

Funerary Monuments and Quarry Management in Middle Dalmatia

Cambi, Nenad

Source / Izvornik: **ASMOSIA XI, Interdisciplinary Studies on Ancient Stone, Proceedings of the XI International Conference of ASMOSIA, 2018, 827 - 838**

Conference paper / Rad u zborniku

Publication status / Verzija rada: **Published version / Objavljena verzija rada (izdavačev PDF)**

<https://doi.org/10.31534/XI.asmosia.2015/08.02>

Permanent link / Trajna poveznica: <https://um.nsk.hr/um:nbn:hr:123:287462>

Rights / Prava: [In copyright](#)/[Zaštićeno autorskim pravom.](#)

Download date / Datum preuzimanja: **2025-03-12**



Repository / Repozitorij:

[FCEAG Repository - Repository of the Faculty of Civil Engineering, Architecture and Geodesy, University of Split](#)



UNIVERSITY OF SPLIT

DIGITALNI AKADEMSKI ARHIVI I REPOZITORIJI



ASMOSIA XI

Interdisciplinary Studies on Ancient Stone

PROCEEDINGS

of the XI ASMOSIA Conference, Split 2015

Edited by Daniela Matetić Poljak and Katja Marasović



Interdisciplinary Studies on Ancient Stone
Proceedings of the XI ASMOSIA Conference (Split 2015)

Publishers:

ARTS ACADEMY IN SPLIT
UNIVERSITY OF SPLIT

and

UNIVERSITY OF SPLIT
FACULTY OF CIVIL ENGINEERING,
ARCHITECTURE AND GEODESY

Technical editor:
Kate Bošković

English language editor:
Graham McMaster

Computer pre-press:
Nikola Križanac

Cover design:
Mladen Čulić

Cover page:

Sigma shaped mensa of pavonazzetto marble from Diocletian's palace in Split

ISBN 978-953-6617-49-4 (Arts Academy in Split)

ISBN 978-953-6116-75-1 (Faculty of Civil Engineering, Architecture and Geodesy)

e-ISBN 978-953-6617-51-7 (Arts Academy in Split)

e-ISBN 978-953-6116-79-9 (Faculty of Civil Engineering, Architecture and Geodesy)

CIP available at the digital catalogue of the University Library in Split, no 170529005

Association for the Study of Marble & Other Stones in Antiquity

ASMOSIA XI

Interdisciplinary Studies of Ancient Stone

Proceedings of the Eleventh International Conference of ASMOSIA,
Split, 18–22 May 2015

Edited by
Daniela Matetić Poljak
Katja Marasović



Split, 2018

Nota bene

All papers are subjected to an international review.

The quality of the images relies on the quality of the originals provided by the authors.

CONTENT

PRESENTATION	15
NECROLOGY: NORMAN HERZ (1923-2013) by Susan Kane	17
1. APPLICATIONS TO SPECIFIC ARCHEOLOGICAL QUESTIONS – USE OF MARBLE	
Hermaphrodites and Sleeping or Reclining Maenads: Production Centres and Quarry Marks <i>Patrizio Pensabene</i>	25
First Remarks about the Pavement of the Newly Discovered Mithraeum of the Colored Marbles at Ostia and New Investigations on Roman and Late Roman White and Colored Marbles from Insula IV, IX <i>Massimiliano David, Stefano Succi and Marcello Turci</i>	33
Alabaster. Quarrying and Trade in the Roman World: Evidence from Pompeii and Herculaneum <i>Simon J. Barker and Simona Perna</i>	45
Recent Work on the Stone at the Villa Arianna and the Villa San Marco (Castellammare di Stabia) and Their Context within the Vesuvian Area <i>Simon J. Barker and J. Clayton Fant</i>	65
Marble Wall Decorations from the Imperial Mausoleum (4 th C.) and the Basilica of San Lorenzo (5 th C.) in Milan: an Update on Colored Marbles in Late Antique Milan <i>Elisabetta Neri, Roberto Bugini and Silvia Gazzoli</i>	79
Sarcophagus Lids Sawn from their Chests <i>Dorothy H. Abramitis and John J. Herrmann</i>	89
The Re-Use of Monolithic Columns in the Invention and Persistence of Roman Architecture <i>Peter D. De Staebler</i>	95
The Trade in Small-Size Statues in the Roman Mediterranean: a Case Study from Alexandria <i>Patrizio Pensabene and Eleonora Gasparini</i>	101
The Marble Dedication of Komon, Son of Asklepiades, from Egypt: Material, Provenance, and Reinforcement of Meaning <i>Patricia A. Butz</i>	109
Multiple Reuse of Imported Marble Pedestals at Caesarea Maritima in Israel <i>Barbara Burrell</i>	117
Iasos and Iasian Marble between the Late Antique and Early Byzantine Eras <i>Diego Peirano</i>	123

Thassos, Known Inscriptions with New Data <i>Tony Kozelj and Manuela Wurch-Kozelj</i>	131
The Value of Marble in Roman <i>Hispalis</i> : Contextual, Typological and Lithological Analysis of an Assemblage of Large Architectural Elements Recovered at N° 17 Goyeneta Street (Seville, Spain) <i>Ruth Taylor, Oliva Rodríguez, Esther Ontiveros, María Luisa Loza, José Beltrán and Araceli Rodríguez</i>	143
<i>Giallo Antico</i> in Context. Distribution, Use and Commercial Actors According to New Stratigraphic Data from the Western Mediterranean (2 nd C. Bc – Late 1 st C. Ad) <i>Stefan Ardeleanu</i>	155
<i>Amethystus</i> : Ancient Properties and Iconographic Selection <i>Luigi Pedroni</i>	167
2. PROVENANCE IDENTIFICATION I: (MARBLE)	
Unraveling the Carrara – Göktepe Entanglement <i>Walter Prochaska, Donato Attanasio and Matthias Bruno</i>	175
The Marble of Roman Imperial Portraits <i>Donato Attanasio, Matthias Bruno, Walter Prochaska and Ali Bahadir Yavuz</i>	185
Tracing Alabaster (Gypsum or Anhydrite) Artwork Using Trace Element Analysis and a Multi-Isotope Approach (Sr, S, O) <i>Lise Leroux, Wolfram Kloppmann, Philippe Bromblet, Catherine Guerrot, Anthony H. Cooper, Pierre-Yves Le Pogam, Dominique Vingtain and Noel Worley</i>	195
Roman Monolithic Fountains and Thasian Marble <i>Annewies van den Hoek, Donato Attanasio and John J. Herrmann</i>	207
Archaeometric Analysis of the Alabaster Thresholds of Villa A, Oplontis (Torre Annunziata, Italy) and New Sr and Pb Isotopic Data for <i>Alabastro Ghiaccione del Circeo</i> <i>Simon J. Barker, Simona Perna, J. Clayton Fant, Lorenzo Lazzarini and Igor M. Villa</i>	215
Roman Villas of Lake Garda and the Occurrence of Coloured Marbles in the Western Part of “Regio X Venetia et Histria” (Northern Italy) <i>Roberto Bugini, Luisa Folli and Elisabetta Roffia</i>	231
Calcitic Marble from Thasos in the North Adriatic Basin: Ravenna, Aquileia, and Milan <i>John J. Herrmann, Robert H. Tykot and Annewies van den Hoek</i>	239
Characterisation of White Marble Objects from the Temple of Apollo and the House of Augustus (Palatine Hill, Rome) <i>Francesca Giustini, Mauro Brilli, Enrico Gallochio and Patrizio Pensabene</i>	247
Study and Archeometric Analysis of the Marble Elements Found in the Roman Theater at Aeclanum (Mirabella Eclano, Avellino - Italy) <i>Antonio Mesisca, Lorenzo Lazzarini, Stefano Cancelliere and Monica Salvadori</i>	255

Two Imperial Monuments in Puteoli: Use of Proconnesian Marble in the Domitianic and Trajanic Periods in Campania <i>Irene Bald Romano, Hans Rupprecht Goette, Donato Attanasio and Walter Prochaska</i>	267
Coloured Marbles in the Neapolitan Pavements (16 th And 17 th Centuries): the Church of <i>Santi Severino e Sossio</i> <i>Roberto Bugini, Luisa Folli and Martino Solito</i>	275
Roman and Early Byzantine Sarcophagi of Calcitic Marble from Thasos in Italy: Ostia and Siracusa <i>Donato Attanasio, John J. Herrmann, Robert H. Tykot and Annewies van den Hoek</i>	281
Revisiting the Origin and Destination of the Late Antique Marzamemi 'Church Wreck' Cargo <i>Justin Leidwanger, Scott H. Pike and Andrew Donnelly</i>	291
The Marbles of the Sculptures of Felix Romuliana in Serbia <i>Walter Prochaska and Maja Živić</i>	301
Calcitic Marble from Thasos and Proconnesos in Nea Anchialos (Thessaly) and Thessaloniki (Macedonia) <i>Vincent Barbin, John J. Herrmann, Aristotle Mentzos and Annewies van den Hoek</i>	311
Architectural Decoration of the Imperial Agora's Porticoes at Iasos <i>Fulvia Bianchi, Donato Attanasio and Walter Prochaska</i>	321
The Winged Victory of Samothrace - New Data on the Different Marbles Used for the Monument from the Sanctuary of the Great Gods <i>Annie Blanc, Philippe Blanc and Ludovic Laugier</i>	331
Polychrome Marbles from the Theatre of the Sanctuary of Apollo Pythios in Gortyna (Crete) <i>Jacopo Bonetto, Nicolò Mareso and Michele Bueno</i>	337
Paul the Silentiary, Hagia Sophia, Onyx, Lydia, and Breccia Corallina <i>John J. Herrmann and Annewies van den Hoek</i>	345
Incrustations from Colonia Ulpia Traiana (Near Modern Xanten, Germany) <i>Vilma Ruppiniè and Ulrich Schüssler</i>	351
Stone Objects from Vindobona (Austria) – Petrological Characterization and Provenance of Local Stone in a Historico-Economical Setting <i>Andreas Rohatsch, Michaela Kronberger, Sophie Insulander, Martin Mosser and Barbara Hodits</i>	363
Marbles Discovered on the Site of the Forum of Vaison-la-Romaine (Vaucluse, France): Preliminary Results <i>Elsa Roux, Jean-Marc Mignon, Philippe Blanc and Annie Blanc</i>	373
Updated Characterisation of White Saint-Béat Marble. Discrimination Parameters from Classical Marbles <i>Hernando Royo Plumed, Pilar Lapeunte, José Antonio Cuchí, Mauro Brillì and Marie-Claire Savin</i>	379

Grey and Greyish Banded Marbles from the Estremoz Anticline in Lusitania <i>Pilar Lapuente, Trinidad Nogales-Basarrate, Hernando Royo Plumed, Mauro Brilli and Marie-Claire Savin</i>	391
New Data on Spanish Marbles: the Case of <i>Gallaecia</i> (NW Spain) <i>Anna Gutiérrez García-M., Hernando Royo Plumed and Silvia González Soutelo</i>	401
A New Roman Imperial Relief Said to Be from Southern Spain: Problems of Style, Iconography, and Marble Type in Determining Provenance <i>John Pollini, Pilar Lapuente, Trinidad Nogales-Basarrate and Jerry Podany</i>	413
Reuse of the <i>Marmorata</i> from the Late Roman Palatial Building at Carranque (Toledo, Spain) in the Visigothic Necropolis <i>Virginia García-Entero, Anna Gutiérrez García-M. and Sergio Vidal Álvarez</i>	427
Imperial Porphyry in Roman Britain <i>David F. Williams</i>	435
Recycling of Marble: Apollonia/Sozousa/Arsuf (Israel) as a Case Study <i>Moshe Fischer, Dimitris Tambakopoulos and Yannis Maniatis</i>	443
Thasian Connections Overseas: Sculpture in the Cyrene Museum (Libya) Made of Dolomitic Marble from Thasos <i>John J. Herrmann and Donato Attanasio</i>	457
Marble on Rome's Southwestern Frontier: Thamugadi and Lambaesis <i>Robert H. Tykot, Ouahiba Bouzidi, John J. Herrmann and Annewies van den Hoek</i>	467
Marble and Sculpture at Lepcis Magna (Tripolitania, Libya): a Preliminary Study Concerning Origin and Workshops <i>Luisa Musso, Laura Buccino, Matthias Bruno, Donato Attanasio and Walter Prochaska</i>	481
The Pentelic Marble in the Carnegie Museum of Art Hall of Sculpture, Pittsburgh, Pennsylvania <i>Albert D. Kollar</i>	491
Analysis of Classical Marble Sculptures in the Michael C. Carlos Museum, Emory University, Atlanta <i>Robert H. Tykot, John J. Herrmann, Renée Stein, Jasper Gaunt, Susan Blevins and Anne R. Skinner</i>	501
3. PROVENANCE IDENTIFICATION II: (OTHER STONES)	
Aphrodisias and the Regional Marble Trade. The <i>Scaenae Frons</i> of the Theatre at Nysa <i>Natalia Toma</i>	513
The Stones of Felix Romuliana (Gamzigrad, Serbia) <i>Bojan Djurić, Divna Jovanović, Stefan Pop Lazić and Walter Prochaska</i>	523
Aspects of Characterisation of Stone Monuments from Southern Pannonia <i>Branka Migotti</i>	537

The Budakalász Travertine Production <i>Bojan Djurić, Sándor Kele and Igor Rižnar</i>	545
Stone Monuments from Carnuntum and Surrounding Areas (Austria) – Petrological Characterization and Quarry Location in a Historical Context <i>Gabrielle Kremer, Isabella Kitz, Beatrix Moshhammer, Maria Heinrich and Erich Draganits</i>	557
Espejón Limestone and Conglomerate (Soria, Spain): Archaeometric Characterization, Quarrying and Use in Roman Times <i>Virginia García-Entero, Anna Gutiérrez García-M, Sergio Vidal Álvarez, María J. Peréx Agorreta and Eva Zarco Martínez</i>	567
The Use of Alcover Stone in Roman Times (<i>Tarraco, Hispania Citerior</i>). Contributions to the <i>Officina Lapidaria Tarraconensis</i> <i>Diana Gorostidi Pi, Jordi López Vilar and Anna Gutiérrez García-M.</i>	577
4. ADVANCES IN PROVENANCE TECHNIQUES, METHODOLOGIES AND DATABASES	
Grainautline – a Supervised Grain Boundary Extraction Tool Supported by Image Processing and Pattern Recognition <i>Kristóf Csorba, Lilla Barancsuk, Balázs Székely and Judit Zöldföldi</i>	587
A Database and GIS Project about Quarrying, Circulation and Use of Stone During the Roman Age in <i>Regio X - Venetia et Histria</i> . The Case Study of the Euganean Trachyte <i>Caterine Previato and Arturo Zara</i>	597
5. QUARRIES AND GEOLOGY	
The Distribution of Troad Granite Columns as Evidence for Reconstructing the Management of Their Production <i>Patrizio Pensabene, Javier Á. Domingo and Isabel Rodà</i>	613
Ancient Quarries and Stonemasonry in Northern Choria Considiana <i>Hale Güney</i>	621
Polychromy in Larisaeon Quarries and its Relation to Architectural Conception <i>Gizem Mater and Ertunç Denктаş</i>	633
Euromos of Caria: the Origin of an Hitherto Unknown Grey Veined Stepped Marble of Roman Antiquity <i>Matthias Bruno, Donato Attanasio, Walter Prochaska and Ali Bahadır Yavuz</i>	639
Unknown Painted Quarry Inscriptions from Bacakale at <i>Docimium</i> (Turkey) <i>Matthias Bruno</i>	651
The Green Schist Marble Stone of Jebel El Hairech (North West of Tunisia): a Multi-Analytical Approach and its Uses in Antiquity <i>Ameur Younès, Mohamed Gaied and Wissem Gallala</i>	659
Building Materials and the Ancient Quarries at <i>Thamugadi</i> (East of Algeria), Case Study: Sandstone and Limestone <i>Younès Rezkallah and Ramdane Marmi</i>	673

The Local Quarries of the Ancient Roman City of <i>Valeria</i> (Cuenca, Spain) <i>Javier Atienza Fuente</i>	683
The Stone and Ancient Quarries of Montjuïc Mountain (Barcelona, Spain) <i>Aureli Álvarez</i>	693
<i>Notae Lapidinarum</i> : Preliminary Considerations about the Quarry Marks from the Provincial Forum of <i>Tarraco</i> <i>Maria Serena Vinci</i>	699
The Different Steps of the Rough-Hewing on a Monumental Sculpture at the Greek Archaic Period: the Unfinished Kouros of Thasos <i>Danièle Braunstein</i>	711
A Review of Copying Techniques in Greco-Roman Sculpture <i>Séverine Moureaud</i>	717
Labour Forces at Imperial Quarries <i>Ben Russell</i>	733
Social Position of Craftsmen inside the Stone and Marble Processing Trades in the Light of Diocletian's Edict on Prices <i>Krešimir Bosnić and Branko Matulić</i>	741
6. STONE PROPERTIES, WEATHERING EFFECTS AND RESTORATION, AS RELATED TO DIAGNOSIS PROBLEMS, MATCHING OF STONE FRAGMENTS AND AUTHENTICITY	
Methods of Consolidation and Protection of Pentelic Marble <i>Maria Apostolopoulou, Elissavet Drakopoulou, Maria Karoglou and Asterios Bakolas</i>	749
7. PIGMENTS AND PAINTINGS ON MARBLE	
Painting and Sculpture Conservation in Two Gallo-Roman Temples in Picardy (France): Champlieu and Pont-Sainte-Maxence <i>Véronique Brunet-Gaston and Christophe Gaston</i>	763
The Use of Colour on Roman Marble Sarcophagi <i>Eliana Siotto</i>	773
New Evidence for Ancient Gilding and Historic Restorations on a Portrait of Antinous in the San Antonio Museum of Art <i>Jessica Powers, Mark Abbe, Michelle Bushey and Scott H. Pike</i>	783
Schists and Pigments from Ancient Swat (Khyber Pukhtunkhwa, Pakistan) <i>Francesco Mariottini, Gianluca Vignaroli, Maurizio Mariottini and Mauro Roma</i>	793
8. SPECIAL THEME SESSION: „THE USE OF MARBLE AND LIMESTONE IN THE ADRIATIC BASIN IN ANTIQUITY”	
Marble Sarcophagi of Roman Dalmatia Material – Provenance – Workmanship <i>Guntram Koch</i>	809

Funerary Monuments and Quarry Management in Middle Dalmatia <i>Nenad Cambi</i>	827
Marble Revetments of Diocletian's Palace <i>Katja Marasović and Vinka Marinković</i>	839
The Use of Limestones as Construction Materials for the Mosaics of Diocletian's Palace <i>Branko Matulić, Domagoj Mudronja and Krešimir Bosnić</i>	855
Restoration of the Peristyle of Diocletian's Palace in Split <i>Goran Nikšić</i>	863
Marble Slabs Used at the Archaeological Site of Sorna near Poreč Istria – Croatia <i>Đeni Gobić-Bravar</i>	871
Ancient Marbles from the Villa in Verige Bay, Brijuni Island, Croatia <i>Mira Pavletić and Đeni Gobić-Bravar</i>	879
Notes on Early Christian Ambos and Altars in the Light of some Fragments from the Islands of Pag and Rab <i>Mirja Jarak</i>	887
The Marbles in the Chapel of the Blessed John of Trogir in the Cathedral of St. Lawrence at Trogir <i>Đeni Gobić-Bravar and Daniela Matetić Poljak</i>	899
The Use of Limestone in the Roman Province of Dalmatia <i>Edisa Lozić and Igor Rižnar</i>	915
The Extraction and Use of Limestone in Istria in Antiquity <i>Klara Buršić-Matijašić and Robert Matijašić</i>	925
Aurisina Limestone in the Roman Age: from Karst Quarries to the Cities of the Adriatic Basin <i>Caterina Previato</i>	933
The Remains of Infrastructural Facilities of the Ancient Quarries on Zadar Islands (Croatia) <i>Mate Parica</i>	941
The Impact of Local Geomorphological and Geological Features of the Area for the Construction of the Burnum Amphitheatre <i>Miroslav Glavičić and Uroš Stepišnik</i>	951
Roman Quarry Klis Kosa near Salona <i>Ivan Alduk</i>	957
Marmore Lavdata Brattia <i>Miona Miliša and Vinka Marinković</i>	963
Quarries of the Lumbarda Archipelago <i>Ivka Lipanović and Vinka Marinković</i>	979

Island of Korčula – Importer and Exporter of Stone in Antiquity <i>Mate Parica and Igor Borzić</i>	985
Faux Marbling Motifs in Early Christian Frescoes in Central and South Dalmatia: Preliminary Report <i>Tonči Borovac, Antonija Gluhan and Nikola Radošević</i>	995
INDEX OF AUTHORS	1009

FUNERARY MONUMENTS AND QUARRY MANAGEMENT IN MIDDLE DALMATIA

Nenad Cambi

Croatian Academy of Sciences and Arts / University of Zadar, Split, Croatia (nenad.cambi@xnet.hr)

Abstract

The purpose of this paper is not to shed a measure of light on Greek, but rather on Roman stonemasonry, and the latter only within the context of the production of funerary monuments in Dalmatia. The first funerary monuments in Dalmatia were stelai. A particular kind of simple, architectural stele developed in Greek towns. Something seen most commonly in Naronā, as well as in Salona and elsewhere on occasion, is that the Greek type of stele was accepted before there was any strong influence from Italy. These stelai obviously belonged to wealthy families, which commissioned burial monuments that would cost an entire fortune on their own. Accompanying the soldiers that served in Dalmatia, who were stationed in legion camps (Burnum and Tilverium) at the start of the 1st century, came monumental and richly decorated monuments, which often featured military symbolism and tools. The sarcophagus began its life in Dalmatia around the middle of the 2nd century, except for isolated examples from the 1st century. The largest source of locally made sarcophagi matches a period within the 3rd century, when the standard became the three-piece front face (a central inscription field with two empty fields on its sides or a *tabula* for reliefs, usually in the form of erotes with a reversed torch).

Military inscriptions regarding the quarries at Trogir and on Brač are clear evidence that the trade was not in the hands of private enterprise. Soldiers were not available to other private and civil institutions, as they were paid directly by the emperor, and were thus tasked with jobs that they were trained to do in the army. This is why none of these city-like settlements had an actual civil government with municipal functionaries.

Keywords

stone, stone quarries, sepulchral monuments, Dalmatia



Fig. 1. Map of Central Dalmatia showing the locations of stone quarries

Funerary monuments and quarry management in middle Dalmatia

Putting stone to use is a very ancient trade which traces its Dalmatian roots back to prehistoric times. Practically the only stone available locally, particularly in the coastal areas, was limestone, which varies greatly in quality from one quarry to the other, and would accordingly be used for various purposes. Limestone deposits were plentiful, and thus utilized in numerous locations. Greek colonists in Dalmatia began harvesting stone in the quarries on Vis (Issa), Hvar (Faros), at Trogir (Tragourion), and Stobreč (Epetion). It was likely that the Greeks also exploited excellent limestone from the small island of Vrnik (off Korčula), across the way from an Issaen settlement in Lumbarda (Greek name unknown). These antique quarries are, for the most part, still in use today. During the 1st century, the repertoires of the workshops that produced these funerary monuments were broadened with the addition of other funeral monuments, with the most numerous among them originating from cult sacrificial altars.



Fig 2. Simple types of Hellenistic stelai from the island of Issa

However, the purpose of this paper is not to shed a measure of light on Greek, but rather on Roman stonemasonry, and the latter only within the context of the production of funerary monuments, which was one of the most developed trades alongside construction, particularly in the middle Dalmatia and Salona, the center of the Roman province of Dalmatia (Fig. 1). The Romans made use of the stone to a much larger degree than the Greeks, which is to be expected, considering the small number and size of the Greek settlements. Thus the Roman settlements were much larger, and the local, pre-Roman population was already romanized, which is to say, had adapted to the Roman way of life. Towns developed because the local people tended to gravitate towards them, along with people from other corners of the antique world, as numerous inscriptions clearly indicate. Thus there was a large increase in the number of citizens living in cities, which meant that there was suddenly a great need for stone as a construction material in some of the most populous cities, specifically for the manufacture of decorations, all kinds of sculptures, and funeral monuments in particular, which led to the expansion of old quarries and the opening of new ones.

The first funerary monuments in Dalmatia were stelai. A particular kind of simple, architectural stele developed in Greek towns (Fig. 2); it occasionally adopted a more complex structure and decorations, but was often of a simple shape derived from Greek architectural trends,

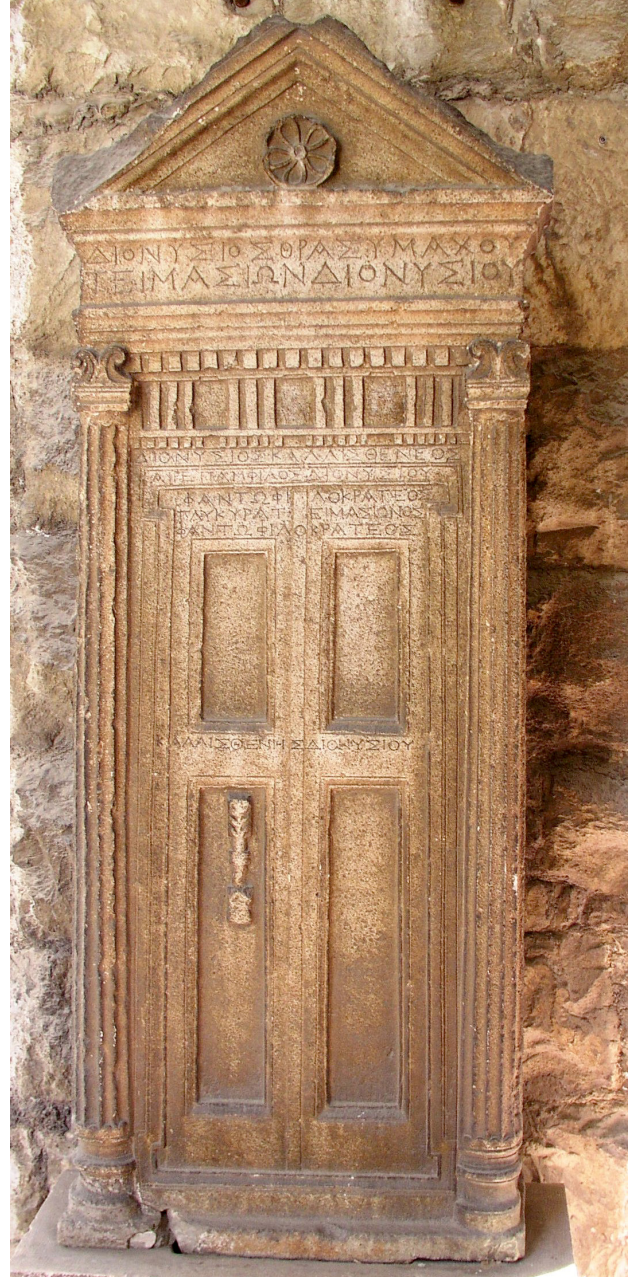


Fig. 3. A specimen of more complex type of Hellenistic stele. The island of Issa

specifically architectural stelai (Fig. 3).¹ Their typology is architecturally modeled, but we cannot use this sort of development process to draw any chronological conclusions as to the simplification or even removal of superfluous elements. By all accounts, it is simply a case of production becoming cheaper and thus affordable to a larger number of

¹ On Greek stelai see NIKOLACI 1961-62, 57-90; NIKOLACI 1980, 205-227; CAMBI 2005, 11-13, fig. 5-6; KIRIGIN 2008, 9, No. 1, 14-16, No. 4-6; KUNTIĆ-MAKVIĆ, MAROHNIC 2010, 73-89; CAMBI 2002 (b), 37-38.



Fig. 4. Stele of Hellenistic type from Narona



Fig. 5. Luxury Roman stela from Salona

consumers. The complexity and simplicity of their forms and decorations clearly gravitated toward the latter in the larger center of production in Issa. However, the manufacture of a smaller number of more complex types points to the workshops' ability to adopt more elaborated forms of monument. As far as the epigraphy is concerned, there is a clear trend toward simplicity, mostly without complex sentences, with predominantly larger sets of names appearing, as the tombs of Issa were often used to bury several generations of a given family. They would usually all appear listed on one funerary monument.² It was not possible to determine whether there were multiple funeral monuments under one grave chamber, known to house up to several dozen skeletons.³ This would have been a logical conclusion, as there was a general desire for posthumous individualization.

Something which was most commonly seen in Narona (Fig. 4)⁴, as well as in Salona⁵ and elsewhere on

occasion⁶, is that the Greek type of stelai was accepted before any strong influence from Italy. There can be no doubt that Greek forms were used as a model, as none of the ones that were introduced in the following decades were around at the time. These early forms of Roman stelai were only slightly different from their Greek counterparts.

Their shapes were usually of a simple Issaeian form, which, aside from its gable, had no other distinguished architectural traits, except that they featured inscriptions in Latin instead of Greek, also with greatly simplified content (mostly names along with the simple phrases related to burials, i.e. *situs est*). However, we can also find several fragments with no inscription, but we should assume that they had inscriptions painted on, which naturally faded over time⁷. It was not until later that the influence of Italian stelai, which obviously originated from the North Italy (likely Aquileia), would be felt in these parts.

These forms were generally extremely simple (sometimes merely a rounded plate at the top) with no outstanding features⁸, and would soon be manufactured here, in Salona in particular, alongside monumental stelai that featured series of family portraits (Fig. 5). These stelai obviously belonged to wealthy families, which commissioned burial monuments that would cost an entire fortune

2 As indicated by the names of the deceased that belonged to a family, which serves as an example of a lavish stela from Issa, see KUNTIĆ-MAKVIĆ, MAROHNIC 2010, 83-84. It lists eight names.

3 Unfortunately, there are few tombs that have not been previously opened. A small number of those that were not pillaged contain numerous skulls. Their inscriptions likely record only the main branch of the family tree.

4 See KIRIGIN 1980, 169-172, fig. 1-3.

5 The *stela* of Lolia Muza see CAMBI 2005, 11-12, fig. 5, 6.

6 GABRIČEVIĆ 2015, 195- 214, fig. 1, 2. Original paper in *Diadora* 9, 1980, 251-271, fig. on pp. 252 - 253.

7 KIRIGIN 1980, fig. 3.

8 CAMBI 2013 (a), 22, fig. 24, 25.



Fig. 6. Examples of Roman military stelae from Gardun



Fig. 7. Roman military tropaeum from Gardun

on their own⁹. Accompanying the soldiers that served in Dalmatia, who were stationed in legion camps (Burnum and Tilurium) at the start of the 1st century, came monumental and richly decorated monuments, which often featured military symbolism and tools (Fig. 6).

Both of the military camps here were home to active workshops that produced funeral monuments, mostly stelai for the soldiers, alongside other kinds of monuments. The most important of these is a fragment of a trophy from Tilurium (Fig. 7). Such official trophy had a great deal of influence on the decoration of funeral monuments (in Tilurium obviously), it is to assume that they were produced in the same workshop.¹⁰

⁹ See CAMBI 2013 (a), 22, fig. 26, 27.

¹⁰ CAMBI 2010, 125-150, fig. 4-11; CAMBI 2013 (a), 9-21, fig. 4-7.



Fig. 8. Ara of Pomponia Vera from Salona

During the 1st century, the repertoires of the workshops that produced these funerary monuments were broadened with the addition of other funeral monuments, with the most numerous among them originating from cult sacrificial altars. The leap from altar to funeral monument of a similar shape is not that great, as the grave were *locus religiosus*, upon which sacrifices were offered for the deceased, or more specifically, for the gods of the underworld, which led to the introduction of the inscription *D(is) M(anibus)* at the end of the 1st century (Fig. 8).

The sarcophagus, both receptacle for the body and the funeral monument, began its life in Dalmatia around the middle of the 2nd century, although there were isolated examples from the 1st century. The largest source of locally made sarcophagi matches a period within the 3rd century, when the standard became the three-piece front face (a central inscription field with two empty fields on its sides or a *tabula* for reliefs, usually in the form of erotes with a reversed torch). These symbolic-decorative elements are a clear indication that the workshops that produced these funeral monuments were all connected, and shared a common path of development in regard to formal treatment and iconography (Fig. 9). All of these funeral monuments have the iconographic motif of a portrait of the deceased (Fig. 10). This is how these funeral monument workshops helped developed portrait art, as part of the education of their personnel, as portraits were in high demand from their customers. The portrait began to fall in disuse in the first half of the 4th century. Even other forms of funeral monuments, aside from sarcophagi and smaller, more modest, stelai (usually undecorated), slowly began to disappear. However, sarcophagi were also



Fig. 9.
An example of local
Salonitan sarcophagus.
Vranjic near Salona



Fig. 10.
A fragment of sarcophagus
lid from Salona. Early 3rd
century



Fig. 11.
Fragment of Christian
sarcophagus chest

convenient for Christian burials, as they were suited to laying whole bodies to rest, as well as housing numerous bodies (Fig. 11). We have uncovered over 2000 sarcophagi and fragments to date, but this number is provisional, as there are new discoveries appearing every day.

Sculptures, sarcophagi, and other forms of funeral monuments made from local stone were not exported from Dalmatia. However, the late Antique saw the beginning of the export of the stone itself for the other coasts of the Adriatic. It is notorious that the monolithic dome

of Theodore's Mausoleum in Ravenna was removed from its original location in a quarry in Istria (likely from the west coast), whose structure and quality were similar to those of Dalmatia. On the other hand, several sarcophagi from Dalmatia were exported to the opposite, Italian coast of the Adriatic, from the 3rd century onward. These were mostly simple chests and lids, with a gable roof and angular *acroteria*, made from bituminous limestone from Brač. The 6th century saw a notable increase in the export of sarcophagi, which had central, plastic crosses



Fig. 12.
Local sarcophagus with cross



Fig. 13.
A sarcophagus chest of Proconnesian marble Salona

and simple cover with four *acroteria* or cylindrical lid (Fig. 12). They featured several types of crosses.¹¹

The idea of a central cross on the sarcophagi was adopted from the altar screens made of Proconnesian marble that were imported to Dalmatia as finished products from the island of Proconnesos (today Marmara) in Propontis. Such *plutei* were also made from local limestone, and the motif was later adapted on sarcophagi. There are numbers of such sarcophagi on Brač and in Salona and its vicinity. According to this author's records, there are seventeen such items on the eastern coast of Italy, and one in Albania.¹² That makes eighteen such examples, which are identical in both form and materials used to those from Dalmatia, discovered to date.¹³ Proconnesian marble was imported to Dalmatia until the end of the Antique and was extensively for church decorations, while the limestone trade on the eastern Adriatic only lasted until the end of Antique civilization.

How and why the first export of finished stone products came is questionable, but anyway, the demand

for sarcophagi continued to grow into the later centuries as their popularity grew considerably, and other destinations across the Adriatic did not have any such workshops due to their lack of quality stone and unfavorable typology. It is clear that the ratio of cost to quality was satisfactory, as the sarcophagi were greatly in demand. Local limestone, particularly the high quality stone, was collected in Seget near Trogir. It was more suited for making statues and reliefs than stone from Brač, which was predominantly used in making sarcophagi and for building material. Stonemasonry was an important branch of trade across the whole of the eastern Adriatic. Half-finished sarcophagi were sent from their quarries to Salona, where they had to be finished. Once completed, such sarcophagi were also shipped to other locations in Dalmatia. Their crosses were occasionally left unfinished, due to the extent of demand. These examples of sarcophagi in local limestone indicate that, in all likelihood, the economic situation necessitated importing cheaper stone from Istria and Dalmatia across the Adriatic. It is very likely that trade was booming.

Until the late Antique, Dalmatia was mostly focused on its own stone, but for more luxurious sculpture and building decorations material from quarries on Proconnesius (Fig. 13) and Attica (Mons Pentelicon and Mons Hymettus, Fig. 14) was imported. A vast number of lavishly decorated sarcophagi, mostly featuring

11 CAMBI 2002, 47-56, fig. 1-12; CAMBI 2007, 87-131, fig. 12 and 13.

12 CAMBI 2002 (a), 49-53.

13 CAMBI 2002 (a), 53.



Fig. 14.
An Attic sarcophagus. Split



Fig. 15.
Sarcophagus fragment of
Carrara marble (Salona)

mythological themes, were imported from the aforementioned stoneworking centers.¹⁴ Even though their numbers were far more limited, sarcophagi made from Carrara marble manufactured in the workshops of Rome were also represented in Dalmatia, and mostly in Salona (Fig. 15).¹⁵ Sarcophagi from Proconnesian marble were predominantly brought to Dalmatia as roughly hewn blocks, which were then finished on the spot.¹⁶

Apart from a short overview of the development of funeral monuments made from local limestone, the particular goal of this paper is to present the history of the management and ownership of rock quarries, which have not been the topic of much discussion in the past. The emperors discovered the benefits of exploiting Dalmatian limestone quite early. Thus they acquired the

quarries in Seget and Brač, although it is impossible to say exactly when this happened (Fig. 1). This is confirmed by the inscriptions of the soldiers who organized and oversaw the works at the quarries, and would measure the stone for various orders, as certain buildings also clearly indicate. These inscriptions were found in the vicinity of the quarries on Brač and Seget near Trogir. Of all of the Greek colonies on the Adriatic, only Issa undertook any further colonization. Tragurium, the Issacan settlement, was very well positioned for shipping and trade. The waterways leading north passed around the southern side of the Trogir island. On the other side of the island, the coast was home to deposits of outstanding limestone, which is still being exploited to this day. The people of Issa had to have been familiar with harvesting and utilizing the stone, as their mother town (Syracuse) was known for its quarries (Latomie), which are both a popular tourist attraction and a source of knowledge on the historical exploitation of stone in modern times. Syracusan colonists passed on their knowledge and experience on the eastern Adriatic, and it is no stretch to say that the exploitation of stone was one of the reasons

14 On antique sarcophagi see CAMBI 1988.

15 CAMBI 1977, 444-459.

16 On the import of sarcophagi see the study by G. Koch in this volume.



Fig. 16. Hercules' shrine in the Rasohe quarry on the island of Brač



Fig. 17. Altar dedicated to Hercules

they founded the settlement.¹⁷ Pliny the Elder, in his well-known characterization of the settlement: *Tragurium civium Romanorum marmore notum*, thus giving two definitions of the city. On one hand, it is a town of Roman citizens known for its marble (limestone).¹⁸ Tragurium, like its mother town of Issa, went on to become a town of citizens who had Roman citizenships in the later period of the Republic, even though it still had not acquired the status of a city.¹⁹ The municipal status was undoubtedly lost for Tragurium when Issa allied with the losing side in the war between Caesar and Pompey, which was largely fought on the eastern coast of the Adriatic. It is likely that the exploitation of the quarries passed into the ownership of the emperor as early as the age of Augustus. The history of the quarries is told through inscriptions dedicated

to Hercules, the guardian of both Seget and Brač.²⁰ The first such inscription is on an altar with a dedication and wreath from Seget. The second inscription was found some time later, and its contents are unknown, aside from the fact that it was dedicated to Hercules.²¹ The third inscription is also dedicated to Hercules, and was found discarded stone material at the *Kučičeva kava* quarry at Seget Donji.²² It is not reliably known whether all of these dedications to Hercules refer to a single place of worship

17 All of the towns that were founded, as a prerequisite for their development, had to have knowledge on selecting and exploiting stone.

18 ZANINOVIĆ 1998, 180.

19 WILKES 1969, 227.

20 JELIČIĆ 1981, 97-104, fig. 1. Inscription reads: Hercu(-li)/Sacrum/P(ublius) Plotius 7 (centurio) le/g(ionis)] VII C(laudia) P(ia) F(idelis)/V(otum) S(olvit) L(ibens) M(erito).

21 JELIČIĆ 1981, 103. The author only mentions the second altar in an addendum to her work.

22 MARŠIĆ 2007, 111-128, fig. 1,2. Inscription reads: [H] ecvii[i]/Avg(usto) S(acrum) Donatvs Gn(ei) Corneli/Certi (servus) V(otum) S(olvit) L(bens). Even though the inscription makes no mention of the occupation of dedicant *Donatus*, we can still reliably say that he was a slave of *Claudius Certus*, who was likely a military man.



Fig. 18. Altar dedicated to Hercules island of Brač

or whether there were several. The latter seems more likely according to parallels from Brač.

A similar situation to the inscriptions dedicated to Hercules can be found on the northern side of the island of Brač, where the largest number of quarries can be found (Stražišće, Rasohe, and Plate), with its center in Škrip. The most important legacy of the cult of Hercules is the relief in bare stone at the entrance to the Rasohe quarry, which belonged to a small, open-air shrine (Fig. 16).²³ The second record of the shrine is an inscription from the quarry at Stražišće, now held in the Brač museum in Škrip.²⁴ The inscription defines a special section of the shrine, as per one *Alnius Obultronius* (Fig. 17). There is one very important altar from Plate dedicated to Hercules (Fig. 18).²⁵ These altars, from the three most

important quarries on Brač, are clear signs that there was a shrine dedicated to Hercules in each of them. However, there are two more inscriptions that were not dedicated to Hercules; one was erected in honor of the Nymphs,²⁶ and the other to Jupiter.²⁷

Both inscriptions were commissioned by soldiers working on stone production that was to be used for the construction of a great theater and more specifically an amphitheater in the 2nd century. These inscriptions were the dedication of two centurions, and the third of a common soldier from an unknown unit. The inscriptions tell of the significant presence of soldiers on the island of Brač, even though there was no military unit stationed on the island. It is clear therefore that the soldiers were in the service of Brač's quarries, and that they were, according to what is on the inscriptions, tasked with preparing, measuring, and manufacturing decorations for various buildings (the theater, amphitheater, and baths). The exact location of these buildings is not listed on two of them, while the third clearly specifies that the work in question was carving for the capitals of the columns in Licinius' baths in Sirmium. It is logical to assume that the theater and amphitheater mentioned in the inscriptions were located in Salona, relatively close to where the stone used in their construction would have been quarried. The third inscription seems to indicate that Brač's quarries would also acquire special commissions from more distant locations. The road from Brač, with a handover on the way to Sirmium, must have taken at least twenty days. However, in the latter case, the objects in question were decorative architectural elements (capitals), but not massive stone constructions. The soldiers were, therefore, part of the management of Brač's and Seget's quarries²⁸, meaning that both were under imperial ownership.²⁹ The soldiers

rum ad te/rmas Liciniana/s q(u)as fiunt S/irmi v(otum) l(ibens) s(olvit). The inscription mentions a soldier from an unknown unit, who went to great effort (*insisto* 3) to build the capitals for Emperor Licinius' baths in Sirmium.

23 CAMBI 2013 (b), 5-19.

24 CAMBI 2013 (b), 62, fig. 22, fig. 22. Inscription reads: *H(erculi) A(ugusto) S(acrum)/Alnius Obul/tronius/de-ter(minavit)*.

25 CIL III 10107; CAMBI 2013 (b), 30-31, fig. 30. Inscription reads: *Herculi Aug(usto)/sac(rum) Val(erius) Val(erianus) mil(es)/cum insist/erem ad cap/itella colu/mna-*

26 See CIL III 3096: *Nymphis Sacrum/Q(uintus) Silvius Sper(atu/s?)/cent(urio) coh(ortis) I Belg(arum)/ curagens theat(ri)/d(onum) d(edit)*. See CAMBI 2013 (b), 65.

27 See KIRIGIN 1979, 131-134, tab. XI, 11. Inscription reads: *I(ovi) O(ptimo) M(aximo)/T(itus) Fl(avius) Pompeius/centurio coh(ortis) III/Alpinorum/Antoninianae/ curamagens/fab(ricae) amp(hitheatri) men(sor) et/Vibius Vibianus/protector co(n)sularis*.

28 See DWORAKOWSKA 1988; CAMBI 2010 (a), 11-14; HIRT 2010.

29 JELIČIĆ 1981, 97-103, fig. 1; MARŠIĆ 2007, 111-128, fig. 1 and 2. The latter altar is the donated work of Gnaeus Cornelius Certus, even though the inscription makes no mention of this.

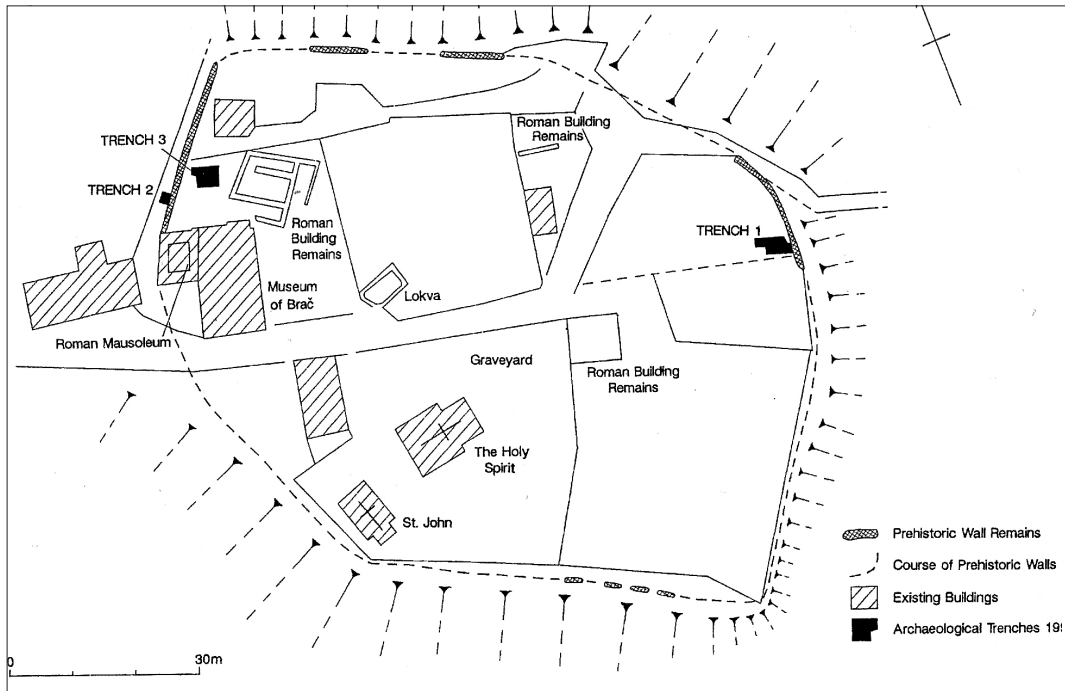


Fig. 19.
Ground plan of
Škrip on the island
of Brač

were not representatives of the commissioning party, but worked as part of the management for the meeting of incoming commissions. This is indicated by the function of a centurion called Pompeus with the rank of *ensor*. There were various posts in the army in charge of taking measurements, but it is likely that the soldier in question was in charge of measuring the gradient of the terrain.³⁰ The only person in charge of any military unit was the emperor himself, through his chief military commanders. As the soldiers originated from various troops, they were undoubtedly individually dispatched to work in the quarry as specialists. They would not have been the ones actually quarrying the stone, as that was reserved mostly for slave labor. The soldiers ran the processing of stone quarrying, and would determine the necessary volumes needed, in accordance with the various orders and projects that were being worked on at the time. Meanwhile, a separate service was in charge of the administration and finances of the imperial treasury (*fiscus*). One of the most important sources of income for the treasury was, in fact, the exploitation of the quarries.

Military inscriptions regarding the quarries at Trogir and on Brač are clear evidence that the trade was not in the hands of private enterprise. Soldiers were not available to other private and civil institutions, as they were paid directly by the emperor, and were thus tasked with jobs that they were trained to do in the army. There were undoubtedly many other kinds of workers in a

quarry, who would keep tallies and reports for the imperial treasury. There can be no doubt that the center of the Brač stoneworking industry was in Škrip, and that Seget's was in Trogir. This is why none of these city-like settlements had an actual civil government with municipal functionaries. There are certainly no inscriptions in Trogir or Škrip that would indicate this. *Tragurium civium romanorum* does not mean that there was some form of civil government, rather, it only indicates the presence of Roman citizens, and even if there was some form of civil government, this quickly changed after Caesar.³¹ The entire settlement would have subserved the vast stoneworking apparatus (from quarrying raw materials, to shaping the final product). An inscription by Publius Cloelius, a soldier of a Campanian cohort, seems to indicate some sort of relationship between Salona and Tragurion. His function, *custos Traguri*, was certainly not municipal in nature.³²

31 WILKES 1969, 227.

32 CIL III 8693 Inscription reads: *P(ublius) Cloelius miles C(o)h(ortis) Campanae custos Traguri/V(otum) s(olvit) L(ibens) M(erito)*. The inscription slab was also put to use as the door for the burial chamber in the basilica in Manastirine, where it is located today. It is a pity that the portion of the inscription dedicated to a deity, which every votive monument had to have, was not preserved. The position of *custos* was known among military nomenclature; see CLAUSS 1999, 37. A soldier with such a title would have likely overseen the workings of the entire quarry production in Trogir.

30 CLAUSS 1999, 73 (s.v. protector), 78 (s.v. singularis) 1999, 57 (s.v. mensor librator).



Fig. 20. The Škrip tower. The island of Brač (reconstruction by S. Faber)



Fig. 21. The Škrip watch tower

Not even Škrip, or anywhere else on Brač, saw the development of a civilian city. Škrip is the only place to display any of the characteristics of a city at the time; walls, streets, a forum, and temples, but no inscriptions to indicate a civil constitution (Fig. 19). Unlike Trogir, which became an archdiocese and city in the Middle Ages, Škrip never developed to that point. Thus, Brač was the only large island on the eastern Adriatic without its own city center. Any attempts to (falsely) corroborate the existence of a city here in the Middle Ages are entirely baseless.³³ The Roman imperial administration actively blocked any civil development. It was only under modern administrative structures that Supetar became

a city center. Unlike Tragurion, which was known for its marble, Brač was praised by Pliny the Elder not for its stone but for its goats (*Brattia capris laudata*), which could have indicated that Brač's quarries were still not very developed or widely known during the 1st century. It would seem that they came fully into their own during the time of the preparation and construction of Diocletian's palace in Split. It is clear that it was significantly easier to bring in the materials needed for this grand undertaking with ships and rafts than it was to transport them by land (on carts) from Seget. An added Hellenistic heroon, which had an arched lintel as seen on the southern corners of Diocletian's palace, only much simpler, was used for the purposes of overseeing and managing the quarries (Fig. 20, 21).³⁴

33 CAMBI 2013 (b), 55-69, fig. 1.

34 CAMBI 2013 (c), fig. 14 and 25.

BIBLIOGRAPHY

- CAMBI N. 1977: "Die stadtrömischen Sarkophagen in Dalmatien", *Archäologischer Anzeiger*, 444-459.
- CAMBI N. 1988: "Atički sarkofazi na istočnoj obali Jadrana, Split.
- CAMBI N. 2002 (a): "Sarcophagi con la croce nel centro della cassa", *Akten des Symposiums "Frühchristliche Sarkophagen"*, Marburg, 30. 6. - 7. 7. 1999, Mainz, 47-56.
- CAMBI N. 2002 (b): *Antika. Umjetnost u Hrvatskoj*, Zagreb.
- CAMBI N. 2005: *Kiparstvo rimske Dalmacije*, Split.
- CAMBI N. 2007: "Bilješke o kasnoj antici na Braču", *Brački zbornik* 22, 87-131.
- CAMBI N. 2010 (a): "Sarkofazi lokalne produkcije u rimskoj Dalmaciji, Split.
- CAMBI N. 2010 (b): "Rimski vojni tropeji u Dalmaciji", *Adrias* 17, 125-150.
- CAMBI N. 2013 (a): "Pregled razvoja nadgrobnih spomenika u Dalmaciji", in N. CAMBI, G. KOCH (eds.): *Funerary sculpture of the western Illyricum and neighbouring regions of the Roman Empire: Proceedings of the International Scholarly Conference held in Split from 27th to the 30th of September 2009*, Split, 17-99.
- CAMBI N. 2013 (b): "Roman Military Tropaea from Dalmatia", *XVII Roman Military Equipment Conference, Zagreb 2010*, (Radovi XVII Romec-a. Rimska vojna oprema u pogrebnom kontekstu), Zagreb, 9-21.
- CAMBI N. 2013 (c): "Herkul na Braču", *Klesarstvo i graditeljstvo* XXXIV, 1-2, May 2013, 5-19.
- CAMBI N. 2013 (d): "Škrip na otoku Braču – nerealizirani grad", *Arheološki radovi i rasprave* 17, 55-84.
- CLAUSS M. 1999: *Lexikon lateinischer Fachausdrücke*, Stuttgart.
- DWORAKOWSKA A. 1983: *Quarries in Roman Provinces*, Warszawa, 26-31.
- FANT J. C. 1988: *Ancient Marble Quarrying and Trade*, Oxford.
- GABRIČEVIĆ B. 1980: "O počecima rimske provincialne umjetnosti u Liburniji. Zapažanja u povodu jednog nedavno otkrivenog nadgrobnog spomenika", *Diadora* 9, 251-271.
- GABRIČEVIĆ B. 2015: *Izbor iz djela*, Split.
- HIRT A. M. 2010: *Imperial Mines and Quarries in the Roman World. Organizational Aspects 27 BC-AD 235*, Oxford.
- JELIČIĆ J. 1981: "Žrtvenik Herakla i ostali nalazi iz Segeta Donjeg kod Trogira", *Vjesnik za arheologiju i historiju dalmatinsku* LXXV, 97-104.
- KIRIGIN B. 1979: "Natpis rimskih natpisa i reljefa kod Škripa na otoku Braču", *Vjesnik za arheologiju i historiju dalmatinsku* LXXII-LXXIII, 129-142.
- KIRIGIN B. 1980: "Tip helenističke stele u Naroni. Dolina rijeke Neretve od prethistorije do ranog srednjeg vijeka", *Izdanja Hrvatskog arheološkog društva* 5, Split, 169-172.
- KIRIGIN B. 2008: *Grčko-helenistička zbirka u stalnom postavu Arheološkog muzeja u Splitu*, Split.
- KUNTIĆ-MAKVIĆ B., MAROHNIC J. 2010: "Natpisi", in J. POKLEČKI STOŠIĆ (ed.): *Antički Grci na tlu Hrvatske*, Zagreb, 73-89.
- MARŠIĆ D. 2007: "Novi Heraklov žrtvenik iz Trogira", *Archaeologia Adriatica* I, 111-128.
- NIKOLACI M. 1961-1962: "Helenistička nekropola Isse", *Vjesnik za arheologiju i historiju dalmatinsku* 63-64, 57-90.
- NIKOLACI M. 1980: "Epigraphica graeca nova et vetera", *Diadora* 9, 205-227.
- WILKES J.J. 1969: *Dalmatia*, London.
- ZANINOVIĆ M. 1998: "Le commerce du marbre en Dalmatie", in E. FRÉSOULS, H. JOUFFROY (eds.): *Les empereurs illyriens, Actes du colloque de Strasbourg (11-13 octobre 1990) organisé par le Centre de Recherches sur l'Europe centrale et sud-orientale*, Strasbourg, 179-186.