

COMPLEXUL MUZEAL JUDEȚEAN NEAMȚ
CENTRUL INTERNAȚIONAL DE CERCETARE A CULTURII CUCUTENI

Rezumatele comunicărilor
colocviului internațional

**IMPACTUL ANTROPIC
ASUPRA MEDIULUI NATURAL ÎN
NEO-ENEOLITICUL SUD-EST EUROPEAN**

MUZEUL DE ARTĂ ENEOLITICĂ CUCUTENI
Piatra-Neamț, 24-26 octombrie 2012

**COMPLEXUL MUZEAL JUDEȚEAN NEAMȚ
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Rezumate / Abstracts / Résumées

Colocviu Internațional / International Colloquium / Colloque International

**IMPACTUL ANTROPIC ASUPRA MEDIULUI NATURAL
ÎN NEO-ENEOLITICUL SUD-EST EUROPEAN**

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**HUMAN IMPACT ON NATURAL ENVIRONMENT
IN THE NEO-ENEOLITHIC OF SOUTH-EASTERN EUROPE**

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**L'IMPACT ANTHROPIQUE SUR L'ENVIRONNEMENT
DANS LE NÉO-ÉNÉOLITHIQUE DU SUD-EST DE L'EUROPE**

Editori:

**Constantin Preoteasa
Gheorghe Dumitroaia**

**MUZEUL DE ARTĂ ENEOLITICĂ CUCUTENI
Piatra-Neamț, 24 – 26 octombrie 2012**

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PROGRAM / PROGRAMME

24 octombrie

12:00 – 17:00

Hotel „Ceahlăul” – sosirea și cazarea invitaților.

„Ceahlăul” Hotel – arriving and accommodation of the guests.

L’Hôtel „Ceahlăul” – l’arrivée et l’accueil des participants.

17:00 – 20:00

Muzeul de Artă Eneolitică Cucuteni – deschiderea manifestării, vernisaj de expoziție, lansare de carte.

Cucuteni Eneolithic Art Museum – the opening of the manifestations, exhibition opening, book release.

Musée d’Art Enéolithique Cucuteni – début de l’événement, vernissage d’exposition, lancement de livre.

25 octombrie

09:00 – 13:00 / 16:00 – 20:00

Muzeul de Artă Eneolitică Cucuteni – comunicări științifice.

Cucuteni Eneolithic Art Museum – scientific communications.

Musée d’Art Enéolithique Cucuteni – session de communications scientifiques.

26 octombrie

09:00 – 13:00

Muzeul de Artă Eneolitică Cucuteni – comunicări științifice.

Cucuteni Eneolithic Art Museum – scientific communications.

Musée d’Art Enéolithique Cucuteni – session de communications scientifiques.

13:30 – 15:30

Zona Târgu Neamț – vizitarea unor situri arheologice legate de exploatarea surselor de apă sărată.

– visiting the archaeological sites related to the exploitation of the salted water resources.

– visite des sites d’exploitation de l’eau salée.

16:00 – 20:00

Vizitarea *Muzeului de Istorie și Etnografie Târgu Neamț* – lansare de carte, închiderea manifestării.

Viewing *History and Ethnography Museum of Târgu Neamț* – book release, closing ceremony.

Visite du *Musée d’Histoire et d’Ethnographie de Târgu Neamț* – lancement de livre, clôture de l’événement.

REZUMATE / ABSTRACTS / RESUMEES

BETWEEN PEDOLOGY, PALYNOLOGY AND ARCHEOLOGY.
PROPOSAL FOR TERMINOLOGICAL INTEGRATION

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Keywords: *archeology, pedology, palynology, terminological standardization.*

The main goal of interdisciplinary research in archeology is to integrate the concepts, working tools and research methods specific to other disciplines (geology, pedology, palynology, zoology, anthropology, GIS etc.), in addition to its own methods, as well as the presentation of its results in a synthesized manner. Unfortunately, most of the recent works which treat different archaeological sites in an interdisciplinary manner appear as a series of individual reports, from which the integrative aspect is missing almost completely. It is a fact often ignored, but however reported and criticized in several publications, so that we will no longer insist on this issue. We will highlight only some aspects regarding the possibilities of integrating the terminology as a mandatory attribute of any interdisciplinary approach and the necessity of using a common language for all specialists involved in the complex research of an archaeological site.

In addition to its own terms and concepts, archeology uses the vocabulary of other disciplines, which on one hand facilitates collaboration between researchers, but on the other hand creates some confusion through inaccurate or inadequate definition of terms and concepts („vegetal soil”, „soil layer” vs. „soil horizon”, „sterile soil” etc.). Other terms are common for archeology and soil science but standardization of terms and methods is not specific for both disciplines. Some examples refer to the *colour, texture and soil structure* (with implications in soil characterization and soil taxonomy for the studied settlement, in setting of the palynological sampling strategy according to soil potential for preservation of pollen and spores, in building correlations between soil characteristics and polynic indices of human intervention etc.); *shape, size and frequency of krotovinas or other biogenic neoformations* (which lead to changing of stratigraphic relationships and

therefore to the mixing of artefacts); *paleosoils identification* (and indicating the specific types such as „buried soils”, „relict soils” or „exhumed soils”) etc.

The absence, more or less justified, of specialists in soil science, palynology, and other sciences, from the research team of an archaeological excavation, may be substituted, in a certain degree, through the use, by the archaeologist, of easy and operative techniques specific to the absent disciplines. We mainly refer here to the possibility of completing the data of the excavation reports with observations concerning the *presence or absence of calcium carbonates* and an estimation of their content within the soil, the *presence of salts*, *presence of gleyic* or *stagnic properties* which affect some soil horizons, the characteristics of the *accumulation and distribution of neoformations* within the soil, the presence of *lithological discontinuities*, the identification of the presence and type of *inclusions* within the soil etc.

All these characteristics have major implications in paleoenvironmental reconstructions and regarding the assessment of the anthropic impact on this, the reconstitution of the vegetal cover in relation with human activities etc.

The reciprocal appropriation of the correct terms by all the specialists involved in the archaeological investigations constitutes an important step towards a coherent interdisciplinary research, even if the construction of an institutional frame is long in coming.

AGRICULTURE AND SUBSISTENCE ECONOMY IN THE TERRITORY OF BULGARIA DURING NEO-ENEOLITHIC

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Keywords: *Neo-Eneolithic, Bulgaria, archaeobotany, agriculture, subsistence economy.*

The Neolithic in Bulgaria is divided to Early Neolithic – ca. 6000-5450 cal. B.C., to Middle Neolithic – ca. 5450-4900 cal. B.C., and Late Neolithic – 4900 cal. B.C. The next period – Eneolithic or Copper Age in Bulgaria corresponds with the period ca. 4900-3800 cal. B.C., divided into Early and Late Eneolithic. During the Neolithic, the Eneolithic and the Bronze Age different cultural groups developed in the different regions of the country.

Recent work aims to present the most significant results of archaeobotanical studies based on the materials collected from pre-historic settlements. The archaeobotanical record shows a remarkable land-use.

The crop assemblage is highly varied. The einkorn and emmer are dominant. Hulled and naked barley is common. Most of the wild plant seeds – small legumes, wild grasses and cereal chaff discovered in the different contexts are evidence for bay product.

Gathering-subsistence

The regular presence of fruits in the studied settlements such as cornel-tree and acorns give reason to assume intensive gathering activities carried as additional subsistence. The several fragments of stones of walnut, hazelnut and flakes of cone are characteristic for neighbouring woodlands close to the settlement which were seasonally gathering.

Land-use – charcoal analysis

The collection of woods was everyday necessity and it is obvious that lowlands and more easily accessible parts were preferred. Generally the data from the charred wood give evidence for the domination of oak forests with the presence by the river banks of alder trees, elm-trees, ash-trees and fruit-bearing trees.

Charcoal analysis indicating the regular collection of firewood from deciduous forests, oak woodland and river.

Traditional crop livestock system

The range of the investigated materials gives grounds to assume a developed economy with well-structured exploitation. Occupation strategies are well documented by the evidence from gathering of wild spices and weeds. Food storage testifies for developed organization of crop livestock management. Archaeozoological data show the dominance of a primitive stock-breeding. The material comprises also evidence for economic subsistence, sedentary occupation.

**PALYNOLOGICAL EVIDENCES FOR THE ANTHROPOGENIC IMPACT
ON THE NATURAL VEGETATION OF THE BULGARIAN
BLACK SEA COAST DURING THE ENEOLITHIC**

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Keywords: *pollen, NPP, Varna Lake, Sozopol Harbor, Late Eneolithic.*

Spore-pollen and non-pollen palynomorph (NPP) analyses of submerged archaeological sites provide valuable information about the ecological conditions in the past, such as climate changes and vegetation dynamics, as well as evidences concerning the human occupation. The AMS ¹⁴C dating helps to find the exact period of human impact on the palaeoenvironment, independently of age proposed by the archaeological remains. The objective of this paper is to discuss certain aspects of the vegetation changes along the Bulgarian Black Sea coast during the Eneolithic on the basis of geoarchaeological analyses of four cores from two sites with submerged prehistoric settlements (Lake of Varna and Harbor of Sozopol), and to link these changes with the human activity. Multiproxy investigations of Core C-3 (Transtroy Harbor, Varna Lake) from the northern part of the coast and three cores (D, F, I) from the Harbor of Sozopol (southern Bulgarian Black Sea shelf) were performed.

The first signs of human activity along the Bulgarian Black Sea coast were found as early as the Late Eneolithic (Chalcolithic) (4500-4000 cal. BC). The palynological tools for tracing the human influence on the natural vegetation are indicator species, such as anthropophytic and anthropochorous taxa, and changes in the vegetation composition. The natural mixed oak forests around the Varna Lake were subject to an intensive exploitation from the Late Eneolithic onwards. The primary anthropogenic indicators such as cultivated cereals *Triticum*, *Hordeum* and *Cerealia*-type are well represented and point to intensive agriculture. The secondary anthropogenic indicators, including the cereal crop weed *Centaurea cyanus* indicate farming. The occurrence of ruderals such as *Polygonum aviculare* and *Sanguisorba minor* and components of wet meadows and pastures such as *Plantago lanceolata*,

Filipendula, *Carduus*-type and *Cirsium*-type, indicates a stock breeding. Palynological data from the Varna Culture lake confirm the previous archaeological information for the Varna (famous with the Oldest Hand Made Gold in the World), that the agriculture was important for the Late Eneolithic economy of the Bulgarian Black Sea coast.

The submerged prehistorically settlements in the Harbor of Sozopol are dated for the final stage of the Late Eneolithic (4100-4000 cal. BC) and formed the southern version of the Varna Culture. The palynological data show that the palaeoenvironmental conditions in this area were favourable for agriculture. Cultivated cereals, weeds, and ruderals such as *Plantago lanceolata*, *Polygonum aviculare* and *Filipendula* confirm the existence of a settlement along the former Patovska River, and suggest a strong human impact on the natural vegetation. Agriculture and stock breeding were the main reasons for sharp reduction of mixed oak forests. The presence of dung indicators such as ascospores of *Sordaria* and *Coniochaeta* indicates habitats rich in nitrates. This is also confirmed by the presence of *Urtica*, which is characteristic of nitrogen-rich cultivated areas. Micro-charcoal analysis shows that not only felling, but also fire was used for clearance of land for agriculture.

The financial support from Bulgarian National Science Fund, project DNTS 02-23/2010 „Comparative palaeoecology and geoarcheology of Varna Lake (Bulgaria) and Mamaia Lake (Romania)” is greatly acknowledged.

**ARCHAEOZOOLOGICAL CONSIDERATION ON WILD FAUNA CHANGES
UNDER HUMAN IMPACT IN SOUTH-EASTERN ROMANIA
SINCE PREHISTORY UNTIL MIDDLE AGE**

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Keywords: *archaeozoology, human impact, wild animals, Prehistory, Middle Age, Dobrudja.*

Archaeozoological researches indicate changes in fauna spectrum over time in the Dobrudja area. Farming and hunting, sometimes excessive, from prehistoric and historic periods, resulted in reduction and fragmentation of forest areas; this phenomenon was the consequence for reducing the spread areas of large mammal species (*Cervus elaphus*, *Ursus arctos*, *Castor fiber*) or disappearance of others (*Bos primigenius*). In the prehistoric and historic periods have been reported hybridization cases of pigs (*Sus scrofa domesticus*) with wild boar (*Sus scrofa ferus*).

The black vulture (*Aegypius monachus*) is a perished species nowadays from our country's fauna. At Oltina, we have the first registration of this species in an archaeological site in Romania. The white-tailed eagle (*Haliaeetus albicila*) is a threatened species in Romania nowadays. Other three identified species are now protected by the law: the whooper swan (*Cygnus olor*), the white pelican (*Pelecanus onocrotalus*) and the great cormorant (*Phalacrocorax carbo*).

This study was supported by the Romanian research programs CNCS – UEFISCDI PN-II-RU-TE-2011-3-0146 and POSDRU/89/1.5/S/49944.

**STRATEGIES IN PIG (*SUS SCROFA DOMESTICUS*) EXPLOITATION:
ARCHAEOZOOLOGICAL DATA
FOR PREHISTORIC AND HISTORIC TIMES IN ROMANIA**

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Keywords: *pig exploitation, archaeozoological data, Prehistory, History, Romania.*

In archaeozoological study slaughter age estimation can lead to assessments of ways management and control of animal populations, for example, the pig. Age estimation was based on replacement of milk teeth with the permanent and wear degree of permanent teeth.

In prehistory, slaughter age varies in different communities; pigs were killed predominantly at 12-18 months and 18-24 months, when reached an optimal weight. Adult individuals (over two years) are identified in fewer settlements and in small percentage, being kept for reproduction. There are settlements with pigs killed predominantly prior one year; killing can be influenced by food available for animals, the food needs for human population.

In the settlements belonging to I and II millennia AD, 1-2 years age group was preferred for slaughter. The next preferred category was 2-3 years. The proportion of pigs slaughtered under one year respectively over three years, is reduced.

Optimal weight for pig was reached to age two, because they were primitive, with slow growth. Pig was exploited exclusively for primary products (meat, skin, fat). In many settlements had grown into a state of semi-freedom in the surroundings, which favor domestic interbreeding with the wild form.

Study was supported by Romanian program CNCS-UEFISCDI PN-II-RU-TE-2011-3-0146.

**ANIMAL MANAGEMENT BY PRECUCUTENIAN COMMUNITIES
AND THEIR IMPACT ON THE ENVIRONMENT
IN LIGHT OF RECENT RESEARCH ON SITES IN EASTERN ROMANIA**

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Keywords: *Precucuteni culture, animal management, age profiles, selective hunting, landscape.*

Based on, 7229 faunal remains from six Precucutenian settlements (Table) have been established the main features of the animal economy and its impact on the environment. The sites developed mainly in two types of habitat: uplands or lowlands of the Moldavia (Eastern Romania). A set of sites including Târgu Frumos, Isaiia and Andrieșeni are located in the low extra-Carpathian regions, in the floodplains of rivers Jijia and Prut. Another group, including Costișa, Târpești and Traian-Dealul Viei are located in Moldavian Sub-Carpathian hills, with altitudes above 200-300 m. Comparing them, some distinctive features were found.

From the outset the research highlighted that, the inhabitants from Precucutenian settlements exploited a large scale of animal resources, including cattle, sheep, goat, pig, big and small game and mollusks. It is also supposed that fishing was occasionally practiced, the sites being located in the rivers' proximity. Unfortunately fish remains were not preserved in all cases. Considering the wild / domestic species report, in relation to biotope, the statistics reveal some interesting aspects. The sample from Costișa individualizes by its high percentage of hunting, about 70.1% (Plateau A), of which 41.1% is attributed to red deer. It seems, its hunting intensified in two moments of the year: end of autumn (more likely during winter) and in spring – late spring. Its hunting was little practiced in summer, the specimens migrating to highland. Therefore we can talk about a seasonal hunting, implying a certain strategy adapted to species behaviour. The unexpected high rate of young / sub-adult exemplars could suggest, either a preference for meat of good quality (naturally the capture of young animals being more facile), or points toward certain difficulties appeared at a moment, in the community food supplying. Anyway the statistics reflect a higher density of red deer in the hunting area, as an effect of propitious conditions of living, suggesting less deforestation as well.

Overall, the faunal analysis from Costișa brings in a new animal economy type in the Precucutenian milieu, modulated on exploit the natural resources in a

profitable way, meaning a high contribution of hunting to meet the needs, substituting the domestic stocks, kept for secondary purposes mainly. In contrast, the site from Târpești is quoted with a reduced rate of hunting, meaning 5.34%. The settlements from Isaiia, Andrieșeni and Târgu Frumos occupy an intermediate position with 20-30% participation of wild taxa.

Relating to domestic segment, a higher cattle rate is registered at Traian-Dealul Viei – 79.89%, 71.92 % at Andrieșeni and a quite reduced share of 55-66%, at Târpești, Târgu Frumos and Isaiia. Costișa places in last position, with 20.6% (Plateau A). It seems that Precucutenian tribes were cattle breeders, excepting those from Costișa. Let us remember that in all above mentioned sites, the sheep, goat and pig farming was little practiced, their share varying between 0.4-11% in case of small ruminants and 0.4-13% for pig. On the subject of mammal exploitation strategies, insignificant differences from case to case were found. Concrete, a similar cattle management, focused on beef and by-products is emphasised in almost all cases. In case of small ruminants, the published data are not sufficiently for an appropriate statistical processing.

Taxa	Costișa (Plateau A)	Târpești	Traian- Dealul Viei	Târgu Frumos (Pit 26)	Andrieșeni	Isaiia
Cattle	20.6	69.83	79.89	55.6	71.92	65.98
Sheep / goat	7.2	10.57	3.42	11.1	0.43	5.48
Pig	1.8	13.77	1.51	2.3	0.43	6.12
Dog	0.3	0.46	0.33	1.9		0.38
Wilds	70.1	5.34	14.85	29.1	27.22	20.63
Total sample	3,038	432	765	1,234	463	1,115

Species frequencies in Precucutenian sites from Moldavia.

**CONSIDERATIONS REGARDING THE OSSEOUS MATERIALS ARTEFACTS
DATED FROM PETREȘTI CULTURE,
DISCOVERED IN TRANSYLVANIA, ROMANIA**

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Keywords: *osseous materials artefacts, Petrești culture, typology, technology, Transylvania.*

The article aims to present 96 artefacts made of osseous materials dated from the Eneolithic – Petrești culture. The artefacts were analyzed according to Beldiman 2007 methodology and they were included into the *Neolithic and Copper Age of the Bone and Antler Industry from Transylvania Database*. Our approach took into account all the characteristics of the items, such as: typology, the raw materials (skeletal elements and species), the manufacturing chain, use-wear traces, morphology and morphometry.

The statistical study of the artefacts was an important element of our analysis. This offered important clues about the cultural distribution of certain types of adornments, the preference of human communities for certain types of raw materials and the development of technologies.

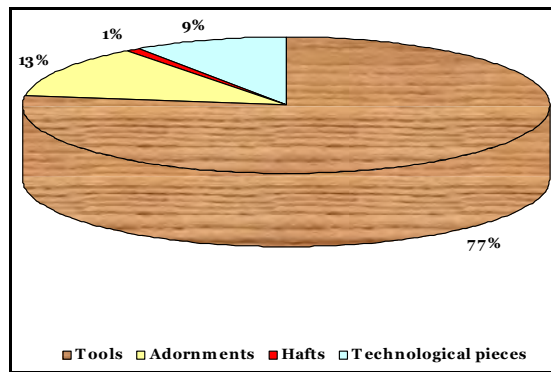
From a typological point of view, the assemblage comprises four categories, as it follows: tools, adornments, hafts and technological pieces. From a quantitative perspective, tools are the most numerous and they are followed by adornments. Pendants, perforated teeth, perforated shells, discs, rings and bracelets are the adornments identified in the assemblage. A special artefact is the anthropomorphic idol made of antler. For this category of pieces, the comparison with the artefacts recovered from graves, offered us some solutions regarding the functionality and symbolism related to those. Raw materials, debris and blanks are included in the category of technological pieces.

In order to obtain these artefacts, the following raw materials were used: long bones, antler, teeth and shells. The species that were exploited by the Transylvanian Eneolithic communities for technological purposes were: *Cervus elaphus*, *Capreolus capreolus*, *Ovis aries* / *Capra hircus*, *Sus scrofa* and *Spondylus* sp.

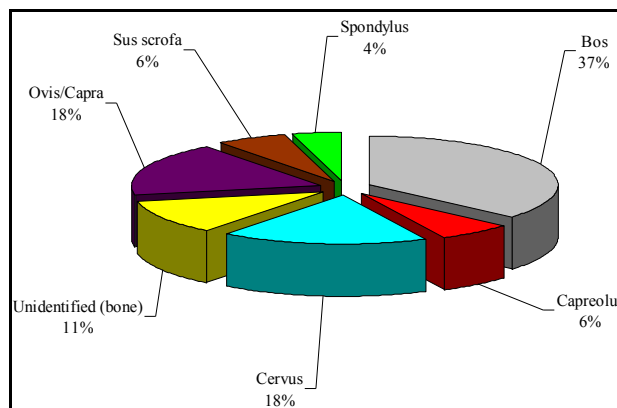
The procedures applied during the stages of manufacturing chain (debitage and shaping) were the technological aspects taken into account in our study. This revealed that they were adapted to the requirements of each raw material and to the

typological finality. For the most of the artefacts, percussion, transversal cutting and chopping were used in debitage stage of manufacture. In some cases, groove and splinter technique was observed. For the shaping stage, the chopping technique and the abrasion were used in most of the cases. In some situations, traces of burning (used in order to shape the artefacts) were observed.

The spectrum of use-wear traces is dominated by the bluntness and polish. These could have been observed on the active parts of the artefacts and helped us to formulate hypotheses regarding the functionality. An important number of so-called „hide beamers” were identified in the studied assemblage. According to Semenov, these were polishing tools for ceramics, but they did not preserve any use-wear traces that could sustain this hypothesis. The analogies found both in archaeological and ethnographical literature quotes them as hide beamers.



Typological categories.



Main species exploited in order to obtain the osseous materials artefacts.

**ADORNMENTS MADE FROM OSSEOUS MATERIALS
BELONGING TO STOICANI-ALDENI CULTURAL HORIZON,
DISCOVERED AT SUCEVENI, GALAȚI COUNTY, ROMANIA**

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Keywords: *animal osseous materials, beads, pendant, shell, Stoicani-Aldeni, wild boar tusk.*

During the 7th and 8th decades of the past century, the ex-director of History Museum of Galați, I.T. Dragomir led archaeological researches in the important site belonging to Stoicani-Aldeni cultural horizon from Suceveni-*Stoborăni* (Galați County). This is one of the most important prehistoric sites from South of Moldavia region, Romania. It allows the statement of some major conclusions regarding specificity of the above mentioned cultural horizon.

The adornments were summary published in articles, studies and in the well-known monograph that deals with Stoicani-Aldeni cultural horizon. The adornments discovered in the archaeological site from Suceveni-*Stoborăni* enrich the catalogue of this type of discoveries and in the same time, they attest the presence of some unique types.

Among these, we should mention the polygonal shell pendant that probably imitates in an extreme geometrized manner a red deer residual canine; the tubular beads made of compact tissue of long bone that imitate the similar pieces made from *Spondylus* that probably were hardly to procure for those communities. We have to add here the rectangular plates, perforated at their ends made from wild boar tusks fragments and pendants made from the same raw material that preserved the morphology of the raw material, probably with a symbolic purpose.

Our approach attests the interests of the prehistoric communities in local manufacture of symbolic elements of social demarcation.

The present paper offers for the first time a modern approach of these artefacts (according to methodology and typology Beldiman 2007). In order to achieve this goal microscopic analysis was currently used.

The analysis of assemblage (in progress) represents a part of the project called *Digitisation of the national movable heritage from History Museum of Galați*.

Collection of artefacts made from animal osseous materials – DanubiOs (2012), financed by the Romanian Administration of the National Cultural Fund (Web: <http://www.migl.ro/DanubiOs/eneolithic/index.html>).



**ABOUT TOOLS AND WEAPONS MADE OF OSSEOUS MATERIALS
DATED FROM CUCUTENI-ARIUȘD CULTURE,
DISCOVERED IN TRANSYLVANIA, ROMANIA**

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Keywords: *Cucuteni-Ariușd culture, osseous materials artefacts, tools, weapons, Transylvania.*

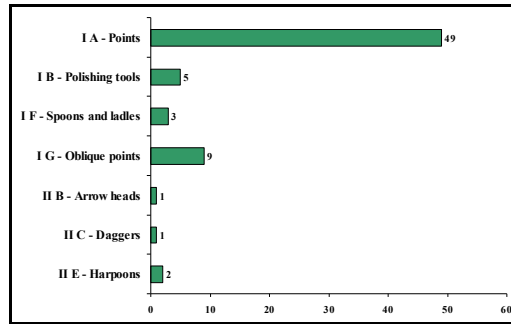
The aim of the article is to present 70 artefacts belonging to the Transylvanian variant of Ariușd-Cucuteni-Tripolye cultural complex. These are included in the typological categories of tools and weapons. Our study was focused on analyzing all the characteristics of the pieces that provide information regarding the typology, technology and palaeoeconomy.

The statistical study of the assemblage revealed the following quantitative situation: bone points (49); oblique points made of deer antler (9); polishing tools (5); spoons and ladles (3). Four artefacts are weapons (a dagger, two arrow heads and a harpoon). A special attention was paid to the oblique points made of antler. Their classification took into account the part of antler that they were made of, the number of active parts and the presence or the absence of the perforation.

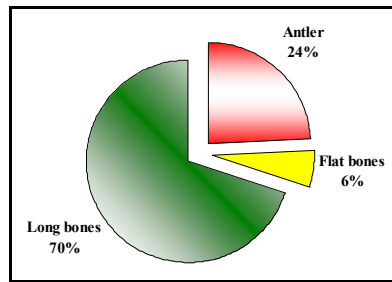
As raw materials used, we identified many objects made of long bones, followed by the ones made of red deer antler and few of them are made from flat bones. These were obtained after slaughtering domestic species as *Ovis aries* / *Capra hircus* and *Bos taurus*. In most of the cases, the antler was obtained after gathering it from the forest; only in few cases the antler was obtained from hunted animals. The absence of teeth and shells is due to the fact that the typology did not allow the use of these raw materials.

The technological aspects that were revealed in our study take into consideration the stages of the manufacturing chain. In this respect, the traces coming from debitage and shaping procedures were analyzed both from a macroscopically and microscopically point of view. The techniques were adapted to the requirements of each raw material and to the typological finality. The groove and splinter technique, the direct percussion, followed by chopping and fracture were the procedures applied during the debitage stage of manufacture. The abrasion was used in most of the cases as shaping procedure for bone tools. For antler, the shaping stage comprises more procedures as: chopping, scrapping and carving.

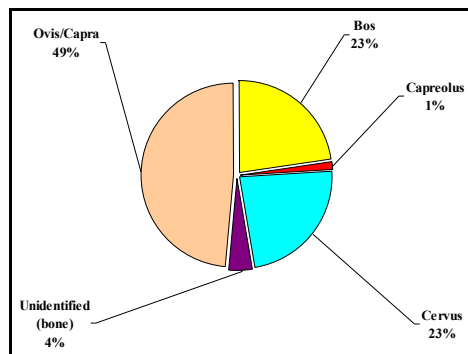
The functionality of tools was established taking into account the use-wear traces. Most of the artefacts present traces of bluntness and functional polish at their active parts. Fractures appeared during the use of the piece and striations of the active parts are also frequent in our assemblage.



Typology of osseous materials artefacts.



Raw materials used in order to obtain the artefacts.



Species exploited in order to obtain raw materials.

**ANIMAL OSSEOUS MATERIALS, TECHNOLOGY AND ARTEFACTS
DATED FROM CUCUTENI CULTURE
DISCOVERED AT BEREȘTI, GALAȚI COUNTY, ROMANIA**

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Keywords: *animal osseous materials, bone, Cucuteni, palaeotechnology, red deer antler.*

The systematic archaeological researches carried by I.T. Dragomir during the 7th and 8th decades of the 20th century in the important site dated from Cucuteni culture, A3 phase from Berești-Dealul Bulgarului (Galați County) led to the discovery of some demi-subterranean dwellings and large houses.

A rich assemblage of bone and deer antler artefacts (about 75) was discovered in their inventory together with various ceramic pots, chopped and polished stone tools etc.

In this assemblage, the pieces made of red deer antler tines are predominant: oblique unperforated and perforated points. There are also some massive pieces made of perforated antler beam segments. In the specialised literature, their functionality was related to the practice of agriculture (digging sticks, antler mattocks).

A small number of bone artefacts are also included in the assemblage: points made of diaphysis of mammal long bones, of caprine metapodials, polishing tools made of fragments of diaphysis of long bones etc.

There is an interesting preference for using the ulnas of small / medium size mammals (probably domestic pigs) in order to manufacture polishing tools with standardized typology and dimensions.

Our approach attests the specific use of some raw materials, the use of certain procedures in order to manufacture them (technology), the presence of certain types of tools and their functionality that was determined by the occupations that took place in the site and that were hypothetically proved: agriculture, textile, hide and wood working.

The present paper offers for the first time a modern approach of these artefacts (according to methodology and typology Beldiman 2007). In order to achieve this goal microscopic analysis was currently used.

The analysis of assemblage (in progress) represents a part of the project called *Digitisation of the national movable heritage from History Museum of Galați. Collection of artefacts made from animal osseous materials – DanubiOs* (2012), financed by the Romanian Administration of the National Cultural Fund (Web: <http://www.migl.ro/DanubiOs/eneolithic/index.html>).



**ANTHROPOLOGICAL ANALYSIS PERFORMED UPON SKULLS
DISCOVERED IN A RITUAL PIT
FROM THE ARCHAEOLOGICAL SITE OF CÂRCEA-LA HOTARE
(COȘOVENI COMMUNE, DOLJ COUNTY, ROMANIA)**

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***Keywords:** anthropology, Neolithic, Cârcea, skulls, ritual pit.*

In a ritual pit uncovered in the site from Cârcea it was found a number of 17 complete and fragmentary skulls. Most of them belonged to women, a single one belonged to a man, while the others were children or undeterminable. Together with them were very few fragments coming from the post-cranial skeleton and animal bones. The skulls were arranged in a circle, with their face towards the inside part of it. We have found resemblances with other sites, like the Mesolithic Ofnet or Neolithic Çayönü. Considering the certain ritual purpose of this deposition, and also the sex of the individuals, we have concluded that the pit from Cârcea is a cultic complex, dedicated both to the cult of the skull and fertility. The presence of a male individual is not unusual in this context. The robust individual must have been a symbol of the male principle, which associated with the female one, must have emphasized the cult of fertility. We should also point out here that the find we have studied here is not a single one at Cârcea. Two other discoveries have been done here. The first one consisted in a pit that contained three female skulls, while the second was a pit dug into steps and containing the fragment of a skull, belonging to a juvenile female, associated with Dimini Arapi ceramics and animal bones. The frontal bone found there was processed.

Seemingly, Cârcea must have been a cultic center, where both the cult of the skull and the cult of fertility were performed, probably during some important ceremonies.

SPATIAL LOCATION OF THE GUMELNIȚA CEMETERIES AND THEIR IMPACT ON THE ENVIRONMENT

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Keywords: *Eneolithic, Gumelnița, cemeteries, landscape, spatial location.*

Until now more than 12 Gumelnița culture necropolises are known in Romania (Vărăști-Grădiștea Ulmilor, Gumelnița I, Gumelnița II, Chirnogi I, Chirnogi II, Cetatea Veche-Grădiștea, Căscioarele, Radovanu, Dridu, Sultana-Malu Roșu I, Măriuța-La Movilă, Pietrele-Gorgana) and other four hypothetical cemeteries (Hârșova, Palazu Mare, Curcani, Sultana-Malu Roșu II). All of them are extramural necropolises.

In this paper we will try to establish ways of locating necropolises areas in relation to settlements, the factors underlying the choice of these areas, rules of spatial organization and the existence of a possible pattern used by Gumelnița communities. Although, apparently, ways of organizing funerary areas near settlements appears to be similar for the entire area of this culture, in fact there are many particular aspects (e.g. two tell settlements and just one cemetery – Căscioarele-D'aia Parte and *Ostrovel*; or two cemeteries for a single *tell*-settlement – Gumelnița I and II etc.). The issue of spatial location and spatial organization of cemeteries is very complex and there are still many questions awaiting answers.

We will use a series of information sources to achieve our goals: (1) archaeological data relating to various Gumelnița settlements and cemeteries identified and investigated in the past 50 years in Romania; (2) cartographic, geographical and topographical data about the landscape and determine the typology of land-use patterns by this prehistoric communities; (3) aerial photographs and satellite images to established the visual relation between settlements and cemeteries; (4) The integration of the archaeological, cartographical, and topographical data available for Kodjadermen-Karanovo VI and Varna cultures from Bulgaria to achieve a comparative model between the two areas.

Based on the available information, we can conclude that the Kodjadermen-Gumelnița-Karanovo VI communities have some specifics funeral rules. Generally, cemeteries were located in high places not liable to flooding, in accessible and manageable areas not far from the settlements, and in the direction close to west from

the settlements (in most of the cases). Distance between settlements and cemeteries ranges from 50 to 950 m. In terms of settlement association, in most of the cases the cemeteries are associated with a single settlement. Sometimes there are two cemeteries associated with one settlement (three cases) or in other cases there are two settlements and just one cemetery. From our point of view, there are three major factors that determine the choice of the location of the cemeteries: topography of the landscape, visibility and the perception of that space by a prehistoric community.

This work was supported by a grant of the Romanian National Authority for Scientific Research, CNCS – UEFISCDI, project number PN-II-ID-PCE-2011-3-1015.



Location of the two cemeteries from Sultana-*Malu Roșu*.

HUMAN IMPACT ON NATURAL ENVIRONMENT IN NEOLITHIC AND COPPER AGE IN TRANSYLVANIA AND BANAT (ROMANIA)

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Keywords: *human impact, environment, Neolithic, Copper Age, Transylvania, Banat.*

Our analysis is related with Transylvania and Banat areas, where pedological analyses have been performed for several sites, investigated on a larger scale (Parța, Bucovăț, Iclod, Gura Baciului, Țaga, Cheile Turzii etc.). Based on these analyses was estimated the human impact that led to the formation or soil modification based on archaeological data and observations.

The data for these obvious changes were observed in Neolithic sites at Iclod, Gura Baciului and Țaga, where the archaeological stratigraphy allowed the identification and dating of soil layers, thus obtaining very necessary data for archaeologists to understand the phenomena of layers formation.

When the archaeological monography of Gura Baciului was published, it was not examined the role of natural factor over Neolithic communities. We have attributed the first habitations with pit houses only to the habit to start with easiest dwellings to build. Reanalyzing today this aspect, we can observe that the first migrations (SC IA and SC IB), that begin earlier then 6000 CAL BC (for which we have radiocarbon data: Lazarovici C.-M., Lazarovici Gh., 2006, p. 64 ff., fig. II.8; p. 46, fig. II.3) were happening during the time of a cold climate, named by Henrieta Todorova in 2007 *Neolithische Eisenzeit* (apud Lazarovici C.-M., Lazarovici Gh., 2007, p. 288, fig. VI b.24).

Because such of a cold climate the type B soil formation it was not possible, as the habitation at Gura Baciului started on a type C soil. New investigations made in the area of Sibiu highway (S.A. Luca) prove the existence of four new Early Neolithic sites nearby salt sources at Miercurea Sibiului. Some of these sites are older than Gura Baciului, other contemporary, in all cases the habitation starts over a C type soil; these sites contain a very impressive wooden architecture (houses with an underground level and another made on massive wood and organic materials roofs covered by stones) and their publication will change opinions regarding Early Neolithic architecture.

The completion of cold climate around 5900-5800 CAL BC coincides with the second migration (SC IC-IIA at Gh. Lazarovici) when at Gura Baciului appear the first huts, maybe similar with the ones at Donja Branjevina. But those data must be compared with anthracological analyses, pollen analyses as was started investigation at Porțile de Fier and in other places (M. Cârciumaru).

The Iclod site is located in Someș Floodplain and erosion occurred as a result of deforestation of the west and south-west hills of settlement were notified in stratigraphy and also could be dated their moments.

Studying civil and „military” architecture (impressive fortifications systems) of all Neolithic sites in Transylvanian Plain (involving Someșul Mic Valley and its tributary), such as Țaga, Iclod, Fundătura, Cluj-Napoca (megasite with a stratigraphy of about 2-5 m and a surface of 50-70 ha), Zau (stratigraphy of about 4 m and surface over 10 ha) one can observe the existence of large housing, made mostly of wood, leading to massive cuts of wood. If we follow Iclod and Țaga prospecting (confirmed by excavation) can see ditches and especially palisades hundreds of meters long, on several rows, similarly with Parța case (3-5 palisades), with support pillars of palisades or „road patrol” or with monumental gates, comparable to the Bronze Age (Păuleni) or Early Medieval fortifications (Dăbâca).

Recent investigation at Turdaș (S.A. Luca), excavations at Foeni (Fl. Drașovean), Uivar (W. Schier and Fl. Drașovean), Parța and Bucovăț (Gh. Lazarovici) showed intensive use of wood (palisades, large housing structures, housing floor, suspended floors, annexes), leading to deforestation and will cause a slope erosion noticeable in the stratigraphy at Turdaș (about 1 m), Gura Baciului (0.80-1.10 m), Iclod (0.40 m), Țaga (0.60 m in the upstream side, respectively south of the site) and at Zau (0.80 m during Foeni - Petrești level, and they continued during Bronze and Hallstatt times).

Upper levels are contemporary with Copper Age (Iclod, Țaga) or belong to Copper Age (Zau, Baci, Tărtăria, Turdaș, Foeni, Parța and Bucovăț) in most of the mentioned sites.

For Copper Age, the prospectings from Ruginoasa and Scânteia, as well as excavated made here, have demonstrated the existence of strong fortifications defended by ditches and palisades, which have been restored, and banks with wood structures (Scânteia). Also traces of imposing wooden floorings and a strong infrastructure, house structure (walls, roof, annexes) and these the thousands of sites and tens of thousands of houses shows the intensity of deforestation, which resulted in erosion but also some side effects on the environment.

Using published data we make some considerations on the quantities of wood used for building houses (and annexes), and fortification systems, that will be compare with other different cultural areas.

In some areas buried soils were notified (case downstream of Parța) likely occurred as a result of tectonic movements and earthquakes? (Parța is in the area of a seismic centre).

Many problems not yet resolved and awaits answers.

LANDSCAPE CHANGES AND HUMAN IMPACT IN THE PREHISTORY OF MOSTIȘTEA VALLEY, ROMANIA

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Keywords: Prehistory, landscape changes, settlements and cemeteries, human adaptation, GIS.

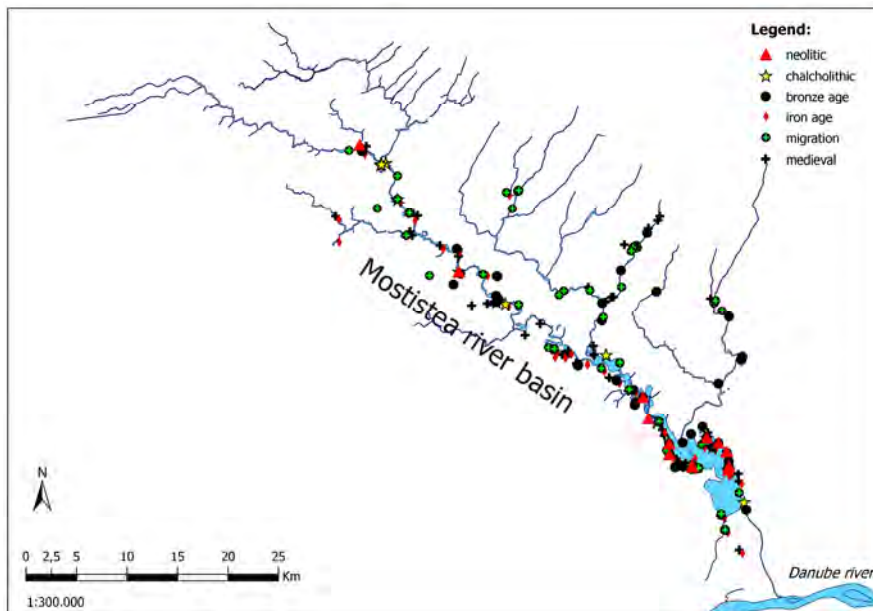
In this paper we will present archaeological, geomorphological, and GIS data about the Chalcolithic communities of the Boian and Gumelnița cultures (5500-3700 BC) from the Mostiștea Valley, South-Eastern Romania. The main aim of this paper is to present the human adaptation and strategies in the use of the landscape, but also to observe changes in landscape morphology, understood not only as an archaeological landscape, but also as an environmental context. We chose the Mostiștea Valley area because it is one of the best studied river basins in Romania, both in terms of archaeological and geomorphological data. The valley has also been the subject of GIS studies of landscape change. Under these circumstances, the Mostiștea Valley is an ideal area for complex analysis, both in terms of the dynamics of prehistoric habitation and changes in the prehistoric landscape.

From the geological point of view, Mostiștea is a typical plain river located in the South-Eastern Romania areas, in the Bărăgan Plain. It is part of the geomorphological subregion Argeș - Sărății Valley - Mostiștea, a transition between the high plains of western and eastern low. It contains the largest plain ramble and transition zone towards the hills. The Mostiștea River Basin is one of the most anthropogenic hydrological systems in the Eastern Romanian Plain and Mostiștea River has a length of 92 km. The main course defines Bărăgan in east and Vlășia in the northeast that link directly to a small portion and with its tributaries drains the field in an area of 1734 km².

From the archaeological point of view, Mostiștea Valley has been inhabited since ancient times. So far are certified 150 archaeological sites from the Neolithic period to the Middle Age. Until now there have been identified 30 sites belonging to Boian and Gumelnița cultures. The archaeological sites have been identified along the middle and lower Mostiștea Valley claim so. The archaeological sites consist in tell settlement, open settlements and cemeteries.

From methodological point of view we will use a series of interdisciplinary methods to achieve goals. Thus we'll use the archaeological data relating to various Chalcolithic period sites (settlements and cemeteries) identified and investigated in the past 50 years. We also use the geological and geomorphological studies for setting a background on the typology of landscape used by prehistoric communities. To determine the changes of the landscape we'll use the old cartographic documents (for 18th and 19th centuries) and the bibliographical data, but also military topographic maps (at the scale 1:5,000 and 1:25,000) and 2005-2008 edition of Romanian orthophotoplans. Also we'll use geological maps (scale 1:200,000), the aerial photographs and satellite images. The integration of the archaeological, geological, cartographical and topographical data has been achieved through the GIS software.

This work was supported by a grant of the Romanian National Authority for Scientific Research, CNCS – UEFISCDI, project number PN-II-ID-PCE-2011-3-1015.



Map of the archaeological sites from the Neolithic period to the Middle Age identified in the Mostiștea Valley.

DYNAMICS OF THE NEO-ENEOLITHIC SETTLEMENTS IN THE ARGEȘ BASIN AND ITS TRIBUTARIES (ROMANIA)

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Keywords: *Neo-Eneolithic, dynamics of settlements, Argeș Basin, Argeș tributaries.*

The Argeș River, with its tributaries of smaller or bigger importance (Dâmbovița, Colentina, Câlniștea, Glavacioc, Milcovăț, Ilfovăț, Sabar, Ciorogârla) is the main water route in the Central Muntenia. This is the one that resulted in the formation and development of some human communities in this space, among which we could find the Neo-Eneolithic ones.

We have to say that, at least in this stage of research, we could discuss about a dynamic, a density of settlements, either in *tells* or placed on the terrace, especially on the secondary river flows, as the range situated in the close proximity of the Argeș proper seeming to be avoided by the communities. This assumption is confirmed by finds such as those from Radovanu-*Valea Coadelor* or Izvoarele, placed upon small valleys that merge with the one of the Argeș River. In the same manner, but more seldom, there are to be mentioned settlements identified right on the river terraces among these, an important position being held by the site from Radovanu-*Gorgana I*, mostly investigated in the past few years.

Going back to the tributaries of the Argeș River, their banks were well inhabited by the neo-eneolithic communities that used to make small settlements on the lower or higher terraces, but also in tell. We could mention here, for instance, Câlniștea, in the proximity of some tells have been identified at Bila, Tangâru, Naipu, but also the Neajlov River, with tells and settlements at Iepurești, Bucșani-*La Pod*, *La Pădure*, *Pepinieră 2*, *La școală*, *La izvor* etc.

The location of the settlements in a certain micro-region, their density, type and dimensions, their inner dynamics, would be elements that we would focus upon in our contribution. We have to stress here that all these considerations are being tightly connected with the stage of investigations, with their amplitude and, none the less, with the minuteness used during the research.

**ANTHROPIC IMPACT ON THE NEOLITHIC
AND ENEOLITHIC ENVIRONMENT IN THE MIDDLE SECTOR
OF THE SUCEAVA RIVER (ROMANIA)**

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Keywords: GIS, paleogeomorphology, landscape, Neo-Eneolithic, Suceava River.

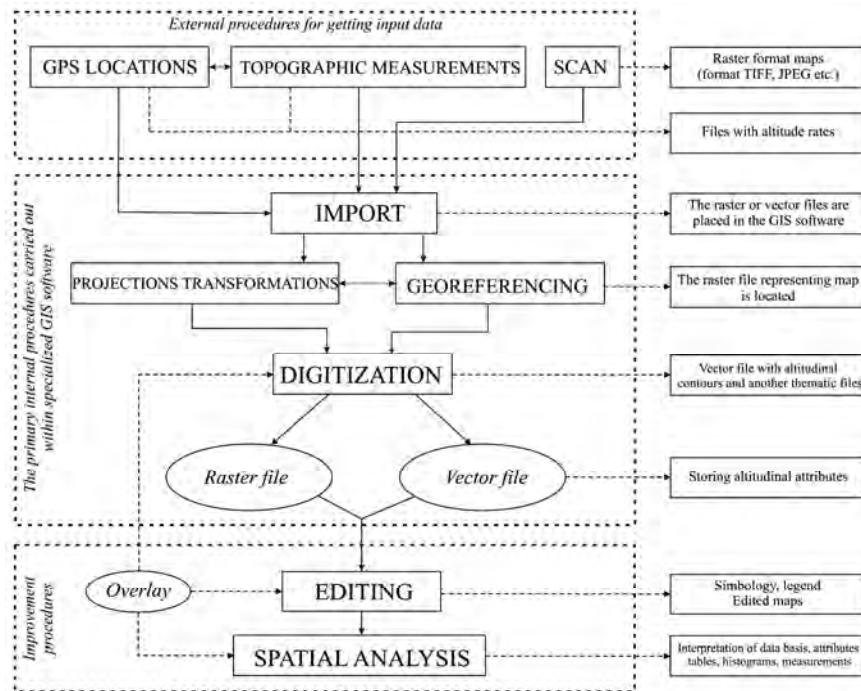
The multi-layered archaeological settlements from Mihoveni-Cahla (*Gârla Morii*) and Suceava / Ițcani-*Ferma 2*, situated in the middle sector of the Suceava River, are well known in the specialized archaeological literature, because they provide a quasi-whole sequence of habitation of the Neolithic and Eneolithic human communities (Starčevo-Criș, Linear Pottery Culture, Precucuteni (II and III phases), Cucuteni (A and B phases), Horodiștea-Erbiceni-Gordinești), followed by those belonging to Middle Bronze Age (Komariv culture), Late Bronze Age (Noua culture) and the horizon with channelled pottery (Gáva-Holíhrády culture, Grănicești group). In this context, the recreation of the geographic framework of *Atlantic* and of the amplitude of the Neolithic and Eneolithic anthropic impact in the considered area can contribute to a more comprehensive modelling of the so complex interactions between pre- and proto-historical man / societies and the natural environment.

In the present paper we describe the results obtained by the authors in the studying the anthropic impact, during and within the reference area, by applying spatial data processing methods within the interdisciplinary framework provided by GIS and the paleo-geomorphological investigations, corroborated with the hydrological, pedological and archaeozoological data. The study followed the association of archaeological data and dating, for each sequence of anthropic habitation in the settlements from Mihoveni-Cahla *Morii* and Ițcani-*Ferma 2*, obtained mostly on the basis of the typological-comparative analysis, with the systemic information acquired by the application of GIS and the interpretations regarding the paleogeomorphology of the area.

On the basis of the numeric model of the land, achieved by the digitization of the level curves on the topographic plans at the scale 1:5,000, the

geomorphometric maps were drawn (hypsothetic map, land inclination map, land exhibition map), and the application which renders the visibility from different locations. For the localization of the settlements the GPS was used together with the visualization of the ortophotoplans.

The evolution in the horizontal plan of the valley of the Suceava River, in the sector Mihoveni and Ițcani was pointed out by the spatial analysis within the program *ArcGIS 9.2* and of certain maps corresponding to different historical phases (the last 200 years, starting with the end of the 18th century). It was possible to notice that the minor riverbed of the Suceava River known a series of successive meanderings and side displacements. The presence of fragments of meadow terrace and of abandoned meanders on the left side of Suceava River confirms the fact that during the last period the same had a sideward evolution, mainly to the right. The terraces on which the settlements are located and the surrounding area provided, apart from the adequate conditions for founding of the built space, aquatic and forest resources, lands for the cultivation of plants and animal husbandry, lithic raw materials and communication ways. These relations determined specific responses, manifested in the form of successive modifications of the habitat type, of the extension or reduction of the same, of the fortification or abandonment of the defensive systems, even of moving away the inhabited and exploited space.



ENEOLITHIC HABITATION IN WALLACHIAN SUBCARPATHIANS: PATTERNS AND TRADITIONS

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Keywords: *eneolithic, landscape, anthropic impact, tell, Wallachian Subcarpathians.*

Knowledge of the impact of the natural elements characteristic for a territory on human communities requires mandatory stage in the evaluation of the structure and performance of those communities. Located at the contact between the Carpathian catena and the plain, the area of Wallachia Subcarpathians individualizes through a complex natural potential because of the dynamics of phenomena and processes present throughout history, as well as the existence of important mineral resources (salt, limestones, chalk with accidents, amber, quartz silicate).

In Wallachian Subcarpathians the landscape is fragmented, the area is bordered on the north side by the Southern Carpathians, on the south by the piedmont plain (150 m altitude), on the western and eastern sides there are the basins of two major rivers, Olt and Buzău. There is a diversity of relief forms ranging from plain to hills, the area being crossed by rivers with high flow rates, flowing in a north-south direction, with their source in the Carpathian Mountains, that some of them cross. This situation ensured communication lines between the north Carpathian communities from Transylvania and the south Carpathian ones from Wallachia. These contacts are confirmed by the existence of cultural influences, or by the so called „imports”. Within this area rich mineral resources are present, especially salt in the form of surface outcrops or deposits, but also salt springs. Amber is another important resource, which apparently was exploited in a limited manner at that time, but slightly more intense during the Bronze Age. Also, in an area covered by extensive forests, wild fauna was heavily exploited, both for primary and secondary products. Of great importance is also the rich network of rivers that cross this geographical area. All these elements seem to have provided prehistoric human communities with necessary resources in order to inhabit this area, the existence of archaeological sites with deposits of 1.5-4 m thick being relevant in this regard. Settlements are located mainly near secondary rivers with reduced flows, on the plane of hills (Aldeni, Seciu), the edge of terraces (Mălăieștii

de Jos, Târgșoru Vechi, Sudiți) or their underlying areas (Ziduri), but also in the open floodplains (Teiu, Geangoești, Colceag).

Landscape geo-diversity, starting with Neolithic, provided for the process of humanization a diversified offer, with significantly higher accessibility than in the adjacent areas, so that, in socio-cultural terms, this environment, located at the interference between multiple cultural spaces, creates regional identities or synthesis faciesuri (Stoicani-Aldeni cultural aspect, Brătești aspect, Cucuteni B - Cernavoda I aspect), by combining the elements specific to different cultural traditions. In the eneolithic era settlements in this area present certain particularities, both by the existence of settlements with complex stratigraphy, developed vertically, similar to tell in the valley of the Danube and in the wider Balkan region, and some that is developing mostly in the horizontal plane. Tell settlements with amplitudes between 1.5-4 m and a diameter of 40-80 m, easily identifiable in the plain area by surface research, are easily confused with natural forms of relief in the subcarpatic range.

Based on the human, cultural and natural elements in a plurifunctional system involve the application of an inter-and transdisciplinary approach which guarantees both the detail analysis of the natural system's components (stratigraphic, paleontological, geomorphological elements) subjected to scientific research and the role of inhibitor or amplifier, especially that of the activity of modeling the evolution of the human component as part of a whole.

DYNAMIQUE DE L'HABITATION ENEOLITHIQUE FINAL DANS LA REGION DE DOBRUDJA

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Mots-clés: Dobrudja, culture Gumelnița A₂, changements climatiques, céramique importés Cucuteni A₃ - A₄ et Cucuteni C, culture Cernavoda I.

A la fin de l'énéolithique final, pendant que les communautés du type Gumelnița de la Dobroudja et du nord-est de la Munténie conservaient les vieilles traditions, le matériel céramique appartenant quasi-totalement à la tradition Gumelnița A₂, dans le reste de la Plaine Roumaine, on observe de plus en plus, des éléments de facture occidentale venus, probablement, du milieu de Sălcița-Krivodol, qui conduisent vers la phase Gumelnița B₁. Dans la zone du littoral ouest-pontique, rien ne suggère une pénétration violente des tribus orientales. Après l'énéolithique final, inondé dans la plupart des sites il y a eu une période d'abandon où les habitations détruites ont été recouvertes d'une couche alluvionnaire, riche en coquilles marines.

Quelles ont été les causes de ces déplacements de populations – indigènes et allogènes?

Les pénétrations orientales doivent être prises en considération dans le contexte des changements climatiques importantes de la fin de l'énéolithique. Les nouveaux – venus ont préféré, d'abord, la steppe dobroudjienne, se déplaçant vers le sud, sur la ligne du Danube, à la fin de la phase Gumelnița A₂. Les pénétrations de la culture Cernavoda I ont eu lieu après ou, tout au plus, au moment de l'inondation des sites de la zone du littoral ouest-pontique.

La disparition des sites de Dobroudja a rompu l'équilibre des échanges culturels, déterminant peu à peu le déclin des vieux centres Gumelnița du nord du Danube, trouvés dans la phase Gumelnița B₁. C'est pourquoi, des revalorisations de fond s'imposent concernant la détermination des périodes, en concordance avec les dates ¹⁴C et les importations céramiques. Le fait d'être partiellement contemporaines – Gumelnița A_{2c} - Gumelnița B₁ - Varna III – démontre l'existence de plusieurs aspects régionaux, avec des évolutions distinctes, selon les particularités de chaque région.

**RESEARCH IN SPATIAL ETHNOARCHAEOLOGY ON THE SUPPLYING
WITH BRINE FROM SALT SPRINGS IN MOLDAVIA (ROMANIA)**

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Keywords: *ethnoarchaeology, brine, salt spring, Moldavia, Romania.*

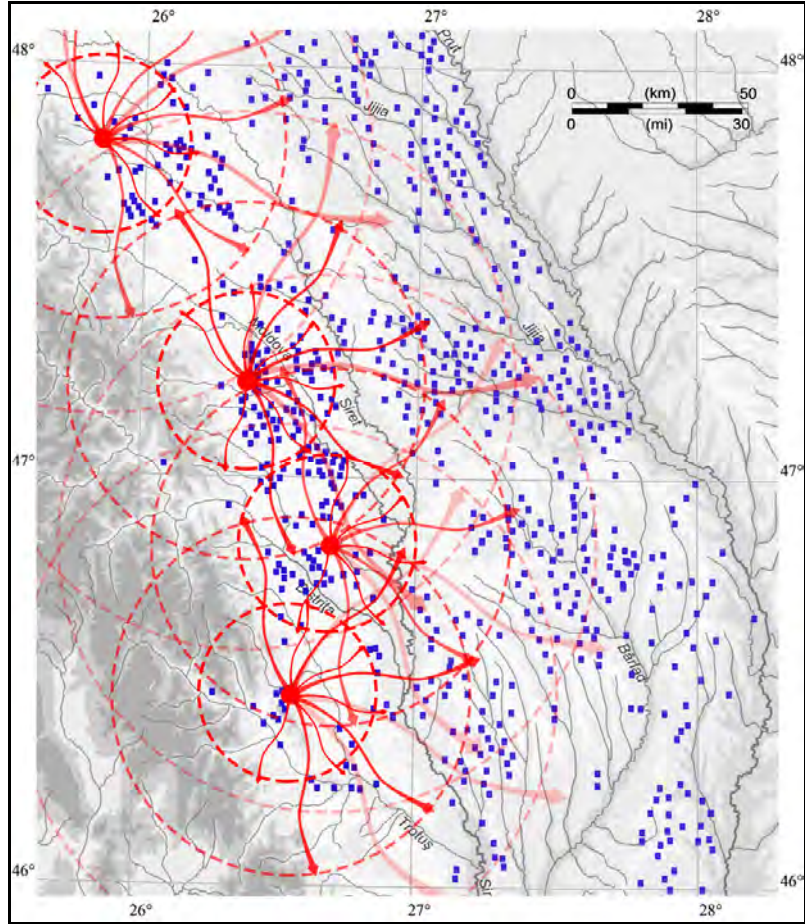
Spatial archaeology and spatial ethnography illustrate research directions that are recent yet already consolidated. But up to the present moment, the connection between these two was only sporadically made. For this reason, in the first part of the paper, one of us (M.A.) advances a theoretical foundation for the concept of spatial ethnoarchaeology.

The research performed as part of two Romanian research projects with French participation – *The salt water springs of Moldavia. The ethnoarchaeology of a polyvalent natural resource* (PN-II-IDEI, code 414/2007, no 167/2007, web: <http://www.ethnosal.uaic.ro/>) and *The ethno-archaeology of the salt springs and salt mountains from the extra-Carpathian areas of Romania* (PN-II-IDEI, code 0825/2011, no 219/5.10.2011, <http://www.ethnosalro.uaic.ro/>) – have produced, among other results, ethnographic models for brine supplying from salt springs in the area of Subcarpathian Moldavia. The main conclusion is that salt springs, invariants of the natural environment, become genuine attractors for human communities in every historical period. We believe that episodes when brine supplying from salt springs unfolded during exceptional circumstances (war, drought, the dissolution of the established commercial networks etc.), ethnographically attested in the historical present (*i.e.* the last century), are most adequate for assessing subsistence patterns related to fulfilling the salt requirements during various archaeological sequences. Obviously, the brine quantities necessary depend on the demographic density in the areas of its distribution. In the current stage of research, the models suggested have a high degree of generality. An in-depth investigation of the relationship between brine resources and demographic density should take into account only the number of synchronous settlements (for

example, a 50-years time span), correlated with an estimated number of inhabitants, and obviously only to a level backed by archaeological evidence. No matter how audacious these attempts might seem, only by taking into consideration these methodological caveats, the approximations of real phenomena could reach a credible level of accuracy.

The ethnographic models that reveal a spatial distribution of brine from salts springs at a local (a 20-30 km radius) and regional (*ca.* 100 km) level were applied to the main archaeological sequences of the most representative areas with salt springs, and which have been archaeologically investigated.

The employment of spatial ethnography for solving the question of salt requirements and direct supplying of brine from salt springs reveal, including from a chronological point of view, significant differences between different areas that harbor liquid salt attractors. Thus, the Solca-Cacica area manifested, rather surprisingly, a gravitational pull for human communities as early as the Palaeolithic, unlike other areas with salt springs that have been thoroughly studied. On the other hand, as revealed by the models developed for the Bronze Age, the human communities favoured a quasi-concentric settling pattern around some salt springs, at relatively short distances from them that eased provisioning. Another important conclusion is that the salt springs from the Moldavian piedmont can cover the salt requirements of the communities of the archaeological time from the entire area between the Carpathians and the Prut River. We can state even at this stage that the existence of over 200 salt springs in the Subcarpathian area of Moldavia would have easily covered the salt requirements on a local level, while the same requirements would have entailed long-distance transport of larger quantities of brine. It follows then that settling of human communities, particular of the Eneolithic ones, followed different parameters, as the question of long-distance brine supplying was resolved. This conclusion entails, in its turn, the complex question of human mobility during pre- and proto-historical times. At the stage of research, we observe complex relationships between the quantity of brine collected from a salt spring, the frequency of travel to the salt spring in order to procure brine, and the distance to which human communities are located around a certain salt spring. Similar substantive results have been obtained from investigating the diachronic variability of site density around the areas that confine a liquid salt attractor. But it is clear that this variability depends on other essential parameters of demographic evolution or involution than satisfying the requirements of salt.



General model (without chronological and cultural indicators) of brine supplying of the Eneolithic communities from the area between the Carpathians and the Prut River.

**HUMAN INTERACTION AND ENVIRONMENTAL IMPACT
OF SALT SPRING EXPLOITATION OVER 2000 YEARS
(HĂLĂBUTOAIA - ȚOLICI, PETRICANI, NEAMȚ, ROMANIA)**

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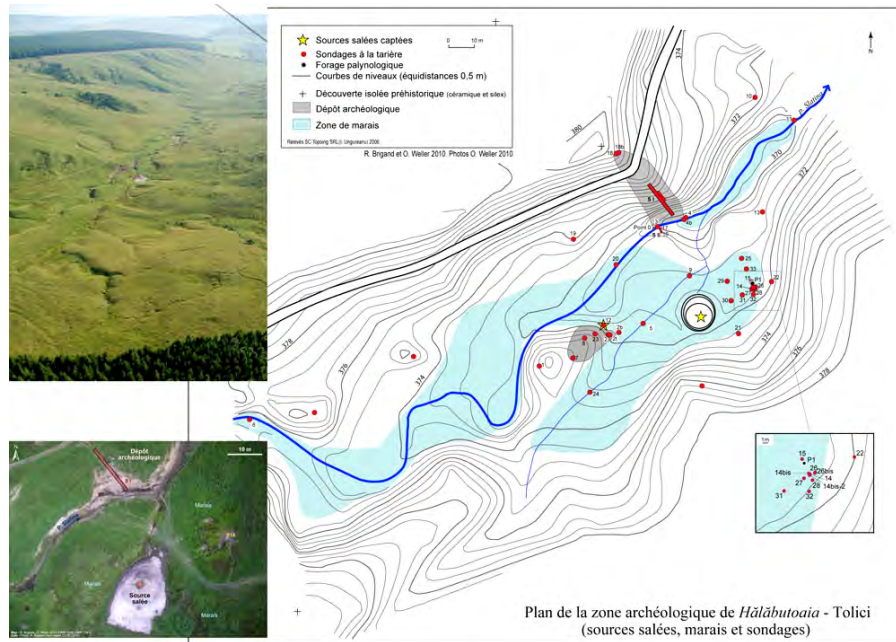
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Keywords: *salt spring, palaeoenvironment, Neolithic, human impact, pollen, non-pollen palynomorphs, Romania.*

Salt exploitation from the mineral spring of Hălăbutoaia-Țolici (Neamț, Romania) is one of the earliest in Europe. Discovered in 2005, salt production is documented from the Early Neolithic to the end of Chalcolithic period (6000-3500 BC) with an important stratigraphy of 8 m high. In 2007-2010, a different core drilling was performed in the salty swamp of the spring and numerous palaeoenvironmental studies were realized in the archaeological site. Multi-proxies approach around salt spring (sedimentology, pollen, non-pollen palynomorphs) and in the salt workshop (micromorphology, mineralogy, anthracology, phytoliths, chemical analysis) suggests a remarkable environmental impact since the Early Neolithic and highlights salt techniques and human interactions. Salt exploitation, pastoral practices and farming are directly in connection with these variations, as well as in the background palaeoclimatic oscillations.

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**TURDAŞ SITE (ROMANIA). A MODEL OF NATURAL IMPACT
ON THE NEOLITHIC AND ENEOLITHIC COMMUNITY**

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Keywords: Turdaş, Neo-Eneolithic, Middle Age, magnetometry.

Turdaş site is known from 1866 and was first excavated by Zsófia von Torma in 1975 who build up a famous Neolithic collection of artefacts. Márton Roska made first scientifically excavations of the site in 1910 and was followed by Vladimir Dumitrescu in '30s and Iuliu Paul in '60s.

Between 1992 and 1998 under Sabin Adrian Luca supervision, were made systematically excavations along the Mureş River, the partial results were published in 2001. A magnetometric survey was undertaken by Mischka Carsten from Kiel University (Germany) in 2007. That was the moment when first enclosure was seen on the magnetogram. In 2011 huge rescue excavations took place in Turdaş and were revealed a complex system of ditches, palisades and fences. The terrace was inhabited from Early Neolithic till Early Medieval times with a maximum reached in the Eneolithic period.

**LA COMMUNAUTE CHALCOLITHIQUE DE TARASCHINA (ROUMANIE)
DANS LE DELTA DU DANUBE ENTRE 4550-4200 bc:
QUELS INDICATEURS AGRICOLES?
QUEL IMPACT ENVIRONNEMENTAL?**

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Mots-clés: *paléo-environnement, géo-archéologie, Gumelnița A₁,
céréaliculture, anthropisation.*

Le site chalcolithique de Taraschina, près de Mila 23, occupe une place particulière dans le Delta du Danube. Cet habitat pluristratifié forme actuellement un paléo-relief qui émerge des eaux du delta. Les fouilles archéologiques conduites depuis 2010 ont permis de préciser que l’habitat s’est établi durant la première moitié du 5^{ème} millénaire avant notre ère, probablement vers 4800-4700 BC. La dernière phase d’occupation laisse entrevoir que l’abandon du site serait intervenu vers 4300-4250 BC.

La fouille archéologique des derniers niveaux d’occupation indique la présence d’une zone où se concentrent des nombreux creusements et plus

particulièrement des silos. Certaines grandes fosses coalescentes pourraient indiquer que ces silos étaient accolés et regroupés. L'analyse des mobiliers lithiques montre, par la présence des meules et des lames de faucilles en silex, que l'agriculture constituait une activité de production importante. L'analyse tracéologique des lames indique la culture de céréales, également avérée par l'analyse des phytolithes présents dans les sédiments de l'habitat. Ces derniers constituent un excellent indicateur des pratiques agricoles. En effet, des stigmates de découpe des céréales à l'aide de lames de silex ont pu être identifiés.

Les recherches géo-archéologiques conduites hors du site archéologique, à l'aide des carottages multiples, montrent que l'environnement immédiat de l'habitat connaît des changements rapides, en lien avec les transformations du système hydrologique. L'analyse de carotte 10, prélevée à moins de 40 mètres de l'habitat chalcolithique, indique que jusque vers 4500 BC, le milieu est exondé. L'analyse à haute résolution chronologique des indicateurs de végétation, tels que les phytolithes, révèle la présence des cultures de céréales, et / ou, d'activités de traitement in situ des récoltes. Durant la seconde moitié du 5^{ème} millénaire avant notre ère, le milieu change très rapidement. L'accélération du régime des crues et la formation des vastes espaces fluvio-lacustres, indiquent un changement hydrologique majeur, en lien avec l'élévation du niveau marin. Une partie de l'environnement de l'habitat, contemporain du Gumelnița A₁, se trouve dès lors inondé et soumis aux crues. Toutefois, il semble que les bases de l'économie ne se trouvent pas bouleversées et que les populations s'adaptent pour parti à ce changement, comme en témoigne l'intensité des pratiques agricoles. Ce n'est que vers 4300-4250 BC que l'impact des changements environnementaux semble affecter les fondements économiques, comme pourrait en témoigner l'augmentation de la prédation. Selon ce modèle, l'abandon de l'habitat interviendrait au plus tard vers 4250 BC, au moment où l'ensemble de la zone passerait sous influence fluvio-lacustre impliquant un changement radical de l'environnement, avec un paysage très semblable au milieu actuel.

**LIVING IN THE DANUBE VALLEY IN THE COPPER AGE.
THE TELL FROM BORDUȘANI-POPINĂ (ROMANIA)**

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Keywords: *landscape, Danube Valley, Balta Ialomiței, Bordușani, Gumelnița.*

The *tell* from Bordușani-Popină, one of the few *tells* in the northern area of Gumelnița culture situated in a floodplain area – in the island between Borcea and Danube branches – and formed on an erosion remnant of the lower terrace of the river, reveals specific human inhabitations for wetlands.

The most important human occupation date from Boian and Gumelnița cultures (5th millennium BC), and Iron Age – La Tène culture (2nd century BC - 1st century AD).

The pluridisciplinary researches, offer important informations for understanding the characteristics of these communities' evolution in the context of their relations with the environment.

The researched area (who has approximate 800 m²) allows important observations concerning the structure and the utilization of the built space. The dwellings were disposed in parallel rows, with passageways between them. This type of space's structure is known for only few Gumelnița settlements in North Danube area.

The archaeological inventory illustrates mainly (till now), the stage A₂ of Gumelnița culture and the connections developed along the river and in the flooded area.

The complex study of all the artefacts and ecofacts underline a specific modality of resources management and strategies in which the aquatic ones was very important.

In the same time, the area being most probably flooded (twice in a year), the plants cultivation and animal breeding present some characteristic aspects. These emphasize the special importance of the different types of the human occupation in the wetland area around the site.

Even, in that moment, the stage of the knowledge is far to be complete, the existing informations suggest some general characteristics of human inhabitation in Copper Age in that area.

Project IDEI *Landscape and human co-evolution patterns in the wetland area of Balta Ialomiței* 2011-2014.

THE TELL-SETTLEMENT FROM SULTANA-MALU ROȘU (ROMANIA) AND EFFECTS OF THE ANTHROPIC ACTIVITIES ON THE LANDSCAPE

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Keywords: *landscape, erosion, settlement, lake, Gumelnița.*

The Sultana-Malu Roșu Eneolithic site is located in South-East Romania, in the Călărași county, near the Sultana village, commune of Mânăstirea in the eastern part of the Romanian Plain, on the right bank of Mostiștea River. The soil is formed of loess deposits and in some areas there are small sand hills. The altitudes for this area are between 4 and 80 m above Black Sea level.

This Kodjadermen-Gumelnița-Karanovo VI site, dating back to the second half of the fifth millennium B.C. consists of a tell settlement and a necropolis. The necropolis is located on the high terrace at approximately 150 m west of the settlements in a place not liable to flooding.

The *tell* is located at the edge of the terrace, separated by it through deep valleys to south-east and north-west. To the southwest an alveoli probably indicates the existence of a rampart which separates the *tell* from the rest of the terrace.

The tells stratigraphy measures between 2.5 meters in the western part and 4 meters in its eastern part.

The first stages of landscape change were produced by the inhabitants themselves. One of the first elements of landscape change was the continuous elevation of the settlement, due to intensive occupation. Second of all, the inhabitants have raised not one but three ramparts during the evolution of the settlement. The archaeological data recovered in the field is backed up by 3 resistivity profiles.

The placement and the usage of the necropolis was a third major landscape intervention of the ancient inhabitants.

We do not know yet the changes of the landscape which occurred between the abandonment of the settlement and the beginning of the archaeological research in 1920's. We can assume that there has been a substantial accumulation of wind deposits.

From that point on, the settlement and its surroundings have suffered substantial landscape changes. The terrace has been affected mainly by erosion inflicted by the waters of the lake but also rainfall, freeze / defreezes processes.

Also, the land improvement project in the 1970's has left its mark upon the landscape configuration. It has raised the level of the water in the Mostiștea Lake, adding power to the soil erosion processes.

Regularly, slices of the terrace are sliding down into the waters of the Mostiștea Lake, along with parts of the tell settlement. In consequence, now the settlement measures ca. 35-40 m on the north-east-south-west axis and 25-30 m on the short axis, the southeast-northwest. Just to get an idea of the extent of landscape changes, we mention that in 1923, Ion Andrieșescu estimated the long axis at about 71 m.



Tell-settlement Sultana-Malu Roșu.

**CHALCOLITHIC SETTLEMENTS VARHARI AND ORLITSA,
EASTERN RHODOPE MOUNTAINS, BULGARIA:
TWO MODELS OF INTERACTION WITH THE ENVIRONMENT**

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Keywords: *Chalcolithic, Rhodope Mountains, Varbitsa River, Varhari, Orlitsa, open-area settlements, architecture, building techniques, raw materials.*

The open-area settlements at Varhari and Orlitsa are located in the catchment area of the Varbitsa River in the Eastern Rhodope Mountains, some 30 km away from each other. The Varhari settlement dates to the Middle Chalcolithic. It spans over 60,000 m². 6,000 m² were excavated and on the other part geomagnetic survey was conducted. The Orlitsa settlement dates to the Late Chalcolithic and is much smaller, with an area of about 5,000 m². It was almost completely excavated (4,150 m²).

Besides the territorial and chronological proximity there are considerable differences in the settlement structure and the architecture of both sites. These differences were largely determined by the environment.

The Varhari settlement is situated between two rivers, on a thick soil layer. The availability of good clay and the presence of large pits left after uprooting the trees to clean the area determined the architecture. The „incorporation” of these pits into the buildings facilitated the building activities. The extracted clay was used to build the walls. The buildings had several „rooms” and a total area between 300 and 800 m². The walls were mainly clay-built, up to 0,60 m thick. The buildings had dug-in and above-ground part. The dug-in structures were between 0.70-0.80 m and 1.50-2 m deep and used, in most cases, as basements. The above-ground parts were used for living. The settlement was densely built-up.

The Orlitsa settlement is situated on a rocky ground. There were six buildings located in about 20-25 m wide strip, at a distance of 4-25 m from each other. Among the buildings there were courtyards in which some pits were located and fruit-trees were grown. The buildings differ in terms of dimensions (one and two-storied; with an area from 20 m² up to 100 m²) and construction. The walls were built in different techniques. Mainly trees and stones were used because of their availability. The good knowledge of the specifics of different trees is visible. The wall construction

was made of oak while for the „verandas” and the second-storey floor softwood was used. Ash, hornbeam and pear were used for the furnishing.

The research of these two settlements shows that prehistoric man was well acquainted with the environment and carefully conformed to its specifics. This refers not only to the construction of the buildings (choice of material, building techniques, dimensions and structure) but to the main manufacture activities as well.

The location of the Varhari settlement is determined not only by the suitable environment but mainly by the available raw materials for the production of stone tools. More than 100,000 artefacts have been found (mainly debris of jasper, chalcedony etc.) which show that the site was production centre. Most of the raw materials were collected from the river beds but for others the exploitation of particular deposits has been attested.



Chalcolithic settlement Oriitsa, Building 1



Flint tools from the Varhari settlement



Stone beads from Varhari at different production phases



Chalcolithic settlement Varhari, Northern sector:
the dug-in complex of building 22-26

**MAN AND NATURAL ENVIRONMENT
IN THE AREA OF THE TĂCUTA-DEALUL MICLEA SETTLEMENT
(VASLUI COUNTY, ROMANIA)**

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Keywords: *Eneolithic, landscape, paleogeomorphology, pedology, hydrology, archaeozoology.*

Located in the northern part of the Central Moldavian Plateau, in a hilly region of arched elevations and ridges separated by deep, asymmetrical valleys, at the confluence of the Valea Largă and Cuțicna / Cuțigna brooks, the latter being the last right tributary of the Vaslui River, the multi-layered prehistorically settlement of Tăcuta-Dealul Miclea / Paic is expected to be, despite the hitherto limited research, one of the most important Precucutenian and Cucutenian sites from this geographical subunit.

The paper presents the attempted reconstruction of the natural environment during the *Atlantic* period, in the reference area of the site, by corroborating the archaeological data obtained from excavations and the elaboration of the archaeological map with the palaeogeomorphological, pedological, hydrological, and archaeozoological data, and the assessment of the degree of human intervention in the ecosystem during the Eneolithic. To this purpose, cartographic material from different historical periods and orthophotomaps were studied, topographic surveys and magnetometric scanning were performed, the geomorphometric maps were elaborated (viz. the hypsometric, ground inclination, and terrain exposure maps), the visibility of the site from different points was ascertained, and the natural resources from the vicinity were referenced.

The spatial analysis of the geographical components of the *Atlantic* allowed us to establish the horizontal and vertical evolution of the valleys of the Valea Largă and Cuțigna brooks, the genesis of several natural ponds and the degree of marshland formation and clogging of the nearby confluence and lowland areas. It was noticed that the minor bed of the Cuțigna brook experienced a series of successive meanderings and moderate lateral shifting. The terrace grounds, with brown luvic soils (podzols), gray soils, and black earth in developing (early

chernozem), together with the rich forest fauna, which was determined by archaeozoological means, reveal that there were vast tracts of forested land around the site, interspersed with pastures and cultivated fields.

The plateau on which the site and the neighbouring terraces are located provided favourable conditions for founding and maintaining the settlement's built area, as well as important water and wood resources, land for plant cultivation and animal husbandry, lithic raw materials, and adequate communication pathways. The impact of the *Eneolithic* man on the environment from this area was consistent, but it was far from producing any major changes to it. These human interventions determined specific adaptive responses, manifested as successive changes in the habitat type, in its expansion or contraction, in the strengthening or abandonment of the defensive systems, in the relocation of the inhabited and of the exploited space, as well as in the expression of the cultural particularities.

**L’HISTORIQUE DES RECHERCHES PLURIDISCIPLINAIRES
CONCERNANT LE COMPLEXE CULTUREL
PRECUCUTENI-CUCUTENI-TRIPOLYE**

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Mots-clés: *énéolithique, Precucuteni-Cucuteni-Tripolye, recherches pluridisciplinaires, l’historique des recherches.*

Le présent matériel relève, d’une part, l’historique des recherches pluridisciplinaires effectuées le long du temps relatives au complexe culturel Precucuteni-Cucuteni-Tripolye et, de l’autre part, les personnalités y impliqués ainsi que les réunions scientifiques et les travaux les plus importants qui ont permis de valoriser les résultats ainsi obtenus.

Telles recherches modernes, réalisées par les archéologues (de formation historique en leur majorité) en collaboration avec des professionnels d’autres domaines (géographie, géologie, botanique, zoologie, anthropologie, physique, chimie, ethnographie etc.) sont en mesure de mettre en évidence la relation entre les communautés humaines appartenant à cette civilisation et l’environnement.

Ceci a permis d’obtenir, le long du temps, des résultats significatifs dans la recherche ethnoarchéologique, archéobotanique, archéozoologique, anthropologique, tracéologique, pétrographique, métallographique, aérophotométrique, magnétométrique, chronologique (radiocarbone (¹⁴C), archéomagnétisme, thermoluminescence) ou bien de l’archéologie expérimentale.

Quand même, quoi qu’au présent le complexe culturel Precucuteni-Cucuteni-Tripolye soit l’une des plus intensément étudiée et valorisée (expositionnel et publicistique) manifestation culturelle de l’*Ancienne Europe*, les issues de la recherche pluridisciplinaires s’avèrent être assez limitées par rapport aux celles de l’archéologie „classique”; en conséquence, toute une série d’aspects importants de la relation entre les communautés humaines appartenant à cette civilisation et l’environnement devra être élucidée à l’avenir.

**LE CHANGEMENT DE L'ASPECT DES HABITATS DE LONGUE DUREE
ET AVEC DES ELEMENTS DE FORTIFICATION
DU COMPLEXE CULTUREL PRECUCUTENI-CUCUTENI**

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Mots-clés: *habitat, complexe culturel Precucuteni-Cucuteni, sites fortifiés, dépôts archéologiques.*

On propose à suivre le changement de l'aspect des lieux où il y avait des habitats de longue durée pendant les cultures Precucuteni et Cucuteni, délimités tant naturellement que par un système de fortification. La manière d'étude consistait de la formation d'un répertoire des habitats de ce type, de la réalisation des mensurations des cotes en dedans et en dehors des sites et, puis, par la comparaison de ces dates avec celles concernant la durée de l'habitat et / ou l'épaisseur des dépôts de la période de l'existence des respectifs sites Precucuteni et Cucuteni tenus en compte. Ainsi, on a obtenu des données concernant le rythme moyen d'accumulation des dépôts (par des phases et pour l'ensemble de l'existence du complexe culturel Precucuteni-Cucuteni), aussi bien que le rythme de transformation (par l'haussement différencié) de l'aspect du lieu d'habitat. Finalement, on considère qu'aussi dans le cadre du complexe culturel Precucuteni-Cucuteni il y avait une tendance de formation des tertres d'origine anthropique, d'agglomérations du type *pseudo-tell* (par un habitat de longue durée, dans un espace délimité, avec une accumulation consistante des débris) – tendance qui, de diverses causes, ne s'accomplissait pleinement.

THE DOMESTICATION OF SPACE: THE GEOMETRY OF DWELLING VS. NATURAL CHAOS

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Keywords: *domestication, geometry, space, experimental archeology.*

„Domestication” is a subject generally associated with the Neolithic „package” and its study is limited to the explanation of the process of control and selection of some species of plants and animals. However, the analysis of the complex societies of South-Eastern Europe Late Neolithic reveals a more complex process, which extended in time up to spatial cognition. An example in this case is the design of the built space and its perception, together with that of the landscape containing it, a cognitive process of „domestication” conducted through the use of Euclidian geometrical forms (easily understandable and reproducible, and therefore easy to be mentally controlled). This mental process of space control represents the subject of the present paper.

The spatial design of the built space in the Gumelnița tradition, a process of visual control of the natural „chaos”, and, consequently a cognitive one, is presented in support of the abovementioned ideas. An index of spatial planning, and therefore of a strict control of the built space using Euclidian figures, is represented by the orthogonal plans of houses and settlements, less visible in the archaeological record than in the miniature architectural clay models. From the rectangular shape of the house to that of the settlement (especially in the first phases of dwelling), one can observe a mental process of space control, which can be compared with a process of „domestication”. Since the presence of such a control can be observed in the miniature clay models, the paper will discuss the geometry of the dwelt space and the perception of the perspective as it appears in two miniature clay models from the Căscioarele and Sultana tells.

The impact of geometry on the environment was relatively limited (being restricted to the built surface of land), but was extremely important by imposing a new world view and contributing to the domestication of space, i.e. a new perception and mental control of space by means of geometry.

The paper will discuss the conflict between the built space and the „chaotic” natural landscape as an example of the „domestication” of the dwelt space and implicitly of the world. Experimental archeology will be used to present various aspects of the process of planning and materialisation of the geometry of Chalcolithic houses and palisades.

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Natural chaos and cultural order. The reconstruction of a prehistoric dwelt space (Time Maps PN II Project, Vădastra 2012. Photo Dragoș Gheorghiu).

LA MISE A FEU RITUELLE DE QUELQUES HABITATS CUCUTENI

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Mots-clés: Cucuteni, habitats, feu rituelle.

Dès les premières fouilles des habitats Cucuteni et Tripolye, les archéologues ont été surpris par l'intensité des brûlages des vestiges. Cela a conduit les chercheurs ukrainiens et russes à considérer que les plate-formes brûlées des habitations étaient des bûches pour l'incinération des cadavres. Cette hypothèse a été abandonnée suite à des fouilles plus amples qui ont établi qu'il s'agissait en fait de planchers en torchis construits sur une plate-forme de poutres en bois. Plusieurs hypothèses ont été proposées au cours des années pour expliquer l'intensité des incendies des habitats Cucuteni. Parmi celles-ci on peut rappeler la mise à feu intentionnelle des seules plateformes, la combustion de la plate-forme et des parois, suivie d'une réparation des parois avec du torchis, l'incendie non-intentionnelle des habitations et même de tout un habitat. En fin, Vsevolod Marchevici a formulé l'hypothèse que les habitats Cucuteni-Tripolye étaient incendiés périodiquement comme mesure d'hygiénisation ou après les épidémies.

Face à ces hypothèses divergentes il ne restait qu'à entreprendre des expériences afin d'élucider le mystère des incendies des villages Cucuteni. Comme les premières expériences faites avec des maquettes de dimensions réduites n'ont pas fourni des informations édificatrices, de nouvelles expériences, réalisées cette fois-ci avec des habitations de dimensions habituelles ont été mises en place. Les expériences de Poduri-Dealul Ghindaru et du Parc Archéologique de Cucuteni nous ont convaincu que pour une combustion semblable à celles qu'on retrouve dans les fouilles, le bois d'une habitation était largement insuffisant, même si on prend en considération l'effet cumulé des mises à feu de plusieurs constructions.

En se basant sur les informations fournies par les fouilles archéologiques et les expériences menées à Poduri, l'auteur propose l'hypothèse que les villages des cultures Precucuteni et Cucuteni étaient incendiés à des fins rituelles au terme d'un cycle d'environ cinquante ans.

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**UTILISATION DE SOURCES DE MATIERES PREMIERES
A LA FIN DU VI MILLENAIRE AVANT J.C.
DANS LA PARTIE DE SUD-EST DE LA PENINSULE BALKANIQUE:
UN OBJET DE DONNEES DE SITE ARCHEOLOGIQUE
HADJIDIMITROVO, YAMBOL, BULGARIE**

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***Mots-clés:** Péninsule Balkanique, Néolithique récent, Hadjidimitrovo, fosses, ressources naturelles, sources des matières premières.*

Le site archéologique Hadjidimitrovo se trouve dans la partie orientale de la Péninsule Balkanique, à 13 km au nord-ouest de la ville de Yambol et environ 1 km au nord du village. Il est situé dans la partie de sud de la vallée de Sliven, sur la première terrasse de la rivière Tundja. Les plus proches montagnes autour du site sont Stara Planina et Sredna Gora, ainsi que les collines Svetiiliski, Manastirski et Bakadzhishki.

Sur une surface de 12.500 mètres carrés sont étudiés 252 fosses creusées dans la base stérile. Elles sont regroupées en sept types, en fonction de la taille, la forme et la manière de remplissage. La caractéristique du matériel trouvé dans les fosses date le site de la seconde moitié du Néolithique récent – culture Karanovo IV (5200-5000 avant J.C.).

En outre des vases entières et des fragments céramiques, dans les fosses ont été trouvés et des outils et des ornements faits de différents matériaux (la pierre, le silex, les moules, les escargots, le minerai de cuivre). Le processus, qui commence à partir de l'extraction de la matière première et se termine avec le produit final exige une certaine connaissance de l'environnement et des ressources naturelles à la fois à proximité du site archéologique et plus lointain, où il y avait une matière première avec la meilleure qualité.

Intensité de l'utilisation des matières premières déterminant l'impact humain sur l'environnement est liée à la distance et l'accès aux sources et des conditions technologiques pour l'extraction de matières premières.

Dans presque tous les cas, les matériaux utilisées au cours de la fin du Néolithique à Hadjidimitrovo sont recherchés dans le voisinage proche du site archéologique (les moules, les escargots, la pierre). Seule le silex et, éventuellement,

du minerai de cuivre ont été demandées non seulement plus proche mais aussi plus lointaines régions géographiques.

L'un des matériaux premières les plus utilisés à Hadjidimitrovo sont les moules et les escargots terrestres (*Unio*, *Zebrina detrita*, *Helix figulina*), qui sont collectées sur la surface ou dans les plus proches des rivières. À l'exception de la nourriture, elles ont été utilisées pour les décorations. Pour la fabrication d'outils en pierre ont été recherchées à partir des matériaux locaux des plus proches collines de site archéologique. Ce sont eux, ainsi que des concrétions de silex ont été amenés des plus proches des rivières, mais peut avoir été obtenue par séparation mécanique des matières premières.

L'étude des outils et des ornements de différents matériaux à Hadjidimitrovo illustre un cas concret d'utilisation des sources des matières premières et reflète les contacts de l'homme néolithique à l'environnement à la fin de VI millénaire avant J.C.

INTERCULTURAL TRADE BY THE PRECUCUTENI-CUCUTENI CULTURE: EVIDENCE OF LITHICS IMPORT

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Keywords: *flint, trade, petrography, Precucuteni-Cucuteni, Gumelnița*

The possibility of intercultural trade between Cucuteni settlements and those of neighbouring cultures has proposed by previous researchers but there has been very limited empirical research to support this theory. In this study we focus specifically on possible interaction with the Gumelnița culture (or possibly the Stoicani-Aldeni culture) to the south, in the Dobruja-Danube area.

During the late Neolithic and Chalcolithic, the Precucuteni-Cucuteni (a.k.a. Trypillian or Tripolye) culture occupied most of the Moldavian plain and the Eastern Carpathian Mountains. Within their cultural territory, there were several raw materials suitable for knapping, of which the best in quality is Moldavian flint. It is found in Upper Cretaceous chalky marl throughout the Moldavian plateau between the Upper Prut and Upper Dniester rivers and as fluvial deposits south of this area. There are also numerous sources of different knappable materials of varying quality in the Eastern Carpathians. To the south, within the Gumelnița culture territory there are large sources of so-called Balkan flint.

We analysed 536 artefacts from three sites in the Sub-Carpathians – Săcălușești-Dealul Valea Seacă, Topolița-La Iliei and Bețești – all situated in Neamț county within 50 km of each other and Poduri-Dealul Ghindaru 50 km further south in Bacău county. These sites are approximately 5 to 20 km from various types of raw material sources in the Carpathians, 100 to 120 km from sources of Moldavian flint (in the Prut river) and 225 to 300 km from the nearest sources of Balkan flint (in the Danube). Thirty artefacts were thin sectioned for petrographic analysis to confirm or redetermine suspected sources.

Based on macroscopic and microscopic analysis, the proportions of the materials varied a lot. Moldavian flint represents between 33% and 67% of the assemblages. Together, the various materials from the Eastern Carpathians represent about 31% of the artefacts at Săcălușești and Topolița. It was not present among the artefacts found so far at Bețești but that may be related to the fieldwork methods used at that site and the small size of the assemblage. Balkan flint varies the most,

from 1% at Săcălușești, 2% at Topolița and 67% at Bețești. The entire assemblage from Poduri was not studied. There are several thousand lithic artefacts from this site, of which 40 are made of obsidian. Of the other pieces, a random ten were selected for analysis. Of these, nine were Balkan flint and one was East Carpathian chert. This study indicates that intercultural trade definitely took place in this region as early as the Neolithic.

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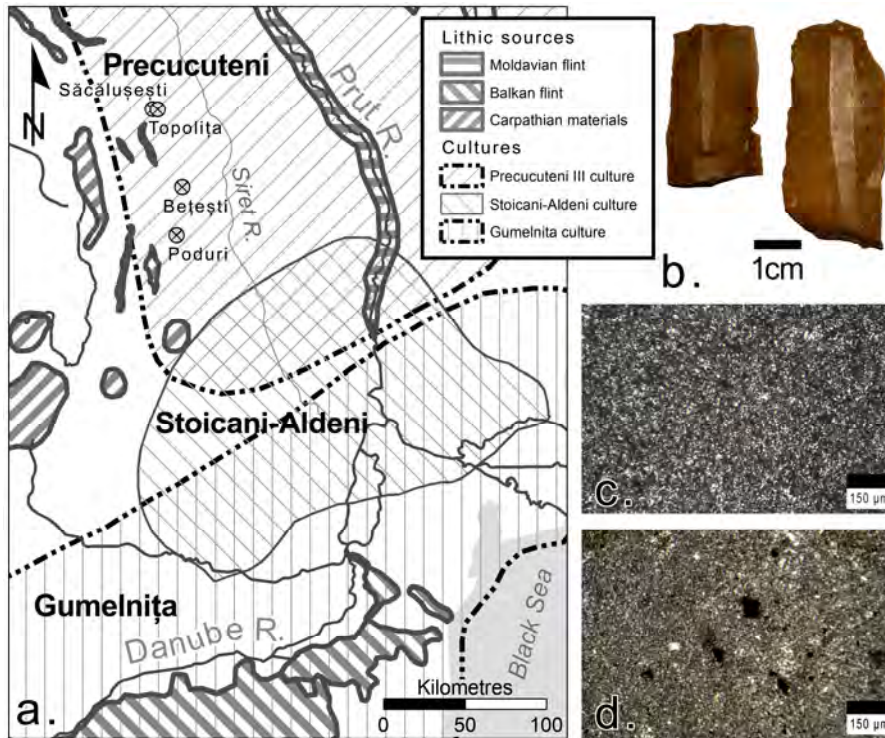


Figure – a) Map showing the location of the main lithic resources and sites from this study;
b) Examples of Balkan flint tools;
 Thin sections of **(c)** Moldavian flint and **(d)** Balkan flint, both crossed polariser.

PECULIARITIES OF FLINTWORKING DURING THE DEVELOPED STAGE OF THE TRIPOLYE CULTURE

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Keywords: *Cucuteni-Tripolye, Volynian flint, flintknapping, flintworking, large blades.*

Migration processes led to formation of several large historical-cultural unities at the territory of South-Eastern Europe during V-IV millennia BC. One of them – Cucuteni-Tripolye situated at the territory of Romania, Moldova and Ukraine was characterized by high level of development in various fields of material and spiritual life. Flint tools played an important role in its economy despite the use of copper tools.

The exploitation of outcrops of high quality Volynian flint starts at that time in the north-western region of the Tripolye culture area, open large scale mines of this flint emerge, and sites, inhabitants of which specialized at flintworking appear at that time. The site Bodaki became one of significant flintworking centres.

The site consisted of several dozens of dwellings, surrounded by a ditch. Primary treatment of raw material and core preparation were done outside the settlement. Core reduction and tool production were carried out inside the settlement in a special workshop and in the open air working area and also near dwellings. New reduction techniques which made possible obtaining of large blades and various tools made from them were used in the flintknapping.

Wide spread of artefacts made from Volynian flint at sites of the Tripolye and neighbouring synchronous cultures, and also large number of unused tools found at Bodaki site indicates that flint artefacts were produced at such sites not only for internal consumption, but also for exchange. The quality of products and high level of development of flintworking production at Bodaki site make possible to consider it as one branch of the communal handicraft.

THE USAGE OF CUCUTENI-TRYPILLIAN CERAMICS: REPRESENTATION IN THE EXISTED CLASSIFICATIONS

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Keywords: *Cucuteni-Trypillia, ceramics, classification, technology, crockery package.*

The usage of crockery in Trypillia is the subject that is almost undeveloped. The main reason is probably that ceramic items are used primarily for reproducing historical and cultural processes in which ceramics plays a role of chronological markers. The direct usage of crockery in everyday life plays second role because in most cases for obvious reasons lack of context prevails. That is why relation of ceramic items to the certain categories in the existing classifications are often based on subjective considerations.

According to the analysis of the Trypillia ceramic classifications developing, made by Olexey Korvin-Piotrovsky some trend is seen. Problems of classification are solved on the basis of features that are reflected the most vast quantity of ceramic components. However, a required feature of these efforts is the subordination of morphological and stylistic features of technical and technological characteristics. Among the latest the following ones are selected: the composition of ceramic masses, impurities, formation of products, the nature of burning, surface treatment and so on. On the grounds of technical and technological features crockery divided into „table” and „kitchen”, reflecting the probable functionality of products. However, often the definition of „table” and „kitchen” remain scientific slang.

The cases when a context of discovering of crockery directly indicates its everyday use purposes are quite rare. One of these cases is the finding of the great Pifos crockery on the Rusanivci historical site (Trypillia, the start of the BII stage). The excavations were held in 2010-2012 within the scope of Trypillia research program in the Upper Pobuzhza.

The dimensions of the „Pifos” are: height – 63.5 sm., diameter of curbs – 43 sm., maximal body diameter – 56 sm., bottom diameter – 16.3 sm. The capacity of the crock is 60-70 liters. It had 14 handles placed in four horizontal rows. By its technical and technological characteristics the crock may belong to painted „tableware”, by the shape and outer surface treatment – to so called „kitchenware”,

by the dimensions – to „tare”. However, from the context of finding we can reasonable concede in what way it was utilized.

„Pifos” was found in the above-ground building and was dug into the earthen floor till the shoulders near the entrance. The carelessly made outer design of the „Pifos”, low quality of the crock, and its shape too – unstable, with the narrow bottom – indicate that the crock from the very beginning was planned to be used dug into the ground. And tightened engobed inner surface and wide mouth make „Pifos” suitable for keeping liquids and frequent everyday use for domestic purposes. Near the „Pifos” a stone causeway is located. Just there was the entrance into the building – the causeway is located at the outside, next to its conventional border and heads for the river. Probably it was handy for temporary placing of heavy portable tare when liquid was poured into the „Pifos”.

The whole set of characteristics with the location of evidence that pot with a Rusanivci 1 – only packaging for liquid products and water. For this pot there are few analogies: „pot-zernovyk-korchaha” from Trypillian layer settlements Buchach-*Fedir Hill*, and the vessel from a Zalyschyky 1. They are dated Trypillia, stage BI-BII. Receptacle from Shypentsiv (stage BII) is similar to them. But how valid is the admission the vessel from a Rusanivci to the category of „packaged” pottery in terms of modern classifications?

Valentina Shumova the first considered the question of allocation of a separate category of cookware „packaged”. The matter concerns product of large size (height up to 0.8-1 m), thick-walled, pear-shaped. They are sculptured from clay dough mixed with organic in patchy techniques layers of lengthening thickness of the hull to 3-5 cm. Surface stroked and painted in dark red. Roasting took place at low temperature in the open fire. It was a porous, badly burned vessels adapted for storing only dry bulk grain. Note that the technical and technological parameters of these vessels are similar to parts of interior Tomashivka buildings. The so-called catwalks, on which mostly finding „packaging” pottery made, from clay mixed with organic, made in layers, well smoothed surface, even polished, smeared with fine clay on top, painted in dark red colour, the temperature of burning even more than in the „packing” vessels.

The question is: „package vessels” of existing classifications for today – is it pottery? Or maybe tripill'ska ground-building „platform” – is the ceramic of „dwelling purposes”? Now it is clear that beyond category „package pottery” should expand, distinguishing packaging for liquid and granular products.

According to L.S. Klein, any grouping of material can not satisfy at the same time different research objectives and to keep the possibility to regroup material in a new way when you change goals. This means the construction of classification schemes should be considered as the main technical and technological, morphological and stylistic characteristics. But keep in mind that determination certain purpose of ceramic products is already reconstructive problem level that works on the reproduction the ancient lifestyle of the population. And this problem can be solved without additional scrupulous studying conditions and possibilities of ceramics usage.

**NEW ARCHAEOZOOLOGICAL DATA
CONCERNING THE CUCUTENI A SETTLEMENT
OF PODURI-DEALUL GHINDARU (BACAU COUNTY, ROMANIA)**

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Keywords: *archaeozoology, Chalcolithic, Cucuteni A phase, Poduri.*

This study provides new archaeozoological results concerning the faunal remains found in the 2008 excavation campaign in the Cucuteni A site of Poduri-Dealul Ghindaru (Bacău County, Romania). The animal remains are mainly described in terms of their frequencies (based on the number of identified specimens and on the minimum number of individuals) and according with the economical and ecological significations.

Among the animal resources, domestic mammals constitute the majority. The domestic species discussed are cattle, sheep / goat, pig and dog – the first dominating the assemblages. The wild mammals, having a low proportion, consist in red deer, roe deer, wild boar, beaver, hare, bear and wolf.

This study was supported by the Romanian research program CNCS PN II-RU-TE-2011-3-0146.

NOTES TO AUTHORS

This information is important to the authors of the studies that are going to be included in the volume that will reunite the papers of the colloquium which is projected to be edited during 2013.

The manuscripts are going to be sent in electronic format in an international language (English or French).

There is no limit concerning the length of the documents.

The page mirror will be in A4 format (297 x 210 mm) with 240 mm height and 155 mm width (the upper margin limit of 32 mm, the lower margin of 25 mm; the interior margin of 30 mm, the exterior margin of 25 mm).

The text will be elaborated in word format (.doc, .docx, .rtf), on a single column (left to right) utilizing Times New Roman font, size 12 pt. line spacing 1,5 and paragraphs alignment of 15 mm.

The article title will be drawn in bold capital letters, the name of the author in bold letters, the name of the institution from which the author came in italic letters and the e-mail address of the author in normal characters.

The summary will be drawn in italic font and will not exceed 250 words; the key words (between 5 and 10) will still be drawn in italic characters.

The text will be elaborated in normal characters and the sections as it follows: bold for the first level, bold and italic for the second level, italic for the third level and normal for the fourth level.

The quotations will be marked with italic letters and not with inverted commas.

The bibliographic references will be mentioned in chronological order, in brackets, in the text and not at the bottom of the page or at the end of the article.

The article will be followed by the complete list of annexes, tables and plates (figures and / or illustrations) drawn in normal characters numbered in ascending order corresponding with the text references mentioned in brackets.

The bibliographic list which will precede the annexes, tables and illustration is going to follow the alphabetical order of the authors and the chronological order of the papers.

The name of the authors and editors of the papers will be drawn in bold letters, the titles of the papers, the name of the scientific publications in which they were included will be drawn in italic characters. The other bibliographic references (the publisher, the place of the release, the year of the publishing, the pages, tables, figures, plates, annexes or notes) will be drawn in normal characters.

The tables and the illustration are not going to be inserted together with the file that contains the text but separately and numbered in ascending order; they are going to be inserted at the end of the article.

The tables are going to be drawn in normal characters in word format (.doc, .docx, .rtf), utilising Times New Roman font, size 10 pt., single line spacing and the information centered inside the cells.

The head of the table will be differentiated from the rest of the content using bold and / or italic; if the table is longer than one page, the head of the table will repeat itself at the beginning of every page.

The illustration will be black and white (in grey tones), sepia or colour, taking into account the author's choices, resolution 600 dpi, format bmp, .tif, or .jpg.

The explanations of the tables and of the illustrations will be drawn without alignment, utilising Times New Roman font, size 10 pt., single line spacing.

The manuscripts will have the pages numbered and no header or footer.

The deadline for submitting the manuscripts in electronic format at the addresses mentioned below is March 31st, 2013.

Any questions concerning the typing rules will be acquainting to the organisers of the colloquium and to the editors of the volume.

Each author will receive a free copy of the volume that will reunite the papers of the colloquium; the expenses for the delivery charges are going to be entirely supported by the institution that organises the scientific manifestation.

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NOTES AUX AUTEURS

Toutes les renseignements au-dessous sur la rédaction concernent les auteurs des études présentées durant le colloque afin de les insérer dans le volume qui ressemblera les actes du colloque et qui sera édité en 2013.

Les manuscrits seront remis sous format électronique et rédigés dans une langue étrangère de circulation internationale (français ou anglais).

Il n'y a pas de contrainte quant aux nombre de lignes.

Le miroir de la page sera en format A4 (297 x 210 mm), sur une longueur de 240 mm et une largeur de 155 mm (marge supérieure – 32 mm; marge inférieure – 25 mm; marge intérieure – 30 mm; marge extérieure – 25 mm).

Le texte sera rédigé en format word (.doc, .docx, .rtf), sur une seule colonne (gauche-droite), en utilisant le point de caractère Times New Roman et la taille de caractère 12, l'interligne de 1,5 et l'alignement des paragraphes de 15 mm.

Le titre d'article sera rédigé en majuscules gros, le nom de l'auteur toujours en gros caractères, le nom de l'institution de l'auteur en caractères italiques, alors que le courriel en caractères normaux.

Le résumé sera écrit en italique, sans dépasser 250 mots, ainsi que les mots-clés limités à 5 jusqu'à 10 mots au maximum.

Le texte d'article sera rédigé en caractères normaux et ses sections comme suit: en gros pour le premier niveau, en gros et en italique pour le deuxième niveau, en italique pour le troisième niveau et en caractères normaux pour le quatrième niveau.

Les citations seront marquées en italique et non pas en guillemets.

Les références bibliographiques seront mentionné chronologiquement, entre parenthèses dans le texte, et non pas au pied de page ou à la fin de l'article.

Le texte de l'article sera suivi de la bibliographie, compte tenant de l'ordre alphabétique des auteurs et dans l'ordre chronologique des travaux.

A la fin seront indiquées les listes intégrales des annexes, des tableaux et des illustrations (figures / planches), en caractères normaux et numérotées en ordre croissante, en conformité avec les renvois du texte, mentionnés entre parenthèses.

Quant à la bibliographie, les noms des auteurs et des éditeurs des travaux seront marqués en gros, les titres des ouvrages et des volumes ou des revues où ceux-ci sont parus en italique, alors que les autres références bibliographiques (édition, lieu de parution, année de parution, nombre des pages, tableaux, figures, planches, annexes ou notes) en caractères normaux.

Les tableaux et l'illustration seront indiqués à part le fichier word contenant le texte et numérotés en ordre croissante, afin d'être ajoutés à la fin de l'article.

Les tableaux seront rédigés en caractères normaux, format word (.doc, .docx, .rtf), en utilisant le point de caractère Times New Roman et la taille de caractère 10, l'interligne de 1, ayant centrées à l'intérieur des cellules les données respectives.

La tête du tableau doit être différenciée par des caractères gros ou italiques et dans le cas où le tableau dépasse une page, la tête de celui-ci va être reprise au début de chaque page.

L'illustration (figures / planches) va être réalisée en blanc et noir (tonalités de gri), sépia ou en couleur, au gré des auteurs, ayant la résolution de 600 dpi, en format .bmp, .tif ou .jpg.

Les légendes des tableaux et des illustrations (figures / planches) seront rédigées sans alinéa, en caractères Times New Roman et taille de 10 et l'interligne de 1.

Les manuscrits n'auront pas de pages numérotées et ne contiendront pas d'haut de la page et / ou pied de la page.

La date limite d'envoi des manuscrits en format électronique aux courriels mentionnés au-dessous est le 31 mars 2013.

Tous malentendus concernant les normes de rédaction seront transmise par les auteurs auprès les organisateurs du colloque et les éditeurs du volume.

Chaque auteur va recevoir gratuitement un exemplaire du volume réunissant tous les actes du colloque, les frais de transport restant en totalité à la charge de l'institution organisatrice.

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