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**10TH**  
INTERNATIONAL  
SCIENTIFIC  
CONFERENCE  
METHODOLOGY & ARCHAEOLOGY  
Zagreb, 1<sup>st</sup> – 2<sup>nd</sup> December 2022

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# 10<sup>TH</sup>

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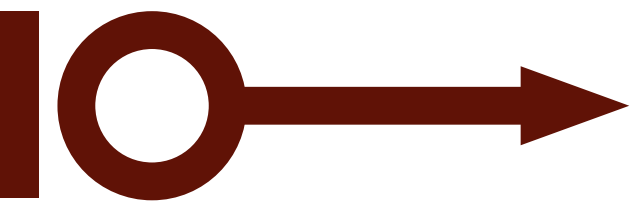
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# Book of abstracts

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**T**he scientific conference *Methodology and Archaeometry* is being organised by the Department of Archaeology, Faculty of Humanities and Social Sciences since 2013. The goal of the conference is to entice interdisciplinarity, critical thinking, new insights and approaches as well as new theoretical frameworks in contemporary archaeological science.

Coverage of a wide spectrum of themes and scientific disciplines has resulted in papers and discussions that promote scientific issues in the fields of methodology, documentation and interpretation of archaeological data.

The interdisciplinary character of the conference brings together archaeologists and researchers from other scientific disciplines with whom archaeologists collaborate closely; and who – through their work, projects and ideas – promote new insights about Interpretation of the human life in the past.

### **Section Methodology**

Obtaining and collecting data is an essential part of the archaeological research process. How we collect and interpret data defines the validity of our interpretation. We use different techniques, approaches and tools which help us to reconstruct past processes and to give a more objective and comprehensive picture of the past. Contemporary interpretation tools alleviate and speed the data collection and also provide us with countless possibilities for the interpretation, protection and presentation of archaeological sites and the landscapes encompassing them.

### **Section Archaeometry**

Having in mind the limited information we obtain from archaeological excavations and from the classification of archaeological material, cooperation with other scientific disciplines becomes necessary, to obtain as much information as possible on the conditions and the way in which humans lived in the past. Contemporary archaeology is a very heterogeneous discipline encompassing interest groups focussed on various periods, regions, theoretical frameworks and methodological techniques. Aside from the description of mechanical and physical features of a specific artefact or material, various arhaeometrical analyses help us to direct our scientific focus to questions regarding the ways and features included in the social and cultural life of people who made, used, exchanged and discarded those objects. Cooperation with the natural sciences provides answers to many questions, but it also demands an additional level of caution when selecting adequate scientific analysis for a specific archaeological problem. It also demands continuous cooperation of a specific expert and an archaeologist from sample collection to the final interpretation.





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## *PROGRAMME*





## Thursday, 1<sup>st</sup> of December

10:00 – 10:15

**Conference opening**

**Keynote lecture:**

**Chair: Ina Miloglav**

10:15 – 10:55

**Patrick Sean Quinn**

**Scientific analysis of archaeological ceramics: Findings and thoughts from a quarter century of research**

11:00 – 11:30

**Coffe break**

**Session 01**

**Chair: Jacqueline Balen**

11:30 – 11:45

**Ana Fundurulić, Ana Manhita, Sérgio Martins, Leonor Rocha, Dora Teixeira, Alessandra Celant & Cristina Barrocas Dias**

**Organic residue analysis of funerary vessels from the Great Dolmen of Zambujeiro, Portugal**

11:50 – 12:05

**Andreja Kudelić, Natali Neral & Lujana Paraman**

**Bronze Age Pottery from central Dalmatia – archaeometric approach**

12:10 – 12:25

**Maja Miše & Jelena Jovanović**

**Potters and painters: Application of geochemical analysis to Greek and Hellenistic painted vases**

12:30 – 12:45

**Benjamín Cutillas-Victoria & Anno Hein**

**Non-invasive protocol for the study of the post-firing painted ware from the Iberian Peninsula**

12:50 – 13:10

**Coffe break**



## Session 2

*Chair: Predrag Novaković*

13:10 – 13:25

**Dimitrij Mlekuž Vrhovnik**

**Modelling long-term demographic patterns of the area of Slovenia**

13:30 – 13:45

**Zoran Čučković**

**Digital landscapes: new algorithms for archaeological site detection and mapping on the basis of Lidar data**

13:50 – 14:05

**Domagoj Tončinić, Miroslav Vuković, Joško Zaninović & Domagoj Bužanić**

**The transformation of the cultural landscape between the Krka and Cetina rivers: Preliminary analysis of potential archaeological structures recognized on LiDAR images**

14:10 – 14:25

**Jerko Luka Gašpar**

**Viewshed analysis of Late Antique fortresses of eastern Adriatic coast and the methodological questions it raises**

14:30 – 14:45

**Andrej Janeš, Palma Karković Takalić & Valerija Gligora**

**The construction history of the Ledenice castle: application of the archaeology of standing structures**

14:50 – 15:05

**Michael Doneus, Bernhard Höfle, Dominic Kempf, Gwydion Daskalakis & Maria Shinoto**

**AFwizard – Human-in-the-loop development of spatially adaptive ground point filtering pipelines**

15:10 – 16:00

**Lunch break**

## Session 3

*Chair: Miroslav Vuković*

16:00 – 16:15

**Luka Gruškovnjak, Agni Prijatelj, Petra Vojaković & Matija Črešnar**

**A smithy revealed by the micro-refuse analysis in the Late Halstatt Building 24 at the hillfort of Pungrt above Ig, Slovenia**

16:20 – 16:35

**Agni Prijatelj, Luka Gruškovnjak, Petra Vojaković & Matija Črešnar**

**From a house to a stable: a micromorphological study of the Late Hallstatt Building 21 at the proto-urban hillfort of Pungrt above Ig, Slovenia**

16:40 – 16:55

**Luka Gruškovnjak**

**The influence of topography and soil geomorphology on the archaeological record within the landscape**

17:00 – 17:15

**Katarina Jerbić**

**Assessing the archaeological and paleo-environmental potential of a submerged prehistoric site: A case study from Zambratija Bay**

17:20 – 17:35

**Tena Karavidović & Tomislav Brenko**

**Reconstruction of bog iron ore deposits in the lowland landscape: a case study predictive model for the analysis of exploitation in archaeological periods**

17:40 – 18:00

**Coffe break**

#### **Session 4**

**Poster presentation**

18:00 – 18:30

**Mila Andonova-Katsarski**

**Bio-archaeology of the pit-fills of Sexaginta Prista (2BC – 1AD)**

**Dario Hruševar, Koraljka Bakrač, Božena Mitić, Ivona Baniček & Rajna Šošić-Klindžić**

**The Neolithic site Gorjani-Topole – preliminary results of palynological analysis from the Slavonia region (eastern Croatia)**

**Valentina Lončarić**

**Image-based low-powered technological analysis of archaeological ceramics and its potential on-site and educational applications**

**Dunja Martić Štefan**

**Sickle gloss on knapped flint artefacts recovered at the Galovo Site in Slavonski Brod and the Dužine site in Zadubravlje**



**Emilija Nikolić, Ivana Delić-Nikolić, Ljiljana Miličić, Nevenka Mijatović, Mladen Jovičić & Snežana Vučetić**

**Searching for elements – creating a composition: from archaeometry to conservation of Roman constructions on the Danube in Serbia**

**Tosho Spiridonov & Svilen Stoyanov**

**DAGIS 4.0 – Balkan Information System**

**Katarina Šprem, Lana Blažinić, Elena Orbanić & Adriana Sponza**

**Lithic analysis of finds from the field surveys of Lovas Municipality, Eastern Croatia**

**Selena Vitezović, Danica Mihailović, Vidan Dimić & Dragana Antonović**

**Tracing prehistoric mines and quarries: preliminary results of the field survey of Rudnik area (Central Serbia), campaign 2021**

**Katarzyna Zdeb & Maciej Sierakowski**

**Food biomarkers in glazed pottery**

**Veronika Gencheva**

**Geospatial archaeological database of Eastern Rhodopes, Bulgaria**

**Milica Tapavički-Ilić & Timka Alihodžić**

**All soul is immortal (Plato)**

**Pio Domines Peter**

**More than shells and shrapnels: Approaching the materiality of Second World War in karst landscape - Case study of battlefield site on Kozjak hill (Senj, Croatia)**

**Sara Iglić, Igor Kulenović & Šime Vrkić**

**Community, archaeology and modern conflicts – example of Obrovac, Croatia**

**Friday, 2<sup>nd</sup> of December**

**Session 5**

***Chair: Selena Vitezović***

**10:00 – 10:15**

**Petros Chatzimpaloglou**

**Provenance investigation of stone tools and its archaeological application**

**10:20 – 10:35**

**Vidan Dimić**

**The use of polished stone axes and adzes in the Neolithic of Serbia - experimental research**

10:40 – 10:55

**Kata Szilágyi, György Szakmány, Sági Tamás, Józsa Sándor, Szilágyi Veronika, Oláh István, Anett Osztás & Katalin T. Biró**

**Preliminary results of provenance studies on the polished stone material at the Neolithic site of Alsónyék, Hungary**

11:00 – 11:15

**Tamás Sági, György Szakmány, Sándor Józsa, Veronika Szilágyi, Kristóf Fehér, István Oláh & Anett Osztás**

**Polished stone tools from the Bátaszék-Alsónyék Neolithic settlement (Hungary)**

11:20 – 11:50

**Coffe break**

## Session 6

*Chair: Maja Miše*

11:50 – 12:05

**Meghna Desai & Thilo Rehren**

**Carbon content determination of hypereutectoid wootz steel using image analysis**

12:10 – 12:25

**István Fórizs & Kata Dévai**

**New data on the cage cup fragments from Gorsium/Herculia, Pannonia (Hungary)**

12:30 – 12:45

**Mila Andonova-Katsarski**

**The archaeological softwoods of ancient Serdica (Sofia, Bulgaria)**

12:50 – 13:05

**Katarina Botić, Tena Karavidović, Tajana Sekelj Ivančan & Metka Culiberg**

**Between technological choices and resource availability: an insight into wood exploitation strategies for iron production and common use**

13:10 – 13:25

**Ana Đuričić**

**Late Neolithic Vinča culture hearths – location identification and function**

13:30 – 14:00

**Coffe break**

## **Session 7**

*Chair: Nikola Vukosavljević*

**14:00 – 14:15**

**Tina Bareša, Ivan Jerković, Anita Adamić Hadžić, Mario Šlaus, Mislav Čavka, Željana Bašić & Ivana Kružić**

**Visibility of epigenetic cranial traits on multi-slice computed tomography (MSCT) scans and dry bones**

**14:20 – 14:35**

**Lia Vidas, Sara Silvestrini, Matteo Romandini, Federico Lugli, Cristina Real Margalef, Siniša Radović, Ivor Janković & Stefano Benazzi**

**Filling in the blanks: the application of palaeoproteomics in faunal analysis**

**14:40 – 14:55**

**Kyriaki Tsirtsis & Evi Margaritis**

**Plants and people in Classical/early Hellenistic Sikyon: what we got through the analysis of archaeobotanical material**

**15:00 – 15:15**

**Andreja Sironić, Alexander Cherkinsky, Damir Borković, Jadranka Barešić & Ines Krajcar Bronić**  
**International radiocarbon mortar dating intercomparison – MODIS2**

**15:20 – 15:35**

**Marija Krečković Gavrilović, Mihailo Radinović, Marko Porčić, Jugoslav Pendić, Lidija Milašinović & Sofija Stefanović**

**Absolute and relative chronology of the Early Bronze Age necropolis in Mokrin, Serbia**

**15:40 – 15:55**

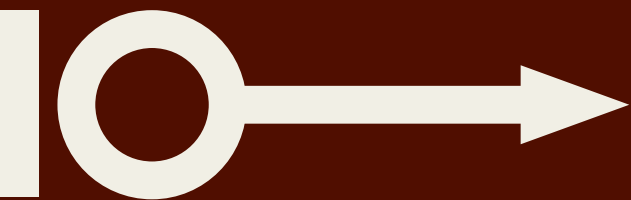
**Predrag Novaković**

**How much and what STEM are we teaching in archaeology?**

**16:00**

**Closing**

## ***ABSTRACTS***





## **Selena Vitezović, Danica Mihailović, Vidan Dimić & Dragana Antonović**

Institute of Archaeology, Belgrade, Serbia

### **Tracing prehistoric mines and quarries: preliminary results of the field survey of Rudnik area (central Serbia), campaign 2021**

**P**rehistoric communities exploited diverse sources of raw materials, from relatively small ones up to large mines and quarries. However, tracing down in the archaeological record the exact source of raw material exploitation is in certain occasions rather difficult – these sources may have been completely destroyed and exhausted with later activities, they may have been comprising small, difficult to detect area, preserved archaeological traces may be too scarce to be detected, etc. Certain areas where the present-day geological data show that sources of raw materials are relatively abundant and particularly interesting for archaeological research. One of these areas is Rudnik mountain, the second major volcanic area in central Serbia, known for its richness and variety of raw materials used in the past. Abundant historical and archaeological record of Rudnik showed intensive exploitation of diverse ores in medieval and pre-modern times., as well as prehistoric exploitation of malachite, dated to the Bronze Age period. The site of Prljuša – Mali Šturac was discovered in the 1980s; research with the limited scope was then conducted and systematic research was initiated in 2011 and is still in progress. However, the settlements of the populations that exploited this mine are unknown. Furthermore, the area of Rudnik mountain and adjacent areas are also known for sources of diverse lithic raw materials. This is why the Archaeological Institute in Belgrade initiated systematic field reconnaissance with the main scope to search for sources of raw materials exploited in prehistory and associated settlements. In this poster will be presented the preliminary results of the 2021 field survey campaign. During the 2021 campaign, the areas of the municipalities of Kragujevac and Knić were extensively surveyed. Three modern quarries and their adjacent areas were researched, Ramača, Rogojevac and Vučkovica, and limited traces of prehistoric activities were discovered in the relative vicinity.

## **Zdeb Katarzyna<sup>1</sup> & Maciej Sierakowski<sup>2</sup>**

<sup>1</sup> Institute of Archaeology, University Cardinal Stefan Wyszyński in Warsaw, Poland

<sup>2</sup> Institute of Biological Sciences, University Cardinal Stefan Wyszyński in Warsaw, Poland

### **Food biomarkers in glazed pottery**

**T**he authors of the poster will present the results of chemical tests carried out on ceramic vessels from late medieval and early modern sites. The aim of the research was to check the function of the vessels covered with glaze. Did the dishes serve as a kitchen and table, or only decorative? Samples taken from the vessels were tested by gas chromatography combined with mass spectrometry. As a result of the research, data on food biomarkers were obtained. The fatty acids were extracted from the dishes and then analyzed and interpreted to identify the types of food that had been in contact with the dishes. The authors will present the possibilities and limitations of the GC-MS method in the identification of food on the basis of fatty acids extracted from the pores of ceramic vessels.



**STORIES OF THE PAST —  
JOURNEY INTO LOST LANDSCAPES**

During the conference the exhibition of the Archaeological Museum in Zagreb *Stories of the Past – Journey Into Lost Landscapes* will be presented in the Library Hall of the Faculty of Humanities and Social Sciences.

The exhibition will be opened from  
**1<sup>st</sup>–9<sup>th</sup>** of December 2022.

arheološki  
muzej  
u zagrebu  
archaeological  
museum  
in zagreb

# PRIČE IZ PROŠLOSTI — PUTOVANJE U IZGUBLJENE KRAJOLIKE

## — STORIES OF THE PAST — JOURNEY INTO LOST LANDSCAPES

 **Interreg**   
Danube Transnational Programme  
Danube's Archaeological  
eLandscapes



izložba  
exhibition

01-09-12-2022



The exhibition ***Stories of the past – journey into lost landscapes*** allows visitors to experience the heritage as it once was through the use of the latest visualizations of virtual and augmented reality technology, created as part of the Interreg project *Virtual Archaeological Landscapes of the Danube Region*.

Digital visualizations are presented through different media and they offer visitors to explore the landscape of three Iron Age sites through VR glasses (Kaptol in the Požega basin in Croatia, Großklein in Austria and Ulaka in Slovenia). Digital visualizations of the Paleolithic site of the Vindija cave near Varaždin, the Bronze Age site of Viškovci-Gradina near Đakovo, the Iron Age site of Großklein in Austria and the Roman city of Flavia Solva in Austria are presented via touchscreen technology.

### **The exhibition will be opened in the following period**

1<sup>st</sup> – 2<sup>nd</sup> of December 2022 during the MetArh conference

5<sup>th</sup> – 9<sup>th</sup> of December 2022 from 10 am to 4 pm

Exhibition is organized by the Archaeological Museum in Zagreb.

### **Authors of the exhibition**

Porin Šćukanec Rezniček

Marta Rakvin

### **Coordination**

Jacqueline Balen

Project *Virtual Archaeological Landscapes of the Danube Region* (acronym: *Danube's archaeological eLandscapes*, DTP: 3-641-2.2) is implemented within Interreg Transnational Cooperation Programme VB Danube 2014-2020 and it is co-funded by the European Regional Development Fund (ERDF).

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## Thin Section Petrography, Geochemistry and Scanning Electron Microscopy of Archaeological Ceramics

PATRICK SEAN QUINN (AUTHOR)

Using over 400 colour figures of a diverse range of artefact types and archaeological periods from 50 countries worldwide, this book outlines the mineralogical, chemical and microstructural composition of ancient ceramics and provides comprehensive guidelines for their scientific study within archaeology.

Thin section petrography, geochemistry, scanning electron microscopy and X-ray diffraction are key scientific methods used to investigate the raw materials, origins and production technology of archaeological pottery, ceramic building materials, ancient refractories and plaster. Using over 400 colour figures of a diverse range of artefact types and archaeological periods from 50 countries worldwide, this book outlines the mineralogical, chemical and microstructural composition of ancient ceramics and provides comprehensive guidelines for their scientific study within archaeology. The core of the book is dedicated to the versatile approach of ceramic petrography. This is complemented by a detailed account of the principles of bulk instrumental geochemistry, as well as the SEM microanalysis and XRD characterisation of ceramics. The book is intended as a reference manual for research as well as a course text for specialist training on scientific ceramic analysis.

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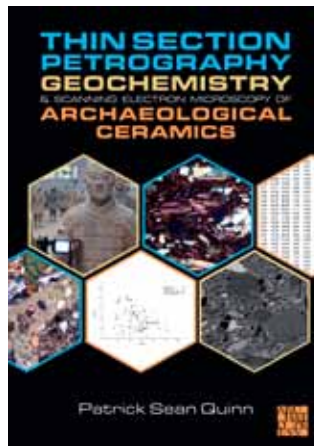
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Papers from the 1<sup>st</sup> and 2<sup>nd</sup> conference *Methodology and Archaeometry* are published in the Journal *Opuscula Archaeologica* 39/40, Department of Archaeology, Faculty of Humanities and Social Sciences of the University of Zagreb, Zagreb, 2018.

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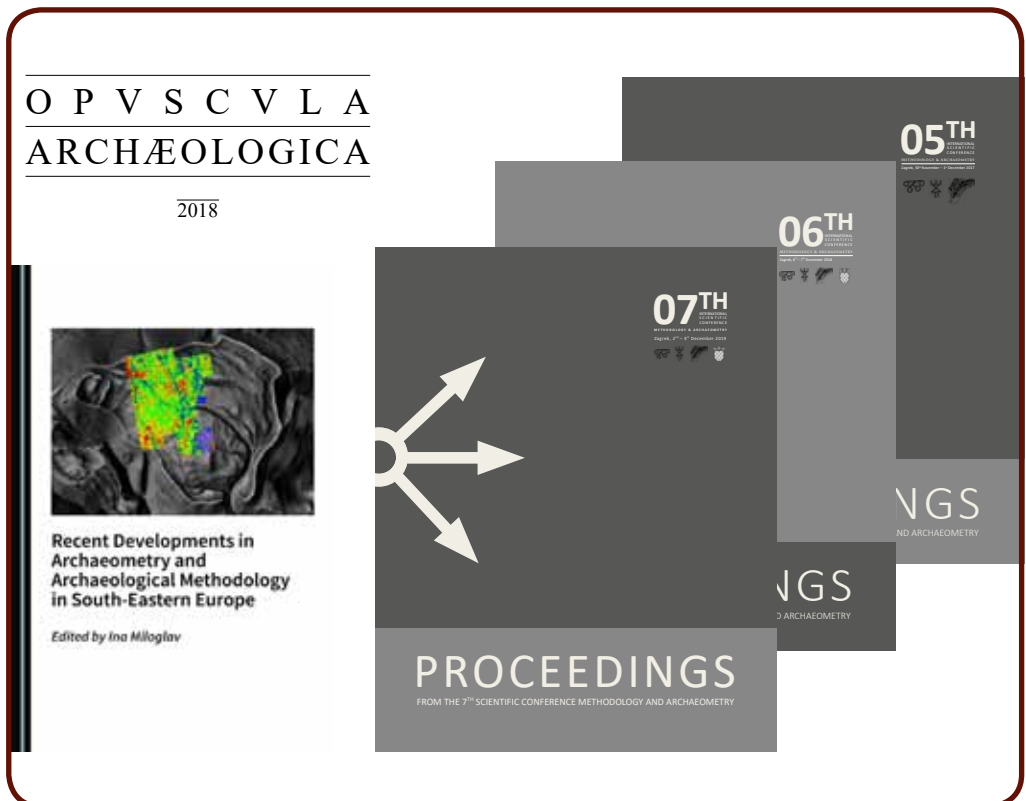
Papers from the 3<sup>rd</sup> and 4<sup>th</sup> conference *Methodology and Archaeometry* are published in a book *Recent Developments in Archaeometry and Archaeological Methodology in Southeastern Europe*, Cambridge Scholars Publishing, Cambridge, 2020.

[https://www.cambridgescholars.com/recent-developments-in-archaeometry-and-archaeological-methodology-in-south-eastern-europe?fbclid=IwAROnMmPB4m\\_ulzm6gSxWiqDi422uRsReS9Oy-0OwLrP9GyjM3R316DGhchas](https://www.cambridgescholars.com/recent-developments-in-archaeometry-and-archaeological-methodology-in-south-eastern-europe?fbclid=IwAROnMmPB4m_ulzm6gSxWiqDi422uRsReS9Oy-0OwLrP9GyjM3R316DGhchas)

Since 2019 papers from the conference are published in the *Proceedings from the scientific conference Methodology and Archaeometry* on a platform for open access books from the Faculty of Humanities and Social Sciences of the University of Zagreb (FF Open Press).

Proceedings from the 5<sup>th</sup>, 6<sup>th</sup> and 7<sup>th</sup> conference are available on:

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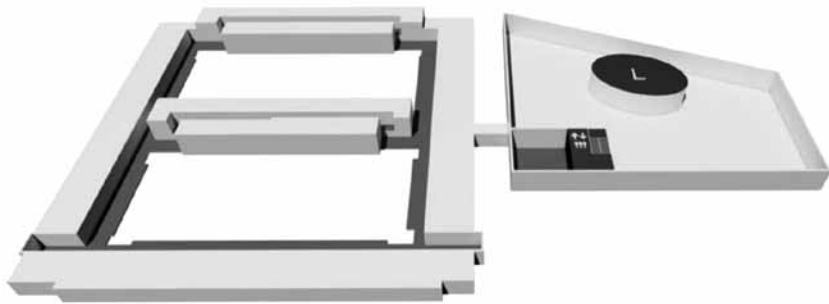


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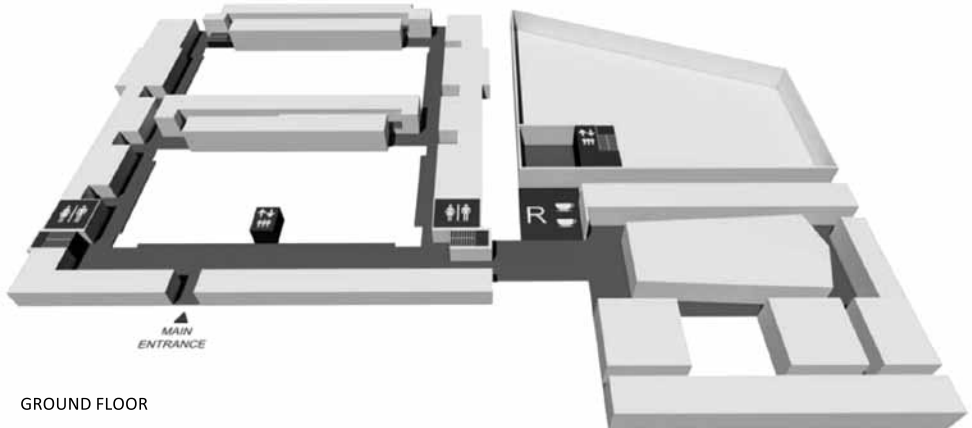
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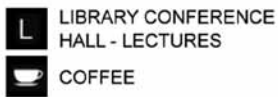




2ND FLOOR



GROUND FLOOR

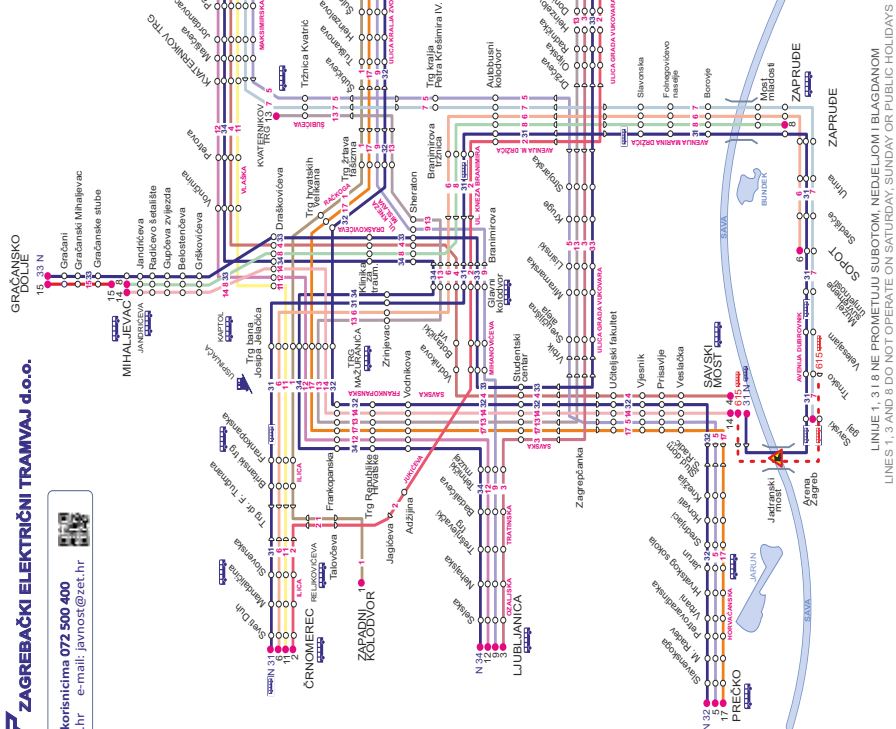


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