

NO.18 (2022)



ARHEOLOGIJA

PRIRODNE NAUK

SCIENCE

ARCHAEOLOGY

SCIENCE



ARHEOLOGIJA I  
PRIRODNE NAUKE

---

ARCHAEOLOGY  
AND SCIENCE

Center for New Technology  
Institute of Archaeology Belgrade

ARCHAEOLOGY  
AND SCIENCE

18  
2022

Belgrade 2022

Centar za nove tehnologije  
Arheološki institut Beograd

ARHEOLOGIJA I  
PRIRODNE NAUKE  
18  
2022

Beograd 2022.

Publishers:

Center for New Technology Viminacium  
Institute of Archaeology Belgrade  
Kneza Mihaila 35/IV  
11000 Belgrade, Serbia  
e-mail: cnt@mi.sanu.ac.rs  
Tel. +381 11 2637191

Editors:

Miomir Korać  
Snežana Golubović

Editorial Board:

Roksana Chowanec, University of Warsaw, Institute of Archaeology, Warsaw  
Gianfranco Cicognani, Central European Initiative (CEI-ES), Trieste  
Rosemarie Cordie, Archäologiepark Belgium  
Eric de Sena - Manhattan College, New York, USA  
Snežana Golubović, Institute of Archaeology, Belgrade  
Natalia Goncharova, Lomonosov Moscow State University, Moscow  
Gisela Grupe, Ludwig-Maximilians-Universität, München  
Michaela Harbeck, Staatssammlung für Anthropologie und Paläoanatomie, München  
Lanfranco Masotti, Università di Bologna, Bologna  
Žarko Mijailović, University of Belgrade, Faculty of Mathematics, Belgrade  
Milan Milosavljević, University of Belgrade, Faculty of Electrical Engineering, Belgrade  
Dragan Milovanović, University of Belgrade, Faculty of Mining and Geology, Belgrade  
Zoran Obradović, Temple University, Philadelphia  
Zoran Ognjanović, Mathematical Institute, Belgrade  
Marco Pacetti, Università Politecnico delle Marche, Ancona  
Slaviša Perić, Institute of Archaeology, Belgrade  
Milica Tapavički-Ilić, Institute of Archaeology, Belgrade  
Dejan Vučković, University of Belgrade, Faculty of Mining and Geology, Belgrade  
Zsolt Zolnai, University of Wisconsin - Madison, Madison  
Olivera Ilić, Emilija Nikolić (secretaries), Institute of Archaeology, Belgrade

Translation:

Jelena Vitezović

Lecturer:

Dave Calcutt

Graphic design:

Digital Art Company, Beograd

Print:

Digital Art Company, Beograd

Printed in:

500 copies

ISSN (Printed) 1452-7448

ISSN (Online) 2738-1102

Izdavači:  
Centar za nove tehnologije Viminacium  
Arheološki institut Beograd  
Kneza Mihaila 35/IV  
11000 Beograd, Srbija  
e-mail: cnt@mi.sanu.ac.rs  
Tel. +381 11 2637191

Urednici:  
Miomir Korać  
Snežana Golubović

Uređivački odbor:  
Roksana Hovanjec, Univerzitet u Varšavi, Arheološki institut, Varšava  
Danfranko Čikonjani, Centralnoevropska inicijativa (CEI-ES), Trst  
Rozmari Kordi, Arheološki park Belginum  
Eric de Sena - Menhetn koledž, Njujork, SAD  
Snežana Golubović, Arheološki institut, Beograd  
Natalija Gončarova, Moskovski državni univerzitet Lomonosov, Moskva  
Gizela Grupe, Ludvig-Maksimilians-univerzitet, Minhen  
Mihaela Harbek, Zbirka za antropologiju i paleoanatomiju, Minhen  
Lanfranko Masoti, Univerzitet u Bolonji, Bolonja  
Žarko Mijailović, Univerzitet u Beogradu, Matematički fakultet, Beograd  
Milan Milosavljević, Univerzitet u Beogradu, Elektrotehnički fakultet, Beograd  
Dragan Milovanović, Univerzitet u Beogradu, Rudarsko-geološki fakultet, Beograd  
Zoran Obradović, Univerzitet Templ, Filadelfija  
Zoran Ognjanović, Matematički institut, Beograd  
Marko Paćeti, Politehnički univerzitet Marke, Ankona  
Slaviša Perić, Arheološki institut, Beograd  
Milica Tapavički-Ilić, Arheološki institut, Beograd  
Dejan Vučković, Univerzitet u Beogradu, Rudarsko-geološki fakultet, Beograd  
Zolt Zolnaj, Univerzitet u Viskonsinu - Medison, Medison  
Olivera Ilić, Emilija Nikolić (sekretari), Arheološki institut, Beograd

Prevod:  
Jelena Vitezović

Lektor:  
Dejv Kalkat

Dizajn i tehničko uređenje:  
Digital Art Company, Beograd

Štampa:  
Digital Art Company Beograd

Tiraž:  
500 primeraka

ISSN (Printed) 1452-7448  
ISSN (Online) 2738-1102

*Book cover:  
Traditional building methods with lime mortar,  
workshop in Viminacium  
(photo documentation of the MoDeCo2000 project).  
Roman trowel from Viminacium, site of Više Grobalja  
(photo documentation of the Institute of Archaeology  
Belgrade, Viminacium project).  
Fragment of mortar from the rampart of Viminacium fortress  
(photo documentation of the MoDeCo2000 project).*



## SADRŽAJ / CONTENTS

### *Rasprave i članci*

#### *Treatises and Articles*

#### *Arheologija, istorija umetnosti i arhitekture* *Archaeology, history of art and architecture*

Manousos E. Kambouris Spyros Bakas	A reappraisal of the ethnic Persian infantry in the Achaemenid armies .....	11
George Valentin Bounegru	A unique representation of Hercules discovered at Apulum .....	23
Marija Jović	Monetary circulation of late antique Naissus .....	29
Igor Bjelić	Use of building materials during the construction of Trajan's Bridge on the Danube .....	45
Bojan Popović	Glamija - Rtkovo, new considerations .....	59
Bojana Plemić Ljubiša Vasiljević	A contribution to the knowledge of antique terracotta iconography in the province of Upper Moesia .....	73

#### *Arheometrija, nauka o konzervaciji, restauracija kulturnog nasleđa* *Archaeometry, conservation science, restoration of cultural heritage*

Mihailo Radinović	Old collection and new insights: technological analysis of obsidian finds from the late Neolithic layers of Vinča-Belo Brdo .....	81
Aleksandar Bulatović Maja Gajić-Kvašček Aleksandar Kapuran Marija Ljuština Vojislav Filipović Ognjen Mladenović Petar Milojević Bogdana Milić	The FLOW project – a contribution to the study of the cultural transmission of the central Balkan communities and the neighboring regions in later prehistory .....	101
Simone Dilaria Michele Secco	Mortar recipes through the ages. A brief review of data from prehistory to late antiquity .....	113
Roman Balvanović	Roman and late antique glass in the Mediterranean area and Serbia: its production, compositional types and provenance .....	127
Kristina Ponjavić Maja Gajić-Kvašček Vojkan Milutinović Dragana Gavrilović	Application of archeometric techniques in the study of wall paintings on the example of fragments of frescoes paintings from the Church of St. Nicholas (Crkva Svetog Nikole) in Baljevac, Serbia .....	145
Slobodan Bogojević Kristina Šarić Bojan Kostić Suzana Erić	The efficiency of chemical cleaning of different metal artefacts from Felix Romuliana and Gradina archaeological sites (Serbia) ....	165
Maja Franković Vesna Matović Jelena Majstorović Nevenka Novaković	Leitha limestones' properties and their degradation – case study Belgrade Fortress .....	183



Nigel Copsey	The rudiments of traditional mortar preparation and use .....	199
	<b><i>Zaštita i interpretacija arheološkog nasleđa, arheološka dokumentacija, informacione tehnologije, Protection and interpretation of archaeological heritage, archaeological documentation, information technologies</i></b>	
Silvana Blaževska Angela Pencheva	Master conservation plan for the archaeological site of Stobi: goals and outcomes .....	223
Marko Nikolić Ena Takač Jelena Šćekić	Contemporary approaches to the revitalisation, presentation and promotion of the cultural and natural heritage of the part of the Roman Limes - case study of the late antique tomb in Brestovik .....	233
Milan Milovanović	Documentation office of the Institute of Archaeology in Belgrade as an organizational unit .....	253
Predrag Škundrić Vanja Korać Zoran Davidovac	EU cyber initiatives and international cybersecurity standards - an overview .....	269
Vanja Korać Dragan Prlja Gordana Gasmi	Influence of artificial intelligence on human rights .....	279
	<b><i>Prikazi Reviews</i></b>	
Ljubiša Vasiljević	Anthony Harding, SALT White Gold in Early Europe, Cambridge University Press – The European Association of Archaeologists, serija Cambridge Elements – The Archaeology of Europe, Cambridge 2021 .....	293
Ljubiša Vasiljević	Manjša rimska naselja na slovenskem prostoru / Minor Roman settlements in Slovenia, Jana Horvat, Irena Lazar, Andrej Gaspari (ur.), ZRC SAZU, Inštitut za arheologijo, Serija: Opera Instituti Archaeologici Sloveniae 40, Ljubljana 2020 .....	295
Bojana Plemić	Izložba "Božica i konjanici 1 – Kultni sinkretizam Donje Panonije", Galerija Arheološkog muzeja u Zagrebu, 5-30.VII 2022 .....	299
	Uređivačka politika časopisa Arheologija i prirodne nauke .....	301
	Uputstvo autorima o načinu pripreme članaka za časopis Arheologija i prirodne nauke .....	306
	Editorial Policy of the journal Arheologija i prirodne nauke (Archaeology and Science) .....	312
	Submission instructions for the journal Arheologija i prirodne nauke (Archaeology and Science) .....	318

---

## PREFACE

In the summer of 2022, the 1<sup>st</sup> *International Conference with Workshop - Science for Conservation of the Danube Limes* was held in Viminacium, as the final event of the project *Mortar Design for Conservation - Danube Roman Frontier 2000 Years After (MoDeCo2000)*, financed by the Science Fund of the Republic of Serbia, with the aim of gathering participants connected by a common interest - research and protection of cultural heritage. The lectures covered topics from archaeology, history of architecture and construction, geology, conservation science, archaeometry, chemistry, materials science, physical chemistry, biology, physics, history of art, practical conservation and restoration, interpretation, documentation, and protection of heritage, as well as its management. Practical work, through the building of a wall with the use of materials present in Roman Viminacium, as a unique experience, brought together a large number of participants.

Although the topic of the project was related to historical mortars, the organisers wanted to bring together researchers and experts who deal with different materials used throughout history for the construction of buildings but also for the production of artifacts. The results of extremely complex multidisciplinary studies of historical materials are important not only for gaining knowledge about their composition and methods of production, the process of exploitation of raw materials, transport, and trade, but also for all kinds of connections between people. Their use ensures responsible conservation practices with the application of materials compatible with historical ones, but also the development of new products in the field of industry. One of the project aims is the promotion of the use of local raw materials and traditional techniques in the production of conservation mortars, but also their improvement in accordance with today's circumstances and the environment in which historical buildings are located. What all historical materials have in common is that they were mainly created using locally available raw materials, they were guided by the experience and practicality of people, and improved over generations.

Most of the papers in this volume of the scientific journal *Archaeology and Science* are dedicated to the topics of the Viminacium event, with their authors as participants. Given that the theme of the event connected an extremely large number of scientific fields, this volume includes other papers that relate to them, all contributing to the research, protection, and interpretation of cultural heritage.

Archaeology, as a humanistic science, in collaboration with natural sciences, provides solutions from the past employed by technical and technological sciences for the development of modern ones, invaluable to the contemporary world, especially regarding some of the most current topics, namely climate change and sustainable development. It is with this thought in mind that the content of this volume of the journal *Archaeology and Science* was conceived.

Emilija Nikolić  
Institute of Archaeology, Belgrade



MARIJA JOVIĆ  
Institute of Archaeology  
Belgrade, Serbia  
E-mail: marija\_zlata@yahoo.com

Received: October 14<sup>th</sup> 2022  
Accepted: November 15<sup>th</sup> 2022  
Original research article  
UDC: 904:737.1.032(37)“02/04”  
902.2(497.11)  
[https://doi.org/10.18485/arhe\\_apn.2022.18.3](https://doi.org/10.18485/arhe_apn.2022.18.3)

## MONETARY CIRCULATION OF LATE ANTIQUE NAISSUS

### ABSTRACT

*The subject of the paper is the analysis of the monetary movements of late antique Naissus. The research is limited to the period from the end of the 3rd to the middle of the 5th century. The numismatic material comes from 13 locations, from the sites: Mediana, King Milan Square and Liberation Square, Niš fortress and Gradsko Polje, Jagodin Mala necropolis, Gorča, Ambassador, Obrenovićeveva Street, and Vuk Karadžić elementary school. The mentioned localities are positioned both in the urban city centre and on its outskirts. Also, the context of the found coinage is different and diverse, coming from the city necropolis, hoards, the fortress, a residential villa, etc. Such a rich sample provides a detailed and comprehensive insight into the monetary movements of late antique Naissus and a good sample for comparison with sites in neighbouring provinces (Dacia Ripensis and Moesia Prima).*

**KEYWORDS:** NUMISMATICS, NAISSUS, LATE ANTIQUITY, COINS, MONETARY CIRCULATION.

### INTRODUCTION

Ancient *Naissus* was formed in the Nišava river valley and is known as the birthplace of the Roman emperor Constantine the Great. It represented an important crossroads of military and trade routes that led throughout the Roman Empire (Petrović 1979: 37; Vasić 2008: 9). The city experienced its economic and political prosperity at the end of the 3<sup>rd</sup> and the beginning of the 4<sup>th</sup> century. The most archaeologically researched parts of *Naissus* belong to this period, located within the city ramparts (the forum with the civil basilica, the main city street, and parts of the impressive villa with the octagon on Gradsko Polje). *Extra muros*, the researched sites included a residential villa on *Mediana*, public baths, smaller necropolises on the left bank of Nišava, as well as the main city necropolis on Jagodin Mala, which began to form and expand in Late Antiquity (Jeremić 2014: 8). It is particularly significant to discover the monetary flow in *Naissus* in the turbulent period of Late Antiquity, when the city reached its heyday

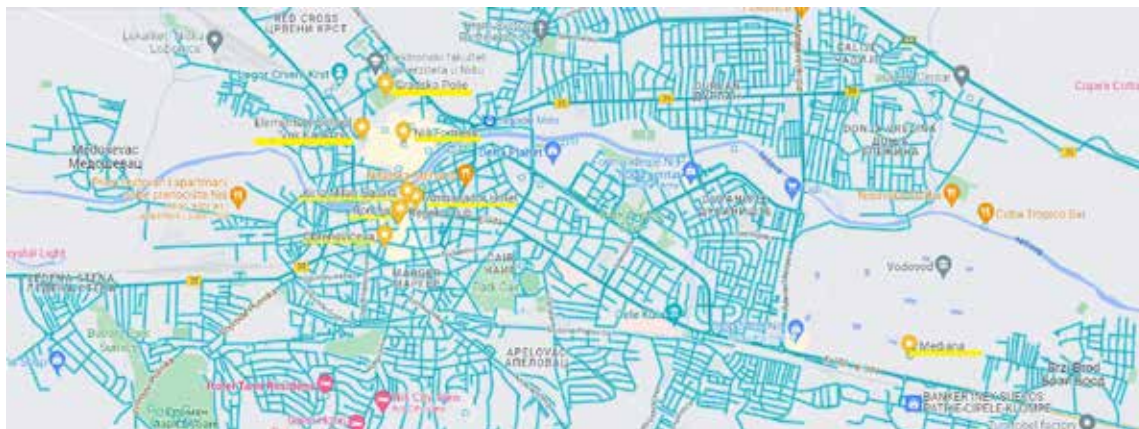
during the reign of Constantine the Great and his successors and collapsed as a result of the Hunnic invasion.

In order to gain a complete picture of the monetary flow of late antique *Naissus*, the research included all processed coins from 13 locations, from the city centre and from the outskirts of the city. The chronological range is limited to the period from the end of the 3<sup>rd</sup> to the middle of the 5<sup>th</sup> century, i.e., the moment when the city was devastated by the Hun invasion. All coinage is divided into two categories based on the context in which it was found: group and individual finds (Map 1).

Group finds of coins include units such as hoards and safes in which coinage was successively collected. This type of find is significant because it gives us a picture of the monetary circulation over a certain period of time. The coins found on Liberation Square and Obrenovićeveva Street, on Gradsko Polje, Vuk Karadžić elementary school, part of the “Maćedonci” hoard, and the hoard from *Mediana* fall under this category. (Table 1).

Square Oslobođenja				Obrenovićevo				Gradsko polje				Primary school Vuk Karadžić			
Period	Pcs.	Mint	Pcs.	Period	Pcs.	Mint	Pcs.	Period	Pcs.	Mint	Pcs.	Period	Pcs.	Mint	Pcs.
317-320	1	Aquileia	2	294	2	Aquileia	8	312-313.	1	Cyzicus	1	257-259.	1	Aquileia	1
320-321	3	Alexandria	1	295	4	Alexandria	20	312-320.	2	Siscia	11	295-299.	1	Antiochia	1
321	2	Antiochia	5	295-296	5	Antiochia	4	318-319.	7	Thessalonica	18	308-310.	1	Arelate	3
321-323	1	Arelate	2	296	1	Heraclea	49	319.	14			312.	5	Cyzicus	1
323-324	1	Heraclea	36	296-297	8	Carthago	2	321-324.	2			312-313.	4	Mediolanum	1
324	3	Cyzicus	39	297-298	6	Nicomedia	10	325-326.	1			313.	32	Nicomedia	2
324-327	2	Constantinopolis	17	297-299	7	Roma	3	326-327.	2			313-315.	3	Roma	10
324-330	53	Nicomedia	14	298-299	3	Serdica	11	328-329.	1			314.	5	Siscia	38
326-330	1	Roma	2	299	1	Siscia	9	Total:			30	314-315.	2	Thessalonica	6
330-335	129	Siscia	25	299-300	1	Thessalonica	41					315-316.	2	Ticinum	1
330-337	18	Thessalonica	66	299-303	2	Ticinum	5	<b>Mediana</b>				319.	3	Treveri	1
334-335	1	Ticinum	2	300	5			Period	Pcs.	Mint	Pcs.	337-341.	1		
		Treveri	1	300-301	4			330-335.	2	Aquileia	5	346-350.	2		
Total:			215	301	1			335-341.	1	Alexandria	3	361-363.	2		
				302	3			337-341.	2	Antiochia	1	?	3		
<b>Mačedonci (part of hoard)</b>				302-303	7			341-346.	8	Arelate	2	Total:			67
Period	Pcs.	Mint	Pcs.	303-305	2			351-361.	4	Heraclea	8				
341-346	3	Alexandria	7	303/4-305	2			355-360.	1	Cyzicus	34				
351-354	5	Antiochia	1	304-305	13			355-361.	9	Constantinopolis	17				
355-361	34	Heraclea	1	305-306	15			364-365.	1	Nicomedia	9				
364-365	4	Constantinopolis	3	305-307	1			364-367.	5	Roma	3				
364-367	304	Roma	19	306-307	1			367-375.	25	Siscia	8				
364-375	9	Siscia	356	307	1			375-378.	1	Thessalonica	26				
367-375	348	Thessalonica	341	307-308	2			378-383.	3						
367-378	7			308	1			383.	18						
368-378	1			308-309	14			383-387.	1						
375-378	9			308-310	39			383-392.	57						
Total:			728	309-310	8			383-395.	14						
				310	16			383-408.	9						
				310-311	2			387-388.	2						
				311	1			388-395.	1						
				?	3			388-402.	4						
				Total:			181	393-395.	7						
								394-402.	1						
								395-408.	2						
								425-450.	1						
								Total:			179				

Table 1 - Composition of group finds from the territory of Late antique Naissus



Map 1 - Mapped sites from the territory of Late antique Naisus (Tags: Marija Jović on @ GIS portal Gradske uprave Niš, <https://gis.ni.rs/smartPortal/gunisPublic>)

The hoard from Liberation Square was found during construction works in 1961, in the immediate vicinity of the ancient wall. It contains 215 coins dated from 317 to 334/5 (Janković Mihaldžić 2000: 37). The find from Obrenovićevea Street was discovered in 1936 and includes 181 folles from a short and homogeneous period from 294 to 311 AD (Janković Mihaldžić 1986: 25). The coins from Gradsko Polje were gifted to the National Museum in Niš in 1962, when 30 bronze coins, which are assumed to be from the city’s necropolis, were handed over to the museum. Although there are few coins, the material composition is homogeneous and belongs to the short time span of 312/3 until 328/9 (Janković Mihaldžić 2002: 15, 17). At the end of 1959, during the foundation digging for the construction of the Vuk Karadžić elementary school in Niš, 67 pieces of Roman coins were found. Nominals can be classified chronologically from the sixth decade of the 3rd century to the seventh decade of the 4th century. Most of the specimens are bronze coins from the Tetrarchy period and one silver coin belonging to the Gallienus mint (257-259) (Janković Mihaldžić 2003: 23). The hoard from Međedonac was discovered in 1944, at the “Strana” site. The hoard contains 3,971 well-preserved Roman bronze coins dating from Constantine I to Gratian (Janković Mihaldžić 2005: 54). This work covers the processed part of the hoard, which contains 728 coins<sup>1</sup>. During the archaeological research in *Mediana*, in 1961, a group find of coins was discovered in the horreum. It contained 227 specimens, of which 179

pieces were chronologically determined. The time distribution of minting spans the years 330/5 to 421/50 (Janković Mihaldžić 2008: 77; Јанковић Михаљдић 2005: 54) (Table 1).

The category of individual finds includes coinage that was discovered during archaeological research, mostly stratified, as well as specimens that became part of museum collections through purchase. The analysis of individual finds of coins provides data on the volume of circulation over a long period of time. This category includes coins found during archaeological research in *Mediana*, King Milan Square, Jagodin Mala, in the premises of the “Ambassador” hotel, the “Gorča” business centre, and coinage from the numismatic collection of the National Museum in Niš (Table 2).

During previous archaeological research in *Mediana* from 1961 to 2011, 1,653 examples of Roman coins were discovered, of which 1,347 were precisely chronologically determined and date from 76 to 450 AD (Vasić 2021: 77; Janković Mihaldžić 2008: 34). The coins from the core of the late antique city of *Naisus* are also included, found during the research of the baths in the Niš fortress, comprising 399 specimens, dated to the period from 310 to 491 AD.<sup>2</sup> Part of the material consists of coins from the suburbs of late antique *Naisus*, obtained from the research of King Milan Square (19 pieces), carried out in 1990-1991 (Jović 2021: 104). Also, four coins discovered next to a brick built grave in the basement of the “Ambassador” hotel and two specimens found during the

1 On this occasion, I would like to thank Vesna Crnoglavac, the current director and advisor of the National Museum in Niš, for the provided data.

2 I owe a great deal of gratitude to Dr Miloje Vasić for providing the data on the numismatic material from the thermal baths in the Niš fortress and for his selfless help in the preparation of this paper.

Mediana				Square Kralj Milan				Tvrđava				Jagodin Mala			
Period	Pcs.	Mint	Pcs.	Period	Pcs.	Mint	Pcs.	Period	Pcs.	Mint	Pcs.	Period	Pcs.	Mint	Pcs.
1. vek	2	Aquileia	5	1. vek	1	Edrine	1	1. vek	1	Aquileia	7	309-313.	2	Aquileia	2
2. vek	1	Alexandria	4	3. vek	1	Cyzicus	1	2. vek	1	Heraclea	3	317-318.	1	Cyzicus	2
2-3. vek	1	Antiochia	11	134-138.	1	Constantinopolis	1	3. vek	3	Carthago	1	321-330.	3	Constantinopolis	5
3. vek	6	Arelate	3	240-241.	1	Nicomedia	1	4. vek	95	Cyzicus	12	330-333.	1	Siscia	2
4. vek	235	Heraclea	38	295-299.	1	Roma	2	4-5. vek	14	Constantinopolis	10	337-341.	3	Thessalonica	9
4-5. vek	3	Carthago	1	311-313.	2	Thessalonica	4	5. vek	4	Nicomedia	3	341-346.	2	Ticinum	1
5. vek	1	Cyzicus	39	336-340.	2	Viminacium	1	vizantija	1	Roma	4	351-361.	11		
76-292.	12	Constantinopolis	31	355-361.	2			310-324.	3	Sirmium	3	364-367.	3		
239-303.	20	Londinium	2	364-375.	1			324-337.	6	Siscia	15	367-378.	4		
305-313.	40	Mediolanum	2	527-565.	1			337-341.	2	Thessalonica	32	378-383.	1		
313-317.	26	Nicea	1	565-578.	1			341-354.	15			383-395.	5		
317-324.	83	Nicomedia	18	1444-1481.	1			355-361.	37			394-408.	1		
324-330.	50	Ostia	1	?	4			363-375.	43			532-537.	1		
330-341.	236	Roma	21	Total:			19	378-383.	7			570-571.	1		
335-361.	5	Serdica	4					383-393.	127			583-584.	1		
351-366.	2	Sirmium	4	<b>Gorča</b>				393-395.	5			595-596.	1		
341-361.	389	Siscia	119	Period	Pcs.	Mint	Pcs.	395-408.	16			Total:			41
361-375.	187	Thessalonica	224	302-303	1	Thessalonica	1	408-425.	4			<b>National Museum of Niš</b>			
378-395.	32	Ticinum	8	355-361	1			425-455.	12			Period	Pcs.	Mint	Pcs.
404-406	1	Treveri	6	Total:			2	476-491.	2			324.	1	Constantinopolis	1
425-450.	2	Viminacium	9					?	2			350-355.	1	Mediolanum	1
?	14			<b>Ambasador</b>				Total:			399	367-375.	1	Nicomedia	1
Total:	1347			Period	Pcs.	Mint	Pcs.					383-388.	2	Thessalonica	2
				232-282	1							430-440.	1	Treveri	1
				270-275	1							Total:			6
				Total:			2								

Table 2 - Composition of individual findings from the territory of Late antique Naissus



construction of the “Gorča” business centre belong to 3<sup>rd</sup> and 4<sup>th</sup> century coins and material from the suburbs of Naissus (Ajdić 1975: 38; Јовановић 1976: 76). The nominals found within the burial units originate from the late antique Jagodin Mala necropolis. Investigations of the necropolis began in 1932 and are still ongoing. The paper includes material up to that found during research on the premises of the “Benneton” factory, conducted in 2012 (Jeremić 2014: 15) (Table 2).

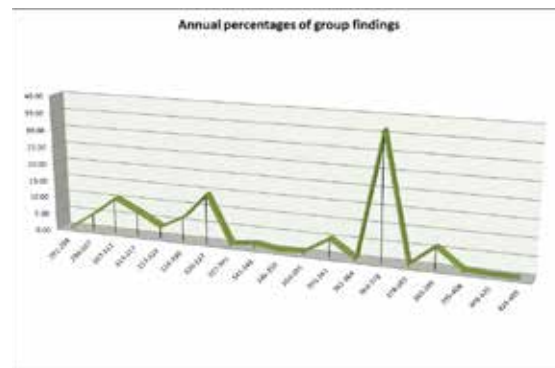
### ANALYSIS OF MONETARY MOVEMENTS OF INDIVIDUAL AND GROUP FINDS OF LATE ANTIQUE NAISSUS FROM THE END OF THE 3<sup>RD</sup> TO THE MIDDLE OF THE 5<sup>TH</sup> CENTURY

An insight into the monetary flow of late antique *Naissus* will be made by analysing the annual percentages<sup>3</sup> of individual and group findings. The number of coins in circulation will be observed for shorter chronological sequences within the period from the end of the 3<sup>rd</sup> to the middle of the 5<sup>th</sup> century. Looking at each category of finds separately will give a more detailed insight into the difference in monetary flows of individual and group finds.

In the group finds category, 1,390 precisely dated specimens were subjected to analysis. Less than 1% of the samples were observed within the following chronological sequences: 292-294, 337-341, 341-346, 346-350, 350-355, 361-364, 378-383, 395-408, 408-425 and 425-455. The number of specimens of these sequences ranges from 0% to 6%. There is a slightly larger number of coins in the periods that belong to the ranges 294-330, 355-361, and 383-395, where percentages do not exceed 10%. The sequences 330-337 and 364-378 make up the highest percentage share (10.79% and 51.37%, respectively.) (Table 3).

If we take a look at the annual percentages of the group finds, a slight increase in coins in circulation between the sequences 292-294 and 307-313 is noticeable, when the first peak is observed. The circulation decreases from 313 to 324, only to peak again between 324 and 330 in the sequence

330-337. In the period from 337 to 364, the value of annual percentages is relatively low and uniform (0.37% - 1.41%) with a slight growth of 6.71% in the period 355-361. The highest number of coins in circulation can be observed from 364 to 378 (36.71%). Between 378 and 455, the circulation is very low (from 0% to 0.94%), with the exception of the period 383-395, when it is 6.14% (Graph 1).



Graph 1 - Presentation of coin flows of group finds from the territory of Late Antique Naissus

The number of precisely dated individual finds of coins is 1,387, where it can be seen that both categories of finds are almost equally represented in percentages (50.05% and 49.95%). The smallest percentage share of coins, in individual finds, which does not exceed 1%, is observed in the sequences: 292-294, 294-307, 350-355, 361-364, 378-383, and 408-425. The range from 1.08% to 6.63% of the coin prominence is in the periods from 307 to 330, 337-346, 395-408, and 425-455. A high percentage of coins is noted in the sequences 330-337 (11.39%), 383-395 (11.46%), 364-378 (16.37%) and in the period 355-361 (20.69%), when it is the highest (Table 4).

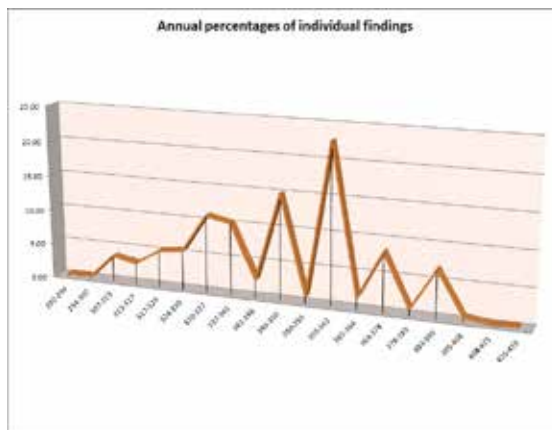
The analysis of annual percentages shows growth from 294 to 330-337, when the curve reaches its first peak. Between the years of 337 and 341, the number of coins is almost uniform from 10.24% to 11%. In the period from 341 to 361, sudden peaks and declines in the monetary flow are periodically observed. From 341-346, the annual percentage value is 2.6%, and in the next sequence (346-350) amounts to 15.03%, while an almost complete drop of 1.02% can already be seen in the next period 350-355. The maximum number of coins in circulation was recorded from 355 to 361 (22.83%). The value of the annual percentages between the years 361 and 455 almost

<sup>3</sup> To obtain the annual percentages, it is necessary to first calculate the annual coefficients. The value of the annual coefficients represents the quotient of the number of samples within one period and the number of years that period includes:  $a=b/c$ . Adding all the annual coefficients ( $a, a_1, a_2, \dots$ ) gives the value ( $e$ ). The value of annual percentages is obtained by the formula  $d= a \times 100 / e$  (Vasić 2021: 95).

Period	Annual percentages
292-294	0.51
294-307	5.09
307-313	10.41
313-317	7.06
317-324	3.26
324-330	6.90
330-337	14.38
337-341	0.61
341-346	1.41
346-350	0.31
350-355	0.77
355-361	5.15
361-364	0.38
364-378	36.51
378-383	0.38
383-395	6.14
395-408	0.71
408-425	0.00
425-455	0.02

Table 3 - Annual percentages of group finds from the territory of Late Antique Naissus

never exceeds 2%, with the exception of sequences 364-378 (8.43%) and 383-395 (6.81%), when an increase is observed (Graph 2).



Graph 2 - Presentation of coin flows of individual finds from the territory of late antique Naissus

Period	Annual percentages
292-294	0.37
294-307	0.36
307-313	3.74
313-317	3.01
317-324	5.22
324-330	5.65
330-337	11.00
337-341	10.24
341-346	2.60
346-350	15.03
350-355	1.02
355-361	22.83
361-364	1.67
364-378	8.43
378-383	0.93
383-395	6.81
395-408	0.72
408-425	0.12
425-455	0.27

Table no. 4 - Annual percentages of individual finds from the territory of late antique Naissus

### MONETARY CIRCULATION OF LATE ANTIQUE NAISSUS FROM THE END OF THE 3<sup>RD</sup> TO THE MIDDLE OF THE 5<sup>TH</sup> CENTURY

By comparing the monetary flows of the group and individual finds, a more complete picture of the coin circulation of late antique *Naissus* can be obtained. Also, by comparing monetary movements with the site of *Horreum Margi* in *Moesia Prima* and *Timacum Minus* in *Dacia Ripensis*, we will get an insight into the monetary circulation of the diocese of *Dacia* (Map 2).

In the period from 292-294, the number of coins in circulation is relatively low in both categories of finds. In the next sequence, 294-307, in the case of individual finds, the situation remains unchanged, but in the case of the group finds, the circulation is increasing. It was recorded that the emperor Diocletian stayed in *Illyricum* during this period. During the year 293, Diocletian focused on the fortification of the Danube Limes, as well as visiting larger cities



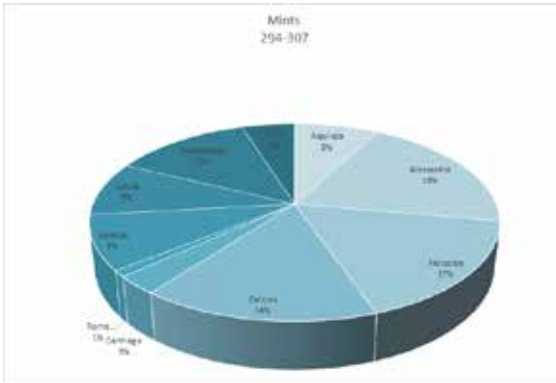
Map 2 - The positions of the sites of Naissus, Timacum Minus and Horreum Margi in the diocese of Dacia, (Tags: Marija Jović on © Cplakidas / Wikimedia Commons / CC BY-SA 3.0, [https://upload.wikimedia.org/wikipedia/commons/0/0e/Balkans\\_6th\\_century.svg](https://upload.wikimedia.org/wikipedia/commons/0/0e/Balkans_6th_century.svg))

and mines. During the year 294, the emperor stayed in *Sirmium*, *Singidunum*, *Viminacium*, and *Cuppae* (Vasić 2008: 58). The increase in coin flow for group finds is possibly due to Diocletian’s stay in this area. The supply of coins mainly originated from eastern mints (53%), but western (16%) and central mints (31%) are also present (Graph 3 and 4). In the 307-313 sequence, there is a noticeable increase in coin flows, even in the category of the group finds, where it reaches the first peak. Historically, this is a complicated period full of disagreements between pretenders to the throne. The Balkan provinces and Asia Minor were under the administration of Galerius until his death in 311, when Licinius took over the administration of the territory of the Balkans and established his residence in *Sirmium* (Vasić 2008: 63; Vasić 2008: 12) (Graph 3). The period from 308 to 310 was marked by Galerius’ frequent trips, departing from *Serdica* or *Thessalonica*, and he

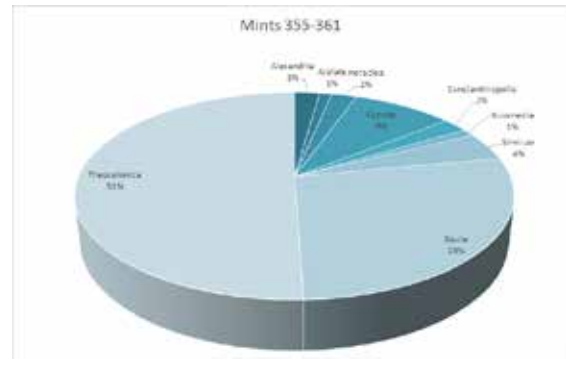
probably also passed through Niš (Vasić 2008: 12). The results of the mints percentage representation in the 307-313 sequence show a dominant share of Balkan and eastern mints (83%). Also, Thessalonica is by far the most represented with 43%, which can be explained by the closing of the *Serdica* mint in 308 and Thessalonica taking over (Božkova 1977: 7; Božkova 1994: 134) (Graph 3 and 4). The increase in circulation and the majority share of the Thessalonica mint can be explained by the desire of the rulers to expand their influence, as well as by the fact that Thessalonica became Galerius’ main mint in 308, and at the same time the closest mint to the city of *Naissus*. From 313 to 330, a uniform and slightly increased circulation rate can be noticed. This period was marked by the diarchy of two rulers, Constantine I and Licinius, but also by frequent conflicts between the rivals. The first battle between the two rulers took place in 316 at *Cibalae*, after which Constantine spent most of his time in the Balkans and assumed power over this territory (Mirković 2012: 9). Constantine’s final victory over Licinius in 324 enabled him to take over the entire Roman Empire (Lenski 2007: 78). During all the years of conflict between the two rulers, Constantine’s frequent visits to the Balkans were recorded. His confirmed stays in *Naissus* took place during the years 319 and 321 and in the period from 316 to 324 he often passed through the city (Vasić 2008: 12). Although it would be expected that the increased deployment of military forces and the permanent stays of emperors in the Balkans would lead to a significant



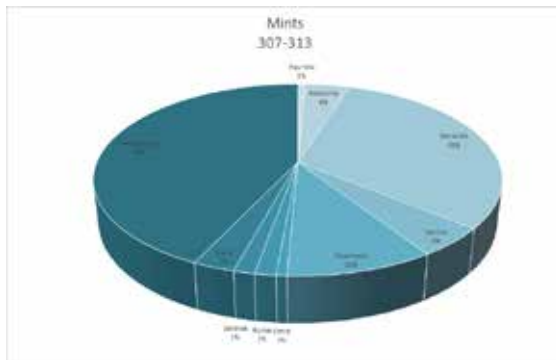
Graph 3 - Parallel display of coin flow of group and individual findings



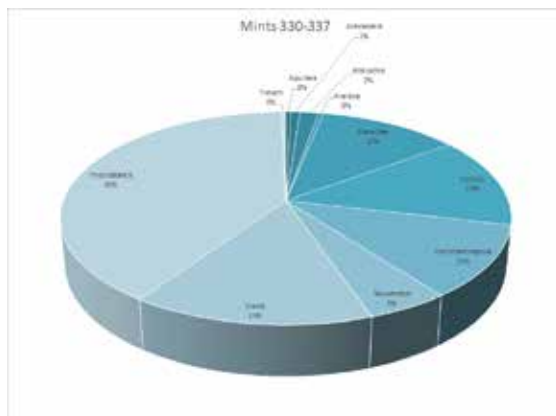
Graph 4 - Percentage representation of mints in the sequence 294-307.



Graph 7 - Percentage representation of mints in the sequence 355-361.



Graph 5 - Percentage representation of mints in the sequence 307-313.



Graph 6 - Percentage representation of mints in the sequence 330-337.

increase in the number of coins in circulation, the results indicate uniform and only slightly increased monetary movements. Also, a greater presence of western mints was noticed during this period, especially the Roma mints during the sequence 313-317, although the dominant share was still held by the Thessalonica and Siscia mints (Graph 3). The influence of the western mints, which were under Constantine's administration

at the time, can be explained by the pretensions of the ruler to expand his influence and take over the territory of the Balkans. In the next sequence, 330-337, a significant increase in coins in circulation was observed in both categories of finds. Until the middle of 334, Constantine led battles against the Goths, Visigoths, and Sarmatian Argarantes on the *Limes*, after which a long period of peace ensued in the Balkans. In the same year, Constantine passed through and stayed in *Naissus* (Vasić 2008: 14; Vasić 2008: 73). It is possible that the increased circulation was a consequence of the mentioned events. The almost exclusive presence of coins from eastern and central mints can be noticed, with the largest share of Thessaloniki at 42% (Graph 3 and 6). After the death of Constantine in 337, and until 341, the situation of individual finds remains unchanged in relation to the previous chronological sequence. Group finds show completely contradictory results, the number of coins in circulation drops drastically from 14.38% to 0.61%. Taking both categories of finds into account, during this period, there was still a significant number of coins in circulation. The territory of *Illyricum* was in the hands of Constans, who came to power at the age of 14 and was under the tutelage of his older brother Constantine II. His stay in *Naissus* between January 19 and February 2, 340 was recorded. Until the year 355, in group finds, the circulation is extremely low and does not exceed 1.5%. Individual finds present a slightly different picture, especially in the sequence 346-350, when the coin supply reached a new peak. In this sequence, significant reforms of Constans and Constantius II (348-354.) took place, but also the death of Constans in 350. (Vasić 1990: 25; Vasić



Period 330-337.			
Mints	Naissus	Horreum Margi	Timacum Minus
Alexandria	/	/	1.2%
Antiochia	3.28%	18.18%	1.2%
Arelate	6.56%	9.09%	/
Heraclea	14.75%	/	2.4%
Cyzicus	21.31%	9.09%	12.24%
Constantinopolis	2.46%	36.36%	14.29%
Nicomedia	8.20%	9.09%	5.10%
Roma	0.82%	9.09%	/
Siscia	9.84%	/	14.29%
Thessalonica	32.79%	9.09%	50%

Table 5 - Percentage representation of mints at the sites: Naissus, Timacum Minus and Horreum Margi, period 330-337.

Period 346-350.			
Mints	Naissus	Horreum Margi	Timacum Minus
Aquileia	3.70%	4.55%	/
Alexandria	1.85%	4.55%	/
Antiochia	1.85%	9.09%	/
Heraclea	5.56%	9.09%	/
Cyzicus	1.85%	/	4.17%
Constantinopolis	5.56%	4.55%	4.17%
Nicomedia	3.70%	13.64%	/
Roma	5.56%	18.18%	4.17%
Siscia	31.48%	/	33.33%
Thessalonica	38.89%	27.27%	54.17%
Treveri	/	9.09%	/

Table 6 - Percentage representation of mints at the sites: Naissus, Timacum Minus and Horreum Margi, period 346-350.

Period 350-355.			
Mints	Naissus	Horreum Margi	Timacum Minus
Aquileia	2.70%	20%	/
Alexandria	/	/	4.76%
Arelate	/	20%	/
Heraclea	10.18%	/	9.52%
Cyzicus	5.41%	/	/
Constantinopolis	13.51%	/	4.76%
Nicomedia	/	20%	4.76%
Roma	2.70%	40%	/
Sirmium	5.41%	/	33.33%
Siscia	13.51%	/	28.57%
Thessalonica	45.95%	/	14.29%

Table no. 7 - Percentage representation of mints at the sites of Naissus, Timacum Minus and Horreum Margi, period 350-355.

Period 355-361.			
Mints	Naissus	Horreum Margi	Timacum Minus
Aquileia	/	3.33%	3.57%
Alexandria	2.30%	/	/
Arelate	1.15%	/	/
Heraclea	2.30%	/	/
Cyzicus	9.20%	10%	7.14%
Constantinopolis	2.30%	20%	14.29%
Nicomedia	1.15%	/	7.14%
Sirmium	4.60%	13.33%	7.14%
Siscia	28.74%	6.67%	14.29%
Thessalonica	48.28%	46.67%	46.43%

Table no. 8 - Percentage representation of mints at the sites of Naissus, Timacum Minus and Horreum Margi, period 355-361.

Period 364-378.			
Mints	Naissus	Horreum Margi	Timacum Minus
Aquileia	0.26%	4.26%	2.74%
Alexandria	1.15%	25.53%	1.37%
Antiochia	0.26%	12.77%	/
Arelate	0.13%	/	/
Heraclea	0.26%	/	/
Cyzicus	0.26%	/	2.74%
Constantinopolis	1.28%	8.51%	2.74%
Nicomedia	0.26%	4.26%	4.11%
Roma	2.56%	14.89%	/
Sirmium	/	/	1.37%
Siscia	48.46%	23.40%	45.21%
Thessalonica	45%	6.38%	38.36%
Treveri	0.13%	/	1.37%

Table no. 9 - Percentage representation of mints at the sites of Naissus, Timacum Minus and Horreum Margi, period 364-378.

2021: 144). In addition to the mentioned historical events, which by their nature could not have had much influence on the increased coin flow in late antique *Naissus*, perhaps the cause can be sought elsewhere. Given that a significant part of the sample of individual finds is occupied by specimens found in *Mediana*, a site with increased construction activity in this period, which required a greater inflow of funds (Vasić 2021: 144), it is possible that all of the above affected the increased circulation. The distribution of coins was mainly carried out from central and eastern mints, among which Thessaloniki (43%) and Siscia (31%) dominate (Graph 3). Observing the monetary flow in the following chronological sequences, in both categories of finds, there are completely parallel, alter-

nating rises and falls in circulation. Between 350 and 355, coin flows were almost at a minimum, only for the curve to reach a new peak in 355-361. The increased circulation was probably the result of Julian's stay in *Naissus* and *Mediana* for several months during the year 361 (Vasić 2008: 15). The supply of coinage remained unchanged, percentage-wise, Thessalonica and Siscia being more prominent (Graph 3 and 7). The next rise in circulation can be noted during the sequence 364-378, which may be related to the stay of Valentinian I and Valens in *Naissus* and *Mediana* in June 364 (Vasić 2008: 19). During the period from 378 to 383, coin circulation was extremely low, which was a logical consequence of the Battle of Hadrianopolis. The last increase in monetary move-

Mints	Naissus	Horreum Margi	Timacum Minus
Aquileia	8.16%	5.07%	/
Alexandria	/	8.70%	/
Antiochia	1.02%	7.73%	/
Arelate	2.04%	0.97%	/
Heraclea	6.12%	4.36%	/
Cyzicus	19.39%	22.95%	20%
Constantinopolis	12.24%	19.81%	30%
Mediolanum	1.02%	/	/
Nicomedia	11.22%	8.94%	20%
Roma	1.02%	10.87%	/
Siscia	5.10%	1.21%	30%
Thessalonica	31.63%	8.94%	/
Treveri	1.02%	/	/
Lugdunum	/	0.48%	/

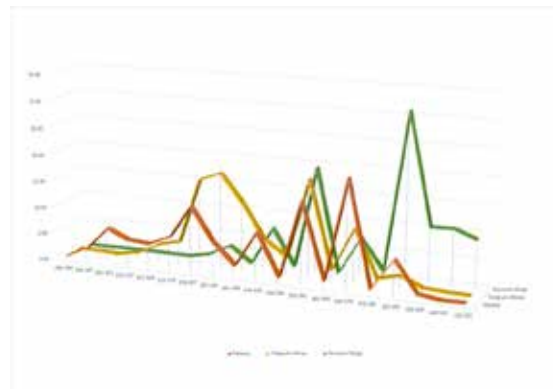
Table no. 10 - Percentage representation of mints at the sites of Naissus, Timacum Minus and Horreum Margi, period 383-395.

ments, within the studied chronology, was recorded in the sequence 383-395. In this sequence, a period of stability prevailed on the territory of *Illyricum*, the distribution of coins was carried out predominantly from the eastern regions, but the presence of western regions is higher in percentage compared to previous periods.

Through a comparison of monetary movements from the sites of *Naissus* in *Dacia Mediterranea*, *Horreum Margi* 4 in *Moesia Prima*, and *Timacum Minus* 5 in *Dacia Ripensis*, we have tried to get a broader picture of coin flows of the prefecture of *Dacia* (Graph 8). The time span from 292 to 330 gives very similar results for all three sites. Throughout this period, the circulation was relatively uniform and low. *Naissus* and *Timacum Minus* have a closer annual percentage that does not exceed the value of 6.54%, while the values at the *Horreum Margi* site are somewhat lower, up to a maximum of 4%. A slight deviation is noticeable in the sequence 307-313 in the form of a slight rise (6.54%), in *Naissus*, while the values in the other two sites do not exceed 1%. *Timacum Minus* had significantly higher monetary circulation in the period of 337-346, and, although the annual percentages at *Horreum Margi* and *Timacum Minus* are lower, the growth and decline of circulation is almost parallel in all three sites. Almost identical coin flows can be observed in the chronological range from 346 to 455. At the

site of *Horreum Margi*, from 395 to 455, the annual percentage values are higher compared to the other two sites, but the curve changes are identical.

The commentary on the analysis of the coin distribution is focused only on chronological sequences where material from all three sites is prominent. In the period from 330 to 337, *Thessalonica* is the most used mint by percentage, while *Constantinopolis* is the most prominent in the case of the *Horreum Margi* site. In *Naissus* and *Horreum Margi*, there is a minor influx of western mints (*Roma* and *Arelate*), however, the central and eastern mints dominate the supply (Table 5). The next section, 346-350, shows that in percentage terms the most prominent mint among all sites is *Thessalonica*. The distribution of coins in *Naissus* and *Timacum Minus* is mostly carried out from central mints, with only a small per-



Graph 8 - Parallel display of coin flow in the sites: Naissus, Timacum Minus and Horreum Margi

4 Numismatic data taken from - Vasić 1990: 101-121

5 Numismatic data as a result of the analysis presented at the INC 2022 - Warsaw - Jović 2022



centage of eastern mints. The percentage at *Horreum Margi* is a little different, because the share of the Roma mint is noticeable at 18.18%, which is negligible at the other two sites (Table 6). The next sequence, 350-355, provides completely different results in all three sites (Table 7). In *Naissus*, the supply was made primarily from the central and eastern mints. *Timacum Minus* shows similar results, although the Sirmium mint dominates, while the western mints are most represented at *Horreum Margi*. During the sequence 355-361, in all three cases, almost half of the coinage came from the Thessalonica mint (Table 8). Sequence 364-378 showed the same inflow of coins at *Naissus* and *Timacum Minus*, with the central mints of Thessalonica and Siscia being the most prominent. *Horreum Margi* had a slightly higher percentage share of eastern mints (Alexandria) compared to central ones (Table 9). The last observed period is 383-395. Here, the dominant distribution of coins was made from the eastern mints at all three sites, with a significant share of the Roma mint at *Horreum Margi* and the Siscia mint at *Timacum Minus* (Table 10).

## CONCLUSIONS

The analysis of monetary circulation was performed on a sample of 2,777 precisely dated coins, which make up 86.35% of the total processed numismatic material from the area of late antique *Naissus*. Only one silver specimen was recorded, all other coins are bronze. Gold coins were not included in the analysis and only two examples are known that correspond chronologically to this research. Although Constantine the Great made the solidus the main unit of the monetary system, the circulation of the gold coin was limited. Solidi were used in the salaries of the army and administration, but were returned to the state coffers through tax collection (Depuyrot 2007: 238). A realistic picture of coin movements is obtained by analysing the bronze coins that the population used in everyday transactions. Bronze coinage entered circulation primarily through the army, and secondarily made its way to regular coin flows through trade transactions. By looking at the annual percentages, it can be concluded that at the very end of the 3rd century, the monetary circulation of late antique *Naissus* was very low. However, at the beginning of the 4th

century and during the reign of Constantine the Great, it slowly grew and the circulation was almost uniform, until his death in 337. The following period, from 337 to 408, is characterised by alternating sudden rises and falls in circulation. The very end of the chronological sequence that is observed, 408-455, features minimal coin flow. Any significant increase in annual percentages can be mostly associated with the stays of emperors in the late antique *Naissus* area. Also, intensive construction activities, which required large amounts of coins, influenced the growth of monetary circulation. Since a significant part of the sample consists of coins from *Mediana*, the site that underwent extensive construction work, this probably contributed to the increased circulation. The inflow of coins was mainly from the central and eastern mints, among which Thessalonica and Siscia had a dominant share. In the period from 307-313, the presence of Roma mints increased noticeably, which is probably a consequence of Constantine's pretensions to expand his influence in the Balkans.

A parallel analysis of the monetary flow of the sites of *Naissus*, *Horreum Margi*, and *Timacum Minus*, which are almost identical, leads to the conclusion that the coin flow and further circulation were uniform in all the provinces of the diocese of *Dacia* and that the same laws, whether of a historical or economic nature, ruled these areas.<sup>6</sup>

## BIBLIOGRAPHY

### Ајдић, Р. 1975

Античке некрополе у Нишу, Нишки зборник, 1: 33-45.

(Ajdić, R. 1975. Antičke nekropole u Nišu, *Niški zbornik*, 1: 33-45).

### Божкова, Б. 1977

Монетарнигшта в Сердика през втората половина на III - IV век, Нумизматика, 4- IX: 3-10.

(Božkova, B. 1977. Monetarniršta v Serdika prez втората polovina na III - IV vek, *Numizmatika*, 4-IX: 3-10).

<sup>6</sup> Dr Miloje Vasić first came to the same conclusion, which was later confirmed by analyses carried out in two independent studies of the monetary circulation of the *Timacum Minus* site, presented at the INC 2022 congress in Warsaw and the study of monetary movements of *Naissus* presented in this paper.

**Божкова, Б. 1994**

Монетна политика в Тракија през IV век. Списание Епохи, 4: 126-135.  
(Božkova, B. 1994. Monetna politika v Trakija prez IV vek. *Spisanie Epohi*, 4: 126-135).

**Дереуот, Г. 2007**

Economy and Society, in: *The Cambridge Companion to The Age of Constantine*, ed. N. Lenski: New York: Cambridge University Press, 226-255.

**Јанковић Михалдзић, Д. 1986**

Скупни налаз римског бронзаног новца из Ниша (Resume: Group find of Roman bronze coins from Niš), Зборник Народног музеја Ниш, 2: 25-48.  
(Janković Mihaldžić, D. 1986. Skupni nalaz rimskog bronзаног novca iz Niša. *Zbornik Narodnog muzeja Niš*, 2: 25-48).

**Јанковић Михалдзић, Д. 2000**

Остава римског бронзаног новца IV века из Ниша (Resume: Hoard of Roman bronze coins of the 4<sup>th</sup> century from Niš), Зборник Народног музеја Ниш, 9: 37-58.  
(Janković Mihaldžić, D. 2000. Ostava rimskog bronзаног novca IV veka iz Niša. *Zbornik Narodnog muzeja Niš*, 9: 37-58).

**Јанковић Михалдзић, Д. 2002**

Један мањи налаз римског бронзаног новца IV века са градског поља у Нишу (Resume: A find of IV century Roman bronze coins from Gradsko polje in Niš), Зборник Народног музеја Ниш, 11: 15-26.  
(Janković Mihaldžić, D. 2002. Jedan manji nalaz rimskog bronзаног novca IV veka sa gradskog polja u Nišu. *Zbornik Narodnog muzeja Niš*, 11: 15-26).

**Јанковић Михалдзић, Д. 2003**

Налаз римског новца са локације школе Вук Караџић у Нишу (Resume: Finds of Roman coins from the location of school Vuk Karadžić in Niš), Зборник Народног музеја Ниш, 12: 23-42.  
(Janković Mihaldžić, D. 2003. Nalaz rimskog novca sa lokacije škole Vuk Karadžić u Nišu. *Zbornik Narodnog muzeja Niš*, 12: 23-42).

**Јанковић Михалдзић, Д. 2005**

Оставе римског новца у Народног Музеју у Нишу (Resume: Hoards of Roman coins in the National museum of Niš), Зборник Народног музеја Ниш, 13-14: 49-60.  
(Janković Mihaldžić, D. 2005. Ostave rimskog novca u Narodnom Muzeju u Nišu. *Zbornik Narodnog muzeja Niš*, 13-14: 49-60).

**Јанковић Михалдзић, Д. 2008**

Скупни налаз римског бронзаног новца из Медиане (Resume: A group find of Roman bronze coins from Mediana), *Naissus*, I: 77-95.

**Јанковић Михалдзић, Д. 2008**

Појединачни налази римског новца на Медиани (Resume: Single finds of Roman coins from Mediana), *Naissus*, I: 27-73.

**Јеремић, Г. 2014**

Naissus у доба касне антике, у: Јагодин мала касноантичка некропола, ур. С. Поповић: Ниш: Графика Галеб Ниш, 7-10. (Naissus in the Late Antiquity, in: *Late Antique necropolis Jagodin mala*, ed. S. Popović: Niš: Grafika Galeb Niš, 7-10.)  
(Jeremić, G. 2014. Naissus u doba kasne antike, u: *Jagodin mala kasnoantička nekropola*, ur. S. Popović: Niš: Grafika Galeb Niš, 7-10).

**Јовановић, А. 1976**

Земљане светиљке из античке збирке Народног музеја у Нишу, Нишки зборник, 2: 61-82.  
(Jovanović, A. 1976. Zemljane svetiljke iz antičke zbirke Narodnog muzeja u Nišu, *Niški zbornik*, 2: 61-82).

**Јовић, М. 2021**

Налази новца са истраживања Трга краља Милана 1990-1991, у: Топографија античког и касноантичког Ниша, *Naissus*, археолошки трагови на простору центра савременог града, Г. Јеремић, Т. Чершков: Београд: АлтаНова, 104-110.  
(Jović, M. 2021. Nalazi novca sa istraživanja Trga kralja Milana 1990-1991, u: *Topografija antičkog i kasnoantičkog Niša*, *Naissus*, arheološki tragovi na prostoru centra savremenog grada, G. Jeremić, T. Čerškov: Beograd: AltaNova, 104-110).

**Jović, M. 2022**

Monetary circulation in the mining area Territoria metallorum- case study of Timacum Minus site, in: XVI International Numismatic Congress in Worsow, 11-16 September, Book of abstracts: Worsow: Faculty of archaeology, University of Worsow, 180.

**Lenski, N. 2007**

The Reign of Constantine, in: *The Cambridge Companion to The Age of Constantine*, ed. N. Lenski: New York: Cambridge University Press, 59-91.

**Mirković, M. 2012**

Co-regency: Constantine and Licinius and the political division of the Balkans (Rezime: Savladari: Konstantin i Licinije i podela balkanskog poluostrva), *Zbornik radova Vizantoloskog instituta*, 49: 7-18.

**Петровић, П. 1976**

Ниш у античко доба, Ниш: Градина. (Petrović, P. 1976. *Niš u antičko doba*, Niš: Gradina).

**Vasić, M. 1990**

*Nalazi rimskog bronзаног новца IV i V veka iz municipiuma Horeum Margi, Ćuprija*, Posebna izdanja knjiga 22, Beograd: Arheološki institut, Vojni muzej.

(*Trouvaille des monnaies de bronze de IVeme et Veme siecle en municipe Horeum Margi, Ćupria*, Monographies volume 22, Beograd: Institut Archeologique, Musee Militaire).

**Vasić, M. 2008**

Prolasci i boravci rimskih imperatora kroz Niš krajem III i u IV veku (Resume: Roman emperors passing through or staying in Niš in late 3rd and 4th centuries), *Naissus*, I: 7-23.

**Васић, М. 2008**

Златни и сребрни новац касне антике (284-450. године) из збирке Народног музеја у Београду, Београд: Народни музеј у Београду.

(Vasić, M. 2008. *Zlatni i srebrni novac kasne antike (284-450. godine) iz zbirke Narodnog muzeja u Beogradu*, Beograd: Narodni muzej u Beogradu).

**Васић, М. 2021**

Нумизматички налази у Медијани (Resume: Numismatic findings in Mediana), *Naissus*, II: 73-192.

(Vasić, M. 2021. Numizmatički nalazi u Medijani, *Naissus*, II: 73-192.)

**REZIME****MONETARNA CIRKULACIJA U KASNOANTIČKOM NAISSUS-U**

**KLJUČNE REČI: NUMIZMATIKA, NAISSUS, KASNA ANTIKA, NOVAC, MONETARNA CIRKULACIJA.**

Predmet rada predstavlja analiza novčanih kretanja kasnoantičkog Naisusa. Istraživanje je ograničeno na period od kraja 3. do sredine 5. veka. Numizmatički materijal je sa 13 lokacija, sa lokaliteta: Medijana, Trg Kralja Milana i Trg Oslobođenja, Niška tvrđava i Gradsko polje, nekropola Jagodin Mala, Gorča, Ambasador, ulica Obrenovićeve i OŠ Vuk Karadžić. Pomenuti lokaliteti pozicionirani su kako u urbanom jezgru grada tako i na njegovoj periferiji. Na osnovu konteksta u kome je pronađen novac je podeljen u dve kategorije: na grupne i pojedinačne nalaze. Grupni nalazi novca podrazumevaju celine poput ostava i kasa u okviru kojih je novac sukcesivno prikupljan, dok pojedinačni nalazi podrazumevaju novac koji je otkriven tokom arheoloških istraživanja, uglavnom stratificiran, kao i primerke koji su otkupom postali deo muzejskih zbirki. Broj hronološki precizno određenih primeraka je kod obe kategorije gotovo jednak (grupni nalazi-1390; pojedinačni nalazi- 1387 primeraka). Komparacijom novčanih tokova grupnih i pojedinačnih nalaza dobija se kompletnija slika monetarne cirkulacije kasnoantičkog Naisusa. Takođe, poređenjem novčanih kretanja sa lokalitetom Horeum Margi (Horreum Margi) u Prvoj Meziji (Moesia Prima) i Timacum Minus (Timacum Minus) u Priobalnoj Dakiji (Dacia Ripensis) dobićemo u monetarnu cirkulaciju prefektуре Dakije. Sagleđavanjem godišnjih procenata može se zaključiti da je na samom kraju 3. veka opticaj novca kasnoantičkog Naisusa bio jako nizak. Ipak početkom 4. veka i za vreme vlade Konstantina Velikog opticaj polako raste i cirkulacija je gotovo ujednačena. Naredni

period od 337. do 408. odlikuju naizmenični nagli skokovi i padovi u optičaju. Sam kraj hronološke sekvence koja se posmatra 408-455. odlikuje minimalan novčani tok. Svaki značajan rast godišnjih procenata uglavnom se može povezati sa boravcima imperatora na prostoru kasnoantičkog Naisusa ili posledicom intenzivne graditeljske aktivnosti. Dotok novca uglavnom je bio iz centralnih i istočnih kovnica, među kojima su dominantan udeo imale Tesalonika i Siscija. Paralelnim sagledavanjem novčanih tokova lokaliteta su Naisus, Horeum Margi i Timakum Minus, koja su gotovo podudarna, nameće se zaključak da su dotok novca i njegova dalja cirkulacija bili ujednačeni u svim provincijama dijeceze Dakije i da su iste, zakonitosti, bilo istorijske ili ekonomske prirode vladale ovim prostorima.

\* \* \*

*Arheologija i prirodne nauke (Archaeology and Science)* is an Open Access Journal. All articles can be downloaded free of charge and used in accordance with the licence Creative Commons — **Attribution-NonCommercial-NoDerivs 3.0 Serbia** (<https://creativecommons.org/licenses/by-nc-nd/3.0/rs/>).

Časopis *Arheologija i prirodne nauke* je dostupan u režimu otvorenog pristupa. Članci objavljeni u časopisu mogu se besplatno preuzeti sa sajta i koristiti u skladu sa licencom Creative Commons — **Autorstvo-Nekomercijalno-Bez prerada 3.0 Srbija** (<https://creativecommons.org/licenses/by-nc-nd/3.0/rs/>).

CIP - Каталогизacija у публикацији  
Народна библиотека Србије, Бе

902/904

**ARHEOLOGIJA i prirodne nauke** = Archaeology and Science  
/ urednici Miomir Korać, Snežana Golubović. -2006, No. 1-  
. - Beograd : Centar za nove tehnologije Viminacium: Arheološki  
institut, 2006 - (Beograd : Digital Art Company). - 28 cm  
Godišnje. - Tekst na srp. i engl. jeziku. - Drugo izdanje na drugom  
medijumu: Arheologija i prirodne nauke (Online) = ISSN 2738-1102  
ISSN 1452- 7448 = Arheologija i prirodne nauke  
COBISS.SR-ID 136747788



