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Victor GHICA

Det teologiske Menighetsfakultet
Gydasvei 4, Majorstuen
N – 0302 Oslo
victor.ghica@mf.no

Ante MILOŠEVIĆ

Muzej hrvatskih arheoloških spomenika
S. Gunjače 3
HR – 21000 Split
ante.milosevic@st.t-com.hr

Nikolina URODA

Muzej hrvatskih arheoloških spomenika
S. Gunjače 3
HR – 21000 Split
nuroda@gmail.com

Danijel DŽINO

Macquarie University
Balaclava Road, North Ryde
AUS – NSW 2109 Sydney
danijel.dzino@mq.edu.au

Arheološki projekt *Varvaria / Breberium / Bribir* u 2015. godini

Varvaria / Breberium / Bribir
Archaeological Project.
The 2015 Excavation Season

Ovaj rad sadrži preliminarno izvješće o drugoj sezoni iskapanja na Bribirskoj glavici u okviru međunarodnog arheološkog projekta Varvaria / Breberium / Bribir. U tekstu se prezentira pregled terenskog rada, njegovi rezultati te arheološki predmeti pronađeni i izučavani u ovoj sezoni. Obradeni materijal se odnosi na bribirsku rotundu i arhitektonske strukture oko nje.

Ključne riječi: *Dalmacija, Bribir, rotunda, mauzolej, crkva sv. Joakima i Ane*

The present paper contains the interim report on the second season of fieldwork carried out at Bribirska Glavica by the Varvaria / Breberium / Bribir Archaeological Project. The text gives an overview of the field operations undertaken, their results and the archaeological finds excavated and studied during this season. This material relates both to the rotunda church and to built structures postdating it.

Key words: *Dalmatia, Bribir, rotunda, mausoleum, church of Sts Joachim and Ann*



sl. 1. Crkva sv. Joakima i Ane i suvremeno groblje, pogled prema sjeveroistoku (A. Z. Alajbeg).
Fig. 1 Church of Sts Joachim and Ann and modern Bribir cemetery; view towards NE (A. Z. Alajbeg).

The fieldwork carried out in 2015 as part of the *Varvaria / Breberium / Bribir* Archaeological Project¹ continued the field operations undertaken in 2014 along the following lines²:

- ¹ The present report rests on results reached thanks to the collective effort of the whole excavation team. The text was written by V. Ghica, and A. Milošević, N. Uroda and D. Džino proofread it, making suggestions and comments. D. Džino authored the Croatian translation.
- ² The fieldwork season took place between 3 and 28 April 2015. Staff members were: Prof. Dr Ante Milošević (project director), Prof. Dr Victor Ghica (field director), Dr Danijel Džino (project co-director), Nikolina Uroda (MHAS, assistant field director), Dr Ivana Ožanić Roguljić (IARH, ceramicist), Dr Kristina Jelinčić Vučković (IARH, ceramicist), Dr Bartul Šiljeg (IARH, glass specialist), Dr Andrea Di Miceli (ArcheoRes / UDSP, Perugia, topographer and database operator), Dr Tommaso Mattioli (ArcheoRes / UDSP, Perugia, GIS operator), Željko Krnčević (Šibenik City Museum, archaeologist), Yann Béliez (Archéodoc, Toulouse, archaeologist), Per Rathsmann (Rathsmann ArkitektKontor AB, Karlstad, architect). Labour was supplied by nine students from Macquarie University (Shenali Boange, David Crane, Ashley Keith, Genevieve Le Ban, Joel Mason, Isabella Oldfield, Ashlee Wakefield, Nicola Wesseling and Amy Wood) and two from the University of Zagreb (Mer-

Terenskim istraživanjima u sklopu projekta *Varvaria / Breberium / Bribir* u 2015. godini¹ nastavilo se s radovima započetim 2014. godine u sljedećim pravcima²:

- ¹ Ovo izvješće rezultat je zajedničkog rada svih sudionika iskopavanja. Tekst su napisali V. Ghica i A. Milošević, a komentare, prijedloge i primjedbe napravili su N. Uroda i D. Džino koji je i preveo tekst na hrvatski jezik.
- ² Prva faza radova je započela 3., a završila 28. travnja 2015. Sudjelovali su: prof. dr. sc. Ante Milošević (voditelj projekta), prof. dr. sc. Victor Ghica (voditelj iskopavanja), dr. sc. Danijel Džino (suvoditelj projekta), mr. sc. Nikolina Uroda (zamjenica voditelja iskopavanja), dr. sc. Ivana Ožanić Roguljić (IARH – ekspertiza keramike), dr. sc. Kristina Jelinčić Vučković (IARH – ekspertiza keramike), dr. sc. Bartul Šiljeg (IARH – ekspertiza stakla), dr. sc. Andrea Di Miceli (ArcheoRes / UDSP, Perugia – dokumentacija i vođenje baze podataka), dr. sc. Tommaso Mattioli (ArcheoRes / UDSP, Perugia – geomagnetska istraživanja), Željko Krnčević (Muzej grada Šibenika – arheolog), Yann Béliez (Archéodoc, Toulouse – arheolog) i Per Rathsmann (Rathsmann ArkitektKontor AB, Karlstad – arhitekt). Uz nekoliko lokalnih radnika iskopavanja u sondama obavljalo je devet studenata Sveučilišta Macquarie (Shenali Boange, David Crane, Ashley Keith, Genevieve Le Ban, Joel Mason, Isabella Oldfield, Ashlee Wakefield, Nicola Wesseling i Amy Wood) i dvi-

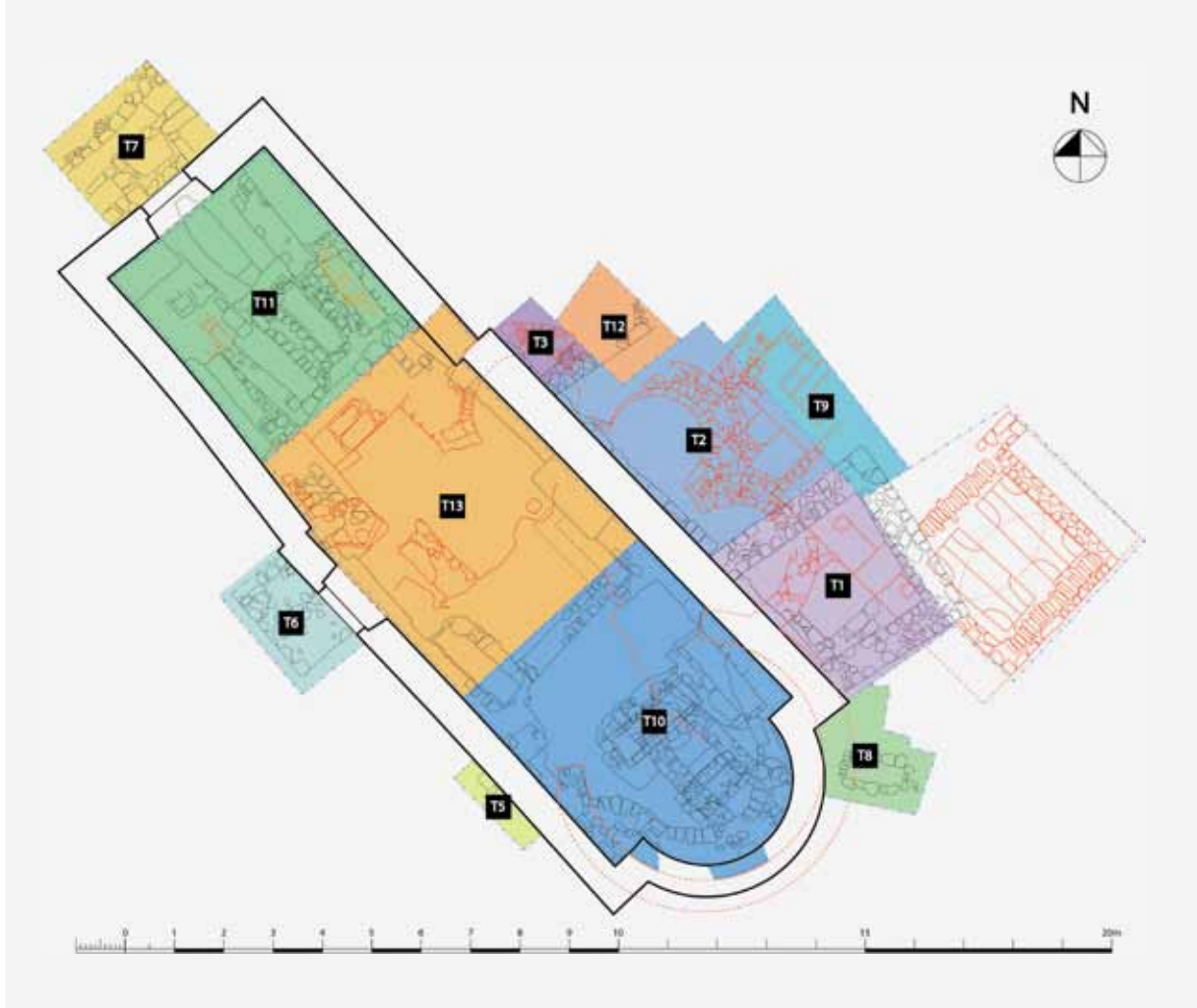
- iskopavanja ispod podnice crkve sv. Joakima i Ane (sl. 1) i sjeveroistočno od sonde T 2 otvorene prošle godine;
- analiza zidnih struktura temelja crkve sv. Joakima i Ane, rotunde ispod nje i pripadajuće kasnoantičke memorije;
- restauracija i konzervacija zidova rotunde ispod podnice crkve sv. Joakima i Ane te postavljanje novog poda u crkvi;
- analiza keramičkog materijala iskopanog tijekom ovogodišnje kampanje;
- antropološka analiza kosturnih ostataka pronađenih tijekom 2015. godine;
- prostorno skeniranje sonde i procesuiranje podataka;
- fotogrametrijsko modeliranje odabranih struktura;
- 3D modeliranje istraženih dijelova lokaliteta;
- uspostavljanje i popunjavanje internetske baze podataka projekta;
- prikupljanje i analiza postojeće dokumentacije s prethodnih iskopavanja;
- izdvajanje i analiza uzoraka tla i organskog materijala prikladnog za datiranje putem OSL i ¹⁴C metoda.
- excavation below the floor level of the church of Sts Joachim and Ann (fig. 1) and to the NE of the trench T2 opened last year;
- analysis of the building archaeology of the foundations of the church of Sts Joachim and Ann, the underlying rotunda monument and the adjoining mausoleum;
- restoration and conservation of the sub-floor structures and the floor of the church of Sts Joachim and Ann;
- study of the ceramic material unearthed during the season;
- anthropological study of selected human remains found during the season;
- terrestrial laser scanner data acquisition and processing;
- photogrammetric modelling of selected excavated structures;
- 3D modelling of excavated areas of the site;
- setting up and populating a web-based data management system for the Project's field operations;
- collecting and studying the documentation relating to previous excavation seasons;

1. Iskopavanja

Rezultati prošlogodišnjih iskopavanja ukazivali su na potrebu širenja istražene površine, osobito unutar današnje crkve sv. Joakima i Ane i sjeveroi-

je studentice Sveučilišta u Zagrebu (Merita Dreshaj i Katarina Franušić). Obradu i katalogizaciju arheološkog materijala koordinirale su Shenali Boange i Merita Dreshaj, dok su Victor Ghica, Andrea Di Miceli i Nicola Wesseling dizajnirali ARK bazu podataka i unosili podatke. Od 30. travnja do 20. svibnja, iskopavanja je nastavio MHAS pod vodstvom A. Miloševića, koji je također nadgledao restauraciju i konzervaciju zidova ispod podnice crkve sv. Joakima i Ane između 30. lipnja i 15. rujna. Miljenko Žabčić (Geographica d.o.o., Split) obavio je prostorno skeniranje sonde iskopanih u 2014. i 2015. godini pri čemu je napravio nekoliko tlocrta, presjeka i pogleda istraživanih sonde. Prof. dr. sc. Željko Peković (Sveučilište u Splitu) napravio je arhitektonsku dokumentaciju restauracije unutar crkve sv. Joakima i Ane, dok je numizmatičku ekspertizu napravio dr. sc. Tomislav Šeparović (MHAS). Antropološka analiza kosturnih ostataka obavljena je u Antropološkom centru HAZU od strane tima predvođenog prof. dr. sc. Mariom Šlausom, u kojem su dr. sc. Željka Bedić i dr. sc. Vlasta Vyroubal. Iskopavanja su financirali Muzej HAS i Sveučilište Macquarie, financijski je sudjelovala i Zaklada Hrvatskih studija iz Sydneyja, a sve konzervatorske radove i troškove prezentacije financiralo je Ministarstvo kulture Republike Hrvatske.

ita Dreshaj and Katarina Franušić), as well as by local workers. The archaeological material processing and cataloguing was coordinated by Shenali Boange and Merita Dreshaj, whilst Victor Ghica, Andrea Di Miceli and Nicola Wesseling conducted the designing and populating of the ARK database. From 30 April to 20 May, the excavation was continued by a Croatian team led by A. Milošević, who also supervised, between 30 June and 15 September, the restoration and conservation of the structures lying beneath the floor of the church of Sts Joachim and Ann. Miljenko Žabčić (Geographica d.o.o., Split) carried out a terrestrial laser scanner survey of the trenches excavated in 2014 and 2015 and created several ground, elevation and cross-section plans. Prof. Dr Željko Peković (University of Split) authored the architectural documentation relating to the restoration of the areas excavated inside the church of Sts Joachim and Ann. The numismatic identifications were provided by Dr Tomislav Šeparović (MHAS). The anthropological analysis of skeletal remains was conducted in the laboratory of the Anthropological Centre of the Croatian Academy of Sciences and Arts by a team directed by Prof. Dr Mario Šlaus, composed of Dr Željka Bedić and Dr Vlasta Vyroubal. Both Macquarie University and the Museum of Croatian Archaeological Monuments funded the fieldwork. The Croatian Studies Foundation of Sydney made an additional financial contribution, whilst the Ministry of Culture of the Republic of Croatia financed all the works related to the conservation and presentation of the finds.



sl. 2. Sonde iz 2014. i 2015. godine (V. Ghica).
Fig. 2 2014 and 2015 trenches (V. Ghica).

- sampling of representative soil and organic material for OSL and ^{14}C dating.

1. Excavation

The results of last year's excavations required expanding the research area, particularly to the NE of, and within, the present church. Three new trenches were opened inside the church (T10, T11, T13) and four sondages dug around it (T7, T8, T9, T12; fig. 2) with the aim of further exposing the underlying rotunda building and the adjacent mausoleum, the relative chronology of which could only be tentatively sketched in 2014. For reasons of excavation strategy, the dig in the four trial trenches was interrupted before reaching the geological substratum. Additionally, small-scale works were carried out in the trench T1.

In brief, the stratigraphy of the seven newly opened squares showed the following:

T7 (fig. 2-4)

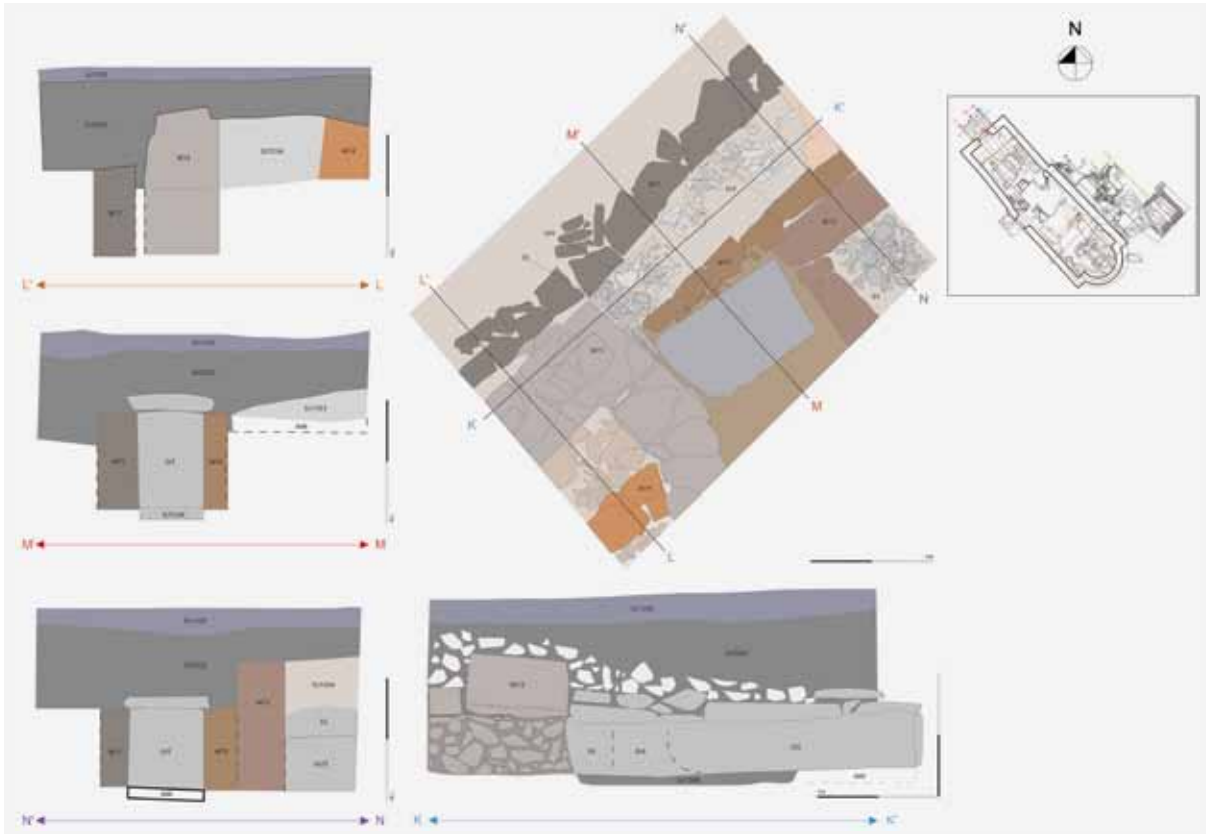
The trench revealed a sector of a burial area comprised of several concentrated and overlapping graves and ossuaries, featuring various types

stočno od nje. Zbog toga su unutar crkve otvorene tri (T 10, T 11, T 13), dok su oko nje otvorene četiri nove sonde (T 7, T 8, T 9, T 12; sl. 2). Cilj ovog proširenja bilo je otkrivanje novih struktura rotunde i susjedne kasnoantičke memorije te uspostavljanje relativne kronologije koja se 2014. godine mogla samo uvjetno pretpostaviti. Zbog nedostatka vremena iskopavanja u četiri probne sonde oko crkve prekinuta su prije dolaska do zdravice, odnosno do kamenoga živca. Dodatno, manji radovi obavljani su i u sondi T 1.

Ukratko, stratigrafska situacija u sedam novootvorenih sondi je sljedeća:

T 7 (sl. 2-4)

U sondi je definirano područje ukapanja unutar kojeg je prepoznato nekoliko grupiranih i preslojenih grobova te kosturnica napravljenih tehnikom suhozida ili jednostavno označenih nizom kamenja. Sve ove strukture ukazuju na kompleksne tafonomske procese koji su uključivali stalna premještanja primarnih skeletnih ostataka tijekom pretvaranja određenih prostora u kosturnice. Kosturnica E 5 sadržavala je ostatke pet, a E 6 sedam osoba. Najmanje jedna od ovih grobnih struktura (Gr 23) može



sl. 3. Plan i stratigrafski presjek sonde T 7 (Y. Béliez, V. Ghica).

Fig. 3 Plan and stratigraphic cross-section of trench T7 (Y. Béliez, V. Ghica).

se smatrati pravim grobom s obzirom na položaj i tehniku zidanja. Čini se da je ova ukopna skupina nastala nakon izgradnje pretprostora današnje crkve. Ovakav zaključak izvodimo iz pregleda opće situacije u kojoj su se strukture naslanjale ili prislanjale na temelje pročelnog zida današnje crkve, tj. njenoga pretprostora. Skromni nalazi keramike iz ove sonde ukazuju na to da je izmiješana višestrukim prekopavanjem prostora. Ulomak keramike, najvjerojatnije italskog podrijetla, koji se uvjetno može datirati u 2. stoljeće (BR 2015680, SU 1032), indikativan je pokazatelj ovakve pretpostavke.

T 8 (sl. 2, 5)

Iako je u ovoj sondi otkriven samo jedan grob (Gr 4), njegov položaj u odnosu na današnju crkvu, kao i ograničena dubina istraživanja ukazuju kako je ovaj ukop dio druge ukopne skupine. Grob je sadržavao kosturne ostatke fetusa i bebe mlađe od šest mjeseci.

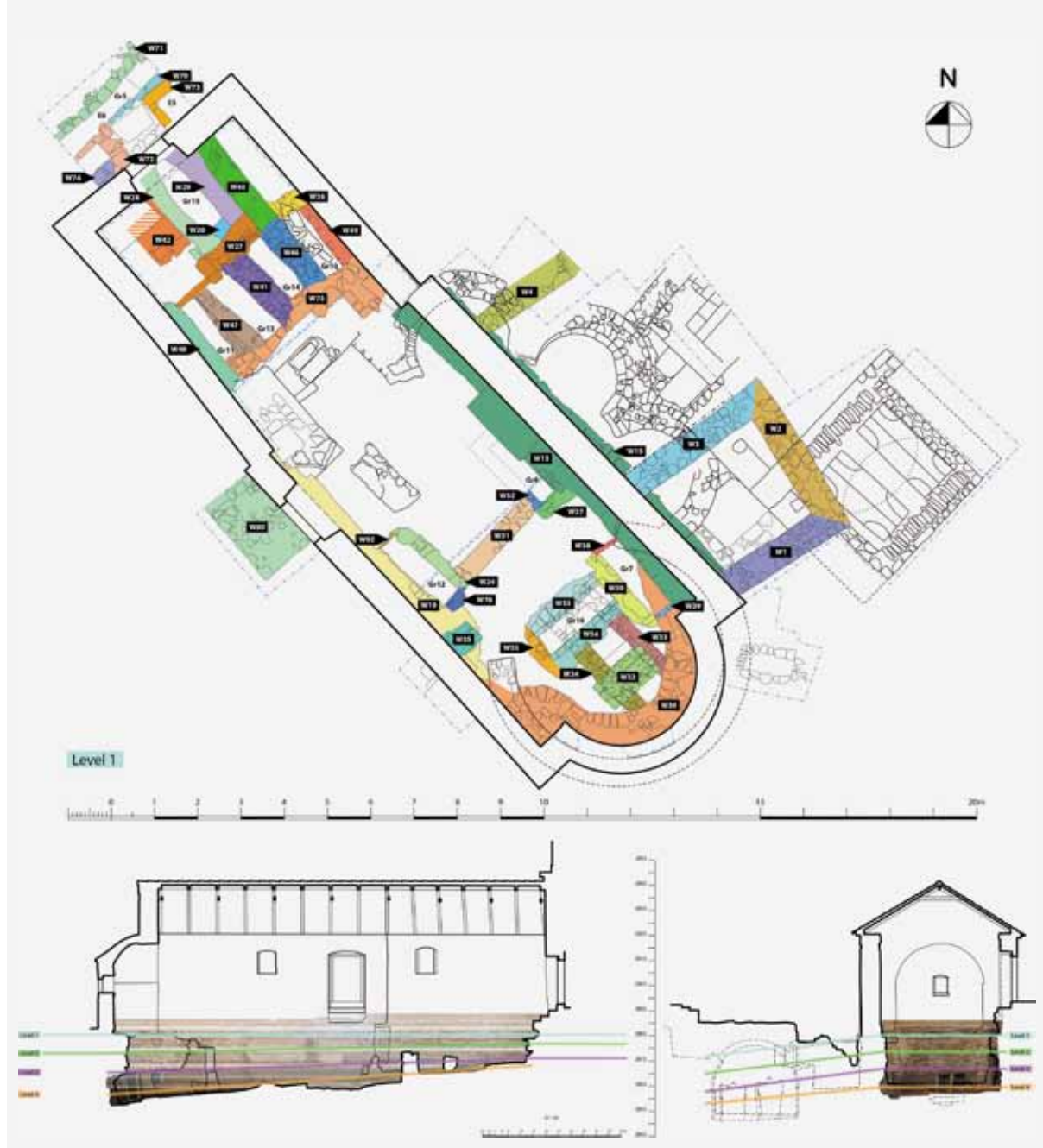
T 9 (sl. 1, 7, 8, 12)

Tijekom kampanje u 2014. godini, bilo je otkriveno jugozapadno lice zida *dromosa* mauzoleja (W 16) koji je otkopan u sondi T 2. Širenje sonde T 2 prema sjeveroistoku dobiva novu oznaku T 9, što

of dry-laid tomb masonry or simple stone lining. These structures reveal complex taphonomic processes. There is evidence of repeated reorganisations of the primary skeletal deposits during the conversion of certain spaces into ossuaries, which contain remains of several individuals (five for E5, seven for E6). At least one of these built structures (Gr23) can be considered a proper tomb, given its position and masonry technique. Abutting and leaning, in a domino-like arrangement, on the foundation of the façade wall of the present church, this funerary cluster postdates the construction of its *pronaos*. Extremely poor pottery finds coming from this test square point to intrusive ceramic. One shard of seemingly Italian origin, tentatively datable to the 2nd century AD (BR2015680, SU1032) is indicative in this regard.

T 8 (fig. 2, 5)

Although this sondage yielded only one grave (Gr4), its position in relation to the present church, as well as the limited excavation depth, suggest that this burial is part of another dense funerary cluster. The grave contained the fragmentary skeletons of an infant, less than six months old, and a foetus.



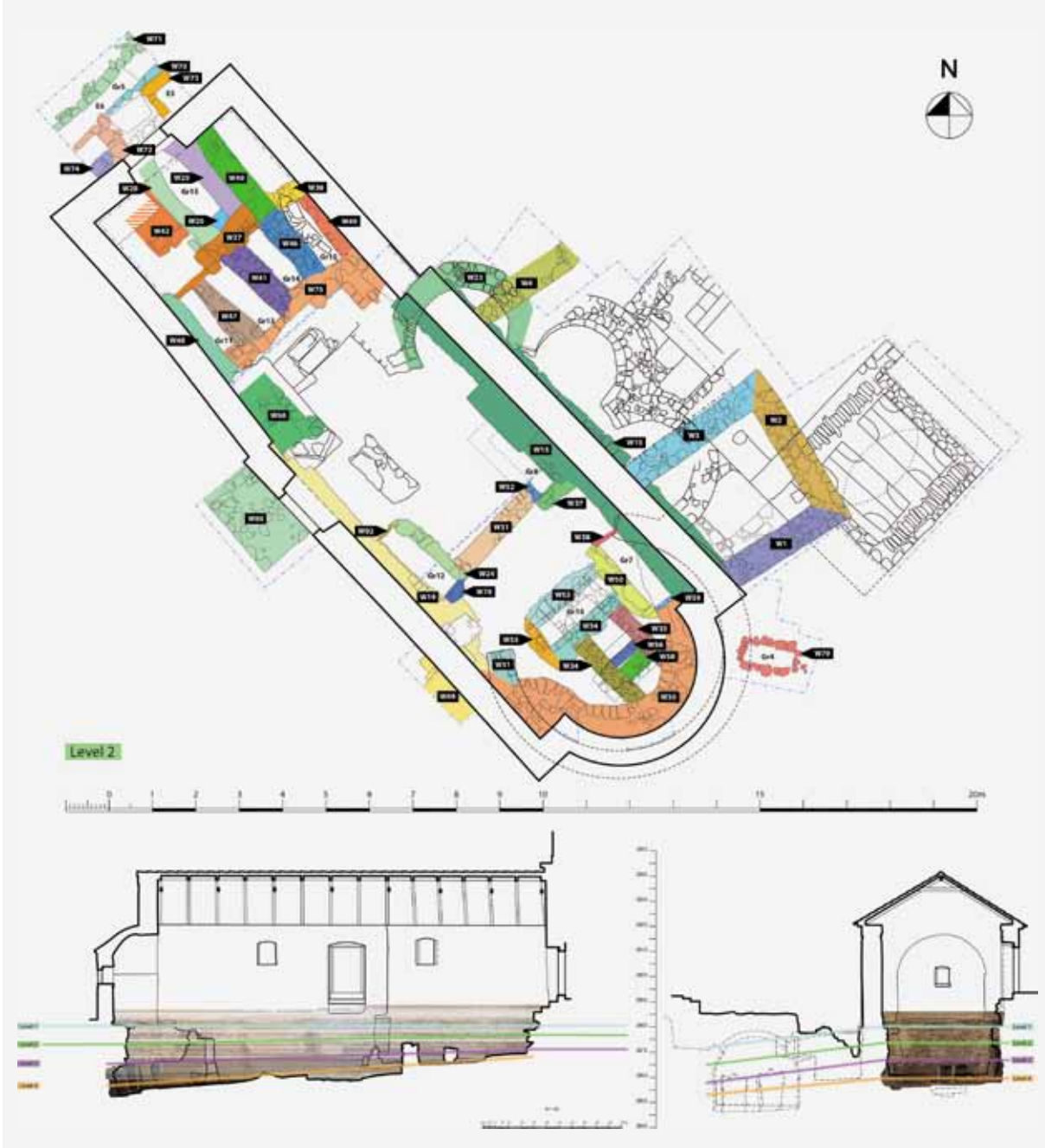
sl. 4. Zidovi – prvi sloj (V. Ghica).

Fig. 4 Walls level 1 (V. Ghica).

T9 (fig. 1, 7, 8, 12)

During the 2014 season, only one wall of the *dromos* (W16) was revealed in trench T2. This year, an extension of T2 further to the NE termed T9, made it possible to investigate the stratigraphic record in the inner area of the *dromos*, assumed to be undisturbed in its lower section. The removal of a (sub-)modern grave (Gr3), built atop the remains of the wall W16 with blocks removed very likely from the rotunda building (among which a stone fragment [BR2015724, fig. 6] carved with early medieval ‘Croatian’ interlace pattern), gave access to two steps belonging to the stairs of the *dromos*. This was made possible by dismantling the slabs belonging to the floor of the larger annexe studied last year (SU1008). This confined space provided very few, undateable, ceramic shards. The new visual access

je u kampanji 2015. godine omogućilo istraživanje stratigrafije unutrašnjosti *dromosa*, za koju se pretpostavljalo da je u donjim slojevima ostala netaknuta. Uklanjanje recentnog groba (Gr 3), koji je bio postavljen nad ostacima zida W 16, kao i dijelova popločanog poda dogradnje istražene prošle godine (SU 1008) – čije su ploče najvjerojatnije preuzete iz rotunde, zajedno s kamenim fragmentom ukrašenim ranosrednjovjekovnom pleternom dekoracijom (BR 2015724; sl. 6) – omogućilo je pristup ulazu u mauzolej dvjema stubama koje su pripadale *dromosu*. U ovom zatvorenom prostoru pronađeno je vrlo malo keramičkih ostataka koji se ne mogu datirati. Otkrivanje ovog prostora, rezultat je iskopavanja unutar *dromosa*, a pojasnilo je kronologiju građevnih faza. Monolitni kameni blok, ugrađen u dnu *dromosa* kao druga stepenica, preuzet je najvjero-



sl. 5. Zidovi – drugi sloj (V. Ghica).
Fig. 5 Walls level 2 (V. Ghica).

jatnije s antičkih zidina *Varvarije*. Blok se oslanjao na pločnik napravljen od ploča manjih dimenzija, postavljenih izravno na živac (SU 1127; sl. 9). Ovakav tip popločanja sličan je popravljenim površinama talijanskih javnih prostora, kao primjerice onih u Americi, Plestiji, Perusiji ili Tadinumu, datiranih od kraja 3. stoljeća nadalje³.

T 12 (sl. 2, 4, 5, 12)

U ovom probnom kvadrantu prepoznata su dva stratigrafska sloja. U gornjem (SU 1053) je otkriven kronološki raznovrstan materijal (dvije naušnice kasnoga srednjeg vijeka i ulomak keramičkog

created by the dig in the area of the *dromos* clarified an important aspect for the sequence of constructive phases. The monolithic shaped block embedded in the base of the *dromos* as second step of the stairs – which comes in all likelihood from the ancient wall of *Varvaria* – rests on a pavement made of small slabs cemented together and set directly on the bedrock surface (SU1127; fig. 9). This type of *pavimentum* is reminiscent of rehabilitated surfaces of public areas known in Italy, at *Ameria*, *Plestia*, *Perusia* or *Tadinum* for example, dating from the end of the 3rd century onwards³.

³ Cf. A. DI MICELI, *Popolamento, città e campagna nell'Umbria tardo antica*. Doktorska disertacija obranjena 2013. na sveučilištu u Perugi, str. 168-169, 185-188.

³ Cf. A. DI MICELI, *Popolamento, città e campagna nell'Umbria tardo antica*, PhD thesis defended in 2013 at the University of Perugia, p. 168-169, 185-188.



sl. 7. Zidovi – treći sloj (V. Ghica).

Fig. 7 Walls level 3 (V. Ghica).

T12 (fig. 2, 4, 5, 12)

We were able to excavate two subsurface layers in this test square, with the subsoil stratum (SU1053) displaying chronologically eclectic material (two late mediaeval earrings and a shard of a Hayes 182 lid dated from the end of the 2nd to the 3rd century AD), a characteristic common to the upper

poklopca – *Hayes 182* – kojega je moguće datirati u razdoblje od kraja 2. i u 3. stoljeće). Ovakva kronološka raznovrsnost karakteristična je za gornje slojeve svih sondi iskopanih sjeveroistočno od današnje crkve.

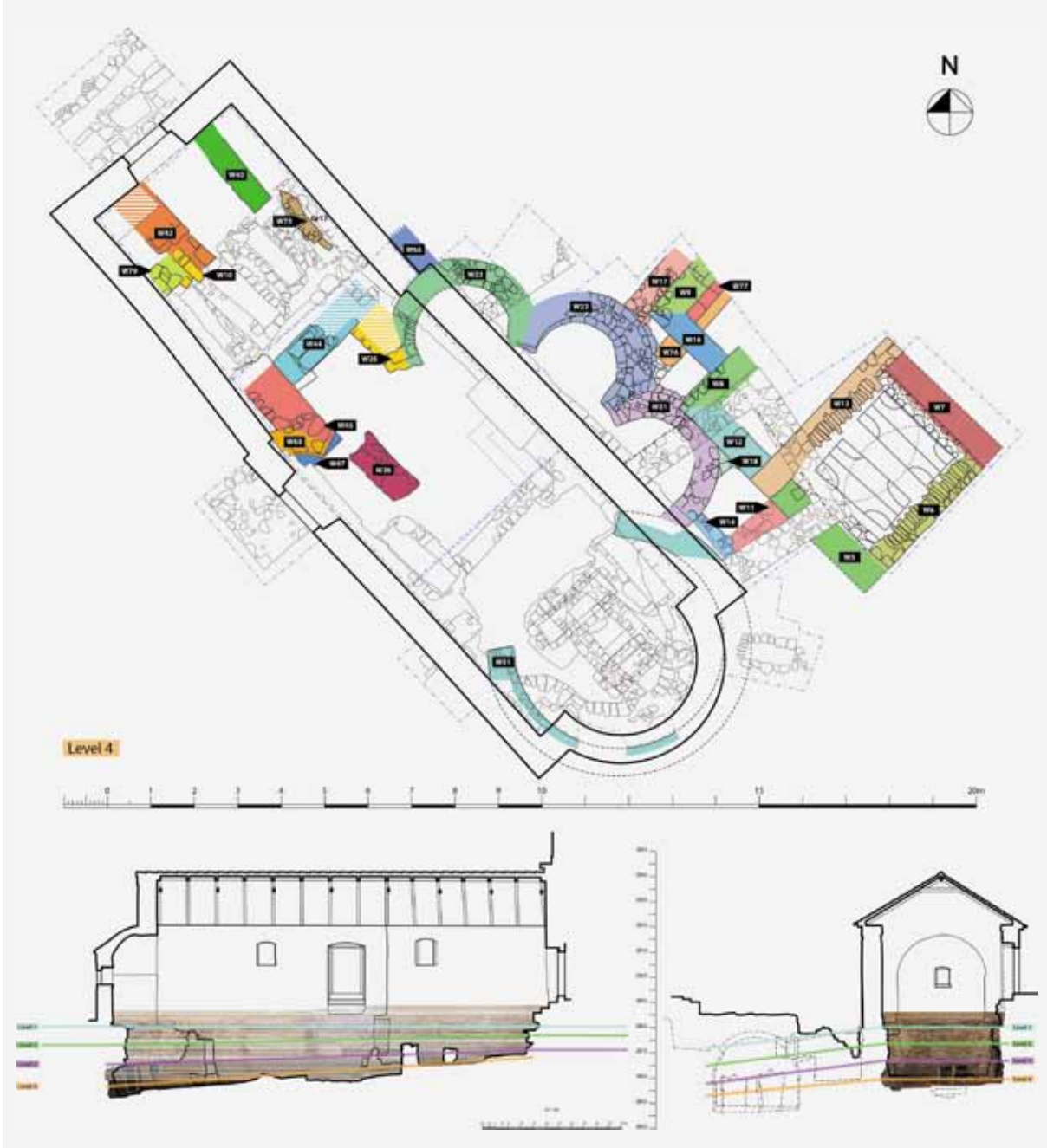
T 10 (sl. 2, 4, 5, 7, 8, 12)

Ova sonda, potpuno istražena tijekom iskopavanja u 2015. godini, zajedno s T 11, donijela je najviše faktografskih i materijalnih podataka u zatvorenim kontekstima. Kompleksna stratigrafija u T 10 (sl. 10) potječe iz dviju glavnih građevinskih



sl. 6. Kameni fragment ukrašen pleterom BR2015724 *in situ* (V. Ghica).

Fig. 6 Stone fragment decorated with interlace pattern BR2015724 *in situ* (V. Ghica).



sl. 8. Zidovi – četvrti sloj (V. Ghica).

Fig. 8 Walls level 4 (V. Ghica).

faza koje su rezultirale izgradnjom rotunde i naosa današnje crkve.

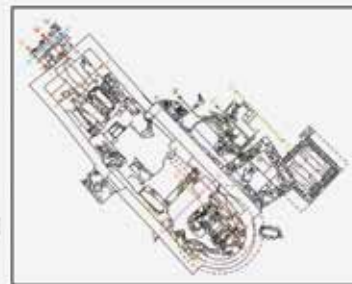
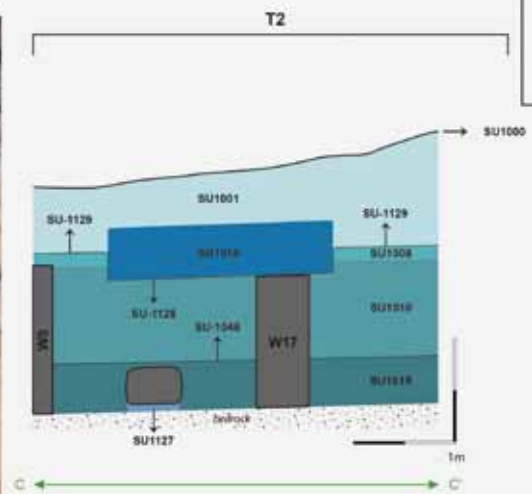
S izgradnjom rotunde iz ove sonde mogu se povezati samo tri stratigrafska konteksta (SU 1087, SU 1100, SU 1108). Ti slojevi otkopani su ispod sloja stvorenog niveliranjem terena prije podizanja jednobrodne crkve, a dva od njih (SU 1100, SU 1108) nalazila su se ispod razine temeljnih zidova naosa. Ovi stratigrafski konteksti, iako poremećeni u kasnijim razdobljima, potječu iz razdoblja urušavanja zidova rotunde i oltarne ograde. Na ovakav nas zaključak navodi pronalazak nekoliko krovnih crijepova u sloju. Analiza keramike pružila je malo kronostratigrafskih podataka. Stratigrafski kontekst SU 1087 sadrži raznoliku keramiku, od republikanskog *orlo bifido* tanjura do dijelova afričkih i istočnomediterranskih amfora 5. i 6. stoljeća. Srećom,

stratigraphy of all the trenches dug to the NE of the present church.

T10 (fig. 2, 4, 5, 7, 8, 12)

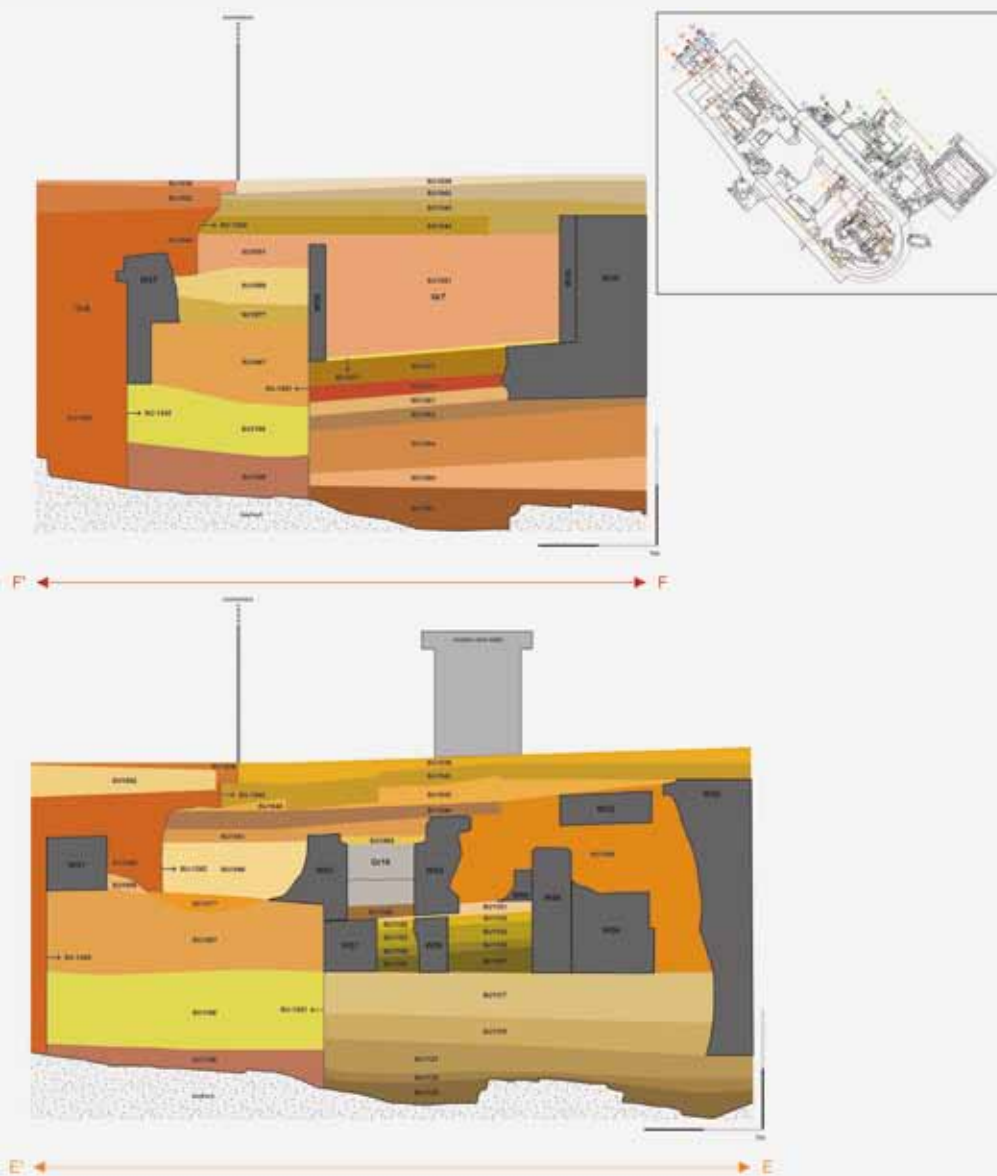
This trench was completely cleared during the 2015 season and provided, together with T11, the largest amount of factual and artefactual data in contexts that show no traces of modern disturbance.

The complex mass of stratification exposed in T10 (fig. 10) originates from two major multi-phased building events resulting in the rotunda construction and the *naos* of the present church. Only three layers associated with the rotunda subsist in this trench (SU1087, SU1100, SU1108). Lying beneath the surface generated during the levelling work prior to the erection of the naved church, with two of them (SU1100, SU1108) below the level of the foundation walls of the *naos*, these strata, al-



sl. 9. Situacija u SU1127 (V. Ghica).
 Fig. 9 Situation of SU1127 (V. Ghica).

sl. 10. Stratigrafski presjeci E-E', F-F' u sondi T10 (V. Ghica).
 Fig. 10 Stratigraphic cross-sections E-E', F-F' in trench T10 (V. Ghica).

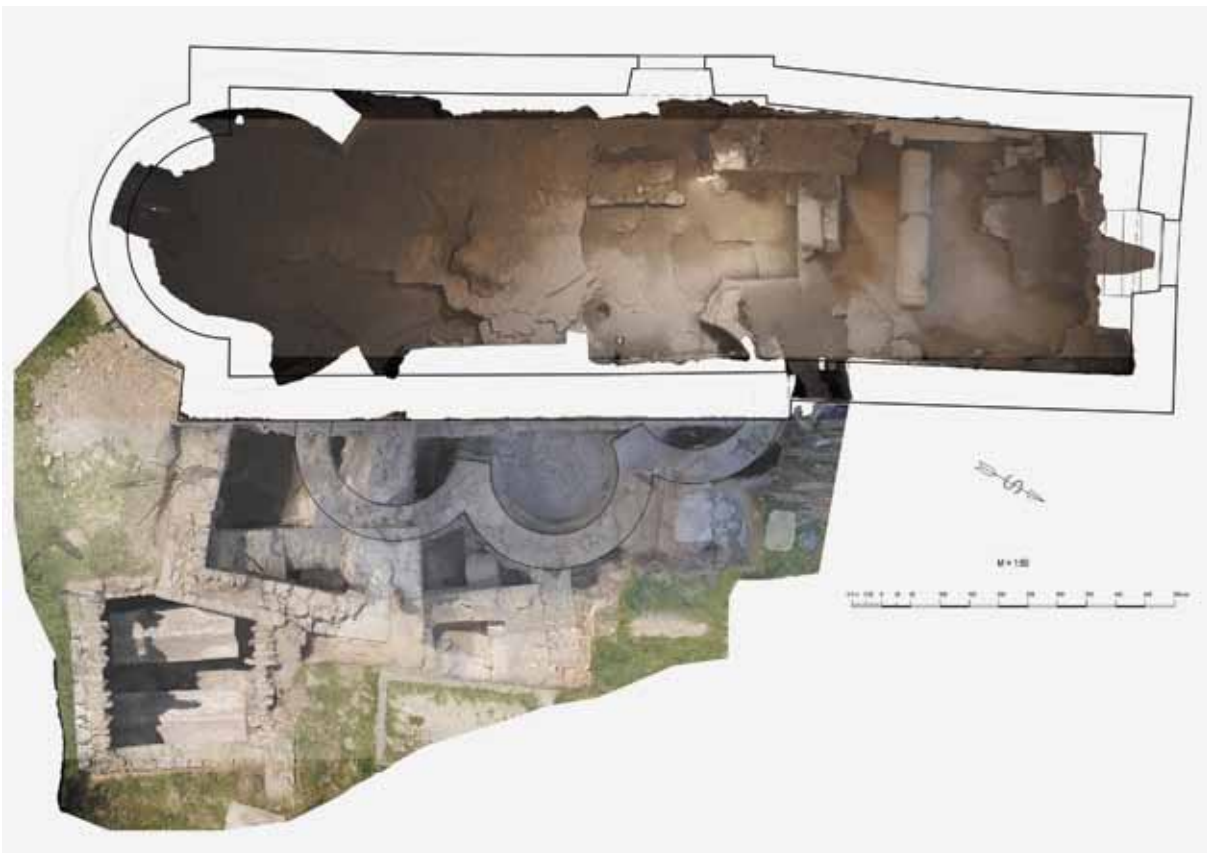




sl. 11. Greda oltarne ograde BR2015723 (A. Z. Alajbeg)
Fig. 11 Fragment of altar screen gable BR2015723 (A. Z. Alajbeg).

pronađen je dio grede oltarne ograde sa zanimljivom spojnom konstrukcijom. Greda je bila ukrašena ranosrednjovjekovnim motivima („troprutim kukama“) i s posvetnim natpisom (...IERI ROCAVI). Cjelovita je i u izvrsnom stanju (BR 2015723, SU 1100; sl. 11), kao i tri manja ukrašena arhitektonska elementa od vapnenca (BR 2015284, BR 2015720, BR 2015721). Datacija ovih nalaza predstavlja

though disturbed at a later stage, are related to the collapse of rotunda's walls and altar screen. Whilst the diagnostic pottery shards have little chronostratigraphical relevance (SU1087 features a variety of fragmentary ceramic ware, from a Republican period *orlo bifido* plate to African and Eastern Mediterranean amphorae of the 5th to 6th centuries), an element of altar screen gable decorated with early



sl. 12. Vertikalni ortofoto dijelova iskopanih 2014. i 2015. napravljen u Lidaru (M. Žabčić).
Fig. 12 Lidar-derived vertical orthophoto of the areas excavated in 2014 and 2015 (M. Žabčić).



sl. 13. Sonda T 10 nakon iskopavanja, pogled prema jugoistoku (A. Milošević).

Fig. 13 Trench T10 after excavation; view SE (A. Milošević).

mediaeval motifs and bearing a dedicatory inscription (JIERI ROCAVI), complete and in an excellent state of preservation (BR2015723, SU1100; fig. 11), as well as three smaller limestone decorated architectural elements (BR2015284, BR2015720, BR2015721) provide a *terminus a quo* in the 9th century for the collapse of mural elements of the rotunda. However, the early Romanesque decorated limestone fragment, datable to the 11th century and found during the 1959 season in an undocumented, yet likely stratigraphically similar, context⁴, leaves the discussion open about this *terminus*.

The structure that can be assigned to the rotunda monument in this trench is a large circular (three quadrants of a circle) apse built atop the bedrock (W51; fig. 8, 12). Although the inner face of the apsidal wall could not be fully cleared due to the risks inherent in its complete exposure, a test opening made in its central part suggests the absence of a bay. Preserved at a maximum height of 215 cm at its SW end, the inner face of the apse is fitted at its widened base with a 47-70 cm-high ledge (fig. 13), a feature shared by all the apses revealed so far.

terminus a quo za urušavanje zidova rotunde u 9. stoljeću. No ranoromanički ukrašeni fragment od vapnenca, datiran u 11. stoljeće, pronađen tijekom Gunjačinih iskopavanja, 1959. godine, u nedokumentiranom, ali vjerojatno stratigrafski sličnom kontekstu⁴, ostavlja diskusiju o datiranju urušavanja rotunde otvorenom.

Zid iz ove sonde, koji se može pripisati rotundi, je i velika kružna (tri četvrtine kruga) apsida izgrađena izravno na kamenom živcu (W 51; sl. 8, 12). Iako se unutrašnje lice apsidalnog zida nije moglo u potpunosti istražiti zbog ugrožavanja statike apside postojeće crkve, probna sonda napravljena u središnjem dijelu pokazuje dio unutrašnjeg zidnog plašta bez vrata u tom dijelu. Jugozapadni dio zida apside rotunde sačuvan je do visine od 215 cm, a leži na proširenoj temeljnoj stopi visine 47 – 70 cm (sl. 13), što je karakteristika svih do sada otkrivenih apsida bribirske rotunde. Ova temeljna stopa, koja u kontinuitetu teče duž baze unutrašnjih zidova, na nekoliko mjesta ima sačuvane tragove žbuke debljine 2 – 4 cm, koji vjerojatno označavaju visinu ožbuknog poda rotunde.

⁴ S. GUNJAČA, *Nalaz srednjovjekovnih arhitektura na Bribiru*, *Starohrvatska prosvjeta* ser. 3, vol. 10, Split 1968, p. 235, pl. 2.

⁴ S. GUNJAČA, *Nalaz srednjovjekovnih arhitektura na Bribiru*, *Starohrvatska prosvjeta*, ser. 3, sv. 10, Split, 1968, str. 235, sl. 2.



sl. 14. Fragment natpisa sa sarkofaga BR 2015727 (A. Z. Alajbeg).

Fig. 14 Inscribed sarcophagus' wall fragment BR2015727 (A. Z. Alajbeg).

Ostala stratigrafija u T 10 odnosi se na arheološke slojeve u naosu, a može se podijeliti na tri funkcionalno definirane skupine u horizontalnim i vertikalnim slojevima: sloj koji prethodi gradnji, sloj ispod podnice i sloj povezan s podnicom.

U prvu kategoriju spadaju dvije serije često ekvivalentnih slojeva s kojima graniči sloj zapune SU 1241 (sl. 10), a čiji spoj označava prodore u već postojeće nasipe zemlje (SU 1108, SU 1100, SU 1087) prije postavljanja temeljnih zidova naosa današnje crkve, kao i tlo nivelirano prije njene gradnje na koje je postavljen sloj ispod podnice sa strukturalno povezanim sa svetištem. Ovo su nepovezani i međusobno izolirani slojevi koji nastaju kao posljedica niveliranja terena. Veliki broj slojeva koji je nastao niveliranjem, može se vjerojatno objasniti mehanikom i sastavom tla. Ulomci keramike identificirani u ovim stratigrafskim kontekstima razbacani su bez reda i mogu se datirati od 2. do 5. stoljeća.

Druga skupina stratigrafskih jedinica povezana je sa strukturama svetišta pronađenim u sloju ispod podnice današnje crkve, a to su: *confessio* i dva privilegirana groba u svetištu (Gr 7, Gr 16), kao i druga dva groba locirana uzduž bočnih zidova naosa (Gr 8, Gr 12). Ovima se mogu dodati i temeljni zidovi naosa crkve sv. Joakima i Ane (W 15, W 19, W 30). Zajednička karakteristika svih ovih struktura je upotreba spolija koji su pripadali rotundi i njezinom kamenom namještaju ili drugim građevinama iz rimskog doba. Među ovim recikliranim blokovima vrijedi spomenuti ulomak stranice sarkofaga od va-



sl. 15. Fragmenti tranzene ili perforiranog pluteja BR 2015720 i BR 2015721 (A. Z. Alajbeg).

Fig. 15 Pluteus fragments BR2015720 and BR2015721 (A. Z. Alajbeg).

This ledge, which runs uninterruptedly along the base of the inner walls and shows in several places traces of a 2-4 cm thick layer of mortar, marks the height of rotunda's mortared floor.

The rest of the stratigraphy in T10 can be divided into three functionally defined groups of both horizontal and vertical strata related to the *naos*: pre-foundation soil, subfloor and floor-related.

To the first category belong two series of often-equivalent layers bordered by the negative unit SU-1241 (fig. 10), the interface marking out the cut made in the pre-existing deposits (SU1108, SU1100, SU1087) prior to setting the wall foundation of the *naos* as well as the pre-foundation levelled soils on which were constructed the subfloor features associated with the sanctuary. These are non-lenticular, clearly anthropic, layers resulting from a levelling operation. The large number of strata necessitated by the levelling work is probably explainable by soil mechanics. The ceramic shards identified in these stratigraphic units, datable to the 2nd to 5th centuries, are out of original context.

The second block of stratigraphic units is connected with the subfloor structures of the sanctuary. It consists of a *confessio* and two privileged tombs in the sanctuary (Gr7, Gr16), along with two other tombs located along the sidewalls of the *naos* (Gr8, Gr12). To these should be added the foundations of the *naos*' walls (W15, W19, W30). A feature shared by all these built structures is the use of *spolia* belonging either to the rotunda building and its internal furnishings or to other edifices of Roman period. Embedded in the foundation walls of



sl. 16. Fragmenti obojene žbuke na zidovima W 59 i W 33 (gore) i W 34 (dolje) (A. Milošević).

Fig. 16 Fragments of painted plaster on walls W59 and W33 (top) and W34 (bottom) (A. Milošević).

the present church or scattered in fills, among these reused blocks are a limestone fragment of sarcophagus wall containing two inscriptions, one of which mentions JIMIRO DUCE (BR2015727, SU1051; fig. 14)⁵ and two limestone fragments of lattice-work belonging to a perforated *pluteus* or *transenna* (BR2015720, W30; BR2015721, SU1050; fig. 15). The relative chronology of these subfloor structures cannot be entirely clarified. However, the positioning of the altar tomb Gr16 perpendicularly over the *confessio* (fig. 4, 5, 7) determines that this operation involved the reshaping of the latter. W54 belonging to Gr16 is built atop and after the partial demolition of W59 (the painted plaster visible on the sidewalls of the *loculus* – W33 and W34 – could still be observed on a small area of W59, fig. 16). This *sub altare* installation (fig. 17), including its NW end, on top of which Gr16 had been constructed, was found empty. Unlike Gr7, devoid of human remains but

⁵ After the excavations, two other inscribed fragments belonging to the same sarcophagus were identified in the Bribir *lapidarium*.



sl. 17. *Confessio* tijekom iskopavanja (A. Milošević).
Fig. 17 *Confessio* during excavation (A. Milošević).

pnenca s natpisima na dvjema ploham. Na jednoj užoj, između ostaloga se čita ...IMIRO DUCE (BR 2015727, SU 1051; sl. 14)⁵. U blizini su pronađena i dva ukrašena vapnenačka ulomka koji predstavljaju dio perforiranog pluteja ili tranzene (BR 2015720, W 30; BR 2015721, SU 1050; sl. 15). Manji ulomak bio je ugrađen u temeljni dio južnoga zida crkve sv. Joakima i Ane, ali bez logičnog konteksta. Relativna kronologija ovih struktura iz slojeva ispod podnice ne može se u potpunosti razjasniti. No položaj oltarnoga groba Gr 16, postavljenog okomito na *confessio* (sl. 4, 5, 7), ukazuje kako je konstrukcija groba preoblikovala *confessio*. W 54 koji je iskorišten kao dio Gr 16, napravljen je iznad W 59, nakon njegova djelomičnog rušenja. Obojena žbuka vidljiva na bočnim zidovima *loculusa* – W 33 i W 34 – još uvijek se mogla vidjeti na malom dijelu W 59 (sl. 16). Ova instalacija *sub altare* (sl. 17) – uključujući njezin sjeverozapadni dio na čijem je

⁵ Naknadno su iz lapidarija na Bribirskoj glavici izdvojena još dva ulomka istoga sarkofaga s dijelovima istih natpisa koji se izravno ne spajaju.



sl. 18. Nalazi iz groba 16: 1. kalež BR 2015783;
2. patena BR 2015993 (A. Z. Alajbeg).

Fig. 18 Findings from the grave Gr16: 1 chalice
BR2015783; 2 paten BR2015993 (A. Z. Alajbeg).

vrhu napravljen Gr 16 – bila je prazna. Gr 7 nije sadržavao ljudske ostatke, ali u njegovom nasutom materijalu pronađen je gore navedeni ulomak BR 2015727. Oltarni grob Gr 16 zatečen je nedirnuto, a među kosturnim ostacima najmanje 6 odraslih osoba, bili su kositreni kalež i patena (BR 2015783, HRU 1095, sl. 18.1-2)⁶. Svi zidovi pronađeni između temelja svetišta i zidova naosa postupno su demontirani, kako bi se mogli istražiti zidovi rotunde.

⁶ Dio još jednoga kositrenog kaleža sličnih stilskih odlika na Bribiru je pronađen u vrijeme Marunovih istraživanja, no nestao je u ratnim razaranjima Drugoga svjetskog rata (usp. S. GUNJAČA, *Strateško i historijsko-arheološko značenje Bribira*, *Starohrvatska prosvjeta*, ser. 3, sv. 10, Split, 1968, str. 211, sl. 3).

in the fill of which was recovered the abovementioned inscribed block BR2015727, the altar tomb Gr16 was intact, containing skeletal remains belonging to at least six adult individuals, a tin chalice and a paten (BR2015783, BR2015993, HRU1095, fig. 18.1-2)⁶. All the structures located between the foundations of the sanctuary and *naos* walls were eventually dismantled in order to allow the examination of rotunda's walls.

The third group of layers is composed of three successive floors (SU1044, SU1042, SU1039) and correlated fills. Both categories featured a significant content of reused blocks.

T11 (fig. 2, 4, 5, 7, 8, 12)

The stratigraphic record uncovered in T11 can be distinguished as two groups: one is characterised by a compact subfloor funerary area and the other composed of pre-existing features and deposition layers.

Notwithstanding the difficulty in interpretation, the second, lower, group, represented chiefly by built features set directly on the bedrock surface,

⁶ Another tin chalice was found on Bribirska glavica by Lujo Marun, but it was lost during the Second World War (cf. S. GUNJAČA, *Strateško i historijsko-arheološko značenje Bribira*, *Starohrvatska prosvjeta* s. 3, 10, Split 1968, p. 211 and pl. 3).



sl. 19.1. Zid W 42 (A. Milošević).

Fig. 19.1 Wall W42 (A. Milošević).

sl. 19.2. Zidovi W 40 i W 42 i grob Gr 15 (A. Milošević).

Fig. 19.2 Walls W40 and W42 and grave Gr15 (A. Milošević).

sl. 19.3. Zid W 40 tijekom razgradnje (A. Milošević).

Fig. 19.3 Wall W40 during dismantling (A. Milošević).

sl. 19.4. Zid W 42 tijekom razgradnje (A. Milošević).

Fig. 19.4 Wall W42 during dismantling (A. Milošević).

sl. 19.5. Dva fragmenta monumentalne natpisne grede pronađene u W 40 i potom spojene (A. Milošević).

Fig. 19.5 Two fragments of a *spolium* recovered from W40 and reconnected (A. Milošević).

shows no direct, physical connection with the rotunda monument. Several massive concrete-bound *spolia* (fig. 19.3, 19.5)⁷, including the late antique, probably early Christian, impost capital of a square-

⁷ Amongst these, it is worth mentioning a long marble block (265x50x60 cm) broken into two pieces and damaged in the lower part, which was embedded in W40 (fig. 19.3, 19.5). After the dismantling of this wall, the two fragments were moved in the midst of T11, where they were tentatively reconnected. On the front side of the block there is a simple *tabula ansata* surrounding an inscription of which only the traces of

Treća skupina stratigrafskih konteksta u T 10 sadrži tri uzastopne podnice (SU 1044, SU 1042, SU 1039) i s njima povezani nasuti materijal. Obje skupine sadržavale su značajan udio ponovo upotrijebljenih kamenih blokova.

T II (sl. 2, 4, 5, 7, 8, 12)

Stratigrafski podatci pronađeni u T 11, mogu se podijeliti u dvije skupine. Prva sadrži kompaktno ukopno područje ispod podnice postojeće crkve sv. Joakima i Ane, a ispod nje nalazila se druga u koju spadaju svi kronološki stariji pokazatelji i nasuti slojevi.



sl. 20. Kapitel s bazom ovalnoga četvrtastog presjeka BR 2015718 (A. Z. Alajbeg).

Fig. 20 Impost capital of a square-section mullion BR2015718 (A. Z. Alajbeg).



sl. 21. Brončane zdjele, unutrašnjost i vanjšina, BR 2015687 (A. Z. Alajbeg).

Fig. 21 Bronze bowls, interior and exterior BR2015687 (A. Z. Alajbeg).

Iako je vrlo teška za interpretaciju, ova druga, stratigrafski dublja skupina, karakterizirana je građevinskim konstrukcijama postavljenim direktno na živac i nije direktno povezana s rotundom. Tvori ih nekoliko masivnih antičkih spolija (sl. 19.3, 19.5) povezanih tvrdom žbukom⁷, a među njima je i vjerojatno starokršćanski kapitel (BR 2015718, sl. 20). Te su konstrukcije oblikovale dva paralelna zida (W 40, W 42) maksimalne visine od oko 130 cm (sl. 7). Iako je njihovo razgraničenje problematično, blokovi postavljeni jugozapadno od zida W 42 (sl. 7, 19.1, 19.4) mogli bi ukazivati na originalne istočne završetke ovih dvaju zidova. Štoviše, ovi kameni

⁷ Među njima je zanimljiv jedan dugački mramorni blok (265 x 50 x 60 cm) prelomljen na dva dijela i oštećen u donjoj zoni. Bio je uzidan u temelj sjevernoga zida W40 (sl. 19.3, 19.5). Nakon razgradnje toga zida oba dijela su pomaknuta u sredinu T 11 gdje su provizorno spojena. Na njegovoj prednjoj strani je jednostavna *tabula ansata* s radiranim natpisom na kojem se nazire tek nekoliko slova (sl. 19.5). Tabula je uokvirena profilacijom. Na krajnjim rubovima blok je bio sužen, što upućuje na pretpostavku da je tim dijelovima bio ugrađen u zid, vjerojatno iznad ulaza u neku monumentalnu rimsku građevinu (hram?) koja se nalazila na istom ovom položaju. Nakon završetka istraživanja ostao je zatrpan ispod poda crkve. Prethodno je napravljen gipsani otisak njegovog natpisnog dijela.

section mullion (BR2015718, fig. 20), form two parallel walls (W40, W42) of a maximum height of *c.* 130 cm (fig. 7). Although their delimitation is to some extent problematic, blocks situated to the SW of the wall W42 (fig. 7, 19.1, 19.4) could indicate that these two walls preserve their original east endings. Furthermore, these stone blocks tend to support the hypothesis of a connecting wall joined to W42 running SW-NE. The function of these two parallel walls, whether never completed or destroyed tower or gate, in which a grave (Gr15) was later encased, could only be determined by further excavations in T7 and along the walls of the *pronaos*, outside the modern church.

Also set on the bedrock, a grave (Gr17; fig. 8) containing skeletal remains of a minimum of ten individuals was identified below and cut by the foundation of the N sidewall of the *pronaos*. Against the

a few letters are still visible (fig. 19.5). The block was narrowed at its longitudinal edges, which could indicate that it was originally built in a wall, probably positioned over the entrance of some monumental building (temple?) that existed at this same place. After the excavations, the block was left on the bedrock, but a plaster imprint of its front side has been taken before the setting of the new floor in the church.



sl. 22. Predmet od rožine BR 2015464 (A. Z. Alajbeg).
Fig. 22 Antler container BR2015464 (A. Z. Alajbeg).

outer face of the only wall of this grave cleared during the dig (W75) were found two triangular bronze bowls (BR2015687; fig. 21), whilst a decorated T-shaped antler object of the type known in specialised literature as “salt container” (BR2015464; fig. 22) was discovered in the fill of the grave, together with a damaged gold early Byzantine earring (BR2015996, SU1099; fig. 23). Worth noting is the location of the grave in relation to the rotunda: Gr17 is situated against and parallel to the wall W66, which, as shown below, is connected to one of the apses of the rotunda (W23). Traces of a lime-mortared floor visible on a large slab embedded horizontally into the base of the S sidewall of the *pronaos* indicate that the area delimited by the walls W68, W44, W23, W66, W40 and W42 was an enclosed space. The level of this floor coincides with the maximum height of the wall W75 belonging to the grave Gr17. Lastly, a second, lower circulation level, made of beaten clay covered with a thin layer of lime mortar, was found in the same area, preserved – to a maximum thickness of 20 cm – only under the walls W42 and W43, on the bedrock surface and covering the remains of the wall W10 (fig. 19.1-19.4).



sl. 23. Zlatna naušnica BR2015996 (A. Z. Alajbeg).
Fig. 23 Gold earring BR2015996 (A. Z. Alajbeg).

blokovi mogu poslužiti i kao podrška pretpostavci o postojanju poveznog zida spojenog s W 42 koji se pružao u pravcu jugozapad-sjeveroistok. Je li ovdje riječ o nedovršenom projektu ili uništenoj strukturi (zvoniku ili vratima flankiranim zidovima) – funkcija ovih dvaju paralelnih zidova, među kojima je pronađen i kasniji grob (Gr 15), ostaje upitna. Rješenje će možda pružiti dovršetak iskopavanja u T 7 i duž zidova pretprostora današnje crkve, koja još nisu ni u obimu ni u dubini, okončana.

Grob (Gr 17; sl. 8), u kojem su pronađeni ostatci najmanje deset osoba također je bio položen na živac te presječen temeljem sjevernoga bočnog zida pretprostora današnje crkve. Neposredno uz vanjski dio jedinog zida ovoga groba (W 75), pronađene su dvije trokutaste brončane posude (BR 2015687; sl. 21), dok je ukrašeni predmet od rožine u obliku slova „T”, poznat u stručnoj literaturi kao „posuda za sol“ (BR 2015464; sl. 22), bio u samom grobu, uz još jednu zlatnu, oštećenu naušnicu ranobizantskih osobina (BR2015996, SU1099; sl. 23). Značajno je dodatno analizirati situaciju u tome grobu u odnosu na rotundu. Gr 17 je lociran odmah do zida W 66 i paralelan je s njim, dok je W 66, kako ćemo pokazati kasnije, naslonjen na jednu od apsida rotunde (W 23). Ostatci podnice od vapnenastih ploča – prepoznatljivi u velikoj ploči postavljenoj vodoravno u temeljnu stopu južnog zida produžetka današnje crkve – ukazuju da je prostor omeđen zidovima W68, W44, W23, W66, W40 i W42 bio zatvoren. Razina ove podnice koincidira s maksimalnom visinom zida W75 koji je pripadao grobu



sl. 24. Stratigrafski presjeci I-I' u sondi T11 (Y. Béliiez, V. Ghica).

Fig. 24 Stratigraphic cross-section I-I' in trench T11 (Y. Béliiez, V. Ghica).

Gr 17. Naposljetku, u istoj zoni ispod tih ploča je sloj od nabijene gline, do maksimalne debljine od 20 cm. Sloj gline, pokriven tankim slojem vapnene žbuke, sačuvan je na više mjesta, a osobito ispod zidova W42 i W43, gdje je položen izravno na živac te je pokrivaostatke zida W10 (sl. 19.1-19.4).

Drugom, recentnijom skupinom stratigrafskih jedinica u T 11 dominira niz od pet grobova ugrađenih u zajedničku suhozidnu strukturu, koja se proteže cijelom širinom pretprostora. Svi grobovi orijentirani su prema uzdužnoj osi sadašnje crkve i zauzimaju oko $\frac{3}{4}$ toga prostora. Četiri groba (Gr 10, Gr 11, Gr 13, Gr 14; sl. 4, 5) su postavljena paralelno, dok peti (Gr 15) zauzima gore navedeni prostor između zidova W 40 i W 42. Četiri paralelna groba postavljena su na slojeve različitog sastava, 42 – 56 cm iznad zdravice (sl. 24). Svih pet grobova sadržavalo je veliku količinu osteološkog materijala. Broj osoba kreće se između 4 (Gr 10) i 38 (Gr 14). Austrijski carski krajcar iz 1887. godine (u optjecaju do 1899. godine), pronađen u Gr 10 (SU 1068), pruža jedini datum za datiranje ovog intenzivno korištenoga ukopnog prostora. Među materijalom iz

The other, higher, stratigraphic concentration in T11 is dominated by a group of five graves embedded in a solidary tight structure, made of dry stones and filling the whole width of the *pronaos*. All of them are oriented in the axis of the present church and occupy $\frac{3}{4}$ of the *pronaos*' space. Four of them (Gr10, Gr11, Gr13, Gr14; fig. 4, 5) are aligned in a row, whilst the fifth one (Gr15) occupies the space between the walls W40 and W42. The four parallel graves sit on layers of various composition, 42-56 cm above the geological substrate (fig. 24). These five graves yielded a large amount of osteological remains. The number of individuals varies between 4 (Gr10) and 38 (Gr14). An Austrian imperial *kreuzer* minted in 1887 (in circulation until 1899) recovered in Gr10 (SU1068) provides the only available date for the intensive reuse of this funerary space. Among the material retrieved in this stratigraphic cluster, we should mention a fragmentary monumental stone slab containing a 1st to 2nd century Latin inscription (BR2015703, found in W41; fig. 25) and a shaped block, possibly part of a frieze, bearing the fragmentary inscription]ATRIBU[(BR2015715, found in W46, fig. 26).



sl. 25. Kameni blok s fragmentom natpisa BR2015703
(A. Z. Alajbeg).

Fig. 25 Inscribed slab BR2015703 (A. Z. Alajbeg).

T13 (fig. 4, 5, 7, 8, 12)

This excavation square was cleared almost entirely in 1959 by Stjepan Gunjača⁸, hence the delimitations of T10 and T11 according to the perimeter of this trench. Except for two coins extracted from the main layer of the backfill (SU1040), an Aquileian *denarius* minted under Ludovico II di Teck (1412-1420) and an 18th century *gazzetta Dalma et Alban*, and a pedestal featuring a large 22 x 20 cm rectangular slot (probably part of the stone base, embedded in the floor, of the chancel *stipites*), the record of the area exposed in 1959 consists solely of built structures. Of the uncontaminated higher stratigraphy, only one double-layered subfloor grave (Gr12; fig. 4, 5) was not dug in 1959. It contained the skeletal remains of a minimum of 16 individuals.

On top of the geological substratum lie two groups of built structures, one related to the rotunda and another one pertaining to a pre-existing building.

⁸ S. GUNJAČA, Nalaz srednjovjekovnih arhitektura, p. 235.



sl. 26. Kameni blok s natpisom BR2015715
(A. Z. Alajbeg).

Fig. 26 Inscribed block BR2015715 (A. Z. Alajbeg).

ovoga stratigrafskog konteksta vrijedi spomenuti fragmentarni monumentalni latinski natpis iz 1. – 2. stoljeća (BR 2015703, pronađen u W 41; sl. 25) i oblikovani ulomak friza s fragmentarnim natpisom ...ATRIBU... (BR2015715, pronađen u W46, sl. 26).

T13 (sl. 4, 5, 7, 8, 12)

Ovu je sondu gotovo u potpunosti istražio Stjepan Gunjača 1959. godine⁸, pa su njezina razgraničenja s T 10 i T 11 određena shodno granicama Gunjačinog iskopavanja. U glavnom sloju nasutom nakon iskopavanja 1959. godine (SU 1040), pronađeni su samo zidovi. Izuzetak predstavljaju akvilejski *denarius*, kovan pod Ludovikom II. di Teckom (1412. – 1420.), venecijanska *gazzetta Dalma et Alban* i kameni blok na kojemu se nalazio veliki pravokutni otvor 22 x 20 cm, vjerojatno dio temeljne baze oltarne ograde (*stipites*) koja je bila ugrađena u podnicu. Od nekontaminiranih dijelova viših stratigrafskih slojeva, samo jedan dvoetažni grob ispod podnice (Gr 12; sl. 4, 5) nije istražen 1959. godine. Grob je sadržavao skeletne ostatke najmanje 16 osoba.

Iznad živca su se nalazile dvije skupine zidova, jedna neosporno kao dio rotunde, a druga se odnosila na građevinu koja se tu nalazila prije nje.

Djelomično su otkrivene dvije polukružne apside rotunde (W 65 i W 23 čija je druga polovica pronađena izvan crkve tijekom prošlogodišnje kampanje) i jedna četvrtasta koju tvore zidovi (W 25, W 44, W 45), smještena na sjeverozapadu, nasuprot velike kružne apside (W 51). Maksimalna visina

⁸ S. GUNJAČA, Nalaz srednjovjekovnih arhitektura, str. 235.

do koje su ovi zidovi sačuvani, mjerena od razine živca, varira od 25 (W 25, od kojeg je pronađena samo baza) do 207 cm (W 23). W 44, kao vjerojatni pročelni zid rotunde, sačuvan je u fragmentarnom stanju do maksimalne visine od 116 cm od živca. U gornjoj zoni toga zida, kao građevinski materijal bio je ugrađen ulomak okvira vrata (od dovratnika ili nadvratnika – sl. 12, 27). Ostatak četvrtaste apsida danas građevinski nije povezan sa zidovima susjednih polukružnih apsida (W23 i W65) jer su u tome dijelu tri zida rotunde (W44, W25, W45) potpuno demontirana u vrijeme gradnje fasade današnje jednobrodne crkve, tako da je od W25 sačuvan samo prvi red kamenja.

Po konstrukcijskim karakteristikama četvrtasta apsida se razlikuje od ostalih, što indicira pitanje jesu li zidovi W44, W25 i W45 – ili barem njihova temeljna stopa – bili originalni dijelovi neke starije građevine. Kako pokazuje debljina W44 (71 cm), ovi zidovi su deblji od zidova polukružnih apsida W21, W22 i W23 (57 cm), razlikuju se po sastavu njegovog vezivnog materijala kao i po načinu zidanja jer su u W44 upotrijebljeni veći blokovi kamenja.

Sondiranjem u sloju ispod temelja sjeveroistočnog zida zapadnog produženja današnje crkve i u blizini vanjskog lica zida W23, otkriven je dio još jednog zida (W66). On se načinom građenja podudara s W23 i proteže se približno paralelno sa sjeveroistočnim zidom produžetka nove crkve (sl. 7, 8). Zidovi W66 i W23 nisu konstruktivno povezani, što sugerira pretpostavku da je W66 rotundi dograđen.

Os rotunde pokazuje otklon od sjevera za 47°, što je identično orijentaciji susjedne građevine sjeveroistočno od današnjega groblja (ispod grobljanskog zida). Istraživana je 1970-tih godina i pokazuje orijentaciju *tipa C*, spomenutu u našem prošlogodišnjem izvješću (sl. 28)⁹. Razlika u visini živca izmjerena između središta velike (W 51) i središta četvrtaste „apside“ (W 44) je 76 cm (sl. 31). Nagib kamenoga živca unutar rotunde je značajno poništen višim utemeljenjem baze velike apsida W 51, za oko 72 cm (sl. 13) i manjih apsida na suprotnoj strani (primjerice, 30 cm u bazi W 44). Ovaj

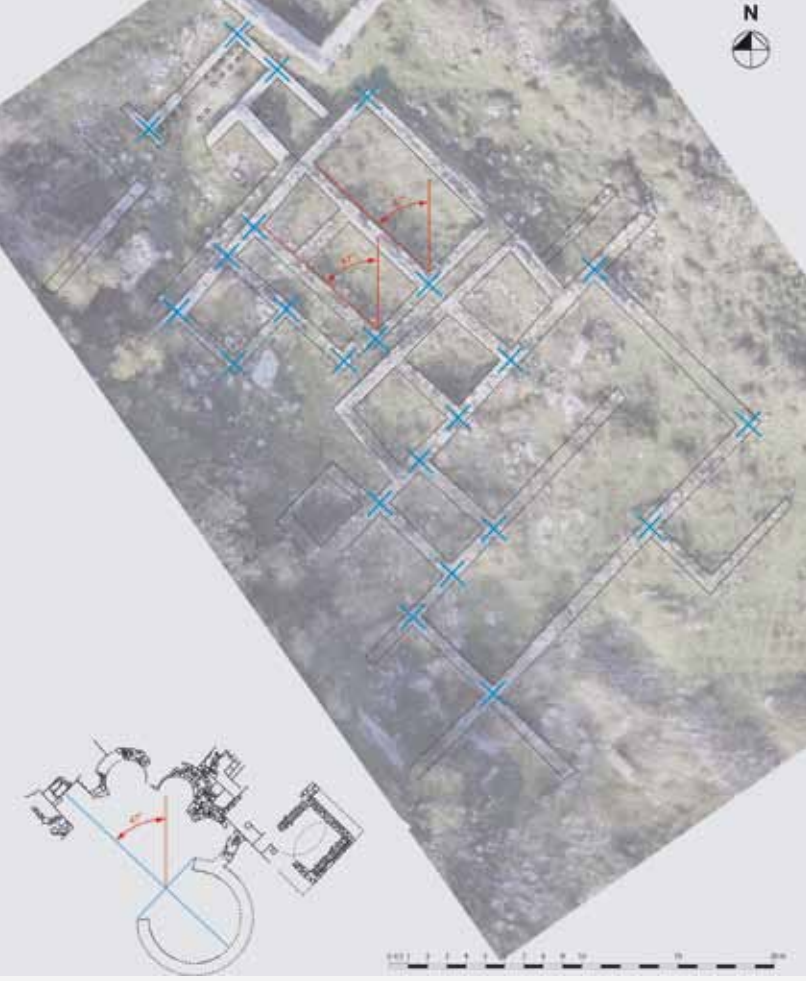
⁹ V. GHICA - A. MILOŠEVIĆ - D. DŽINO, Arheološki projekt *Varvaria / Breberium / Bribir* u 2014. godini / *Varvaria / Breberium / Bribir* Archaeological Project. The 2014 Excavation Season, *Starohrvatska prosvjeta*, ser. 3, sv. 42, Split, 2015, str. 32-33.



sl. 27. Zid W 44; pogled prema jugoistoku (A. Milošević).

Fig. 27 Wall W44; view towards SE (A. Milošević).

Belonging to the rotunda, two circular apses were partly uncovered (W65 and W23, half of which had been exposed during the last season) together with a rectangularly planned recess (W25/W44/W45) located to the NW, opposite to the large horseshoe-shaped apse (W51). The maximum height from the bedrock surface level to where these walls are preserved varies from 25 cm (W25, of which only the ledge subsists) to 207 cm (W23). W44, as possible front wall of the building, is currently preserved very fragmentarily to a maximum height of 116 cm from the bedrock level. From the highest row of stones extant in this wall survives only an ashlar block, whose shape and position (in the very centre of W44) suggest a threshold element (fig. 12, 27). At a certain point after the abandonment of the rotunda, possibly during the construction of the



sl. 28. Orijetacijski otklon *tipa C* na rotundi i susjednoj arheološkoj zoni (V. Ghica).

Fig. 28 Orientation *type C* visualised on the rotunda and the neighbouring archaeological area (V. Ghica).

present *naos*, the three walls of the recess (W44, W25, W45) were subjected to intentional dismantling in such a way that much of W25 is no longer extant, except for the first row of stones forming the ledge of this wall.

Several construction characteristics distinguish this space of rectangular plan and might invite the question of whether the walls W44, W25 and W45 – or the lower section of them – were originally part of an earlier building. As indicated by W44 (71 cm), these walls are thicker than the apses W21, W22 and W23 (57 cm) and the masonry displays a different quality of binding material as well as larger blocks (in W44). However, such hypothesis remains architecturally questionable and is not necessarily supported by the results of the OSL age of the soil lying beneath W25 (see below).

In addition to this recess, a sondage in the soil layer situated below the foundation of the NE wall of the *pronaos*, in the vicinity of the outer face of W23, revealed the section of a wall (W66) abutting W23 and running approximately parallel to the NE wall of the *pronaos* (fig. 7, 8). The masonry joint between W66 and W23 seems to suggest that the former results from a later stage of construction.



sl. 29. Građevinske strukture na živcu u sondama T10, T11 i T13; pogled prema sjeveroistoku (A. Milošević).

Fig. 29 Built structures laying on the bedrock in trenches T10, T11 and T13; view towards NE (A. Milošević).

zaključak se može izvesti znajući da istureni redovi zidanog kamena postavljenih na živcu, u bazi unutarnjeg dijela apsidalnih zidova, ponegdje sa značajnim ostacima žbuke, vjerojatno označavaju visinu podnice.

Tri su zanimljiva podatka identificirana ispod podnice rotunde: fragmentarni zid, od kojeg je sačuvan samo jedan red kamena koji je ostao u rascjepu živca kako bi kompenzirao razliku u visini (W 26; sl. 8, 12, 29); pravokutno oblikovani zidani blok (W 67) koji se nalazio ispod spoja W 45 i W 65 te rupa ovalnog četvrtastog oblika, veličine 20 x 20 x 10 cm, iskopana u živcu (sl. 12, 30). Odnos ovih fragmentarnih zidanih struktura i rotunde još uvijek nije razjašnjen, ali po svemu sudeći pripadaju nekoj ranijoj građevini.

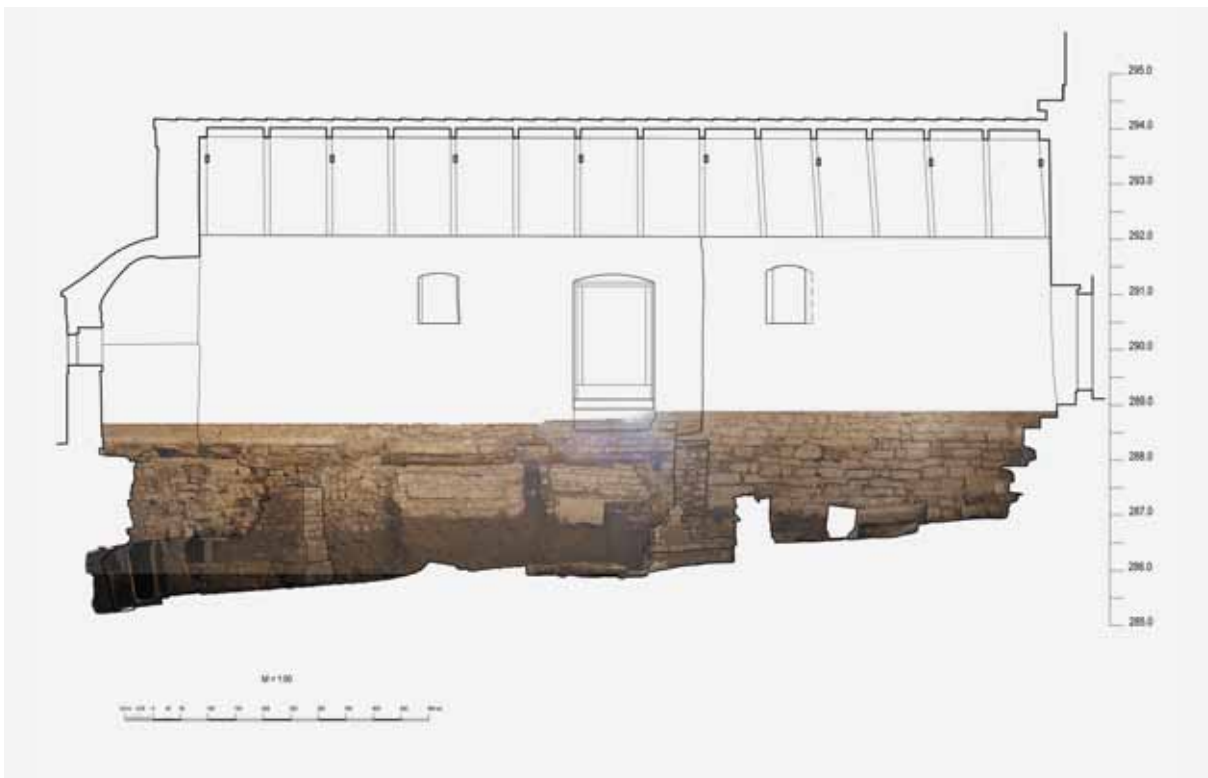
Otkrivanje velike istočne apside u T 10 nalagalo je uklanjanje W 14 u T 1, kao i nekih susjednih zidanih blokova koji su pripadali W 15, kako bi se otkrilo vanjsko lice W 51 prema sjeveru-sjeveroistoku. Spoj između apside W 51 i W 21 je time postao vidljiv. Na obama zidovima pronađeni su tragovi maltera i žbuke.



sl. 30. Rupa iskopana u živcu (V. Ghica).

Fig. 30 Hole excavated in the bedrock (V. Ghica).

The axis of the rotunda displays a 47° deviation from the north, the same orientation as the one of the adjacent buildings excavated in the 1970s to the NE of the modern cemetery (orientation type C mentioned in our previous report⁹; fig. 28). The difference of altitude of the bedrock measured between the centre of the large apse (W51) and the centre of the rectangular ‘apse’ (W44) is 76 cm (fig. 31). The



sl. 31. Vodoravni ortofoto struktura ispod poda crkve sv. Joakima i Ane nakon iskopavanja, izrađen u Lidaru (M. Žabčić).

Fig. 31 Lidar-derived horizontal orthophoto of the subfloor structures inside the church of Sts Joachim and Ann after excavation (M. Žabčić).

Građevne faze

Ova sezona rasvijetlila je detalje koji nam omogućavaju doradu obrisa kronologije građevnih faza koju smo definirali prošle godine. Ovdje ćemo se ograničiti na dodatke i ispravke u prošlogodišnjem izvješću.

Iskapanja u sondi T 9 otkrila su nove dijelove popločane podnice (SU 1008) velike dodane prostorije istražene u 2014. godini¹⁰. Ploče koje su joj

¹⁰ V. GHICA - A. MILOŠEVIĆ - D. DZINO, Arheološki projekt *Varvaria / Breberium / Bribir* u 2014., str. 21-23.

slope of the floor set inside the rotunda is substantially attenuated by a higher ledge at the base of the large apse W51 (72 cm, fig. 13) and shorter ones on the opposite side (for instance, 30 cm at the base of W44) (the projecting rows of stones situated on the bedrock surface, at the base of the inner face of

⁹ V. GHICA, A. MILOŠEVIĆ, D. DZINO, Arheološki projekt *Varvaria / Breberium / Bribir* u 2014. godini / *Varvaria / Breberium / Bribir* Archaeological Project. The 2014 Excavation Season, *Starohrvatska prosvjeta* s. 3, sv. 42, Split, 2015, p. 32-33.

the apsidal walls, some of which retain significant traces of mortar, mark the altitude of the floor).

Three features were identified under the floor level of the rotunda. The first is a fragmentary wall, of which only one row of stones survives in a split of the bedrock compensating its difference of level (W26; fig. 8, 12, 29). Then, there is an apron-like large rectangular shaped block lying underneath the joint W45/W65 (W67), and lastly a sub-rectangular hole 20 x 20 cm and *c.* 10 cm deep excavated in the bedrock (fig. 12, 30). The relationship of these structures to the rotunda building is still under study, but the first two belong in all likelihood to a pre-existing construction.

Finally, the recovery of the large horseshoe-shaped apse in T10 prompted the dismantling, in T1, of W14 and of some adjacent blocks belonging to W15 in order to expose the outer face of W51 to N-NE. The joint between the apses W51 and W21 was thus rendered visible. Both walls retain traces of mortar and plaster in this area.

Building phasing

This season has brought to light features that permit us to refine the outline we gave last year of the building phases in the current excavation area. We limit ourselves here to *addenda et corrigenda*.

The dig in the trench T9 revealed new sections of the slabbed floor (SU1008) of the large annexe excavated in 2014¹⁰. Slabs belonging to it could be identified this year to the E of the corner W2/W3 of the smaller adjoining subsidiary room, determining that the latter was surrounded in this perimeter by the space of the larger annexe. The building phases 4 and 5¹¹ should therefore be interchanged.

This year's excavation did not allow us to further determine the relative chronology of the building phases 6-7, as outlined in our previous report¹². However, examining the inner face of the foundation walls of both the *naos* and the *pronaos* validates the hypothesis of the latter constituting a later addition to the former. Based initially on the different length of the *naos*' sidewalls and on the devia-

pripadale vidjele su se i ove godine istočno od ugla koji zatvaraju zidovi manje susjedne pomoćne prostorije W 2 i W 3, pokazujući kako je veća prostorija okruživala manju. Redoslijed građevnih faza 4 i 5¹¹, prema tome, treba biti zamijenjen.

Ovogodišnja iskopavanja, nažalost, nisu omogućila daljnje razjašnjavanje relativne kronologije građevnih faza 6 – 7, ocrtanih u prošlogodišnjem izvješću¹². No ispitivanje unutrašnje strane temeljnih zidova crkvenog broda i njegovog pretprostora potvrđuje pretpostavku kako je taj pretprostor kasnija dogradnja. Ova pretpostavka je temeljena u početku na različitoj duljini bočnih zidova naosa i odstupanja između osi naosa i pretprostora (2° u odnosu na sjeveroistočni i 3,5° na jugozapadni zid). Takav kronološki građevni slijed je i nadalje potvrđen različitim tehnikama građenja i zidanja koje su vidljive u temeljima u ovim dvama dijelovima današnje crkve sv. Joakima i Ane (sl. 31), kao i položajem naosa koji leži direktno na ostatcima rotunde i ima identičnu orijentaciju i duljinu kao i rotunda. Ovakav slijed građevnih faza također može objasniti namjerno uklanjanje značajnih dijelova zidova rotunde W 25 i W 44, smještenih ispod područja gdje se nalazio pretpostavljeni prednji zid prve jednobrodne crkve.

Faze namjene i korištenja prostora

Iskopavanja 2015. godine otkrila su dokaze koji omogućuju daljnje definiranje apsolutne i relativne kronologije ovog mikro-lokaliteta.

Kasnoantičko doba, pretpostavljeno prošle godine¹³ kao vrijeme gradnje rotunde, sada je potvrđeno. Orijeantacija rotunde, identična rimskoj građevini sjeveroistočno od modernoga groblja (47° sjever – orijentacija tipa C¹⁴; sl. 28), upućuje na nešto mlađi datum njene konstrukcije i njeno inkorporiranje u postojeće rimsko urbano tkivo. Različiti detalji u tehnikama gradnje, vidljivi u zidovima mauzoleja

¹⁰ V. GHICA, A. MILOŠEVIĆ, D. DZINO, Arheološki projekt *Varvaria / Breberium / Bribir* u 2014., p. 21-23.

¹¹ Cf. V. GHICA, A. MILOŠEVIĆ, D. DZINO, Arheološki projekt *Varvaria / Breberium / Bribir* u 2014., p. 21-27.

¹² V. GHICA, A. MILOŠEVIĆ, D. DZINO, Arheološki projekt *Varvaria / Breberium / Bribir* u 2014., p. 27-29.

¹¹ Cf. V. GHICA - A. MILOŠEVIĆ - D. DZINO, Arheološki projekt *Varvaria / Breberium / Bribir* u 2014., str. 21-27.

¹² V. GHICA - A. MILOŠEVIĆ - D. DZINO, Arheološki projekt *Varvaria / Breberium / Bribir* u 2014., str. 27-29.

¹³ V. GHICA - A. MILOŠEVIĆ - D. DZINO, Arheološki projekt *Varvaria / Breberium / Bribir* u 2014., str. 20-21.

¹⁴ V. GHICA - A. MILOŠEVIĆ - D. DZINO, Arheološki projekt *Varvaria / Breberium / Bribir* u 2014., str. 32-33.

i rotunde, upućuju na razmišljanje u istom pravcu. Ova opažanja podržana su arheometrijskim podacima. Tri primjerka pougljenog organskog materijala, pronađena izravno na živcu ispod nivoa podnice rotunde (SU 1021, SU 1126), postavljaju *terminus a quo* za gradnju rotunde u sredinu 3. stoljeća¹⁵. Fragment kosti jedne od osoba iz groba Gr 17 odredio je *terminus ad quem*, a to je, sudeći po rezultatima analize, sredina 6. stoljeća¹⁶. Naime, smještaj Gr 17 uza zid koji se proteže paralelno sa sjevernim bočnim zidom pretprostora današnje crkve i koji ga je djelomično preslojio (sl. 8) ukazuje da je taj grob mlađi od zida W 66 pa, prema tome, starost kostiju iz toga groba predstavlja *ante quem* za građevinu kojoj W 66 pripada, a koja jedno vrijeme funkcionira zajedno s rotundom. Mada je teoretski moguće, teško je vjerovati u kasnije, sekundarno sahranjivanje ovih skeletnih ostataka iz više razloga. Konačno, ove kronološke orijentire potvrđuje i procjena OSL starosti uzorka tla uzetog iz prostora između živca i prvog reda kamenja uza zid W 51 (OSL 6). Bez obzira na široku kronologiju dobivenu mjerenjem luminescencije ovog uzorka (1985 ± 470 BP), vrijeme formiranja horizonta u tlu ispod zida W 51 ne daje datum mlađi od početka 6. stoljeća. Drugi uzorak tla (OSL 4), koji dolazi iz sličnog konteksta uz W 25, pruža mnogo raniji datum (2380 ± 355 BP), što sugerira da pravokutna „apsida“ rotunde ili dijelovi tla iz procjepa u živcu ispod nje (ako nisu bili poremećeni), pripadaju nekoj starijoj građevini. Mjerenja luminescencije ovaj uzorak datira u 1. stoljeće prije Krista. To nije nužno i datum izgradnje W 25 koji je vjerojatno originalno građen kao dio rotunde. Usklađivanje ovih datuma s vidljivim arhitektonskim elementima bit će jedna od zadata budućih iskopavanja. Sigurno je u ovom trenutku da je uzorak OSL 4 uzet iz istoga stratigrafskog nivoa na kojemu bi se mogao nalaziti i W 26, koji je osta-

tion between the axes of the *naos* and the *pronaos* (2° for the NE and 3.5° for the SW wall of the *pronaos*), this building sequence is further corroborated by the distinct types of masonry and discernible in the foundations of the two sections of the modern church (fig. 31) as well as by the position of the *naos*, which lies exactly atop the remains of the rotunda and has the same length and orientation as it. Such phasing could account for the deliberate dismantling of substantial parts of the rotunda walls W25 and W44, located underneath the area where the presumptive front wall of the first nave church would have lain.

Occupation phasing

The 2015 season has made available evidence that contributes substantially to further defining the absolute and the relative chronology of the area under study.

The late antique horizon hypothesised last year¹³ for the erection of the rotunda is now confirmed. The orientation of the monument, identical to that of the Roman period buildings located to the NE of the modern cemetery (47° N – orientation type C¹⁴; fig. 28), points to both the early date of the construction and its incorporation into the Roman urban fabric. Various details of construction technique apparent in the walls of both the mausoleum and the rotunda point in the same direction. These observations are supported by archaeometrical data. Three charcoal samples extracted from two uncontaminated layers situated directly on the bedrock (SU1021, SU1126), below the floor of the rotunda, provide a *terminus a quo* for the erection of the building in the mid-3rd century¹⁵. On the other hand, the radiocarbon date

¹⁵ Za BR 201464 (SU 1021, T1): Beta-385371 – 1840 ± 30 BP ($\delta^{13}\text{C}$ –23.8 ‰vs PDB), Cal AD 85-240 (Cal BP 1865-1710) (95%, 2 σ), Cal AD 130-230 (Cal BP 1820-1720) (68%, 1 σ). Za BR 2015621b (SU 1126, T13): Beta-411794 – 1900 ± 30 BP ($\delta^{13}\text{C}$ –24.1 ‰vs PDB), Cal AD 55-135 (Cal BP 1895-1815) (95%, 2 σ), Cal AD 70-130 (Cal BP 1880-1820) (68%, 1 σ). Za BR 2015622 (SU 1126, T13): Beta-411795 – 1850 ± 30 BP ($\delta^{13}\text{C}$ –24.4 ‰vs PDB), Cal AD 80-240 (Cal BP 1870-1710) (95%, 2 σ), Cal AD 125-220 (Cal BP 1825-1730) (68%, 1 σ).

¹⁶ Beta-437577 – 1580 ± 30 BP ($\delta^{13}\text{C}$ –18.5 ‰vs PDB), Cal AD 405-550 (Cal BP 1545-1400) (95%, 2 σ), Cal AD 420-540 (Cal BP 1530-1410) (68%, 1 σ).

¹³ V. GHICA, A. MILOŠEVIĆ, D. DŽINO, Arheološki projekt *Varvaria / Breberium / Bribir* u 2014, p. 20-21.

¹⁴ V. GHICA, A. MILOŠEVIĆ, D. DŽINO, Arheološki projekt *Varvaria / Breberium / Bribir* u 2014, p. 32-33.

¹⁵ For BR201464 (SU1021, T1): Beta-385371 – 1840 ± 30 BP ($\delta^{13}\text{C}$ –23.8 ‰vs PDB), Cal AD 85-240 (Cal BP 1865-1710) (95%, 2 σ), Cal AD 130-230 (Cal BP 1820-1720) (68%, 1 σ). For BR2015621b (SU1126, T13): Beta-411794 – 1900 ± 30 BP ($\delta^{13}\text{C}$ –24.1 ‰vs PDB), Cal AD 55-135 (Cal BP 1895-1815) (95%, 2 σ), Cal AD 70-130 (Cal BP 1880-1820) (68%, 1 σ). For BR2015622 (SU1126, T13): Beta-411795 – 1850 ± 30 BP ($\delta^{13}\text{C}$ –24.4 ‰vs PDB), Cal AD 80-240 (Cal BP 1870-1710) (95%, 2 σ), Cal AD 125-220 (Cal BP 1825-1730) (68%, 1 σ).

of a bone fragment belonging to one of the skeletons deposited in Gr17 offers a *terminus ad quem* in mid-6th century¹⁶. Indeed, as its position (against W66, the wall identified below and running parallel to the N sidewall of the *pronaos*; fig. 8) indicates, Gr17 postdates W66 and, consequently, the age of the bone sampled in this grave constitutes an *ante quem* for the structure to which W66 belongs as well as, obviously, for the rotunda. Whilst not theoretically excluded, a late re-inhumation of the skeletal remains in question is, for many reasons, highly improbable. Ultimately, an OSL age estimate for soil parent material sampled in an interstice present between the bedrock and the first row of stones of W51 (OSL6) corroborates these landmarks. Despite the dispersed luminescence measurements obtained for this sample (1985 ± 470 BP), the depositional age of the C horizon soil below W51 does not postdate the beginning of the 6th century. A second soil sample (OSL4) coming from a similar context from beneath W25 offers instead a much earlier age range (2380 ± 355 BP), which suggests that this section of the rectangularly-planned recess – or, at least, the soil beneath it trapped in a split of the bedrock, provided that it went undisturbed – appertains to a pre-existing construction. The luminescence measurements for this sample might be interpreted as consistent with a 1st century BC date for the last exposure to sunlight of this soil layer, which is not necessarily the date of the building of W25, probably originally constructed as part of the rotunda. Reconciling this age with the visible architectural elements pertaining to the rectangular recess will be one of the tasks of the future excavation seasons. What is, however, certain is that OSL4 was sampled in a stratigraphic layer that could be contemporaneous with W26, a wall that belongs to a building predating the rotunda. This stratigraphic association allows us to relate the age of OSL4 with the antecedent building of which only the remains of W26 survive.

These observations call for a paradigm shift in the analysis of the Bribir rotunda. For the time being, this monument ought to be studied synchronically, dissociated from the other Dalmatian rotunda-type polyconch churches, at least from the chronotypological and geotypological interpreta-

tak građevine koja je prethodila rotundi. Ova stratigrafska povezanost omogućava nam da povežemo datum dobiven OSL 4 analizom s nekom starijom gradnjom kojoj je W 26 zadnji preostali trag.

Ovi kronološki podatci i njihova interpretacija ukazuju na neminovnost za potpunom promjenom paradigme u interpretaciji bibrirske rotunde. Neosporno je, dakle, da ova građevina mora biti izučavana odvojeno od ostalih dalmatinskih polikonhnih crkava, a također i odvojeno od kronotipoloških odnosno geotipoloških interpretacija gotovo svih hrvatskih znanstvenika koji su do sada proučavali ovakve ranosrednjovjekovne građevine¹⁷. Bribirsku rotundu stoga je opravdanije uspoređivati sa sličnim građevinama kasnoantičkoga svijeta kao što su *cella septichora* iz *Sopiana*e (Pécs) ili baptisterij iz *Ulpiana* (Gračanice) – da spomenemo najznačajnije. Iako je vrijeme nastanka ovih građevina donekle upitno, početak njihove gradnje mogao bi se datirati u 4. ili 5. stoljeće¹⁸.

¹⁷ Miljenko Jurković je među malobrojnim stručnjacima koji su razmatrali, barem nakratko, mogućnost ranijeg datiranja nekih polikonhnih dalmatinskih crkava (M. JURKOVIĆ, La rotonde de Saint-Donat à Zadar et les églises hexaconques préromanes en Croatie, u: *Guillaume de Volpiano et l'architecture des rotondes*, (ur. M. Jannet, Chr. Sapin), Dijon, 1996, str. 249).

¹⁸ Istraživana od 1938. do 1940., Sopijska *cella septichora*, nažalost, nema odgovarajuću arheološku dokumentaciju. Dostupni podatci koji se odnose na ova prva iskapanja su sažeti u: F. FÜLEP, *Sopiana. The History of Pécs During the Roman Era, and the Problem of the Continuity of the Late Roman Population*. Budapest, 1984, str. 57-59. Završna iskapanja iz 2005. – 2006. dozvoljavaju, kako se čini, nešto jasniju analizu vremena gradnje (cf. Cs. POZSÁRKÓ - I. Zs. TÓTH - Zs. VISY, *Sopiana: a cella septichora és környéke. Beszámoló a 2005-2006. évi régészeti feltárásról, Ókor* 6/3, Budapest, 2007, str. 84-90, osobito str. 87b). Za kronologiju gračaničke krstionice, otkrivene 2011. godine tijekom geofizičkog ispitivanja tima predvođenog Felixom Teichnerom vidi u: F. TEICHNER, *Ulpiana / Iustiniana Secunda bei Gračanica (Kosovo)*, *Bericht der römisch-germanischen Kommission* 92, Frankfurt, 2011, str. 530-536, osobito str. 530, 532. – F. TEICHNER, *On the Ancient Twin-City of Ulpiana-Iustiniana Secunda (Kosovo): Capital of the Metalla Dardanica*, u: *Actas XVIII congreso internacional arqueología clásica: Centro y periferia en el mundo clásico*, Mérida, 2014, str. 271-275, osobito str. 273. – F. TEICHNER, *Gračanicë/Gračanica, Kosovo. Ulpiana / Iustiniana Secunda*, *e-Forschungsberichte des Deutschen Archäologisches Instituts* 2016/1, 2016, str. 85-89). Što se tiče iskapanja 2012. – 2013., trenutno su dostupne samo dvije preliminarne i znanstveno vrlo problematične publikacije: H. ČE-

¹⁶ Beta-437577 – 1580 ± 30 BP ($\delta^{13}\text{C}$ –18.5 ‰ vs PDB), Cal AD 405-550 (Cal BP 1545-1400) (95%, 2 σ), Cal AD 420-540 (Cal BP 1530-1410) (68%, 1 σ).

Rotunda na Bribiru stoji u funkciji barem do 9., ako ne i do 11. stoljeća¹⁹, ako se uzme u obzir fragment ranoromaničke skulpture pronađen 1959. godine²⁰. Doista, kako pokazuju ovogodišnji nalazi, u 9. stoljeću događa se njeno raskošno renoviranje. Ulomak s natpisom (BR 2015727), koji spominje kneza Branimira (879. – 892.) (...IMIRO DUCE EG...) je gotovo identičan natpisu iz Lepura²¹ i ostavlja malo dvojbe da se to renoviranje dogodilo u posljednjim desetljećima 9. stoljeća, vjerojatno uz nadzor ranije dokumentiranog opata Theudeberta²². Analogija s natpisom iz Lepura pretpostavlja mogućnost da je i ovdje riječ o dijelu sarkofaga, na kojem je urezan bribirski natpis, tj. da je on ponovo korišten kao okvir otvora, ugrađen u vrata rotunde nakon što mu je odstranjeno dno. Veličina slova pokazuje kako se radilo o dijelu duljeg teksta, za koji je bio potreban veći epigrafički prostor kakav se mogao pronaći na obodu rimskog sarkofaga. Ako je ova analogija točna, tekst isklesan na drugoj površini (vanjskom licu bočne stranice sarkofaga) bio je namjerno sakriven i ugrađen u zid, što je indicacija da je stariji od natpisa koji spominje kneza Branimira.

Drugi natpis ispisan rustičnom kapitalom u četirima sačuvanim redovima do maksimuma od 15 slova, a koji je nekada stajao na pročelju sarkofaga, sačuvan je fragmentarno (sl. 14), pa u ovom trenut-

tion they are given in Croatian scholarship¹⁷. Valid *comparanda* to bring into discussion are constructions such as the *cella septichora* of *Sopiana*/*Pécs* or the baptistery of *Ulpiana*/*Gračanica*, to name only the most relevant ones. Although their dating raises questions, the foundation of these buildings can be situated in the 4th or 5th century¹⁸.

The rotunda remains in use at least until the 9th, if not the 11th century¹⁹ taking into account the early

¹⁷ M. Jurković is among the very few specialists who envisaged, be it only *en passant*, an earlier date for some of the polyconch Dalmatian churches (M. JURKOVIĆ, La rotonde de Saint-Donat à Zadar et les églises hexaconques préromanes en Croatie, in: *Guillaume de Volpiano et l'architecture des rotondes* [ed. M. Jannet, Chr. Sapin], Dijon 1996, p. 249).

¹⁸ Excavated between 1938 and 1940, the *cella septichora* of *Sopiana* is without proper archaeological documentation. The available data pertaining to these first excavations is summarised in: F. FÜLEP, *Sopiana. The History of Pécs During the Roman Era, and the Problem of the Continuity of the Late Roman Population*, Budapest 1984, p. 57-59. The final digs conducted in 2005-2006 allowed, so it seems, for a clearer assessment of the construction date (cf. Cs. POZSÁRKÓ, I.Zs. TÓTH, Zs. VISY, *Sopiana: a cella septichora és környéke. Beszámoló a 2005-2006. évi régészeti feltárásról, Ókor* 6.3, Budapest 2007, p. 84-90, particularly p. 87b). For the chronology of the *Gračanica* baptistery, identified in 2011 during a geophysical survey by a team led by Felix Teichner (cf. F. TEICHNER, *Ulpiana/Iustiniana Secunda* bei *Gračanica* (Kosovo), *Bericht der römisch-germanischen Kommission* 92, Frankfurt 2011, p. 530-536, particularly p. 530, 532; F. TEICHNER, On the Ancient Twin-City of *Ulpiana-Iustiniana Secunda* (Kosovo): Capital of the *Metalla Dardanica*, in: *Actas XVIII congreso internacional arqueología clásica: Centro y periferia en el mundo clásico*, Mérida 2014, p. 271-275, particularly p. 273; F. TEICHNER, *Gračanicë/Gračanica, Kosovo. Ulpiana/Iustiniana Secunda*, *e-Forschungsberichte des Deutschen Archäologisches Instituts* 2016-1, 2016, p. 85-89) and excavated in 2012-2013, only two preliminary and highly questionable publications are currently available: H. ÇETINKAYA, *Türkiye'nin Avrupa'daki İlk Arkeolojik Kazısı Ulpiana, Arkeoloji ve Sanat* 150, Istanbul 2015, p. 67-78 (see particularly p. 70); H. ÇETINKAYA, *Newly Discovered Early Christian Baptistery and Church at Ulpiana, Kosova archaeologica* 2, Priština 2015, p. 99-116 (see particularly p. 102-103, 105).

¹⁹ As such, this monument is the natural starting point for the re-examination of the rotunda buildings in pre-Romanesque Dalmatia and early mediaeval Croatia. A review of the scholarship about the early mediaeval Dalmatian multi-apsed churches can be found in P. VEŽIĆ, *Dalmatinski šesterolisti – sličnosti i razlike, Ars Adriatica* 2, Zadar 2012, p. 41-74. The analytical part of this article, which discusses the problems

TINKAYA, Türkiye'nin Avrupa'daki İlk Arkeolojik Kazısı Ulpiana, *Arkeoloji ve Sanat* 150, Istanbul, 2015, str. 67-78 (vidi posebno str. 70). – H. ÇETINKAYA, Newly Discovered Early Christian Baptistery and Church at Ulpiana, *Kosova archaeologica* 2, Priština, 2015, str. 99-116 (osobito str. 102-103, 105).

¹⁹ Tom činjenicom ona je mogla poslužiti kao tipološki uzor desetku sličnih građevina podignutih u predromaničkoj Dalmaciji i ranosrednjovjekovnoj Hrvatskoj. Pregledno o našim višekonhnim crkvama vidi u: P. VEŽIĆ, *Dalmatinski šesterolisti – sličnosti i razlike, Ars Adriatica* 2, Zadar, 2012, str. 41-74. Analitički dio toga teksta koji raspravlja problematiku tih ranosrednjovjekovnih građevina trebat će u znatnoj mjeri revidirati.

²⁰ Usp. S. GUNJAČA, *Nalaz srednjovjekovnih arhitekture*, str. 235, pl. 2.

²¹ Usp. N. JAKŠIĆ, *Novi natpis s imenom kneza Branimira*, u: *Munuscula in honorem Željko Rapanić*, (ur. M. Jurković, A. Milošević), Zagreb - Motovun - Split, 2012, str. 213-221.

²² Usp. *Hrvati i Karolinzi. Rasprave i vrela*. (Ur. A. Milošević), Split, 2000, str. 101. – N. JAKŠIĆ, *Novi natpis s imenom kneza Branimira*, str. 218-219. Jakšić čita natpis iz Lepura kao: [TEMPORIB]US B(RANI) MIRO DUX EGO TEO[DEBERTUS].

Romanesque sculpted fragment recovered in 1959²⁰. Indeed, as testified by this season's stone inventory, it is in the 9th century that the apparently lavish refurbishing of the monument takes place. Moreover, the inscribed block BR2015727, which refers to duke Branimirus (879-892) (JIMIRO DUCE EG(O) – the parallel with the very similar Lepuri inscription²¹ leaves little doubt in this respect –, pleads strongly in favour of this revamping being carried out during the last decades of the 9th century, possibly by the already documented abbot Theudebert²². The analogy with the Lepuri *comparandum* leads, furthermore, to believe that the sarcophagus on which the Bribir dedicatory inscription was engraved (the size of the letters demonstrates that this block is only part of a longer text, which necessitated the substantial epigraphic space offered by the rim of a Roman period sarcophagus) was reused, after the removal of its bottom, as a portal embedded in the masonry of the rotunda. If that was the case, the text carved on the other face (the outer face of sarcophagus' wall) of the stone fragment was deliberately concealed through the embedding into the masonry and consequently predates the dedicatory inscription. Written in rustic capitals, this second inscription is preserved fragmentarily, with only four readable lines of up to 15 letters (fig. 14), and is still under study²³.

A smaller fragment of an inscription that belonged to the same sarcophagus was identified in the *lapidarium* of Bribirska glavica. It was discovered in 1986 and shows the same organisation of the

raised by these early mediaeval buildings, requires a thorough revision in the light of the evidence provided by the Bribir rotunda.

²⁰ Cf. S. GUNJAČA, *Nalaz srednjovjekovnih arhitektura na Bribiru*, p. 235, pl. 2.

²¹ Cf. N. JAKŠIĆ, *Novi natpis s imenom kneza Branimira*, in: *Munuscula in honorem Željko Rapanić*, (ed. M. Jurković, A. Milošević), *Dissertationes et monographiae* 5, Zagreb–Motovun–Split 2012, p. 213-221.

²² Cf. *Hrvati i Karolinzi*, vol. I (*Rasprave i vrela*) (ed. A. Milošević), Split 2000, p. 101; N. JAKŠIĆ, *Novi natpis s imenom kneza Branimira*, p. 218-219 – he reads the Lepuri inscription as: [TEMPORIB]US B(RANI)MIRO DUX EGO TEO[DEBERTUS].

²³ The inscription mentions the name of a province, the interpretation of which will be discussed in a different publication. Whether this toponym relates to the historical province of Skåne, in southern Sweden, or to some other remains to be determined. Whatever the case, the historical context of the document and its finding on Bribirska glavica open a new research horizon.

ku nije moguće iznijeti njegovo čitanje i optimalnu restituciju²³. Suviše, manji dio natpisa koji je pripadao istom ovom sarkofagu prepoznat je i u depou bribirskog lapidarija. Pronađen je 1986. godine i pokazuje isti raspored slova, mada se izravno ne povezuje s tekstom na većem ulomku. Na njegovom obodu također se nalazi nekoliko slova koja dopunjavaju spomenuti natpis iz Branimirovog doba.

S izuzetkom kamenog materijala, samo su predmeti iz groba Gr 17, pronađenog uz zidove W 75 i W 66, povezani s razdobljem kada je rotunda bila u upotrebi. Iako vrlo problematične za datiranje, metalne zdjele trokutastog recipijenta (BR 2015687; sl. 21)²⁴, koštani predmet (BR 2015464; sl. 22)²⁵ te

²³ Bitan dio teksta toga natpisa je spomen neke provincije, a čitanje i interpretacija teksta bit će prezentiran u drugoj publikaciji. Odnosi li se taj toponim na povijesnu provinciju Skåne, u južnoj Švedskoj, ili neku drugu sa sličnim dočetcima u imenu, za sada, ostaje nerazriješeno. Također, ostatak njegova sadržaja otvara potpuno novi horizont istraživanja, a mjesto i okolnosti nalaza na Bribiru određuju ga i kao važan povijesni dokument.

²⁴ Još se traže analogije za ova dva predmeta. Tri višeće zdjele irske proizvodnje, datirane između 7. i prve polovine 9. stoljeća, pružaju vrlo malo relativnih usporedbi (vidi: R. BRUCE MITFORD - Sh. RAVEN, *A Corpus of Late Celtic Hanging-Bowls*. Oxford, 2005, str. 330-333 [#120], 335-339 [#123], 416-421 [#173]. Bibliografiji navedenoj u prethodnoj knjizi treba dodati: J. GRAHAM CAMPBELL, *National and Regional Identities: The Glittering Prizes*, u: *Pattern and Purposes in Insular Art: Proceedings of the Fourth International Conference on Insular Art*, (ur. M. Redknap, N. Edwards, S. Youngs, A. Lane, J. Knight), Oxford, 2001, str. 29. – A. M. HEEN PETERSEN, *Insular Artefacts from Viking-Age Burials from Mid-Norway. A Review of Contact Between Trøndelag and Britain and Ireland*, *Internet Archaeology* 38, 2014, <http://dx.doi.org/10.11141/ia.38.2>). Bribirske zdjele usporedive su i s jednom vrlo sličnom iz Haithabua / Hedebyja. Iako potječe iz vikinškoga groba datiranog u 10. stoljeće, pretpostavlja se da ta trokutasta brončana posuda pripada 7./8. stoljeću jer je na njoj urezana mala *triquetra*, tipična za irsko-saksonsku umjetnost. Kratak natpis ugreban s vanjske strane dodatno komplicira interpretaciju objekta iz Haithabua. János Harmatta prepoznao je ovdje „Orchon-Jenissei-Schrift” i ponudio dva čitanja – prvo u njemačkom prijevodu „Erwäge (einen) Rat: trinke – heiss liebe! Befolge!”, koji je korigirao na mađarskom u „(Ó) barát, (kérlek) fogadj meg egy tanácsot: Igyál, – asszonyt (feleséget) forrón szeress!” (J. HARMATTA, *Avar rovásírásos edényfeliratok Haithabuban*, *Antik tanulmányok* 31/2, Budapest, 1987, str. 262, 266). Harmattino čitanje (i to prvo, koje je autor naknadno ispravio), skupa s ostalim njegovim zaključcima u duhu kulturno-povijesne paradigme, je nekritički prihvaćano u kasnijoj literaturi,

fragmentarna zlatna naušnica (BR2015996, sl. 23)²⁶ ne mogu se datirati kasnije od sredine 10. stoljeća. Mada pronađeni u otvorenom kontekstu, oni su neupitno povezani s grobom, jedinim koji se nalazi na toj dubini na cijelom području iskopavanja. Smješten je ispred rotunde i uza zid W 66 koji bi mogao biti dio zapadnog prostora ili ograđenog dvorišta koje je jedno vrijeme funkcioniralo zajedno s rotundom, slično crkvi sv. Mihovila u Pridrazi²⁷. Također, s popriličnom sigurnošću, može se ustvrditi da je Gr 17 privilegirani grob i bez dvojbe kršćanski.

Zbog nedostatka kamenog namještaja iz ranog razdoblja²⁸, originalna namjena rotunde ne može se,

vidi primjerice: W. LAUR, Altbulgarische oder chasarische Runen aus Haithabu, *Beiträge zur Schleswiger Stadtgeschichte* 38, Schleswig, 1993, str. 57-63, osobito str. 57. – H. STEUER, Mittelasien und der wikingerzeitliche Norden, u: *Die Wikinger und das Frankische Reich*, (ur. K. P. Hofmann, H. Kamp, M. Wemhoff), Paderborn, 2014, str. 237-238, – S. KALMRING, A conical bronze boss and Hedeby's Eastern connection, *Fornvännen* 109, Stockholm, 2014, str. 6-7, sl. 4/6b. Po mišljenju prof. Marcela Erdala (Freie Universität Berlin), kojem ovdje zahvaljujemo, rune s ovog natpisa nisu previše slične znacima potvrđenim u staroturkskim runskim natpisima i oba Harmattina prijevoda su krajnje neuvjerljivi (e-mail V. Ghici, od 17. studenog 2016. godine). Ako pismo kojim je napisan natpis na zdjeli iz Haithabua nije „Orkhon-Yenisey”, vrlo je vjerojatno da se radi o proto-Bugarima, Hazarima, Avarima, Pečenezima ili nekoj drugoj turkofonoj skupini koja je migrirala iz središnje Azije u prvom mileniju.

²⁵ Datiranje koštanih recipijenata pronađenih u Ivoševcima (ili Đevrskama) (M. PETRINEC, *By Their Fruit You Will Recognize Them: The Beginnings of Christianity Among the Croats in the Light of Archaeological Evidence*, u: *Tak więc po owocach poznacie ich*, (ur. W. Dzieduszycki, J. Wrzesiński), *Funeralia Lednickie - Spotkanie* 12/2, Poznań, 2010, str. 195), groblju Ždrijac kod Nina i Privlaci kod Vinkovaca zasniva se na tipologiji bez arheometrijskih analiza. O ovoj će temi biti opširnije diskutirano - u budućoj studiji, a bibliografija koja se odnosi na koštane recipijente može se naći u: J. BELOŠEVIĆ, *Starohrvatsko groblje na Ždrijacu u Ninu*, Zadar, 2007, str. 417-424. – M. PETRINEC, *Groblja od 8. do 11. stoljeća na području ranosrednjovjekovne hrvatske države*, Split, 2009, str. 261-263. – V. SOKOL, *Medieval Jewelry and Burial Assemblages from in Croatia. A Study of Graves and Grave Goods, ca. 800 to ca. 1450*, ser.: *East Central and Eastern Europe in the Middle Ages, 450-1450*, 36, Leiden, 2016, str. 91). Do sada lokalno orijentirane hrvatske studije izoliraju ove primjerke iz većeg korpusa europskih nalaza kojem oni tipološki pripadaju ignorirajući dva sveobuhvatna istraživanja u kojima je objavljen ovaj materijal (N. PROFANTOVÁ, *Awarische Funde aus den Gebieten nördlich der awarischen Siedlungsgrenzen*, u: *Awarenforschungen*, (ur.



sl. 32. Kamena baza s rupama BR2015995
(A. Milošević).

Fig. 32 Slotted stone pedestal BR2015995
(A. Milošević).

F. Daim), vol. 2, *Archaeologia austriaca Monographien 2, Studien zur Archäologie der Awaren* 4, Vienna, 1992, str. 605-711. – M. SCHULZE DÖRRLAMM, Herkunft und Funktion der dreizipfligen Geweihbehälter des frühen und hohen Mittelalters, *Jahrbuch des römisch-germanischen Zentralmuseums Mainz* 48, Mainz, 2001, str. 529-557). Ekstremni primjerci ovakvog pristupa mogu se naći u spekulacijama F. Smiljanica i S. Sambunjaka (O besmrtnosti i svjetlosti kazuju kosti, *Domesti* 12, Rijeka, 1982, str. 67-76) ili V. Sokola (The Archaeological Heritage of the Early Croats, u: *Croatia in the Early Middle Ages. A Cultural Survey*, (ur. I. Supičić), London - Zagreb, 1999, str. 119). Oblikom i načinom ukrašavanja, koštani recipijent s Bribira sasvim je blizak još jednome pronađenom u grobu 99 na brdu Spas u sklopu kninske tvrđave (usp. D. JELOVINA, *Starohrvatska nekropola na brdu Spasu kod Knina, Starohrvatska prosvjeta*, ser. 3, sv. 19, Split, 1991, str. 137, 218-219, T. 9). Prema našem mišljenju, primjerak iz Knina pripada drugoj polovini 7. ili 8. stoljeću.

²⁶ Mada je znatno oštećena, vjerojatno je da naušnica pripada ranobizantskom nakitu kakav je u Dalmaciji pronađen na više lokaliteta (pregledno o tome u: M. PETRINEC, *Groblja od 8. do 11. stoljeća*, sl. 44, 45, 49, 52).

²⁷ Za ovu crkvu s literaturom vidi u: P. VEŽIĆ, *Dalmatinski šesterolisti*, str. 45.

²⁸ Izuzetak su kapitel stupa (BR2015718, W43; sl. 20), a vjerojatno i dva ukrašena vapnenačka ulomka koji su predstavljali dio perforiranog pluteja ili tranzene (BR2015720 i BR2015721, sl. 15). Njima se hipotetski može dodati i otprije poznati impost s uklesanim križem (usp. M. SUIĆ, *Varvarina palæochristiana, Diadora* 16-17, Zadar, 1994-1995, str. 300, 304-305. Isti tekst u: *Područje Šibenske županije od pretpovijesti do srednjeg vijeka* (Izd. HAD-a 19), (ur. B. Čečuk), Za-

text, although it does not directly relate to the text of the larger fragment. On its edge (the sarcophagus' rim) were several letters that relate to the inscription from the time of the duke Branimir.

With the exception of the stone material, shaped, sculpted or inscribed, only the objects recovered against the wall W75 of the grave Gr17 are related to the period of activity of the rotunda building. Although of somewhat problematic date, the metal triangular bowls (BR2015687; fig. 21)²⁴, the antler container (BR2015464; fig. 22)²⁵ and the fragmentary gold earring (BR2015996, fig. 23)²⁶ cannot

²⁴ The two objects are still under study. Three hanging bowls of Irish production dated between the 7th and the first half of the 9th century provide relative parallels (see R. BRUCE-MITFORD, Sh. RAVEN, *A Corpus of Late Celtic Hanging-Bowls*, Oxford 2005, p. 330-333 [#120], 335-339 [#123], 416-421 [#173]; to the bibliography mentioned by Bruce-Mitford, we should add: J. GRAHAM-CAMPBELL, National and Regional Identities: The Glittering Prizes, in: *Pattern and Purposes in Insular Art: Proceedings of the Fourth International Conference on Insular Art* [ed. M. Redknapp, N. Edwards, S. Youngs, A. Lane, J. Knight], Oxford 2001, p. 29; A.M. HEEN-PETTERSEN, Insular Artefacts from Viking-Age Burials from Mid-Norway. A Review of Contact Between Trøndelag and Britain and Ireland, *Internet Archaeology* 38, 2014, <http://dx.doi.org/10.11141/ia.38.2>). A closer *comparandum* comes from the Viking Age settlement of Haithabu/Hedeby. Although found in a 10th century grave, this triangular bronze bowl is considered to date to the 7th or 8th century because, *inter alia*, of a small *triquetra* carved inside, typical for Hiberno-Saxon art. A short, secondary, inscription in runiform script incised on the outer face of one of the walls complicates even further the interpretation of the object. János Harmatta saw in it an "Orchon-Jenissei-Schrift" and put forward two readings with their respective translations: initially "Erwäge (einen) Rat: trinke – heiss liebe! Befolge!", revised into "(Ó) barát, (kérlek) fogadj meg egy tanácsot: Igyál, – asszonyt (feleséget) forrón szerezess!" (J. HARMATTA, Avar rovásírásos edényfeliratok Haithabuban, *Antik tanulmányok* 31/2, Budapest 1987, p. 262, 266). Together with some of its luxuriant culture-history-driven inferences, Harmatta's reading (the first one of the two mentioned above, although it was not Harmatta's final word) has been unanimously and unquestionably adopted in subsequent literature; see, for example: W. LAUR, Altbulgarische oder chasarische Runen aus Haithabu, *Beiträge zur Schleswiger Stadtgeschichte* 38, Schleswig 1993, p. 57-63, in particular p. 57; H. STEUER, Mittelasiens und der wikingerzeitliche Norden, in: *Die Wikinger und das Frankische Reich* (eds. K. P. Hofmann, H. Kamp, M. Wemhoff), Paderborn 2014, p. 237-238; S. KALMRING, A conical bronze boss and Hedeby's Eastern connection, *Fornvännen* 109, Stockholm 2014, p. 6-7, fig. 4/6b. According to Prof. Marcel Erdal (Freie

Universität Berlin), whom we wish to thank here, the runes of this inscription have only weak similarities with the scripts attested in the Old Turkic runiform inscriptions, and J. Harmatta's translations are highly unconvincing (email to V. Ghica of 17 November 2016). If the alphabet in question is not the "Orkhon-Yenisey" one, it is however likely that it should be connected with Proto-Bulgars/Bolgars, Khazars, Avars, Pechenegs or any other Turkic-style nation that migrated from Asia in the first millennium CE.

²⁵ The dating of the antler containers recovered at Ivoševci (or Đevrske; see M. PETRINEC, *By Their Fruit You Will Recognize Them: The Beginnings of Christianity Among the Croats in the Light of Archaeological Evidence*, in: *Tak więc po owocach poznacie ich* [ed. W. Dzieduszycki, J. Wrzesiński], *Funeralia Lednickie – Spotkanie 12*, part 2, Poznań 2010, p. 195), Nin-Ždrijac and Vinkovci-Privlaka rests on weak archaeological grounds and no archaeometrical analyses (we shall discuss this matter in detail in a future study; the bibliography related to these containers was gathered by J. BELOŠEVIĆ, *Starohrvatsko groblje na Ždrijacu u Ninu*, Zadar 2007, p. 417-424; see also M. PETRINEC, *Gräberfelder aus dem 8. bis 11. Jahrhundert im Gebiet des frühmittelalterlichen kroatischen Staates*, Split 2009, p. 214-218 and ultimately V. SOKOL, *Medieval Jewelry and Burial Assemblages from in Croatia. A Study of Graves and Grave Goods, ca. 800 to ca. 1450, East Central and Eastern Europe in the Middle Ages, 450-1450* 36, Leiden 2016, p. 91). Regionally centred Croatian studies that address these specimens tend to isolate them from the large corpus to which they typologically belong, ignoring the two comprehensive surveys published of this repertoire (N. PROFANTOVÁ, Awarische Funde aus den Gebieten nördlich der awarischen Siedlungsgrenzen, in: *Awarenforschungen* [ed. F. Daim], vol. 2, *Archaeologia austriaca Monographien* 2, *Studien zur Archäologie der Awaren* 4, Vienna 1992, p. 605-711; M. SCHULZE-DÖRRLAMM, Herkunft und Funktion der dreizipfligen Geweihbehälter des frühen und hohen Mittelalters, *Jahrbuch des römisch-germanischen Zentralmuseums Mainz* 48, Mainz 2001, p. 529-557). An extreme expression of such oriented approach is to be found in the speculations of F. Smiljanić and S. Samunjak (O besmrtnosti i svjetlosti kazuju kosti, *Domesti* 12, Rijeka 1982, p. 67-76) or V. Sokol (The Archaeological Heritage of the Early Croats, in: *Croatia in the Early Middle Ages. A Cultural Survey* [ed. I. Supićić], London-Zagreb 1999, p. 119). The shape and decoration of the antler from Bribirska glavica is very similar to the find from the hill of Spas, inside the fortress of Knin (grave 99) (cf. D. JELOVINA, Starohrvatska nekropola na brdu Spasu kod Knina, *Starohrvatska prosvjeta* s. 3, vol. 19, Split 1991, p. 137, 218-219, pl. XI). In our opinion, the example from Knin should be dated in the second half of the 7th or in the 8th century.

²⁶ Although the earring is visibly damaged, it is very likely that it belongs to the corpus of early Byzantine jewellery found in Dalmatia on several archaeological sites, see M. PETRINEC, *Gräberfelder aus dem 8. bis 11. Jahrhundert*, ph. 44, 45, 49, 52.

za sada, sa sigurnošću ustvrditi, usprkos tipološkim paralelama koje se nameću. No nesumnjivo je da je rotunda korištena kao crkva u ranom srednjem vijeku. Vrijedno je u ovom kontekstu naglasiti da dijelovi kamenog bloka s rupama za ulaganje pilastara, pronađenih u ovoj sondi (T13, BR2015995; sl. 32), pretpostavljaju mogućnost postojanja ranosrednjovjekovne oltarne ograde.

Prva konstrukcijska faza današnje jednobrodne crkve (faza 3 u izvješću za 2014. godinu²⁹) događa se u razdoblju kada je rotunda bila značajnije porušena te zatrpana nanesenom zemljom i urušenim kamenim blokovima. Njena unutrašnjost bila je lišena svih dekoracija, a istovremeno je korištena i kao odlagalište materijala, na što ukazuje veliki kamen od lapora otkriven u sondi T 10 (sl. 33). Preostali ostatci rotunde, kao i njezina unutrašnjost potom se poravnavaju i ruše do određene visine kako bi se uredio prostor za današnju crkvu i njene ispodpodne instalacije. Za sada nemamo nikakvu kronološku odrednicu koja bi pomogla datirati izgradnju nove crkve (tj. faze 3) izuzev dvaju komada akvilejskog novca pronađenog u 2014. i 2015. godini, koji je kao *terminus ad quem* smještaju u kraj 14. i početak 15. stoljeća.

Vrijedno je dodati još jednu opasku u vezi unutrašnje arhitekture jednobrodne crkve. Dio zida (W 35) identificiran ove godine do južnog zida naosa, izgrađen na temeljima potonjeg (W 19), smješten je u projektiranom nastavku zida W 3 koji pripada manjoj dodanoj prostoriji na sjevernoj strani crkve (sl. 4). Uloga ovog zida trebala bi se dodatno razjasniti jer je poprečni zid W 31 mogao biti temelj za lektorij.

2. Restauracija i konzervacija

Zidovi rotunde pronađeni u sondama otvorenim unutar crkve sv. Joakima i Ane rekonstruirani su kako bi se mogli vidjeti u novoj podnici crkve (sl. 34.1-34.4, 35). Vidljive sekcije apsidalnih zidova su prvo učvršćene i njihovi nedostajući dijelovi do-

greb, 1998, str. 181-189) te istim takvim križem ukrašen ulomak nadbratnika, danas u lapidariju na Bribirskoj glavici. Ne može se isključiti niti mogućnost da su dva veća kamena profilirana bloka, pronađena u podu crkve sv. Joakima i Ane (SU 1042, sl. 36), izvorno bili dio vijenca u unutrašnjosti rotunde.

²⁹ V. GHICA - A. MILOŠEVIĆ - D. DŽINO, Arheološki projekt *Varvaria / Breberium / Bribir* u 2014., str. 21 i sl. 8.



sl. 33. Veliki blok od lapora položen na živac pokraj zida W 51, pogled prema jugu (A. Milošević).

Fig. 33 Boulder lying on the bedrock surface next to wall W51; view towards S (A. Milošević).

postdate the mid-10th century. Despite their open finding context, they are unquestionably related to this grave, the only one situated at that low altitude in the whole excavation area. Located, as it is, in the front of the rotunda, along W66, a wall that might be part of western hall connected to the rotunda building and functioning together with it, similar to the narthex of the church of St Michael in Pridraga²⁷, Gr17 is presumably a privileged grave and assuredly a Christian one.

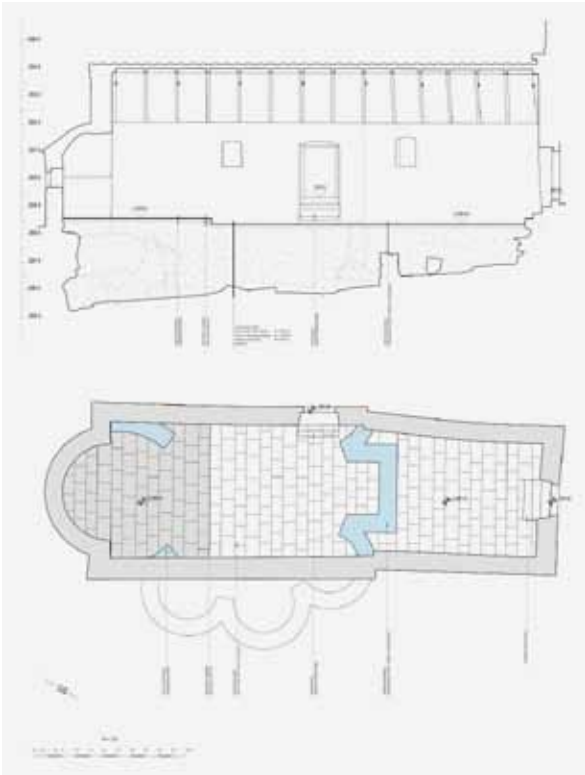
Owing to the lacking of early period furnishings²⁸, the original function of the rotunda cannot

²⁷ For this church, see, with literature, P. VEŽIĆ, *Dalmatinski šesterolisti*, p. 45.

²⁸ The exceptions are a mullion impost capital (BR2015718, W43; fig. 20) and perhaps the *pluteus* fragments (BR2015720 and BR2015721; fig. 15). To these could hypothetically be added the already known impost decorated with a cross (cf. M. SUIĆ, *Varvarina palæochristiana, Diadora* 16-17, Zadar, 1994-1995, p. 300, 304-305, reprinted in: *Područje Šibenske županije od pretpovijesti do srednjeg vijeka* (Izd. HAD-a 19), [ed. B. Čečuk], Zagreb, 1998, p. 181- 189) as well as the fragment of the door-frame with an identical cross, kept in the *lapidarium* of Bribirska glavica. It cannot also be excluded that two of the ashlar found in one of the floors of the modern church (SU1042; fig. 36) belonged to the rotunda.



sl. 34.1-4. Različite faze iskopavanja unutar crkve sv. Joakima i Ane (A. Milošević).
 Fig. 34 Different stages of the excavation inside the church of Sts Joachim and Ann (A. Milošević).



sl. 35. Plan i presjek crkve sv. Joakima i Ane, nakon restauracije (Ž. Peković).

Fig. 35 Plan and cross-section of the church of Sts Joachim and Ann after restoration (Ž. Peković).

građeni do visine nove podnice koja je postavljena (140 cm za W 44, prema sjeverozapadu; sl. 37 te 180 cm za južni dio W 51, prema jugoistoku) niže nego ona koja je uklonjen tijekom iskapanja. Kako bi se izbjegao kasniji pritisak tla na temeljne zidove, sonde u crkvi su ispunjene kompaktnim šljunkom (sl. 38.1). Sve je kasnije zatvoreno vapnenom podnicom na koju je položen novi pod napravljen od vapnenačkih pravokutnih ploča (sl. 38.2-38.4). Popločanjem je naglašen prezbiterijalni dio koji je povišen za jednu stepenicu, i to na mjestu gdje u budućnosti treba montirati novi ikonostas. Za potrebe iskopavanja u crkvi bilo je potrebno demontirati i stari oltar čija je menza stajala na masivnom zidnom stipesu (sl. 38.5). Na kraju je sve zamijenjeno novim oltarom na četiri stupa od bijeloga vapnenca s lokulusom za relikvije u sredini menze. Usporedno je uređeno svetohranište u sjevernom zidu prezbiterijalnog dijela, a postavljene su i metalne stepenice kod glavnih (zapadnih) i bočnih (južnih) vrata crkve (sl. 37.1-5).



sl. 36. Kamena podnica (SU1042) pronađena ispod cementnog poda današnje crkve (A. Di Miceli).

Fig. 36 Stone floor (SU1042) found beneath the cement floor of the modern church (A. Di Miceli).

be securely ascertained as yet, notwithstanding the typological parallels that one might bring into play. It is instead evident that the building served as a church in the early mediaeval era. In this regard, the slotted stone pedestal retrieved in T13 (BR2015995; fig. 32) hints at the existence of early mediaeval *cancelli*.

The first construction phase of the naved church (the *naos* phase – building phase 3 in our previous excavation report²⁹) occurs at a stage where the rotunda building is substantially degraded, covered by soil deposits and collapsed stone blocks, conceivably plundered of its internal furnishings but also used as a dump, as a massive boulder discovered in trench T10 (fig. 33) indicates. The vestigial remains of the rotunda as well as the intramural fill undergo levelling, dismantling and cutting in order to set the foundations of the present *naos* and of the subfloor features associated with it. We do not have for now any other chronological marker available for the construction of the *naos* (building phase 3) except the Aquileian coins found in 2014 and 2015, which give a *terminus ad quem* at the end of the 14th and the beginning of the 15th century.

²⁹ V. GHICA, A. MILOŠEVIĆ, D. DZINO, Arheološki projekt *Varvaria / Breberium / Bribir* u 2014, p. 21 and fig. 8.



sl. 37. Djelomično rekonstruirani zidovi W 25, W 44, W 45 i W 65 tijekom restauracije (A. Milošević).
Fig. 37 Reconstruction of walls W25, W44, W45 and partly W65 during the restoration campaign (A. Milošević).

An additional point must be raised regarding the internal architecture of this first naved church. A wall fragment (W35) identified this year against the S wall of the *naos*, built on the foundation of the latter (W19), is situated somewhat in the projecting continuation of the wall W3, which belongs to the smaller northern annexe (fig. 4). The role of this wall remains to be clarified since it is rather the transversal wall W31 that can be interpreted as foundation of the choir screen.

2. Restoration and conservation

The walls of the rotunda exposed in the trenches opened inside the church of Sts Joachim and Ann (fig. 34.1-34.4) underwent reconstruction in order to make their display possible on the floor of the church (fig. 35). To do so, several operations were undertaken. The visible sections of the apsidal walls have been first consolidated and then their missing parts rebuilt to the height of the new floor laid in the church (140 cm for W44, to the NW [fig. 37], and 180 cm for the S end of W51, to the SE), which is lower than the one dismantled during the excavation. In order to counter the later earth pressure on the foundation walls, the trenches were filled with compacted gravel (fig. 38.1). This was later caged under a limestone ground floor, over which was cemented a pavement made of limestone rectangu-



38.1

sl. 38.1-5. Različiti stadiji rekonstrukcije ispod podnice i same podnice u crkvi sv. Joakima i Ane (A. Milošević).

Fig. 38.1-5 Different stages of the reconstruction of the subfloor and floor levels in the church of Sts Joachim and Ann (A. Milošević).

3. Keramika

Kako je to bio slučaj i u kampanji u 2014. godini, ovogodišnji keramički materijal također je, bez izuzetka, pronađen u kasnijim depozitima, izvan originalnog konteksta.

Inventarom pronađenim u izvještajnoj godini dominiraju posude iz afričkog uvoza, s pretežito sjevernoafričkom stolnom i kuhinjskom keramikom, pojava *orlo annerito* keramike kao i amfora, od kojih su mnoge nedovoljno cjelovite da bi bile tipološki prepoznatljive. Iz Italije dolazi nekoliko zdjela tankih stijenki, s ili bez barbotinskih dekoracija, kao *terra sigillata italica*, odnosno talijanske imitacije afričke keramike. Egejska keramika zastupljena je s nekoliko ulomaka kuhinjske keramike. Slično tome, kuhinjska keramika i istočnomediterranske amfore također su rijetke, kao i uvoz iz Panonije koji je prepoznat u nekoliko fragmenata crvene i crne stolne keramike. Pet ulomaka amfora s ravnim dnom i vjerojatno pehar dekoriran u barbotinskom stilu predstavljaju jadransku proizvodnju. Posebice su zanimljiva tri fragmenta centralno gal-



38.2



38.3



38.4



38.5

lar slabs (fig. 38.2-38.4). The pavement features a raised *solea* at the limit of the sanctuary platform, at the place where the iconostasis should be set in the future. For the needs of the excavation, it was necessary to remove the existing altar that had a *mensa* standing on a massive *stipes*. This was eventually replaced with a new altar supported by four limestone pillars, with a *loculus* for the relics in the centre of the *mensa* (fig. 38.5). Finally, a tabernacle has been arranged in the northern wall of the sanctuary and metal stairs have been installed in front of the main (western) and side (southern) doors.

3. Ceramic material

As it was the case in 2014, this season's ceramic material was found, without exception, in later deposits, out of original context.

African imports dominate again the inventory with frequent African red slip and cooking ware, some with *orlo annerito*, as well as amphorae, many of which too fragmentary to be typologically identified. From Italy come several bowls, thin-walled, with or without barbotine patterns, in *terra sigillata italica* or Italian imitations of African ware. Aegean ware is limited to a few shards of cooking vessels. Likewise, kitchenware and amphorae of Eastern Mediterranean provenance are rare, as are also the Pannonian imports, of which few fragments of red and black-slipped ware were turned up. Five fragments of flat bottom amphorae and possibly a beaker decorated with barbotine represent the Adriatic production. Especially noteworthy are three fragments of Central Gaulish shallow bowls Curle 23. As with the two types of local fabric described last year³⁰, they appear on coarse ware, a pot and a cooking bowl, along with non-diagnostic shards.

The mediaeval repertoire is once more particularly poor. Exceptional cases, such as fragments of tin-glazed pottery, can only confirm, still begging numerous questions, the manifold disturbance processes that the area underwent.

4. Physical anthropology

The osteological material recovered during the 2014 and 2015 seasons comes from the following contexts: southern sarcophagus in the mausoleum

skih plitkih zdjela tipa *Curle 23*. Jednako kao i dva tipa lokalne proizvodnje opisana prošle godine³⁰, pojavljuju se na gruboj keramici – loncu i zdjeli za kuhanje, s nedijagnosticiranim fragmentima.

Srednjovjekovni materijal je ponovno vrlo slabo zastupljen. Izuzetni slučajevi, kao što su fragmenti kositrom glazirane keramike, mogu samo potvrditi mnogobrojne građevne procese koji su se događali na istraživanom području.

4. Fizička antropologija

Osteološki materijal pronađen tijekom 2014. i 2015. godine izuzet je iz sljedećih konteksta: južni sarkofag u memoriji (minimalni broj individua – MBI 8); kosturnice E 1 (T 1; MBI 12); E 2 (T 1; MBI 17); E 3 (T 1; MBI 4); E 4 (T 1; MBI 5); E 5 (T 7; MBI 5); E 6 (T 7; MBI 7); E 11 (T 13; MBI 13); grobovi Gr 1 (T 3; BI 1); Gr 3 (T 9; BI 1); Gr 4 (T 8; BI 2); Gr 5 (T 7; BI 1); Gr 6 (T 7; BI 1); Gr 7 (T 10; BI 2); Gr 10 (T 11; BI 4); Gr 11 (T 11; MBI 14); Gr 12 (T 10/T 13; MBI 16); Gr 13 (T 11; MBI 13); Gr 14 (T 11; MBI 38); Gr 15 (T 11; BI 5); Gr 16 (T 10; MBI 6); Gr 17 (T 11; MBI 10); stratigrafski konteksti SU 1009 (T 1; MBI 4) i SU 1098 (T 11; MBI 10).

Za sonde T 1, T 2 i T 3, kao i za sekundarni depozit u južnom sarkofagu memorije, analiza skeleta, kod kojih se spol može odrediti, pokazuje zanimljiv demografski odnos od 15 dječjih, 2 ženska i 14 muških ukopa, što bi, ako se potvrdi i u budućim iskapanjima, trebalo razjasniti. U sondama T 7, T 8, T 9, T 10, T 11, T 13 odnos je jednako neproporcionalan te je prepoznato 48 djece, 28 ženskih i 55 muških osoba.

Zabilježeno je i devet *ante-mortem* lomova kostiju (u južnom sarkofagu memorije, u kosturnici E 1 i u grobovima Gr 5, Gr 11 i Gr 12), kao i iščašenje ramena (u grobu Gr 2). Sve ove frakture mogu se pripisati slučajnim razlozima. Osam je locirano u distalnim dijelovima cjevanice i lisne kosti, što sugerira ozljede uzrokovane strmim i neravnim terenom Bribirske glavice i njezinog okoliša.

Brojne *ante-mortem* frakture na lubanjama – uglavnom na čeonim, ali parijetalnim kostima – jasni su pokazatelji nasilja. Ove ozljede se pojavljuju u sljedećim kontekstima: Gr 10 (skelet A); Gr 12 (skeleti C, D); Gr 11 (skeleti B, D); Gr 13 (skelet

³⁰ V. GHICA, A. MILOŠEVIĆ, D. DZINO, Arheološki projekt *Varvaria / Breberium / Bribir* u 2014., p. 41.

³⁰ V. GHICA - A. MILOŠEVIĆ - D. DZINO, Arheološki projekt *Varvaria / Breberium / Bribir* u 2014., str. 41.



sl. 39. Lubanja 1 iz kosturnice E 1 na kojoj se vidi širenje nosnog otvora (A) te upalne promjene u usnoj duplji i na tvrdom nepcu (B) (V. Vyroubal).

Fig. 39 Skull 1 from ossuary E1, showing rounding and widening of the nasal aperture (A) and alveolar abscess on right lateral incisor (B) (V. Vyroubal).

E); Gr 14 (lubanja B i dječiji skelet 2); E 5; E 6 (2 lubanje); E 11 (2 lubanje); SU 1098 (skelet A). Među ovima treba istaknuti skelet djeteta od 2,5 do 3,5 godine s trostrukom frakturom lubanje (Gr 14) i tri ženske lubanje s ozljedama (E 5, E 6, E 11).

Nasilje se vidi i u perimortalnim ozljedama koje su obično i uzrok smrti. Ovaj tip ozljeda je ravnomjerno raspoređen po sondama:

Gr 3 (48 mm duga fraktura parijetalne kosti oštrih rubova, koja je djelomično prošla kroz svod lubanje);

Gr 7 (skelet A, na kome se vide sedam perimortalnih ozljeda oštrih rubova na kostima nogu i ruku);

Gr 11 (ozljeda oštrih rubova na drugom vratnom kralješku);

Gr 14-E 8 (ozljeda oštrih rubova na drugom, trećem i četvrtom vratnom kralješku);

Gr 16 (ozljeda oštrih rubova stražnjim i lateralnim rubovima lijeve lakatne i palčane kosti, vjerojatno je uzrokovana jednim udarcem).

Osobito je zanimljiva koncentracija skeleta s brojnim perimortalnim ozljedama iz Gr 7 koji je nađen u svetištu.

Uz ove ozljede izazvane traumama, analiza je utvrdila i postojanje dviju zaraznih bolesti – gube i

(minimum number of individuals [MNI] 8); ossuary E1 (T1; MNI 12); ossuary E2 (T1; MNI 17); ossuary E3 (T1; MNI 4); ossuary E4 (T1; MNI 5); ossuary E5 (T7; MNI 5); ossuary E6 (T7; MNI 7); E11 (T13; MNI 13); grave Gr1 (T3; NI 1); grave Gr3 (T9; NI 1); grave Gr4 (T8; NI 2); grave Gr5 (T7; NI 1); grave Gr6 (T7; NI 1); grave Gr7 (T10; NI 2); grave Gr10 (T11; NI 4); grave Gr11 (T11; MNI 14); grave Gr12 (T10/T13; MNI 16); grave Gr13 (T11; MNI 13); grave Gr14 (T11; MNI 38); grave Gr15 (T11; NI 5); grave Gr16 (T10; MNI 6); grave Gr17 (T11; MNI 10); SU1009 (T1; MNI 4); SU1098 (T11; MNI 10).

For trenches T1, T2 and T3 as well as for the secondary deposit in the southern sarcophagus of the mausoleum, the analysis of skeletons of which the sex could be determined revealed an unusual demographic ratio of 15 sub-adults, 2 females and 14 males, which, if confirmed in adjacent future trenches, remains to be explained. In trenches T7, T8, T9, T10, T11, T13, the ratio remains unbalanced, with 48 sub-adults, 28 females and 55 males.

Nine ante-mortem fractures (in the S mausoleum sarcophagus, ossuary E1 and graves Gr5, Gr11 and Gr12) and a shoulder dislocation (in grave Gr2) were recorded, all of which are consistent with accidental injuries. Eight of these fractures, located in the distal part of the shafts of tibiae and fibulae, suggest accidents caused by the rugged terrain of Bribirska glavica and its surroundings.

Numerous ante-mortem fractures on skulls, mostly on the frontal but also on the parietal bones, are rather clear indicators of interpersonal violence. These appear in the following contexts: Gr10 (skeleton A); Gr12 (skeletons C, D); Gr11 (skeletons B, D); Gr13 (skeleton E); Gr14 (skull B and skeleton sub-adult 2); E5; E6 (2 skulls); E11 (2 skulls); SU1098 (skeleton A). We note among these cases a 2.5-3.5 years old sub-adult with an oblong fracture on the left side of the frontal bone, a triply fractured skull (both in Gr14) and three female cranial fractures (E5, E6, E11).

Interpersonal violence is further evidenced by a series of peri-mortem injuries, largely distributed across the excavated trenches: Gr3 (48 mm long sharp edged fracture on the parietal bone, partly penetrating through the skull vault); Gr7 (skeleton A, displaying seven peri-mortem sharp edged injuries on legs and arms bones); Gr 11 (sharp edged injury on second cervical vertebra); Gr14-E8 (sharp

edged injuries on second, third and fourth cervical vertebrae); Gr16 (sharp edged injuries on the posterior-lateral side of left ulna and radius, resulting likely from a single blow). Particularly noteworthy is the location of the skeleton featuring multiple peri-mortem injuries in the sanctuary grave Gr7.

In addition to these forced traumas, the pathologic inventory includes two infectious diseases, leprosy and tuberculosis. Several probable cases of the former (on skull 2 in S mausoleum sarcophagus and skulls 1, 2, 4 and 5 in E1; fig. 39), visible in the rounding and widening of the nasal aperture and the inflammatory changes in the nasal cavity and on the hard palate, require confirmation through DNA analysis. If these cases are validated as leprotic, the concentration of crania indicative of this pathology in two related deposited assemblages (in the closed southern sarcophagus and the nearby ossuary E1, trapped under the vault of mausoleum's vestibule) is consistent with a collective, yet expeditious to say the least, burial. Tuberculosis is represented by one single individual (Gr11, skeleton D).

Lastly, numerous bones, equally distributed between graves inside and outside the present church, exhibit obvious traces of post-mortem rodent activity, a rare occurrence in Croatian osteological material, but well documented elsewhere³¹. The bones featuring gnawing marks have been either exposed on the ground surface in an open location or shallowly buried prior to their deposition in graves and ossuaries.

5. Terrestrial laser scanning

A 5 mm resolution lidar survey has been carried out on the areas excavated in 2014 and 2015 with a double purpose, archaeological and patrimonial. The full documentation of the backfilled trenches T10, T11 and T13 is thus available for further analysis and cultural heritage applications. The workflow included: point cloud and digital image acquisition with a stationary Leica P20 scanstation and a Nikon D5500 camera; data post-processing in Leica Cyclone 5.1; drawing in AutoCAD environment with Cloud Works 3.

The survey resulted in outputs angled according to the lines of research of our project: geo-refer-

tuberkuloze. Na nekoliko lubanja (lubanja 2 u južnom sarkofagu memorije i lubanje 1, 2, 4 i 5 u E 1; sl. 39) uočeno je zaokruživanje i širenje nosnog otvora te upalne promjene u nosnoj duplji i na tvrdom nepcu. Dok osnovana sumnja na gubu postoji, neophodno ju je potvrditi DNK analizom. Ako se guba potvrdi na ovim lubanjama, indikativno je da su pronađene u dvama povezanim kontekstima (zatvoreni južni sarkofag memorije i kosturnica E 1 koja se nalazila ukopana u rupu urušenog svoda memorije, što bi impliciralo kolektivni ili, u najmanju ruku, brzi ukop. Tuberkuloza se može vidjeti samo na ostatcima jedne osobe (Gr 11, skelet D).

Napokon, brojne kosti, ravnomjerno raspoređene između grobova, unutar i izvan današnje crkve, pokazuju očevitne *post-mortem* tragove glodavaca, rijedak slučaj u hrvatskom osteološkom materijalu, ali dokumentiran na drugim mjestima³¹. Kosti koje pokazuju tragove glodanja su najvjerojatnije bile izložene na površini odnosno otvorenoj lokaciji ili su bile plitko ukopane prije njihovog odlaganja u grobove i kosturnice.

5. Prostorno skeniranje sondi

Mjerenje optičkim radarom (lidar, laserski radar) rezolucije 5 mm na sondama iskapanim 2014. i 2015. godine obavljeno je iz arheološkog razloga, ali i zbog zaštite i dokumentacije kulturne baštine. Time je, za dalje analize, ali i za potrebe zaštite kulturne baštine ostala dostupna potpuna dokumentacija zatrpanih sondi T 10, T 11 i T 13. Radovi su se sastojali od kombiniranja koordinatnih točaka i digitalne slike s nepokretnom Leica P 20 stanicom za skeniranje i Nikon D 5500 foto-aparatom, dok je procesiranje podataka obavljeno u Leica Cyclone 5.1, a izrada slike u *AutoCAD*-u s *Cloud Works 3*.

Mjerenje je rezultiralo geo-referenciranim 3D modelima, s mikro-topografijom te rasporedom struktura i zidova. Ovi modeli se mogu integrirati u GIS i iskoristiti u 3D rekonstrukcijama i prezentacijama.

6. Fotogrametrijsko modeliranje

Nekoliko stratigrafskih konteksta – od cijelih sondi do pojedinačnih struktura ili stratigrafskih

³¹ Cf. T. L. DUPRAS, J. J. SCHULTZ, S. M. WHEELER, L. J. WILLIAMS, *Forensic Recovery of Human Remains: Archaeological Approaches*, Boca Raton (Florida) 2006, p. 33-36.

³¹ Usp. T. L. DUPRAS - J. J. SCHULTZ - S. M. WHEELER - L. J. WILLIAMS, *Forensic Recovery of Human Remains: Archaeological Approaches*. Boca Raton (Florida), 2006, str. 33-36.



sl. 40. 3D rekonstrukcija srednjovjekovne crkve uz zapadni zid današnjega groblja i romaničke crkve na sjeverozapadnom rubu Bribirske glavice (P. Rathsmann).

Fig. 40 3D reconstructions of the mediaeval church W of the modern graveyard, and the Romanesque church in the NW of Bribirska glavica (P. Rathsmann).

sekvenci – fotogrametrijski je zabilježeno za izučavanje nakon iskapanja. Kriterij za izbor dokumentiranih konteksta bio je njihova nedostupnost nakon iskapanja. Modeliranje je uključivalo *Agisoft PhotoScan* i *MeshLab*.

7. 3D modeliranje

Digitalna 3D rekonstrukcija bibrirskih građevina nastavljena je i ove godine. Napravljeni su modeli dviju srednjovjekovnih crkava (romanička crkva na Vratnicama i mala gotička crkva uz jugozapadni zid seoskoga groblja), a prošlogodišnji model rotunde je izmijenjen shodno novim saznanjima. Modeliranje je uključivalo *ArchiCAD* i *Artlantis* (sl. 40).

8. Arheološka baza podataka

Ispunjavanje ARK baze podataka ostaje jedan od glavnih zadataka projekta nakon iskapanja. Ovogodišnji napor usmjeren je obradi velikog broja pronađenih artefakata koje treba unijeti u bazu podataka, pa je GIS komponenta u 2015. godini ostala u drugom planu.

enced high resolution 3D modelling, micro-topography and building mapping, integrable in GIS and exploitable both in 3D reconstructions and outreach deliverables.

6. Photogrammetric modelling

Several contexts, from whole trenches to single structures or stratigraphic sequences, have been photogrammetrically recorded for *ex situ* examination. The selection criterion for the documented contexts was their post-excavation inaccessibility. The processing of the point clouds was realised in *Agisoft PhotoScan* and *MeshLab*.

7. 3D modelling

Based on a workflow involving mainly *ArchiCAD* and *Artlantis*, the digital 3D reconstruction of the excavated monuments continued this year with models of two more mediaeval churches (the Romanesque church at Vratnice, in NW part of the site, and the small gothic church next to the SW wall of the village cemetery) and the reshaping of rotunda's initial model (fig. 40).

8. Archaeological database

Populating the ARK database remained one of the main post-excavation operations. The focus on the large number of items to record made the GIS component see limited progress this year.