



### **KNJIGA SAŽETAKA I PROGRAM KOLOKVIJA**

IV. Međunarodni arheološki kolokvij

Rimske keramičarske i staklarske radionice.  
Proizvodnja i trgovina na jadranskom prostoru i šire

Crikvenica, 8. – 9. studenog 2017. godine

### **LIBRO DEGLI ABSTRACTS E PROGRAMMA DEL COLLOQUIO**

IV Colloquio archeologico internazionale

Officine per la produzione di ceramica e vetro in epoca romana.  
Produzione e commercio nella regione adriatica e oltre

Crikvenica, 8 – 9 novembre 2017

### **ABSTRACTS' BOOK AND COLLOQUIUM PROGRAMME**

4<sup>th</sup> International Archaeological Colloquium

Roman Ceramic and Glass Manufactures.  
Production and Trade in the  
Adriatic region and beyond

Crikvenica, 8<sup>th</sup> – 9<sup>th</sup> November 2017

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LIBRO DEGLI ABSTRACT E PROGRAMMA DEL COLLOQUIO  
BOOK OF ABSTRACTS AND COLLOQUIUM PROGRAMME

**Organizatori kolokvija / Organizzatori del Colloquio / Colloquium organisers**

Institut za arheologiju / Istituto di archeologia / Institute of Archaeology

Muzej Grada Crikvenice / Museo civico di Crikvenica / Crikvenica Municipal Museum

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## Program / Programma / Programme

Srijeda / Mercoledì / Wednesday

8. 11. 2017.

8.00 – 9.00 Registracija sudionika / RegISTRAZIONI / Participants' registration

9.00 – 9.45 **OTVORENJE KOLOKVIJA / APERTURA DEI COLLOQUIO /  
COLLOQUIUM OPENING**

Pozdravni govori / Saluti / Welcome speeches

Počasno otvaranje / Apertura onoraria / Invited speech -

**Eleni Schindler Kaudelka**

9.45 – 13.30 **SEKCIJE / SESSIONI / PAPERS' SESSIONS**

1.

*Uloga vodenih i pomorskih putova u distribuciji keramike i stakla:  
dokazi o lukama, dokovima i brodskim olupinama*

*Il ruolo delle vie d'acqua e delle rotte marittime nella distribuzione della  
ceramica e del vetro: evidenze dai porti, dagli approdi e dai relitti*

*The role of waterways and seaborne routes in distribution of  
ceramics, pottery and glass: evidence of ports, docking structures and  
shipwrecks*

2.

*Važnost pejzažnih značajki u proizvodnji i distribuciji keramike i stakla*

*L'importanza delle caratteristiche del territorio per la produzione e la  
distribuzione di ceramica e vetro*

*The importance of landscape features in pottery and glass production  
and distribution*

9.45 – 10.00 *Roman river barge from Kupa*

Krunoslav Zubčić, Giulia Boetto, Anton Divić

10.00 – 10.15 *Trade through the Stella River: the archaeological evidence*

Ardis Carla, Massimo Capulli, Stefano Magnani, Stefi Floreani

10.15 – 10.30 *Wine and oil of the Central Adriatic on the coast of Narbonnaise*

Marie-Brigitte Carre

10.30 – 10.45 *Neke rimske luke i pristaništa Istre i Dalmacije*

Luka Bekić

- 10.45 – 11.00 *Antički brodolom kod otočica Sv. Petra nedaleko Ilovika – stara istraživanja nove pretpostavke*  
Irena Radić Rossi
- 11.00 – 11.15 *Jadranovo – Lokvišće, rezultati pregleda podmorja antičkog lokaliteta*  
Mato Ilkić, Mate Parica, Tea Rosić
- 11.15 – 11.30 **DISKUSIJA / DISCUSSIONE / DISCUSSION**
- 11.30 – 11.45 **PAUZA / PAUSA / BREAK**
- 11.45 – 12.00 *Nalaz crikveničke amfore Tip 1 iz Nadina (ant. Nedinum)*  
Igor Borzić, Martina Čelhar, Gregory Zaro
- 12.00 – 12.15 *Roman pottery production centres in Crikvenica and Lopar (Island of Rab) in the light of new geophysical and geoarcheological research*  
Fabian Welc, Goranka Lipovac Vrkljan, Ana Konestra
- 12.15 – 12.30 *Project RED spatial database: the web interface*  
Nera Šegvić
- 12.30 – 12.45 *Distribution possibilities and transport infrastructure in northern Dalmatia's pottery workshops: evidence and problems*  
Ana Konestra, Goranka Lipovac Vrkljan
- 12.45 – 13.00 *The Amber route between Caput Adriae and Emona basin: the ceramic evidence on inner road - and water - communications*  
Iris Bekljanov Zidanšek, Petra Vojaković, Tina Žerjal
- 13.00 – 13.15 *The recent excavation of a kiln in the ceramic workshop complex of Loron (Tar-Vabriga, HR): first results of the archaeological and bioarchaeological study*  
Gaetano Benčić, Corinne Rouse, Christophe Vaschalde, Davor Munda, Kristina Gergeta Sotončić, Paola Maggi
- 13.15 – 13.30 *Late Antiquity climate forcing and its significance for the interpretation of the use of landscape*  
Katarina Botić
- 13.30 – 13.45 **DISKUSIJA / DISCUSSIONE / DISCUSSION**
- 13.45 – 14.45 **PAUZA ZA OBJED / PAUSA PRANZO / LUNCH BREAK**
- 14.45 – 18.00 **SEKCIJA / SESSIONE / PAPERS' SESSION**

3.

*Proučavanje materijalnih dokaza keramike i staklene proizvodnje: prezentacija arheološkog materijala / lokalno i regionalno*

*Lo studio dei resti materiali della produzione ceramica e vetraria: presentazione del materiale archeologico (siti / regioni)*

*The study of material evidence of pottery, ceramics and glass production  
(presentation of material assemblages from sites or regions)*

- 14.45 – 15.00 *La production de gobelets d'Aco à Lyon et Vienne: influence ou succursale d'ateliers padans?*  
Armand Desbat
- 15.00 – 15.15 *Terra sigillata Norditalica decorata a matrice intenzionalmente nera: alcune considerazioni*  
Eleni Schindler Kaudelka, Valentina Mantovani, Roby Stuani, Carla Corti
- 15.15 – 15.30 *The imports of high quality early Roman glass in mansio Romula – the social and economic context*  
Irena Lazar
- 15.30 – 15.45 *Glass finds from Tomb 7 from necropolis of Kopila hillfort on the island of Korčula*  
Anamarija Eterović Borzić
- 15.45 – 16.00 *Staklene perle s arheološkog lokaliteta Burnum (Amfiteatar, Campus)*  
Ivana Jadrić Kučan
- 16.00 – 16.15 *Roman pottery from a disposal pit in Caska*  
Zrinka Serventi, Morana Vuković
- 16.15 – 16.30 **PAUZA / PAUSA / BREAK**
- 16.30 – 16.45 *Forni tardoantichi per lucerne: attestazioni in Romagna*  
Maria Luisa Stoppioni
- 16.45 – 17.00 *Production and distribution of Late Antique glass and fine wares in Romagna (2<sup>nd</sup> – 7<sup>th</sup> century AD)*  
Tania Chinni, Enrico Cirelli
- 17.00 – 17.15 *Late Antique glass finds as indicators of an early urban development – the case of Koper*  
Zrinka Mileusnić
- 17.15 – 17.30 *Heavy unguentaria from Poetovio: cosmetic or medicinal use?*  
Eleni Schindler Kaudelka, Maja Janežić
- 17.30 – 17.45 *Stakleni nalazi s facetiranim ukrasom s prostora rimske provincije Dalmacija*  
Anamarija Eterović Borzić, Ivana Krile
- 17.45 – 18.00 **DISKUSIJA / DISCUSSIONE / DISCUSSION**
- 18.00 – 19.00 **PREDSTAVLJANJE I PROMOCIJA PUBLIKACIJA  
PRESENTAZIONE DELLE PUBBLICAZIONI  
PUBLICATIONS' PRESENTATION AND PROMOTION:**

***Terminološki rječnik antičkog staklarstva (Dizionario terminologico della produzione vetraria / Terminological dictionary of ancient glass making)*** – autori / authors: dr. sc. Ivo Fadić, Šime Perović, dipl. archeol., prof. pov.

Predstavljajući / presentano / presenters: prof. dr. sc. Anamarija Kurilić, Anamarija Eterović Borzić, dipl. archeol.

***Proceedings of the 3rd International archaeological Colloquium Roman Ceramic and Glass Manufactures. Production and Trade in the Adriatic region (Crikvenica, 4th – 5th November 2014)*** – urednici / curatori / editors: Goranka Lipovac Vrkljan, Bartul Šiljeg, Ivana Ožanić Roguljić, Ana Konestra

Predstavljajući / presenta / presenter: doc. dr. sc. Igor Borzić

19.30 **SVEČANA VEČERA** – prigodno organizirana zajednička večera (hotel Villa Ružica, Crikvenica)

**CENA** – organizzata per i partecipanti al Colloquio (Hotel Villa Ružica, Crikvenica)

**DINNER** – organized dinner for Colloquium participants (hotel Villa Ružica, Crikvenica)



9.00 – 10.30 **SEKCIJA / SESSIONE / PAPERS' SESSION**

4.

*Građevinska keramika: lokacija i organizacija proizvodnje, distribucija, regionalne posebnosti*

*Laterizi: localizzazione e organizzazione della produzione, canali distributivi, particolarità regionali*

*Ceramic building materials production: production site location, production organisation, distribution channels, regional specificities*

9.00 – 9.15 *Roman brick kilns in the area of ancient Viminacium, Moesia Superior*  
Ljubomir Jevtović

9.15 – 9.30 *Produzione di ceramica e laterizi nell'Italia Nord-orientale in epoca romana: le cave*  
Cristina Mondin

9.30 – 9.45 *Some insights on the organization of Roman brickyards – the combined effort of archaeological and experimental evidence*  
Tim Clerbaut

9.45 – 10.00 *Ceramic finds of the 6th – 8th c. from the late Antique site "Cickini" on the island of Krk*  
Ranko Starac

10.00 – 10.15 *Radionički pečati s keramičkog i staklenog materijala s lokaliteta Velika Mrdakovica u blizini Šibenika*  
Toni Brajković

10.15 – 10.30 **DISKUSIJA / DISCUSSIONE / DISCUSSION**

10.30 – 10.45 **PAUZA / PAUSA / BREAK**

10.45 – 12.15 **SEKCIJA / SESSIONE / PAPERS' SESSION**

5.

*Tehnologije, tehnike, zbirke*

*Tecnologie, tecniche, collezioni*

*Technologies, techniques, collections*

10.45 – 11.15 *Ažuriranja o recikliranju stakla u antici*  
Šime Perović

11.15 – 11.30 *Presjek kroz zbirku stakla starog vijeka iz fundusa muzeja Mimara*  
Lada Ratković Bukovčan

11.30 – 11.45 *Experimental archaeology in the Museum of Ancient Glass in Zadar*  
Berislav Štefanac, Marko Štefanac

- 11.45 – 12.00 *Experimental archeology – making of amphora lids*  
Zrinka Šimić Kanaet
- 12.00 – 12.15 *Stakloslikar i pozlatar – struka s dugom tradicijom, vještina vrhunskog majstorstva*  
Zvonka Požun

12.15 – 12.45 **POSTER SEKCIJA**  
predstavljanje, mogućnost kraćih predavanja

**SESSIONE POSTER**  
possibilità di brevi presentazioni

**POSTERS' SESSION**  
presentation, possibility of short lectures

*Stakleni askos s zadarske antičke nekropole*, Timka Alihodžić

*Roman pottery finds from the villa rustica at Novo Selo Bunje site on Brač island*, Emmanuel Botte, Kristina Jelinčić Vučković, Ana Konestra, Ivana Ožanić Roguljić

*Goods and marketplaces: wool and pottery production at Mutina and Campi Macri (Modena, Italy)*, Carla Corti

*The East Baths of Labraunda. Preliminary results of the brick study*, Alexandra Dolea

*Terra sigillata gallica dalle vecchie collezioni del Museo Archeologico Nazionale di Aquileia. Trentasei anni dopo l'ultima analisi*, Patrizia Donat

*Dressel 6B and "Caska 1" amphorae from the villa rustica in Caska, island of Pag (Croatia)*, Maja Grisonić, Nikolina Stepan

*Le anfore galliche nella Regio X: dati preliminari*, Giuseppe Indino, Andrea Cipolato, Daniela Cottica

*Adriatic amphores in Roman military contexts in Western Hispania*, Javier Heras, Jordi Principal

*Stakleni predmeti antičke luke u Zatonu*, Marija Ivić

*Brodolom s teretom krovnih opeka kod otoka Vrgade*, Filipa Jurković Pešić, Mladen Pešić

*Rimska keramika iz Sikula*, Ivanka Kamenjarin

*Brigetio trade relations in the light of the import ceramics*, Zita Kis

*Canale Anfora, recupero 1988: contributo alla conoscenza della ceramica fine orientale ad Aquileia*, Paola Maggi, Paola Ventura

*Nuove testimonianze di ceramica metallescente di Treviri da Verona*, Valentina Mantovani

*Early roman fine wares from Siscia, archaeological site "Sisak railway station"*, Ivana Miletić Čakširan

*Between the Sea and the River. Narrow-Necked Amphorae and Trade Routes in Roman Dobrudja (NE Moesia Inferior)*, George Nuțu, Simina Rafailă Stanc

*Lonci za skladištenje hrane iz Crikvenice*, Ivana Ožanić Roguljić

*Iskustva u restauraciji antičkog stakla u Arheološkom muzeju Istre*, Monika Petrović

*Interprovincial brick trade? The example of the Círculo del Estrecho*, Lourdes Roldán Gómez, Macarena Bustamante Álvarez

*Tipologija amfora s lokaliteta Kolovare-Fontana iz 2007. godine*, Dušanka Romanović

*Antičko staklo s lokaliteta Lokvišće Jadranovo*, Bartul Šiljeg, Kristina Turkalj

*Typology and Provenance of Ceramic Unguentaria from Central Dalmatia*, Marina Ugarković

*Attestazioni di terra sigillata africana ad Aquileia II. Nuovi materiali inediti dai magazzini del Museo Archeologico Nazionale*, Ella Zulini

12.45 – 13.00 **PAUZA / PAUSA / BREAK**

13.00 – 14.00 **EKSPERIMENTALNA RADIONICA I PREGLED MATERIJALA  
WORKSHOP SPERIMENTALE E VISIONE DEL MATERIALE  
EXPERIMENTAL WORKSHOP AND MATERIALS SHOW-AND-TELL**

*Predstavljanje lokalne proizvodnje građevinskog materijala s istočnoga Jadrana – pregled materijala*

*Presentazione dei laterizi prodotti nell'area dell'Adriatico orientale – visione del materiale*

*Presentation of local ceramic building materials from the eastern Adriatic – materials show-and-tell*

**Eksperimentalna radionica izrade stakla i video prezentacija**  
*Replika tehnike puhanja u kalupu*

**Workshop sperimentale e video**

*Replica della produzione del vetro soffiato a matrice*

**Experimental workshop and video – glass production workshop**

*Mold-blown glass production*

*Through the workshop the techniques and technologies of glass objects production will be shown on the basis of ancient originals. Workshop presenters Marko Štefanac and Berislav Štefanac.*

- 14.00 – 14.30 **ZAKLJUČCI KOLOKVIJA / CONCLUSIONI DEL COLLOQUIO / COLLOQUIUM CONCLUSIONS**
- 14.30 – 16.00 **PAUZA ZA OBJED / PAUSA PRANZO / LUNCH BREAK**
- 16.00 – 19.30 **POSJET** arheološkom postavu *Pomorskog i povijesnog muzeja Hrvatskog primorja u Rijeci* i razgled povijesne cjeline grada Rijeke  
**VISITA** al Museo di storia e storia navale del Litorale Croato, Rijeka e visita al centro storico di Rijeka  
**VISIT** at the Maritime and the History Museum of the Croatian Littoral, Rijeka, sightseeing of the old town of Rijeka
- 19.30 **SVEČANA VEČERA** – prigodno organizirana zajednička večera u Rijeci  
**CENA** – organizzata per i partecipanti a Rijeka  
**DINNER** – organized dinner for Colloquy participants in Rijeka

## **1. SEKCIJA / I SESSIONE / 1<sup>st</sup> PAPERS' SESSION**

**Krunoslav Zubčić, Giulia Boetto, Anton Divić**

### *Roman river barge from Kupa*

The remains of the Roman river barge found in Kamensko near Karlovac are being researched in recent years in the Kupa river. The main cargo of the ship, rather well preserved, were clay bricks. The wooden remains, measuring 2 x 13m, are also being studied by the Croatian-French team. Special attention is given to the reconstruction of the vessel architecture and dendrological analysis. The finds will be discussed here as evidence of the important inland navigation route oriented on the rivers around Karlovac within the communication system that extended to the Sava river basin and further on to south Pannonia.

**Ardis Carla, Massimo Capulli, Stefano Magnani, Stefi Floreani**

*Trade through the Stella River: the archaeological evidence*

Inland waterways played an important role in North-Eastern Italy during Roman times, completing the terrestrial road network and creating a complex, integrated system of communication. This system, linking the inland to the sea, was well exploited by landowners and manufactory owners for the distribution of their products. Archaeological evidence of this phenomenon has recently been traced in the framework of the Anaxum Project, a wider study of the Stella River's cultural landscape through time.

An underwater concentration of artefacts has been individuated near the modern town of Palazzolo dello Stella, not far from a Roman bridge on the Via Annia. It apparently pertains to one shipwreck, named Stella 1, sunk between the 1st and 2nd centuries AD, which transported mainly tiles. Their stamps single out a restricted number of producers, whose brickyards were located nearby on the river path, but whose products are widely spread both along the coast of Histria and Dalmatia and the main commercial centres of Venetia, Aemilia and Picenum. Also belonging to the cargo is a consistent number of coarse ware vessels and several glass materials, whose study is currently ongoing, focusing the comparative research on the Stella basin and the spread out area of the brick stamps.

Due to the lack of any reliable information about coarse ware and glass workshops along the river, mapping the distribution of these materials will enhance our knowledge of their system of production and distribution. Furthermore, cross-referencing the data with that provided by the bricks, will provide a better insight into the productive exploitation of the territory. Finally, due to its position and its composite materials, the site will certainly enable the reconstruction of the integrated network of various transport systems, shedding light on the commercial dynamics during Roman times, and suggesting the local producers' interests and scopes.

## **Marie-Brigitte Carre**

*Wine and oil of the Central Adriatic on the coast of Narbonnaise*

*Olio e vino del medio adriatico sulla costa provenzale*

Questo contributo ha come obiettivo di segnalare la presenza, sulla costa provenzale, di anfore per l'olio e per il vino di produzione medio-adriatica. I contenitori per il vino sono attestati, ma solo le anfore brindisine sono finora state riconosciute, a causa della loro bollatura, per il trasporto dell'olio. Lo studio del relitto di Cap Gros C vicino Antibes ha messo in evidenza un trasporto di anfore ovoidali praticamente sconosciute al di fuori della zona adriatica. Recentemente, gli scavi del pretorio della Butte Saint Antoine a Fréjus hanno messo in evidenza contesti ricchi di anfore medio-adriatiche sia per l'olio sia per il vino. Anche se rimangono sporadici, l'arrivo di questi contenitori fa emergere la domanda sulla natura di questo trasporto anomalo di fronte alla massa di importazioni dalle coste tirrenica e iberica: si cercherà di capire se si possa trattare di un'ordinazione specifica, del trasporto di prodotti dalla proprietà di un personaggio importante presente in Gallia o di un tentativo di circuito commerciale che non ha avuto futuro.

## **Luka Bekić**

### *Neke rimske luke i pristaništa Istre i Dalmacije*

Tijekom deset godina postojanja Međunarodni centar za podvodnu arheologiju u Zadru proveo je brojne podvodne preglede terena kao i iskopavanja na raznim priobalnim položajima u Istri i Dalmaciji. Velik broj ovih položaja su sidrišta, od kojih neka imaju i tragove potopljene arhitekture iz rimskog doba. Lučka postrojenja rimskog doba su različita, a uglavnom je riječ o izduženim molovima ili masivnim operativnim obalama. Nalaze se na različitim mjestima duž obale, a bez opsežnih iskopavanja koja bi se vodila i pod morem i na kopnu, teško im je odrediti pravu namjenu. U ovom prilogu predstaviti će se nekoliko zanimljivih pozicija s podvodnim ostacima rimskih lučkih objekata.

### *Some Roman harbours and quays of Istria and Dalmatia*

During the ten years of its existence of the International Centre for Underwater Archaeology in Zadar has carried out numerous underwater surveys of the terrain as well as excavations at various coastal locations in Istria and Dalmatia. A great number of these locations are anchorages, some of which have traces of submerged architecture from the Roman period. Harbour facilities from the Roman period vary, but generally, they were extended jetties or massive operational shorelines. They are located in various places along the coast, and without extensive excavations, which would be led under the sea and on land, it is difficult to determine their real purpose. In this article, several interesting positions with underwater remains of Roman harbour structures will be presented.



## **Irena Radić Rossi**

### *Ancient Shipwreck off the Islet of St. Petar near Ilovik – old research, new assumptions*

In 1962, the outstandingly preserved remains of a sunken Roman ship were found in the channel between the islet of Sv. Petar, and the island of Ilovik. In 1970, the site was already heavily looted. During the rescue research, completed at the beginning of the 1980s, many interesting finds were recovered from the deeper layers.

The cargo of the ship consisted in several types of amphorae, among which the most numerous were the Adriatic flat-bottomed containers, usually referred to as Forlimpopoli type. According to the repertoire of the finds, including one sestertius of the emperor Trajan, the site was dated to the 2nd century AD. Unusual luxurious finds, such as bronze and glassware, which probably did not belong to the ship's cargo, point to a person of higher rank who might have been present on the ship in the moment of sinking.

In 1999, a bronze statue of a young athlete was erected was recovered from the sea near the island of Vele Orjule, where no remains of the ship that carried it were located. Marijan Orlić, the director of the Sv. Petar shipwreck research project, assumed the possibility of connecting the two sites, but his assumption was neglected in the subsequent research. Arguments supporting Orlić's assumption need to be confirmed by future research.

### *Antički brodolom kod otočića Sv. Petra nedaleko Ilovika – stara istraživanja, nove pretpostavke*

Odlično očuvani ostatci potonulog antičkog broda pronađeni su 1962. godine u kanalu između otočića Sv. Petra i otoka Ilovika. Godine 1970. nalazište je zatečeno u devastiranom stanju, ali se tijekom zaštitnih istraživanja, dovršenih početkom osamdesetih godina prošloga stoljeća pokazalo kako su se u dubljim slojevima očuvali mnogi zanimljivi nalazi.

Brodski je teret činilo nekoliko tipova amfora, među kojima prevladavaju jadranske amfore ravnoga dna tzv. tipa Forlimpopoli. Zahvaljujući repertoaru nalaza, među kojima je i jedan sestercij cara Trajana, nalazište je datirano u 2. st. po Kr. Neuobičajeni luksuzni nalazi poput brončanog i staklenog posuđa, koji vjerojatno nisu pripadali brodskom teretu, upućuju na osobu višega ranga koja se u trenutku brodoloma mogla nalaziti na brodu.

Godine 1999. iz podmorja otoka Vele Orjule podignuta je brončana statua mladog atleta uz koju nisu pronađeni ostatci broda u čijem se teretu nalazila. Marijan Orlić, istraživač brodoloma kod otočića Sv. Petra, pretpostavio je mogućnost povezivanja dvaju nalaza, ali je njegova pretpostavka zapostavljena u istraživanjima koja su uslijedila. Argumente u prilog Orlićevoj pretpostavci potrebno je potvrditi budućim istraživanjima.

## **Mato Ilkić, Mate Parica, Tea Rosić**

### *Jadranovo – Lokvišće, rezultati pregleda podmorja antičkog lokaliteta*

Uvala Lokvišće u Jadranovu pokraj Crikvenice dio je šire arheološke zone koja obuhvaća gradinu na brdu Čelo i njene južne padine prema uvalama Lokvišće i Trstena te prostor poluotoka Rtac. Lokvišće se nalazi unutar morskog tjesnaca između kopna i sjeverne obale otoka Krka. Zbog konfiguracije okolnog terena, dostupnosti pitke vode i položaja na prometnoj ruti, uvala je u prošlosti mogla biti jedna od luka Vinodolskog kanala.

O intenzitetu naseljenosti ovog prostora svjedoče brojni nalazi. Tijekom protekla dva desetljeća provedena su kopnena arheološka istraživanja koja dokazuju naseljenost Lokvišća od 2. st. pr. Kr. do 5. st. po Kr. Pronađeni su ostaci arhitekture stambeno-gospodarske namjene iz 4. st. po Kr. Također od ranije su poznati podaci o devastiranoj nekropoli na poluotoku Rtac koja upućuje na postojanje manjeg nepoznatog naselja u blizini uvale tijekom 1. i 2. st. po Kr.

Godine 1970. obavljen je pregled podmorja ispred uvale Lokvišće pri čemu su pronađeni rastresiti ulomci amfora iz razdoblja od 1. st. pr. Kr. do ranobizantskog doba. Godine 2015. ponovno je provedeno rekognosciranje spomenutog područja te su pronađeni ostaci antičkoga gata na južnom dijelu poluotoka Rtac. Ulaz u uvalu Lokvišće također ukazuje na moguće korištenje danas plitke i muljem zatrpane uvale kao antičke luke. Kako bi se potvrdile ove pretpostavke potrebno je obaviti dodatna istraživanja.

## 2. SEKCIJA / II SESSIONE / 2<sup>nd</sup> PAPERS' SESSION

**Igor Borzić, Martina Čelhar, Gregory Zaro**

### *Crikvenica amphorae Type 1 from Nadin (Nedinum)*

Ancient Nedinum (today Nadin) was a Liburnian-Roman settlement whose systematic investigation began in 2015, and since 2017 it has continued within the project 'Ravni Kotari: the urbanisation and changes to the landscape in Northern Dalmatia' of the Croatian Science Foundation. The present understandings of the site, located in the very centre of Ravni Kotari in the interior of Southern Liburnia, have mainly been based on the results of multiple investigations of the necropolis. With this project the chronology, character and layout of the settlement itself and its related territory are endeavoured to be defined in detail.

At the so-called B Sector located on the northern edge of the site, continuously used from the Late Iron Age to Late Antiquity, the isolated Roman residential architecture was surrounded by the town's roads. In one of the discovered rooms, in layers of the late 1st and 2nd centuries, between the masses of movable archaeological material, mostly ceramics, were found several fragments of amphorae of the flat bottom Crikvenica Type 1. Their registering in Nadin currently represents the most eastern point of Crikvenica's workshop amphorae distribution, which additionally enriches the knowledge about its distributional strength, and appearance in specific contextual complexes.

### *Crikveničke amfore tip 1 iz Nadina (ant. Nedinum)*

Antički Nedinum (danas Nadin) je liburnsko-rimsko naselje čije je sustavno istraživanje započelo 2015. godine, a od 2017. se nastavlja u sklopu projekta „Ravni Kotari: urbanizacija i promjene krajolika u sjevernoj Dalmaciji“ Hrvatske zaklade za znanost. Dosadašnja saznanja o lokalitetu, smještenom u samom središtu Ravnih Kotara u unutrašnjosti južne Liburnije, uglavnom su bila temeljena na rezultatima višestrukih istraživanja nekropole. Ovim se projektom nastoji pobliže definirati kronologija, karakter i raster samog naselja i njemu pripadajućeg teritorija.

Na tzv. sektoru B smještenom na sjevernom rubu lokaliteta, kontinuirano korištenom od kasnog željeznog doba do kasne antike, izolirana je rimska stambena arhitektura opkoljena gradskim komunikacijama. U jednoj od otkrivenih prostorija, u slojevima kasnog 1. i 2. stoljeća, među mnoštvom pokretne arheološke građe, pretežito keramike, pronađeno je nekoliko ulomaka amfora ravnog dna Crikveničkog tipa 1. Njihovo bilježenje u Nadinu trenutno predstavlja najistočniju točku nalaza amfora iz crikveničke radionice, što dodatno obogaćuje spoznaje o njezinoj distributivnoj moći, te pojavi u konkretnim kontekstualnim cjelinama.

**Fabian Welc, Goranka Lipovac Vrkljan, Ana Konestra**

*Roman pottery production centres in Crikvenica and Lopar (island of Rab) in the light of new geophysical and geoarchaeological research*

The paper presents the results of an extensive geophysical survey conducted in Crikvenica and in Podšilo Bay (Lopar, island of Rab). The survey was performed in the framework of the project RED - Roman Economy in Dalmatia [HRZZ, IP-11-2013-3973]. During the survey Mala Geoscience/ABEM ground – penetrating radar system was used, with the application of bimodal screened transmitting antenna, with a nominal frequency of 470 MHz, while both sites were also surveyed by a Bartington Grad601 gradiometer.

In Crikvenica's case, the main aim was to identify the extension of the Roman pottery workshop discovered in 1983 to the north of the modern town, on the site Igralište (playground). Systematic excavation carried out from 2006 to 2015 by the Institute of Archaeology from Zagreb allowed the reconstruction of the complex's layout and many production features. The excavations were concentrated within an area of ca 1,800 m<sup>2</sup>, allowing an estimation that the uncovered area could represent 1/3 to 1/2 of the complex's actual extension, which must have stretched further south, below today's football field. An extensive geophysical survey was carried out in the area covered by the modern playground. Magnetic and GPR measurements revealed a number of anomalies that can be associated with anthropogenic activity at different periods, both in modern and ancient times, also revealing, in the north-western part, a concentration of anomalies that can very likely be interpreted as the remains of pottery kilns.

In 2017, selected areas of Podšilo Bay located in Lopar, on the island of Rab, were geophysically surveyed. The main aim was to document the existence of Roman architecture in two areas of the bay's hinterland, previously identified on the basis of surface finds. The geophysical survey revealed the presence of underground remains of ancient structures, probably connected with a ceramic production centre discovered near the present seashore. One of the most interesting discoveries is the location of another Roman pottery kiln, nearby the one excavated in 2009.

## **Nera Šegvić**

### *Project RED spatial database: the web interface*

The paper gives an overview of the work on the design and implementation of the spatial database of the project Roman Economy in Dalmatia (RED 3973, IP-11-2013-3973), and introduces the current web interface of the database. The project RED combines the standard archaeological research with the multi-disciplinary archaeometric analysis to define the range of ceramic production and distribution in Late Hellenistic and Roman period in the coastal areas of Roman Dalmatia. Having in mind these two main project components, it was necessary to design a spatial database as a central place for storage, manipulation, visualisation, analysis and dissemination of data gathered during the project. The design methodology adopted a standard process beginning at the high-level database definition reaching its low-level definition while progressing through the successive phases from the conceptual modelling toward the logical and, ultimately, physical modelling. The interplay of conceptual, logical and physical modelling in the design and implementation of the database serves as a foundation for future applications, one of which is the web interface also presented here. The web interface aims to give an insight on the typology of ceramic material together with the utilized ceramic fabrics produced at pottery workshops under consideration while forming a framework for further dissemination of the data gathered during the project.

## **Ana Konestra, Goranka Lipovac Vrkljan**

### *Distribution possibilities and transport infrastructure in northern-Dalmatia's pottery workshops: evidence and problems*

Within the various factors that influence the choice of location for setting up craft activity, distribution possibilities are among the most important, especially if the workshop is meant to market its products to a wider consumer area. On the other hand, the same infrastructure could have been used to source raw materials needed for production from more or less distant locations.

In the case of pottery and ceramics production, distribution possibilities are crucial for marketing both ceramics as a primary product as well as vessels meant to contain and distribute foodstuff. This is particularly true for larger workshops producing at an almost industrial scale, as well as those set up within larger rural estates.

In this contribution the distribution possibilities and transport infrastructure of northern Dalmatia's pottery workshops will be analyzed, combining landscape features, on-site evidence and the so far identified distribution patterns, in an attempt to determine how and if it influenced the choice of location. Drawing on examples from other regions, we will attempt to compare typologically diverse productive sites in the aspect of transportation infrastructure, both land and maritime, and the role it had in production organization. A wider implication of this study is to try to assess the role various transport methods had in products distribution in relation to the overall regional consumption pattern.

**Iris Bekljanov Zidanšek, Petra Vojaković, Tina Žerjal**

*The Amber route between Caput Adriae and Emona basin: the ceramic evidence on inner road - and water - communications*

Prehistoric Amber route, attested in the Argonaut Myths and mentioned by Strabo and other antique authors, connected the emporia of Caput Adriae through Karstic passes and Ljubljana basin with the Baltic sea. Some new archaeological discoveries with important ceramic assemblages confirm that. The dissemination of the imported ware from the end of the 2nd, 1st c. BC and beginning of the 1st c. AD indicates trade routes and its organisation just before and at the beginning of the Roman occupation of the area.

Sites with larger quantities of imported pottery, as Black Slip Pottery, Central Italic Cooking Ware and Thin-wall pottery and amphorae Lamb. 2, resembles early emporia and trade post from the end of the 2nd and 1st c. BC. Amounts of imported Ware differentiate this sites from the surroundings villages with prehistoric characteristics. Early emporia are supposed in the port of Piran (location Bolniška ulica 1) and Sermin on the southwest coast of Trieste gulf. On the road to the continent the trade post of Mandrga on the mountain pass Ocra (Razdrto over Nanos) appeared as a gateway between Mediterranean and Central Europe. Similar imported finds from the end of the 2nd and beginning of the 1st c. BC were found at Nauportus (today Vrhnika, location Stara pošta) on the left bank of Ljubljanica river. This was the beginning entrance to an important inner waterway, that enabled the crossing of the dangerous Ljubljana marshes. On the other end of the river stands Ljubljana – the ancient Emona, where the latest discoveries enable us to observe the assemblages of an indigenous village/settlement from the same time (location Tribuna, Gornji trg). Before the middle of the 1st century BC the imports are rare, but present in very small quantities, even in other Laten settlements in the region (among others Stična). The location of the Italic trade-post (as at Vrhnika) is not yet recognised. With the consolidation of the Roman rule in the Augustan period and deduction of the Colonia Iulia Emona the picture changed. The presence of the Roman Army and new Italic population gave an impulse to trade on larger scale. The construction of the road, via publica, through Hrušica and the northern bank/margin of the Ljubljana marsh, which was finished in the early Tiberian period, shifted a part of the main cargoes from the river to the land routes.

**Gaetano Benčić, Corinne Rouse, Christophe Vaschalde, Davor Munda, Kristina Gergeta Sotončić, Paola Maggi**

*The recent excavation of a kiln in the ceramic workshop complex of Loron (Tar-Vabriga, Croatia): first results of the archaeological and bioarchaeological study*

The workshop complex of Loron (Tar-Vabriga, Croatia) corresponds to a non-standard complex of pottery production, known as the property of senators, and then emperors (from Domitian to Hadrian). In 2017, the excavation of a large kiln perfectly preserved, with a set of intact carbonised logs of wood discovered in the praefurnium, led to a more precise interpretation of the architecture and the functioning of the kilns in the last phase of the activity of the complex.



## **Katarina Botić**

### *Late Antiquity climate forcing and its significance for the interpretation of the use of landscape*

During Late Antiquity (4th – 6th century) a change in climate is recorded. On a global scale, the decrease in temperature can be observed from the mid-4th century culminating in the pronounced negative peak around AD 450 which was accompanied by reduced solar activity. Predating the Bond 1 event for about three centuries, this episode might have been one of the causes of sediment deposition on the Roman sites in north Adriatic region. Although the decrease in precipitation is documented globally, several pronouncedly wet years can be reconstructed in Europe from tree-ring records during the 4th and 5th centuries. On a micro regional scale, as the modern records show, specific wet episodes with above normal precipitation levels can be expected in the observed region in Late Antiquity, which are not documented in available global proxies. In archaeological records, sediment deposits caused by pronounced weather/climate influence are seldom minutely recorded causing the loss of information crucial for understanding the landscape in which the settlements were situated and its dynamic throughout time. By combining the archaeological record system with geological analysis, this loss of information can be reduced.

### 3. SEKCIJA / III SESSIONE / 3<sup>rd</sup> PAPERS' SESSION

#### **Armand Desbat**

*The production of Aco beakers at Lyon and Vienne: the influence or branch of Po valley workshops?*

The discovery at Lyon, and later at Vienne, of workshops producing Aco beakers, has raised the question of the relationship between the production within these two towns and the Po valley workshops. Is it only the case of the imitation of products that were fashionable at a given time, or the testimony of the transfer of Po valley artisans to the towns of the Rhone valley, with genuine branches of the Po valley workshops being established? If the names of Aco, Hilarus, Gavius and Philarcurus are known from the Po valley, the name of Chrysippus, the main decorator at Lyon – La Murette and Saint-Romain-en-Gal, is yet unknown in that region. Nevertheless, the existence of Po valley branch workshops, like the set-up of a branch of Arezzo at La Murette, seems to be the most likely hypothesis.

*La production de gobelets d'Aco à Lyon et Vienne : influence ou succursale d'ateliers padans?*

La découverte à Lyon, puis à Vienne, d'ateliers producteurs de gobelets d'Aco, soulève la question des rapports entre la production de ces deux villes et celles des ateliers padans. S'agit-il simplement de l'imitation d'un produit à la mode à un moment donné, ou le témoin de la venue d'artisans de la vallée du Pô dans la vallée du Rhône, voire de l'installation de véritables succursales d'ateliers padans? Si les noms d'Aco, d'Hilarus, de Gavius ou de Philarcurus sont connus dans la vallée du Pô, celle de Chrysippus le principal décorateur de Lyon, la Murette, et de Saint-Romain-en-Gal, n'est pas encore attestée. Malgré cela, l'existence de succursales padanes, à l'instar de l'installation d'une succursale d'Arezzo à la Murette, semblent l'hypothèse la plus probable.

**Eleni Schindler Kaudelka, Valentina Mantovani, Roby Stuani, Carla Corti**

*Terra sigillata Norditalica decorata a matrice intenzionalmente nera: alcune considerazioni*

L'intervento vuole presentare per la prima volta insieme una serie di casi, più o meno noti in bibliografia, di ceramiche in terra sigillata nord-italica decorata a matrice (coppe tipo Sarius e bicchieri tipo Aco) prodotti con rivestimento intenzionalmente nero, alcuni dei quali precedentemente considerati esito di esposizione a fuoco secondario. Se ne analizzeranno analogie e difformità, cercando di indagare le radici di questa particolare espressione di un gusto estetico che si discosta dalla rappresentazione canonica della terra sigillata.

## **Irena Lazar**

### *The imports of high quality early Roman glass in mansio Romula – the social and economic context*

The Roman station Romula was strategically positioned at the passageway from the Krka and Sava river valley into the Pannonian plain, on the via publica Emona-Siscia; the settlement itself was located where it was also possible to control the river traffic on the Sava River (Savus), an essential type of transport in the time when river routes were easier, faster and cheaper. The ideally positioned road and customs station Romula, which was a link between Italy and the Balkan peninsula, was also marked on itineraries.

The Roman glass material from the Ribnica na Dolenjskem site is rich and diverse, proving that glass was imported to Roman Romula from all over the Empire and from different workshops. The glass objects were made in moulds or by free blowing or blowing into moulds. The site yielded several forms of glass finds previously unknown in Slovenia and the wider area; a large percentage of the finds were high-quality glass (so-called glass with ceramic profiles) of intense colours (dark blue, dark green, turquoise, blue, violet, sometimes nearly black), precious mosaic vessels from the early 1<sup>st</sup> century as well as high-quality decolourised glass from the mid-1<sup>st</sup> century AD, which imitates vessels made of rock crystal.

Their quality and the inscriptions of the glassmakers prove that they were produced in Italian and Mediterranean workshops such as Aquileia, Alexandria and perhaps even Pergamon in Asia Minor. Comparing the material from the settlement and the necropolis we will single out the importance of the site and its position along the land and river routes, and also open the questions of its possible status as an emporium.

## **Anamarija Eterović Borzić**

### *Glass finds from Tomb 7 from the necropolis of the hillfort settlement of Kopila on the island of Korčula*

The systematic archaeological investigations which have been taking place since 2012 at the site of the hillfort settlement of Kopila on the island of Korčula, are focused primarily on the necropolis i.e. on one of at least two of its nuclei, made up of mutually connected monumental tomb plots, they have enriched the present very modest knowledge about the local protohistoric community. During six seasons seven tombs were investigated, mostly dating from the 4<sup>th</sup> to 1<sup>st</sup> centuries BC. The tombs were used repeatedly, and the exceptionally large amount of archaeological material, primarily Hellenistic ceramic vessels, metallic parts of clothing and offensive weapons plus glass and amber decorated objects, points to the fact that this was an economically powerful and commercially very active indigenous community.

The present overall analysis of the material remains of the tombs have enabled the clear interpretation of the funeral customs and their specificities which are particularly recognised in two tombs (Tomb 1 and Tomb 7), in which large number of children of perinatal and natal age were buried, and which are for now a unique example within the knowledge of Illyrian funeral customs.

The glass material from Tomb 7 which consists of a large number of beads and pendants and date from the 3<sup>rd</sup> to 1<sup>st</sup> centuries BC, and which are a product of Hellenistic workshops throughout the Mediterranean will be analysed. A glass balsamary found in the context of a cremation burial inside the tomb, within the necropolis unique in every sense will also be analysed separately. This kind of burial and the connected rite represent a cultural shift in relation to earlier customs and are undoubtedly the consequence of the interaction with the Roman civilisation.

### *Stakleni nalazi iz Grobnice 7 s nekropole gradinskog naselja Kopila na otoku Korčuli*

Sustavna arheološka istraživanja koja se od 2012. godine provode na lokalitetu gradinskog naselja Kopila na otoku Korčuli, usmjerena prvenstveno na nekropolu odnosno na jedan od najmanje dvaju njezina nukleusa, sastavljena od međusobno povezanih monumentalnih grobnih parcela, obogatila su dosadašnje vrlo skromne spoznaje o tamošnjoj protopovijesnoj zajednici. U šest kampanja istraženo je sedam grobnica, većinom datiranih od 4. do 1. stoljeća prije Krista. Grobnice su bile višekratno korištene, a iznimno velika količina arheološkog materijala, prije svega helenističkoga keramičkog posuđa, metalnih dijelova nošnje i ofenzivnog oružja te staklenih i jantarnih ukrasnih predmeta, upućuje na to da je riječ o gospodarski snažnoj i trgovački vrlo aktivnoj indigenoj zajednici.

Dosadašnje sveukupne analize materijalnih ostataka grobnica omogućile su jasno iščitavanje pogrebnih običaja i njihovih specifičnosti što se posebno prepoznaju u dvjema grobnicama (Grobnica 1 i Grobnica 7) u kojima je ukopan velik broj djece

perinatalne i natalne dobi, a koje su za sada jedinstven primjer u okviru ilirskih pogrebnih običaja.

U radu će se obraditi stakleni materijal iz Grobnice 7 koji se sastoji od većeg broja perli i privjesaka datiranih od 3. do 1. stoljeća prije Krista, a koji su proizvod helenističkih radionica diljem Mediterana. Također, posebno će se obraditi stakleni balzamarij pronađen u kontekstu paljevinskog ukopa unutar grobnice, u sklopu nekropole jedinstven u svakom smislu. Ovakav ukup i vezani ritus predstavljaju kulturološki pomak u odnosu na ranije običaje te su nesumnjivo posljedica interakcija s rimskom civilizacijom.

## **Ivana Jadrić Kučan**

### *Glass beads from the archaeological site Burnum (Amphitheatre, Campus)*

During the systematic archaeological investigations of the Roman Legion camp of Burnum (in the area of the amphitheatre and military exercise grounds-Campus), a significant quantity of diverse glass material was found. The glass beads have been separated for this case. They show a wide variety of shapes and decorations, and are mostly dated to the first half of the 1st century. They originate from all the most important workshop centres of this period: Egiptian circle (Alexandria), the Syrian-Palestinian circle (Sidon) and Northern Italy (Aquileia).

### *Staklene perle s arheološkog lokaliteta Burnum (Amfiteatar, Campus)*

Tijekom sustavnih arheoloških istraživanja rimskog vojnog logora Burnum (prostor Amfiteatra i vojnog vježbališta-Campus) pronađeno je znatna količina raznovrsnog staklenog materijala među kojim su za ovu priliku izdvojene staklene perle. Pronađeni primjerci pokazuju veliku različitost oblika i ukrasa, datiraju se uglavnom u prvu pol. 1. st. i potječu iz svih važnijih radioničkih središta onog doba: egipatski krug (Aleksandrija), sirijsko-palestinski krug (Sidon), prostor sjeverne Italije (Akvileja).

## **Zrinka Serventi, Morana Vuković**

### *Roman pottery from a disposal pit in Caska*

During housing construction in 2011 in the settlement of Caska on the island of Pag, which is well known for its abundance of ancient remains, a disposal pit full of Roman pottery fragments was found. Unfortunately, only a part of the pit was preserved, as the entire foundations of the house were dug up before the Conservation department was alerted and the construction halted. However, the remaining finds are still quite indicative of the production period as well as the time of their disposal. Namely, the disposal pit was mostly filled with Roman pottery shards, predominantly tegulae, amphorae, jugs and pithoi, which all had sharp edges, indicating that they were thrown in shortly after the vessels (or construction material) fell out of use. The remains were all covered with a distinctive, mostly sterile layer of soil and at the bottom of the disposal pit a fragmented Sarius cup and a thin-walled thorn decorated cup were found, indicating the beginning and (quite short) duration of use of this pit. Furthermore, this find, situated on a mild slope extending from Sveti Juraj towards the sea, is seemingly detached from befitting a Roman context - a house or a workshop - as the nearest Roman period remains are located further south of this plot. In this paper, therefore, we shall consider the use and dating of this disposal pit, analyse the surviving pottery fragments and place them in the context of other finds in the wider Caska area.



## **Maria Luisa Stoppioni**

### *Forni tardoantichi per lucerne: attestazioni in Romagna*

Gli scavi delle officine ceramiche a Santarcangelo di Romagna hanno consentito l'individuazione di forni di piccole dimensioni, con o senza prefurnio ma costantemente dotati di pilastri laterali per il sostegno del piano forato, la cui camera di combustione era di modestissima profondità; costruiti in tecnica precaria, con coperture talore sostenute con l'ausilio di nervature formate da tubuli a siringa inseriti l'uno nell'altro, sono certamente databili al V/VI sec. I prodotti erano costituiti da oggetti di piccole e piccolissime dimensioni e, nello specifico santarcangiolese, soprattutto da lucerne a imitazione delle africane, databili al VI sec. d.C.

Con questo studio, si desidera proporre una tipologia di questi forni, indicarne i confronti con altre situazioni anche extra-regionali, riflettere sulle trasformazioni delle grandi officine ceramiche che, in età tardoantica e in regioni in cui erano venute meno le grandi produzioni anforarie, non arrestarono completamente i proprio cicli produttivi ed anzi li adattarono alle nuove realtà, economiche e sociali, rivelando duttilità e interessanti qualità imprenditoriali.

Si proporrà infine un aggiornamento della tipologia delle lucerne santarcangiolesi alla luce dei recenti rinvenimenti, che hanno aggiunto nuove decorazioni fino ad oggi sconosciute, e comunque riconducibili al tipo già noto, recante l'iconografia del Sol invictus.

**Tania Chinni, Enrico Cirelli**

*Production and distribution of Late Antique glass and fine wares in Romagna (2nd – 7th centuries AD)*

During the last season of archaeological excavations and surveys, a long tradition of local glass and fine wares production centres has been identified in Romagna (Classe, Ravenna, Rimini, Cesenatico, Faenza). These products were distributed over mid and north Adriatic sites, together with other more successful products, coming from Mediterranean trade routes, from Eastern territories and North Africa. In this paper we will try to underline the major typologies of products and forms identified in this region and to identify the production centres and distribution patterns during Late Antiquity and the Early Middle Ages.

## **Zrinka Mileusnić**

### *Late Antique glass finds as indicators of an early urban development – the case of Koper*

The early urban traces of Koper were covered and partially erased by the intensive mediaeval urban development. Chronologically they can be dated to the period of Late Antiquity. For the above-mentioned reasons, the complete reconstruction of the Late Antique urban development based on a particular small range of excavations in the urban environment is not possible at the moment and depends greatly on the cumulative study of various aspects of the material culture, such as the study of ceramic finds, glass finds, modest architectural remains and burial remains from different sites. The presentation will include the current state of research of the Late Antique glass finds based on the two largest excavated sites, one in the former Capuchin garden and the other one, unpublished excavation, in the area of the Dominican monastery. Based on the review of the finds, several topics connected to the early urban development of Koper, as well as ones dealing with the Late Antique period on the Northern Adriatic, will be tackled: the urbanisation of the coastal areas as opposed to the urban dynamics in the hinterland, the possible production of glass, distribution and trade of glass, the reconstruction of production areas of the town, the continuity of the production and continuity of the functional use of certain urban areas.

## **Eleni Schindler Kaudelka, Maja Janežić**

### *Heavy unguentaria from Poetovio: cosmetic or medicinal use?*

The Institute for the Protection of Cultural Heritage of Slovenia, Centre for Preventive Archaeology, conducted archaeological research in the former military building in Vičava in Ptuj. The remains of the former Roman colony Poetovio were found. Several construction phases and stages of use were determined. Approximately 38 thousand fragments of pottery and more than 10 thousand other finds (glass, bones, coins and building material) were discovered in this research. Among this material 11 heavy unguentaria of different sizes and shape were identified. In the past this items were described as amphora stoppers.

In this lecture we will present the new breakthroughs and ideas about these items from this excavation and also already published unguentaria from other parts of Poetovio and nearby sites.

## **Anamarija Eterović Borzić, Ivana Krile**

### *Glass finds with faceted decoration from the area of the Roman province of Dalmatia*

In the paper decorated glasses and small bowls decorated with the technique of faceting dating from the mid-1st to 2nd centuries, from the area of the Roman province of Dalmatia are analysed. These are objects of Eastern Mediterranean provenience which when considering the demanding technique in which they were made belong to the category of more luxurious products.

### *Stakleni nalazi s facetiranim ukrasom s prostora rimske provincije Dalmacije*

U radu se obrađuju dekorativne čaše i zdjelice ukrašene tehnikom facetiranja, datirane od sredine 1. do 2. stoljeća, s prostora rimske provincije Dalmacije. Riječ je o predmetima istočnomediteranske provenijencije koji s obzirom na zahtjevnu tehniku izrade pripadaju u kategoriju luksuznijih proizvoda.

#### 4. SEKCIJA / IV SESSIONE / 4<sup>th</sup> PAPERS' SESSION

**Ljubomir Jevtović**

*Roman brick kilns in the area of ancient Viminacium, Moesia Superior*

This study will analyse the brick industry of ancient Viminacium, the capital of the Roman province of Moesia Superior and military camp of the VII Claudian legion. Extensive archaeological excavations have unearthed 19 kilns used for brickmaking, located south and east of the civil settlement and the military camp. The majority of the kilns were found in the area of the southern necropolis, and seemingly belong to one, large manufacturing centre, which was used for making various ceramic products. Further, recent excavations have identified another manufacturing centre, located to the east of the city. Both centres were active during the 2nd and the 3rd centuries AD, and should be attributed to the VII Claudian legion. Additionally, finds of a few stamped bricks suggest that several private workshops existed in the territory of Viminacium.

## **Cristina Mondin**

### *Produzione di ceramica e laterizi nell'Italia Nord-orientale in epoca romana: le cave*

Le produzioni di ceramica e laterizi in Italia settentrionale in epoca romana sono numerose. Uno dei motivi principali di tale abbondanza è determinato dalla presenza di depositi argillosi di ottima qualità.

Recenti studi storico-antropologici e scavi archeologici sempre più attenti hanno permesso di portare alla luce numerose evidenze di cave e luoghi di approvvigionamento della materia prima. L'intervento mira a presentare i siti di maggiore interesse portati alla luce in Italia nord-orientale e propone una tipologia delle cave affiancando i rinvenimenti archeologici ai dati forniti dalle fonti.

## **Tim Clerbaut**

### *Some insights on the organization of Roman brickyards – the combined effort of archaeological and experimental evidence*

Brickyards, just as other Roman workshops, are highly organized. This high level of organization is closely related with an increasing level of efficiency within the production process. One of the main reasons is of course the large demand for brick and tile all around the Empire. It is in this vast expanding market that also private or civil producers find their position next to more official production sites linked to civic authorities or the Roman army. Within this paper the author explores several elements derived from epigraphic evidence, technological analysis of material finds and experimental archaeology in order to reconstruct the production process and brickyard organization in Roman times. Apart from stamps, also other (an)epigraphic elements related to Roman brick and tile are discussed (including so called 'signatures' and production lists or 'Ziegelrechnungen') in order to create a hypothetical model of brickyard organization. The results of a recent experimental approach by the author are putting this model further to the test.



## **Ranko Starac**

### *Ceramic finds of the 6th – 8th centuries from the Late Antique site 'Cickini' on the island of Krk*

During the excavations of the early Christian church and residential complex at 'Cickini' woods in the Malinska-Dubašnica municipality, a large quantity of ceramic materials and pottery was found.

Apart from cooking ware, pots and cloches, and amphorae, within the residential complex adjacent to the church, a large number of stamped tegulae datable to classical Antiquity was found. It would seem that the builders of the complex at Cickini collected these tiles from other sites and reused them to cover the roofs of the mid-6<sup>th</sup>-century buildings. There is, however, a number of rectangular bricks of uniform shape and thickness, found within the burnt layers of the roof collapse datable to the beginning of the 9<sup>th</sup> century. These bricks may have been used for flooring, but here they have been reused to repair the roofs. They are all products of a local workshop, and some examples bear depictions incised before firing, such as wavy lines as well as complex motifs from early Christian iconography.

## **Toni Brajković**

### *Workshop stamps with ceramic and glass material from the site of Velika Mrdakovica near Šibenik*

The Liburnian-Roman settlement at the site of Velika Mrdakovica, 15 km from Šibenik, has been the subject of interest for archaeologists for several decades. The first archaeological investigations at the site of the settlement were carried out back in the 1970s at micro-locations of the acropolis and below it. With regard to the then available financial resources and the fact that attention was mainly dedicated to the nearby necropolis, they did not produce more impressive results. Longer lasting and more systematic archaeological seasons in conjunction with the HERA-FB2-W-02/14 project, co-financed by the EU, were carried out in 2014/2015 and upon that occasion partly or in its entirety the south-eastern part of the settlement of an area of 1,500 m<sup>2</sup> was investigated. Within the residential and economic urban complex of 18 rooms, amongst other material, also uncovered were many fragments of tegulae and amphorae, of which several stand out with their preserved workshop stamps. In fact these stamps, documented on the mentioned ceramic material from the settlement and those from the ceramic and glass vessels and lamps studied during the current archaeological season from the Mrdakovica necropolis, are the most exact proof of trading links of the settlement on the hill of Velika Mrdakovica with the rest of the then known world, therefore in this paper we will dedicate particular attention to them.

### *Radionički pečati s keramičkog i staklenog materijala s lokaliteta Velika Mrdakovica u blizini Šibenika*

Liburnsko-rimsko naselje na lokalitetu Velika Mrdakovica, 15 km udaljeno od Šibenika, predmet je interesa arheologa već nekoliko desetljeća. Prva arheološka istraživanja na položaju naselja provodila su se, sad već dalekih, 70-ih godina prošlog stoljeća na mikrolokacijama akropole i podno nje. S obzirom na tada dostupna financijska sredstva i na činjenicu da se pažnja uglavnom posvećivala obližnjoj nekropoli, nisu dala zamjetnije rezultate. Dugotrajnija i sistematičnija arheološka kampanja u sklopu projekta HERA-FB2-W-02/14, sufinancirana od strane EU-a, obavljena je 2014./2015. godine i tom je prilikom djelomično ili u potpunosti istražen jugoistočni dio naselja na površini od 1500 m<sup>2</sup>. Unutar stambenoga i gospodarskoga urbanog sklopa od 18 prostorija, među ostalim materijalom, otkriveno je i mnoštvo ulomaka tegula i amfora od kojih se nekoliko ističe sačuvanim radioničkim pečatima. Upravo ti pečati, evidentirani na spomenutome keramičkome materijalu iz naselja te oni s keramičkih i staklenih posuda i lucerni istraženih tijekom dosadašnjih arheoloških kampanja s mrdakovičke nekropole, najezgaktiniji su dokaz trgovačkih veza naselja na brdu Velika Mrdakovica s ostatkom tada poznatoga svijeta, stoga ćemo njima u ovom radu posvetiti posebnu pozornost.

## 5. SEKCIJA / V SESSIONE / 5<sup>th</sup> PAPERS' SESSION

**Šime Perović**

### *Updates about the recycling of glass in Antiquity*

In the context of creating a more secure future, one of the most important challenges of the modern day is achieving a balance between the developmental dynamics of human society and the limits of natural resources. Studying this balance in the past was realised in several projects of experimental archaeology in the Museum of Ancient Glass in Zadar. On the basis of archaeological evidence, the repeated interpretations of the instructions of ancient authors Martialis, Statius and Pliny the Elder and on the basis of the results of archaeometric analyses, the possible forms of the recycling or restoration of damaged glass objects in Antiquity are reconstructed. This was sometimes achieved with the change in the function of the object, and also sometimes with the attempts at restoration. The descriptions of the preparation of glue which Pliny made in his work *Naturalis historia* are a clear representation of such a Roman period recycler's (restorer's) practice, and their credibility is confirmed by empirical checks carried out in the department of restoration and research of the Museum of Ancient Glass. Similarly, the recycling by the repeated melting of glass is also explained, which was absolutely opportune due to the unavailability and high cost of the basic materials (quartz and mineral soda).

### *Ažuriranja o recikliranju stakla u antici*

U kontekstu stvaranja sigurnije budućnosti jedan od najvažnijih izazova današnjice jest postizanje ravnoteže između razvojne dinamike ljudskog društva i granice prirodnih potencijala. Proučavanje te ravnoteže u prošlosti ostvareno je u nekoliko projekata eksperimentalne arheologije u Muzeju antičkog stakla u Zadru.

Na temelju arheoloških dokaza, ponovljenih interpretacija naputaka antičkih pisaca Marcijala, Stacija i Plinija Starijeg te na temelju rezultata arheometrijskih analiza, rekonstruirani su mogući oblici recikliranja ili restauriranja oštećenih staklenih predmeta u antici. To se ponekad ostvarivalo mijenjanjem izvorne funkcije predmeta, a ponekad i pokušajima prave restauracije. Opisi pripreme ljepila koje Plinije donosi u svojem djelu *Naturalis historia* zoran su prikaz takve rimskodobne reciklatorske (restauratorske) prakse, a njihova vjerodostojnost potvrđena je empirijskim provjerama provedenima u Odjelu za restauraciju i istraživanje MAS-a. Također, obrazložena je i reciklaža ponovnim taljenjem stakla, što je apsolutno bilo oportuno zbog nedostupnosti i skupoće osnovnih sirovina (kvarca ili mineralne sode).

## **Lada Ratković Bukovčan**

### *Presjek kroz zbirku stakla starog vijeka iz fundusa muzeja Mimara*

Zbirka stakla Muzeja Mimara odlikuje se izuzetnom preglednošću svekolikih rukavaca povijesti staklarstva vodeći nas kroz susljedne faze njegova razvoja; kroz složenost tehnologija izradbe i urešavanja; slojevitost stilskih i estetskih odrednica; množinu oblika i gusta mrežišta prožimanja utjecaja. Ukratko, staklarstvo nam se kroz analizu ove zbirke pokazuje u svojoj složenosti i neupitnoj ljepoti kroz ostvarenja nastala u Egiptu u razdoblju od II. tisuć. pr. Kr.; na prostranstvima Rimskog Carstva; kroz islamska srednjovjekovna ostvarenja; preko venecijanskih renesansnih uradaka te djela europskog staklarstva baroka i brojnim radovima nastalim u češkim, muranskim i njemačkim radionicama u XIX. st.

Zbirka stakla starog vijeka (90 cjelovitih predmeta i 450 ulomaka) zrcali također tu jedinstvenu sveobuhvatnost zbirke, a za ovu prezentaciju odabranih 35 predmeta potvrđuju sve njene odlike istinskog pojmovnika starovjekovnog staklarstva. Egipatski balzamarij i perle izrađeni od staklene paste omatanjem oko zemljane jezgre iz II. tisuć. pr. Kr.; grčki amforiski i enohoa iz V. i IV. st koji svjedoče o punom zamahu grčkog staklarstva; aleksandrijske zdjelice izrađene u I. st. svjedoče o usavršavanju stakla koje, dodavanjem probiranih kemijskih tvari, postaje sve prozirnije i postaje značajnom tvari izradbe luksuznih, još uvijek malobrojnih predmeta. Sirijske posude, šalice te djela nastala u Italiji i Porajnju u razdoblju od I. – IV. st. govore, pak, o istinskom bujanju staklarstva i njegovu zaživljavanju u svim segmentima života (i zagrobnog smiraja!) Rimskog Carstva.

Po pronalasku puhaljke u Siriji u I. st. pr. Kr. stakleni će predmeti u svim meandrima djelovanja na području Rimskog Carstva uistinu poprimiti odliku masovnosti no nikada neće napustiti bit cjelokupne povijesti staklarstva – sljubljenost funkcionalnosti predmeta i estetske ugone njegova oblika i uresa. Permanentna istraživanja kemijskog sastava staklene tvari, prozirnost i spektar uvijek novih boja, usavršavanje tehnika izradbe, uporaba reljefnih kalupa, brojni uvijek novi, maštoviti oblici – boce, vrčevi, tanjuri, čaše, zdjele – pokazuju nam i u ovom odabiru zbirku stakla Muzeja Mimara u svom značaju istinskog thesaurusa staklarstva svjedočeći o rađanju i izvorišnim elementima njegove povijesti.

## **Berislav Štefanac, Marko Štefanac**

### *Experimental archaeology in the Museum of Ancient Glass in Zadar*

The main objective of Zadar's Museum of Ancient Glass, apart from presenting and exhibiting glass from the Roman period, is also the study of ancient glasswork. The base for scientific research is provided by results in the field of experimental archaeology conducted in the museum's glass workshop. Experiments are conducted to attempt to set and examine hypotheses related to the explanation of the production method with which various glass recipients were made. Numerous methods, techniques, analyses and approaches, based on the archaeological material found in Roman archaeological sites in Croatia, are covered. Replicas of ancient and mediaeval glass, using original techniques, are made with an interdisciplinary approach. Research conducted so far has complemented the comprehension of multiple different methods, giving a new insight into the production of recipients with two chambers and containers with recesses. The methods of research include the testing of the means of executing minute details while using the free-blowing technique, as well as the technique of blowing into relief-ornamented moulds. The glass workshop, led by glassblower Marko Štefanac, provides a graphic display of the creation of various glass receptacles, and, through everyday demonstrations, imitates phenomena of the past with controlled experimental procedures.

## **Zrinka Šimić Kanaet**

### *Experimental archaeology – making of amphora lids*

In Tilurium, the Roman military camp, ceramic lids were used for sealing amphorae. During systematic archaeological investigations, along with standard ceramic material, 70 amphorae lids were also set aside. According to the way they were made three types are represented: plate, lids made in a mould – press, lids made on a potter's wheel and lids made from large ceramic vessels or amphorae being used again, in fact, recycled broken ceramic vessels. All the methods of making lids according to the analysis of finds from Trilurim will be reconstructed.

### *Eksperimentalna arheologija – izrada poklopaca za zatvaranje amfora*

U Tiluriju, rimskome vojnom logoru, za zatvaranje amfora rabili su se keramički poklopci. Tijekom sistematskih arheoloških istraživanja, uz standardan keramički materijal, izdvojeno je i 70 poklopaca amfora. Zastupljena su tri tipa prema načinu izrade: pločasti, poklopci izrađeni u kalupu – preši, poklopci izrađeni na lončarskom kolu i poklopci izrezani od velikih keramičkih posuda ili amfora u sekundarnoj upotrebi, zapravo recikliranjem puknutih keramičkih posuda. U radu će se rekonstruirati sva tri načina izrade poklopaca prema analizi nalaza iz Tilurija.

## **Zvonka Požun**

### *Glass painter and gilder – a profession of long tradition, the skill of superb craftsmanship*

It seems that this traditional glass profession has been left to die out. It was long ago in the past when glass painters or gilders were one of the most prestigious craftsmen of every glass workshop, a time in which they were great artists of great names. It was during the time of Secession when the skill of glass painting experienced its greatest glory.

For the gilding of glass precious molten metals or metal salts with a liquid additive which enable a better adhesion to the surface of the glass are used. The glass painter or gilder need to apply the solution in a very thin layer and with fine movements with the aid of a special brush (made of squirrel hair) or a special calligraphy pencil. After decorating the object it is baked in a special glassmaker's kiln so that the gold sticks to the surface of the glass firmly and permanently. The composition of the gilt, the condition of the surface to which it is applied, the thickness of the layer itself and the conditions of the baking all influence the quality of the coating. At the temperature of around 550 – 560 °C, the precious metals firmly bond to the surface of the glass. After the baking process, which last 4-5 hours (depending on the shape of the glass cup), distinct gold or silver tones are achieved.

A brilliant liquid gold was “invented” by Heinrich Gottlieb Kühn in 1827 in the Meißen porcelain factory. In 1879 in his company Degussa AG Heinrich Roessler developed the process of the industrial production of molten precious metals which from 1880 enabled the wide use of shiny gold. In 1896 independently of Richard Kűch the procedural possibilities for the production of shiny gold for greater needs were created for the company Heraeus.

Today this can only be purchased in specialised shops. A very viscous, brownish-black liquid of an aromatic smell of cinnamon oil or peru balsam. When decorating glass or porcelain in thin layers it is a greenish-brown colour. It dries very quickly. With the heating procedure it becomes black and eventually a beautiful pale-yellow gold colour.

### *Stakloslikar i pozlatar – struka duge tradicije, vještina vrhunskog majstorstva*

Čini se da je ova tradicionalna profesija u staklu prepuštena izumiranju. Već je davno prošlo vrijeme kada su stakloslikari ili pozlatari bili jedni od najprestižnijih majstora svake staklarske radionice, vrijeme u kojem su bili veliki umjetnici velikih imena. To je bilo vrijeme secesije, kad je stakloslikarstvo doživjelo najveći sjaj.

Za pozlaćivanje stakla upotrebljavaju se otopljeni plemeniti metali ili metalne soli s tekućim dodatkom koji omogućuju bolje prijanjanje na površinu stakla. Stakloslikar ili pozlatar otopinu treba nanositi u vrlo tankom sloju i finim pokretima s pomoću posebne četke (izrađene od dlake vjeverice) ili posebne kaligrafske olovke. Nakon ukrašavanja predmeti se peku u posebnoj staklarskoj peći da bi se zlato čvrsto i trajno spojilo sa staklenom površinom. Na kvalitetu prevlake prije svega utječu sastav

pozlate, stanje površine na koju se ona nanosi, debljina samog sloja i uvjeti pečenja. Na temperaturi od oko 550 – 560 °C plemeniti se metali čvrsto vežu s površinom stakla. Nakon procesa pečenja, koji traje 4-5 sati (ovisno o obliku staklene čaše), dobiju se izraženi zlatni ili srebrni tonovi.

Sjajno tekuće zlato „izumio“ je Heinrich Gottlieb Kühn 1827. godine u tvornici porculana Meißen. Heinrich Roessler razvio je 1879. godine u svojoj tvrtki Degussa AG proces industrijske proizvodnje otopljenih plemenitih metala koji je od 1880. godine omogućio široku upotrebu sjajnog zlata. Godine 1896. neovisno o Richardu Küchu za tvrtku Heraeus stvorile su se proceduralne mogućnosti za proizvodnju sjajnog zlata za veće potrebe.

Danas se ono može nabaviti samo u specijaliziranim prodavaonicama. Vrlo viskozna, smečkasto-crna tekućina aromatskog mirisa cimetova ulja ili perubalsam. Kod ukrašavanja na staklu ili porculanu u tankim slojevima izgleda poput zelenkasto-smeđe boje. Vrlo se brzo suši. Postupnim zagrijavanjem postaje crna i konačno prelijepa blijedožuta boja zlata.



## POSTER SEKCIJA / SESSIONE POSTER / POSTERS' SESSION

**Timka Alihodžić**

### *Glass askos from Zadar's ancient necropolis*

During the protective archaeological investigations of 2008 in Polačišće Street around 90 graves were uncovered which belong to the large necropolis of ancient Jader where over the last 30 years more than 1,500 graves have been researched. The majority of the newly-uncovered graves belong to the ritual of incineration, which as in previous investigations resulted in a large number of grave goods. A glass askos from grave 45 represents a particularity. With an insight of the more than 6,000 complete glass objects and fragments which are located in the Collection of Ancient Glass at the Archaeological Museum of Zadar not one such example is found. Analogies have not been confirmed even in the wider region of Liburnia.

### *Stakleni askos sa zadarske antičke nekropole*

Tijekom zaštitnih arheoloških istraživanja 2008. godine u Ulici Polačišće otkriveno je oko 90 grobova što pripadaju velikoj nekropoli antičkog Jadera na kojoj je proteklih 30 godina istraženo više od 1500 grobova. Većina novootkrivenih grobova pripada ritusu incineracije, što je kao i u prethodnim istraživanjima rezultiralo velikim brojem grobnih priloga. Osobitost predstavlja stakleni askos iz groba 45. Uvidom u više od 6000 cjelovitih staklenih predmeta i ulomaka koji se nalaze u Zbirci antičkog stakla Arheološkog muzeja Zadar nije pronađen ni jedan takav primjerak. Analogije nisu potvrđene ni na širem području Liburnije.

*Roman pottery finds from the villa rustica at Novo Selo Bunje site on Brač island*

An international team has been excavating a Roman villa on the island of Brač at the Novo Selo Bunje site since 2015. Evidence showed that the villa was inhabited from the 1<sup>st</sup> century to the end of the 5<sup>th</sup> century AD. Different pottery categories from different production centres were found. Amphorae came from Northern African, the Eastern Mediterranean, possibly the Eastern Adriatic and Italian workshops along with transported goods. *Sigillata* finds vary from early Italic, Eastern and later North African types. From the 3<sup>rd</sup> century ARS is dominant along with Phocaeen sigillata. Pannonian fine wares, such as dark grey PGW bowls and plates, and marmorised bowls, have also been found, as well as thin-walled ware from Italic workshops. A certain amount of tableware was not identified in terms of origin, and given the quantity, we assume it was produced in yet unknown Eastern Adriatic workshops. *Dolia* are presumed to have been produced locally too. Cooking ware is presented by different vessels, imported from the Eastern Mediterranean, the South-Eastern Adriatic (Illyrian ware) and North African workshops while some were probably produced locally. *Tegulae* mostly carry PANSIANA stamps while some had a secondary purpose as loom weights. Given the vicinity of Salona, and the fact that major trade routes did not pass close to the northern shore of the island of Brač, we assume that all imported goods came through this major centre.

## **Carla Corti**

### *Goods and marketplaces: wool and pottery production at Mutina and Campi Macri (Modena, Italy)*

In establishing pottery production sites the opportunities given by territory (natural resources and location in relation to ports and transit routes) are important, but to understand their commercial success it is also necessary to evaluate other factors and at first the presence of marketplaces and product sectors of high economic impact, such as wool and textiles.

It is necessary to consider that ceramics and clay oil lamps were, in most cases, accompanying goods and that their trade exploited the existing economic networks. The case of Mutina (Modena), where at the marketplace of Campi Macri various kinds of pottery production (ceramics, lamps and amphorae to transport the local wine) in the Late Republican period were established, offers us the opportunity to investigate this aspect. Mutina was known throughout the Roman world for the quality of its wools. Not far from the city, at the Campi Macri, there was an important cattle market with a large user base during the Roman Republic. Here also Turranius Niger, a good friend of Varro and great breeder, usually went to buy sheep (Rust. 2, praef. 6). The great success of this manufacturing sector continues until the Late Imperial time, as the Edict on Prices of Diocletian (AD 301) also shows, where the wools of Mutina are the most expensive. Even pottery production, with the production of oil lamps, continues successfully in the Imperial time, so that in some cases it has given rise to the presence of provincial branches, as documented by the moulds for Fortis Firmalampen found in Pannonia.

## **Alexandra Dolea**

### *The East Baths of Labraunda. Preliminary results of the brick study*

The present study focuses on bricks found during the East Baths of Labraunda excavations due to the large variety of forms and fabrics, but also because this material is essential for building baths, so a detailed study of the bricks would complete the excavation information and the architectural features. A fuller picture was obtained by correlating the ceramic building material data with the chronological frame brought by the pottery and the studies of other finds, and also with the archaeological information of the documented layers.

Concerning the production of the ceramic construction material no reject piece or fragment with defects of fabrication, which could indicate local production, was registered. At the current stage of research, one can assume a rather regional production than a local one. To prove or eventually disprove this hypothesis, samples were selected and used to describe the different fabrics; microscopic photos were taken, while archaeometrical analyses are planned for the near future in order to acquire a better image of the production and the development over the centuries.

## **Patrizia Donat**

### *Terra sigillata gallica dalle vecchie collezioni del Museo Archeologico Nazionale di Aquileia. Trentasei anni dopo l'ultima analisi*

Tra i materiali esposti o conservati al Museo Archeologico Nazionale di Aquileia la presenza della terra sigillata gallica è nota fin dall'inizio del XX secolo, quando Robert Knorr pubblicò i primi quattro esemplari. Un campione di proporzioni leggermente maggiori (18 esemplari) è stato, poi, edito trentasei anni fa da Franca Maselli Scotti. Si tratta, comunque, di pochi vasi, che hanno portato a ritenere che la presenza della classe ad Aquileia fosse poco significativa.

Nell'ultimo decennio le attestazioni di terra sigillata gallica ad Aquileia sono notevolmente aumentate, grazie ad una serie interventi di scavo e di indagini di superficie attuati a partire dalla fine degli anni Sessanta del secolo scorso. In seguito all'ampliamento del panorama delle conoscenze sulle presenze della classe ad Aquileia è cambiata anche l'interpretazione che si dà di queste evidenze. Per completare il nuovo quadro che si va delineando, si è deciso, dunque, di proporre un'analisi completa di tutta la terra sigillata gallica custodita al Museo di Aquileia, appartenente alle vecchie collezioni museali. Gli studi di Knorr e di Maselli Scotti ne hanno preso in considerazione, infatti, solo pochi esemplari, che non permettono di comprendere appieno l'entità e la composizione dei depositi del Museo.

## **Maja Grisonić, Nikolina Stepan**

### *Dressel 6B and 'Caska 1' amphorae from the villa rustica in Caska, island of Pag (Croatia)*

The Croatian island of Pag was part of Liburnia, the most Romanized part of the province of Dalmatia. The most important settlement on the island, Cissa, stated by Pliny the Elder (Nat. His. III, 140), is thought to be located by the largest valley known as Novaljsko Polje, which had the unique potential to be surrounded by three natural bays: the bay of Novalja – set on the main Eastern Adriatic seafaring route, Stara Novalja and Caska.

Caska is the archaeological site where curious and impressive archaeological monuments are located. The underwater excavations, directed by Irena Radić Rossi (University of Zadar) and Giulia Boetto (Centre Camille Jullian, Université Aix-Marseille, CNRS), discovered port structures and four ships that were reused in the 1st and 2nd centuries AD for the construction of piers and wharfs. On land the necropolis, part of the Late Roman settlement (excavations led by Anamarija Kurilić, University of Zadar) and the storage part of a villa rustica have been unearthed (under the direction of Goran Skelac, Georheo d.o.o.).

In this contribution we would like to present the results of the typological study of the Dressel 6B and the temporarily so-called 'Caska 1' type amphorae from the Augusto-Tiberian period, including amphorae unearthed in the villa rustica and three almost complete amphorae found during the underwater excavations in Caska bay. The 'Caska 1' type for the moment appears to have been found only in Caska, but its shape shows similarities with the Crikvenica 9 type. The Dressel 6B and 'Caska 1' from Caska show a very similar clay fabric, which is comparable to the fabric of the Dressel 6B amphorae from the kiln in nearby Novalja, excavated by the Archaeological Museum of Zadar in 1993. The local production of these ceramic containers could be connected with the maritime trade of the local resources of oil and tuna.

**Giuseppe Indino, Andrea Cipolato, Daniela Cottica**

*Le anfore galliche nella Regio X: dati preliminari*

Le anfore galliche, a differenza di altre aree geografiche del bacino del Mediterraneo, sono molto poco diffuse nella Regio X (Venetia et Istria) tra I e IV secolo a giudicare dai dati in nostro possesso. La tipologia maggiormente presente è la Gauloise 4, adibita al trasporto di vino ma anche di altri generi alimentari, proveniente da ateliers della Gallia Narbonese di cui quello di Sallèles d'Aude è il più indagato e meglio conosciuto. Al momento, solo alcuni centri importanti come Oderzo, Altino, Aquileia, Trieste hanno restituito frammenti di questi contenitori. Ma quali sono i motivi di una tale penuria di anfore galliche nella Regio X? Quali le vie di transito e di approvvigionamento percorse da tali prodotti?

## **Javier Heras, Jordi Principal**

### *Adriatic amphorae in Roman military contexts in Western Hispania*

The amphorae L2 of Adriatic origin constitute a habitual component of the material contexts of the Hispanic military supply of beginnings of the 1<sup>st</sup> century BC. Its unavoidable presence in the Roman camps of the Iberian Western must be understood in the official supply of the Roman Army, in an interior territory without urban development and distant from the Atlantic ports and coastal cities, very important elements of military logistics. Precisely, this region witnessed excellence in the internal conflicts - civil wars - that convulsed the Rome of the beginning of the century, the War of Sertorius (81-72 BC).

In this paper, we will analyse the keys to military supply, taking as a reference this particular container for the transport of wine/oil and its transit to the areas at war.



## **Maja Ivić**

### *Overview of the types of glassware of the ancient port in Zaton*

In Antiquity, just fifteen kilometres from Zadar, there was the port of the Liburnian settlement of Nin which subsequently became the Roman municipality of Aenona. Of the important finds, most attention was drawn to the find of three Liburnian serilia. The port itself was discovered in the 1960s and has been systematically researched since 2002. The last research season was carried out in 2013. During the investigations a large quantity of various material was found, primarily ceramics, and subsequently in somewhat smaller numbers objects made from glass, bone and metal, some wooden objects and pieces of leather and rope. We can seek the origin of the ceramic material in the workshops in Asia Minor, the Middle East, Northern Africa, Northern Italy and Greece, whilst we can link the glass objects to the glassworkers' workshops in Syria and Alexandria. Of the glass material to date we are familiar with the square glass bottles with handles and glasses with a curved brim and four recesses on the body (Glušćević, 1991; Glušćević 1994). From the overall quantity of found glass objects, an insignificant number has been processed, therefore with this opportunity the other types of glass objects will be shown; the glass urns (olla cineraria), cylindrical bottles, balsamaries, aryballoi, glasses and alike.

### *Pregled tipova staklenog posuđa antičke luke u Zatonu*

U antičko doba, svega petnaestak kilometara udaljena od Zadra, egzistirala je luka liburnskog naselja Nin koji je naknadno postao rimski municipij Aenona. Od važnih nalaza više je pažnje privukao nalaz triju liburnskih serilija. Sama je luka otkrivena šezdesetih godina 20. st., a sustavno se istražuje od 2002. godine. Zadnja kampanja istraživanja provedena je 2013. godine. Prilikom istraživanja pronađena je velika količina različitog materijala, prvenstveno keramičkog, a potom u nešto manjem broju predmeti izrađeni od stakla, kosti i metala, nešto drvenih predmeta te komada kože i konopa. Keramičkomu materijalu podrijetlo možemo tražiti u radionicama u Maloj Aziji, na Bliskom istoku, sjevernoj Africi, sjevernoj Italiji i Grčkoj, dok staklene predmete povezujemo sa staklarskim radionicama u Siriji i Aleksandriji. Od staklenog materijala do sada su nam poznate kvadratične staklene boce s ručicom te staklene čaše s izvijenim obodom i s četiri udubljenja na tijelu (Glušćević, 1991; Glušćević 1994). Od sveukupne količine pronađenih staklenih predmeta obrađen je neznatan broj, stoga će ovom prilikom biti prikazani i ostali tipovi staklenih predmeta; staklene urne (olla cineraria), cilindrične boce, balsamariji, aribalosi, čaše i dr.

## **Filipa Jurković Pešić, Mladen Pešić**

### *Shipwreck with a load of roof tiles by the island of Vrgada*

During a survey of the seabed of Zadar County, which was carried out of the International Centre for Underwater Archaeology of the seabed of the island of Vrgada, the location of an intact shipwreck with a load of building material was found. The bulk of the load consisted of roofing tiles (tegulae) and arched roofing tiles (imbreces). By looking at the surface area alone two different workshop stamps are obvious; C.TITI.HERMEROTIS and Q.CLODI AMBROSI. Both of these workshops were located in the region of Aquileia; the first dates from the very beginning of the 1st century, whilst the dates for the Q.CLODI AMBROSI stamp are various and the date of manufacture is placed from the beginning of the 1st century to the first decades of the 2nd century. The fact that the products of two workshops were being transported on the same ship is interesting from the aspect of ancient trade, and at the same time, it gives us indications that the workshops existed at the same time in one period.

### *Brodolom s teretom krovnih opeka kod otoka Vrgade*

Prilikom rekognosciranja podmorja Zadarske županije, što ga je proveo Međunarodni centar za podvodnu arheologiju u podmorju otoka Vrgade, otkrivena je lokacija intaktnog brodoloma s teretom građevinskog materijala. Glavninu tereta čine krovne opeke (tegulae) i kupe kanalice (imbreces). Već samim površinskim pregledom uočena su dva različita radionička pečata; C.TITI.HERMEROTIS i Q.CLODI AMBROSI. Obje se radionice smještaju u akvilejsko područje; prva se datira na sam početak 1. st., dok su za pečat Q.CLODI AMBROSI datacije različite i proizvodnja se stavlja od poč. 1. st. pa do prvih desetljeća 2. st. Činjenica da su se na istom brodu prevozili proizvodi dviju radionica zanimljiva je s aspekta antičke trgovine, a ujedno nam daje naznake da su radionice u jednom periodu egzistirale istovremeno.

## **Ivanka Kamenjarin**

### *Roman pottery from Siculi*

A short overview of the Roman pottery which was found at Siculi will be given. Although the archaeological research has been taken place for more than 20 years, the Roman pottery has only just begun to be analysed. The author will give a short description of the site and an overview of the possible imported and local types of vessels from the Roman period.

### *Rimska keramika iz Sikula*

Dat će se kratak pregled o rimskoj keramici koja je pronađena u Sikulima. Iako se arheološka istraživanja provode više od 20 godina, rimska se keramika tek počela proučavati. Autorica će dati kratak opis lokaliteta i pregled mogućih uvoznih i domaćih vrsta posuda iz rimskog doba.

## **Zita Kis**

### *Brigetio trade relations in the light of the import ceramics*

Thin-walled pottery is relatively frequent in Pannonia among fine tableware ceramics. In most cases they are found in early Roman cemeteries and settlement layers. In Pannonia they are spread over the whole province, but they are concentrated mainly along the Amber Road and the limes and appear in various forms and qualities.

On the poster I would like to give a brief summary of the types of thin-walled pottery from Brigetio (Komárom/Szőny, Hungary). Based on their fabric fineness and the quality of the coating we can separate them into two main groups. Some of them have a hard, grey fabric but in some cases we can observe that in the clay there are little remains of burnt organic materials. One part of the vessels has a good quality glossy dark grey coating on the outer and inner wall, while others have remains of weaker quality shabby greyish coating on their outer walls. The same decoration appears on more vessels of various qualities. In the case of the finer vessels it is possible that they were made in the region of Northern Italy, while the weaker ones (which have a poorer fabric and coating) we could possibly identify with a currently unidentified Pannonian workshop.

## **Paola Maggi, Paola Ventura**

### *Canale Anfora, recupero 1988: contributo alla conoscenza della ceramica fine orientale ad Aquileia*

Risalgono alla fine degli anni '80 del secolo scorso i primi lavori pionieristici sulle attestazioni, in Friuli Venezia Giulia ed in particolare ad Aquileia, delle ceramiche fini provenienti dal Mediterraneo orientale, produzioni prima qui quasi del tutto sconosciute: il quadro delle attestazioni si è via via ampliato, grazie al sistematico riconoscimento delle diverse classi (sigillata orientale, ma anche le più facilmente identificabili ceramiche megarese, corinzia, cnidia) e all'incremento dei reperti da scavo, ma resta tuttora consistente la quota di materiale inedito.

Da un lato si intende quindi procedere, anche per questo materiale, con la ricognizione dei reperti, prevalentemente privi di dati di provenienza, custoditi nei depositi di Aquileia accanto alle sigillate in parte recentemente edite o oggetto di paralleli contributi in questa sede o di prossimo studio.

Si privilegerà però ora la presentazione della ceramica fine orientale proveniente dal recupero effettuato nel 1988 da Luisa Bertacchi nel Canale Anfora, contesto il cui esame complessivo è pure già stato avviato, in continuità con quello delle indagini stratigrafiche effettuate nello stesso sito nei primi anni 2000, giunto a conclusione e di imminente pubblicazione.

Lo scavo del secolo scorso portò al rinvenimento di un'ingente quantità di frammenti ceramici, fra i quali circa 700 diagnostici pertinenti alla ceramica fine.

Il vasellame da mensa orientale comprende singoli esemplari di ceramica cnidia e corinzia, ma soprattutto sigillata: vi appartengono una decina di frammenti di orientale A tarda, un numero notevole di orientale B (oltre 100 esemplari classificabili in una dozzina di forme) e alcuni esemplari di Çandarlı.

Si conferma quindi un importante apporto dal Mediterraneo orientale, attestato in parallelo dalle numerose attestazioni di anfore e soprattutto di ceramica comune.

## **Valentina Mantovani**

### *Nuove testimonianze di ceramica metallescente di Treviri da Verona*

In seguito all'identificazione ad Aquileia (Casa delle Bestie ferite e vecchie collezioni del Museo Archeologico Nazionale) di otto esemplari di ceramica metallescente di Treviri si propone qui un aggiornamento sullo stato delle ricerche che integra la carta di distribuzione di questi pregiati manufatti con due nuovi esemplari provenienti dai siti di Via Cantore e di Vicolo Calcirelli, a Verona.

## **Ivana Miletić Čakširan**

### *Early Roman fine wares from Siscia, the 'Sisak railway station' archaeological site*

Protective archaeological research was conducted in the area of the railway track reconstruction at the railway station in Sisak from 2013 – 2014. The site is located in the centre of the Roman town Siscia. Layers and structures of Siscia's earliest phase have been found. Given the thickness of the Late Roman architecture and the vertical stratigraphy up to the depth of 7 m, the layers and structures of Siscia's earliest phase could not have been fully explored and only probing research was conducted in places where that was possible. They included smaller surfaces with recorded layers from the Late Iron Age Segestica and layers specific for the era of Augustus and Tiberius. The large number of finds on a relatively small surface area and the quality of products indicate that it is possible to connect the finds with the area of a Roman camp set up after the conquest of Segestica on the river Kupa's left bank. The poster will present fragments of Aco beakers and Sarius cups; the largest finding of this type of ceramic material in Sisak and the largest finding of this type in Pannonia. Also, thin-walled pottery and the first find of a fragment of an Egyptian glazed ceramic in the Pannonia region will be presented.

**George Nuțu, Simina Rafailă Stanc**

*Between the Sea and the River. Narrow-Necked Amphorae and Trade Routes in Roman Dobrudja (NE Moesia Inferior)*

The so-called ‘narrow-necked light clay’ amphorae have been analysed by many scholars over the decades. They occupy a prominent place among the early Roman amphorae in the Black Sea region having only minor occurrences in the Mediterranean. In Dobruja (north-east Moesia Inferior, present-day south-east Romania), they are widespread in the contexts of the early Roman period (late 1<sup>st</sup> – mid-3<sup>rd</sup> century AD). Although these containers have been studied recently, for this region, they lack a spatial analysis which might shed light on coastal and inland trade routes of this region.

Taking into account the fact that this amphora type might shed light on maritime trade in the Pontus, so far there has been no proof for this aspect. A unique find, a Roman shipwreck from the mid-2<sup>nd</sup> century AD discovered in 2016 off the Romanian coast, shows that they were traded along the seaborne routes and reached the city-harbours of the Black Sea coast. From these hubs, they were (re)distributed inland along the land routes, but were also shipped along the Danube. The shipwreck carried the amphorae of Šelov C/Vnukov SinIVC.

The overall aim of this paper is to address questions of distribution of this amphora type from the Black Sea along the Danube, towards inland Dobruja. It analyses the clustering of this amphora type in north-east Moesia Inferior in urban and non-urban settlements, civilian and military sites, using spatial and quantitative methods in order to create an overall picture of the inter-regional and regional exchange networks.

**Acknowledgments**

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## **Ivana Ožanić Roguljić**

### *Pots for the storage of food from Crikvenica*

During the research of the Roman ceramic workshop in Crikvenica vessels were discovered with one or multiple handles which were most probably used for the storage of food. The question remains about which kind of foodstuff they were used for. According to analogies, such vessels were used for the storage and transport of honey, garum, as well as other foodstuffs. Some types of vessels with multiple handles have a button-like addition to the handles whose purpose we have yet to figure out, although they could have been used to hold other vessels. All the functions that the mentioned types vessels could have performed will be considered in the poster.

### *Lonci za skladištenje hrane iz Crikvenice*

Tijekom istraživanja rimske keramičarske radionice u Crikvenici otkrivene su posude s jednom ili više ručki koje su najvjerojatnije služile za skladištenje hrane. Ostaje otvorenim pitanje za koju su vrstu namirnica služile. Prema analogijama takve su posude korištene za skladištenje i prijevoz meda, garuma, ali i drugih namirnica. Neki tipovi posuda s više ručki imaju dugmetasti dodatak na ručkama kojemu ne znamo točnu namjenu, no mogli su poslužiti za pridržavanje drugih posuda. Na posteru će se razmotriti koje su sve funkcije spomenuti tipovi posuda mogli obnašati.

## **Monika Petrović**

### *Iskustva u restauraciji antičkog stakla u Arheološkom muzeju Istre*

U ovom posteru se predstavlja načini očuvanja arheološkog stakla. Opisuju se iskustava u konzervaciji i restauraciji antičkog stakla (čišćenju, konsolidaciji, desalinizaciji, integraciji i nadogradnji) do pohranjivanja staklenih predmeta u Arheološkom muzeju Istre.

**Lourdes Roldán Gómez, Macarena Bustamante Álvarez**

*Interprovincial brick trade? The example of the Círculo del Estrecho*

In several Roman enclaves located in the area known as the Circle of the Strait, evidence has been found of a possible interprovincial trade of later material. Specifically, we refer to Baelo Claudia (Tarifa, Cádiz), for Baetica and, Tamuda (Tetuán) or Gandori (Tánger), among others, for Mauritania Tingitana.

This phenomenon, which, a priori, might seem inappropriate in a well-established economic organisation chart seems not to be the only one witnessed in the Empire, with two exemplary cases being that of the Channel and of the transit between Italy and Dalmatia.

In the poster that we present now we make a statement about the question of this phenomenon, we show all the existing evidence and analyse this phenomenon from the point of view archaeometry in order to confirm some data that, until now, has only been valued from the macrospatial point of view.

## **Duška Romanović**

### *The typology of amphorae from the Kolovare-Fontana site from 2007*

In Zadar in the area of Kolovare at the 'Fontana' site, the Archaeological Museum Zadar carried out a short underwater archaeological investigation in conjunction with the 'Doživljaj u plavom' ('Experience in the Blue') project, for International Museum Day on 18th May 2017. At the same location back in 1995 a short trial investigation was carried out and upon that occasion a cultural layer more than half a metre thick was identified. Unfortunately, over the decades material has been removed from this spot and so the individual layers, especially the upper, are completely mixed. This is a place of exceptional significance in the ancient, early mediaeval and mediaeval history of Zadar. The sea around 'Fontana' is quite shallow and in a long stretch towards the east on a coastal part there is an embankment of small and large rocks after which clear sand begins. Given that the depth of the line on which the rock stops and the sand begins, and according to the data about the raising of the sea level, it could be concluded that this is the former coastal line at which the shore ended and the sea began. In total three test pits (A, B and C) were placed, however, only individual sub-quadrants (A1/1, A1/4, B1/1, B1/4 and C1/4) were studied. The layers were relatively shallow, up to a maximum of 50 cm, although they did provide an extraordinary amount of varying material. A view of the material shows several various types of amphorae, which are determined and placed in a chronological line. All the discovered types of amphorae will be shown on the poster along with a short description and their dating.

### *Tipologija amfora s lokaliteta Kolovare-Fontana iz 2007. godine*

U Zadru na predjelu Kolovare na položaju „Fontana“ Arheološki muzej Zadar godine proveo je kratko podvodno arheološko istraživanje u sklopu projekta „Doživljaj u plavom“, u povodu Međunarodnog dana muzeja 18. svibnja 2017. godine. Na istoj je lokaciji i davne 1995. godine obavljeno kratko sondažno istraživanje i tom je prigodom utvrđen kulturni sloj debeo više od pola metra. Nažalost, na tome se mjestu desetljećima vadi materijal pa su pojedini slojevi, osobito gornji, u potpunosti izmiješani. Taj je prostor od iznimnog značenja u antičkoj, ranosrednjovjekovnoj i srednjovjekovnoj povijesti Zadra. More uokolo „Fontane“ prilično je plitko i na dugom potezu prema istoku u obalnom se dijelu nalazi nasip od manjeg i većeg kamena nakon kojega počinje čisti pijesak. S obzirom na dubinu crte na kojoj prestaje kamen i počinje pijesak, a u skladu s podacima o dizanju morske razine, moglo bi se zaključiti da se radi o nekadašnjoj obalnoj crti na kojoj je završavala obala i počinjalo more. Ukupno su bile postavljene tri sonde (A, B i C), ali istraživalo se samo u pojedinim podkvadrantima (A1/1, A1/4, B1/1, B1/4 i C1/4). Slojevi su bili relativno plitki, maksimalno do 50 cm, no dali su iznimnu količinu različitog materijala. Pregledom materijala izdvojeno je nekoliko različitih tipova amfora, koje su determinirane i stavljene u kronološku liniju. Na posteru će biti prikazani svi pronađeni tipovi amfora s kratkim opisom i njihovom datacijom.

## **Bartul Šiljeg, Kristina Turkalj**

### *Antičko staklo s lokaliteta Lokvišće Jadranovo*

Povoljan položaj uvale Lokvišća u Jadranovu bio je korišten za luku još tijekom prethistorijskog doba. Osim povoljne luke to je i najbliža točka za prijelaz na otok Krk do položaja znakovitog naziva Voz. Iz rimskog vremena ostala je zabilježena pomorska bitka koja se odvijala u ovom tjesnacu između Havišća/Lokvišća, Krka i otočića Sv. Marka 49. godine pr. Kr. između vojskovođa suparnika u građanskom ratu Pompeja i Julija Cezara.

Od početka 20. stoljeća zabilježeni su razni podaci o arheološkim ostacima na ovom području. Krajem istog stoljeća provedena su arheološka istraživanja koja su uz nalaze brončanoga doba otkrili i vrijedne nalaze iz vremena rimske vladavine na ovom prostoru. Nalazi ukazuju na kontinuirani život na Havišću/Lokvišću koji možemo pratiti od polovice 1. stoljeća pr. Kr. do 5. stoljeća tj. razdoblja kasne antike. Gotovo istu sliku vidimo u analizi staklenih predmeta pronađenih tijekom tih istraživanja. Staklo datiramo od 1. st. do 5. st. po. Kr. Usporedit ćemo ga sa rimskim lokalitetima u blizini: Crikvenica Igralište, Omišalj i Bakar ali i širim istočnojadranskim prostorom.

## **Marina Ugarković**

### *Typology and Provenance of Ceramic Unguentaria from Central Dalmatia*

Several sites along the central eastern Adriatic region (Dalmatia in modern-day Croatia) have revealed the evidence of whole or fragmentary 3<sup>rd</sup> to 1<sup>st</sup> century BCE ceramic unguentaria. These were frequently brought to light within the context of material remains of mortuary activities, but have also been discovered during excavations of residual areas in settlements and sanctuaries. As yet, little is known about the provenance of Hellenistic unguentaria from central Dalmatia. Furthermore, up until now, the regional in-depth study of these widespread ceramic containers is completely lacking.

The undertaken research employs complementary interdisciplinary methodology in order to investigate unguentaria from central Dalmatia. On one side it relies on the contextualised study of morphological, stylistic and typological features of the analysed artefacts. On the other side, a strong emphasis is set on the definition of the represented fabrics and wares. The aim is to define the shapes of the unguentaria that were produced locally and to relate imported wares with their probable provenance. In this way, it will offer some fresh evidence on the developing traits of the local ceramic workshop(s), while at the same time contribute to our understanding of Adriatic connectivity within the vivid cultural networks of the Hellenistic Mediterranean.

## **Ella Zulini**

### *Attestazioni di terra sigillata africana ad Aquileia II. Nuovi materiali inediti dai magazzini del Museo Archeologico Nazionale*

Il contributo rappresenta la continuazione dello studio della terra sigillata africana conservata nei magazzini del Museo Archeologico Nazionale di Aquileia; nel 2014 è stato pubblicato tutto il materiale fino a quel momento noto facente parte delle vecchie collezioni (84 frammenti significativi). Durante un riordino nei depositi sono stati individuati altri reperti (circa una ventina) che contribuiscono ad arricchire il panorama della classe nell'emporio altoadriatico; si tratta di oggetti riferibili a diverse produzioni, quali la A, la C e la C a rilievi applicati.





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