

Institute of archaeology



Institut za arheologiju

7th International Conference on Mediaeval Archaeology

7. međunarodni znanstveni skup srednjovjekovne arheologije

Secrets of iron - from raw material to an iron object

Tajne željeza - od sirovine do željeznog predmeta

Book of Abstracts / Knjiga sažetaka

Zagreb, 10th – 11th September 2020
Zagreb, 10. – 11. rujna 2020

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Programme and the Book of Abstracts
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Ladislav Lazić, Aleksandar Durman:**Mining and Metallurgy in the Trgovi Heights and Northwestern Bosnia in the Roman period with special emphasis on the iron production**

Metallurgy in the territory of the present-day Sisak and Banovina, as a region of Sisak-Moslavina County, was developed from the Vučedol Culture as well as later Celtic and Roman elements. The main reason for this connection between Sisak and iron metallurgy lies in the immediate hinterland, south of Sisak, next to the mouth of the Sana River where it flows into the Una River. The main deposits and occurrences of metals are related to the border area of the Zrinska Gora and Trgovi Heights on the direction Gvozdansko – Trgovi on both sides of the Žirovac stream. The prevailing opinion is that the iron, copper, silver-bearing lead, and barite deposits of the Trgovi Heights were formed from Upper Paleozoic sediments and belong to the Hercynian metallogenic epoch. The Paleozoic of the Trgovi Heights is a northwest extension of the much larger and more metallogenetically important Una-Sana Paleozoic, i.e. the area located between the cities of Bosanski Novi, Prijedor, and Sanski Most. In Illyrian and Roman times, it was primarily mined for hard limonite ore from the oxidation zone of siderite deposits. The ore deposits in the Trgovi Heights and Northwestern Bosnia are listed, with an emphasis on traces of mining for metal ores in the ancient period. Also, the goal is to shed light on the then-existing technologies of metal production, particularly iron.

Mirko Vranić:**Medieval iron mining of the Kopaonik region: the state of exploration and potential future research**

The development of ore mining and processing technology started in the mid-13th century, which led to the spread of mining centres in all parts of the Serbian medieval state. There is not much information regarding the production of iron ore in the written sources, however, the toponyms and different types of material remains indicate a certain level of production. The Kopaonik basin has a confirmed continuity of mining and metallurgy since prehistory and encompasses several mines. In addition to confirmed lead mining, iron mining was also developed. Geological and archaeological investigations have revealed traces of mining and metallurgical complexes in the vicinity of which iron ore and slag were deposited. These remains were mostly located alongside rivers. Furthermore, mining equipment and tools point to the existence of local workshops (smithies). In addition to summarizing the published results of the aforementioned archaeological and geological research regarding iron mining in the Kopaonik region, this paper will also present the spatial distribution of



known medieval sites of different types (fortifications, settlements, cemeteries), in relation to iron ore deposits known in the Middle Ages.

Bartul Šiljeg, Hrvoje Kalafatić:

Aerial archaeology in the study of metallurgical activities in eastern Croatia

The project Aerial Archaeology in Eastern Croatia started in 2012 at the Institute of Archaeology. This part of Croatia was chosen for various reasons: archaeological sites from all periods are abundant, the fertile land divided into large plots is ideal for aerial survey, airports with planes suitable for aerial photography exist, as well as a tradition of local museums and conservation offices who have diligently surveyed their regions from the end of the 19th century onwards. The project has also been supported by the Croatian Ministry of Culture since 2014, so there has been an intensification of photographing and remote sensing. Remote research into sites involved recognition using classic archaeological methods: crop marks, soil marks, and more rarely shadow marks. Some 350 sites have been documented throughout the entire region of eastern Slavonia. The combination of the analysis of aerial photographs from various sources and field surveys has provided a completely new view of land use, population distribution, and manners of survival in all historical periods in the area under observation. Certain finds that indicate metallurgical activity in the region were gathered during field survey. They are associated with Roman, medieval, and modern period sites. A spatial image will be presented of the sites in the region of eastern Croatia.

Branko Mušič, Tajana Sekelj Ivančan, Barbara Horn:

TransFER – Iron production along the Drava river in the Roman period and the Middle ages: Creation and transfer of knowledge, technologies and goods. Case studies of Virje, Velike Hlebine, Dedanovice, Bakovčice, Nađbarice and Ždala

The archeological goals of geophysical research using the magnetic method were to identify the remains of medieval ironworks (iron-smelting workshops, iron production waste material in the form of different slag types, burnt clay from furnace walls in various forms, etc.). All of these sites with indications of ironworks have been discovered by a previous archaeological field survey as part of the regular activities of the TransFER project (IP-06-2016-5047), financed by the Croatian Science foundation. Magnetic method prospections has revealed concentrations of refuse material associated with iron-production activities at all of these sites which are situated in the Croatian lowland, on the bank of the upper course of the Drava river. Since these