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RESEARCH PROJECTS

CROSSING THE BOUNDARIES. REMODELING CULTURAL IDENTITIES AT THE END OF ANTIQUITY IN CENTRAL AND EASTERN EUROPE. A CASE STUDY.

PN-II-ID-PCE-2011-3-0158

Contract nr. 329/31.10.2011

Project Coordinator: Dr. Coriolan H. Opreanu (IAHA Cluj-Napoca)

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The area focused by our research is situated today across the frontiers of several Central and Eastern European countries (Slovakia, Hungary, Poland, Ukraine and Romania). From the geographically point of view, this unit is revolving around the Upper Tisa River basin, having a diverse relief, from the plain from North-West Romania and Hungary, to the mountainous region of Northern Carpathians and the Beskids Mountains from Southern Poland, Ukraine and Eastern Slovakia. The actual political borders did not represent landmarks for the reconstitution of the historical processes which have taken place in Antiquity, thus being necessary a unified approach of this area.

The first knowledge referring to Antiquity have been gathered since the 18th–19th centuries (when archaeology was not yet definitely constituted as science) and consisted mainly in coins, coin hoards and object hoards. Only after the Second World War were accumulated substantial data concerning the habitat of the studied area[1]. Among the first important finds can be counted the settlement and the Dacian-Germanic cemetery at Zemplin (Slovakia)[2] and along the sixties a similar site was researched at Medieşul Aurit (Romania)[3]. The next stage was marked by the elaboration of the archaeological and numismatic repertories meant to evaluate the finds known at that moment, an eloquent example for the mentioned region being the work of Al. Săşianu on monetary discoveries[4]. The fourth stage is characterized by distinctive quantitative and qualitative accumulation. The initiation of systematic archaeological excavations, mainly in the settlements, determined the possibility of analysis a substantial quantity of archaeological artefacts, being used later to establish new regional chronological frame and for illustrating cultural diversity of the whole area, as well[5].

[1] S. Dumitraşcu, Dacia apuseană (teritoriul dacilor liberi din vestul şi nord-vestul României în vremea Daciei romane), Oradea, 1993.

[2] V. Budinsky-Kricka, M. Lamiova-Schmiedlova, A late 1st century BC–2nd century AD cemetery at Zemplin, in Slovenska Arheologia, 28, 1, 1990, p. 246–344.

[3] S. Dumitraşcu, T. Bader, Aşezarea dacilor liberi de la Medieşul Aurit, Oradea, 1967.

[4] Al. Săşianu, Moneda antică în vestul şi nord-vestul României, Oradea, 1980.

[5] I. Stanciu, Contribuţii la cunoaşterea epocii romane în bazinul mijlociu şi inferior al râului Someş, in Ephemeris Napocensis, 5, 1995, p. 139–226; V. G. Kotigorosko, Ţinuturile Tisei superioare în veacurile III î.e.n. –

The cultural aspect of this area from the end of the Iron Age consisted in a contact zone between the Late Celtic and Germanic civilizations from the North of the Northern Carpathians on one side and the Dacian civilization from the Upper Tisa River and Upper Dniester River region, on the other. After the vanishing of the Dacian kingdom and the setting up of the Roman province of Dacia important changes in the landscape of the area have taken place. The known data outline the status of a region which has assimilated and later has diffused the elements of the Roman civilization to the North and North-West in the Barbaricum land from the Upper Tisa River and even till to the Upper Vistula River. The numerous North-South oriented passes over the Northern Carpathians advantaged the contacts from the Roman frontier zone northward. The researches from other Western European regions, where the Roman frontier crossed the old cultural unit of the Iron Age, have identified a strip of land across the Roman frontier of around 200 km width, called "contact zone"[6]. This zone generated a direct interaction space whose cultural mark is given by the Roman provincial background and in consequence can be rightly defined as a periphery of the Roman world. Unlike other regions from Barbaricum, here the presence of the barbarian elites is poor outlined[7].

After the withdrawal of the Roman administration from Dacia, the economic and social aspects of the region have significantly changed. From this time, for approximately a century, essential cultural changes will occur on a huge area, new population groups moved in historical rhythm from Northern Europe. Around AD 400 in the whole Carpathian Basin finds a mixture of diverse cultural elements, which suggests an important dislocation of the old social framework[8].

The confusion of the old society was amplified by the impact caused by the first notable movement of the nomads from the steppes of Asia. After the arrival in Central Europe, the Huns created a nomadic empire controlling huge areas through their Eastern Germanic subject populations[9].

After the disintegration of the Hunnic power, the region under research will be open to dispute among several Eastern Germanic populations. To the end of the 5th century AD the Gepids will take political and military control.

The interpretation of the ethnical phenomena needs explicit positions regarding the nature of the ethnical identity and mobility in this context, the using of the social sciences being more useful than that of history. The history and archaeology cannot be totally replaced when one wants to have access to a certain human group identified in the literary sources by ethnonyms[10]. The understanding of the ethnical identity as representing the cultural identity

IV e.n. (perioadele Latène şi romană), Bucureşti, 1995; M. Oledzki, The Przeworsk culture in the Upper Tisza Basin. An outline of problems, in Etnographisch-Archäologische Zeitschrift, 42, 2003, p. 195–210; I. Stanciu, Etapa finală a epocii romane imperiale şi începutul epocii migraţiilor în *barbaricum*-ul din nord-vestul României, in Ephemeris Napocensis, 18, 2008, 147–169; R. Gindele, Die Entwicklung der kaiserzeitlichen Siedlungen in Barbaricum im nordwestlichen Gebiet Rumäniens, Satu Mare, 2010.

6 L. Hedeager, A quantitative analysis of Roman imports in Europe north of the *limes* (0–400 AD) and the question of Roman-Germanic exchange, in K. Kristiansen, C. Paludan Müller (Eds.), New direction in Scandinavian archaeology, Copenhague, 1978, p. 191–217.

7 C. H. Opreanu, Dacia romană şi *barbaricum*, Timişoara, 1998, p. 129–132.

8 J. Tejral, Fremde Einflüsse und kulturelle Veränderungen Nördlich der mittleren Donau zu Beginn der Völkerwanderungszeit, in Peregrinatio Gothica(= Archaeologia Baltica 7), 1986, p. 175–338; J. Tejral, The problem of the primary acculturation at the beginning of the Migration Period, in Die Spätrömische Kaiserzeit und die Frühe Völkerwanderungszeit in Mittel– und Österuropa, Lodz, 2000, p. 5–31.

9 I. Bona, Das Hunnenreich, Budapest-Stuttgart, 1991; A. Măgureanu, B. Ciupercă, Huns and other peoples – archaeological evidence in present day Romania, in Hunen zwischen Asia und Europa, Langenwiesbach, 2008, p. 119–130.

10 W. Pohl, H. Reimitz (Eds.), Strategies of Distinction. The Constitution of Ethnic Communities, 300–800. The Transformation of the Roman World 2, Leiden-Boston-Koln, 1998; K. A. Cerulo, Identitiy construction:

of a population expressed in terms of distinctive features, made historians and archaeologists to base their researches on ethnical entities from the past on the study of cultural continuities and discontinuities. The theoretical background which has been adopted during the last years by many researchers of the migration period means to nuance some concepts which establish a direct link and put the equal sign between the archaeological culture (understood as the overall of some specific artefacts, i. e. material culture) and some populations, or ethnical groups[11].

This traditionalist manner of approaching the subject of ethnical identity was performed to extreme by the German researcher G. Kossinna, who was influenced by the German nationalism ideology from the beginning of the 20th century; he advanced the theory that among the archaeological cultures and the populations mentioned in the written sources must be established a direct connection. This paradigm is still active in Central and Eastern European archaeology[12].

A possible solution regarding the understanding and nuancing the social mechanisms (previously analyzed in terms of the above mentioned theories) which model the traditional communities living in Antiquity outside the Roman world should be searched in the field of the social sciences, respective in cultural anthropology and in sociology, two disciplines which stress the contextualization as an instrument for actions and for interpretation, as well[13].

In the structure of the project are correlated a series of general theoretical concepts which will be approach in the context of the archaeological and historical realities of the considered area. For the Early Roman Imperial period (stages B1–C1a), Northern Europe was divided along the big rivers, Rhine and Danube, from the territories transformed in Roman provinces. Thus, two distinctive areas of civilization were outlined: Orbis Romanus (Roman world) and Barbaricum (barbarian world). These two were separated conventionally by the Roman frontier (limes). The limes, besides its role to delimit the territory of the Roman Empire, became a real contact zone, the juridical separation changing into economic interaction[14]. Individualization of different barbarian populations and their relative geographical position can be found at the ancient historians and geographers. The precise location of the territories inhabited by these tribes is more difficult due to the social and political organization stage of the barbarian world. Generally, the "tribal society", which presumes the existence of the kinships, had a transient cohesion, the tribes, or the confederations fluctuating often, so their territories had not very firm limits, a situation which produced at the communities level an ethnical mobility phenomenon[15]. For these reasons archaeology operates with the concept of material culture for these territories, adopted from the methodology of prehistory. Although chronological point of view this period belongs to the historical stage, there are still used conventional denominations as "Przeworsk culture", "Wielbark culture", "Sântana de Mureş-Černjachov culture", all identified and located

New issues, New directions, in Annual Review of Sociology, 23, 1997, p. 385–409.

[11] S. Jones, The Archaeology of Ethnicity. Constructing identities in the past and present, London–New York, 1997; S. Brather, Ethnische Interpretationen in der frühgeschichtlichen Archäologie. Geschichte, Grundlagen und Alternativen, Berlin–New York, 2004; Gh. Al. Niculescu, Populaţia romanică dintre Dunăre şi Alpi în antichitatea târzie, Bucureşti, 2009.

[12] G. Kossinna, Die Herkunft der Germanen. Zur Methode der Siedlungsarchäologie, Mannus-Bibl. 6, Würzburg, 1911.

[13] L. R. Binford, Archaeology as Anthropology, in American Antiquity, 28, 2, 1962, p. 217–225; C. Geertz, The interpretation of cultures, New York, 1973; M. Sökefeld, Debating Self, Identity and Culture in Anthropology, in Current Anthropology, 40, 4, 1999, p. 417–447; R. Chapman, Archaeologies of Complexity, London-New York, 2003; S. J. Shennan (Ed.), Archaeological Approaches to Cultural Identity, London-New York, 1994; J. M. Skibo, M. B. Schiffer, People and Things. A Behavioural Approach to Material Culture, New York, 2008.

[14] M. Todd, Les Germains aux frontieres de l'Empire Romain (100 av. J-C–300 ap. J-C), Paris, 1990, p. 31–37; Ch. R. Whittaker, Les frontieres de l'Empire Romain, Paris, 1989; C. H. Opreanu, Dacia romană şi barbaricum, Timişoara, 1998.

[15] N. Roymans, Tribal society in northern Gaul. An anthropological perspective, Amsterdam, 1990.

in the field on the spatial distribution of a specific manifestations. In reality the building of an ethnical identity is based on many factors which give a unsteadiness to the cultural manifestations in a context. But this only nuances the idea of "archaeological culture".

During the Late Roman period and at the beginning of the migration period (stages C1b–D) the dynamics of the barbarian world changed. The archaeology uses the concept of "cultural contacts", in its attempt to explain the presence of some foreign artefacts in a determinate cultural area. But always exists a second possibility, as the movement of some isolated elements or even significant groups of people from one territory to another. This kind of slow migration of the sedentary populations is a fundamentally different pattern from the other one of the fast and destructive attacks of the nomads. The slow migrations, taking place at the historic scale-time, had many times as consequence an ethno-cultural remodelling process, named by anthropology "acculturation".

The geographical region under attention was usually approached only in small chronological sequences, a reason for which, until now a general overview of the inhabitancy level in this area is still expected. Moreover, the fact that this whole region is currently divided between several states determined, through the filter of political ideologies specific to each country, different interpretations of the archaeological record. Consequently, the whole project justifies itself through the multiple issues still unsolved that it concerns. One of the greatest mutations that changed the structure of the habitat in the north-western part of Romania was the appearance of the Roman frontier in AD 106, immediately after the creation of the Roman province of Dacia. Starting with this moment, the barbarian settlements situated outside the Roman frontier witnessed a new phase of their existence. Through 165 years of the existence of Roman Dacia, the barbarian habitat located in the vicinity of the Roman frontier experienced various topographical, cultural or economical changes, each of those varying in intensity. All these changes occurred obviously because of the impact that the Roman frontier had upon that region. The Roman frontier was considered to be an impenetrable barrier in older studies, destined to isolate the Roman Empire against the threats coming from the barbarian world situated at its margins. Nowadays, in the case of the Roman provinces in the western part of the Roman Empire, under the influence of similar situations observed for various chronological periods, the Roman frontier is being more and more defined as a contact zone, unifying under different aspects the communities that lived on its both sides. The frontier zone became a region of economic interactions, the former technological differences unifying themselves in time. Such an approach is also necessary in the case of north-western Romania; the absence of some clear natural features that would have isolated this area (like the great rivers Rhine or Danube) determined an arbitrary separation of this geographical region. The way in which the above mentioned region evolved in time was determined by two essential factors: the dynamics of the barbarian world from northern Europe and the Roman politics towards the barbarian tribes. Both of these factors developed themselves slowly but continuously. If in the period of time that immediately followed the Roman conquest, the barbarian world was perceived by the Romans as being an imminent threat which Trajan's military campaigns managed to overcome, after the population movements that occurred in northern Europe and the pressure they have exercised upon the Roman *limes*, the barbarian settlements moved towards the Roman frontier, the main north-south communication routes towards the Carpathian Basin playing an very important role in this action. The way in which the habitat of this region evolved starting from this moment to the end of the Late Roman period still remains unknown, this situation being based mainly on the small number of discoveries known from this area which can be very clearly framed into this chronological interval. The nature of the relationships between this

few settlements known from both sides of the former Roman frontier may serve as a basis for the understanding of the changes observed in the habitat of this region during this period.

Objectives of the project:

The study of the way in which the tribal communities lived and their interactions with the Roman world is a little approached subject, the classical vision being oriented towards the study of Roman civilisation. In reality, the contact between the Roman and the barbarian world represented an essential historical process which later on gave birth to the medieval Europe as we know it. Approaching the subject in such a key, the main objectives of this project would be:

1. Establishing the nature of the relations between the pre-Roman habitat and the one emerging after the creation of the Roman province of Dacia.
2. Defining the nature of the economic and social interactions that took place in the Roman frontier zone based mainly upon the spatial distribution of the Roman imports in *Barbaricum* but also of the barbarian products inside Dacia.
3. Determining different chronological stages of the barbarian movements that took place in the region we are focusing our attention upon based on the study of the habitats characteristics and funerary rites.
4. Establishing a continuity or discontinuity pattern of inhabitancy, the main element studied in this respect being the technological characteristics of pottery.

The novelty of such a project consists in a unitary approach of a subject analysed in its historical and regional development as well as the attempt at identifying some cultural patterns which can be applied to the realities of the region under study. Focusing upon the archaeological discoveries from a cultural anthropological and sociological perspective for a better understanding of the mechanisms that determined the way in which human communities functioned is also a new manner in which archaeology can be approached.

***Method and approach*:**

The structure of the project would comprise the following stages:

1. The settlement proceeding in the Roman period – current state of knowledge or a "must have" discussion?
2. The habitat from *Barbaricum* during the Roman period.
    a. Barbarian settlements in the Early Roman period.
    b. The consequences of the Marcomanic Wars upon the barbarian habitat.
3. The diffusion of the Roman-provincial civilization in *Barbaricum* – mechanisms and consequences.
    a. The Roman frontier zone as a cultural and economic interaction region.
        1. Roman imports in *Barbaricum*.
        2. Barbarian products on the northern *limes* of Dacia.
    b. Technology transfer or Roman civilian presence in *Barbaricum*?
4. The habitat in *Barbaricum* during the Late Roman period between influences and cultural integration.
5. The transition from the Late Roman period to the Early Middle Ages.
6. Cultural continuity or discontinuity reflected in the habitat dynamics.

Research methods and techniques:

In a first phase, a documentary database comprising every archaeological discovery fitting the designated time span will be elaborated. In order to make this database much more efficient it will take the form of an online database thus allowing every member of the project

to access it and to input the required information as well as performing different types of statistical analysis from their home office using a username and a password given to them after the database will be created and uploaded on a server. This database will be connected to a GIS platform allowing for different types of predictive analyses and display of the results such as thematic maps generated automatically by the software for example. The types of analyses that such a database would allow are not limited to simple orderings of the main information inserted but to a multivariate statistical approach of a both quantitative and qualitative nature. The input of geographical coordinates for the sites registered in the database would constitute one of the most important stages of the project, only in this way one should approach some landscape archaeology issues such as determining the settlement evolution pattern in the region. The analysis of pottery coming from a technological perspective in accordance with the newest trends in the field such as the *chêne operatoire* concept will lead to the performance of thorough archaeometric studies which will eventually lead to the creation, for the first time in Romania, of a pottery fabric reference group essential for the interpretation of different phenomenon in the above mentioned region during the chronological period which we are dealing with. A series of geophysical surveys will be scheduled for several sites already known to be pottery production centres, combined with archaeometric analysis performed on samples coming from rejections and from charges found inside the pottery kilns. Based on such analyses the occurrence of some marketing distribution patterns are going to be studied as well as possible evolutions in the pottery technology with possible major effects in establishing inferences regarding the concepts of technological continuity or discontinuity.

***Impact, relevance, applications*:**

The expected impact of the project for the scientific milieu implies the study for the first time of a geographical region still very little known, but situated in a convergence point of different civilisations. The structure of the relief in this area transformed it into a highway across the Upper Tisza river valley towards the west but also on a north-south axis through the many passing points of the Northern Carpathians. It is in this very region where multiple cultural contacts occurred through the time had been produced thus generating some very important acculturation phenomenon on the historical scale. Their understanding will only be possible in our opinion using new methods of investigation such as geophysical surveys, archaeometric analysis and GIS applications which our project will use.

The online database will be permanently updated and in time it will be possible for other researchers to access it and use the basic information which it provides. Also, a regional reference catalogue for pottery fabrics, a highly important work instrument for the researchers interested in this subject will be established and published. The main objectives of the project will make the subject of 4 synthesis English version studies published in journals that make the scientifically informational mainstream. Also, the members of the project will present their preliminary results attending several national and international conferences.

Coriolan H. Opreanu
Vlad-Andrei Lăzărescu

WARRIORS AND MILITARY RETAINERS IN TRANSYLVANIA OF THE 7TH–9TH CENTURIES

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Project Coordinator: Dr. Călin Cosma (IAHA Cluj-Napoca)

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Dr. Gabriel Rustoiu (MU Alba-Iulia), Alpar Dobos (ELTE Budapest)

The warriors held a special statute within the structures of powers in the 7th–9th centuries Europe. In their societies they were the upper class, a group with decisional power for all parts of life (politics, warfare, culture and society). The warriors were the society elite. The political elite came from them. Actually, the political and military elites were a conglomerate of interest that were convergent towards the way they saw the reality of their times. Within communities there was a hierarchy of warriors. The highest ones were part of retainers for the military leaders. The military entourage comprised the closest councillors of chieftains. The military entourages were true schools for the future military leaders, the next army commanders and, implicitly, the future community rulers. Amongst these military retainers, the most worthy ones were selected to accomplish various missions such as leading plundering raids, the conquest of new territories, as well as to represent the supreme authority on the territories located far away from the political center.

Even during peacetime the warrior still held a special statute. The militaries, the military and political retainers were the most visible personalities within society. They were persons with a decisive influence upon all the aspects of community's life. The prestigious warriors, their wife and retainers were the first ones who were acquainted of influences coming from other communities. They were those who establish the fashion within the community. They have a direct contact with smiths and jewellers, social categories who took the orders for weapons, harness and various jewellery and clothing accessories. They took the privilege on spoils of war, the payments in coin or gold from the Byzantine Empire just to keep peace. The warriors were also the most important ones to get in touch with those connected to the spiritual life of communities.

The special statute of the warrior went on even after his death. The family buried the warrior together with his weapons and horse or just the harness, and with jewellery and clothing accessories that belonged to him during lifetime.

It has been mentioned above those elements that come ahead to point out the importance of the warriors and their retainers in the European societies in the second half of the first Christian millennium. It is an excellent reason why the subject of this research project **Warriors and military retainers in Transylvania of the 7th–9th centuries** is one of the highest interests from many perspectives. If one studies the warrior behaviour, its retainers, then we carry on

research also on a very important segment of the history of the communities from Transylvania in the last centuries of the first Christian millennium.

This research represents a premiere for the Romanian historiography regarding the research period. This research has good analogies coming from antiquity and up to the beginning of the Early Middle Age. Some Romanian scholars have pointed out in their studies the importance of warrior within the Dacian society or the special role played by the Roman soldier in outlining the society of Roman Dacia, as well as in other parts of the Roman Empire. Another model for this subject comes from a series of studies from abroad focused on the warriors' deed and the military retainers, and the major impact of the warrior population upon Central-West Europe in the 5th–10th centuries.

The political and military context within the Carpathian Basin in the last centuries of the first Christian millennium was extremely agitated. In the struggle to control and conquer this area were involved the Avar khaganate, the Carolingian Empire, the First Bulgarian Empire and the Great Moravia. All these military powers were interested to control and conquer Transylvania in order to get access to its natural resources on the Transylvanian Plateau, such as the salt and the ferrous and non-ferrous metals.

There are many unknown things regarding the political state of Transylvania in the 7th–9th centuries. They are: Which were the powers that conquered Transylvania? It was a "classic" conquest? If it took place how it actually happened? If affirmative, the control was exercised directly through own warriors and their retainers, or through intermediaries recruited from chieftains of local communities?

The questions on the forms and the intensity of the Avar Khaganate control upon Transylvania in the 7th–8th centuries. The Avar graves of warriors are documented within inter-Carpathian Transylvania. Their number is very low. There are only few graves that can be assigned to top mounted warriors. The warriors on foot are more numerous. The female graves are also present and due to the funerary inventory they certainly belonged to the military entourage. The byzantine coins are documented as they were part of the Byzantine payments. There is a possibility that the Avar Kaghanate may have controlled the Transylvania Plateau through its own representatives, meaning warriors and their retainers who arrived in Transylvania in a larger number in the last decades of the 7th century. Most likely, the potentates from the 8th century Transylvania were the successors of the Avar warriors buried in the cemeteries dated between 670 and 720. These were the persons who controlled the Transylvanian Plateau with the approval of the Great Khagan. The hypothesis that the Avar Khagans controlled Transylvania through local chieftains of Slavic roots may also be taken into account. The argument could be the cremation mound graves from Someşeni and Nuşfalău. Some of them were assigned to Slavic chieftains but the rank artefacts were known for the Avars. The presence of local Slavic chieftains in Transylvania is also supported by the finding of harness and military equipment (e.g. spurs, weapons) that could belong to Slavic warriors, who became local potentates co-interested by the Avars to control various areas of Transylvania and its natural resources.

In the second half of the 9th century the state of Great Moravia tried to conquer and control the 'salt road' on the Mureş valley. The Moravian presence in Transylvania is documented by the cemeteries of the Ciumbrud-Orăştie type. A peculiar aspect to be noticed is the absence of weapons and harness in the graves from the two necropolises belonging to warriors. On the other hand, many graves show jewellery and clothing accessories that belonged to individuals of high-rank within communities.

The Bulgarians are attested in Transylvania due to three cemeteries discovered at la Blandiana – Brod, Alba Iulia – 'Staţia de Salvare' and Sebeş dated in the second half of the 9th century and the first decades of the 10th. There are only few graves in to ordinary warriors.

Recently, after 1990, in Transylvania were found pieces of military equipment, harness and weapons which, based on their features, belong to Carolingian warriors. All of them are dated in the second half of the 9th century are located around the salt mines or the main access routes from Transylvania to Pannonia. The presence of Carolingian warriors in Transylvania sounds very plausible. Together with the Bulgarians warriors their task was to set up an 'embargo' on the Mureş valley by installing guard spots to stop the salt transportation towards the Great Moravia. In fact they applied the treaty of 892 between the First Bulgarian Empire and the Carolingian Empire which stated the ceased of salt transportation to the Great Moravia. Archaeologically, once the Bulgarian and Franc artefacts are appeared in Transylvania the Moravian necropolises of the Ciumbrud-Orăştie type disappeared.

The lack of written sources makes the archaeological study and analyse of the necropolises from Transylvania of the Early Middle Age even more important. The documentation of funerary inventory will offer important data on the cultural and identity of the warrior with direct consequence on the true historical statute of those buried in the Transylvanian necropolises dated in the 7th–9th centuries. The research will be able to pint out who were those warriors and their retainers in Transylvania, a social category of first importance in the development of the Transylvanian society in the last centuries of the first Christian millennium.

The main aim of this research project is to outline the warriors and their retainers, and what role did they play within the communities of Transylvania in the 7th–9th centuries. The research will be focus on: to identify the warriors' graves within cemeteries; to identify warriors' dwellings within settlements; to map the area of where artefacts belonging to warriors and their retainers were found; the typology and the chronology of weaponry, military equipment, harness, jewellery and clothing accessories found in warriors' graves; the coin circulation, the hoards and their historical meaning in Transylvania in the 7th–9th centuries; specific rites and funerary rituals of warriors and their retainers.

Last but not least, we look for the way the warrior statute and the one of his entourage was received in Transylvania in the 7th–9th centuries; the location of powerful centres and the political statute of Transylvania in the last century of the 1st millennium AD; the ethnical and cultural interferences on the Transylvanian territory in the second half of the 1st millennium AD; the social and cultural relations between natives and incomers; the relations between warriors and smiths an jewellers, the last ones were those who made the rank artefacts that point out the statute of elites during lifetime as well as in the after life.

The research subject and its aims are a premiere for the Romanian historiography regarding the Early Middle Age in Transylvanian. There are some European models that may be followed. The clarifying of all these aspects on the elite groups of warriors and their retainers in the 7th–9th centuries Transylvania from archaeologically point of view will frame the research in what is known nowadays as the history of elites. In Romania this is a new direction of research for this chronological segment. The outline of this social category in all of its complexity will bring new perspectives regarding the development of economic, social and cultural life in Transylvania at the end of the 1st millennium AD. The aims of this project are part of the efforts to align the Romanian historiography to the most updated European directions of research in this field.

Călin Cosma

SEEING THE UNSEEN. LANDSCAPE ARCHAEOLOGY ON THE NORTHERN FRONTIER OF THE ROMAN EMPIRE AT POROLISSVM (ROMANIA) – POROLIMES

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Concept and objectives:

Today we assist to a fast and spectacular evolution of the research methods in archaeology. It is not only a matter of the technological progress which provided new and efficient instruments, but a revolution of the concepts, of the "philosophy" of archaeology. Traditional archaeology was based on a long-period excavation for main sites. But the scientific community desires faster and more consistent results as time goes by. On this basis were more and more used during the last years the non-destructive types of surveys, using aerial photographs, geomagnetic prospecting, geo-radar and electrical resistivity methods and last hour technology analysis based on satellite images. Results offered by these new surveying methods were impressive. At the same time the concept of "landscape archaeology" became more and more used. Archaeology in its attempt to record the material remains of the ancient communities, but also to create an understandable pattern for them was confronted with more questions concerning the landscape, the natural conditions and the natural resources which influenced the life of men in Antiquity. "Landscape archaeology" became a concept defining the global analyses of a site or of an area in a period of time. This new concept gave birth to new methods, the necessity of appealing to other disciplines, creating the multidisciplinary dimension of "landscape archaeology". While traditional archaeology was uncovering the material remains of ancient human activity, the "landscape archaeology" is revealing data hidden to our normal seen. In Romania, preoccupation for "landscape archaeology" were very limited and with no important results. We arrived to the elaboration of this project not only starting from these considerations, but also because the Roman period in the history of Romania represents a key period. Understanding the Roman period will help the correct evaluation of the period and the ethno-cultural processes which happened during the migration period on the territory of former Roman Dacia. Today the *limes Romanus*, which separated the *Orbis Romanus* from Barbaricum is seen as a zone which unifies

different types of civilization than a barrier line which separated two incompatible worlds. The area chosen for the research, the Northern frontier is in itself a zone of crossroads of cultures, peoples, languages, religions. Investigating a frontier land inside its deep levels is an absolutely new and original approach for the archaeological research of the Roman frontiers. The *limes* followed in this sector the Meseş Mountain, a natural barrier completed with forts, mile castles and towers to control the access inside the province. The military importance of the sector of Porolissvm for the Northern frontier of Dacia was already emphasized by scholars. Porolissvm was also a civil settlement which has developed into a town in the 3rd century AD and a custom point for merchants travelling over the borders of the Empire. Daily life in this zone is fascinating. Who were these people: Romans or barbarians? How did they look like? What languages were spoken? Trying to learn more about their world we arrived to the idea of finding out everything about their relation with the nature, how was the climate that time, what trees and savage plants existed in the area, what species of wild animals were living in the forests, what plants were cultivated and what domestic animals were breaded, what was the base of the nourishment, how used were the medicinal plants in the cure of the diseases. All these have to be compared with the contemporary situation. On the other side we will do surveys based on non-destructive techniques to identify the structures of the civil habitat and the Roman defence works situated in the "buffer zone", 5 to 15 km in front of the fort at Porolissum. Latin written sources record that great movement of barbarian populations began from the middle Danube frontier and in the region of the Upper Tisza River, North of Roman Dacia at the beginning of Marcus Aurelius's reign. Among the first barbarian populations which advanced to the Dacian border were the Buri, probably a mixed population of Germanic and Dacian origin. Around AD 180 the defeated Buri are attested very close to the North-Western border of Dacia. It was probably the same sector as will be researched by our project, in the area of Porolissvm. After the wars of Marcus Aurelius with the barbarians, its situation was deeply changed. Some groups, as the Buri, settled much closer to the Roman frontier as before. The main consequence was the growth of trade contacts between Roman Dacia and the barbarian territories. As an important production and trade centre on the Northern frontier, Porolissum area became the focus for the barbarian tribes from the North. Their permanent attempts to settle closer to this Roman advanced frontier post transformed the area into an interaction zone. Here the Roman coins and Roman goods arrived as a direct consequence of the frontier trade re-established by emperor Commodus, called "*restitutor comerciorum*" in an inscription found in the customs building at Porolissvm. There was expressed the hypothesis that the essence of this trade was the cattle of the barbarians and the cereal production of the Roman provinces. The dynamic of the trade in front of the big Roman forts from the frontier, as Porolissvm, transformed this area into a "periphery" of the Roman economy, erasing the political separation. In time, a process of social and economic integration of the "contact zone" was progressing. Step by step separation became transition, a specific way of life developing on both sides of the "border line". This doesn't mean the Romans did not follow a well defined politic towards the barbarians. But their main idea was to keep control of the movement of the populations in front of the *limes.* That is why they watched the main accesses to the province. In front of the fort at Porolissvm they placed a system of defence works, turf walls and stone walls blocking narrow valleys. We do not know if there were gates permitting passing over. But all this system is located at the moment under the forests, making archaeological and topographical research impossible. For this reasons we decided to use last generation technology, as satellite and airborne remote sensing imagery such as LANDSAT and LIDAR, which will make visible what was hidden for a very long period. Sticking together all these categories of data will offer a totally new image of a sector of the Roman frontier. We can say this is an innovative research initiative, over passing entirely the old manner of archaeological approaches of the area.

From a geographical point of view, the research area belongs to the western piedmont Moigrad's downthrows and represents in reality a fracture positioned generally along the Ortelec valley. The geological stratification has at its surface traces of volcanic activity which consists in the high hills Pomat (505 m) – where the Roman fort is situated, Citera (500 m), Magura

(514 m), Cornistea (493 m), Camini (470 m). This area links the Transylvanian Plateau to the Pannonian Plain. Very important for the communication in this area was the Meses Gate pass. In terms of geographical coordinates, the research area is situated:

	STEREO 70			
	N	**E**	**Latitude**	**Longitude**
1	644381.759	343455.445	47°16'49.00002"N	22°55'44.00002"E
2	616522.983	346799.881	47°01'50.00000"N	22°58'57.00001"E
3	609126.385	365430.204	46°58'04.99999"N	23°13'47.00001"E
4	610889.941	372360.231	46°59'06.99999"N	23°19'12.99998"E
5	640839.843	381851.276	47°15'23.00002"N	23°26'14.00002"E
6	646118.603	374455.187	47°18'09.00001"N	23°20'17.00001"E
7	646025.439	349194.328	47°17'47.00001"N	23°00'14.99999"E

Starting from this general background and from the identification of the poorer documented aspects we established the main objectives of the research project. Taking into consideration the objectives we have looked for the partners of the project. As a starting objective we planned to build a database storing all available archaeological and historical data known at the moment. Another objective is to perform a series of non-destructive geophysical surveys based on GIS modelled predictions and analyzing the sites and defence structures around Porolissvm by satellite remote sensing imagery and astronomical determination. This last objective is entirely new for Romanian archaeology, not used before and the methods used are the most adequate ones to get the desired information. To achieve another objective, to reconstruct the ancient landscape in the Porolissvm area we have to have a general database gathering all the information provided by the partners. The objectives of the partner 1/1 – geography are to make a 3D reconstruction of the landscape and the visible archaeological structures inside the researched area and to build an integrated database containing spatial references. They will start from the existing mapping support arriving to the GIS model of the actual landscape (relief, landscape, socio-economic pattern), trying at the end to reconstruct the ancient reality, using a feedback type of deduction. The topographic measurements and the analysis of the natural landscape by specific geographical methods are essential in any attempt of reconstructing a historical landscape. Partner 2 has as the main objective the reconstructing of the historic human activity in the studied area through identification of the medicinal plants used, analysis of pollen spectra and charcoal fragments. As another objective partner 2 will elaborate the list of vascular plant species and will obtain C14 palynological samples. In palynology, one of the major international research trends is the study of paleo-biodiversity. In Europe, the current biodiversity model of the forest ecosystems is explained by two historical parameters: a) postglacial expansion, climatically determined, of the trees from glacial refuges, following different migration routes, and b) the human intervention. The increasing human intervention upon the natural ecosystems during the last centuries induced visible changes in their floristic structure, causing the mitigation or even the extinction of specific regional species and the increase of the number of anthropogenic species.

The palynological studies are an efficient tool in the reconstruction of the natural ecosystems structure, at different times in their evolution. The pollen diagrams reflect the reaction of the taxa to both climatic changes and human intervention.

In this project, the main purpose of the palynological studies is the reconstruction of vegetation history, climate changes and human impact in the study area during the Holocene and especially during the Roman period. An essential objective of the researches is the elaboration

of a precise chronology of the vegetation dynamics by means of the radiocarbon dating. The acquired results will be confronted with the ensemble of existing palynological data in Romania and in the neighbour countries in order to reach a high level of general knowledge of the climate and vegetation dynamics in Romania and Europe.

Up to the present, no detailed studies have been undertaken in Romania that focused on the vegetation history and human impact during de Roman Empire period. In this project we intend to find if the presence of Roman settlements can be revealed through pollen analysis, and which plants in particular can be considered as indicators of human presence during this period. To achieve this goal, we pursue several directions:

a) Reconstructing the vegetation history, climate changes and human impact in the study area during the Holocene and especially during the Roman period.

b) Identifying patterns in the pollen data that can be attributed to the human influence during the Roman period.

c) Identifying specific anthropogenic indicators for this period in the pollen assemblages.

d) Establishing a relationship between the distance of a Roman settlement from the sampling point and the (anthropogenic) pollen signal.

e) Identifying differences in anthropogenic pollen signal between sites of different origin (small/large lakes or mires).

f) Establishing the importance of human influence for late Holocene immigration and spread of some trees.

Another goal is to map the geographical distribution of current vegetation that would be correlated with the historical vegetation in the period of the Roman settlement. The comparative analysis of vegetation in different moments of time would allow the assembly of a more complete image of the Porolissvm settlement since vegetation has directly influenced the organization and functioning of the settlement while it would also make possible the evaluation of human impact that Roman settlers had on vegetation.

The vegetation of historical Porolissvm was also important as source of medicines in a time when there were no other alternatives. It would be important to discover the species of vascular plants that were used by Roman settlers of Porolissvm for their medical treatment. Achieving this objective would allow the scientific reconstruction of medical practices from those days, a very important task since Romans used extensively the medicinal properties of the plants. To our knowledge very little is known about the public health in the Northern Frontier of the Roman Empire at Porolissvm (Romania). Usually, in the colonies, the Roman soldiers and their governor had a physician that used the medicinal plants that he knew and were present in the area where they lived.

The novelty and innovative nature of this part of the project consists of the scientific reconstruction of medical practices in the area of the Porolissvm site from that period using information from ancient literature correlated with scientific data on current vegetation, obtained through modern methods. A database would be compiled comprising the medicinal plants and their uses at the Northern Frontier of the Roman Empire at Porolissvm (Romania).

The objective of partner 1/2 – biology is the identification of the faunal biodiversity in the Porolissvm area during the Roman period. The skeletal remains recovered in the archaeological excavations will be determined establishing the proportion between the wild and domestic animals in the diet of the soldiers.

We expect innovative scientific results consisting in identifying unknown habitation structures in the frontier zone and establishing a pattern of the habitat. We will be able to map for the first time the defence elements situated under the forest and to relate them to the habitat. Using the work of the partners a complex image of the area will be available, reconstructing the ancient landscape and the daily life in a Roman frontier zone, from the diet to the medical cure.

We will understand better why the Romans have chosen the area for their main base on the Northern frontier and how the natural factors influenced the life of ancient communities using the specific geographical research methods, as topographical measurements made with total station and GIS spatial modelling.

After finishing the project, 4 international conferences will be attended by the research team, 6 studies in ISI and ERIH journals and a final monograph will be published. At the same time a 3D digital map presenting the ancient landscape reconstructed and a digital map reconstructing the vegetation dynamics in the area will be elaborate. Both will be used in the didactical process in local high schools and at the Faculties of Biology and Geography from Cluj-Napoca.

State of the art:

The site at Porolissvm was mentioned for the first time starting with the 18th century, but many finds were gathered mainly during the second half of the 19th century. At the same time in the early 20th century were performed the first archaeological excavation. The first relevant archaeological researches have been done in 1939–1940, 1943 and 1949. In 1958 the Romanian Academy restarted the excavations at Porolissvm. From 1977 to 2009 yearly the Roman fort from the Pomet Hill and the civil settlement were investigated. In 1990 was identified the Roman town, South-East to the fort and partially the Roman cemeteries. The presumed forum of the town was investigated for several years, without relevant results. Another important building excavated was the amphitheatre. Some structures were consolidated and even reconstructed as one of the gates of the fort. Recently (2009–2011), a water tank was investigated and from 2010 the director of this project, Dr. Coriolan H. Oprean became the director of the site, started to excavate the buildings situated inside the fort in the vicinity of the defence elements.

In 2010–2011 were organized the first geophysical surveys in the fort, in the civil settlement and in one of the cemeteries. There are still large areas not yet surveyed, as the Roman town and the defence system in front of the fort from the Pomet Hill, the fort from the Citera Hill, the limes from the Meseş Mountain and the barbarian settlements from the frontier zone. All this information is necessary for establishing a realistic image of the life in the area in Roman period.

In Romania, there are many palynological studies which have approached mainly the forests dynamics in the Holocene. The pioneering researches of Emil Pop in the field of palynology date back from the first half of the last century (1928, 1929, 1931, 1932), being among the first of this kind in Europe. All these results are subject to lack of absolute dating and to the fact that sometimes the pollen of the herbaceous taxa was not considered. The first radiocarbon dating on the quaternary peat sediments, in Romania, was obtained by Pop (1971). The objective of most of the palynological researches performed during the last years was to decipher the vegetation and climate history in the Romanian Carpathians, during the last 15000 years (Late Glacial-Holocene interval).

The first modern researches, where pollen data are completed with absolute age dating have approached two sequences situated in Căliman Mts. and Retezat Mts. Other significant results were acquired in the Semenic Mts., Apuseni Mts., Eastern Romanian Carpathians and in the Transylvania Depression. An important conclusion after all these studies is that, in Romania, forest succession during the Holocene is considered to be uniform. However, there are some differences in the timing of the expansion of several forest taxa.

The history of vegetation was influenced in principal by the climate changes, but starting with the Atlantic period, also by human impact. Palynologists focused on such topics starting with some decades ago. In Romania only modern studies have approached the human impact on the vegetation.The earlier signs of the human impact in the studied regions can be dated at about 7.000 years BP.

The impact of prehistoric people upon the central and south-eastern European landscape was complex and is expressed in a variety of different ways including reduction in forest cover, change in forest composition, expansion of pastureland and widespread clearings as a result of a more refined agricultural technology.

This project is the first one in Romania focused entirely on vegetation history and human impact during de Roman Empire period in comparison with the structure of current vegetation in the area of the Porolissum site.

In what regards the importance of medicinal plants in the life of Romans, it is known that they made great use of the medical properties of the plants they knew about. There are some notable examples of research and study during Roman times. Krateuas was an herb gatherer and medic who wrote a book, around the 1st century BC. His writings are lost but he is well spoken of by Dioscorides. By 60 AD the Greek military physician Pedanius Dioscorides (40–90AD) assembled a book called *De Materia Medica* of 600 herbs with description, preparation and effect. This became the standard reference for centuries to come. Pliny the Elder, a Roman writer and encyclopaedist wrote of many plants, over 1000 it seems, as part of his *Naturalis Historia*. The *Naturalis Historia* also contains some useful tips for some particular ailments.

It is therefore evident that the Romans used a great variety of medicinal plants, for example *Melissa* against insect bites and as a tea against melancholy. Ancient Romans recognized lavender for its healing and antiseptic qualities, for its usefulness in deterring insects, and used it in washing. The first written record of the healing uses of lavender appears to be that of Dioscorides in 77 AD. Pliny the Elder noted its benefits in helping those with menstrual problems, upset stomachs, kidney disorders, jaundice, dropsy and treating insect bites. Romans, which perfumed themselves lavishly, used the aromatic oils to perfume their hair, their bodies, their clothes, their bed, their baths, their military flags, and the walls of their houses. One of their most famous scented oils was nardinum, which included lavender.

At international level we can find studies that resulted in lists with the medicinal plant species that ancient Romans used, but there is very little evidence about what plants may have used at the Northern Frontier of the Roman Empire at Porolissvm (Romania), especially because Rome was very far away from Porolissvm and in this area local physicians had to use different species then in other parts of the Roman Empire.

Important faunistic data from Porolissvm area are lacking even for the present times (inventory list of species, species distribution). The experts from Biology and Geology Faculty, "Babeş-Boyai" University, will assess for the first time the present and ancient structures of animal communities from Porolissvm area. They will provide qualitative and quantitative reports about animals that could be found in the Roman occupation period, in the Porolissvm area. A first attempt to study the breeding in the Roman period in some fort from the northern limes (Bologa, Romanasi) and in some buildings as the customs building, the temple of Jupiter Dolichenus, a taberna and two dwellings, belongs to Al. Gudea (2009). All his analysis is concentrated on archaeological complexes situated in the civil area along the Roman road and from buildings with different function. His working method was determining the skeletal remains provided by the archaeological excavations. No data from the Roman fort and Roman town, amphitheatre, were analyzed.

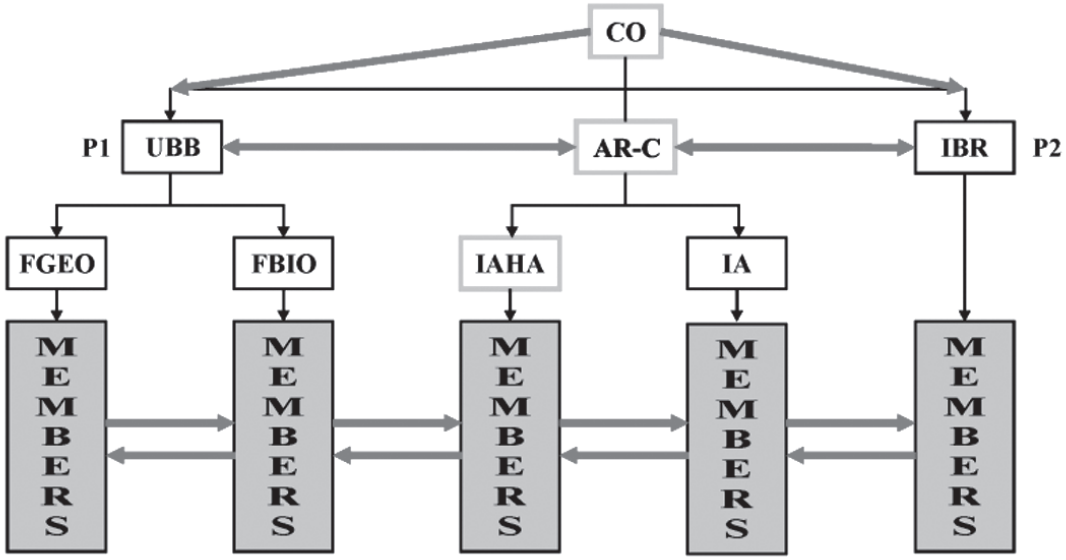
This project through its complexity will generate an interdisciplinary approach of the proposed subject stimulating such future attempts in the archaeological research field. By using the latest technical methods of non-destructive investigation the project will not damage the stratigraphy of the archaeological site obtaining instead a high amount of data otherwise time consuming judging from the archaeological excavations perspective contributing also to the preservation of the cultural heritage.

The database accumulated after the last stage of the project will stand as a starting element for the acknowledgement of the potential that the Roman Frontier has as a European cultural heritage. As the British and the German sectors of the Roman *limes* became a monument

part of the UNESCO world heritage (the Hungarian part is currently being evaluated for such a reason), we hope that the Romanian cultural authorities will take into consideration such an application for our part of the same Roman Frontier.

Management structure and procedures:

The managerial structure of this project relies mainly on bilateral relationships between the CO of the project (CO = Romanian Academy – Cluj branch, represented by the Institute of Archaeology and History of Art and the Institute of Astronomy of the Romanian Academy – Cluj branch) and its partners (P1 = Babeş-Bolyai University Cluj Napoca, represented by the Faculty of Biology and the Faculty of Geography and P2 = Institute of Biological Research Cluj-Napoca, branch of The National Institute of Research and Development for Biological Sciences Bucharest), between them existing a series of close collaboration and coordination relations at the level of the persons in charge for each involved partner.

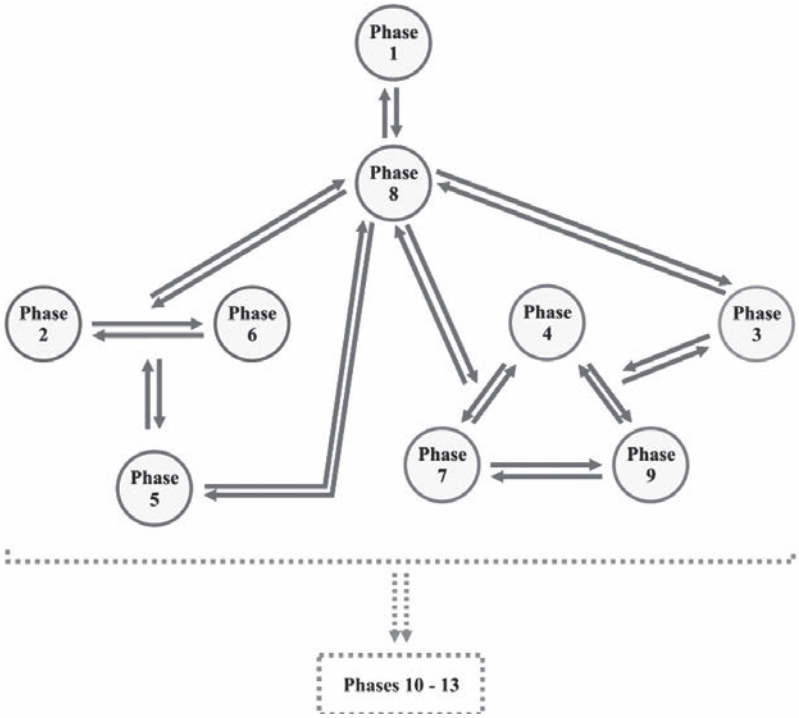


The proposed managerial structure of the project (as illustrated in the above schema) is comprised in reality by 4 vertical levels and 5 on the horizontal, their coordination being ascribed to one person for each partner institution. The choice of such an arborescent structure with two main elements based both upon the coordination on a vertical level and cooperation on a horizontal level between all the members of the research teams was determined by the projects' complexity and amplitude. Such an interdisciplinary approach, involving a great number of researchers with highly different scientific background is crucial for the reconstruction of the ancient landscape and for understanding the reasons which are hidden behind human ancient behaviour. The results of such a cooperation will allow us in the end to take a glimpse at long lost realities and to try and offer some valid interpretative modells. The decisional factors are represented evidently by the persons responsible for each partner institution, their coordination being assured by the CO who will impose the strategy, coordinate and supervise the implementation of the entire project. The partners are obliged to assure the implementation of the project inside their own institutions through the cooperation on one side with the other partners and on the other with the CO. Because of the great complexity and amplitude of the project, the scientific decisions and the establishment of the top priorities and

main tasks are to be taken by each research team after presenting them both to the other team leaders and to the CO who will gather all the information, coordinate and manage the scientific actions that are to be taken as part of the project. The most fruitful cooperation from a scientifical point of view will clearly be the one taking place at the 4th vertical level of the managerial structure, where the close links between each teams' objectives will generate not only a interdisciplinary approach of the tasks, but also organizing and teamwork skills for each member involved in the project. One of the most important objective of this interdisciplinary approach (established right from the concept phase of the project) refers to the knowledge accumulation from different scientific fields for each member, thus enabling them to identify new potential research topics and to try and approach them from different perspectives. Under this respect we would like to think that this project has apart form a scientific target, also a didactical one in a sense in which it focuses the attention of researchers having different backgrounds on a well defined topic, each of them contributing whith their own expertise to the process of analysing and understanding the past.

Methodology and associated work plan:

The work plan consists mainly in 4 stages of the project. Because of the amplitude of the project and the great number of research teams involved we adopted a quite distinct phase repartition starting with the idea that the general objectives of the project could not be approached by each team in the same time and during similar phases because of the scientific nature and methods of each domain and problems raised by the main task. Thus although there are 13 phases as established for all the teams, in fact, from the scientific point of view of the steps needed in order to achieve the main task (recreating the ancient landscape in the research area and understanding it), there are only 4 big stages. We started the whole project having a question in mind and then asking ourselves whether we are asking the right question and to which type of data we must address it. Keeping in mind the above mentioned statement we then had to find the suitable research partners that could have offered us the data sets that we should interrogate. Reading the scheme presented below using this key we would get the following stages:



The key phase of this whole project is **Phase 8** (please use the **Phase list table** for the description of each phase) for its achievement being necessary all the rest of the phases. In order for one to manage and gather the necessary amount of information necessary for fulfilling the objectives assumed in **Phase 8**, we needed several partners specialized in different scientific domains. It was obvious that when approaching a subject based on landscape analysis, a geographer's team needed to be involved their main tasks being represented by **Phase 2** and **6**, phases which are closely connected with IAHA's **Phase 5**. These 3 phases represent one of the 2 main sub-clusters of the project, the second one being that of gathering information regarding the ecosystem of the research area, in this respect **Phases 3**, **4**, **7** and **9** being absolutely crucial. Only after inserting all other known information about archaeological and historical aspects from the research area in a database during **Phase 1** and having all necessary data from the other teams could **Phase 8** be approached and questioned in a correct manner.

The phases are arranged in such a way that the results obtained by each research team to be available also to the others at the right moment in order for them to use the data provided by the rest of the teams in their following step of their analysis. Practically all phases are conceived so that any team could rely on the other's results obtained during the previous phase creating thus a sort of pyramidal type of research. Basically having in mind the structure of the work plan presented above, we are talking about different stages such: **gathering of the data needed and uploading them into a database**, **elaborating a theoretical model for questioning the data**, **analysis and interpretation of the datasets** and finally **the dissemination of the results**.

The schedule of the project had to be very well established right from the beginning in order for each team to have access to the data implied by each following task. We summarized the schedule of the project below trying to show the importance given to both the necessity of having partial results of paramount importance for the developing of the project by going further with each objective and of having a sufficient amount of time to finish what started having in mind the necessity of an equilibrium between the time consuming objectives and the time necessary for processing the raw data collected in the field.

One of the main objectives of the project refers to the action of dissemination of the obtained results in order for both the scientific milieu and the social factor to be influenced. The deliverables can be broken down into two different categories:

1. Scientific products (as participation at conferences and publishing of scientific papers), of highly importance for the scientific community in order for both the better understanding of the surveyed area and for generating other future research projects that will have an impact upon this region by popularising the area as an interesting one
2. Popularisation and didactical products (as maps, plans, 3D PowerPoint presentations and short movies, educational leaflets and specialized guides for visiting the site) which will have an impact for the local authorities and community who will understand the importance of this area a reality which hopefully will generate investments.

Expected impact:

The expected scientific results of the project will have a significant impact upon the knowledge of the Northern Roman frontier of Dacia. The site at Porolissvm and the area of the frontier controlled from this military headquarters is one of the most important in Romania, due to its complexity: it was not only a fort and a garrison but a system composed of a big fort, a Roman town, roads, several fortlets, watching towers, turf walls, walls and defence ditches blocking valleys, representing an original Roman military complex in the extreme Northern edge of the Empire, not documented in other provinces. All this area, mostly covered by forest today, was only empirically researched till now. Our project

represents the first scientific and multidisciplinary approach which will try to record all the known and unknown features of this archaeological complex using the high technical support of other disciplines, as well as the reconstruction of the entire ancient landscape of the area which finally will give us the possibility of a better and more comprehensive understanding of the daily life of a community from the Roman frontier zone. At the same time the area focused by our research is large enough to investigate also the habitat situated close to the frontier, in the Barbarian world.

This type of project, based on landscape archaeology and using the contribution of different sciences, as geography, biology, zoology, astronomy and sophisticated scientific methods as palinology, C14 analyses, or satellite and airborne remote sensing imagery has not been approached in Romania before. At the same time we estimate that the results will be important at European and general international level, first because dealing with a sector of the frontier of the Roman Empire represents a European matter. The Romanian Academy and the Institute of Archaeology and History of Art Cluj-Napoca are already participating to an important international project, Corpus Limitis Imperii Romani (CLIR) under the high patronage of the Union Academique Internationale. CLIR intends to create commune databases recording the main features of the Roman frontiers. Our project will contribute substantially to the progress of this long-term programme. On the other side our contacts and intention of cooperation with NASA Agency will give a strong international dimension to the project. This pioneer initiative will open the way for other future international cooperation projects in Romania.

Apart from the scientific value, our project will have also an impact at the social-economic level. It will stimulate the local authorities to have a better understanding of the tourism potential of the Roman frontier area. The initiative of a "Road of the Roman forts" will be more correct planned and implemented using the new results. We think also that the cultural international tourism will be stimulated by the results of our project.

Dissemination of the project results represents one of our intense preoccupations. Partial results will be presented to international conferences, by each partner. All the three main partners believe in the importance of publishing the results in the most representative international scientific journals from their own fields (ISI or ERIH), to include the new results in the main "informational stream". In this way the results can be appreciated as valuable and the international scientific community can benefit and use them. Following this way it is expected for all the partners to get other future cooperation project proposals from foreign researchers. Partnerships create better understanding of different fields and develop the group working experience. As a final result a monograph book will be published at an international reputed publishing house. We have to mention also that a web site specially designed for this project will be created in order to show the well development of the project and to disseminate information world wide. The web site will contain the project's database with restricted access (only to the members of the team) during the project, without ruling out the possibility of sharing information with the public as long as the intellectual property for the results of each team's research are not altered.

Different products created by the partners, as geographical maps and models, map of ancient plants spreading, or illustrated list of medicinal plants used in antiquity at Porolissum will be disseminated in schools of the counties of Salaj and Cluj and at the University of Cluj. We will propose also to the local authorities from Salaj county and to the Museum of History and Art from Zalau to print informative materials for visitors, containing some results from our project.

The project leader is concerned and will manage the intellectual property rights. A written agreement will be proposed to all the partners and to all research groups. Every group or individual will be protected. There are considered the following groups: The researchers

from the Romanian Academy are grouped in the Institute of Archaeology and History of Art, an individual from the Institute of Astronomy, partner 1, "Babes-Bolyai" University having two research groups, the Faculty of Geography one and the Faculty of Biology one, partner 2 the Institute of Biology. In conclusion:

Level 1 – every responsible of the three partners will establish the intellectual rights of each member, according to his contribution to different objectives and everybody will sign the document.

Level 2 – a general written agreement with the approval and the conditions of all the members of the project to participate with the results to the final monograph.

Coriolan H. Opreanu
Vlad-Andrei Lăzărescu