



Place of event
Archäologisches Landesmuseum Brandenburg
 im Paulikloster
 Neustädtische Heidestraße 28,
 14776 Brandenburg an der Havel

Hotel 1 City Hotel Pension Brandenburg
 Große Gartenstraße 2, 14776 Brandenburg an der Havel

Connection: Brandenburg Central station Tram 1 (Direction Brandenburg, Anton-Saefkow-Allee) or Tram 2 (Direction Brandenburg, Quenzbrücke) until station Brandenburg, Große Gartenstr.

Hotel 2 Hotel am Molkenmarkt
 Molkenmarkt 29, 14776 Brandenburg an der Havel

Connection: Brandenburg Central station Tram 2 (Direction Brandenburg, Quenzbrücke) or Tram 6 (Direction Brandenburg, Hohenstücken Nord) until station Brandenburg, Neustädtischer Markt

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Train:
 line RE 1 Berlin Hauptbahnhof <> Brandenburg Hauptbahnhof
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INTERNATIONAL CONFERENCE

Landscape archaeology in Middle and Eastern Europe: A multi-disciplinary approach to investigations of sites of the Roman times and the Migration period

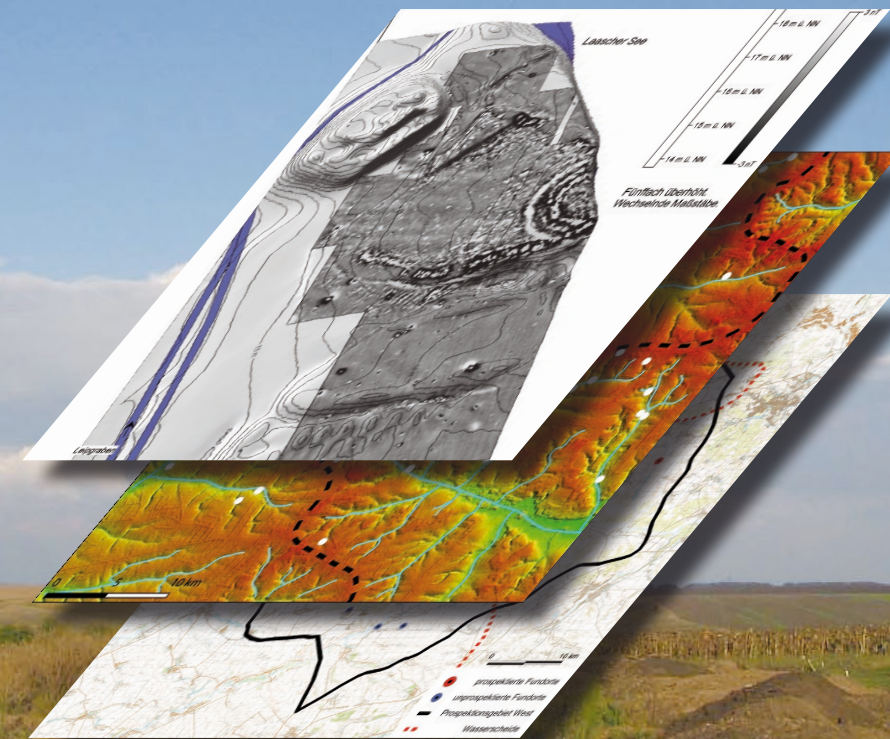
April 16th-18th, 2018
 Brandenburg, Paulikloster

Deutsches Archäologisches Institut
EURASIEN-ABTEILUNG

Institute of Archaeology
 Russian Academy of Sciences

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Landscape archaeology in Middle and Eastern Europe: A multi-disciplinary approach to investigations of sites of the Roman times and the Migration period

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Forschungsgemeinschaft**

Monday, 16th April, 2018

Arrival of the participants

15.00 *Welcome and Introduction*

Chairman: V. Rodinkova

15.30 **Dmitry S. Korobov** (Moscow)
Early medieval system of habitation and land-use in the Kislovodsk basin: landscape approach in the Northern Caucasus

16.15 **Hauke Jöns** (Wilhelmshaven)
Research on 1st millennium landing sites and harbours on the coasts and estuaries of northern Germany

17.00 *Coffee break*

17.15 **Leonid A. Vyazov** (Kazan), **Elena V. Ponomarenko** (Ontario),
Ekaterina G. Ershova (Moscow), **Mikhail S. Blinnikov** (St. Cloud)
Shifting cultivation as a factor of population mobility during the Migration period in the forest-steppe region of Eurasia

18.00 Discussion

19.00 *Supper*

Tuesday, 17th April, 2018

9.00 **Franz Schopper**, Head of the State Office for Preservation of Monuments and the Archaeological Museum Brandenburg
Welcoming Words

Chairman: E. Ponomarenko

9.15 **Ludmilla S. Shumilovskikh** (Göttingen)
Introduction to palynology

10.00 **Ekaterina G. Ershova** (Moscow)
On-site and off-site archaeological palynology: pollen analysis of cultural layers and buried soils

10.45 *Coffee break*

Chairman: H. Jöns

11.00 **Halina Dobrzańska** (Kraków), **Tomasz Kalicki** (Kielce),
Regional landscape as effect of differences of interaction man-environment in the Roman and Early Migration periods – case studies from Poland

11.45 **Orsolya Heinrich-Tamáska** (Leipzig), **Máté Szabó** (Pécs),
Late Antique Pannonia in light of recent research in landscape archaeology

12.30 **Balázs Komoróczy** (Brno), **Marek Vlach** (Brno), **Claus-Michael Hüssen** (Frankfurt/M.)
Multidisciplinary approach to the research of the Roman-Germanic confrontations within the Middle Danube region with particular regard to the research of the Roman temporary camps

13.15 *Snack/refreshment* / 13.30 Museum

Chairman: D. Korobov

15.00 **Jens Schneeweiß** (Leipzig), **Elena F. Kasjuk** (Minsk), **Anna Bartrow** (Halle), **Ludmilla S. Shumilovskikh** (Göttingen), **Valentina S. Vergej** (Minsk), **Piotr Kittel** (Łódź), **Jerzy Sikora** (Łódź)
Landscape Archaeology in Belarus. The example of the settlement cluster of Snyadin in the Belorussian Pripyat basin

15.45 **Vlasta E. Rodinkova** (Moscow), **Dmitry I. Kiselev** (Moscow), **Svetlana S. Sycheva** (Moscow), **Dmitry I. Isaev** (St. Petersburg), **Ekaterina G. Ershova** (Moscow), **Ludmilla S. Shumilovskikh** (Göttingen),
People and environment in the central part of the East European plain in the Late Roman Period and at the beginning of the Early Middle Ages (the example of the Sudzha region, Russia)

16.30 Coffee break

Chairman: O. Heinrich-Tamáska

16.45 **Alexander S. Syrovatko** (Kolomna), **Alla A. Troshina** (Kolomna), **Andrey V. Panin** (Moscow), **Nataliya E. Zaretskaya** (Moscow),
Landscape research in archaeology: a case-study approach from the Middle Oka River (Central Russia)

17.30 **Adam Cieśliński** (Warsaw), **Karin Göbel** (Schleswig), **Jörg Nowotny** (Schleswig),
Archaeological GIS on the barrow cemeteries of the Wielbark culture and their connections to settlements

18.15 Discussion

19.00 Dinner

Wednesday, 18th April, 2018

Chairman: A. Cieslinski

9.00 **Hans-Ulrich Voß** (Frankfurt/M.), **Johannes Kalmbach** (Frankfurt/M.), **Sergiu Musteață** (Chișinău), **Alexandru Popa** (Sf. Gheorghe),
A settlement agglomeration of the Sântana-de-Mureș Culture in the Cubolta Valley near Putinești, Raionul Florești in northern Moldavia

9.45 **Mikhail V. Lyubichev** (Kharkiv), **Erdmute Schultze** (Berlin), **Anja Kaeselitz** (Berlin)
The Chernyakhov complex of Voitenki (East Ukraine), its environmental conditions and the infrastructure of the region during the late Roman Period

10.30 Coffee break

Chairman: E. Schultze

10.45 **Oleg V. Petrauskas** (Kiev), **Maryana O. Avramenko** (Kiev)
The settlement Komariv – glassproduction centre in the European Barbaricum: a cultural and natural environment

11.30 **Robert Gindele** (Satu Mare)
Possibilities for reconstruction of the habitat structure of an industrial micro-region in Barbaricum. Pottery production centers and iron smelting from Medieșu Aurit (northwest of Romania)

12.15 **Sergey N. Chaukin** (Moscow), **Ekaterina G. Ershova** (Moscow), **Nikolay A. Krenke** (Moscow), **Alexander N. Krenke** (Moscow)
Stagnation or ecological balance: cultural landscape at Moskva-river basin in Iron Age - Migration period. Poster.

12.30 General discussion and outlook

13.30 Lunch

Departure of the Participants

Archaeological GIS on the barrow cemeteries of the Wielbark culture and their connections to settlements

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One of the characteristic distinctive features of the Wielbark Culture is its very varied funeral rite. It is visible in particular in the variety of grave forms and presence or absence of overground funerary “architectural” elements, like stone circles or barrows. Burial mound cemeteries, compared with typical flat-grave cemeteries, are few. They appeared in two concentrations: in Pomerania (northern Poland) in the Early Roman Iron Age and in Mazowsze and Podlasie (eastern Poland) in the Late Roman

Iron Age and early phase of the Migration Period. This shift of geographical location of this type of necropolis is connected with the settlement changes in the Wielbark Culture, explained by the historical migration of Gothic tribes.

A very interesting research topic is the topographic positions of barrow cemeteries in the landscape and their relation to settlements, which was examined using archaeological GIS. From the outset of this project a two level research was regarded as the best option. All known barrow graveyards of the Wielbark Culture within Poland were identified and systematically recorded in a GIS. Detailed landscape analysis around the barrow fields was conducted at a medium scale of 1:25.000. Every site received its own GIS and an identical file system for collecting and managing all available data. These data are topographic and thematic maps at various scales, as well as excavation documentation. It was the aim to evaluate specific spatial arrangements, taking into consideration evidence of intensive landscape changes. It turned out that old Prussian maps from the 19th and early 20th centuries, in comparison with modern topographic and geological maps, were quite useful to start with. Often signs of gravel mining or brick manufacture indicates essential landscape changes and therefore are important for editing. The study also focussed on detecting former lakes

and water courses, and also on identifying soils that have been preferred for cemeteries as well as for settlements. The relationship of water and burial sites were evaluated by several spatial analysis and interpretation of the results was done carefully because of intensive landscape changes during the times. The relationship of settlements and burial sites was interesting as well, but known only in the case of the Leśno region settlements. Even if a reliable landscape reconstruction is impossible without further investigation, this site was used to define possible requirements of a settlement and specific spatial arrangements concerning a burial site. Therefore, one has to analyse the slope, the aspect and the heights of the landscape. By setting up defined parameters for the maximal values for slope and heights in relationship to the cemeteries as well as excluding the unfavourable aspect directions, together with viewshed analysis one is able to identify potential settlement areas around other burial sites. It turned out that only a few places around the burial sites fulfill all these criteria and it would be interesting to verify this in the future using further investigation.

Regional landscape as effect of differences of interaction man – environment in the Roman and Early Migration periods – case studies from Poland

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Archaeological landscape has not attracted much interest from researchers of the Iron Age in East and Central Europe. It is because they are not very convinced of the research value of studies on relations between man and natural environment in their coexistence aspects. Shaping the landscape is the reflection of the life of people in their environment. In what way did people use and change their habitat in shaping the local landscape? For examining this process, thorough palaeogeographic studies combined with archaeological evidences are required. The objectives of the presented studies are the exploring and understanding of human expressions in the Iron Age landscape

in the most western part of the Sandomierz Basin. The project is based on interpretation of natural and cultural data obtained from a thirty-kilometer-long section of the Vistula River downstream of Cracow.

The study includes detailed palaeogeographic data collected over many years of research in the Vistula River valley downstream of Cracow. Rich archaeological evidences on this subject have been obtained during long-term investigations in the intensively settled area of the Vistula valley. Available are also results of specialized analyses (geophysical, archaeobotanical, palynological, archaeozoological, ceramological as well as radiocarbon and dendrochronological dating).

In the Vistula valley east of Cracow, two types of landscape are observed: natural and anthropogenic. They encompass two main geoecosystems, two terraces covered with loess and flood plain, very different one from another. Vistula terraces and flood plains were being formed with various intensities, in relation to space and time.

In the Iron Age, the loess terraces were completely changed by anthropogenic factors. The process started in the Neolithic period. In contrast to the loess terraces, human impact on the

second geoecosystem, the flood plain, was negligible. Its form was dependent mainly on natural factors.

Throughout the Iron Age, the landscape of both geoecosystems was being shaped by man with varying intensity in space and time. The Latène period was followed by the Roman Period with significant growth of human activities from the mid 2nd till the 4th century. At that time the knowledge of the natural environment and its components among the people became considerably high.

Today, the picture of the Vistula valley is very much different from the prehistoric times. Landscape of the river terrace and the flood plain are transformed to such a degree that they can be referred to as anthropogenic.

On-site and off-site archaeological palynology: pollen analysis of cultural layers and buried soils

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Peat bogs and lakes located near archaeological sites give very important palynological information about vegetation and climate changes; they also accumulate pollen and NPP indicators of human activity. However, suitable research sites are not available in every region. In such cases, pollen analysis can be applied to sediments of another type - cultural layers and / or mineral soils buried under cultural layers or other deposits of anthropogenic origin. For the cultural layers, we must take into account that the pollen can not only be from the surrounding vegetation, but also from a variety of materials brought by man, including food waste, manure, and human excrement. Pollen spectra of such deposits can give information about the use of plant resources by ancient people. However, they may have little in common with the regional "pollen rain", and, thus can

be used for paleoecological and paleoclimate reconstructions with caution. On the contrary, pollen analysis of buried soils is suitable for such reconstructions, but only when taking into account the peculiarities of pollen accumulation and conservation in aerated mineral soils (vertical and horizontal movement, selective degradation and destruction, etc.). Thus, a combination pollen analysis with detailed soil and stratigraphic studies are necessary.

The disturbances in the soil cover due to deforestation, forest fires or plowing usually cause intensive erosion and accumulation of colluvia in local depressions. As a result, series of undeveloped soils buried within colluvial sequences can be found on slopes and in gullies in the vicinity of archaeological sites. We can analyse these stratified deposits for pollen and charcoal and date them using AMS. A complex analysis not only reveals local natural or anthropogenic vegetation changes but also allows us to link these changes with economic activities of specific archaeological cultures. The accumulation of a large number of dated local pollen spectra from different periods and localities within the same region makes it possible to search for general patterns in the development of landscapes and land-use systems using methods of statistical analysis.

Stagnation or ecological balance: cultural landscape at Moskva-river basin in Iron Age – Migration period

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The square of Moskva-river basin is about 17600 km². Approximately half of this square was occupied by settlements (including their catchment areas) dated from Iron Age through to the Migration Period. They were localized mostly within the main river valley and along the biggest tributaries.

Specialized studies proved that inhabitants of these settlements (about 300 of which were discovered) practiced a complex economy based on agriculture, cattle breeding and used different natural resources as well. This is typical for the inhabit-

ants of the European Forest Zone in the Iron Age. Field studies proved that the number of sites (we know of about 300 from this region) dated to the 5th century BC – 6th century AD (Iron Age through the Migration Period) twice – four times more than the number of sites dated to Bronze Age and Early Medieval Period. The size of population was about 10–20 thousands people. An attempt was made to reconstruct the system of land use, to assess the openness of landscape and transformation of wild forests. Soil studies and pollen analysis were used to achieve this. Unfortunately, we failed to trace the chronological trends within the general period. Clue objects of study were flood plain sediments, buried soils (under the ramparts of hill-forts as well), turf swamps at Moskva-river valley and at watersheds, cultural layers of the settlements. The hypothesis formulated argues that hill-forts were surrounded by open space (radius about 1.5 km) used as fields (at terraces) and meadows (at flood plain). Forest patches still existed in the valley. Wild forests at watersheds show the low level of anthropogenic pressure. Settlement system was stable and non-mobile. Within the thousands of years we do not see the attempts of "internal colonization" of new lands. One can say that the phenomenon of sustainable system of land-use reached the ecological balance.

Possibilities for reconstruction of the habitat structure of an industrial micro-region in Barbaricum. Pottery production centers and iron smelting from Medieșu Aurit (northwest of Romania)

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We have studied the microzone in the northwest of Romania which is located on the Someș Plain, approx. 80 km directly from the Roman city of Porolissum on the northwestern border of Dacia. In recent years, on a relatively small surface of approx. 100 km² within the Medieșu Aurit commune, we have been able to systematically investigate the largest pottery production center known so far from Barbaricum (now 267 pottery kilns), an iron smelting furnace and several rescue excavations of some contemporary settlements.

The research gives us the image of a complex habitat structure of barbarian society in this microzone, including evidence of cultural co-habitation and reciprocal influences between the free Dacians and the population of the Przeworsk culture. At the barbaric cultural confluences, the presence of several Roman military pieces, indicating specific ties with the Empire, is added.

The reconstruction of the internal structure of the industrial areas is an excellent application of the geomagnetic measure-

ment where the pottery kilns and iron smelting kilns can be clearly seen. Unfortunately, due to the acidic soil, the animal bones and other organic residues are no longer preserved, which made the reconstitution of fauna and flora difficult. Due to the low level of the plain, the differences of the level do not facilitate altimetric reconstruction. The settlements are measured in detail but we will need such measurements for the entire microzone.

Significant anthropogenic interventions (canals) occurred only during the communist period, so in our case the maps of the 18th century are very good for reconstructing the ancient landscape. Studying the distance communication routes from Transylvania to northern Europe in the Middle Ages can provide us with ideas for a better habitat reconstitution in the studied microzone.

To determine the geographic distribution area of products of this important barbarian industrial area, it is absolutely necessary to establish the chemical image/imprint of the clay and iron resources.

Based on habitat reconstitution, we can obtain important data for a picture of social stratification and interactions between the different social categories in the barbarian environment (resource/crafts/organization of production/product distribution/political-military and economic control).

Late Antique Pannonia in light of recent research in landscape archaeology

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Máté Szabó

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In this lecture, we focus on the territory of Roman Pannonia. Selected examples of *castra* and *villae* in the countryside are used to discuss problems, methods and the potential of archaeological research for understanding landscape structures during Late Antiquity at a micro- and macro-regional level. First, we deal with Late Roman inner fortresses, whose civil and military use has been the subject of much debate. On the basis of large-scale prospections, including the results of topographic surveys, pedological and natural scientific analyses, we are able to shed light on some new aspects of the question concerning the use of the *castra*. They were economic centres with different purposes, i.e. for logistical tasks and agricultural production.

Furthermore, for the example of Keszthely-Fenékpuszta, we can investigate the catchment area of Lake Balaton, studying the interactions between water-levels and climate change on the one hand and the transformations in the infrastructure on the other. The second part of our presentation is dedicated to the network of *villae* around Sopiana/Pécs. The evaluation of aerial photographs and systematic surveys allows us to discuss the settlement and road systems as well as the land-use in the urban surroundings of a Late Roman city. In conclusion – beyond summarizing our examples – we propose new perspectives and research goals in landscape archaeology in Roman and Post-Roman Pannonia.

Research on 1st millennium landing sites and harbours on the coasts and estuaries of northern Germany

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In northern Germany, natural bodies of water – in particular the North Sea, the Baltic Sea and the rivers flowing into them – formed important parts of the communication infrastructure during all periods of settlement history. Especially for the 1st millennium AD, concentrations of not locally-produced goods found along marine coasts and riverbanks may be considered as hints for landing places, harbours, beach markets or trading centres that had access to navigable waters, even if they nowadays are located on dry spots. The reason for this is that sea level changes together with anthropogenic measures for coastal defense, water management and agriculture led to extensive landscape changes. Therefore, the contemporaneous landscape needs first to be reconstructed before an interpretation of archaeological findings and finds is possible.

In order to address this goal, an extensive range of investigations has been carried out since 2010 along the banks of the rivers Ems, Weser and Elbe as well as along the German coasts

of the North Sea and the Baltic Sea. Based on an evaluation of digital terrain models, geological and soil maps and the distribution of metal objects, geophysical measurements and extensive drilling-programmes were conducted. Finally, archaeological excavations were done on several sites that produced new information not only on the internal structure, but also on the economic and social function of these sites. Within the presentation the methodological approach and a selection of the most important results will be reported.



Multidisciplinary approach to the research of the Roman-Germanic confrontations within the Middle Danube region with particular regard to the research of the Roman temporary camps

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The use of theoretical models and structures devised according to the traditional methods of archaeology, and the recent incorporation of landscape archaeology methods into a standard practice, have provided a wide spectrum of information. The Roman-Germanic relations in the Middle Danube region are characterized through the wide range of interactions, os-

cillating variously between violent conflicts and diplomatic relations. The significant and methodologically specific sources of information for the subject of the military confrontations is represented by the group of direct (temporary field camps) and circumstantial evidence (parts of equipment and weaponry) of the Roman military presence in barbarian territory. A unique set of evidences of Roman military presence is located at Mušov-Burgstall, a strategic location of the South Moravian landscape. During the last years, it has been enriched significantly, especially through the joint international multidisciplinary project. The main objectives were oriented to the application of prospection methods (geophysics, aerial survey, field artefact survey) and conduction of small-scale terrain research, besides the collection of archaeological data of various environmental samples for laboratory analyses (archaeobotany, malacology, geochemistry, micromorphology, AMS dating, etc.).

The stable military presence and occupation of the barbarian settlement regions, despite only having occurred for a shorter period of time, also puts a significant load on the military logistics performance. The spatial analyses of various aspects (GIS) as well as modelling and simulation (agent-based modeling) also represent one of the featured interests. Inherently the Germanic impacted context and our theoretical models regarding

the settlement structures, population size and its distributions represent inseparable area of study interest. Therefore, spatial and statistical structures testing of the featured environmental factors of the Germanic settlement structure, as well as its dynamic modelling, may provide further insight into multifaceted picture of Roman-Germanic interactions and confrontations.

Early medieval system of habitation and land-use in the Kislovodsk basin: landscape approach in the Northern Caucasus

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In the context of searching for agricultural landscapes that have escaped more recent anthropogenic disturbance, the antiquities of the Kislovodsk basin are of special importance. The microregion is part of the unique Caucasian Mineral Waters area situated in the Northern Caucasus. The closed geography of the Kislovodsk basin, and the fact that it is relatively well-studied, allowed, for the first time in Russia, the creation of an archaeological GIS for the microregion, which currently includes the data of over 920 archaeological sites, from the Eneolithic to modern times. Preliminary analysis of the archaeological antiquities of the Kislovodsk basin has revealed the early medieval period as one of the highest population densities that could be dated to the 5th–8th centuries AD.

The author presents the results of Site Catchment Analysis used by means of GIS for allocation of the agricultural holdings located more than 120 fortified and unfortified settlements as

the main habitation places of the Alanic tribes that occupied the Kislovodsk basin in the Early Middle Ages. The investigation consisted of several stages, during the course of which territories of potential ploughing areas were modelled for each settlement. It is based on the combined archaeological and soil field survey around fortified settlements in the different parts of the area.

As a result, it is assumed that during the 5th to 8th centuries AD, relatively flat territories (with a slope inferior to 10°) within one kilometer around the site were the most valuable for agriculture. The rest of the economic area, simulated using Thiessen tessellation, could have been used for pasture and hay production.

Computer simulations of the potential economic territories give a possibility of determining the area of proposed ploughing and pasture holdings, and of hypothetically proving the quantity of settled population along with their cattle. As a result, a modelling thesis of small dimension of the patronymic society of the Alans, who occupied these early medieval settlements, and the affirmation of self-sufficiency of their economy were confirmed.

The Chernyakhov complex of Voitenki (East Ukraine), its environmental conditions and the infrastructure of the region during the late Roman Period

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The site of Voitenki is situated in the eastern Ukraine (modern-day district of Kharkiv) and has been investigated since 2004. During the first centuries AD, the history of settlement on this site started in the second half of the 3rd century with the Boromlya horizon. Subsequently, a settlement and the associated cemetery of the Chernyakhov Culture existed here in the 4th and at most up to the beginning of the 5th century. Previous investigations concerning the reconstruction of the vicinity of this site will be presented. They are, first of all, linked to the results of soil sciences, while paleobotany offers only limited opportunities for research due to the conditions of preservation.

Since 2009, we have tried to pinpoint the sites of the Chernyakhov Culture in this region known from scientific literature by surveys. At the same time, a number of unknown settlements have been discovered. Altogether, this provides a base for investigations on the infrastructure of the region between the rivers Sukhoj Merchik und Mzha. The density of settlements during the 4th century was high; the distances between two settlements could be as close as about 2 km. The concentration of settlements in the area of the Dniepr-Severskiy Donets watershed will be discussed as indication that this watershed was used as a preferred land route. This feature will be compared with other parts of the region in question.

The spread of finds observed during the surveys on the surface of the sites gives an impression of their former extent, after what the settlements had a size from 1.2 up to 29.3 hectare. A longer lifespan can be detected in the bigger settlements, but can also testify the special importance of these places. Some of these bigger settlements serve as initial points to investigate the connections between the settlements in more detail. Possible ways are calculated with the help of least cost path analysis. The application possibilities and limitations of this method are reconsidered and first results for this region are presented. They offer insight into the use of the landscape and for the infrastructure during the 4th century.

The settlement Komariv – a glass-production centre in the European Barbaricum: a cultural and natural environment

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The settlement of the III–IV centuries AD near the village Komariv is located in the middle reaches of the Dniester River. In the 1950–70s, its excavations were conducted by M. Yu. Smyshko and Yu. L. Shchapova. Forty objects of the late Roman times were excavated (glass-melting kiln, building on a stone foundation, pottery kiln, pits and terrestrial dwellings, hearths). From 2012 onwards, comprehensive research of the settlement has been carried out by a joint Ukrainian-German archaeological expedition (project leaders: O. Petrauskas and H.-J. Karlsen). This project provided new information on the monument. The area of the settlement is about 35 hectares, of which 12 hectares have undergone geophysical survey. This has to create a

map of archaeological anomalies. Twenty-two objects were excavated during five seasons: pottery kilns, dwellings, household pits and buildings, pit related to the production of glass, etc. In 2012, a cemetery was discovered and six inhumations were subsequently investigated.

The chronological framework of the existence of the Komariv manufactory covers phases from C1 to D1. The settlement has a two-part planigraphy and consists of residential and industrial parts. The production included several crafts: glass, pottery, jewelry production, metallurgy of ferrous metals, burning charcoal and lime, and others. The peculiarity of the material culture of Komariv is strongly influenced by the late antique civilization. The cultural and ethnic composition of the Komariv inhabitants consisted of representatives of local and foreign populations.

The study of materials of the monument has been carried out via the involvement of a wide range of specialists in the natural sciences - soil scientist (M. Servetnik), paleobotany (S. Gorbatenko), paleozoology (O. Zhuralevlev), geology (O. Kovtanyuk), etc. These data allow us to expand our understanding of the nature, economy and demography of the monument as well as the surrounding area and the region between the Dniester and Prut. Since 2013, comprehensive reconnaissance of the area has

been carried out to determine the cultural and natural environment in which this unique settlement existed.

A special direction of research in Komariv is the creation of a regional map of deposits of raw materials, which were necessary for various crafts – sand, clay, limestone, etc.

The study of the natural and cultural environment in which Komariv existed provides an opportunity to highlight the causes of its occurrence, the resource zone, etc.

People and environment in the central part of the Eastern European plain in the Late Roman Period and at the beginning of the Early Middle Ages (the example of the Sudzha region, Russia)

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The Sudzha region, situated to the southwest of the Kursk oblast of Russia is characterized by a high concentration of heterochronous archaeological sites. These therefore provide a good opportunity to study various aspects of human-environmental interaction during various time periods. Our investigations are focused on the 2nd and 3rd quarters of the 1st millennium AD, when the bearers of the Proto- and Early Slavonic Kiev and Kolochin cultures lived in the region.

Interesting results were obtained at the site of Kurilovka 2, located at the confluence of the rivers Sudzha and Psyl (the Dnieper River basin). Features of the geological-geomorphological structure and soil cover of the territory allowed the local population to vary the strategies of its development. For the early Slavonic stage, we distinguished three zones of land use corresponding to soil-lithological areas. These zones could serve settlement purposes, crop cultivation, and grazing and haymaking. There is evidence that the early Slavonic population practiced slash-and-burn agriculture. However, in the palynological record from the nearby site, the anthropogenic signal relevant to the studied period is quite poor. Apparently, the way of life of the early Slavs was such that it has had little impact on the natural environment.

Kiev and Kolochin settlements are situated in the river floodplains, on low remnants of ancient terraces. The majority of researchers suppose that the advancement of the Proto-Slavonic population into the floodplains was due to the drying out of the latter during the warm and/or dry climate conditions of the Roman Warm Period. However, the reconstruction of the flood zones in the low reaches of the Sudzha River shows that the areas of the Slavonic sites have never been flooded, even at the maximum level of the high water. It allows us to assume that such a choice of habitats was caused by the economic model and the nature of land use more than changes in natural conditions that allowed for the occupation of previously uninhabitable territories.

Landscape Archaeology in Belarus. The example of the settlement cluster of Snyadin in the Belorussian Pripyat basin

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Polesie in Southern Belarus is characterised by a vast, swampy environment with the Pripyat river as main artery. It is a tributary of the Dnieper river. This region is of importance for far-reaching cultural developments in Eastern Europe during late antiquity after the collapse of the Roman Empire. Nevertheless, the archaeology of this region is not sufficiently known and frequently underestimated due to a lack of published modern archaeological data.

Since 2012, an international team of various specialists has attempted to rectify the situation. The special focus of complex archaeological research including geomagnetic surveys, small-scale excavations, environmental studies and several scientific analyses have been placed on the settlement cluster of Snyadin. The archaeological complex is bordered by ox-bow lakes. It lies peninsular on the Weichselian terrace in the mid-Pripyat river valley floor, which is, at this point, no more than 2 km wide and therefore exceptionally narrow. Widely extended fluvial terraces, complemented by aeolian landforms, represent the typical geomorphologic landscape.

The earliest evidence for occupation dates back to the Neolithic. Especially notable is the assumed continuity between the Late Latène - Roman Zarubincy Culture and the early Prague Culture, which has been dated back in its earliest phase to the mid 4th

c. AD. Therefore, the Prague culture existed for 3 or 4 centuries before it developed to the middle Slavic Rajkovec culture. The early dating and the continuity in the shaping of the Prague culture highlight the particularity of the Pripyat region, which may be connected to its somewhat hardly accessible position apart from the big communication lines.

Another originality of the Snyadin archaeological complex is the evidence for ironwork connected to the Prague culture. This is of special importance, because Slavic iron production as a whole is still poorly understood.

The paper presents the main results of recent fieldwork activities with a special focus on methodological approaches and future perspectives.

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Palynology is the study of pollen grains, plant spores and other palynomorphs present in living and fossil states. Pollen grains, the major objects of the palynology, are microgametophytes of plants with a very resistant outer wall made of sporopollenin. The main function of pollen is the transport of the male genetic material during plant reproduction. However, the great majority of pollen grains do not reach their biological destination, but are deposited by wind or water on the surface. In case of pollen deposition on soil, it gets quickly incorporated and decomposed, while deposition in water-logged sites like peatlands, lakes, seas or oceans allows pollen to become preserved over thousands and millions of years, representing a memory of the past vegetation in such archives. The pollen wall has specific inner structural and outer morphological features that help to identify its taxonomical origin in terms of plant families, genera and species. Therefore, studies of pollen and plant spores from water-logged sediment archives give us a clue about the local

and regional vegetation and their development through time under climate change and human impact. Other palynomorphs found in palynological samples, generally called non-pollen palynomorphs (NPP), contribute to a deeper understanding of the environmental situation at the studied site. For example, spores of coprophilous fungi indicate presence of grazing animals and pasture, helminth eggs allow the tracing of diseases and human diet and can point to waste pollution, algal remains specify the local hydrological conditions and eutrophication status, spores of the mycorrhizal fungi *Glomus* indicate erosion intensity, microcharcoals demonstrate fire events. The broad variety of palynological indicators allow different important insights into the human living conditions and interaction with the habitat in the past, making palynology to a very important and powerful tool in landscape archaeology.

Landscape research in archaeology: a case-study approach from the Middle Oka River (Central Russia)

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The site under study was the archaeological complex Shurovo on River Oka, in the Central Russian Plain. The peak of its activity occurred during the 1st Millennium AD. Initially it was a settlement of the Early Iron Age (Dyakovo culture), then there was a settlement of the Great Migration Epoch (2nd quarter of the 1st Millennium AD). Belonging to the next stage, in the 3rd quarter of the 1st Millennium AD, there was found a burial ground with cremations in special funeral constructions (“houses of the dead”); a concurrent settlement was found in the modern floodplain under alluvial sediments. The final stage is a cemetery with cremations of the Viking Age.

The authors suggest that, between all four stages of the existence of the monument, there are chronological breaks accompanied by tangible breaks in cultural traditions. Spore-pollen studies, analysis of phytoliths, study of River Oka channel dynamics, allow us to assume that the succession of the listed stages of the monument’s existence corresponded to changing environmental conditions in terms of local vegetation, climate humidity, river flood regime, river channel morphology and human impact over the landscape. In this paper, the authors try to assess the relationships between cultural and landscape-climatic changes.

A settlement agglomeration of the Sântana-de-Mureș Culture in the Cubolta Valley near Putinești, Raionul Florești in northern Moldavia

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Together with project partners from the Faculty of History and Geography of the State Pedagogical University “Ion Creangă”

in Chișinău, the RGK has been carrying out field studies on the Cubolta Valley, a tributary of the River Reut, in the northern part of the Republic of Moldova since 1972. Along the slopes of the Cubolta Valley, between the villages of Putinești, Raionul Florești, and Mindic, Raionul Drochia over a distance of 39 km, 38 locations with a total size of 6.29 km² were prospected. It was possible to collect and map material from a total of 17 sites from both the Neolithic Cucuteni Culture and the Late Roman / Early Migration Period Sântana-de-Mureș Culture.

Between the villages of Putinești and Cubolta in the south of the valley, a settlement agglomeration with three settlements and the areas farmed around them were prospected. Following the geophysical prospection of the settlement at Putinești, a technical installation, first interpreted as a pottery kiln, was excavated in 2016. The work on the pottery recovered from all the sites is not yet finished. Nevertheless, it is already possible to identify similarities and differences in the use of the natural boundaries of the local landscape in prehistoric and proto-historic times can be identified. In contrast to the burial mounds (Kurgans), which were built on the west slope of the valley, all of the settlements that have been discovered lie on the slopes on the east side of the valley. The use of the same location for a Neolithic and a Late Roman settlement was only identified in one case.



Shifting cultivation as a factor of population mobility during the Migration period in the forest-steppe region of Eurasia

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The population movement during the entire extent of the Migration Period was spread at mass level, forming one of the important factors of economic development of the forest-steppe and broad leaved forests in Eastern Europe.

The issue is conditioned by the fact that the migrating groups introduced new tools and new approaches to agriculture. This set of tools was considered as the indicator of permanent cultivation by various researchers until recent times. However, the most recent data received as a result of multi-proxy analysis, including paleopedological investigations in accordance with pollen and phytolith data, shows that the population, which set of tools includes small ploughshares and millstones as well, used a particular swidden agriculture technique. Several common features could be attributed to this type, including millet cultivation, the development of lowlands and slopes of river terraces, specific types of agricultural implements.

This economic system conditioned fast (almost immediate according to archaeological data) movements of new groups of populations into the vast non-developed and under-populated regions of Eastern Europe. Among the outcomes of such a massive process was deforestation of comparatively large areas. At the same time, that economic system was not sufficiently stable

and permanently required a high mobility of the population, its readiness to new movements searching for best conditions for agricultural activities.

The high level of mobility was among the key issues preventing the evolvement of complex social structures. In spite of a formal resemblance with historic process in Central and Western Europe, leading to the emergence of Barbarian Kingdoms, the Eastern European Barbaricum did not develop the same structures. The authors consider that the economic system based on shifting cultivation was the significant factor influencing the high mobility of the population and its sensibility to migration impetuses.

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