Interactive Lapidarium – Opportunities for Research and Training

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Abstract. The presentation of cultural heritage is a difficult, comprehensive and constantly updated topic. Researchers often focus more on the different techniques to digitize artifacts of cultural heritage. This work focuses on the overall shape and structure of a multimedia application, called "Interactive Lapidarium", whose specificity is determined by the topic – the ancient inscriptions. Below is presented the structure and content-based information available for specific ancient inscriptions in the lands of modern Bulgaria. The main concept of the multimedia application is to be used in teaching programs related to cultural heritage and history of antiquity in universities. The aim of designers is that it can be modified easy for use in museums also. The Interactive Lapidarium application is in the process of being developed. At this point, several objects have been added just to illustrate the full functionality that future users will have.

Keywords: Ancient inscriptions · Multimedia content
Multimedia application · Interactive map · E-learning · Cultural heritage

1 Introduction

The ancient inscriptions are probably the most important source for everyday life, administration, society and religion of the ancient societies. Especially valuable are the epigraphic monuments of the European "classical" and postclassical past, i.e. the history of the Roman Empire and its provinces. The multicultural Roman society stretched from what is now Portugal to the banks of Euphrates has left more than 300 000 inscriptions [1] that cover multitude of aspects of its life – from the minutiae of everyday life to the laws and records of the Emperors themselves. This epigraphic evidence is exploited mainly by the scholars and meanwhile developed itself into a separate discourse within the broader scholarly field of Roman history and archaeology.

Sadly however, the ancient inscriptions belong to the most underestimated artifacts of the cultural heritage. In this respect, they can look back to a long history of damaging and plundering beginning from the Late Antiquity or early mediaeval times, when they were often replaced from their original sites and were reused as a building material for later constructions, thus losing part of their scientific and cultural significance. Nowadays only a relative smaller number of the epigraphic monuments from the Antiquity could be found by excavations in their original archaeological context.

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In present days, the inscriptions were given a central position in the museums or special attention by the teaching only in exceptional cases. The main reasons for this seem to be two: in the first place, the lack of knowledge of ancient languages by most of the receptors of the cultural product is a considerable obstacle for the popularization of monuments of this kind. Secondly, the ancient Greek and Roman inscriptions are great in numbers in the lands of modern Bulgaria and thus and their multitude and variety makes any classification approach, not to mention the way in which they should be preserved and exposed in the museums, a hard task.

Consequently, the inscriptions not only lack the attractiveness of some other archaeological artifacts, but they are hard to manage with respect to teaching, but also in matters of organizing and preserving cultural heritage. These circumstances determine the need for a vivid, content-based information of the inscriptions, who will achieve the removal of the barriers between the common user or student and the epigraphic material. The main goal of the project is to achieve a transmission of sufficient information about a variety of inscription types, their context and historical and archaeological background, while at the same time it manages to keep a complex historical and archaeological information understandable enough for a broader audience by providing pictures, comments and translations of the inscriptions and including.

The main method that was used by the classical science of 19 and 20th century for encompassing epigraphic information was the publishing of *corpora*, which followed the pattern of the famous *Corpus inscriptionum latinarum*, first published in Berlin in 1862. The following 17 volumes of this collection, compiled according to the geographical distribution, include the known Latin inscriptions from the times of the Roman Empire. In the beginning of this endeavour, correspondents from different countries informed the editorial board about the newly found inscriptions. This approach is also used by the most famous bulletin for epigraphy – *Annee epigraphique.* Soon, the different states that share territories of the former Roman Empire began to publish *corpora* for their own epigraphical material. In Bulgaria this task was carried out by the distinguished scholars Georgi Mihailov (for the Greek inscriptions, 1956–1995) and Boris Gerov (for the Latin ones), who, unfortunately could only publish the latin monuments between the Rivers Oescus and Iatrus (1989) in Northern Bulgaria.

Such collections, although still of high scientific value, are often inaccessible for the common scholar and sometimes have some inaccuracies in the readings. In lot of cases the photos are not good enough and hamper the correct juxtaposition with the published text of the inscription. Since the epigraphic corpora concentrate on the inscribed text, the archaeological context is sometimes neglected, or just briefly mentioned. Considerable weakness of this approach is the steadily growing number of newly found and unpublished inscriptions the paper body could not catch on.

Thus, the digitalization, the quick access to the collected epigraphic information about the ancient society is a goal that has been pursued by other European countries and research centres. Today there is a variety of online resources that offer search possibilities in terms of geographical distribution or with key words from the inscription content (EpiDoc content). Such an example is http://www.manfredclauss.de/. Many of these offer possibilities for tracing the geographical distribution of the monuments according to their grouping in a certain region.

Our project offers a similar decision by the main focus being on the artifacts in the museums. Although the material in the now existing databases is encompassing also some monuments that are being preserved in the museums, there is no attempt for digitalization and categorization of the content of specific museums – this will contribute not only to the introduction of the inscriptions to the broader scientific audience, but also to the socialization of the cultural-historical heritage in terms of visualization of hardly accessible (and hence available only to fewer people) monuments, which is the main concept of the project.

In broader terms, the resources that now exist are offering mostly an access to the material that will eventually serve the scientist in their scholarly attempts. In this project the digitalized inscriptions will be accompanied by a scientific commentary (analysis), which aims at a contribution to several problems from the field of ancient roman provincial history and archaeology. A very specific and complicated aspect of the modern epigraphic discourse – and probably the most important – is the understanding of the still unsolved puzzle of ethnical and migrational patterns in the provinces of the Roman Empire, including the processes of assimilation and Romanization.

The epigraphic monuments are a material of high value for the investigation of a large spectrum of problems in connection with the population, demography, ethnical and social identities in the Roman Empire. As long as the most epigraphic databases are integrating inscriptions from the whole Empire, their criteria hardly match to the specifics of every single province. This make the need for specific database, which concentrates on the multicultural society of Moesia and Thracia especially visible, for the population of this provinces consists of Romans and Romanised peregrines, Thracians, Greeks, who are often mutually connected through social relations or marriages.

The approaches that we propose place the research endeavour of the project in the vanguard of the ancient and Roman provincial studies, where the topics as the social networking in the Roman and Late Roman world broadens gradually. In more specific terms, the attempted categorization of inscriptions will be used for evaluation of the so called “epigraphic habit” – a definition that is since long created to point at the social manifestation of Roman or pre-Roman identities and developed itself into starting point for most of the epigraphic researches that concentrate on the patterns of veneration through inscriptions.

Thus, using the modern scientific approach, the project will create a database that could be used for easy access to the abundant epigraphic material that encompasses the various social layers and ethnic groups represented by the “epigraphic habit”, and could offer possibilities for summarizing it. Further, this collection will enable conclusions about the density of the Romanized population represented on the inscriptions and about its grouping and networking in social entities and influential groups, both in provincial and imperial context.

The project is a considerable attempt for a new approach to the presentation and research of a specific type of monuments, integral and important part of the historical heritage, which haven’t received until now the deserved attention as cultural and historical artefacts. It will bring the research in the field of ancient society and culture on a new level. The Project will be a contribution to the growth of the interest in these monuments and their enhanced scientific research and exposure in the museums. The

results will reach a maximal number of scientists, students and lovers of the antiquities due to the fact that the database will be bilingual – in Bulgarian and English languages.

2 Cultural Heritage Education – The Role of ICT

Cultural heritage education in most European countries was based for a long time on traditional teaching methods such as face-to-face classroom lessons using mainly printed materials (texts and images), and very seldom watching videos [2]. Strangely enough, such innovativeness has not yet reflected openness to the introduction of ICT (Information and Communication Technology) in teaching and learning methods, which has, on the contrary, characterized other disciplines in the last few years. As a matter of fact, no specific reference was directly made in the recommendation, as far as the use of ICT to support and enhance Cultural Heritage Education [3]. Consequently, nowadays ICT, while being increasingly employed in the field of cultural heritage to produce large archives of materials [4], to support scientific research and to foster the maintenance/preservation of cultural heritage artifacts [5], has not yet affected the approaches to teaching and learning in cultural heritage education enough.

Immersive technologies such as virtual environments and augmented reality have a clear potential to support the experiencing of cultural heritage by the large public, complementing the current tools and practices based on tangible goods such as museums, exhibitions, books and visual content. Serious games – videogames designed for educational objectives – and multimedia applications appear as a new tools to learn cultural content in an engaging way [6].

3 Examples

The further lines intend to demonstrate the values of the *interactive lapidarium* for the research and visualizing of specific topics from the history, culture and religion of the ancient Thracian and Roman society in the lands of present-day Bulgaria. We have chosen four texts that exemplify the role of the inscriptions as testimonies of the multi-national society, which emerged after the Roman conquest of these lands. For a common feature in these testimonies we have chosen the name *Pyr(u)merulas* that belonged to a native Thracian deity, which was venerated also under the Roman rule – both by Thracian soldiers that had been romanized in the Roman army and Roman officials.

The first inscription (Fig. 1) is engraved on vessels from a treasure that consists of a cylindrical vessel and five dippers with a total weight of 1.650 kg; chemical analyses show that it was made of the highest grade silver [7]. It was found in a place named Zhidovets, located on the southern slope of a ridge to the north of the Golyama Brestnitsa village, which had been populated already in the pre-Roman period and in all probability it flourished during the first three centuries of the first millennium, which is also suggested by the coin hoards found in the region [8]. The treasure was found accidentally during trenching of a vineyard (1958), hence the archaeological context is unclear, with the exception of the fact that the five dippers had been placed inside the bowl and they were buried in the ground in that way [7, 9].

Fig. 1. Inscription engraved on vessel from a treasure found in a place named Zhidovets, located on the southern slope of a ridge to the north of the Golyama Brestnitsa village. Photo: Nikolai Genov

The making of the vessels is dated to the end of the 1st or the beginning of the 2nd century, and its burying is associated with the barbarian incursions and more specifically with the late 3rd century. This dating is also corroborated by the written form of the *nomen gentile* of the dedicator – *Flavius*, perceived more as a *praenomen* and a sign for military rank or affiliation and thus mostly abbreviated as *Fl.* in the inscriptions at the close of the 3rd century AD and later.

The inscription has been commented many times. The prevalent opinion on the meaning of the epithet *Pyrumerulas* is "big/brilliant fire" [9–12], and the name of the beneficiary *Flavius Mestrianos* – as Latinised Thracian name [13, 14]. A votive tablet of the Thracian Hero with the same epithet as the one in the inscriptions on the bowl and on the handle of one of the dippers originates from the same region where the treasure was found [13].

The treasure was found accidentally during trenching of a vineyard (1958), hence the archaeological context is unclear, with the exception of the fact that the five dippers had been placed inside the bowl and they were buried in the ground in that way [7]. There is evidence of such arranging of vessels also from the people who had found the Panagyurishte gold treasure, who reported that the rhytons and the amphora had been placed in the phiale [11]. It is not possible for the descriptions to have been influenced by one another and this suggests seeking symbolism in the arranging of the vessels, all the more that the treasures comply with the theme of the ritual deposition of valuable

objects, which has been repeatedly discussed in the specialised literature. The act of burying treasures in the ground is interpreted as a gift to the Great Goddess-Mother in connection with inauguration or with the aim of acquiring or confirming autochthonous status as marking of territories and as an act of symbolic hierogamous relation with the Goddess-Earth [9, 11]. However, the set from Golyama Brestnitsa is a gift for the ruler-hero *Purumerulas* – most probably an equine deity with a fiery-solar nature (i.e., connected with light) and the arranging of the vessels before they were buried tends to suggest a ritual act recreating a hierogamous relation between the fiery equine deity and the Great Goddess-Earth. From the time of the first publication of the set it was assumed to have been used for drinking wine during some rite. Sets made of precious metals and bronze are generally associated in specialised literature with drinking wine or libations with it, ignoring the other ritual liquids: water, milk, honey and blood. However, the set found near the Golyama Brestnitsa village suggests another hypothesis as well, because it was found near a spring the water from which flows into the Panega River (on the sanctuary near Glava Zlatna Panega see [15]). There is a very high probability that the spring was worshipped as sacred in the search for the water–fire opposition (on account of the fiery nature of the worshipped deity). Purifying rites were mandatory, especially those involving washing with and drinking of the sacred liquid prior to entering the sacred space and performing sacred acts.

Bearing in mind that inscriptions with epithet *Pyrmerulas, Pyrmerylas, Pirmerulas, Pyrymerylas* and *Purumerulas* occurred to the south of the Balkan Range [16] and along the Struma River, it may be assumed that the donor of the treasure with dedication to the horseman-deity (and hunter) with fiery-solar characteristics originated from there, and also that the epithet was transferred to the north by Thracians who settled in the region after their military service (see also [9]). Most probably Mestrianos was a son from a typical soldier's family of Romanized Thracians (see below).

We have the rare chance to find the name of the supposed father of *Flavius Mestrianos* on an inscription of completely different kind. It is found in the very same place, called "Zhidovec" by the village of Malka Brestnica (now Brestnica), Lovech Province, Northern Bulgaria, in other words in the very same region as the treasure. Most probably the votive plate was once dedicated in a sanctuary of the Heros. The monument is partially preserved: a lower part of a marble anaglyptic image of the Thracian Rider. The inscription on it reveals the name *Flavius Mestrius Iustus*. *Flavius Mestrianos* (see above) obviously received his father's *nomen* (the latinized Thracian Name *Mestrius*) transformed by the suffix – *ianus* to a derivative *cognomen* (*Mestrianus*) in order to underline his descent from a father's kin (more on this naming in [17]).

Both pieces of evidence reveal a military family of Thracians that had kept the religion of their ancestors. The father *Flavius Mestrius* was probably recruited for *cohors II Lucensium* from the lands where its camp *Germania* (now Sapareva banja) was situated at the first decades of 3rd century. As a son of a soldier, Mestrianos was recruited for more prestigious military unit – one of the Moesian legions (most probably *legio I Italica*), where he eventually reached the high-rank of a *beneficiarius*.

Apart from the lands of the province Lower Moesia (now North Bulgaria), we posses other testimonies for the cult of *Purmerulas*: one of them [18] is particularly interesting. It is found in the church of the village Kovacevo, Sandanski region, SW Bulgaria. The dedicator, or an ancestor of him, is mentioned in an inscription from

Rome [19]. *Cestius* was most probably a Roman official, with still unknown function in the Thracian "fasti". Nevertheless, he pays homage to the local Deity of *Pyrmerulas*, which is mentioned not as a Heros or Master (see above), but as a Great God. According to the inscription, the Roman official *L. Cestius* was inspired – by a vision or a by a dream - by *Pyrmerulas* to made a dedication to him, which shows that the deity was without doubt very popular among the local Thracian population and *Cestius* felt obliged to show his religious piety by dedicating an altar to him.

4 Possibilities

As it was shown, the interactive database provides possibility to trace the geographical distribution of monuments that inform about a specific problem of the past and about a specific type of cultural relict. The interactive map creates possibilities for tracking (through hyperlinks) the inscriptions with a similar content and leads the user through different archaeological and cultural context of the inscriptions.

In the interactive application, the approach is based on geo-positioning the ancient inscriptions. The main menu is in the form of a map and each location is a button (hyperlink), leading to an internal page dedicated to proper inscription (Fig. 2). Within the home page, links will also include information for authors, a common bibliography, and a search engine.

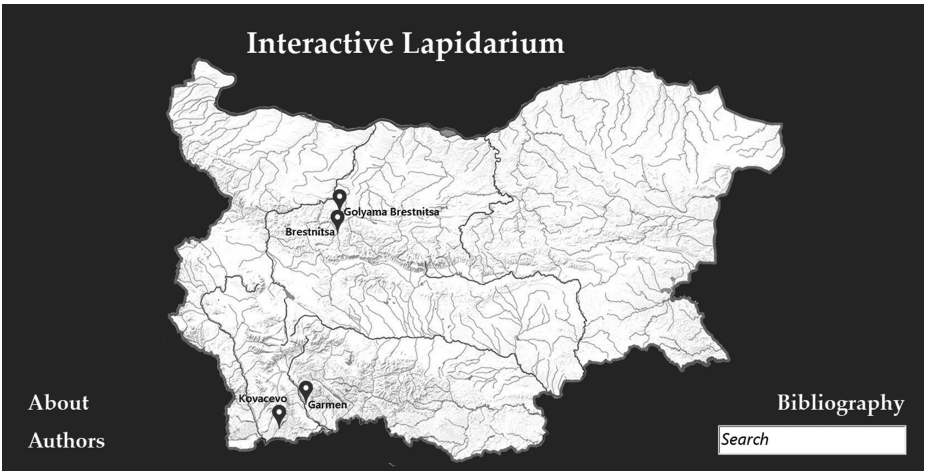

Fig. 2. Home screen of multimedia application

At an inner level the interface includes description of the object, context, bibliography, text of inscription, translation, date, commentary, hyperlink to the site of the institution where the artefact is stored, 3D model of object and pictures (Fig. 3). To develop the product are used programming languages ActionScript and Lua. The product will be distributed among the students through the learning management

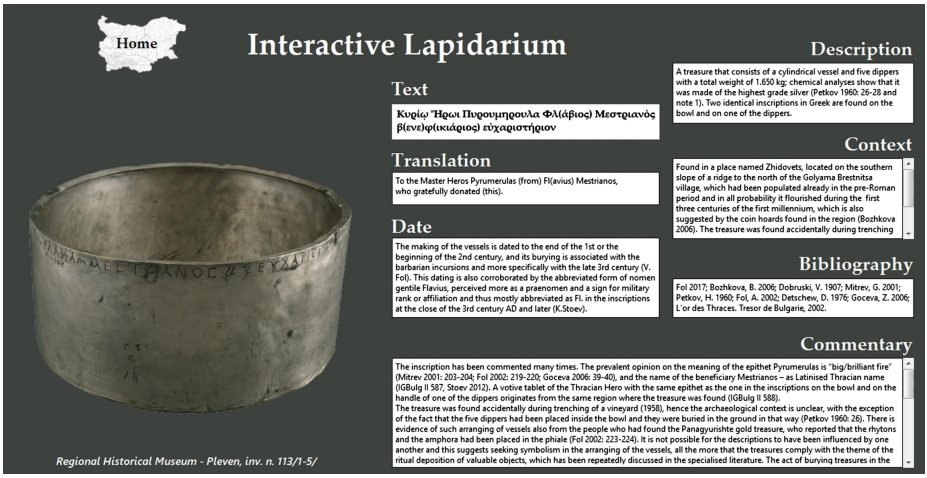

Fig. 3. Inner level screen of multimedia application

systems (e.g. Moodle, ILIAS etc.) as a separate exe-file for download (now the application is only available for PC users).

5 Research Methodology and Techniques

The interdisciplinary approach of the project determines the use of various research techniques. The main scientific method of the study of the epigraphic material is the text analysis of the monuments and the comparative epigraphic analysis of their contents. It takes place in several stages. The first one aims at familiarising with the actual preserved text of the monument, eventually correcting previous erroneous readings or omissions. Text content acquires a broader historical context by comparison with other inscriptions that mention similar names, divinities, and other realia. After the end of this stage - clarification of its written and correct normalization, a digital version with a photo of the monument and normalized text would be included in the database. If the region's inscriptions described by earlier researchers are now lost, instead of a photo a drawing or schematic presentation of the inscription text will be applied. Normalization serves to convert the raw epigraphic text often found on the stone in abbreviations in the Latin monuments (sigla), sometimes in Greek as well as without other necessary clarifications, punctuation marks in the ancient text. For Latin monuments, the Leidner Klammersystem conventions system will be used that is common in epigraphic publications, and which during the normalization phase correctly translates the characteristics of the original text.

In the next step, a content-based text analysis of the monuments is used, which analyzes the historical context and significance of the monuments. The methods of prosopography and historical anthroponomy apply to the personal names and composition of the population known owing to the monuments: grouping the population by monuments according to different criteria and examining the relative influence they

have in society and on the historical process through the dissemination data of the names and families in the various areas of the Empire. This methodology is classical for studies on the provincial history of the Roman Empire and contributes to the understanding of demographic relations, processes of Romanisation and acculturation, migration, and socio-political hierarchy in the regions the monuments originate from.

In addition, methods from the field of archaeology, cultural studies, and art studies will be used to determine the cultural context of the finds, exploration of monuments as objects of art, conclusions about the spiritual life and the culture of the mentioned population. Their use is particularly important in defining the different workshops in which the inscriptions are made. This would allow to determine the economic parameters of the spread of the epigraphic habit. For the definition of the atelier, as well as the dating of the monuments, the palaeographic method, which uses the shape of the letters for the dating of the monuments, is of particular importance.

The development of the interactive application will follow the method of design thinking with its six-step process.

Design thinking can be described as a discipline that uses the designer's sensibility and methods to match people's needs with what is technologically feasible and what a viable business strategy can convert into customer value and market opportunity. (Tim Brown, CEO of IDEO, HBR, 2009).

The design thinking process consists of the following several stages: Empathize, Define, Ideate, Prototype and Test. Within these steps, problems can be framed, the right questions can be asked, more ideas can be created, and the best answers can be chosen. The steps aren't linear; they can occur simultaneously and can be repeated.

On the other hand, the interactive application is an instrument to respond to particular human and research needs. Its functionalities in response to these needs should be very well defined and planned, prototypes should be created at fast-paced iterations in order to test every step and functionality until a fully functional final product is created within the limited time-frame of the respective Working Package. Added value to the design thinking process is the multidisciplinarity of the scientific team, as this would allow to analyse the application's functionalities and content from all necessary points of view – both scientific, IT, as well as with regard to the needs of the direct and indirect target groups.

6 Conclusions

The project has the ambition to encompass the inscriptions from the times of the Roman rule in modern day Bulgaria. The next stages of the work could incorporate also evidence from broader regions of the South-Eastern Europe, e.g. the region of Ancient Thrace, which is now divided between Bulgaria, Greece and Turkey, thus showing the multicultural past of the region in the ancient times. The idea will result in a *full-scale interactive map*, which should be usable not only by scholars and students, but also by the institutions responsible for the cultural heritage, tourists and everyone that needs quick and easy virtual access for scientific or learning purposes, or for the goals of the management of the cultural heritage.

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