Glass, Wax and Metal

Lighting technologies in Late Antique, Byzantine and medieval times

Edited by

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Top: Representation of wood brands, torch and lantern, detail of fresco, 14th century, Church of Hagios Nicholaos Orphanos, Thessaloniki. ©Ephoreia of Antiquities of the City of Thessaloniki.
Bottom, from left:
Glass lamp, Kolchida Kilkis, 5th century, Museum of Byzantine Culture, inventory no. BY 182. ©Museum of Byzantine Culture.
Representation of a candela, south panel mosaic detail, Rotunda of Galerius, Thessaloniki. ©Ephoreia of Antiquities of the City of Thessaloniki.
Representation of a candlestick, south panel mosaic detail, Rotunda of Galerius, Thessaloniki. ©Ephoreia of Antiquities of the City of Thessaloniki.
Copper alloy polycandelon, 6th century, Museum of Byzantine Culture, inventory no. BA 77/1. ©Museum of Byzantine Culture.

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Glass, Wax and Metal: Lighting Technologies in Late Antique, Byzantine and Medieval Times: an Introduction

Karen S. Garnett and Ioannis Motsianos

The International Lychnological Association (ILA),[1] a non-profit association founded in 2003 by Dr Laurent Chrzanovski, promotes the knowledge of pre-modern lighting devices, in part by organizing congresses and symposiums.

The present collective volume is the result of two Round Tables organized by the International Lychnological Association to study the technological development of lighting and lighting devices during Late Antiquity and the Middle Ages[2] in Western Europe[3] and Byzantium.[4] The third International Round Table under the title 'Dark Ages? History and archaeology of lighting devices in Continental Europe, from Late Antiquity to late Medieval Ages' was held in Olten, Switzerland from 24 to 29 September 2007 in cooperation with the Historical Museum of Olten (Figure 1). The fourth International Round Table under the title 'Lighting in Byzantium' was held at the Museum of Byzantine Culture, Thessaloniki, Greece from 10 to 15 October 2011 and was organized in cooperation with the Archaeological Institute of Macedonian and Thracian Studies, the Aristotle University of Thessaloniki and the Museum of Byzantine Culture (Figure 2).

Both Round Tables[5] were part of the series of colloquia promoted by the International Lychnological Association that allowed specialists to develop a specific theme (chronological, geographical, typological, etc.) during an exclusive meeting, with more time available for exchange than would be available during the large open triennial congresses.

When organizing these Round Tables we took into account that, while the symbolic, political and religious importance of artificial light increased dramatically during Late Antiquity and the Middle Ages, scholarly research on this timespan appeared less frequently in the scientific literature than research for the preceding historical periods. Nevertheless, the major economic, geopolitical and social changes during the Middle Ages are reflected by radical modifications of lighting devices, and the investigation of these relationships deserves great attention. Lighting devices in Medieval Western Europe and Byzantium provided illumination for everyday activities, at work, at home, in public spaces and in places of worship. Lighting devices were also an important element of the ritual ceremonies of private, sacred and social life and, at the end, were an accompaniment at each individual's final resting place. Much information can be derived from the lighting artifacts preserved in museums and private collections as well as from those devices with archaeological contexts. The written sources and depictions of lighting devices on mosaics, frescos, icons, textiles and manuscripts can help scientists to complete their notions about lighting in the Middle Ages. Both ILA Round Tables' considered the use of lighting devices in everyday and ecclesiastical life and discussed many aspects of the lighting devices, including their terminology, typology, chronology, manufacturing techniques, and symbolic functions. The great breadth of lighting technologies available to those 'Dark Ages' became apparent through the diversity of the discussions, which reflected the great variety of materials used to create lighting devices in addition to the traditional terracotta used for wheel-made and mold-made lamps. Hence the introductory title to this volume: glass, wax and metal were all important materials for the lighting technologies of these eras.

And above all, these Round Tables offered to the participating scholars a venue for comparing two different areas of lychnological interest. In medieval Western Europe (geographically in central and north Europe) during the depth of winter the daylight lasts but a few hours –not long enough to let people organize and complete all their everyday activities. Also, the production and the evolution of lighting devices in Mediterranean areas was influenced by the use of the olive oil that was used as a fuel. In northerly regions remote from the Mediterranean there was no local production of olive oil and animal fat was the main fuel for the lighting devices of the everyday life in these regions.

In Byzantine territory the use of the olive oil, and from the end of Late Antiquity the use of beeswax, was taken for granted not only by the Christian churches and monasteries but also by rich and prosperous people. However, it is not

[1] http://www.lychnology.org, viewed 10 December 2018.

[2] According to Encyclopaedia Britannica 'The period of European history extending from about 500 to 1400-1500 CE is traditionally known as the Middle Ages. The term was first used by 15th-century scholars to designate the period between their own time and the fall of the Western Roman Empire. The period is often considered to have its own internal divisions: either early and late or early, central or high, and late'. https://www.britannica.com/topic/history-of-Europe/The-Middle-Ages, viewed 15 December 2018.

[3] We use this term conventionally to describe the European regions outside the borders of the Byzantine Empire's territory.

[4] 'Byzantine Empire' or 'Byzantium' is the conventional name of a medieval state that existed for more than one thousand years. The date of its beginning remains a subject of discussion; most scholars prefer the date 324 (or 330) when Constantinople was founded by Constantine the Great, or 395, when the Roman Empire was divided between the sons of Theodosius I. It ceased to exist in 1453 when Constantinople was captured by the Ottomans. See Kazhdan, A. P. (ed.) 1991. *The Oxford Dictionary of Byzantium*, Prepared at Dumbarton Oaks, Vols. 1-3. New York-Oxford: Oxford University Press. Here, vol. 1, s.v. Byzantium, 344-345.

[5] For the chronicle of their organization, see in this Volume, Laurent Chrzanovski, A Highly Important 'Half-volume' as Acta of two Pioneer Congresses: some Explanations.

Figure 1. The wax seller, illustration from the 'Tacuinum sanitatis' of Albucasis, bilingual Rhenish manuscript of the 15th century (fol. 92v.), Paris, Bibliothèque nationale de France (Photo from Chrzanovski and Kaiser 2007, color plate 11).[6]

clear if the common folk had the same fiscal ability to make similar choices in their everyday life.[6]

The two ILA Round Tables were accompanied by exhibitions and extensive exhibition catalogues. The '*Dark Ages? Licht im Mittelalter / L'éclairage au moyen-âge*'[7] exhibition opened in the early fall of 2007 and the'Μια ιστορία από φως στο φως/ *Light on light: an illuminating story*'[8] exhibition opened in the fall of 2011[9] in Thessaloniki and subsequently travelled to Athens the following year.

An aftereffect of the exhibition '*Light on light: an illuminating story*' was the idea for the realization of *The Oxford Handbook of Light in Archaeology*[10] published online in June 2017. Since then there have been wonderful lychnological exhibitions

[6] Chrzanovski, L. and P. Kaiser (eds) 2007. '*Dark Ages? Licht im Mittelalter / L'éclairage au moyen-âge*'. Milano: Edizioni Et.
[7] Chrzanovski, L. and P. Kaiser (eds) 2007. '*Dark Ages? Licht im Mittelalter / L'éclairage au moyen-âge*'. Milano: Edizioni Et.
[8] Motsianos, I. and E. Bintsi, (eds) 2011. Μια ιστορία από φως στο φως/ Light on Light: an illuminating story. Thessaloniki: Folklife & Ethnological Museum of Macedonia-Thrace.
[9] For more information see in this Volume, Laurent Chrzanovski, A Highly Important 'Half-volume' as Acta of two Pioneer Congresses: some Explanations.
[10] Papadopoulos, C. and H. Moyes (eds) *The Oxford Handbook of Light in Archaeology*. Online publication: Oxford University Press. http://www.oxfordhandbooks.com/view/10.1093/oxfordhb/9780198788218.001.0001/oxfordhb-9780198788218, viewed 24 January 2019.

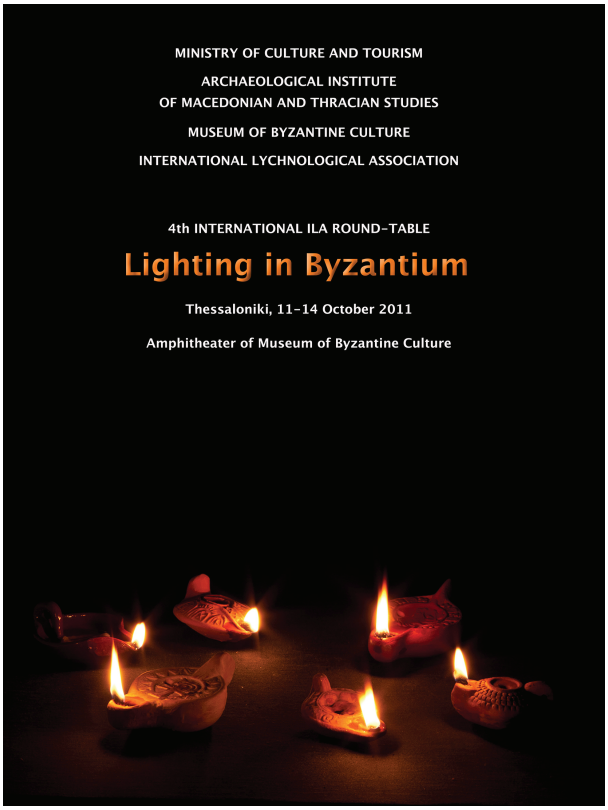

Figure 2. Poster of the 4th International Round Table under the title 'Lighting in Byzantium'.

in Geneva[11] and in Cluj-Napoca[12] presented in 2012 and 2013 respectively.

Interestingly, according to John Dudley, Chair of the International Year of Light 2015 Steering Committee: 'When discussions of IYL 2015 first began in 2009 within the scientific community, I don't think that anyone could have foreseen the extent of the worldwide enthusiasm around the theme of light, and neither did we anticipate the many new linkages that would appear between science and art and culture'. Continuing this vein, the final report of the International Year of Light 2015 underlines that 'Under the leadership of UNESCO, IYL 2015 brought together hundreds of national and international partners to raise awareness of the importance of light science and technology in areas such as sustainable development, energy, education, climate change, and health.'[13]

Taking into account not only the results of the Round Tables in Olten and Thessaloniki, the exhibitions and the catalogues which accompanied them and the other ones which followed but also the final report of the International Year of Light, we

[11] Chrzanovski, L. (ed.) 2012. *A la tombée de la nuit... art et histoire de l'éclairage.* Genève-Milano, Musées d'art et histoire de Genève, Genève.
[12] Chrzanovski, L. (ed.) 2013. *LVMEN EST OMEN Arta, istoria și spiritualitatea iluminatului artificial.* Cluj-Napoca; downloadable from https://laurentchrzanovski.academia.edu
[13] http://www.light2015.org/Home/About/IYL-Final-Report.html, viewed 24 January 2019.

Figure 3. Logo of the International Year of Light 2015.

decided that the publication of the present collective volume should include among its goals both to clarify some topics and also to provoke interest in other topics which were not so well-studied to date. Initially the main goal of this volume was to delineate the similarities and the differences concerning lighting and the lighting devices of Western Europe and Byzantium in the Middle Ages and identify relations between them and the social and financial situations of every region.

The majority of the twenty nine papers published in the present volume have been presented in the Round Tables of Olten and Thessaloniki. A few additions provide enhancements to the volume. In many cases the length of each paper reflects how little –or well– studied is the presented topic. Also, we present in this volume discussions on some artifacts dated after 1500 AD because they represent and reflect the technological evolution of lighting related to the Middle Ages.

In the present volume:

Verena Perko with the collaboration of Vesna Tratnik presented '*An Overview of Late Antique Oil Lamps and Lighting Devices from Slovenia*', a short survey of Late Antique lighting devices from the territory of today's Republic of Slovenia.

Thomas Bitterli in his paper '*A Light is on in the Hut. Light and Lighting Equipment in Medieval Everyday Life*' takes into account archaeological evidence as well as literary and iconographic sources which provide vital clues on lighting equipment used in Medieval everyday life.

The paper of Svetlana Avdusina '*Medieval Lighting Devices from the Collection of the State Historical Museum of Russia*' describes the medieval lighting devices from the collections of the State Historical Museum of Russia in Moscow which includes: lamps, candleholders and candles, as well as splinter holders.

Catherine Vincent in the paper '*Lumière et luminaires dans la vie religieuse en Occident au Moyen Âge*' provides a brief panoptic on the elaboration of the lighting, the faith, the symbolism and the use of lighting devices in French regions, not only from ancient Rome but also up to the 13th century AD.

In the paper of Arja Karivieri *'Olaus Magnus the Goth on Fire, Light and Lighting Devices of the Northern People'* a special

focus is given to the numerous and various instances where Olaus Magnus comments on fire, light and lighting devices in Scandinavia, including the symbolic meaning of fire and light at wedding ceremonies, lighting at guild feasts, light in Christian processions and in the church, lighting in wintertime, light and fire in summertime, fire and lights during warfare, birds and lights, and fishing by means of fire.

Lena Berg Nilsson in her paper *'Mines Illuminated – Reflections upon Lighting in Medieval Mining'* takes into account some written sources and examples from contemporary art in order to present to us some aspects of lighting methods used in the mining industry in medieval Sweden.

Yvonne Seidel studied the Tabula Peutingeriana, a reproduction of an ancient world map, in her paper *'Lighthouses in the Tabula Peutingeriana and their Importance in Late Antiquity,'* greatly expanding our knowledge regarding lighthouses and the use of light signals based on the use of fire in Late Antiquity.

The paper of Ioannis Motsianos *'Lighting Devices in Byzantium: Comparisons in Time and Space'* attempts to address common practices in lighting devices used during the Byzantine era and examines the differences between Byzantine and Roman practices. These differences also help identify the interactivity between corresponding lighting devices used in Central and Northern Europe.

Sophia Akrivopoulou, Paraskevi Leventeli, and Periklis Slampeas in their paper *'Lamps from the Excavation at 45 Basileus Heracleiou Street, Thessaloniki'* added new data to our knowledge about the lamps found in Thessaloniki and new indications for local lamp production, possibly secondary, based on the technique of surmoulage.

The paper *'Lighting Artifacts from the Episcopal Complex at Louloudies Pierias'* written by Evangelia Angelkou and Maria Cheimonopoulou is a panorama of lighting devices used in the Early Christian Episcopal Complex at Louloudies Pierias based on excavational data.

'Bottoms Up! Bases and Handles on Attic KY Shop Lamps from Corinth's Fountain of the Lamps' is the title of the paper in which Karen S. Garnett present new observations and comments concerning the chronological typologies evident when special attention is paid to the bases and handles of lamps produced by a single lampmaker. Her examples were lamps produced by the Athenian lampmaker KY which were part of a single large deposit of over 4000 lamps found in the Fountain of the Lamps in Ancient Corinth.

The paper of Arja Karivieri *'Athenian Lamps in the Early Byzantine period – Export, Import and Imitation'* analyzes in detail what methods the Athenian lamp producers used in their efforts to keep their trade contacts and market towards the end of the 5th century, a time when North African and Asia Minor products became more popular in the Eastern Mediterranean. Another aspect of the article deals with the imitation of imported lamps during this period.

Renate Rosenthal-Heginbottom focused on lamps from domestic and funerary contexts rather than on those in museums and private collections, many of which were acquired on the antiquities market, to support the aim of her article as clearly described by its title *'Aspects of typology, chronology and iconography in the regional lamp production in the area of present-day Israel (4th-7th centuries AD)'.*

Lambrini Koutoussaki in her paper *'Argos and its Lamps from the late 4th to 7th Century AD'* informs us that Argos was, without doubt, one of the main production centers in the region and a lot of the *officines* specialized in the production of copies.

Anastassios Ch. Antonaras in his paper *'A Three-handled, Calyx-shaped glass lamp from Thessaloniki and its Archaeological Context'* proposes a precise chronology for a three-handled calyx-shaped glass lamp, a chronology based closely on its archaeological context.

The article of Anastasia G. Yangaki *'Some Remarks on a Category of Wheel-Made Lamps: A 'Koinè' in the 6th and the 7th Centuries AD?'* explores a category of wheel-made lamp which is characterized by an ovoid body, an oblong nozzle and a cylindrical neck. Based on the diffusion of its six sub-types and the range of the production of each, it is apparent that such wheel-made lamps were common during the 6th and the 7th centuries AD in regions of the eastern Mediterranean.

Christopher S. Lightfoot in his paper *'Lighting Devices found at Byzantine Amorium (Turkey)'* presents us with different types of lighting devices that have been found during the excavations at the Byzantine city of Amorium in central Anatolia. They show that lighting devices of several different types continued to be used throughout the site's existence as a Byzantine city (late 5th–late 11th centuries). In addition to metal and glass lighting devices used in churches and other privileged contexts, small and relatively inexpensive terracotta lamps continued to be produced for use in daily life.

The paper of Stanislav Ryzhov and Tatyana Yashayeva *'Bronze Lightning Devices in Churches of Byzantine Cherson'* presents and interpets a special group of devices composed of bronze church lighting implements from Cherson: icon lamp stands, church chandeliers and candelabra, which played an important practical role in the church interior and also had some symbolical value.

Mara Verykokou focuses on the problems concerning the chronology of Byzantine polykandela that are from museums and private collections and underlines the need for their analysis in her paper *'Problems of Methodology in the Dating of Byzantine Polykandela: The Benaki Museum Examples'.*

Paschalis Androudis and Ioannis Motsianos in their article *'Byzantine metal support fittings for a candlestick from the Monastery of Chilandar on Mount Athos'* propose dates and provide an interpretation for two Byzantine metal support fittings that initially were parts of a candlestick and then re-used as supports for icons.

New research about candelabra is presented in the paper of Mariela Inkova *'Once again on the 'Byzantine-Mediterranean Limoges'?'.* Moreover, Mariela Inkova showed us a possible relation between the Byzantine Candelabra and ones manufactured in Western Europe.

Georgios Velenis and Stavros Zachariadis in their article *'Considerations on the Function and Usage of Pottery Lamps, Inspired by finds from the Forum of Thessaloniki'* takes into account experiments, analytical techniques, tradition and literal sources, supplemented by archaeological evidence, to provide us with a wealth of information concerning the use and function of closed (nozzled) lamps.

Ioannis Motsianos describes the *'Difficulties and Preconditions for the Utilitization of Glass in Lighting in Byzantium'* and discusses the technological issues that had to be resolved before glass could become an efficient and practical vessel for lighting.

Naama Sukenik and Yotam Tepper present *'A Linen Wick from the Northern Church at Shivta, Israel'* and give us valuable information about this rare find.

In his article *'Some thoughts about the use and the making of beeswax candles in Byzantium'* Ioannis Motsianos investigates the infrastructure required for the production of beeswax candles: the tools, the utensils, and methods used for this process during the Byzantine and Post Byzantine periods.

Pelli Mastora in her article *'The Virtual Lighting of the Rotunda's Mosaics'* shows us that not only lighting devices but also their depictions can play an important role in our understanding of the lighting of monuments.

The paper of Ioannis G. Iliades *'Light and Lighting Devices in Wall Paintings of Byzantine Churches in Thessaloniki'* presents some of the lighting devices depicted on wall paintings in the monuments of Thessaloniki. In some cases, he is able to make comparative analyses of the lighting devices and their light as depicted in paintings of the same or later period.

The paper of Efterpi Marki *'A beacon from the castle of Kitros, Pieria, Greece'*paper describes a special construction found at the medieval castle of Kitros which could be interpreted as a φρυκτωρία (beacon), i.e., a system of direct communication based on the use of fire which allowed for the rapid transfer of messages over long distances.

The paper of Laurent Chrzanovski *'Lessons of Modernity from the Past: some Amazing Parallels drawn from Antique and Medieval Lychnological Economics'* draws some parallels from the past to the present: rich civilizations without good fuel for lighting, long distance imports, fuel taxes and bureaucracy, fuel poverty, monopolies, monopsonies as well as the use of child labor in industries. All these topics, most of which can be considered as features in contemporary society and among the hottest challenges in global macro-economics, can be found in different civilizations: in ancient and medieval civilizations, in the Classical world and later not only in Medieval Europe but also in the civilizations of today and on other continents.

This volume provides an excellent overview of medieval lighting devices used in medieval Western Europe and Byzantium and coming from a wide range of collections and archaeological research. Scholars have brought forth and coordinated information from sometimes obscure collections or research references to clearly explain and illustrate their ideas.

Additionally, the material covered reaches way beyond basic research into the chronology and typology of the terracotta oil lamp. The articles not only expand our discussions of the scope of materials used as lighting devices, but also expand the timeline for our discussion of ancient lighting devices, going well beyond the Late Roman era when terracotta decreases as the predominant material for lighting vessels. The researchers show us many new ways to look at the physical record presented by the lamps and lighting vessels themselves. And the scholars have also provided information which helps us to recognize the manifestation of these various devices in both pictorial and written records.

In contrast to the lighting common in our electrified world, in Ancient times and indeed right up to the end of the 19th century AD, artificial lighting and fire were one and the same. Whatever gave light was also an agent of combustion, with all the concomitant advantages and disadvantages. That which illuminated, burned; and that which burned, illuminated.[14] Taking into account that one of the five main aims and goals of *The International Year of Light and Light-based Technologies 2015* was 'to reduce light pollution and energy waste'[15] we conclude that maybe the biggest lesson we receive by studying the lighting of the past is that supplies for lamps were the fuels and wicks made from materials that were renewable. It was the nature that could provide people the consumables for their luminaires (tinder, sticks of resinous wood, etc.) or they could acquire them cultivating plants (olive oil, flax, cotton, hemp, etc.) or raising livestock (animal fat). Moreover the people who used them could immediately recognize their abundance or lack –a fact that could prompt them to consume fuels for lighting in moderation, since in most cases the excessive use of lighting devices could also lead to shortages in their diet.[16]

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[14] Motsianos, I. 2011. Artificial Lighting during Byzantine and Post-Byzantine Period, in I. Motsianos and E. Bintsi (eds) *Light on light, an illuminating story*, Exhibition Catalogue, 90-125. Thessaloniki: Folklife & Ethnological Museum of Macedonia-Thrace. Here, page 91.

[15] https://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=1&ved=2ahUKEwj54rfkxYjgAhWPNOwKHY30CS8QFjAAegQIABAC&url=http%3A%2F%2Fwww.light2015.org%2Fdam%2FAbout%2FResources%2FIYL_EPS_ShortPresentati.pptx&usg=AOvVaw0UqgZblxoQ8q0RiXxr-3Hn viewed 10 January 2019.

[16] Wunderlich, Ch.-H. 2003. Light and Economy an Essay about the Economy of Prehistoric and Ancient Lamps, in L. Chrzanovski (ed.) *Nouveautés Lychnologiques - Lychnological News,* 251-264. Neuchâtel: Chaman Edition.

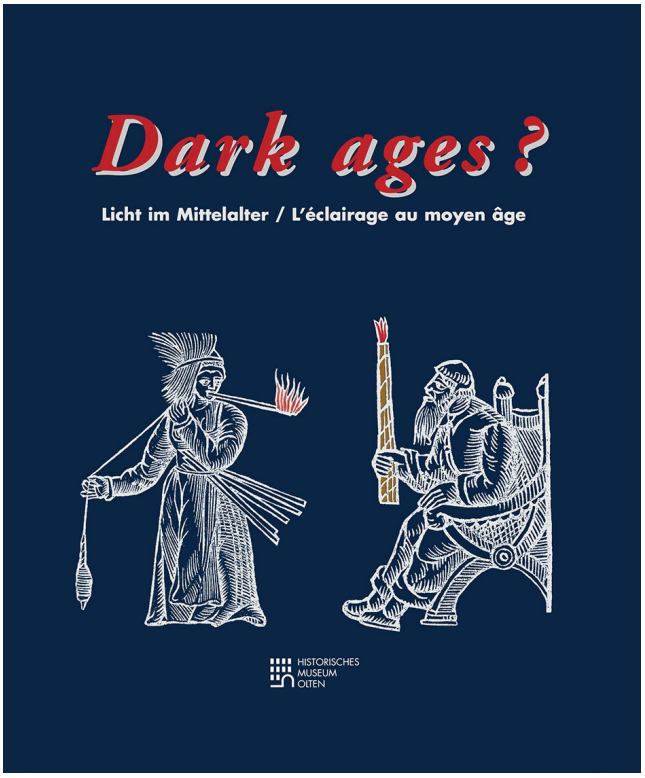
A Highly Important 'Half-volume' as Acta of two Pioneer Congresses: some Explanations

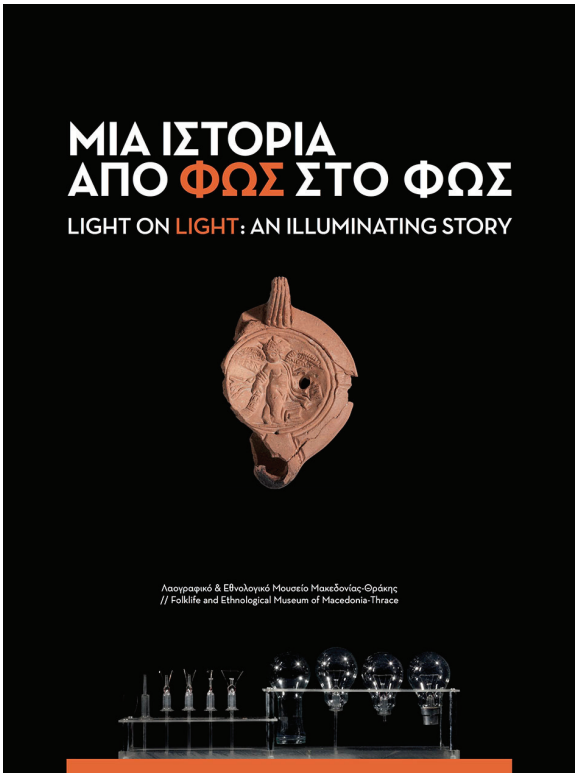
Laurent Chrzanovski
Doctoral School of History and Humanities, Lucian Blaga State University, Sibiu
Founder and Secretary-General, International Lychnological Association

We remember this moment as if it was yesterday. The scene took place during the 2nd Congress of the International Lychnological Association: held at Zalau and Cluj-Napoca (Romania), 13th to 18th of May 2006, one of the best organized events of our series due to the friendly atmosphere created and managed by the late Dorin Alicu with the staffs of both Zalau Provincial Museum and Cluj-Napoca's National Museum of Transylvanian History.

and studied by almost all our colleagues –from the Archaic period to the Late Roman era.

Half of the table's guests looked at us with eyes full of skepticism –no words needed to be added. The other half expressed interest, but all responses offered were, in a compulsory way, politely accompanied by all forms of conditional expressions, studded with 'but', 'how', 'if', 'nevertheless', and so on...



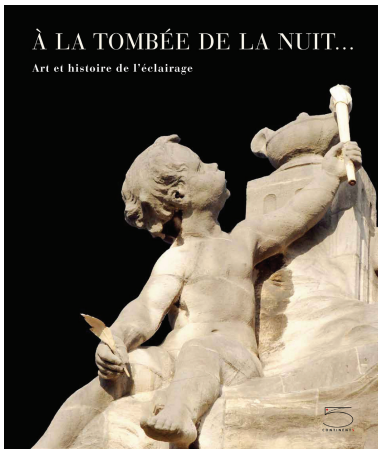


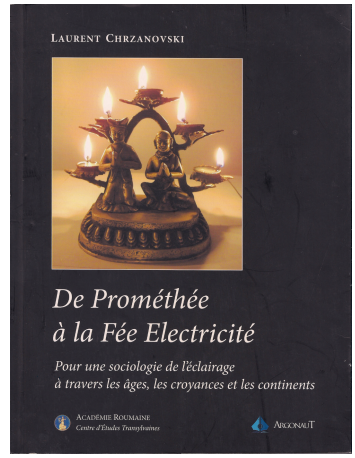
Dorin was one of the few archaeologists we knew who had, no matter the funds at his disposal, hospitality, dialogue and networking set as priorities in his DNA, so it is not a hazard if the conversation mentioned hereunder was held during one of the extremely generous hyper-caloric –how many dishes could have provided fuel for lamps!– and open-bar dinners which lasted long into the night.

During discussions within the board of ILA, we raised the proposal of driving an innovative attempt aimed to foster research on 'what happened next?', meaning how did people light their homes and workplaces after the timeframe beloved

'Young and crazy', as we are also now –even if no more so young–, Ioannis Motsianos and myself engaged in a constructive dialogue, shortly ending with 'OK, let's do a medieval times lighting round-table in two sessions: you organize the Continental European part and I take care of the Byzantine one, at Thessaloniki.'

What happened after that was even more 'crazy' if we look at the enthusiasm the idea generated not among lychnologists, but among museum directors as well as among specialists of different periods and topics.





As a result, much more than two small meetings between niche-specialists occurred. Both scholarly events were accompanied by what remains, in our point of view, the two most exemplar exhibitions on the subject ever realized in Europe. Outstanding in terms of their trans-disciplinarity and the innovative ideas they introduced to their visitors, these exhibits achieved a major, yet very rarely reached, objective: to be coherent, attractively arranged and seductive for the general public.

In Switzerland, Peter Kaiser, then Director of the Historishes Museum Olten, took the challenge and we worked hand in hand to gather all the possible Swiss 'exhibition-friendly' materials as well as not a few foreign contributions to help the viewer better understand the objects' contexts by setting the Helvetic artifacts within their broader continental framework.

In Greece, Foteini Oikonomidou-Botsiou, then Director of the Folklife and Ethnological Museum of Macedonia-Thrace in Thessaloniki, gave a green light to Ioannis Motsianos and Eleni Bintsi to build an even more comprehensive and amazing show: a complete history of light and lighting devices.

Furthermore, both exhibitions were opened with huge catalogues (respectively 384 and 462 pages) which are far more than just a visitor's booklet. They offer, along with a crystal-clear and useful introduction to all topics, the presentation of each object shown at the museums and much, much more. Both volumes are bilingual (French and German for the first, Greek and English for the second), in a rare attempt to make the syntheses available to the broadest number of readers possible.

'*Dark Ages? Licht im Mittelalter* / L'éclairage au moyen-âge'[1] exhbition opened in early fall of 2007, and a six day Round-Table of the same title was hosted from the 24th to 29th of September. 'Μια ιστορία από φως στο φως/ *Light on light: an illuminating story*',[2] exhibition opened in the fall of 2011, as the Round-Table 'Lighting in Byzantium' commenced at the Museum of Byzantine Culture from 11th to 14th of October, thanks to its director, Dr Susanna Choulia-Kapeloni.

The provocative title we chose for this introduction, i.e., the '*half-volume*' you have in your hands as *Acta* is in fact the result of all the contributions already published in both volumes, mainly the first, which gathers in its largest chapter a full '*status quaestionis*' as delivered by all the component Swiss cantonal archaeological services which have led excavations and researches to fruitful results on the topic. The 'Continental European' part of the present acts is then considerably diminished in comparison to the speeches presented at Olten and which were already published in the catalogue, which is readable for free on the Association's website and also downloadable on our research website.[3]

Returning to the present work, we have to salute the enormous job made by Ioannis Motsianos, 'constrained' on a voluntary basis, to gather all the texts and edit this volume at the same time we are compiling an analogue work on the *Acta* of the 4th and 5th Lychnological Congresses, held at Ptuj and Sibiu in 2012 and 2015.The financial crisis is still here, and not only in Greece, and is affecting our profession in its most '*politically unattractive*' aspect, its scientific publications.

Thanks to Dr Motsianos efforts, the papers constituting this volume offer to the scientific community a huge contribution to the published scholarship about these poorly known Byzantine lighting devices, especially when compared to the quantity of literature devoted to lamps from preceding periods. This book will be, irony of history, only the second existing 'milestone' on this topic, the first being a huge scholarly effort (2 volumes) published also... in Thessaloniki, in 2010.[4]

As a more personal conclusion, we would like to take a step backward and look again at the volume of the amazing exhibition held in 2011. For us, it was such a revelation in the

[1] Chrzanovski, L. and P. Kaiser (eds) 2007. '*Dark Ages? Licht im Mittelalter / L'éclairage au moyen-âge*'. Milano: Edizioni Et.

[2] Motsianos, I. and E. Bintsi (eds) 2011. *Μια ιστορία από φως στο φως/ Light on Light: an illuminating story.* Thessaloniki: Folklife & Ethnological Museum of Macedonia-Thrace.

[3] For reading online : <http://www.lychnology.org/flip/dark_ages/>, viewed 15 July 2018; for downloading: <https://laurentchrzanovski.academia.edu> , viewed 15 July 2018.

[4] Παπανικόλα-Μπακιρτζή, Δ. and N. Κουσουλάκου (eds) 2010. *Κεραμική της ύστερης αρχαιότητας από τον Ελλαδικό Χώρο (3ος-7ος μ.Χ.).* Επιστημονική συνάντηση, Θεσσαλονίκη, 12-16 Νοεμβρίου 2006. Θεσσαλονίκη (2 volumes), gathering no less than a dozen articles about late Roman and Byzantine lamps.

variety of topics it presented that it has been the source of inspiration not only of the two exhibitions we made shortly thereafter, one in Geneva[5] and another in Cluj-Napoca,[6] the last, being itinerant and gathering more than 500,000 visitors during the two years it travelled, but also for opening our eyes to the religious, cultural and ethnographic aspects of lighting, a subject we could finally research and publish thanks to a generous EU postdoctoral grant.[7]

Dozens of ideas and paths of research would very probably not have captured our interest if it weren't for the exhibition held at the Folklife and Ethnological Museum of Macedonia-Thrace, Thessaloniki, fruit of Ioannis Motsianos' open-mindedness and the collaboration he obtained for conceiving and bringing to fruition the event.

For all this, we have to say an enormous '*thank you, Ioannis*'! We hope the present volume will soon be followed by a resurgence of interest in publications on the illuminating devices of this very eclectic period.

Thessalonki, Motsianos' home, 25th of July 2018.

[5] Chrzanovski, L. (ed.) 2012. *A la tombée de la nuit... art et histoire de l'éclairage.* Genève-Milano, Musées d'art et histoire de Genève, Genève.
[6] Chrzanovski, L. (ed.) 2013. *LVMEN EST OMEN Arta, istoria* și *spiritualitatea iluminatului artificial.* Cluj-Napoca; downloadable from https://laurentchrzanovski.academia.edu
[7] Chrzanovski, L. 2013. *De Prométhée à la Fée Electricité. Pour une sociologie de l'éclairage à travers les* âges*, les croyances et les continents.* Cluj-Napoca, Académie Roumaine; downloadable from https://laurentchrzanovski.academia.edu

Acknowledgements

ILA Round Tables form part of a series of conferences promoted by the *International Lychnological Association* (ILA) in order to allow specialists to develop a precise theme in an exclusive meeting. The 3rd ILA colloquium in Olten was organized in 2007 after two preceding meetings devoted to a precise geographical area, the 1st taking place in Amman and Petra (Jordan) in November 2005, on the theme 'Ancient lamps from Bilad esh-Sham, from the Phoenicians to the Ummayads', and the 2nd in Millau (France) in March 2007, on the theme 'Archéologie et histoire de l'éclairage en Gaule, de la Préhistoire au début du Moyen Âge'.

While their symbolic, political and religious importance increased constantly, Late Antique and Medieval lighting devices from Continental Europe have been astonishingly neglected in scientific literature, at least compared to the richness of research concerning the previous periods. Nevertheless, the major economic and geo-political changes of this period caused radical modifications in the means of lighting, which deserve a great scholarly interest. ILA received a strong demand from archaeologists and historians to organize a meeting in order to launch a new discussion, make the research more dynamic and to make a synthesis of the acquired knowledge on lighting devices from the 5th to the 17th century. This was the aim of the Olten colloquium, as well as the organization of a national exhibition on the same theme 'Dark Ages? Licht im Mittelalter', organized by the Museum of Olten in honor of this event.

The 3rd International ILA Round Table 'Dark Ages? History and Archaeology of Lighting Devices in Continental Europe from Late Antiquity to Late Mediaeval Period' was thus organized in Olten, Switzerland, in 24-29 September 2007. The Olten colloquium, organized in the Historical Museum at Olten was placed under the high patronage of Dr Charles Kleiber, the Swiss Secretary of State for Research and Science at that time, and the then mayor of Olten, Mr. Ernst Zingg, and it was supported by the French Centre national de la recherche scientifique (CNRS) and the Swiss National Science Foundation (SNSF). We also wish to thank *Instrumentum* (European Research Group on Crafts in Antiquity), the president of honor, Prof. Catherine Vincent from the University Paris X, the president Dr Peter Kaiser, Curator of the Historisches Museum in Olten, the secretary Dr Laurent Chrzanovski, the Secretary General of the ILA, and the members of the organizing committee, Prof. Massimiliano David, University of Bologna, Dr Michel Feugère, CNRS, Dr Pierre Harb, Director of the Archaeological Service Solothurn, Prof. Jerzy Holubiek, Polish Academy of Sciences, Dr Danièle Foy, CNRS, and Dr Cosmin Rusu, National Museum of History of Transsylvania, for all their support.

The 3rd ILA Round Table is tied into the 4th colloquium, which deals with the same subject but is devoted to the Byzantine and Levantine worlds. The 4th International ILA Round Table 'Lighting in Byzantium' was held four years later, 11-14 October 2011, in the amphitheater of the Museum of Byzantine Culture in Thessaloniki. As was the case with Continental Europe, the research on lighting in Byzantium during Late Antiquity and in the Byzantine era has been astonishingly neglected in the scientific literature, at least in comparison to lighting research for the preceding historical periods. Lighting devices in Byzantium had multiple roles far beyond utilitarian purposes. They provided illumination for everyday activities, at work, at home, in public spaces, and places of worship. Lighting devices were an important element of the significant rituals of Byzantine private, sacred and social lives. Valuable information may be derived from artifacts found in excavations or exhibited in museums and private collections. The Round Table focused on Byzantine lighting devices, including: their typology and chronology, their production and workshops, terminology, the symbolic role of light and lighting devices in Byzantium, and the use of lighting devices in everyday and ecclesiastical life.

The Thessaloniki colloquium about light and lighting devices in the Byzantine world was aimed to cover the Byzantine world, Eastern and Southern Mediterranean, and it was organized with the patronage and the support of the Greek Ministry of Culture and Tourism, Archaeological Institute of Macedonian and Thracian Studies, Museum of Byzantine Culture and International Lychnological Association. During the Round Table the participants had the occasion to visit a special exhibition on artificial lighting from the Byzantine era to the 20th century 'Light on light: an illuminating story', presented in the Folklife and Ethnological Museum of Macedonia-Thrace, as part of the program called 'Thessaloniki: Crossroads of Civilizations', organized by the Greek Ministry of Culture and Tourism.

We wish to thank warmly all the members of the scientific committee, Director, Dr Polyxeni Adam-Veleni, Prof. Georgios Velenis, Aristotle University of Thessaloniki, Prof. Stella Drougou, Aristotle University of Thessaloniki, the then Director of 9th Ephorate of Byzantine Antiquities Dr Despina Makropoulou, the then Director of the Archaeological Institute of Macedonian and Thracian Studies Dr Vasiliki Misailidou-Despotidou, Dr Ioannis Motsianos from the Museum of Byzantine Culture, the Director emerita of the Archaeological Institute of Macedonian and Thracian Studies Dr Demetra Bakirtzi, and the then Director of the Museum of Byzantine Culture Susanna Choulia-Kapeloni, as well as all the members of the organizing committee, Prof. Stella Drougou, Director Dr Vasiliki Misailidou-Despotidou, Dr Ioannis Motsianos, Dr Anastasios Antonaras, Director Susanna Choulia-Kapeloni and Karen Garnett. It would not have been possible to organize the Thessaloniki colloquium without the efficient and important cooperation of the 9th Ephorate of Byzantine Antiquities, 10th Ephorate of Byzantine Antiquities and the Folklife and Ethnological Museum of Macedonia-Thrace. We also wish to thank Mrs Eleni Stoubou-Katsamouri for her help in the production of the information for the colloquium. The colloquium was organized with the support of Malliari Paideia AE.

As the president of the ILA from 2003 to 2015, I am really grateful for all the help provided by the Historical Museum at Olten, as well as the Museum of Byzantine Culture during

the 3rd and 4th ILA Round Tables. I am especially thankful to Dr Ioannis Motsianos who as the representative of the ILA for Greece and being responsible for lighting devices for the Byzantine and later periods suggested the organization of a Round Table in Thessaloniki. We owe a great debt of gratitude to him and Karen Garnett for making this volume of the proceedings of the two ILA Round Tables a coherent whole.

For all the ILA members,
in February 2019,
Professor Arja Karivieri
President of the International Lychnological Association (ILA)
from 2003 to 2015

An Overview of Late Antique Oil Lamps and Lighting Devices from Slovenia

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Abstract: The article represents a short survey of Late Antique lighting devices from the territory of today's Republic Slovenia. The western part of the country with the Ljubljana basin had been since the 3rd century included in the Province Venetia et Histria with its center in Aquileia. The defense system was established in the territory of South-Eastern Alps to protect Italy, known as Claustra Alpium Iuliarum. After Diocletian's reforms the territory Noricum Mediterraneum comprised also the town Poetovio. Poetovio, Celeia and Emona became early episcopal seats, which is reflected also in their archaeological heritage. After the mid-5th century the coastal towns were directly included under Byzantine rule. In the hinterland the fortress of Carnium persisted as one of a rare Late Antique lowland strongholds till the beginning of the 7th century. A review of the published oil lamps from Slovenia indicates that in the Western part oil lamps of type Atlante VIII prevailed, while in the coastal regions and Istria oil lamps of type Atlante X amounted to a larger number. In rare cases ecclesiastical equipment was preserved: two bronze candlesticks from Rogoznica near Ptuj and the Christograms from Vipota near Celje and from Emona are known. Glass fragments of lamps were found in Emona and other urban and rural settlements.

Keywords: Lighting device, Emona, Poetovio, Celeia, Carnium, *Claustra Alpium Iuliarum,* peacock-shaped lamp, Christogram, bronze candlestick, Rogoznica.

This paper presents a short survey of Late Antique ceramic oil lamps and other lighting devices, which had already been published in numerous Slovenian site publications and excavation reports. The western part of Slovenia with the Ljubljana basin had been since the emperor Diocletian a part of Province *Venetia et Histria* with its center in Aquileia. In the 3rd and the 4th century a defense system was established in the territory of South-Eastern Alps to protect Italy, known as *Claustra Alpium Iuliarum* (Figure 1). It was protected by fortifications and strongholds of different sizes, connected with roads and enclosed by walls.[1] The strategic center of the defense system was in Aquileia with its military harbor, warehouses and workshops for military equipment.[2] In the interior area of *Claustra* there were two main fortresses, *Castra* and *Ad pirum*. *Emona,* controlling entrances from Pannonia, represented an important strategic stronghold in the defense system.[3]

The eastern part of today's Slovenia was a part of *Illyricum* in the Early Imperial Period. With the foundation of towns and completion of Romanization processes *Poetovio* became one of the most important towns in the province of *Pannonia Superior*, and *Celeia* one of rich Norican municipia.[4] After Diocletian's reforms the territory *Noricum Mediterraneum* comprised also the town of Poetovio. Poetovio, Celeia and Emona became early episcopal seats, which is reflected in their archaeological heritage.[5]

After the mid-5th century the urban centers broke down. The population moved partly to Istria where some new towns were established on the coast. In the protected areas of the hinterland numerous hilltop settlements started to appear; the larger centers contained complex ecclesiastical buildings, where not only religious services but also administrative and military affairs were performed.[6] Coastal towns survived, were reinforced and continued directly under Byzantine rule. In the hinterland the fortress of Carnium remained as a rare Late Antique lowland stronghold until the beginning of the 7th century. Although Carnium, today's Kranj, used to be a fortress with Germanic military units included as part of the Germanic states, it remained under strong Byzantine influence.[7]

Western Region

Most of the known and studied oil lamps from the western part of today's Slovenia were discovered on Late Roman and Late Antique archaeological sites, sites which are characteristic of their military role or located on important merchant routes, such as the fortresses Hrušica/*Ad pirum,* Ajdovščina/*Castra* (Figure 2).[8] These oil lamps are mainly of African types, the most frequent type being Atlante VIII in different variants.[9] They were discovered in *in Emona-Episcopal Center,* in Ajdovščina/*Castra*, Hrušica/*Ad pirum*, Škocjan, Solkan, Koper/

[1] Ciglenečki 1999, 287-309.
[2] Sotinel 2001; Šašel 1976, 446-461; Christie 1991, 410-430; Ciglenečki 1999, 289.
[3] Ulbert 1981; Plesničar-Gec 1999.
[4] Horvat 2003, 153-189.
[5] Bitenc *et al*. 2001.
[6] Ciglenečki 1999, 287-309.
[7] Vidrih-Perko 2005, 49-77.
[8] Both locations were mentioned in *Tabula Peutingeriana* and *Itinerarium Burdigalense / Hierosolymitanum* (Šašel and Petru 1971).
[9] Atlante 1981, 129.

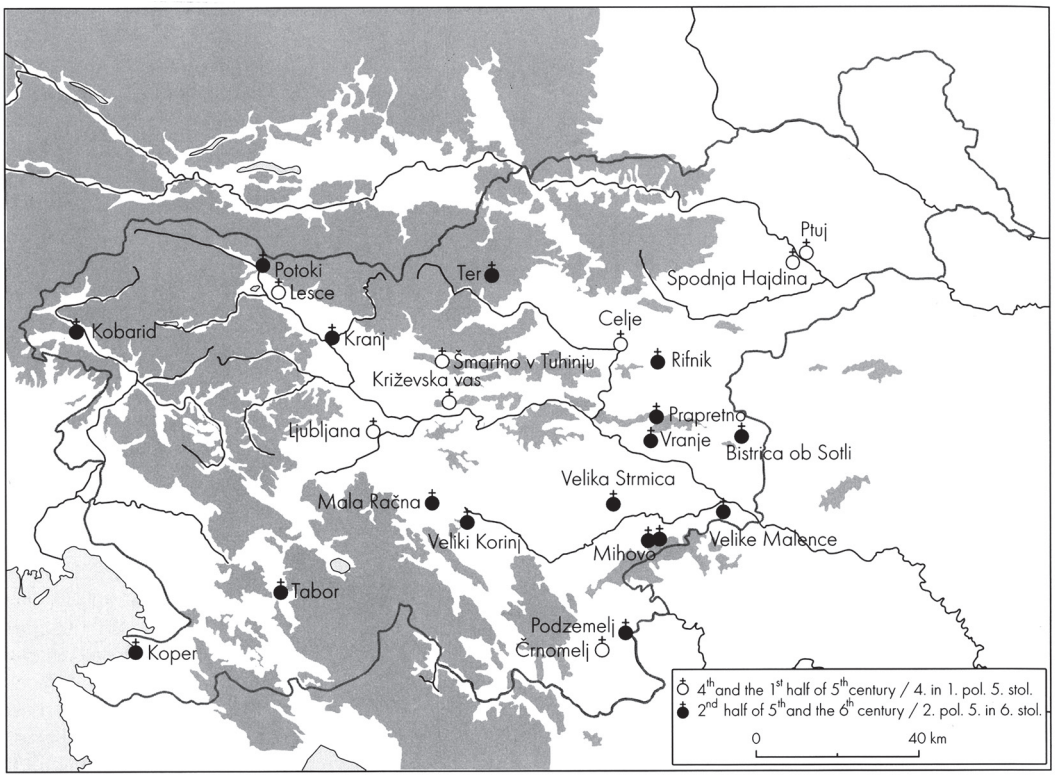

Figure 1. Map of the Slovenian territory in Roman times

Figure 2. Distribution map of Late Antique oil lamps in western part of Slovenia.

Školarice.[10] The lamps were made of clay fired orange to brick red and have a slip of the same color.[11]

The known workshops where sigillata oil lamps were produced are documented in the Central and Northern Tunisia; among them are *Hencir es Sirna* and *El Mahrine*. The oil lamps of Hayes type I /Atlante VIII, were in use mostly from the second half of the 4th century to the end of the 5th century.[12]

Also the lamps from the discussed sites can be placed exactly in the same chronological time frame. The building of the Episcopal Center in Ljubljana was stratigraphically dated to the end of the 4th century. The destruction of the complex is evidenced by the coins of Honorius dating into the third decade of the 5th century.[13] The fortress at Hrušica/ *Ad pirum,* most probably resisted until the beginning of the 5th century.[14] The characteristic features in the first decades of

[10] For Emona-Episcopal Center: Plesničar-Gec 1983, fig. 37. 3, fig. 42.3; Ajdovščina-*Castra*: Pröttel 1996, 226-228, fig. 64.3-6, 8, 11; Hrušica-*Ad Pirum*: Pröttel 1996, 222, fig. 20.2-5, fig. 5.25; Škocjan: Pröttel 1996, 232, fig. 70.1; Solkan: Pröttel 1996, 231, fig. 96.4,7; Koper-Školarice: Žerjal 2008, 110, fig. 29.

[11] Pröttel 1996, 71.

[12] Oil lamp production was related to the production of African Red Slip Ware, at the beginning to the production C3-C4 (linking up with relief decoration on oil lamps and sigillata vessels' decoration, above all on cups type Hayes 53A), and later to the production D1-D2 (Hayes 1972, 311; Mackensen 1993; Pröttel 1996, 71; Bonifay 2004, 358.

[13] Plesničar-Gec 1983, 29. Some more examples are known from Emona, i.e., Knific and Sagadin, 1991, nos. 47, 48.

[14] Pflaum, 2004, 152.

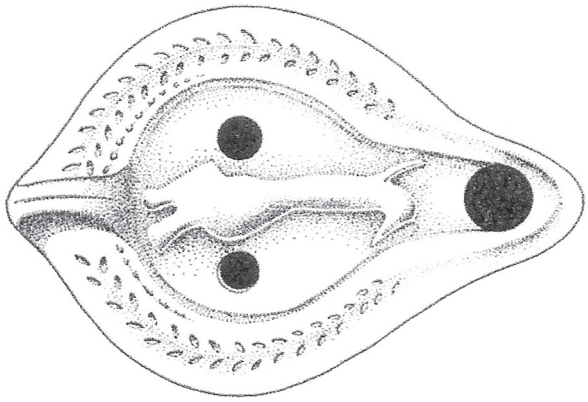

Figure 3. Oil lamp from Bilje (Osmuk 1978, 467. Fig. 1).

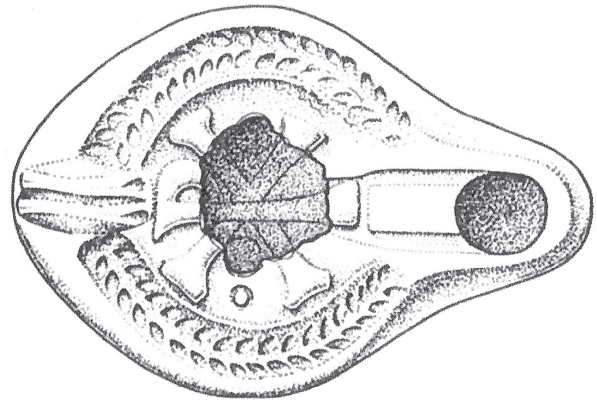

Figure 4. Oil lamp from Solkan (Svoljšak 1985, 278. fig. 107).

the 5th century could be recognized by the materials from the fortification at Ajdovščina/*Castra*.[15]

Also oil lamps of type Atlante VIII from recent excavations of a roman villa in Koper/Školarice are dated by the context to the first half of the 5th century.[16]

Some imitations of oil lamp type Atlante VIII A1 were also identified. The samples were discovered in Ljubljana, Logatec, Hrušica and in the region from Vipava Valley to Most na Soči (Figures 3, 4).[17] Individual lamps were known also from Aquileia, where the local Late Roman production imitating the African types flourished.[18]

The pottery –and brick– workshop was excavated also at site Bilje in Vipava valley. Regarding its brick stamps it had produced them already in the 1st century, and could have operated as a part of a large Aquileian production base, taking into account convenient river transport to Aquileia. The settlement finds bear evidence that workshops in Bilje must have remained in use also in the Late Roman period.[19] However, without analyses, it is difficult to identify the workshop which produced the lamps imitating the oil lamps of type Atlante VIII A1a, which represent frequent finds in that region. Finally, local pottery workshops are confirmed in Emona as well.[20]

In the western part of Slovenia sigillata oil lamps of later type Hayes II/Atlante X were often identified, which is the most typical and widely distributed form of the African types. Those types were discovered in Koper (Figure 5); some also at the site Škocjan and individual items were found at Predjama

Figure 5. Oil lamp from Koper (Bratož 1999, 295).

Figure 6. Oil lamp from Predjama (photo by T. Lauko).

[15] Osmuk 1997, 119-130; Vidrih-Perko and Žbona-Trkman 2005, 58.
[16] Žerjal 2008, 112.
[17] Ljubljana: Knific and Sagadin 1991, 66, no. 47; Petru 1972, 134, fig. 98.5; Logatec: Frelih 1988, 24; Hrušica: Pröttel 1996, 222, fig. 5.23,24; Vipava Valley: Osmuk 1978, 464-467; Pröttel 1996, fig. 20.22. fig. 69.1,2,3,7.
[18] An oil lamp model of African type Atlante X is displayed in Museo Nazionale in Aquileia.
[19] Vidrih-Perko and Žbona-Trkman, 2005, 40.
[20] Istenič and Tomanič-Jevremov 2004, 313-341. In the exhibition catalogue *Decline of the Antiquity* (Petru 1976) an oil lamp model from the National Museum of Ljubljana is mentioned, with the depiction of a *Pastor bonus.* Supposedly the model originated from Emona.

(Figure 6), Most na Soči and some more in Emona.[21] The lamps were in use from the beginning of the 5th century to the 7th century. In archaeological contexts from Koper the lamps can be placed in the 5th and 6th century with regard to their stratigraphic position.[22] The Predjama site is dated in the 4th and to the 1st half of the 5th century; considering the defense and strategic position of the site and numerous military finds, Predjama belonged to the context of the *Claustra Alpium Iuliarum* defense system.[23]

The fortress Turnišče near Vrhnika, belongs to the same context and period of time and is where a fragment of an oil lamp type Atlante X A1a was found.[24]

The imitations of oil lamps type Atlante X were discovered in Koper, one item was identified at Vrtovin in Vipava Valley (type Atlante XA1a).

Besides African oil lamps and their imitations some other lamp types appeared in that period. At Ajdovščina a fragment of the oil lamp type Atlante XIII, i.e. Tripoli oil lamp, was identified, which was the northern most find of that type.[25]

There are also some samples of local production. From Emona grave 214 along with a coin of Decius Traianus the so called *Warzenlampe* is known.[26] The decoration was influenced from the type Leibungut 35, where its pear-shaped body and nozzle form are linked to early African types. Some further oil lamps of local production, also influenced by African types, were identified in Emona.[27]

To old Emona grave finds belongs an almond-shaped oil lamp, type Sidon[28] and another one resembling Byzantine forms.[29]

Type Atlante VIII, represented by a mold for a pear-shaped lamp, was found together with a wheel-made lamp of local production (type Iványi XXII) in a grave from Javorje, dated to the second half of the 4th century (Figures 7, 8).[30]

Round lamps with a simple turned up handle of type Iványi XXII were characteristic of the Late Roman local production.[31] They appeared in the second half of the 3rd century and together with late samples of type Firmalampen stand for the typical production in numerous local workshops of glazed pottery until the first decades of the 5th century. The oil lamps of type Iványi XXII were identified almost in every local pottery workshop, and are also known from the Emona

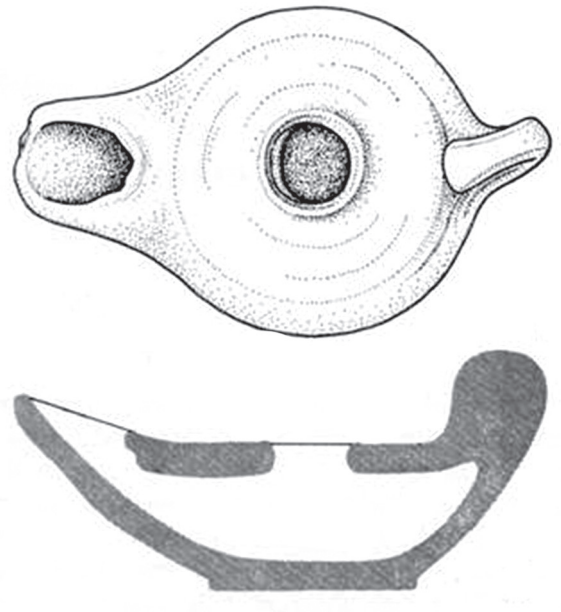

Figure 7. Oil lamp from Javorje near Ljubljana (Guštin and Knific 1973, fig. 5).

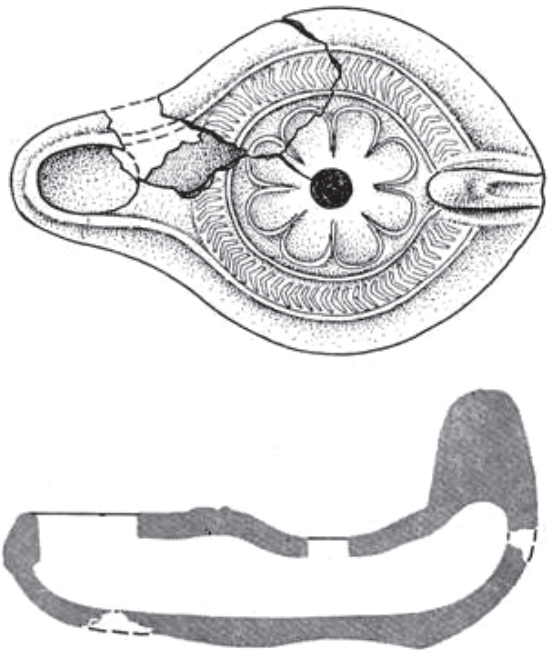

Figure 8. Oil lamp from Javorje near Ljubljana (Guštin and Knific 1973, fig. 5).

[21] Koper: Pröttel 1996, fig. 70.3-8. fig. 71.1-15; Škocjan: Pröttel 1996, fig. 69.10; Emona: Pröttel 1996, fig. 63.8-9. fig. 64.1-2. Some African oil lamps were discovered also in the site Predloka, but the material is still being prepared for publication.
[22] Cunja 1989, 103.
[23] Korošec 1956, 42; Bitenc *et al.* 2001, 27.
[24] Horvat 1990, fig. 19.1.
[25] Pröttel 1996, 87. Contradictory to Pröttel, some researchers suggest these objects as being of South Italian production; (L.Chrzanovsky at the conference in Olten, in September 2007).
[26] Plesničar-Gec 1972, fig. 60.1.
[27] Petru 1972, fig. 98: 5, 8.
[28] Petru 1972, fig. 97.8.
[29] Petru 1972, fig. 97.9. Menzel, fig. 81.2.
[30] Guštin and Knific 1973, 847, fig. 5. 2-69. The oil lamp from Javorje perfectly matches the type 8C 2b, Atlante I, fig. XCVII, with no precise datation (Atlante I, 195).
[31] Iványi 1935, 20, fig. 56.4-11.

pottery production and were found in graves in Emona necropolies.[32]

The drop in production of ceramic oil lamps, which occurred in the Late Roman period, must have resulted from the increased use of glass lamps. Among the numerous fragments of glass beakers, discovered at Emona Episcopal Center, some of them certainly belonged also to glass lamps.[33] The same situation most probably occurred in other Late Roman sites in the western part of today's Slovenian territory, where glass fragments were found (Martinj hrib, Ajdovščina, Hrušica, Predjama, the castle Kalc above Pivka). The latest finds from Koper Cathedral confirm this assumption.[34]

The main traffic route from Aquileia to Transdanubia passes through the Vipava Valley. African oil lamps were brought in as a minor, unimportant part of food cargo, which supplied markets and military posts in the time of agricultural decline. In the 4th, and mostly in the beginning of the 5th century, food supplies together with equipment and clothing implied from time to time a part of military salary, *annona,* which may point to a noticeable difference in the quantity of imported Late Roman vessels in the settlements and posts outside and inside the *Claustra*.[35]

Reviewing the published oil lamps it was determined that in Vipava Valley and Ljubljana basin oil lamps of type Atlante VIII prevailed, while in the coastal regions and Istria oil lamps of the later type Atlante X amounted to a larger number. The later type of oil lamps were also found on important Late Roman military posts, i.e., Most na Soči, Predjama, and Škocjan. The domination of Atlante X type in the coastal towns could be explained by uncertain conditions in the 4th and the 5th centuries, which forced the population to move more often to the safer littoral areas. In the case of the town of Koper it is known that after the collapse of Gothic rule in the mid-6th century, the Byzantine authority seated in Ravenna, restored and reinforced all local ports and protected their territory from the Lombard, Avar and Slav invasions. At the end of the 6th century the town accepted a great number of refugees from the Pannonian region. The town was also mentioned as a episcopal center.[36]

The military posts (Predjama and Most na Soči) undoubtedly continuously existed during the 5th century, which might reflect the developing defenses of the north-eastern Italian borders. Defense gradually changed from the centrally guided defense force into a dispersed countryside structure with numerous minor fortifications and posts along the significant road connecting to Italy.

Eastern part of today's Slovenia – Noricum and Pannonia

Poetovio used to be a rich town. For militarily strategic reasons, it is positioned along a key transportation route and the river Drava. In the Early Imperial Period a legionary camp was established. At the beginning of the 2nd century a status of *colonia* was given to the settlement. Poetovio become the seat of the Illyrian custom system, which accelerated the growth of population and fast economic development with numerous trade workshops.[37] During the Late Roman period strong divisions of military units were stationed in the town. Following the reforms of Diocletian Poetovio become part of *Noricum Mediterraneum*. The town served as the residence of the highest ranking civil and military elite. From the 3rd century onwards it was also the seat of bishop.[38]

The inhabitants' structures were various; especially remarkable is the presence of a population of Eastern origin, as testified by numerous epigraphic monuments and eastern cults spread out over the Poetovio territory. Cultural and ethnic variety is reflected in the rich archaeological heritage of Poetovio.[39]

More than 150 pottery kilns were discovered in Poetovio, confirming numerous pottery workshops.[40] In the Early Imperial period production of ceramic oil lamps is wide spread. Products bearing the names of Italic masters prevail, i.e., Fortis, Cresce, Decimi, Litogene, Aprio, Festi, Exorati, Lucius, Optati and Pulli, while stamps with the names of the local masters Iustinianus and Ursul(i) were active from the second half of the 2nd century to the beginning of the 4th century.[41] Especially thriving were Iustinianus' workshops, producing all kinds of pottery, i.e., *mortaria*. Their products were exported to eastern *Noricum, Pannonia Inferior, Mesia*, and even *Dacia*.[42]

Taking into account the characteristic Roman economy, the phenomenon of large joint-trade exchanges can be presumed, most probably connected with the organization of the custom system and supplying of posts from the seat in Poetovio.

From grave evidence the massive imports of Italic oil lamps, characteristic for the period till the mid-2nd century, were gradually replaced by strong local production.[43]

Among the molds and products from the Poetovio workshops in the Early and Middle Roman Period volute oil lamps and

[32] Petru 1972, fig. 104.6. Among the Emona ceramic finds a lot of glazed pottery and whee lmade oil lamps appeared (unpublished settlement material).
[33] Plesničar-Gec 1983, fig. 23-29; especially the fragments in fig. 23.1, fig. 27.10, 19. fig. 28. 2, 3. 28.4 and 7.
[34] This information was provided by M. Župančič, who is preparing the material for publication.
[35] Vidrih-Perko and Žbona-Trkman, 2005, 61.
[36] Šašel 1989, 10.
[37] Tomanič-Jevremov 2004, 94-99; Horvat 2003, 153-189. Metal, stone, wool, brick and other trades are archaeologically, epigraphically and historically documented.
[38] Horvat 2003, 158.
[39] Besides Mithraism and other oriental cults the presence of a strong Christian community was verified. Poetovio was the Episcopal center already at the end of the 2nd century. The theological opus of bishop Victorinus, one of the most prominent Christian writers, represents an excellent reflexion of the immense cultural background of Poetovio. R. Bratož (2000) one of the most important experts of Early Christianity –considering discoveries of numerous Christian churches and other archaeological materials in connection with Christianity– supposes the existence of a strong Christian community in Poetovio already in the 1st century AD, and the formation of the Poetovian bishop's diocese in the 2nd century. Victorinus' rich philosophical and theological works point to the existence of a comprehensive library, most probably owned by ecclesiastical community in Poetovio (Horvat 2003, 159 with extensive bibliography).
[40] Tomanič-Jevremov 2004, 94-99; Istenič 2004, 108-111.
[41] Istenič 1999, 155, fig. 146. Vomer-Gojkovič 2008.
[42] Istenič 1999, 158.
[43] Istenič 1999; Istenič 2000.

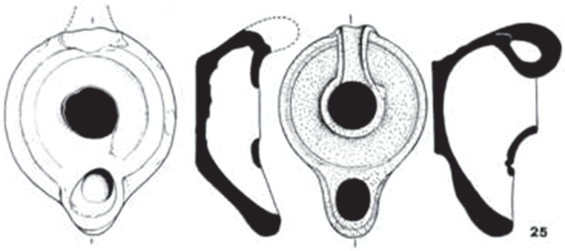

Figure 9. Oil lamps of local production from Ptuj (Šubic 1975, fig. 6.24, 25).

Firmalampen types prevailed. From the pottery kilns are known also waste finds, representing the zoomorphic oil lamps and lamps with face mask decoration.[44]

In the 3rd and 4th centuries the most frequent products of the local workshops were late forms of *Firmalampen*, *Warzenlampen* and round oil lamp of type Ivanyi XXII and XXIII (Figure 9). The oil lamps of type Ivanyi XXIII often appeared among the glazed products and were mostly wheel-made. They were found in abundance in both settlement and grave contexts.[45]

Despite the richness of the town and its important economic and political role in the Late Roman period, the number of African imports in Poetovio, in comparison to Emona, was rather small. This cannot be a result of research status, although it has considerable influence.[46] A rare Poetovian find of a late African import is also an oil lamp of Atlante, type X A 1a, with geometric decoration resembling the form of cross (Figure 10).[47] The oil lamp was found at Hajdina, today's eastern suburb of the modern town of Ptuj, which was the seat of Illyric customs from the Hadrianic Period. In the vicinity many temples had been built, and the remains of an Old Christian basilica were discovered.[48]

The most remarkable finds from Late Roman Poetovian contexts are the bronze peacock-shaped lamp and two bronze candlesticks from Rogoznica.[49]

The peacock-shaped lamp was discovered in the territory of the town area named Zgornji Breg, where a Late Roman cemetery was situated upon the urban remains of the Early Period (Figure 11). The lamp is only partly preserved and the tail of the figure is missing, which at the time of discovery resulted in the identification of the object as a Christian symbol. Because of the site of discovery and incorrect semiotic interpretation, the lamp was dated to the Late Roman period.[50] This datation and symbolic interpretation remained in Slovenian archaeological literature till recently. A similar candlestick in a peacock shape –with a widely

Figure 10. Oil lamp from Ptuj (Šubic 1975, Fig. 5.19).

open tail, but lacking a large opening on the belly– is already known from Menzel's publication.[51] The reliable dating of the Poetovio lamp to the Early Roman period, which corresponds also to the semiotic message of open tail, unfortunately not preserved in the Poetovio example, was confirmed by a recent Swiss discovery. In an intact archaeological context in Gallo-Roman villa from Morat/Combett in Switzerland a completely identical lamp in a peacock shape was found, with a wide open tail and a large opening on the belly. The lamp is dated to the second half of the 2nd century.[52]

Regarding the archaeological context of the Poetovio peacock-shaped oil lamp it can be presumed that the object must have been in use for a long period of time. The same can be stated for the tripod candlestick with folding legs, found in the vicinity of the eastern Late Roman necropolis of Poetovio. It can be placed among earlier finds.[53]

Among the most noteworthy Late Roman finds from Poetovio are two bronze candlesticks, discovered at Rogoznica, today a suburb of Ptuj (Figures 12, 13).

Both objects were discovered in 1858 and because of great cultural and historical value, they were included into the collection of *Kunsthistorisches Museum* in Vienna.[54] The discovery circumstances are not clear. Because the site was in close vicinity to the large Poetovio necropolis along the eastern road, and because the candlesticks were discovered as a pair, it was often mentioned that the candlesticks might have belonged to the graveyard chapel furniture.[55]

[44] Tomanič-Jevremov 2004, 94-99.
[45] Šubic 1975, 83; Mikl-Curk 1976; Istenič 2000, 15: grave 3, fig. 2.1.
[46] Most prevalent of the African imports are those from the production group C, belonging to the period between 230 and 340 AD; later finds are sporadic (Pröttel 1996, 130).
[47] Šubic 1975, fig. 5.19; Knific and Sagadin 1991, 67, fig. 50.
[48] Šubic 1975, 83, fig. 5.19; Mikl-Curk 1976, fig. 18.11.
[49] Knific and Sagadin 1991.
[50] Klemenc 1953.
[51] Menzel, 1969, fig. 90.4.
[52] Agustoni 2005, fig. 1-3.
[53] Vomer-Gojkovič 1996, fig. 20.17.
[54] Kunsthistorisches Museum Wien, inv. no. VI 727.
[55] Korošec 1980, 55-61.

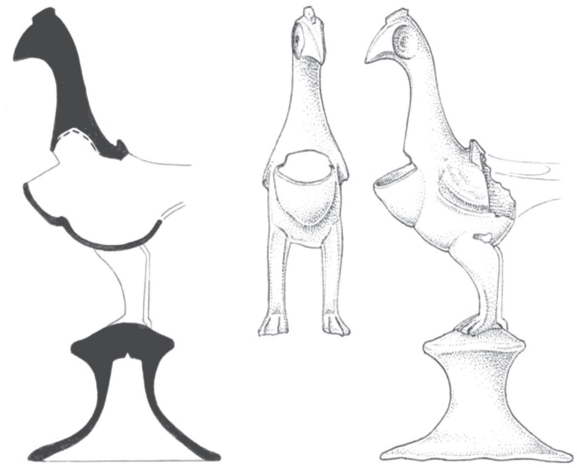

Figure 11. Bronze lamp from Ptuj (Knific and Sagadin 1991, fig. 74).

Figure 12. Bronze candlestick from Rogoznica near Ptuj (Knific and Sagadin 1991, fig. 1).

Figure 13. Bronze candlestick from Rogoznica near Ptuj (Knific and Sagadin 1991, fig. 2).

Figure 14. Candleholder from bronze candlestick, found at Črnomelj (Bitenc *et al.* 2001, no. 102).

The compact bronze candlesticks are composed of three parts: the lower part for fixing it on the postament, the central part in Christogram form with an incised inscription, and the upper part forming calyces as candleholders. The two objects are almost identical. They only differ in the form of their candleholders. In one case it is shaped as a quinque-foliolate calyx held in two hands, and in the second case as only one four-foliolate flower fixed on the top of the *Christogram*. The inscription on the candlestick with the flower-formed calyx says: *Votum Pusinio posuit*, and on the other: *Intimius, Maximilianus fratres Crispino posuerunt.*[56]

The interpretation of the style, especially the element of the candleholder in a calyx form and hands, reflect in style Coptic spiritual influences. The candlesticks are dated to the second half or end of the 4th century and are perhaps even indicative of the presence of a Coptic church in Poetovio.[57]

The Poetovio candlesticks are not isolated finds as testified by the discovery of a very similar candleholder, a fragment of bronze candlestick. The object was discovered during the extensive archeological excavations in the Late Roman area at the site of Črnomelj (Figure 14), a settlement in the southeast of modern Slovenia.[58]

Celeia had been since its very beginning a Norican town and one of the centers of Celtic indigenous aristocracy.[59] Its rich archaeological heritage comprises many oil lamp finds, and recent archeological work has brought insight into the local ceramic production.[60] Among the published finds of Celeian Late Roman oil lamps is a well known African import motif with the depiction of a menorah candlestick, type Atlante X A 1a (Figure 15).[61]

[56] Knific and Sagadin 1991, 48.
[57] Korošec 1980, 57.
[58] Mason 1998, 285-313; Bitenc *et al.* 2001, 37, no. 102.
[59] Lazar 2002, 71-101.
[60] Unpublished.
[61] Atlante I 1981, 200, fig. 160.3; Lazar 2001, fig. 76.

Figure 15. Oil lamp from Celeia (Lazar 2001, fig. 76).

Figure 16. Bronze *christogram* discovered in the hilltop settlement of Vipota near Celje (Lazar 2002, Fig. 36).

Figure 17. Bronze *christogram* discovered in the hilltop settlement of Vipota near Celje (Lazar 2002, fig. 36).

Many Late Roman finds were discovered on the neighboring hilltop settlements, where the Celeian population sheltered at the end of the 5th and in the 6th century.

Two bronze Christograms were discovered in the hilltop settlement of Vipota (Figures 16, 17).[62] Both objects have preserved hooks for fixing chains on what may have been hanging glass lamps. The *Christograms* are dated to the end of the 4th century and most probably represent a part of the church equipment from Celeian's Old Christian basilica.[63]

In close vicinity to Celeia another strong Late Antique hilltop settlement of Rifnik with its so called 'group of churches' was discovered.[64] In the fields below the hilltop settlement two exceptional silver oil lamps were found, each with a carinated bowl-body and two flat-topped nozzles with rounded tips. The lamps are partly demolished and slightly flattened (Figure 18). The first one has a raised edge surrounding the top of it and the nozzles with an open canal. The second one has a raised central part without canals and six small holes are placed on the passage towards the nozzle for fixing the hanging chain. A similar braze and bronze objects from the British Museum are dated between AD 200 and 400.[65] The lamps were unearthed during the ploughing of land and are usually considered as a part of treasure rather than as grave goods. It remains unknown whether or not the oil lamps formerly belonged to the sanctuary's furniture of the local deity *Aquonius* and later probably passed over to the church equipment of the Early Christian basilica, erected in the same place. The oil lamps could be also have been brought to the hilltop settlement of Rifnik from the near *municipium Celeia* and could have been buried or lost upon the destruction of the hilltop post.[66]

At Vranje near Sevnica, on another hilltop settlement of Late Antiquity, in the southast of modern Slovenia, a large residential area was excavated and another 'group of

[62] Bitenc *et al.* 2001, 18, nos. 30 and 31; Lazar 2002, fig. 36.
[63] Lazar 2002, 97. The town is linked with the Christian tradition by the legend of Saint Maximillian's martyrdom, which together with archaeological finds testifies to the presence of Christianity in Celeia at the end of the 3rd century. The town became the bishop's seat with the Early Christian basilica and baptistry (Lazar 2003, 96).
[64] Pirkmajer 1994, fig. 45.
[65] Bailey 1996, 64, fig. 74, Q 3779.
[66] Pirkmajer 1994, fig. 45.

Figure 18. Silver oil lamps from Šentjur near Celje (Pirkmajer 1994, Fig. 45).

churches' was unearthed.[67] No ceramic oil lamps were found, only some glass lamp fragments were excavated in the church presbytery.[68]

On Ajdna, the hilltop settlements above Jesenice (northwest of modern Slovenian territory) glass fragments were discovered in the church altar area and dated to the mid-6th century (Figure 19). From the same site Ajdna, an imitation of an African oil lamp was found within the building layers next to the church.[69] The lamp strongly resembles the example of African production found at Celeia.

Carnium

Ancient *Carnium*, the modern town Kranj in the north of Slovenia, became the most important lowland post after the destruction of the towns *Emona, Celeia* and *Poetovio* in the mid-5th century.[70] *Carnium* is known for its rich grave finds belonging to a necropolis of the Germanic and indigenous populations.[71] With regard to the material culture, the persistence of the settlement can be verified up to the first decades of the 7th century.

[67] Petru and Ulbert 1975; Knific 1979.
[68] Knific 1979, fig. 35-41.
[69] Bitenc *et al.* 2001, 44, fig. 120.
[70] Vidrih-Perko 2005, 77.
[71] Stare 1980.

Figure 19. Glass and oil lamp from the hilltop settlement of Ajdna (photo by T. Lauko).

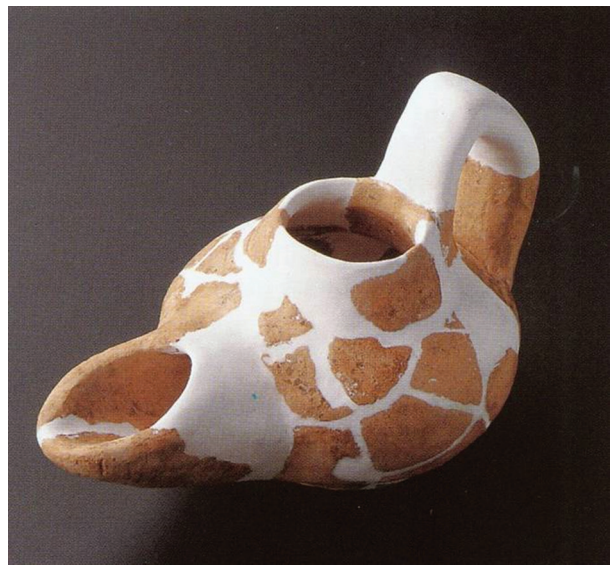

Figure 20. Oil lamps from the Late Antique necropolis at Kranj (Bitenc *et al.* 2001, 63, no. 190).

Two late ceramic oil lamps are known from Kranj –one having been found in grave 230[72] and fragments of another unearthed in settlement layers (Figure 20). In both contexts the oil lamps date to the 6th century. They belong to Late Antiquity wheel made oil lamp types without slip and with a surmounted handle. Similar oil lamps are known from the contexts of the 5th and the 6th century at the site El Ashmunein in Egypt and elsewhere.[73] In the Late Roman period ceramic oil lamps of local production prevailed. The African imports are, in contrast to the coastal zone and Ljubljana basin, not so frequent. A remarkable difference occurred during the late 5th and 6th century. In the coastal zone under the direct Byzantine rule African imports still remained numerous, while in the hinterland they appeared only sporadically.[74]

In rare cases ecclesiastical equipment was preserved, such as the two bronze candlesticks, discovered at Rogoznica and the Christogram from Vipota. The glass fragments of beakers from the Vranje and Ajdna church interiors testify to a frequent use

[72] Stare 1980, 67, fig. 72.5-7; Bitenc *et al.* 2001, 63, no. 190.
[73] Bailey 1998, 149, fig. 90.167.
[74] Vidrih-Perko 2005, 77.

of glass lamps. Due to the practice of recycling fragmented glass vessels, only a few of them have been preserved. In the Late Roman settlement of Poetovio glass production is strongly represented; and therefore glass lamps are to be identified in quantity among the glass fragments.[75] A glass workshop was discovered in Kranj in the settlement layers of the 6th century (Figure 21). Among numerous fragments of glass beakers must have been some lamp fragments, too.[76]

It can be also be stated that in the 5th and the 6th centuries, beside ceramic and glass oil lamps, wax and tallow candles were also generally in use.

Addendum

The study of Roman lamps always raises two fundamental questions; the first being why was the Early Imperial period associated with the massive production of mold-made oil lamps which were intensively exported to all parts of the Empire; and the second, why and when did this massive production cease.

The production of ceramic oil lamps was closely associated with olive growing and olive oil production, which occurred after the spread of the Phoenicians across the Mediterranean region. Greek and Hellenistic production of wheel-made oil lamps is remarkable and occurred at many Mediterranean sites. But the massive, almost industrial production of oil lamps was first noticed in the Early Imperial Roman period. That extensive production was linked to mold-made types, which had originated from the Hellenistic Asia Minor workshops and later continued in the Roman centers. The increasing need for oil lamps was fundamentally linked to the immense production of olive oil, which took place in Italy only after the Second Punic War. With the expansion of villas and slave labor the production of wine and oil exploded.[77] Through the foundation of provinces and towns, which represented focuses of Romanization, extensive new markets appeared. The need for food products, above all wine, oil, and grains, increased and so did the need for ceramics and lamps. The use of lamps culminated with the appearance of relief-decorated types of volute lamps and Firmalampen. But the massive production of oil lamps obviously did not result only from the market needs. Oil amphora studies recognized oil exportation into Northern provinces as an important instrument of Romanization, which affected trade, and the systematic army provisioning of all supplies for provincial and municipal bureaucracy. Not only the Latin language, legislation, religion and clothing, but also the way of living and dieting reflected the *romanitas* of the political and military elite, in contrast to the peregrine, indigenous and other lawless populations. In the Early Imperial period also urbane organizations and arts represented the instruments of power, which spread into all parts of the society. It was reflected even on such a bizarre field as in the decoration of vessels.

Therefore the influences of the political agenda –the images of power– can be found also in the decoration of oil lamps. On the disks of volute oil lamps there was enough space for relief decoration, which symbolically depicted heroes from Mediterranean myths and their deeds, Greco-Roman deities with their attributes, or merely to everyone intelligible allegories with the symbols of fortune, fertility and abundance. The image of a long-legged ibis –not only on the frescos in imperial palaces or in urban and suburban villas in southern Italy, but also in the beam of light on a tiny oil lamp reminds one of Augustan victories in Egypt; and Fortuna with a horn of abundance in her hands announces *Pax Romana* welfare. Perhaps the round acorns' caps were mighty enough to recall the image of fertile oak forests of *Cisalpina* into the consciousness of the Italic population even in the farther provinces. Nevertheless, the tiny lamp with its relief decoration and simple Latin inscription was powerful enough to distinguish between the Italic and the indigenous population –between the *civis Romanus* with the lamp filled with olive oil, and the other population who lit wood splinters and used stinking tallow candles. The former one was literate or at least understood Latin, while the latter one was illiterate and spoke a Barbarian language. *Cives Romani* illuminated their dwellings by oil lamps, with respect to inscriptions and relief decoration, which might have even unconsciously influenced them. The language of splinters and tallow candles remained the expression of poverty and the peregrines' deprivation of rights. Oil lamps can be acknowledged as objects of identification, testified by the producers' careful attention to the decoration and inscriptions. The latter had been prominent on oil lamps neither before nor later, when in the 60s of the 1st century *Firmalampen* appeared as the technically most advanced type of ceramic lamps,[78] and disk decoration gradually lost its meaning. The lamp appeared with the producers' names, confirming their quality.

Figure 21. Fragments of glass beakers and lamps from a glass workshop discovered in Kranj (photo by T. Lauko).

[75] Glass beakers are frequently found in Poetovian graves of the late 4th and the first half of the 5th century (Vomer-Gojkovič 1996. Vomer-Gojkovič 1996a).
[76] Sagadin 2000, 13-22; Vidrih-Perko 2005, 77, figs 16-17.
[77] Carandini 1999, 775-804.
[78] Wunderlich 2006, 40-45.

It could be stated with no exaggeration that the symbolic meaning of the object had surmounted a complex, generally known semiotic message, embodied in the object itself. The message brought to light only the most important data and some rich symbolic elements of art, while the contexts and archetypical support became unnecessary and become neglected. A technically perfect object itself became the essence of the semiotic identity message. Its genuineness was confirmed by the name of its producer.

It is still questionable why, despite numerous provincial workshops in the first two centuries AD, the majority of lamps discovered in provinces were usually of Italic production. Among Early Roman oil lamps volute forms prevailed, mostly of types Loeschcke 1, 4 and 8, less often 2, 3, or 5. There followed *Firmalampen* types Loschcke 9 and 10. In spite of massive imports, all these forms were produced also in local workshops.

From the Flavian period on, oil lamps were generally spread to almost all rural areas of the provinces. They indicated an important part of the everyday private and public life, as they were found in all living places, in temples, in baths, etc. Oil lamps represented the objects most frequently found in graves, certainly in the entire 1st and 2nd centuries. In the 3rd century their number respectively diminished and the presence of imports remarkably diminished.

It can be presumed that the general crisis of the Marcomanic wars influenced the economic situation, although Italic imports were quite noticeable also in the 2nd half of the 2nd century. And as is well known, the crisis of the Italic economy was essentially already under way in the 1st century.

Also the political and economic crisis, followed by temporary moving of populations onto hilltop shelters in the 3rd quarter of the 3rd century, was not synchronous with the disappearance of the oil lamp and could not be the main reason for general import diminution. That can be recognized already in the beginning of the 3rd century.

If agreeing with the statement that economical events alone did not provoke that situation, we should think of synchronous political events. Taking into account that oil lamps were a Roman state product for supplying Italic political, military and administrative elite, which in the Early Imperial period lived in provinces, in order to reinforce its *romanitas*, then we should have in view the Antonine Edict from the year 212. The political event legally equaled all freeborn inhabitants in the Roman Empire, therefore the needs for identity instrumentalization disappeared. Oil lamps remained in everyday life during the next centuries. The immediate change happened in the changes in massive production and exportation from Italic centers, which completely broke down. Characteristic types with relief decoration and inscriptions vanished. From that time on output from the provincial local workshops prevailed and wheel-made lamps reappeared together with glass lamps. All over the expanded use of olive oil for lighting had been limited. Undoubtedly also other oils, i.e., linseed, rapeseed or hemp oil were employed. Animal fats were also brought into use, as well as tallow and wax, which has been proven by individual finds of candlesticks.

Late Roman oil lamp mass production was mostly limited to African and rare Eastern products. Compared to Early Roman types, the lamps of African production were not found so frequently. Their distribution was scattered along the Mediterranean coastal area and was limited to a few individual imports in the hinterland.

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