17). These vertical tubes are basically cylindrical, but their profiles could be different. Mostly we find them in lamps in shape of cups/small bowls that had three handles connecting rim and belly of the lamp. Material remains of lamps with these holders have been attested only at Near Eastern sites, according to information presented by D. Foy.<sup>92</sup>

Lamps with stable base may have been used for lighting, as already mentioned, functioning in that way as independent lighting devices.<sup>93</sup> If base form did not allow freestanding use, they were used as parts of hanging metal lighting devices polycandela and monocande-



SLIKA 17. Stakleni držač fitilja, Hawarte, Sirija (preuzeto iz K. GAWLIKOWSKA, 2012, 502).

FIGURE 17 Glass wick holders, Hawarte, Syria (after K. GAWLIKOWSKA, 2012, 502).

<sup>91</sup> D. FOY, 2011, 221.

<sup>92</sup> D. FOY, 2011, 210-212.

<sup>93</sup> P. CHEVALIER, 1999, 180-181.

<sup>92</sup> D. FOY, 2011, 210-212.

<sup>93</sup> P. CHEVALIER, 1999, 180-181.

vao samostalnu uporabu, rabile su se kao dio visećih metalnih rasvjetnih tijela polikandila i monokandila. Polikandila, koja su bila veća i bogatija po načinu izrade, sadržavala su veći broj uljanica i koristila su se uglavnom za osvjtljavanje palača, crkava i vila (Sl. 18).<sup>94</sup> Monokandila su bila znatno jednostavnija i služila su vješanju samo jedne svjetiljke.

Većina sačuvanih dijelova polikandila napravljena je od bronce, a izrađivali su se i od kositra i plemenitih metala. Pronađeno je tek nekoliko srebrnih primjeraka jer su se predmeti od plemenitih metala vjerojatno reciklirali i prodavali zbog svoje vrijednosti.<sup>95</sup> Polikandila se sastoje od krune i metalnog diska s perforacijama, obično su s trima lancima pričvršćena na dugi snažni lanac koji je obješen na strop ili svod. Krune, *coronae fatalus*, opremljene su konzolnim nosačima, obično u obliku delfina ili grana koje završavaju u obliku prstena ili šalice u koje su se umetale staklene svjetiljke, a poslije i voštane svijeće. Jednostavniji oblici polikandila sastojali su se od diskova, *fara canthard*, na kojima su kružni otvori za svjetiljke, a broj perforacija namijenjenih umećanju svjetiljki bio je izrazito varijabilan (Sl. 18). Polikandila ovog tipa obično su se rabila za osvjtljavanje velikih urbanih i crkvenih zgrada. Postoje neki lusteri razrađenijih oblika poput onih oblika pravokutne posude, križa, kugle, bazilike ili vrlo veliki primjerci umećanja nekoliko kruna lampi. Neki od tih lusteri još uvijek se upotrebljavaju u pravoslavnim crkvama i džamijama.<sup>96</sup>

Elementi polikandila često uključuju križeve ili medaljone koji su prepoznatljivi po rupama na dnu, na vrhu ili bočno. Mali ukrasni križevi ponekad se nalaze na spoju lanaca. Donji lanci, često izrađeni od poveznica koji čine dvije međusobno okomite petlje nalaze se na krajevima i imaju kuke za pričvršćivanje na luster. Rjeđe, elementi za vješanje ovih vrlo teških



SLIKA 18. Polikandil u obliku okrugle ploče s perforacijama za staklene svjetiljke (preuzeto iz K. WEITZMANN, 1979, 622).

FIGURE 18 Polycandelon in the form of a metal disc with perforations for glass lamps (after K. WEITZMANN, 1979, 622).

la. Polycandela were bigger and more elaborate regarding craftsmanship, containing a number of oil lamps. They were used mostly for illumination of palaces, churches and villas (Fig. 18).<sup>94</sup> Monocandela were much simpler being used for hanging only one lamp.

Majority of preserved parts of polycandelon were made of bronze, but they were also made of tin and precious metals. Only few silver specimens were found since artifacts made of precious metals were probably recycled and sold owing to their value.<sup>95</sup> Polycandela consist of a crown and a metal disc with perforations. Usually they were attached with three chains on another heavy chain hanging from the ceil-

<sup>94</sup> B. PAPADOPOULOU, 2003, 260.

<sup>95</sup> P. CHEVALIER, 1999, 167.

<sup>96</sup> P. CHEVALIER, 1999, 166-169.

<sup>94</sup> B. PAPADOPOULOU, 2003, 260.

<sup>95</sup> P. CHEVALIER, 1999, 167.



SLIKA 19. Monokandil (preuzeto iz A. C. ANTONARAS, 2010, 388).

FIGURE 19 Monocandelon (after A. C. ANTONARAS, 2010, 388).

lusteri mogu biti napravljeni od žice ili ravne brončane vrpce te se u tom slučaju kombinira nekoliko elemenata dugih 10 – 15 cm. Uređaji s užadi i koloturima omogućavali su manipulaciju polikandila pri mijenjanju ulja i ostalih

ing or vault. The crowns, *coronae fatalus*, had cantilever carriers, usually in shape of a dolphin or branches ending in form of a ring or a cup in which glass lamps were inserted, and later wax candles. Simpler forms of polycandela consisted of discs, *fara canthard*, which had circular openings for lamps. The number of perforations for inserting lamps was highly variable (Fig. 18). Polycandela of this type were usually used for lighting big urban buildings and churches. There are some chandeliers in more elaborate forms such as the ones in shape of a rectangular vessel, cross, sphere, basilica, or examples of inserting several crowns of lamps. Some of these chandeliers are still used in Orthodox churches and mosques.<sup>96</sup>

Elements of polycandela often include crosses and medallions recognizable by holes in the bottom, at the top or laterally. Little decorative crosses can sometimes be found on the chain connections. Lower chains, often made of links consisting of two mutually perpendicular loops are at the ends having hooks for suspension on the chandelier. Only rarely can hanging elements of these very heavy chandeliers be made of wire or straight bronze band when several elements about 10-15cm are combined. Devices with ropes and pulleys enabled manipulation of polycandela when oil was changed and in case of other maintenance procedures.<sup>97</sup>

Three small handles for hanging were applied on the shoulder when lamps were used as a single hanging lighting device, referred to as monocandela in the literature (Fig. 19).<sup>98</sup> Sets of forged bronze wire were used for that purpose, found across the eastern Mediterranean. Lamps used in monocandela might have been carried in hand or used as independent hanging lighting device.<sup>99</sup> Corresponding system that has identical structure as polycandelon, only

<sup>96</sup> P. CHEVALIER, 1999, 166-169.

<sup>97</sup> P. CHEVALIER, 1999, 168-171.

<sup>98</sup> In foreign publications they are referred to as *polyangistron* (Cf. A. C. ANTONARAS, 2005, 25.).

<sup>99</sup> M. TOPIĆ, 1999, 96.

tehničkih stvari povezanih s pravilnim radom svjetiljki.<sup>97</sup>

U slučaju kada su svjetiljke služile kao samostalna viseća rasvjetna tijela, u literaturi zvana *monokandila*,<sup>98</sup> na ramenu posude bile su aplicirane tri male ručke za vješanje (Sl. 19). U tu svrhu korišteni su kompleti od kovane brončane žice kakvi su pronađeni diljem istočnog Sredozemlja. Svjetiljke korištene unutar monokandila mogle su se nositi u ruci ili su pak korištene kao samostalna viseća rasvjetna tijela.<sup>99</sup> Odgovarajući sustav koji ima strukturu kao i polikandila, ali manjih dimenzija, najčešće se sastoji od brončane žice, ponekad upletene, ponekad u lancima, a rjeđe u ravnim trakama metala. Najjednostavniji model sastoji se od triju segmenata sitnije brončane žice prekinute petljom na dva kraja ili lanca s poveznica. Neki primjerci su čak imali središnji križ poput polikandila koji je u ovom slučaju bio manje masivan.<sup>100</sup> Podrijetlo im se veže uz područje Palestine, gdje su datirane od 5. do 8. stoljeća. Brojni povijesni izvori i ikonografski prikazi daju podatke o uporabi ovog tipa rasvjete kakav se uz određene modifikacije upotrebljava do kraja 19. stoljeća.<sup>101</sup>

## ZAKLJUČNA RAZMATRANJA

Staklene svjetiljke kao važan dio materijalne kulture kasne antike ponajviše se pronalaze pri istraživanju starokršćanskih lokaliteta, a u domaćoj su literaturi poznate i po nazivu *lumini*. Ovaj su naziv dobile zbog tehnike koja se upotrebljavala za osvjetljenje: punjene su vodom kojoj bi se dodao sloj ulja (ulje tako pluta na vodi). Ta je tehnika ekonomična i omogućuje jače svijetlo, a u našem priobalju rabi se još i

smaller, most commonly consists of bronze wire, sometimes intertwined, or in chains, or rarely in flat metal bands. The simplest model consists of three segments of bronze wire with smaller links cut off with a loop on two ends or chain with loops. Some examples even had central cross just like polycandela, that was less massive in this case.<sup>100</sup> Their origin is related to the Palestine region, where they are dated from the 5th to 8th century. A number of historical sources and iconographic depictions provide information on use of this lighting type that was retained, with certain modifications, until the 19th century.<sup>101</sup>

## CONCLUDING CONSIDERATIONS

Glass lamps as an important part of late antique material culture are usually found in the excavations of the early Christian sites. In the domestic publications they are also known as *lumini*. They were given this name because of the technique used for lighting: they were filled with water to which oil was added (so that oil floated on water). This technique is economical and gives brighter light. In our littoral it is still used, in particular on the day of the dead (families remember their loved ones in that way). The term *lumin* refers to votive lamps used in the cult of the dead that are mostly mentioned in the domestic publications as lamps in shape of a cup/small bowl and chalice-shaped lamps.<sup>102</sup>

Precise answers to a number of questions are still lacking, including the production centers of glass lamps. However there are indications that they were probably made in some of glass-making workshops in Late Antiquity and Early Middle Ages.<sup>103</sup>

In the region of Italy, Ubaldi mentions the

<sup>97</sup> P. CHEVALIER, 1999, 168–171.

<sup>98</sup> U stranoj literaturi javljaju se i pod nazivom *polyangistron* (Usp. A. C. ANTONARAS, 2008, 25).

<sup>99</sup> M. TOPIĆ, 1999, 96.

<sup>100</sup> P. CHEVALIER, 1999, 174–177.

<sup>101</sup> M. TOPIĆ, 1999, 96.

<sup>100</sup> P. CHEVALIER, 1999, 174–177.

<sup>101</sup> M. TOPIĆ, 1999, 96.

<sup>102</sup> I. FADIĆ, 2005, 221–229.

<sup>103</sup> T. MILAVEC, 2017, 211.

danas, pogotovo na Dušni dan (obitelji se na taj način prisjećaju svojih najmilijih). Termin *lumin* odnosi se na zavjetne svjetiljke koje su se upotrebljavale u kultu pokojnika i koje se uglavnom spominju u domaćoj literaturi kao svjetiljke u obliku šalice/zdjelice te svjetiljke u obliku kaleža.<sup>102</sup>

Na dosta pitanja još uvijek nije moguće dati preciznije odgovore, tako da niti produkcijski centri staklenih svjetiljki još uvijek nisu poznati, međutim postoje indikacije da su se vjerojatno izrađivale u nekima od staklarskih radionica kasne antike i ranog srednjeg vijeka.<sup>103</sup>

Na području Italije, kao moguće centre proizvodnje staklenih uljanica Uboldi spominje lokalitete Piazza della Signoria u Firenzi i Lungotevere Testaccio u Rimu gdje su unutar peći pronađeni fragmenti svjetiljki zajedno s drugim staklenim materijalom.<sup>104</sup> Samostanski kompleks S. Vincenza al Volturna od ranog srednjeg vijeka proizvodi staklene predmete, moguće čak i prozorsko staklo za samostan. Prema tome vjerojatno je da su i staklene svjetiljke pronađene na lokalitetu proizvedene u lokalnoj radionici. U prilog tomu išla bi i činjenica da se jedan od podtipova svjetiljki tipa šalice/zdjelice (Uboldi I.4) smatra oblikom tipičnim za ovaj lokalitet.<sup>105</sup> Za staklene uljanice pronađene na prostoru jugoistočnih Alpa T. Milavec također smatra kako su rađene regionalno, a moguće čak i lokalno.<sup>106</sup>

Što se tiče hrvatskih nalaza, vjerojatno je velika količina uljanica importirana, međutim ne bih odbacila pretpostavku da su neki od primjerka izrađeni u nekoj od većih lokalnih staklarskih radionica što će možda potvrditi buduća arheološka istraživanja.

sites of Piazza della Signoria in Florence and Lungotevere Testaccio in Rome as possible centers of production of glass oil lamps as lamp fragments were found in a furnace together with other glass material.<sup>104</sup> Monastery complex S. Vincenza al Volturna has produced glass objects from the Early Middle Ages, possibly also windowpanes for the monastery. Therefore it is likely that glass lamps found at this site were manufactured in the local workshop. This is supported by the fact that one of subtypes of lamps in shape of cups/small bowls (Uboldi I.4) is considered typical of this site.<sup>105</sup>

T. Milavec believes that oil lamps recovered in the area of southeastern Alps were also regional, and possibly even local products.<sup>106</sup>

As for the Croatian finds, probably a large amount of glass lamps was imported, but I would not eliminate the possibility that some of objects were made in one of bigger local glass workshops which will possibly be attested in future archaeological excavations.

*Translation: Marija Kostić*

<sup>102</sup> I. FADIĆ, 2005, 221–229.

<sup>103</sup> T. MILAVEC, 2017, 211.

<sup>104</sup> J. STEVENSON, 1988, 205–208.

<sup>105</sup> M. UBOLDI, 1995, 98–100.

<sup>106</sup> T. MILAVEC, 2017, 211.

<sup>104</sup> J. STEVENSON, 1988, 205–208.

<sup>105</sup> M. UBOLDI, 1995, 98–100.

<sup>106</sup> T. MILAVEC, 2017, 211.

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# INVENTAR NALAZA I VIŠEFAZNO GROBLJE UZ UTVRDU SOKOL U KONAVLIMA

## INVENTORY OF FINDS AND MULTIPHASE CEMETERY BY FORT SOKOL IN KONAVLE

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### KLJUČNE RIJEČI:

analiza radioaktivnim  
ugljikom <sup>14</sup>C, antika,  
antropološka analiza,  
arheološki nalazi, arheo-  
loško istraživanje, Duna-  
ve, Konavle, novi vijek,  
prapovijest, srednji vijek,  
utvrda Sokol, višefazno  
groblje

*Izneseni su rezultati arheoloških istraživanja provedenih uz utvrdu Sokol u Konavlima 2012. i 2013. godine, te rezultati antropološke analize i analize radioaktivnim ugljikom <sup>14</sup>C. Lokalitet Sokol ima dugi kontinuitet u naseljavanju počevši od prapovijesti do ranog novog vijeka. Istraživanje prostora uz utvrdu podijeljeno je na četiri velike sonde od kojih je najkompleksnija ona uz njezinu južnu stranu. Višefazno groblje smješteno je uz južnu i istočnu stranu utvrde s manjim brojem grobova uz njezinu sjevernu stranu. U svim sondama pronađeni su duboki slojevi formirani potresima koji su bili česti na dubrovačkom području. Ti slojevi su osim grobova i ostataka arhitekture sadržavali i kamene gromade koje su se urušile s utvrde tijekom potresa te mnoštvo raznovrsnih nalaza širokog vremenskog raspona, od prapovijesti do novog vijeka. Utvrda je napuštena 1672. godine. Antropološkom analizom obuhvaćeni su svi pronađeni*

*kosturni ostaci iz bolje i slabije sačuvanih grobnih cjelina, čime su definirani ostaci 92 osobe, od čega 57 odraslih i 35 djece. Pregledom osteološkog materijala također su dokumentirane patološke promjene nastale za života osoba. Određivanje starosti kosturnih ostataka provedeno je metodom  $^{14}\text{C}$ . Određena je starost kostura u rasponu od 5. do 19. stoljeća. Istom metodom provedeno je i mjerenje starosti karboniziranih badema koji su datirani u starije željezno doba (750. – 400. cal BC).*

**KEY WORDS:**

*radiocarbon ( $^{14}\text{C}$ ) dating, antiquity, anthropological analysis, archaeological finds, archaeological research, Dunave, Konavle, Modern Period, prehistory, Middle Ages, Fort Sokol, multiphase cemetery*

*This paper presents the results of the archaeological excavations conducted next to Fort Sokol in Konavle in 2012 and 2013, as well as the results of the anthropological analysis and radiocarbon ( $^{14}\text{C}$ ) dating. The site of Sokol has a long occupation continuity starting from prehistory until the Early Modern Period. The excavation of the area adjoining the fort was divided into four big probes, the one next to its southern side being the most complex. Multiphase cemetery is located along the southern and eastern side of the fort, with a smaller number of graves along its northern side. All probes revealed deep layers formed in earthquakes that were common in the Dubrovnik region. In addition to graves and architecture remains, these layers contained stone boulders that fell off the fort in earthquakes and an abundance of diverse finds dating to a broad time span, from prehistory to the Modern Period. The fort was deserted in 1672. Anthropological analysis encompassed all recovered skeletal remains from preserved grave units regardless of the state of preservation, whereby the remains of 92 individuals were identified, of which 57 adults and 35 children. Analysis of osteological material also documented pathological changes developed antemortem. Radiocarbon ( $^{14}\text{C}$ ) dating was applied on skeletal remains resulting in chronological range from the 5th to the 19th century. The same method was used for dating carbonized almonds that were dated to the Early Iron Age (750 – 400 cal BC).*

## UVOD I POVIJESNI OKVIR

Utvrda Sokol ili Soko-grad nalazi se u selu Dunavama u Konavlima (Sl. 1-3). Strateška važnost tog položaja poznata je još iz prapovijesnog razdoblja, kada je tu postojala gradina i podgrađe s naseljem.<sup>1</sup> Vjerojatno je riječ o gradini sa suhozidnim bedemima, uobičajenoj za taj period. Ta prirodna klisura služila je kao utvrđenje Ilira (plemena Plereja), Grka i Rimljana. U ranijem rekognosciranju terena pronađeni su nalazi koji svjedoče o životu na Sokolu. Tada su pronađeni ulomci prapovijesne keramike (eneolitičke, brončanodobne, željeznodobne).<sup>2</sup> Prvo naselje uz prirodnu klisuru može se prema keramičkim nalazima datirati u kasni eneolitik/rano brončano doba. Najbrojnija je keramika karakteristična za nositelje cetinske kulture, koji su se nastanili na širem području istočnog Jadrana.<sup>3</sup>

Tijekom prve polovice 1. tisućljeća pr. Kr. ilirska plemena dominirala su nad pomorskom trgovinom na Jadranu, a osobitu ulogu u talasokraciji imali su Liburni. Oni se sukobljavaju s Grcima koji su težili osigurati pravo plovidbe prema sjevernom Jadranu ploveći uz istočnojadransku obalu. Grcima je plovidba Jadranom značila i otvoren put prema srednjoj Europi i Panoniji. Zbog sukoba s ratobornim Ilirima, Grci nisu bili u prilici odmah osnivati svoje naseobine i emporije na Jadranu, nego to čine kad opada vojna moć Liburna nakon 5. st. pr. Kr.<sup>4</sup> Iliri su se pokušavali obraniti od grčkih kolonista početkom 4. st. pr. Kr., no bili su odbijeni.<sup>5</sup> Ardijejci su tijekom 4. st. pr. Kr. bili jedno od najmoćnijih ilirskih plemena koji su naseljavali područje južnog Jadrana (od neretvanskog područja do središnje Albanije). Šire se iz donjeg toka Neretve, a koristeći se malim

<sup>1</sup> Š. BATOVIĆ, 1988a, 56; Š. BATOVIĆ, 1988b, 37; I. BOJANOVSKI, 1992, 176.

<sup>2</sup> L. BERITIĆ, 1966, 104; Š. BATOVIĆ, 1988b, 37, 64, 67; I. BOJANOVSKI, 1992, 176.

<sup>3</sup> S. DIMITRIJEVIĆ, T. TEŽAK-GREGL, N. MAJNARIĆ-PANDŽIĆ, 1998, 175.

<sup>4</sup> A. STIPČEVIĆ, 1991, 31-32.

<sup>5</sup> A. STIPČEVIĆ, 1991, 34.

## INTRODUCTION AND HISTORICAL FRAMEWORK

Fort Sokol or Soko-grad is situated in the village of Dunave in Konavle (Fig. 1-3). Strategic importance of this position has been known back from prehistoric time, when a hillfort and a suburbium with a settlement were located here.<sup>1</sup> Probably it was a hillfort with drystone walls, common for the period. This natural cliff was used as a fortification of the Illyrians (the tribe of Plerei), Greeks and Romans. Finds testifying to settling of Sokol have been recovered in the earlier field survey, such as prehistoric pottery sherds (dating to the Eneolithic, Bronze and Iron Ages). The first settlement next to the natural cliff can be dated to the Late Eneolithic/Early Bronze Age on the basis of pottery finds.<sup>2</sup> The most abundant pottery is characteristic of the Cetina culture population, which occupied the wider eastern Adriatic region.<sup>3</sup>

In the first half of the 1st millennium BC, Illyrian tribes dominated the maritime trade in the Adriatic, and the Liburnians were especially important in the thalassocracy. Their opponents were the Greeks who tried to ensure naval route towards the northern Adriatic sailing along the eastern Adriatic coast. The Greeks could reach central Europe and Pannonia via Adriatic naval routes. Due to conflicts with belligerent Illyrians, the Greeks could not found their settlements and emporia in the Adriatic, but they only did it when the military power of the Liburnians started to decrease in the 5th century BC.<sup>4</sup> The Illyrians tried unsuccessfully to fight off the Greek colonists at the beginning of the 4th century BC.<sup>5</sup> The Ardiaei, who occupied the southern Adriatic area (from the Neretva region to central Albania), were one of the most powerful Illyr-

<sup>1</sup> Š. BATOVIĆ, 1988a, 56; Š. BATOVIĆ, 1988b, 37; I. BOJANOVSKI, 1992, 176.

<sup>2</sup> L. BERITIĆ, 1966, 104; Š. BATOVIĆ, 1988b, 37, 64, 67; I. BOJANOVSKI, 1992, 176.

<sup>3</sup> S. DIMITRIJEVIĆ, T. TEŽAK-GREGL, N. MAJNARIĆ-PANDŽIĆ, 1998, 175.

<sup>4</sup> A. STIPČEVIĆ, 1991, 31-32.

<sup>5</sup> A. STIPČEVIĆ, 1991, 34.



SLIKA 1. Pogled na utvrdu Sokol u Dunavama u Konavlima (JZ-SI), 2013. (foto: N. Topić).  
FIGURE 1 View of the fort Sokol in Dunave in Konavle (SW-NI), 2013 (photo: N. Topić).



SLIKA 2. Pogled s utvrde Sokol u Konavlima, 2013. (foto: N. Topić).  
FIGURE 2 View from the fort Sokol in Konavle, 2013 (photo: N. Topić).



SLIKA 3. Zračna snimka utvrde Sokol u Konavlima (N. KAPETANIĆ, 2013, 80).  
FIGURE 3 Aerial view of the fort Sokol in Konavle (N. KAPETANIĆ, 2013, 80).

brzim brodovima lako pokoravaju ostala susjedna ilirska plemena i nameću svoju dominaciju. Plereji se pridružuju Ardijejcima oko 250. pr. Kr., za vrijeme Agrona. Teritorij Plereja pokriva područje od Pelješca do Boka Kotorske, ili od Epidaura do Skadra. Plereji s Ardijejcima sudjeluju u ratovima protiv Etolaca 231. pr. Kr., a s kraljicom Teutom oko 230. pr. Kr. osvajaju Drač i Krk, te doživljavaju poraz od Rimljana 228. pr. Kr. Plereji vjerojatno ratuju i u službi posljednjeg ilirskog kralja Gencija (180. – 168. pr. Kr.). Ilirskoj državi iznimno je jake udarce zadao rimski konzul i vojskovođa Servije Fulvije Flak 135. pr. Kr. No, bilo je još povremenih nemira, a zadnji pokušaj pobune Ilira – Batonov ustanak – dogodio se između 6. i 9. godine. Zatim na tom području dolazi do osnivanja rimske provincije Dalmacije.<sup>6</sup> Tada je osnovan *Epidaurum* (Cavtat) kao središte iz kojeg se upravljalo južnim dijelom novoosnovane provincije. Pored onih na obali, paralelno se razvijaju naselja i utvrđenja u unutrašnjosti tog područja, što potvrđuju rimski nalazi raznovrsnog karaktera. Jedno od njih je i utvrda Sokol uz koju su pronađeni ulomci grčko-italskih i italskih amfora koje su služile za transport vina i različitih prehrambenih namirnica. Rimsku prisutnost na Sokolu osobito potvrđuje posljednje istraživanje u kojem je pronađen velik broj ulomaka tegula (*tegulae*) i kanalice (*imbrices*) (koje su također nađene u ranijim rekognosciranjima lokaliteta<sup>7</sup>), ostali pokretni nalazi te arhitektura i grobovi.

Prema pronađenim nalazima utvrda Sokol tijekom ranorimskog perioda nije bila osobito važna, kao što je to u kasnijem rimskom razdoblju kada strateška važnost utvrde opet dolazi do izražaja. Naseljavanje u kasnoantičkom razdoblju bilo je vrlo šaroliko jer je došlo do izmjene stanovništva naseljenih mjesta, a najveći uzlet doseglo je u Justinijanovo doba (527. – 565.). Tada je Ilirik postao središte vojnih

ian tribes in the 4th century BC. They spread from the lower course of Neretva, using small fast boats, easily subjugating neighbouring Illyrian tribes and imposing their dominance. The Plerei joined the Ardiaei ca. 250 BC, during the reign of Agron. The Plerei ruled the area from Pelješac to Boka Kotorska, or from Epidaurus to Scodra. The Plerei joined the Ardiaei in wars against Aetolians in 231 BC, and under queen Teuta they conquered Durrës and Corfu around 230 BC. They were defeated by the Romans in 228 BC. The Plerei probably fought in the service of the last Illyrian king Gentius (180-168 BC). Roman consul and army leader Servius Fulvius Flaccus was very successful in battles against the Illyrian state in 135 BC. However, there were still occasional riots, and the last attempt of the Illyrian uprising - Bato's rebellion - happened between 6 and 9 AD. Finally the Roman province of Dalmatia was established in this region,<sup>6</sup> when Epidaurum (Cavtat) was founded as a center to govern the southern part of the newly established province. Settlements and fortifications in the hinterland of this region developed parallel with the coastal part, as evidenced by various Roman finds. One of them is Fort Sokol, next to which fragments of Greco-Italic and Italic amphorae were found, used for transporting wine and viands. Roman presence at Sokol is attested in particular by the last excavation that yielded a number of fragments of tegulae and imbrices (that were also found in earlier field surveys of the site<sup>7</sup>), other movable finds, architectural remains and graves.

Judging from the finds, Fort Sokol was not particularly important in the early Roman period, but the strategic importance of the fort increased in the later Roman period. Settlement process in late antique period was very dynamic since the population in settlements changed. This process was most intense in the Justinian's era (527-565). That is when Illyricum became the center

<sup>6</sup> I. BOJANOVSKI, 1985, 8-9; A. STIPČEVIĆ, 1991, 39-51.

<sup>7</sup> L. BERIĆ, 1966, 104; Š. BATOVIĆ, 1988b, 37-38, 64, 100; I. BOJANOVSKI, 1992, 176.

<sup>6</sup> I. BOJANOVSKI, 1985, 8-9; A. STIPČEVIĆ, 1991, 39-51.

<sup>7</sup> L. BERIĆ, 1966, 104; Š. BATOVIĆ, 1988b, 37-38, 64, 100; I. BOJANOVSKI, 1992, 176.

dogadanja, te je bio izložen barbarskim upadi-  
ma.<sup>8</sup> U ranobizantsko doba, prema Prokopije-  
vu djelu *De aedificiis* (*O gradnjama*), učestale  
su obnove utvrda i gradova u sklopu limesa, u  
svrhu učvršćivanja bizantske vlasti na Jadranu.<sup>9</sup>  
Te obnove obuhvatile su i utvrdu Sokol (tada  
je vjerojatno izgrađena od drva) koja se nalazila  
u sklopu Justinijanova kopnenog limesa koji se  
protezao istočnojadranskim obalnim zaleđem,  
te otocima i obalom. Osim obnovljenih utvrda,  
u limes su uključeni i novosagrađeni objekti.<sup>10</sup>  
Danas su na utvrđi Sokol vidljivi ostaci ukle-  
sanih stubišta i rupa koje su korištene za usa-  
đivanje baza drvene konstrukcije koja je bila  
prilagođena zatečenoj stjenovitoj konfiguraciji.  
O važnosti utvrde svjedoče brojni i raznovrsni  
nalazi, od građevinskog materijala (tegule, ka-  
nalice), metalnih predmeta, preko staklenih i  
keramičkih posuda (sjevernoafričkih, istočno-  
mediteranskih amfora).

Kasnoantički grad znatno se razlikovao od  
ranijih rimskih gradova, jer sada do izražaja  
dolazi obrambena arhitektura. Nije se uvijek  
moglo jasno razlikovati veće utvrđenje od ma-  
njeg grada. Taj novi utvrđeni oblik gradova u  
ranobizantsko doba formira se zbog učestalih  
upada barbara, a neki autori pretpostavljaju da  
se to događa i prije 6. stoljeća.<sup>11</sup> No, da bi se  
dobila predodžba o naselju uz utvrdu Sokol,  
istraživanje bi u budućim kampanjama trebalo  
proširiti na okolno područje. Realno je pretpo-  
staviti postojanje kasnoantičke/ranobizantske  
naseobine uza samu utvrdu, jer su osim muških  
grobova pronađeni ženski i dječji što upućuje  
na to da lokalitet nije bio samo vojnog karakte-  
ra.<sup>12</sup> Tomu u prilog ide i naziv Soko-grad, koji  
svjedoči i o urbanom karakteru lokaliteta. Sta-  
novništvo se u opasnim trenucima skrivalo na  
utvrđi, gdje je postojao refugij namijenjen za  
takve situacije.

<sup>8</sup> M. SUIĆ, 2003, 341–342, 347–349; S. CIGLENEČKI, 2009, 205.

<sup>9</sup> S. CIGLENEČKI, 2009, 205.

<sup>10</sup> Ž. TOMIČIĆ, 1990, 139–162; S. CIGLENEČKI, 2009, 213–215.

<sup>11</sup> M. SUIĆ, 2003, 356–357; S. CIGLENEČKI, 2009, 206.

<sup>12</sup> M. ŠLAUS et al., 2014; I. KRAJCAR BRONIĆ et al., 2015.

of military events, and was exposed to barbaric  
raids.<sup>8</sup> In the early Byzantine period, according  
to Procopius' work *De aedificiis* (*On Buildings*),  
forts and cities on limes were renewed with the  
aim of consolidating the Byzantine power in the  
Adriatic.<sup>9</sup> Fort Sokol was one of such forts (back  
then it was probably built of wood) since it was a  
part of the Justinian's land limes spreading along  
the eastern Adriatic coastal hinterland, on the is-  
lands and the littoral. Except for renovated forts,  
some newly built structures were incorporated  
in the limes.<sup>10</sup> Presently in Fort Sokol we can  
find the remains of staircase carved in stone and  
holes used for inserting bases of wooden con-  
struction that was adapted to rocky terrain con-  
figuration. Importance of the fort is evidenced  
by numerous and diverse finds, from building  
material (tegulae, imbrices), metal objects, to  
glass and ceramic vessels (north African, eastern  
Mediterranean amphorae).

Late antique town differed significantly from  
the earlier Roman towns, since defensive archi-  
tecture became more prominent. A larger forti-  
fication could not always be easily distinguished  
from a smaller town. This new fortified form of  
cities in the early Byzantine period was formed  
due to frequent barbaric raids, and some authors  
assume it happened even before the 6th century.<sup>11</sup>  
However to get a clearer view of the settlement  
next to Fort Sokol, future excavations should  
spread to the surrounding area. It is reasonable  
to assume presence of late antique / early Byzan-  
tine settlement next to the fort, since graves of  
women and children were found in addition to  
male graves suggesting that the site was not only  
military post.<sup>12</sup> In perilous times the population  
would hide in the fort where a refugium was or-  
ganized for such situations.

Konavle was mentioned by the Byzantine  
emperor and writer Constantine Porphyrogeni-

<sup>8</sup> M. SUIĆ, 2003, 341–342, 347–349; S. CIGLENEČKI, 2009, 205.

<sup>9</sup> S. CIGLENEČKI, 2009, 205.

<sup>10</sup> Ž. TOMIČIĆ, 1990, 139–162; S. CIGLENEČKI, 2009, 213–215.

<sup>11</sup> M. SUIĆ, 2003, 356–357; S. CIGLENEČKI, 2009, 206.

<sup>12</sup> M. ŠLAUS et al., 2014; I. KRAJCAR BRONIĆ et al., 2015.

Konavle spominje bizantski car-pisac Konstantin Porfirogenet u djelu *De Administrando Imperio* (10. st.). Povijest Konavala nije dobro poznata do 12. stoljeća, a vjerojatno su bile pod jakim bizantskim utjecajem. Postoji nekoliko podataka o vladarima u Konavlima tijekom 12. stoljeća. U prvim desetljećima 13. stoljeća, kad opada bizantska vlast na Jadranu, Konavle su bile pod vlašću Raške, a ostaju posjed Nemanjića do 1371. godine. Sačuvana su imena nekih vazalnih kneževa i župana koji su upravljali Konavlima u ime svojih feudalnih gospodara. U trećoj četvrtini 14. stoljeća vlast nad Konavlima prešla je u ruke humskog kneza, zatim u ruke Altomanovića i Balšića. Godine 1378. Konavle padaju pod vlast bosanskog kralja Tvrtka. Knez Pavle Radonić dolazi u posjed ovog kraja 1389., a zahumska vlastela Sankovići 1391. postaju gospodari Konavala. Iste godine poklanjaju Konavle Dubrovčanima, a upravo u toj darovnici spominje se Sokol-grad. Knez Pavle ubrzo ponovno osvaja Konavle koje dijeli s Vlatkom Vukovićem koji mu je pomogao u borbi. Pavlovim dijelom upravljali su njegovi sinovi Petar i Radosav, a Vlatkovim njegov nećak Sandalj Hranić. Dubrovčani su s upraviteljima Konavala 1419. uspjeli postići dogovor o kupnji tog njima važnog posjeda. No, nije se sve jednostavno odvijalo jer su se Konavljani bunili protiv novih gospodara. Dubrovčani ipak uspijevaju doći u posjed Konavala 1420. godine, kada postavljaju prvog zapovjednika na utvrdi, popravljaju zidine i snabdjevaju utvrdu posadom i oružjem. Dogodile su se i nesuglasice između bivših upravitelja od kojih su Dubrovčani preuzeli posjed. Sandalj Hranić zatražio je natrag posjed zbog straha od Turaka, a Dubrovčani su morali primiti nekoliko njegovih vojnika na Sokol. Na kratko vrijeme Dubrovčani su napustili Sokol, ali su ubrzo počeli s pregovorima da povrate te posjede. Godine 1423. od Sandalja Hranića uspjeli su dobiti Sokol-grad, a konačnu predaju, tj. prodaju posjeda Dubrovčanima, učinio je Radosav 1426. godine.<sup>13</sup>

<sup>13</sup> M. GRUJIĆ, 1926, 3–15; D. ŽIVANOVIĆ, D. VUKOVIĆ,

tus in his work *De Administrando Imperio* (10th century). History of Konavle is poorly known for the period until the 12th century, but probably it was marked by strong Byzantine influence. There is some information about rulers in Konavle in the 12th century. In the first decades of the 13th century, with the decline in the Byzantine power in the Adriatic, Konavle were ruled by Raška, and remained the estate of the Nemanjić dynasty until the year 1371. Names of certain vassal princes and dukes who governed Konavle on behalf of their suzerains have been preserved. In the third quarter of the 14th century, the duke of Hum took control over Konavle, and finally the families of Altomanović and Balšić were feudal lords in this region. In the year 1378 Konavle was conquered by the Bosnian king Tvrtko. Duke Pavle Radonić took over in 1389, and the noble family of Stanković from Zahumlje became lords of Konavle in 1391. The same year they donated Konavle to Dubrovnik, and Sokol grad is mentioned in the deed of donation. Duke Pavle soon reconquered Konavle, sharing rule with Vlatko Vuković who helped him in the battles. Pavle's sons Petar and Radosav governed his part, and Vlatko's part was governed by his nephew Sandalj Hranić. In 1419 the city of Dubrovnik managed to make an agreement with the rulers of Konavle about purchasing this important estate. However, not everything went smoothly, since the population of Konavle rebelled against new masters. Still Dubrovnik managed to come into possession of Konavle in 1420 when they appointed the first commander in the fort, repaired the walls and stationed an armed garrison there. Former estate owners also had some claims so that Sandalj Hranić demanded the estate back because of the Ottoman danger. Dubrovnik had to accept a few of his soldiers on Fort Sokol. Dubrovnik left the fort but only for a short while, and soon started negotiations for bringing back the estate. Finally in 1423 they reclaimed Sokol-grad from Sandalj Hranić, and final handover or selling of the estate to Dubrovnik was carried out by

Konavle su od davnina bile važne Dubrovčanima zbog strateškog položaja, plodne zemlje i jeftine radne snage. Okolnosti izgradnje srednjovjekovne utvrde Sokol nisu sasvim poznate, a prvi zapisi datiraju iz 1373. godine kad se spominje utvrda i knez (kastelan, kaštelan) Dubravac te 1391. godine u povelji kojom braća Sankovići Dubrovčanima poklanjaju Konavle. Pod dubrovačkom vlašću utvrda dobiva konačan oblik.<sup>14</sup>

Zapovjednike su uvijek birali iz redova vlastele, a nazivi su im bili *Castellanus de Sochol*, *Conte*, *Conde*, *Praefectus Capitanus* i dr. Veliko vijeće je 1423. godine donijelo propise o stražarskoj službi u gradu te izmjene i dopune 1425. i 1449. godine. Tako doznajemo da je na utvrdu boravio kaštelan koji je imao dva mladića za pomoćnu službu i osam stražara, među kojima tri strijelca i jednog trubača, koji su birani isključivo među pouzdanim ljudima. Svi su živjeli u utvrdu i nisu je smjeli napuštati osim u posebnim slučajevima, i to na dva do tri dana. Od polovice 16. stoljeća ne bira se kaštelan za utvrdu Sokol, a tamo su postojale samo razvaline. Utvrda se 1634. godine povezivala s nemoralnim životom vlastelina i sluškinja.<sup>15</sup> Sokol se u zaključcima Vijeća ne spominje nakon što je napušten 1672. godine,<sup>16</sup> dakle ubrzo nakon Velikog potresa koji se zbio 1667. godine.

Utvrda Sokol izvrsno se uklapa u pejzaž jer je kamen dobio patinu prirodne stijene, a tvrđava se nalazi u podnožju brda. Utvrda se sastoji od citadele i obrambenih zidova, a pristup je vrlo težak i opasan za napadače.<sup>17</sup> Osim utvrde Sokol u Konavlima, na geografskom području na kojem se prije prostiralo srednjovjekovno Bosansko Kraljevstvo smještene su još tri utvrde istoga imena, a nalaze se na Plivi, u Usori i Međurječju. Zajedničko im je to što se izvrsno uklapaju u ambijent i dominiraju okolnim područjem, a sam naziv Sokol izvrsno dočarava

Radosav in 1426.<sup>13</sup>

Dubrovnik had been interested in Konavle for quite a while due to its strategic position, fertile land and cheap labour force. The circumstances of construction of the medieval Fort Sokol are rather poorly known. The first records date to 1373 when a fort and a duke (castellan) Dubravac were mentioned, and in 1391 when the Sanković brothers donated Konavle to Dubrovnik. The fort attained its final form under the authority of the city of Dubrovnik.<sup>14</sup>

The commanders were always members of the gentry, and their titles were *Castellanus de Sochol*, *Conte*, *Conde*, *Praefectus Capitanus* etc. The Major Council issued regulations on guard service in the city and amendments in 1425 and 1449. In that way we learn that a castellan was stationed in the fort with two men for auxiliary service and eight guards, including three archers and a trumpeter, who were chosen among highly reliable men. They all lived in the fort and were not permitted to leave it, except in special circumstances, only for two or three days. The elections of the Fort Sokol castellan stopped from the mid-16th century, since only ruins were left. In 1634 the fort was associated with immoral life of noblemen and maids.<sup>15</sup> Sokol was not mentioned in the Council acts after it had been deserted in 1672<sup>16</sup>, meaning shortly after the great earthquake of 1667.

Fort Sokol blends with the landscape since stone has taken a patina of natural rock and the fort is at the foot of a hill. It consists of a citadel and defensive walls, and the access is very difficult and dangerous in case of attack.<sup>17</sup> Except for Fort Sokol in Konavle, three forts with identical name were located in the same region of the former medieval Kingdom of Bosnia: in Pliva, Usora and Međurječje. They all fit into the environment exceptionally well and dominate the

1954, 375–376; L. BERITIĆ, 1966, 104–108.

<sup>14</sup> D. ŽIVANOVIĆ, D. VUKOVIĆ, 1954, 375, 378.

<sup>15</sup> D. ŽIVANOVIĆ, D. VUKOVIĆ, 1954, 378, 380.

<sup>16</sup> L. BERITIĆ, 1966, 131–132.

<sup>17</sup> D. ŽIVANOVIĆ, D. VUKOVIĆ, 1954, 380.

<sup>13</sup> M. GRUJIĆ, 1926, 3–15; D. ŽIVANOVIĆ, D. VUKOVIĆ, 1954, 375–376; L. BERITIĆ, 1966, 104–108.

<sup>14</sup> D. ŽIVANOVIĆ, D. VUKOVIĆ, 1954, 375, 378.

<sup>15</sup> D. ŽIVANOVIĆ, D. VUKOVIĆ, 1954, 378, 380.

<sup>16</sup> L. BERITIĆ, 1966, 131–132.

<sup>17</sup> D. ŽIVANOVIĆ, D. VUKOVIĆ, 1954, 380.

tu dominaciju nad prostorom aludirajući na pticu<sup>18</sup> (Sl. 2).

Pored klisure podno utvrde nalaze se ostaci nekadašnje srednjovjekovne crkve iz 15. stoljeća. Oko nje se nalazila nekropola sa stećcima. Srednjovjekovna kapelica bila je porušena 1885., a izgradila se nova seoska crkva pri čemu je dio nekropole sa stećcima uništen. Zavjetna crkva izgrađena je 1904. pod utvrdom.<sup>19</sup> Glagoljski natpis na mramoru pronađen je pri obnovi crkve Male Gospe 1979. uz utvrdu Sokol.<sup>20</sup>

Slijedi kratki prikaz prethodnih istraživanja, nakon kojeg se iznose rezultati arheoloških istraživanja 2012./2013. s antropološkom analizom pri čemu se rabe i rezultati <sup>14</sup>C datiranja. Zatim se donose opće antropološke značajke groblja, nakon kojih slijedi detaljniji prikaz <sup>14</sup>C datiranja kostura i karboniziranih badema. U drugom dijelu članka donosi se opći pregled materijala koji obuhvaća kremene, kamene, koštane, keramičke nalaze, krovni crijep, metalne, metalurške, numizmatičke te staklene nalaze.

## PRETHODNA ISTRAŽIVANJA

Utvrda Sokol i područje oko nje rijetko su istraživani i publicirani. Arthur J. Evans istraživao je groblje na Sokolu, po svoj prilici na gradini u Dunavama. Ne donosi potpune rezultate, ali spominje nalaze neslavenskih lubanja.<sup>21</sup> Sedamdesetih godina prošloga stoljeća Dubravka Beritić i Patricija Veramenta istražile su gornju utvrdu sa cisternom. U istraživanju su pronađeni različiti nalazi: vršci za samostrele (veretoni), pločice oklopa, ulomci stakla, fibula, stotinjak kamenih kugli (koje su poslije pokradene jer su stajale na utvrđi).<sup>22</sup> Šime Batović obišao je arheološke lokalitete po Konavlima, među njima i Sokol, te izvr-

surrounding region, as suggested by the name Sokol (*falcon*) alluding to the bird (Fig. 2).<sup>18</sup>

Remains of the former 15th-century medieval church are located next to the cliff at the foot of the fort, surrounded by a necropolis with medieval tombstones (*stećci*). Medieval chapel was torn down in 1885 in order to build a new village church whereby a part of the necropolis with *stećci* was destroyed. Votive church was built under the fort in 1904.<sup>19</sup> Glagolitic inscription on marble was found when the church of Our Lady next to Fort Sokol was renewed in 1979.<sup>20</sup>

A short overview of the previous research will be presented henceforth, followed by the results of the archaeological excavations in 2012/2013 with anthropological analysis and radiocarbon dating results. General anthropological characteristics of the cemetery are provided, and then a more detailed presentation of the radiocarbon dating of skeletons and carbonized almonds. The second part of the article brings a general overview of the material including finds of flint, stone and ceramics; roof tiles; metal; metallurgic, numismatic and glass finds.

## PREVIOUS RESEARCH

Fort Sokol and the surrounding area have been scarcely explored and published. Arthur J. Evans excavated the cemetery in Sokol, in all likelihood on hillfort in Dunave. He did not publish the complete results, but only mentioned the find of non-Slavic skulls.<sup>21</sup> In the 1970s Dubravka Beritić and Patricija Veramenta explored upper fort with a cistern. The excavation yielded diverse finds: crossbow bolts ("veretons"), armor plaques, glass pieces, a fibula, about a hundred stone balls (later stolen as they were left on the

<sup>18</sup> E. KURTOVIĆ, E. O. FILIPOVIĆ, 2011, 201–222.

<sup>19</sup> J. BRAUTOVIĆ, M. BRAUTOVIĆ, 2005, 212.

<sup>20</sup> B. FUČIĆ, N. KAPETANIĆ, 1997, 7–10; N. KAPETANIĆ, M. ŽAGAR, 2001, 9–48; G. TOMOVIĆ, 2005, 23–32.

<sup>21</sup> Š. BATOVIĆ, 1988b, 14, 37–38.

<sup>22</sup> Sačuvani nalazi smješteni su u depou Arheološkog muzeja Dubrovačkih muzeja.

<sup>18</sup> E. KURTOVIĆ, E. O. FILIPOVIĆ, 2011, 201–222.

<sup>19</sup> J. BRAUTOVIĆ, M. BRAUTOVIĆ, 2005, 212.

<sup>20</sup> B. FUČIĆ, N. KAPETANIĆ, 1997, 7–10; N. KAPETANIĆ, M. ŽAGAR, 2001, 9–48; G. TOMOVIĆ, 2005, 23–32.

<sup>21</sup> Š. BATOVIĆ, 1988b, 14, 37–38.

šio rekognosciranje. Spominje nalaze s utvrde Sokol i oko nje, gdje je pronašao ulomke ilirske i rimske keramike (ulomke amfora), te rimske krovne cigle (tegule i imbrekse). Također spominje nalaze srednjovjekovne i novovjekovne keramike.<sup>23</sup> Dubrovački muzeji su pod vodstvom Zdenka Žeravice i Romane Menalo proveli istraživanje srednjovjekovnih stećaka uz utvrdu Sokol. Pritom je otkriveno da su grobovi izrađeni korištenjem kamena živca, klesanih kamenih blokova i neobrađenog kamena. Zdenko Žeravica interpretirao ih je kao obiteljske grobnice feudalaca, vlasnika srednjovjekovnog Sokola, koje su poslije u srednjem i novom vijeku korištene i kao kosturnice. Pronađeno je 16 metalnih igala (s pozlatom ili glavicama od muranskog stakla), srebrna pozlačena muška naušnica, brončani prsten, zrna od neprozirnog stakla, fragmenti ogrlica, nožića, medalje s likom sv. Bernarda na aversu i Krista na reversu.<sup>24</sup>

## ARHEOLOŠKO ISTRAŽIVANJE 2012./2013. I ANTROPOLOŠKA ANALIZA

Arheološko istraživanje koje je provedeno 2012. i 2013. godine<sup>25</sup> obuhvatilo je područ-

<sup>23</sup> Š. BATOVIĆ, 1988b, 37–38, 64, 67, 100, sl. 7/1–2, 13.

<sup>24</sup> Z. ŽERAVICA, 2004, 296–297, 310–315, 325, sl. 44–56, Pl. 17–18.

<sup>25</sup> Voditeljica arheološkog istraživanja bila je Nikolina Topić, zamjenica voditeljice Nikolina Drašković Vlašić, u istraživanju su također sudjelovali Antonio Džaja i Jelena Beželj, tada apsolvantica arheologije. Istraživanje je provela tvrtka Omega engineering d.o.o. iz Dubrovnika. Konzervatorski nadzor proveo je Konzervatorski odjel u Dubrovniku. U arheološkim radovima sudjelovali su radnici iz tvrtke Troja d.o.o. iz Cavtata. Investitor arheološkog istraživanja je bilo Društvo prijatelja dubrovačke starine, koje je financiralo i antropološku analizu, analizu radioaktivnim ugljikom <sup>14</sup>C, restauraciju nalaza i obnovu utvrde. Nalazi s lokaliteta Sokol u Konavlima pronađeni izvan arheoloških istraživanja, te iz arheoloških istraživanja 2012. i 2013. godine (121 radni dan), oni iz naknadnog istraživanja 2015. (15 radnih dana), te iz posljednjeg istraživanja 2018. godine (10 radnih dana) koje je vodio Miroslav Katić, nalaze se na trajnoj pohrani na Odjelu za arheologiju i spomeničku baštinu Muzeja i galerija Konavala u Pridvorju te u stalnom postavu utvrde Sokol.

fort).<sup>22</sup> Šime Batović conducted a field survey at the archaeological sites in Konavle, including Sokol. He mentioned finds from Fort Sokol and the nearby area, such as fragments of Illyrian and Roman pottery (amphorae fragments), Roman tegulae and imbrices, as well as medieval and postmedieval pottery sherds.<sup>23</sup> Zdenko Žeravica and Romana Menalo from the Dubrovnik Museums explored the medieval tombstones near Fort Sokol. The research results indicated that the graves were made by using bedrock, dressed stone blocks or undressed stone. Z. Žeravica interpreted them as family tombs of feudal lords of medieval Sokol, that were used as ossuaries in medieval and postmedieval period. Sixteen metal pins were found (gilt or with heads of Murano glass), silver gilt male earring, bronze ring, pieces of necklaces and knives, medal with St Bernard figure on the obverse and Christ on the reverse.<sup>24</sup>

## ARCHAEOLOGICAL RESEARCH IN 2012/2013 AND ANTHROPO- LOGICAL ANALYSIS

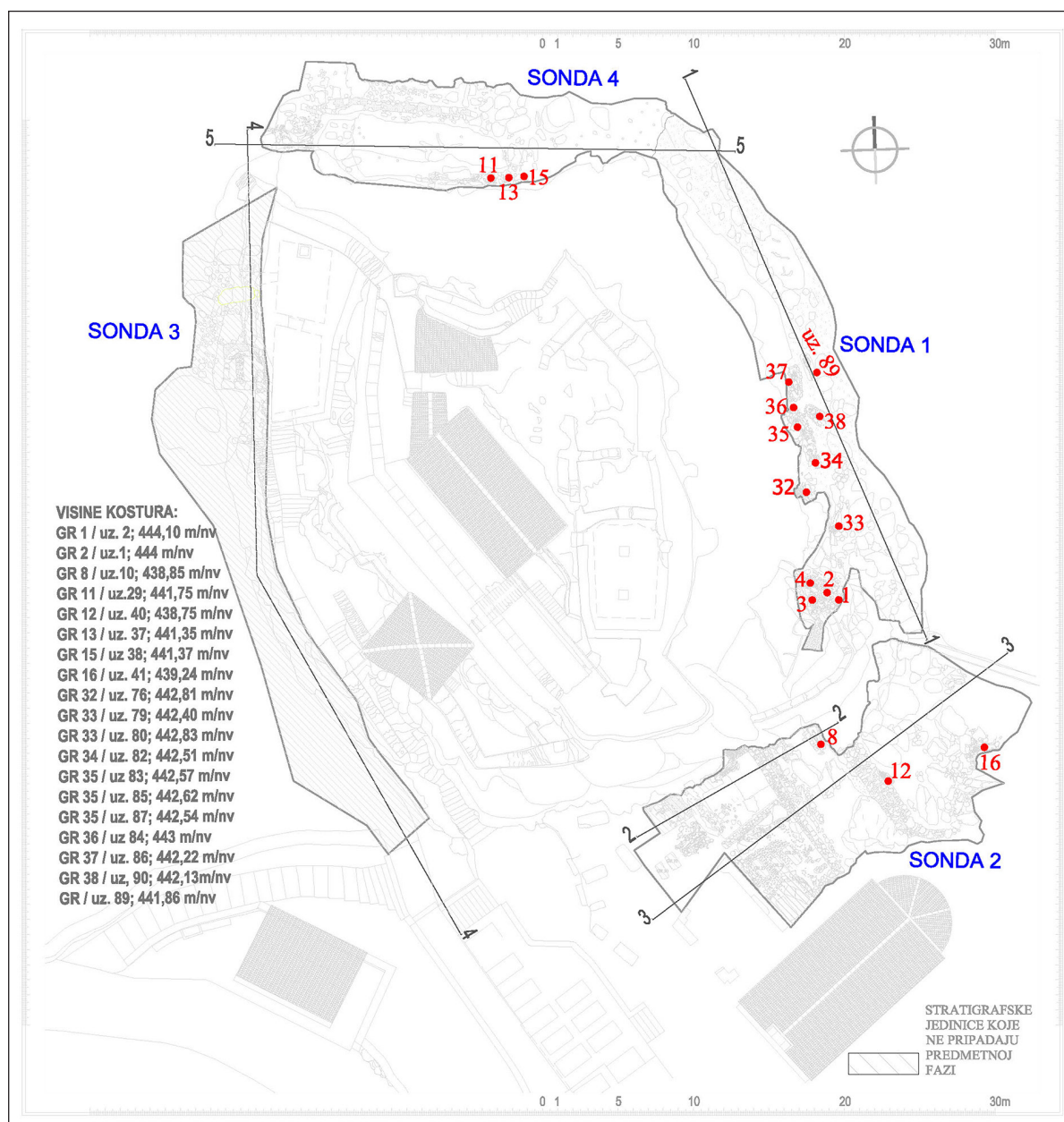
Archaeological excavations conducted in the years 2012 and 2013<sup>25</sup> encompassed the area

<sup>22</sup> These finds are kept in the depot of the Archaeological Museum of the Dubrovnik Museums.

<sup>23</sup> Š. BATOVIĆ, 1988b, 37–38, 64, 67, 100, fig. 7/1–2, 13.

<sup>24</sup> Z. ŽERAVICA, 2004, 296–297, 310–315, 325, fig. 44–56, Pl. 17–18.

<sup>25</sup> Leader of the archaeological excavation was Nikolina Topić, deputy leader was Nikolina Drašković Vlašić, and other participants were Antonio Džaja and Jelena Beželj, senior undergraduate student at the time. The excavation was conducted by the Omega engineering d.o.o. firm from Dubrovnik. Conservation supervision was carried out by the Conservation Department from Dubrovnik. Workers of the Troja d.o.o. firm from Cavtat participated in the works. The Society of Friends of the Dubrovnik Antiquities was the investor of the archaeological research, also funding the anthropological analysis, radiocarbon analysis, restoration of finds and renovation of the fort. Finds from Fort Sokol in Konavle (found before the archaeological excavations, and the ones from the 2012 and 2013 excavations (121 working days), as well as the finds from subsequent research in 2015 (15 working days), and the last research in 2018 (10 working days) led by Miroslav Katić, are permanently deposited at the Department of Archaeology and Monument Heritage of the Museums and Galleries of Konavle in Pridvorje, and in the permanent display in Fort Sokol.

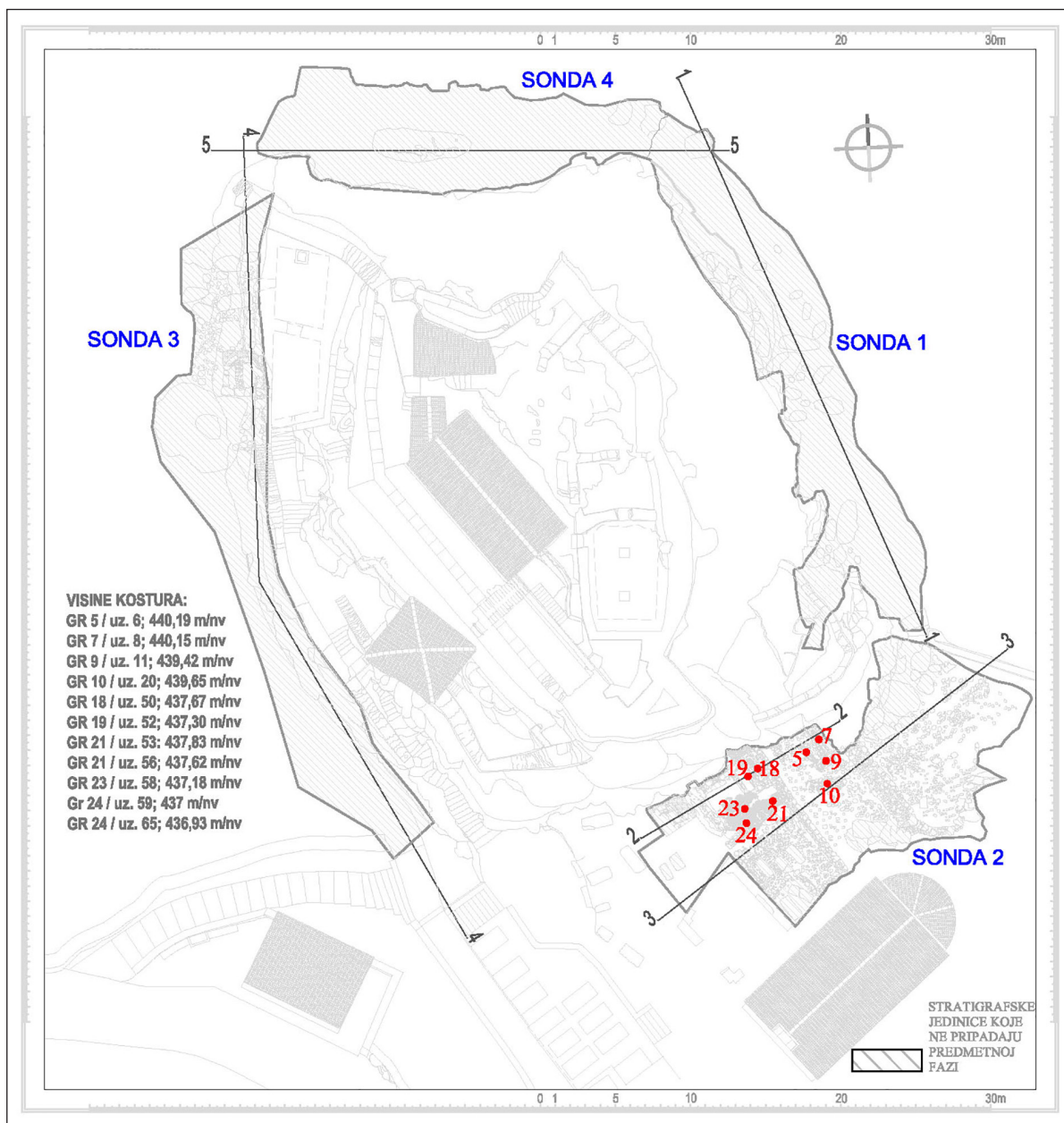


**TLOCRT 1.** *Kasna antika/rani srednji vijek; naznačene pozicije grobova (tlocrt sonde: N. Topić, N. Drašković Vlašić, D. Deranja, A. Radonić, Omega engineering d.o.o. Dubrovnik).*

**GROUND PLAN 1** *Late Roman/early medieval period; position of the graves (probes ground plans: N. Topić, N. Drašković Vlašić, D. Deranja, A. Radonić, Omega engineering d.o.o. Dubrovnik).*

je uza samu utvrdu Sokol, a podijeljeno je na četiri velike sonde (Tlocrti 1-3; Presjeci 1-5; Sl. 4-12). Prije nego što se pristupilo arheološkom istraživanju, tijekom sanacije i konzervacije utvrde te drugih građevinskih aktivnosti, pronađen je veći broj raznolikih nalaza. Izvorni srednjovjekovni i novovjekovni slojevi oko utvrde su već prije arheološkog istraživanja jednim dijelom uklonjeni tijekom građevinskih radova.

next to Fort Sokol, that was divided in four large probes (Ground plans 1-3; Cross-sections 1-5; Figs. 4-12). A number of interesting finds were unearthed during the recovery and conservation of the fort and other construction activities, before the archaeological excavation commenced. The original medieval and postmedieval layers around the fort had been partially removed in construction works before the archaeological excavation began.

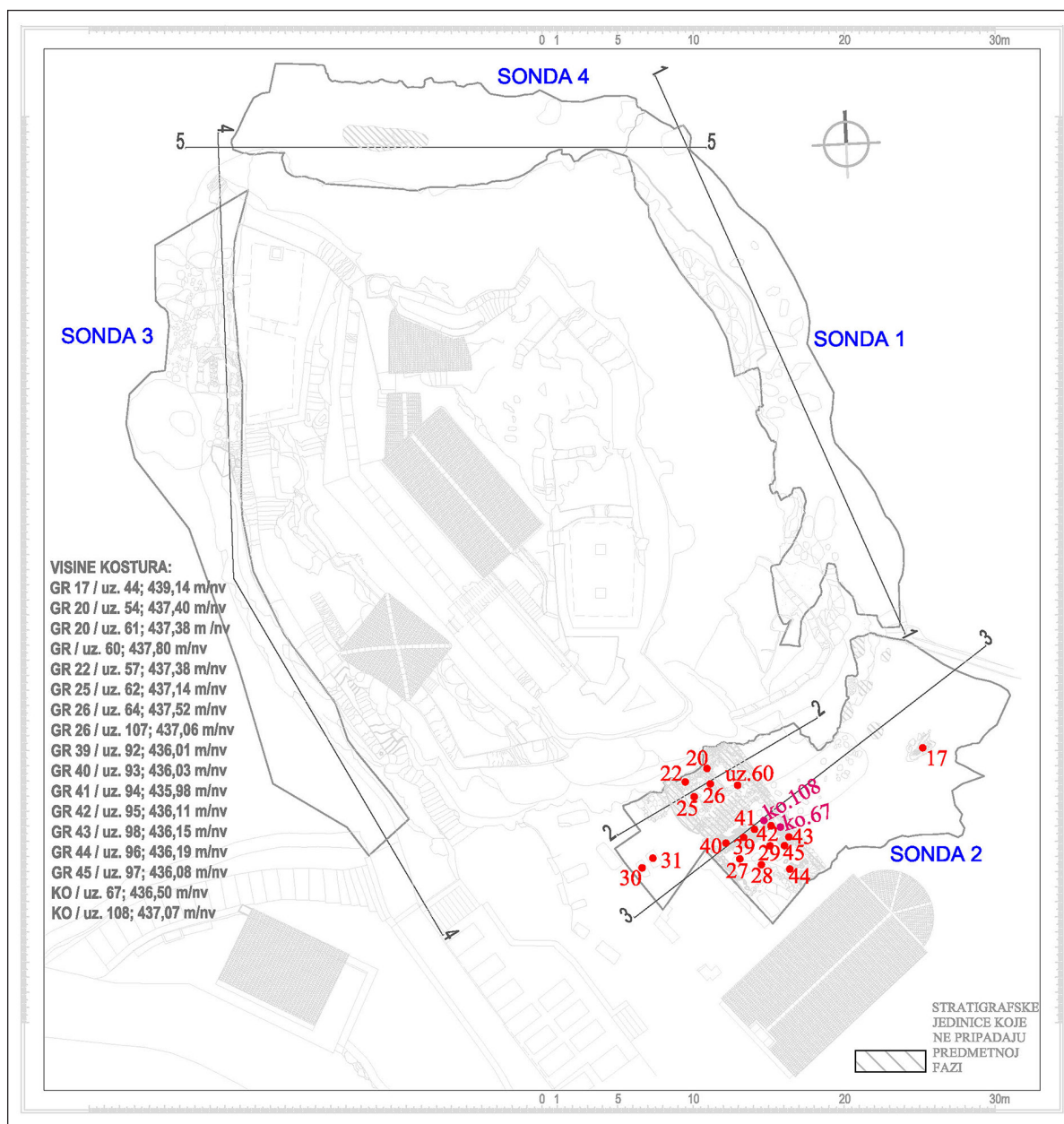


**TLOCRT 2.** *Razvijeni srednji vijek; naznačene pozicije grobova* (tlocrt sondi: N. Topić, N. Drašković Vlašić, D. Deranja, A. Radonić, Omega engineering d.o.o. Dubrovnik).

**GROUND PLAN 2** *High medieval period; position of the graves* (probes ground plans: N. Topić, N. Drašković Vlašić, D. Deranja, A. Radonić, Omega engineering d.o.o. Dubrovnik).

Grobovi (T. I-XI; Tlocrti 1-3; Presjeci 1-3) su pretežno smješteni uz južnu stranu utvrde, više grobova nalazi se uz istočnu stranu, manji broj uza sjevernu dok na zapadnoj strani nisu dokumentirani. Pronađeni grobovi upućuju na kontinuitet ukopavanja oko utvrde od antike do novog vijeka, dok se prapovijesni ukopi nisu sačuvali. Većina je kosturnih nalaza datirana metodom  $^{14}\text{C}$ , a starosti su izražene kao raspon kalibriranih datuma za  $1\sigma$ , što čini 68,2 % vje-

Graves (T. I-XI; Ground plans 1-3; Cross-sections 1-3) are mostly situated along the southern side of the fort, several graves are next to the eastern side, and only a small number along the northern side. Graves were not documented on the western side. Recovered graves suggest continuity of burials around the fort from antiquity to the Modern Period, while prehistoric burials have not been preserved. Most skeletal remains were dated by



**TLOCRT 3.** *Kasni srednji vijek/novi vijek; naznačene pozicije grobova (tlocrt sondi: N. Topić, N. Drašković Vlašić, D. Deranja, A. Radonić, Omega engineering d.o.o. Dubrovnik).*

**GROUND PLAN 3** *Late medieval period/early postmedieval period; position of the graves (probes ground plans: N. Topić, N. Drašković Vlašić, D. Deranja, A. Radonić, Omega engineering d.o.o. Dubrovnik).*

rojatnosti nalaženja rezultata u tom rasponu, te medijana raspona kalibriranih datuma (Tablica 1, Sl. 17).

Nalazi su raznovrsni, a zastupljeni su kreveti artefakti, kameni, koštani, keramički, metalni, metalurški i stakleni nalazi koji obuhvaćaju razdoblje od neolitika/eneolitika do ranog novog vijeka (T. XII-XXIX). Nisu pronađeni grobni prilozi, osim jedne korodirane kovanice u grobu 11. No, unutar grobova dokumentirani su

using the radiocarbon method, and their age was expressed in a range of calibrated dates for  $1\sigma$ , representing 68.2 % probability of finding results in that range, and median range of calibrated dates (Table 1; Fig. 17).

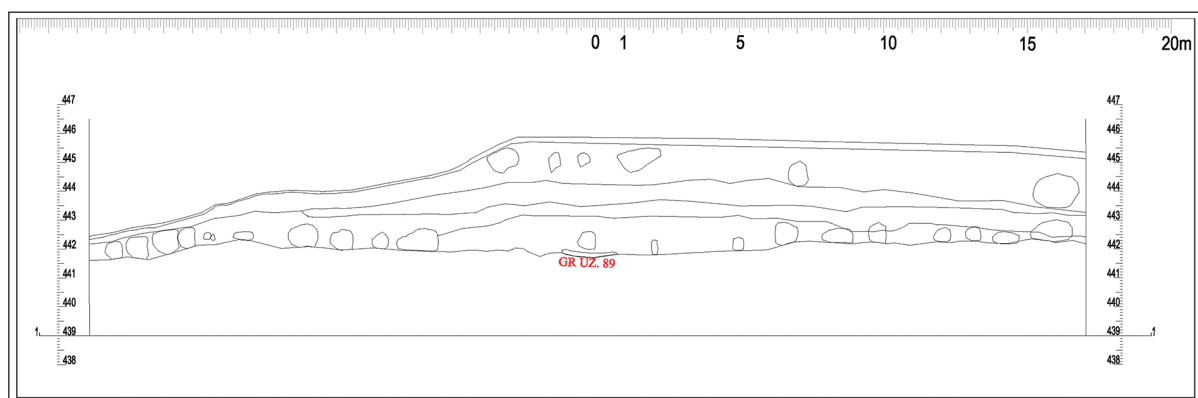
The graves are diverse, containing artifacts made of flint, stone, bone, ceramics, metal, glass and metallurgic finds dating to a time span from the Neolithic/Eneolithic to the Early Modern Period (T. XII-XXIX). Grave goods

ulomci metala, stakla, keramike, kosti koji su tu dospjeli u kontekstu zasipa grobova, dakle skupa sa zemljom. Isti materijal također je nađen u slojevima u kojima su ukopani grobovi.

Sonda 1 (Sl. 4; Tlocrti 1-3; Presjek 1) smještena je uz istočnu stranu utvrde. Prekrivali su je nasuti slojevi s ranonovovjekovnim i kasnosrednjovjekovnim materijalom. Pronađene su velike kamene gromade koje su se urušile s prirodne stijene utvrde pri potresu koji se zbio u kasnosrednjovjekovnom razdoblju. Gromade su uklonjene radi daljnjeg istraživanja. Ispod su ustanovljeni kasnoantički slojevi koji su prekrili prostor na kojem se prije zbio potres o čemu također svjedoči veliki broj urušenih gromada s utvrde. Materijal iz slojeva koji zasipaju gromade datira se u prijelazni period kasne antike u rani srednji vijek, što upućuje da se potres u kojem je došlo do urušavanja gromada zbio krajem antike ili nešto prije. Slojevi često sadrže izmiješani materijal iz različitih razdoblja što je posljedica potresa velikih razmjera. Osim poremećaja u stratigrafiji koje su uzrokovali potresi, mogli su se dogoditi i oni nastali ljudskim djelovanjem u prošlosti. Kad novi gospodari zauzimaju utvrdu, rade preuredbe na njoj i izbacuju ranije slojeve na područje oko utvrde. Na kasnoantičkoj razini isprepliću se smeđi nasipni sloj i smeđocrni zemljani sloj. Ispod tih slojeva nalazi se žućkastosmeđi pješčano-zemljani sloj koji je gotovo bez nalaza (moguće da je riječ o građevinskom materijalu), s malo

were not found, except for one corroded coin in grave 11. However the graves yielded fragments of metal, glass, pottery and bone that ended up in graves in context of grave filling, together with the soil. The same material was found in layers into which graves were dug.

Probe 1 (Fig. 4; Ground plans 1-3; Cross-section 1) was located next to the eastern side of the fort. It was covered by filled layers with early postmedieval and late medieval material. Large stone boulders were found, that collapsed from a natural rock of the fort in a late medieval earthquake. Boulders were removed in order to continue the excavation. Late antique layers were found beneath them, covering the area where the earthquake happened, as testified by a number of collapsed boulders from the fort. Finds from the layers that covered the boulders date to the transition period from Late Antiquity to the Early Middle Ages, suggesting that the earthquake in question happened by the end of antiquity or somewhat earlier. Layers often contain mixed material from different periods as a consequence of strong earthquake. Disturbed stratigraphy could also be a consequence of human activity in the past, and not only earthquakes. When new masters conquered the fort, they rearranged it and threw earlier layers out, to the area around the fort. Brown fill layer and brown-black earth layer mix at the late antique level. Under these layers is a yellowish-brown



**PRESJEK 1.** *Uzdužni presjek kroz sondu 1, SZ-JI (izradila: N. Topić, Omega engineering d.o.o. Dubrovnik).*

**CROSS-SECTION 1** *Longitudinal cross-section through probe 1, NW-SE (made by: N. Topić, Omega engineering d.o.o. Dubrovnik).*



SLIKA 4. Pogled na sondu 1; gromade upale tijekom potresa, 2013. (foto: N. Topić, Omega engineering d.o.o. Dubrovnik).

FIGURE 4 View of probe 1; boulders that fell in earthquake in 2013 (photo: N. Topić, Omega engineering d.o.o. Dubrovnik).

ulomaka keramike i tegula, vjerojatno propalih iz gornjih slojeva. Na toj razini zaustavljeno je istraživanje uz istočnu stranu utvrde.

U prvoj fazi iskopavanja sonde 1 istraženo je područje uvučenog dijela pod stijenom (JI strana prirodne stijene utvrde), dok je u drugoj fazi istraženo područje duž istočne strane utvrde, a zatim su ta dva segmenta spojena u cjelinu. Grobovi (GR 1-4) pronađeni u uvučenom prostoru pod stijenom su djelomično sačuvani. **Grob 1** (GR 1, uz. 2)<sup>26</sup> (T. I, 1) građen je od nepravilnih kamenih poklopnica, obložnica (jednu stranicu groba zatvara stijena utvrde) i ploča nepravilnog oblika koje čine dno groba. Orijentacija groba je JZo—SI. Kostur djeteta (5,5 – 6,5 godina) bio je u opruženom položaju na leđima ali dijelom poremećen.<sup>27</sup> Zabilježen je blagi aktivni periostitis na unutrašnjoj strani donje čeljusti. Upala periosteuma, odnosno periostitis najblaža je manifestacija zarazne bolesti na kosti. Može biti posljedica više čim-

sandy-earth layer that contained virtually no finds (possibly it was construction material), with few fragments of pottery and tegulae, that probably fell through the upper layers. Excavation along the eastern side of the fort was stopped at that level.

In the first research phase of probe 1, the area of a recessed part under the rock was excavated (SE side of the natural rock of the fort), while the excavation in the second phase encompassed the area along the eastern side of the fort. Finally, these two segments were joined. Graves (**GR 1-4**) found in the recessed area under the rock were partially preserved. Grave 1 (**GR 1**, s. 2)<sup>26</sup> (T. I, 1) was built of irregular stones that constitute the sides (natural rock encloses one side), cover and the base of the grave. Grave orientation is SW – NE. Skeleton of a child (5.5-6.5 years) was in an extended position on the back, but partly disturbed.<sup>27</sup> Mild active periostitis was recorded

<sup>26</sup> Oznaka **GR** označava grob, **uz.** uzorak a **KO** kosturnicu.

<sup>27</sup> N. TOPIĆ et al., 2014a; N. TOPIĆ, 2014b, 667-674.

<sup>26</sup> Mark **GR** stands for grave, **uz.** for sample, **KO** for ossuary.

<sup>27</sup> N. TOPIĆ et al., 2014a; N. TOPIĆ, 2014b, 667-674.

benika među koje spadaju: nespecifične bakterijske infekcije, specifične zarazne bolesti koje se hematogenim putem prošire na kost (na primjer sifilisa), lokalizirane traume, venozne insuficijencije, metaboličke bolesti kao što je na primjer skorbut i brojni drugi čimbenici.<sup>28</sup> Generalizirani periostitis obično je posljedica nespecifičnih ili specifičnih zaraznih bolesti, dok je lokalizirani periostitis najčešće sekundarna posljedica trauma ili kroničnih gnojnih čireva. Periostitis na unutarnjoj strani donje čeljusti može biti indikativna manifestacija nedostatka vitamina C, odnosno skorbuta.<sup>29</sup> Nažalost, u ovom slučaju to nije moguće sa sigurnošću ustvrditi zbog nedostatka ostalih skeletnih elemenata koji bi mogli dati sigurniju dijagnozu. Nisu nađeni prilozi. Određena je kalibrirana starost cal AD 585. – 639., medijan cal AD 608.

**GR 2** (uz. 1) (T. I, 2) zidani je grob od poluobrađenog kamena u sloju morta žućkastobijele boje. Grob je bio prekriven tegulama koje su ukrašene koncentričnim polukrugovima i petljama. Tegule su uklonjene prije arheološkog istraživanja pri dizanju nasipnog sloja. Konstrukcija groba je zatečena oštećena, a orijentacija groba je JZo—SI. Kostur žene (25 – 30 godina) zatečen je djelomično sačuvan u položaju na leđima. Na kosturu ove osobe uočeno je nekoliko patoloških promjena: blaga zarasla *cribra orbitalia* prisutna je u orbitama. *Cribra orbitalia* se morfološki očituje po pojavi šupljikave kosti na gornjim svodovima orbita, a smatra se posljedicom anemije uzrokovane nedostatkom željeza.<sup>30</sup> Blagi degenerativni osteoartritis prisutan je na 12. prsnom kralješku. Degenerativni osteoartritis karakterizira progresivna pojava osteofita oko rubova zglobnih ploština. U uznappedovalim oblicima inače glatka zglobna površina razvija koštane nodule, porozitet ili eburnaciju. Ove promjene rezultat

on the inner side of the lower jaw. Inflammation of the periosteum, that is periostitis is the mildest manifestation of an infectious disease on a bone. It can be a consequence of several factors such as: non-specific bacterial infections, specific infectious diseases that spread to bone hematogenously (e. g. syphilis), localized traumas, venous insufficiencies, metabolic diseases such as scurvy, and many other factors.<sup>28</sup> Generalized periostitis is usually a consequence of non-specific or specific infectious diseases, while localized periostitis is most frequently a secondary consequence of traumas or chronic purulent ulcers. Periostitis on the inner side of the lower jaw can often be an indicative manifestation of vitamin C deficiency, i.e. scurvy.<sup>29</sup> Unfortunately in this case we cannot determine the exact cause due to lack of other skeletal elements that might offer a more reliable diagnosis. Grave goods were not found. Calibrated age was determined: cal AD 585 – 639, median cal AD 608.

**GR 2** (uz. 1) (T. I, 2) is a stone-built grave made of semi-dressed stone in a layer of yellowish-white mortar. The grave was covered with tegulae decorated with concentric semicircles and loops. Tegulae were removed with the fill layer before the archaeological excavation began. Grave construction was found damaged. Orientation of the grave is SW-NE. Skeleton of a woman (25-30 years) was found partially preserved, in a supine position. Several pathological changes have been noticed on this skeleton: mild, healed *cribra orbitalia* preserved in orbits. *Cribra orbitalia* is morphologically exhibited in a porous bone on the upper arches of eye sockets, and it is considered to be a consequence of anaemia caused by iron deficiency.<sup>30</sup> Slightly degenerative osteoarthritis is present on the 12th thoracic vertebra. Degenerative osteoarthritis is characterized by

<sup>28</sup> R. W. MANN, S. P. MURPHY, 1990; D. J. ORTNER, 2003.

<sup>29</sup> S. MAYS, 2014, 55-62.

<sup>30</sup> R. HUSS-ASHMORE, A. H. GOODMAN, G. J. ARMELAGOS, 1982, 395-474.

<sup>28</sup> R. W. MANN, S. P. MURPHY, 1990; D. J. ORTNER, 2003.

<sup>29</sup> S. MAYS, 2014, 55-62.

<sup>30</sup> R. HUSS-ASHMORE, A. H. GOODMAN, G. J. ARMELAGOS, 1982, 395-474.

su mikrotrauma koje su posljedica svakodnevnih aktivnosti i razlikuju se od traumatskog artritisa koji nastaje kao posljedica prekida normalnog biomehaničkog funkcioniranja zgloba. Schmorlovi defekti su prisutni na 10., 11. i 12. prsnom, te 2., 3. i 5. slabinskom kralješku. Schmorlovi defekti nastaju uslijed prolapsa intervertebralnog diska u tijela susjednih kralježaka.<sup>31</sup> Njihova prisutnost može biti idiopatska ili povezana s nizom uzročnika među kojima je najčešći prekomjerni, kontinuirani fizički rad.

Na superiornoj strani tijela 4. slabinskog kralješka prisutna je lezija nepravilnog oblika i poroznog dna. Na zubima su prisutni hipoplastični defekti. Ovi defekti morfološki se očituju kao plitki vodoravni utori koji opasuju krunu zuba. Njihova prisutnost veže se uz pojavu jakih avitaminoza, neonatalne žutice, anemije, zaraznih bolesti ili kronične neishranjenosti.<sup>32</sup> Nije sasvim poznato je li grob imao priloge, jer je zatečen otvoren i vrlo poremećen. Određena je kalibrirana starost cal AD 535. – 598., median cal AD 553.

**GR 3** djelomično je sačuvan, a dno mu je bilo načinjeno od tegula. **GR 4 (?)** također se loše sačuvao, a pronađen je dio konstrukcije koja je možda služila kao dječji grob prema dimenzijama. Dno je izrađeno od sitnih kamenčića nabijenih u zemlju. Kosturni ostaci nisu pronađeni. Orijentacija je JI-SZ. Nakon što su grobne konstrukcije (GR 1-4) razložene, utvrđeno je da su bile formirane na nasipu od zemlje i kamenih gromada koje svjedoče o potresu koji je prethodio gradnji grobova koji su <sup>14</sup>C metodom datirani u 6. i 7. stoljeće.

Pri istraživanju gornjih slojeva duž istočne strane utvrde nisu ustanovljeni grobovi, dok je više njih pronađeno pri istraživanju kasnoantičke/ranosrednjovjekovne razine. Dio grobova (GR 32, 33, 34, 36) ukopan je u smeđi i crnosmeđi sloj u kojima je nađen kasnoantički materijal. Ostali grobovi (GR 35, 37, 38, 46) bili su ukopani u žućkasti pješčano-zemljani antič-

progressive emergence of osteophyte around the edges of joint surfaces. In advanced forms, smooth joint surface develops bone nodules, porosity or eburnation. These changes result from microtraumas that are a consequence of everyday activities and are different from traumatic arthritis resulting from a cessation in normal biomechanical functioning of a joint. Schmorl's nodes are present on the 10th, 11th and 12th thoracic vertebrae, and 2nd, 3rd and 5th lumbar vertebrae. Schmorl's nodes are caused by the prolapse of the intervertebral disc in the body of the adjacent vertebra.<sup>31</sup> Their presence can be idiopathic or related to a number of factors, most commonly excessive, continuous physical work.

On the superior side of the body of the 4th lumbar vertebra is a lesion, irregular in form, with a porous base. Hypoplastic defects are present on the teeth. These defects are morphologically exhibited as shallow horizontal grooves encircling the tooth crown. Their presence is associated with severe deficiency diseases, neonatal jaundice, anaemia, infectious diseases or chronic malnutrition.<sup>32</sup> The grave was found open and heavily disturbed so it is unknown if there were any grave goods. Calibrated age was determined: cal AD 535 – 598, median cal AD 553.

**GR 3** is partially preserved. Its base was made of tegulae. **GR 4 (?)** is also poorly preserved. A part of construction was found that might have served as a child's grave, judging from the dimensions. The base was made of tiny stones packed into soil. Skeletal remains were not found. Orientation is SE-NW. After grave constructions were dismantled (**GR 1-4**), it was determined that they were formed on a fill of earth and stone boulders testifying to an earthquake that preceded construction of graves dated to the 6th and 7th centuries using the <sup>14</sup>C method.

New graves were not found in upper layers

<sup>31</sup> G. SCHMORL, H. JUNGHANNS, 1971.

<sup>32</sup> A. H. GOODMAN, 1988, 781-791.

<sup>31</sup> G. SCHMORL, H. JUNGHANNS, 1971.

<sup>32</sup> A. H. GOODMAN, 1988, 781-791.

ki građevinski sloj. Grobovi su bili smješteni uz utvrdu da bi bili što bolje zaštićeni. Samo dva groba pronađena su po sredini sonde. Njihove konstrukcije izrađene su od poluobrađenog kamena bez vezivnog sredstva i od ulomaka manjih gromada upalnih pri potresu, s malo sačuvanih tegula koje su vjerojatno činile pokrov grobova. Samo jedan grob nema konstrukciju, a s obzirom na to da je položen u žučkasto smeđi zemljano-pješčani sloj skelet se dosta dobro sačuvao. Nisu sadržavali priloge. <sup>14</sup>C analizom datirani su u 5. i 6. stoljeće.<sup>33</sup> Na toj razini zastavljeno je istraživanje sonde 1.

**GR 32** (uz. 76) (T. VII, 4) smješten je u zaštićenom dijelu sonde uz utvrdu. Jednim dijelom kao stranice groba koristi utvrdu dok su ostale stranice zatvorene nepravilnim kamenjem. Kostur žene (45 – 50 godina) presječen je u donjem dijelu nogu tijekom radova koji su prethodili arheološkima. Na kosturu su prisutne četiri antemortalne frakture (na rebrima, na distalnoj desnoj palčanoj kosti, na srednjoj trećini dijafize lijeve lakatne kosti). Blagi degenerativni osteoarthritis prisutan je u lijevom ramenu, 5. vratnom te 6. i 7. slabinskom kralješku. Jaki degenerativni osteoarthritis prisutan je na 4. vratnom kralješku. Blagi aktivni periostitis prisutan je na anteriornoj strani obiju lopatica, na objema bedrenim kostima i lijevoj goljeničnoj kosti. Na zubima su prisutni hipoplastični defekti. U uzorku je pronađena i desna bedrena kost fetusa. Orijentacija groba je Jo—S. Određena je kalibrirana starost cal AD 431. – 550., medijan cal AD 484.

**GR 33** (uz. 78-80) (T. VIII, 1-2) također kao jedno lice koristi utvrdu dok je s ostalih strana zatvoren gromadama urušenima u potresu. Grob ima dvije razine ukopavanja, a vjerojatno je riječ o obiteljskoj grobnici, kao što je već dokumentirano na groblju uz crkvu sv. Đurđa u obližnjoj Župi dubrovačkoj.<sup>34</sup> Na gornjoj razini dokumentiran je trojni ukop: jedan stariji

along the eastern side of the fort, but several graves were hit at the late antique / early medieval level. Some graves (**GR 32, 33, 34, 36**) were dug into brown and black-brown layer in which late antique material was found. The remaining graves (**GR 35, 37, 38, 46**) were dug into a yellowish, sandy-earth construction layer from antiquity. Graves were located next to the fort for the sake of protection. Only two graves were found in the middle of the probe. Their constructions consist of semi-dressed stones without any bonding agent, and of fragments of smaller boulders collapsed in the earthquake, with few tegulae that probably formed the grave cover. Only one grave has no construction, and since it was laid in the yellowish-brown earthy-sandy layer, the skeleton was rather well preserved. There were no grave goods. <sup>14</sup>C analysis dated them to the 5th and 6th centuries.<sup>33</sup> Excavation of probe 1 was stopped at that level.

**GR 32** (uz. 76) (T. VII, 4) is located in the protected part of the probe next to the fort. Fort is used as one side of the grave while irregular stones delineate the rest of its sides. Skeleton of a woman (45-50 years) was cut in the lower part of legs during the works that preceded the archaeological excavations. Four antemortem fractures are present on the skeleton (on ribs, on right distal radius, in the middle third of diaphysis of left ulna). Mild degenerative osteoarthritis is present on the left shoulder, 5th cervical vertebra and the 6th and 7th lumbar vertebrae. Severe degenerative osteoarthritis was found on the 4th cervical vertebra. Mild active periostitis is present on the anterior side of both scapulae, on both femurs and left tibia. Hypoplastic defects are present on the teeth. The sample also contained right femur of a foetus. Orientation of the grave is S-N. Calibrated age was determined: cal AD 431 – 550, median cal AD 484.

**GR 33** (uz. 78-80) (T. VIII, 1-2) also uses

<sup>33</sup> I. KRAJCAR BRONIĆ, N. HORVATINČIĆ, 2014; I. KRAJCAR BRONIĆ, 2015.

<sup>34</sup> M. PERKIĆ, 2008, 74.

<sup>33</sup> I. KRAJCAR BRONIĆ, N. HORVATINČIĆ, 2014; I. KRAJCAR BRONIĆ, 2015.

ženski kostur (45 – 50 godina) i dva dječja (3 – 5 i 14 – 16 godina). Kod starijeg djeteta prisutna je blaga zarasla ektokranijalna poroznost na svodu lubanje. Ektokranijalna se poroznost ponekad još naziva „kost u obliku narančine kore“ jer se morfološki očituje po prisutnosti plitkih rupica oko bregme, sagitalnog šava i na zatiljnoj kosti (općenito pri vrhu svoda lubanje). Ektokranijalna poroznost prvi je put opisana kod mladih američkih vojnika koji su umrli kao ratni zarobljenici tijekom rata u Koreji.<sup>35</sup> Kod tih osoba, pojava ektokranijalne poroznosti povezana je s dugotrajnim i sustavnim izgladnjivanjem. Visoke učestalosti uočene su i kod američkih vojnika koji su poginuli tijekom opsade utvrde Snake Hill u ratu iz 1812., a za koje također postoje povijesni dokumenti koji svjedoče o neadekvatnoj prehrani.<sup>36</sup> Litički defekt prisutan je na zglobojnoj plohi lijeve lopatice. Na distalnoj zglobojnoj plohi lijeve goljenične kosti također su prisutna dva mala litička defekta. Schmorlovi defekti prisutni su na prsnim kralješcima. Blagi aktivni lokalizirani periostitis prisutan je na lijevoj bedrenoj kosti i na dvjema kostima desnog stopala. Kod mlađeg djeteta prisutan je jaki aktivni *osteomijelitis* na desnoj goljeničnoj i lisnoj kosti. Osteomijelitis je infekcija kostiju koju najčešće uzrokuju bakterije, a ponekad i gljivice. Kostiju koje su obično dobro zaštićene od infekcije, mogu se inficirati na tri načina: krvotokom, direktnim prodorom ili od infekcija iz okolnog mekog tkiva.

Ispod njih ukopana je mlađa žena (25 – 30 godina) kod koje je na lijevoj strani donje čeljusti ispod drugog kutnjaka prisutan blagi aktivni periostitis. Na desnoj ključnoj kosti prisutna je naglašena *rhomboidna fossa*. Ovu pojavu karakteriziraju kortikalni defekti na hvatištu kostoklavkularnog ligamenta, te kao i svi kortikalni defekti upućuju na intenzivnu fizičku aktivnost, koju su u ovom slučaju provodili mišići ramenog obruča. Na prvim me-

the fort as one side while other sides are closed by boulders collapsed in the earthquake. The grave has two levels of burying, and probably it was a family tomb, as already documented in the cemetery near the church of St George in nearby Župa dubrovačka.<sup>34</sup> Triple burial was documented on the upper level: an older female skeleton (45-59 years) and two child's skeletons (3-5 and 14-16 years). Mild healed ectocranial porosity is noticeable on the older child's skull. Ectocranial porosity is sometimes referred to as "orange peel bone" as it is morphologically exhibited in the presence of shallow holes around bregma, sagittal suture and on the occipital bone (generally near the cranium). Ectocranial porosity was first described in young American soldiers who died as prisoners of war during the Korean War.<sup>35</sup> In these cases, presence of ectocranial porosity was related to lengthy and systematic starvation. High frequencies were also noticed in American soldiers who died during the siege of Fort Snake Hill in the war of 1812, that are also associated with inadequate diet, according to historical documents.<sup>36</sup> Lithic defect is present on the joint surface of the left scapula. Two small lithic defects are present on the distal joint surface of the left tibia. Schmorl's nodes are present on the thoracic vertebrae. Mild active localized periostitis is present on the left femur and two bones of the right foot. Severe active osteomyelitis is present on the younger child, on the right tibia and fibula. Osteomyelitis is an infection of bones usually caused by bacteria, or sometimes fungi. Bones are usually well protected from the infection, and can be infected in three ways: through bloodstream, direct penetration or from infections from the surrounding soft tissue.

A young woman (25-30 years) was buried under them. Mild active periostitis was found on the left side of her lower jaw under second

<sup>35</sup> T. W. MCKERN, T. D. STEWART, 1957.

<sup>36</sup> D. W. OWSLEY, R. W. MANN, S. P. MURPHY, 1991, 198-226.

<sup>34</sup> M. PERKIĆ, 2008, 74.

<sup>35</sup> T. W. MCKERN, T. D. STEWART, 1957.

<sup>36</sup> D. W. OWSLEY, R. W. MANN, S. P. MURPHY, 1991, 198-226.

tatarzalnim kostima stopala – palca, prisutne su litičke lezije zaobljenih rubova. Također, na starijem ženskom kosturu zabilježen je blagi degenerativni osteoarthritis na pojedinim kralješcima. Na zubima su prisutni hipoplastični defekti. Orijentacija gornjih kostura je So–J s malim otklonom, dok je pokojnica ispod njih obrnuto orijentirana: Jo–S s malim otklonom. Određena je kalibrirana starost cal AD 543. – 592., medijan cal AD 564. (uz. 79, starije djetete, 14 – 16 godina, s gornje razine groba); cal AD 538. – 597., medijan cal AD 558. (uz. 80, mlađa žena s donje razine groba).

**GR 34** (uz. 82) (T. VIII, 3) formiran je od nepravilnog manjeg i većeg kamenja. Zapadna stranica groba dijelom koristi stijene utvrde kao dio konstrukcije. Na krajevima groba vertikalno su postavljene tegule, dok pokrov nije sačuvan. Upotreba starijeg građevinskog materijala očekivana je na ovakvim lokalitetima. Primjer upotrebe tegula za srednjovjekovne grobne konstrukcije nalazimo u obližnjoj Župi dubrovačkoj.<sup>37</sup>

Na ženskom kosturu (45 – 55 godina) blagi degenerativni osteoarthritis (osteofiti) prisutan je u kukovima i na 6. prsnom kralješku. Umjereni degenerativni osteoarthritis (osteofiti) prisutan je na pojedinim vratnim i prsnim kralješcima. Na falangi šake prisutna je fraktura. Skelet je orijentacije Jo–S.

Grobna konstrukcija **GR 35** (uz. 83, 85, 87) (T. VIII, 4; T. IX, 1) formirana je od poluobrađenog i neobrađenog kamena, s malo sačuvanih tegula po vrhu groba te na krajevima. Kao zapadno lice koristi utvrdu. Grob je poremećen u potresima i/ili pljačkama. Uzorak 83 predstavlja skeletne ostatke djeteta (13 – 14,5 godina), a nalazio se na sjevernoj strani groba. Kostu su dislocirane, djelomično su sačuvane kosti ruku, zdjelice i nogu. Blagi aktivni periostitis prisutan je na lijevoj goljeničnoj kosti. Skelet uz. 85 (mlada žena, 15,5 – 17,5 godina) nalazio se na južnoj strani groba. Pokojnica je u opruženom položaju na leđima,

<sup>37</sup> M. PERKIĆ, 2008, 72.

molar. A severe rhomboid fossa is present on the right clavicle. This phenomenon is characterized by cortical defects on the attachment of costoclavicular ligament. As all cortical defects, it suggests strenuous physical exertion, in this case performed by shoulder muscles. Lithic lesions with rounded edges are visible on the first metatarsal bones of the foot – the big toe. Mild degenerative osteoarthritis is recognizable on some vertebrae of the older female skeleton. Hypoplastic defects are present on the teeth. Orientation of the upper skeletons is NS with a slight deviation, while the female skeleton underneath is in the opposite S–N direction with a slight deviation. Calibrated age is cal AD 543 – 592, median cal AD 564 (uz. 79, older child (14–16 years) from the upper level of the grave); cal AD 538 – 597, median cal AD 558 (uz. 80, younger woman from the lower level of the grave).

**GR 34** (uz. 82) (T. VIII, 3) is formed of irregular stones of different sizes. Western side of the grave partly uses rocks of the fort as a part of the construction. At the grave ends are tegulae placed vertically, while the cover was not preserved. Use of older construction material is expected at sites like this. An example of use of tegulae in medieval grave constructions is attested in nearby Župa dubrovačka.<sup>37</sup>

On a female skeleton (45–55 years) mild degenerative osteoarthritis (osteophytes) is present on hips and the 6th thoracic vertebra. Moderate degenerative osteoarthritis (osteophytes) is recorded on certain cervical and thoracic vertebrae. A fracture was recognized on the fist phalanx. Orientation of the skeleton is NS.

Grave construction **GR 35** (uz. 83, 85, 87) (T. VIII, 4; T. IX, 1) was formed of semi-dressed and undressed stones, with few preserved tegulae on the top of the grave and at the ends. Fort is used as the western face. The grave was disturbed in earthquakes and/or robberies. Sample 83 consists of subadult

<sup>37</sup> M. PERKIĆ, 2008, 72.

ruke su prekrížene na trbuhu, noge izlaze izvan konstrukcije. Određena je kalibrirana starost cal AD 435. – 574. cal AD, medijan cal AD 539. Uzorak 87 (muškarac, 25 – 30 godina) posljednji je pokojnik u ovom grobu koji je višekratno korišten. Bolje mu je sačuvan gornji dio skeleta, pokopan je na leđima, lubanja je napuknuta, kralješci i rebra su u lošem stanju, lijeva ruka opružena, a desna savijena u laktu i vjerojatno prislonjena na zdjelicu, dok su noge djelomično sačuvane. Patološke promjene uočene kod ove osobe uključuju antemortalnu dobro zaraslu frakturu na zglobnoj ploštini lijeve lopatice, kostoklavikularno romboidno udubljenje (*rhomboïd fossa*) na desnoj ključnoj kosti te Schmorlove defekte na 6. i 7. prsnom kralješku. Skelet je orijentacije SZo—JI. Određena je kalibrirana starost cal AD 435. – 576., medijan cal AD 539.

Sjeverno uz GR 35 nalazi se **GR 36** (uz. 84) (T. IX, 2) koji ima loše sačuvanu konstrukciju, formiranu od manjeg kamena i tegula. Skelet djeteta (1 – 1,5 godine) također je loše sačuvan: lubanja je prislonjena uz stijenu, djelomično su sačuvane kosti ruku, nogu i pojedine sitne kosti. Patološke promjene nisu prisutne. Orijentacija mu je So—J. Sjeverno se pruža **GR 37** (uz. 86) (T. IX, 3) koji ima relativno dobro sačuvanu konstrukciju u formi vijenca, formiranu od nepravilnog kamena, a kao zapadno lice dodatno koristi stijenu utvrde. U grobu su nađene dvije tegule u predjelu nogu, a tvorile su dio pokrova groba koji nije sačuvan. Skelet muškarca (40 – 55 godina) dobro je sačuvan, u opruženom položaju na leđima, desna ruka na zdjelici. Uočeno je nekoliko patoloških promjena: blaga zarasla ektokranijalna poroznost prisutna je na svodu lubanje. Blagi degenerativni osteoarthritis prisutan je na laktovima i desnom koljenu te slabinskim kralješcima. Schmorlovi defekti prisutni su na pojedinim kralješcima. Na 5. slabinskom kralješku prisutna je spondiloliza, odnosno prirođeni koštani defekt luka kralješka. Blagi aktivni i zarasli periostitis prisutan je na lijevoj lisnoj kosti, dok je blagi zarasli periostitis prisutan na desnoj lisnoj kosti. Orijentacija

skeletal remains (13-14.5 years), and it was located on the northern side of the grave. Partially preserved bones of arms, pelvis and legs were dislocated. Mild active periostitis is present on the left tibia. Skeleton sample 85 (young woman 15.5-17.5 years) was located on the southern side of the grave. The deceased woman was in an extended position, supine, arms crossed on the lower abdomen, legs protruding out of the construction. Calibrated age is cal AD 435 – 574 cal AD, median cal AD 539. Sample 87 (man, 25-30 years) is the last person to have been buried in this grave that was used repeatedly. Upper part of the skeleton is better preserved, the skull is cracked, vertebrae and ribs are in a poor condition, the left arm is stretched, and the right arm is bent in the elbow, probably leaning on the pelvis, while legs are partially preserved. Pathological changes noticed on this skeleton include well-healed antemortem fracture on the joint surface of the left scapula, costoclavicular rhomboid fossa on the right clavicle, and Schmorl's nodes on the 6th and 7th thoracic vertebrae. Orientation of the skeleton is NW-SE. Calibrated age is cal AD 435 – 576, median cal AD 539.

North of GR 35 is **GR 36** (uz. 84) (T. IX, 2) with a poorly preserved construction, made of small stones and tegulae. Skeleton of a child (1-1.5 years) is also poorly preserved: the skull leans against the rock, bones of arms, legs and certain small bones are partially preserved. There are no pathological changes. Grave orientation is NS. To the north is **GR 37** (sample 86) (T. IX, 3) with a relatively well preserved construction in form of a wreath, formed of irregular stones, using the rock of the fort as the western face. Two tegulae which formed the unpreserved grave cover, were found in the leg area. Skeleton of a man (40-45 years) is well preserved, in an extended position, supine, right hand on the pelvis. Several pathological changes were noticed: mild healed ectocranial porosity on the cranium; mild degenerative osteoarthritis on the elbows, right knee and

je So—J.

Osim grobova koji su smješteni uza samu utvrdu, nađena su i dva koja su udaljena od nje i time manje zaštićena. **GR 38** (uz. 90) (T. IX, 4) ima konstrukciju građenu od manjeg i većeg poluobrađenog i neobrađenog kamena koja je na donjem dijelu presječena pri građevinskim radovima. Kostur muškarca (30 – 35 godina) u relativno je dobrom stanju, osim što mu je presječen donji dio nogu. Kod ove osobe prisutna je blaga zarasla ektokranijalna poroznost na svodu lubanje. Na zubima su prisutni hipoplastični defekti. Orijehtacija je Zo—I. Drugi grob (**GR/**, uz. 89) (T. X, 1) smješten je po sredini sonde, nema grobnu konstrukciju i ukopan je u žučkasti pješčani sloj u kojem je formirana grobna raka. Kostur muškarca (20 – 25 godina) vrlo dobro se sačuvao zahvaljujući sastavu sloja koji vjerojatno predstavlja građevinski materijal (pijesak u svojem sastavu ima kalcij, filtrira se i brzo propušta vodu). Pokojnik je na leđima, ruke su položene uz tijelo, desna ruka je na zdjelici. Uočen je niz patoloških promjena. Naglašena *rhomboidna fossa* prisutna je na objema ključnim kostima, dok je benigni kortikalni defekt prisutan na hvatištu mišića *teres maior* desne nadlaktične kosti. Na desnom iveru prisutan je veliki *vastus notch* (u osnovi „usjek“ na superiornu-lateralnoj površini ivera i najčešće se smatra normalnom varijacijom) dok je na lijevom manji. Schmorlovi defekti prisutni su na pojedinim prsnim i 1. slabinskom kralješku. Orijehtacija je So—J. Određena je kalibrirana starost cal AD 540. – 590., medijan cal AD 558.

Istraživanje je zaustavljeno na razini pješčano-zemljanog sloja, grobne konstrukcije su razložene, a gromade urušene u potresu koje dijelom zasipa pješčano zemljani sloj u ovoj fazi istraživanja nisu uklonjene.

Sonda 2 (Sl. 5-10; Tlocrti 1-3; Presjeci 2-3) zauzima područje uz južnu stranu utvrde, na padini. Najprije je uklonjen ranonovovjekovni/kasnosrednjovjekovni ostatak nasipa, zatim su uslijedili srednjovjekovni sloj s kamenim nabo-

lumbar vertebrae, Schmorl's nodes on some vertebrae. Spondylosis as a congenital bone defect of the vertebral arch is noticeable on the 5th lumbar vertebra. Mild active and healed periostitis is present on the left fibula, while mild healed periostitis is recognizable on the right fibula. Grave orientation is NS.

Except for graves that are situated next to the fort, two more graves were found at some distance from it, therefore being less protected. **GR 38** (uz. 90) (T. IX, 4) has a construction built of small and large semi-dressed and undressed stones, that was cut off in the lower part in the construction works. Male skeleton (30-35 years) is in a relatively good condition, except lower part of his legs was cut off. Mild healed ectocranial porosity on the cranium is present on this skeleton, as well as the hypoplastic defects on the teeth. Grave orientation is WE. The other grave (**GR/**, uz. 89) (T. X, 1) is located in the middle of the probe, without grave construction, dug into yellowish sandy layer in which grave pit was formed. Male skeleton (20-25 years) is well preserved owing to soil composition, probably consisting of construction material (sand contains calcite, it is filtrated and passes water quickly). The deceased person is on the back, arms are extended along the body, right hand is on the pelvis. A number of pathological changes were noticed. Prounounced rhomboid fossa is present on both clavicles, while a benign cortical defect is visible on the attachment of the *teres maior* muscle of the right humerus. On the right patella is a big *vastus notch* (basically a “notch” on the superior-lateral surface of the patella, usually considered as a normal variation), while it is smaller on the left patella. Schmorl's nodes are present on some thoracic vertebrae and the 1st lumbar vertebra. Grave orientation is NS. Calibrated age is cal AD 540 – 590, median cal AD 558.

The excavation was stopped at the level of sandy-earth layer, grave constructions were dismantled, and boulders collapsed in the earthquake that are partially covered by sandy-



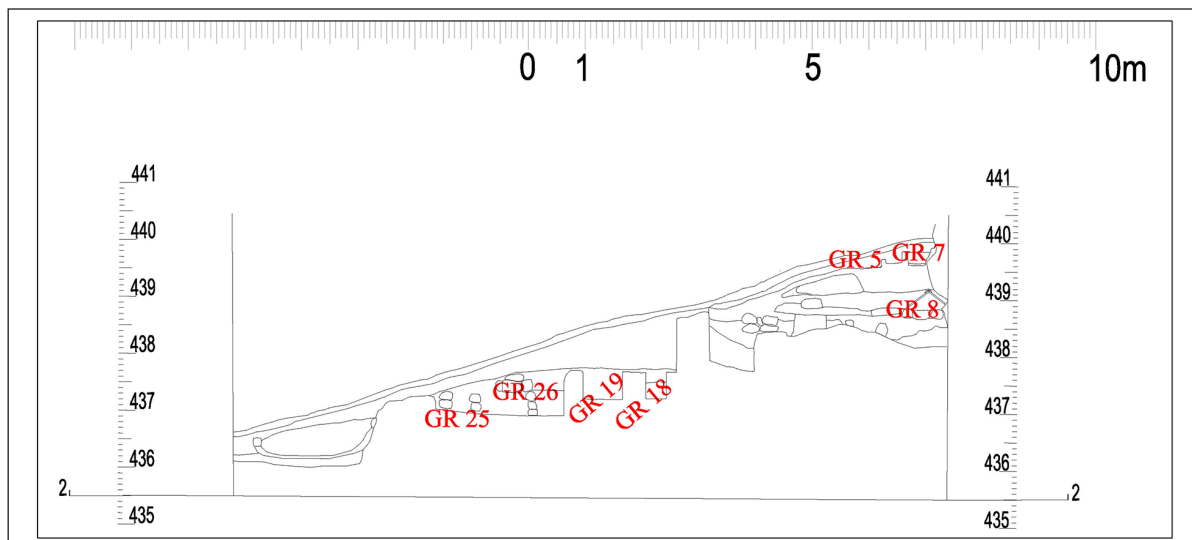
SLIKA 5. Pogled na sondu 2, 2013. (foto: N. Topić, Omega engineering d.o.o. Dubrovnik).  
FIGURE 5 View of probe 2, 2013 (foto: N. Topić, Omega engineering d.o.o. Dubrovnik).

jem (10. – 11. st.), kasnoantički/ranosrednjovjekovni sloj (5. – 6. st.), te sloj s izmiješanim prapovijesnim nalazima. Dva kasnoantička zida dijele sondu na tri dijela.

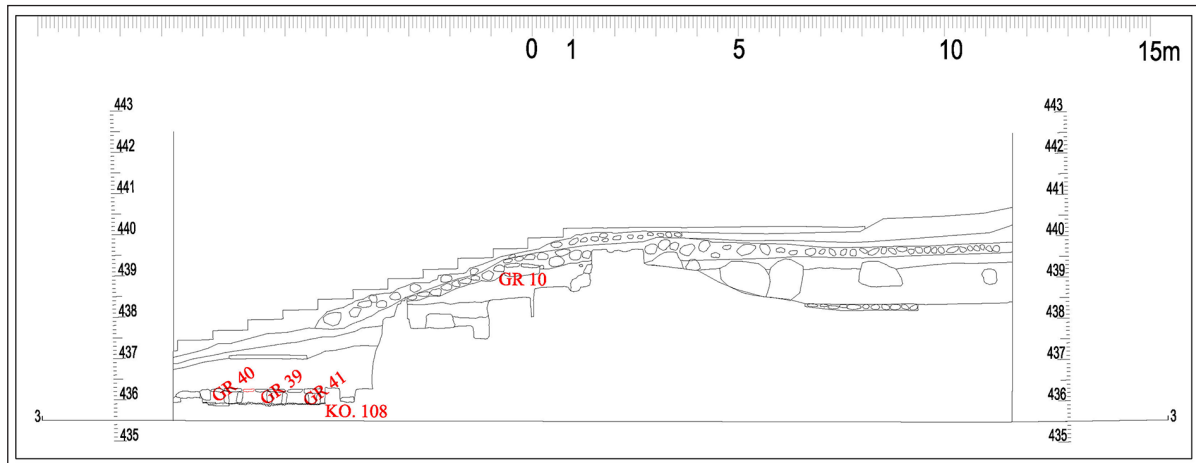
U kasnosrednjovjekovnom/ranonovovjekovnom nasipu nađeni su ulomci glazirane keramike, fragmenti metala, stakla, cigle, kamene

earth layer have not been removed in this research phase.

Probe 2 (Fig. 5-10; Ground plans 1-3; Cross-sections 2-3) takes the area along the southern side of the fort, on the slope. Early postmedieval / late medieval fill remains were



PRESJEK 2. Kraći uzdužni presjek kroz sondu 2, SI-JZ (izradila: N. Topić, Omega engineering d.o.o. Dubrovnik).  
CROSS-SECTION 2 Shorter longitudinal cross-section through probe 2, NE-SW (made by: N. Topić, Omega engineering d.o.o. Dubrovnik).



**PRESJEK 3.** Duži uzdužni presjek kroz sondu 2, SI-JZ (izradila: N. Topić, Omega engineering d.o.o. Dubrovnik).  
**CROSS-SECTION 3** Longer longitudinal cross-section through probe 2, NE-SW (made by: N. Topić, Omega engineering d.o.o. Dubrovnik).

kugle, veretoni (vrhovi strelica), fragmenti oklopa sa zakovicama (T. XIII, 8; T. XIX-XX; T. XXIV-XXV; T. XXVIII-XXIX). U tom sloju bilo je i većih kamenih gromada koje su se odlomile s prirodne stijene utvrde. Gromade urušene tijekom potresa su postajale više vidljive uklanjanjem sloja koji je uglavnom sadržavao kasnorimski/ranokršćanski materijal, a koji se nalazio pod kamenim nabojem. Uslijedio je duboki prapovijesni sloj crne zemlje s uglavnom manjim kamenjem te kamenim gromadama koje su uništile prapovijesno naselje. Materijal iz prapovijesnog sloja je dosta izmiješan: pri vrhu sloja pronađeni su kasnoeneolitička/ranobrončanodobna keramika (T. XV, 2) te ulomak neolitičkog/eneolitičkog kremenog sječiva za srp (T. XII, 1). Među nalazima su vrlo brojni ulomci prapovijesne keramike, uglavnom grube bez ukrasa i dosta usitnjene, ali ima i sačuvanih karakterističnih ručki i ukrašenih ulomaka (T. XIV, 4-9; T. XV). Velika količina prapovijesne keramike i kućnog lijepa upućuje na kontinuitet života na gradini od eneolitika, preko brončanog do željeznog doba.

Na istočnom dijelu sonde pronađena je prapovijesna podnica od nabijenih kamenčića koja je možda služila kao dvorište ispred kuće. Na tom dijelu sonde ustanovljena je još jedna podnica te uz nju veće kamenje (ostatci ilirske kuće?). Nije bilo moguće ustanoviti tip kuće

removed first, followed by a medieval layer with a stone fill (10th – 11th cent.), late antique / early medieval layer (5th – 6th cent.), and a layer with mixed prehistoric finds. Two late antique walls divide the probe into three parts.

The late medieval / early postmedieval fill yielded finds of glazed pottery, fragments of metal, glass, brick, stone balls, veretons (arrowtips), fragments of armor with rivets (T. XIII, 8; T. XIX-XX; T. XXIV-XXV; T. XXVIII-XXIX). This layer also contained bigger stone boulders that broke off the natural rock of the fort. Boulders that fell off in the earthquake were becoming more visible during removing of the layer containing mostly the late Roman / early Christian material, that was under the stone fill. A deep prehistoric layer of black soil came next, containing mostly smaller stones and stone boulders that destroyed prehistoric settlement. Material from prehistoric layer is quite mixed: late Eneolithic / Early Bronze Age pottery was found at the top of the layer (T. XV, 2) as well as a fragment of the Neolithic / Eneolithic flint blade of a sickle (T. XII, 1). Prehistoric pottery sherds are abundant, mostly in coarse fabric, unornamented and quite fragmented, but some characteristic handles and decorated sherds were also preserved (T. XIV, 4-9; T. XV). Large amount of prehistoric pottery and daub suggests continu-

zbog malog područja koje je istraženo na rubnom dijelu sonde (koje bi trebalo proširiti u budućim istraživanjima), te zbog upalih kamenih gromada koje su onemogućavale potpuno istraživanje i interpretaciju tog prostora. Ispred te konstrukcije nalazi se vatrište s kamenom podlogom (Sl. 6). Dosta ulomaka kućnog lijepa nađeno je na istočnoj strani sonde, u prapovijesnom sloju s mješovitim nalazima, što također svjedoči o načinu gradnje i naseljenosti ovog područja. Na tom dijelu sonde također su pronađeni karbonizirani bademi (T. XIV, 2) koji su <sup>14</sup>C analizom datirani u 7. st. pr. Kr. (cal BC 756. – 543., medijan cal BC 637.; cal BC 787. – 567., medijan cal BC 649.). Uz njih je nađeno i dosta razbijenog grubog keramičkog posuđa, pa možemo pretpostaviti da su bademi bili uskladišteni u tim posudama (vjerojatno pitosima) unutar spremišta kuće. Razbijeni pitosi s karboniziranim zrnjem također su pronađeni u istraživanju ilirskog utvrđenog naselja Rosuje na SI Albanije, u prostoriji koja je slu-

ity of life on the hillfort from the Eneolithic over the Bronze and Iron Ages.

A prehistoric floor made of small packed stones was found in the eastern part of the probe, that might have been a courtyard in front of the house. Another floor was found in that part of the probe, and large stones next to it (remains of an Illyrian house?). The type of the house could not be determined due to a small area excavated in the peripheral part of the probe, and also because collapsed stone boulders prevented complete research and interpretation of the area. A fireplace with a stone base is in front of this construction (Fig. 6). A lot of daub pieces were found on the eastern side of the probe, in the prehistoric layer with mixed finds, testifying to the manner of construction and settlement patterns of this area. Carbonized almonds were also found in this part of the probe (T. XIV, 2), dated to the 7th century BC by <sup>14</sup>C dating. (cal BC 756 – 543, median cal BC 637; cal BC 787 – 567,



**SLIKA 6.** *Istočni, povišeni dio sonde 2 – željeznodobni ilirski sloj (ostatci kuće, nastambi, vatrište), 2013. (foto: N. Topić, Omega engineering d.o.o. Dubrovnik).*

**FIGURE 6** *Elevated eastern part of probe 2 – Iron age, Illyrian layer (remains of a house, buildings, fireplace), 2013 (photo: N. Topić, Omega engineering d.o.o. Dubrovnik).*



SLIKA 7. Pogled na istočni, povišeni dio sonde 2, 2013. (foto: N. Topić).

FIGURE 7 View of elevated eastern part of probe 2, 2013 (photo: N. Topić).

žila kao spremište.<sup>38</sup> Ostaci struktura i nalazi uz utvrdu Sokol sličnog su konteksta kao albanski nalazi. Također je nađena veća količina životinjskih kostiju, ali nije izvršena zoološka osteološka analiza. Svi ti nalazi upućuju na to da su se tadašnji stanovnici na ovom području bavili zemljoradnjom i stočarstvom u starijem željeznom dobu. Sterilni žućkasti sloj s većim i manjim kamenom ustanovljen je dizanjem podnice s nabojem po sredini istočnog dijela sonde, a istraživanje je zaustavljeno na toj razini.

Istočni dio sonde od središnjeg dijela kasnoantički zid građen od priklesanog kamena i cigle u sloju vapnenog morta koji je većim dijelom uništen korijenjem (Sl. 5, 7). Zid na južnom dijelu mijenja smjer prema kamenoj gromadi upaljoj u nekom od razornih potresa prije ili tijekom kasnorimskog perioda. Budući da se taj zid u vidu luka nastavlja prema velikoj gromadi (tj. prema istoku, a ne u smjeru juga), a drugi zid na nižem dijelu sonde također mi-

median cal BC 649). A lot of broken coarse pottery was found next to them, allowing an assumption that the almonds were stored in these vessels (probably pithoi) within a house depository. Broken pithoi with carbonized seeds were also found in the excavation of the Illyrian fortified site Rosuje in NE Albania, in a room used for storage.<sup>38</sup> Remains of structures and finds next to Fort Sokol provide a similar context as the Albanian finds. A considerable amount of animal bones was found as well, but osteological analysis was not carried out. All these finds suggest that the inhabitants of this area practiced agriculture and animal husbandry in the Early Iron Age. Sterile yellowish layer with stones of different sizes was found after removing a floor with a fill in the middle of the eastern part of the probe, and the research was stopped at that level.

Eastern part of the probe is divided from the central part by a late antique wall made of trimmed stone and brick in a layer of lime

<sup>38</sup> A. STIPČEVIĆ, 1991, 107.

<sup>38</sup> A. STIPČEVIĆ, 1991, 107.

jenja smjer na jednak način, ali prema zapadu, možemo pretpostaviti da je i prije njihove gradnje (prije kasne antike) na području današnje crkve postojala neka građevina, moguće sakralni objekt.

Uz taj zid na istočnom dijelu sonde nađen je dječji grob – **GR 12** (uz. 28=40) (T. II, 3) – koji je kao pokrov imao tegule iznad kamene konstrukcije pravokutne forme, koja na jugozapadnoj strani koristi spomenuti zid da bi zatvorila svoje gabarite. Grob je djelomično ukopan u prapovijesni sloj. Orijehtacija groba je SZo–JI. Dijete (7,5 – 8,5 godina) opruženo je na leđima, ruke su uz tijelo, šake na zdjelici. Na kosturu su uočene sljedeće patološke promjene: blaga zarasla *cribra orbitalia* prisutna je u desnoj orbiti. Benigni kortikalni defekt prisutan je na hvatištima *biceps brachii* mišića obiju palčanih kosti, dimenzija 15 × 5 × 3 mm što sugerira iznimnu fizičku aktivnost odnosno napore. Na tijelima od 8. do 12. prsnog kralješka prisutne su lezije, a makroporozitet je prisutan na križnoj kosti te od 1. do 5. slabinskog kralješka. Blagi aktivni periostitis prisutan je na lijevoj bedrenoj i objema goljeničnim kostima. Na zubima su prisutni hipoplastični defekti. Određena je kalibrirana starost cal AD 435. – 571., med cal AD 536. Zid je izgrađen prije tog datuma jer je grob prislonjen uz njega.

Na istočnom dijelu sonde 2 ustanovljeni su još **GR 16** i **GR 17**. **Grobu 16** (uz. 41) (T. III, 2) jednu stranicu čini stijena (upala gromada), a ostale veće i manje priklesano i neobrađeno kamenje. Pokrov groba činio je naboj od kamenčića. Grob je orijentacije Jo—S. Kostur žene (30 – 35 godina) na leđima je, glava blago nagnuta prema prsima, ruke izbačene van u laktovima, kralježnica i rebra na mjestu, noge zakošene. Položaj kostura prilagođen je stjenovitoj škrapi koja je upotrijebljena kao grob. Što se tiče patoloških promjena, blaga zarasla ektokranijalna poroznost prisutna je na svodu lubanje. Blagi degenerativni osteoartritis prisutan je na 4. i 5. prsnom kralješku. Koštana ankiloza (spajanje dviju kosti) prisutna je između dviju falanga stopala; vjerojatno je riječ o loše zara-

mortar that was destroyed by roots for the most part (Figs. 5, 7). In the southern part the wall changes direction towards a stone boulder fallen off in some of destructive earthquakes before or during the Roman period. Since this wall continues towards the big boulder (eastwards, not southwards) in shape of an arch, and the other wall in the lower part of the probe also changes direction in a similar way, but towards the west, we can assume that even before they were built (before late antiquity), a certain building, possibly a sacral structure, preceded present-day church at the same spot.

Child's grave **GR 12** (uz. 28=40) (T. II, 3) was found next to this wall, in the eastern side of the probe. It had a cover made of tegulae over a stone construction in rectangular form, that uses mentioned wall on south-western side to close its form. The grave is partially dug into the prehistoric layer. Grave orientation is NW-SE. Child (7.5-8.5 years) is extended on the back, arms are along the body, hands on the pelvis. Following pathological changes were noticed on the skeleton: mild healed *cribra orbitalia* on the right orbit; benign cortical defect on attachments of *biceps brachii* muscles of both thumb bones, with dimension 15×5×3mm, suggesting strenuous physical exertion. Lesions are visible on the bodies of the 8th to 12th thoracic vertebrae, and macroporosity is present on the sacrum, and from the 1st to 5th lumbar vertebrae. Mild active periostitis is present on the left femur and both tibiae. Hypoplastic defects are noticeable on the teeth. Calibrated age is cal AD 435 – 571, med cal AD 536. The wall was built before that date as the grave was leaning against it.

**GR 16** and **GR 17** were also found in the eastern part of probe 2. A stone (collapsed boulder) constituted one side of **grave 16** (uz. 41) (T. III, 2), and trimmed or undressed stones defined the rest of its shape. Grave cover consisted of stone fill. Grave orientation is WE. Female skeleton (30-35 years) is in the supine position, head is slightly bent towards the chest, arms are protruding outwards in the

sloj frakturi koja je rezultirala preklapom kosti i angulacijom. Na zubima su prisutni hipoplastični defekti. Određena je kalibrirana starost cal AD 431. – 547., medijan cal AD 483.

**Grob 17** (uz. 44) (T. III, 3) novovjekovnog je datuma, a ukopan je u prapovijesni sloj, među upalim kamenim gromadama. Konstrukciju mu čine neobrađeni kamen i stijene. Grob je bio zatvoren žbukanim pokrovom, a pokojnik (mlađi muškarac, 16 – 17 godina) prekriven daskom. Orijehtacija groba je JZo—SI. Pokojnik je opružen na leđima, ruke uz tijelo, šake uz zdjelicu. Uz glavu je nađeno nekoliko nalaza: fragment metalnog privjeska i ulomak keramičkog pršljena koji su tu dospjeli iz prapovijesnog sloja u koji je pokojnik ukopan te recentno dugme, vjerojatno s pokojnikove odjeće. Uočen je niz patoloških promjena: blaga zarasla ektokranijalna poroznost prisutna je na svodu lubanje. Benigni kortikalni defekt prisutan je na hvatištu *latissimus dorsi* obiju nadlaktičnih kosti. Na distalnom zglobu desne nadlaktične kosti prisutan je *osteochondritis dissecans* (odvajanje hrskavice i subhondralne kosti u obliku sekvestra zbog učestalih mikrotrauma). Najčešće se pojavljuje kod adolescenata i mlađih odraslih osoba s većom učestalošću kod muškaraca. Na 5. slabinskom kralješku prisutna je spondiloliza. Blagi zarasli periostitis prisutan je na bedrenim i goljeničnim kostima. Lezija zaobljenih rubova i nepravilnog oblika prisutna je na kosti prsta desnog stopala. Na objema skočnim kostima prisutne su lezije zaobljenih rubova i sklerotičnog dna. Na zubima su prisutni hipoplastični defekti. Određena je kalibrirana starost cal AD 1706. – 1914., medijan cal AD 1881. Pokojnik je naknadno ukopan, u vrijeme kada utvrda više nije u funkciji.

Na središnjem dijelu sonde uklonjeni su gornji slojevi tijekom građevinskih radova, prije arheološkog istraživanja, pa se pri istraživanju ubrzo došlo do oštećenih grobova iz vremena zrelog srednjeg vijeka. Na površini je zatečen žuti recentni pješčani nasip, koji se protezao velikim dijelom središnjeg i donjeg dijela sonde. Nakon tog recentnog nasipa i kasnosrednjo-

elbows, spine and ribs are in place, legs slanted. Position of the skeleton is adjusted to a rock fissure that was used as a grave. As for the pathological changes, mild healed ectocranial porosity is present on the cranium and mild degenerative osteoarthritis is noticeable on the 4th and 5th vertebrae. Bony ankylosis (adhesion of two bones) is recognizable on two phalanges of the foot; probably it is a poorly healed fracture resulting in an overlap of fracture elements and angulation. Hypoplastic defects are visible on the teeth. Calibrated age is cal AD 431 – 547, median cal AD 483.

**Grave 17** (uz. 44) (T. III, 3) dates to the Modern Period, and it was dug into a prehistoric layer, between the collapsed stone boulders. Its construction consists of undressed stones and rocks. The grave was closed with a mortared cover, and the deceased person (younger male, 16-17 years) covered with a plank. Grave orientation is SW-NE. The deceased person is extended on his back, arms along the body, hands along the pelvis. Several artifacts were found next to the head: fragment of a metal pendant and a fragment of ceramic whorl that got there from the prehistoric layer into which the grave was dug, and a recent button, probably from the deceased person's clothes. A series of pathological changes have been noticed: mild healed ectocranial porosity present on the cranium; benign cortical defect is visible on the attachment of *latissimus dorsi* of both humeri. *Osteochondritis dissecans* (separation of cartilage from subchondral bone in form of sequestrum due to frequent microtraumas) is visible on the distal joint of the right humerus. It is most common in adolescents and young adults, predominantly male. Spondylosis was noticed on the 5th lumbar vertebra. Mild healed periostitis is present on femurs and tibiae. Lesion with rounded edges and irregular form is present on the toe bone of the right foot. Lesions with rounded edges and sclerotic bases are noticeable on both ankle bones. Hypoplastic defects are present on the teeth. Calibrated age is cal AD 1706

vjekovnog/ranonovovjekovnog ostatka nasipa uslijedio je kameni naboj te nekoliko grobova koji pripadaju 10. – 11. stoljeću (**GR 5**, **GR 7**, **GR 9**, **GR 10**). Ispod se nalazio kasnorimski/ranosrednjovjekovni sloj s grobom iz 5. stoljeća (**GR 8**). Budući da su taj grob i ostale rimske strukture prilagođene slobodnom prostoru oko gromada urušenih u potresu, znamo da se potres dogodio u kasnoj antici ili nešto prije.

Veliki odvodni kasnoantički kanal prislonjen je uz utvrdu i na tom je dijelu kvalitetnije građen, zatim se blagim padom nastavlja prema donjem dijelu koji je građen od kamenih ploča koso postavljenih uz zid. Proteže se uz zid koji dijeli središnji od zapadnog dijela sonde. Ispod kasnorimske/ranosrednjovjekovne faze uslijedio je crnosmeđi sloj (nabijen u škrapi) koji sadrži raniji rimski, helenistički, brončanodobni/eneolitički materijal. Da bi se u potpunosti istražilo to područje bilo bi potrebno ukloniti kamene gromade upale pri potresu što bi zbog njihove veličine bilo kompleksno, a time bi se poremetile i kasnoantičke strukture.

**Grob 5** (uz. 6) (T. I, 3) zatečen je poremećen građevinskim radovima koji su prethodili arheološkim, a bio je formiran od obložnica postavljenih na nož oko kojih je postavljeno poluobrađeno kamenje. Poklopnice groba nisu sačuvane, dno su činile kamene ploče debljine cca 2 – 3 cm. Orijentacija groba je So–J s odklonom od 30° prema zapadu. Pokojnik (muškarac star više od 45 godina) u opruženom je položaju na leđima. Pronađen je nagnječeni manji dio zdjelice i kosti nogu koje su nagnječene obložnicama. Kod ovog pokojnika zabilježen je blagi degenerativni osteoartritis na koljenima. Blagi zarasli periostitis prisutan je na lijevoj goljeničnoj kosti. Ostatak grobne konstrukcije je razložen radi daljnjeg istraživanja slojeva. Određena je kalibrirana starost cal AD 903. – 1014., medijan cal AD 979.

**Grob 7** (uz. 8) (T. I, 4) ima konstrukciju koja se sastoji od poluobrađenog i neobrađenog kamena bez vezivnog sredstva. Ispunu groba čini tamnosmeđi zemljani sloj s manjim kamenom, ulomcima tegula, fragmentima kasnoantičke/

– 1914, median cal AD 1881. The deceased person was buried when the fort was no longer functional.

Upper layers were removed in the central part of the probe during construction works, before the archaeological excavation, so damaged graves dating to the High Middle Ages were hit soon after the beginning of the research. Recent yellow sandy fill was found on the surface that spread over a big part of the central and lower part of the probe. After this recent fill and the remaining late medieval / early postmedieval fill, there was a stone layer and several graves dating to the 10th-11th centuries (**GR 5**, **GR 7**, **GR 9**, **GR 10**). Late Roman / early medieval layer with a 5th-century grave was underneath (**GR 8**). Since this grave and the remaining Roman structures were adjusted to the free space around the boulders collapsed in the earthquake, we know that it happened in Late Antiquity or somewhat earlier.

Big late antique drainage ditch was leaned against the fort and it was built better in this part, then in slopes gently towards the lower part that is built of stone slabs placed obliquely along the wall. It spreads along the wall dividing the central from the western part of the probe. Under the late Roman / early medieval phase was a black-brown layer (packed into cracks) containing earlier Roman, Hellenistic, and Bronze Age / Eneolithic material. In order to fully explore this area, it would be necessary to remove stone boulders collapsed in the earthquake which would be quite demanding due to their size, and it would disrupt late antique structures.

**Grave 5** (uz. 6) (T. I, 3) was disturbed in construction works that preceded the archaeological excavation, and it was made of slabs placed vertically and surrounded by semi-dressed stones. Grave cover was not preserved, and the base consisted of stone slabs ca. 2-3cm thick. Grave orientation is NS with a deviation of 30° westwards. The deceased person (man over 45 years of age) was in an extended position on his back. A small smashed part of the

ranobizantske keramike, stakla. Orijentacija groba je So—J s odklonom od 30° prema zapadu. Sačuvan je kostur (muškarac, 55 – 60 godina) u opruženom položaju na leđima, ruke su preklapljene na trbuhu. Bio je prekriven većim kamenjem, lubanja je nagnječena, a ostale kosti su dobro sačuvane. Dokumentirano je više patoloških promjena na kosturu. Blaga zarasla ektokranijalna poroznost prisutna je na svodu lubanje. Blaga *hiperostosis frontalis interna* prisutna je na endokranijalnoj strani čeone kosti. *Hiperostosis frontalis interna* je učestalo, benigno zadebljanje na unutrašnjoj strani čeone kosti lubanje. Najčešće se pojavljuje kod žena nakon menopauze i uglavnom je asimptomatičnog karaktera. Blaga zarasla *cribra orbitalia* prisutna je u orbitama. Na desnoj sljepoočnoj kosti (endokranijalno) prisutan je otok sklerotične kosti. Litičke lezije prisutne su na zglobojnoj ploštini obiju lopatica. Benigni kortikalni defekt prisutan je na hvatištu *teres* i *pectoralis maior* lijeve nadlaktične kosti, te *biceps brachii* lijeve palčane kosti. Blagi degenerativni osteoarthritis prisutan je u ramenima, laktovima, koljenima i 1. prsnom kralješku. Umjereni degenerativni osteoarthritis prisutan je u kukovima, na pojedinim prsnim te slabinskim kralješcima. Jaki degenerativni osteoarthritis prisutan je na pojedinim vratnim (Sl. 11), prsnim i slabinskim kralješcima te na kostima šake. Lezije su prisutne u periartikularnom dijelu kukova, lijevog ramena, lakta, desnog lakta, lijevog koljena te na kosti desne šake. Moguće je da je riječ o reumatoidnom artritisu. Reumatoidni artritis kronična je upalna bolest vezivnog tkiva, nepoznatog uzroka, koja najjače pogađa lokomotorni sustav. Karakterističan je patološki nalaz ove bolesti trajna upala sinovijske ovojnice perifernih zglobova, koja je uz to simetrično distribuirana. Bolest se može iskazivati blagom kliničkom slikom u kojoj su zahvaćeni tek pojedini zglobovi ili kao teži oblik bolesti s jakim deformitetima. Najčešća je varijanta bolesti umjerene jakosti. Prema epidemiološkim podacima, bolest zahvaća otprilike 1% populacije, s tim da je ovaj poremećaj češći kod žena

pelvis was found as well as leg bones, pressed by lateral stone slabs. Mild degenerative osteoarthritis on the knees was recorded on this skeleton. The rest of grave construction was dismantled for further excavation of the layers. Calibrated age is cal AD 903 – 1014, median cal AD 979.

**Grave 7** (uz. 8) (T. I, 4) has a construction consisting of semi-dressed and undressed stones without bonding agent. The grave is filled with dark brown earth layer with smaller stones, tegulae fragments, sherds of late antique / early Byzantine pottery, glass. Grave orientation is NS with a deviation of 30° westwards. A skeleton was preserved (male, 55-60 years) in an extended position on the back, arms crossed on the lower abdomen. He was covered with big stones, the skull is damaged, other bones are well preserved. Several pathological changes were documented on the skeleton. Mild healed ectocranial porosity was present on the cranium. Mild *hyperostosis frontalis interna* is present on the endocranial side of the forehead bone. *Hyperostosis frontalis interna* is a common, benign thickening on the inner side of the frontal bone of the skull. Most commonly it occurs in women after menopause, it is usually asymptomatic. Mild healed *cribra orbitalia* is present on the orbits. On the right temporal bone (endocranially) is a swelling of a sclerotic bone. Lithic lesions are present on joint surface of both scapulae. Benign cortical defect is present on the attachment of *teres* and *pectoralis maior* of the left humerus, and *biceps brachii* of the left thumb bone. Mild degenerative osteoarthritis is present on the shoulders, elbows, knees and the first thoracic vertebra. Mild degenerative osteoarthritis is recognizable on the hips, and on certain thoracic and lumbar vertebrae. Strong degenerative osteoarthritis is recognizable on certain cervical (Fig. 11), thoracic and lumbar vertebrae and hand bones. Lesions are present in periarticular part of the hips, left shoulder, elbow, right shoulder, left knee and bones of the right hand. Possibly it could be rheumatoid arthritis which is

i do četiri puta u odnosu na mušku populaciju. Bolest najčešće počinje u 4. ili 5. desetljeću života. Neke obiteljske studije uputile su na genetsku predisponiranost za bolest.<sup>39</sup> Na zubima su prisutni hipoplastični defekti. Određena je kalibrirana starost cal AD 897. – 985., medijan cal AD 946. Grobna konstrukcija razložena je radi daljnjeg istraživanja slojeva.

**Grob 8** (uz. 10) (T. I, 5) ima konstrukciju od poluobrađenih kamenih blokova koji su postavljeni kao njegove obložnice, dijelom u sloju morta. Pokrov je bio u formi krova na dvije vode koji su činile tegule te na vrhu kanalice (*imbrices*), a cijela konstrukcija je dosta oštećena i nagnječena. Takav način pokapanja povezuje se s kasnoantičkim razdobljem. Tegule su uglavnom ukrašene petljama i koncentričnim polukrugovima (T. XXI, 1-2), neke nemaju oznaku, dok je nađeno više ulomaka s ostacima pečata (T. XXI, 4-6). Ispunu groba čini zemljani sloj s kamenjem, ulomcima tegula, imbreksa te fragmenata keramike i stakla. Orientacija groba je SZo—JI. Sačuvan je kostur muškarca (25 – 35 godina) u opruženom položaju na leđima, u lošem je stanju, osobito zdjelica, lopatice, rebra i kralješci. Glava je okrenuta udesno, ruke su prekrížene na zdjelici, noge su također prekrížene. Patološke promjene uključuju blagu zaraslu ektokranijalnu poroznost te hipoplastične defekte na zubima. Određena je kalibrirana starost cal AD 433. – 533., medijan cal AD 483. Grobna konstrukcija je razložena, a utvrđeno je da je grob ležao na nasipu od zemlje i kamenih gromada koji je sadržavao i grubu keramiku te manju količinu tegula.

**Grob 9** (uz. 11) (T. I, 6) kamena je konstrukcija od poluobrađenog kamena različitih dimenzija. Grob je imao poklopicu od kamena lošije kvalitete koja je napukla, obložnice su od iste vrste kamena (vapnenac) i postavljene su na nož, uz njih je poslagano kamenje, a dno čini napukla ploča. Grob je jednom kraćom stranicom prislonjem uz utvrdu i leži na nasipu. Orientacija mu je JZo—SI. Skelet muškarca (45

a chronic inflammatory disease of connective tissue, of unknown etiology, damaging musculoskeletal system most severely. Characteristic pathological finding of this disease is a chronic inflammation of synovial lining of peripheral joints, that is symmetrically distributed. The disease can be manifested with mild clinical symptoms with only few joints affected or in a more severe form with pronounced deformities. Moderately strong disease is most common. According to epidemiological information, the disease affects approximately 1% of the population. Women are affected 4 times as frequently as men. Onset is most frequent in the fourth or fifth decade of life. Some family studies suggested genetic predisposition to this disease.<sup>39</sup> Hypoplastic defects are noticeable on the teeth. Calibrated age is cal AD 897 – 985, median cal AD 946. Grave construction was dismantled for further excavation of the layers.

**Grave 8** (uz. 10) (T. I, 5) has a construction of semi-dressed stone blocks placed as its lining, partially in a mortar layer. The cover was in a form of a double-pitched roof consisting of tegulae and imbrices at the top. Entire construction was quite damaged and crushed. Such burial manner is characteristic of Late Antiquity. Tegulae were mostly decorated with loops and concentric semicircles (T. XXI, 1-2), some do not have a stamp, but there are several stamped examples (T. XXI, 4-6). Grave fill consists of a layer with stones, fragments of tegulae and imbrices as well as glass pieces and pottery sherds. Grave orientation is NW-SE. Male skeleton was preserved (25-35 years) in an extended position on the back, in a poor condition, in particular the pelvis, scapulae, ribs and vertebrae. The head is turned to the right, arms are crossed on the pelvis, legs are also crossed. Pathological changes include mild healed ectocranial porosity and hypoplastic defects on the teeth. Calibrated age is cal AD 433 – 533, median cal AD 483. Grave construction was dismantled, and it was deter-

<sup>39</sup> C. A. ROBERTS, K. MANCHESTER, 2005.

<sup>39</sup> C. A. ROBERTS, K. MANCHESTER, 2005.

– 50 godina) bočno je položen, ruke su uz tijelo i prekrížene na trbuhu, noge su prekrížene. Patološke promjene: blagi degenerativni osteoarthritis prisutan je u lijevom laktu, kukovima i križnoj kosti. Blagi zarasli periostitis prisutan je na desnoj goljeničnoj kosti te objema lisnim kostima. Na zubima su prisutni hipoplastični defekti. Određena je kalibrirana starost cal AD 992. – 1019., median cal AD 1004.

Na središnjem dijelu sonde otkriven je i **GR 10** (uz. 20) (T. II, 1). Grobnu konstrukciju čine ploče poklopnice, obložnice na nož koje su okružene kamenim vijencem, a dno je formirano od nekoliko ploča. Grob je relativno dobro sačuvan, a kosti su u dosta lošem stanju (proželo ih je korijenje, nagnječile obložnice, a vjerojatno su utjecaj imali i potresi). Grob je ukopan u sloj koji sadrži kasnoantičke/ranosrednjovjekovne nalaze. U predjelu lubanje presječen je kamenom strukturom. Grob je orijentacije Zo—I s otklonom od cca 30° prema jugu. Utvrđeno je da je riječ o kosturu žene (25 – 35 godina) opružene na leđima. Sačuvana joj je donja čeljust, lijeva ruka je opružena, desna savijena i naslonjena na trbuh, noge opružene. Na fragmentu desnog rebra prisutna je dobro zarasla fraktura koja se očituje po dobro remodeliranom kalusu. Određena je kalibrirana starost cal AD 1045. – 1155., median cal AD 1097.

Na zapadnom dijelu sonde (Sl. 8-10) definirani su gabariti prostorije koja je sagrađena u rimsko doba. No, u srednjem vijeku prenamijenjena je u groblje što je učinjeno dodavanjem nekoliko pregradnih zidova. Dva groba kvalitetnije su građena i fino žbukana dok su drugi lošije izvedeni te su u raspadajućem stanju. Neki od tih improviziranih grobova upotrijebljeni su za višefazno ukopavanje. Također je i druga prostorija koja se nalazi niže (zbog prilagodbe terenu) prenamijenjena u dječje groblje koje je probilo njezinu žbukanu podnicu. Ta prostorija imala je peć, vjerojatno krušnu, pa je mogla služiti kao neka vrsta pekare/kuhinje u kasnoantičko doba. Groblje je u novom vijeku dijelom prekopano i poništeno da bi se formi-

mined that the grave lay on a fill of earth and stone boulders containing coarse pottery and a smaller amount of tegulae.

**Grave 9** (uz. 11) (T. I, 6) is a stone construction made of semi-dressed stone of different sizes. The grave had a cover of poor quality stone that cracked, lining slabs were made of the same stone type (limestone) and placed vertically, stones were arranged next to them, and a cracked slab constitutes the base. The grave leans against the fort with its shorter side and lies on the fill. Its orientation is SW-NE. Skeleton of a man (45-50 years) is laid on the side, arms along the body, crossed on the lower abdomen, legs crossed. Pathological changes include: mild degenerative osteoarthritis of the left elbow, hips and sacrum. Mild healed periostitis is present on the right tibia and both fibulae. Hypoplastic defects are present on the teeth. Calibrated date is cal AD 992 – 1019, median cal AD 1004.

**GR 10** (uz. 20) (T. II, 1) was discovered in the central part of the probe. Grave construction consists of cover slabs, vertical lining slabs surrounded by a stone wreath, and base made of several slabs. The grave is relatively well preserved, and the bones are in quite poor condition (penetrated by roots, crushed by lining slabs, earthquakes also probably had adverse effect). The grave is dug into a layer containing late antique / early medieval finds. It was cut by a stone structure in the skull area. Grave orientation is WE with a deviation of 30° southwards. It was determined as a female skeleton (25-35 years) extended on the back. Her mandible was preserved, left arm is outstretched, right arm bent and placed on the lower abdomen, legs extended. Well healed fracture recognizable after well remodelled callus is visible on the fragment of the right rib. Calibrated age is cal AD 1045 – 1155, median cal AD 1097.

In the western part of the probe (Figs. 8-10) dimensions of a room built in the Roman period were defined. However, in the Middle Ages it was reutilized as a cemetery, by add-

ralo novo groblje, pa su tada vjerojatno stradali i neki od grobova puno ranijeg datuma. Istraženi grobovi nisu imali priloge, a  $^{14}\text{C}$  analizom datirani su od 9. do 14. stoljeća.

Osim dječjih grobova, u donjoj prostoriji po njezinom središnjem dijelu smješteni su i grobovi s monolitnim poklopicama (**GR 27-29**) (Sl. 8-9) koji su vjerojatno ukopani početkom novog vijeka. Uza zid koji dijeli središnji od zapadnog dijela sonde, u nižoj prostoriji, također je početkom novog vijeka ukopana kosturnica (**KO**, uz. 66-67) (T. VII, 1) koja sadrži kosture odraslih osoba.

Dva groba su žbukana i nalaze se u višoj prostoriji. **Grob 18** (uz. 50) (T. III, 4) zidana je grobnica, ožbukana s unutrašnje strane. Pokojnik (muškarac, 40 – 45 godina) na leđima je, kosti glave su napuknute i razbacane, ruke uz tijelo, prsti na zdjelici (desna ruka) i uza zdje-

ing several partition walls. Two graves exhibit more quality craftsmanship and good quality mortar, unlike the rest that are in decay. Some of these improvised graves were used for multiphase burials. Another room that is located somewhat lower (owing to terrain configuration) was reused as a children's cemetery that penetrated its mortared floor. This room had an oven, probably bread oven, so it might have been used as a sort of bakery / kitchen in Late Antiquity. The cemetery was dug over and obliterated in order to form a new cemetery. It is more than likely that some much earlier graves were destroyed on that occasion. Excavated graves contained no grave goods, and they were dated by radiocarbon analysis to the period from the 9th to 14th century.

Except for children's graves, in the lower room were graves with monolithic covers



SLIKA 8. Pogled na središnji i donji dio sonde 2, 2013. (foto: N. Topić, A. Džaja, Omega engineering d.o.o. Dubrovnik).

FIGURE 8 View of the central and lower part of probe 2, 2013 (photo: N. Topić, A. Džaja, Omega engineering d.o.o. Dubrovnik).



SLIKA 9. Pogled na središnji i donji dio sonde 2 (SI-JZ), 2013. (foto: N. Topić, A. Džaja, Omega engineering d.o.o. Dubrovnik).

FIGURE 9 View of middle and lower part of probe 2 (NE-SW), 2013 (photo: N. Topić, A. Džaja, Omega engineering d.o.o. Dubrovnik).



SLIKA 10. Pogled prema donjem dijelu sonde 2 – prostorije koje su poslije prenamijenjene u groblje (JZ-SI), 2013. (foto: N. Topić, Omega engineering d.o.o. Dubrovnik).

FIGURE 10 View towards lower part of probe 2 – rooms that were later used for burials (SW-NI), 2013 (photo: N. Topić, Omega engineering d.o.o. Dubrovnik).



SLIKA 11. Jaki degenerativni osteoarthritis na vratnim kralješcima (foto: V. Vyroubal).

FIGURE 11 Severe degenerative osteoarthritis on cervical vertebra (photo: V. Vyroubal).

licu (lijeva ruka), noge opružene. Patološke promjene nisu prisutne. Orijentacija groba je SZo—JI. Određena je kalibrirana starost cal AD 778. – 891., medijan cal AD 845.

**Grob 19** (uz. 52, 55) (T. IV, 1) zidana je grobnica, žbukana s unutrašnje strane. Orijentacija groba je SZo—JI. Kostii glave su loše sačuvane, zatečene su pod kamenom, sačuvana je mandibula, ruke su uz tijelo, a noge su ravno položene. Skupina kostiju pronađena je na dijelu groba uz lubanju, a taj uzorak predstavlja ostatke najmanje četiriju osoba (dviju odraslih i dvoje djece) na temelju četiriju čeonih kostiju.

**Grob 20** (uz. 54, 61) (T. IV, 2-3) konstrukcija je koja na sjevernoj strani koristi lice zida prislonjenog uz utvrdu, uz to ima i obložnice od nepravilnih ploča, a zidovi sa suprotne strane graniče s konstrukcijama GR 18, GR 19 i GR 22. Nađene su poremećene kosti više pokojnika. U uzorku 54 prisutne su najmanje četiri osobe (tri odrasle i jedno dijete) na temelju četiriju lijevih lopatica. Moguće je identificirati dijete (8 – 10 godina) kod kojeg su dokumen-

(**GR 27-29**) (Figs. 8-9), probably dug at the beginning of the Modern Period. An ossuary (**KO**, s. 66-67) (T. VII, 1) containing adult skeletons was also dug at the beginning of the Modern Period, in the lower room, next to the wall dividing central from the western part of the probe.

Two mortared graves are located in the higher room. **Grave 18** (uz. 50) (T. III, 4) is a stone-built tomb, mortared on the inner side. The deceased person (male, 40-45 years) is on the back, head bones are cracked and scattered, arms along the body, fingers on the pelvis (right hand) and along the pelvis (left hand), legs extended. Calibrated age is cal AD 778 – 891, median cal AD 845.

**Grave 19** (uz. 52, 55) (T. IV, 1) is a stone-built tomb, mortared on the inner side. Grave orientation is NW-SE. Head bones are poorly preserved, found under the rock. Mandible is preserved, arms are along the body, and legs are laid straightly. A heap of bones was found in the grave area next to skull, and this sample

tirane sljedeće patološke promjene: blagi zarašli periostitis prisutan je na objema goljeničnim kostima. Na zubima su prisutni hipoplastični defekti. Drugi kostur je pripadao muškarcu (35 – 45 godina), a zabilježene su sljedeće patološke promjene: blagi degenerativni osteoarthritis prisutan je u kukovima. Na zubima su prisutni hipoplastični defekti. Jedan uzorak (muškarac, 18 – 25 godina) bolje je sačuvan i većim je dijelom *in situ* (uz. 61). Blagi aktivni periostitis prisutan je na objema goljeničnim kostima. Orijehtacija je JZo—SI. Određena je kalibrirana starost za uz. 61 cal AD 1306. – 1397., medijan cal AD 1346.

**GR 21** (uz. 53, 56) (T. IV, 4; T. V, 1) formiran je tako što su za dulje stranice upotrijebljeni zidovi pored kojih su i obložnice s unutrašnje strane, a korišten je za višekratno ukopavanje, možda kao obiteljski grob. Orijehtacija groba je JZo—SI. U 1. fazi (uz. 53) kosti su izmiješane i u dosta su lošem stanju. Bilo je moguće izdvojiti samo jednu osobu (žena, 30 – 40 godina, bez patoloških promjena) iz ovog uzorka. Ostale kosti pripadaju najmanje jednoj odrasloj osobi i jednom djetetu. 2. faza (uz. 56): glava nije sačuvana, rebra su u vrlo lošem raspadajućem stanju, ruke su djelomično sačuvane i preklapljenе obložnicama, zdjelica je u vrlo lošem stanju, noge su bolje sačuvane (desna je opružena, a lijeva iskrivljena i ulazi pod zid). Ustanovljeno je da je riječ o kosturu muškarca (30 – 40 godina), s blagim zarašlim periostitisom prisutnim na desnoj goljeničnoj kosti. Određena je kalibrirana starost za uz. 56/F2 cal AD 1040. – 1152., medijan cal AD 1098.

**Grob 22** (uz. 57) (T. V, 2) smješten je uza samu utvrdu, a građen je od priklesanog manjeg kamena. Orijehtacija groba je SIo—JZ. Riječ je o dječjem (7 – 9 godina) grobu. Lumbanja je oštećena, ruke su uz tijelo i savinute u laktu, prstići su na zdjelici koja je vrlo slabo sačuvana, rebra su u lošem stanju, a lijeva noga je djelomično sačuvana. Patološke promjene nisu prisutne. Određena je kalibrirana starost cal AD 1320. – 1408., medijan cal AD 1346.

Slično je formiran i **GR 23** (uz. 58) (T. V, 3)

contains the remains of at least four persons (two adults and two children) on the basis of four frontal bones.

**Grave 20** (uz. 54, 61) (T. IV, 2-3) is a construction that uses the wall face leaning against the fort on the northern side. It is lined with irregular slabs, and walls on the opposite sides border with constructions **GR 18**, **GR 19** and **GR 22**. Disturbed bones of several skeletons were found. In sample 54 there were at least four skeletons (three adults and one child) on the basis of four left scapulae. It was possible to identify a child (8-10 years) with the following pathological changes: mild healed periostitis on both tibiae, hypoplastic defects on the teeth. The second skeleton belonged to a man (35-45 years), and following pathological changes were documented: mild degenerative osteoarthritis on the hips, and hypoplastic defects on the teeth. One sample (man, 18-25 years) is better preserved and mostly *in situ* (uz. 61). Mild active periostitis is present on both tibiae. Orientation is SW-NE. Calibrated age of sample 61 is AD 1306 – 1397, median cal AD 1346.

**GR 21** (uz. 53, 56) (T. IV, 4; T. V, 1) consists of used walls lined with slabs on inner side that constitute longer sides. It was used for repeated burials, perhaps as a family tomb. Grave orientation is SW-NE. In the 1st phase (uz. 53) bones were mixed and they are poorly preserved. Only one individual could be singled out from this sample (female, 30-40 years, without pathological changes). The remaining bones belong to at least one adult and one subadult. The second phase (uz. 56): head was not preserved, ribs are in poor, decaying condition, legs are somewhat better preserved (right leg extended, left crooked, partly under the wall). It was determined it was a skeleton of a man (30-40 years), with mild healed periostitis present on right tibia. Calibrated age of sample 56/F2 is cal AD 1040 – 1152, median cal AD 1098.

**Grave 22** (uz. 57) (T. V, 2) is located next to the fort. It was made of trimmed smaller

koji je smješten između zidova koji mu služe kao dulje stranice. Pored zidova također ima i obložnice s unutrašnje strane. Orijehtacija groba je JZo—SI. Riječ je o kosturu odraslog muškarca. Kostur je opružen na leđima, lubanja nedostaje, sačuvana je desna ruka položena uz tijelo, noge su opružene. Patološke promjene nisu prisutne. Određena je kalibrirana starost cal AD 1026. – 1148., medijan cal AD 1097.

**Grob 24** (uz. 59, 65) (T. V, 4; T. VI, 1) također je improvizacijski formiran, slično grobu 21. Orijehtacija groba je JZo—SI. 1. faza (uz. 59) obuhvaća oštećene ljudske kosti među kojima su identificirane tri osobe: jedna mlađa ženska osoba (15 – 17 godina) kod koje je benigni kortikalni defekt prisutan na hvatištu mišića *teres maior* lijeve nadlaktične kosti i dvije djece (12 – 15 i 7 – 10 godina) kod kojih nisu definirane patološke promjene. Iz 2. faze (uz. 65) sačuvane su kosti ruku i nogu koje su pripadale muškarcu (30 – 45 godina). Blagi zarasli periostitis prisutan je na lijevoj goljeničnoj i lisnoj kosti. Određena je kalibrirana starost za uzorak 65/F2 cal AD 1023. – 1147., medijan cal AD 1093.

Kosti nogu i dijelomično sačuvana zdjelica (**GR I**, uz. 60) (T. VI, 2) pronađeni su na zidu u kasnoantičkoj povišenoj prostoriji. Kostur odrasle osobe (45 – 60 godina) protezao se u smjeru SZ—JI, a njegov nesačuvani dio vjerojatno je presječen u prekopavanjima ovog dijela terena u bližoj prošlosti jer se nađeni dio kostura nalazio blizu površine sonde. Utvrđeno je da je velik dio groblja prekopavan prije zbog čega su neki grobovi oštećeni, a neki možda i potpuno uništeni. Ostali kosturi bolje su sačuvani jer su ukopani dublje. Patološke promjene uočene na kosturu odrasle osobe uključuju: litičke lezije prisutne su na zglobnim ploštinama obiju lopatica. Blagi degenerativni osteoartritis prisutan je u kukovima. Umjereni degenerativni osteoartritis prisutan je na dvama prsnim kralješcima.

**Grob 25** poremećen je (kosti u lošem stanju, bez lubanje), a građen je od priklesanog kamena sa zemljom i mortom. **Grob 26** (uz. 64,

stones. Grave orientation is NE-SW. It is a child's (7-9 years) grave. The skull is damaged, arms are along the body and bent in the elbow, fingers are on poorly preserved pelvis, ribs in poor condition, left leg partially preserved. There are no pathological changes. Calibrated age is cal AD 1320 – 1408, median cal AD 1346.

**GR 23** (uz. 58) (T. V, 3) was formed in a similar way, located between the walls used as longer sides. Lining slabs are on the inner side, next to walls. Grave orientation is SW-NE. It is a skeleton of an adult male. Skeleton is extended on the back, the skull is missing, right arm is along the body, legs extended. There are no pathological changes. Calibrated age is cal AD 1026 – 1148, median cal AD 1097.

**Grave 24** (uz. 59, 65) (T. V, 4; T. VI, 1) was also formed in an improvisation, like grave 21. Grave orientation is SW-NE. The first phase (s. 59) comprises damaged human bones among which three persons were identified: a younger female person (15-17 years) with a benign cortical defect on the attachment of the muscle *teres maior* of the left humerus, and two subadults (12-15 and 7-10 years) without pathological changes noticed. Of the second phase (s. 65) bones of arms and legs were preserved belonging to a man (30-45 years). Mild healed periostitis is present on the left tibia and fibula. Calibrated age of sample 65/F2 is cal AD 1023 – 1147, median cal AD 1093.

Leg bones and partially preserved pelvis (**GR I** / uz. 60) (T. VI, 2) were found in the wall in late antique elevated room. Skeleton of an adult person (45 to 60 years) was in NW-SE direction, and its unpreserved part was probably cut in digs in this area in the recent past as the recovered part of the skeleton was found close to the surface of the probe. It was determined that a large part of the cemetery was dug over earlier whereby some graves were damaged, and some possibly completely destroyed. Other skeletons are better preserved since they were not so close to the surface. Pathological

107) (T. VI, 3-4) dijeli žbukani zid s GR 19. Orijentacija mu je Jo-S. Grob je dva puta korišten za ukopavanje, a moguće je da je i ovdje riječ o obiteljskoj grobnici. Na prvoj razini nađen je kostur muškarca (starijeg od 35 godina). Kostu ruku i nogu su opružene i u lošem stanju. Patološke promjene nisu prisutne. Ispod je nađen još jedan pokojnik (uz. 107) čiji spol nije odrediv (40 – 55 godina), a smješten je na samoj podnici kasnoantičke prostorije u opruženom položaju. Blagi degenerativni osteoarthritis prisutan je u ramenima, kukovima i na 4. vratnom kralješku. Određena je kalibrirana starost uz. 107/F2 cal AD 1276. – 1297., median cal AD 1288.

Slijede grobovi (Sl. 8) iz prostorije koja je bliža crkvi i smještena je na nižoj visini. Najprije je utvrđeno postojanje kosturnice s pretežno odraslim kosturima (KO, uz. 66, 67) (T. VII, 1) koja je ukopana u novovjekovnu podnicu. Na vrhu kosturnice bilo je izmiješanih ljudskih i životinjskih kostiju, zatim su uslijedile samo ljudske kosti: kratke, plosnate i duge kosti, a lubanje su bile poslagane ispod njih. Kostu su posložene na ovaj način kako bi stale u raku, a prebačene su iz okolnih grobova da bi se dobio prostor za nove ukope. Moguće je da nisu svi pokojnici istovremeni. Ispod kosturnice pronađeno je dječje groblje. U uzorku kosturnice (uz. 66-67) prisutne su najmanje 23 osobe (20 odraslih i troje djece) na temelju 23 lijeve bedrene kosti i 23 desne nadlaktične kosti. U ovom uzorku bilo je moguće sigurno izdvojiti jednu osobu (muškarac, 45 – 55 godina) i to zato što je bila teško bolesna – bolovala je od terciarnog (ili krajnjeg stadija) sifilisa koji je zahvatio gotovo sve kosti: u središnjem dijelu čeone kosti, ali i na objema tjemenim kostima prisutna su udubljenja te stanjene stjenke lubanje; porozitet na čeonoj kosti, gornjoj čeljusti i jagodičnim kostima; čitava unutrašnja strana nosnih kostiju, tvrdog nepca, maksilarnih sinusa u potpunosti je resorbirana i remodelirana uz prisutnost porozne, sklerotične kosti i lezija. Na inferiornom dijelu desne nosne kosti prisutna je lezija dimenzija 18 × 10 mm koja se

changes noticed on the skeleton of an adult include: lithic lesions on joint surfaces of both scapulae, mild degenerative osteoarthritis on the hips, and moderate degenerative osteoarthritis on two thoracic vertebrae.

**Grave 25** is disturbed (bones in poor condition, skull missing), and it was made of trimmed stones with earth and mortar. **Grave 26** (uz. 64, 107) (T. VI, 3-4) shares mortared wall with GR 19. Its orientation is NW-SE. The grave was used twice for burials, and possibly this might be a family tomb. Male skeleton (over 35 years) was found at the first level. Poorly preserved bones of arms and legs are in an extended position. There are no pathological changes. Another skeleton (uz. 107) was found underneath whose sex could not be determined (40-55 years), located on the floor of the late antique room, in an extended position. Mild degenerative osteoarthritis is visible on the shoulders, hips and the 4th cervical vertebra. Calibrated age of sample 107/F2 is cal AD 1276 – 1297, median cal AD 1288.

The following group of graves (Fig. 8) includes examples from the room closest to the church, located at a lower altitude. Presence of ossuary was determined first, containing mostly adult skeletons (KO, uz. 66, 67) (T. VII, 1), dug into a postmedieval floor. Human and animal bones were mixed at the top of the ossuary, followed by only human bones: short, flat and long bones, and skulls were arranged next to them. Bones were arranged in this way to fit into the pit, and they were transferred from the surrounding graves to obtain space for new burials. It is possible that not all burials were synchronous. Children's cemetery was found under the ossuary. In the ossuary sample (uz. 66-67) at least 23 persons were identified (20 adults and three subadults) on the basis of 23 left femurs and 23 right humeri. One person could be singled out in this sample (man, 45-55 years), because he was gravely ill – suffering from tertiary (the last stage) syphilis that spread to almost all bones: in the central part

proširila na alveolarnu kost (Sl. 12). Na svim dugim kostima prisutno je zadebljanje kosti, jaki aktivni periostitis te *cloace* (otvori u kosti kroz koje istječe gnoj) (Sl. 13). Najteže su promjene evidentirane na lijevoj nadlaktičnoj i lakatnoj kosti, objema bedrenim kostima i lijevoj goljeničnoj kosti. Na ovom su kosturu evidentirane i ostale patološke promjene: blaga zarasla *cribra orbitalia* te blagi degenerativni osteoarthritis u desnom laktu i koljenu. Tragovi sifilisa, samo u nešto blažem obliku, zamijećeni su na još najmanje šest osoba (na temelju patoloških promjena na šest lijevih goljeničnih kostiju). Jedan muškarac (35 – 55 godina) zanimljiv je po tome što ima jasno vidljive tragove griženja na unutrašnjoj (endokranijalnoj) strani zatiljne kosti lubanje odmah do *foramen magnuma*. Tragovi se očituju kao plitki, uski, paralelni utori koje je sasvim izvjesno ostavio neki glodavac. Određena je kalibrirana starost za uz. 67 (muškarac s tercijalnim sifilisom) cal AD 1491. – 1631., medijan cal AD 1565.

**Grobovi 27 – 29** (T. VII, 2) imaju monolitne poklopnice, a može ih se smjestiti u novi

of the frontal bone, and on both parietal bones are cavities and thinned skull walls, porosity on the frontal bone, upper jaw and cheek bones; entire inner part of nasal bones, hard palate, maxillary sinuses is completely resorbed and remodeled, with presence of porous, sclerotic bone and lesions. On the inferior part of the right nasal bone is a lesion with dimensions of 18×10mm that spread to alveolar bone (Fig. 12). Bone thickening can be recognized on all other bones, as well as strong active periostitis and *cloacae* (openings in bone allowing drainage of purulent material) (Fig. 13). The most severe changes were documented on the left humerus and ulna, both femurs and left tibia. Some other pathological changes were recognized on this skeleton: mild healed *cribra orbitalia* and mild degenerative osteoarthritis on the right elbow and knee. Traces of syphilis, in somewhat milder form, were noticed on at least 6 persons (on the basis of pathological changes on six tibiae). One man (35-55 years) is particularly interesting because clearly visible traces of biting were recognized

on the inner (endocranial) side of occipital bone of skull next to *foramen magnum*. These traces look like shallow, narrow, parallel grooves definitely left by some rodent. Calibrated age of sample 67 (man with tertiary syphilis) is cal AD 1491 – 1631, median cal AD 1565.

**Graves 27-29** (T. VII, 2) have monolithic covers, and they can be dated to the Modern Period. They are located at the level of other tombstones in front of



**SLIKA 12.** Remodeliran i proširen nosni otvor s lezijom na desnoj strani te perimortalna trauma na desnoj strani čeone kosti (foto: V. Vyroubal).

**FIGURE 12** Remodeled and resorbed nasal bone with a lesion on the right side and perimortem trauma on the right side of the frontal bone (photo: V. Vyroubal).



**SLIKA 13.** Lijevo ulna zahvaćena upalnim procesom (jaki aktivni periostitis, zadebljanje kosti i dvije cloace) (foto: V. Vyroubal).

**FIGURE 13** Left ulna with inflammatory process (strong active periostitis, bone thickening and two cloacae) (photo: V. Vyroubal).

vijek. Nalaze se u razini ostalih nadgrobnihih ploča pred novom crkvom (sagrađenom 1904. godine). Slične su izrade što upućuje na to da je riječ o groblju koje pripada približno istom periodu. Grobovi 27 – 29 bili su prekriveni novovjekovnom podnicom od bijelog vapna. Iznad te podnice dokumentirani su novovjekovni sloj i sterilni nasip s velikom količinom kamena i pijeska. Podno grobova, uz utvrdu, pronađena je manja klačara koja potječe iz novog vijeka, a vjerojatno je poslužila za pravljenje morta koji čini podnicu. **Grobovi 30 i 31** (T. VII, 2) sastavni su dio groblja koje se nalazi uokolo crkve, na istoj su razini kao i ostali grobovi pod kamenim monolitnim poklopnicama (GR 27 – 29). Prekrivao ih je smeđi nasipni sloj nastao u novom vijeku. Ti grobovi nisu otvarani.

Na zapadnom dijelu sonde 2 smješteni su i dječji grobovi (**GR 39 – 45**) (Sl. 8; T. X, 2-4; T. XI, 1-3), građeni od kamenih poklopnica i obložnica postavljenih na nož. Grobovi su probili žbukanu podnicu kasnoantičke prostorije,

the new church (built in 1904). They exhibit similar craftsmanship suggesting that the cemetery belongs roughly to the same period. Graves 27-29 were covered with postmedieval floor made of white mortar. Postmedieval layer and sterile fill with a large amount of stone and sand were documented above this floor. A smaller lime kiln dating to the Modern Period was found under the graves, next to the fort. Probably it was used for producing mortar for the floor. **Graves 30 and 31** (T. VII, 2) belong to the cemetery surrounding the church. They are at the same level as the remaining graves under the stone monolithic covers (GR 27-29). Postmedieval brown fill layer covered them. These graves have not been opened.

Children's graves were found in the western part of probe 2 (**GR 39-45**) (Fig. 8; T. X, 2-4; T. XI, 1-3), built of stone covers and lining slabs placed vertically. Graves penetrated mortared floor of the late antique room, and their base consists of small packed stones.

a dno im čini naboj od kamenčića. Skeleti su u opruženom položaju i dobro su sačuvani. Dijete (6–7 godina) iz **GR 39** nije imalo patološke promjene. Određena je kalibrirana starost (uz 92/GR 39) cal AD 1291. – 1386., medijan cal AD 1358. Kod djeteta (2,5 – 3,5 godine) iz **GR 40** zabilježen je blagi aktivni periostitis na goljeničnim kostima. Iste dobi je bilo dijete (2,5 – 3,5 godine) iz **GR 41**, kod kojeg je zabilježeno više patoloških promjena: jaka aktivna *cribra orbitalia* prisutna je u objema orbitama. Generalizirani aktivni periostitis prisutan je na lubanji i svim dugim kostima. S unutrašnje strane lubanje prisutne su digitalne impresije, aktivni periostitis te okrugle kavitacije (Sl. 14). Makroporozitet je prisutan na klinastim, jagodičnim kostima, gornjoj i donjoj čeljusti te na objema lopaticama. Metafize na distalnim bedrenim te proksimalnim goljeničnim kostima su proširene. Ovakav raspored i intenzitet patologija upućuje na skorbut. Na desnoj tjemennoj kosti prisutna je plitka depresijska fraktura promjera 7 mm. U **GR 42** ukopana je beba (0,5 – 1 godine) kod koje nisu zabilježene patološke promjene. Dijete (3,5 – 4,5 godine) iz **GR 43** ima na lijevoj tjemennoj kosti leziju dimenzija 3 × 2 × 2 mm, uzdignutog i zaobljenog ruba. Starije dijete (11 – 13 godina) bilo je pokopano u **GR 44**, kod kojeg su na zubima prisutni hipoplastični defekti. U **GR 45** bilo je pokopano manje dijete (3 do 4 godine). Uočene su sljedeće patološke promjene: jaka aktivna *cribra orbitalia* prisutna je u objema orbitama. Generalizirani aktivni periostitis prisutan je na lubanji i na goljeničnim kostima. Porozitet je prisutan na jagodičnim kostima. Ovakav raspored i intenzitet patologija upućuju na skorbut.

Pri iskopavanju dječjeg groblja utvrđeno je i postojanje dječje kosturnice (**KO**, uz. 108) (T. XI, 4), ukopane ispred peći i pod njom. Dio strukture (moguće je da je riječ o antičkoj krušnoj peći) uništen je radi ukopavanja dječje kosturnice i groba 42. Dio kosturnice ostao je neistražen u profilu peći. U uzorku je prisutno najmanje devetero djece na temelju devet

Skeletons are in an extended position and well preserved. The child's skeleton (6-7 years) from **GR 39** had no pathological changes. Calibrated age of sample 92 (**GR 39**) is cal AD 1291 – 1386, median cal AD 1358. The child (2.5-3.5 years) from **GR 40** had mild active periostitis on the tibiae. The child from **GR 41** was the same age (2.5-3.5 years), on whose skeleton following pathological changes were recorded: strong active *cribra orbitalia* on both orbits; generalized active periostitis on the skull and all other bones; digital impressions, active periostitis and round cavitations on the inner side of the skull (Fig. 14). Macroporosity is present on the sphenoid, cheek bones, upper and lower jaw and both scapulae. Metaphyses on distal femurs and proximal tibiae are expanded. Such distribution and intensity of pathologies suggest scurvy. A shallow depressed fracture with diameter of 7mm is visible on the right parietal bone. A baby (0.5-1 year) was buried in **GR 42**. There were no pathological changes on the infant skeleton. Child (3.5 to 4.5 years) from **GR 43** has a lesion with dimensions of 3×2×2mm with raised and rounded edge, on the left parietal bone. Older child (11 to 13 years) was buried in **GR 44**. Hypoplastic defects were noticed on the teeth. A smaller child (3 to 4 years) was buried in **GR 45**. Following pathological changes were noticed: strong active *cribra orbitalia* on both orbits, generalized active periostitis on the skull and tibiae; porosity on the cheek bones. Such distribution and intensity of pathologies suggest scurvy.

A children's ossuary (**KO**, uz. 108) (T. XI, 4) was found during the excavation of the children's cemetery. It was buried in front of the oven and underneath it. Part of the structure (possibly it was an ancient bread oven) was destroyed when children's ossuary and grave 42 were dug in. Part of the ossuary remained unexplored in the oven profile. At least 9 children were identified in the sample on the basis of 9 right femurs. All children died from their birth to the age of 1.5.



SLIKA 14. Digitalne impresije, aktivni periostitis i okrugle kavitacije promjera 3-4 mm na unutrašnjoj strani lubanje (foto: V. Vyroubal).

FIGURE 14 Digital impressions, active periostitis and round cavitations (3-4mm in diameter) on the inner side of the skull (photo: V. Vyroubal).

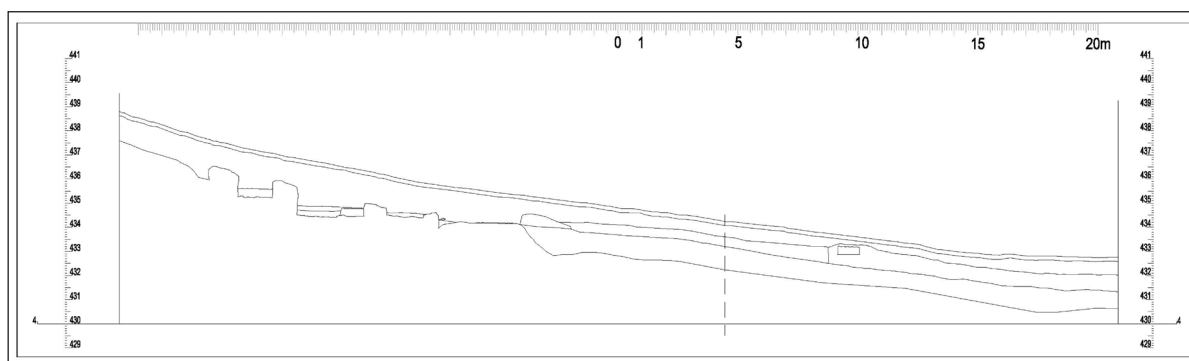
desnih bedrenih kostiju. Sva su djeca umrla u rasponu između rođenja i 1,5 godine života.

Sonda 3 (Tlocrti 1-3; Presjek 4) nalazi se duž zapadne strane utvrde. Prekrivali su je ranonovovjekovni i kasnosrednjovjekovni nasuti slojevi. Na južnom dijelu sonde ustanovljeno je više slojeva dok strukture nisu pronađene, osim recentne međe koja je uklonjena u istraživanju. Na sjevernom dijelu ustanovljeno je da su se tijekom potresa urušile kamene gromade, od kojih su neke upotrijebljene kao pregrade „prostorija“ uz peć (Sl. 15) koja je vjerojatno izgrađena u kasnom srednjom vijeku. Peć (Sl. 15) je većih dimenzija (2,80 x 2 m), zidana je od priklesanog krupnijeg i sitnijeg kamena, cigle i crepova u sloju vapnenog morta. Iznutra je polukružna, izvana pravokutna, a unutar nje nalazi se pregradni zid. Funkcija peći nije sasvim utvrđena, a moguće je da je riječ o krušnoj peći. Uz peć je pronađena drozga među kojom je bilo i staklaste drozge što svjedoči o

Probe 3 (Ground plans 1-3; Cross-section 4) is located along the western side of the fort. It was covered with early postmedieval and late medieval fill layers. Several layers were found in the southern part of the probe. There were no structures, except for a recent one that was removed in the excavation. Stone boulders collapsed in the earthquake in the northern part, and some of them were used as partitions of “rooms” next to the oven (Fig. 15) that was probably built in the Late Middle Ages. Oven (Fig. 15) is rather big (2.80x2 m), built of trimmed stone of different sizes, bricks and tiles in a layer of lime mortar. It is semicircular on the inner side, and rectangular on the outside, with a partition wall inside. Function of the oven has not been fully defined, possibly it was a bread oven. Slag was found near the oven, including glass slag testifying to high temperatures reached. This was confirmed by a partially preserved iron melting pot (T. XXV, 7) that could sustain high temperatures. Raw

postizanju vrlo visokih temperatura. To je potvrdio i nalaz djelomično sačuvane željezne talioničke posude (T. XXV, 7) koja je mogla podnijeti visoke temperature. Sirovine za taljenje nabavljali su iz zaleđa, a mogli su topiti željezo, broncu, olovo. Slojevi ispod peći i ostatka tog kompleksa nisu istraženi radi prezentacije te cijeline kao kasnosrednjovjekovne zone u sklo-

material for melting was procured from the hinterland, and they could melt iron, bronze, lead. Layers under the oven and remains of the complex were not excavated due to presentation of this whole as a late medieval zone within an archaeological park. The excavation was stopped at the same level in the southern part of the probe. Fragments of late medieval / ear-



**PRESJEK 4.** *Uzdužni presjek kroz sondu 3 (S-J)* (izradile: N. Topić, N. Drašković Vlašić, Omega engineering d.o.o. Dubrovnik).

**CROSS-SECTION 4** *Longitudinal cross-section through probe 3 (N-S)* (made by: N. Topić, N. Drašković Vlašić, Omega engineering d.o.o. Dubrovnik).



**SLIKA 15.** *Peć u sondi 3, 2013. (JZ-SI)* (foto: N. Topić, N. Drašković Vlašić, Omega engineering d.o.o. Dubrovnik).  
**FIGURE 15** *Fireplace in probe 3, 2013 (SW-NE)* (photo: N. Topić, N. Drašković Vlašić, Omega engineering d.o.o. Dubrovnik).

pu arheološkog parka. Na južnom dijelu sonde također je zaustavljeno istraživanje na istoj razini. U istraženim slojevima su nađeni ulomci kasnosrednjovjekovog/ranonovovjekovnog stakla, keramike, metala.<sup>40</sup>

Sonda 4 (Sl. 16; Tlocrti 1-3; Presjek 5) obuhvaća sjeverno područje uz utvrdu. Na tom dijelu je pronađen grob pri građevinskim radovima, koji su se izvodili radi izgradnje septičke jame. Uklonjeni su novovjekovni i kasnosrednjovjekovni slojevi ispod kojih su uslijedili slojevi koji pripadaju ranijem srednjovjekovnom ili kasnoantičkom periodu. U tim slojevima pronađeno je mnoštvo različitih nalaza (keramike, tegula, metala, stakla, životinjskih kostiju). U kasnosrednjovjekovnom sloju također je nađeno dosta kovačke drozge (T. XXV, 9) koja je bacana sa sjevernog dijela utvrde gdje se nalazila kovačnica.

Po sredini sonde nalazi se gromada upala s prirodne stijene utvrde u potresu, a proteže se velikim dijelom sonde. Istočno od nje ustanovljen je sloj s dosta tegula, a ispod njega nasip s manjom količinom sličnih nalaza. U razini sloja s tegulama pronađeni su grobovi (GR 11, 13, 15) za čije konstrukcije su korištene stijene utvrde te manje i veće neobrađeno kamenje, a leže na nasipnom sloju. U zapunama grobova pronađeni su ulomci keramike, tegula, stakla. Jedini grob u kojem je nađen prilog (korodiran novčić) jest GR 11. <sup>14</sup>C analizom grobovi su datirani u 6. stoljeće.

GR 11 (T. II, 2) konstrukcija je formirana od poluobrađenog kamena bez vezivnog sredstva. Korištena je kao trojni grob za dvojicu muškaraca i djeteta. Kosturi su zatečeni poremećeni. Južni dio groba omeđuje prirodna stijena utvrde, na sjevernoj strani je kamena gromada velikih dimenzija, zapadno je manja gromada i manje kamenje, a istočnu granicu groba omeđuje veće kamenje. Uz. 27 kostur je muškarca (20 – 30 godina). Blaga zarasla ektokranijalna poroznost prisutna je na svodu lubanje. Litička

ly postmedieval glass, pottery and metal were found in the excavated layers.<sup>40</sup>

Probe 4 (Fig. 16; Ground plans 1-3; Cross-section 5) encompassed northern area near the fort. A grave was found here during construction works on a sewer. Late medieval and postmedieval layers were removed revealing layers dating to the earlier medieval or late antique period. Abundance of diverse finds (pottery, tegulae, metal, glass, animal bones) were recovered from these layers. A lot of smithing slag (T. XXV, 9) was found in the late medieval layer that was thrown from the northern part of the fort where a forge was situated.

In the middle of the probe is a boulder fallen from the natural rock of the fort in the earthquake. A layer with a lot of tegulae was found east of the boulder. Under it was a fill with small amount of similar finds. At the level of the layer with tegulae, graves (GR 11, 13, 15) were found whose constructions consisted of fort rocks and undressed stones of different sizes. They lay on the fill layer. Fragments of pottery, tegulae and glass were found in grave fills. The only grave with grave goods (corroded coin) was GR 11. <sup>14</sup>C analysis dated the graves to the 6th century.

GR 11 (T. II, 2) is a construction formed of semi-dressed stones without bonding agent. It was used as a triple grave for two men and a child. The skeletons were disturbed. Southern side of the grave is bordered by the natural rock of the fort, on the northern side is a big stone boulder while smaller boulder and smaller stones are on the western side. Large stones border the eastern side of the grave. Sample 27 is a male skeleton (20-30 years). Mild healed ectocranial porosity is present on the cranium. Star-shaped lithic lesion in irregular form is present on the inner side of the left nasal bone. Sample 29 is a male skeleton (20-30 years), without pathological changes.

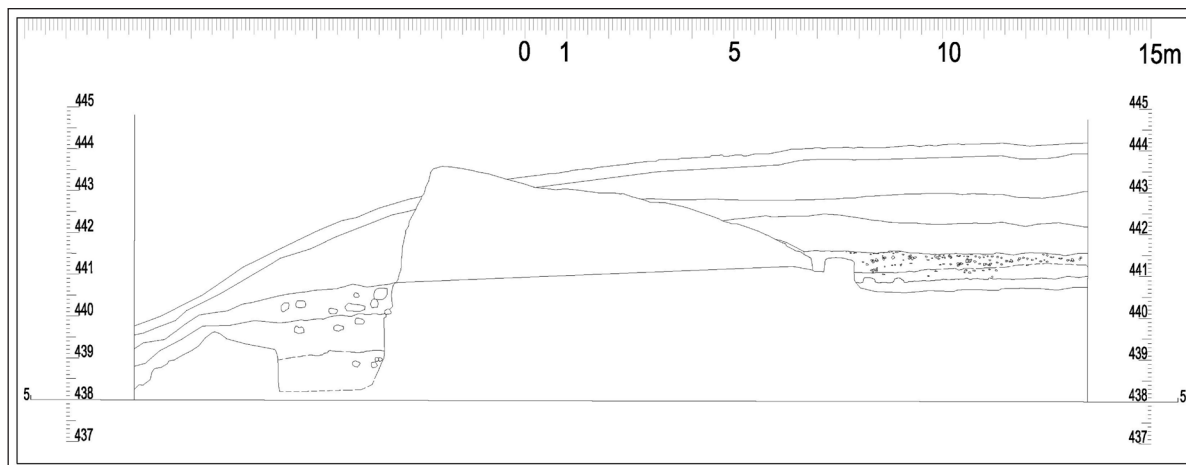
<sup>40</sup> N. TOPIĆ, N. DRAŠKOVIĆ VLAŠIĆ, 2015, 7-9, Fig. 4.

<sup>40</sup> N. TOPIĆ, N. DRAŠKOVIĆ VLAŠIĆ, 2015, 7-9, Fig. 4.



SLIKA 16. Pogled na sondu 4; temelj južnog zida moguće obrambene kule, 2013. (foto: N. Topić, Omega engineering d.o.o. Dubrovnik).

FIGURE 16 View of probe 4; the foundation of the southern wall of possible defensive tower, 2013 (photo: N. Topić, Omega engineering d.o.o. Dubrovnik).



PRESJEK 5. Uzdužni presjek kroz sondu 4 (I-Z) (izradile: N. Topić, N. Drašković Vlašić, Omega engineering d.o.o. Dubrovnik).

CROSS-SECTION 5 Longitudinal cross-section through probe 4 (E-W) (made by: N. Topić, N. Drašković Vlašić, Omega engineering d.o.o. Dubrovnik).

lezija zvjezdastog i nepravilnog oblika prisutna je na unutrašnjoj strani lijeve nosne kosti. Uz. 29 kostur je muškarca (20 – 30 godina). Patološke promjene nisu prisutne. Orijentacija groba je Jo–S. U ovom grobu nađen je novac kralja Baleja (T. XXVI, 2). No, određena je ka-

Grave orientation is SN. Coin of king Ballaios was found in this grave (T. XXVI, 2). However calibrated age is cal AD 552 – 599, median cal AD 576. Sample 31 is a subadult (4.5-5.5 years), without pathological changes.

**GR 13** (T. II, 4) is a construction consist-

librirana starost cal AD 552. – 599., medijan cal AD 576. Uz. 31 je dijete (4,5 – 5,5 godina). Patološke promjene nisu prisutne.

**GR 13** (T. II, 4) konstrukcija je koja se sastoji od neobrađenog kamena bez vezivnog sredstva, a s južne strane granicu groba čini prirodna stijena utvrde. Grob ima dvije zapune: prvu čini sivkastosmeđa zemlja puna tegula, sitnijeg i krupnijeg kamena, a druga je tamnosmeđi zemljani sloj pun gara u kojem su nađene sitne nagorjele kosti (uz. 33). Dno je formirano od nabijene zemlje i kamenčića. Pronađene su noge *in situ*, (uz. 37), a pokojnik (muškarac, 25 – 40 godina) bio je presječen pregradnjom grobne konstrukcije. Kod pokojnika pokopanog u ovom grobu uočen je niz patoloških promjena: blagi zarasli periostitis prisutan je na desnoj goljeničnoj kosti i lijevoj lisnoj kosti. Na objema distalnim goljeničnim kostima prisutne su „fasete savinutog zgloba“. Ove promjene na distalnim goljeničnim kostima kostura nastaju zbog kontakta dvije kosti u položaju hiperdorzifleksije (kad je jedna kost previše savinuta prema gore), a veže se uz markere koji indiciraju da je osoba učestalo čučala.<sup>41</sup> Određena je kalibrirana starost cal AD 543. – 594., medijan cal AD 564. GR 13 u produžetku je s GR 15 tvorio cjelinu prije nego što je grob pregrađen i izbačen gornji dio kostura, da bi na to mjesto bilo pokopano dijete.

Južnu stranu **GR 15** (T. III, 1) čini stijena utvrde, a ostale tri su od poslanog krupnijeg kamenja. Grob je vjerojatno u kasnijoj fazi prenamjenjen u dječji, čime je poremećen/presječen prethodni ukop (GR 13, uz. 37). U grobu je nađena lubanja malog djeteta (2 – 3 godine) i sitnije kosti. Patološke promjene nisu prisutne. Ispod tih ostataka nisu nađene druge kosti koje bi pripadale ranijem pokojniku iz GR 13 (uz. 37). Kamenje koje čini konstrukciju sa zapadne strane ista je pregrada kao i za GR 13. Stratigrafija ispod grobova nije u potpunosti istražena. Istočno od grobova su slojevi s dosta kamena i ulomaka tegula, žbuke i pijeska, a is-

ing of undressed stone without bonding agent. Natural rock of the fort constitutes the southern border of the grave. The grave has two fills; the first one consists of greyish-brown soil full of tegulae, small and bigger stones; and the other one is dark brown layer full of soot that contained tiny burnt bones (uz. 33). Base is made of rammed earth and small stones. Legs were found *in situ* (uz. 37), and the deceased person (male, 25-40 years) was cut in an adaptation of the grave construction. A number of pathological changes were noticed on this skeleton: mild healed periostitis present on the right tibia and left fibula. “Squatting facets” are present on both distal tibiae. These changes on the distal tibiae happen because of the contact of two bones in the position of hyperdorsiflexion (when one bone is bent upwards too strongly), and they are associated with markers indicating that the person often squatted.<sup>41</sup> Calibrated age is cal AD 543 – 594, median cal AD 564.

**GR 13** was joined with **GR 15** before it was adapted when upper part of the skeleton was thrown out, to bury a child there.

Southern side of **GR 15** (T. III, 1) consists of the rock of the fort, and the remaining three sides were built of arranged larger stones. In the last phase the grave was probably re-used as a child’s grave whereby earlier burial was disturbed/cut (GR 13, uz. 37). Skull of a little child (2-3 years) and small bones were found in the grave. Pathological changes were not noticed. Bones that might have belonged to the earlier skeleton from GR 13 (uz. 37) were not found under these remains. Stones that constitute the construction on the western side are the same partition as on GR 13. Stratigraphy under the graves was not fully explored. East of the graves are layers with a lot of stones and tegulae pieces, mortar and sand, and underneath them is a layer with large and smaller stones and stone boulders.

Late antique wall was found at the foot of a

<sup>41</sup> E.-L. BOULLE, 1998, 50–56.

<sup>41</sup> E.-L. BOULLE, 1998, 50–56.

pod njih sloj s krupnijim i sitnijim kamenom te kamenim gromadama.

U podnožju velike urušene gromade pronađen je kasnoantički zid koji je nalijepljen na nju, što upućuje na to da se potres u kojem se gromada urušila morao zbiti u kasnoj antici ili nešto prije. Zid se proteže u smjeru I–Z, a činio je južni zid neke prostorije (moguće obrambene kule) kojoj su definirani JZ i JI ugao. Ostatak te prostorije ostao je nedefiniran jer gabariti sonde staju na tom dijelu. Zid se u vidu luka nastavlja na SZ uglu i veže se na utvrdu. Na tom dijelu iznad njega vjerojatno je bila izgrađena drvena konstrukcija/skela koja se, osim na zid i nasip, oslanjala na kružne utore izvedene na zapadnom dijelu gromade. Dakle, osim današnjeg ulaza na JZ dijelu koji je vjerojatno nastao u srednjem vijeku, postojao je raniji ulaz koji je nastao u kasnoj antici na sjevernoj strani utvrde.<sup>42</sup> To se podudara s kasnijim navodom da je utvrda Sokol bila u dvojnog vlasništva u srednjem vijeku,<sup>43</sup> pa je za očekivati i da je imala dva ulaza.

Zapadno od velike urušene stijene, nakon uklanjanja nasipa, pojavio se sloj tamnije smeđe zemlje pomiješane sa sitnijim i krupnijim kamenom. Taj sloj zasuo je manje gromade, a također i sloj sivkastosmeđe zemlje pune sitnijeg i krupnijeg kamena. Ispod tog sloja ustanovljen je crni masni sloj s velikim kamenim gromadama za koje možemo pretpostaviti da su posljedica nekog ranijeg potresa koji se mogao zbiti na prijelazu era ili početkom rimskog razdoblja. Taj sloj oskudan je nalazima, ali nađeno je nekoliko ulomaka amfora (T. XVII, 2-4).

Analiza radioaktivnim ugljikom <sup>14</sup>C kosturnih ostataka rezultirala je vrlo širokim vremenskim rasponom (5. – 19. st.) koji upućuje na kontinuitet pokapanja uz utvrdu od kasne antike do novog vijeka. Grobni prilozi su izostali, osim u GR 11 uza sjevernu stranu utvrde, tako

collapsed boulder, leaning against it, suggesting that the earthquake when it collapsed had to happen in Late Antiquity or somewhat earlier. The wall spreads in EW direction, and it constituted the southern wall of a certain room (possibly a defensive tower) whose two corners (SW and SE) had been defined. The rest of the room remained undefined since the probe did not extend any further. The wall continues in shape of an arch on NW corner and connects with the fort. In this part probably a wooden construction / ferry was built over it, that rested not only on the wall and fill, but also on round grooves made on the western part of the boulder. Except for the present-day entrance in the SW part that was probably made in the Middle Ages, there was an earlier entrance on the northern side of the fort dating to Late Antiquity.<sup>42</sup> This corresponds to the later claim that Fort Sokol was in dual ownership in the Middle Ages,<sup>43</sup> so it is not surprising that it had two entrances.

A layer of dark brown earth mixed with stones of different sizes emerged after removing the fill, west of the big collapsed stone. This layer covered smaller boulders, as well as the layer of greyish brown soil full of stones of different sizes. Under this layer was a black greasy layer with big stone boulders that were probably a consequence of some earlier earthquake that might have happened at the transition of eras or at the beginning of the Roman period. Finds are scarce in this layer, but there were several fragments of amphorae (T. XVII, 2-4).

Radiocarbon analysis of skeletal remains resulted in a very broad chronological span (5th-19th cent.) suggesting continuity of burials next to the fort from Late Antiquity to the Modern Period. Grave goods were missing, except in GR 11 next to the northern side of the fort, so that precise dating on the basis of grave

<sup>42</sup> N. TOPIĆ et. al., 2014.

<sup>43</sup> L. BERITIĆ, 1966, 105–106.

<sup>42</sup> N. TOPIĆ et. al., 2014.

<sup>43</sup> L. BERITIĆ, 1966, 105-106.

da na temelju arheoloških nalaza nije bilo moguće precizno odrediti datum grobova. Grobovi su formirani na različite načine: u kombinaciji kamena i tegula (forma krova na dvije vode), rijetko kao zidane konstrukcije, većinom s kamenim obložnicama, poluobrađenim i neobrađenim kamenom uz korištenje utvrde za zatvaranje jedne strane groba, te u običnim zemljanim rakama kao pojedinačni ukopi. Kosturnice su ukopane u raku i/ili uz neku strukturu. Osim grobova s pojedinačnim ukopima dokumentirani su i grobovi koji su korišteni kao obiteljske grobnice s višestrukim ukopima, tijekom kasnoantičkog i srednjovjekovnog razdoblja. Grobovi su ponajviše formirani na način da je najprije polagan pokojnik, a zatim je izrađivan grob. Neki od grobova s obložnicama imali su dno od kamenih ploča (zreli srednji vijek) dok je većina bila položena na zemlju ili dno od nabijene zemlje, kamenčića i cigle (kasnoantički/ranosrednjovjekovni, kasnosrednjovjekovni). Pokojnici su u obližnjoj Župi dubrovačkoj (uz crkvu sv. Đurđa) također u srednjem vijeku polagani u zemljane rake i oblagani neobrađenim kamenim pločama bez veziva, ali za razliku od sokolskih nalaza nisu imali dna od kamenih ploča ili kamenčića.<sup>44</sup> Pokopani su na leđima, a orijentirani su najviše na zapad i sjever s manjim odstupanjima, što je uobičajeno i za ostala srednjovjekovna konavoska groblja<sup>45</sup> i župsko groblje uz crkvu sv. Đurđa.<sup>46</sup> Grobovi su vjerojatno imali vanjske oznake jer su neki bili višestruko korišteni, pri čemu su sačuvani raniji ukopi.

## OPĆE ANTROPOLOŠKE ZNAČAJKE GROBLJA

Razvoj modernih antropoloških, odnosno bioarheoloških metoda u svijetu započeo je sedamdesetih godina prošlog stoljeća. Tada se

<sup>44</sup> M. PERKIĆ, 2008, 72–73, sl. 6.

<sup>45</sup> Z. ŽERAVICA, 2004, 302.

<sup>46</sup> M. PERKIĆ, 1998, 76–80.

goods was not possible. Graves were formed in a number of ways: in combination of stones and tegulae (double-pitched roof form), rarely as stone-built constructions, mostly with lining slabs, semi-dressed and undressed stone, using the fort for closing one side of the grave, or in simple earthen pits as individual burials. Ossuaries were dug into the pit and/or next to a certain structure. Except for graves with individual burials, there were also graves used as family tombs with multiple burials, in Late Antiquity and the Middle Ages. Graves were usually formed by laying the deceased person first, and constructing the grave subsequently. Some graves with lining slabs had a base of stone slabs (High Middle Ages) while the majority were laid out on earth or base of rammed earth, stones and bricks (late antique / early medieval, late medieval). In the Middle Ages, the deceased persons in nearby Župa dubrovačka (next to the church of St George) were also laid in earthen pits and lined with undressed stone slabs without a binder, but as opposed to the finds from Sokol they did not have bases of stone slabs or small stones.<sup>44</sup> They were buried supine, directed mostly to the west and north with minor deviations, which is common for the rest of the medieval cemeteries in Konavle,<sup>45</sup> including the parish cemetery near the church of St George.<sup>46</sup> Graves probably had outer markers as some were used repeatedly, preserving thereby earlier burials.

## GENERAL ANTHROPOLOGICAL CHARACTERISTICS OF THE CEMETERY

The development of modern anthropological, or bioarchaeological methods in the world started in the 1970s. That is when reliable and

<sup>44</sup> M. PERKIĆ, 2008, 72-73, fig. 6.

<sup>45</sup> Z. ŽERAVICA, 2004, 302.

<sup>46</sup> M. PERKIĆ, 1998, 76-80.

razvijaju i prihvaćaju pouzdane i standardne metode za određivanje spola i doživljene starosti, povećava se dostupnost velikih, dobro dokumentiranih osteoloških zbirki s arheoloških nalazišta, razvijaju se multivarijatne statističke metode za pouzdano i objektivno određivanje spola koje se potom masovno primjenjuju u bioarheološkim analizama.

Sve do polovice 20. stoljeća biološka antropologija je pružala samo dodatne materijale arheološkim istraživanjima u vidu anatomsko orijentiranih opisa osteološkog materijala i iščitavanja eventualnih patoloških stanja. U drugoj polovici 20. stoljeća uvođenjem analitičkih metoda istraživanja razvijaju se i novi pristupi i teorije koje se temelje na proučavanju utjecaja bioloških, sociokulturnih i klimatskih faktora na čovjeka. Osteološki materijal katkada nam daje odgovore na pitanja o najčešćim bolestima, fiziološkom stresu, povredama, fizičkim aktivnostima i uzrocima smrti. S obzirom na to da osteološki materijal sam za sebe ne dopušta preciznije pretpostavke o životu arheoloških populacija, antropološku je analizu potrebno dopuniti s podacima iz arhivskih izvora, dostupne literature te arheološkog konteksta.

Iako je ovo istraživanje ograničeno, ono treba poslužiti kao predložak za šira istraživanja. Usporedbom velikog broja različitih izvora moguće je ponuditi odgovore na kompleksnija pitanja, poput zdravlja arheoloških populacija i razlika u dostupnosti medicinske skrbi s obzirom na društveni status. U konačnici, može nam ponuditi odgovor o ograničenjima ovakvih istraživanja i o mogućnostima daljnjeg razumijevanja (inter)subjektivnosti.

Rezultati antropološke analize su pokazali da je u osteološkom uzorku s utvrde Sokol riječ o ukupno 92 osobe. Za njih 49 bilo je moguće odrediti spol i starost (20 muškaraca, 10 žena i 19 djece). Od ostatka uzorka izdvojeno je 16 djece te 27 odraslih osoba kod kojih se u većini slučajeva starost nije mogla odrediti. Na temelju rezultata <sup>14</sup>C datacije ukapanje na ovom lokalitetu trajalo je dugi niz stolje-

standard methods for determining sex and age were developed and accepted; availability of big, well documented osteological collections from the archaeological sites was growing; multivariate statistical methods for reliable and objective sex determination were developed and then massively used in bioarchaeological analyses.

Until the mid-20th century biological anthropology offered only additional information to the archaeological research in form of anatomically oriented descriptions of osteological material and recognition of possible pathological conditions. In the second half of the 20th century new analytical methods of research were introduced leading to development of new approaches and theories based on the influence of biological, sociocultural and climatic factors on humans. Osteological material sometimes offers answers to questions about the most common diseases, physiological stress, injuries, physical activities and causes of death. Since osteological material in itself does not allow more precise assumptions about life of archaeological populations, anthropological analysis should be complemented with data from archival sources, available literature and archaeological context.

Although this research is limited in scope, it should be used as a model for more extensive research. Comparison of a number of different sources will enable providing answers to more complex questions, such as the health of archaeological populations and differences in access to healthcare with regard to social status. Finally it can clarify limitations of this kind of research and possibilities of further understanding of (inter)subjectivity.

The results of the anthropological analysis indicate that there were 92 persons in the osteological sample from Fort Sokol. Age and sex could be determined for 49 individuals (20 men, 10 women and 19 children). The rest of the sample included 16 subadults and 27 adults whose age could not be determined. The radiocarbon dating results suggest that the site

ća. Upravo zbog toga teško je dati zaključke o ljudima koji su pokopani na ovom mjestu jer razni ekonomski, socijalni, politički, ekološki i drugi čimbenici djeluju na kvalitetu života u određenom razdoblju. Međutim, datiranje velikog broja grobova utjecalo je na mogućnost interpretacije određenih rezultata. Najviše je kostura (16) datirano u kasnoantičko i rano-srednjovjekovno razdoblje (5. do 7. stoljeće). Po demografskoj distribuciji su podjednako raspoređeni: prisutno je šest muškaraca, pet žena i petero djece. Zanimljivo je da žene prosječno žive cca 10 godina dulje od muškaraca (37,0 naprama 27,3 godine) što je dakako utjecalo na patologije koje su ovisne o starijoj životnoj dobi (degenerativne promjene poput osteoartritisa te bolesti zuba). Tako npr. žene imaju učestalost karijesa 22,6 %, dok muškarci samo 5,1 % što je i statistički značajno ( $\chi^2=9,564$ ;  $P=0,001$ ) i učestalost osteoartritisa na kralješcima 14,8 % dok kod muškaraca on uopće nije evidentiran. Unutar čitavog kasnoantičkog i rano-srednjovjekovnog uzorka učestalosti pokazatelja subadultnog stresa (*cribrae orbitaliae* i nespecifičnog periostitisa) nisu posebno visoke (16,7 % i 28,6 %), dok učestalosti linearne hipoplazije zuba jesu (60 %). U ovom su uzorku na trima kosturima prisutne frakture. Muškarac iz groba 35 (uz. 87) ima frakturu lijeve lopatice, žena iz groba 16 ima frakturu na dvjema falangama stopala koje su rezultirale koštanom ankilozom, dok žena iz groba 32 ima frakturu na dvjema rebrima, na distalnoj desnoj palčanoj kosti te na srednjoj trećini lijeve lakatne kosti. Od svih spomenutih fraktura jedino kod zadnje može biti riječ o posljedici namjernog nasilja, odnosno obrambenoj frakturi. Međutim, namjerno nasilje smatra se sigurnim u slučajevima kada su traume na lakatnim kostima praćene drugim pokazateljima namjernog nasilja, odnosno perimortalnim traumama (nastale u/oko trenutka smrti) ili visokom učestalošću trauma glave<sup>47</sup>

<sup>47</sup> M. O. SMITH, 1996, 84-91; M. A. JUDD, C. A. ROBERTS, 1999, 229-243.

was used for burials for centuries. Therefore it is difficult to offer conclusions about people buried here because various economic, social, politic, ecological and other factors affect life quality in a certain period. However dating of a big number of graves facilitated possibilities of interpretation of certain results. Most skeletons (16) were dated to late antique and early medieval period (5th to 7th centuries). As for the demographic distribution, it is rather equal with six men, five women and five children. It is interesting that women lived ca. 10 years longer than men (37.0 to 27.3 years) which affected pathologies related to older age (degenerative changes such as osteoarthritis and dental diseases). For instance women had caries incidence of 22.6% and men only 5.1%, which is statistically significant ( $\chi^2=9.564$ ;  $P=0.001$ ), and incidence of osteoarthritis on vertebrae 14.8% while on men it was not documented at all. Incidence of indicators of subadult stress (*cribra orbitailia* and non-specific periostitis) is not particularly high (16,7% and 28,6%) unlike the incidence of linear enamel hypoplasia (60%). Three skeletons had fractures in this sample. Man from grave 35 (uz. 87) had a fracture of left scapula, woman from grave 16 had fractures on two feet phalanges resulting in bony ankylosis, while woman from grave 32 had fractures on two ribs, on right distal thumb bone and in the middle third of the left ulna. Only the last of these fractures can be a consequence of deliberate violence (defensive fracture). However deliberate violence is considered as a definite cause when traumas on ulnae are accompanied by other indicators of deliberate violence, i.e. perimortem traumas (occurring at or near the time of death) or high incidence of head traumas,<sup>47</sup> that are not present in this case. We need to mention osteomyelitis in the child 3 to 5 years old from grave 33. This disease is rarely found on osteological material, it is a bone infection that

<sup>47</sup> M. O. SMITH, 1996, 84-91; M. A. JUDD, C. A. ROBERTS, 1999, 229-243.

što u ovom slučaju nije prisutno. Potrebno je spomenuti primjer osteomijelitisa na djetetu starosti između 3 i 5 godina iz groba 33. Iako je ova bolest relativno rijetko viđena na osteološkom materijalu, riječ je o infekciji kosti koja može biti akutna ili kronična. Bakterije prodiru (npr. iz rane) u krv i uzrokuju upalu koštane moždine koja rezultira obilnim gnojem koji dovodi do vretenastog zadebljanja kosti i u nekim slučajevima koštanih otvora kroz koje gnoj izlazi. Obično je zahvaćen dio kosti pokraj zgloba. Osteomijelitis je najčešći kod djece i javlja se više kod dječaka nego djevojčica.<sup>48</sup> Ovo je razdoblje, koje većinom pripada Justinijanovu dobu, u povijesnom pregledu okarakterizirano izmjenom stanovništva te strateškom važnošću utvrde. Međutim arheolozi zaključuju da nalazište nije imalo samo vojni karakter što dokazuju grobovi ne samo muškaraca nego i žena i djece. Moguće je da su obaveze muškaraca povezane s vojnom službom imale utjecaj na nižu prosječnu doživljenu starost, iako ovo treba reći s oprezom zbog iznimno malog uzorka.

U razdoblje ranog srednjeg vijeka (9. do 11. stoljeće) datirano je ukupno osam kostura (sedam muških i jedan ženski). Za razliku od kasnoantičkog i ranosrednjovjekovnog uzorka, ovdje omjer između spolova nije ravnomjerno raspoređen i u potpunosti nedostaju dječji grobovi. Ovdje muškarci (46 godina) u prosjeku žive mnogo dulje od muškaraca iz kasne antike i ranog srednjeg vijeka. Budući da je riječ o samo jednoj ženi, usporedba sa ženama iz kasnoantičkog perioda nije adekvatna. Učestalosti pokazatelja subadultnog stresa su više (*cribra orbitalia* 33,3 %, nespecifični periostitis 57,1 %, linerana hipoplazija 66,7 %), međutim, treba uzeti u obzir da je riječ o vrlo malom uzorku pa stoga niti nema statistički značajnih razlika između uzoraka. Iz ovog bi uzorka trebalo izdvojiti mogući primjer reumatoidnog artritisa kod muškarca iz groba 7. Takvi slučajevi nisu česti u arheološkim popu-

can be acute or chronic. Bacteria invade blood stream (e.g. through a wound) and cause an inflammation of the bone marrow resulting in abundant pus secretion that leads to a spindle-shaped thickening of the bone, and in certain cases to bone openings through which pus is discharged. Usually bone next to joint is affected. Osteomyelitis is more common in children, affecting more boys than girls.<sup>48</sup> In a historical overview, this period, that mostly overlaps with Justinian's era, is characterized by population changes and strategic importance of the fort. However archaeologists have concluded that the site did not have only military character as testified by graves of women and children, in addition to male graves. It is possible that men's tasks related to military service affected lower average age at the time of death, although this is a tentative assumption based on a very small sample.

Eight skeletons (seven male and one female) were dated to the period of the Early Middle Ages (9th to 11th centuries). In contrast to the late antique and early medieval sample, sex ratio in this period is not evenly distributed, and children's graves are missing altogether. Men lived much longer in this period (46 years) in comparison to men in Late Antiquity and the Early Middle Ages. Since we have only one woman in the sample, comparison with women from late antique sample is not adequate. Incidence of indicators of subadult stress is higher (*cribra orbitalia* 33.3%, non-specific periostitis 57.1%, linear hypoplasia 66.7%), however the sample is very small and therefore there are no statistically significant differences between the samples. A possible example of rheumatoid arthritis should be singled out from this sample, in a man from grave 7. Such cases are not common in archaeological populations, and nowadays they occur in less than 1% of the population.<sup>49</sup> The disease may be manifested with mild clinical symptoms, with

<sup>48</sup> D. J. ORTNER, 2003, 181.

<sup>48</sup> D. J. ORTNER, 2003, 181.

<sup>49</sup> G. FIRESTEIN, 2001, 921.

lacijama, a i u današnjima se javljaju kod otprilike 1 % populacije.<sup>49</sup> Bolost se može iskazivati blagom kliničkom slikom u kojoj su zahvaćeni tek pojedini zglobovi ili kao teži oblik bolesti s jakim deformitetima. U ovom slučaju, s obzirom na to da je na velikom dijelu kralježnice i na pojedinim kostima šaka prisutan jaki osteoarthritis, a promjene su zamijećene na većini velikih zglobova, vjerojatno je bila riječ o težem obliku bolesti.

U razdoblje kasnog srednjeg vijeka i novog vijeka datirano je dvanaest kostura (troje muškaraca, jedna odrasla osoba neodredivog spola i osmero djece). Prosječna doživljena starost odraslih osoba iznosi 42,3 godine, no uzorak je premalen za bilo kakvu usporedbu.

Vjerojatno je najzanimljiviji uzorak 67 datiran u 16. stoljeće, a potječe iz kosturnice (KO, uz. 66,67) u kojoj je najmanji broj prisutnih osoba bio 23. Iz kosturnice je mogao biti izdvojen samo muškarac stariji od 45 godina iz razloga što se razlikovao od drugih. Naime, na čitavom kosturu, na glavi i dugim kostima bile su prisutne jake patološke promjene koje upućuju na terciarni sifilis. Za ovu spolno prenosivu bolest je iz dokumenata Državnog arhiva u Dubrovniku poznato da je bila prisutna u Dubrovniku tijekom 16. stoljeća.<sup>50</sup> Uzevši u obzir činjenicu da su Konavle pripale Dubrovčanima već u 15. stoljeću (vidi ranije u Uvodu i povijesnom okviru), lako je bilo moguće da se bolest proširila i na utvrdu Sokol. U ovom je kontekstu posebno zanimljiva prije spomenuta činjenica da se utvrda u 17. stoljeću (1634.) povezivala s nemoralnim životom vlastelina i sluškinja (vidi ranije u Uvodu i povijesnom okviru).

Posebnu bi pažnju trebalo dati dječjim kosturima iz kasnosrednjovjekovnog i novovjekovnog razdoblja, ali i čitavog uzorka. Djeca najviše umiru u razdoblju između 2. i 10. godine života (13 od ukupno 19 djece ili 68,4 % kojima je bilo moguće odrediti starost). Kod

only some joints affected or in a more difficult form of the disease with severe deformities. In this case, since severe osteoarthritis is present on a big part of the spine and some hand bones, and changes were noticed on the majority of big joints, most likely it was a severe form of the disease.

Twelve skeletons (three men, one adult person of undeterminable sex and eight children) were dated to the Late Middle Ages and the Modern Period. Average age of the adults is 42.3 years, but the sample is too small for any kind of analysis.

Probably the most interesting sample (uz. 67) was dated to the 16th century. It was found in the ossuary (KO uz. 66,67) in which the smallest possible number of skeletons was 23. Only a man over 45 years old could be singled out in the ossuary as his bones were different than the others. Namely, severe pathological changes suggesting tertiary syphilis were present on the entire skeleton, including the skull and other bones. Documents of the State Archives in Dubrovnik prove that this sexually transmitted disease was present in Dubrovnik in the 16th century.<sup>50</sup> Since Konavle came under the authority of the city of Dubrovnik as early as the 15th century (cf. Introduction and Historical framework), it is possible that the disease had spread to Fort Sokol. In this context we should remember previously mentioned fact that the fort was associated with immoral life of noblemen and maids in the 17th century (1634) (cf. Introduction and Historical framework).

Special attention should be paid to subadult skeletons from late medieval and postmedieval period, as well as in the entire sample. Children died mostly when they were 2 to 10 years old (13 of 19 children or 68.4% whose age could be determined). Time of weaning infants from breastfeeding is an especially delicate period as diet based on mother's milk is replaced by food and water full of different

<sup>49</sup> G. FIRESTEIN, 2001, 921.

<sup>50</sup> F. GRUBER, 2009, 248.

<sup>50</sup> F. GRUBER, 2009, 248.

djece je obično razdoblje nakon prestanka dojenja iznimno osjetljivo jer se prelazi s prehrane temeljene na majčinu mlijeku na prehranu i vodu koje su prepune raznih mikroorganizama koji uzrokuju razne zarazne bolesti praćene dijarejom.<sup>51</sup> Da je to razdoblje bilo osobito teško, dokazuju primjeri skorbuta kod dvoje djece starosti 2 do 4 godine iz grobova 41 i 45 i već spomenuti primjer osteomijelitisa iz groba 33. Skorbut je posljedica nedostatka vitamina C u prehrani, a neki od simptoma koji se pojavljuju su gingivitis, gubitak zuba, naticanje donjih ekstremiteta, krvarenja.<sup>52</sup> Možemo pretpostaviti da su u razdoblju kasnog srednjeg vijeka i novog vijeka uvjeti života bili posebno teški što se odrazilo na dječje zdravlje i pojavu skorbuta.

Iako je koštani uzorak analiziran u ovom radu relativno velik, nažalost, zbog raspona pokapanja od 5. do 19. stoljeća ne mogu se dati specifični zaključci o populaciji koja je ovdje pokopana. No, unatoč tomu, dobivene su određene informacije o pojedinim razdobljima, kao i pojedinim članovima društva, npr. djeci, a i onima koji su bolovali od specifičnih zaraznih bolesti poput sifilisa.

## ODREĐIVANJE STAROSTI KOSTURNIH OSTATAKA I KARBONIZIRANIH BADEMA

Provedena je analiza starosti radiokarbonskom metodom na 27 kosturnih ostataka. Budući da nije bilo grobnih priloga, osim jedne korodirane kovanice kralja Baleja koja je ranija od datuma groba (GR 11), bila je otežana uža datacija grobova. <sup>14</sup>C analizom na Institutu „Ruđer Bošković“ određena je starost grobova u rasponu od 5. do 19. stoljeća što upućuje na kontinuitet ukopavanja uz utvrdu Sokol od kasne antike do novoga vijeka (Tablica 1, Sl.

microorganisms causing various infectious diseases accompanied by diarrhea.<sup>51</sup> This statement is proven by examples of scurvy on two children, ages 2 to 4, from graves 41 and 45, as well as the aforementioned example of osteomyelitis from grave 33. Scurvy is a consequence of vitamin C deficiency in diet, and some of the symptoms are gingivitis, tooth loss, swelling of lower extremities, hemorrhages.<sup>52</sup> We can assume that in the Late Middle Ages and Modern Period living conditions were especially difficult which was reflected on children's health and occurrence of scurvy.

Although the bone sample analyzed in this paper is rather large, unfortunately specific conclusions about the population that was buried here cannot be provided due to the time span of burials from the 5th to the 19th century. Nevertheless information on certain periods have been obtained, as well as about certain community members, e.g. children, and individuals who suffered from specific infectious diseases such as syphilis.

## DATING SKELETAL REMAINS AND CARBONIZED ALMONDS

Radiocarbon dating was conducted on 27 skeletal remains. Since there were no grave goods, except for one coin of king Ballaios that was earlier than the grave date (GR 11), more precise dating of the graves was difficult. At the Institute Ruđer Bošković, <sup>14</sup>C analysis was used to date graves in the range from the 5<sup>th</sup> to 19<sup>th</sup> century, suggesting continuity of burials at Fort Sokol from Late Antiquity to the Modern Period (Table 1, Fig. 17). Dating of carbonized almonds was also conducted (2 samples) resulting in the date of the Early Iron Age.<sup>53</sup>

<sup>51</sup> M. G. M. ROWLAND, S. G. J. GOH ROWLAND, T. J. COLE, 1988, 134–138.

<sup>52</sup> J. GEBER, E. MURPHY, 2012, 512–524.

<sup>51</sup> M. G. M. ROWLAND, S. G. J. GOH ROWLAND, T. J. COLE, 1988, 134–138.

<sup>52</sup> J. GEBER, E. MURPHY, 2012, 512–24.

<sup>53</sup> I. KRAJCAR BRONIĆ, N. HORVATINČIĆ, 2013; I. KRAJCAR BRONIĆ, N. HORVATINČIĆ, 2014; I. KRAJ-

**TABLE 1.** Rezultati određivanja starosti kostiju i sjemenki badema utvrde Sokol metodom radioaktivnog ugljika  $^{14}\text{C}$ . Z-broj je laboratorijski broj uzorka, a A-broj je redni broj pripreme grafitu, SUERC-broj je redni broj grafitne mete u Scottish University Environmental Research Centre, Glasgow, UK, UGAMS-broj je redni broj grafitne mete u University of Georgia Centre for Applied Isotope Research. Ostale veličine objašnjene su u tekstu.  $\delta^{13}\text{C}$  vrijednosti imaju nesigurnost od 0,1 ‰. Konvencijska starost je zaokružena prema preporukama časopisa Radiocarbon. Za kalibraciju je korišten program OxCal v4.3.2 (C. BRONK RAMSEY, 2017) uz kalibracijsku krivulju IntCal13 (P. J. REIMER et al., 2013). Kalibrirani period: raspon povijesnih godina, izražen u kalibriranim godinama (cal BC, cal AD) dan uz  $1\sigma$ , što je 68,2 % vjerojatnosti nalaženja rezultata. Prikazani su samo rezultati s vjerojatnošću većom od 5 %. Uzorci poredani kako se pojavljuju u tekstu.

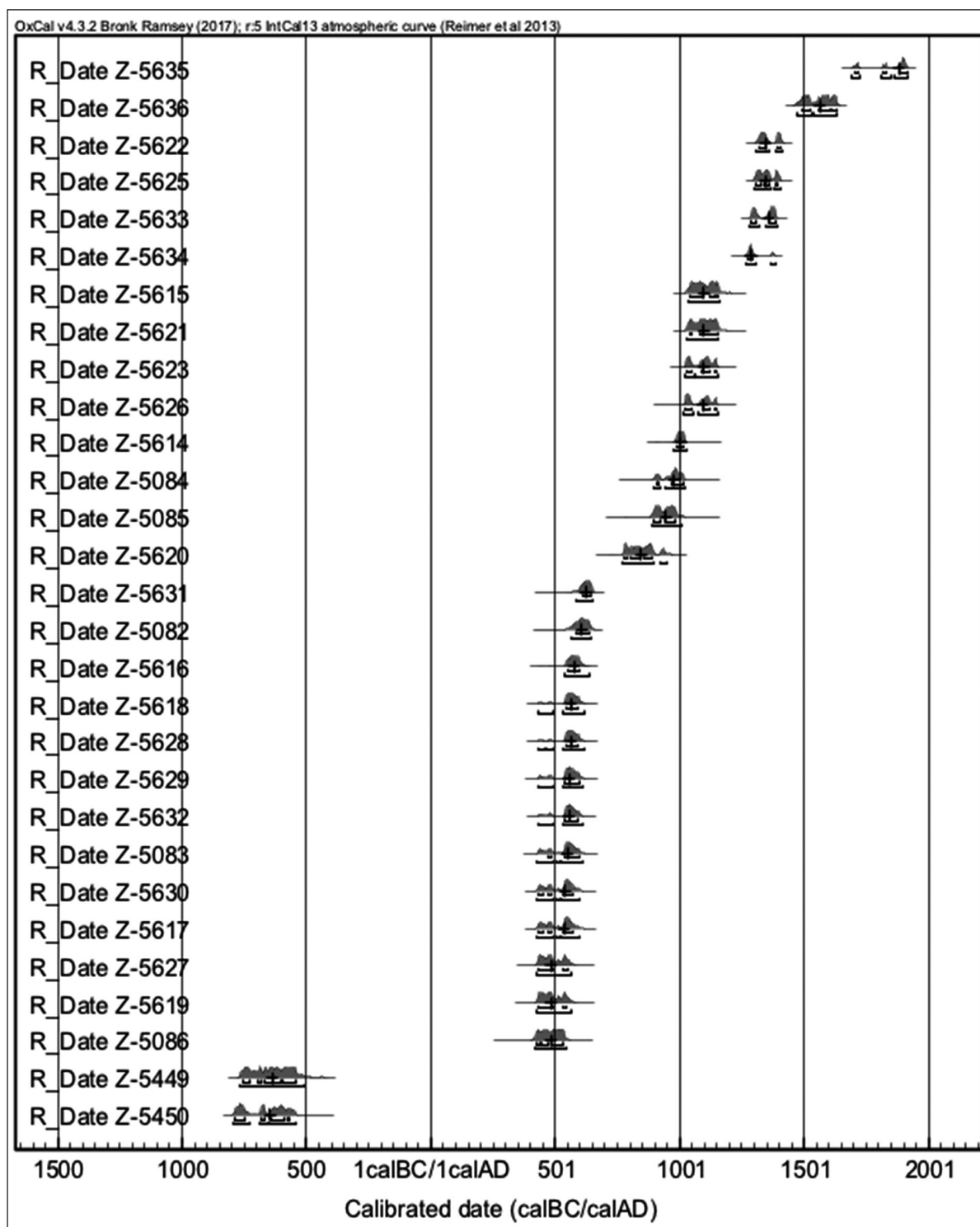
**TABLE 1** Results of  $^{14}\text{C}$  radiocarbon dating on skeletal remains and almonds from the fort Sokol. Z-number is the laboratory number of a sample, and A-number is ordinal number of graphite preparation. SUERC-number is ordinal number of graphite target in Scottish University Environmental Research Centre, Glasgow, UK; UGAMS-number is ordinal number of graphite target in University of Georgia Centre for Applied Isotope Research. Other values are described in the text.  $\delta^{13}\text{C}$  values have 0.1 ‰ measurement errors. Conventional age is rounded according to the set of parameters outlined in the journal Radiocarbon. OxCal v4.3.2 (C. BRONK RAMSEY, 2017) computer program is used for calibration with IntCal13 (P. J. REIMER et al., 2013) calibration curve. Calibrated age: calendar years expressed in calibrated dates (cal BC, cal AD) for  $1\sigma$ , representing 68.2% of probability of finding results. Only the results with probability greater than 5% are shown. The samples are arranged in the order of appearance in the text.

Lab. br.Z Lab. No. Z	Lab. br. A Lab. No. A	Br. grafitu Graphite No.	GR	Uz.	Naziv uzorka Sample	$\delta^{13}\text{C}$	Konvencijska starost Conventional age	Kalibrirani period Calibrated period	Medijan Median (cal BC/ AD)
5082	578	SUERC-44132	1	2	Kost #1 Bone #1	-19,7	1455 ± 25	cal AD 588 – 638 (68,2 %)	cal AD 608
5083	594	SUERC-44151	2	1	Kost #2 Bone #2	-20,0	1520 ± 25	cal AD 474 – 485 (6,3 %) cal AD 536 – 596 (61,9 %)	cal AD 550
5627	960	UGAMS-18288	32	76	Kost, kratke kosti #16 Bone, short bone #6	-19,9	1550 ± 25	cal AD 430 – 492 (51,9 %) cal AD 530 – 550 (16,3 %)	cal AD 484
5628	964	UGAMS-18290	33	79	Kost #17 Bone #17	-18,9	1510 ± 25	cal AD 542 – 592 (68,2 %)	cal AD 564
5629	969	UGAMS-18293	33	80	Kost #18 Bone #18	-20,3	1515 ± 25	cal AD 538 – 597 (68,2 %)	cal AD 558
5630	970	UGAMS-18294	35	85	Kost #19 Bone #19	-20,0	1530 ± 25	cal AD 435 – 452 (11,5 %) cal AD 470 – 487 (12,5 %) cal AD 534 – 574 (44,5 %)	cal AD 539
5631	966	UGAMS-18551	35	87	Kost #20 Bone #20	-20,0	1430 ± 25	cal AD 610 – 645 (68,2 %)	cal AD 625
5632	967	UGAMS-18292	38	89	Kost #21 Bone #21	-19,7	1515 ± 25	cal AD 540 – 590 (68,2 %)	cal AD 558
5617	948	UGAMS-18276	12	40 = 28	Kost, kosti lubanje (1/4) #6 Bone, skull bones (1/4) #6	-20,0*	1530 ± 25	cal AD 434 – 452 (12,3 %) cal AD 470 – 487 (13,4 %) cal AD 534 – 570 (42,5 %)	cal AD 536

Lab. br.Z <i>Lab. No. Z</i>	Lab. br. A <i>Lab. No. A</i>	Br. grafita <i>Graphite No.</i>	GR	Uz.	Naziv uzorka <i>Sample</i>	$\delta^{13}C$	Konvencijska starost <i>Conventional age</i>	Kalibrirani period <i>Calibrated period</i>	Medijan <i>Median</i> (cal BC/ AD)
5619	951	UGAMS-18279	16	41	Kost, duge kosti 2/4 #8 <i>Bone, long bones 2/4 #8</i>	-20,6	1550 ± 25	cal AD 430 – 492 (53,8%) cal AD 530 – 547 (14,4%)	cal AD 483
5635	973	UGAMS-18552	17	44	Kost #24 <i>Bone #24</i>	-15,0	70 ± 20	cal AD 1706 – 1720 (12,8%) cal AD 1820 – 1833 (10,7%) cal AD 1882 – 1914 (44,6%)	cal AD 1881
5084	595	SUERC-44151	5	6	Kost #3 <i>Bone #3</i>	-19,2	1070 ± 25	cal AD 906 – 914 (7,3%) cal AD 968 – 1015 (60,9%)	cal AD 979
5085	581	SUERC-44135	7	8	Kost #4 <i>Bone #4</i>	-19,2	1100 ± 30	cal AD 898 – 924 (27,9%) cal AD 944 – 984 (40,3%)	cal AD 946
5086	579	SUERC-44133	8	10	Kost #5 <i>Bone #5</i>	-19,6	1580 ± 25	cal AD 427 – 436 (7,4%) cal AD 446 – 472 (20,9%) cal AD 486 – 534 (40,0%)	cal AD 483
5614	949	UGAMS-18277	9	11	Kost, kosti glave (1/4) #3 <i>Bone, skull bones (1/4) #3</i>	-20,6	1035 ± 20	cal AD 992 – 1018 (68,2%)	cal AD 1004
5615	946	UGAMS-18274	10	20	Kost, duge kosti 1/4 #4 <i>Bone, long bones 1/4 #4</i>	-18,9	925 ± 25	cal AD 1045 – 1095 (42,5%) cal AD 1120 – 1142 (19,0%) cal AD 1146 – 1154 (6,7%)	cal AD 1097
5620	952	UGAMS-18280	18	50	Kost, plosnata kost 4/4 #9 <i>Bone, flat bone 4/4 #9</i>	-18,7	1170 ± 25	cal AD 778 – 792 (12,7%) cal AD 804 – 842 (28,1%) cal AD 860 – 891 (27,4%)	cal AD 845
5625	955	UGAMS-18283	20	61	Kost, kost šake #14 <i>Bone, fist bone #14</i>	-19,2	600 ± 20	cal AD 1309 – 1330 (26,9%) cal AD 1339 – 1360 (28,5%) cal AD 1386 – 1396 (12,7%)	cal AD 1346
5621	959	UGAMS-18287	21	56	Kost, duge kosti 1/2 #10 <i>Bone, long bones 1/2 #10</i>	-19,1	935 ± 25	cal AD 1040 – 1052 (10,6%) cal AD 1080 – 1152 (57,6%)	cal AD 1098
5622	953	UGAMS-18281	22	57	Kost #11 <i>Bone #11</i>	-18,9	575 ± 25	cal AD 1320 – 1350 (44,6%) cal AD 1392 – 1408 (23,6%)	cal AD 1346
5623	954	UGAMS-18282	23	58	Kost #12 <i>Bone #12</i>	-19,1	960 ± 25	cal AD 1026 – 1047 (24,1%) cal AD 1089 – 1122 (35,2%) cal AD 1139 – 1148 (8,9%)	cal AD 1097

Lab. br.Z <i>Lab. No. Z</i>	Lab. br. A <i>Lab. No. A</i>	Br. grafita <i>Graphite No.</i>	GR	Uz.	Naziv uzorka <i>Sample</i>	$\delta^{13}\text{C}$	Konvencijska starost <i>Conventional age</i>	Kalibrirani period <i>Calibrated period</i>	Medijan <i>Median</i> (cal BC/ AD)
5626	956	UGAMS-18284	24	65	Kost #15 <i>Bone #15</i>	-19,2	970 ± 25	cal AD 1022 – 1046 (32,3%) cal AD 1094 – 1120 (30,0%) cal AD 1141 – 1147 ( 5,9%)	ca AD 1093
5634	972	UGAMS-18296	26	107	Kost, Kostni glave 1/4 #23 <i>Bone, skull bones 1/4 #23</i>	-19,4	695 ± 20	cal AD 1276 – 1296 (68,2%)	cal AD 1288
5636	974	UGAMS-18553	KO	67	Kost iz kosturnice <i>Ossuary bones</i>	-18,9	340 ± 20	cal AD 1490 – 1524 (23,8%) cal AD 1558 – 1602 (29,7%) cal AD 1610 – 1631 (14,7%)	ca AD 1565
5633	971	UGAMS-18295	39	92	Kost #22 <i>Bone #22</i>	-19,2	650 ± 20	cal AD 1290 – 1308 (27,3%) cal AD 1361 – 1386 (40,9%)	ca AD 1358
5616	974	UGAMS-18275	11	29	Kost #5 <i>Bone #5</i>	-20,8	1495 ± 25	cal AD 552 – 598 (68,2%)	cal AD 576
5618	950	UGAM-18278	13	37	Kost #7 <i>Bone #7</i>	-20,2	1510 ± 25	cal AD 542 – 594 (68,2%)	cal AD 564
5449	905	UGAMS-17773		24	Pougljenjene sjemenke badema #1 <i>Carbonized almonds #1</i>	-23,6	2480 ± 25	756 – 728 cal BC (11,7%) 693 – 680 cal BC (5,7%) 671 – 605 cal BC (26,2%) 598 – 542 cal BC (24,6%)	637 cal BC
5450	906	UGAMS-17774		42	Pougljenjene sjemenke badema #2 <i>Carbonized almonds #2</i>	-27,0	2525 ± 30	786 – 749 cal BC (24,0%) 684 – 667 cal BC (10,7%) 640 – 588 cal BC (28,3%) 578 – 566 cal BC (5,3%)	649 cal BC

\*pretpostavljena  $\delta^{13}\text{C}$  vrijednost / supposed  $\delta^{13}\text{C}$  value



SLIKA 17. Kalibrirane raspodjele starosti uzoraka iz Tablice 1. Znak + označava medijan raspodjele. Uži rasponi označavaju područje vjerojatnosti nalaženja rezultata od 68,2 % ( $1\sigma$ ), a širi rasponi vjerojatnosti nalaženja rezultata od 95,4 % ( $2\sigma$ ). Za kalibraciju je korišten program OxCal v4.3.2 (C. BRONK RAMSEY, 2017) uz kalibracijsku krivulju IntCal13 (P. J. REIMER et al., 2013). Uzorci poredani kronološki.

FIGURE 17 Calibrated age of the samples shown in Table 1. “+” sign denotes median. Narrow ranges denote 68.2% ( $1\sigma$ ) probability of finding results and wider ranges denote 95.4% ( $2\sigma$ ) probability of finding results. OxCal v4.3.2 (C. BRONK RAMSEY, 2017) computer program is used for calibration with IntCal13 (P. J. REIMER et al., 2013) calibration curve. Samples are arranged in chronological order.

17). Također je provedeno određivanje starosti karboniziranih badema (dva uzorka), što je rezultiralo datumom starijeg željeznog doba.<sup>53</sup>

<sup>14</sup>C analiza je provedena tehnikom akceleratorne masene spektrometrije (AMS).<sup>54</sup> Za analizu je potrebno s uzorka odstraniti interferencije (nečistoće) te ugljik iz uzorka prevesti u oblik grafita. Na Institutu „Ruđer Bošković“ se iz uzoraka kostiju izolirao kolagen modificiranim metodom Longin,<sup>55</sup> dok su uzorci badema tretirani standardnom A-B-A metodom (engl. *acid-base-acid*, tj. kiselina-baza-kiselina).<sup>56</sup> Iz pripremljenih uzoraka kolagena te badema, ugljik se preveo u CO<sub>2</sub> oksidacijom pomoću bakrova(II)-oksida pri 850 °C u vakuumu. Dio plina CO<sub>2</sub> se odvojio za određivanje koncentracije stabilnog izotopa <sup>13</sup>C u ukupnom ugljiku (izražava se kao δ<sup>13</sup>C vrijednost) na masenom spektrometru za stabilne izotope (engl. *Isotope Ratio Mass Spectrometer*, IRMS). Iz drugog dijela, CO<sub>2</sub> se prevodio u grafit redukcijom sa cinkom u željezov katalizator. Grafit je prešan u aluminijski nosač (meta) te se odredio omjer broja atoma izotopa <sup>14</sup>C prema <sup>13</sup>C (<sup>14</sup>C/<sup>13</sup>C) na akceleratorskom masenom spektrometru (AMS). Mjerenja δ<sup>13</sup>C i <sup>14</sup>C/<sup>13</sup>C vrijednosti obavljena su u *Center for Applied Isotope Studies* (CAIS), *University of Georgia, Athens, SAD*, odnosno u *Scottish University Research Centre*, (SUERC) Glasgow, UK.

Vrijednost δ<sup>13</sup>C nekog materijala izražava se u promilima i predstavlja relativno odstupanje omjera količine izotopa <sup>13</sup>C prema <sup>12</sup>C u uzorku prema istom omjeru u referentnom materijalu. Izmjerena <sup>14</sup>C/<sup>13</sup>C vrijednost se normalizira s obzirom na izmjerenu δ<sup>13</sup>C

<sup>14</sup>C analysis was carried out by using the technique of accelerator mass spectrometry (AMS).<sup>54</sup> It is necessary to remove all interferences (impurities) from the sample for the analysis, and carbon from the sample needs to be converted into graphite. Collagen was extracted from the bone samples by modified Longin method at the Ruđer Bošković Institute,<sup>55</sup> while almonds were treated by standard A-B-A (acid-base-acid) method.<sup>56</sup> From the prepared samples of collagen and almonds, carbon was converted into CO<sub>2</sub> through oxidation with cupric oxide at 850 °C in vacuum. Some CO<sub>2</sub> gas was separated for determining concentration of the stable isotope <sup>13</sup>C in total carbon (expressed as δ<sup>13</sup>C value) in isotope ratio mass spectrometer, IRMS. From the remaining part, CO<sub>2</sub> was converted into graphite through reduction with zinc and iron catalyst. Graphite was pressed into an aluminum base (target) and the <sup>14</sup>C/<sup>13</sup>C ratio of the number of atoms was determined in the accelerator mass spectrometer (AMS). Measurements of δ<sup>13</sup>C and <sup>14</sup>C/<sup>13</sup>C values were performed in the Center for Applied Isotope Studies (CAIS), University of Georgia, Athens, SAD, and in the Scottish University Research Centre, (SUERC) Glasgow, UK.

δ<sup>13</sup>C value of a certain material is expressed in per mill and it represents a relative deviation of the <sup>13</sup>C isotope ratio to <sup>12</sup>C in the sample in relation to the same ratio in the referential material. Measured <sup>14</sup>C/<sup>13</sup>C value is normalized with regard to δ<sup>13</sup>C values of the sample at agreed value of -25 ‰, and conventional <sup>14</sup>C-age of the sample is calculated by using Libby's <sup>14</sup>C halftime of 5568 years.<sup>57</sup> Conventional <sup>14</sup>C-age obtained in this way is expressed in years before present (BP), 0 BP =

<sup>53</sup> I. KRAJCAR BRONIĆ, N. HORVATINČIĆ, 2013; I. KRAJCAR BRONIĆ, N. HORVATINČIĆ, 2014; I. KRAJCAR BRONIĆ et. al., 2015.

<sup>54</sup> I. KRAJCAR BRONIĆ et. al., 2010, 943–946; A. SIRONIĆ et. al., 2013, 185–188.

<sup>55</sup> R. LONGIN, 1971, 241–2; F. BROCK et. al., 2010, 103–112.

<sup>56</sup> S. K. GUPTA, H. A. POLACH, 1985; F. BROCK et. al., 2010; E. DUNBAR et. al., 2016, 9–23; A. SIRONIĆ et. al., 2013.

CAR BRONIĆ et. al., 2015.

<sup>54</sup> I. KRAJCAR BRONIĆ et. al., 2010, 943–946; A. SIRONIĆ et. al., 2013, 185–188.

<sup>55</sup> R. LONGIN, 1971, 241–2; F. BROCK et. al., 2010, 103–12.

<sup>56</sup> S. K. GUPTA, H. A. POLACH, 1985; F. BROCK et. al., 2010; E. DUNBAR et. al., 2016, 9–23; A. SIRONIĆ et. al., 2013.

<sup>57</sup> M. STUIVER, H. POLACH, 1977, 355–363.

vrijednosti uzorka na dogovornu vrijednost -25 ‰ te se izračunava konvencijska  $^{14}\text{C}$ -starost uzorka koristeći se Libbyjevim vremenom poluraspada  $^{14}\text{C}$  (5568 godina).<sup>57</sup> Ovako dobivena konvencijska  $^{14}\text{C}$ -starost izražava se u godinama prije sadašnjosti BP (engl. *before present*), 0 BP = AD 1950. Budući da je koncentracija  $^{14}\text{C}$  u atmosferskom  $\text{CO}_2$  (koji je i primarni izvor  $^{14}\text{C}$  u bioti, tj. materijalu koji datiramo) bila promjenjiva zbog utjecaja različitog intenziteta kozmičkog/solarnog zračenja, promjene magnetskog polja i sl. koje utječu na produkciju  $^{14}\text{C}$ , potrebno je konvencijsku starost kalibrirati kako bi se starost uzorka mogla izraziti u kalendarskim godinama. Za kalibraciju se rabi krivulja IntCal13 te računalni program OxCal,<sup>58</sup> a rezultat je kalibrirani raspon godina izražen u cal AD, odnosno cal BC, „cal“ označava da je kalendarska godina dobivena kalibracijom.

U Tablici 1 prikazani su svi dobiveni rezultati: konvencijska  $^{14}\text{C}$  starost (godine BP),  $\delta^{13}\text{C}$  vrijednosti i kalibrirana starost (cal BP, cal AD). U zagradama pored svakog raspona, navedena je vjerojatnost nalaženja rezultata.

Vrijednosti  $\delta^{13}\text{C}$  karakteristične su za pojedini materijal te mogu upućivati na porijeklo materijala. Za pougljenjene sjemenke badema  $\delta^{13}\text{C}$  vrijednosti su u skladu s  $\text{C}_3$  biljkama (od -20 do -30 ‰). Za određivanje paleo/arheoprehrane obično se rabe dvokomponentni ( $^{15}\text{N}$  i  $\delta^{13}\text{C}$ ), odnosno trokomponentni (i  $^{34}\text{S}$ )<sup>59</sup> sustavi, ali već i sama  $\delta^{13}\text{C}$  vrijednost može upućivati na vrstu prehrane. Korelacijom konvencijske  $^{14}\text{C}$ -starosti s  $\delta^{13}\text{C}$  uočava se grupiranje (Sl. 18A) svi uzorci s  $\delta^{13}\text{C}$  između -21 i -19,5 ‰ grupirani su oko 1500 BP (medijan oko cal AD 600.), samo jedan uzorak je mlađi (1036 ± 23 BP, medijan cal AD 1004, uz. 11). U toj skupini se nalaze i svi kosturni ostatci žena. Uzorci viših  $\delta^{13}\text{C}$  vri-

AD 1950. Since concentration of  $^{14}\text{C}$  in atmospheric  $\text{CO}_2$  (which is the primary source of  $^{14}\text{C}$  in biota, or the material we want to date) was changeable due to influence of different intensity of the cosmic/solar radiation, changes in magnetic field etc. that affect  $^{14}\text{C}$  production, it is necessary to calibrate the conventional age so that the age of the sample can be expressed in calendar years. Curve IntCal13 is used for calibration, as well as the computer program OxCal,<sup>58</sup> and the result is calibrated range of years expressed in cal AD, or cal BC, “cal” denoting that calendar year was obtained through calibration.

All the results obtained are presented in Table 1: conventional  $^{14}\text{C}$  age (years BP),  $\delta^{13}\text{C}$  values and calibrated age (cal BP, cal AD). Probability of finding the results is stated in the parentheses next to every range.

$\delta^{13}\text{C}$  values are characteristic of certain materials and they can indicate their provenance.  $\delta^{13}\text{C}$  values for carbonized almond seeds are in accordance with  $\text{C}_3$  plants (from -20 to -30 ‰). In determining paleo/archaeodiet usually two-component ( $^{15}\text{N}$  and  $\delta^{13}\text{C}$ ), or three-component (and  $^{34}\text{S}$ )<sup>59</sup> systems are used, but even only  $\delta^{13}\text{C}$  value can suggest diet type. Correlation between conventional  $^{14}\text{C}$ -age and  $\delta^{13}\text{C}$  reveals grouping (Fig. 18A) all samples with  $\delta^{13}\text{C}$  between -21 and -19.5 ‰ are grouped around 1500 BP (median cal ca. AD 600), only one sample is younger (1036 ± 23 BP, median cal AD 1004, sample 11). All skeletal remains of women are in this group. Samples of higher  $\delta^{13}\text{C}$  values, (Fig. 18B) between -19.5 and -18.5 ‰ are younger, covering the range of 1508 ± 24 BP (median cal AD 564, sample 79) to 342 ± 21 BP (median cal AD 1565, sample 67). Sample 44 stands out in both groups, as being the youngest (cal AD 1881) and having the highest  $\delta^{13}\text{C}$  value (-15.0 ‰), but it is irrelevant in this research as it dates to

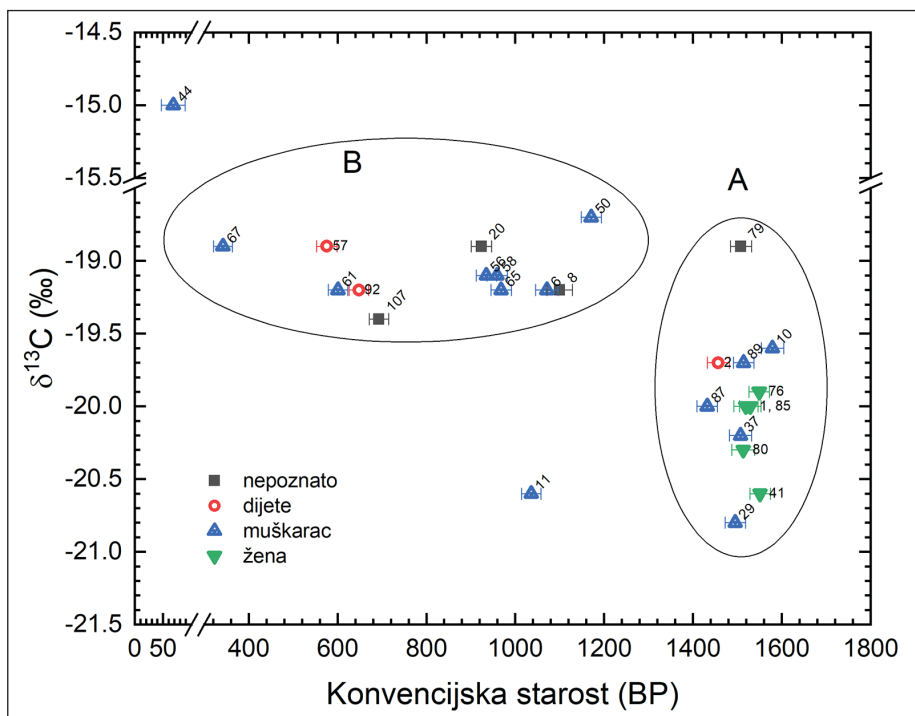
<sup>57</sup> M. STUIVER, H. POLACH, 1977, 355–363.

<sup>58</sup> P. J. REIMER et. al., 2013: 1869–1887; C. BRONK RAMSEY, 2017.

<sup>59</sup> E. LIGHTFOOT et. al., 2014, 375–376; K. L. SAYLE et. al., 2014, 811–821; J. P. R. DURY et. al., 2018, 1561–1685.

<sup>58</sup> P. J. REIMER et. al., 2013: 1869–1887; C. BRONK RAMSEY, 2017.

<sup>59</sup> E. LIGHTFOOT et. al., 2014, 375–376; K. L. SAYLE et. al., 2014, 811–821; J. P. R. DURY et. al., 2018, 1561–1685.



SLIKA 18. Odnos konvencijske starosti uzoraka kolagena prema njihovoj izmjerenoj  $^{13}\text{C}$  vrijednosti. Brojevi pored točaka označavaju broj uzorka.

FIGURE 18 Relation between conventional age of samples and their measured  $^{13}\text{C}$  value. Numbers next to the dots are sample numbers.

jednosti, (Sl. 18B) između -19,5 i -18,5 ‰ su mlađi i pokrivaju područje od  $1508 \pm 24$  BP (medijan cal AD 564, uz. 79) do  $342 \pm 21$  BP (medijan cal AD 1565, uz. 67). Od obiju skupina se izdvaja uz. 44, i po tome da je najmlađi (cal AD 1881) i po najvišoj  $\delta^{13}\text{C}$  vrijednosti (-15,0 ‰), ali koji nije relevantan u ovom istraživanju jer je datiran u vrijeme nakon napuštanja utvrde Sokol.

Kolagen iz kostiju biljojeda je nižih  $\delta^{13}\text{C}$  vrijednosti nego kod svezjeda, odnosno, mesozjeda, odnosno vrijednost  $\delta^{13}\text{C}$  raste sa stupnjem trofije<sup>60</sup>. Također, kod biljojeda/svezjeda ovisi i o biljkama kojima se hrane: biljke fotosintetskog ciklusa  $\text{C}_3$  (većina biljaka) imaju  $\delta^{13}\text{C}$  vrijednosti oko -27 ‰, dok one fotosintetskog ciklusa  $\text{C}_4$  (npr. kukuruz, šećerna repa, proso, neke vrste trava) imaju oko -12 ‰. Morska fauna na jednak način reflektira morską floru, a s obzirom na to da  $\text{CO}_2$  otopljen u morskoj vodi ima  $\delta^{13}\text{C}$  vrijednost višu (oko -1,5 ‰)

the period after Fort Sokol was deserted.

Collagen from the bones of herbivores has lower  $\delta^{13}\text{C}$  values than in the bones of omnivores or carnivores meaning that  $\delta^{13}\text{C}$  value increases with the trophic level.<sup>60</sup> In herbivores/omnivores it depends on plants they eat: plants of photosynthetic cycle  $\text{C}_3$  (most plants) have  $\delta^{13}\text{C}$  values around -27 ‰, while those of photosynthetic cycle  $\text{C}_4$  (e.g. corn, sugar beet, millet, some grass types) have around -12 ‰. Marine fauna reflects marine flora in the same way, and since  $\text{CO}_2$  dissolved in sea water has  $\delta^{13}\text{C}$  value (ca. -1,5 ‰) higher than the atmospheric  $\text{CO}_2$  (ca. -7,5 ‰), marine fauna has higher  $\delta^{13}\text{C}$  value (ca. -16 ‰). Therefore people who consume marine fauna (fish) have higher  $\delta^{13}\text{C}$  values<sup>61</sup> than the ones eating terrestrial  $\text{C}_3$  plants, or fauna. Higher  $\delta^{13}\text{C}$  values are generally considered to be a result of

<sup>60</sup> M. J. SCHOENINGER, M. J. DE NIRO, H. TAUBER, 1983, 1381-1383.

<sup>60</sup> M. J. SCHOENINGER, M. J. DE NIRO, H. TAUBER, 1983, 1381-1383.

<sup>61</sup> O. SVERRE JOHANSEN, S. GULLIKSEN, R. NYDAL, 1986, 754-761.; P. L. ASCOUGH et. al., 2007: 947-961; P. L. ASCOUGH et. al., 2012, 2261-2271.

nego atmosferski CO<sub>2</sub> (oko -7,5 ‰), morska fauna ima više δ<sup>13</sup>C vrijednosti (oko -16 ‰). Na jednak način, ljudi koji konzumiraju morsku faunu (ribe) imaju više δ<sup>13</sup>C vrijednosti<sup>61</sup> od onih koji se hrane kopnenim C<sub>3</sub> biljem, odnosno faunom. Više δ<sup>13</sup>C vrijednosti se generalno smatraju rezultatom miješane prehrane C<sub>3</sub> i C<sub>4</sub> biljem te prehrane bazirane na morskoj hrani, pogotovo ako je riječ o primorskim naseljima.<sup>62</sup> Jedina C<sub>4</sub> biljka Starog Kontinenta je proso, koji se u Hrvatskoj konzumira od željeznog doba.<sup>63</sup> Slika 18 implicira da je skupina A (oko 1500 BP, tj. oko cal AD 600.) imala pretežno kopnenu, biljnu C<sub>3</sub> ishranu, dok je skupina B konzumirala ili pretežno mesnu hranu ili djelomično i riblju hranu i/ili djelomično proso. U korist nagle promjene prehrane sa skupine A na skupinu B ide mogućnost povećane konzumacije ribe zbog širenja kršćanstva.<sup>64</sup> Najmlađi uzorak 44 s izrazito visokom δ<sup>13</sup>C vrijednosti upućuje ili na gotovo isključivu prehranu prosom, odnosno, vjerojatnije ribom (slične vrijednosti imaju narodi Haida<sup>65</sup>).

## KREMENI NALAZI

Nekoliko kremenih artefakata pronađeno je tijekom istraživanja sonde 2 na JI dijelu lokaliteta, u podnožju masivne stijene na kojoj je sagrađena utvrda Sokol. Artefakti su pronađeni u dubokom sloju s prapovijesnim materijalom koji je dosta poremećen potresima. Među nalazima su fragment sječiva za srp (T. XII, 1), sječivo s obradom (T. XII, 3), malo strugalo sa strmom obradom (T. XII, 2), dubilo

mixed diet of C<sub>3</sub> and C<sub>4</sub> plants and diet based on marine food, particularly in case of coastal settlements.<sup>62</sup> The only C<sub>4</sub> plant of the Old Continent is millet that has been consumed in Croatia since the Iron Age.<sup>63</sup> Fig. 18 implies group A (ca. 1500 BP, i.e. ca. cal AD 600) had terrestrial, plant-based C<sub>3</sub> diet while group B consumed mostly meat or partially also fish and/or millet. Sudden change of diet from group A to group B might be associated with possible increased consumption of fish related to spreading of Christianity.<sup>64</sup> The youngest sample 44 with exceptionally high δ<sup>13</sup>C value suggests either diet based almost only on millet, or, more likely, fish (similar values are found in Haida populations<sup>65</sup>).

## FLINT ARTIFACTS

Several flint artifacts were recovered during the excavation of Trench 2 in the southeast sector of the site, at the foot of the massive rock on which the Sokol Fortress was constructed. The artifacts were recovered from a deep level of prehistoric material that had been much disturbed through earthquake activity. The tools consisted of a sickle blade fragment (T. XII, 1), a blade knife (T. XII, 3), a small flake scraper with scalar retouch (T. XII, 2), a single-blow burin on a blade (T. XII, 4) and a stubby arrowhead with rough retouch (T. XII, 5). An axe made of white flint that was found on the surface may be associated with these artifacts also. The flint from which the blade tools were made was yellowish, fine-grained, and with white inclusions. It appears to have been heat-treated. The arrowhead was made of black flint. A small amount of flint waste was recovered from the same area, indicating that

<sup>61</sup> O. SVERRE JOHANSEN, S. GULLIKSEN, R. NYDAL, 1986, 754–761; P. L. ASCOUGH et. al., 2007, 947–961; P. L. ASCOUGH et. al., 2012, 2261–2271.

<sup>62</sup> A. FISCHER et. al., 2007, 2125–2150; A. L. LAMB et. al., 2012, 765–777; D. C. SALAZAR-GARCIA et. al., 2014, 231–240.

<sup>63</sup> E. LIGHTFOOT et. al., 2014.

<sup>64</sup> L. J. REITSEMA, D. E. CREWS, M. POLCYN, 2010, 1413–1423.

<sup>65</sup> M. J. SCHOENINGER, K. MOORE, 1992, 247–296.

<sup>62</sup> A. FISCHER et. al., 2007, 2125–2150; A. L. LAMB et. al., 2012, 765–777; D. C. SALAZAR-GARCIA et. al., 2014, 231–240.

<sup>63</sup> E. LIGHTFOOT et. al., 2014.

<sup>64</sup> L. J. REITSEMA, D. E. CREWS, M. POLCYN, 2010, 1413–1423.

<sup>65</sup> M. J. SCHOENINGER, K. MOORE, 1992, 247–296.

na sječivu (T. XII, 4) i zdepasta strelica s grubim retušom (T. XII, 5). Sjekirica izrađena od bijelog kremenca, pronađena izvan arheološkog istraživanja, također se može povezati s ovim artefaktima. Kremen od kojeg su izrađena sječiva je žućkast, sitnozrn, s bijelim inkluzijama. Čini se da su nalazi termički obrađeni. Strelica je izrađena od crnog kremenca. Mala količina kremenog otpada pronađena je na istom području, što upućuje na to da su bar neke od alatki vjerojatno izrađene na lokalitetu. Vrlo je vjerojatno da kremen također potječe od izvora u blizini.

Sve ove kremene alatke mogle bi biti iz neolitičkog ili moguće iz razdoblja eneolitika, jer su slični skupovi nalaza pronađeni po Dalmaciji na drugim lokalitetima u srednjoneolitičkim i kasnoneolitičkim, te u eneolitičkim slojevima. Primjeri uključuju špilju Nakovanu na sjeverozapadnom kraju poluotoka Pelješca, Gudnju kod Stona,<sup>66</sup> te Grapčevu špilju na otoku Hvaru.<sup>67</sup> Dalje na sjeveru, pronađeni su veliki skupovi sličnih kremenih artefakata na poznatim neolitičkim nalazištima Danilu i Pokrovniku.<sup>68</sup>

Sokol gleda na široku, plodnu i vodom bogatu dolinu Konavoskog polja. Ta je dolina mogla biti vrlo atraktivna neolitičkim poljodjelicima koji su se kretali kroz regiju s udaljenog juga. Stoga, nije iznenađujuće ovdje pronaći dokaz ljudske aktivnosti iz vremena neolitika. Sam lokalitet Sokol, visoko smješten na planini nadgledajući ravnice u nizini, nalazi se na putu koji vodi do prolaza preko visokog planinskog lanca na istoku. Taj je put jedna od nekoliko ruta koje vode od obale prema Hercegovini. Vrlo je vjerojatno da je ovaj geografski položaj, uz obilje izvora na tom području, učinio lokalitet prikladnim mjestom za logor ili čak kratkotrajno naselje od neolitika prema kasnijem razdoblju.

some of the tools, at least, were probably made on site. It is likely that the flint also came from sources in the vicinity.

All these flint tools could be Neolithic or possibly Eneolithic/Copper Age in date, as similar assemblages have been found elsewhere in Dalmatia in Middle and Late Neolithic as well as Eneolithic levels at other sites. Examples include the cave sites of Nakovana at the northwest end of the Pelješac Peninsula, Gudnja near Ston<sup>66</sup>, and Grapčeva spilja on the island of Hvar<sup>67</sup>. Farther north, large assemblages of similar flint artifacts have been found at the well-known Neolithic sites of Danilo and Pokrovnik.<sup>68</sup>

Sokol overlooks the broad, fertile, and well-watered valley of the Konavosko Polje. The valley would have been highly attractive to Neolithic farmers moving into the region from farther south. It is not surprising, therefore, to find evidence of human activity there dating from the Neolithic. The Sokol site itself, high up on the mountainside overlooking the plain below, is on a path that leads to a pass over the high mountain ridge to the east. This path thus provided one of the few routes from the coast into Hercegovina. It is likely that this geographical location, together with the abundant springs in the area, made it a convenient site for a camp or even short-term settlement, from the Neolithic into later times.

## STONE ARTIFACTS

Several stone grinding stones were found in the Sokol Fortress excavations. They all date from the Iron Age and Roman periods. Two rubbing stones were recovered from Iron Age/Illyrian levels in Trench 2. One was trapezoidal (T. XIII, 1) and the other was ovoid in shape

<sup>66</sup> B. MARIJANOVIĆ, 2005a, T. IV, T. XXX; S. FORENBACHER, Z. PERHOČ, 2017, 189–211, Fig. 5.

<sup>67</sup> G. NOVAK, 1955, T. CCXXXIX–CCXLII.

<sup>68</sup> J. KOROŠEC, 1964, T. 24–30; A. M. T. MOORE et al., 2019, Figure 22.

<sup>66</sup> B. MARIJANOVIĆ, 2005a, T. IV, T. XXX; S. FORENBACHER, Z. PERHOČ, 2017, 189–211, Fig. 5.

<sup>67</sup> G. NOVAK, 1955, T. CCXXXIX–CCXLII.

<sup>68</sup> J. KOROŠEC, 1964, T. 24–30; A. M. T. MOORE et al., 2019, Figure 22.

## KAMENI NALAZI

Nekoliko nalaza od abrazivnog kamena pronađeno je u iskopavanjima utvrde Sokol. Svi oni potječu iz željeznog doba i rimskog razdoblja. Dva rastirača pronađena su u željeznodobnim/ilirskim slojevima u sondi 2. Jedan je trapezoidne (T. XIII, 1), a drugi jajolike forme (T. XIII, 2). Oba su izrađena od domaćeg vapnenca i obojena su crvenom bojom zbog dugog taloženja u zemlji crvenici (*terra rossa*). Treći ulomak kamenog oruđa, dio žrvnja (T. XIII, 3), također izrađen od domaćeg vapnenca, pronađen je u istoj sondi. Ovaj nalaz potječe iz rimskog razdoblja. Četvrti predmet je nađen na kasnorimskoj razini uz istočnu stranu utvrde. Također je služio kao rastirač, gotovo pravokutnog je oblika, a izrađen je od vapnenca (T. XIII, 4). Vrlo je vjerojatno da su svi ovi alati korišteni za obradu žitarica i drugih biljaka za hranu.

Ulomak stupa s utorom kojem nedostaje kapitel (T. XIII, 5) nađen je u kasnoantičkom/ranosrednjovjekovnom sloju uz južnu stranu utvrde. Moguće je da potječe iz neke ranokršćanske crkve. Uz taj ulomak nađeno je još nekoliko fragmenata središnjih dijelova stupića. Uz južnu stranu utvrde i danas postoji crkva, a pretpostavlja se, zbog kasnoantičkih zidova koji naglo mijenjaju smjer na toj strani sonde jer se nisu imali kuda pružati zbog već zauzetog prostora, da je u neposrednoj blizini morao biti smješten neki objekt (moguće sakralni) koji je sprječavao njihovo pružanje.

Stupić s dijelom kapitela s reljefnim ornamentom (T. XIII, 6) nađen je s mješovitim materijalom u kasnosrednjovjekovnom/ranovovjekovnom sloju uz istočnu stranu utvrde.

Ulomak kamena s uklesanom ribom (T. XIII, 7) pronađen je uza sjevernu stranu utvrde u nasipnom sloju s mješovitim, pretežno kasnosrednjovjekovnim materijalom i s nešto tegula.

Dvije veće konzole (cca 60 cm dužine) na-

(T. XIII, 2). Both were made of local limestone and had been colored red by long deposition in *terra rossa* soils. A third stone tool fragment, this time a segment of a rotary quern (T. XIII, 3), also made of local limestone, was recovered from the same trench. This object is Roman in date. The fourth object came from a late Roman level on the eastern side of the fortress. It, too, was a rubbing stone, almost rectangular in shape and made of limestone (T. XIII, 4). It is likely that all these tools were used to prepare grains and other plants for food.

A fragment of a column with utor without capitel (T. XIII, 5) was found in late Roman / early Medieval layer next to the southern side of the fort. It is possible that it belonged to some early Christian church. Beside that fragment, several other pieces of central parts of small columns have been found. There is a church next to the southern part of the fort and it is supposed, due to late Antique walls that abruptly change direction in that part of the probe, that some building (sacral ?) was in the vicinity.

Small column with fragment of the capitel with relief ornamentation (T. XIII, 6) was unearthed together with mixed material in late Roman / early Medieval layer next to the fort's eastern part.

A stone fragment with depiction of a fish inscribed in it (T. XIII, 7) was found next to the northern side of the fort in a layer with mixed but mostly late Medieval material with some tegulae.

Two larger consoles (cca 60 cm in length) were found next to the western side of the fort. They probably got there when one of the buildings on top of the fort collapsed.

Stone balls-projectiles for missile weapons and bombards (T. XII, 8) were often used on the fort Sokol which is attested by the defensive character of the building and an information from 1423 that states that a stonemason was sent to the fort to make 100 stone balls for bombards.<sup>69</sup> Balls that have been found are

<sup>69</sup> L. BERITIĆ, 1966, 108.

đene su uza zapadnu stranu utvrde, a tu su vjerojatno dospjele kad se urušila neka od građevina na vrhu utvrde.

Kamene kugle-projektili za bacačke sprave i bombe (T. XIII, 8) dosta su korištene na utvrđi Sokol o čemu svjedoče nalazi i sam karakter objekta, kao i podatak iz 1423. godine preko kojeg znamo da je na utvrdu poslan klesar radi izrade 100 kamenih kugli za bombe.<sup>69</sup> Pronađene kugle različitih su promjera (cca 10 – 40 cm) i kvalitete obrade. Nađene su u nasipnim kasnosrednjovjekovnim/ranonovovjekovnim slojevima uokolo utvrde. Njihova upotreba je bila raširena u to vrijeme, a slične kamene, ali i metalne i srednje kugle različitih promjera za topove i/ili katapult pronađene su u istraživanju utvrde Sokol na Plivi.<sup>70</sup> Kamene kugle nađene su i na kraljevskoj utvrđi Bobovac u Bosni,<sup>71</sup> utvrđi Kličevici u sjevernodalmatinskom zaleđu,<sup>72</sup> te u Starom Baru u Crnoj Gori.<sup>73</sup>

## KOŠTANI NALAZI

Koštani artefakti pronađeni uz utvrdu Sokol nisu brojni, iako je tradicija obrade kosti bila vrlo raširena u ranijim razdobljima (prapovijest, antika) koja su dokumentirana na lokalitetu. Među nalazima se ističu privjesci-amuleti (T. XIV, 1), jelenji rogovi i češljevi (T. XIV, 3). Privjesci su izrađeni od kosti, a probušeni su da bi se mogli nositi kao ukras, amuleti ili su mogli imati apotropejsku funkciju. Nađeni su u dubokom prapovijesnom sloju s mješovitim nalazima. Slični predmeti upotrebljavani su i u ranijim prapovijesnim razdobljima (paleolitik, neolitik).<sup>74</sup>

Dvostrani koštani češljevi pravokutnog

of different diameters (cca 10 – 40 cm) and quality. They were found in late Medieval / early postmedieval fill layers around the fort. Their usage was common in those times. Similar stone balls, as well as metal and tufa balls of different diameters for cannons and/or catapults were found during the excavation of the fort Sokol on the river Pliva.<sup>70</sup> Stone balls were found in the regal fort of Bobovac in Bosnia,<sup>71</sup> Kličevica fort in North Dalmatian hinterland<sup>72</sup> and in Stari Bar in Montenegro.<sup>73</sup>

## BONE FINDS

Bone artifacts found near Fort Sokol are not numerous though tradition of working bone was very widespread in the earlier prehistoric periods (prehistory, antiquity) that have been documented at the site. Interesting bone finds include pendants-amulets (T. XIV, 1), deer antlers and combs (T. XIV, 3). Pendants made of bone were perforated to be worn as ornaments, amulets, or they might have had apotropaic function. They were found in a deep prehistoric layer with mixed finds. Similar objects were used in the earlier prehistoric periods (Paleolithic, Neolithic).<sup>74</sup>

Double-sided bone combs, rectangular in form, with teeth, are common finds from antiquity. They were also used as hair adornment.<sup>75</sup> On two fragments were iron rivets used to fasten bone plate in the middle of the comb as a reinforcement. Comb fragments were found in late antique layer along the northern side of the fort. One fragment was found in the fill of GR 37 (male grave) along the eastern side of the fort. Finds can be dated to the 5th and 6th centuries in accordance with dat-

<sup>69</sup> L. BERIĆ, 1966, 108.

<sup>70</sup> I. BOJANOVSKI, 1972, 58.

<sup>71</sup> P. ANĐELIĆ, 2004, 154.

<sup>72</sup> K. GUSAR, M. ČURKOVIĆ, 2011, 13, 30, kat. 55.

<sup>73</sup> L. SABBIONESI, 2013, 169–170, Fig. 5,66.

<sup>74</sup> M. MALEZ, 1979, 260, T. XXIV, 20–23; B. MARIJANOVIĆ, 2005a, 61, T. XXXI/10; B. MARIJANOVIĆ, 2005b, 15–16.

<sup>70</sup> I. BOJANOVSKI, 1972, 58.

<sup>71</sup> P. ANĐELIĆ, 2004, 154.

<sup>72</sup> K. GUSAR, M. ČURKOVIĆ, 2011, 13, 30, kat. 55.

<sup>73</sup> L. SABBIONESI, 2013, 169–170, Fig. 5,66.

<sup>74</sup> M. MALEZ, 1979, 260, T. XXIV, 20–23; B. MARIJANOVIĆ, 2005a, 61, T. XXXI/10; B. MARIJANOVIĆ, 2005b, 15–16.

<sup>75</sup> M. PETRINEC, 2009, 186.

oblika sa zupcima čest su nalaz iz antičkog razdoblja. Korišteni su i kao ornament u kosi.<sup>75</sup> Na dvama ulomcima sačuvane su željezne zakovice koje su fiksirale koštanu letvicu koja se nalazila po sredini kao pojačanje češlja. Jedna strana češljeva gušće je nazubljena tanjim zupcima. Fragmenti češlja pronađeni su u kasnoantičkom sloju uz sjevernu stranu utvrde. Jedan ulomak nađen je u zapuni GR 37 (muški grob) uz istočnu stranu utvrde. Nalazi se mogu datirati u 5. – 6. stoljeće prema dataciji dobivenoj za ostale grobove iz tog sloja. Fragment koštanog češlja nađen je uz poremećene/uništene grobne konstrukcije (GR 1 i 2, dječji i ženski grob) uz JI stranu utvrde pa je moguće da je riječ o grobnom prilogu nekoga od grobova koji su datirani u rasponu od polovice 6. do početka 7. stoljeća, što bi moglo približno datirati i ovaj nalaz. Prema stratigrafskom kontekstu fragmenti se mogu datirati u kasnu antiku ili rani srednji vijek. Ovakvi nalazi su osobito učestali u kasnoantičkim naseljima i nekropolama na širem euroazijskom prostoru. Slične primjere nalazimo na nekropolama sjeverne i srednje Dalmacije. Kronološki su im još bliži nalazi iz istarskih nekropola 7. i 8. stoljeća koji su vrlo brojni, a povezani su s pridošlim Slavenima i romaniziranim starosjediocima.<sup>76</sup> Takvi nalazi poznati su i iz istraživanja crkve sv. Stjepana u Dubrovniku a datirani su u rani srednji vijek.<sup>77</sup>

## KERAMIČKI NALAZI

Keramički nalazi vrlo su brojni, a osobito se ističu ulomci keramičkih posuda iz prapovijesnog razdoblja (eneolitik/brončano doba, željezno doba) (T. XIV, 4-11; T. XV; T. XVI, 1-2), grčko-helenističkog doba (T. XVI, 3-9) te rimskog i ranobizantskog razdoblja (T.

ing obtained for other graves from that layer. Fragment of a bone comb was found next to disturbed/destroyed grave constructions (GR 1, 2: child's and female grave) along SE side of the fort so it is possible that it belonged to grave goods from some of the graves that were dated to the range from mid-6th to early 7th century, that might be broad dating for this find as well. On the basis of stratigraphic context, these fragments can be dated to Late Antiquity or the Early Middle Ages. Such finds are particularly common at late antique sites and necropoles in wider Euro-Asian region. Similar examples can be found at necropoles of northern and central Dalmatia. Numerous finds from Istrian necropoles of the 7th and 8th centuries are even closer to these fragments in terms of chronology. Istrian combs are related to Slavic newcomers and Romanized indigenous population.<sup>76</sup> Such finds are known from the excavations of the church of St Stephen in Dubrovnik dating to the Early Middle Ages.<sup>77</sup>

## CERAMIC FINDS

Ceramic finds are numerous, particularly pottery sherds from prehistory (Eneolithic / Bronze Age, Iron Age) (T. XIV, 4-11; T. XV; T. XVI, 1-2), Greek-Hellenistic period (T. XVI, 3-9) and Roman and Early Byzantine period (T. XVII-XVIII). There are also many finds of ceramic vessels dating to the Late Middle Ages and Early Modern Period (T. XIX-XX). Several small weights in different shapes were found (T. XVI, 1). Three miniature vessels are especially interesting (T. XVI, 2). Fragments of a late antique lamp also belong to ceramic inventory of this site (T. XVIII, 4). Most ceramic finds were recovered from layers in very fragmentary condition, while only a small portion of fragments were found in grave fills

<sup>75</sup> M. PETRINEC, 2009, 186.

<sup>76</sup> J. BELOŠEVIĆ, 1980, 124.

<sup>77</sup> N. TOPIĆ et. al., 2019, 92, 131, T. XX/1-3.

<sup>76</sup> J. BELOŠEVIĆ, 1980, 124.

<sup>77</sup> N. TOPIĆ et. al., 2019, 92, 131, T. XX/1-3.

XVII-XVIII). Također su brojni nalazi keramičkih posuda kasnog srednjeg i ranog novog vijeka (T. XIX-XX). Nađeno je više malih utega različitih oblika (T. XVI, 1), a osobito se ističu tri minijaturne posude (T. XVI, 2). Također su nađeni ulomci kasnoantičke svjetiljke (T. XVIII, 4). Keramički nalazi su uglavnom pronađeni kao vrlo fragmentirani nalazi u slojevima, dok je manji broj nađen u zapunama grobova (ne u funkciji grobnih priloga).

**Kasnoeneolitička/ranobrončanodobna keramika** (T. XIV, 5-7) svjedoči o prijelaznom periodu iz kamenog na metalno doba na području utvrde Sokol. Eneolitik istočne jadranske obale slabije je istražen od razvoja toga razdoblja u unutrašnjosti Balkana.<sup>78</sup> Prijelaz eneolitika na brončano doba na području zaleđa srednjeg i južnog dijela istočnog Jadrana obilježile su dvije kulturne grupe, cetinska (kasni eneolitik/rano brončano doba) i posuška (rano i srednje brončano doba). Iako im područje južnog Jadrana i otoka nije ishodišni prostor, te kulturne grupe sudjelovale su u kreiranju brončanog doba na tom području.<sup>79</sup>

Protonakovanska kultura pojavljuje se na području srednjeg i južnog Jadrana. Manji broj ulomaka (T. XIV, 4) odlikuje se nekim karakteristikama protonakovanske i nakovanske kulture (plitke kratke kanelire duž gornjeg dijela posude, ispod horizontalnih ureza).<sup>80</sup> Eneolitička keramika manje je zastupljena od brončanodobne na Sokolu, ali se na pronađenom materijalu vide eneolitički utjecaji. Badenska kulturna grupa očituje se u načinu ornamentiranja posuda (trokutići s paralelno urezanim linijama, trake ispunjene točkastim ubodima, lažne ručke) (T. XIV, 7; T. XV, 7). Porijeklo te kulturne grupe nije sasvim jasno, no smatra se da je nastala na području južnog Balkana na periferiji kasne vinčanske kulture

(but not as grave goods).

**Late Eneolithic / Early Bronze Age** pottery (T. XIV, 5-7) testifies to the transitional period from the Stone Age to the Metal Ages that happened in the area of Fort Sokol. Eneolithic of the eastern Adriatic coast is poorly explored in comparison with this period in the interior of the Balkans.<sup>78</sup> Transition from the Eneolithic to the Bronze Age in the hinterland area of central and southern part of the eastern Adriatic was marked by two cultural groups: the Cetina culture (Late Eneolithic / Early Bronze Age) and the Posušje culture (Early and Middle Bronze Age). Although the area of the southern Adriatic and islands is not their area of origin, these cultural groups participated in creating the Bronze Age in this region.<sup>79</sup>

Proto-Nakovana culture emerged in the area of the central and southern Adriatic. Small number of sherds (T. XIV, 4) are characterized by some features of the proto-Nakovana and Nakovana cultures (shallow channels along the upper part of the vessel under horizontal incisions).<sup>80</sup> Eneolithic pottery sherds are not as numerous as the Bronze Age fragments in Sokol, but Eneolithic influences can be recognized on the recovered material. The Baden cultural group is manifested in ornamentation of vessels (small triangles with parallelly incised lines, bands filled with dotted pricks, false handles) (T. XIV, 7; T. XV, 7). Origin of this group has not been determined unambiguously, it is assumed that it was created in the southern Balkan region in the periphery of the late Vinča culture under Anatolian influences.<sup>81</sup>

The Lasinja and Vučedol cultures influenced formation of the Cetina culture in the Adriatic region.<sup>82</sup> In the Adriatic zone probably

<sup>78</sup> S. DIMITRIJEVIĆ, T. TEŽAK-GREGL, N. MAJNARIĆ-PANDŽIĆ, 1998, 112-113.

<sup>79</sup> B. MARIJANOVIĆ, 2005b, 17-18.

<sup>80</sup> S. DIMITRIJEVIĆ, 1979a, 371-372, T. XLVIII/3-4, 8-9.

<sup>78</sup> S. DIMITRIJEVIĆ, T. TEŽAK-GREGL, N. MAJNARIĆ-PANDŽIĆ, 1998, 112-113.

<sup>79</sup> B. MARIJANOVIĆ, 2005b, 17-18.

<sup>80</sup> S. DIMITRIJEVIĆ, 1979a, 371-372, T. XLVIII/3-4, 8-9.

<sup>81</sup> S. DIMITRIJEVIĆ, T. TEŽAK-GREGL, N. MAJNARIĆ-PANDŽIĆ, 1998, 122-126.

<sup>82</sup> I. MAROVIĆ, B. ČOVIĆ, 1983, 225-228; S. DIMITRIJEVIĆ, 1979b, 377.

uz anadolske utjecaje.<sup>81</sup>

Na području Jadrana na tvorbu cetinske kulture utjecale su lasinjska i vučedolska.<sup>82</sup> U jadranskoj zoni vjerojatno je postojala kasno-vučedolska faza prije formiranja ljubljanske kulturne grupe, tj. prije početka brončanog doba.<sup>83</sup> Utjecaji kasnovučedolskih populacija iz područja južne i zapadne Bosne zamjećuju se na jadranskom području u vrijeme prijelaza eneolitika na brončano doba, nakon nakovanskog razdoblja.<sup>84</sup> Ističe se ulomak otvora posude s ukrasom žigosanih kvadratića (T. XIV, 5), kod kojeg se vide utjecaji vučedolske kulture.<sup>85</sup> Također su nađeni ulomci s ukrasom šrafiranih trokutića od kojih neki sadrže V i M motive (T. XIV, 6), što je uobičajen način dekoracije za rano brončano doba, a tako ukrašene posude nalazimo na području zapadne Hercegovine<sup>86</sup> i prijelazne zone (sjeverna Hercegovina, južna i centralna Bosna, gornji tokovi Neretve, Bosne i Vrbasa).<sup>87</sup> Prijelaznu zonu krajem eneolitika uglavnom su naseljavali nosioci vučedolske kulture, što također svjedoči o mogućim utjecajima, a pristiže i novo stanovništvo.<sup>88</sup> Na nalazima koji su nađeni uz utvrdu Sokol nije sačuvana inkrustacija koja je karakteristična za takvo posuđe. Nekoliko ulomaka ukrašeno je koso šrafiranim uzastopnim trokutima (T. XIV, 7) koji se pojavljuju u kasnoklasičnoj fazi vučedolske kulture,<sup>89</sup> ranom brončanom, ali i kasnom brončanom dobu u prijelaznoj zoni (sjeverna Hercegovina, južna Bosna).<sup>90</sup>

Prijelazni period s kasnog eneolitika na **brončano doba** očituje se u zastupljenosti keramike cetinske kulturne grupe (T. XIV,

late Vučedol phase preceded formation of the Ljubljana cultural group, i.e. beginning of the Bronze Age.<sup>83</sup> Influences of the late Vučedol populations from the regions of southern and western Bosnia can be noticed in the Adriatic region in the period of transition from the Eneolithic to the Bronze Age, after the Nakovana phase.<sup>84</sup> Fragment of a vessel opening decorated with stamped squares (T. XIV, 5) stands out, with obvious influences of the Vučedol culture.<sup>85</sup> There were also fragments decorated with hatched triangles some of which contain V and M motifs (T. XIV, 6), decoration characteristic of the Early Bronze Age. Vessels decorated in this manner can be found in western Herzegovina<sup>86</sup> and in the transition zone (northern Herzegovina, southern and central Bosnia, upper courses of Neretva, Bosna and Vrbasa).<sup>87</sup> The transition zone at the end of the Eneolithic was mostly inhabited by the population of the Vučedol culture, testifying to possible influences, and also new population was arriving.<sup>88</sup> Incrustation technique which is characteristic of such vessels was not recorded on the finds recovered near Fort Sokol. Several fragments were decorated with obliquely hatched triangles in a row (T. XIV, 7) characteristic of the late classical phase of the Vučedol culture,<sup>89</sup> Early Bronze, and Late Bronze Ages in the transition zone (northern Herzegovina, southern Bosnia).<sup>90</sup>

Transition period from the Late Eneolithic to the **Bronze Age** is manifested in presence of the Cetina culture pottery (T. XIV, 8-9; T. XV, 1-2, 4-6). Characterized by heterogeneity, it emerged in the Eneolithic of the Adriatic hinterland and coastal area, continuing its development in the Bronze Age, until its middle phase. The first stage represents transition

<sup>81</sup> S. DIMITRIJEVIĆ, T. TEŽAK-GREGL, N. MAJNARIĆ-PANDŽIĆ, 1998, 122-126.

<sup>82</sup> S. DIMITRIJEVIĆ, 1979b, 377; I. MAROVIĆ, B. ČOVIĆ, 1983, 225-228.

<sup>83</sup> S. DIMITRIJEVIĆ, 1979b, 378.

<sup>84</sup> S. DIMITRIJEVIĆ, 1979b, 370, 378.

<sup>85</sup> S. DIMITRIJEVIĆ, 1979a, 267-341, T. XXVIII/3.

<sup>86</sup> B. ČOVIĆ, 1983a, 151, T. XVIII/2.

<sup>87</sup> B. ČOVIĆ, 1983b, 170, 177, T. XXIV/10, T. XXV/11.

<sup>88</sup> B. ČOVIĆ, 1983b, 182.

<sup>89</sup> S. DIMITRIJEVIĆ, 1979a, 293, T. XXXIII/6.

<sup>90</sup> B. ČOVIĆ, 1983c, 390, 395, sl. 25/4, T. LIX/3-4,9, LXI/10.

<sup>83</sup> S. DIMITRIJEVIĆ, 1979b, 378.

<sup>84</sup> S. DIMITRIJEVIĆ, 1979b, 370, 378.

<sup>85</sup> S. DIMITRIJEVIĆ, 1979a, 267-341, T. XXVIII/3.

<sup>86</sup> B. ČOVIĆ, 1983a, 151, T. XVIII/2.

<sup>87</sup> B. ČOVIĆ, 1983b, 170, 177, T. XXIV/10, T. XXV/11.

<sup>88</sup> B. ČOVIĆ, 1983b, 182.

<sup>89</sup> S. DIMITRIJEVIĆ, 1979a, 293, T. XXXIII/6.

<sup>90</sup> B. ČOVIĆ, 1983c, 390, 395, sl. 25/4, T. LIX/3-4,9, LXI/10.

8-9; T. XV, 1-2, 4-6). Ona se odlikuje heterogenošću, pojavljuje se u eneolitiku jadranskog zaleđa i obalnog područja, a nastavlja se razvijati u brončanom dobu, do njegove srednje faze. Prvi stupanj čini prijelazno razdoblje iz kasnog eneolitika u rano brončano doba.<sup>91</sup> U brončanom dobu dolazi do razvoja metalurgije (lijevanje brončanih predmeta), ali se nastavlja i izrada šireg spektra keramičkih posuda.<sup>92</sup> Nalazi pronađeni uz utvrdu Sokol također svjedoče o dominaciji nositelja te kulturne grupe. Nekoliko ulomaka ima aplicirane trake s otiscima prstiju (T. XIV, 8), kakve nalazimo u cetinskoj kulturnoj grupi.<sup>93</sup> Također su tako ukrašene ranobrončanodobne posude nađene u zapadnoj Hercegovini.<sup>94</sup>

Sljedeći ulomci karakteristični su za cetinsku kulturu, a pripadaju tipu Kotorac koji se pojavljuje u prvoj fazi cetinske kulture – ranom brončanom dobu.<sup>95</sup> Sačuvan je ulomak otvora posude s dekoracijom trokuta izvedenih višestrukim urezanim linijama (T. XV, 9). Takav linearni način ukrašavanja karakterističan je za drugu fazu cetinske kulture.<sup>96</sup> Drugi ulomak ukrašen je trokutićima koji su ispunjeni ubodima (T. XV, 1). Ornament izveden urezivanjem i ubadanjem geometrijskih motiva (trokuti) obilježje je rane faze cetinske kulture, a na sličan način su ukrašene posude tipa Kotorac. Za cetinsku kulturu karakteristični su grublji i finiji plastični ukras, udubljanje, urezivanje, ubodi, žigosanje, tekstilni otisci.<sup>97</sup>

Nađeno je nekoliko ulomaka posuda s valovitim, blago povijenim i zadebljanim otvorom te stijenkama ukrašenom sitnim urezima

period from the Late Eneolithic to the Early Bronze Age.<sup>91</sup> Metallurgy (casting bronze objects) started developing in the Bronze Age, and repertory of ceramic vessels was enriched.<sup>92</sup> Finds recovered from the surroundings of Fort Sokol testify to dominance of the representatives of this cultural group. Several sherds are decorated with applied bands with fingertip impressions (T. XIV, 8), found in the Cetina culture as well.<sup>93</sup> Early Bronze vessels found in western Herzegovina were also decorated in that way.<sup>94</sup>

The following fragments are characteristic of the Cetina culture, belonging to the Kotorac type from the first phase of the Cetina culture – the Early Bronze Age.<sup>95</sup> A fragment of a vessel opening was preserved, decorated with triangles executed with multiple incised lines (T. XV, 9). Such linear decoration is typical of the second phase of the Cetina culture.<sup>96</sup> The other fragment is decorated with triangles filled with pricks (T. XV, 1). Ornament executed by incising and pricking geometric motif (triangles) is characteristic of the early phase of the Cetina culture, and vessels of the Kotorac type were decorated in a similar way. The Cetina culture is characterized by coarse or fine embossed ornaments, impressing, incising, pricking, stamping, textile imprints.<sup>97</sup>

There were also sherds of vessels with wavy, slightly inverted and thickened opening, and wall decorated with small incisions constituting zig-zag motifs that can be single or double (T. XV, 2). Similar manner of incising can be found in the Early Bronze Age in western Her-

<sup>91</sup> I. MAROVIĆ, B. ČOVIĆ, 1983, 194, 196, 218–219, 223–224; S. DIMITRIJEVIĆ, T. TEŽAK-GREGL, N. MAJNARIĆ-PANDŽIĆ, 1998, 174.

<sup>92</sup> S. DIMITRIJEVIĆ, T. TEŽAK-GREGL, N. MAJNARIĆ-PANDŽIĆ, 1998, 167.

<sup>93</sup> I. MAROVIĆ, B. ČOVIĆ, 1983, 195, Sl. 14/6, 211–212, T. XXIX/1.

<sup>94</sup> B. ČOVIĆ, 1983a, 150, T. 16/1, T.21.

<sup>95</sup> I. MAROVIĆ, B. ČOVIĆ, 1983, T. XXXI/5-6; S. DIMITRIJEVIĆ, T. TEŽAK-GREGL, N. MAJNARIĆ-PANDŽIĆ, 1998, 176, sl. 10.

<sup>96</sup> I. MAROVIĆ, B. ČOVIĆ, 1983, T. XXIX/2.

<sup>97</sup> B. ČOVIĆ, 1983a, 150.

<sup>91</sup> I. MAROVIĆ, B. ČOVIĆ, 1983, 194, 196, 218–219, 223–224; S. DIMITRIJEVIĆ, T. TEŽAK-GREGL, N. MAJNARIĆ-PANDŽIĆ, 1998, 174.

<sup>92</sup> S. DIMITRIJEVIĆ, T. TEŽAK-GREGL, N. MAJNARIĆ-PANDŽIĆ, 1998, 167.

<sup>93</sup> I. MAROVIĆ, B. ČOVIĆ, 1983, 195, Sl. 14/6, 211–212, T. XXIX/1.

<sup>94</sup> B. ČOVIĆ, 1983a, 150, T. 16/1, T.21.

<sup>95</sup> I. MAROVIĆ, B. ČOVIĆ, 1983, T. XXXI/5-6; S. DIMITRIJEVIĆ, T. TEŽAK-GREGL, N. MAJNARIĆ-PANDŽIĆ, 1998, 176, fig. 10.

<sup>96</sup> I. MAROVIĆ, B. ČOVIĆ, 1983, T. XXIX/2.

<sup>97</sup> B. ČOVIĆ, 1983a, 150.

koji tvore cik-cak motive koji su jednostruki i dvostruki (T. XV, 2). Sličan način urezivanja nalazimo u ranom brončanom dobu u zapadnoj Hercegovini.<sup>98</sup> Također sličan ornament nalazimo u prijelaznoj zoni (sjeverna Hercegovina, južna i centralna Bosna, gornji tokovi Neretve, Bosne i Vrbasa), na posudu ukrašenom tehnikom „namotane niti“ (*Wickelschnur*) specifičnim cik-cak motivom.<sup>99</sup> Posude s valovitim rubom poznate su u cetinskoj grupi.<sup>100</sup> Slični nizovi udubljenja pojavljuju se na keramici kasnog brončanog doba iz prijelazne zone.<sup>101</sup> Jedan ulomak ima ukras žigosanja na širokom zaravnjenom obodu, što je odlika rane cetinske kulture,<sup>102</sup> a žigosane trokutiće na obodu posude nalazimo i u rano-brončanodobnom sloju Gudnje na Pelješcu, te u srednjoj fazi posuške kulture na gradini u Sovićima.<sup>103</sup> Prije nego što su započela arheološka istraživanja, na lokalitetu su pronađeni i ulomci loptastih posuda s tunelastim ručkama koje pripadaju prvoj fazi cetinske kulture (2100. – 1900. pr. Kr.).<sup>104</sup>

Slijedi nekoliko ručki karakterističnih za brončanodobne posude. Jedna je izrađena od oker gline, a mogla je pripadati peharu, amfori ili amforici iz ranog brončanog doba (T. XV, 3). Slične ručke poznate su iz prijelazne zone.<sup>105</sup> Druga je koljenaste forme (T. XV, 4), vjerojatno je pripadala peharu, a slične primjere nalazimo u zapadnoj Hercegovini.<sup>106</sup> Manja kanelirana ručka sive boje (T. XV, 5) također je karakteristična za rano brončano doba, a paralelne primjere nalazimo u prijelaznoj zoni.<sup>107</sup> Četvrta je trakasta sa žlijebom u sredini i izvučena iznad otvora (T. XV, 6), a

zegovina.<sup>98</sup> Similar ornament is present in the transition zone (western Herzegovina, southern and central Bosnia, upper courses of Neretva, Bosna and Vrbasa), on vessels with cord ornaments (*Wickelschnur*) in a specific zig-zag motif.<sup>99</sup> Vessels with wavy rim are known from the Cetina culture.<sup>100</sup> Similar rows of impressions occur on pottery of the Late Bronze Age from the transition zone.<sup>101</sup> One fragment has a stamped decoration on the wide flattened rim, which is characteristic of the Early Cetina culture.<sup>102</sup> Stamped triangles on the vessel rim are also found in the Early Bronze Age layer in Gudnja on Pelješac, and in the middle phase of the Posušje culture on hillfort in Sovići.<sup>103</sup> Fragments of globular vessels with tunnel-shaped handles from the first phase of the Cetina culture were found at the site before the archaeological excavation started (2100-1900 BC).<sup>104</sup>

Pottery finds from Fort Sokol also comprise several handles characteristic of the Bronze Age vessels. One of them was made of ocher clay, and it might have belonged to a goblet, amphora or small amphora dating to the Early Bronze Age (T. XV, 3). Similar handles are known from the transition zone.<sup>105</sup> The second handle has a bent form, resembling a knee (T. XV, 4). Probably it belonged to a goblet, and similar examples can be found in western Herzegovina.<sup>106</sup> Small grey channelled handle (T. XV, 5) is also characteristic of the Early Bronze Age, and parallel examples can be found in the transition zone.<sup>107</sup> The fourth example is a strap handle with a groove in the middle, that surmounts the rim (T. XV, 6), belonging to

<sup>98</sup> B. ČOVIĆ, 1983, 151, T. XVIII/4, 6, 9.

<sup>99</sup> B. ČOVIĆ, 1983b, 170, 177, T. XXIV/13, T. XXVI/4, 6-9.

<sup>100</sup> I. MAROVIĆ, B. ČOVIĆ, 1983, 195, sl. 14/1.

<sup>101</sup> B. ČOVIĆ, 1983c, 402-403, T. VVII/1,1a, 6, 9, T. LVIII/2a, 5, LXI/3, 4a, 5a, 6, 7.

<sup>102</sup> I. MAROVIĆ, B. ČOVIĆ, 1983, 199, sl. 15/11, T. XXIX/2a, 12a.

<sup>103</sup> B. MARIJANOVIĆ, 2005a, 91, T. LIX/2b.

<sup>104</sup> N. KAPETANIĆ, 2013, 9-10.

<sup>105</sup> B. ČOVIĆ, 1983b, 176, T. XXII/9.

<sup>106</sup> B. ČOVIĆ, 1983a, 149-150, T. XVI/8, XVII/4.

<sup>107</sup> B. ČOVIĆ, 1983b, T. XXII/4.

<sup>98</sup> B. ČOVIĆ, 1983, 151, T. XVIII/4, 6, 9.

<sup>99</sup> B. ČOVIĆ, 1983b, 170, 177, T. XXIV/13, T. XXVI/4, 6-9.

<sup>100</sup> I. MAROVIĆ, B. ČOVIĆ, 1983, 195, fig. 14/1.

<sup>101</sup> B. ČOVIĆ, 1983c, 402-403, T. VVII/1,1a, 6, 9, T. LVIII/2a, 5, LXI/3, 4a, 5a, 6, 7.

<sup>102</sup> I. MAROVIĆ, B. ČOVIĆ, 1983, 199, fig. 15/11, T. XXIX/2a, 12a.

<sup>103</sup> B. MARIJANOVIĆ, 2005a, 91, T. LIX/2b.

<sup>104</sup> N. KAPETANIĆ, 2013, 9-10.

<sup>105</sup> B. ČOVIĆ, 1983b, 176, T. XXII/9.

<sup>106</sup> B. ČOVIĆ, 1983a, 149-150, T. XVI/8, XVII/4.

<sup>107</sup> B. ČOVIĆ, 1983b, T. XXII/4.

pripada cetinskoj kulturnoj grupi.<sup>108</sup>

Sljedeći ulomci su dijelovi otvora posuda s apliciranim potkovičastom drškom (T. XIV, 7), kakve nalazimo na ranobrončanodobnim posudama u sjevernoj Dalmaciji<sup>109</sup> i Hercegovini.<sup>110</sup> Više ulomaka posuda s takvim ručkama nađeno je u srednjobrončanodobnim slojevima pećine Gudnje na Pelješcu. Takve ručke imaju i posude iz treće faze posuške kulture.<sup>111</sup>

U kasnom brončanom dobu dolazi do dinamičkih kretanja i brojnih trgovačkih kontakata.<sup>112</sup> **Željezno doba** donosi razvoj metalurgije te uznapredovale trgovačke veze s južnim krajevima (grčkim, italskim, etruskim svijetom).<sup>113</sup> Također se nastavlja produkcija keramičkih posuda različitih formi i ukrasa, a kao što je to slučaj i s prethodnim razdobljem ni željezno doba južnodalmatinskog područja nije dobro istraženo. Željeznodobna keramika zastupljena je grubim smeđim, crnim i narančastim posuđem s primjesama kalcita (T. XV, 8-12). Ističu se ulomci posuda s plastičnim jezičastim (T. XV, 10) i izvučenim ručkama izduženog ovalnog presjeka (T. XV, 11) iz željeznodobnog ilirskog horizonta (iz posljednjeg istraženog sloja na SZ području uz utvrdu). Analogni su im delmatski nalazi ručki iz Gospodske pećine kod vrela Cetine, koje također imaju kraće ili duže ručke sličnog tipa.<sup>114</sup> Jezičaste ručke također nalazimo u srednjem brončanom dobu u Gudnji na Pelješcu.<sup>115</sup> Vertikalna trakasta ručka koja nadvisuje otvor posude nađena je u mješovitom prapovijesnom sloju uz II stranu utvrde (T. XV, 12), a slične primjere nalazimo u srednjobosanskoj željeznodobnoj grupi.<sup>116</sup>

<sup>108</sup> I. MAROVIĆ, B. ČOVIĆ, 1983, 199, sl. 15/15.

<sup>109</sup> B. ČOVIĆ, 1983d, T. XV/8.

<sup>110</sup> B. ČOVIĆ, 1983a, 157.

<sup>111</sup> B. MARIJANOVIĆ, 2005a, 91-92, T. LIX/3, T. LX/1-5.

<sup>112</sup> S. DIMITRIJEVIĆ, T. TEŽAK-GREGL, N. MAJNARIĆ-PANDŽIĆ, 1998, 215.

<sup>113</sup> S. DIMITRIJEVIĆ, T. TEŽAK-GREGL, N. MAJNARIĆ-PANDŽIĆ, 1998, 229.

<sup>114</sup> I. MAROVIĆ, 1979, 29-31, sl. 9/2, 10/1-3.

<sup>115</sup> B. MARIJANOVIĆ, 2005a, 91, T. LIX/4a-b.

<sup>116</sup> B. ČOVIĆ, 1987a, 491, T. LII/21.

the Cetina cultural group.<sup>108</sup>

The following fragments are parts of the opening of a vessel with an applied handle in shape of a horseshoe (T. XIV, 7), of the type found on the Early Bronze Age vessels in northern Dalmatia<sup>109</sup> and Herzegovina.<sup>110</sup> Several sherds of vessels with such handles were found in the Middle Bronze Age layers of the Gudnja cave on Pelješac. Such handles are also found on vessels from the third phase of the Posušje culture.<sup>111</sup>

Dynamic population movements and growing trade contacts marked the Late Bronze Age.<sup>112</sup> **The Iron Age** brought the development of metallurgy and advanced trade connections with southern regions (Greek, Italic, Etruscan world).<sup>113</sup> Production of ceramic vessels in various forms and with different ornaments continued. Southern Dalmatian area in the Iron Age is poorly explored, just like in the previous period. The Iron Age pottery is represented by coarse brown, black and orange vessels with calcite inclusions (T. XV, 8-12). Fragments of vessels with embossed semicircular (T. XV, 10) and pulled handles with elongated oval cross-section (T. XV, 11) were found in the Iron Age Illyrian horizon (from the last excavated layer in the NW area next to the fort). We can find analogies for these finds in the Dalmatian handles, in longer or shorter variants, from Gospodska pećina at the Cetina river source.<sup>114</sup> Semicircular and flattened handles are also found in the Middle Bronze Age in Gudnja on Pelješac.<sup>115</sup> Vertical strap handle that surmounts vessel opening was found in the mixed prehistoric layer along the SE side of the fort (T. XV, 12). Similar examples can

<sup>108</sup> I. MAROVIĆ, B. ČOVIĆ, 1983, 199, fig. 15/15.

<sup>109</sup> B. ČOVIĆ, 1983d, T. XV/8.

<sup>110</sup> B. ČOVIĆ, 1983a, 157.

<sup>111</sup> B. MARIJANOVIĆ, 2005a, 91-92, T. LIX/3, T. LX/1-5.

<sup>112</sup> S. DIMITRIJEVIĆ, T. TEŽAK-GREGL, N. MAJNARIĆ-PANDŽIĆ, 1998, 215.

<sup>113</sup> S. DIMITRIJEVIĆ, T. TEŽAK-GREGL, N. MAJNARIĆ-PANDŽIĆ, 1998, 229.

<sup>114</sup> I. MAROVIĆ, 1979, 29-31, fig. 9/2, 10/1-3.

<sup>115</sup> B. MARIJANOVIĆ, 2005a, 91, T. LIX/4a-b.

Neki ulomci su karakteristični i za brončano i za željezno doba, a zbog male sačuvanosti nije ih moguće tipološki ni kronološki pouzdano odrediti.

Pronađeno je više keramičkih utega (T. XVI, 1) koji su se mogli rabiti pri ribolovu. Upotrebljavani su tijekom različitih prapovijesnih razdoblja, a prema kontekstu ostale keramike mogu se datirati u brončano i željezno doba. Zanimljiv nalaz su posudice različitih formi: šalica s ručkom, brodić i pehar s dvije drške (T. XVI, 2). Mogu se pripisati brončanodobnom/željeznodobnom razdoblju, a izrađene su kao minijature kopije posuda koje su korištene u svakodnevnom životu što donekle pomaže pri njihovoj kronološkoj determinaciji. Imale su funkciju igračka, a izrađivali su ih iskusni keramičari koji su bili zaduženi za izradu uobičajenih posuda za upotrebu zajednice, a ponekad i djeca. Osim keramičkih posudica, izrađivane su lutke te stolovi i stolice. Takve igračke izrađivale su se i od drukčijih materijala (kosti, kože, tekstila, drva, trstike, slame, rjeđe metala). Slični predmeti korišteni su od mlađeg kamenog do mlađeg željeznog doba.<sup>117</sup>

Južnodalmatinsko područje bilo je pod utjecajem Delmata i glasinacke grupe. Od 6. st. pr. Kr. nadalje intenzivira se trgovina i upotreba grčkih proizvoda. Od 4. st. pr. Kr. helenizacija zahvaća i ovo područje,<sup>118</sup> što se očituje i u keramičkim importima. **Grčko-helenistička keramika** (5. – 4. st. pr. Kr.) pronađena je u dosta fragmentiranom stanju (T. XVI, 3-9), no ipak je moguće pretpostaviti neke tipološke forme i ukrase. Ulomci su nađeni uz južnu stranu utvrde u sloju s mješovitim prapovijesnim materijalom (eneolitičkim/brončanodobnim, željeznodobnim) među kojima su bile i kovanice kralja Baleja (2. st. pr. Kr.) (T. XXVI, 1, 3). Na temelju sačuvanih fragmenata može se pretpostaviti da su pripadali manjim vrčevima (T. XVI, 5),

be found in the Cental Bosnian group dating to the Iron Age.<sup>116</sup>

Some sherds are characteristic of both Bronze and Iron Ages, and due to poor preservation they cannot be determined neither typologically nor chronologically.

Several ceramic weights (T. XVI, 1) were found that could have been used in fishing. They were used in different prehistoric periods, and the context of the remaining pottery dates them to the Bronze and Iron Ages. Small vessels in different forms are particularly interesting: cup with a handle, small boat and a goblet with two handles (T. XVI, 2). They can be attributed to the Bronze / Iron Ages, and they were made as miniature copies of the vessels used in everyday life, making their chronological determination somewhat easier. They were used as toys. They were made by experienced potters, who also produced regular vessels for everyday use, but sometimes also by children. Dolls, tables and chairs were made in addition to small ceramic vessels. Such toys were made of other materials as well (bone, leather, textile, wood, reed, straw, rarely metal). Similar objects were used from the Late Stone Age to the Late Iron Age.<sup>117</sup>

Southern Dalmatian region was influenced by the Delmatae and the Glasinac group. Trade and use of Greek products were intensified from the 6th century BC onwards. Hellenization started in this region from the 4th century BC,<sup>118</sup> which is reflected in pottery import. **Greek-Hellenistic pottery** (5th-4th cent. BC) was found in quite fragmentary condition (T. XVI, 3-9), but still we can assume certain typological forms and decorations. Fragments were found along the southern side of the fort in the layer with mixed prehistoric material (Eneolithic / Bronze and Iron Ages) including the coins of king Ballaios (2nd cent. BC) (T. XXVI, 1, 3). On the basis of preserved

<sup>117</sup> D. BALEN-LETUNIĆ, 2014, 11–13, 321, sl. 1, 2, 4.

<sup>118</sup> S. DIMITRIJEVIĆ, T. TEŽAK-GREGL, N. MAJNARIĆ-PANDŽIĆ, 1998, 325, 349–358.

<sup>116</sup> B. ČOVIĆ, 1987a, 491, T. LII/21.

<sup>117</sup> D. BALEN-LETUNIĆ, 2014, 11–13, 321, fig. 1, 2, 4.

<sup>118</sup> S. DIMITRIJEVIĆ, T. TEŽAK-GREGL, N. MAJNARIĆ-PANDŽIĆ, 1998, 325, 349–358.

ulomak jedne stope je možda tvorio donji dio lekane (T. XVI, 8), a drugi dno *skyphosa* (T. XVI, 9). Ukas je izveden crnim slikanjem na keramičkoj podlozi ili je crnim premazom pokrivena cijela površina. Prikazi su slabo sačuvani, a na ulomku stijenke nedefinirane posude sačuvan je dio florealnog ornamenta (T. XVI, 3). Sličan mu je prikaz (lepezasta palmeta oblih listova) s ulomka koji je nađen u Starom Gradu na Hvaru, a određen je kao lukanski (?) produkt 4. st. pr. Kr.<sup>119</sup> Na jednom ulomku vidljive su urezane linije (T. XVI, 8), što je bilo uobičajeno za posude izrađene u 5. i 4. st. pr. Kr. Tako se postizao kontrast crnog premaza i urezanog dijela tj. keramičke posude.<sup>120</sup>

Premazivanje keramičkih posuda crnom bojom karakteristično je za grčku keramiku tijekom arhajskog, klasičnog i helenističkog doba. Crno slikanje također je prisutno na ranorimskim posudama. U početku se crno slikane keramičke posude rade u Ateni, a kako su ti proizvodi distribuirani diljem Mediterana, dopijevaju i do južne Italije i Sicilije gdje su počele djelovati lokalne radionice (osobito u Tarantu i Metapontu) tijekom 5. i 4. st. pr. Kr. Južnotalijanska keramika sada prednjači pred atenskim produktima i uvelike se importira na istočnu obalu Jadrana.<sup>121</sup> No, ta vrsta keramike importirana je i iz grčkih kolonija u Jadranskom moru u kojima su također organizirane keramičke radionice. O tome svjedoči keramika farskih radionica koja je već pronađena u istraživanjima u istočnojadranskom zaleđu, na području Bosne i Hercegovine,<sup>122</sup> a sokolski nalazi na kojima je crni premaz često oštećen (što može upućivati na moguću domaću izradu lošije kvalitete) još su jedan dokaz o intenzitetu trgovine između grčkih kolonija na Jadranu (Faros, Issa) i Ilira. No, za neke nalaze ne treba isključiti južnoitalsko

fragments we can assume that they belonged to smaller jugs (T. XVI, 5), fragment of one ring base might have been a lower part of a lekane (T. XVI, 8), and the other a skyphos base (T. XVI, 9). Decoration was executed by black painting on ceramic base or entire surface was covered with black glaze. Depictions are poorly preserved, and a fragment of floral ornament can be recognized on the piece of wall of an undefined vessel (T. XVI, 3). It is similar to a depiction (fan-like palmette with rounded leaves) on a sherd found in Stari Grad on the island of Hvar, determined as Lucanian (?), dating to the 4th cent. BC.<sup>119</sup> Incised lines are visible on one fragment (T. XVI, 8), which was common for vessels made in the 5th and 4th centuries BC. In that way contrast of black glaze and incised ornament was achieved.<sup>120</sup>

Covering ceramic vessels with black paint is characteristic of Greek pottery in the archaic, classical and Hellenistic period. Black painting is also present on the early Roman vessels. At the beginning black painted ceramic vessels were made in Athens, and since these products were distributed across the Mediterranean, they reached southern Italy and Sicily where local workshops started working (especially in Taranto and Metapontum) in the 5th and 4th centuries BC. Southern Italic pottery exceeded Athenian products and was imported in great quantities to the eastern Adriatic coast.<sup>121</sup> However this kind of pottery was also imported from Greek colonies in the Adriatic Sea where pottery workshops were also active as evidenced by pottery of the Pharian workshops that has already been found in the excavations in the eastern Adriatic hinterland, in the territory of Bosnia and Herzegovina.<sup>122</sup> Finds from Sokol, often with damaged black glaze (which might suggest possible local, less quality production) are yet another proof of

<sup>119</sup> B. MIGOTTI, 1986, 161, T. 2/9, T. 9/4.

<sup>120</sup> M. MIŠE, 2005, 30.

<sup>121</sup> B. MIGOTTI, 1986, 29.

<sup>122</sup> M. KATIĆ, 1996, 123-124; M. KATIĆ, 1999-2000, 49; M. MIŠE, 2005, 27.

<sup>119</sup> B. MIGOTTI, 1986, 161, T. 2/9, T. 9/4.

<sup>120</sup> M. MIŠE, 2005, 30.

<sup>121</sup> B. MIGOTTI, 1986, 29.

<sup>122</sup> M. KATIĆ, 1996, 123-124; M. KATIĆ, 1999-2000, 49; M. MIŠE, 2005, 27.

porijeklo.

Na dubrovačkom području već je pronađena raznovrsna grčko-helenistička keramika, a ističu se nalazi iz istraživanja u Vilinoj špilji iznad izvora rijeke Omble (prva polovica 4. – početak 3. st. pr. Kr.),<sup>123</sup> te Spile Nakovane – ilirskog svetišta na Pelješcu. Keramika iz Nakovane importirana je od 4. st. pr. Kr. do početka nove ere iz Spine, južne Italije, Grčke ali i iz radionica na Jadranu koje su imitirale grčke uzore (Issa, Resnik). Uglavnom je riječ o posudama za serviranje i pijenje vina te objedovanje.<sup>124</sup> Plereji osobito od 4. stoljeća intenziviraju kontakte s Grcima i koriste se pomorskim komunikacijama. U ranijem istraživanju, nedaleko od utvrde Sokol, pronađene su grobnice s priložima koje su sadržavale oslikane helenističke posude i ilirsku keramiku grube izrade.<sup>125</sup> Ti nalazi svjedoče da su Iliri s južnog Jadrana i njegova zaleđa imali razvijene trgovačke veze s Grcima u helenističkom razdoblju, što upućuje i na suživot tih dviju velikih zajednica.

**Korintske amfore** (4. st. pr. Kr.) također su zastupljene među nalazima pronađenim uz utvrdu Sokol (T. XVII, 1). Ta vrsta amfora proizvodila se u Korintu (6. – 3. st. pr. Kr.), Korkiri na Krfu, a njihova produkcija odvijala se i na Hvaru (4. st. pr. Kr.). Dosta su česti takvi nalazi na istočnoj obali Jadrana.<sup>126</sup> Za sokolske nalaze ovih amfora može se pretpostaviti hvarsko porijeklo, a već spomenuti nalazi grčko-helenističke keramike jadranske produkcije također upućuju na takve trgovačke kontakte Ilira i doseljenih grčkih kolonista.

**Grčko-italske amfore** (sredina 4. – kasno 2. st. pr. Kr.) bile su u upotrebi kao ambalaža uglavnom na otocima i obali, ali nađene su i u unutrašnjosti kod Daorsa (na gradini u Ošanićima u Hercegovini).<sup>127</sup> Prepoznatljive

intensity of trade between the Greek colonies in the Adriatic (Pharos, Issa) and the Illyrians. However southern Italic provenance should not be ruled out for certain finds.

Diverse Greek-Hellenistic pottery was found in the Dubrovnik region, with particularly interesting finds from Vilina špilja over the Ombla river source (first half of the 4th – beginning of the 3rd cent. BC),<sup>123</sup> and Spila Nakovana – Illyrian sanctuary on Pelješac. Pottery found in Nakovana was imported from the 4th cent. BC until the end of the 1st century BC from Spina, southern Italy, Greece and workshops in the Adriatic that imitated Greek models (Issa, Resnik). Mostly these are vessels for serving and drinking wine and dining.<sup>124</sup> Plereii intensified contacts with the Greeks especially from the 4th century using naval communications. In the earlier excavation in the vicinity of Fort Sokol, tombs were found with grave goods including Hellenistic vessels and coarse Illyrian pottery.<sup>125</sup> These finds testify to the fact that the Illyrians from the southern Adriatic and its hinterland had developed trade connections with the Greeks in the Hellenistic period, suggesting coexistence of these two big communities.

**Corinthian amphorae** (4th cent. BC) are also represented among the finds recovered near Fort Sokol. This kind of amphorae was produced in Corinth (6th-3rd cent. BC), Corcyra in Corfu, as well as Hvar (4th cent. BC). Such finds are quite common on the eastern Adriatic coast.<sup>126</sup> Provenance of the finds of these amphorae found in Sokol should probably be looked for in Hvar and previously mentioned finds of Greek-Hellenistic pottery of the Adriatic production suggest such trade contacts of the Illyrians and the settled Greek colonists.

**Graeco-Italic amphorae** (mid-4th – late

<sup>123</sup> D. PERKIĆ, 2010, 159–161, kat. 404.

<sup>124</sup> S. FORENBAHER, T. KAISER, 2003, 62–92, 114–132; R. MENALO, 2005, 20–27.

<sup>125</sup> N. KAPETANIĆ, 2013, 9, 14.

<sup>126</sup> M. KATIĆ, 2005, 51–59.

<sup>127</sup> B. KIRIGIN, 1994, 18; B. KIRIGIN, T. KATUNARIĆ, L. ŠEŠELJ, 2005, 7.

<sup>123</sup> D. PERKIĆ, 2010, 159–161, cat. 404.

<sup>124</sup> S. FORENBAHER, T. KAISER, 2003, 62–92, 114–132; R. MENALO, 2005, 20–27.

<sup>125</sup> N. KAPETANIĆ, 2013, 9, 14.

<sup>126</sup> M. KATIĆ, 2005, 51–59.

su po trokutasto naglašenom donjem vanjskom rubu otvora (koji je zakošen pod ostrim kutom), imaju izdužen vrat i ručke. Kod ranijih formi (4. – 3. st. pr. Kr.) nalazimo kraće i šire rame, dok su kasnije amfore (2. st. pr. Kr.) izdužene i elegantne. Najprije su izrađivane u južnoj Italiji, ali pretpostavlja se i njihova produkcija u lokalnim radionicama na Jadranu. Služile su za transport vina,<sup>128</sup> koje se u velikim količinama uvozilo na područje Ilirika. Fragmenti takvih amfora nađeni su uz utvrdu Sokol (T. XVII, 2), uz njezinu JI stranu na prijelazu antičkih u prapovijesne slojeve formirane potresima. Ti nalazi svjedoče o trgovini vinom s južnom Italijom prije uspostave rimske vlasti nad ovim prostorima.

**Italiske amfore** (2. st. pr. Kr. – 1. st.) također su zastupljene među nalazima sa Sokola, a sačuvani su ulomci oboda i ručki amfora (T. XVII, 3-4). Nađeni su ispod kasnoantičkih slojeva formiranih potresima uza sjevernu stranu utvrde na području gdje se u antičko vrijeme nalazio izvorni ulaz na utvrdu. Nisu sačuvani žigovi, što je uobičajeno za većinu amfora. Mogle su služiti za transport vina, ulja, garuma, voća. Budući da je riječ o djelomično sačuvanim nalazima, nije uvijek moguće pouzdano odrediti o kojim se tipovima radi.

**Kasnoantička i ranobizantska keramika** (5. – 7. st.) zastupljene su ulomcima stolne (vrčevi, zdjele) i u većem broju skladišno-transportne (amfore) keramike. Amfore su ukrašene horizontalnim više ili manje gustim rebrima (T. XVII, 5-6), koja su mogla prekrivati i cijelu posudu. Uglavnom su pronađene stijenke, otvori, ručke (trakaste, ovalne s hrptom po sredini) (T. XVII, 5-6; T. XVIII, 1), dna amfora (XVIII, 2) i različiti ulomci kuhinjskog posuđa (T. XVIII, 3), no nisu uvijek dovoljni za pouzdanu rekonstrukciju pa se njihove forme mogu pretpostaviti preko analognih primjera. Sličan materijal pronađen je diljem istočnojadranskog područja (utvrda

2nd cent. BC) were used as packaging mostly on the islands and coast, but they were also found in the hinterland with the Daorsi (on the hillfort in Ošanići in Herzegovina).<sup>127</sup> They are recognizable by triangular lower outer part of the opening (slanted at an oblique angle), with elongated neck and handles. In the earlier forms (4th – 3rd cent. BC) we find shorter and wider shoulder, while later amphorae (2nd cent. BC) are more elongated and more elegant. At first they were made in southern Italy, but their production in the local workshops in the Adriatic is also assumed. They were used for wine transport<sup>128</sup> that was imported into Illyricum in ample quantities. Fragments of such amphorae were found next to Fort Sokol (T. XVII, 2), along its SE side at the transition of layers dating to antiquity to prehistoric ones formed in the earthquakes. These finds testify to wine trade with southern Italy before the Roman power was established in this region.

**Italic amphorae** (2nd cent. BC – 1st cent.) are also represented among the Sokol finds, with fragments of rim and handles (T. XVII, 3-4). They were found under the late antique layers formed in the earthquakes along the northern side of the fort where the original fort entrance was located in antiquity. Stamps have not been preserved, as usual for most amphorae. They might have been used for transport of wine, oil, garum, fruit. Since finds are only partially preserved, it is not always possible to determine the type.

**Late antique and early Byzantine pottery** (5th-7th cent.) are represented with fragments of tableware (jugs, bowls) and more abundant pottery used for storage and transport (amphorae). Amphorae were decorated with horizontal ribs, more or less dense (T. XVII, 5-6), that might cover the entire vessel. Mostly walls, openings, handles (strap, oval with

<sup>128</sup> B. KIRIGIN, 1994, 15-24; A. STARAC, 2006, 86-87.

<sup>127</sup> B. KIRIGIN, 1994, 18; B. KIRIGIN, T. KATUNARIĆ, L. ŠEŠELJ, 2005, 7.

<sup>128</sup> B. KIRIGIN, 1994, 15-24; A. STARAC, 2006, 86-87.

Lopar,<sup>129</sup> Zadar – Poluotok,<sup>130</sup> Split – Dioklecijanova palača,<sup>131</sup> uvala Sobra kod rta Pusti na Mljetu,<sup>132</sup> Župa dubrovačka – crkva sv. Đurđa,<sup>133</sup> uvale Veliki i Mali Molunat,<sup>134</sup> Stari Bar<sup>135</sup>). Poznate su pod nazivom *Late Roman I* (LR 1), a bile su u upotrebi tijekom 5. i 6. stoljeća. Nemaju žigove, a proizvodile su se u Siriji, Kilikiji, na Cipru te ušću Dunava na Crnome moru. Čest su nalaz diljem Rimskog Carstva, a također su u većem broju nađene na istočnom Jadranu<sup>136</sup> o čemu svjedoče već spomenuti analogni nalazi. Tipovi amfora *Late Roman 2-6* (LR 2-6) imaju guste vodovodne ureze na trbuhu i ramenu, a većina ih je importirana s područja istočnog Mediterana.<sup>137</sup>

Kasnoantičke amfore imaju mali vrat konične ili cilindrične forme i prstenasto zadebljan otvor (T. XVII, 7-8) te polukružno savijene ručke. Sačuvano je nekoliko ulomaka oboda koji se mogu atribuirati sjevernoafričkim amforama. Riječ je o amforama formi *Africana II* (T. XVII, 7) koje imaju vertikalno uzdignut obod. Proizvodile su se na području današnjeg Tunisa tijekom 3. stoljeća.<sup>138</sup> Jedan obod (T. XVII, 8) podsjeća na nešto kasniju formu sličnu amforama *Keay LXII* (5. – 6. st.), a pripada istom proizvodnom krugu tunijskih radionica.<sup>139</sup>

Na Sokolu je zastupljena i keramika s valovnicom (T. XVIII, 3) karakteristična za kasnoantičko razdoblje (5. i 6. st.).<sup>140</sup> No, tako ukrašena keramika prisutna je kod Slavena, čija keramika se razvijala na bazi kasnoan-

a ridge in the middle) were found (T. XVII, 5-6; T. XVIII, 1), as well as bases of amphorae (XVIII, 2) and different sherds of kitchenware (T. XVIII, 3), but they are not always sufficient for a reliable reconstruction so their forms can be assumed on the basis of analogous examples. Similar examples were found across the eastern Adriatic region (fort Lopar,<sup>129</sup> Zadar – Poluotok,<sup>130</sup> Split – Diocletian's Palace,<sup>131</sup> Sobra cove near cape Pusti on the island of Mljet,<sup>132</sup> Župa dubrovačka – church of St George,<sup>133</sup> coves Veliki and Mali Molunat,<sup>134</sup> Stari Bar<sup>135</sup>). They are known as *Late Roman I* (LR 1), used in the 5th and 6th centuries. They bear no stamps, and they were produced in Syria, Cilicia, Cyprus and in the Danube Delta on the Black Sea. They are a common find in all parts of the Roman Empire, and they were also found in the eastern Adriatic<sup>136</sup> in a considerable amount, evidenced by previously mentioned analogous finds. *Late Roman 2-6* (LR 2-6) amphorae have dense horizontal incisions on the body and shoulder, and majority was imported from the eastern Mediterranean.<sup>137</sup>

Late antique amphorae have a short neck in conical or cylindrical form, thickened rim (T. XVII, 7-8) and semicircularly bent handles. Several rim sherds were preserved that can be attributed to north African amphorae: form *Africana II* (T. XVII, 7) with vertically raised rim, produced in the region of present-day Tunisia in the 3rd century.<sup>138</sup> One rim (T. XVII, 8) resembles somewhat later form similar to amphorae *Keay LXII* (5th-6th cent.), and it belongs to the identical production circle of

<sup>129</sup> A. JANEŠ, 2014, 19–20, 26, T. 2/1-2.

<sup>130</sup> L. BEKIĆ et al., 2017, 42–43, sl. 5.

<sup>131</sup> J. MARDEŠIĆ, 2014, 49–52, 65–69, 73, kat. 14, 18–19, 22–27, 39.

<sup>132</sup> A. KISIĆ, 1988, 158, 163, Sl. 7.

<sup>133</sup> M. PERKIĆ, 2008, 84–86, 115, 117, T. 24, 26.

<sup>134</sup> A. KISIĆ, 1988, 154.

<sup>135</sup> M. ZAGARČANIN, 2013, 30–32, 39–41, figs. 2.5, 2.6, 2.9, 2.12.

<sup>136</sup> A. STARAC, 2006, 101, 105.

<sup>137</sup> L. BEKIĆ et al., 2017, 42.

<sup>138</sup> M. BONIFAY, 2004, 111–114.

<sup>139</sup> S. J. KEAY, 1984, 309–328. Za determinaciju ovih ulomaka dugujemo zahvalnost kolegi Mladenu Pešiću, ravnatelju Međunarodnog centra za podvodnu arheologiju u Zadru.

<sup>140</sup> L. BEKIĆ, J. VIŠNJIĆ, 2008, 232.

<sup>129</sup> A. JANEŠ, 2014, 19–20, 26, T. 2/1-2.

<sup>130</sup> L. BEKIĆ et al., 2017, 42–43, fig. 5.

<sup>131</sup> J. MARDEŠIĆ, 2014, 49–52, 65–69, 73, kat. 14, 18–19, 22–27, 39.

<sup>132</sup> A. KISIĆ, 1988, 158, 163, Fig. 7.

<sup>133</sup> M. PERKIĆ, 2008, 84–86, 115, 117, T. 24, 26.

<sup>134</sup> A. KISIĆ, 1988, 154.

<sup>135</sup> M. ZAGARČANIN, 2013, 30–32, 39–41, figs. 2.5, 2.6, 2.9, 2.12.

<sup>136</sup> A. STARAC, 2006, 101, 105.

<sup>137</sup> L. BEKIĆ et al., 2017, 42.

<sup>138</sup> M. BONIFAY, 2004, 111–114.

tičke i ranobizantske. Slični nalazi također su zabilježeni na drugim istočnojadranskim nalazištima s kasnoantičkim horizontom.<sup>141</sup> Osim ovih ulomaka s karakterističnim obilježjima, nađeno je i grubo kuhinjsko posuđe bez ornamenta. Iako su ulomci navedenih karakteristika pronađeni u zasipima grobova, nije riječ o ostatcima grobnih priloga, nego o otpadnom materijalu iz slojeva oko grobova kojima su oni zasuti. Riječ je o ambalažnom i kuhinjskom posuđu korištenom na utvrđi u vrijeme njezina intenzivnog razdoblja. Brojan kasnoantički materijal potvrđuje dobru snabdjevenost Sokola u tom periodu i daje pogled u ekonomske i društvene prilike ove važne utvrde na putu iz zaleđa prema Jadranu.

Osim antičkih amfora i posuda, također su nađeni malobrojni ulomci (rame i ručka) keramičke svjetiljke (T. XVIII, 4) u kasnoantičkim slojevima. Jedan je nađen uz južnu, a drugi uz istočnu stranu utvrde, u blizini grobova. Na svjetiljci su prisutni tragovi gorenja što nam otkriva da je bila u svakodnevnoj upotrebi. Ulomci imaju ukras stilizirane borove grančice, a prema dekoraciji su im analogne svjetiljke koje su pronađene na području Dalmacije<sup>142</sup> i Panonije.<sup>143</sup> Takve svjetiljke izrađivale su se na području sjeverne Afrike od kraja 4. do polovice 5. stoljeća, kao i u drugim provincijama, a bile su u upotrebi diljem Mediterana. Uglavnom su bile ukrašene motivima iz svakodnevnog života i životinjskog svijeta te vegetabilnim i geometrijskim prikazima.<sup>144</sup> Iako su nalazi svjetiljki malobrojni, ipak svjedoče o trgovini takvim predmetima na području južnojadranskog zaleđa.

Među **kasnosrednjovjekovnim i ranono-**

<sup>141</sup> L. BEKIĆ, J. VIŠNJIĆ, 2008, 232; V. DELONGA, 2014, 104-105, 127-128, kat. 9-10, 12; A. JANEŠ, 2014, 17-19, 24, T.1/1-15.

<sup>142</sup> V. BUBIĆ, 2011, 245-248, 254-255, 278-282, 290-291, 298-300, kat. 2, 5-7, 22-23, 81-82, 102, 120-122; V. BUBIĆ, 2012, 119, 128, 130-131, 133, 136-137, 139-143, 145, 158-159, kat. 13, 15, 18, 26, 34, 35, 37-40, 42, 76.

<sup>143</sup> B. VIKIĆ-BELANČIĆ, 1972, 118, 166, 169-170, kat. 280, 289, 304, T. XVII/1-2, 4.

<sup>144</sup> B. VIKIĆ-BELANČIĆ, 1972, 118-119, 120-125; V. BUBIĆ, 2012, 119, 122.

the Tunisian workshops.<sup>139</sup>

Pottery decorated with a wavy line (T. XVI-II, 3) characteristic of Late Antiquity (5th and 6th centuries) was found at Sokol.<sup>140</sup> Pottery with identical decoration was also used by the Slavs whose pottery developed on the basis of late antique and early Byzantine models. Similar finds were recorded at other eastern Adriatic sites with late antique horizon.<sup>141</sup> In addition to these finds with characteristic decoration, some coarse undecorated kitchenware was also found. Although fragments with mentioned characteristics were found in grave fills, they were not grave goods but waste material from layers around the graves used for filling. This is pottery for storage purposes and kitchenware used in the fort's heyday. Abundant late antique material testifies to good supply of Sokol in this period and offers a view into economic and social circumstances of this important fort on the way from hinterland to the Adriatic.

In addition to amphorae and vessels from antiquity, scarce fragments (shoulder and handle) of a ceramic lamp (T. XVIII, 4) were found in late antique layers. One sherd was found next to the southern side of the fort, and the other by the eastern side of the fort, close to graves. Traces of burning were noticed on the lamp suggesting it was in everyday use. The sherds are decorated with a motif of stylized pine branch. Analogous lamps in terms of decoration were found in the region of Dalmatia<sup>142</sup> and Pannonia.<sup>143</sup> Such lamps were manufactured in the region of northern Africa from the end of the 4th to mid-5th century, as

<sup>139</sup> S. J. KEAY, 1984, 309-328. We would like to thank Mladen Pešić, director of the International Center for Underwater Archaeology in Zadar for his assistance in determining these sherds.

<sup>140</sup> L. BEKIĆ, J. VIŠNJIĆ, 2008, 232.

<sup>141</sup> L. BEKIĆ, J. VIŠNJIĆ, 2008, 232; V. DELONGA, 2014, 104-105, 127-128, kat. 9-10, 12; A. JANEŠ, 2014, 17-19, 24, T.1/1-15.

<sup>142</sup> V. BUBIĆ, 2011, 245-248, 254-255, 278-282, 290-291, 298-300, kat. 2, 5-7, 22-23, 81-82, 102, 120-122; V. BUBIĆ, 2012, 119, 128, 130-131, 133, 136-137, 139-143, 145, 158-159, kat. 13, 15, 18, 26, 34, 35, 37-40, 42, 76.

<sup>143</sup> B. VIKIĆ-BELANČIĆ, 1972, 118, 166, 169-170, kat. 280, 289, 304, T. XVII/1-2, 4.

**vovjekovnim** keramičkim nalazima zastupljeni su ulomci grubog i stolnog posuđa svakodnevnog upotrebe. Grubo kuhinjsko posuđe korišteno je za skladištenje i pripremu hrane, dok je glazirano bilo namijenjeno za serviranje. Gruba keramika (lonci, zdjele) crne je i smeđe boje, izrađena je od slabo pročišćene gline i ima primjese kalcita. U istraživanju je pronađena veća skupina ulomaka glazirane keramike (*invetriata, maiolica, graffita*) importirane s Apeninskog poluotoka (južna Italija, Faenza, Marche, Venecija; 14. – 17. st.), različitih tipoloških formi (zdjele, zdjelice, vrčevi, tanjuri) (T. XIX, 1-9; T. XX, 1-5). Nađeni su i rijetki ulomci zdjelica orijentalne keramike (Iznik, 16. st.) (T. XX, 6) te španjolske lustrum keramike (Valencija, Manises, 15. st.) (T. XX, 7). Nalazi su pronađeni u kasnosrednjovjekovnim/ranonovovjekovnim nasipnim slojevima uokolo utvrde, pa ih stratigrafski nije moguće precizno datirati zbog čega je bilo potrebno osloniti se na analogne primjere.

U 14. stoljeću na utvrdu Sokol importira se keramika iz južne Italije (arhajska majolika). Ističe se ulomak ručke sa smeđim paralelnim crticama (T. XIX, 1). Pronađeno je nekoliko ulomaka vrčeva majolike s ukrasom medaljona s kobaltnoplavim bobicama u reljefu (*zaffera in rilievo*) (T. XIX, 2). Tako dekorirana keramika izrađivana je krajem 14. i početkom 15. stoljeća u Romagni, Toskani, Umbriji, Marchama, Laciju.<sup>145</sup> Zastupljeno je renesansno majoličko posuđe iz porodice cvjetne gotike (*famiglia floreale-gotico*) koje je izrađivano od polovice 15. do početka 16. stoljeća u Romagni i Marchama. Vrčevi s *a scaletta* i *a ciuffo* motivom (T. XIX, 3) učestali su na istočnoj obali Jadrana.<sup>146</sup> Nađeni su i ulomci majolike *alla porcellane* (T. XIX, 4). Ta vrsta keramike oponaša kineski porculan, a izrađivana je u Romagni, Venetu i Toska-

well as in other provinces, and they were used throughout the Mediterranean. They were usually decorated with motifs from everyday life, animal world, vegetal and geometric depictions.<sup>144</sup> Although lamp finds are scarce, they still testify to trade with such objects in the area of southern Adriatic hinterland.

**Late medieval and early postmedieval** ceramic finds comprise fragments of coarse pottery and tableware for everyday use. Coarse kitchenware was used for storage and food preparation, while glazed pottery was intended for serving. Coarse pottery (pots, bowls) is black or brown, made of poorly purified clay, with calcite inclusions. A considerable amount of glazed pottery (*invetriata, maiolica, graffita*) imported from the Apennine Peninsula (southern Italy, Faenza, Marche, Venice, 14th-17th cent.) was found in the excavations, in different typological forms (bowls, small bowls, jugs, plates) (T. XIX, 1-9; T. XX, 1-5). Oriental pottery was represented by rare fragments of small bowls (Iznik, 16th cent.) (T. XX, 6) and Spanish lusterware (Valencia, Manises, 15th cent.) (T. XX, 7). The finds were recovered in late medieval / early postmedieval fill layers around the fort, so they could not be dated on the basis of stratigraphy but relying on analogous examples.

In the 14th century pottery from southern Italy (archaic maiolica) was imported to Fort Sokol. A handle decorated with brown parallel lines is especially interesting (T. XIX, 1). Several fragments of maiolica jugs were found decorated with a medallion with cobalt blue beads in relief (*zaffera in rilievo*) (T. XIX, 2). Pottery decorated in that way was made at the end of the 14th and beginning of the 15th century in Romagna, Toscana, Umbria, Marche, Lazio.<sup>145</sup> The finds include Renaissance maiolica ware from the Gothic-floral family (*famiglia floreale-gotico*) that was made from the mid-15th to

<sup>145</sup> T. BRADARA, O. KRNJAK, 2016, 141, 148-149, kat. 49.

<sup>146</sup> H. ZGLAV-MARTINAC, 2004, 142, kat. 172-173; K. GUSAR, 2010, 128-131, 365-370, kat. 393-407; T. BRADARA, O. KRNJAK, 2016, 142, 150-151, kat. 51.

<sup>144</sup> B. VIKIĆ-BELANČIĆ, 1972, 118-119, 120-125; V. BUBIĆ, 2012, 119, 122.

<sup>145</sup> T. BRADARA, O. KRNJAK, 2016, 141, 148-149, cat. 49.

ni u prvoj polovici 16. stoljeća.<sup>147</sup> Brojniji su ulomci majolike *berettine* (T. XIX, 5) za koju je karakteristična plava i plavo siva podloga s oslikanim geometrijsko-biljnim motivima u različitim bojama. Ta vrsta keramike izrađivala se od 16. do sredine 17. stoljeća i vrlo je čest nalaz na istočnoj obali Jadrana.<sup>148</sup> Rijetki su nalazi majolike s ukrasom listova masline (*a foglie d'ulivo*) (T. XIX, 6). Takve posude izrađivane su sredinom 16. stoljeća i početkom 17. stoljeća, a importirane su iz Veneta, Marcha, Emilije Romagne.<sup>149</sup> Također je dokumentirana *maiolica compendiaria* (T. XIX, 7). Taj stil bio je popularan u drugoj polovici 16. i početkom 17. stoljeća.<sup>150</sup>

Nađeno je i nekoliko ulomaka zdjelica s engobnim premazom od kaolinske gline i s caklinom, koje su ukrašene mrljama (*a macculazione*) (T. XIX, 8). Njihova proizvodnja odvijala se krajem 16. i tijekom 17. stoljeća.<sup>151</sup> Višebojna *rivestita* vrlo je čest nalaz na istočnoj obali Jadrana, a zastupljena je i na Sokolu (T. XIX, 9). Odlikuje se dekoracijom višebojnih koncentričnih kružnica i stiliziranih biljnih motiva. Karakteristična je za srednjotalijanske radionice druge polovice 16. i početka 17. stoljeća.<sup>152</sup>

Također su zastupljene posude s engobnim premazom na kojem je urezan ukras, te nakon slikanja premazan caklinom. Ističe se ulomak renesansne grafite iz druge polovice 15. ili početka 16. stoljeća (T. XX, 1) karakterističan za radionice Emilije Romagne i Veneta.<sup>153</sup> Dje-

early 16th century in Romagna and Marche. Jugs with *a scaletta* and *a ciuffo* motif (T. XIX, 3) are common on the eastern Adriatic coast.<sup>146</sup> Fragments of maiolica *alla porcellane* were also found (T. XIX, 4). This kind of pottery imitates Chinese porcelain, and it was made in Romagna, Veneto and Tuscany in the first half of the 16th century.<sup>147</sup> Fragments of maiolica *berettina* are more numerous (T. XIX, 5), characterized by blue or blue-gray base with painted geometric and vegetal motifs in different colours. This kind of pottery was made from the 16th to mid-17th century and it is a very common find on the eastern Adriatic coast.<sup>148</sup> Rare maiolica finds are decorated with olive leaves (T. XIX, 6). Such vessels were manufactured in the mid-16th and early 17th century, and they were imported from Veneto, Marche, Emilia Romagna.<sup>149</sup> *Maiolica compendiaria* (T. XIX, 7) was also documented. This style was popular in the second half of the 16th and early 17th century.<sup>150</sup>

There were also some fragments of small bowls with engobe coating of kaolin clay and glaze, characterized by blurred decoration (*a macculazione*) (T. XIX, 8). They were produced at the end of the 16th and in the 17th century.<sup>151</sup> Polychrome *rivestita* is a very common find on the eastern Adriatic coast, and it was found in Sokol (T. XIX, 9). It is decorated by polychrome concentric circles and stylized vegetal motifs. It is characteristic of the

<sup>147</sup> H. ZGLAV-MARTINAC, 2004, 173, kat. 352–353; K. GUSAR, 2010, 147–149, 393–398, kat. 476–492; L. KOVAČIĆ, 2010, 23, 51, kat. 23; T. BRADARA, O. KRNJAK, 2016, 146, 156, kat. 59.

<sup>148</sup> H. ZGLAV-MARTINAC, 2004, 170–171, kat. 334–341; K. GUSAR, 2010, 403–408, kat. 505–522; L. KOVAČIĆ, 2010, 24, 51–52, kat. 24–27; B. MILOŠEVIĆ, N. TOPIĆ, 2014, 1–20; T. BRADARA, O. KRNJAK, 2016, 147, 157, kat. 60.

<sup>149</sup> H. ZGLAV-MARTINAC, 2004, 171–172, kat. 345–351; K. GUSAR, 2010, 180–181, 437–440, kat. 609–616; L. KOVAČIĆ, 2010, 28, 54, kat. 33.

<sup>150</sup> H. ZGLAV-MARTINAC, 2004, 166–169, kat. 312–333.

<sup>151</sup> K. GUSAR, 2010, 57–58, 277–280, kat. 126–135.

<sup>152</sup> K. GUSAR, 2010, 181–182, 618–621, kat. 440–441.

<sup>153</sup> H. ZGLAV-MARTINAC, 2004, 138, kat. 148; K. GUSAR, 2010, 82–85, 304, kat. 208–210.

<sup>146</sup> H. ZGLAV-MARTINAC, 2004, 142, cat. 172–173; K. GUSAR, 2010, 128–131, 365–370, cat. 393–407; T. BRADARA, O. KRNJAK, 2016, 142, 150–151, cat. 51.

<sup>147</sup> H. ZGLAV-MARTINAC, 2004, 173, kat. 352–353; K. GUSAR, 2010, 147–149, 393–398, kat. 476–492; L. KOVAČIĆ, 2010, 23, 51, kat. 23; T. BRADARA, O. KRNJAK, 2016, 146, 156, kat. 59.

<sup>148</sup> H. ZGLAV-MARTINAC, 2004, 170–171, kat. 334–341; K. GUSAR, 2010, 403–408, kat. 505–522; L. KOVAČIĆ, 2010, 24, 51–52, kat. 24–27; B. MILOŠEVIĆ, N. TOPIĆ, 2014, 1–20; T. BRADARA, O. KRNJAK, 2016, 147, 157, kat. 60.

<sup>149</sup> H. ZGLAV-MARTINAC, 2004, 171–172, cat. 345–351; K. GUSAR, 2010, 180–181, 437–440, kat. 609–616; L. KOVAČIĆ, 2010, 28, 54, kat. 33.

<sup>150</sup> H. ZGLAV-MARTINAC, 2004, 166–169, cat. 312–333.

<sup>151</sup> K. GUSAR, 2010, 57–58, 277–280, cat. 126–135.

lomično je sačuvan motiv ležeće srne na cvjetnom polju. Pronađen je u nasipu uz istočnu stranu utvrde. Kasna arhajska grafita (Emilia Romagna, druga polovica 15. st./prva polovica 16. st.) zastupljena je s više ulomaka (T. XX, 2-3). Gravirana mreža i plohe s urezima (listovi ili heraldički motivi) doslikani su oker žutom i zelenom bojom.<sup>154</sup> Jedan ulomak ima trag distancijatora (*zampa di gallo*) (T. XX, 2) koji je nastao tijekom pečenja posude. Više ulomaka zdjela kasne grafite (T. XX, 4-5) pronađeno je uz istočnu stranu utvrde u novovjekovnom nasipu. Kasna grafita proizvodila se u Venetu krajem 16. i početkom 17. stoljeća.<sup>155</sup> Ugravirani su različiti biljni motivi (pužolike vitice, latice), a oslikani su plavom, zelenom i žutom bojom.

Fragmentsi talijanske glazirane keramike (Faenza) također su nađeni na utverdama Sokol na Plivi,<sup>156</sup> Kličevici kod Benkovca,<sup>157</sup> Čačvini kod Trilja,<sup>158</sup> te Svaču kod Ulcinja<sup>159</sup> što upućuje na uporabu luksuzne glazirane keramike u bližem i daljem jadranskom zaleđu u sklopu vojnih objekata. Također su u bosanskim srednjovjekovnim gradovima (Bobovac, Kraljeva Sutjeska, Blagaj, Borač) pronađeni ulomci talijanske majolike iz 14. stoljeća (arhajska majolika), ali i s kraja 15. stoljeća (porodica cvjetne gotike). Majolika je osobito importirana iz faentinskih radionica.<sup>160</sup>

Osim talijanske glazirane keramike, u kasnosrednjovjekovnim/ranonovovjekovnim nasipnim slojevima uz sjevernu i istočnu stranu utvrde Sokol, nađeni su malobrojni ulomci keramike iz Iznika, oslikani plavom i maslinastozelenom bojom (T. XX, 6). Budući da su ulomci malih dimenzija nije moguće pouzdano odrediti kojoj vrsti posuda su pripadali. Motiv su cvjetići i vitice, nastali pod utjecajem kineskog porculana (otomanizirani

central Italian workshops of the second half of the 16th and early 17th century.<sup>152</sup>

There are also vessels with engobe coating and incised ornament, that was glazed after painting. A fragment of Renaissance sgraffito pottery from the second half of the 15th or early 16th century (T. XX, 1) is characteristic of the workshops of Emilia Romagna and Veneto.<sup>153</sup> Motif of a doe lying in a flower field is partially preserved. It was found in the fill along the eastern side of the fort. Late archaic sgraffito pottery (Emilia Romagna, second half of the 15th cent./first half of the 16th cent.) is represented by several fragments (T. XX, 2-3). Engraved net and surfaces with incisions (leaves or heraldic motifs) were painted in ochre-yellow and green.<sup>154</sup> One sherd has a mark of a separator (*zampa di gallo*) (T. XX, 2) created during firing of the vessel. Several fragments of late sgraffito pottery (T. XX, 4-5) were found along the eastern side of the fort in the Modern Period fill. Late sgraffito pottery was produced in Veneto by the end of the 16th century and at the beginning of the 17th century.<sup>155</sup> Different vegetal motifs were engraved (snail-like tendrils, petals), painted in blue, green, yellow.

Fragments of Italian glazed pottery (Faenza) were also found at forts Sokol on Pliva,<sup>156</sup> KličevicanearBenkovac,<sup>157</sup> ČačvinanearTrilj,<sup>158</sup> and Svač near Ulcinj<sup>159</sup> suggesting use of luxurious glazed pottery in closer and more distant Adriatic hinterland within military structures. Fragments of Italian maiolica dating to the 14th century (archaic maiolica), and late 15th century (Gothic-floral family) were also found in Bosnian medieval towns (Bobovac, Kraljeva Sutjeska, Blagaj, Borač). Maiolica was import-

<sup>154</sup> K. GUSAR, 2010, 68, 288, kat. 162, 291, kat. 170-171.

<sup>155</sup> H. ZGLAV-MARTINAC, 2004, 152, kat. 230-233.

<sup>156</sup> I. BOJANOVSKI, 1972, 54.

<sup>157</sup> K. GUSAR, M. ČURKOVIĆ, 2011, 9, 20-21, kat. 16-17.

<sup>158</sup> Lj. GUDELJ, 2000, 171-175.

<sup>159</sup> E. ZEČEVIĆ, 1989, 116.

<sup>160</sup> P. ANĐELIĆ, 2004, 146-147, 221-223.

<sup>152</sup> K. GUSAR, 2010, 181-182, 618-621, cat. 440-441.

<sup>153</sup> H. ZGLAV-MARTINAC, 2004, 138, cat. 148; K. GUSAR, 2010, 82-85, 304, kat. 208-210.

<sup>154</sup> K. GUSAR, 2010, 68, 288, kat. 162, 291, kat. 170-171.

<sup>155</sup> H. ZGLAV-MARTINAC, 2004, 152, kat. 230-233.

<sup>156</sup> I. BOJANOVSKI, 1972, 54.

<sup>157</sup> K. GUSAR, M. ČURKOVIĆ, 2011, 9, 20-21, kat. 16-17.

<sup>158</sup> Lj. GUDELJ, 2000, 171-175.

<sup>159</sup> E. ZEČEVIĆ, 1989, 116.

kineski elementi). Ovi iznički ulomci mogu se datirati u drugu polovicu 16. stoljeća (cca. 1570.), prema slično ukrašenom posuđu iz muzejskih kolekcija.<sup>161</sup> U kasnosrednjovjekovnom nasipnom sloju uza zapadnu stranu utvrde pronađen je ulomak zdjelice španjolske keramike s plavim slikanjem (T. XX, 7), no lustrum (metalni premaz koji se nanosio na posudu nakon glazure i boje) nije se sačuvao. Motiv nije dobro sačuvan, ali moguće je da je riječ o ostatku arapskog natpisa. Takve posude uglavnom su izrađivane u Valenciji, Paterni, Manisesu.<sup>162</sup> Ulomak španjolske majoličke zdjelice ukrašene lustrom pronađen je u istraživanju utvrde Kličevice,<sup>163</sup> tako da ovo nije izolirani nalaz iznimno luksuzne glazirane keramike u kontekstu vojnog objekta.

Ovi keramički nalazi svjedoče o luksuznom stilu života na utvrdi koji gotovo da nije odudao od kulture življenja u urbanim sredinama tog razdoblja. Pri tome je položaj utvrde imao važnu ulogu jer je smještena na putu iz zaleđa prema Jadranu, kuda su se kretale razne trgovačke karavane s ciljem prodaje svojih produkata u zaleđe i kupnje određenih sirovina od domaćeg stanovništva. To je osobito izraženo u kasnom srednjem vijeku kad Venecijanci plasiraju svoje proizvode, a doborostojće stanovništvo iz jadransko-balkanskog zaleđa konzumira zapadnoeuropski stil življenja.<sup>164</sup>

## KROVNI CRIJEP (*TEGULAE, IMBRICES*)

Nalazi krovnog crijepa, tegula i kanalice (*tegulae, imbrices*) vrlo su obilni (T. XXI, 1-7). Kao što je očekivano, osobito su brojni u antičkim slojevima, ali ima ih i u kasnijim jer je materijal sekundarno korišten u srednjem

ed in particular from the Faentine workshops.<sup>160</sup>

Except for Italian glazed pottery, scarce fragments of pottery from Iznik, painted in blue and olive-green (T. XX, 6), were found in late medieval / early postmedieval fill layers next to the northern and eastern side of Fort Sokol. It is not possible to determine the type of vessel these sherds belonged to since they are too small. Decorative motifs are flowers and tendrils, created under influences of Chinese porcelain (Ottomanized Chinese elements). These Iznik sherds can be dated to the second half of the 16th century (ca. 1570), on the basis of similarly decorated vessels from museum collections.<sup>161</sup> A fragment of a small bowl of Spanish pottery decorated with blue painting (T. XX, 7) was found in late medieval fill layer next to the western side of the fort, but luster (metal coating applied on the vessel after glaze and paint) was not preserved. The motif is poorly preserved, but possibly it was an inscription in Arabic. Such vessels were usually made in Valencia, Paterna, Manises.<sup>162</sup> Fragment of a Spanish maiolica bowl decorated with luster was found in excavations on fort Kličevica,<sup>163</sup> so this is not an isolated find of exceptionally luxurious glazed pottery in the context of a military structure.

These pottery finds testify to luxurious lifestyle on the fort that was not much different than in the urban centers at the time. The position of the fort was very important in that regard as it stood on the road from the hinterland to the Adriatic, where different trade caravans traveled with an aim of selling their products in the hinterland and buying certain raw materials from the local population. This was particularly noticeable in the Late Middle Ages when the Venetians offered their products, and well-off population from the Adri-

<sup>161</sup> N. ATASOY, J. RABY, 1994, 239-241, kat. 442, 443, 445, 756.

<sup>162</sup> F. AMIGUES, 1995, 129; T. BRADARA, O. KRNJAK, 2016, 158.

<sup>163</sup> K. GUSAR, M. ČURKOVIĆ, 2011, 9, 21, kat. 18.

<sup>164</sup> V. BIKIĆ, 2006, 201-210.

<sup>160</sup> P. ANĐELIĆ, 2004, 146-147, 221-223.

<sup>161</sup> N. ATASOY, J. RABY, 1994, 239-241, kat. 442, 443, 445, 756.

<sup>162</sup> F. AMIGUES, 1995, 129; T. BRADARA, O. KRNJAK, 2016, 158.

<sup>163</sup> K. GUSAR, M. ČURKOVIĆ, 2011, 9, 21, kat. 18.

vijeku, što je također poznato s drugih lokaliteta na dubrovačkom području.<sup>165</sup> Slično kao na konavoskom Sokolu, i na Sokolu na Plivi nađeni su ulomci tegula koje su vjerojatno korištene kao građevinski materijal, ali nema naznaka o rimskom utvrđenju na Plivi.<sup>166</sup> Budući da je najviše polomljenih tegula i kanalice pronađeno uz sjevernu i sjeveroistočnu stranu utvrde, može se pretpostaviti da je na toj strani utvrde došlo do urušavanja kuća koje su bile pokrivene krovom, u nekom od potresa koji su bili učestali na dubrovačkom području. Osim fragmenata sačuvane su i cijele ili manje oštećene tegule i crjepovi koji su korišteni u grobnoj arhitekturi (u formi krova na jednu vodu i krova na dvije vode, te obložnica i poklopnica) (T. I, 5; T. II, 3; T. VIII, 4; T. IX, 3; T. XXI, 2-4). Također su manji dijelovi tegula ugrađivani u kasnoantičke zidove s južne strane utvrde. Dimenzije bolje sačuvanih tegula i kanalice su različite,<sup>167</sup> a mogu upućivati na raznovrsne proizvođače i duži period u kojem su tegule naručivane za potrebe gradnje na utvrdi i oko nje. Pečati, koji su mogli garantirati kvalitetu i veličinu proizvoda,<sup>168</sup> također su vrlo različiti što upućuje na drukčije izvore nabave. Neke tegule ukrašene su užljebljenim koncentričnim polukrugovima i dvostrukim petljama (T. XXI, 1, 3) dobivenim povlačenjem prstiju po svježoj glini, što je uobičajeno i za nalaze tegula s mnogih drugih lokaliteta u široj regiji (Župa dubrovačka,<sup>169</sup> Gornji Tučepi,<sup>170</sup> Baška na Krku,<sup>171</sup> Ptuj – *Poetovio*<sup>172</sup>). No, ti ukrasi nisu uvijek sasvim jednaki nego je riječ

atic-Balkan hinterland accepted western European lifestyle.<sup>164</sup>

## ROOF TILES (*TEGULAE, IMBRICES*)

Finds of roof tiles, tegulae and imbrices are very abundant. (T. XXI, 1-7). As expected, they were particularly numerous in layers dating to antiquity, but they also appear in later phases as this material was in secondary use in the Middle Ages, which has been attested at other sites in the Dubrovnik region.<sup>165</sup> Similar to Sokol in Konavle, the other Sokol, on Pliva, yielded finds of tegulae that were probably used as construction material, though there are no indicators of a Roman fortification on Pliva.<sup>166</sup> Since most broken tegulae and imbrices were found along the northern and northeastern side of the fort, we can assume that houses covered with roof tiles collapsed on this side of the fort, in some of the earthquakes that often shook the Dubrovnik littoral. Except for fragments, complete or less damaged tegulae and tiles were preserved that were used in funerary architecture (in form of a mono- or double-pitched roof, as bases and covers) (T. I, 5; T. II, 3; T. VIII, 4; T. IX, 3; T. XXI, 2-4). Smaller parts of tegulae were incorporated into late antique walls on the southern side of the fort. Dimensions of better preserved tegulae and imbrices are not uniform,<sup>167</sup> and they might suggest different producers and longer chronological range in which tegulae were ordered for constructions on and around the fort. Stamps, that might have guaranteed quality and size of the pro-

<sup>165</sup> M. PERKIĆ, 2008, 86–87, 118, T. 27; N. TOPIĆ et al., 2019, 87, 129, T. XVIII/1-2.

<sup>166</sup> I. BOJANOVSKI, 1972, 54.

<sup>167</sup> Dimenzije tegula: 54 x 37 cm; 54 x 40 cm; 54,5 x 38,5 cm; 54,5 x 40 cm; 55 x 37 cm; 55 x 39 cm; 56 x 39 cm; 56 x 43 cm; 56 x 42 cm; 58 x 45 cm; 61 x cca 40 cm. Dimenzije kanalice: 50 x 23 cm; 50 x 22 cm; 76 x 27 cm.

<sup>168</sup> R. MATIJAŠIĆ, 1985, 289; R. MATIJAŠIĆ, 1989, 62.

<sup>169</sup> M. PERKIĆ, 2008, 86–87, 118, T. 27.

<sup>170</sup> S. BOŽEK, 1999-2000, 512.

<sup>171</sup> L. BEKIĆ, J. VIŠNJIĆ, 2008, 242, 254, Tabla 3/75, Tabla 15/1.

<sup>172</sup> I. TUŠEK, 2004, 118, sl. 6.

<sup>164</sup> V. BIKIĆ, 2006, 201-210.

<sup>165</sup> M. PERKIĆ, 2008, 86–87, 118, T. 27; N. TOPIĆ et al., 2019, 87, 129, T. XVIII/1-2.

<sup>166</sup> I. BOJANOVSKI, 1972, 54.

<sup>167</sup> Tegulae dimensions: 54 x 37 cm; 54 x 40 cm; 54,5 x 38,5 cm; 54,5 x 40 cm; 55 x 37 cm; 55 x 39 cm; 56 x 39 cm; 56 x 43 cm; 56 x 42 cm; 58 x 45 cm; 61 x cca 40 cm; imbrices dimensions: 50 x 23 cm; 50 x 22 cm; 76 x 27 cm.

o njihovim varijacijama. Raširenost sličnih oznaka na tegulama upućuje na univerzalnost u označavanju, ali i na trgovačku povezanost šireg područja. Tegule su različitih boja, od žućkaste što se smatra akvilejskom karakteristikom do crveno narančastih tonova koji se povezuju s Padskom nizinom.<sup>173</sup> Budući da su importi tegula iz tih područja već poznati na području Dalmacije, može se pretpostaviti i takvo porijeklo za manji dio materijala, što bi ga datiralo u 1. stoljeće. No, datum velikog dijela materijala, sudeći po njegovu kontekstu i količini, seže u kasnoantičko razdoblje. Također je bilo uobičajeno da se nakon 1. stoljeća osnivaju lokalne radionice (vojničke i privatne) jer uvoz opada,<sup>174</sup> pa možemo pretpostaviti da se na obližnjem području nalazila radionica za izradu krovnog crijepa.

Na nekim tegulama pronađenima uz utvrdu Sokol sačuvani su pravokutni pečati, a jedan bi se mogao čitati kao FORTIS (T. XXI, 5). Za sada nije poznat paralelan primjer tegule s tim natpisom, ali je taj natpis učestao na svjetiljkama koje su se izrađivale u sjevernoitaljskim ili dalmatinskim radionicama krajem 1. do polovice 2. stoljeća.<sup>175</sup> Nekoliko manjih fragmenata ima djelomično i slabije sačuvane pečate, od kojih neke nije moguće pročitati dok za ostale koji su vrlo loše sačuvani nemamo analogne primjere koji bi pomogli pri interpretaciji, pa ih za sada nije moguće pouzdano očitati (T. XXI, 6-7). Budući da je riječ o velikoj količini materijala, vjerojatno je u blizini postojala radionica u kojoj se izrađivao krovni crijep, u sklopu kolonije Epidauruma. Poznato je da su se u ranom srednjem vijeku u Kuparima izrađivale opeke i kupe u svrhu građevinskog materijala za crkve.<sup>176</sup> Ovi nalazi važni su za rekonstrukciju trgovačkih putova i tržišta u antici, te ubiciranje mogućih lokalnih radionica. Upućuju na intenzitet gradnje

duct,<sup>168</sup> are also very diverse suggesting different acquisition sources. Some tegulae are decorated with grooved concentric semicircles and double loops (T. XXI, 1, 3) resulting from dragging fingers on fresh clay, which is common for finds of tegulae from many other sites in the wider region (Župa dubrovačka,<sup>169</sup> Gornji Tučepi,<sup>170</sup> Baška on the island of Krk,<sup>171</sup> Ptuj – *Poetovio*<sup>172</sup>). However these decorations are not always the same but they come in variations. Wide distribution of similar marks on tegulae suggests universality of marking, and trade connections of the wider region. Tegulae come in different colours, from yellowish which is considered to be an Aquileian characteristic, to red-orange tones associated with the Po Valley.<sup>173</sup> Since import of tegulae from these regions has already been known in Dalmatia, we can assume identical provenance for a smaller part of the material, dating it to the 1st century. However most material, judging by its context and amount, dates to Late Antiquity. Local workshops (military and private) were founded after the 1st century as indicated by reduced import,<sup>174</sup> so we can assume that a roof tile workshop was situated in the vicinity of the fort.

Rectangular stamps have been preserved on some tegulae found at Fort Sokol, and one could be read as FORTIS (T. XXI, 5). We have not been able to find a parallel example of tegula with this stamp which is common on lamps produced in northern Italic or Dalmatian workshops from the end of the 1st century until the mid-2nd century.<sup>175</sup> Several smaller fragments have partially and poorly preserved stamps, some of which are illegible

<sup>173</sup> S. BOŽEK, 1999-2000, 512, bilješka 4.

<sup>174</sup> R. MATIJAŠIĆ, 1989, 65-66.

<sup>175</sup> Z. BULJEVIĆ, 2010, 113, 115, 117, 126, 141-142, sl. 33, Tabla 10/G16, sl. 51.

<sup>176</sup> Z. ŽERAVICA et al., 2007, 25.

<sup>168</sup> R. MATIJAŠIĆ, 1985, 289; R. MATIJAŠIĆ, 1989, 62.

<sup>169</sup> M. PERKIĆ, 2008, 86-87, 118, T. 27.

<sup>170</sup> S. BOŽEK, 1999-2000, 512.

<sup>171</sup> L. BEKIĆ, J. VIŠNJIĆ, 2008, 242, 254, Table 3/75, Table 15/1.

<sup>172</sup> I. TUŠEK, 2004, 118, fig. 6.

<sup>173</sup> S. BOŽEK, 1999-2000, 512, note 4.

<sup>174</sup> R. MATIJAŠIĆ, 1989, 65-66.

<sup>175</sup> Z. BULJEVIĆ, 2010, 113, 115, 117, 126, 141-142, fig. 33, Table 10/G16, fig. 51.

u rimskom razdoblju, a time i na važnost i gospodarski stupanj lokaliteta u to vrijeme.

## METALNI NALAZI

Metalni nalazi također su raznovrsni (predmeti svakodnevnog upotrebe, nošnja, oružje), a mogu se datirati od željeznog doba do novog vijeka (T. XXII–XXV). Manja skupina željeznodobnih nalaza pronađena je u dubokom mješovitom prapovijesnom sloju uz južnu stranu utvrde. Ističe se privjesak u obliku posudice s poklopcem (T. XXII, 1) koji je vjerojatno služio kao viseća dekoracija luka fibule. Ne nalazimo mu identične paralele, a slični privjesci s takvom alkom i stopom zastupljeni su u željeznodobnim grupama: japodskoj (6. – 4. st. pr. Kr.)<sup>177</sup> i srednjodalmatinskoj (6. – 5. st. pr. Kr.).<sup>178</sup> No, karakteristični su i za južne ilirske krajeve. Drugi privjesak (T. XXII, 2) karakterističan je za isto razdoblje (6. – 4. st. pr. Kr.), a slične primjere nalazimo u Bosni (grobnji nalaz iz Vratnice).<sup>179</sup> Takvi privjesci su kod Ilira, u ovom slučaju Plereja, imali dekorativno svojstvo, ali su ujedno služili i kao amuleti.<sup>180</sup> U nasutom prapovijesnom sloju na II dijelu sonde, pronađen je ulomak privjeska (vjerojatno s luka fibule) (T. XXII, 3). Iz istog konteksta su vrhovi igli sa stožastom i ravnom glavom (T. XXII, 4), kakve nalazimo u japodskoj<sup>181</sup> i srednjodalmatinskoj grupi. Karakteristične su uglavnom za 8. st. pr. Kr. i dosta su rasprostranjene na SZ Balkanu, ali su pojedini tipovi u upotrebi i do 6. st. pr. Kr.<sup>182</sup> Ističe se nalaz glave dvojne igle „omega“ tipa (T. XXII, 5) kojoj paralele nalazimo među željeznodobnim materijalom iz obližnjih regija (srednjodalmatinska<sup>183</sup> i srednjobosanska kulturna grupa; 6. – 5. st. pr. Kr., a traju sve

while the poorly preserved ones lack analogies that might facilitate the interpretation, so they could not be reliably identified (T. XXI, 6-7). Since large amount of tegulae was recovered at the fort, probably a roof tile workshop was situated somewhere near, within the colony of Epidaurum. It is known that bricks and tiles were made in Kupari in the Early Middle Ages as construction material for churches.<sup>176</sup> These finds are important for reconstruction of trade routes and markets in antiquity, and location of possible workshops. They suggest the intensity of building in the Roman period, and thereby the importance and stage of economic development of the site at the time.

## METAL FINDS

Metal finds are also diverse (objects for everyday use, costume, weapons), dating from the Iron Age to the Modern Period (T. XXII–XXV). A smaller group of the Iron Age objects was found in deep mixed prehistoric layer along the southern side of the fort. Pendant in shape of a little lidded vessel (T. XXII, 1) stands out, probably used as a hanging decoration of the fibula bow. We cannot find adequate parallels for it, but similar pendants with identical ring and foot are represented in the Iron Age groups: Iapodic (6th-4th cent. BC)<sup>177</sup> and Central Dalmatian (6th-5th cent. BC).<sup>178</sup> However they are characteristic of other southern Illyrian regions. The other pendant (T. XXII, 2) is characteristic of the same period (6th-4th cent. BC), and similar examples can be found in Bosnia (grave goods from Vratnica).<sup>179</sup> Such pendants had decorative meaning for the Illyrians, Plereii in this case, but they were also used as amulets.<sup>180</sup> In the filled prehistoric layer in the SE

<sup>177</sup> R. DRECHSLER-BIŽIĆ, 1987, 434, XLV/6, T. XLVII/8.

<sup>178</sup> B. ČOVIĆ, 1987b, 455, T. L/14, 16.

<sup>179</sup> B. ČOVIĆ, 1984, 43, 45, sl. 9/13.

<sup>180</sup> A. STIPČEVIĆ, 1991, 95.

<sup>181</sup> R. DRECHSLER-BIŽIĆ, 1987, 400–401, Sl. 22/12, 14.

<sup>182</sup> B. ČOVIĆ, 1987b, 452–455, T. XLVIII/15–17.

<sup>183</sup> B. ČOVIĆ, 1987b, 456, T. L/8.

<sup>176</sup> Z. ŽERAVICA et al., 2007, 25.

<sup>177</sup> R. DRECHSLER-BIŽIĆ, 1987, 434, XLV/6, T. XLVII/8.

<sup>178</sup> B. ČOVIĆ, 1987b, 455, T. L/14, 16.

<sup>179</sup> B. ČOVIĆ, 1984, 43, 45, fig. 9/13.

<sup>180</sup> A. STIPČEVIĆ, 1991, 95.

do kraja 3. st. pr. Kr.),<sup>184</sup> što upućuje na import iz tih područja i na kontakte s drugim ilirskim plemenima. Nalazi takvih igli već su poznati iz ranijih istraživanja ilirskih grobova nedaleko od utvrde Sokol.<sup>185</sup> Također je nađena brončana karičica s krajevima koji su prebačeni jedan preko drugoga, koja je mogla služiti kao prsten. Poznato je da su se Iliri bavili rudarstvom i obradom metala, te da su izrađivali različite lijevane predmete.<sup>186</sup> Budući da su u istom sloju s prapovijesnim nalazima pronađeni i komadi drozge, mogli bismo pretpostaviti i lokalnu produkciju nekih predmeta. No, pojedini nalazi ipak svjedoče o razmjeni dobara sa susjednim zajednicama.

Tijekom istraživanja kasnoželjeznodobnog sloja uza sjevernu stranu utvrde pronađena je jedna cjelovita i dvije djelomično sačuvane fibule (od jedne je nađen luk, a od druge igla) koje se mogu datirati u 1. st. pr. Kr. (T. XXII, 6). Riječ je o jednostavnim lučnim fibulama na čijim završecima se nalazi nekoliko navoja koji završavaju iglom. Prije početka arheološkog istraživanja, tijekom sanacije utvrde/građevinskih radova, pronađeni su različiti tipovi fibula (*Aucissa* fibula s trakastim lukom, 1. st.; fibula s lukovičastim završecima, 4. – 5. st.; kasnoantičke i ranobizantske fibule, 5. – 6. st.).<sup>187</sup>

Među metalnim nalazima je i ključ iz rimskog vremena (T. XXII, 7), iz antičkog sloja uz JI stranu utvrde. Željezna kopča (T. XXII, 8) pronađena je u sloju s kasnorimskim materijalom uz JI stranu utvrde, a iz sličnog konteksta su i željezni noževi i britve (T. XXIII, 1). Prije početka arheološkog istraživanja, tijekom građevinskih radova, nađen je dio bizantske kopče s perforiranim križem i polumjesecom (6. st.).<sup>188</sup> U kasnoantičkim slojevima uz sjevernu i južnu stranu utvrde pronađena su ra-

part of the probe, a piece of a pendant was found (probably from a fibula bow) (T. XXII, 3). The same context yielded tips of pins with conical or flat heads (T. XXII, 4), also found in the Iapodic<sup>181</sup> and Central Dalmatian group. They are characteristic mostly of the 8th cent. BC and are quite widespread in NW Balkans, but certain types were used until the 6th cent. BC.<sup>182</sup> Find of the head of a double “omega” pin (T. XXII, 5) is especially interesting, with parallels among the Iron Age material from the neighbouring regions (Central Dalmatian<sup>183</sup> and Central Bosnian cultural groups; 6th-5th cent. BC, and they were used until the end of the 3rd cent. BC),<sup>184</sup> suggesting import from these regions and contacts with other Illyrian tribes. Finds of such pins are known from earlier excavations of the Illyrian graves in the vicinity of Fort Sokol.<sup>185</sup> A bronze circlet with overlapping ends was also found, that might have been used as a ring. The Illyrians practiced mining and processed metals, making different cast objects.<sup>186</sup> Since pieces of slag were found in the same layer with prehistoric finds, we might assume local production of some objects. However certain finds testify to exchange of goods with neighbouring communities.

One complete and two partially preserved fibulae (bow of one example, and pin of the other) were found in the excavation of the Late Iron Age layer next to the northern side of the fort (T. XXII, 6). They can be dated to the 1st century BC. These are simple bow fibulae on whose ends are coils ending in a pin. Before the beginning of the archaeological excavations, during the fort repair / construction works, various types of fibulae were found (*Aucissa* fibula with a flat bow, 1st cent.; fibula with bulbous endings, 4th-5th cent.; late

<sup>184</sup> B. ČOVIĆ, 1984, 43, 45, sl. 9/3; B. ČOVIĆ, 1987a, 502, T. LIII/18.

<sup>185</sup> N. KAPETANIĆ, 2013, 9, 13.

<sup>186</sup> A. STIPČEVIĆ, 1991, 112-116.

<sup>187</sup> N. KAPETANIĆ, 2013, 17-19, 21.

<sup>188</sup> N. KAPETANIĆ, 2013, 17-18, 20.

<sup>181</sup> R. DRECHSLER-BIŽIĆ, 1987, 400-401, fig. 22/12, 14.

<sup>182</sup> B. ČOVIĆ, 1987b, 452-455, T. XLVIII/15-17.

<sup>183</sup> B. ČOVIĆ, 1987b, 456, T. L/8.

<sup>184</sup> B. ČOVIĆ, 1984, 43, 45, fig. 9/3; B. ČOVIĆ, 1987a, 502, T. LIII/18.

<sup>185</sup> N. KAPETANIĆ, 2013, 9, 13.

<sup>186</sup> A. STIPČEVIĆ, 1991, 112-116.

zličita oruđa (dlijeto, šilo, jednokraki šestar) (T. XXIII, 2-3, 5) i čavli (T. XXIII, 4). Slična šila su poznata iz kasnoantičkog razdoblja, a pronađena su i u srednjovjekovnim grobovima sjeverne i južne Dalmacije.<sup>189</sup> U kasnoantičkom sloju uz južnu stranu utvrde nađen je dio koplja (drške) (T. XXIII, 6).

Kasnosrednjovjekovni metalni materijal dosta je brojan, a osobito nalazi vojnog karaktera. Samostrijel se rabio još među nomadskim azijskim narodima, u rimsko doba taj način ratovanja je usavršen, a zadržao se do srednjeg vijeka.<sup>190</sup> Jedna strelica je u obliku izduženog lista, nađeno je mnoštvo vrhova strelica (veretona) koničnog oblika, a ima i strelica s naglašenim zašiljenim ili piramidalnim vrhom (T. XXIV, 1). Slične brojne željezne strelice od samostrela iz 14./15. st. poznate su iz istraživanja utvrđenja na području Bosne i Srbije,<sup>191</sup> te iz zaleđa Dalmacije i Crne Gore. Na utvrdi Sokol na Plivi nađeni su raznoliki metalni nalazi.<sup>192</sup> Strelice su nađene u srednjovjekovnim bosanskim gradovima Bobovcu<sup>193</sup> i Kraljevoj Sutjesci.<sup>194</sup> Brojni su takvi nalazi na utverdama, a nađeni su na Svaču kod Ulcinja<sup>195</sup> te srednjodalmatinskom zaleđu na utverdama Ključevici kod Benkovca<sup>196</sup> i Čačvini kod Trilja.<sup>197</sup> Strelica s naglašenim zašiljenim vrhom (15. st.) pronađena je u istraživanju u Splitu (Diolecijanova palača).<sup>198</sup> Također je nađen veći broj fragmenata pločica koje su tvorile oklop, a koje su spajane zakovicama (T. XXIV, 2). Nađeni su i dijelovi konjske opreme – žvala i potkova.

U arhivskim dokumentima iz 15. stoljeća (1423., 1428., 1438., 1458.) zabilježeno je da je na utvrdi Sokol više puta pristizalo oružje

antique and early Byzantine fibulae, 5th-6th cent.).<sup>187</sup>

A Roman-era key is another metal find (T. XXII, 7), from the layer dating to antiquity along the SE side of the fort. Iron clasp (T. XXII, 8) was found in the layer with late Roman material next to the SE side of the fort, and iron knives and razors are from a similar context (T. XXIII, 1). Before the archaeological excavation started, a piece of a Byzantine clasp with perforated cross and a crescent (6th cent.) was found during construction works.<sup>188</sup> Various tools (chisel, awl, single-leg compass) (T. XXIII, 2-3, 5) and nails (T. XXIII, 4) were found in late antique layers next to the northern and southern side of the fort. Similar awls are known from Late Antiquity, and they were also found in medieval graves in northern and southern Dalmatia.<sup>189</sup> A part of a spear (handle) was found next to the southern side of the fort (T. XXIII, 6).

Late medieval metal material is quite abundant, in particular military finds. Crossbow was used by the nomadic Asian populations, and in Roman time this weapon was improved to perfection. It was used until the Middle Ages.<sup>190</sup> One arrow is in shape of an elongated leaf, and many arrowtips (veretons) are conical in shape. There are also arrows with pronouncedly pointed or pyramidal tip (T. XXIV, 1). Similar iron crossbow arrows dating to the 14th/15th centuries were found in the excavations of forts in Bosnia and Serbia,<sup>191</sup> as well as in the hinterland of Dalmatia and Crna Gora. Diverse metal finds were found in Fort Sokol on Pliva.<sup>192</sup> Arrows were found in medieval Bosnian town of Bobovac<sup>193</sup> and Kraljeva Sutjeska.<sup>194</sup> Identical finds are numerous in forts,

<sup>189</sup> J. BELOŠEVIĆ, 1980, 120-122; M. PERKIĆ, 2008, 82, 133, kat. 9, T. 22/9.

<sup>190</sup> G. A. ŠKRIVANIĆ, 1957, 111-114.

<sup>191</sup> G. A. ŠKRIVANIĆ, 1957, 111-112.

<sup>192</sup> I. BOJANOVSKI, 1972, 54, 56-57, sl. 17-18.

<sup>193</sup> P. ANĐELIĆ, 2004, 153.

<sup>194</sup> P. ANĐELIĆ, 2004, 235.

<sup>195</sup> E. ZEČEVIĆ, 1989, 115-116, T. II/19.

<sup>196</sup> K. GUSAR, M. ČURKOVIĆ, 2011, 11, 28-29, kat. 45-50.

<sup>197</sup> Lj. GUDELJ, 2000, 169-170.

<sup>198</sup> J. BONAČIĆ MANDINIĆ, 2014, 369, 377, kat. 14.

<sup>187</sup> N. KAPETANIĆ, 2013, 17-19, 21.

<sup>188</sup> N. KAPETANIĆ, 2013, 17-18, 20.

<sup>189</sup> J. BELOŠEVIĆ, 1980, 120-122; M. PERKIĆ, 2008, 82, 133, kat. 9, T. 22/9.

<sup>190</sup> G. A. ŠKRIVANIĆ, 1957, 111-114.

<sup>191</sup> G. A. ŠKRIVANIĆ, 1957, 111-112.

<sup>192</sup> I. BOJANOVSKI, 1972, 54, 56-57, fig. 17-18.

<sup>193</sup> P. ANĐELIĆ, 2004, 153.

<sup>194</sup> P. ANĐELIĆ, 2004, 235.

različitog tipa: samostrijeli, veretoni (u pojedinačnim narudžbama spominju se količine od čak 1000 i 3000 komada), oklopi, kacige, štitovi, bombe, bombe, spingarde, kamene kugle, barut, puške, olovne kugle za puške.<sup>199</sup> Godine 1465. navodi se da su se veretoni izrađivali na utvrđi, a 1474. spominje se da se ostala vojna oprema i oružje i dalje naručuju, među kojima i sablje.<sup>200</sup> Za 1476. godinu izrađen je popis predmeta koji su predani utvrđi, a navodi se cijeli niz vojnih predmeta: tarasi, maškule, željezne puške, samostrijeli, sablje, željezni veretoni (4900 komada), oklopi, obrazine za oklope, kacige, koplja, celenga (rijetki šljemovi sa zaštitom ramena), bombe.<sup>201</sup> Prema navedenom, krajem 15. stoljeća dolazi do promjene u korištenju oružja jer je sada u upotrebi i vatreno oružje, te dolazi do prilagodbe novom načinu ratovanja na utvrđi. Početkom 17. stoljeća (1605., 1631.) na Sokol se i dalje doprema oružje (puške, barut i slično).<sup>202</sup> Budući da je Venecija oslabila nakon Kandijskog rata (1645. – 1669.), utvrda Sokol ubrzo je napuštena.<sup>203</sup>

Osim predmeta vojnog karaktera, arhivski dokumenti spominju i materijal povezan s obavljanjem radova na utvrđi poput željeznih klinova (15. st.). Početkom 16. stoljeća (1509., 1513.) spominju se: željezo za spine (30 litara), čavli, kreč za krov, cigle, daske.<sup>204</sup> O tome svjedoče sljedeći nalazi: razni klinovi, čavli (kružne, piramidalne, raskucane glave) (T. XXIV, 3-4), kovački čekić (T. XXV, 1), te alati i pribor poput šestara (T. XXV, 2). Također su nađeni noževi (T. XXV, 3) koji su mogli biti upotrebljavani za različite svrhe. Udice (T. XXV, 4) upućuju na ribolov, a srpovi na poljoprivrednu djelatnost (T. XXV, 5). Među nalazima je i jedno kresivo (T. XXV, 6).

<sup>199</sup> L. BERITIĆ, 1966, 108, 115, 119.

<sup>200</sup> L. BERITIĆ, 1966, 121-122.

<sup>201</sup> L. BERITIĆ, 1966, 122.

<sup>202</sup> L. BERITIĆ, 1966, 128-129.

<sup>203</sup> L. BERITIĆ, 1966, 132.

<sup>204</sup> L. BERITIĆ, 1966, 122, 124-125.

such as Svač near Ulcinj<sup>195</sup> and central Dalmatian hinterland on forts Kličevica near Benkovac<sup>196</sup> and Čačvina near Trilj.<sup>197</sup> Arrow with pronouncedly pointed tip (15th cent.) was found in the excavation in Split (Diocletian's Palace).<sup>198</sup> A number of fragments of armor plaques were also found, that were joined with rivets (T. XXIV, 2). Some parts of horse equipment were also recovered – bits and horseshoe.

In the 15th century archival documents (years 1423, 1428, 1438, 1458) it was recorded that Fort Sokol was supplied with different types of weapons: crossbows, veretons (individual orders mention as many as 1000 and 3000 pieces), armors, helmets, shields, bombardas, bombardellas, spingardas, stone balls, gunpowder, rifles, lead balls for rifles.<sup>199</sup> In 1465 it is stated that the veretons were made on the fort, and in 1474 that other military equipment and weapons were still ordered, including sabers.<sup>200</sup> A list of objects, mostly military utensils, delivered to the fort was made for the year 1476: signal ship cannons ("taras" type), mortars, iron rifles, crossbows, sabers, iron veretons (4900 pieces), armors, cheek-pieces for armors, helmets, spears, rare helmets with shoulder protection (*celenga*), bombardas.<sup>201</sup> In accordance with the aforementioned, firearms were introduced into standard weaponry at the end of the 15th century, and the fort was adjusted to the new way of warfare. At the beginning of the 17th century (1605, 1631) weapons were still delivered to Sokol (guns, gunpowder etc).<sup>202</sup> Since Venice lost power after the Cretan War (1645-1669), Fort Sokol was soon abandoned.<sup>203</sup>

Except for military objects, archival documents also mention material related to main-

<sup>195</sup> E. ZEČEVIĆ, 1989, 115-116, T. II/19.

<sup>196</sup> K. GUSAR, M. ČURKOVIĆ, 2011, 11, 28-29, cat. 45-50.

<sup>197</sup> Lj. GUDELJ, 2000, 169-170.

<sup>198</sup> J. BONAČIĆ MANDINIĆ, 2014, 369, 377, cat. 14.

<sup>199</sup> L. BERITIĆ, 1966, 108, 115, 119.

<sup>200</sup> L. BERITIĆ, 1966, 121-122.

<sup>201</sup> L. BERITIĆ, 1966, 122.

<sup>202</sup> L. BERITIĆ, 1966, 128-129.

<sup>203</sup> L. BERITIĆ, 1966, 132.

Ostali lokaliteti približnog datuma i konteksta iz šire regije jadranskog zaleđa dali su dosta metalnog materijala sličnog karaktera. Tijekom istraživanja utvrde Sokol na Plivi nađeni su brojni kasnosrednjovjekovni metalni nalazi, a među njima i predmeti praktične namjene (noževi, britve, škare, kovani klinovi).<sup>205</sup> U istraživanju kraljevskih dvora u Bobovcu i Kraljevoj Sutjesci također su nađeni razni metalni predmeti svakodnevnog upotrebe (noževi, britve, šarke, lokoti, ključevi, dljeteta, sjekire).<sup>206</sup> Na utvrdu Svač u blizini Ulcinja, koja je izgrađena u sklopu Justinijanovog utvrđivanja Ilirika u 6. stoljeću, nađeni su metalni nalazi (noževi, koplja, kopče, kresiva, ključevi, šarke – 14./15. st.)<sup>207</sup> slični onima s konavoskog Sokola. Slični noževi i kovani čavli pronađeni su u istraživanju utvrda Kličevica kod Benkovca<sup>208</sup> i Čačvine kod Trilja.<sup>209</sup>

Također je nađena predica željezne pojase kopče nepravilne pravokutne forme (T. XXV, 7), dok trn nije sačuvan. Među metalnim nalazima ističe se venecijanska olovna plomba s prikazom krilatog lava (T. XXV, 8), pronađena uz južnu stranu utvrde u sloju s kronološki mješovitim nalazima. Plombe su tijekom srednjeg i novog vijeka korištene za označavanje porijekla i kvalitete proizvoda, a uglavnom se povezuju s tekstilom koji se izvozio iz Venecije. Nekoliko olovnih plombi poznato je iz istraženih brodoloma uz istočnu obalu Jadrana (pličina Sv. Pavao kod Mljeta, Koločepski kanal, Gnalić kod Biograda n/M).<sup>210</sup>

Budući da su se takvi, uglavnom željezni, predmeti upotrebljavali tijekom više stoljeća, nije moguće izvršiti njihovu preciznu dataciju, no može ih se okvirno odrediti u kasni srednji i rani novi vijek. Različiti uporabni predmeti i dijelovi ratne opreme upućuju na svakodnevni život na Sokolu. U nekim aspek-

tenance of the fort such as iron wedges (15th cent.), or iron for clamps (30 liters), nails, roof lime, bricks, planks (early 16th cent.).<sup>204</sup> This is attested by the following finds: various wedges, nails (with round, pyramidal, forged heads) (T. XXIV, 3-4), blacksmithing hammer (T. XXV, 1), and tools and utensils such as a pair of compasses (T. XXV, 2). Knives were also found (T. XXV, 3) that could have been used for various purposes. Hooks (T. XXV, 4) suggest fishing, and sickles agricultural activity (T. XXV, 5). Metal finds include one tinder (T. XXV, 6).

Other sites dating roughly to the same period and belonging to the same context from the wider region of the Adriatic hinterland yielded substantial quantities of similar metal finds. During the excavation of Fort Sokol on Pliva numerous late medieval metal finds were recovered, including practical objects such as knives, razors, scissors, forged wedges.<sup>205</sup> Research of imperial courts in Bobovac and Kraljeva Sutjeska also resulted in various metal objects for everyday use (knives, razors, hinges, padlocks, keys, chisels, axes).<sup>206</sup> On fort Svač near Ulcinj that was built within Justinian's fortification of Illyricum in the 6th century, metal finds were recovered (knives, spears, clasps, tinders, keys, hinges – 14th/15th cent.)<sup>207</sup> similar to the ones from Sokol in Konavle. Similar knives and forged nails were found in the research of forts Kličevica near Benkovac<sup>208</sup> and Čačvina near Trilj.<sup>209</sup>

An irregular rectangular ring of an iron belt buckle was also found (T. XXV, 7), while the prong has not been preserved. Venetian lead seal featuring a depiction of a winged lion stands out among the metal finds (T. XXV, 8), found next to the southern side of the fort in the layer with mixed finds in terms of chronol-

<sup>205</sup> I. BOJANOVSKI, 1972, 56.

<sup>206</sup> P. ANĐELIĆ, 2004, 155-157, 236-238.

<sup>207</sup> E. ZEČEVIĆ, 1989, 112-116, T. II/7, 10, 18-19.

<sup>208</sup> K. GUSAR, M. ČURKOVIĆ, 2011, 11, 23-25, kat. 28-30, 32-33.

<sup>209</sup> Lj. GUDELJ, 2000, 170.

<sup>210</sup> J. BEZAK, 2015, 112-113, 179, kat. 91.

<sup>204</sup> L. BERITIĆ, 1966, 122, 124-125.

<sup>205</sup> I. BOJANOVSKI, 1972, 56.

<sup>206</sup> Lj. GUDELJ, 2000, 170.

<sup>207</sup> E. ZEČEVIĆ, 1989, 112-116, T. II/7, 10, 18-19.

<sup>208</sup> K. GUSAR, M. ČURKOVIĆ, 2011, 11, 23-25, cat. 28-30, 32-33.

<sup>209</sup> Lj. GUDELJ, 2000, 170.

tima, sudeći po materijalu, život na utvrđi odvijao se u skladu s naseobinama tadašnjeg doba koje nisu bile vojnog karaktera.

## METALURŠKI NALAZI

Na utvrđi i uz nju odvijala se i metalurška djelatnost. Zabilježena je još od prapovijesnog razdoblja, a povezuje se s ilirskim slojem koji je dokumentiran uz JI stranu utvrde. U njemu su nađeni manji komadi drozge koji svjedoče o lijevanju metalnih predmeta, vjerojatno manjih dimenzija.

Uz zapadnu stranu utvrde pronađena je oštećena željezna posuda s tragovima staklaste drozge (T. XXV, 9) što svjedoči o visokim temperaturama taljenja i metalurškom djelovanju u kasnom srednjem ili ranom novom vijeku. Uza SI stranu utvrde nađena je dosta oštećena talionička željezna posudica koja je mogla biti korištena za taljenje sirovine za izradu predmeta manjih dimenzija (T. XXV, 10). Tijekom istraživanja pronađena je veća količina kovačke drozge (T. XXV, 11), osobito uz sjevernu i SI stranu utvrde. Taj metalni otpad bacan je iz kovačnice koja je smještena na sjevernoj strani utvrde Sokol pa je bilo za očekivati pronaći najviše drozge na toj strani. U kovačnici su kovani i popravljani različiti predmeti u kasnom srednjem vijeku. Drozga upućuje na to da su se u mnogo većoj količini kovali i popravljali predmeti (oruđe, oružje) od željeza nego od drugih metala (bakar, bronca, olovo). No, buduće kemijske analize će razjasniti odnos između pronađene drozge i nalaza, te pobliže porijeklo sirovina koje su nabavljane iz rudnika u unutrašnjosti Bosne.<sup>211</sup> Gruba sirovina pročišćavala se u proizvođačkim središtima, a izvozila se čista metalna sirovina. Glavni trgovci metalima iz Bosne i Srbije bili su Dubrovčani koji su tamo imali i svoje kolonije u kasnom srednjem vijeku (14. – 15. st.). Također su i talijanski trgovci su-

ogy. Seals were used in the Middle Ages and Modern Period to mark origin and quality of products, and they are mostly associated with textile exported from Venice. Several lead seals were found in shipwrecks along the eastern Adriatic coast (shallows Sv. Pavao near Mljet, Koločep Channel, Gnalić near Biograd n/m).<sup>210</sup>

Since such, mostly iron finds were used for centuries, it is difficult to date them precisely, but they can be broadly dated to the Late Middle Ages and Early Modern Period. Various utilitarian objects and parts of military equipment illustrate everyday life in Sokol. In some aspects, judging from the material, life on the fort was not much different than in synchronous civilian settlements.

## METALLURGICAL FINDS

Metallurgical activities were carried out on and around the fort. Metallurgical traces were recorded back from prehistory, related to the Illyrian layer that is documented along the SE side of the fort. Slag pieces were found in it testifying to casting metal objects, probably small in size.

Damaged iron vessel with pieces of glassy slag was found next to the western side of the fort (T. XXV, 9) attesting high temperatures of melting and metallurgic activity in the Late Middle Ages or Early Modern Period. Quite damaged iron melting pot was found along the NE side of the fort. It might have been used for melting raw material for manufacturing smaller objects (T. XXV, 10). A substantial amount of blacksmithing slag was found in the excavations (T. XXV, 11), in particular along the northern and NE side of the fort. This metal waste was thrown from the forge that was located on the northern side of Fort Sokol so it was expected that most slag might be found on this side. Various objects were made and repaired in the forge in the Late

<sup>211</sup> N. TOPIĆ, N. DRAŠKOVIĆ VLAŠIĆ, 2015, 7–9.

<sup>210</sup> J. BEZAK, 2015, 112-113, 179, cat. 91.

djelovali u trgovini balkanskim metalima koje su izvezili diljem Mediterana.<sup>212</sup>

Budući da je primarna funkcija utvrde bila obrambena, produkti su ponajviše bili vojno-ga karaktera (veretoni, koplja, olovni metci, pločice oklopa), a izrađivani su i neophodni alati i potrepštine za gradnju i popravke utvrde, te svakodnevni predmeti (čavli, klinovi, noževi, britve, ključevi). Osim što su oružje i ostali predmeti izrađivani na utvrdi, također su velike količine takvih predmeta naručivane iz drugih središta, o čemu svjedoče arhivski podaci.<sup>213</sup>

## NUMIZMATIČKI NALAZI

U arheološkim istraživanjima provedenim 2012. i 2013. uz utvrdu Sokol u Konavlima otkriveno je devet primjeraka starog novca.<sup>214</sup> Iz objektivnih razloga nije bio moguć uvid u tu numizmatičku građu nakon provedenog postupka čišćenja i konzervacije pa zbog toga izostaju metrološki podatci. Novac je determiniran prema fotografijama koje su nastale neposredno nakon otkrića tih nalaza, kada je na njima bilo naslaga nečistoće. Unatoč tomu, većina ih pruža dovoljno podataka za tipološku i kronološku analizu.

Najstariji numizmatički nalazi iz spomenutih istraživanja pripadaju helenističkom razdoblju. To su tri novca od bakrene slitine iskovana za ilirskog kralja Baleja (*Ballaïos*). Na aversu je prikaz vladareve glave u profilu, koji je kod dvaju primjeraka okrenut ulijevo (T. XXVI, 1-2), a na jednome udesno (T. XXVI, 3). Na reversu je prikazana Artemida u iskoraku na lijevo. Odjevena je u hiton, a u rukama drži dva koplja i baklju. Od legende, koja se sastoji od ΒΑΛΛΑΙΟΥΥ desno od božice i ΒΑΣΙΛΕΩΣ lijevo od nje, na prvom i trećem primjerku vidljiv je dio Balejeva ime-

Middle Ages. Slag indicates that mostly iron objects (tools, weapons) were made and repaired in the forge, while other metals (copper, bronze, lead) were not as common. However future chemical analyses will shed more light on the relation between the recovered slag and finds, as well as on more precise origin of raw materials procured in mines in the inland of Bosnia.<sup>211</sup> Coarse raw material was purified in production centers, and pure metal raw material was exported. Main traders with metals from Bosnia and Serbia were residents of Dubrovnik that had their colonies there in the Late Middle Ages (14th-15th cent.). Italian traders also participated in the trade with Balkan metals that were exported across the Mediterranean.<sup>212</sup>

Since primary function of the fort was defensive, the products were mostly military (veretons, spears, lead bullets, armor plaques), but necessary tools and utensils for building and repairing the fort were also made, as well as everyday objects (nails, wedges, knives, razors, keys). Except for local production of arms and other objects, large amount of such items were ordered from other centers, as testified by the archival information.<sup>213</sup>

## NUMISMATIC FINDS

Nine old coins were found in the archaeological excavations conducted in 2012 and 2013 next to Fort Sokol in Konavle.<sup>214</sup> Objective reasons prevented autopsy of that numismatic material after procedures of cleaning and conserving which is why metrologic data are missing. The coins have been determined on the basis of photographs that were taken immediately after the discovery of the finds, while they were still covered with impurities.

<sup>212</sup> D. KOVAČEVIĆ, 1961, 140, 166–170.

<sup>213</sup> L. BERITIĆ, 1966, 105–131.

<sup>214</sup> Veća količina novca pronađena je izvan arheološkog istraživanja, a ovdje neće biti predmet obrade.

<sup>211</sup> N. TOPIĆ, N. DRAŠKOVIĆ VLAŠIĆ, 2015, 7-9.

<sup>212</sup> D. KOVAČEVIĆ, 1961, 140, 166-170.

<sup>213</sup> L. BERITIĆ, 1966, 105-131.

<sup>214</sup> A number of coins were found unrelated to the archaeological research. They will not be analyzed here.

na. Kod drugoga komada nije moguće utvrditi je li bila naznačena i vladareva titula. Razdoblje vladavine tog ilirskog kralja, poznatog samo prema novcu, starija literatura smješta približno između 167. i 135. prije Krista.<sup>215</sup> U novije vrijeme ona je pomaknuta skoro 100 godina ranije.<sup>216</sup> Balejev novac nije rijetka pojava. Otkriven je i u obližnjem Dubrovniku.<sup>217</sup> Primjera radi, nađen je i na brojnim lokalitetima u susjednoj Hercegovini.<sup>218</sup> Posve se logično može očekivati da će ga biti i na utvrdi Sokol, jer se taj lokalitet nalazi blizu pretpostavljene Balejeve kovnice u Risnu, a možda i prijestolnice, gdje je njegov novac pronađen u velikom broju.<sup>219</sup>

Četvrti numizmatički nalaz pripada Rimskom Carstvu. Iz razdoblja je tetrahije. To je tzv. radiatus koji je iskovan u ime Galerija s titulom cezara (T. XXVI, 4), suvladara cara Dioklecijana (284. – 305.). Na aversu je prikazano udesno okrenuto poprsje sa zrakastom krunom i u draperiji. Uokolo je legenda: GAL VAL MAXIMIANVS NOB CAES. Na reversu je s desne strane Jupiter sa žezlom. Stoji okrenut ulijevo. Do njega je Galerije u vojnoj odori. Okrenut je prema rimskom bogu, od kojeg prima malu Viktoriju na kugli. Oko te kompozicije je legenda: CONCORDIA MIL-ITVM. U polju je oznaka radionice Γ, a u odsječku kratica kovnice ALE. Prema standardnom katalogu rimskog carskog novca *Roman Imperial Coinage* taj je novac iskovan između 296. i 297. u trećoj radionici kovnice u Aleksandriji.<sup>220</sup> Uobičajena je pojava diljem antičke vojne velesile pa nije potrebno navoditi analogije.

Vremenski slijedi novac Dubrovačke Republike iz kasnoga srednjeg i ranoga novog vijeka (T. XXVI, 5). To je minca ili folar s aversnim prikazom glave okrenute u lijevo,

<sup>215</sup> J. BRUNŠMID, 1998, 88.

<sup>216</sup> R. CIOŁEK, 2011, 86-92; P. DYCZEK et al., 2011-2012, 97-99.

<sup>217</sup> I. MIRNIK, 1995, 170.

<sup>218</sup> I. DRAGIČEVIĆ, 2019, u tisku.

<sup>219</sup> D. UJES, 1993, 5-7; R. CIOŁEK, 2011, 73-74.

<sup>220</sup> RIC VI, 1968, br. 48b.

Nevertheless most of them offer enough information for typological and chronological analysis.

The oldest numismatic finds from the aforementioned excavations date to the Hellenistic period – three coins made of copper alloy, struck during the Illyrian king Ballaios. The obverse features a depiction of the emperor's head in profile, facing left on two examples (T. XXVI, 1-2), or right on one coin (T. XXVI, 3). The reverse bears a depiction of Artemis stepping out to the left. She is wearing a chiton, holding two spears and a torch in her hands. The legends consists of ΒΑΛΛΑΙΟΥ right of the goddess and ΒΑΣΙΛΕΩΣ to the left. A part of Ballaios' name is visible on the first and third example. It was impossible to determine if the king's title was present on the second piece. Period of reign of this Illyrian king, known only from coins, is dated approximately between 167 and 135 BC in the older publications.<sup>215</sup> Recently this dating has been moved for 100 years earlier.<sup>216</sup> Ballaios' coins are not rare. They were also found in nearby Dubrovnik.<sup>217</sup> For instance, they were recovered from a number of sites in nearby Hercegovina.<sup>218</sup> It is logical to expect their presence in Fort Sokol, since this site is close to Ballaios' mint in Risan (Rhizinium), and possibly also capital, where his coins were found in great quantities.<sup>219</sup>

The fourth numismatic find belongs to the tetrachy period of the Roman Empire. It is so-called radiatus struck for Galerius, with the title of caesar (T. XXVI, 4), co-ruler of the Emperor Diocletian (284-305). On the obverse is a draped bust with radiate crown, facing right, surrounded by the legend GAL VAL MAXIMIANVS NOB CAES. Jupiter with a scepter is on the right side of the reverse, facing left.

<sup>215</sup> J. BRUNŠMID, 1998, 88.

<sup>216</sup> R. CIOŁEK, 2011, 86-92; P. DYCZEK et al., 2011-2012, 97-99.

<sup>217</sup> I. MIRNIK, 1995, 170.

<sup>218</sup> I. DRAGIČEVIĆ, 2019, forthcoming.

<sup>219</sup> D. UJES, 1993, 5-7; R. CIOŁEK, 2011, 73-74.

oko koje je natpis: MONETA RAGVSII. U središtu reversa su tri kule s gradskim vratima, a uokolo je legenda: CIVITAS RAGVSII. Ovakvi tekstni i likovni sadržaji manjim dijelom se naziru na još dvama primjercima s utvrde Sokol (T. XXVI, 6-7). Inače, riječ je o nominali kasne emisije, koja pripada razdoblju između 1452. i 1612. godine.<sup>221</sup> Brojni analogni primjerci otkriveni su u arheološkim istraživanjima u Dubrovniku.<sup>222</sup>

Dva novca datiraju podosta vremena nakon što je utvrda Sokol napuštena 1672. godine. Možda su posljedica pastirskih djelatnosti. Kako god bilo, iz 19. su stoljeća. S njegova početka je turska para od slitine srebra i bakra (T. XXVI, 8). Iskovana je u Misiru (Kairo, Egipat) za vladavine Selima III. (1789. – 1807.).<sup>223</sup> Na aversu je sultanovo ime i jedna od titula u obliku tугre (vrsta monograma, ali s cjelovitim tekstom): Selim Han bin Mustafa el-Muzafer Daima. U prijevodu: Selim kan sin Mustafin uvijek pobjednik. Unutar reversa je vidljiv veći dio sadržaja na arapskom: Darebe fi Misr sene [1203.]. U prijevodu: Kovano u Egiptu godine 1203. Gore se vidi i 16, brojka koja se odnosi na godinu sultanove vladavine, što znači da je para iskovana 1218., odnosno 1803./1804. godine.<sup>224</sup> Malo je dalmatinskih nalaza turskih para iz Egipta. Jedna od sultana Mahmuda I. (1730. – 1754.) nađena je u Zadru.<sup>225</sup>

Posljedni numizmatički nalaz iz utvrde Sokol datira iz konca 19. stoljeća. To je uobičajeni austrougarski novac od bakra u vrijednosti od 2 helera (T. XXVI, 9).<sup>226</sup> Iskovan je 1896. u Beču. Na aversu unutar kartuše naznačene su nominala i godina. Unutar reversa dominira okrunjeni dvoglavi orao.

Galerius is next to him in a military uniform, facing Roman god, from whom he is receiving little Victoria on a ball. This composition is surrounded by the legend: CONCORDIA MIL-ITVM. Workshop mark Γ is in the field, and mint abbreviation ALE in the exergue. According to the standard catalogue of the Roman imperial coins *Roman Imperial Coinage* these coins were minted between 296 and 297 in the third workshop of the Alexandria mint.<sup>220</sup> It is very common across the Roman Empire so it is not necessary to list analogies.

Coins of the Republic of Ragusa of the Late Middle Ages and Early Modern Period (T. XXVI, 5) are represented by *minca* or *folar* with a depiction of a head facing left on the obverse, surrounded by the legend: MONETA RAGVSII. In the center of the reverse are three towers with city gates, with a legend around: CIVITAS RAGVSII. Such textual and visual contents can be partially discerned on two more examples from Fort Sokol (T. XXVI, 6-7). It is a denomination of late issue, dating to the period between 1452 and 1612.<sup>221</sup> Numerous analogous examples have been discovered in the archaeological excavations in Dubrovnik.<sup>222</sup>

Two coins date to the period long after the fort had been abandoned in 1672. They might be related to shepherds' activities. Be that as it may, they date to the 19th century. Turkish para made of alloy of silver and copper dates to the beginning of the 19th century (T. XXVI, 8). It was struck in Misir (Cairo, Egypt), during the reign of Selim III (1789-1807).<sup>223</sup> The obverse bears sultan's name and one of his titles in shape of tughra (a kind of monogram but with complete text) Selim Han bin Mustafa el-Muzafer Daima. In translation: Selim kan sin Mustafin forever victorious. Big-

<sup>221</sup> I. DOLENEC, 1993, 46.

<sup>222</sup> M. ILKIĆ, N. TOPIĆ, Ž. PEKOVIĆ, 2015, 4-5, kat. br. 37-57; N. TOPIĆ et al., 2019, 62, 72, 75-76, Tabla XI, 7-10, Tabla XII, 1-5.

<sup>223</sup> C. L. KRAUSE, C. MISHLER, 1984, 484, C#63.

<sup>224</sup> Ovaj turski novac pomogao nam je determinirati Amer Sulejmanagić, na čemu mu najljepše zahvaljujemo.

<sup>225</sup> L. BEKIĆ et al., 2017, 160, 163, Sl. 1: 16.

<sup>226</sup> E. SZAIVERT, 1991, br. 497.

<sup>220</sup> RIC VI, 1968, no. 48b.

<sup>221</sup> I. DOLENEC, 1993, 46.

<sup>222</sup> M. ILKIĆ, N. TOPIĆ, Ž. PEKOVIĆ, 2015, 4-5, kat. br. 37-57; N. TOPIĆ et al., 2019, 62, 72, 75-76, Tabla XI, 7-10, Table XII, 1-5.

<sup>223</sup> C. L. KRAUSE, C. MISHLER, 1984, 484, C#63.

Svi ovi nalazi su iz nasutih slojeva oko utvrde, osim jednog novca kralja Baleja (T. XXVI, 2) koji je nađen unutar kasnoantičkog groba iz 6. stoljeća.

## STAKLENI NALAZI

Stakleni materijal je vrlo raznovrstan, a može se datirati od ranorimskog perioda do ranog novog vijeka (T. XXVII–XXIX). Pronađen je u nasipnim slojevima uokolo utvrde izvan grobnog konteksta, a manjim dijelom u zasipu grobova (bez funkcije priloga). Materijal upućuje na kontinuitet u korištenju staklenih predmeta na utvrđi. Nalazi su funkcionalno raznoliki, a obuhvaćaju posude (čaše, zdjelice, boce, vrčve), svjetiljke, prozorsko staklo (*oculi*), ukrasnu pločicu. Rimski stakleni predmeti importirani su pretežno iz talijanskih (Aquileia) (1. – 2. st.) i rajnskih (Köln, Trier) (3. – 4. st.) središta, a brojniji su nalazi iz kasne antike. Ranobizantski (6. st.) stakleni predmeti nisu previše brojni, dok su više zastupljeni kasnosrednjovjekovni i ranonovovjekovni (13. – 17. st.) nalazi koji su izrađivani u venecijanskim, dubrovačkim ili drugim lokalnim radionicama.

Ulomak stijenke rebraste zdjelice karakterističan je za **ranorimsko razdoblje** (prva polovica 1. st.). Posuda od kobaltnoplavog stakla izrađena je tehnikom presavijanja preko kalupa (T. XXVII, 1). Analogne primjere nalazimo u Polačama na Mljetu<sup>227</sup> i Sisku.<sup>228</sup> Rebraste zdjelice također su poznate iz istraživanja kolonije Epidauruma (lokalitet Rat u Cavtatu), gdje je nađeno više ulomaka rebrastih zdjelica zelenoplave boje.<sup>229</sup> Nekoliko ulomaka izrađeno je od plavkastozelenkastog stakla, a pripadali su zdjelicama s prošupljenim obodom i prošupljenom bazom (T.

ger part of the text in Arabic is legible inside the reverse: Darebe fi Misr sene [1203.]. In translation: Struck in Egypt in 1203. Number 16 is recognizable at the top, relating to the year of the sultan's reign, meaning that it was struck in 1218, or in 1803/1804.<sup>224</sup> There are few Dalmatian finds of Turkish para from Egypt. One such specimen of Sultan Mahmud I (1730-1754) was found in Zadar.<sup>225</sup>

The last numismatic find from Fort Sokol dates to the end of the 19th century. It is a common Austro-Hungarian 2 heller copper coin (T. XXVI, 9).<sup>226</sup> It was struck in 1896 in Vienna. Denomination and year were denoted inside a cartouche on the obverse. A crowned double-headed eagle is dominant on the reverse.

All these coins were found in filled layers around the fort, except for one coin of king Ballaios (T. XXVI, 2) that was found in the 6th century late antique grave.

## GLASS FINDS

Glass material is very diverse, and it can be dated from the early Roman period to the Early Modern Period (T. XXVII–XXIX). It was found in fill layers around the fort outside the grave context, and to much lesser degree in grave fills (but not as grave goods). The material suggests continuity of use of glass finds on the fort. The finds are functionally diverse, encompassing vessels (beakers, cups, bottles, jugs), lamps, windowpane (*oculi*), decorative plaque. Roman glass objects were imported mostly from the Italian workshops (Aquileia) (1st-2nd cent.) and Rhine centers (Köln, Trier) (3rd-4th cent.). Late antique finds are more numerous. Early Byzantine (6th cent.) glass finds are not as abundant, while late medieval and postmedieval glass items are some-

<sup>227</sup> L. KOVAČIĆ, 2017, 16, 51, kat. 2.

<sup>228</sup> I. BAČANI, 2017, 65, kat. 67.

<sup>229</sup> N. TOPIĆ, H. PUHARA, L. VUKOVIĆ, 2019, 51-52, Fig. 2.2-3.

<sup>224</sup> We would like to extend our sincere gratitude to Amer Suljemanagić who helped us to determine this Turkish coin.

<sup>225</sup> L. BEKIĆ et al., 2017, 160, 163, Fig. 1: 16.

<sup>226</sup> E. SZAIVERT, 1991, no. 497.

XXVII, 2) koje se datiraju u 1. – 2. stoljeće.<sup>230</sup> Ulomci dna od tirkiznozelenog stakla karakteristični su za boce izrađivane od 1. do 3. stoljeća (T. XXVII, 3).<sup>231</sup> Među nalazima je i ulomak oboda zdjele ili žare izrađen od maslinastozelenog stakla, karakterističan za 2. – 3. stoljeće (T. XXVII, 4).

Više je zastupljeno **kasnorimsko staklo**, koje se uglavnom odlikuje maslinastozelenom i žučkastozelenom bojom. Pronađeno je nekoliko ulomaka oboda i stijenki polukuglastih čaša za piće od žučkastog i maslinastog stakla koje se uglavnom datiraju u 3. – 4. stoljeće (T. XXVII, 5). Te čaše, koje su mogle služiti i kao svjetiljke uljanice ili zdjelice, karakteristične su za rajnske radionice, ali i akvilejsko područje, a njihova upotreba proteže se i u ranobizantsko razdoblje (do 7. st.).<sup>232</sup> Analogni nalazi pronađeni su na više lokaliteta na istočnoj obali Jadrana i njezinu zaleđu,<sup>233</sup> te u balkanskom zaleđu, Crnome moru i Maloj Aziji.<sup>234</sup> No, nije isključena njihova produkcija u Saloni.<sup>235</sup> Ulomci stijenki polukuglastih čaša od žučkastosmedeg stakla s apliciranim modrim mrljama (*Nuppenläser*) (T. XXVII, 6) karakteristični su za posude koje su se proizvodile u rajnskim radionicama 3. – 4. st.,<sup>236</sup> sjeverno galskim<sup>237</sup> te sjevernotalijanskim, istočnim i dunavskim radionicama.<sup>238</sup> Tako ukrašene čaše, ali od bezbojnog stakla, pronađene su u istraživanju Rata u Cavtatu.<sup>239</sup> Slični nalazi poznati su s različitih nalazišta u Hr-

what better represented (13th-17th cent.)

Wall fragment of a small ribbed bowl is characteristic of the **early Roman period** (first half of the 1st century). Vessel of cobalt blue glass was made by using the technique of bending over mold (T. XXVII, 1). Analogous examples can be found in Polače on Mljet<sup>227</sup> and in Sisak.<sup>228</sup> Ribbed bowls are also known from the excavations of the colony of Epidaurum (site of Rat in Cavtat), where several sherds of green-blue ribbed bowls were found.<sup>229</sup> Few fragments were made of bluish-greenish glass, and they belonged to small bowls with perforated rim and hollowed base (T. XXVII, 2) dating to the 1st-2nd cent.<sup>230</sup> Fragments of bases made of turquoise green glass are characteristic of bottles made from the 1st to 3rd cent. (T. XXVII, 3).<sup>231</sup> Among the finds is a fragment of a rim of a bowl or an urn made of olive-green glass, characteristic of the 2nd and 3rd centuries (T. XXVII, 4).

**Late Roman glass** is more abundant, mostly characterized by olive-green and yellowish green color. Glass finds include several fragments of rims and walls of hemispherical beakers for drinking made of yellowish and olive glass mostly dating to the 3rd-4th centuries (T. XXVII, 5). These beakers, that might have been used as oil lamps or cups, are characteristic of the Rhine workshops, and Aquileian region. Their use was continued in the Early Byzantine period (until the 7th cent.).<sup>232</sup> Analogous finds were recovered from a number of sites on the eastern Adriatic coast and its hinterland,<sup>233</sup> and the Balkan inland, Black Sea and

<sup>230</sup> I. LAZAR, 2004, kat. 31, 58.

<sup>231</sup> C. ISINGS, 1957, 63-65, Form 50; Za determinaciju ulomaka zahvaljujemo dr. sc. Anastassiosu Antonarasu iz Muzeja bizantske kulture u Solunu.

<sup>232</sup> K. BARTOLIĆ SIROTIĆ, 2013, 95-97.

<sup>233</sup> S. GLUŠČEVIĆ, 1995, 164-172, 178-181; K. BARTOLIĆ SIROTIĆ, 2013, 96-99, 103, 106, SL. 4-5, kat. 1-3, T. 1./1-3.

<sup>234</sup> M. KRIŽANAC, 2016, 93-95, Fig. 5.29,32, Fig. 6/3, 34.

<sup>235</sup> S. GLUŠČEVIĆ, 1995, K. BARTOLIĆ SIROTIĆ, 2013, 97, 177.

<sup>236</sup> C. ISINGS, 1957, 113, type 96; K. GOETHERT-POLASCHEK, 1977, 54-55, 58, 61, 65, 68, 307, 310-311, 315, 318, 321, Tafel 39 / 188, 210, 233-234; Tafel 41 / 268, 250, Tafel 42 / 267, 269.

<sup>237</sup> J. MORIN-JEAN, 1922-1923, 218-225, Figs. 296-301, Pl. 10.

<sup>238</sup> A. LARESE, 2004, 89.

<sup>239</sup> N. TOPIĆ, H. PUHARA, L. VUKOVIĆ, 2019, 54-55, Fig. 3.5.

<sup>227</sup> L. KOVAČIĆ, 2017, 16, 51, cat. 2.

<sup>228</sup> I. BAČANI, 2017, 65, cat. 67.

<sup>229</sup> N. TOPIĆ, H. PUHARA, L. VUKOVIĆ, 2019, 51-52, Fig. 2.2-3.

<sup>230</sup> I. LAZAR, 2004, cat. 31, 58.

<sup>231</sup> C. ISINGS, 1957, 63-65, Form 50; We would like to thank Anastassios Antonaras of the Museum of Byzantine Culture in Thessaloniki for his assistance in determining the fragments.

<sup>232</sup> K. BARTOLIĆ SIROTIĆ, 2013, 95-97.

<sup>233</sup> S. GLUŠČEVIĆ, 1995, 164-172, 178-181; K. BARTOLIĆ SIROTIĆ, 2013, 96-99, 103, 106, fig. 4-5, cat. 1-3, T. 1./1-3.

vatskoj.<sup>240</sup> Nađene su u istraživanju vojnog logora Tilurium (Trilj).<sup>241</sup> Čaša izrađena od iste boje stakla kao sokolski nalazi i s apliciranim modrim kapljicama pronađena je u Sisku.<sup>242</sup> Slični nalazi također su pronađeni u istraživanju lokaliteta na sjeveru i istoku Hrvatske, a pretežno su datirani u 4. stoljeće,<sup>243</sup> kao i takve čaše s apliciranim kapljicama iz muzeja u Akvileji (*Museo Archeologico di Aquileia*).<sup>244</sup>

Ulomak posude, vjerojatno zdjelice sa širokim otvorom, izrađene od blijedog žućkasto zelenkastog stakla (T. XXVII, 7), karakterističan je za posude koje su bile u upotrebi u kasnoantičkom/ranobizantskom razdoblju (4. – 6. st.). Također je nađen ulomak gornjeg dijela plitke zdjele izrađene od blijedo zelenog stakla (T. XXVII, 8), a prema analognim primjerima s područja Srbije može se datirati u ranobizantsko razdoblje (6. – 7. st.).<sup>245</sup>

Pronađeno je nekoliko ulomaka oboda i stijenki koničnih recipijenata s apliciranim ručkama (T. XXVII, 9). Ulomci stopa (pretežno fragmentarno sačuvanih) koji su mogli tvoriti čaše na stalku ili svjetiljke također su zastupljeni među staklenim nalazima sa Sokola (T. XXVII, 10). Ti nalazi mogu se datirati u 5. – 6. stoljeće, a pretežno se povezuju s ranokršćanskim crkvama, pa mogu nagovijestiti i postojanje takvog, za sada nedefiniranog, objekta uz utvrdu. Izrađeni su pretežno od žućkastog, žućkasto zelenog i maslinasto zelenog stakla. Brojni analogni primjeri poznati su iz ranijih istraživanja ranokršćanskih lokaliteta na istočnoj obali Jadrana i jadranskog zaleđa,<sup>246</sup> ali i sa širem područja Balkana, Male

Asia Minor.<sup>234</sup> However their production in Salona cannot be ruled out.<sup>235</sup> Wall fragments of hemispherical beakers made of yellowish brown glass with applied dark blue prunts (*Nuppenläser*) (T. XXVII, 6) are characteristic of vessels produced in the Rhine workshops in the 3rd and 4th centuries,<sup>236</sup> northern Gallic,<sup>237</sup> and northern Italian, eastern and Danubian workshops.<sup>238</sup> Beakers decorated in that way, only made of colorless glass, were found in the excavations of Rat in Cavtat.<sup>239</sup> Similar finds are known from different sites in Croatia,<sup>240</sup> such as military camp *Tilurium* (Trilj).<sup>241</sup> Beaker made of glass in the same color as the finds from Sokol, with applied dark blue prunts was found in Sisak.<sup>242</sup> Similar finds were recovered at the excavations of the sites in northern and eastern Croatia, mostly dating to the 4th century.<sup>243</sup> Such beakers with applied prunts can also be found in the museum in Aquileia (*Museo Archeologico di Aquileia*).<sup>244</sup>

Fragment of a vessel, probably a small bowl with a wide opening, made of pale yellowish greenish glass (T. XXVII, 7), is characteristic of the vessels used in the Late Roman/Early Byzantine period (4th–6th cent.). A fragment of the upper part of a shallow bowl made of pale green glass is another glass find from Sokol (T. XXVII, 8). On the basis of analogies from Serbia it can be dated to the early Byzantine period (6th–7th cent.).<sup>245</sup>

Several fragments of rims and walls of con-

<sup>240</sup> V. DAMEVSKI, 1974, 87, T. XV/3.

<sup>241</sup> Z. BULJEVIĆ, 2014, 225–226, T. 6.96.

<sup>242</sup> I. BAČANI, 2017, 70, kat. no. 75.

<sup>243</sup> Z. GREGL, 2013, 50–52, kat. 62, 65, 68.

<sup>244</sup> M. CARINA CALVI, 1969, Tav. 26.4–5.

<sup>245</sup> M. KRIŽANAC, 2016, 88–89, Fig. 1.1–2.

<sup>246</sup> V. HAN, 1981, 135, T. XI/1; C. FISKOVIĆ, 1983, 76–77, sl. 18, 19; I. FADIĆ, 1992, 63–66, T. 1/1–2, T. 3/1; I. FADIĆ, 1994, 213–215, 221; Z. BULJEVIĆ, 1994, 259, 262, kat. 14–15; Z. BULJEVIĆ, 2002, 171, 192, kat. 25; I. FADIĆ, 2005, 221–119, 233–234, sl. 2, kat. 16–18; Z. ETTINGER STARČIĆ, 2006, 256–258, sl. 11; Š. PEROVIĆ, 2012, 589–597; L. KOVAČIĆ, 2017, 44–45, 88–89, kat. 66–69.

<sup>234</sup> M. KRIŽANAC, 2016, 93–95, Fig. 5.29,32, Fig. 6/.3, 34.

<sup>235</sup> S. GLUŠČEVIĆ, 1995, K. BARTOLIĆ SIROTIĆ, 2013, 97; 177.

<sup>236</sup> C. ISINGS, 1957, 113, type 96; K. GOETHERT-POLASCHEK, 1977, 54–55, 58, 61, 65, 68, 307, 310–311, 315, 318, 321, Tafel 39 / 188, 210, 233–234; Tafel 41 / 268, 250, Tafel 42 / 267, 269.

<sup>237</sup> J. MORIN-JEAN, 1922–1923, 218–225, Figs. 296–301, Pl. 10.

<sup>238</sup> A. LARESE, 2004, 89.

<sup>239</sup> N. TOPIĆ, H. PUHARA, L. VUKOVIĆ, 2019, 54–55, Fig. 3.5.

<sup>240</sup> V. DAMEVSKI, 1974, 87, T. XV/3.

<sup>241</sup> Z. BULJEVIĆ, 2014, 225–226, T. 6.96.

<sup>242</sup> I. BAČANI, 2017, 70, kat. no. 75.

<sup>243</sup> Z. GREGL, 2013, 50–52, kat. 62, 65, 68.

<sup>244</sup> M. CARINA CALVI, 1969, Tav. 26.4–5.

<sup>245</sup> M. KRIŽANAC, 2016, 88–89, Fig. 1.1–2.

Azije, Crnoga mora i Bliskog istoka.<sup>247</sup> Osim svjetiljki u obliku konične čaše s ručkama i svjetiljki na stalku, također su zastupljene svjetiljke s donjim dijelom u obliku ljevka (T. XXVII, 11). Takve svjetiljke pripadaju istom vremenskom razdoblju (5. – 6. st.), kao i prethodno navedeni tipovi. Ovaj tip svjetiljki također je zabilježen na širem balkanskom prostoru, osobito Srbiji i Kosovu, ali i na Crnome moru, Maloj Aziji i na Bliskom istoku. Takve svjetiljke stajale su na metalnom nosaču (grč. *polykandilon*).<sup>248</sup>

Tamnozeleno uglučana gema-pločica (T. XXVII, 12) nepravilne je pravokutne forme zaobljenih krajeva. Nađena je u nasipnom sloju koji je sadržavao mješavinu materijala koji pripada razdoblju od kasne antike do srednjeg vijeka. Slične gema-pločice korištene su kao dekorativni elementi nakita, odjeće, mozaika (uglavnom zidnih), ali i kao ornament u arhitekturi, na štitovima, namještaju, krunama, crkvenim posudama, križevima, koricama knjiga. Uglavnom su pravokutne ili ovalne forme (ali ima i trokutastih i romboidnih), ravne su i uglučane, a izrađene su najviše od zelenog, plavog i crvenog stakla. Upravo tamnozelene gema-pločice, vrlo slične sokolskom nalazu, ponekad i nešto većih dimenzija, izrađivale su se u Solunu u **ranokršćanskom razdoblju** u drugoj polovici 6. stoljeća, ali i u drugim radioničkim središtima. Takvi nalazi poznati su s više lokaliteta u Grčkoj, Makedoniji, te s rijetkih u Turskoj i Jordanu, a povezuju se s crkvenim i svjetovnim objektima. U Francuskoj i Srbiji slični predmeti korišteni su u rimskom razdoblju.<sup>249</sup> Pravo stanje geografske raširenosti, upotrebe i trgovine ovakvim predmetima još treba istražiti. Funkcija toga predmeta na Sokolu nije sasvim jasna, a moguće je da je bila dekorativni umetak za odjeću jer je pronađeno i mnoštvo

ical vessels with applied handles were found (T. XXVII, 9). Fragments of feet (usually fragmentary) that may have belonged to footed beakers or lamps were also present among the glass finds from Sokol (T. XXVII, 10). These finds can be dated to the 5th and 6th centuries, and they are mostly associated with the Early Christian churches, so they might be interpreted as an indicator of such structure, next to the fort, unknown for now. They were made mostly of yellowish, yellowish-green and olive green glass. Many analogies can be found among the material from the earlier excavations of the Early Christian sites on the eastern Adriatic coast and the Adriatic hinterland,<sup>246</sup> but also from the wider area of the Balkans, Asia Minor, Black Sea and Near East.<sup>247</sup> Except for lamps in shape of a conical beaker with handles and lamps on a base, there are also lamps with funnel-shaped lower part (T. XXVII, 11). Such lamps belong to the same period (5th-6th cent.), as well as the aforementioned types. This type of lamps was also recorded in the wider Balkan region, especially in Serbia and Kosovo, but also in the Black Sea, Asia Minor and Near East. Such lamps stood on the metal holder (Greek *polykandilon*).<sup>248</sup>

Dark green polished gem-plaque (T. XXVII, 12) has irregular rectangular form with rounded edges. It was found in the fill layer that contained mixed finds dating from Late Antiquity to the Middle Ages. Similar gem-plaques were used as decorative elements of jewelry, clothes, mosaics (mostly wall mosaics), but also as an ornament on architecture, shields, furniture, crowns, church vessels, crosses, book covers. They are usually rectangular or oval (but also triangular or rhomboid), flat and polished,

<sup>247</sup> M. KRIŽANAC, 2016, 95–99, Fig. 7.54, Fig. 8/56, Fig. 9.61.

<sup>248</sup> M. KRIŽANAC, 2016, 99–100, Fig. 11.65-77.

<sup>249</sup> A. Ch. ANTONARAS, 2018, 1–21, Figs. 1.1, 1.2, 1.10. Za determinaciju pločice zahvaljujemo dr. sc. Anastassiosu Antonarasu iz Muzeja bizantske kulture u Solunu.

<sup>246</sup> V. HAN, 1981, 135, T. XI/1; C. FISKOVIĆ, 1983, 76–77, sl. 18. 19; I. FADIĆ, 1992, 63–66, T. 1/1-2, T. 3/1; I. FADIĆ, 1994, 213–215, 221; Z. BULJEVIĆ, 1994, 259, 262, kat. 14–15; Z. BULJEVIĆ, 2002, 171, 192, kat. 25; I. FADIĆ, 2005, 221–119, 233–234, sl. 2, kat. 16–18; Z. ETTINGER STARČIĆ, 2006, 256–258, sl. 11; Š. PEROVIĆ, 2012, 589–597; L. KOVAČIĆ, 2017, 44–45, 88–89, kat. 66–69.

<sup>247</sup> M. KRIŽANAC, 2016, 95–99, Fig. 7.54, Fig. 8/56, Fig. 9.61.

<sup>248</sup> M. KRIŽANAC, 2016, 99–100, Fig. 11.65–77.

drugih predmeta koji odudaraju od vojnog karaktera i upućuju na viši životni standard.

**Kasnosrednjovjekovno i ranonovovjekovno** staklo brojnije je i raznolikije, a pretežno su takvi nalazi nađeni u nasipnom sloju koji je sadržavao izmiješani kasnosrednjovjekovni i novovjekovni materijal. Pronađeni su ulomci čaša bez ukrasa (*moioli*) (T. XXVIII, 1) koje su bile uobičajene i učestale zbog svoje jednostavnosti.<sup>250</sup> Korištene su pretežno u razdoblju od 13. do 15. stoljeća. Nekoliko ulomaka čaša ukrašeno je slikanjem i emajlom plave, crvene i žute boje (tip *Aldrevandin*) (T. XXVIII, 2). To su luksuznije posude koje su se izrađivale u Veneciji u 13. i početkom 14. stoljeća.<sup>251</sup> Pronađene su u cisterni na utvrdi pri njezinoj sanaciji. Manji broj ulomaka čaša s gornjim proširenim i donjim bačvastim dijelom ukrašen je kapljičasto-bradavičastim aplikacijama (*Nuppenbecher*) i aplikacijom u obliku spljoštene geme (*Krautstrunk*) (T. XXVIII, 3).<sup>252</sup> Te aplikacije imale su funkciju pri držanju čaše, da ne klizne iz ruke, jer se u srednjem vijeku obično jelo prstima. Takve čaše osobito su korištene tijekom 14. i 15. stoljeća, najviše su karakteristične za zapadnoeuropske (njemačke) radionice,<sup>253</sup> no analize su pokazale da je ovdje riječ o venecijanskim importima,<sup>254</sup> osim za jedan ulomak koji je zapadnjačke provenijencije.<sup>255</sup> Također su pronađeni ulomci čaša s nitima i rebrima, koje su konusne ili imaju gornji dio u obliku šalice, dok im je donji dio bačvaste forme što također tipološki upućuje na zapadu Europu. No, analize su pokazale da njihov kemijski sastav također odgovara venecijanskoj tehnologiji (*vitrumblanchum*).<sup>256</sup> Neke imaju aplicirane plave niti u gornjem dijelu čaše (T. XXVIII, 4), druge imaju rebra

made mostly of green, blue and red glass. Exactly dark green gem-plaques, very similar to the Sokol find, sometimes somewhat bigger, were made in Thessaloniki in the **Early Christian period** in the second half of the 6th century, but also in other workshop centers. Such finds have been recovered at a number of sites in Greece, Macedonia, and only rarely in Turkey and Jordan, related to churches and secular buildings. Similar objects were used in France and Serbia in the Roman period.<sup>249</sup> Actual state of geographical distribution, use and trade with such objects needs to be further explored. Function of this object in Sokol is not quite clear, but it might have been a decorative appliqué for clothes since many other objects were found not related to military character, suggesting high standard of living.

**Late medieval and early postmedieval** glass is more abundant and more diverse. Such finds mostly originate from a fill layer that contained mixed late medieval and postmedieval material. In it were fragments of undecorated beakers (*moioli*) (T. XXVIII, 1) that were common due to their simplicity.<sup>250</sup> They were used mostly in the period from the 13th to 15th century. Some beaker sherds were decorated with painting and enamel in blue, red and yellow (type *Aldrevandin*) (T. XXVIII, 2). These were more luxurious vessels made in Venice in the 13th and early 14th century.<sup>251</sup> They were found when the cistern on the fort was repaired. Few sherds of beakers with the upper expanded and lower barrel-shaped part were decorated with drop-shaped appliques (*Nuppenbecher*) and with an appliqué in form of a flattened gem (*Krautstrunk*) (T. XXVIII, 3).<sup>252</sup> These appliques were used for holding beakers, to prevent slipping from hand, as it

<sup>250</sup> V. HAN, 1971, 58.

<sup>251</sup> D. WHITEHOUSE, 2001, 297; I. KRUEGER, 2002, 111–132; N. TOPIĆ, 2015, 120–126, 228–232, kat. 14–23.

<sup>252</sup> N. TOPIĆ, 2015, 135–144, 264–265, kat. 117–120.

<sup>253</sup> E. BAUMGARTNER, I. KRUEGER, 1988, 210–218.

<sup>254</sup> N. TOPIĆ et al., 2018, Table 2, samples 44–45.

<sup>255</sup> N. TOPIĆ, 2016, 586–587.

<sup>256</sup> N. TOPIĆ et al., 2016, samples 21, 38, 53, 62; N. TOPIĆ et al., 2018, Table 2, samples 31–43, 46–77.

<sup>249</sup> A. Ch. ANTONARAS, 2018, 1–21, Figs. 1.1, 1.2, 1.10. We would like to thank Anastassios Antonaras of the Museum of Byzantine Culture in Thessaloniki for his assistance in determining the plaque.

<sup>250</sup> V. HAN, 1971, 58.

<sup>251</sup> D. WHITEHOUSE, 2001, 297; I. KRUEGER, 2002, 111–132; N. TOPIĆ, 2015, 120–126, 228–232, kat. 14–23.

<sup>252</sup> N. TOPIĆ, 2015, 135–144, 264–265, kat. 117–120.

u donjem dijelu (T. XXVIII, 5) ili su izrađene kombiniranjem tih dekorativno-funkcionalnih elemenata. Korištene su tijekom 14. i početkom 15. stoljeća.<sup>257</sup> Nađeno je i više sitnih fragmenata čaša izrađenih tehnikom optičkog puhanja (*bicchieri gambassini*), s ornamentom pčelinjih saća, kvadratića, heksagona, rombova (14. – 15. st.).<sup>258</sup> Od novovjekovnih čaša zastupljene su one koje su ukrašene različitim reljefnim istacima (T. XXVIII, 6), a koje su karakteristične za zapadnoeuropske (nizozemske) radionice 17. stoljeća.<sup>259</sup> Malobrojni su nalazi čaša na stalku venecijanske ili dubrovačke provenijencije koje su se izrađivale tijekom 16. – 17. stoljeća. Osobito se ističu čaše na stalku u obliku lavlje glave (T. XXVIII, 7) koja simbolizira Republiku Sv. Marka.<sup>260</sup>

Zdjelice su ukrašene na različite načine, a ima i onih bez dekoracije. Neke su imale ručke, a jedna finije izrađena ručka od tirkiznog stakla (T. XXVIII, 8) sa sačuvanim dijelom bezbojne stijenke mogla je biti aplicirana na zdjelicu.<sup>261</sup> Takve ručke karakteristične su za venecijanske radionice 17. stoljeća.<sup>262</sup> Zdjelica izrađena od modrog stakla s apliciranom nožicom (T. XXVIII, 9) može biti venecijanski produkt 16. stoljeća.<sup>263</sup> Također su nađeni ulomci zdjelica od žućkastog stakla s rebrastom dekoracijom (T. XXIX, 1-2). Pripadaju renesansnom razdoblju, a vjerojatno su produkti talijanskih radionica.<sup>264</sup> Rijetki ulomci izrađeni su u kalupu s ornamentom „dijamanata“ i rubom koji je izrađen od uvijenog žućkastog i mliječnog stakla (T. XXIX, 3).<sup>265</sup> Slični primjerci poznati su iz brodoloma

was common to eat with hands. Such beakers were used in particular in the 14th and 15th centuries. They are characteristic of the western European (German) workshops,<sup>253</sup> but analyses have shown that these specimens were import from Venice,<sup>254</sup> except for one example of western provenance.<sup>255</sup> There were also fragments of beakers with threads and ribs, that are conical or they have cup-shaped upper part, while their lower part is barrel-shaped, which is a typological characteristic of western Europe. However analyses have shown that their chemical composition also corresponds to the Venetian technology (*vitrum blanchum*).<sup>256</sup> Some have blue threads applied in the upper part (T. XXVIII, 4), others have ribs in the lower part (T. XXVIII, 5) or they were made by combining these decorative and functional elements. They were used in the 14th and early 15th century.<sup>257</sup> There were also a few small fragments of beakers made by using the technique of optical blowing (*bicchieri gambassini*), with an ornament of honey comb, small squares, hexagon, rhombs (14th-15th cent.).<sup>258</sup> Postmedieval beakers are represented by the examples decorated with various embossed protrusions (T. XXVIII, 6), characteristic of western European (Dutch) workshops of the 17th cent.<sup>259</sup> There are few footed beakers of the Venetian or Ragusan provenance made in the 16th and 17th centuries. An example that stands out is a footed beaker on a base shaped like a lion head (T. XXVIII, 7), symbolizing the Republic of St Mark.<sup>260</sup>

Small bowls are decorated in different ways,

<sup>257</sup> LJ. KOJIĆ, M. WENZEL, 1967, 80–90; P. ANĐELIĆ, 2004, 149, 223–226; N. TOPIĆ, 2015, 145.

<sup>258</sup> N. TOPIĆ, 2015, 130–132, kat. 48-51, 55, 57, 59, 61-62, 64-66.

<sup>259</sup> J. GAWRONSKI et al., 2010, 80–81, 1.2.4-1.2.5; A. LAMÉRIS, K. LAMÉRIS, W. LAMÉRIS, 2015, 86–87, cat. 54.

<sup>260</sup> N. TOPIĆ, 2015, 159–160, 310, kat. 249.

<sup>261</sup> N. TOPIĆ, 2015, 167, 344, kat. 346.

<sup>262</sup> L. ZECCHIN, 1989, 47–51.

<sup>263</sup> I. LAZAR, H. WILLMOTT, 2006, 60, Fig. 73; N. TOPIĆ, 2015, 360–361, kat. 393.

<sup>264</sup> N. TOPIĆ, 2015, 362–363, kat. 399-400.

<sup>265</sup> N. TOPIĆ, 2015, 171, 364, kat. 404.

<sup>253</sup> E. BAUMGARTNER, I. KRUEGER, 1988, 210-218.

<sup>254</sup> N. TOPIĆ et al., 2018, Table 2, samples 44-45.

<sup>255</sup> N. TOPIĆ, 2016, 586-587.

<sup>256</sup> N. TOPIĆ et al., 2016, samples 21, 38, 53, 62; N. TOPIĆ et al., 2018, Table 2, samples 31-43, 46-77.

<sup>257</sup> LJ. KOJIĆ, M. WENZEL, 1967, 80-90; P. ANĐELIĆ, 2004, 149, 223-226; N. TOPIĆ, 2015, 145.

<sup>258</sup> N. TOPIĆ, 2015, 130-132, kat. 48-51, 55, 57, 59, 61-62, 64-66.

<sup>259</sup> J. GAWRONSKI et al., 2010, 80-81, 1.2.4-1.2.5; A. LAMÉRIS, K. LAMÉRIS, W. LAMÉRIS, 2015, 86-87, cat. 54.

<sup>260</sup> N. TOPIĆ, 2015, 159-160, 310, cat. 249.

kod Gnalića (kraj 16. st., sjevernotalijanska radionica).<sup>266</sup>

Nađen je samo jedan ulomak lijevka manjeg vrča ili ampule (T. XXIX, 4).<sup>267</sup> Slični muransko-venecijanski nalazi datirani su od kraja 15. do početka 17. stoljeća.<sup>268</sup> Boce su puno više korištene na utvrđi, a među njima se ističu ingastare (boce uskog dugog vrata) koje su mogle biti bez dekoracije, ali su izrađivane i optičkim puhanjem ili su dekorirane mliječnobijelim nitima (T. XXIX, 5-6). Uglavnom su korištene od 14. do 16. stoljeća i vrlo su rasprostranjene.<sup>269</sup> Vrčevi su nađeni u manjem broju, a ističu se ulomci jednostavnog vrča bez dekoracije s trolisnim otvorom i ručkom (16. – 17. st.) (T. XXIX, 7).<sup>270</sup>

Među staklenim nalazima zastupljene su i bikonične svjetiljke. Jedna je izrađena od žućkastog stakla, a rekonstruirana je na temelju ulomka dna i stijenke s dijelom ručke (T. XXIX, 8).<sup>271</sup> Prema analognim primjerima iz obližnjeg Kotora, datirana je u 14. stoljeće.<sup>272</sup> Drugi fragment je izrađen od bezbojnog stakla i ukrašen plavim horizontalno apliciranim nitima (T. XXIX, 9),<sup>273</sup> a s obzirom na to da mu je promjer oboda cca 18 cm, moguće je da je pripadao bikoničnoj svjetiljci (iako su tako dekorirane čaše imale velike promjere oboda, često oko 14 cm).

Prozorsko staklo zastupljeno je ulomcima *ocula* (T. XXIX, 10) (15. – 16. st.) (staklenih diskova koji su bili uglavljeni u olovne ili drvene okvire) koji su tvorili staklene plohe.<sup>274</sup> Ti nalazi otkrivaju nam da su na utvrđi neke kuće bile zastakljene, što nije uobičajeno za obrambene i vojne objekte, dok je u gradskim sredinama to bilo učestalo. Moguće je da je

but there are also undecorated examples. Some had handles, and one finely modeled handle made of turquoise glass with preserved part of colorless wall could have been applied on the small bowl.<sup>261</sup> Such handles are characteristic of the 17th century Venetian workshops.<sup>262</sup> Small bowl made of dark blue glass with an applied foot (T. XXVIII, 9) could be a Venetian product of the 16th century.<sup>263</sup> There were also fragments of small bowls made of yellowish glass with ribbed decoration (T. XXIX, 1-2). They belong to the Renaissance period, probably as products of the Italian workshops.<sup>264</sup> Rare pieces were made in the mold with “diamond” ornament and an edge made of twisted yellowish and milk glass (T. XXIX, 3).<sup>265</sup> Similar examples were found in the Gnalić shipwreck (late 16th century, northern Italian workshop).<sup>266</sup>

Only one fragment of a juglet or ampulla was found (T. XXIX, 4).<sup>267</sup> Similar Murano-Venetian finds are dated to the period from the end of the 15th to the beginning of the 17th century.<sup>268</sup> Bottles were used more frequently on the fort, such as *ingastare* (bottles with long narrow neck) that might have been undecorated, but they were optically blown or decorated with milky-white threads (T. XXIX, 5-6). This widespread type was mostly used from the 14th to 16th century.<sup>269</sup> Jugs were less numerous. Fragments of a simple undecorated jug with trefoil mouth and handle are particularly interesting (16th-17th cent.) (T. XXIX, 7).<sup>270</sup>

Biconical lamps are represented among the

<sup>266</sup> I. LAZAR, H. WILLMOTT, 2006, 44, 116, Fig. 44:S9a, Plate 8/1-2.

<sup>267</sup> N. TOPIĆ, 2015, 518, kat. 837.

<sup>268</sup> R. BAROVIĆ MENTASTI et al., 1982, 143, cat. 204; L. ZECCHIN, 1990, 56.

<sup>269</sup> N. TOPIĆ, 2015, 183–186, 380–383, kat. 443–448, 451.

<sup>270</sup> N. TOPIĆ, 2015, 190–191, 395, kat. 483.

<sup>271</sup> N. TOPIĆ, 2015, 192, 398–399, kat. 492.

<sup>272</sup> M. KRŽANAC, 2001, 53, T. XVII/112, T. XVIII/114–117.

<sup>273</sup> N. TOPIĆ, 2015, 192, 400, kat. 496.

<sup>274</sup> N. TOPIĆ, 2015, 200–204, 415–416, kat. 539–540.

<sup>261</sup> N. TOPIĆ, 2015, 167, 344, kat. 346.

<sup>262</sup> L. ZECCHIN, 1989, 47–51.

<sup>263</sup> I. LAZAR, H. WILLMOTT, 2006, 60, Fig. 73; N. TOPIĆ, 2015, 360–361, cat. 393.

<sup>264</sup> N. TOPIĆ, 2015, 362–363, cat. 399–400.

<sup>265</sup> N. TOPIĆ, 2015, 171, 364, cat. 404.

<sup>266</sup> I. LAZAR, H. WILLMOTT, 2006, 44, 116, Fig. 44:S9a, Plate 8/1-2.

<sup>267</sup> N. TOPIĆ, 2015, 518, kat. 837.

<sup>268</sup> R. BAROVIĆ MENTASTI et al., 1982, 143, cat. 204; L. ZECCHIN, 1990, 56.

<sup>269</sup> N. TOPIĆ, 2015, 183–186, 380–383, kat. 443–448, 451.

<sup>270</sup> N. TOPIĆ, 2015, 190–191, 395, kat. 483.

takve prozore imala kaštelanova kuća na utvrđi, a njezina obnova spominje se 1526. godine.<sup>275</sup> Taj datum približno odgovara dataciji *oculi* koji su možda ugrađeni pri toj obnovi. *Oculi* su bili popularni produkti dubrovačkih radionica, ali su se uvozili i iz Venecije pa ne možemo pouzdano odrediti njihovo porijeklo.

Nalazi općenito svjedoče o višem životnom standardu i upotrebi luksuznih staklenih posuda, osim uobičajenih keramičkih. Tomu je pridonio i položaj Sokola koji je kontrolirao prijelaz iz zaleđa prema obali, a tom rutom prolazile su i mnoge trgovačke karavane. Dakle, život na utvrđi odvijao se vrlo slično onomu u gradskim naseljima, sudeći prema standardu keramičkih i staklenih predmeta. Također su ulomci staklenih posuda talijanske (venecijanske, apeninske, sjevernojadranske) ili dubrovačke provenijencije nađeni na utvrđama Sokolu na Plivi,<sup>276</sup> Kličevici kod Benkovca,<sup>277</sup> te Čačvini kod Trilja<sup>278</sup> što upućuje na uporabu luksuznog krhkog posuđa i u drugim vojnim objektima jadranskog zaleđa.

U kasnosrednjovjekovnom razdoblju dosta su jaki venecijanski utjecaji na kulturu življenja u jadranskom/balkanskom zaleđu.<sup>279</sup> Trgovačke rute obično su polazile iz Dubrovnika prema unutrašnjosti, a ovi nalazi upućuju na to da je i utvrda Sokol bila važan punkt na karavanskoj ruti koja je vodila prema krajnjim odredištima u Bosni i Srbiji.

## ZAKLJUČNA RAZMATRANJA

Lokalitet Sokol u Dunavama u Konavlima ima dugi kontinuitet u naseljavanju, od prapovijesti do ranog novog vijeka. U kasnom eneolitiku na tom području postojalo je na-

glass finds. One specimen was made of yellowish glass, and it was reconstructed on the basis of a fragment of base and wall with a piece of handle (T. XXIX, 8).<sup>271</sup> It was dated to the 14th century on the basis of analogous examples from nearby Kotor.<sup>272</sup> The other fragment was made of colorless glass and decorated with blue horizontally applied threads (T. XXIX, 9).<sup>273</sup> Since its rim diameter is ca. 18 cm it is possible that it belonged to a biconical lamp (although beakers decorated in that way had big rim diameters, often around 14 cm).

Windowpane is represented by fragments of *oculi* (T. XXIX, 10) (15th-16th cent.) (glass discs that were usually installed in lead or wooden frames) that constituted glass surfaces.<sup>274</sup> These finds indicate that some houses on the fort had glass panes which is not common for defensive and military structures, unlike the cities. It is possible that the castellan's house in the fort had such windows. Its renovation is mentioned in 1526.<sup>275</sup> This date roughly corresponds to the dating of *oculi* that might have been installed during renovation. *Oculi* were popular products of the Dubrovnik workshops, but they were also imported from Venice so their provenance cannot be determined with certainty.

Finds in general testify to high standard of living and use of luxurious glass vessels, except for common pottery. The position of Sokol definitely contributed to that fact as it controlled the passage from the hinterland to the littoral, which was a road traveled by many caravans. Therefore life on the fort resembled urban life in many ways, at least judging from the standard of ceramic and glass objects. Fragments of glass vessels of Italian (Venetian, Apennine, northern Adriatic) or Ragusan provenance were found at forts in Sokol on Pliva,<sup>276</sup>

<sup>275</sup> L. BERITIĆ, 1966, 125.

<sup>276</sup> I. BOJANOVSKI, 1972, 54.

<sup>277</sup> K. GUSAR, M. ČURKOVIĆ, 2011, 10–11, 22–23, kat. 22–27.

<sup>278</sup> LJ. GUDELJ, 2000, 175–178.

<sup>279</sup> V. BIKIĆ, 2006, 201–210.

<sup>271</sup> N. TOPIĆ, 2015, 192, 398–399, cat. 492.

<sup>272</sup> M. KRIŽANAC, 2001, 53, T. XVII/112, T. XVIII/114–117.

<sup>273</sup> N. TOPIĆ, 2015, 192, 400, cat. 496.

<sup>274</sup> N. TOPIĆ, 2015, 200–204, 415–416, cat. 539–540.

<sup>275</sup> L. BERITIĆ, 1966, 125.

<sup>276</sup> I. BOJANOVSKI, 1972, 54.

selje, zatim je formirana brončanodobna i željeznodobna ilirska gradina. Utvrda je osobito bila važna u kasnoantičko doba, zatim tijekom ranobizantskog razdoblja kada je to bila važna kontrolna točka prolaza iz balkanskog zaleđa prema moru, te u razvijenom srednjem vijeku kad je utvrda bila pod raznim gospodarima. U kasnom srednjem vijeku utvrda dolazi pod dubrovačku vlast a napuštena je 1672. godine.

Istraženo je područje uz utvrdu, a pri tom je ustanovljeno postojanje manjeg broja grobova uz sjevernu stranu, većeg uz istočnu i jugozapadnu stranu utvrde, dok na zapadnom dijelu nisu nađeni grobovi. Moguće da je ta strana pod utvrdom bila korištena za metalurške radnje, pečenje hrane (krušna peć), uzgoj stoke i nastambe. Pronađeni su kasnoantički/ranosrednjovjekovni grobovi i kasniji srednjovjekovni te ranonovovjekovni grobovi (uz iznimku jednog kasnijeg ukopa iz 19. ili 20. st.). Kasnoantički grobovi nađeni su pod konstrukcijom tegula na dvije vode uz kombinaciju kamenog materijala, s kamenom konstrukcijom te rijetko u grobnoj raci. Neki grobovi pronadjeni su razoreni i poremećeni. Grobni prilozi su izostali, a provedene analize radioaktivnim ugljikom <sup>14</sup>C odredile su datume grobova u rasponu od 5. do 19. stoljeća.

Uz južnu stranu utvrde vjerojatno je postojao neki sakralni objekt i groblje, koje se nastavljalo uz istočnu stranu koristeći se prirodnom zaštitom stijena utvrde, te se nastavljalo prema SI području uz utvrdu. Na sjeveru se nalazio kasnoantički ulaz na utvrdu. U kasnoantičkom periodu bilo je uobičajeno da se sakralni objekti i groblje nalaze na ulazu u grad. Ulaz na JZ dijelu vjerojatno je formiran u kasnom srednjem vijeku, što se i podudara s arhivskim podacima koji navode da je utvrda Sokol tada bila u dvojnog vlasništvu.

Sonde nisu istražene do kraja kulturnih slojeva, osim istočnog povišenog dijela sonde 2 gdje je na jednom dijelu definirano postojanje sterilnog sloja ispod kasnoeneolitičke/brončanodobne razine. U ovoj fazi učinjen

Kličevica near Benkovac,<sup>277</sup> and Čačvina near Trilj<sup>278</sup> suggesting that fragile luxurious vessels were also used in other military structures in the Adriatic hinterland.

Venetian influence on the culture of living in the Adriatic-Balkan hinterland was exceptionally strong in the late medieval period.<sup>279</sup> Trade routes usually started from Dubrovnik towards hinterland, and these finds suggest that Fort Sokol was an important station on the caravan route leading to final destinations in Bosnia and Serbia.

## FINAL CONSIDERATIONS

The site of Sokol in Dunave in Konavle has long continuity of occupation, from prehistory to the Early Modern Period. A settlement was formed at this position in the Late Eneolithic, followed by the Bronze and Iron Age Illyrian hillfort. The fort was particularly important in Late Antiquity, as well as in the early Byzantine period when it was an important control point on the road from the Balkan hinterland towards the sea, and in the High Middle Ages when it changed different rulers. In the Late Middle Ages the Republic of Ragusa seized the fort. It was finally abandoned in 1672.

The area next to the fort was excavated, unearthing a small number of graves along the northern side, bigger number along the eastern and southwestern side of the fort, while western part yielded no graves. It is possible that this area under the fort was used for metallurgical activities, baking (bread oven), livestock raising and houses. Late antique / early medieval graves were found as well as later medieval and early postmedieval graves (with the exception of one later burial from the 19th or 20th century). Late antique graves have been found under the construction of tegulae

<sup>277</sup> K. GUSAR, M. ČURKOVIĆ, 2011, 10-11, 22-23, cat. 22-27.

<sup>278</sup> IJ. GUDELJ, 2000, 175-178.

<sup>279</sup> V. BIKIĆ, 2006, 201-210.

je opsežan arheološki zahvat, a u budućima preostaje istražiti pojedine dionice u potpunosti, te proširiti istraživanje na šire područje oko utvrde jer se na temelju dosadašnjih istraživanja može pretpostaviti da je na širem području uz utvrdu postojalo naselje koje je vjerojatno prvi put formirano na prijelazu kamenog u metalno doba. Život se tu nastavio u idućim razdobljima, a najbolje je dokumentirana kasnoantička/ranobizantska faza kada je život bio intenzivan na ovom prostoru. Prapovijesni ukopi nisu sačuvani, a od nastambi djelomično je dokumentirana ilirska kuća sa spremištem hrane. Sačuvanost je slaba zbog intenzivnog djelovanja potresa, ali je uzrok tomu i ljudski faktor (poništanje ranijih slojeva dolaskom novih gospodara utvrde). Budući da je pronađena arhitektura, ostatci građevinskog materijala, mnoštvo pokretnih nalaza te grobovi djece, žena i muškaraca, možemo reći da lokalitet opravdava naziv Sokol-grad jer sve upućuje na to da je oko utvrde postojalo bar manje naselje.

U ovom istraživanju pronađen je materijal koji potvrđuje neke ranije, ali pruža i dosta novih spoznaja. Nađen je kasnoneolitički/eneolitički/brončanodobni kremen materijal koji upućuje na nešto raniju dataciju lokaliteta od prijašnje. Eneolitičko razdoblje također je dokumentirano keramičkim nalazima, a brončano i željezno doba keramičkim materijalom i metalnim nalazima te karboniziranim bademima. Među prapovijesnim nalazima ističu se minijaturne keramičke posude. Slikana grčko-helenistička keramika (5. – 4. st. pr. Kr.) potvrđuje trgovačke kontakte domorodačkog ilirskog stanovništva s južnoitaljskim i/ili jadranskim grčkim kolonijama. Također su nađene kovanice kralja Baleja (2. st. pr. Kr.) što upućuje na važnost kasnoilirskog razdoblja. Najbrojniji su kasnoantički nalazi koji su i raznovrsniji. Pronađena je velika količina tegula (*tegulae*) i kanalice (*imbrices*) od kojih neke imaju ostatke pečata. Ta velika količina nalaza upućuje na postojanje naselja oko utvrde, a dio je vjerojatno mogao pasti

in form of a double-pitched roof with combination of stone material, or with a stone construction and only rarely in a grave pit. Some graves were found destroyed and disturbed. There were no grave goods, and radiocarbon analyses dated the graves from the 5th to the 19th century.

Along the southern side of the fort was probably a sacral structure and cemetery that continued along the eastern side using natural protection of the fort rock, extending further towards the NE area next to the fort. Late antique entrance to the fort was on the northern side. In late antique period it was common that sacral structures and cemetery were located at the entrance to the city. Entrance at the SW side was probably formed in the Late Middle Ages which corresponds to the archival information stating that Fort Sokol was in dual ownership.

The probes did not reach the end of the cultural layers, except for the eastern elevated part of probe 2 where in one part presence of sterile layer under the late Eneolithic / Bronze Age level was documented. An extensive archaeological excavation has been conducted in this phase, leaving for the future campaigns complete research of certain segments and expansion to the wider region around the fort since previous research suggests that there was a settlement in the wider region next to the fort, formed for the first time at the transition from from the Stone Age to the Metal Ages. Life continued here in subsequent periods, and late antique / early Byzantine phase is best documented when life was particularly intense in this region. Prehistoric burials have not been preserved, and houses are represented by an Illyrian house with a food storage. The state of preservation is poor due to earthquakes, but also human activities (with the arrival of the new masters of the fort earlier layers were obliterated). Since architectural remains were found as well as construction material pieces and abundance of movable finds and graves of children, women and

s kuća na utvrdi pri urušavanjima uzrokovanim potresima. Od ostalih nalaza zastupljeni su ulomci keramike (amfore, zdjele, zdjelice, grube i ukrašene reljefnim ili slikanim ornamentom), ulomci stakla (čaše, svjetiljke, zdjelice, boce), metalni predmeti (čavli, kopče, fibule, ključevi, oruđe, oružje), ulomci koštanih dvostranih češljeva. Kasnosrednjovjekovni i ranonovovjekovni nalazi su također brojni, a među njima ima najviše metalnih nalaza među kojima je dosta strelica (veretona) i ulomaka oklopnih pločica, kamenih kugli te različitog oruđa. Zastupljeno je stolno (vrčevi, zdjele, zdjelice) i grubo keramičko (lonci, zdjele) posuđe. Također su pronađeni ulomci staklenih posuda (zdjelice, čaše, boce, vrčevi) svakodnevne upotrebe. Numizmatički nalazi obuhvaćaju široki vremenski raspon, od rimskog razdoblja do novog vijeka.

Dakle, Sokol je dao iznimno velik broj nalaza, a istraživanje bi trebalo nastaviti da bi se upotpunila predodžba o njegovoj važnoj povijesnoj ulozi. Taj lokalitet je i od iznimne važnosti jer je vrlo prezentabilan, a to i je jedan od najvažnijih zadataka istraživanja, jer neprezentirani lokaliteti često padaju u zaborav te svrha istraživanja počinje gubiti širi smisao. Lokalitet Sokol obuhvaća utvrdnu sa stalnim muzejskim postavom, te okolno područje – potencijalni arheološki park.

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men, we can say that the site justifies the title Sokol-grad (*Sokol-town*) as everything seems to indicate that there was at least a smaller settlement around the fort.

These excavations yielded finds that confirm earlier assumptions, and also offer some new insights. Flint artifacts dating to the Late Neolithic, Eneolithic and Bronze Age were recovered suggesting somewhat earlier dating of the site than previously assumed. The Eneolithic period was also documented with pottery finds, and Bronze and Iron Ages with pottery, metal finds and carbonized almonds. Miniature ceramic vessels stand out among the prehistoric finds. Painted Greek-Hellenistic pottery (5th-4th cent.) confirms trade contacts of the indigenous Illyrian population with the southern Italic and/or Adriatic Greek colonies. Coins of king Ballaios (2nd cent.) have been found suggesting the importance of the late Illyrian period. Late antique finds are most numerous and at the same time most diverse. Tegulae and imbrices were found in great quantities, some still bearing stamp traces. This abundance of finds suggests presence of a settlement around the fort, and some tegulae might have fallen off the fort houses in earthquakes. The rest of the finds include pottery sherds (amphorae, bowls, cups, coarse and decorated with relief or painted ornament), glass fragments (beakers, lamps, fibulae, keys, tools, weapons), fragments of double-sided combs. Late medieval and early postmedieval finds are also numerous, with dominant metal finds such as arrows (veretons) and pieces of armor plaques, stone balls and various tools. Tableware (jugs, bowls, small bowls) was found as well as coarse ceramic ware (pots, bowls). Fragments of glass vessels (small bowls, beakers, bottles, jugs) for everyday use belong to finds from this site. Numismatic finds cover a wide chronological span from the Illyrian period to postmedieval times.

Finally we can say that Sokol provided an abundance of finds that entice continuation of the research in order to complete the idea of

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its important historical role. This site is of exceptional importance as it is very presentable which is one the most important tasks of the research because sites that are not presented often fall into oblivion and research purpose is compromised. The site of Sokol encompasses the fort with a permanent museum display and the surrounding area – potential archaeological park.

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## TABLE

### FOTOGRAFIJE:

- T. I-XI, N. Topić (osim fotografija T. II.2, T. II.4, T. III.1; autorica: N. Drašković Vlašić);
- T. XII-XXIX: preuzeto iz N. TOPIĆ et. al., 2014a (Omega engineering d.o.o. Dubrovnik) osim fotografija: T. XII, 3-5; T. XIII, 1, 2, 4; T. XIV, 1, 3, 4, 6, 8; T. XV, 1, 3-7, 9-12; T. XVI; T. XVII, 1, 2, 4, 5, 7, 8; T. XVIII, 1 (u sredini), 2 (lijevo), 3 (dolje), 4; T. XIX; T. XX; T. XXI, 1, 2-4, 6; T. XXII, 1, 5; T. XXIII, 2-4; T. XXIV, 1, 2; T. XXV, 1, 6, 7, 9, 10; T. XXVII, 1, 3-10, 12 (fotografirano 2019. s dopuštanjem Muzeja i galerija Konavala);
- N. Topić: T. XXVII, 2, 11 (desno), 12; T. XXVIII; T. XXIX;
- M. Rogošić: T. XXII, 7 i 8;
- J. Beželj: T. XIII.2, XIV.1, XXI.1, XXVII.8.

**CRTEŽI:** N. Topić i Ž. Buško (Omega engineering d.o.o. Dubrovnik).

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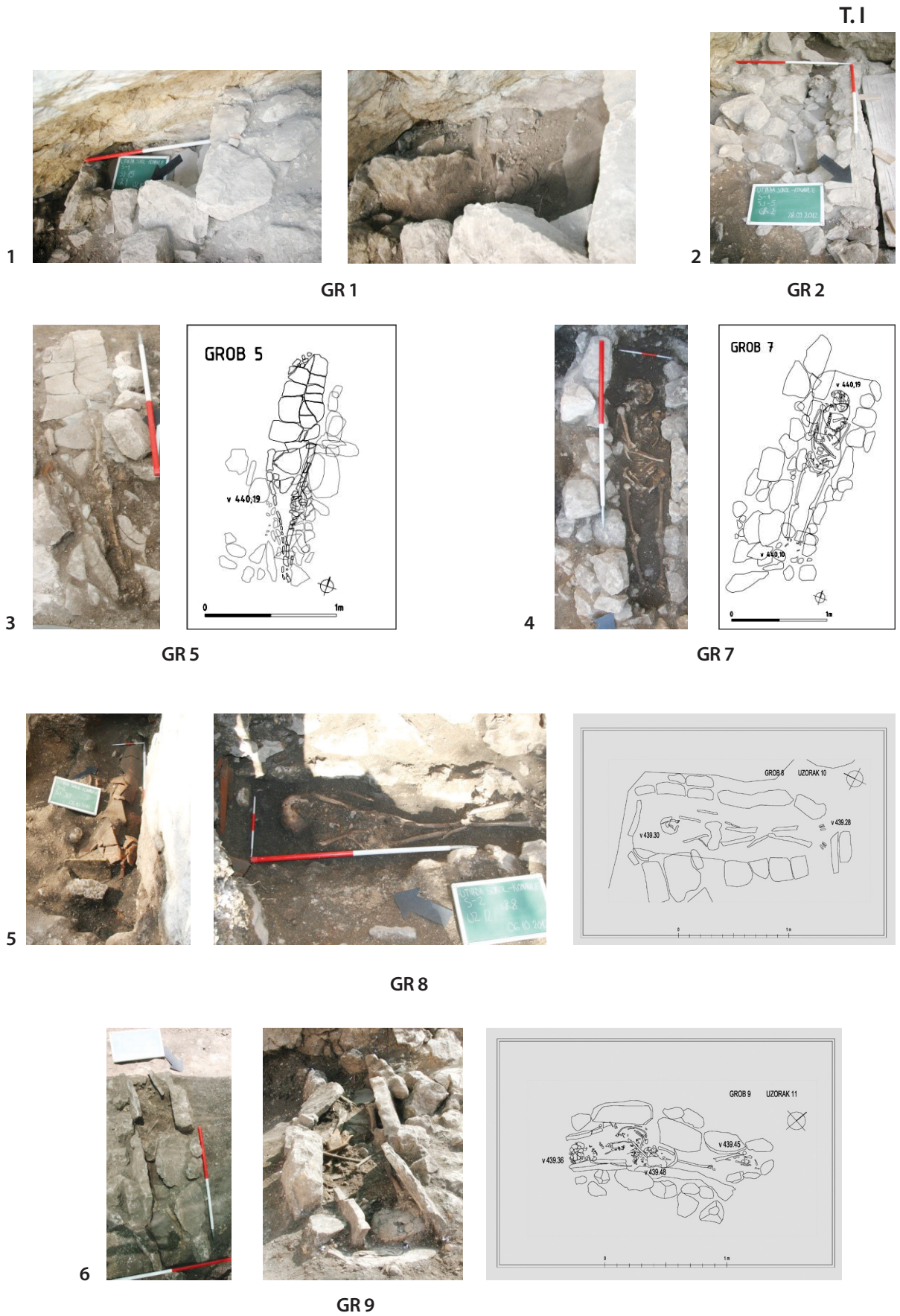
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## TABLES

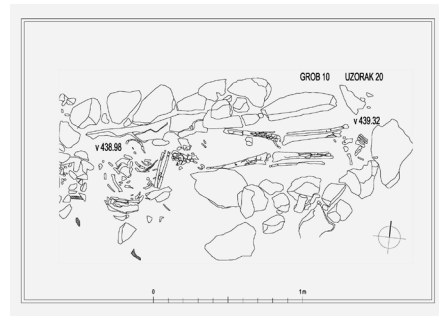
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- T. XII-XXIX: after N. TOPIĆ et. al., 2014a (Omega engineering d.o.o. Dubrovnik), except: T. XII, 3-5; T. XIII, 1, 2, 4; T. XIV, 1, 3, 4, 6, 8; T. XV, 1, 3-7, 9-12; T. XVI; T. XVII, 1, 2, 4, 5, 7, 8; T. XVIII, 1 (middle), 2 (left), 3 (lower), 4; T. XIX; T. XX; T. XXI, 1, 2-4, 6; T. XXII, 1, 5; T. XXIII, 2-4; T. XXIV, 1, 2; T. XXV, 1, 6, 7, 9, 10; T. XXVII, 1, 3-10, 12 (photographed in 2019. with permission of the Museums and Galleries of Konavle);
- N. Topić: T. XXVII, 2, 11 (right), 12; T. XXVIII; T. XXIX;
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- J. Beželj: T. XIII.2, XIV.1, XXI.1, XXVII.8.

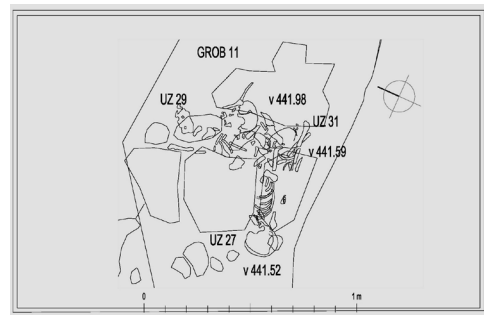
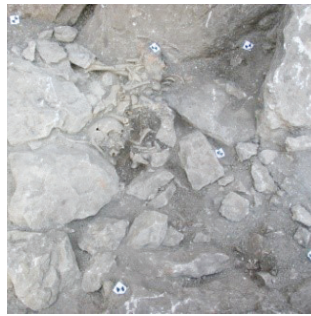
**DRAWINGS:** N. Topić and Ž. Buško (Omega engineering d.o.o. Dubrovnik).



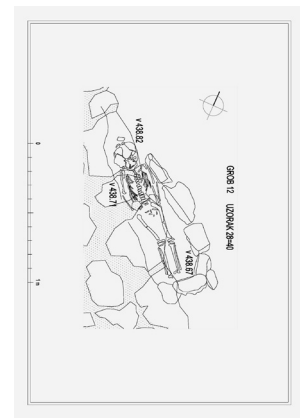
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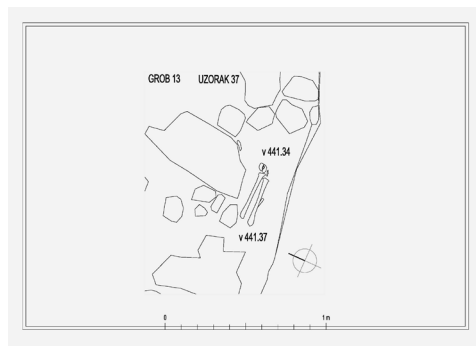
GR 10



GR 11

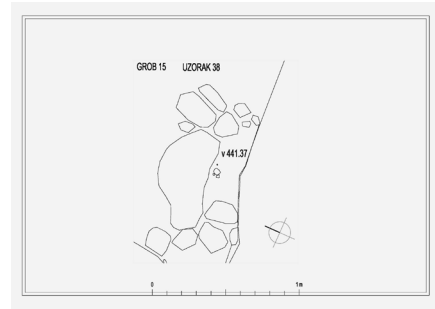


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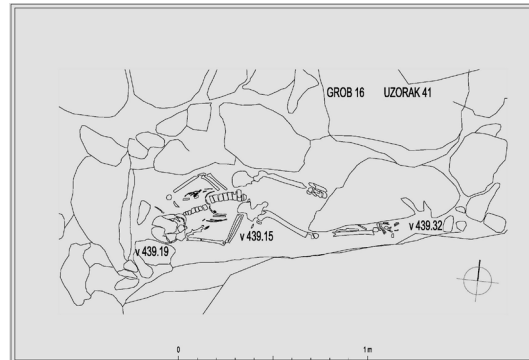


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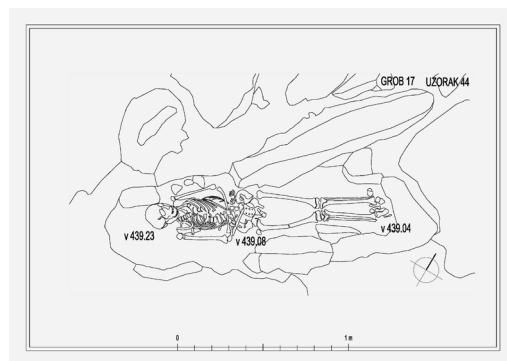
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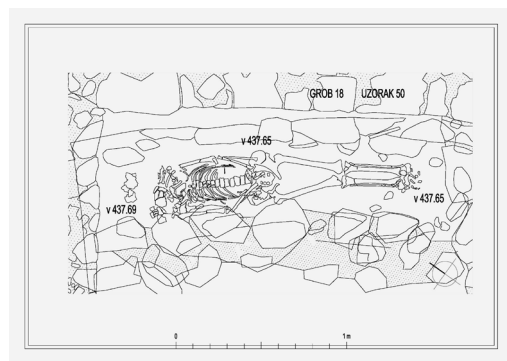
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GR 16

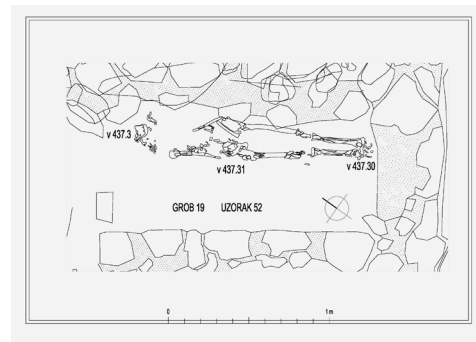
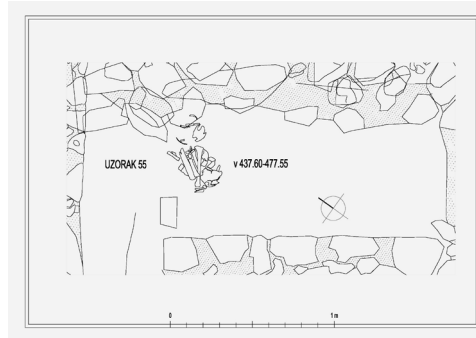


GR 17



GR 18

T. IV



1

GR 19 + uz.55

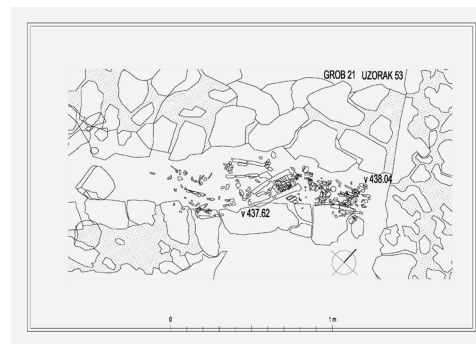


2

GR 20, uz. 54

3

GR 20, uz. 61

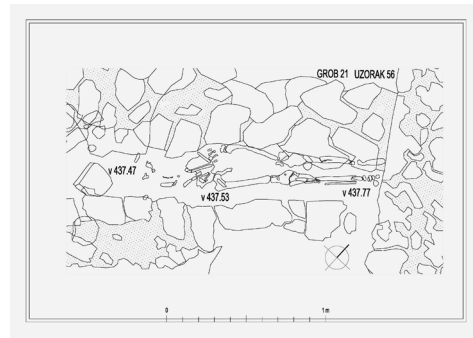


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GR 21, uz. 53

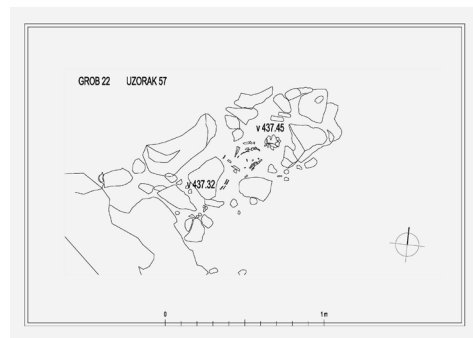
T.V

1



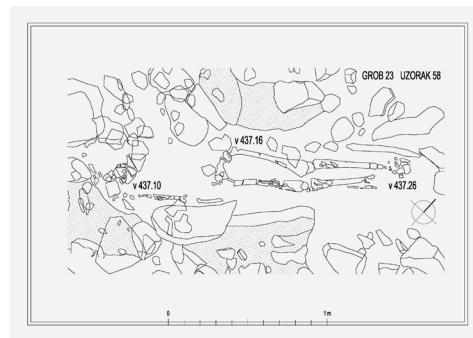
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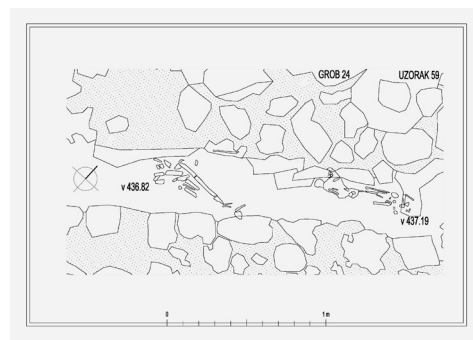
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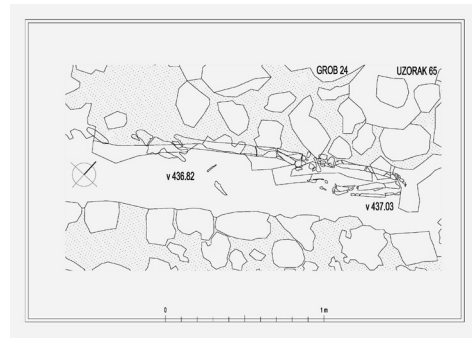
GR 23

4



GR 24, uz. 59

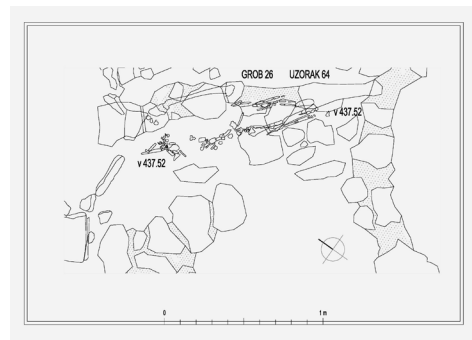
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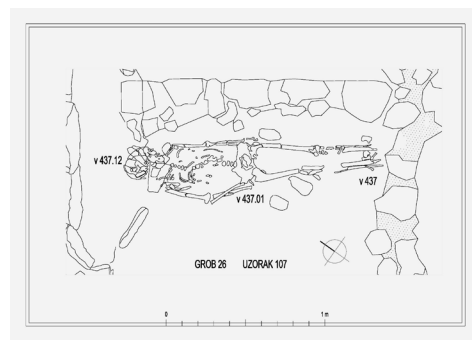
GR 24, uz. 65



uz. 60

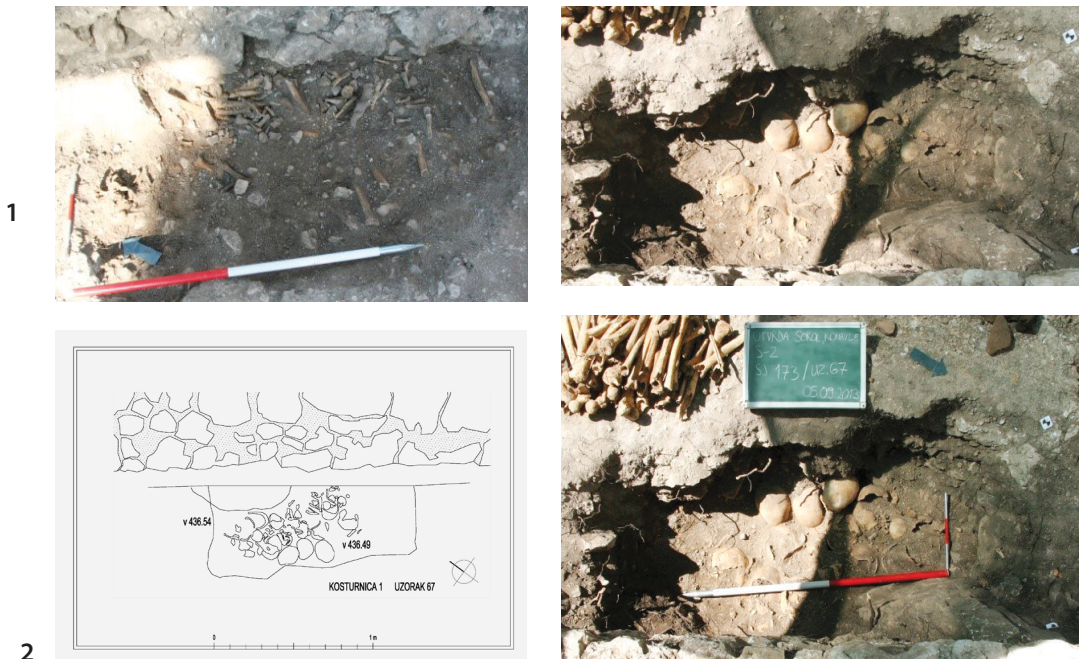


GR 26, uz. 64



GR 26, uz. 107

T.VII



Kosturnica (KO), uz. 66, 67

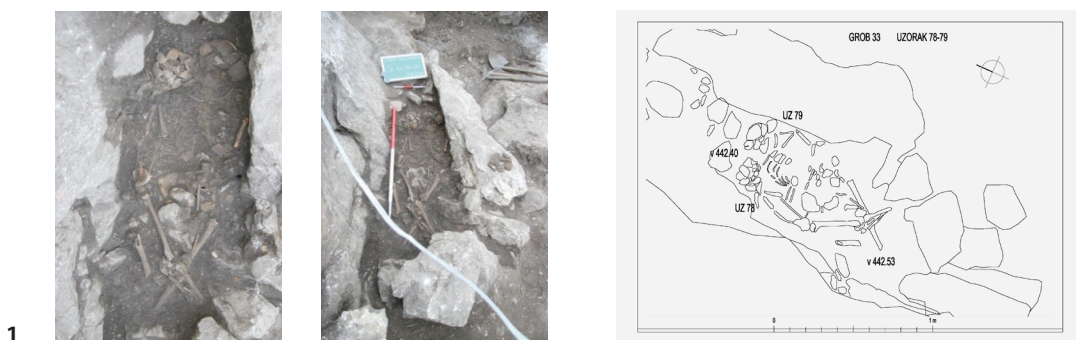


GR 27-31



GR 32

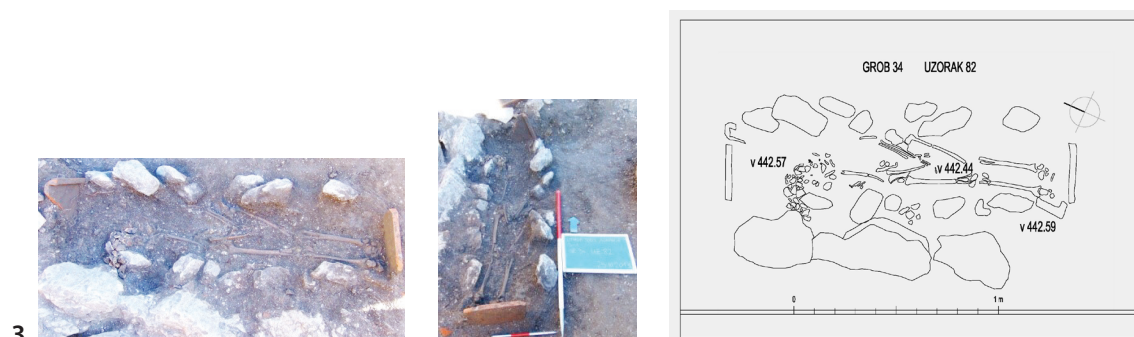
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GR 33, uz. 78, 79



GR 33, uz. 80



GR 34, uz. 82

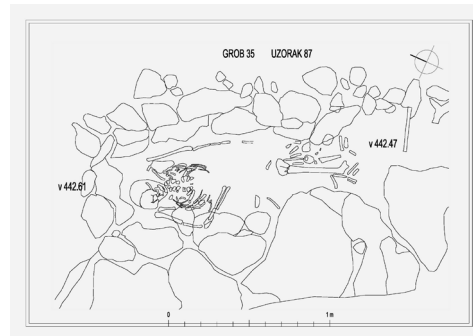


GR 35, uz. 83, 85

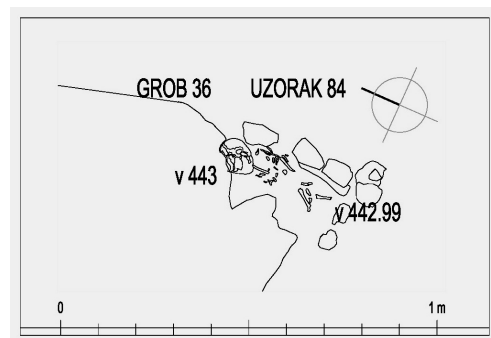
T. IX



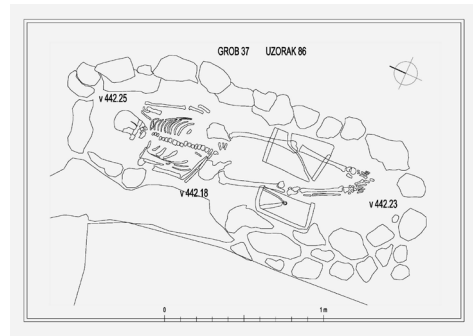
GR 35, uz. 87



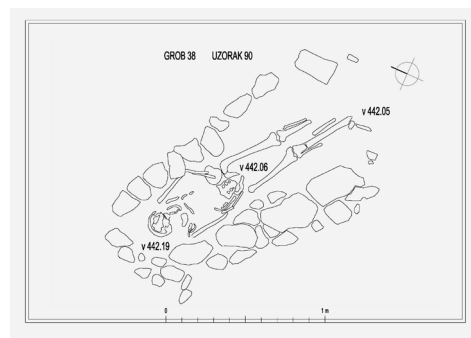
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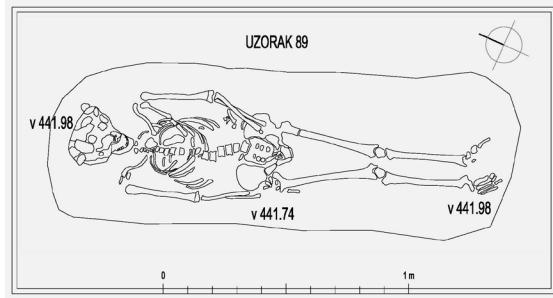
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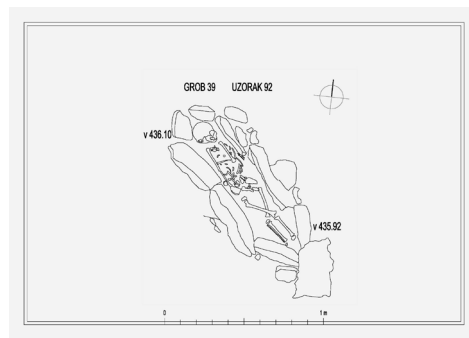
GR 38, uz. 90



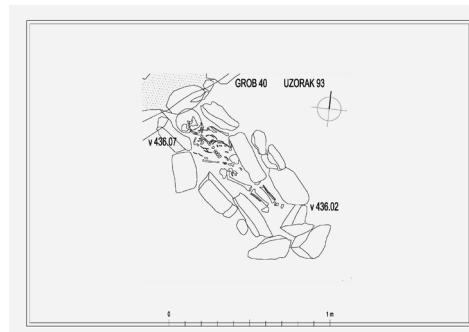
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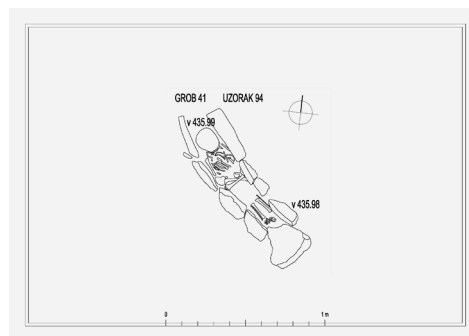
uz. 89



GR 39, uz. 92



GR 40, uz. 93

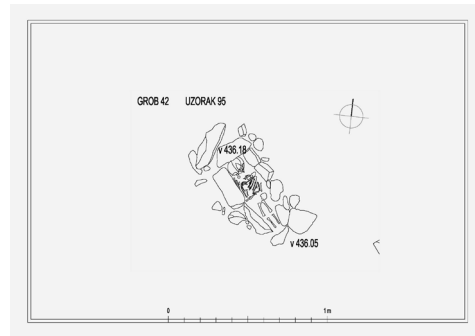


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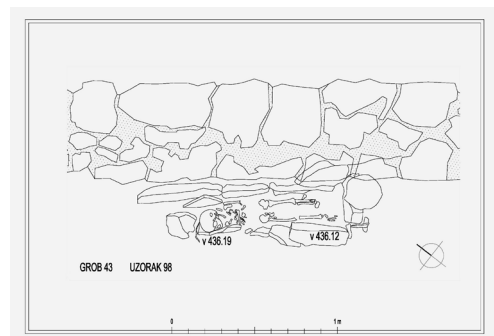
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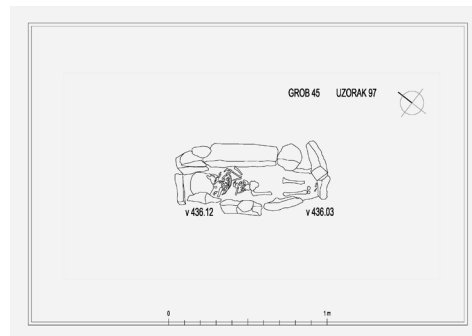
GR 42, uz. 95



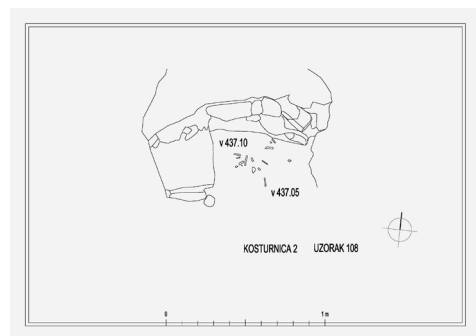
GR 43, uz. 98



GR 45, uz. 97



Dječja kosturnica, uz. 108



T. XII



1



2



3



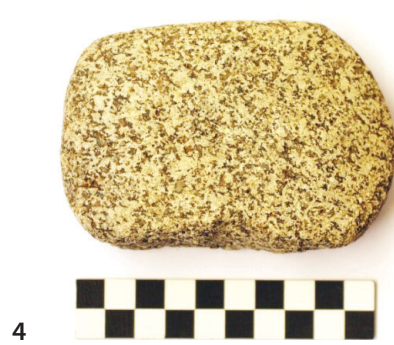
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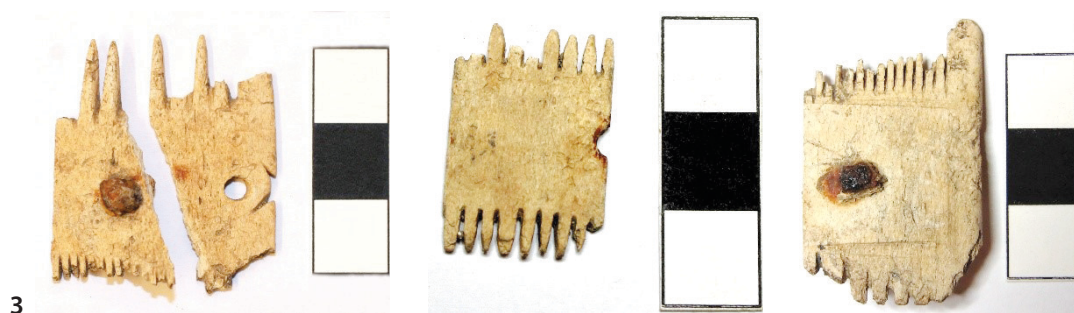
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T. XIII



T. XIV



T. XV



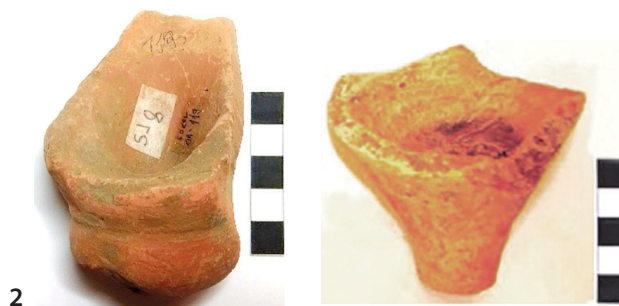
T. XVI



T. XVII



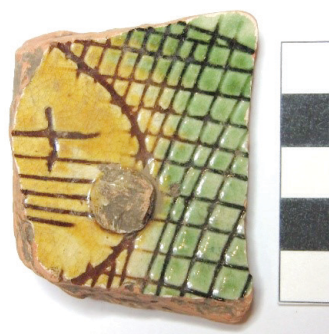
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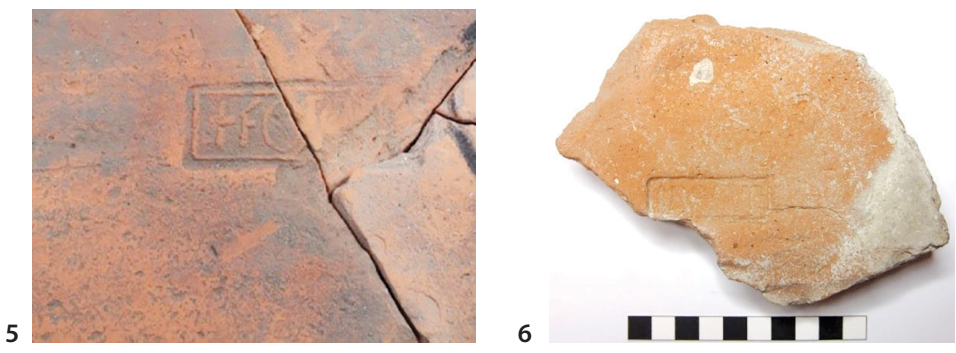
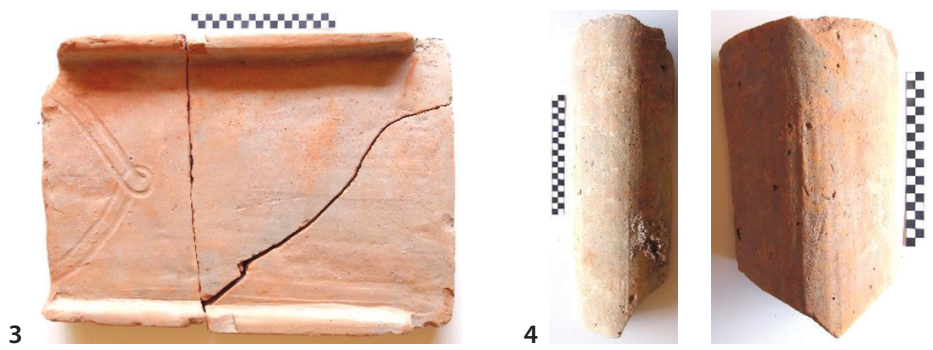
T. XIX



T. XX



T. XXI



T. XXII



T. XXIII



1

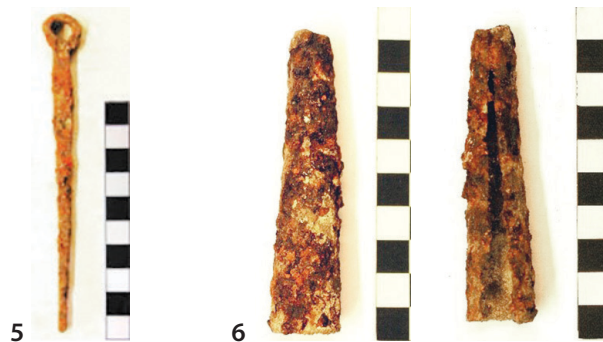


2

3



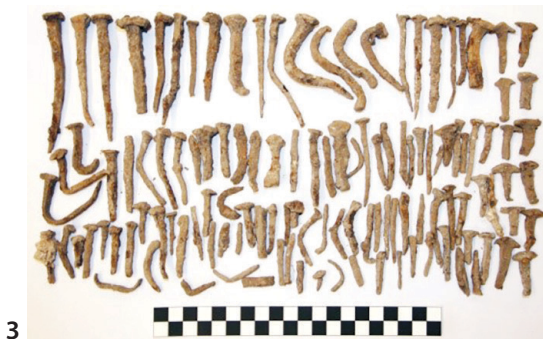
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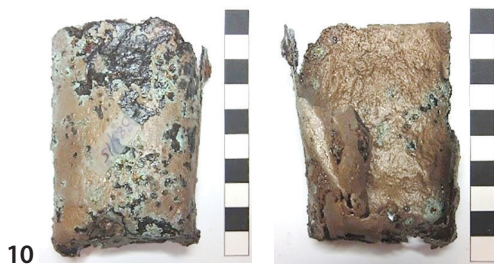
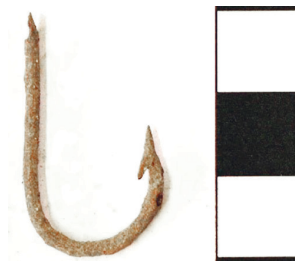
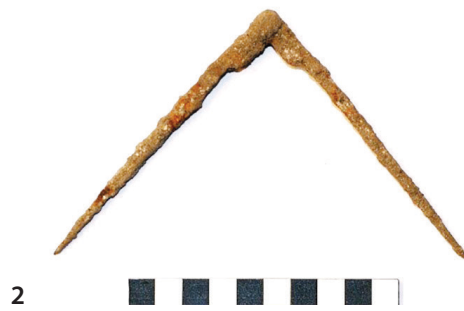


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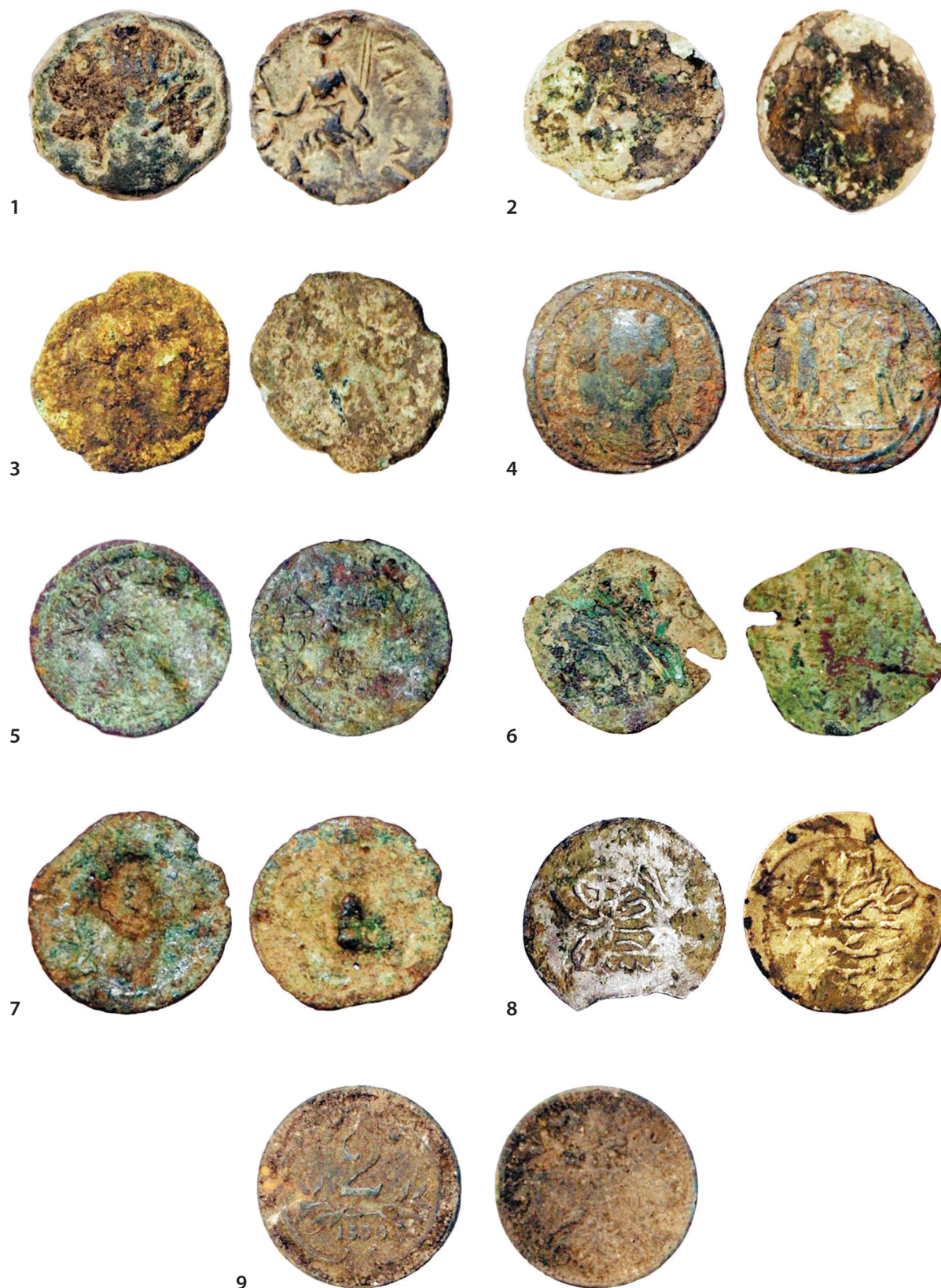
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T. XXIV





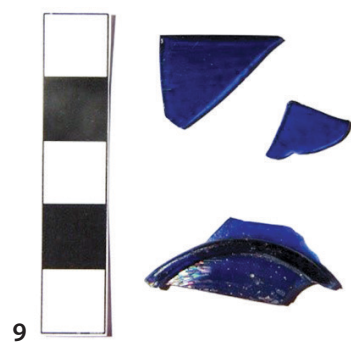
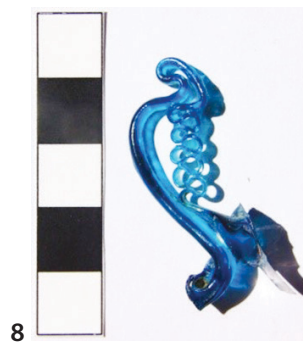
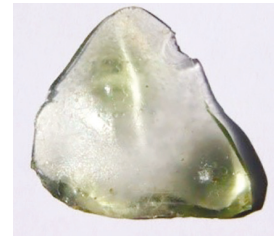
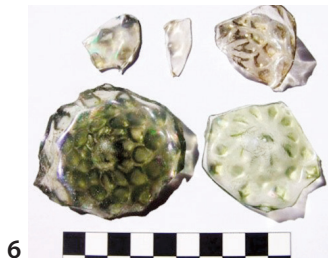
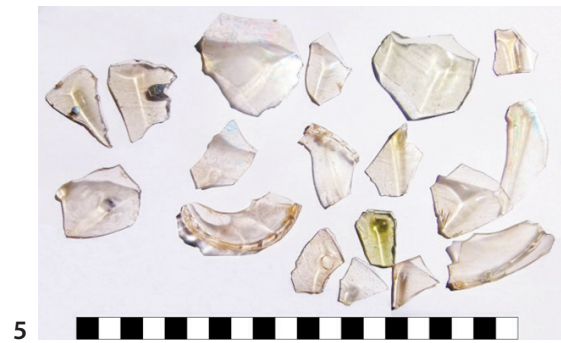
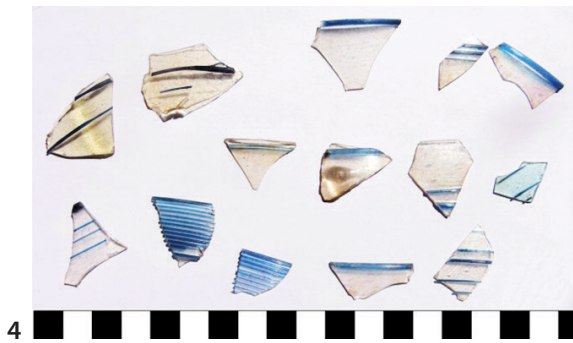
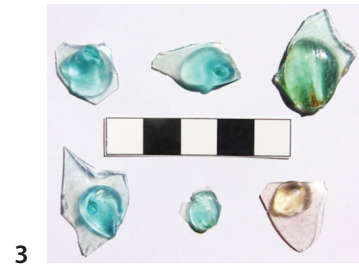
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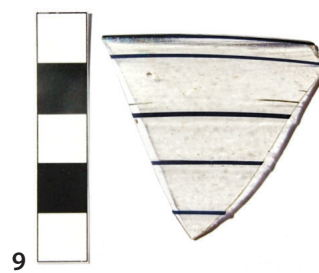
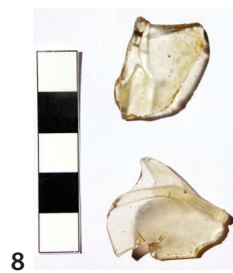
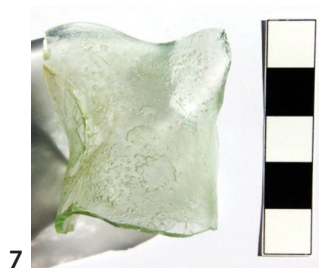
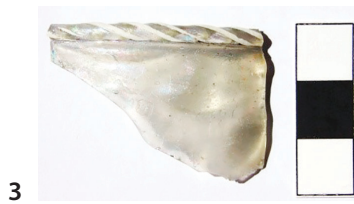
T. XXVII



T. XXVIII



T. XXIX





# TERENSKI PREGLED KRŠKE ZARAVNI NA PODRUČJU JASENICA I OBROVCA

## FIELD SURVEY OF THE KARST PLATEAU IN THE JASENICE AND OBROVAC AREAS

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IZVORNI ZNANSTVENI ČLANAK / ORIGINAL SCIENTIFIC PAPER

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### KLJUČNE RIJEČI:

Hrvatska, Dalmacija, dinarski krš, krški krajo-lik, terenski pregled, Jase-nice, Obrovac, Zrmanja

*U radu je prezentirano istraživanje koje se provodi metodom terenskog pregleda. Istraživanje je usmjereno na dinarski krš, a provodi se na području Jasenica i Obrovca. Definirani su formacijski procesi i arheološki potencijal područja istraživanja. Posebna rasprava posvećena je metodologiji istraživanja i njezinoj primjerenosti za krški teren. Predstavljene su osnovne karakteristike arheoloških izvora na krškom terenu te je razrađena kategorizacija arheoloških izvora koja valorizira materijalna svojstva i procese u dinarskom kršu. Empirijski podatci prikupljeni istraživanjem prezentirani su prema kronološkom kriteriju.*

### KEY WORDS:

Croatia, Dalmatia, Di-naric karst, karst land-scape, field survey, Jase-nice, Obrovac, Zrmanja

*The paper presents a study conducted by applying the method of archaeological field surveying. The survey was conducted on the Dinara mountain karst of the Jasenice and Obrovac areas. It defines the formation processes and the archaeological potential of the surveyed area. In addition, it discusses the applied methodology and its suitability for karst relief. It further presents the main characteristics of archaeological sources on karst terrain and categorises them by taking into account the material features and processes of Dinaric karst. The empirical data collected during the surveying are presented in chronological order.*

## UVOD

Problematika terenskih pregleda u arheologiji je postigla status zasebne discipline. Razni oblici rekognosciranja i terenskih pregleda već dulje vrijeme nisu pitanje pukog detektiranja ili pronalaženja arheoloških lokaliteta, nego je riječ o jasno razrađenim sustavima razmišljanja o tome što je zapravo reprezentirano nalazima i/ili tvorevinama/strukturama koje identificiramo radom na terenu. Zbog toga glavne teme terenskih pregleda nisu popisi lokaliteta, odnosno arheološka topografija, već su usmjerene na formacijske i transformacijske procese koji dovode do određenog stanja arheoloških izvora. U skladu s tim se razrađuju i formuliraju metodologije prikupljanja podataka metodom terenskog pregleda koje su istovremeno usmjerene na same nalaze, ali i na to kako prikupljeni površinski nalazi i njihova distribucija reprezentiraju potpovršinski kontekst. Brojne analitičke kategorije koje su ustaljene u disciplini terenskih pregleda uzimaju se zdravo za gotovo te na neki način predstavljaju opće mjesto, primjerice, u kontekstu ovoga rada i istraživanja je od iznimne važnosti gotovo pa univerzalno postavljena analitička kategorija potpovršinskog konteksta i njegova odnosa s površinskim nalazima, o čemu će više riječi biti dalje u tekstu. Terenski pregled koji se objavljuje u ovom radu provodi se na području dinarskog krša, na specifičnom području čije ga karakteristike izdvajaju od područja na kojima su uopće razvijeni koncepti i metode terenskih pregleda. Stoga cilj ovog rada nije samo prezentiranje prikupljenih arheoloških podataka, već i prezentiranje problematike terenskih pregleda u odnosu na krški teren.

## PODRUČJE ISTRAŽIVANJA

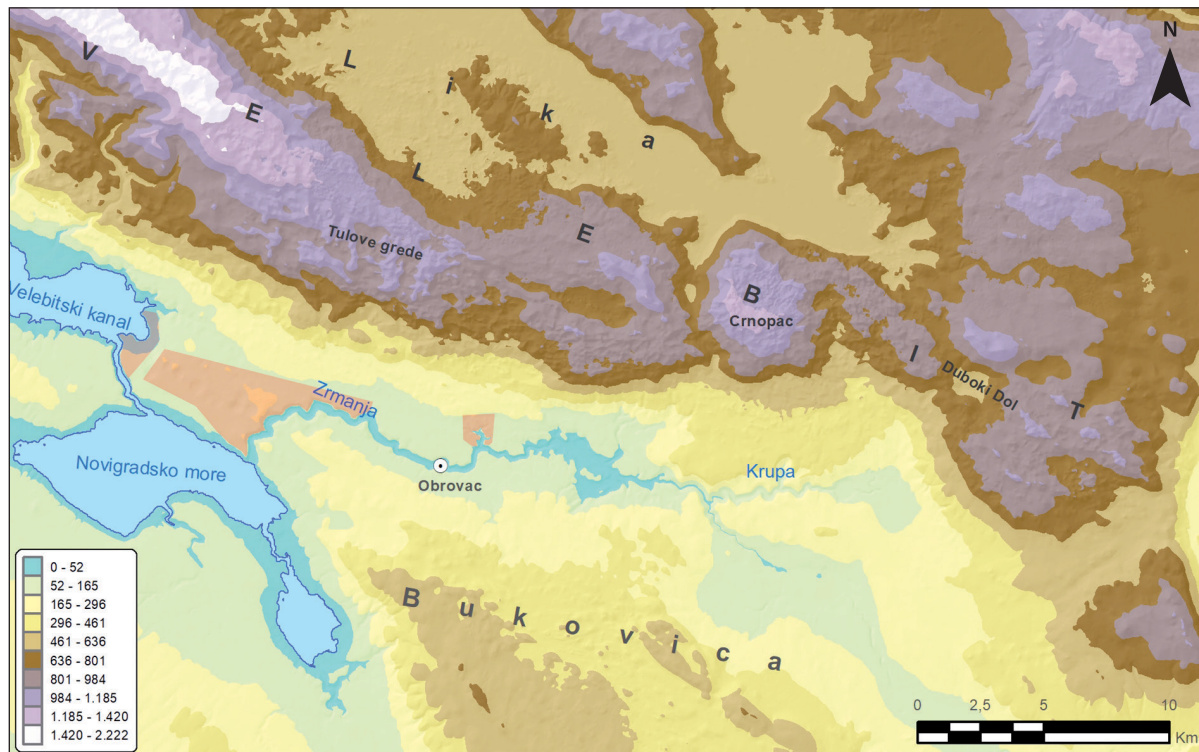
Područje istraživanja je definirano pružanjem jugoistočnog Velebita i kanjona rijeka Zrmanje i Krupe. Riječ je o geomorfološki vrlo heterogenom krškom području koje

## INTRODUCTION

Archaeological field surveying has become a separate discipline. Various forms of archaeological prospecting and field surveying long ago ceased to represent mere detecting or identifying archaeological sites; they rather developed into a clearly structured system of thoughts on what the finds and/or artefacts/structures identified during field work actually suggest. Therefore, the main focus of field surveying is not listing archaeological sites, i.e. the archaeological topography, but is rather directed at the formation and transformation processes that lead to a certain status of archaeological sources. Hence, data collection methods have been developed based on field surveys aimed at collected surface finds, but also at the way in which the finds and their distribution reflect the subsurface context. Many categories of analysis that are usually applied in field surveying are taken for granted and are considered as representing universal values; thus, of extraordinary significance in the context of this paper and this study is the almost universal analytical category of subsurface circumstances and their relation with surface finds, which will be discussed later in the paper. The field survey, the results of which are published in this paper, was conducted in a Dinaric karst region, an area which, owing to its specific characteristics, differs from regions in which the concept and methodology of field surveys were originally developed. Therefore, the objective of this paper is to present not only the collected archaeological data, but also the problems of field surveying on karst terrain.

## SURVEYED AREA

The surveyed area is defined by the southeastern Velebit slopes, and the Zrmanja and Krupa canyons. This karst area is extraordinarily heterogeneous in terms of geomorphology.



KARTA 1. Područje istraživanja s označenim pregledanim prostorom (crveno) (izradila: N. Kulenović).

MAP 1 Surveyed area with surveyed zones marked red (by N. Kulenović).

obuhvaća planinski teren, zaravan, kanjone i obale Novigradskog mora i Velebitkog kanala (Karta 1).

Velebit je najdulja hrvatska planina, a pruža se u smjeru SZ-JI. Klimatska je razdjelnica primorske i kontinentalne Hrvatske. Slabo je raščlanjen rezultat čega je mali broj prijevoja. Karakterizira ga reljef visoke energije, složena antiklinalna građa te poprečna stepeničasta asimetrija. Jugoistočni Velebit je jedini kopneni dio ovog dinarskog lanca dužine od oko 40 km. Riječ je o najnižem i najužem dijelu lanca Velebita (širina do 10 km) koji kao struktura ima odlike gorskog hrpta. Najvažniji prijevoji na ovom dijelu Velebita su Mali Alan (1044 m) i Prezid (766 m), a vrhovi Tulove grede (1127 m) i Crnopac (1404 m).<sup>1</sup> Podnožje jugoistočnog Velebita čini obrovačko-zrmanjska terasa ili zaravan u koju je usječen kanjon rijeke Zrmanje. Na području istraživanja zaravan je najveće površine na području Jasenica. Visinski pojas za-

<sup>1</sup> A. BOGNAR, 1994.

It encompasses mountainous terrain, a plateau, canyons, the shores of the Novigrad Sea Bay and the Velebit Channel (Map 1).

Velebit is Croatia's longest mountain range, stretching from the northwest to the southeast. It acts as a climatic barrier between coastal and continental Croatia. It is poorly indented, and as a result it does not have many passes. It is characterised by high-energy relief, a complex anticlinal structure and step-like transversal asymmetry. Southeastern Velebit is the only continental part of this Dinaric chain, stretching for approximately 40 km. It is the lowest and narrowest part of the Velebit chain (up to 10 km wide) which, as a structure, has the characteristics of a mountain ridge. The most important passes in this part of Velebit are Mali Alan (1044 m) and Prezid (766 m), and the summits are Tulove Grede (1127 m) and Crnopac (1404 m).<sup>1</sup> The foot of southeastern Velebit is formed by the Obrovac-Zrmanja terrace or plateau which the River

<sup>1</sup> A. BOGNAR, 1994.

ravni je od 100 do 300 m n. v. Zrmanja utječe u Novigradsko more, a plovna je uzvodno otprilike do Obrovca, odnosno, do Jankovića buka. Kanjon rijeke Krupe je usječen u sjevernodalmatinsku zaravan koja čini podnožje Velebita.<sup>2</sup>

Čitavo područje istraživanja pripada tipu klasičnog dinarskog krša koji karakterizira dominacija debelo uslojenih čistih vapnenačkih stijena. Osnovni proces u kršu je kemijsko trošenje ili korozija stijena topivih u vodi koji omogućuju razvijanje svih egzogenih i endogenih krških reljefnih oblika. Važna osobina ovog prostora je vrlo niska prisutnost površinskih voda i izvora.<sup>3</sup> Geomorfološke formacije koje su prisutne na području istraživanja uključuju vrtače od kojih dominiraju one manje površine, jaruge, speleološki objekti raznih vrsta itd. Vrtače su jedine površine s obradivim tlom. Udio obradivog tla na području istraživanja je iznimno nizak (svega nekoliko posto). Većina prostora može se okarakterizirati kao razvijeni krš s dubokim škrapama i goli kamenjar bez vegetacije ili sa slabo razvijenom vegetacijom (makija).

## ARHEOLOŠKI POTENCIJAL I FORMACIJSKI PROCESI

Područje istraživanja dinarskog krša, čije su karakteristike opisane u prethodnom poglavlju, odabrano je prema više kriterija: reljefna homogenost dinarskog krša, reljefna heterogenost koja se očituje u prisutnosti makro i mikro geomorfoloških krških oblika, mogućnost primjene više različitih strategija prikupljanja podataka metodom terenskog pregleda u skladu s reljefnom heterogenosti, mogućnost primjene daljinskih istraživanja te sačuvanost i istraženost krajolika. Kriterij koji povezuje područje istraživanja je prije svega krški reljef i to krš klasičnog dinarskog tipa. U

Zrmanja Canyon cuts into. In the surveyed area, the plateau is the widest near Jasenice. The altitude belt of the plateau is between 100 and 300 m above sea level. The Zrmanja flows into the Novigrad Sea Bay, and is navigable upstream approximately to Obrovac, i.e. up to the Jankovića Buk waterfall. The River Krupa Canyon cuts into the northern Dalmatian plateau which forms the foot of Velebit.<sup>2</sup>

The entire surveyed area is categorised as classical Dinaric karst, with thickly layered pure limestone rocks prevailing. The dominant process that produces karst is the chemical wear or corrosion of water-soluble rocks, allowing the development of all exogenous and endogenous karst relief forms. A significant characteristic of the area is the extraordinarily low presence of surface waters and springs.<sup>3</sup> Geomorphological formations in the surveyed area include sinkholes, among which smaller ones prevail, gullies, all sorts of speleological structures, etc. Gullies are the only surfaces with arable soil. The share of arable soil in the surveyed area is extraordinarily low (only several percent). The majority of the surveyed area can be characterised as developed karst with deep karrens and bare rock without any or with only poorly developed vegetation (macchia).

## ARCHAEOLOGICAL POTENTIAL AND FORMATION PROCESSES

The surveyed Dinaric karst area, whose characteristics were described in the previous chapter, was selected according to several criteria: the relief homogeneity of Dinaric karst, relief heterogeneity manifested in the presence of macro and micro geomorphological karst forms, the possibility of applying different data collection strategies by field surveying based on relief heterogeneity, the ability to apply remote sensing, and the conservation

<sup>2</sup> M. MATAS, 2009.

<sup>3</sup> J. ROGLIĆ, 2004.

<sup>2</sup> M. MATAS, 2009.

<sup>3</sup> J. ROGLIĆ, 2004.

tom smislu je područje istraživanja homogeno, a za razliku od primjerice, Ravnih kotara u kojima alteriraju sinkklinealne zone krških grebena i sinklinale flišnih naslaga. Reljefna heterogenost očituje se u prisutnosti gotovo svih krških geomorfoloških oblika.

Arheološki potencijal tog područja je relativno visok, jednako kao i potencijal za provođenje istraživanja metodom terenskog pregleda. Ta se ocjena temelji na količini postojećih arheoloških podataka, sačuvanosti prostora te geomorfologiji terena. Stanje istraženosti je vrlo slabo, a postojeći podatci reflektiraju selektivan i topografski pristup arheološkim ostatcima. Slabo stanje istraženosti čini potrebu za sistematičnom arheološkom valorizacijom sveukupnog prostora jer upravo postojeći, doduše selektivni podatci upućuju na arheološku važnost prostora u prošlosti, odnosno njegov arheološki potencijal. Manji dio prostora zahvaćen je direktnim uništavanjem površine (primjerice rudnici boksita, strojno pošumljavanje, autocesta itd.) ili je nedostupan za istraživanje (minski sumnjiva područja). Geomorfološka heterogenost omogućava primjenu različitih vrsta terenskih pregleda te posljedično daljnju problematizaciju metode terenskog pregleda u kontekstu reljefa dinarskog krša. Primjerice, blaga topografija krške zaravni omogućuje sistematičan ili ujednačen pregled terena te zadovoljavajuću kontrolu dinamike i pokrivenosti terena istraživanjem.

Temeljni negativni faktor za provođenje istraživanja terenskim pregledom jest smanjena vidljivost pojedinih područja koja je rezultat dugotrajnih modernizacijskih procesa čiji je sastavni dio iseljavanje stanovništva te napuštanje zemljišta i stočarstva kao opći proces deruralizacije. Rezultat nenaseljenosti je povećana gustoća vegetacije šikara koja smanjuje vidljivost pri terenskom pregledu, ali uglavnom ne u tolikoj mjeri da onemogućava terenski rad, makar ne veći dio godine. Nepovoljna vidljivost karakterizira uglavnom područja vrtača s obzirom na to da većina obradivog zemljišta, posebno onog manje

and exploration of the landscape. The criterion connecting the entire surveyed area is primarily karst relief, and thus that of the classical Dinaric karst type. In this sense, the surveyed area is homogeneous, unlike, for example, Ravni Kotari, where sinclinal zones of karst ridges and syncline of flysch deposits alternate. Relief heterogeneity is evident in the presence of almost all geomorphological karst forms.

The archaeological potential of the area is relatively high, as is the potential for field surveying. The assessment is based on the amount of existing archaeological data, the conservation of space and the geomorphology of the terrain. The state of exploration is very poor, and the existing data reflect a selective and topographic approach to archaeological remains. The poor state of exploration points to the need for the systematic archaeological appraisal of the entire area because the existing, though selective, data suggest the archaeological significance of the area in the past, i.e. its archaeological potential. A smaller part of the area is affected by direct destruction of the surface (e.g. bauxite mines, mechanical afforestation, motorway construction, etc.) or is unavailable for surveying (suspected mines). The geomorphological heterogeneity allows for different types of field surveys and, consequently, the further problematisation of the field surveying method in the context of Dinaric karst relief. Thus, the mild topography of the karst plateau allows for systematic or uniform field surveying as well as satisfactory control of the field survey dynamics and coverage.

The main factor impeding field surveys is the reduced visibility of certain areas as a result of long-term modernisation processes that include depopulation as well as the abandonment of land and of cattle breeding as part of a general process of de-ruralisation. The result of depopulation is an increased density of macchia, which decreases visibility during field surveys, although generally not to an extent that would make fieldwork impossible, at least for most of the year. Poor visibility is typical mainly of

površine, nije kultivirana te je posljedično prekriveno gustom niskom vegetacijom koja u potpunosti anulira mogućnost prikupljanja površinskih nalaza.

Osim općih uvjeta koji utječu na provedbu terenskog pregleda kao što je vegetacijski pokrov, definiranje i identificiranje formacijskih i transformacijskih procesa<sup>4</sup> na području istraživanja omogućuje bolje razumijevanje arheoloških podataka koji se prikupljaju pri terenskom pregledu. U Hrvatskoj je ova problematika razrađena u više različitih projekata terenskih pregleda kao što su Neothermalna Dalmacija (*Neothermal Dalmatia Project*),<sup>5</sup> terenski pregled na Hvaru (*Hvar Survey Project*)<sup>6</sup> te u najnovijem istraživanju provedenom u Istri na području Bujštine.<sup>7</sup> Formacijski procesi identificirani u navedenim projektima dijele brojne sličnosti s procesima identificiranim na području istraživanja koje je predmet ovog rada, a koji su rezultat tradicionalne obrade zemljišta te osnovnih geoloških karakteristika. Formacijski i transformacijski procesi koji dominiraju na području istraživanja su u najvećoj mjeri kulturni dok je detektiran tek jedan prirodni proces.

Opis formacijskih procesa i njihova utjecaja na vidljivost arheoloških nalaza može se započeti s obradivim zemljištem koje ionako na području istraživanja predstavlja najmanje zastupljen tip zemljišta. U tom kontekstu je važno istaknuti kulturni transformacijski proces koji je prvi put definiran u sklopu hvarskog terenskog pregleda. Riječ je o tradicionalnoj poljoprivrednoj praksi čišćenja obradivih površina od kamena, pri kojoj se, ako su prisutni, iz tla uklanjaju i arheološki nalazi te se odlažu na ograde i druge suhozidne strukture. Na ovaj se način najčešće „utječe“ na arheološka nalazišta iz rimskog razdo-

sinkholes since most arable land and particularly smaller parcels are uncultivated and are consequently densely covered with low vegetation, which makes the collecting of surface finds impossible.

In addition to the general conditions which have an impact on the conducting of field surveys, such as vegetation cover, it is possible to gain better understanding of the archaeological data collected during the field survey by defining and identifying the formation and transformation processes<sup>4</sup> in the surveyed area. In Croatia, this issue has been elaborated in a number of different field survey projects such as the Neothermal Dalmatia Project<sup>5</sup>, the Hvar Survey Project<sup>6</sup> and the latest survey conducted in Istria in the Buje region.<sup>7</sup> The formation processes identified within the framework of the aforementioned projects show many similarities with those identified in the surveyed area as a result of traditional land cultivation or as basic geological characteristics. Formation and transformation processes that prevail in the surveyed area are predominantly cultural, while only one natural process has been detected.

The description of the formation processes and their impact on the visibility of archaeological finds can begin with arable land, which is the least represented type of land in the surveyed area. In this context, it is important to highlight the cultural transformation process that was first defined as part of the Hvar Survey Project, namely the traditional agricultural practice of clearing stones from arable land, where any archaeological finds are removed from the soil and placed in fences and other drywall structures. This is the most frequent way of affecting archaeological sites from the Roman period and dismantling parts of Ro-

<sup>4</sup> M. B. SCHIFFER, 1972; M. B. SCHIFFER, 1975; M. B. SCHIFFER, 1983; M. B. SCHIFFER, 1996.

<sup>5</sup> J. CHAPMAN, R. SHIEL, Š. BATOVIĆ, 1987; J. CHAPMAN, R. SHIEL, Š. BATOVIĆ, 1996.

<sup>6</sup> V. GAFFNEY, J. BINTLIFE, B. SLAPŠAK, 1991.

<sup>7</sup> Z. ČUČKOVIĆ, 2012; Z. ČUČKOVIĆ, 2012a.

<sup>4</sup> M. B. SCHIFFER, 1972; M. B. SCHIFFER, 1975; M. B. SCHIFFER, 1983; M. B. SCHIFFER, 1996.

<sup>5</sup> J. CHAPMAN, R. SHIEL, Š. BATOVIĆ, 1987; J. CHAPMAN, R. SHIEL, Š. BATOVIĆ, 1996.

<sup>6</sup> GAFFNEY, J. BINTLIFE, B. SLAPŠAK, 1991.

<sup>7</sup> Z. ČUČKOVIĆ, 2012; Z. ČUČKOVIĆ, 2012a.

blja te se dijelovi rimskih objekata i nalaza razgrađuju, sortiraju i ugrađuju u ograde.<sup>8</sup> Taj tip formacijskog procesa je na području istraživanja zasada zabilježen jedino u uvali Rovanjska (Sl. 1A). Naime, na čitavom području istraživanja ta je lokacija jedino mjesto s obradivim zemljištem uz obalu s uvalom što se u potpunosti poklapa s obrascem rimskog ruralnog naseljavanja. U uvali Rovanjska su po suhozidnim međama parcela distribuirani ulomci amfora, tegula, keramičkih posuda, bruseva, žrvnjeva i obrađenog kamena, a također je prisutan vidljiv zid *in situ*.<sup>9</sup> Potrebno je napomenuti da su nalazi prikupljeni samo sa suhozidnih struktura s obzirom na to da parcele nisu izorane i kultivirane. Iako je već primjer iz uvale Rovanjska ekstremna transformacija arheološkog konteksta, kojim su arheološki nalazi distribuirani po principu podjele zemljišta, ona je zadobila još ekstremniji oblik u Istri pri okrupnjavanju zemljišta za potrebe PIK-ova kada su uklonjene suhozidne ograde, a arheološki nalazi koji su bili na ogradama su kao rezultat strojnog oranja zadobili novu prostornu distribuciju – još više su raspršeni i usitnjeni čime su stvoreni sasvim novi prostorni obrasci disperzije nalaza.<sup>10</sup> Izuzev uvale Rovanjska, tek su na još jednom mjestu u vrtači, dakle na obradivom zemljištu (Srid sela) prikupljeni ulomci keramike koji se mogu datirati u rimsko razdoblje. Za taj primjer je važno naglasiti da druge vrste nalaza ili dijelova struktura nisu zabilježene.

Već smo napomenuli da su vrtače praktički jedina područja koja uopće sadrže tlo u krškom krajoliku. Uobičajena podjela zemljišta u vrtačama na području istraživanja ovoga rada jest na dugačke i uske parcele (lokalni naziv *lastve*)

man buildings and finds, sorting them and building them into fences.<sup>8</sup> In the surveyed area, this type of formation process has only been recorded in Rovanjska Cove (Fig.1A). In the entire surveyed area, this site is the only location with arable land along the coast with a cove, which fully coincides with the pattern of Roman rural settlement. In Rovanjska Cove, fragments of amphorae, tegulae, ceramic vessels, whetstones, grindstones and worked stones were distributed in the drywall between the plots, and there is also a visible wall *in situ*.<sup>9</sup> It should be noted that the finds were collected only from the drywall structures since the plots were not ploughed and cultivated. The Rovanjska Cove example itself represents an extreme transformation of the archaeological context in which the archaeological finds were distributed according to the principle of land division. However, such transformation took an even more extreme form in Istria during land consolidation for the purposes of agricultural-industrial concerns, when drywall fences were removed, and the land was machine-ploughed, so that the archaeological finds that used to be in the drywalls were further dispersed and shredded, thus creating entirely new spatial patterns with the dispersed finds.<sup>10</sup> Apart from Rovanjska Cove, fragments of pottery that can be dated to the Roman period have been collected at only one other site, and thus in a sinkhole, i.e. on arable land (Srid Sela). It should be noted that no other types of finds or parts of structures have been recorded at the site.

As has already been mentioned, in karst landscape, sinkholes are practically the only areas containing soil. In the surveyed area described

<sup>8</sup> V. GAFFNEY, J. BINTLIFE, B. SLAPŠAK, 1991, 63–66, jednaki formacijski procesi i prostorni obrasci površinskih nalaza su zabilježeni i analizirani u terenskom pregledu na području Privlake, M. DUBOLNIĆ GLAVAN, 2015a.

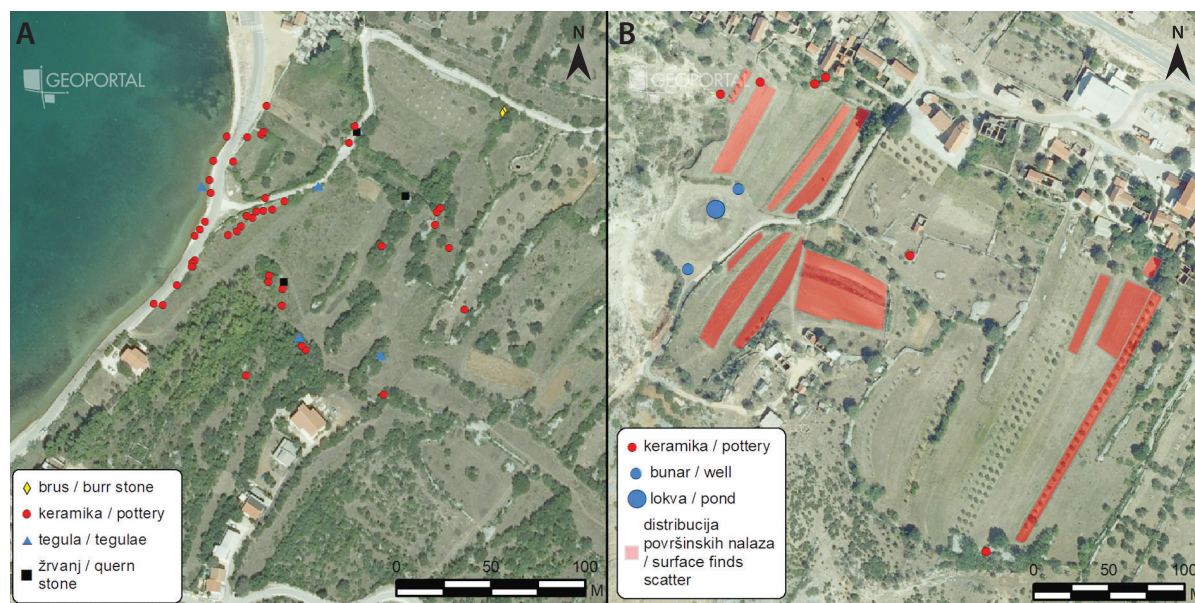
<sup>9</sup> Teorijska analiza takvih vrsta depozita je razrađena u N. KULENOVIĆ OČELIĆ, 2019, 86-87.

<sup>10</sup> Z. ČUČKOVIĆ, 2012, 94–95; Z. ČUČKOVIĆ, 2012a, 252, 265.

<sup>8</sup> According to V. GAFFNEY, J. BINTLIFE, B. SLAPŠAK, 1991, 63-66, equal formation processes and spatial patterns of surface finds were recorded and analysed in a field survey in the Privlaka area, as quoted in M. DUBOLNIĆ GLAVAN, 2015a.

<sup>9</sup> A theoretical analysis of such types of deposits was elaborated by N. KULENOVIĆ OČELIĆ, 2019, 86-87.

<sup>10</sup> Z. ČUČKOVIĆ, 2012, 94-95; Z. ČUČKOVIĆ, 2012a, 252, 265.



SLIKA 1. Prostorna distribucija površinskih nalaza: A) uvala Rovanjaska, B) Srid sela (izradila: N. Kulenović).  
 FIGURE 1 Spatial distribution of surface finds: A) Rovanjaska Cove, B) Srid Sela (by: N. Kulenović).

koje međusobno nisu odijeljene suhozidima, već jarkom ili pojedinačnim kamenim međašima (lokalni naziv *cilj*). Parcele koje su danas obrađene su iznimka te gotovo da predstavljaju pojedinačne primjere. Stoga ih se može smatrati, da se slikovito izrazimo, „svojevrsnim prozorom“ koji nam nužno pruža samo parcijalan uvid u pod-površinski kontekst (Sl. 1B). Na obrađenim parcelama u vrtićima većinom su otkriveni površinski nalazi, jednako kao i pojedinačni nalazi na suhozidnim ogradama, a o čemu će više riječi biti dalje u tekstu.

Krški teren, kao dominantno zastupljena geomorfološka formacija na području istraživanja sasvim je drukčije okruženje za terenski pregled. U sklopu projekta Neothermalna Dalmacija prvi je put krški reljef ravnokotarskih grebena definiran u terminima terenskih pregleda, i to kao zona sačuvanosti (*zone of preservation*), a kao kontrast zoni uništenja (*zone of destruction*) koja je dominantna u većem dijelu Europe. Zona uništenja se kao kategorija prije svega odnosi na agrarna područja čija je površina izrazito transformirana strojnim oranjem.<sup>11</sup> Ono što je problematično u

in this paper, land in sinkholes is usually divided into long and narrow plots (local name *lastve*), which are not separated by drywalls, but by a ditch or by individual hoarstones (local name *cilj*). Presently, cultivated plots are rather an exception, with only a few individual examples. Therefore, they serve as a window into the subsurface context (Fig. 1B). Surface finds mostly originate from cultivated plots in sinkholes, and individual finds, which will be discussed further in the text, from drywall fences.

The karst terrain – a predominant geomorphological formation in the surveyed area – represents a completely different environment for field surveys. As part of the Neothermal Dalmatia Project, the karst relief of the Ravni Kotari ridges was for the first time defined using field survey terminology, and thus as a zone of preservation, in contrast to a zone of destruction which is prevalent in most of Europe. A zone of destruction, as a category, primarily refers to farming areas whose surface was evidently transformed by mechanical ploughing.<sup>11</sup> A problem in categorising karst as a

<sup>11</sup> J. CHAPMAN, R. SHIEL, Š. BATOVIĆ, 1987, 136 s referencom: C. TAYLOR, 1971.

<sup>11</sup> J. CHAPMAN, R. SHIEL, Š. BATOVIĆ, 1987, 136 with reference to: C. TAYLOR, 1971.

kategoriziranju krša kao zone sačuvanosti jest princip po kojem je ova kategorizacija postavljena. Naime, osnovni princip ove kategorizacije je upravo poljoprivredna aktivnost koja je praktički nepostojeća na krškom terenu kao transformacijski faktor koji djeluje na površinu. Zapravo ono što krški teren razlikuje od kontinentalnih područja umjerene klime, a na kojima su i razvijene kategorije, metode i drugi analitički koncepti terenskih pregleda, jest što na kršu dominiraju površinske strukture, a ne potovršinski kontekst koji se procjenjuje i reprezentira pomoću površinskih nalaza.<sup>12</sup> Da krški teren nije pasivan, sačuvan i mogli bismo reći „zamrznut u vremenu i prostoru“ vidljivo je iz odnosa ljudi prema mjestima i kamenu tijekom prošlosti. Čučković je naglasio upravo prakse sukcesivnog korištenja određenih mjesta i razgradnje te izgradnje struktura na lokalitetima na krškom terenu koje su u istraživanju sasvim drukčiji izazov od distribucija površinskih nalaza na oranicama. Kao primjere ističe dogradnje različitih pastirskih i vojnih objekata na gradinskim lokalitetima.<sup>13</sup> Na području istraživanja takve su situacije relativno česte. Manji vojni objekti u formi bunkera i grubo-brana zastupljeni su na više mjesta od kojih možemo istaknuti gradinske lokalitete Dračevac i Patkin kuk. Pastirski zakloni su najčešća dogradnja na tumulima i gradinama. Osim ovih modifikacija razgradnje i izgradnje struktura, istraživanjem su detektirane i ekstremne inačice transformacija arheoloških struktura razgradnjom. Tomu pripada iskorištavanje kamenih struktura kojim se u potpunosti poništava ili anulira postojeća struktura, ali i materijal od kojeg je izgrađena i to na način da djelomično ili potpuno prestaje postojati kao takva, na razini strukture, materijala i prostornosti. Brojne arheološke strukture iskorištene su kao izvor kamena za

zone of conservation is the underlying principle of this categorisation. The categorisation is mainly based precisely on agricultural activity as a transformative factor affecting the surface, while on karst terrain this activity is practically non-existent. The categories, methods and other analytical concepts of field surveys were in fact developed in continental regions with a temperate climate, whereas a distinctive feature of the karst terrain is actually the predominance of surface structures rather than the subsurface context, assessed and represented based on surface finds.<sup>12</sup> The fact that the karst terrain is not passive, preserved and, so-to-say, “frozen in time and space” is evident from the relationship of people to places and stone throughout the past. Čučković pointed precisely to the practices of the successive use of certain sites, as well as to dismantling and then constructing structures on karst sites, where field surveyors face completely different challenges from those presented by surface finds distributed on ploughlands. As examples, he mentions various shepherds’ and military structures constructed at hillfort sites.<sup>13</sup> In the surveyed area, such situations are relatively common. On several sites, such as the Dračevac and Patkin Kuk hillforts, smaller military structures can be found, for instance bunkers or breastworks. The most common structures built on tumuli and hillforts are shepherds’ shelters. In addition to different variations of dismantling and constructing structures, the survey also detected some extreme transformations of archaeological structures due to their dismantling. This includes the exploitation of stone from structures resulting in the complete demolition not only of the structures themselves, but also of the material from which they were built, and ultimately in the complete destruction of structures, materials and space. Numerous archaeological structures have been used as

<sup>12</sup> Teorijske implikacije takvog koncipiranja krškog terena su razrađene u N. KULENOVIĆ OČELIĆ, 2019, 82.

<sup>13</sup> Z. ČUČKOVIĆ, 2012a, 253.

<sup>12</sup> The theoretical implications of such a conception of karst terrain are elaborated in N. KULENOVIĆ OČELIĆ, 2019, 82.

<sup>13</sup> Z. ČUČKOVIĆ, 2012a, 253.

proizvodnju vapna, za izradu šljunka te za izgradnju stambenih objekata. Primjerice, dijelovi rimske ceste na širem području Jasenica iskorišteni su za proizvodnju vapna.<sup>14</sup> Kameni plaštevci brojnih tumula samljeveni su u šljunak gdje kao primjer možemo istaknuti Turske gromile na užem području Dračevca i Vulića Dolca.<sup>15</sup>

Najnovija, najintenzivnija i sveobuhvatna uništavanja i oštećivanja arheoloških nalazišta, kulturnog krajolika i prirodnog okoliša odvijaju se pri strojnom pošumljavanju kojeg provode Hrvatske šume na iznimno velikim površinama. Strojno pošumljavanje provodi se izoravanjem dubokih paralelnih brazdi u matičnoj stijeni na razmaku od 1 do 1,5 m što rezultira potpunim uništenjem tretirane površine. Pri terenskom pregledu takva oštećenja su evidentirana na prapovijesnim tumulima na predjelu Bravar i Baljenica koji su u cijelosti zahvaćeni takvom aktivnosti. Ta tehnika pošumljavanja i način uništavanja kulturnih dobara je uglavnom ograničena na područje zaravni gdje se zbog topografskih karakteristika terena takve metode pošumljavanja uopće mogu provoditi.

Otočić Veliki školjić u Novigradskom moru iznimku je i pojedinačan primjer prirodnih formacijskih procesa djelovanjem mora na području istraživanja. Djelovanje mora na ovaj lokalitet je dvojako. Pojedinačni zidovi su vidljivi u razni površine kao rezultat abrazijskog djelovanja mora dok more istovremeno stvara nanose sitnog žala kojim je prekriven kulturni sloj crne boje s arheološkim nalazima.

## METODOLOGIJA ISTRAŽIVANJA

Projekt terenskog pregleda koji se objavljuje u ovome radu provodi se od 2016. godine. Strategija istraživanja ovisila je ponajviše o

<sup>14</sup> T. ŠARLIJA, 2010, 16.

<sup>15</sup> Prema kazivačima A.V. i V.V.

sources of stone for the production of lime or gravel, and for the construction of dwellings. For example, parts of the Roman road in the wider Jasenice area were used to produce lime.<sup>14</sup> Stone mantles of numerous tumuli have been ground into gravel, for example at the Turske Gromile [Turkish tumuli] site in the narrow area of Dračevac and Vulić Dolac.<sup>15</sup>

The latest, most intense and comprehensive destruction and devastation of archaeological sites, cultural landscapes and the natural environment have taken place during mechanical afforestation carried out over extremely large areas by Hrvatske šume, the Croatian forest management company. Mechanical afforestation is performed by ploughing deep parallel grooves in the parent rock at a distance of 1-1.5 m, resulting in the complete destruction of the treated surface. Such damage was recorded during field surveys on prehistoric tumuli in Bravar and Baljenica, which were entirely affected by such activity. This afforestation technique that brings about the destruction of cultural property is generally restricted to the plateau where such afforestation can take place due to the topographic characteristics of the terrain.

An exceptional example of natural formation processes as a result of the action of the sea in the surveyed area is the islet of Veliki Školjić in the Novigrad Sea Bay. The effect of the sea on this site is twofold. On the surface, as a result of sea abrasion, individual walls are visible, while, at the same time, the sea creates deposits covering archaeological finds contained in the black cultural layer.

## SURVEY METHODOLOGY

The field survey project whose results are published in this paper began in 2016. The survey strategy depended primarily on the

<sup>14</sup> T. ŠARLIJA, 2010, 16.

<sup>15</sup> According to locals providing information, A.V. and V.V.

konfiguraciji terena i prilagođavanju uvjetima na terenu. Stoga su i primijenjene različite metode terenskog pregleda, u skladu s geomorfologijom terena. Sustavni terenski pregled proveden je na području krške zaravni dok se ciljani terenski pregled provodi u svrhu dokumentiranja određenih tvorevina kao što su putovi i ceste.

Područje zaravni obuhvaćeno terenskim pregledom omogućilo je sustavni pregled terena pravilnim kretanjem prostorom, s manjim odstupanjem, u skladu s konfiguracijom terena. Pravilno kretanje terenom u krškom krajoliku služi i omogućava isključivo i samo kontrolu pokrivenosti terena pregledom, ali ne i nekakve oblike uzorkovanja. Svi članovi ekipe kretali su se ujednačenom brzinom na međusobnoj razdaljini od 50 do 100 m uglavnom smjera S-J s obzirom na to da kretanje prostorom u osnovi nije ograničeno parcelama i ogradama. Tijekom 2016. godine pregledana je površina zaravni od 20 km<sup>2</sup>, prosječno po radnom danu između 0,5 do 0,7 km<sup>2</sup>.

Opći pristup terenskom pregledu može se okarakterizirati kao terenski pregled temeljen na nalazima (*siteless* pristup, za razliku od terenskog pregleda temeljenog na lokalitetima). Nalazi izvan nalazišta (*off-site finds*) tretirani su kao analitička kategorija i posebna pozornost posvećena je upravo dokumentiranju takvih nalaza.<sup>16</sup> Konačno, nesustavni terenski pregled provodi se na teže dostupnim, planinskim područjima. Istraživači koji se bave problematikom terenskog pregleda krškog terena često se susreću s problemima metodološke prirode. Primjerice, Čučković je primijenio vrlo slične metode prilikom istraživanja u Istri kao prilagodbu flišnom terenu s obradivim površinama i krškim grebenima.<sup>17</sup>

Ciljani terenski pregled usmjeren je prije svega na dokumentiranje putova te ga možemo nazvati i tematskim jer je usmjeren na

configuration of the terrain and on adapting to the conditions of the terrain. Therefore, different field survey methods were applied, in accordance with the geomorphology of the terrain. Systematic field surveys were conducted on the karst plateau, and targeted field surveys to document certain structures such as paths and roads.

The plateau provided for a systematic field survey that included movement in regular spatial patterns, with minor deviations, in accordance with the terrain configuration. On karst landscape, movement in regular spatial patterns enables uniform terrain coverage during a field survey, but it does not necessarily allow for sampling. All team members moved at a uniform speed, at a distance of 50-100 m, mainly in a north-south direction, as, generally, spatial movement was not restricted by plots or fences. In 2016, an area of 20 km<sup>2</sup> of the plateau was surveyed, with an average of 0.5-0.7 km<sup>2</sup> per workday.

Generally, the field survey was artefact-based, applying the siteless approach, as opposed to a site-based field survey. Off-site finds were treated as an analytical category and particular attention was paid to documenting such finds.<sup>16</sup> Finally, non-systematic field surveys are conducted in hard-to-reach mountainous areas. Researchers surveying karst terrain often encounter problems of a methodological nature. For example, Čučković used very similar methods when conducting field surveys in Istria to adapt to the flysch terrain with arable land and karst ridges.<sup>17</sup>

Targeted field surveys focus primarily on documenting paths and could also be called thematic because they focus on specific types of structures. Paths and roads were surveyed along the entire length, and, in addition, where field conditions so permitted, particular areas around the formations were scrutinised. The methodology applied in these situations

<sup>16</sup> R. FOLEY, 1981; J. BINTLIFF, 2000.

<sup>17</sup> Z. ČUČKOVIĆ, 2012; Z. ČUČKOVIĆ, 2012a.

<sup>16</sup> R. FOLEY, 1981; J. BINTLIFF, 2000.

<sup>17</sup> Z. ČUČKOVIĆ, 2012; Z. ČUČKOVIĆ, 2012a.

određene vrste struktura. Putovi su tretirani na način da su takve strukture pregledane cijelom duljinom kao i određena zona oko same tvorevine (gdje uvjeti na terenu dopuštaju). Metodologija primijenjena u takvim situacijama primjerena je za dokumentiranje različitih karakteristika takvih struktura kao što su morfologija, tehnike gradnje, relativno kronološki odnosi među putovima koji se spajaju ili presijecaju, odnosi između putova i mjesta te nalaza koji su s njima povezani. Pristup koji se primjenjuje u ovom radu za dokumentiranje putova i cesta je na općoj razini u skladu s metodologijom terenskog pregleda razrađenoj i primijenjenoj za detektiranje i dokumentiranje putova na Cipru.<sup>18</sup>

Nesustavni tip terenskog pregleda (odnosi se prije svega na nepotpunu pokrivenost terena pregledom) primijenjen je na područjima reljefa visoke raščlanjenosti (padine Velebita i područja uz kanjone) kao oblik prilagodbe na terenske uvjete. Takav pristup ne treba miješati s topografskim pregledom ili klasičnim rekognosciranjem. Intenzitet terenskog pregleda nije nužno smanjen time što je pokrivenost terena nepotpuna ili neujednačena već pregled terena nepravilnim kretanjem prati i u skladu je s konfiguracijom terena visoke raščlanjenosti.

Komplementarne metode arheologije krajolika su kao pomoćne metode prikupljanja podataka primijenjene tijekom istraživanja kao što su analiza dostupnih zračnih snimaka te zračno snimanje iz bespilotne letjelice. Dostupne zračne snimke su vertikalne te su pogodne za uočavanje struktura većih dimenzija kao što su ograde, zidovi, putovi itd. Manje strukture otkrivene terenskim pregledom nisu vidljive na vertikalnim zračnim snimcima što je rezultat niske prostorne razlučivosti takvih snimaka te vertikalne perspektive koja poništava razlike između površinskih struktura i njihova okružja. Te razlike često nisu izražene niti kroz razlike u boji s obzirom na

includes documenting various characteristics of such structures, for example morphology, construction techniques, relative chronological relations between connecting or intersecting paths or roads, relations between paths or roads and sites, and finds related to them. The approach used in this paper to document paths and roads is generally in line with the field survey methodology developed and applied for detecting and documenting paths and roads in Cyprus.<sup>18</sup>

A non-systematic field survey (referring primarily to the survey's incomplete field coverage) was applied in areas of highly indented relief (Velebit slopes and canyon areas) as a form of adaptation to the terrain conditions. This approach should not be confused with topographic surveys or classical prospecting. The intensity of a field survey is not necessarily reduced by the fact that the coverage of the terrain is incomplete or uneven; rather, the irregular movement of a field survey follows the configuration of highly indented terrain.

In the course of the study, as ancillary data collection methods, complementary methods of landscape archaeology were used, such as analysis of available aerial imagery, as well as imaging from an unmanned aerial vehicle. The available aerial imagery is vertical and is thus suitable for spotting larger structures such as fences, walls, paths or roads, etc. Smaller structures detected in field surveys are not visible on vertical aerial imagery, which is the result of the low spatial resolution of such imagery and of the vertical perspective that nullifies the differences between the surface structures and their environment. These differences are often not expressed even through differences in colour, since the structures are mostly made of stone, in a stone environment.

The complementary use of landscape archaeology methods is of paramount importance for

<sup>18</sup> E. GIBSON, 2007.

<sup>18</sup> E. GIBSON, 2007.

to da je uglavnom riječ o kamenim strukturama u „kamenom okruženju“. Upotreba komplementarnih metoda arheologije krajolika od iznimne važnosti je za istraživanje terena visoke raščlanjenosti, odnosno na planinskom dijelu područja istraživanja kojem je pristup uvelike otežan. Povijesni prostorni podatci kao što su povijesne zračne fotografije, katastarske i druge karte korištene su u svrhu dokumentiranja dinamike promjena u krajoliku i „uvida“ u dijelove krajolika koji su uništeni tijekom 20. stoljeća.

## DOKUMENTACIJA ARHEOLOŠKIH PODATAKA

Struktura ili nalaz sadrži različite skupine podataka koje je moguće zabilježiti, ovisno o kontekstu. Svaka struktura se dokumentira s obzirom na poziciju ili pružanje u prostoru te osnovne morfološke karakteristike (način vidljivosti, dimenzije, tehnika gradnje, tlocrt itd.) i relativno-kronološki odnos ako ga je moguće odrediti (primjerice, odnos zidova itd.).

Površinski nalazi na krškim predjelima su uglavnom rijetki i prisutni su u malim količinama, stoga se svakom pojedinačnom nalazu može zasebno dokumentirati pozicija. Jednako vrijedi i za nalaze na strukturama nastalim čišćenjem tla. Površinski nalazi povezani s arheološkim strukturama, primjerice tumulima, uglavnom su prisutni ako je kameni plašt modificiran ili uništen.

Budući da su vrtače u osnovi jedina mjesta koja sadržavaju tlo na području istraživanja, vrtače su ujedno i jedina mjesta gdje uopće možemo očekivati postojanje potpovršinskog konteksta. Samim time to su i jedina mjesta na kojima ima smisla razmišljati o strategijama uzorkovanja u svrhu reprezentiranja ili procjene potpovršinskog konteksta na temelju površinskih podataka. Zbog iznimno malog postotka obrađenih površina u vrtačama, uzorkovanje nije oportuna metoda za priku-

field surveys of highly indented terrains, that is, in the mountainous, difficult-to-access parts of the surveyed area. Historical spatial data such as historical aerial photographs, cadastral maps and other maps were used to document the dynamics of change in the landscape and in reviewing parts of the landscape destroyed in the 20<sup>th</sup> century.

## ARCHAEOLOGICAL DATA DOCUMENTATION

Depending on the context, a structure or a find contains different sets of recordable data. Each structure is documented with respect to its position or extension in space, and its basic morphological characteristics (visibility, dimensions, construction technique, ground plan, etc.), and relative-chronological relations if they can be determined (for example, relations between the walls, etc.).

Surface finds in karst areas are generally rare and found only in small quantities. It is therefore possible to separately document the position of each individual find. The same applies to finds on structures created by soil clearing. Surface finds associated with archaeological structures, such as tumuli, are generally present if the stone mantle has been modified or destroyed.

Since sinkholes are basically the only sites containing soil in the surveyed area, they are also the only locations where we can expect any subsurface context at all. Therefore, these are at the same time the only places where it makes sense to think of sampling strategies for the purpose of representing or assessing the subsurface context based on surface data. Due to an extremely small percentage of cultivated areas in sinkholes, sampling has not proven to be a viable data collection method. Therefore, the cultivated plots were scrutinised, and findspots on the surveyed plots were marked (Fig. 1A).

All detected structures and finds were

pljanje podataka. Stoga su obrađene parcele pregledane, a distribucije površinskih nalaza su označene pružanjem površine pregledane parcele (Sl. 1A).

Sve otkrivene strukture i nalazi kartirani su ručnim GPS uređajima kao i tragovi kretanja svakog člana ekipe. Prikupljeni podatci su integrirani u GIS bazu podataka istraživanja. Podloga za kartiranje lokaliteta su službene državne karte i podatci topografske izmjere TK 1 : 25 000, HOK 1 : 5 000 i vertikalne zračne snimke DOF koje se rabe putem WMS servisa (geoportal.dgu.hr). Lokaliteti su kartirani u koordinatnom sustavu HTRS96/TM.

## REZULTATI

Istraživanje koje je isključivo usmjereno na krški teren rezultiralo je brojnim podacima, ali je istovremeno postalo i kontekst za refleksiju o postojećim analitičkim konceptima i njihovoj prikladnosti za krški krajolik. Stoga rezultate možemo podijeliti na teorijske<sup>19</sup> i empirijske. Osnovna referentna točka za refleksiju svakako je projekt Neotermalna Dalmacija kao rijetko metodološki razrađeno i koherentno provedeno procesualno istraživanje u Hrvatskoj. Budući da je riječ o iznimno važnom projektu, na ovom mjestu vrijedi ponoviti neke dijelove rasprave koja je iznesena u ranijem radu.<sup>20</sup> Upravo su koncepti pomoću kojih je krški krajolik definiran u tom projektu bili polazište za redefiniranje analitičkih koncepata za istraživanje koje se predstavlja u ovom radu, a kojima se može obuhvatiti raznolikost fenomena arheoloških ostataka u krškom krajoliku.

U okviru projekta Neotermalna Dalmacija, u maniri procesualne misli i metodologije terenskih pregleda, definirani su brojni analitički koncepti i kategorije. Osim formacijskih

mapped by hand-held GPS devices, as was the movement of each team member. The data collected were integrated into a GIS database. Official state maps and topographic survey data of a Topographic Map (TK) at a scale of 1 : 25,000, a Croatian Base Map (HOK) at a scale of 1 : 5,000, and vertical aerial images (digital orthophotos, DOFs) via the Web Map Service (WMS) were used as a basis for site mapping (geoportal.dgu.hr). Local data were mapped in the HTRS96/TM coordinate system.

## RESULTS

The survey that focused solely on karst terrain yielded a wealth of data, but at the same time it evoked reflections on existing analytical concepts and their suitability for karst landscape. Therefore, we can divide the results into theoretical<sup>19</sup> and empirical ones. The main point of reference for reflection is certainly the Neothermal Dalmatia Project as one of the rare methodologically elaborated and coherently conducted procedural studies in Croatia. As this is a highly important project, at this point it is worth repeating part of the discussion from an earlier paper.<sup>20</sup> The concepts developed as part of that project to define karst landscape served as a starting point for redefining analytical concepts for the study presented in this paper. These concepts are capable of capturing the diversity of the phenomenon of archaeological remains in karst landscape.

In the Neothermal Dalmatia Project, numerous analytical concepts and categories that followed the procedures and methodology applied in field surveying were defined. In addition to the formation processes outlined in this paper in the chapter on Archae-

<sup>19</sup> Teorijski rezultati istraživanja i njihove implikacije za arheologiju općenito su razrađeni i objavljeni u N. KULENOVIĆ OCELIĆ, 2019.

<sup>20</sup> N. KULENOVIĆ OCELIĆ, 2019.

<sup>19</sup> The theoretical results of the study and their implications for archaeology were generally elaborated and published in N. KULENOVIĆ OCELIĆ, 2019.

<sup>20</sup> N. KULENOVIĆ OCELIĆ, 2019.

procesa izloženih u ovom radu, u poglavlju Arheološki potencijal i formacijski procesi, u projektu Neotermalna Dalmacija su definirane i tri osnovne kategorije arheoloških lokaliteta: spomenici ili samostojeći spomenici (*monuments* ili *standing monuments*), koncentracije površinskih nalaza (*findspots*) i pojedinačni površinski nalazi (*single finds*).<sup>21</sup> Ne treba posebno naglašavati da ta kategorizacija nije definirana prema istom kriteriju. Nekonzi- stentnost te kategorizacije očituje se u dvostrukom kriteriju definiranja: prema kriteriju sačuvanosti i vidljivosti (spomenik) te prema načinu distribucije i količini (koncentracije i pojedinačni nalazi). Sam termin spomenik nije analitički ili tehnički termin već ga prije možemo odrediti kao nominalan što znači da je njegov doseg isključivo imenovanje pojedinih pojava, a ne analiza njihove varijabilnosti (a za razliku od kategorija koncentracija i pojedinačni nalaz). Potrebno je napomenuti da su lokaliteti koji su svrstani u kategoriju spomenik dominantno zastupljeni na predjelima grebena, na krškom terenu što upućuje na razlog definiranja ove kategorije. Već je prije navedeno da su metode i analitički koncepti terenskih pregleda razvijeni na kontinentalnim područjima umjerene klime koji su prije svega prilagođeni dokumentiranju i analizi površinskih nalaza kao reprezentacija potpovršinskog konteksta.<sup>22</sup> S obzirom na to da su na takvim područjima površinske arheološke strukture rijetke, možemo pretpostaviti da je to razlog definiranja kategorije spomenika, odnosno lokaliteta vidljivog u stojećoj formi ili formi spomenika.<sup>23</sup> Osnovni problem tako postavljenog razumijevanja arheoloških izvora u krškom krajoliku jest što funkcionira na univerzalistički postavljenim i definiranim analitičkim konceptima i arheološkim očekivanjima, a što se reflektira, između ostalog, i u takvoj kategorizaciji. Stoga su implikaci-

ological potential and formation processes, the Neothermal Dalmatia Project also defined three basic categories of archaeological sites: monuments or standing monuments, surface findspots, and single surface finds.<sup>21</sup> Needless to say, this categorisation was not defined according to the same criteria. The inconsistency of this categorisation is manifested in the double definition criterion: according to the criterion of preservation and visibility (monument), and according to the distribution method and quantity (findspots and single finds). The term monument itself is not an analytical or technical term; it can rather be defined as a nominal term, meaning that it only serves to denominate particular phenomena, and not to analyse their variability (as opposed to the categories of findspots and single finds). It should be noted that, in karst terrain, the sites that were categorised as monuments were mostly identified on ridges, which suggests the reason for defining this category. As has already been stated, field survey methods and analytical concepts were developed in continental temperate climates and were primarily aimed at documenting and analysing surface finds as a representation of the subsurface context.<sup>22</sup> Given that, in such areas, archaeological surface structures are rather rare, it can be assumed that this is the reason for defining the category of monuments, that is, sites visible in standing or monumental form.<sup>23</sup> The basic problem of such an understanding of archaeological sources in karst landscape is that this understanding is based on universally set and defined analytical concepts and archaeological expectations, which is also reflected, among other things, in such categorisation. Therefore, the categories established in such a way suggest that the karst terrain has not been appropriately appraised in accordance with the diversity

<sup>21</sup> J. CHAPMAN, R. SHIEL, Š. BATOVIĆ, 1987; J. CHAPMAN, R. SHIEL, Š. BATOVIĆ, 1996.

<sup>22</sup> O metodama i konceptima vidi E. B. BANNING, 2002.

<sup>23</sup> N. KULENOVIĆ OCELIĆ, 2019, 82.

<sup>21</sup> J. CHAPMAN, R. SHIEL, Š. BATOVIĆ, 1987; J. CHAPMAN, R. SHIEL, Š. BATOVIĆ, 1996.

<sup>22</sup> For methods and concepts, see E. B. BANNING, 2002.

<sup>23</sup> N. KULENOVIĆ OCELIĆ, 2019, 82.

je tako postavljenih kategorija da krški teren nije valoriziran u skladu s raznolikošću koja proizlazi iz njegovih materijalnih specifičnosti već se nastoji svesti na opće principe koji su razrađeni za područja s kojima krš kao geomorfološka formacija ima vrlo malo dodira.

Osim kao različite distribucije arheoloških nalaza, arheološki izvori u dinarskom kršu sačuvani su i vidljivi većinom kao površinske strukture, dakle, uglavnom nisu posredovani kroz odnos potpovršinskog i površinskog konteksta arheoloških izvora. Sačuvanost i vidljivost takvih lokaliteta ponajviše proizlazi iz same materijalnosti krškog krajolika, vapnenačke stijene kao trajnog materijala i u skladu s tim krajolika koji se mijenja iznimno sporom stopom. Sukladno tome, možemo tvrditi da su prošle materijalne prakse ostavile trajan trag u topografiji i na površini krškog krajolika.<sup>24</sup>

Provođenjem istraživanja, a koje je kako je već rečeno kontekst za refleksiju, a u odnosu na prethodno izloženu problematiku koncipiranja i valorizacije krškog krajolika definiranu projektom Neotermalna Dalmacija,<sup>25</sup> definirane su osnovne kategorije arheoloških izvora u kršu. Ovom tipologijom pokušavaju se naglasiti i valorizirati upravo materijalna svojstva dinarskog krša koja prije svega polaze od kamena kao trajnog materijala i s njim posljedično povezanom dominacijom površinskih struktura, a ne potpovršinskog konteksta (koji čini zasebnu klasu arheoloških izvora). Na temelju iskustva terenskog pregleda područja dinarskog krša i rezultata istraživanja definirane su osnovne kategorije arheoloških izvora koje na najopćenitijoj razini možemo podijeliti na artificijelne i prirodne i/ili modificirane strukture te distribucije površinskih nalaza (Tablica 1). Cilj ovako postavljene kategorizacije jest razviti vokabular tehničkih termina kojima možemo opisivati arheološke

resulting from its material specificities, but rather has been reduced to general principles originally developed for areas with which karst as a geomorphological formation has very little in common.

Archaeological sources in the Dinaric karst are for the most part preserved and visible either as archaeological findspots or as surface structures; hence they are mostly not mediated through the relation of the subsurface and surface contexts of archaeological sources. The preservation and visibility of such sites is primarily due to the constitution of the karst landscape: limestone rock is a durable material and, consequently, the karst landscape changes at an extraordinary slow pace. Accordingly, past material practices have left a lasting mark on the karst landscape topography and surface.<sup>24</sup>

As previously stated, the conducted survey provided a context for rethinking previously presented issues of the karst landscape concept and appropriately appraised as defined by the Neothermal Dalmatia Project,<sup>25</sup> and resulted in defining the basic categories of archaeological sources in karst. This typology seeks particularly to emphasise and give value to those material properties of Dinaric karst, which primarily originate from stone as durable material and the consequent prevalence of surface structures rather than the subsurface context (which represents a separate class of archaeological sources). Based on the experience of the field survey of the Dinaric karst area and its results, basic categories of archaeological sources were defined, which at the most general level can be divided into artificial and natural and/or modified structures, and surface findspots (Table 1). The aim of this categorisation is to develop technical terminology to describe archaeological phenomena in karst landscape. For this reason,

<sup>24</sup> Detaljna razrada svojstava krškog krajolika u N. KULENOVIĆ OČELIĆ, 2019, 83.

<sup>25</sup> J. CHAPMAN, R. SHIEL, Š. BATOVIĆ, 1987; J. CHAPMAN, R. SHIEL, Š. BATOVIĆ, 1996.

<sup>24</sup> For a detailed elaboration of karst landscape characteristics, see N. KULENOVIĆ OČELIĆ, 2019, 83.

<sup>25</sup> J. CHAPMAN, R. SHIEL, Š. BATOVIĆ, 1987; J. CHAPMAN, R. SHIEL, Š. BATOVIĆ, 1996.

Artificijelne strukture <i>Artificial structures</i>		
Pozitivne strukture <i>Positive structures</i>		Negativne strukture <i>Negative structures</i>
Zidovi (objekti, ograde...) <i>Walls (structures, fences ...)</i>		Ukopane strukture <i>Sunken structures</i>
Terase (podzidi i nasipi) <i>Terraces (supporting masonry and earthwork)</i>		Bunari/cisterne <i>Wells/cisterns</i>
Gomile (krčevine, tumuli, urušeni objekti...) <i>Mounds (cleared land, tumuli, collapsed structures ...)</i>		Kamenolomi <i>Quarries</i>
Nasipi <i>Earthworks</i>		Površine priklesanog kamena <i>Surfaces of irregularly cut stone</i>
Putovi/ceste <i>Paths/roads</i>		
Prirodne strukture <i>Natural structures</i>	Distribucije površinskih nalaza <i>Surface findspots</i>	
Lokve <i>Puddles</i>	Nalazi povezani s arheološkim strukturama <i>Finds associated with archaeological structures</i>	Pojedinačni nalazi i distribucije nalaza na kršu <i>Single finds and findspots in karst</i>
Speleološki objekti (sa strukturama i kulturnim slojevima) <i>Speleological facilities (with structures and cultural layers)</i>	Na izoranim parcelama u vrtačama <i>On ploughed plots in sinkholes</i>	Na strukturama nastalim čišćenjem tla <i>On structures created by soil clearing</i>
Vrtače <i>Sinkholes</i>		Na višeslojnim nalazištima <i>At multi-layered sites</i>

TABLICA 1. Osnovne kategorije arheoloških izvora u kršu.  
TABLE 1 Basic categories of archaeological sources in karst.

fenomene u krškom krajoliku. Zbog toga je predložena tipologija isključivo tehničke naravi te nam omogućuje prikazivanje, makar u osnovnim crtama, raznolikosti arheoloških fenomena na krškim područjima. Iz tih razloga je tipologija formulirana u što je moguće više neutralnim terminima koji će u najmanjoj mogućoj mjeri u sebi sadržavati interpretacijski sadržaj, a da istovremeno omogućuje određenu širinu kojom je na standardiziran i ujednačen način moguće obuhvatiti cjelokupnu raznolikost arheoloških fenomena u krškom krajoliku.

Osim definiranja različitih formi ili tipova arheoloških izvora u krškom krajoliku, istraživanje je rezultiralo i brojnim empirijskim podacima. Područje istraživanja je vrlo slabo istraženo, svakako nesistematično, a postojeće arheološke podatke ovog područja možemo okarakterizirati kao topografske, što i reprezentira selektivna istraživanja ponajviše

the proposed typology is of a purely technical nature, showing, at least in basic terms, the diversity of archaeological phenomena in karst areas. Thus, the typology was formulated as far as possible using neutral terminology, free of any interpretative content, at the same time providing a certain breadth to encompass, in a standardised and uniform manner, the complex diversity of archaeological phenomena in karst landscape.

In addition to defining different forms or types of archaeological sources in karst landscape, the study also yielded numerous empirical data. In the past, the surveyed area was poorly and certainly not systematically scrutinised, and available archaeological data on the area were topographic data, as suggested also by past campaigns that focused primarily on individual, mostly already known and notable sites, such as the Dračevac Hillfort, Modrič Cave, Ždrilo Cave, the Velebit Roman Road,

usmjerena na pojedinačna, većinom vrlo poznata i upečatljiva nalazišta, kao što su primjerice gradina i utvrda Dračevac, Modrič pećina, Pećina u Ždrilu, velebitska rimska cesta itd.<sup>26</sup> Prije su sistematično pregledana jedino pojedinačna, manja i ograničena područja kao oblik zaštitnih mjera za potrebe različitih infrastrukturnih projekata.<sup>27</sup> Stoga većina lokaliteta dokumentiranih terenskim pregledom nije bila poznata u stručnoj literaturi. Razdoblja koja su obilježila područje istraživanja svakako su novi vijek te prapovijest, dok je antički period najslabije zastupljen. Potrebno je napomenuti da je očuvanost površinskih nalaza uglavnom slaba, stoga je većinu moguće samo okvirno datirati u širi vremenski okvir. Distribucije površinskih nalaza iz svih vremenskih razdoblja, na krškom terenu, u vrtačama i na strukturama nastalim čišćenjem tla gotovo su nepoznat tip lokaliteta na ovim područjima. U sljedećim poglavljima izneseni su preliminarni rezultati istraživanja prema kronološkom kriteriju.<sup>28</sup>

## PRAPOVIJEST

Nalazi i strukture iz razdoblja prapovijesti su na području istraživanja zastupljeni s trideset lokaliteta. Većinom je riječ o lokalitetima iz mlađe prapovijesti brončanog i željeznog doba. Prapovijesni lokaliteti su vidljivi i sačuvani na sljedeće načine (Tablica 2).

Pećina u Ždrilu je najstariji lokalitet na području istraživanja datiran u razdoblje neolitika. Iako nikada nije istraživana, taj lokalitet je često spominjan u stručnoj literaturi.<sup>29</sup> Smje-

etc.<sup>26</sup> Previous archaeological campaigns included systematic surveying only of individual, smaller and restricted areas as a form of rescue excavations prior to various infrastructure projects.<sup>27</sup> Therefore, most of the sites documented in the field survey have not been known in professional literature. The periods that marked the surveyed area were certainly the modern era and prehistory, while the period of classical antiquity was the least represented. It should be noted that the level of preservation of surface finds is generally poor, so most of them can only be dated to a broader timeframe. Surface findspots from all periods on karst terrain, in sinkholes and on structures created by soil clearing, represent almost unknown typical site categories in these areas. In the following chapters, preliminary research results are presented according to the chronological criterion.<sup>28</sup>

## PREHISTORY

In the surveyed area, thirty sites with finds and structures from the prehistoric period have been detected. These are mostly sites from the Bronze Age and the Iron Age. Prehistoric sites are visible and preserved in the following ways (Table 2).

Ždrilo Cave is the oldest site in the surveyed area, dated to the Neolithic period. Although it has never been excavated, this site has often been mentioned in professional literature.<sup>29</sup> It is located at the northwestern

<sup>26</sup> Primjerice: M. ABRAMIĆ, A. COLNAGO, 1909; Š. BATOVIĆ, 1977; Š. BATOVIĆ, 1979; R. JURIC, 1986; Š. BATOVIĆ, 1987; M. MALEZ, 1987; R. JURIC, 1988; S. LEGOVIĆ, 1988; M. MALEZ, 1988; Ž. MILETIĆ, 1992/1993; Š. BATOVIĆ, 2002; T. ŠARLIJA, 2010; T. ŠARLIJA, 2012.

<sup>27</sup> Primjerice Z. WIEWEGH, V. KEZUNOVIĆ, 2009; Š. VULIĆ, M. BILIĆ, A. IVIŠIĆ, 2009; Š. VRKIĆ, 2011; M. DUBOLNIĆ GLAVAN, 2015.

<sup>28</sup> Prikupljene nalaze su pregledali i datirali izv. prof. dr. sc. D. Vujević i doc. dr. sc. I. Kulenović te im ovim putem zahvaljujem na pomoći.

<sup>29</sup> Primjerice Z. BRUSIĆ, 1970, 552; Š. BATOVIĆ, 1979; Š.

<sup>26</sup> For example, M. ABRAMIĆ, A. COLNAGO, 1909; Š. BATOVIĆ, 1977; Š. BATOVIĆ, 1979; R. JURIC, 1986; Š. BATOVIĆ, 1987; M. MALEZ, 1987; R. JURIC, 1988; S. LEGOVIĆ, 1988; M. MALEZ, 1988; Ž. MILETIĆ, 1992/1993; Š. BATOVIĆ, 2002; T. ŠARLIJA, 2010; T. ŠARLIJA, 2012.

<sup>27</sup> For example, Z. WIEWEGH, V. KEZUNOVIĆ, 2009; Š. VULIĆ, M. BILIĆ, A. IVIŠIĆ, 2009; Š. VRKIĆ, 2011; M. DUBOLNIĆ GLAVAN, 2015.

<sup>28</sup> The collected finds were reviewed and dated by Associate Professor D. Vujević and Assistant Professor I. Kulenović for whose help I am very grateful.

<sup>29</sup> For example, the authors Z. BRUSIĆ, 1970, 552; Š. BATOVIĆ, 1979; Š. BATOVIĆ, 2002; T. ŠARLIJA, 2010, 32 consider that the function of this site was to monitor maritime traffic.

Prapovijest <i>Prehistory</i>		
Pozitivne strukture <i>Positive structures</i>	Distribucije površinskih nalaza <i>Surface findspots</i>	Prirodne strukture <i>Natural structures</i>
Zidovi <i>Walls</i>	Nalazi povezani s arheološkim strukturama <i>Finds associated with archaeological structures</i>	Speleološki objekti <i>Speleological structures</i>
	Na strukturama nastalim čišćenjem tla <i>On structures created by soil clearing</i>	
Kamene gomile <i>Stone mounds</i>	Na izoranim parcelama u vrtačama <i>On ploughed plots in sinkholes</i>	Vrtače <i>Sinkholes</i>
	Na višeslojnim nalazištima <i>At multi-layered sites</i>	
	Koncentracije nalaza i pojedinačni nalazi na krškim predjelima <i>Findspots and single finds in karst areas</i>	

**TABLICA 2.** Kategorije arheoloških izvora iz prapovijesti.

**TABLE 2** Categories of archaeological sources from prehistory.

šten je na sjeverozapadnom kraju Novskog ždrila, oko desetak metara ispod vrha kanjona. Pećina je lako pristupačna, do nje vodi put. Ispred pećine se nalazi manji ravni plato prekriven travom. Ulaz je većih dimenzija, pravilnog polukružnog oblika, dobro osvijetljen. Ulazna dvorana je veće površine, dno je prekriveno debljim slojem životinjskog izmeta. Ovce se još uvijek povremeno drže u pećini. Iz glavne dvorane vode prolazi u dodatne kanale i dvorane ukupne duljine oko 100 m. U obama kanalima i u sjevernoj dvorani nalaze se površinski nalazi ulomaka keramičkih posuda. Na nekoliko mjesta su vidljivi ostatci ognjišta uz stjenke kanala (ostatci gara i karboniziranog drveta, a stjenke su na mjestima crne od gara).

Najčešće prapovijesne strukture su kamene gomile tumuli koje se većinom mogu datirati u razdoblje od brončanog do željeznog doba. Većina lokacija s tumulima nije poznata izuzev predjela Jelovac.<sup>30</sup> Kamene gomile su interpretirane kao grobni humci – tumuli prema nekoliko kriterija. Osim samog oblika strukture, važan kriterij je i njihova prostorna mikrolokacija (krški predjeli, rub rta, grebe-

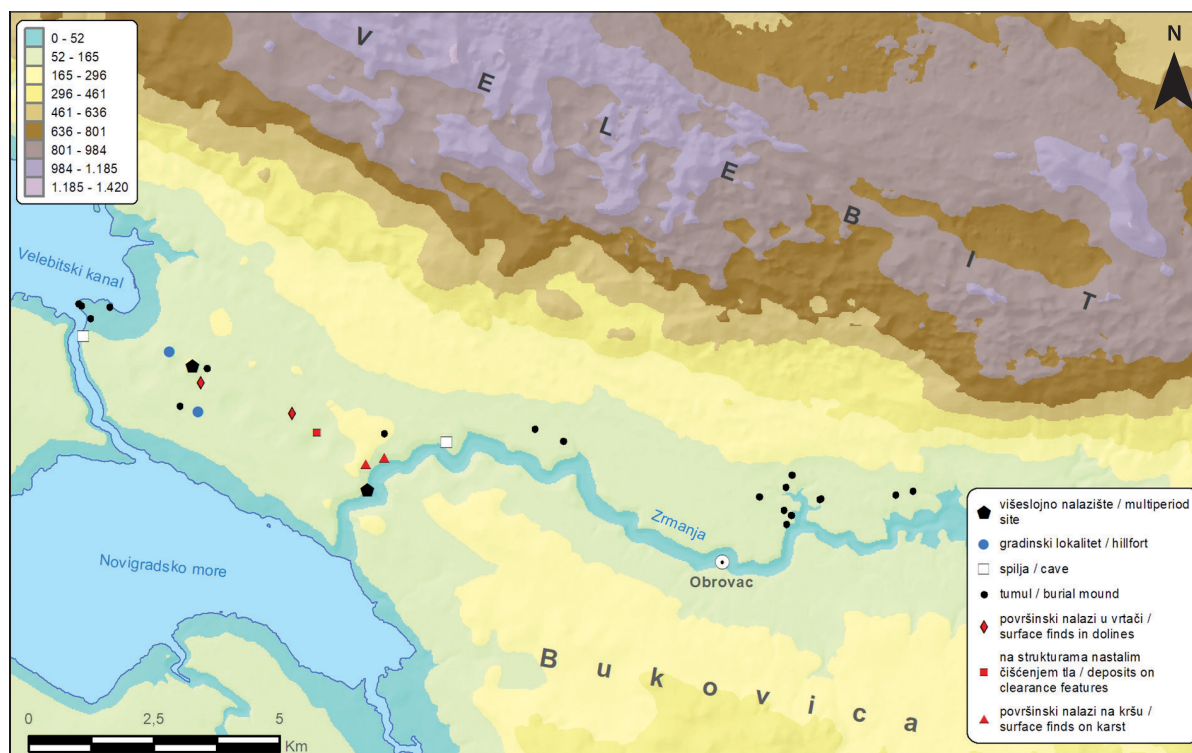
end of Novsko Ždrilo Strait, about 10 metres below the top of the canyon. The cave is easily accessible via a path. In front of the cave is a smaller flat plateau covered with grass. The entrance is rather big, of a regular semi-circular shape, and is well lit. The entrance hall has a rather large surface, and its bottom is covered with a thick layer of animal faeces. Occasionally, sheep are still kept in the cave. From the main hall, there are passages leading into additional channels and halls with a total length of about 100 m. In both channels and in the north hall, there were surface finds of pottery shards. In several places along the channel walls, remains of a hearth are visible (soot and carbonated wood), and the walls are in places black from soot).

The most common prehistoric structures are stone mounds – tumuli – which can mainly be dated from the Bronze Age to the Iron Age. Most tumulus sites are unknown, except in the Jelovac area.<sup>30</sup> According to several criteria, the stone mounds were interpreted as tumuli. Apart from their shape, an important interpretation criterion was their spatial micro-location (karst areas, edges of capes, ridges, hills, hilltops, etc.) and the absence, in their immediate vicinity, of structures resulting

BATOVIĆ, 2002; T. ŠARLIJA, 2010, 32. Autori smatraju da je funkcija ovog lokaliteta kontrola pomorskog prometa.

<sup>30</sup> M. GLAVIČIĆ, 1995, 219; T. ŠARLIJA, 2010, 15, Karta 1.

<sup>30</sup> M. GLAVIČIĆ, 1995, 219; T. ŠARLIJA, 2010, 15, Map 1.



KARTA 2. Prostorna distribucija prapovijesnih lokaliteta (izradila: N. Kulenović).

MAP 2 Spatial distribution of prehistoric sites (by: N. Kulenović).

na, brežuljka, vrh brežuljka itd.) te odsutnost struktura nastalih čišćenjem tla ili ograđivanja u njihovoj neposrednoj blizini. Tumuli dokumentirani pri istraživanju su uglavnom od 8 do 20 m promjera te od 1 do 3 m visine (Sl. 2B). Na većini njih otkriveni su površinski nalazi. Površinski nalazi su uglavnom rezultat recentnih upotreba kamena od plašta gomile pri izgradnji manjih vojnih objekata, pastirskih zaklona ili razgradnjom kamenog plašta tumula za proizvodnju vapna.

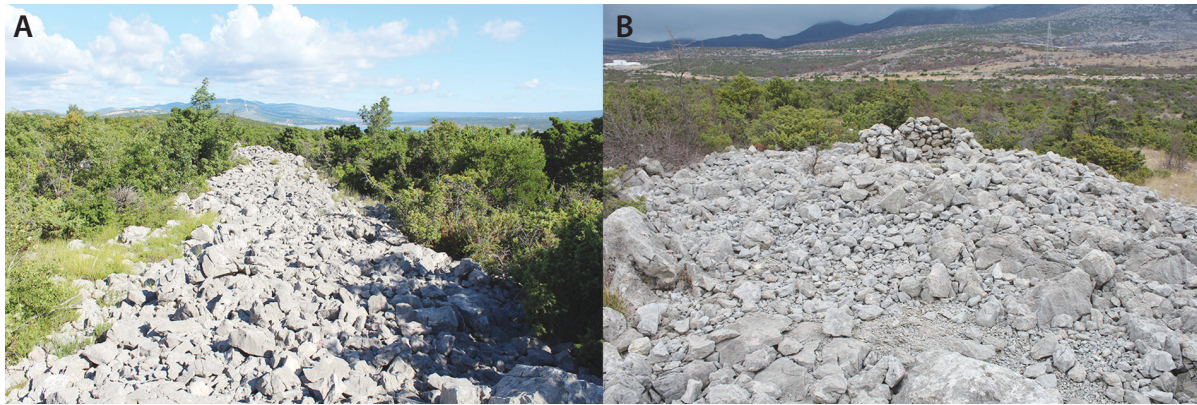
U razdoblje mlađe prapovijesti (brončano/željezno doba) mogu se datirati dva gradinska lokaliteta na predjelima Patkin kuk i Livodica. Ograda na Patkinu kuku smještena je na zaravnjenom dijelu grebena.<sup>31</sup> Ograđuje veću površinu krškog terena. Unutar ograde sediment uglavnom nije prisutan. Tlocrt je nepravilnog pravokutnog oblika. Zid je sačuvan u visini do 1 m, nejednake je debljine do

from clearing the soil or building drywall fences. Tumuli documented in the course of the survey were generally 8-20 m in diameter and 1-3 m in height (Fig. 2B). On most of them, surface finds were unearthed. The surface finds were mainly unearthed as a result of recent use of stones taken from the tumuli stone mantles to construct smaller military structures, shepherd's shelters, or resulted from the dismantling of the stone mantles of tumuli for lime production purposes.

Two hillfort sites – Patkin Kuk and Livodica – can be dated to the early prehistoric period (Bronze/Iron Age). The fence at Patkin Kuk is located on a flattened part of the ridge.<sup>31</sup> It encloses a large area of karst terrain. Within the fence, there is mostly no sediment. The ground-plan is of an irregular rectangular shape. The wall is preserved up to a height of 1 m, with an uneven thickness up

<sup>31</sup> Š. BATOVIĆ, 1983; Š. BATOVIĆ, 2002; T. ŠARLIJA, 2010, 29, lokalitet se interpretira kao gradina čija je funkcija kontrola pomorskog prometa.

<sup>31</sup> Š. BATOVIĆ, 1983; Š. BATOVIĆ, 2002; T. ŠARLIJA, 2010, 29, interpreted the site as a hillfort serving to monitor maritime traffic.



SLIKA 2. A) Zid prapovijesnog gradinskog lokaliteta Livodica, B) tumul na predjelu Marovac (foto: N. Kulenović).  
 FIGURE 2 A) Wall of the prehistoric Livodica site, B) Tumulus in the Marovac area (photo: N. Kulenović).

maksimalno 3 m. Uočeno je nekoliko preki-  
 da zida u širini od oko 2 m. Osim ulomaka  
 keramičkih posuda, prikupljeno je i nekoliko  
 ulomaka bruseva, uglavnom po zidovima.

Gradinski lokalitet Livodica jest objekt  
 kompleksnijeg tlocrta koji nije poznat u  
 stručnoj literaturi. Dva paralelna zida građe-  
 na suhozidnom tehnikom tvore nepravilan  
 izduženi oblik kružne osnove s pravokutnim  
 završetkom s jugoistočne strane. Oblik pod-  
 sjeća na oblik ključa. Zid je sačuvan u obli-  
 ku kamenog urušenja na kojem se uočavaju  
 vanjske stjenke zida građenog u tehnici sla-  
 ganja većih kamenih blokova od lomljenog  
 amorfno vapnenca u dva lica ispunjena sa  
 sitnijim kamenom (Sl. 2A). Debljina zida je  
 oko 1 do 2 m, a urušenja na mjestima oko  
 2,5 do 3 m. Zid je sačuvan u najvećoj visini  
 oko 1,5 m. Ograda je znatno oštećena pri iz-  
 gradnji i modernizaciji magistralne ceste pri  
 čemu je presječena na dva dijela.

Prapovijesni nalazi su prikupljeni i na dva  
 višeslojna lokaliteta Dračevac i Šibenik. Dra-  
 čevac je lokalitet poznat u stručnoj literaturi.  
 Prapovijesna faza ovog lokaliteta datira se u  
 željezno doba, u njegovu mlađu fazu.<sup>32</sup> Nalazi  
 iz prapovijesne faze na Dračevcu se vjerojatno  
 mogu povezati sa strukturama terasa smješte-  
 nim na jugozapadnim padinama brežuljka.

Prapovijesni nalazi sa Šibenika se također

to a maximum of 3 m. Several interrup-  
 tions in the wall were observed at a width of about  
 2 m. In addition to pottery shards, several  
 whetstone fragments were collected, mostly  
 from the walls.

The Livodica hillfort site is a structure with  
 a more complex layout that is not known in  
 professional literature. Two parallel drywalls  
 form an irregular elongated circular base with  
 a rectangular extension on the southeast side.  
 The shape is reminiscent of a key. The wall  
 has been preserved as an implosion with vi-  
 sible outside walls built by stacking large stone  
 blocks made of cut amorphous limestones  
 forming two outer faces, and with a filling of  
 small stones in between (Fig. 2A). The wall  
 is about 1-2 m thick, and the implosions, in  
 places, reach a thickness of approximately 2.5-  
 3 m. The maximum preserved height of the  
 wall is around 1.5 m. The fence was signifi-  
 cantly damaged during the construction and  
 modernisation of the trunk road, and was cut  
 in two.

Prehistoric finds have also been collected at  
 two multi-layered sites: Dračevac and Šibe-  
 nik. Dračevac is a site known in professional  
 literature. The prehistoric phase of the site is  
 dated to the Late Iron Age.<sup>32</sup> Finds from the  
 prehistoric phase on Dračevac can probably  
 be linked to terrace structures located on the

<sup>32</sup> Primjerice Š. BATOVIĆ, 1977; Š. BATOVIĆ, 1987; T. ŠARLIJA, 2010, 14-15.

<sup>32</sup> See, for example, Š. BATOVIĆ, 1977; Š. BATOVIĆ, 1987; T. ŠARLIJA, 2010, 14-15.

interpretiraju kao ostatci slojeva prapovijesne gradine,<sup>33</sup> ponajviše zbog prominentnog položaja lokaliteta.<sup>34</sup> Danas na ovom lokalitetu dominira novovjekovna utvrda, stoga se ulomci keramičkih posuda iz razdoblja prapovijesti, a koji su prikupljeni na Šibenskoj glavici ne mogu povezati sa slojevima ili strukturama.

Prapovijesni nalazi su također prisutni kao distribucije površinskih nalaza na izoranim njivama u vrtačama (Vulića Dolac, Srid sela) te na strukturama nastalim čišćenjem tla (Strana Zubkova). Ovi nalazi se također mogu okvirno datirati u razdoblje mlađe prapovijesti.

## ANTIKA

Nalazi i strukture iz razdoblja antike su najmanje zastupljeni na području istraživanja. Izuzev rimske ceste, prisutni su na trima lokacijama. Riječ je o lokalitetima uvala Rovanjska, Srid sela i Šibenik (Karta 3). Dvije posljednje navedene lokacije višeslojna su nalazišta. Na takvim lokalitetima su prisutni samo površinski nalazi koji se ne mogu povezati sa strukturama.

Antički lokaliteti su vidljivi i sačuvani na sljedeće načine (Tablica 3).

Lokalitet u uvali Rovanjska poznat je u stručnoj literaturi (Sl. 1A).<sup>35</sup> Vidljiv je kroz nalaze prisutne na strukturama nastalim čišćenjem tla. Na suhozidnim ogradama i gomilama prisutni su depoziti rimskih tegula i imbreksa, amfora, kamenih blokova sa žbukom, ulomak žrvnja i utega. Unutar jedne ograde vidljiv je veći dio zida građen tehnikom zidanja sa žbukom koji je vjerojatno u izvornom prostornom kontekstu. Površinski nalazi su prisutni na obali i u moru. S obzirom na transgresiju mora od antičkog razdoblja do danas, možemo pretpostaviti da je

southwestern slopes of the hill.

Prehistoric finds from Šibenik are also interpreted as remnants of layers of a prehistoric hillfort,<sup>33</sup> primarily because of the prominent position of the site.<sup>34</sup> Presently, a modern era fortress dominates the site. Consequently, pottery shards from the prehistoric period collected at Šibenska Glavica cannot be associated with any layers or structures.

Prehistoric finds are also present as surface findspots on ploughed fields in sinkholes (Vulića Dolac, Srid Sela) and on structures created by soil clearing (Strana Zubkova). These finds can also be roughly dated to the early prehistoric period.

## CLASSICAL ANTIQUITY

Finds and structures from the Classical Antiquity period are the least represented in the surveyed area. With the exception of the Roman road, they are present at three sites. These are Rovanjska Cove, Srid Sela and Šibenik (Map 5). The latter two sites are multi-layered. At such sites, only surface finds have been unearthed that cannot be associated with any structures.

The Classical Antiquity sites are visible and preserved in the following ways (Table 3).

The Rovanjska Cove site is known in professional literature (Fig. 1A).<sup>35</sup> It is visible through finds on structures created by soil clearing. On drywall fences and mounds there are deposits of Roman tegulae and imbrices, amphorae, stone blocks with mortar, grindstone fragments and weights. In one fence, a rather large part of a wall with mortar joints is visible, which is probably located in its original spatial context. Surface finds are present along the shore and in the sea. In the light of the marine transgression from the Classical Antiquity period to the present, it is possible to assume that

<sup>33</sup> Š. BATOVIĆ, 1977; M. GLAVIČIĆ, 1995.

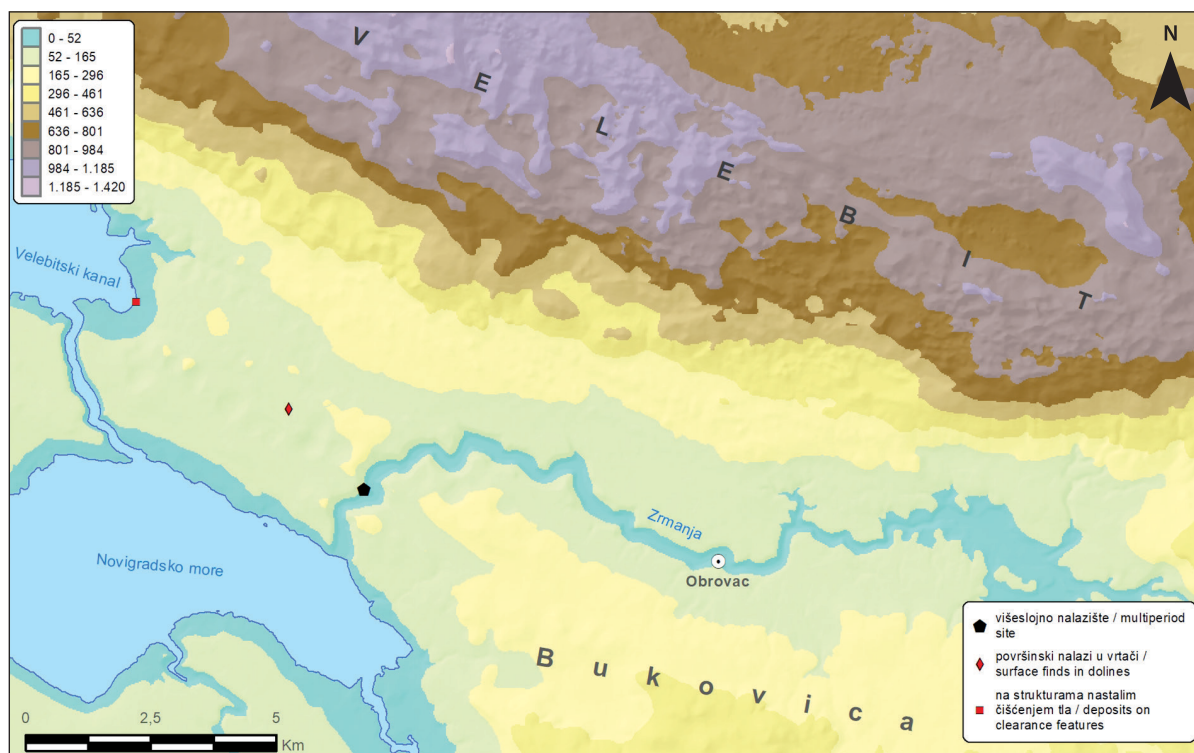
<sup>34</sup> T. ŠARLIJA, 2010, 34–36, lokalitet opisuje u kontekstu prapovijesne kontrole pomorskog prometa.

<sup>35</sup> T. ŠARLIJA, 2010, 32–33.

<sup>33</sup> Š. BATOVIĆ, 1977; M. GLAVIČIĆ, 1995.

<sup>34</sup> T. ŠARLIJA, 2010, 34–36 describes the site in the context of the prehistoric monitoring of maritime transport.

<sup>35</sup> T. ŠARLIJA, 2010, 32–33.



KARTA 3. Prostorna distribucija rimskih lokaliteta (izradila: N. Kulenović).

MAP 3 Spatial distribution of Roman sites (by: N. Kulenović).

Rimsko razdoblje <i>Roman period</i>	
Pozitivne strukture/Negativne strukture <i>Positive structures/Negative structures</i>	Distribucije površinskih nalaza <i>Surface findspots</i>
Zid objekta <i>in situ</i> <i>In situ wall</i>	Na strukturama nastalim čišćenjem tla <i>On structures created by soil clearing</i>
	Na izoranim parcelama u vrtačama <i>On ploughed plots in sinkholes</i>
Cesta <i>Road</i>	Na višeslojnim nalazištima <i>At multi-layered sites</i>

TABLICA 3. Kategorije arheoloških izvora iz rimskog razdoblja.

TABLE 3 Categories of archaeological sources from the Roman period.

dio ovog lokaliteta potopljen morem i sačuvan kao podvodni lokalitet. Položaj lokaliteta (uvala pogodna za luku, mikrolokacija s većom površinom obradivog tla uza samo more), vrsta pokretnih nalaza (importirana keramika) idu u prilog pretpostavci da je riječ o važnijem antičkom gospodarskom objektu.

Antički površinski nalazi prikupljeni su na višeslojnom nalazištu Šibenik. Riječ je o lokalitetu poznatom u stručnoj literaturi. Šibenik smješten je na rtu kanjona rijeke Zrmanje stoga se antički nalazi na ovom lokalitetu po-

part of the site was sunken and preserved as an underwater site. The site's location (a bay suitable for a port, a micro-location with a large arable surface by the sea), as well as the type of moveable finds (imported pottery) suggest a rather significant antique economic facility.

Classical Antiquity surface finds were collected at the Šibenik multi-layered site. The site is known in professional literature. Šibenik is located on a cape in the River Zrmanja Canyon and therefore the site's Classical Antiquity finds are connected with river traffic

vezuju s kontrolom plovidbenih ruta.<sup>36</sup> Osim ulomaka kuhinjske keramike i amfora, na Šibeniku su otkriveni ulomci tegula koje upućuju na postojanje objekta.

U Srid sela u izduženoj vrtači prikupljeni su nalazi na obrađenim njivama te na struktura nastalim čišćenjem tla. Prikupljena je veća količina ulomaka keramičkih posuda koji se mogu datirati u razdoblje prapovijesti, antike i novog vijeka. Ovo upućuje na dugu tradiciju mjesta koje je vjerojatno, osim s dostupnošću resursa povezano i s komunikacijom koja prolazi sjeverno od naselja, a koja povezuje istočni i zapadni dio zaravni, na koju se spajaju velebitski putovi smjera S-J.

## KASNI SREDNJI I NOVI VIJEK

Strukture koje se mogu datirati u razdoblje kasnog srednjeg i novog vijeka su najčešće prisutne, najbolje sačuvane i vidljive na području istraživanja. Na taj način nam predstavljaju najjasniji sloj krajolika. Kasno-srednjovjekovni i novovjekovni lokaliteti su vidljivi i sačuvani na sljedeće načine (Tablica 4).

Znatan dio srednjovjekovnog i novovjekovnog krajolika su utvrde. Na vrhu brežuljka Dračevac nalazi se novovjekovna utvrda čije podrijetlo vjerojatno seže u ranija, srednjovjekovna razdoblja. Preciznije definirane faze utvrde Dračevac nisu poznate. Potvrđeno je da je utvrda bila pod vlašću Habsburške Monarhije te Mletačke Republike te da je napuštena krajem 18. stoljeća. Utvrda je opasana zidom koji tvori nepravilan poligonalni tlocrt, a unutar kojeg se nalaze razni objekti pravokutnog oblika i bunar kružnog tlocrta.<sup>37</sup> Do utvrde vodi stari put naziva „podputina“ koji je u novije vrijeme strojno proširen.

Druga utvrda je smještena na Šibeniku, na jedinoj lokaciji na desnoj obali Zrmanje s koje je vidljiv kanjon, zaravan te Velebit s Tu-

monitoring.<sup>36</sup> In addition to fragments of kitchenware and amphorae, tegulae fragments were unearthed at Šibenik, suggesting the existence of a structure.

In Srid Sela, in an elongated sinkhole, finds were collected on cultivated fields and on structures resulting from soil clearing. A large number of pottery shards dated to prehistoric, antique and modern times has been collected. This points to the long tradition of a place that was probably characterised by the availability of resources and that must have been situated along a communication route passing north of the settlement and connecting the eastern and western parts of the plateau, which were adjoined by the Velebit north-south routes.

## LATE MIDDLE AGES AND MODERN ERA

In the surveyed area, the most frequent, best-preserved, and clearly visible structures are those that can be dated to the Late Middle Ages and the modern era. Thus, they represent the clearest layer of the landscape.

Late mediaeval and modern era sites are visible and preserved in the following ways (Table 4).

Forts are a significant part of medieval and modern era landscapes. At the top of Dračevac Hill is a modern-era fort whose origin probably dates back to earlier, medieval periods. The development stages of Dračevac Fort have not been more precisely defined. It has been confirmed that the fort was under the rule of the Habsburg Monarchy and the Venetian Republic, and that it was abandoned at the end of the 18<sup>th</sup> century. The fort is surrounded by a wall forming an irregular polygonal ground-plan, inside which are various rectangular structures and a round well.<sup>37</sup> The fort can be reached via an old

<sup>36</sup> T. ŠARLIJA, 2010, 34-35.

<sup>37</sup> J. COLNAGO, 1928, 134-135; T. ŠARLIJA, 2012.

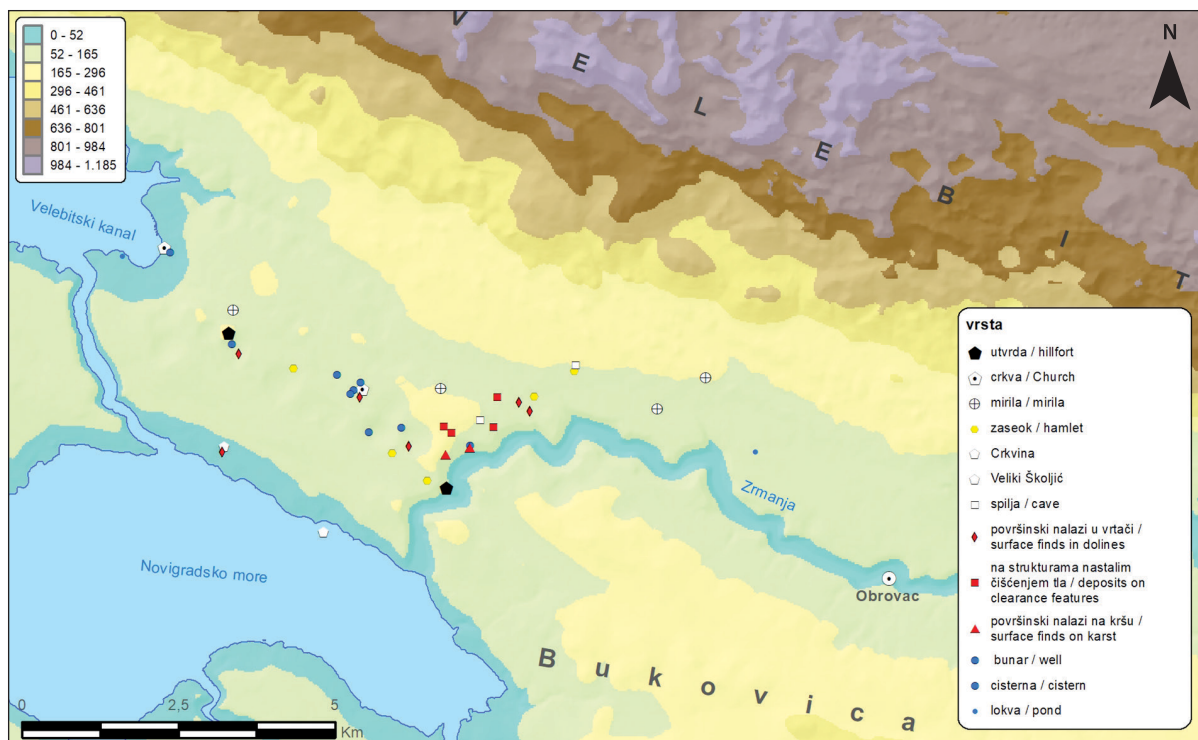
<sup>36</sup> T. ŠARLIJA, 2010, 34-35.

<sup>37</sup> J. COLNAGO, 1928, 134-135; T. ŠARLIJA, 2012.

Kasni srednji i novi vijek <i>Late Middle Ages and modern era</i>		
Pozitivne strukture <i>Positive structures</i>		Negativne strukture <i>Negative structures</i>
Objekti <i>Structures</i>		Cisterne <i>Cisterns</i>
Terase <i>Terraces</i>		
Vapnenice <i>Limekilns</i>		Bunari <i>Wells</i>
Zidovi <i>Walls</i>		
Mirila <i>Mirila</i>		
Putovi/ceste <i>Paths/roads</i>		
Prirodne strukture <i>Natural structures</i>	Distribucije površinskih nalaza <i>Surface findspots</i>	
Lokve <i>Puddles</i>	Nalazi povezani s arheološkim strukturama <i>Finds associated with archaeological structures</i>	Pojedinačni nalazi i distribucije nalaza na krškim predjelima <i>Single finds and findspots in karst</i>
Speleološki objekti <i>Speleological structures</i>	Na izoranim parcelama u vrtačama <i>On ploughed plots in sinkholes</i>	Na strukturama nastalim čišćenjem tla <i>On structures created by soil clearing</i>
Vrtače <i>Sinkholes</i>		Na višeslojnim nalazištima <i>At multi-layered sites</i>

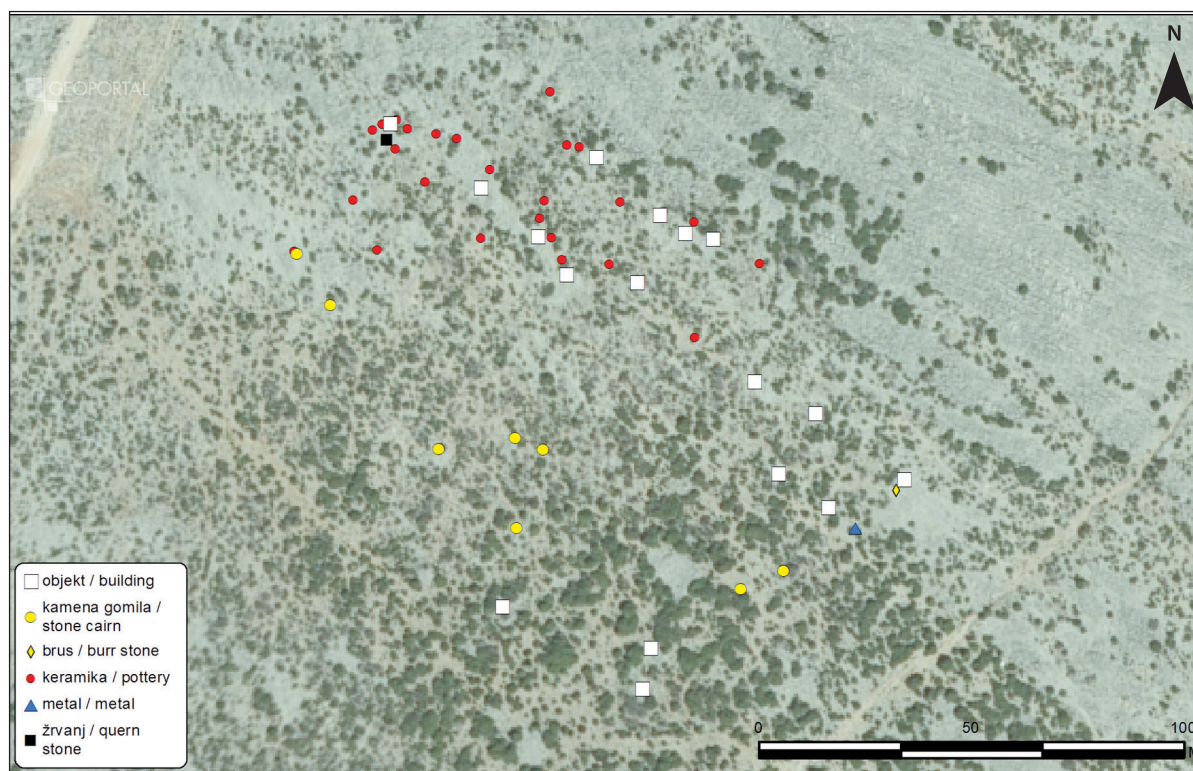
TABLICA 4. Kategorije arheoloških izvora iz kasnog srednjeg i novog vijeka.

TABLE 4 Categories of archaeological sources from the Late Middle Ages and the modern era.



KARTA 4. Prostorna distribucija kasnosrednjovjekovnih i novovjekovnih lokaliteta (izradila: N. Kulenović).

MAP 4 Spatial distribution of late medieval and modern sites (by: N. Kulenović).



SLIKA 3. Zaselak kod Stinate glavice, prostorna distribucija objekata i nalaza (podloga: DOF; izradila: N. Kulenović).

FIGURE 3 The hamlet at Stinata Glavica, spatial distribution of objects and finds (basemap: DOF; by: N. Kulenović).

lovim gredama. Ta utvrda je tek nedavno prvi put opisana u literaturi.<sup>38</sup> Sastoji se od branič-kule, dviju prostorija pravokutnog tlocrta i dvaju podzidanih prostora, odnosno, terase. Branič-kula kvadratnog tlocrta sačuvana je u visini od oko 2 m i na njezinu je vrhu vidljiva zapuna od šute i građevinskog materijala (Sl. 4A). Dvije prostorije pravokutnog tlocrta su sačuvane do 1 m visine. Podzidi terasa su izvrsno sačuvani. Na terenu su uočljivi i slabije sačuvani temelji građevina koje nije bilo moguće preciznije definirati. Na površini terasa su disperzirani dobro vidljivi razni arheološki nalazi kao što su žbuka, ulomci keramičkih posuda i kosti.

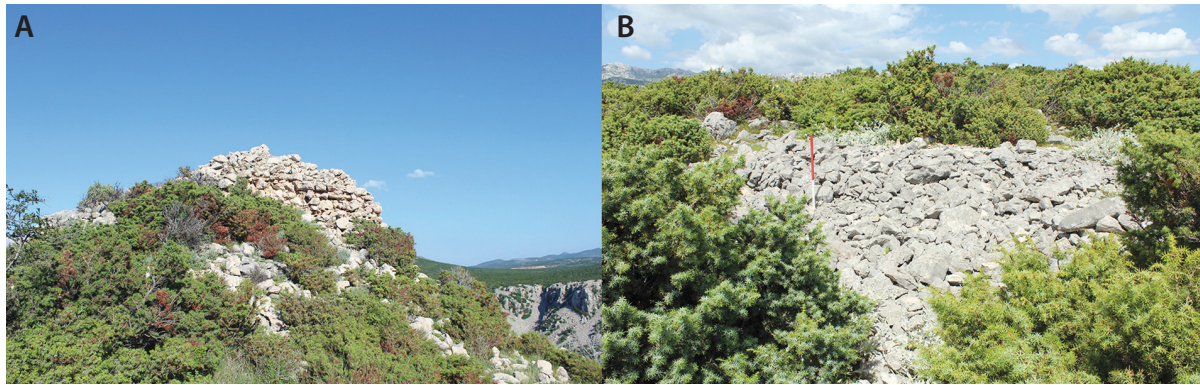
Istraživanjem su otkrivena i dokumentirana tri veća zaseoka: Stinata glavica, Kosa, Bravar te jedan manji zaseok (Blaževac). Također je dokumentiran već prethodno poznat zaseok

path called the lower path (*podputina*), which has recently been extended with the use of machines.

The second fort is located on Šibenik, the only site on the right bank of the Zrmanja from which the canyon, the plateau and Velebit with Tulove Grede can be seen. The fort has been described in literature for the first time only recently.<sup>38</sup> It consists of a watchtower, two rectangular rooms and two rooms with supporting masonry, that is, terraces. The watchtower with a square ground-plan has been preserved up to a height of about two metres, and at its top a filling of rubble and construction material can be seen (Fig. 4A). Two rectangular rooms have been preserved up to a height of one metre. The supporting masonry of the terraces is well preserved. On the site, the rather poorly preserved foundations of structures that could not be defined

<sup>38</sup> T. ŠARLIJA, 2010; T. ŠARLIJA, 2012.

<sup>38</sup> T. ŠARLIJA, 2010; T. ŠARLIJA, 2012.



SLIKA 4. A) Branič-kula na utvrđi Šibenik, B) objekt iz zaseoka kod Stinate glavice (foto: N. Kulenović).

FIGURE 4 A) Defence tower at the fort of Šibenik B) Structures from the hamlet near Stinata Glavica (photo: N. Kulenović).

u ogradi Križ.<sup>39</sup> Zaseoci kod Stinate glavice i Kose su smješteni u blizini utvrde Šibenik. Na tim lokalitetima su otkriveni i dokumentirani ostatci stambenih objekata pravokutnog tlocrta, gomile, suhozidne ograde te terase. Stambeni objekti su građeni u suhozidnoj tehnici, većinom su dužom stranom orijentirani S-J. Riječ je o manjim jednodimenzionalnim objektima (do 5x10 m). Zidovi su debljine od 1-3 m, nekim objektima je sačuvan ulaz (Slika 4.: B). Objekti su raspoređeni u pravilne nizove (Slika 3.). Na svakoj od lokacija su prikupljeni površinski nalazi kao što su ulomci keramičkih posuda, ulomci žrvnja, brus te poneki metalni predmet, ulomak alata.

Tragovi korištenja prostora su vidljivi kroz distribucije površinskih nalaza u vrtačama i na krškim predjelima. Uočljiv je povećan intenzitet korištenja cjelokupnog prostora u razdoblju novog vijeka. Na većini obradivih površina su otkriveni novovjekovni nalazi (ulomci keramičkih posuda, lule, metalni predmeti – dijelovi alata itd.). U tim vrtačama su također vidljive najmanje dvije faze čišćenja zemljišta i ograđivanja. Prvu fazu karakterizira izgradnja širokih ogradnih zidova često građanih u formi terasa. Izgrađeni su u tehnici prislanjanja više lica kamenih blokova i ispunom od sitnijeg i vrlo sitnog kamena. U drugoj fazi su izgrađeni tanki ogradni zidovi koji prate gabarite starijih. Tehnika gradnje

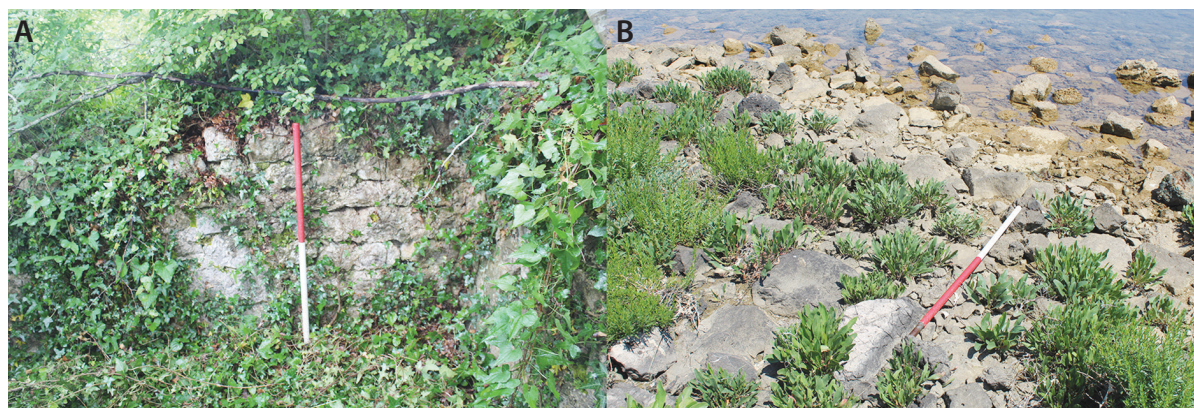
more precisely have been recorded as well. Various archaeological finds such as mortar, pottery shards and bones were dispersed on the surface of the terraces.

The field surveys uncovered and documented three rather large hamlets: Stinata Glavica, Kosa, Bravar and the somewhat smaller Blaževac hamlet. Also documented was the already known Križ hamlet, enclosed by a fence.<sup>39</sup> The hamlets of Stinata Glavica and Kosa are located near Šibenik Fort. At these sites, the remains of dwellings with a rectangular ground-plan, mounds, drywall fences and terraces have been unearthed and documented. The dwellings were built using the drywall technique, mostly with the longer side oriented north-south. These were rather small, one-room structures (up to 5 x 10 m). The walls were 1-3 m thick, and some structures had a preserved entrance (Fig. 4B). The structures were arranged in regular rows (Fig. 3). At each site, surface finds have been collected, such as pottery shards, grindstone fragments, a whetstone, and occasionally metal artefacts, tool fragments.

The use of space can be tracked through surface findspots in sinkholes and karst areas. In the modern era, the increased intensity of use of the entire space is noticeable. On a major part of arable land, modern-era finds have been unearthed, such as pottery shards, pipes, metal artefacts – parts of tools, etc. The

<sup>39</sup> Š. VULIĆ, M. BILIĆ, A. IVIŠIĆ, 2009.

<sup>39</sup> Š. VULIĆ, M. BILIĆ, A. IVIŠIĆ, 2009.



SLIKA 5. A) Crkvina, sačuvani zid, B) ostatci zida na Velikom školjiću (foto: N. Kulenović).

FIGURE 5 A) Crkvina, preserved wall, B) Remains of the wall on Veliki Školjić (photo: N. Kulenović).

tih zidova razlikuje se po tome što su takvi zidovi formirani slaganjem većih amorfnih blokova bez ispune sitnijim kamenom.

U tom razdoblju su znatno zastupljeni sakralni objekti. Najstariji sakralni objekt je crkva sv. Jurja u Rovanjskoj. Današnji izgled crkve sv. Jurja nastao je izgradnjom u više faza, od 9. do 20. stoljeća. Tlocrt u obliku slova L nastao je dogradnjom dvaju krila u srednjovjekovnom razdoblju.<sup>40</sup> Groblje oko crkve je u upotrebi stoljećima. I danas su vidljive velike kamene ploče starijih grobova s reljefnim prikazima, stećcima. To groblje je već otprije u literaturi poznato kao nalazište stećaka.<sup>41</sup> Stariji sačuvani grobovi, iz 19. i 20. stoljeća svojim izgledom i oblikom sličje mirilima.

Istraživanjem je dokumentiran objekt na predjelu Crkvina koji prema iskazu lokalnog stanovništva nosi posvetu sv. Petra. Objekt je pravokutnog tlocrta, kraćom stranom je orijentiran SI-JZ. Unutarnje dimenzije objekta su 3,6 x 7,2 m. Debljina zida je 0,65 m, a zid je sačuvan u maksimalnoj visini od 1,2 m (sjeverni zid). Objekt je izgrađen u tehnici zidanja sa žbukom gdje su klesani kameni blokovi slagani u pravilne redove (Sl. 5A).<sup>42</sup>

Arheološki ostatci su dokumentirani i na otočiću Veliki školjić u Novigradskom moru. Na površini su vidljive urušene suhozidne

sinkholes also suggest at least two phases of land clearing and the building of a fence. The first phase is characterised by the construction of wide fence walls, often constructed as terraces. They were built by joining multiple stone block faces and a filling of smaller and finer stones. In the second phase, thin fence walls were constructed, following the size of the previous ones. The construction technique of such walls differs in that they were formed by stacking larger amorphous blocks without a filling of smaller stones.

Sacral structures are represented in a significant number in this period. The oldest sacral building is St. George's Church in Rovanjaska. Today's appearance of St. George's Church is a result of several construction phases from the 9<sup>th</sup> to the 20<sup>th</sup> century. The L-shaped ground-plan is a result of adding two wings in the medieval period.<sup>40</sup> The cemetery surrounding the church has been in use for centuries. Even today, large stone slabs of older graves with relief tombstones – *stećaks* – can be seen. The cemetery is known in literature as a *stećak* site.<sup>41</sup> The appearance and shape of older preserved tombs, from the 19<sup>th</sup> and 20<sup>th</sup> centuries, resemble *mirila*.

In the field survey, a structure was recorded in the Crkvina area that, according to the testimonies of the local population, bears

<sup>40</sup> I. PETRICIOLI, 1963, 177–180; P. VEŽIĆ, 1991, 323–368.

<sup>41</sup> Š. BEŠLAGIĆ, 1971; Š. BEŠLAGIĆ, 1974.

<sup>42</sup> Za pribavljanje podataka o opisanim sakralnim objektima potrebno je provesti arhivsko istraživanje.

<sup>40</sup> I. PETRICIOLI, 1963, 177–180; P. VEŽIĆ, 1991, 323–368.

<sup>41</sup> Š. BEŠLAGIĆ, 1971; Š. BEŠLAGIĆ, 1974.

konstrukcije izgrađene od amorfnog lomljenog vapnenca i sačuvane su u visini do oko 1 m. Suhozidi tvore niz pravokutnih prostorija nepravilnog tlocrta. Namjena ovih prostorija nije jasna, ali je moguće da je njihova funkcija povezana s djelatnostima na moru te da datiraju iz relativno novijeg vremena. Međutim, na sjevernoj strani otoka, uza samu obalu, uočeni su ostatci pravilnog, vjerojatno zidanog zida koji načinom izgradnje odudara od suhozida. Sačuvan je samo red kamenja neposredno na površini, ali je jasno uočljiva struktura s oba lica zida (Sl. 5B). Duljina zida iznosi oko 3 m dok mu je širina do 0,5 m. Na lokalitetu je pronađen izrazito mali, ali značajan broj nalaza. Riječ je o ulomcima keramičkih posuda te crijepa i opeke. Izdvaja se ulomak engobirane gravirane keramike. Nalazi opeke i crijepa upućuju na moguće postojanje neke građevine na otoku koja je sačuvana u potpovršinskom kontekstu. Konačno, crijep upućuje na solidniju gradnju te na objekt određene važnosti. Možemo iznijeti radnu pretpostavku da je ovdje riječ o crkvenoj gradnji samostanskog tipa gdje je mogla boraviti neka manja zajednica redovnika. Temelj ovoj interpretaciji su, osim pokretnih nalaza otkrivenih na lokalitetu i sam smještaj lokaliteta na izdvojenom osamljenom mjestu.

Specifičnost šireg područja Velebita su mirila. Riječ je o posebnoj pogrebnoj praksi specifičnoj za nomadske stočare. Katoličko stanovništvo zaselaka južnog i jugoistočnog velebitskog podgorja s područja Jasenica svoje je pokojnike sahranjivalo na groblju kod crkve sv. Jurja u Rovanjskoj. Mirila na ovom području do sada nisu bila dokumentirana. Pri terenskom pregledu, a u suradnji s lokalnim stanovništvom dokumentirane su četiri lokacije mirila. Dvije lokacije su uništene, jedna rudnicima boksita, a druga ukopavanjem vojske tijekom ratnih djelovanja. Na preostalim dvjema lokacijama mirila su sačuvana. Većinom je riječ o primjercima rustikalnog stila, izgrađenim od lomljenog pločastog amorfnog kamena od kojih su

a dedication to St. Peter. The structure has a rectangular ground-plan, with the shorter side oriented northeast-southwest. The inside dimensions of the structure are 3.6 x 7.2 m. The wall is 0.65 m thick and has been preserved to a maximum height of 1.2 m (north wall). The structure was constructed in the technique of mortared masonry where cut stone blocks were stacked in regular rows (Fig. 5A).<sup>42</sup>

Archaeological remains have also been recorded on the Veliki Školjić islet in the Novigrad Sea Bay. On the surface, collapsed drywall structures made of amorphous cut limestone are visible. They have been preserved to a height of approximately 1 m. Drywalls form a series of rectangular rooms with an irregular ground-plan. The function of these rooms is not clear, but was possibly associated with maritime activities. The rooms date back to relatively recent times. However, on the north side of the islet, directly on the coast, the remains of a regular, probably masonry, wall were observed, which largely differs from the drywall in terms of construction. Only the row of stones directly on the surface has been preserved, but the structure with two faces of the wall is clearly visible (Fig. 5B). The length of the wall is about 3 m and its width is up to 0.5 m. A very small but significant number of finds has been collected on the site. These are fragments of pottery, tiles and bricks. A fragment of engobed engraved pottery stands out. Brick and tile finds suggest the possible existence of a structure preserved on the islet in a subsurface context. Finally, tiles suggest a more solid construction and a structure of certain significance. A working assumption could be made that this was once a sacral building, such as a monastery, in which a small congregation of monks might have resided. Apart from moveable finds unearthed at the site, the basis for such an interpretation is

<sup>42</sup> To obtain data on the described sacral structures, an archival study is necessary.

pojedini primjerci ukrašeni grubo uklesanim križevima.

## ZAKLJUČAK

Terenski pregled koji se provodi na području krške zaravni na području Jasenica ima brojne implikacije za poimanje problematike terenskih pregleda. Prije svega, u dosadašnjim istraživanjima krški krajolik se pokušalo svesti u okvire termina i koncepata koji su razvijeni na područjima sasvim drukčijih karakteristika, a koja su postavljena kao model za istraživanje arheoloških izvora općenito. Naime, procjena odnosa površinskog i potpovršinskog konteksta uzeta je kao nepobitna i sama po sebi razumljiva analiza što implicira nemogućnost rasprave o arheološkim podacima na područjima krškog reljefa unutar discipline terenskih pregleda. Karakteristika dinarskog krša je izraziti nedostatak tla. Stoga, dosljedno primjenjivanje koncepata koji nužno uključuju odnos površinskog i potpovršinskog konteksta čine takva područja neprimjerenima za provedbu istraživanja terenskim pregledima. Međutim, takva tvrdnja ovisi isključivo o kriterijima koje smo postavili kao validne pri istraživanju i interpretaciji. Polazna točka svakog istraživanja na nekom terenu treba biti krajolik u kojem se istraživanje provodi sa svim svojim specifičnostima iz kojih će proizlaziti i priroda arheoloških izvora, a ne unaprijed postavljene norme čija je osnovna pretpostavka da je njihova primjenjivost univerzalna. Stoga su rezultati koji su predstavljeni u ovom radu rezultat kompleksne dinamike materijalnosti između ljudi, životinjskog i biljnog svijeta, geomorfoloških karakteristika i transformacijskih procesa. Arheološki lokaliteti u krškom krajoliku imaju sasvim specifičnu formu i sadržaj. Općenito možemo reći da se arheološki izvori na takvim područjima sastoje od raznih vrsta artificijelnih i prirodnih struktura te površinskih distribucija arheoloških nalaza koji mogu, ali i ne

also the location of the site in a secluded and isolated position.

*Mirila* are characteristic of the Velebit area. These form part of a funeral practice specific to nomadic herders. The Catholic population of the hamlets of the southern and southeastern Velebit foothills of the Jasenica area buried their deceased in the cemetery at St. George's Church in Rovanjaska. So far, no *mirila* have been documented in the area. In the course of the field survey, in collaboration with locals, four *mirila* sites were recorded. Two of them were destroyed, one by bauxite mines and the other by the digging of army trenches during the war. The *mirila* at the remaining two sites have been preserved. They are mostly rustic-style specimens, made of cut slabs of amorphous stone, some of which are decorated with roughly carved crosses.

## CONCLUSION

The field survey conducted on the Jasenica area karst plateau has numerous implications for understanding the issues of field surveying. First of all, previously conducted studies attempted to interpret karst landscape in terms of and in the context of regions having entirely different characteristics, and what is more, these regions used to serve as models for the study of archaeological sources in general. Specifically, the assessment of the relations between surface and subsurface contexts used to be taken as an irrefutable and self-explanatory analysis, suggesting that it was impossible to discuss archaeological data in karst areas within the context of field surveying. A characteristic of Dinaric karst is the scarcity of soil. Therefore, consistently applying concepts that necessarily involve the relations between the surface and subsurface contexts make such areas inappropriate for field surveys. However, such a claim depends solely on criteria established as valid in research and interpretation. The starting point of any field survey

moraju biti u vezi sa strukturama ili potpovršinskim kontekstom.

Arheološki lokaliteti na području istraživanja su reprezentirani širokim rasponom vrsta arheoloških izvora. Prapovijesni lokaliteti pripadaju najzastupljenijima. Dokumentirane su različite artificijelne strukture koje čine gradinske lokalitete i tumule te distribucije površinskih nalaza u vrtačama i na strukturama nastalim čišćenjem tla. Kao i bilo koji drugi krajolik, i krš je živi sustav koji se mijenja. Na takav način možemo sagledati činjenicu da su prapovijesni lokaliteti predmet stalnih transformacija koje se očituju u iskorištavanju kamena od kojih su izgrađeni do izgradnje raznih drugih struktura od njih ili na njima. Antičko razdoblje je najslabije zastupljeno na području istraživanja. Lokaliteti iz rimskog razdoblja su vidljivi i sačuvani na dva načina, kao depoziti na strukturama nastalim čišćenjem tla te kao distribucije površinskih nalaza. Svakako su razdoblja kasnog srednjeg i novog vijeka ostavila najviše traga u krajoliku i pružila osnovu za obrasce korištenja prostora od kojih neki funkcioniraju i danas. Iz tog razdoblja se izdvajaju ostatci čitavih zaselaka s kućama poredanim u pravilne nizove. Posebno se ističu višeslojni lokaliteti preslojeni novovojekovnim utvrdama te sakralni objekti.

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should be the landscape in which the survey is conducted with all its specificities, arising from the nature of archaeological sources, and not from pre-set norms that rely on the basic assumption of the universality of their application. Therefore, the findings presented in this paper are a result of the complex dynamics of materiality between humans, animals and plants, geomorphological features, and transformation processes. Archaeological sites in karst landscape have an extraordinary specific form and content. Generally, it can be said that archaeological sources in such areas consist of various types of artificial and natural structures and archaeological surface findspots that may or may not be related to the structures or to the subsurface context.

Archaeological sites in the surveyed area are represented by a wide variety of archaeological sources. Prehistoric sites are among the most commonly represented. A record has been made of various artefacts representing hillfort sites and tumuli, and surface findspots in sinkholes and on structures resulting from soil clearing. Like any other landscape, karst is an ever-changing living system. Thus, it can be broadly seen that prehistoric sites have been subject to constant transformations, manifested in the exploitation of stones from which they were built as well as of various other structures constructed from these stones or on them. The Classical Antiquity period is the least represented in the surveyed area. Sites from the Roman period are visible and have been preserved in two ways: as deposits on structures created by soil clearing and as surface findspots. Certainly, the Late Middle Ages and the modern era have left most marks in the landscape and provided a basis for patterns of spatial use, some of which still function today. From this period, the remains of entire hamlets stand out, with houses arranged in regular rows. A particularly prominent place is held by multi-layered sites superimposed by modern-day forts and sacral structures.

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