

An Imperial Town in a Time of Transition. Life, Environment, and Decline of Early Byzantine Caričin Grad

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Abstract

The site of Caričin Grad in south-eastern Serbia – currently listed on UNESCO’s tentative list – has been the subject of archaeological investigations for more than 100 years. For the last decades it has been the focus of a joint project of the Archaeological Institute in Belgrade and the École Française de Rome. A reconstruction of the economic, environmental and social history of the city is the main objective of a cooperative project started in 2014 with the Römisch-Germanisches Zentralmuseum Mainz.

The remains of the early Byzantine complex of Caričin Grad show the features of a city built in the

classical, Hellenistic-Roman tradition, combined with ecclesiastical Christian architecture. Based on the comparison of Byzantine text sources with the settlement’s topography and its architecture, Caričin Grad is supposed to be identical to Iustiniana Prima, a city newly founded by the Emperor Justinian as the region’s episcopal and administrative centre.

With the period of occupation covering a mere 90 years, from circa AD 530 to circa AD 615, the site allows a rare archaeological “snapshot” of a short period of very intensive use, which furthermore remained undisturbed from later encroachments. Due to these circumstances, Caričin Grad offers the unique opportunity to analyse a city at

the turn of the Late Antique era to the Early Medieval epoch and the complex issues associated with periods of cultural transition.

Based on the perspective of human ecology and social sciences, the project will establish new approaches and investigate the concept of “The Short Life of an Imperial City” during periods of cultural transition by using methods of archaeozoology, archaeobotany, geoarchaeology, soil science and GIS.

The main topic addressed within this context, “Households, consumption and everyday life” will deal with single domestic units concerning methods of production, consumption and activity zones regarding comestible goods. This perspective on the town and its consumption will be complemented by a viewpoint on the surrounding landscape focussing on its resources and agrarian production.

Keywords: Urban Archaeology, Household Archaeology, Ecological Archaeology, Environmental Archaeology, Late Antiquity

Introduction

Caričin Grad is a prominent late antique site in the Central Balkans. Based on the comparison of Byzantine written sources with the settlement’s topography and its architecture, Caričin Grad is supposed to be identical to Iustiniana Prima, a city newly founded by the Emperor Justinian as the region’s episcopal and administrative centre (for this debate see Snively, 2001). The town itself is divided in an acropolis with the episcopal basilica and palace, an upper, and a lower town with some newly discovered suburbs (Bavant, 2007; Duval & Popović, 2010). With the period of occupation covering a mere 90 years, from around AD 530 to AD 615, the site allows a rare archaeological “snapshot” of a short period of very intensive use, which furthermore remained undisturbed from later encroachments.

Perspectives

Therefore, Caričin Grad offers the unique opportunity to analyse a city at the turn of the Late Antique era to the Early Middle Ages and the complex issues associated with periods of cultural transition. Hence, the main objective of the new project “The Short Life of an Imperial City” is to reconstruct different aspects of the city’s economic, environmental and social history and to understand the town as a human ecosystem.

Households, Consumption and Everyday Life

A first, town-centred part of our research deals with domestic units concerning consumption, methods of production and activity zones regarding comestible goods. As a case study the first campaign in summer 2014 focused on a small 18 sq m, rather simply built and modestly equipped building, directly outside of the acropolis’ fortification. The small house, called “Building 23”, had a loam floor and a small fireplace which was probably aired via a chimney. The find of a sickle blade indicates amongst other finds a background in agriculture. Technically we adopted excavation strategies by consequent single point measurement, systematic soil sampling and GIS-implemented 3D photography. We investigated destruction and occupation layers in order to gain archaeobotanical, archaeozoological as well as data from soil analyses, which will provide some insights in daily life activities.

Resources for Building and Maintaining Caričin Grad

Questions of energy needs, nutrition and other supplies connect the small-scale household perspective to landscape archaeology in the surroundings of the town. Based on an existing 3D reconstruction, the amount of material needed for the construction of the city will be estimated. Detailed excavations will provide data for con-

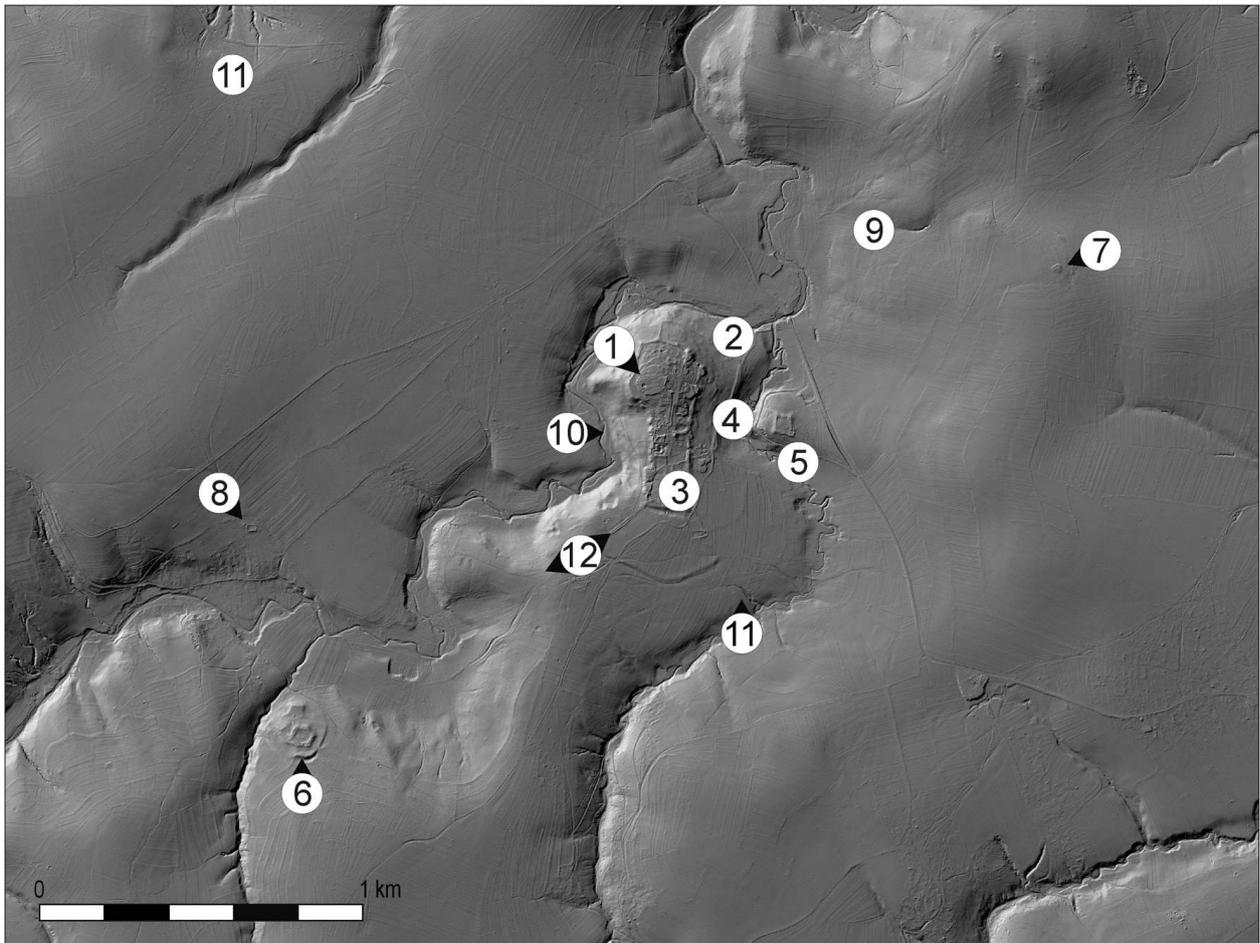


Fig. 1 LiDAR-Scan of the surrounding of Caričin Grad: 1 acropolis, 2 upper town, 3 lower town, 4 dam, 5-7 fortifications, 8 church, 9 agrarian fields, 10 kiln, 11 erosion gullies, 12 aquaeduct (by ArcLand.eu, 2011).

sumption at a small scale. This perspective of consumption is complemented by a perspective of production looking beyond the limits of the town. Targeted surveys deal with the pattern of agrarian production and mining. An approach of site catchment analysis looking for landscape potential and resources is complemented by an archaeological landscape assessment, looking for actual traces of past land use practices.

Archaeological Landscape Assessment

In addition to the research within the town, we also work on understanding the sixth century's landscape, as there are some indications for an intensification of land use during this century. Besides some early Byzantine churches in the surroundings of the town we know several kiln sites. One of these, in the valley below the acropolis, is buried by accumulated sediments which will be analysed in the course of the project. A LiDAR-Scan, provided by the EU-funded ArcLand project (fig. 1), shows many landscape details such as erosion gullies, fossil agrarian terraces indicating past landscape changes. Targeted surveys will evaluate known archaeological sites of Roman *villae*, Byzantine churches, mining activities, old roads and hollow tracks, and fortifications in the surroundings of Caričin Grad (Stamenković, 2013; Ivanišević & Stamenković, 2014).

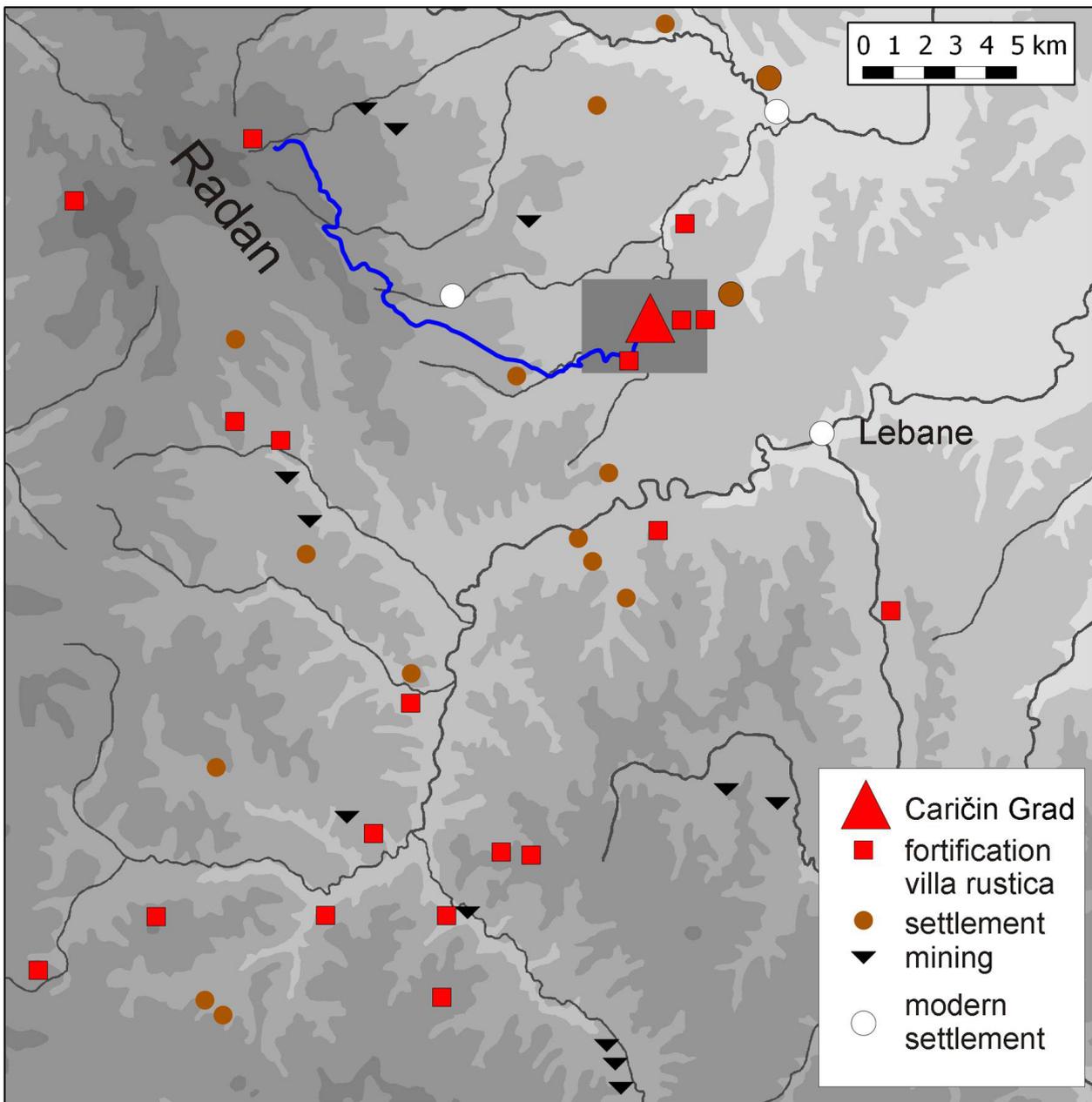


Fig. 2 Roman and late antique settlement in the surrounding of Caričin Grad after Stamenković 2013.

The location of the town was probably rather far from the Roman traffic routes following the Morava valley in 20 km distance. The region around Caričin Grad provides, however, fertile agricultural land as well as various ores. In the Radan mountains, around 10 km to the west, there was Roman mining activities, probably mainly of

silver and lead, but little has been researched so far. The remains of mining activities were recognised in the whole area of the southwestern part of the Leskovac basin, ascertained in some villages south of the Radan mountains, such as Ravna Banja and Marovac (fig. 2). This region is mostly known by its mining zones, from prehistory to today. Historical sources and archaeological evidence, so far, indicate well organised mining activity in this part of the Leskovac basin in Roman times (Stamenković, 2013).



Fig. 3 Caričin Grad and the Radan mountains, view from the east (photo: RGZM).

On the other side, besides mining as certainly one of the most important economic activities in this area, the hilly landscape (fig. 3) provides a remarkable agrarian potential, used since Neolithic times. Further research at Caričin Grad aims for a rough calculation of the expanse of agrarian fields and attempts to identify relics of the Byzantine cultural landscape. The positions of some villages in the immediate vicinity of Caričin Grad indicate the possible existence of Roman villae rusticae. Two stone presses from the village of Vrbovac could have been used for making wine (Stamenković, 2013).

A Byzantine brick kiln down in the valley below the town, excavated in the 1970s (Jeremić, 2010) and buried by alluvial clay, provides first indications of an intensive agricultural land use around the town. Erosion gullies may be seen in the same context. Geoarchaeological research will help to evaluate human impact during the town's short existence.

Excavations

Archaeological excavations on the northern slopes of Caričin Grad provide an important picture of the

economic and non-representative architecture of the city. Situated between the Acropolis rampart and the northern defensive wall of the city, the western part of this area was structured by at least eleven small buildings, divided by corridors and small passageways leading up to the acropolis, and arranged in a predominantly radial layout. In stark contrast, this area diverges from the other areas outside the primary perimeter which follow the linear arrangement applied within the classical layout of the city.

Archaeological research shows that two of the buildings (11, 15c) were used for storing fruits. In building 11 a lot of walnut shells were found and in building 15c lots of wild pears were detected. They were placed in ceramic vessels, mostly in *pithoi*, the latter aspect being confirmed by the amount of pear pits discovered inside one of them. During the excavation of building 15c, it was decided to investigate a part of the corridor east of it. This resulted in the discovery of a furnace made of brick with a stone foundation. Grains of wheat suggest that it was an oven used for baking bread.

The excavations of building 18, a somewhat bigger estate with a courtyard, adjacent to the northern rampart of the Acropolis, could possibly be assigned to a military owner, due to the finds of several arms.

One of the small scale domestic units, building 23, directly at the rampart, was chosen for a detailed analysis in anticipation of a well preserved stratigraphy. After removing the destruction

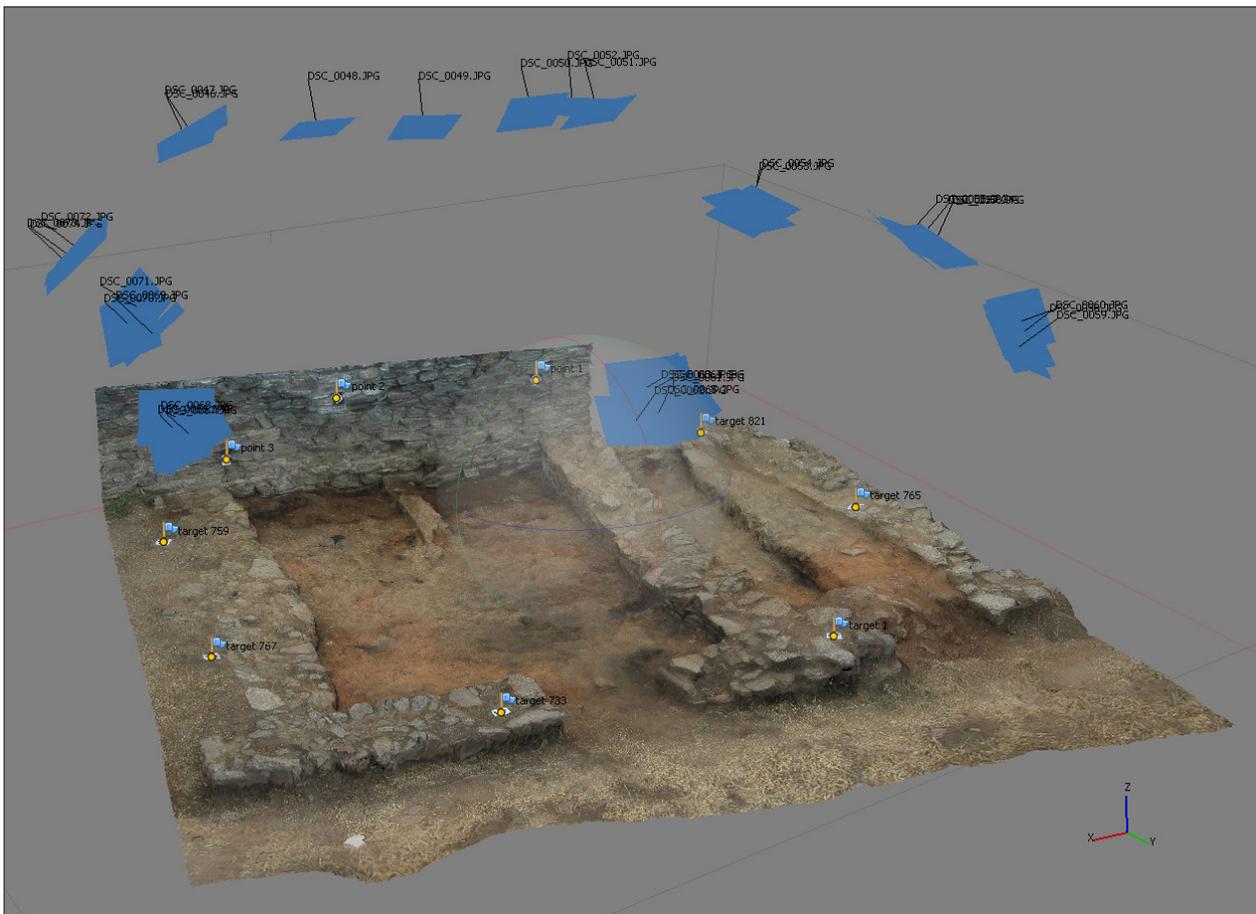


Fig. 4 3D-documentation (structure from motion, elaboration empowered by Agisoft) of building 23 (RGZM, Archaeological Institute Belgrade).

layers, which contained traces of subsequent use and the possible remains of an upper floor, a tile constructed fireplace and a canal were discovered in the house. The excavations also included the interspace between the buildings 23 and 25. The interspace was filled with a considerable amount of finds compared to the finds within building 23 and their distribution in fact indicates a waste deposit and thereby secondary use. Finds from building 23 include - *inter alia* - sherds of *pithoi*, several knives and a sickle, a buckle, a snaffle and a coin which dates to the early sixth century. The excavation included sampling for archaeobotanical, archaeozoological and soil scientific analysis.

The *horreum*, built in *opus mixtum*, is probably the oldest building on the northern plateau of the Upper Town, belonging to the initial construction phase of the town. From what we know so far, the 28.5 m by 12.5 m large building underwent a series of modifications in the later stages of the town's history. It is likely that it had lost its original public function which could testify to important changes in the economy in the late sixth century. South of the *horreum* there was an open space excavated in the 1950s. The 2014 campaign also revised these excavations and uncovered a series of small channels for drainage which give some insights of the infrastructure of the town.

The eastern part of the Upper Town shows a different picture. Buildings in this area are orientated in the southwest-northeast direction in linear arrangements indicating a planned layout following the main north-south axis of the city. Ongoing excavations made it possible to compare

buildings from these two different 'units' of the northern Upper Town, which indicated the economic function of this whole area. Furthermore, there are some possibilities for comparisons with the economic buildings in the Lower Town, excavated earlier (Ivanišević, 2010).

Methods

Excavations in the different parts of the town are being sampled for animal bones, botanical macroremains and soil samples. Detailed studies in building 23 provide further references due to a higher resolution of sampling, single point measurements of all archaeological finds and special attention to the formation processes of the archaeological record (fig. 4). Excavation techniques have specifically been adapted to the needs of soil sampling, in order to gain reference samples from levels 5 and 10 cm above the floor of the house. Documentation uses single point measurement of all finds by a total station and a photographic documentation by "structure from motion" allowing a direct integration of all data within a GIS.

Due to recent technological developments, methodology and documentation of archaeological excavations have undergone technological advances, enabling a uniform system of documentation based on GIS. Therefore, a database for the archaeological site of Caričin Grad based on free GIS-software solution packages had been made that provides the ability to create a virtual space and its reduction in a two-dimensional or three-dimensional data model. This offers answers to specific groups of questions. Used as the basis of this database have been topographic, geology and soil maps, orthophotos, data obtained by LiDAR, terrain elevation models, aerial images, geophysical scanning, cadastral maps, and digitised plans from previous excavations. All data are georeferenced. Besides these data, the reconstruction and georeferencing of data from old archaeological excavations in Caričin Grad has been undertaken. The application of the geographic information sys-

tems allows us to visualise, analyse and interpret data from the urbanism of the city to the distribution of small finds.

Archaeobotany

The aim of the archaeobotanical investigation is first to get knowledge about the diet and consumption of the inhabitants of the town. Which species were cultivated and which were economically significant? The weed spectrum can answer questions on agricultural techniques and the quality of the soil of the arable land. Using that, it is interesting to try to assess to what extent the inhabitants of Caričin Grad were involved in agricultural production. Is it possible to find out if they were mainly consumer or producer and to which extent trade activities were important? The detection of activity areas according to processing and stock-keeping is also important. Social differentiation is also a question as well as the development from the beginning to the end. Furthermore, it is important to find out if the crop spectrum is typical for the time and region or if there is any evidence of influences on diet by, for example, the indigenous population or other groups.

During the excavation seasons 2013/2014, 116 soil samples for archaeobotanical analysis were systematically taken from occupation layers of different structures of the Upper Town area north of the acropolis and from four towers of the fortification of the acropolis. Beside the systematically taken samples, 36 hand-picked samples from previous excavations in the Lower Town and Upper Town area were available for analysis. All samples were floated, using a flotation machine with closed water circulation and a 300 µm mesh sieve. A total of 2963.25 litres of soil was processed in 2013 and 2014. The further processing of the samples took place in the Institute of Pre- and Protohistoric Archaeology of the Christian-Albrechts-University, Kiel. All macroremains are preserved in charred condition, with a total amount of more than 70,000 remains up to now. The concentration of findings is rather low with 6.4 finds in



Fig. 5: Whole charred walnut (*Juglans regia*) from a storage context in the Upper Town Area (photo by authors).

one litre of soil.

The plant spectrum is dominated by crop plants, wild plants are underrepresented. Most of the cultivated plants belong to nine detected cereal species. Cereals are mostly represented by grains, chaff, stems and culm nodes are rare. The most common species were bread wheat (*Triticum aestivum*), broomcorn millet (*Panicum miliaceum*) and rye (*Secale cereale*). Six-rowed barley (*Hordeum vulgare* var. *vulgare*), two-rowed barley (*Hordeum distichum*), einkorn (*Triticum monococcum*), emmer (*Triticum dicoccum*), oat (*Avena sativa*), and spelt (*Triticum spelta*) are represented in only small proportions or as single findings. The bulk of the cereal grain findings, especially bread wheat and broomcorn millet, belongs to the hand-collected samples from the Lower Town area, which originate from storage facilities. Unlike the cereal spectrum of the Lower Town area, the spectrum of the Upper Town area, represented by mixed deposits from settlement layers, is clearly dominated by rye. In addition to rye, broomcorn millet and bread wheat are also common.

Legumes are represented by six taxa, but in relation to the cereal findings only few are preserved,

because legumes normally are badly preserved in charred condition. Taxa found are: broad bean (*Vicia faba*), common vetch (*Vicia sativa*), lentil (*Lens culinaris*), pea (*Pisum sativum*), chickpea (*Cicer arietum*) and bitter vetch (*Vicia ervilia*). The majority is represented by broad bean from storage facilities of the Lower Town area. Common vetch and bitter vetch normally were not used for human consumption but primarily as animal fodder. Especially bitter vetch can be toxic for humans, pigs and horses, but not for sheep, goat and cattle. To remove the toxic bitter compounds they must have been cooked or soaked in water before consumption. Most of the fruits of common vetch were found in Tower C and D of the fortification of the acropolis, an indicator that animal fodder could have been stored in these two towers. In the Upper Town area, lentil and pea are the most common legumes.

In addition to cereals and legumes, a lot of collected and cultivated fruits and nuts were found. Most important are grape vine (*Vitis vinifera*), walnut (*Juglans regia*) and wild pear (*Pyrus* sp.). Abundant finds of small underdeveloped pips of grape vine indicate the cultivation of common grape vine (*Vitis vinifera* ssp. *vinifera*). Grape vine is the most abundant crop species in Caričin Grad, fragmented or whole pips were found in more than 50 % of all samples. But also fragments of shells of walnut are abundant with 40 % in all samples (fig. 5). In addition to these three species, seeds and fruits of wild collected plants like peach (*Prunus persica*), raspberry (*Rubus ideaus*), blackberry (*Rubus fruticosus*), strawberry (*Fragaria* sp.), cornelian cherry (*Cornus mas*), black elder (*Sambucus nigra*) and cherry plum (*Prunus cereasifera*) were found. In addition, the finds of fig seeds (*Ficus carica*) and olive (*Olea europea*) indicate trade activities.

Archaeozoology

The main objectives of the archaeozoological investigation, carried out in a close Serbian-German cooperation, were to reconstruct the diet in different parts of the city, the animal husbandry strategies, the artisan use of animal raw materials

(e.g. bone and antler) (Marković & Stamenković, 2014: 24) and the exploitation of wild animals. The latter is a good indicator for activity zones outside the city walls as well as for trade connections (e.g. Danubian or sea-fish).

The spatial distribution of the bone finds, supported by GIS, can be used to attempt a mapping of animal origin material cycles within the city. For this purpose, an attempt will be made to identify waste complexes stemming from different processes, e.g. butchery, artisanship, and the preparation of upscale or common meals. These analyses contribute to the first research question of the interdisciplinary project, i.e. households, consumption, and diets.

The evaluation of the wild animal spectra with respect to activity zones as well as the indications the livestock spectrum gives concerning applied animal husbandry strategies is crucial for the second research question, which is dedicated to the erection and maintenance of the city. Within this field, another important issue will be the exploitation of animal labour in the city and its surroundings, for agricultural as well as for transportation purposes. As comparably numerous camel bones have been identified so far, this does not only apply for cattle and equids but also for these rather exotic labour animals in this area. Finally, we shall try to detect diachronic changes in animal use that can at best be ascribed to altered economical, social, or ecological circumstances during the short existence of the city.

Soil Science

The excavation of building 23 and the adjacent areas was adapted to allow dense soil sampling. Soil samples were collected from the original floor and underlying layers. Additionally, samples were collected from the debris above the floor. Samples from this debris were collected to investigate post-abandonment leaching of substances from these layers into the original floor.

Ongoing soil analyses include methods already established in the context of archaeological exca-

vations as well as some more recently developed analyses. Classically, phosphate was analysed in soils to detect ancient human activities areas (Eidt, 1977; Bethel & Máté, 1989; Woods, 2003; Holliday & Gartner, 2007). Phosphorus is suitable for the analysis of human material deposition because of its universal association with human activities (Eidt, 1977). Due to instrumental developments in the last decades, simultaneous analyses of several elements in soil extracts were facilitated. In this way, multi-element analyses were used in an increasing number of studies to analyse anthropogenic inputs (Linderholm & Lundberg, 1994; Middleton, 2004; Wilson, Davidson & Cresser, 2008; Oonk, Slomp & Huisman, 2009). Analyses of several elements in addition to phosphorus can deliver hints about the kind of the material deposited. In Caričin Grad, activity areas are divided by mapping of phosphate concentrations. Mapping of phosphate concentrations is compared with mapping of the total concentrations of several elements.

In selected samples biomarkers are analysed that are characteristic for organic material deposited by human activity. So the input of animal remains in soils at archaeological sites was investigated e.g. by analyses of fatty acids and steroids (Morgan et al, 1983; Nolin, Kramer & Newman, 1994). Especially, biomarkers are analysed in samples from Caričin Grad that allow identifying latrines and animal husbandry. Faecal deposition to soils and terrestrial sediments can be traced by 5 β -stanols (Bethell, Goad & Evershed, 1994; Bull et al, 1999; 2002). Their high stability also permits their application in an archaeological context (Evershed & Bethell, 1996; Bull et al, 1999; 2002). 5 β -stanols originate mainly from microbial reduction of Δ 5-sterols in the gut of mammals. Δ 5-sterols (e.g. cholesterol and b-sitosterol) are widespread substances in animal and plant membranes. 5 β -cholestan-3 β -ol (coprostanol) is the most abundant reduction product of Δ 5-sterols in the faeces of omnivores, while high amounts of 5 β -stigmastan-3 β -ol occur in the faeces of herbivores. Using this difference, 5 β -stanols patterns can be used to gain information about the origin of faeces in environmental samples (Bethel, Goad

& Evershed, 1994; Evershed and Bethell, 1996; Leeming et al, 1997). Bile acids deliver more detailed information about the source of faeces than stanols (Evershed and Bethell, 1996; Bull et al, 2002; Tyagi, Edwards & Coyne, 2008). Therefore, especially stanols, Δ^5 -sterols and bile acids are analysed in this project to identify areas of faecal deposition, animal husbandry and which animals were kept in Caričin Grad.

Creating a Synthesis

Excavations at Caričin Grad started 100 years ago. The three years' term project funded by the German Leibniz-Association brings together researchers from Serbia, France and Germany. This international and interdisciplinary research has high potential for new ideas that change our view of Late Antique / Early Medieval urbanism and lead to an overall perspective on the city's resource management and methods of maintenance. In addition to the long-lasting interest in architectural planning of the town and its representative buildings and more recent approaches to deal with the economic aspects of urban life, the project aims to understand the town in terms of urban ecology, questioning the impact of the town on its surroundings.

Data from these various disciplines will be integrated into an all-encompassing interpretation using perspectives of ecological and social archaeology. This leads us to new research questions concerning the role of production and consumption for the development of the town, the role of people mainly involved in processes of subsistence; their social practice for the development of the town and the role of land use practices for the subsistence of the town and landscape changes.

Already there is evidence for an impact on the landscape by the establishment of the town. Furthermore, there are several hints from archaeology as well as from botanical data indicating a ruralisation of the town of Caričin Grad during its short existence. Approaches of social and ecological archaeology will help to gain a better

understanding of the short life of the imperial town *Iustiniana Prima*.

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