



"ALEXANDRU IOAN CUZA"
UNIVERSITY OF IASI



ARHEOINVEST
PLATFORM



UNIVERSITATEA
DE STAT DIN MOLDOVA

THIRD ARHEOINVEST CONGRESS

INTERDISCIPLINARY
RESEARCH
IN
ARCHAEOLOGY

6-8 JUNE 2013

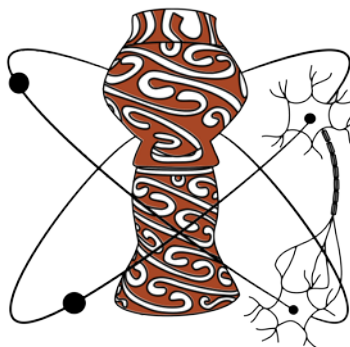
IASI

PROGRAMME AND ABSTRACTS

THIRD ARHEOINVEST CONGRESS

Interdisciplinary Research in Archaeology

June 6th–8th, 2013
Iași, Romania



Programme and Abstracts

Editor: Vasile Cotiugă

Organizing Institutions

“Alexandru Ioan Cuza” University of Iași
Faculty of History
ARHEOINVEST Platform

Moldova State University, Chișinău

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PROGRAM

Joi, 6 iunie 2013

| | |
|---------------|---|
| 8.30 – 10.00 | Primirea invitaților - Corpul H (Casa Catargi) |
| 10.00 – 12.00 | Ceremonia de deschidere - Sala Senatului Universității „Alexandru Ioan Cuza” din Iași |
| 10.00 – 10.10 | Cuvânt de salut din partea Președintelui de onoare al Congresului, Prof. univ. dr. Victor SPINEI, membru corespondent al Academiei Române |
| 10.10 – 10.20 | Mesajul Rectorului Universității „Alexandru Ioan Cuza” din Iași, Prof. univ. dr. Vasile IȘAN |
| 10.20 – 10.30 | Mesaj din partea Universității de Stat din Moldova, Prof. univ. dr. hab. Ion NICULIȚĂ, copreședinte al Congresului |
| 10.30 – 10.40 | Mesajul Decanului Facultății de Istorie a Universității „Alexandru Ioan Cuza” din Iași, Prof. univ. dr. Petronel ZAHARIUC |
| 10.40 – 11.00 | Lansare de carte: <i>Interdisciplinary Research in Archaeology. Proceedings of the First Arheoinvest Congress, 10-11 June 2011, Iași, Romania</i> , edited by Vasile Cotiugă, Ștefan Caliniuc, BAR International Series 2433, Archaeopress, Oxford, 2012 – prezintă Conf. univ. dr. Marius ALEXIANU |
| 11.00 – 12.00 | Conferință în plen: Dr. Pierre Pétrequin (Maison des Sciences de l’Homme et de l’Environnement, Besançon, France), <i>Noi tendințe în etnoarheologie: proiectul JADE și topoarele alpine lungi în vestul Europei în mileniiile V–IV BC</i> |
| 13.00 – 14.30 | Pauză de masă – restaurantul Hotelului Gaudeamus |
| 15.00 – 19.30 | Desfășurarea lucrărilor pe secțiuni |
| 16.45 – 17.00 | Deschiderea sesiunii de postere – Corpul H (Casa Catargi) |
| 20.30 | Cocktail oferit de Platforma ARHEOINVEST |

Vineri, 7 iunie 2013

| | |
|---------------|--|
| 09.00 – 13.00 | Desfășurarea lucrărilor pe secțiuni |
| 13.00 – 14.30 | Pauză de masă – restaurantul Hotelului Gaudeamus |
| 15.00 – 19.00 | Desfășurarea lucrărilor pe secțiuni |
| 20.00 | Cocktail oferit de DAAD ALUMNI CLUB IAȘI |

Sâmbătă, 8 iunie 2013

| | |
|---------------|---|
| 07.00 – 21.00 | Excursie în Republica Moldova, cu vizitarea siturilor arheologice de la Saharna Mare, Butuceni și Orheiul Vechi |
|---------------|---|



JOI, 6 Iunie 2013

INVESTIGAȚII FIZICE ȘI CHIMICE

Moderator: Nicolae BUZGAR

Secretar: Viorica VASILACHE

Sala H1 (Casa Catargi)

- 15.00 – 15.15 Dumitru BOGHIAN, Mihai GRAMATICU, Silviu Gabriel STROE, Traian Lucian SEVERIN, Sorin IGNĂTESCU, *Investigații traseologice pe un lot de unelte de piatră șlefuită descoperite în situl Fetești–La Schit (com. Adâncata, jud. Suceava)*
- 15.15 – 15.30 Ion SANDU, Viorica VASILACHE, Dumitru BOGHIAN, Sergiu-Constantin ENEA, Ciprian-Cătălin LAZANU, *Investigații pe loturi de fragmente ceramice și pigmenți minerali provenind din situl cucutenian Tăcuta–Dealul Miclea/Paic, jud. Vaslui*
- 15.30 – 15.45 Ana ILIE, Daniela STAN, Bogdan CONSTANTINESCU, *Analize XRF asupra pigmenților identificați pe ceramică și figurine gumelnițene din colecția Complexului Muzeal „Curtea Domnească” Târgoviște*
- 15.45 – 16.00 Florica MĂȚĂU, Valentin NICA, Petronel POSTOLACHE, Vasile COTIUGĂ, Alexandru STANCU, *Testarea alegerilor tehnologice: studiul analitic al ceramicii din situl arheologic Cucuteni–Cetățuie*
- 16.00 – 16.15 Mihai GRAMATICU, Dumitru BOGHIAN, Silviu Gabriel STROE, Traian Lucian SEVERIN, Sorin IGNĂTESCU, *Analize ceramografice pe loturi de materiale arheologice Precucuteni III și Horodiștea–Erbiceni*
- 16.15 – 16.30 Bogdan Petru NICULICĂ, Viorica VASILACHE, Dumitru BOGHIAN, Ion SANDU, *Studiul arheometric al unor fragmente de ceramică din așezarea Komariv (Komarów) de la Adâncata–Sub Pădure, jud. Suceava*
- 16.30 – 16.45 **Discuții**
- 16.45 – 17.00 **Pauză de cafea**

**BIOARHEOLOGIE****Moderator: Simina STANC****Secretar: Monica LUCA****Sala H1 (Casa Catargi)**

- 17.00 – 17.15 Mihaela DANU, George BODI, *Palinologia arheologică în România – o privire în trecut și stadiul actual*
- 17.15 – 17.30 Valentin RADU, Dragomir Nicolae POPOVICI, Cătălina CERNEA, Ioan CERNĂU, Adrian BĂLĂȘESCU, *Culesul moluștelor în eneolitic. Studiu de caz al unei acumulări de bivalve din situl eneolitic Bordușani–Popină (România)*
- 17.30 – 17.45 Luminița BEJENARU, Vasile COTIUGĂ, *Noi date arheozoologice din așezarea Precucuteni de la Târgu Frumos (jud. Iași)*
- 17.45 – 18.00 Simina STANC, Valentin RADU, *Analiza arheozoologică a unui eșantion din așezarea de la Niculițel (cultura Babadag)*
- 18.00 – 18.15 Claudia RADU, KIRÁLY Lajos, *Diagnostic diferențial pentru o leziune litică identificată pe un schelet din perioada neolitică de la Suplacu de Barcău (județul Bihor, România)*
- 18.15 – 18.30 Monica LUCA, Anna LINDERHOLM, Adrian BĂLĂȘESCU, Simina STANC, Greger LARSON, *Analiza arheogenetică a unor resturi de suine din perioada calcolitică de pe teritoriul României*
- 18.30 – 18.45 Angela SIMALCSIK, Robert Daniel SIMALCSIK, Vasilica Monica GROZA, *Analiza paleopatologică a seriei scheletice deshumate din necropola medievală de la Lozova, Republica Moldova (secolele XIV-XV)*
- 18.45 – 19.00 **Discuții**

Postere

Adrian BĂLĂȘESCU, Carlos TORNERO, Ughetto-Monfrin JOËL, Valentina VOINEA, Marie BALASSE, *Sezonabilitatea nașterilor la oi și vite în situl calcolitic de la Cheia (mileniul V BC, Cultura Hamangia), prin analize de izotopi stabili*

Simina STANC, Luminița BEJENARU, Mariana POPOVICI, *Variabilitatea frecvenței suinelor (Sus scrofa domesticus and Sus scrofa ferus) în epoca bronzului pe teritoriul României*

Mariana POPOVICI, Simina STANC, Luminița BEJENARU, *Suinele (Sus scrofa domesticus și Sus scrofa ferus) din epoca bronzului de pe teritoriul României: o abordare morfometrică*

Simina STANC, Ionela MOCANU, *Exploatarea resurselor animale în așezarea de la Răcari (județul Dolj): date arheozoologice*

Vasilica-Monica GROZA, Georgeta MIU, Angela SIMALCSIK, *Aspecte de patologie osoasă la populația Iașului din perioada medievală târzie și începutul epocii moderne (necropola bisericii Banu, secolele XVI-XIX)*



VINERI, 7 Iunie 2013

ETNOARHEOLOGIE ȘI ARHEOLOGIE EXPERIMENTALĂ

Moderatori: Pierre PÉTREQUIN, Marius ALEXIANU

Secretar: Felix-Adrian TENCARIU

Sala H1 (Casa Catargi)

- | | |
|---------------|--|
| 09.00 – 09.20 | Marius Gheorghe BARBU, <i>Arheologie experimentală vs. recreare istorică. Studiu de caz: antichitatea dacică și romană</i> |
| 09.20 – 09.40 | Nelu ZUGRAVU, <i>Arheologia identității etnice</i> |
| 09.40 – 10.00 | Felix-Adrian TENCARIU, <i>Etnoarheologia ceramicii. Câteva considerații privind meșteșugul olăritului în Moldova</i> |
| 10.00 – 10.20 | Theodor IGNAT, Vasile OPRIS, Cătălin LAZĂR, <i>Considerații privind ceramica culturii Gumelnița pe baza unui studiu de arheologie experimentală</i> |
| 10.20 – 10.40 | Monica MĂRGĂRIT, Valentin RADU, Mădălina VOICU, Cătălin LAZĂR, <i>Experimentul în slujba arheologiei. Un model de atelier experimental desfășurat pe șantierul arheologic de la Sultana–Malu Roșu (jud. Călărași)</i> |
| 10.40 – 11.00 | Senica ȚURCANU, Ciprian LAZANU, <i>Asupra prezenței săniilor de treierat de tip tribulum la nordul Dunării de Jos</i> |
| 11.00 – 11.20 | Pauză de cafea |
| 11.20 – 11.40 | Theodor IGNAT, Vasile OPRIS, Cătălin LAZĂR, <i>Observații privind arhitectura culturii Gumelnița pe baza unui studiu de arheologie experimentală III: rezultatele din 2012</i> |
| 11.40 – 12.00 | Pierre PÉTREQUIN, <i>Studii comparative asupra exploatării izvoarelor de apă sărată din Guinea și zona Jura din Franța</i> |
| 12.00 – 12.20 | Marius ALEXIANU, Andrei ASĂNDULESEI, Radu BALAU, Robin BRIGAND, Ștefan CALINIUC, Vasile COTIUGĂ, Roxana-Gabriela CURCĂ, Gheorghe ROMANESCU, Ion SANDU, Felix-Adrian TENCARIU, Olivier WELLER, <i>Densitatea diacronică a habitatului (de la paleolitic până în secolul al IV d.Hr.) în jurul izvoarelor de apă sărată din zona est-carpatică a României. Un model etnoarheologic</i> |
| 12.20 – 13.00 | Discuții |



GEOARHEOLOGIE

Moderator: Gheorghe ROMANESCU

Secretar: Cristi STOLERIU

Sala H1 (Casa Catargi)

- 15.00 – 15.15 Constantin HAITĂ, *Micromorfologia secvențelor antropice din tell-ul calcolitic de la Bordușani–Popină*
- 15.15 – 15.30 Constantin PREOTEASA, *Caracteristici ale mediului natural din spațiul și perioada de evoluție a complexului cultural Precucuteni–Cucuteni–Tripolye*
- 15.30 – 15.45 Gheorghe ROMANESCU, Ionuț-Cristi NICU, *Relația om-apă din preistorie până în prezent. Studiul de caz pentru Valea Oii (România)*
- 15.45 – 16.00 Ionuț-Cristi NICU, Gheorghe ROMANESCU, Andrei ASĂNDULESEI, Vasile COTIUGĂ, *Caracteristicile morfometrice și geomorfologice ale mediului din bazinul Valea Oii. Implicații directe asupra siturilor arheologice*
- 16.00 – 16.15 Elmar SCHMALTZ, Michael MÄRKER, *Reconstrucția landşaftului și modelarea hidro-eroziunii pentru analiză geoarheologică în bazinul Mugello (Toscana, Italia)*
- 16.15 – 16.30 Radu-Ștefan BALAUR, Andrei ASĂNDULESEI, *Distribuția spațială a așezărilor eneolitice din Câmpia Moldovei*
- 16.30 – 16.45 **Pauză de cafea**
- 16.45 – 17.00 Neculai BOLOHAN, Cristian SECU, Andrei ASĂNDULESEI, *Un peisaj arheologic, un palimpsest și începuturile unei ample investigații științifice întreprinse în porțiunea de sud a bazinului Cracău-Bistrița*
- 17.00 – 17.15 Ion NICULIȚĂ, Aurel ZANOCI, Sergiu MATVEEV, Andrei NICIC, Mihail BĂȚ, Andrei COROBCEAN, *Cercetări de arheologie spațială în regiunea Nistrului mijlociu*
- 17.15 – 17.30 Alexandru BERZOVAN, Ștefan HONCU, *Putere și control în secolele V-III î.Hr. Un studiu de caz: fortificația getică de la Poiana Mănăstirii–Între Șanțuri (com. Țibana, jud. Iași)*
- 17.30 – 17.45 Alexandru Leonard DOROGOSTAISKY, Alexandru HEGYI, *Câmpia Bărăganului, aprilie – mai 2013: o odisee spațială*
- 17.45 – 18.00 Andrei ASĂNDULESEI, Vasile COTIUGĂ, Robin BRIGAND, *Combinarea fotografiei aeriene oblice cu prospecțiunile geofizice. Un model de cercetare operativă pentru siturile arheologice calcolitice*
- 18.00 – 18.15 Andrei ASĂNDULESEI, Felix-Adrian TENCARIU, Aurel MELNICIUC, Dumitru BOGHIAN, *Prospecțiuni magnetometrice în așezarea Cucuteni de la Ripiceni–Holm, jud. Botoșani*
- 18.15 – 18.30 Coriolan H. OPREANU, Vlad-Andrei LĂZĂRESCU, *Ascultând vocea pământului. Investigații geofizice în orașul roman Porolissum (jud. Sălaj)*
- 18.30 – 18.45 Andrei ASĂNDULESEI, Vasile COTIUGĂ, *Investigații non-invasive în fortificația liniară „Valul lui Athanarich”*



18.45 – 19.00 Ioan IAȚCU, Mitică PINTILEI, *O bază de date cu motive decorative ale bazilicilor dobrogene, georeferențiate*

POSTER

Andrei ASĂNDULESEI, Vasile COTIUGĂ, Ionuț-Cristi NICU, *Cercetări geofizice în sisteme de fortificație ale așezărilor Cucuteni*



PROGRAMME

Thursday, 6th June 2013

| | |
|----------------------|---|
| 8.30 – 10.00 | Registration at Secretariat (Building H – Casa Catargi) |
| 10.00 – 12.00 | Opening Ceremony – the University Senate Hall |
| 10.00 – 10.10 | Keynote address by Professor PhD Victor SPINEI, corresponding member of the Romanian Academy, Honorary President of the Congress |
| 10.10 – 10.20 | Welcoming speech by Professor PhD Vasile IȘAN, Rector of the “Alexandru Ioan Cuza” University of Iași |
| 10.20 – 10.30 | Welcoming speech by Professor PhD Ion NICULIȚĂ, Co-president of the Congress |
| 10.30 – 10.40 | Welcoming speech by Professor PhD Petronel ZAHARIUC, Dean of the Faculty of History |
| 10.40 – 11.00 | Book launch: <i>Interdisciplinary Research in Archaeology. Proceedings of the First Arheoinvest Congress, 10-11 June 2011, Iași, Romania</i> , edited by Vasile Cotiugă, Ștefan Caliniuc, BAR International Series 2433, Archaeopress, Oxford, 2012 – presented by Associated Professor PhD Marius ALEXIANU |
| 11.00 – 12.00 | Keynote lecture: Dr. Pierre Pétrequin (Maison des Sciences de l’Homme et de l’Environnement, Besançon, France), <i>New trends in ethnoarchaeology : JADE project and the long Alpine axeheads in Western Europe during the 5th and 4th millennia BC</i> |
| 13.00 – 14.30 | Lunch - Gaudemus restaurant |
| 15.00 – 19.30 | Congress - Parallel sessions |
| 16.45 – 17.00 | Poster presentation - Building H (Casa Catargi) |
| 20.30 | Cocktail offered by the ARHEOINVEST Platform |

Friday, 7th June 2013

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|----------------------|--|
| 09.00 – 13.00 | Congress - Parallel sessions |
| 13.00 – 14.30 | Lunch - Gaudemus restaurant |
| 15.00 – 19.00 | Congress - Parallel sessions |
| 20.00 | Cocktail offered by DAAD ALUMNI CLUB IAȘI |

Saturday, 8th June 2013

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| 07.00 – 21.00 | Visit to archaeological sites from the Republic of Moldova: Saharna Mare, Butuceni and Orheiul Vechi |
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THURSDAY, 6TH JUNE 2013

PHYSICAL AND CHEMICAL INVESTIGATIONS

Chairperson: Nicolae BUZGAR

Secretary: Viorica VASILACHE

H1 Hall (*Casa Catargi*)

- 15.00 – 15.15 Dumitru BOGHIAN, Mihai GRAMATICU, Silviu Gabriel STROE, Traian Lucian SEVERIN, Sorin IGNĂTESCU, *Traceological investigations on a batch of polished stone tools found in the Fetești–La Schit site (Adâncata commune, Suceava County)*
- 15.15 – 15.30 Viorica VASILACHE, Ion SANDU, Dumitru BOGHIAN, Sergiu-Constantin ENEA, Ciprian-Cătălin LAZANU, *Investigation on batches of ceramic fragments and mineral pigments from the Cucutenian site of Tăcuta–Dealul Miclea/Paic, Vaslui county*
- 15.30 – 15.45 Ana ILIE, Daniela STAN, Bogdan CONSTANTINESCU, *X-ray fluorescence analysis on pigments identified on Gumelnița ceramic vessels and figurines from the archaeological collection of the “The Princely Court” Complex Museum, Târgoviște*
- 15.45 – 16.00 Florica MĂȚĂU, Valentin NICA, Petronel POSTOLACHE, Vasile COTIUGĂ, Alexandru STANCU, *Testing technological choices: analytical study of pottery from the archaeological site of Cucuteni–Cetățuie*
- 16.00 – 16.15 Mihai GRAMATICU, Dumitru BOGHIAN, Silviu Gabriel STROE, Traian Lucian SEVERIN, Sorin IGNĂTESCU, *Ceramographic analyses on batches of Precucuteni III and Horodiște–Erbiceni archaeological artefacts*
- 16.15 – 16.30 Bogdan Petru NICULICĂ, Viorica VASILACHE, Dumitru BOGHIAN, Ion SANDU, *An archaeometric study of several ceramic fragments from the Komariv (Komarów) settlement of Adâncata–Sub Pădure, Suceava county*
- 16.30 – 16.45 **Discussions**
- 16.45 – 17.00 **Coffee break**



BIOARCHAEOLOGY

Chairperson: Simina STANC

Secretary: Monica LUCA

Sala H1 (*Casa Catargi*)

- | | |
|---------------|---|
| 17.00 – 17.15 | Mihaela DANU, <u>George BODI</u> , <i>Archaeological palynology in Romania — a review of its past and current state</i> |
| 17.15 – 17.30 | <u>Valentin RADU</u> , Dragomir Nicolae POPOVICI, Cătălina CERNEA, Ioan CERNĂU, Adrian BĂLĂȘESCU, <i>Gathering mollusks in the Eneolithic. Case study on an accumulation of bivalve shells from the Eneolithic site of Bordușani–Popină (Romania)</i> |
| 17.30 – 17.45 | Luminița BEJENARU, <u>Vasile COTIUGĂ</u> , <i>New archaeozoological data concerning the Chalcolithic site (Precucuteni culture) of Târgu Frumos (Iași County, Romania)</i> |
| 17.45 – 18.00 | <u>Simina STANC</u> , Valentin RADU, <i>The archaeozoological analysis of a sample from Niculițel settlement (Babadag culture)</i> |
| 18.00 – 18.15 | <u>Claudia RADU</u> , KIRÁLY Lajos, <i>Differential diagnosis of a lytic lesion from a Neolithic skeleton from Suplacu de Barcău (Bihar County, Romania)</i> |
| 18.15 – 18.30 | <u>Monica LUCA</u> , Anna LINDERHOLM, Adrian BĂLĂȘESCU, Simina STANC, Greger LARSON, <i>An archaeogenetic analysis of Chalcolithic swine remains from Romanian territory</i> |
| 18.30 – 18.45 | <u>Angela SIMALCSIK</u> , Robert Daniel SIMALCSIK, Vasilica Monica GROZA, <i>The paleopathological analysis of the human osteological remains exhumed from the mediaeval necropolis of Lozova, Republic of Moldova (14th–15th centuries)</i> |
| 18.45 – 19.00 | Discussions |

Posters

Adrian BĂLĂȘESCU, Carlos TORNERO, Ughetto-Monfrin JOËL, Valentina VOINEA, Marie BALASSE, *Seasonality of births in sheep and cattle at the Chalcolithic settlement of Cheia (5th millennium BC, Hamangia culture) from stable isotopes analyses*

Simina STANC, Luminița BEJENARU, Mariana POPOVICI, *The variability of swine (Sus scrofa domesticus and Sus scrofa ferus) frequencies during the Bronze Age on the territory of Romania*

Mariana POPOVICI, Simina STANC, Luminița BEJENARU, *Swines (Sus scrofa domesticus and Sus scrofa ferus) during the Bronze Age in the territory of Romania: a morphometric approach*

Simina STANC, Ionela MOCANU, *Animal resources utilized in the Răcari settlement (Dolj County): archaeozoological data*

Vasilica-Monica GROZA, Georgeta MIU, Angela SIMALCSIK, *Bone pathologies in the population inhabiting the city of Iași during the late Middle Ages and the Early Modern Period (the necropolis of the Banu Church, 16th–19th centuries)*



FRIDAY, 8TH JUNE 2013

ETHNOARCHAEOLOGY AND EXPERIMENTAL ARCHAEOLOGY

Chairpersons: Pierre PÉTREQUIN, Marius ALEXIANU

Secretary: Felix-Adrian TENCARIU

H1 Hall (*Casa Catargi*)

- 09.00 – 09.20 Marius Gheorghe BARBU, *Experimental archaeology vs. historical reenactment. Case study: Dacian and Roman antiquity*
- 09.20 – 09.40 Nelu ZUGRAVU, *The archaeology of ethnic identity*
- 09.40 – 10.00 Felix-Adrian TENCARIU, *Ceramic ethnoarchaeology. Some thoughts regarding the potter's craft in Moldavia*
- 10.00 – 10.20 Theodor IGNAT, Vasile OPRIȘ, Cătălin LAZĂR, *Considerations on the pottery of the Gumelnița culture, based on a study of experimental archaeology*
- 10.20 – 10.40 Monica MĂRGĂRIT, Valentin RADU, Mădălina VOICU, Cătălin LAZĂR, *Experiment in the service of archaeology. A model of experimental workshop developed on the archaeological site from Sultana–Malu Roșu (Călărași County)*
- 10.40 – 11.00 Senica TURCANU, Ciprian LAZANU, *On the presence north of the Lower Danube of threshing sledges of the tribulum type*
- 11.00 – 11.20 **Coffee break**
- 11.20 – 11.40 Theodor IGNAT, Vasile OPRIȘ, Cătălin LAZĂR, *Observations on the architecture of the Gumelnița culture based on a study of experimental archaeology III: 2012 results*
- 11.40 – 12.00 Pierre PÉTREQUIN, *Comparative studies of salt springs exploitation in New Guinea and the French Jura*
- 12.00 – 12.20 Marius ALEXIANU, Andrei ASĂNDULESEI, Radu BALAU, Robin BRIGAND, Ștefan CALINIUC, Vasile COTIUGĂ, Roxana-Gabriela CURCĂ, Gheorghe ROMANESCU, Ion SANDU, Felix-Adrian TENCARIU, Olivier WELLER, *Diachronic (from the Palaeolithic to 5th c. A.D.) site density around the salt springs from the Romanian Eastern Carpathians. An ethnoarchaeological model*
- 12.20 – 13.00 **Discussions**



GEOARCHAEOLOGY

Chairperson: Gheorghe ROMANESCU

Secretary: Cristian STOLERIU

H1 Hall (*Casa Catargi*)

- 15.00 – 15.15 Constantin HAITĂ, *The micromorphology of anthropic sequences from the Chalcolithic tell Bordușani–Popină*
- 15.15 – 15.30 Constantin PREOTEASA, *The characteristics of the natural environment of the area, and the chronological sequence of evolution of the Precucuteni–Cucuteni–Tripolye cultural complex*
- 15.30 – 15.45 Gheorghe ROMANESCU, Ionuț-Cristi NICU, *The human-water relationship from prehistory until the present. A case study for Valea Oii River (Romania)*
- 15.45 – 16.00 Ionuț-Cristi NICU, Gheorghe ROMANESCU, Andrei ASĂNDULESEI, Vasile COTIUGĂ, *Morphometrical and geomorphological characteristics of the landscape from the Valea Oii basin (tributary of the Bahlui River). Direct implications for Chalcolithic archaeological sites*
- 16.00 – 16.15 Elmar SCHMALTZ, Michael MÄRKER, *Landscape reconstruction and hydro-erosion modelling for geoarchaeological analysis in the Mugello basin (Tuscany, Italy)*
- 16.15 – 16.30 Radu-Ștefan BALAUR, Andrei ASĂNDULESEI, *Spatial distribution of Chalcolithic settlements in the Moldavian Plain*
- 16.30 – 16.45 **Coffee break**
- 16.45 – 17.00 Neculai BOLOHAN, Cristian SECU, Andrei ASĂNDULESEI, *An archaeological landscape, a palimpsest and the beginnings of multiple scientific investigations carried out in the southern part of the Cracău-Bistrița basin*
- 17.00 – 17.15 Ion NICULIȚĂ, Aurel ZANOCI, Sergiu MATVEEV, Andrei NICIC, Mihail BĂȚ, Andrei COROBCEAN, *Spatial archaeological research in the middle Dniester area*
- 17.15 – 17.30 Alexandru BERZOVAN, Ștefan HONCU, *Power and control during the 5th–3rd centuries BC a case study: the Getic fortification from Poiana Mănăstirii–Între șanțuri (Țibana commune, Iași County)*
- 17.30 – 17.45 Alexandru Leonard DOROGOSTAIKY, Alexandru HEGYI, *The Bărăgan Plain, April–May 2013: a space odyssey*
- 17.45 – 18.00 Andrei ASĂNDULESEI, Vasile COTIUGĂ, Robin BRIGAND, *Combining oblique aerial photography and geophysical prospection. An operative research model for Chalcolithic archaeological sites*
- 18.00 – 18.15 Andrei ASĂNDULESEI, Felix-Adrian TENCARIU, Aurel MELNICIUC, Dumitru BOGHIAN, *Magnetic prospection in the Cucuteni settlement from Ripiceni–Holm, Botoșani County*
- 18.15 – 18.30 Coriolan H. OPREANU, Vlad-Andrei LĂZĂRESCU, *Listening to the voice of the Earth. Geophysical surveys in the Roman town of Porolissum (Sălaj*



- County, Romania)
- 18.30 – 18.45 Andrei ASĂNDULESEI, Vasile COTIUGĂ, *Non-invasive investigations of the linear fortification known as "Atharic's wall"*
- 18.45 – 19.00 Ioan IATCU, Mitică PINTILEI, *A database with geo-referenced decorative elements of the Dobrudjan basilicas (Romania)*
- 19.00 – 19.30 **Discussions**

POSTER

Andrei ASĂNDULESEI, Vasile COTIUGĂ, Ionuț-Cristi NICU, *Geophysical surveys in the defensive systems of the Cucuteni settlements*



KEYNOTE LECTURE

NEW TRENDS IN ETHNOARCHAEOLOGY: JADE PROJECT AND THE LONG ALPINE AXEHEADS IN WESTERN EUROPE DURING THE 5TH AND 4TH MILLENNIA BC

Pierre PÉTREQUIN

Maison des Sciences de l'Homme et de l'Environnement, Besançon (France)

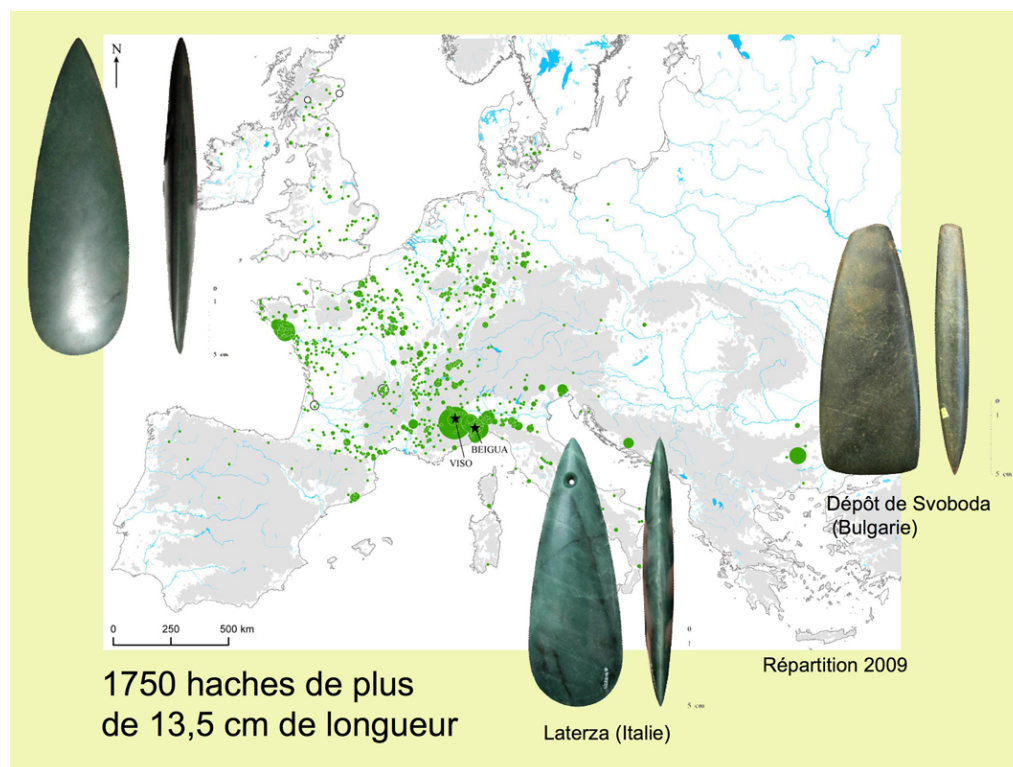
Keywords: Neolithic, Europe, New Guinea, axehead, jade.

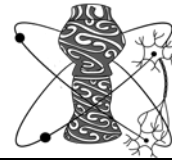
The fundamental role held by polished stone axeheads was early recognized and they became a central symbol for the Neolithic. Nevertheless their study was delegated to typologists for chronological ranking and to geologists to determine the origin of the raw materials. In other words, the question – in our opinion essential- of the social integration of polished blades of disproportionate length or (and) of extraordinary polish, without technical function, rarely held attention.

Since 1984, we focused our research on two projects led in parallel.

- On one hand, an ethnoarchaeological field work among human groups still producing, exchanging and using stone axes blades in New Guinea; our purpose was to propose new models about the non-technical functions of stone tools.

- On the other hand, a wide scale study of the production, circulation and use of Alpine jade axes in the European Neolithic (JADE1 project, French Scientific Research Agency), by using these New Guinea models to test new hypothesis, even if it means modifying them or abandoning them when they were not validated.





Our presentation will explore these ethnoarchaeological models and the interpretation of the long Alpine axeheads—considered as social and religious signs—which, during the 5th and part of the 4th millennia, circulated through Europe on distances up to 1700km as the crow flies. Through these two aspects of the research—which constantly fed and enriched the one by the other—we shall show the archaeological benefits of course, but also try to draw the limits of applications of models, when the comparison is not possible any more between very distant societies which followed completely different social and historic trajectories.



GEOARCHAEOLOGY

THE MICROMORPHOLOGY OF ANTHROPIC SEQUENCES FROM THE CHACOLITHIC *TELL BORDUȘANI–POPINĂ*

Constantin HAITĂ

National Museum of Romanian History, National Center for Pluridisciplinary Researches

Keywords: Chalcolithic, Gumelnița culture, *tell*, micromorphology, sedimentary facies, anthropic structures, activity areas, anthropic activities.

Bordușani–Popină is a *tell* type settlement located in Muntenia, in *Balta Ialomiței*—the internal zone of the Danube floodplain located between the two branches (the Borcea River to the west and the Danube River to the east).

This site, attributed to the Gumelnița culture, is extremely important by its position, but also by its stratigraphy, anthropic structures, organizing of inhabited space and inventory.

The micromorphological analysis involves different scales of observation, from the macroscopic analysis in the field, to the stereomicroscope and polarized light microscopy. The microscopic analysis is performed on thin sections made on sediments and soils samples in undisturbed state and oriented and previously impregnated with synthetic resin. The study under polarized light is mainly consists of observing the sedimentary features—texture, structure, porosity, colour, nature of constituents, homogeneity, and degree of compaction—identification of diagnostic elements and interpreting the actions which can be attributed to main anthropogenic, sedimentary and soil forming processes. The facies analysis is helpful for the comparison between different anthropic structures and deposits.

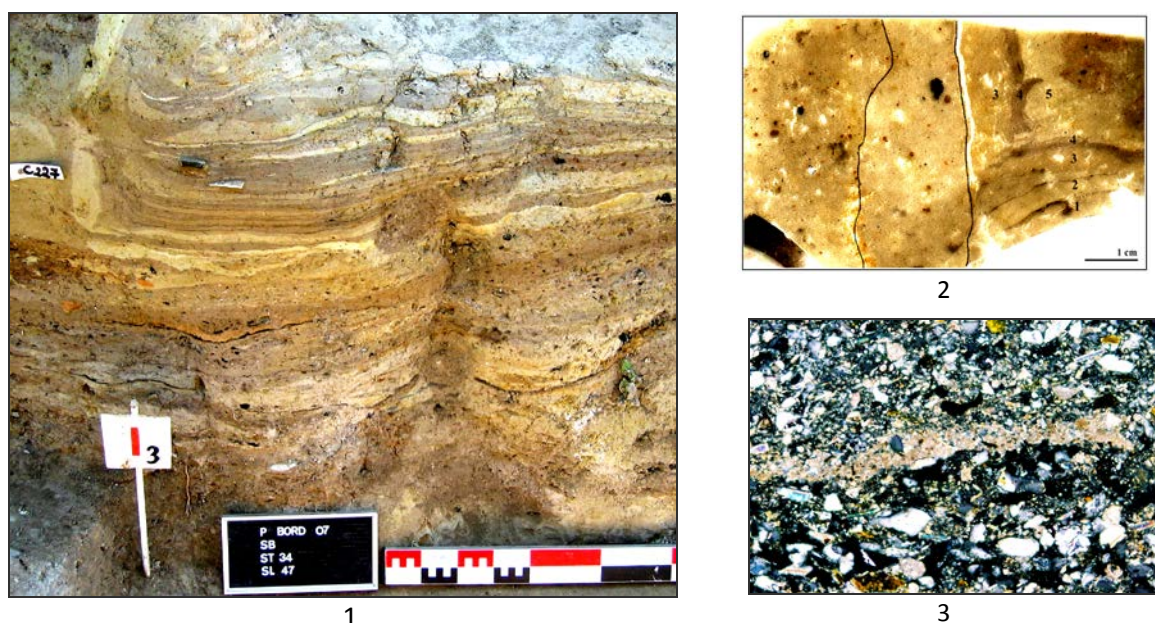


Figure 1. Microstratigraphic sequence inside an unburnt dwelling. 1. Section; 2. Micromorphologic thin section; 3. Photo at microscope (image width 2mm).



The main types of sedimentary units are attributed to prepared materials used for the construction or fitting out of the anthropogenic structures; accumulations formed in the interior of dwelling structures, in waste or transit areas; sedimentary units with important degree of transformation, under the influence of anthropogenic or natural agents, and natural deposits, formed under the action of physical-chemical and biological factors.

The interpretation of the sedimentary features identified at the microscope brings important information about the human activities and sedimentary evolution of the anthropic sequences of the settlement.

Acknowledgements. This study was supported by the Romanian research program *Co-evolution patterns between human and environment in the wetland zone of Balta Ialomiței* (2011–2014), UEFISCDI PN-II-ID-PCE-2011-3-0982.

THE CHARACTERISTICS OF THE NATURAL ENVIRONMENT OF THE AREA, AND THE CHRONOLOGICAL SEQUENCE OF EVOLUTION OF THE PRECUCUTENI-CUCUTENI-TRIPOLYE CULTURAL COMPLEX

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Keywords: Chalcolithic, Precucuteni–Cucuteni–Tripolye cultural complex, Atlantic period, natural environment.

For a better understanding of the relationship between human communities and their natural environment, we attempted to collect and summarize the existent and reliable interdisciplinary archaeological data (from the fields of bioarchaeology, geoarchaeology in particular, as well as palynological information). The aim of this information gathering is to build a general reconstitution of the natural environment in the space and time in which the Precucuteni–Cucuteni–Tripolye cultural complex (around 5000–3500 BC) had evolved. Our approach also uses climate data corresponding to the Atlantic period (around 8000–4500 BP), which were correlated with the different periods of evolution of this civilization, from a chronological point of view.

The comparison between the evolution of the Atlantic period and the chronological phases of evolution of the Precucuteni–Cucuteni–Tripolye cultural complex reveals the existence of four important climatic sequences.

Thus, between 7100 and 6550/6450 BP (corresponding to the Precucuteni/Tripolye A and the beginning of the Cucuteni A/Tripolye BI phase) there existed a generally warm and dry climate followed by a warmer and more humid period (between 6450/6400 and 6050/6000 BP) corresponding to the most part of the Cucuteni A/Tripolye BI phase and the beginning of the Cucuteni A-B/Tripolye BII phase. Subsequently, between 6050/6000 and 5800/5600 BP (corresponding to the Cucuteni A-B/Tripolye BII and the beginning or even the first part of the Cucuteni B/Tripolye CI phase) a warm and dry climate prevailed, rather similar to the first sequence mentioned. At last, between 5800/5600 and 5200/4900 BP, from the beginning of the Cucuteni B/Tripolye CI phase or at least from the second part of it, a colder climate compared to the



previous phases is recorded; this cold climate lasted until the end of this civilization, reaching its minimum towards 5300 BP.

Taking into account the picture of the climate evolution mentioned above, we can appreciate that during the Atlantic, in the period of time corresponding to the evolution of this civilization (Precucuteni/Tripolye A, Cucuteni A/Tripolye BI and Cucuteni A-B/Tripolye BII but also the beginning or even the first part of the Cucuteni B/Tripolye CI) there existed a warmer and more humid climate, similar to the Subtropical climate found nowadays in the Mediterranean area (south of continental Europe).

Afterwards, from the beginning or even from the second part of the Cucuteni B/Tripolye CI phase, a climate change took place, i.e. a cooling sequence as compared to the previous periods, which gradually led at the end of the Atlantic to a climate similar to the present-day continental one.

The Mediterranean climate is confirmed by a series of determinations of thermophile species (the pedunculate oak—*Quercus pedunculiflora*; the holm oak—*Quercus ilex*; the boxwood—*Buxus sempervirens*; the sweet chestnut—*Castanea sativa*; the walnut—*Juglans regia*) and animals (the fallow deer—*Dama dama*; the European ass—*Asinus hydruntinus*; the lion—*Panthera leo*; the leopard—*Panthera pardus*; and probably the cobra—*Naja sp.*) identified inside the settlements belonging to this civilization or to other Neo-Eneolithic archaeological cultures.

The continental climate at the end of the period of evolution of the Precucuteni–Cucuteni–Tripolye cultural complex and of the Atlantic seems to be confirmed by the flora and fauna spectra, which are similar to the present ones around 5000 BP.

We also need to mention that the largest part of the territory occupied by the human communities of this civilization, namely the Moldavian-Volhyno-Podolian plateau represented an area of interference between the forest fringe (dominated by oak mixed with hazelnut tree), forested steppe (with woodlands) and steppe. The principal rivers were populated along their banks by gallery forests.

The adaptation of the human communities to the natural environment conditions and the efficient utilization of the resources directly influenced the long period of existence and the high degree of development characteristic for the Precucuteni–Cucuteni–Tripolye cultural complex.

THE HUMAN-WATER RELATIONSHIP FROM PREHISTORY UNTIL THE PRESENT. A CASE STUDY FOR VALEA OII RIVER (ROMANIA)

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"Alexandru Ioan Cuza" University of Iași (Romania), ARHEOINVEST Platform

Keywords: Prehistory, Valea Oii River, human, water, relationship, GIS.

Valea Oii watershed is located in north-eastern part of Romania. It occupies the south-western sector of the Moldavian Plain and southern part of the Suceava Plateau. This study aims to analyze the natural potential of the Valea Oii watershed and the human settlement dynamics by taking into account the hydrological risk factors and hydrological resources. Archaeological sites and present human settlements are placed according to the archaeological repertoires and by using GPS technology. Using GIS techniques are investigated the archaeological sites and



existing villages, as well as their placement depending on water resources and hydrological risks exposure: floods, draughts, gulying, etc. There are being updated all the water resources: springs, water courses, natural and anthropic ponds. In the dynamics analysis of the lake basins are being used topographic plans and maps at different scales and from different years. The earliest archaeological evidences date from the Chalcolithic period. The morpho-hydrographical, geological and pedological characteristics determined the late occupation of the upper part of the catchment basin. The existence of descending springs lead to the occupation of almost the entire area in the upper basin, which has an amphitheatre form. In the old times, the lower sector of the valley and the flood-plains were used in agricultural purpose or as pastures and rarely for human settlements placement. Over time, human settlements gradually lowered to the lower area, towards the lower sector. This fact was triggered by the heavy deforestation, which lead to the extension of the pastures and agricultural lands. The lack of forests lead to the disappearance of some springs from the upper area. The flood-plain, which in the old times was for pastures, nowadays is occupied by human settlements. The modern period makes most of the settlements to move even in the floodable area. This process was determined by the increasing slope processes as landslides and gulying. New human settlements were located near the water resources, even though they were under the possibility of being affected by floods. In order to defend the settlements from the floodplain, dams were built to mitigate floods. The new ponds determined the appearance of a new economic sector: fish farming.

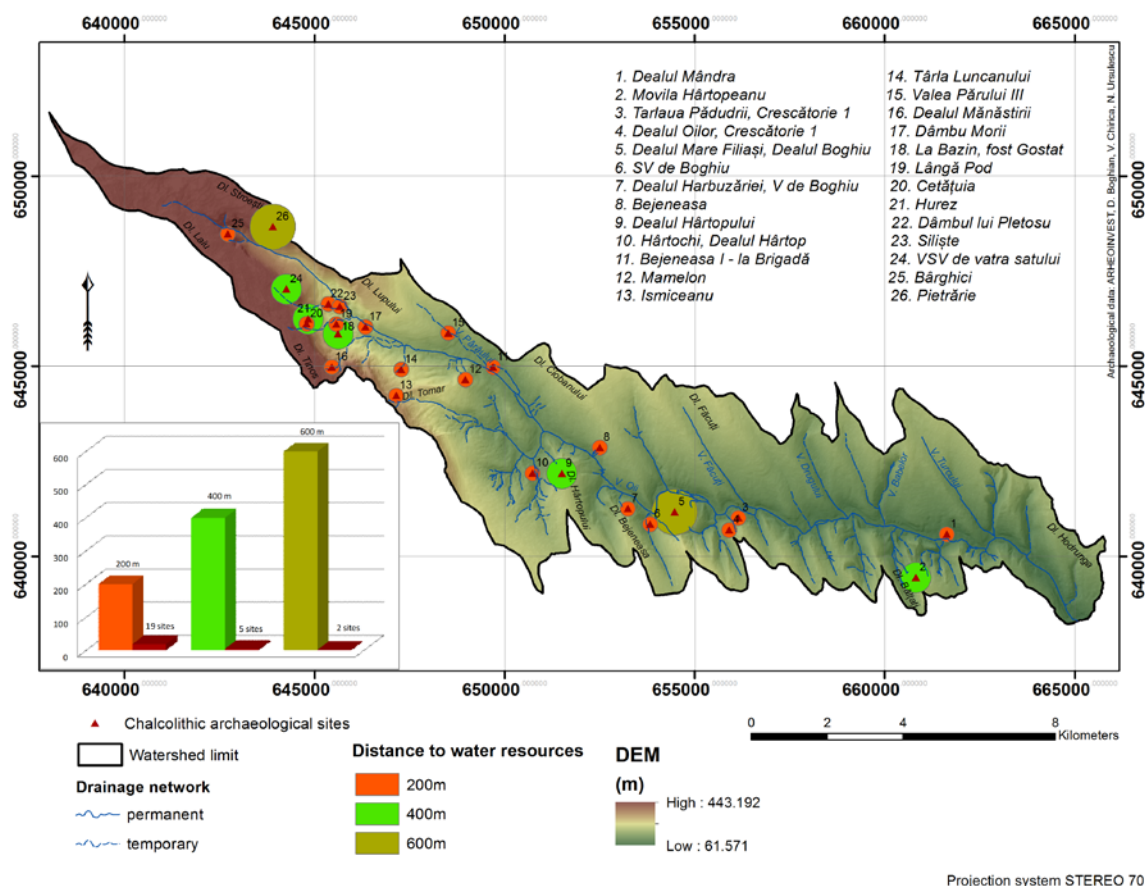


Figure 1. Archaeological sites location depending on water resources.



MORPHOMETRICAL AND GEOMORPHOLOGICAL CHARACTERISTICS OF THE LANDSCAPE FROM THE VALEA OII BASIN (TRIBUTARY OF THE BAHULUI RIVER). DIRECT IMPLICATIONS FOR CHALCOLITHIC ARCHAEOLOGICAL SITES

Ionuț-Cristi NICU, Gheorghe ROMANESCU, Andrei ASĂNDULESEI, Vasile COTIUGĂ

"Alexandru Ioan Cuza" University of Iași (Romania), ARHEOINVEST Platform

Keywords: Chalcolithic, Cucuteni culture, geomorphological processes, archaeological sites, DEM, slope, GIS.

Knowing the morphometric and morphologic characteristics of a watershed can give us both geographical information and very significant data in understanding the mechanisms of space occupancy by the prehistoric communities (Chalcolithic) from our study area. Because there are no detailed studies regarding the geomorphological processes in this area, it is necessary to carry out attentive research in this direction. In this case, thematic maps were made using GIS (DEM map, slope map, aspect map, geomorphological map), overlaid by the vector data with the 26 Chalcolithic archaeological sites, chronologically classified. We obtained data regarding the placement of archaeological sites by DEM classes, slope classes, aspect classes and those who are affected by the current geomorphological processes. Finding and conjecturing the relation between prehistoric humans and the environment could be the premises to many questions that are still unanswered or just assumptions.

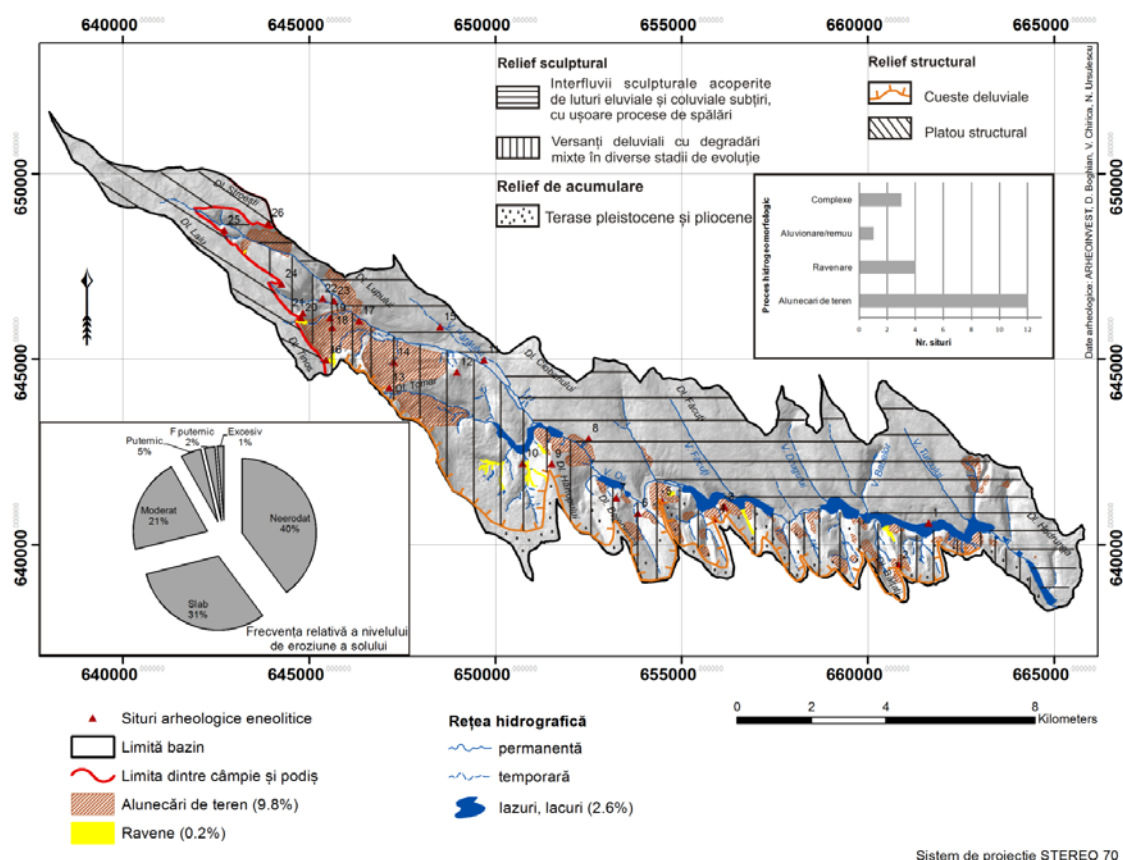


Figure 1. Map of the geomorphological and hydrogeomorphological processes that affect the archaeological sites in the Valea Oii basin.



LANDSCAPE RECONSTRUCTION AND HYDRO-EROSION MODELING FOR GEOARCHAEOLOGICAL ANALYSIS IN THE MUGELLO BASIN (TUSCANY, ITALY)

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¹ *University of Tübingen (Germany), Institute of Geography*

² *Heideberger Akademie der Wissenschaften, Heidelberg (Germany)*

Keywords: Paleolithic, Mugello basin, Digital Elevation Model, multitemporal remote-sensing data, palaeoclimate, landscape.

In a cooperation between the ROCEEH Project launched from the Heidelberg Academy of Sciences and the University of Tübingen, a student workgroup started a project to verify the correlation of archaeological find sites with transportation processes based on erosion. As part of terrain measurements in the Mugello basin (Tuscany, Italy), data of potential infiltration was gathered in the autumn of 2012. This information is supplemented through analysis of land coverage (classified on the basis of multitemporal remote-sensing data), recent climate data concerning events of (heavy) precipitation over a period of 60 years, as well as a reconstruction of palaeoclimate based on pollen profiles from proximate spots in the region. By evaluation of a Digital Elevation Model, several terrace levels have been detected that contained artefacts of various ages (middle and upper Palaeolithic period). Artefacts and terrace levels are being correlated with each other. Another goal of the carried out modelling is the derivation of additional find sites. For this cause, results of the reconstruction of the palaeoclimate are being used. On the basis of recent climate data, changes in land use have been modelled for different periods of time to develop statements for potentially profitable find sites.

SPATIAL DISTRIBUTION OF CHALCOLITHIC SETTLEMENTS IN THE MOLDAVIAN PLAIN

Radu-Ștefan BALAUR, Andrei ASĂNDULESEI

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Keywords: Chalcolithic, settlements, Moldavian Plain, GIS, spatial distribution.

In the archaeological research of Chalcolithic settlements, the way how prehistoric communities occupied space remains a seldom addressed topic. Therefore, trying to capture the spatial distribution of archaeological sites in a particular zone, their density or the dynamic of living, represents innovative approaches, at least at a methodological level, and fully justified. In a geographical space, the archaeological sites can be arranged in different patterns or entirely at random. There are three general categories of conventional geographical models used to describe how archaeological sites are spatially structured: clusters, dispersed or random.

This paper aims to achieve the spatial distribution analysis of Chalcolithic settlements in the Moldavian Plain. Methodologically speaking, the first step in achieving these analyses was the development of a spatial database, in a GIS environment, containing all the Chalcolithic settlements from the region under consideration. A first result is the spatial distribution map of the Chalcolithic settlement in the investigated area. Starting from this, using Kernel Density



Estimation function, density analyses were performed for the Chalcolithic settlements in the Moldavian Plain. Their dynamics can be captured by simply comparing the resulting maps for each stage of living, resulting in the identification of abandonment or stability and development areas from one phase to another.

Using in parallel the distribution and density maps, we can capture the evolution and dynamics of the Chalcolithic communities. Also, the analytical interpretation of the results can provide useful information on the human-environment relation in prehistoric times.

AN ARCHAEOLOGICAL LANDSCAPE, A PALIMPSEST AND THE BEGINNINGS OF MULTIPLE SCIENTIFIC INVESTIGATIONS CARRIED OUT IN THE SOUTHERN PART OF THE CRACĂU-BISTRIȚA BASIN

Neculai BOLOHAN, Cristian SECU, Andrei ASĂNDULESEI

"Alexandru Ioan Cuza" University of Iași (Romania), ARHEOINVEST Platform

Keywords: Middle Bronze Age, archaeological landscape, fortified settlement, multiple investigations.

The chronological sequence represented by the Middle Bronze Age east of the Carpathians may represent a very good example of the coexistence of two cultural representations (Monteoru and Costișa pottery groups). However, in the area of study there is a demonstrated cultural palimpsest. To support this statement may be relied upon a recent scientific contribution regarding the communities life and destiny from Costișa–*Cetățuia* (Neamț County). On this account, we considered that the landscape has multiple meanings and can be differently seen by the community, geographer, archaeologist, chemist, physicist, media user, etc.

In local archaeology the representation of living space during the Bronze Age supposed developing a standard set of criteria (geographic location, presence or absence of a defence system, etc.), that rather have been used to describe and not to understand its histories. Current opportunities for *lecturing* an archaeological landscape necessarily involve the collaboration between scientific areas with specific language. The identification of a common language has given a new consistency and has multiplied the stories about living space in prehistory.

On this occasion we want to present and highlight the stages and the content of a research carried out in the southern part of the Cracău-Bistrița basin, with a special focus on the Silișteea–*Pe Cetățuia* site (Neamț County). On the basis of archaeological data, especially through ceramic analysis, we managed to frame the artefacts and the site in an early stage of the Middle Bronze Age. Subsequently, this framing was confirmed by the use of radiometric data.

The history of discovery and its scientific recovery is an example of the gradual transition between the archaeological monologue and the need for the multidisciplinary discourse, attempting to find other less visible histories. Thus, in successive steps, we managed the integration of various methods of investigating the archaeological landscape (written sources, geology, geography, soil science investigations, non-invasive and invasive investigation of artefacts).

About the preliminary results of these investigations as well as how they interacted we will try to present some considerations in what follows.



Acknowledgements. We warmly thanks to the following PhD candidates: Sebastian Andrei Drob, Alexandru Gafincu, Tudor Mandache, Cristi Nicu from "Alexandru Ioan Cuza" University of Iași, that contributed by all means to this research.

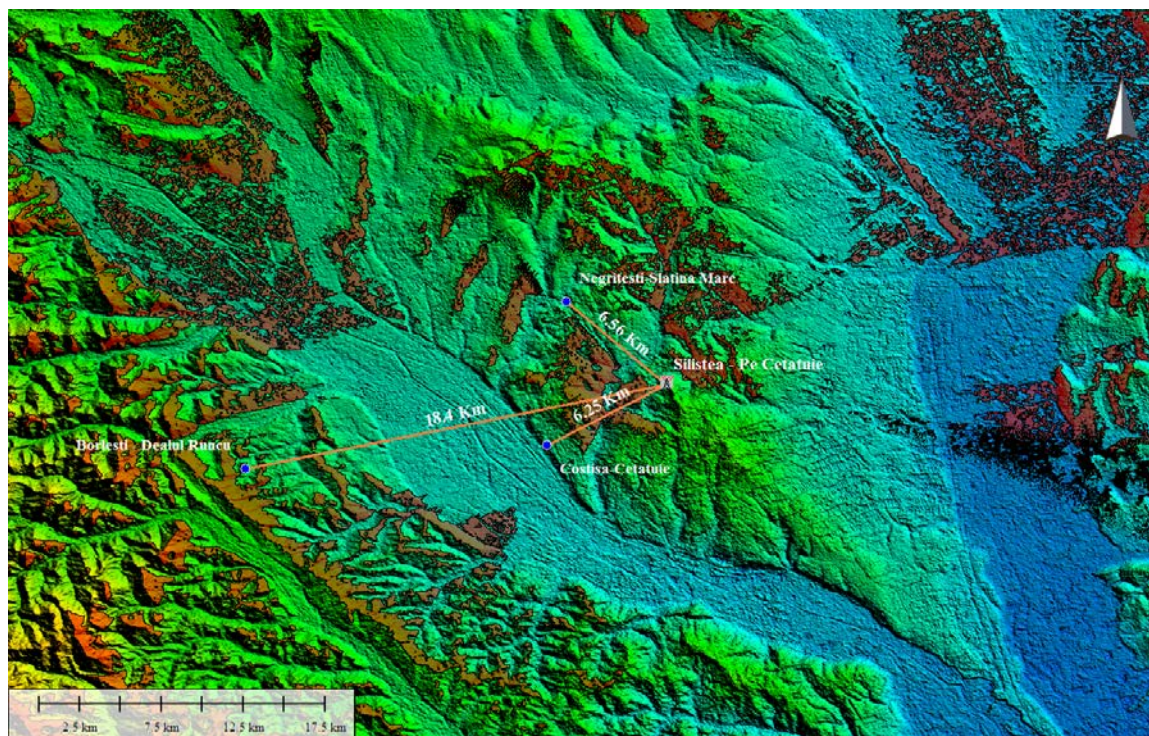


Figure 1. Siliștea-Pe Cetățuie: GIS application.

SPATIAL ARCHEOLOGICAL RESEARCH IN THE MIDDLE DNIESTER AREA

Ion NICULIȚĂ, Aurel ZANOCI, Sergiu MATVEEV,
Andrei NICIC, Mihail BĂȚ, Andrei COROBCEAN

Moldova State University, Chișinău (Republic of Moldova)

Keywords: La Tène, Middle Dniester, Rezina-Țâpova area, open and fortified settlements, GIS, Digital Elevation Model.

Archaeological research in the Middle Dniester region after WW2 revealed several archaeological sites dating from the second half of the 1st millennium B.C. Throughout these years researchers employed various methods and references for producing a map of the region's archaeological sites. But the absence of common criteria for elaborating this map was materialised in a series of difficulties for identifying the sites on the ground. The situation is also hindered by the administrative, relief and forest changes that occurred during the last decades. In this context, the new research techniques, based on GIS applications, offer possibilities for precise charting of the archaeological sites, as well as geo-spatial interpretations.

The pilot project performed by the members of the Archaeology Chair from the State University of Moldova sought to create a digital map of the archaeological sites from the second half of the 1st millennium BC that were identified in the area spanning between Rezina and



Țâpova, on the right bank of the Dniester River, and to establish certain co-relationships between them.

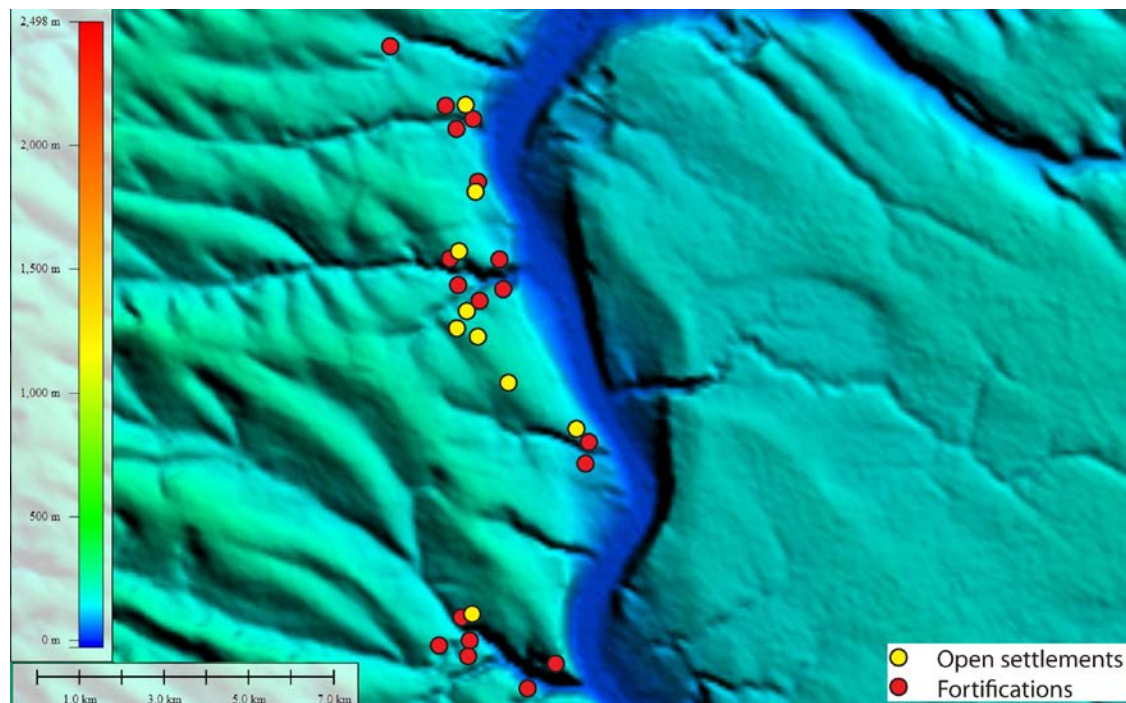


Figure 1. Sites from 6th–3rd centuries B.C. located in the Rezina–Țâpova area.

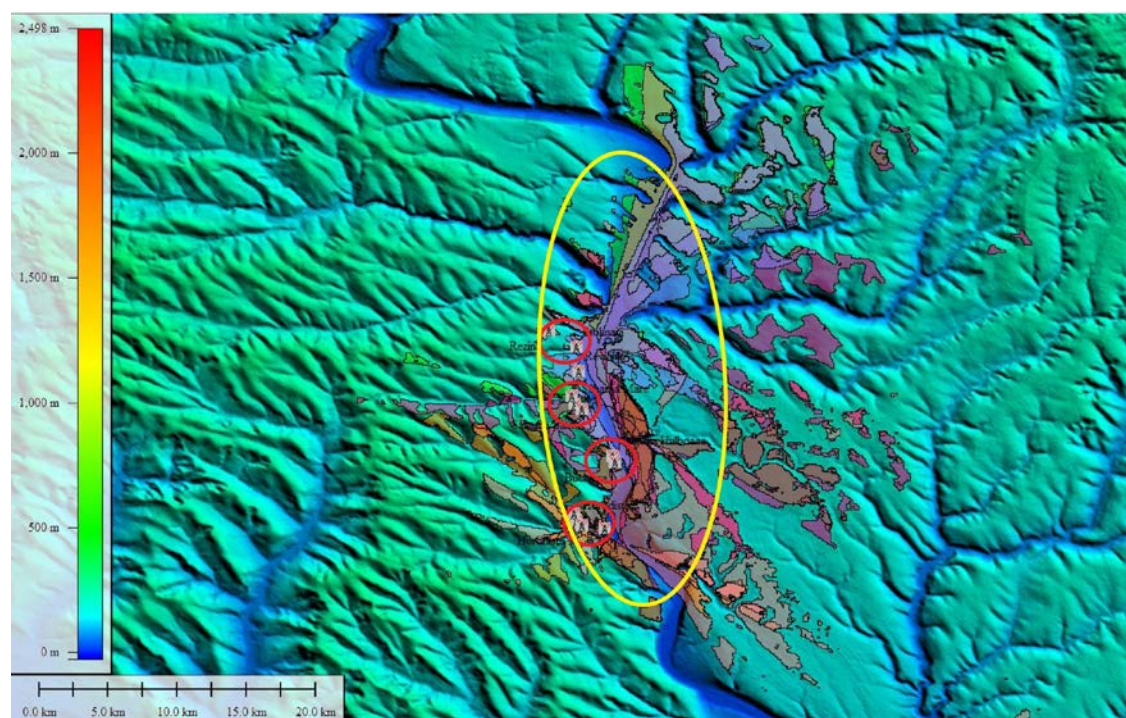


Figure 2. Visibility analysis of sites from the 6th–3rd centuries B.C. located in the Rezina–Țâpova area.



Stage I. The research methodology involved the identification of the contours of each of the archaeological sites identified on the ground, and their positioning on map using the coordinates registered using GPS devices.

Stage II involved the use of the 'Line of Sight' analysis method applied on a Digital Elevation Model (DEM) of the investigated area in order to ascertain a range of realities concerning the hierarchy of the sites, and to highlight the size of monitored area.

Following the field investigations, there were discovered 27 sites (open and fortified settlements), some already known and other recently identified. These are generally located on the banks of the gorges that start from the Dniester's bed and continue westwards. Thus, four "groups" of monuments (according to the number of gorges) were distinguished in the investigated area, comprising fortified and open settlements. The use of the 'Line of Sight' method of analysis demonstrated, on the one hand, the existence of a perfect visibility between the sites of each "group", and, on the other hand, the possibility for these "groups" to communicate/be mutually visible. Such a location of the monuments suggests the existence of a defence strategy applied for a ca. 30km tract of land running along the Dniester, from the modern-day village of Solonceni in the north, to Țâpova in the south. The width of this strip of land varied, according to the relief, between 4 and 8km. A key position between the sites investigated in the region of the Middle Dniester was held by the fortification from Saharna Mare, which was protected on the northern and southern flanks by four strongholds (two for each flank).

Following the field and geo-spatial investigations, we can establish the existence of a "power centre" in the region of the Middle Dniester during the second half of the 1st millennium BC.

POWER AND CONTROL DURING THE 5TH–3RD CENTURIES BC A CASE STUDY: THE GETIC FORTIFICATION FROM POIANA MĂNĂSTIRII–ÎNTRU ȘANȚURI (ȚIBANA COMMUNE, IAȘI COUNTY)

Alexandru BERZOVAN, Ștefan HONCU

"Alexandru Ioan Cuza" University of Iași (Romania), Faculty of History

Keywords: Late Iron Age, Getic period, fortifications, GIS, Poiana Mănăstirii.

The Getic world in the 5th–3rd centuries BC is characterized by the existence of large fortifications. In many cases, these are continuing older settlements dating from the First Iron Age, representing not just a physical expression of the power and authority of the local leaders, but also a mark of a tribal society with an acute communitarian sense—far from being the residences of a small elite, the large *intra muros* areas offered, if needed, space and shelter for the nearby population.

In this paper we will present a case study on a less-known Getic fortification, from Poiana Mănăstirii–Întru Șanțuri (Țibana commune, Iași County), located in the Central Moldavian Plateau, on the ridge that separates the Sacovăț and the Ursița hydrographical basins.

Using a DEM with a 30-meter resolution, and Global Mapper 13 as software base, we made a series of analyses in order to establish the area controlled by the fortress as well as the easiest access routes. We saw that the fortress had a large viewshed across the Sacovăț basin. It



controlled a series of dependent civilian settlements, located no further than 4 to 5 km, but also the barrows located near the village Alexeni, that might represent, with certain likelihood, the tumular necropolis of this center of power. In the area of the Ursița basin, the discoveries that can be dated in the timeframe we discuss are missing. Regarding the access routes, the easiest ones follow the ridges.

Having a surface of almost 12ha, benefiting from a good strategic position, rallied to the socio-economical mechanisms of the time (judging after the numerous imports), the fortress we have analysed was an important political and territorial centre in this area of the Central Moldavian Plateau.

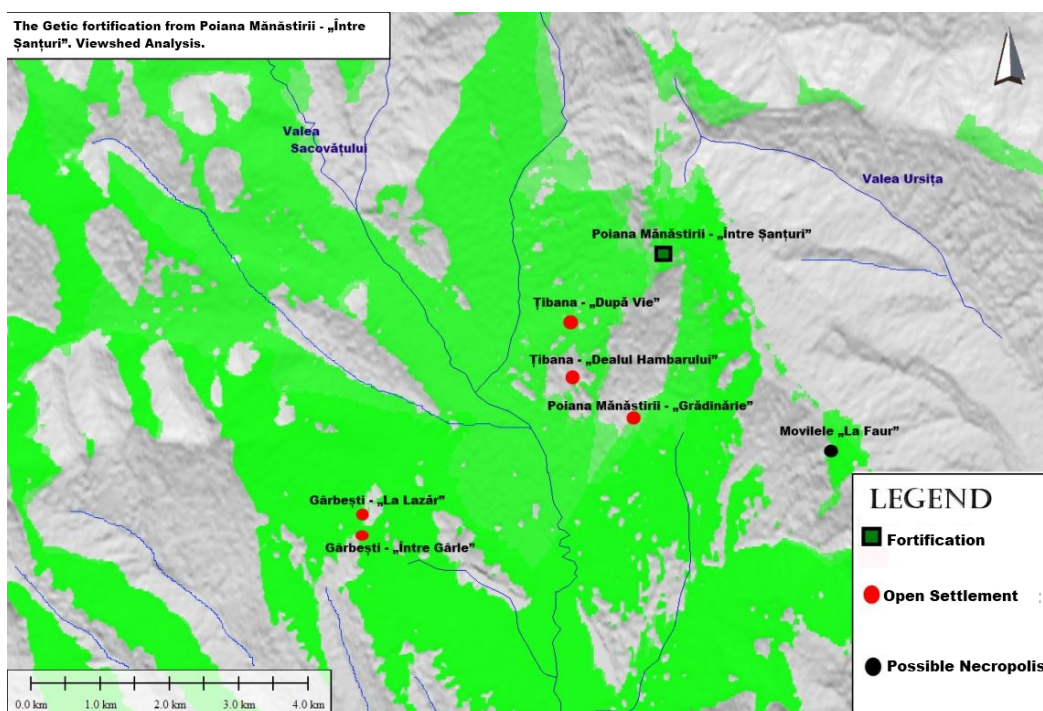


Figure 1. Viewshed analysis of the Getic fortress from Poiana Mănăstirii-Între Șanțuri.

THE BĂRĂGAN PLAIN, APRIL-MAY 2013: A SPACE ODYSSEY

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¹Arheovest NGO, Timișoara (Romania)

²West University of Timișoara (Romania)

Keywords: Bărăgan Plain, satellite images, aerial photographs, fortified settlements.

This paper presents the results of the preliminary analysis aerial photographs (source: APIA) and satellite images (source: Google Earth) in the visible spectrum depicting the Bărăgan Plain with an area of about 11,000 square kilometers mainly focusing at this stage on the discovery of possible old settlements.



Of course this analysis was subject to several limitations, primarily due to the image itself, like different resolution (good for about 40% of the surface), the season in which they were taken, the number of images available for each area (in general, aerial photographs range from 2-3, and for GE 1-2) in the second due to natural causes flooding and erosion rates for major water meadows and the presence of sand dunes in some areas and limiting products this modern settlements occupying arguably the oldest settlements.

Why producing a Bărăgan Plain study?

- 11,000 sq. similar natural conditions;
- Similarity in the natural and anthropogenic transformations over time;
- The possibility of a large GIS study — the possibility of predictive models;
- Research and documentation in the same national system relatively good because of the proximity to Bucharest;
- The possibility of extending the experience of ArheoVest in four counties: Brăila, Buzău, Călărași and Ialomița.

The results obtained led to the identification of 112 potential archaeological sites not included in the National Archaeological Register, including 16 possibly fortified settlements, three fortifications, two circular structures maybe with ceremonial role, and a place of pilgrimage.

What we offer:

- Informing researchers in the four counties: Brăila, Buzău, Călărași and Ialomița;
- In the event that the targets are confirmed, to provide ArheoVest support;
- Expanding research on new aerial and satellite photographs;
- A GIS archaeological study of the Bărăgan region tied together with all interested parties.



Figure 1. Possible archaeological sites in the Bărăgan: fortified settlements (black), fortifications (purple) and circular structures (red).

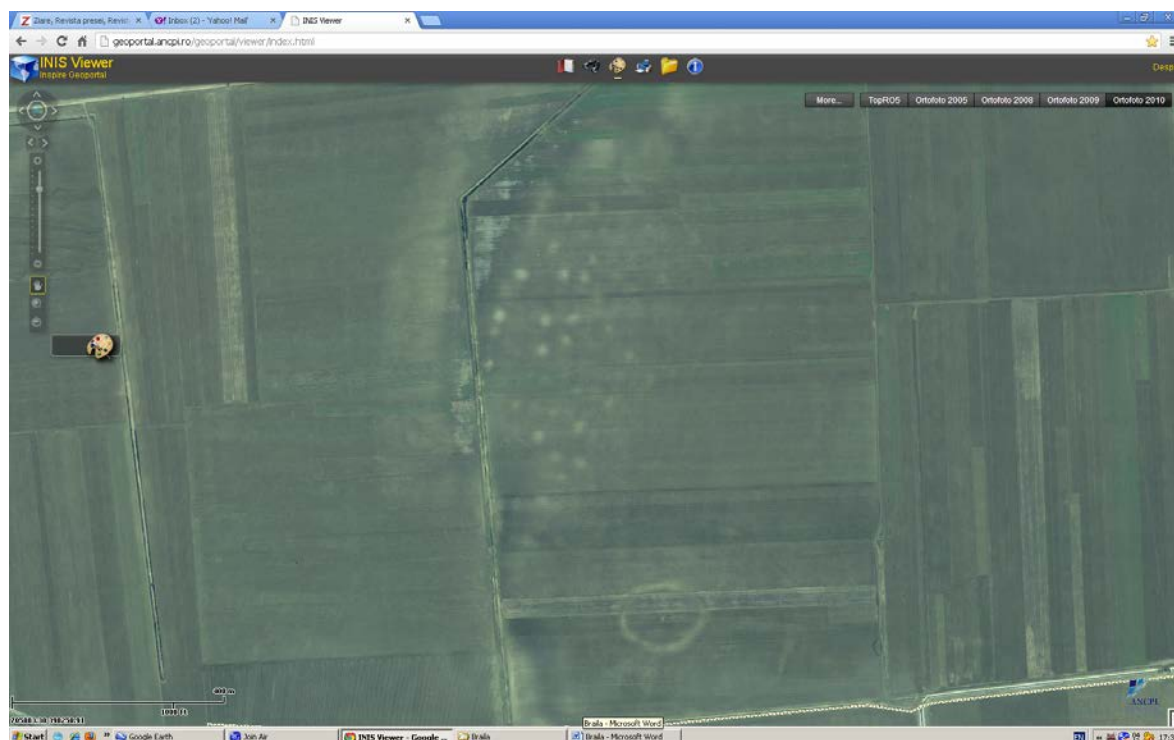


Figure 2. Objectives Constantin Gabrielescu SV: possible a settlement (19ha), possible 13ha elliptical structure commune Bordei Verde, Brăila County (45°3'37"N, 27°36'55" E, 45°3'20", 27°37'2" E).



Figure 3. Objective Ghimbășani-Mărculești: possible fortification of 7 hectares, commune Cosîmbești/ Mărculești, Ialomița County, (44 ° 33'29 "N, 27 ° 29'46" E).



COMBINING OBLIQUE AERIAL PHOTOGRAPHY AND
GEOPHYSICAL PROSPECTION. AN OPERATIVE RESEARCH MODEL
FOR CHALCOLITHIC ARCHAEOLOGICAL SITES

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Keywords: Chalcolithic, aerial photography, geophysical prospection, Bahluiet River.

More than once, the use of aerial photography in archaeological research has shown over time that it can be undoubtedly one of the effective tools when it comes to dealing with such requests. However, quite often, problems in interpreting aerial photos can occur, caused by a variety of disturbing factors. The associated photo interpretation, along with maps generated by geophysical measurements, confirms and clarifies these issues and also completes the volume of information. This work presents a series of case studies situated in the Bahluiet River catchment area that are relevant for our scientific research.



Figure 1. The Cucuteni settlement of Filiași–Dealul Mare/Dealul Boghiului:
aerial photography.



MAGNETIC PROSPECTION IN THE CUCUTENI SETTLEMENT FROM RIPICENI–HOLM, BOTOȘANI COUNTY

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Keywords: Chalcolithic, Cucuteni culture, Ripiceni–Holm, magnetometric prospection.

The magnetic method is known as one of the most effective prospection technique for archaeology. The opportunity to investigate large areas in a short amount of time, and obtaining good resolution maps, represents a significant advantage over other geophysical research methods, at least in our case. At the site of Ripiceni, archaeological micro-topography was combined with magnetometric measurements. In the study area there were identified large rectangular anomalies, probably dwellings, and, also, others having small sizes.

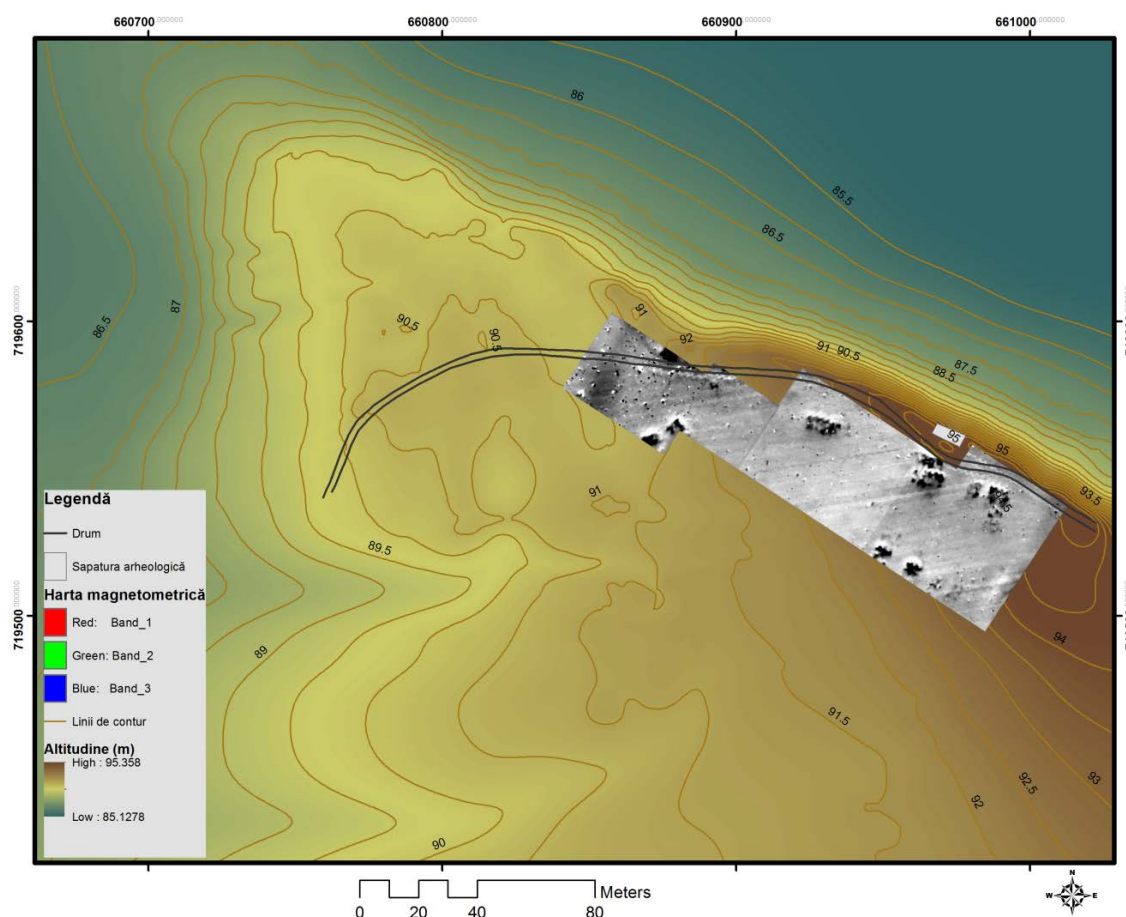


Figure 1. Magnetometric map of the Ripiceni–Holm Cucuteni settlement.



LISTENING TO THE VOICE OF THE EARTH. GEOPHYSICAL SURVEYS IN THE ROMAN TOWN OF POROLISSUM (SĂLAJ COUNTY, ROMANIA)

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Keywords: Roman period, Dacia Porolissensis, Porolissum, geophysical prospection.

The authors are dealing with their latest archaeological research activities in the Roman fort and town of Porolissum (Dacia Porolissensis). The Roman archaeological complex Porolissum is spread on more than 500 hectares on several hills between the villages of Jac and Moigrad (Sălaj County,) at about 12km from Zalău, the most important town of the county. The main Roman military base was placed on the Pomăt hill, a strategically key point for blocking the most important route towards the province, across the Ortelec Valley. This passage represented the only important cross over the Western Carpathians used during Antiquity. Controlling this road was a strategic aim for the Romans and for the establishment of the defence system of the frontier. Because of this reason, huge military defence works were performed in the area. Beside the two already mentioned forts, the top hills were provided with many signalling watchtowers composing a unique surveillance system, other valleys being blocked by stone or turf and wood walls. Porolissum remained the most important military base of the Dacian frontier having a garrison composed of both legionary detachments and several auxiliary units, all-around 3000 soldiers. Soon, the civil settlement developed in the shadow of the two forts started growing. It became also a production centre due to the great contacts with the barbarian tribes situated in its vicinity. The civilian habitation at Porolissum was identified around the fort from Pomăt hill. Important researches have been done in front of the western and northern sides of the fort, along the Imperial road that linked the Roman province with the barbarian world. A mile castle excavated was identified with the customs building. In this part were unearthed several temples and private buildings during the last 30 years which lead to the presumption that it is this area where the first military *vicus* emerged. After 2011, a new strategy of research was obviously needed and was implemented by the new director of the site. The first step was to gather as much topographical information as possible thus mapping all the already known archaeological features and creating a local topographic grid system. Then, as part of the above mentioned project "Seeing the unseen", massive and diverse geophysical surveys were performed all around the site, focusing upon less known areas. In the sector XZ and sector AH there were spectacular results. It is easy to identify some huge rectangular buildings, probably being public buildings, as well as an interesting double precinct, these sectors surely covering parts of the municipium Septimium. In the sector XZ, between the amphitheatre and the southern side of the fort, small scale geophysical prospections were previously done, but no general background for the area was known until now. In the sector MQ the density of the archaeological significant features is rather low being concentrated along the Roman imperial road. Some circular anomalies present in the southern part of the area may be interpreted as kilns. Based on this new information, the future archaeological strategy will focus on checking structures situated in key points that may offer answers to problems related.

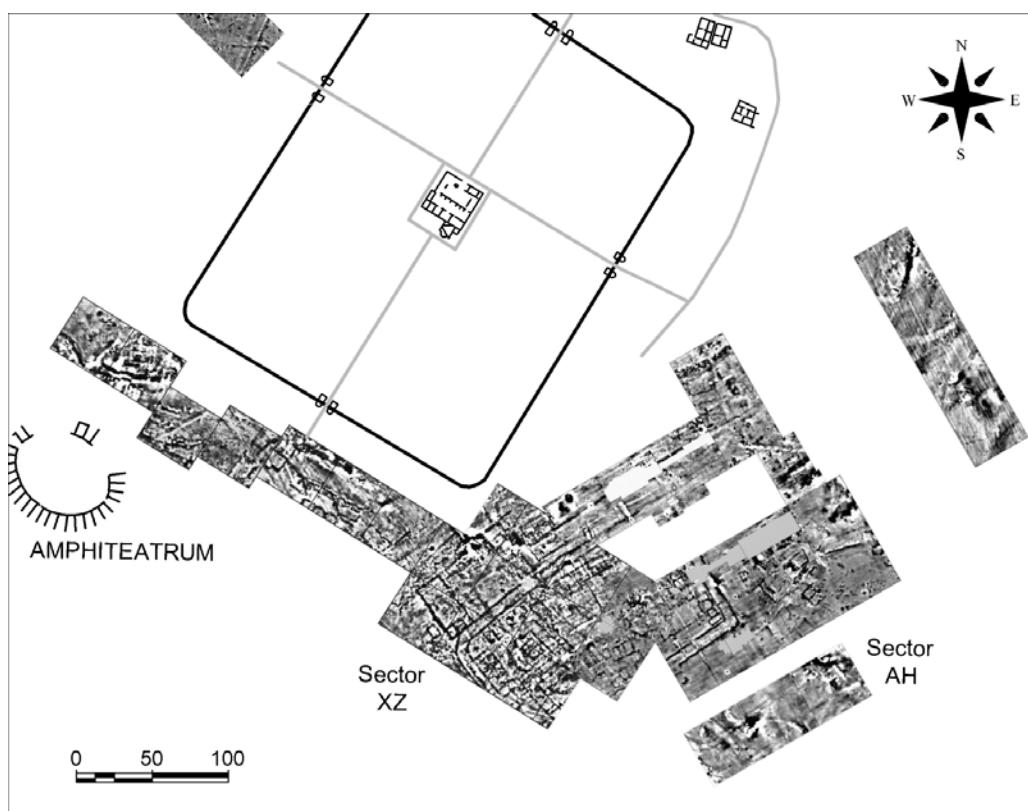


Figure 1. Recent geophysical survey in the Roman town of Porolissum (2012).

NON-INVASIVE INVESTIGATIONS OF THE LINEAR FORTIFICATION KNOWN AS "ATHANARIC'S WALL"

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Keywords: Late Roman period, linear fortification, Băleni, magnetometric prospection.

Recently, among the archaeological scientific community, began, timidly, to actively manifest confident when it comes about to prepare a relevant feasibility study, preceding an archaeological excavation, using non-invasive geophysical techniques. The magnetometric measurements of the so-called "Athanaric's wall" (after the king of the Thervings) at Băleni (Galați County) are part of this trend. Using this methodology we could easily determine the exact problem areas and also we could establish the upcoming archaeological trenches. The results from the magnetic measurements were shown to be quite accurate, fully confirmed by a series of surveys conducted afterwards.

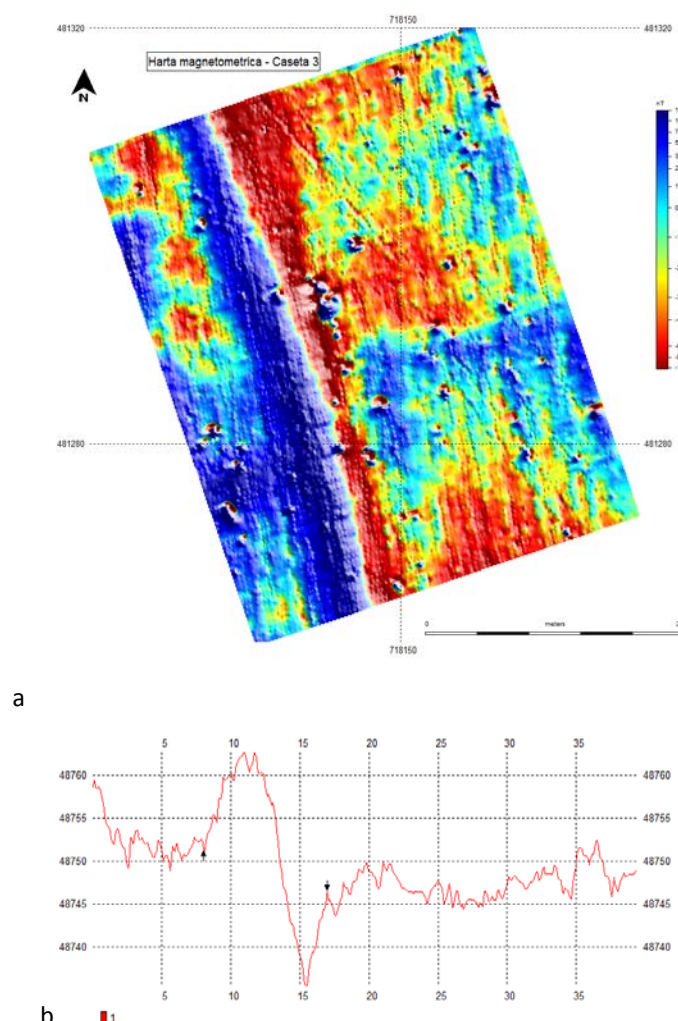


Figure 1. Magnetometric map of the "Athanaric's wall" linear fortification at Băleni (a) and magnetometric profile no. 25 (b).

A DATABASE WITH GEO-REFERENCED DECORATIVE ELEMENTS OF THE DOBRUDJAN BASILICAS (ROMANIA)

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Keywords: Late Roman period, Dobrudja, Christian basilica, limestone quarries, marble.

The purpose of this study is to identify, record and chart the late Roman centres of Dobrudja where there are Christian basilicas, based on specific maps (1:50.000). At the same time, we intend to map and distribute the architectural elements used in the ornamentation of



the religious edifices during the time of Emperor Justinian I. Basilica ornamentation elements were centralized by developing a geo-referenced database management model. The analysis of the geo-referenced data allows the understanding of the implementation and development phenomenon of the Byzantine imperial ideology from the perspective of the commercial dynamics (quarry exploitation and the transportation of the items) and the historical-religious one (the role played by the Emperor and the local church). The distribution of the limestone architectural elements points out the role played by the limestone quarries of Dobrudja in ensuring the necessary material. The dynamics of the commercial links with areas of the Mediterranean areal is pointed out by the distribution of the decorative elements made of marble of Proconnesus and Thasos, these being present, to an overwhelming extent, in the ecclesiastic centres on the maritime littoral and less in (or even completely absent from) the episcopal centres on the Danubian *limes*.

Aknowledgements. For Ioan Iațcu, this work was supported by a grant of the Romanian National Authority for Scientific Research, CNCS-UEFISCDI, project number PN-II-RU-PD-2011-3-0103.

POSTER

GEOPHYSICAL SURVEYS IN THE DEFENSIVE SYSTEMS OF THE CUCUTENI SETTLEMENTS

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Keywords: Chalcolithic, Cucuteni culture, fortification settlements, magnetometric prospection, GPR.

Extensive archaeological research in the settlements belonging to the Cucuteni culture in Romania have revealed the existence of defensive systems, especially in the case of those settlements located on elevated areas within the landscape. The settlements, located on higher ground and representing the object of our study, are always naturally defended from three sides, while the remaining open side has, in many cases, a ditch with rampart and sometimes stockade. The geophysical surveys conducted at many Cucuteni settlements within the space bordered in the west by the Eastern Carpathians and by the Prut River in the east, offered precious data regarding the defensive systems, as well as their planimetry. Combining the magnetic and georadar (GPR) methods led to the identification of complex defensive systems, which were located on the most easily accessible side of the settlement and made up of two vaulted parallel ditches that effectively closed the open side.

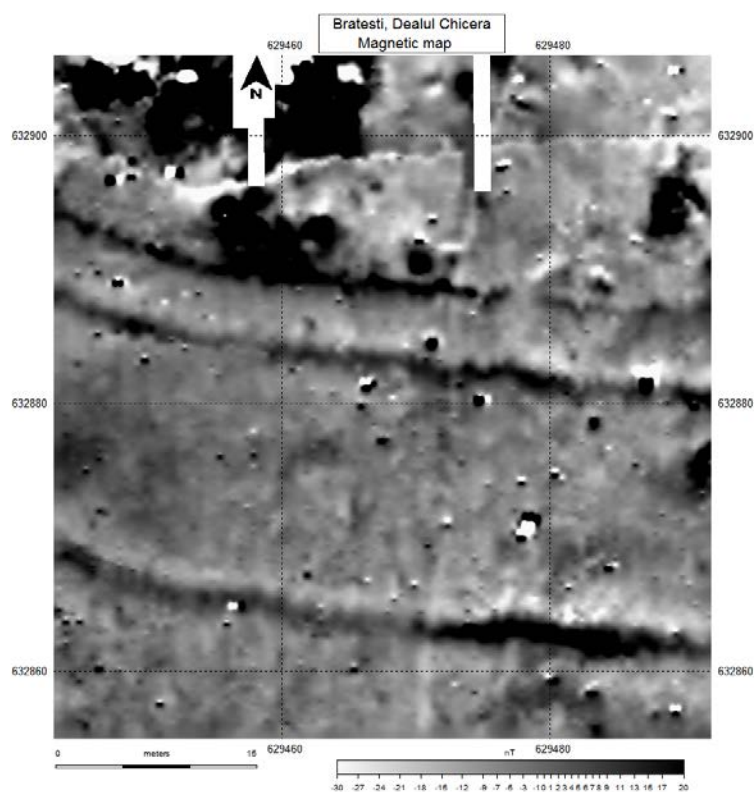


Figure 1. Magnetometric map of the defensive system of the Brătești–Dealul Chicera Cucuteni settlement.



BIOARCHAEOLOGY

ARCHAEOLOGICAL PALYNOLOGY IN ROMANIA — A REVIEW OF ITS PAST AND CURRENT STATE

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Keywords: palynology, archaeology, prehistory, Romania, palaeoenvironment.

The study of palaeoenvironments raises for several years an increased interest among researchers, as palynology plays an ever more important role in the archaeological literature.

Since the discipline deals with the study of pollen and spores, it is mainly used to reconstruct vegetation history, and it has proved to be a good tool to reconstruct the past, and to construct archaeological scenarios with an ever growing level of complexity, through the integration of the natural environment as an explanatory factor of human behaviour, or through the integration of the anthropogenic impact as a shaping element of the environment. From this point of view, archaeological palynology highlights aspects of the existing interactions between ancient human communities and their environment, from the point of view of their agricultural practices. It also sheds light on other different daily-life aspects, such as ancient diets, funeral practices, the function and use of various classes of artefacts, etc.

Pollen analysis in Romanian archaeology is a well-established practice and the interest concerning the opportunities offered by this discipline is steadily growing. The increasing visibility of the discipline reflects a mentality change in terms of research methodology in Romanian archaeology, particularly in prehistoric archaeology.

This paper will focus on a short critical survey of the development of archaeological palynology in Romania, from its beginning in the early twentieth century to the present.

Acknowledgements. This work was supported by the CNCIS-UEFISCSU, project number PN II-RU code TE 172/2010. Funding of M. Danu was provided by POSDRU/89/1.5/S/49944 project: ~~"Developing the innovation capacity and improving the impact of research through post-doctoral programmes" (2010–2013).~~



**GATHERING MOLLUSKS IN THE ENEOLITHIC.
CASE STUDY ON AN ACCUMULATION OF BIVALVE SHELLS FROM
THE ENEOLITHIC SITE OF BORDUȘANI–POPINĂ (ROMANIA)**

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Keywords: Eneolithic, Gumelnița, area of household waste, molluscs, seasonality.

The area of household waste were defined and studied interdisciplinary for the first time in the northern area of the Gumelnița culture (the second half of the 5th millennium BC) in the Harșova and Bordușani tells within the Danube Valley. The areas of household waste are a category of living space specific to Eneolithic tells. These proved to be important resources of information for reconstructing the life of human communities. The study of archaeofaunal materials was carried out not only for obtaining information regarding activities such as gathering molluscs, fishing, animal breeding or hunting, but also for outlining the processes and actions that generated those kind of activities and seasonality. The presence of these complexes in tells from the Danube Valley point out to certain behaviours and current practices for the Gumelnița communities living in that kind of environment. Their study provides important information regarding the management model of various food resources and the specific strategies adopted.

A massive accumulation of bivalve shells from an area of household waste was studied recently at Bordușani site. This kind of accumulation was also encountered in the Harșova settlement, which indicates a practice common for both communities. The advantage of studying such deposits is that they are made in a short period of time (a few days). The biological and economical characteristics of the species found in such accumulations will be important data on which it will be possible to reconstruct the environment surrounding the settlement.

Collecting shells doesn't have the same importance during the warm season, even if it seems a daily activity. The bivalves cannot be found in all the water basins due to some specific ecological requests (substrate, turbidity, water speed). The connection with a main river channel, as well as the water level influences their density. High densities, accessible for the collector are found only at low water levels. In this circumstances it is understandable why there aren't more accumulations of this type on the habitation levels of the tells.

The correlation between these deposits and a low level of the river can be seen along the tells' research and can provide us information regarding climate data and their influence on the site habitation.

Short-term accumulations in a certain period of the year may be temporal marks to quantify other activities identified in these structures, like fishing for example. For the Bordușani and Harșova sites it can be noticed that the collecting/fishing relationship is inversely proportional. In the last level of the shells' accumulation, the fishing is almost negligible. Besides all these aspects, the study of such accumulations through seasonality studies can provide chronological benchmarks regarding both the development of the settlement in comparison with the environment and different types of resources provided by this and also the potential impact of various human activities.

Acknowledgements. This work is carried out within the framework of the project IDEI *Landscape and human co-evolution patterns in the wetland area of Balta Ialomiței* (PN-II-ID-PCE-2011-3-0982).



NEW ARCHAEZOOLOGICAL DATA CONCERNING THE CHALCOLITHIC SITE (PRECUCUTENI CULTURE) OF TÂRGU FRUMOS (IAȘI COUNTY, ROMANIA)

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Keywords: Chalcolithic, archaeozoology, Precucuteni culture, Târgu Frumos.

The Chalcolithic site of Târgu Frumos (Iași County) is the most extensive settlement of the Precucuteni culture, on the territory of Romania. The site, situated between the valley of the Siret River and the Moldavian Plain, comprises three levels of habitation, summing up to about 80 cm of sediments (4800–4600/4500 BC).

Previous archaeozoological studies concerning the Chalcolithic settlement of Târgu Frumos have mainly addressed questions related to subsistence practices, such as animal present and/or consumed in the site, proportion of wild species versus livestock, and animal use for food, as well as ritual practices, and raw material used in manufacturing. The studies have also analysed the morphometric variability of certain identified animal species.

The present paper describes a sample of animal remains recovered in the 2003 archaeological campaign, in terms of taxon frequencies, based on the number of identified specimens (NISP) and the number of minimum number of individuals (MNI). Among the identified animal resources, domestic mammals constitute the majority, and they consist in cattle, sheep/goat, pig, and dog. Cattle dominate the assemblage. Wild animal remains were uncovered in very small amounts (red deer, roe deer, wild boar, aurochs, and shells). We have also to point out the presence of few worked pieces (bones, teeth and antlers).

Acknowledgements. This work was supported by a grant of the Romanian National Authority for Scientific Research, CNCS-UEFISCDI: project number PN-II-RU-TE-2011-3-0146.

THE ARCHEOZOOLOGICAL ANALYSIS OF A SAMPLE FROM NICULIȚEL SETTLEMENT (BABADAG CULTURE)

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Keywords: Hallstatt, Babadag culture, archaeozoology, quantification, Niculițel.

Between June and September 2000, during the installation works for a gas pipeline that crosses Dobrudja, the archaeological rescue excavations were resumed in the Babadag settlement of Niculițel, on a terrace located on the southern shore of Gorgonel lake. The archaeological research covered an area of approximately 2000 square meters, with trenches drawn on each side of the pipe. The settlement's stratigraphy includes two habitation levels, the upper level belonging to the Roman era and the lower level to the Babadag culture, with archaeological material illustrating its three stages.



The first stage of the Iron Age in Dobrudja is embodied by the Babadag culture, that evolved chronologically between the second half of 11th century and the beginning of 7th century BC.

The faunal remains we analysed were uncovered by the archaeological research carried out in 1988 and 2000. The analysed faunal sample contains 902 pieces, out of which 4 are human (*Homo sapiens*).

The highest ratio within the sample is occupied by mammal bones, with 615 pieces, out of which 397 were also identified by species. The identified domestic mammal species are: cattle (*Bos taurus*), sheep (*Ovis aries*), goat (*Capra hircus*), horse (*Equus caballus*), pig (*Sus domesticus*), with cattle prevailing. The identified wild mammal species are: red deer (*Cervus elaphus*), wild boar (*Sus scrofa*) and roe deer (*Capreolus capreolus*), with the largest number belonging to red deer. There are also 218 bones fragments for which the species was impossible to determine.

There is a single fragment of bird bone and 6 fragments of reptilian bone (belonging to the species *Testudo graeca* and *Emys orbicularis*).

Fish remains are numerous (276) and the following species were identified: pike (*Esox lucius*), common carp (*Cyprinus carpio*), tench (*Tinca tinca*), catfish (*Silurus glanis*) and zander (*Sander lucioperca*); the highest ratio is represented by common carp bones.

Acknowledgements. This work was supported by a grant of the Romanian National Authority for Scientific Research, CNCS –UEFISCDI, project number PN-II-RU-TE-2011-3-0146.

DIFFERENTIAL DIAGNOSIS OF A LYTIC LESION FROM A NEOLITHIC SKELETON FROM SUPLACU DE BARCĂU (BIHOR COUNTY, ROMANIA)

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Keywords: Neolithic, paleopathology, physical anthropology, differential diagnosis, Suplacu de Barcău.

Our paper aims to discuss the differential diagnosis for the pathologies observed on a Neolithic skeleton from Suplacu de Barcău (Bihor County, Romania). The skeleton, excavated by Fl. Gogâltan and colleagues and dated to around 7000 YBP, belongs to the Suplacu Group and it was found in the Mid-Neolithic settlement.

The sex and age of the skeleton were determined following the standards provided by Buikstra and Ubelaker (1994). Using the morphological features present on the skull and pelvis, the sex was established as male, with an age of 33 to 45 years.

The anthropological analysis of the skeleton revealed the presence of several pathologies. One of them is interesting in particular, namely a lytic lesion located on the posterior surface of the right calcaneus, with a distinct morphology (extended destruction of the bone, strong remodelling on the edges with presence of large bony exostoses). Moreover, on the left calcaneus similar lesions can be observed; their dimensions point to the fact that they could represent the early stage of the same pathology observed on the right calcaneus. A second, highly significant, pathological aspect in our case is the presence of advanced DISH (Diffuse Idiopathic Skeletal Hyperostosis) on the last two lumbar vertebrae. The latter, along with the



other pathological conditions, make the case a challenge as for determining a biologically satisfying diagnosis. The location and morphology of the lesions are consistent with multiple diseases, especially diabetes and brucellosis, but also tuberculosis and osteomyelitis.

Thereby, we expand our information regarding the skeleton by correlating macroscopic and microscopic observations with X-Ray and molecular analyses. By following the working methodology used for differential diagnosis, we examine the etiology, location and morphology of the lesions, but also the presence of these diseases in the discussed chronological period. Finally, we attempt to connect the biological data with the archaeological context in order to construct a bio-cultural profile of the individual whose skeleton this has once been.

Acknowledgements. This research was funded in the frame of UEFISCDI project PCCA_1153/2011.



Figure 1. Neolithic skeleton from Suplacu de Barcău. 1: the presence of DISH (Diffuse Idiopathic Skeletal Hyperostosis) on the last two lumbar vertebrae and on the first sacral vertebra; 2: the two calcanei showing lytic lesions on the posterior surface: the location and morphology of the lesions indicates that they represent different development stages of the same pathology.

AN ARCHAEOGENETIC ANALYSIS OF CHALCOLITHIC SWINE REMAINS FROM ROMANIAN TERRITORY

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Keywords: Chalcolithic, archaeogenetic, swine, Romania

Previous studies on Romanian ancient samples of *Sus scrofa* dating from the Early Neolithic until the Chalcolithic revealed only one genetic signature for the domestic pig: the ANC-Y1-6A Near-Eastern haplotype. This study aims to complete the image of the Chalcolithic distribution and occurrence of the ancient haplotypes in the Eastern part of Romania, with the analysis carried out for another 104 samples from 14 different sites. All the samples were subjected to DNA extraction, PCR and sequencing. The results show that starting with 4500 BC



the variety of haplotypes for domestic pigs increases, and, apart from the ANC-Y1-6A haplotype, widely spread on Romanian territory, the domestic pigs also present both European haplotypes, ANC-Aside and ANC-Cside, out of which ANC-Aside was identified in 8 domestics and only one wild individual. According to the previous studies, the only European site with the same ANC-Aside haplotype identified both in wild and domestic pigs in the same time frame is Bercy (Chassean culture), France, and this genetic signature is absent so far from other European countries between Romania and France. This poor genetic data is also due to the bad preservation of the analysed samples and the impossibility of getting the DNA sequences for them. More data is needed to investigate if, apart from the farmers migration route from the Near-East to Europe, there was a second trade route, between the Neolithic farmers from Romanian territory and Western Europe, and where this route had started from.

Acknowledgements. This work was supported by a grant of the Romanian National Authority for Scientific Research, CNCS – UEFISCDI, project number PN-II-RU-TE-2011-3-0146.

THE PALEOPATHOLOGICAL ANALYSIS OF THE HUMAN OSTEOLOGICAL REMAINS EXHUMED FROM THE MEDIAEVAL NECROPOLIS OF LOZOVA, REPUBLIC OF MOLDOVA (14th–15th CENTURIES)

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Keywords: mediaeval necropolis, Lozova, 14th–15th centuries, bone abnormalities, paleopathological analysis

The paper analyses the anomalies, pathologies and non-metric traits evidenced in the human skeletal remains exhumed from the necropolis of Lozova (Strășeni district, Republic of Moldova), formed of 51 human skeletons (22 males, 13 females and 16 individuals of undeterminable sex). The necropolis, investigated pluridisciplinarily between 2010 and 2011, was dated by archaeologists, on the basis of the funerary inventory, as belonging to the 14th–15th centuries. The exhumed skeletons belong to persons buried with the head westwards and sight eastwards, leaned on their back, with stretched legs and arms bent from the elbows, hands lying on the belly, chest or shoulders. This populational segment represents an infinitesimal part of the mediaeval people that lived in these Moldavian territories more than five centuries ago, the multidisciplinary investigations performed completing the anthropological picture of the region. The scope of the present study is to achieve an osteobiographical reconstitution of the "chapter" referring to bone anomalies and pathologies.

The multiple osteoarthritic and rheumatismal problems discovered in the members of this community confirm the fact that they used to live in a cold and humid geographical areal more than that, these signs indicate the difficult living conditions of the community. The ratio of osteoarthritis cases is of 43.14%.

Dental pathologies record high percentages, being manifested by caries, *in vivo* dental losses, granulomas, supragingival calculus and hypoplasia, the last one being developed during childhood, when the harsh living conditions caused temporary interruption of the growth and development processes.



1

M₃₀, ♂, 45-50 Y. O.

Partially healed trephination (left parietal)



2

M₃₃, ♂, 35-40 Y. O.

Supraorbital complete foramen (right side) and supraorbital notch (left side)



3

M₉, ♂, 50-55 Y. O.

Supragingival dental calculus/tartar



4

M₂₃, ♂, 20-25 Y. O.

Spondylosis of the fifth lumbar vertebra



5

M₂₆, ♀, 20-25 Y. O.

Supratrochlear foramen of the humeri



6

M₂₆, ♀, 20-25 Y. O.

Lumbar vertebrae showing Schmorl's nodes, L₅ – spondylosis



7

M₂₇, ♀, 45-50 Y. O.

Anterior surface of the lower end of the tibiae showing squatting facets



8

M₃₀, ♂, 45-50 Y. O.

Lumbar vertebrae showing osteophytes

Figure 1. Examples of pathologies and bone abnormalities reported in the medieval population exhumed from the medieval necropolis at Lozova.



Traumatisms are only rarely present, which supports the hypothesis that the population under analysis had not been involved in violent conflicts, having sedentary habits and a normal/peaceful life style. Fractures are also absent. In only one male individual, a possible cranial traumatism—which might have been the cause of death—was discovered. Another subject evidenced a possible cranial traumatism, probably responsible for the occurrence of hematomas and of increased intracranial pressure, which caused severe headaches, so that trephination—the oldest form of proto-surgical intervention, involving opening of the cranial bone wall and removal of the incised bone fragment—had been necessary.

As to the indices of health condition, the value of 13.72% attained by the cranial bone porosities might suggest the presence, inside the community, of some diseases, such as: infantile scorbutus, rachitism, iron deficiency anaemia, osteitis, osteomyelitis, periostitis or inflammatory processes of the cranial bones. The presence of exocranial porosity is frequently employed as an instrument for evaluating the health condition and the nutritional status of the old populations, acting as a possible indicator of the environmental conditions in which they used to live.

The category of osteoanomalies also included the cranial and postcranial epigenetic features, appreciated as having a special biological significance and a high heritability degree, their determinism being dictated by both environmental and hereditary factors. There have been identified 17 epigenetic characteristics at cranial level, and 13 characteristics—at postcranial level.

Apart from the quite high pathological charge of this population, several peculiarities of the skeleton—appreciated in the literature of the field as functional adaptations and "traces" of the occupations or of the style of life of the individuals—have been evidenced.

All these aspects provided precious information on the daily activities and health condition of the analyzed populations, contributing to establishing and better understanding the life style of a long ago extinct community.

POSTERS

SEASONALITY OF BIRTHS IN SHEEP AND CATTLE AT THE CHALCOLITHIC SETTLEMENT OF CHEIA (5TH MILLENNIUM BC, HAMANGIA CULTURE) FROM STABLE ISOTOPES ANALYSES

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Keywords: Early Chalcolithic, Hamangia culture, Cheia, Stable oxygen isotopes, seasonality.

Cheia is a Chalcolithic settlement in the central hills of the Dobrudja region in Romania, close to the Casimcea River, and attributed to the Hamangia culture, more precisely to the Hamangia III phase (5000–4700 CAL BC).



The site has provided an impressive amount of bone material, over 11,000 fragments (NISP = 11163), which is the largest faunal assemblage for the Hamangia settlements so far. The faunal remains belong to molluscs, fish, reptiles, birds and mammals. Mammals are prevalent (83%). Mammalian fauna is dominated by domestic animals (89%), illustrating the importance of animal husbandry for the Cheia community. The livestock consists of cattle (49%) and ovicaprids (sheep and goats, 39%). Wild animal remains make only a small part of the assemblage (11%), but belong to a large spectrum (14 species).

The isotopic studies conducted on sheep and cattle molars allowed for the investigation of the distribution of births in these two domesticates. In sheep, births are grouped over four months between late winter and early summer. In cattle, the births occurred over 3 to 4 months. However, the exact period remains to be clarified by the future comparative analysis with other reference datasets.

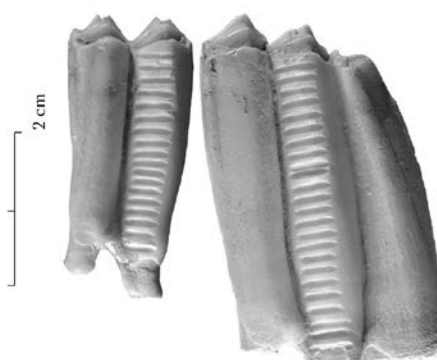


Figure 1. Sampling procedure in a sheep second (left) and third (right) molars.

Acquisition of additional datasets from other Romanian sites from different environmental and chronological contexts may help in the future evaluating the diversity of this parameter. This work encourages the integration of stable isotope analyses into the study of animal husbandry, broadening horizons in our knowledge of strategies adopted by early communities with domestic animals.

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THE VARIABILITY OF SWINE (*SUS SCROFA DOMESTICUS* AND *SUS SCROFA FERUS*) FREQUENCIES DURING THE BRONZE AGE ON THE TERRITORY OF ROMANIA

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Keywords: Bronze Age, archaeozoology, frequency variability, *Sus scrofa domesticus*, *Sus scrofa ferus*, Romania.

This study represents an archaeozoological synthesis of swine occurrences (*Sus scrofa domesticus* and *Sus scrofa ferus*) in Bronze Age settlements on the territory of Romania. Pig and



wild boar are described in terms of their frequencies (number of identified specimens and the minimal number of individuals). The samples were ordered according to the regions (Moldova, Transylvania, Dobrudja, Banat, Muntenia, and Oltenia) and the chronology of the Bronze Age (Chalcolithic–Bronze Age transition, Early Bronze Age, Middle Bronze age, and Late Bronze Age).

Among the animal resources, the mammals are predominant and according to our results, the role of pig increases in Bronze Age settlements. In the Chalcolithic–Bronze Age transition pigs represent in average 8.71% of all identified mammals, while in the Late Bronze Age an increase up to 24% was observed. In the case of wild boar, the tendency is a decrease in frequency from the Chalcolithic–Bronze Age transition (8.7% of the identified mammals) to the Late Bronze Age (1%). The synchronic and diachronic relationships of pig and wild boar frequencies were established using the Multiple Correspondence Analysis.

Acknowledgements. This work was supported by a grant of the Romanian National Authority for Scientific Research, CNCS – UEFISCDI, project number PN-II-RU-TE-2011-3-0146.

SWINES (*SUS SCROFA DOMESTICUS* AND *SUS SCROFA FERUS*) DURING THE BRONZE AGE IN THE TERRITORY OF ROMANIA: A MORPHOMETRIC APPROACH

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Keywords: Bronze Age, swines, morphometry, Romania.

This study concerns *suinae* remains uncovered in assemblages dated to the Bronze Age from Romania (3000/2500 BC–1200/1150 BC). Our aim is to characterize from a morphometric point of view the two forms of *Sus scrofa* species by means of synchronic and diachronic analysis. The remains belonging to the postcranial skeleton are better represented and the obtained morphometric data were used in the multivariate analysis.

The longest metric data series were provided by the humerus, radius, tibia and calcaneum bones.

A crossbreeding between pig and wild boar is indicated by some variables; this fact does not reveal clear limits of separation between the two forms. In case of the lower third molar, significant differences were revealed between three assemblages (Mândrișca, Bogdănești, and Cernavodă) by the ANOVA unifactorial test ($F=6.3$; $p<0.05$).

Certain limits of separation between the two forms were identified for the length of the calcaneus (pig: 80–83.5 mm and wild boar: 85–108 mm) and for the distal breadth of the humerus (pig: 26–45 mm and wild boar: 51–58).

Acknowledgements. This work was supported by a grant of the Romanian National Authority for Scientific Research, CNCS – UEFISCDI, project number PN-II-RU-TE-2011-3-0146.



ANIMAL RESOURCES UTILIZED IN THE RĂCARI SETTLEMENT (DOLJ COUNTY): ARCHAEOZOOLOGICAL DATA

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Keywords: 4th century AD, archaeozoology, animal resources, faunal remains, quantification, Răcari.

The studied faunal batch from the site of Răcari (Dolj County, Romania) was compiled during the 2008 and 2009 campaigns and originates from archaeological features dated to the 4th century AD; these remains represent exclusively domestic waste.

The archaeozoological samples of 2880 faunal remains belong to three taxonomic groups: mammals, birds (28 remains) and fish (3 remains). Out of the mammal remains, 1523 were much too fragmented to clearly establish their species.

Within the samples from Răcari, the ratio of remains belonging to wild mammals is low (3.4%), compared to the domestic mammals (96.6%), demonstrating that the source of food was mainly animal husbandry and then hunting.

The list of domestic animals identified in the samples from Răcari includes: *Ovis aries*, *Capra hircus*, *Bos taurus*, *Sus domesticus*, *Canis familiaris*, *Equus caballus*. The *Ovis/Capra* proportion within the samples is 35.6% (of the identified mammals) and they were raised for secondary products. The cattle is placed second within the identified mammals, with 30.54%; most of them were sacrificed after reaching maturity, respectively after reaching 2.5 years and were raised mainly for secondary products (animal traction, breeding, milk) and then for the primary products. The ratio of domestic pig is 29.64% (number of bones and bone fragments); pigs were raised for meat and grease which are primary products, a fact indicated by the early slaughtering age of the individuals.

From an ecological point of view, the list of hunted species indicates mainly the utilization of the forest biotope (*Sus scrofa*, *Cervus elaphus*, *Ursus arctos*, *Meles meles*), and of the fringe woodland subsequently (*Capreolus capreolus*, *Lepus europaeus*). The number of identified remains belonging to wild mammals is 45, namely 3.4% out of the total of identified mammal remains. Among the wild mammals, the wild boar has the highest frequency in terms of number of bones and bone fragments. Nowadays, red deer and bears are no longer present in the area, their habitat being reduced to the Carpathians. In the middle of 1st millennium AD, these species were still present in the forests surrounding the castrum of Răcari.

Out of the whole faunal sample, fish bones and bone fragments have a ratio of only 0.2%. The identified species are *Cyprinus carpio* and *Silurus glanis*.

In 2003, another 274 remains were recovered from the waste dumps of Răcari castrum, belonging to mammals and birds. The list presented above has to be completed with the fox, identified among the samples of 2003.

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**BONE PATHOLOGIES IN THE POPULATION INHABITING THE CITY OF IAȘI
DURING THE LATE MIDDLE AGES AND THE EARLY MODERN PERIOD
(THE NECROPOLIS OF THE BANU CHURCH, 16TH – 19TH CENTURIES)**

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Keywords: necropolis, Banu Church, 16th–19th centuries, pathological aspects.

This report presents the paleopathological analysis of a small osteological series unearthed from the necropolis of the old Banu Church of Iași. According to those who conducted the diggings (Stela Cheptea, PhD and C.S.I archaeologist and her collaborators at the Centre for European History and Civilization of Iași), the necropolis was used between the first half of the 16th century and the beginning of the 19th century. The unearthed osteological material was primarily found in reinterment tombs; we identified 67 skeletons or skeletal remains, of which 18 children (aged 0–14 years: approximately 27%), three adolescents (14–20 years: approximately 4%), two adults (20–30 years: approximately 3%), 40 mature people (30–60 years: approximately 60%) and 4 senile people (60–x years: approximately 6%).

The average life span, both for the entire series (0–x years—35.63 years) and by gender (20–x years—46.76 years in the male group and 50.39 years in the female group) has similar values to those calculated for the late medieval populations who inhabited the Central Moldavian Plateau.

The presence of pathological processes, anomalies or non-metric features was estimated both separately by gender and for the entire osteological series. In the cranial segment, dental caries recorded the highest incidence, followed by the metopic suture, edentia and wormian bones. Other bone anomalies (cribra orbitalia, hypodontia, premature synostosis of the cranial sutures) were sporadic, though significant occurrences. In the postcranial segment, the most frequent anomaly was represented by the extra facets of the tibia, followed by fractures, osteoarthritis, spina bifida occulta and congenital hip dislocation. In the male series, pathological processes recorded a higher incidence compared to the female series.

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ETHNOARCHAEOLOGY AND EXPERIMENTAL ARCHAEOLOGY

EXPERIMENTAL ARCHAEOLOGY VS. HISTORICAL REENACTMENT. CASE STUDY: DACIAN AND ROMAN ANTIQUITY

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Keywords: experimental archaeology, historical reenactment, Dacian civilization, Roman civilization.

Experimental archaeology is in many countries of the world a well-defined branch and increasingly used in archaeological research. Unfortunately, in Romania, this discipline is still regarded with apprehension and distrust by many specialists, which led to poor development in this field.

Experimental archaeology is a science that aims to find out the historical truths, using different methods, techniques, analyses and approaches in order to create and test hypotheses based on archaeological historical source.

Archaeology as a science, has as main purpose to obtain information (as many and accurate we can get) about the people and companies that have succeeded over time. Archaeology should use all available means that can provide information. Classical methods of archaeology is limited to analysing the results of archaeological sites and do all sorts of combinations, interpretations and assumptions for the issue of observation and many times certain assumptions. But many information cannot be obtained from classical archaeology, because many times we don't have traces to analyse.

Experimental archaeology brings to this science a defining character, the experiment. All sciences (mathematics, physics, chemistry) base their theories on experiments.

Experimental archaeology is not to be confused with the historical daily living or trying to imitate certain historical moments which took place over time. Reenactment history involves staging of facts or civil and military events of the past. The main purpose of these actions is educational; actors dressed as historical characters try submit to audience the actual facts of the past.

In this work, I tried to highlight aspects of archaeological experiments that provide different testing techniques for producing antique objects. We reproduced a number of weapons, tools, jewellery and pottery of Dacian and Roman provenance. I also tried to test different features of their functionality.

On the other hand, we present some aspects of ancient reenactment of Romania, by exemplifying actions over time by the association Terra Dacica Aeterna (Figure 1).



Figure 1. Aspects of ancient reenactment in Romania, by exemplifying actions over time by the association Terra Dacica Aeterna.

THE ARCHAEOLOGY OF ETHNIC IDENTITY

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Keywords: archaeology, ethnicity, identity, archaeological culture.

The archaeology of identity represents the recent descendent of a branch of knowledge (archaeology) on the verge of expansion; as a discipline itself it seems to experience a process of enhancement, as long as the types of identity recognizable through archaeological research prove to be manifold. Within the context, on the background of conceptual and methodological incentives borrowed from anthropology and sociology, on one hand, and influenced by the political, economic and technological transformations manifested at European, global and national level, on the other hand, the archaeology of ethnic identity experienced a notably development. The author (and not only him) states a surprising fact: in spite of the indubitable contribution brought about by this branch of research in clarifying terminology issues ("ethnicity", "ethnic group", "identity", "alterity", "archaeological culture", "style") and creating a more refined technical-methodological analysis frame (ethnic identity and other types of identities; ethnicity as a situational construct; criteria or markers of ethnic identity and their "objectivity", etc.), the already vast professional literature provides more interrogations than answers to the ethnical identity issue, as well as numerous contradictions and „unsolvable“ intricacies, that lead us to question whether this epistemological pattern bypassed the stage of sketching the theoretical structure: the (sometimes unlimited) pessimism regarding the potential of archaeology to provide any type of answer to ethnical issues; refusing (sometimes harsh) to admit the quality of "ethnical identity signs" of certain archaeological materials or their entirety and interpret them as markers of other types of identity (power, gender, age, religion, etc.); considering the "archaeological cultures" as fictions and the (great) ethno-linguistic groups as being non-historical entities; the (sometimes clear) distinction between "cultural continuity" and "ethnical continuity"; the skepticism towards the written sources and the necessity that, in order to be considered as "ethnical signs", the archaeological materials should be in accordance with ancient or post-ancient information, etc. Finally, the author interrogates the measure in which the archaeology of the first millennium in Romania needs to change the pattern or rely on the traditional identity between the "archaeological culture" and "ethnicity".



CERAMIC ETHNOARCHAEOLOGY. SOME THOUGHTS REGARDING THE POTTER'S CRAFT IN MOLDAVIA

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Keywords: ethnoarchaeology, potter's craft, mode of production, distribution, social status.

During 2012, as part of a postdoctoral fellowships supported by POSDRU, I conducted a series of ethnoarchaeological surveys among the few potters remaining in the Moldavian territory west of the Prut River.

The main goal of doing ceramic ethnoarchaeology is the deeper, holistic understanding of a *chaîne opératoire*—the potter's craft—in a certain region, including technology and human behaviour, in relation with the environment and the economic and social context. The rich details and the amazing variability of the living culture should invigorate the analogical thought of the archaeologist, offering a chance to avoid platitudes, superficial conclusions or 'inherited', preconceived ideas about archaeological ceramics. Another reason for conducting ethnoarchaeological inquiries among potters is the rapid decline and loss of the traditional ceramic industry, in Romania and elsewhere; this reality itself should be a good enough reason for any archaeologist who took interest in the relations between material culture and human behaviour to use more of his scientific rigor in collecting data on the living people. Although some ethnoarchaeological studies sometimes may not look like having direct relevance for archaeological issues, these are still valuable records which, corroborated with one, ten or dozens of others alike, should and will generate patterns and universal laws, applicable even to the distant past.

Thus, based on a standard form, 18 potters from 11 villages in Suceava, Botoșani, Iași, Bacău and Vaslui Counties were interviewed. The questions are grouped into different categories: identification data, learning and transmitting knowledge, context of ceramic production and distribution, technology, rituals, beliefs and prohibitions related to the potter's craft. Resulting records were summarized in the form of several tables on which a series of assessments and discussions can derive. In this paper I will refer to the pottery production and distribution modes, today's potter social status, and the potential benefits of this information for the archaeological research.



Figure 1. Kiln of the "turtle" type, used by the potter Dumitru Ifrim from Schitu Stavnic, Iași County.



CONSIDERATIONS ON THE POTTERY OF THE GUMELNIȚA CULTURE, BASED ON A STUDY OF EXPERIMENTAL ARCHEOLOGY

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Keywords: experimental archaeology, Gumelnița culture, pottery, typology, technology.

In 2012 we planned to extend the initial objectives of the *Architecture & Experimental Archaeology Project*, for a better understanding of the everyday life specific to the prehistoric communities. Thus, we studied the execution of certain specific activities and the production of objects specific to the Gumelnița civilization, which involved the processing of raw materials specific to that period (wood, bone, horn, flint, stone, clay, leather, etc.) That allowed us to produce artefacts similar to the prehistoric ones (tools, weapons, ornaments, clothing accessories, etc.).

In this new phase of the project, the production of pottery similar to that used by Gumelnița communities, both in terms of forms and production technologies, proved to be one of the important directions of the experiment.

The work sequence involved collecting clay from various sources within the valley of Mostiștea River, then the preparation of the paste, applying "recipes" similar to those identified for Gumelnița pottery. After that, we shaped the vessels by hand, trying to reproduce typical Gumelnița shapes (bowls, tronconic and biconic pots, etc.).

After drying the batch and the treatment of interior and exterior surfaces, we proceeded to decorate the vessels. The last step was the firing of the vessels in three different firing structures.

All parameters related to the quantity of raw materials, the time required to make and dry the vessels, the weight of the batch, as well as the temperatures during firing were properly recorded. The resulting data will be used in a comparative study with data obtained from the Gumelnița pottery from the Sultana–*Malu Roșu* site.

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Figure. 1. Finishing a clay pot.



**EXPERIMENT IN THE SERVICE OF ARCHAEOLOGY.
A MODEL OF EXPERIMENTAL WORKSHOP DEVELOPED ON THE
ARCHAEOLOGICAL SITE FROM SULTANA–MALU ROȘU (CĂLĂRAȘI COUNTY)**

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Keywords: experimental protocol, raw materials, operational sequence, marks, functional level.

The techno-typological study of the tools made of animal raw materials, consisting in the identification of the operational sequence, is essential in order to evaluate the different interactions man—animal environment, but also to identify those activities implicated in tool making. The functional level, having as objective the determination of the types of processed material and of the means by which they were processed, is the only way to determine the productive process in which the artefacts were involved. In order to understand this dualistic approach (technologic and functional) it is necessary to implement an experimental program by means of which to examine the manufacturing and the using of an artefact. The making of a replica allows us to reconstruct both the operative chain and to evaluate the invested time, or to understand why certain anatomic elements were chosen for certain types of tools. The experimental utilization of these replicas proves the diversity of the marks left by different materials and types of movement. Analysing these marks, we are able to interpret the models identified in the archaeological sites.

The experimental protocol we applied on the Eneolithic site from Sultana–*Malu Roșu* (Călărași County) included, as a first stage, the elaboration of a descriptive chart which to include all the stages of the operated chain, with the registration of the used raw materials, of the time necessary for each type of operation, of the used tools and of the results obtained for each operation (macro-marks). These series of these charts have as purpose the making of a reference database that can be used for a long period of time and by a large array of interested specialists. In the same time, the experimental program was modelled both according to the aimed objectives—the types of Prehistoric tools we wanted to manufacture—and to the raw materials we had access to. But we also desired to cover a typological scale as large as possible and to put to practice as many techniques identified in the archaeological ensembles.

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Figure 1. Experimental archaeology at Sultana–*Malu Roșu*.



ON THE PRESENCE NORTH OF THE LOWER DANUBE OF THRESHING SLEDGES OF THE *TRIBULUM* TYPE

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Keywords: threshing sledge, *tribulum*, farming technology, ancient agriculture, north of Lower Danube.

This paper aims at pointing out the ethnographic evidence, north of the Lower Danube, of an agricultural implement less presented/discussed in the Romanian archaeological literature, the threshing sledge. Items identified in the collections of several museums come either from Dobruđa or from the Eastern Carpathian area. Their study and interpretation is extremely useful in the reconstruction of the history of this agricultural implement which can go back to the Chalcolithic.

The threshing sledge (known in the ethnographic of Romania as *dicanie*, *doscă* or *cremene*, with the Latin name, in the specialized literature, *tribulum* or *trillo*,) is the most long-lasting agricultural implement known in the history of mankind. Its usage has been confirmed until the first half of the 20th century in the Near East and in the circum-Mediterranean area and the Balkan Peninsula. Until several decades ago, people used to consider it a Roman invention.

Together with the start of the traceological studies on the knapped lithic industries in the Near East, the history of this agricultural implement could be traced back in time to the Bronze Age and Upper Neolithic. It is mentioned in the Bible, in texts of the Greek and Roman world, in the Byzantine and then Turkish environment, in medieval documents as well. Items dated to the second half of the 19th century and the first half of the 20th are found in ethnographic collections and in field surveys in South and South-easter Europe, and South-western Asia.

Its invention was associated to the "revolution of the secondary products" which also included the usage of the traction power of domesticated animals. The oldest "agricultural machinery" was generally hauled by one or two beasts of burden (oxen, cows, horses, donkeys or mules, or even camels) on top of the bundles of cropped cereals gathered on a threshing surface. With its help, straw would be cut in small pieces and the grains separated from the shanks and straw.



Figure 1. *Tribulum*.



OBSERVATIONS ON THE ARCHITECTURE OF THE GUMELNIȚA CULTURE BASED ON A STUDY OF EXPERIMENTAL ARCHEOLOGY III: 2012 RESULTS

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Keywords: Experimental archaeology, architecture, house, Eneolithic, Gumelnița culture.

In 2012 on the archaeological site Sultana–*Malu Roșu*, Călărași County, held the third stage of the project *Experimental Archaeology & Architecture Project*. The main purpose of the experiment was to evaluate the degradation level of construction from 2010, achieving the necessary repartition and decoration of the building to complete the experiment (Figure 1).

After two years from the building of the house, in 2012, we made the second evaluation of how it behaved. Our analysis was directed especially towards the evaluation of the status of the structural strength of the building, by following different construction elements. Also, we analysed the behaviour of the external walls of the house and we made a redecoration of the exterior walls.

Thus, in terms of infrastructure it has been observed that the foundation system performed favourably, with the exception of a slight subsidence on the southern side. In the case of the vertical supporting structure it has been observed that the posts supporting the walls were not significantly distorted from their original state. The roof resisted well to its own weight load, to snow and wind. There were observed inclinations of the trusses of the roof perpendicularly on their plan, with deviations of up to 9cm on a horizontal plan.

Regarding the cover of the roof, the reed compacted as result of its drying and the loss of initial weight. It was observed in some areas, especially on the southern side, the sliding down the slope of the reed layer.

The redecoration process took place after the repairs. For this operation, we added on the external walls a final smooth layer of clay with much sand, as a preparatory layer for dying. After drying we proceeded to the painting of the north-western, north-eastern and south-eastern walls. The south-western side was left unpainted as it is object of a separate study. To paint the walls, we utilized red clay and white clay diluted with water, but also graphite for drawing outlines. The painted motifs are inspired by decorations on pottery found at the site of Sultana–*Malu Roșu*.

Acknowledgements. 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.



Figure 1. Reconstruction of a Gumelnița dwelling (Sultana–*Malu Roșu*, Călărași County).



COMPARATIVE STUDIES OF SALT SPRINGS EXPLOITATION IN NEW GUINEA AND THE FRENCH JURA

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Keywords: ethnoarchaeology, Prehistory, Neolithic, salt, France, New Guinea.

Particular groupings of fortified prehistoric villages have been identified around certain salt springs in the French Jura, indicative of a particular interest for brine since the Neolithic. It must be admitted that it was impossible to demonstrate unequivocally the production of salt, given the total absence of structures or by-products. The authors thus looked to New Guinea (Papua, Indonesia) to build a predictive ethnoarchaeological model.

The application of the model was based on deep borings to explore the marshy depressions close to the salt springs, date any charcoal deposits and reconstitute the forest cover based of the pollen and the anthracological diagrams. We have thus been able to demonstrate a genuine exploitation of salt springs as far back as the 5th millennium, although this only intensified during the Middle Bronze Age, to culminate with the Gallic salt.

We then reach the limits of the predictive model. At the technical level first of all, the salt was probably not produced by soaking, as in New Guinea, but by pouring the brine on bonfires. Furthermore the production of salt using this method fluctuated substantially after the Neolithic. Finally, we need to ask ourselves why, in the case of the Jura as well as at the Western European level, why certain areas of salt production led at specific points in time to particular accumulations of wealth, whilst other salt springs were ignored, notwithstanding their high concentration levels of salt.

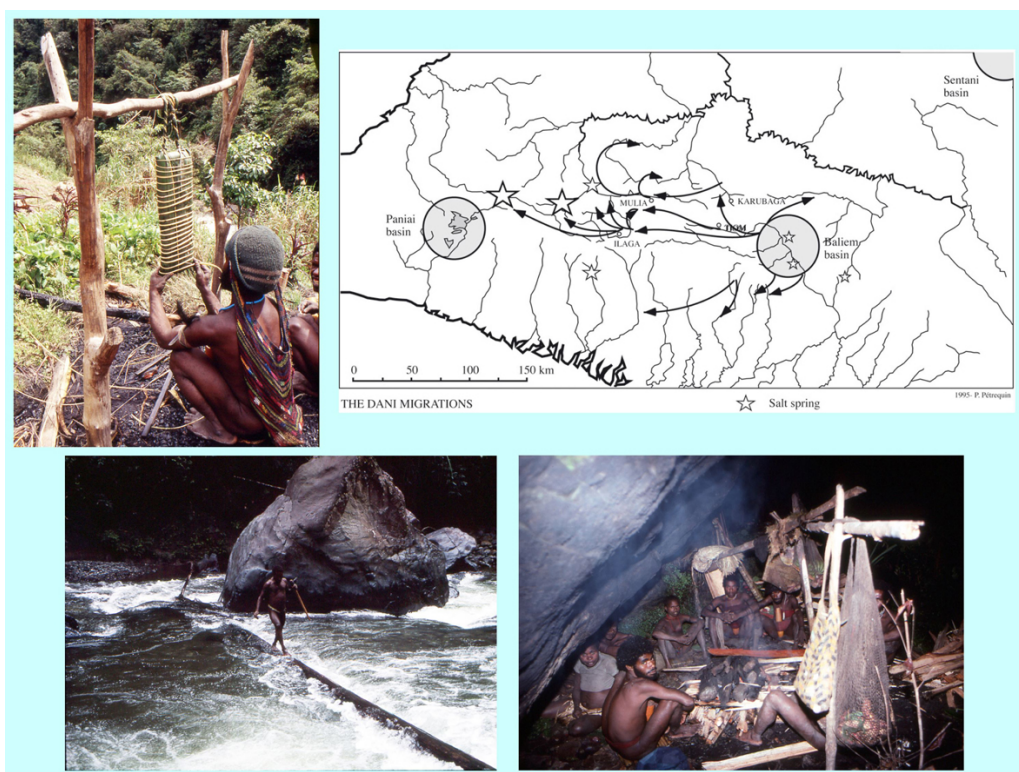


Figure 1. The Dani migrations.



DIACHRONIC (FROM THE PALAEOLITHIC TO 5TH C. A.D.) SITE DENSITY AROUND THE SALT SPRINGS FROM THE ROMANIAN EASTERN CARPATHIANS. AN ETHNOARCHAEOLOGICAL MODEL

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Keywords: Prehistory, Antiquity, ethnoarchaeology, salt springs, Eastern Carpathian, model.

The ethnoarchaeological research on the exploitation of brine from the salt springs of the Eastern Carpathian and Subcarpathian areas of Romania have revealed an unexpectedly intense direct supplying with saline water of the rural settlements, even during the present day on a radius of approximately 30km. The employment of this ethnological model, in its essence a radial one, to the archaeological time offers, in principle, the possibility to statistically estimate the number of user settlements. But the valid diachronic estimations must take into consideration at least a number of basic factors: the relative synchrony (*ca.* 50 years) of the user settlements; data on the archaeological sites as accurate as possible (many being known only from field surveys); the presence inside the 30km-radius area of use of several salt springs; etc. In no event should the synoptic character of the graphical models bring about a synchronic perception. The study from a diachronic perspective of the archaeological site density around the salt springs is intended to expose the variability of the concentration of the human habitat that was the direct beneficiary of this resource, indispensable to animal life. Because many of the parameters referring to the archaeological sites are not ascertained or are vague, our estimations should be deemed fuzzy logic.

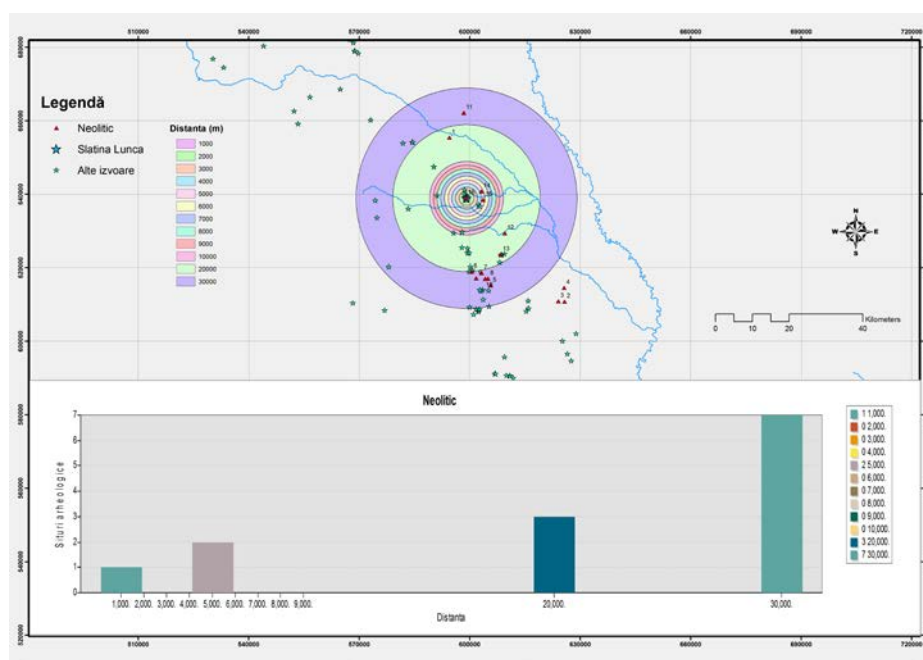


Figure 1. Neolithic archaeological site density around the Poiana Slatinei–Lunca and Hălăbutoaia–Țolici salt springs.

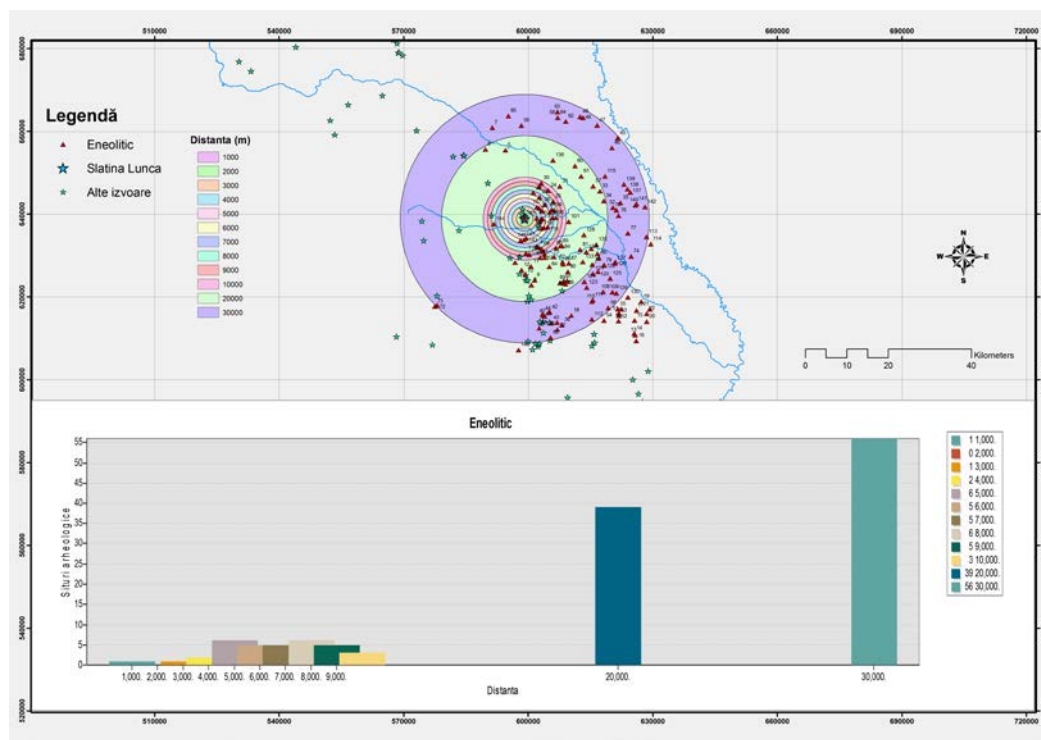


Figure 2. Eneolithic archaeological site density around the Poiana Slatinei–Lunca and Hălăbutoaia–Țolici salt springs.



PHYSICAL AND CHEMICAL INVESTIGATIONS

TRASEOLOGICAL INVESTIGATIONS ON A BATCH OF POLISHED STONE TOOLS FOUND IN THE FETEȘTI–LA SCHIT SITE (ADÂNCATA COMMUNE, SUCEAVA COUNTY)

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Keywords: Chalcolithic, Cucuteni culture, Fetești, traseology, polished stone tools, *low power approach*, *high power approach*.

The authors present the traceological investigations carried out on a batch of 10 polished lithic artefacts, from the Cucuteni A and Cucuteni B levels of the multi-layered site of Fetești–La Schit (Adâncata Commune, Suceava County). Petrographic determinations were performed to define the raw materials, their sources, and the physical—mechanical properties. By optical microscopy (binocular microscope) and stereo-microscopy (stereomicroscope with an OPTIKA QIMAGING Go 3 digital camera connected to PC) using *low power approach* (10–50×) and *high power approach* (100×) there were identified technological elements of manufacturing of the concerned artefacts (chopping, polishing, drilling), in the so—called *chaîne opératoire*, as well as the traces of catching in the handles/tails, and the indicators for usage, in the earth work, of the wood and horn processing activities (cutting, splitting and carving, etc.), in particular. Using the 3D Optical μ Scan[®] NanoFocus type profilometer, the micro-topographies surfaces of the active areas of lithic artefacts were measured three-dimensionally, without any contact, emphasizing the traces of processing and use (Figure 1). Through the Vickers and Martens tests made with a Shimadzu HMV micro hardness tester device there were highlighted the specific hardness/micro hardness of these artefacts, as physical-mechanical indicators of these tools/weapons.

Even if the analysed batch is part of a typological and functional series of the polished lithic artefacts, already known for the Ariușd–Cucuteni–Tripolye cultural complex denoting the preservation of certain technological traditions, the present traceological analyses have revealed some peculiarities, especially in relation with the sources of raw materials and the technological gestures.

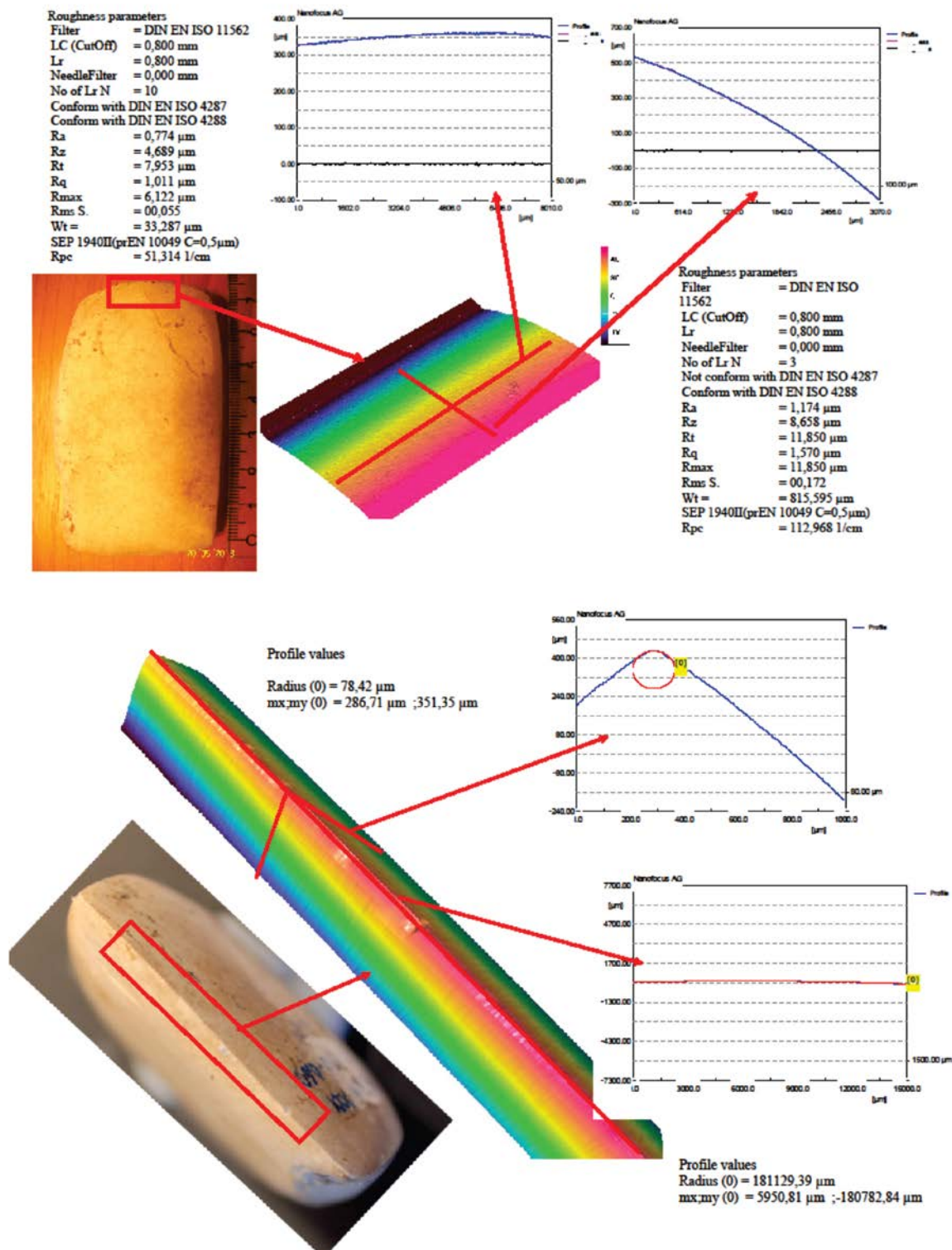


Figure 1. 3D Images of an adze (distal edge and blade) made of siltite (Cucuteni B), with the roughness measurements and indicators of use/wear.



INVESTIGATIONS ON BATCHES OF CERAMIC FRAGMENTS AND MINERAL PIGMENTS FROM THE CUCUTENIAN SITE OF TĂCUTA–DEALUL MICLEA/PAIC, VASLUI COUNTY

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Keywords: Chalcolithic, Cucuteni culture, Tăcuta, painted ceramics, mineral pigment, MO, SEM-EDX.

In the pit no. 1/2011 (T. I/2011), of the Cucuteni A3 site, from Tăcuta–Dealul Miclea/Paic (Vaslui County, Romania), where numerous ceramic materials were discovered, some of them coming from the decommission of a potter workshop (domestic and fine pottery, stones, bones, shells, snail shells, anthropomorphic and zoomorphic figurines, clay daub of hearth, clay teaspoons, a clay mould, etc., covered with levelling clay lens), ceramic fragments painted before and after firing, as well as "chunks" of mineral pigment were identified. In the present work, the authors present the chemical-physical analyses made on painted ceramic fragments (before and after firing) and fragments of red mineral pigment discovered within this complex.

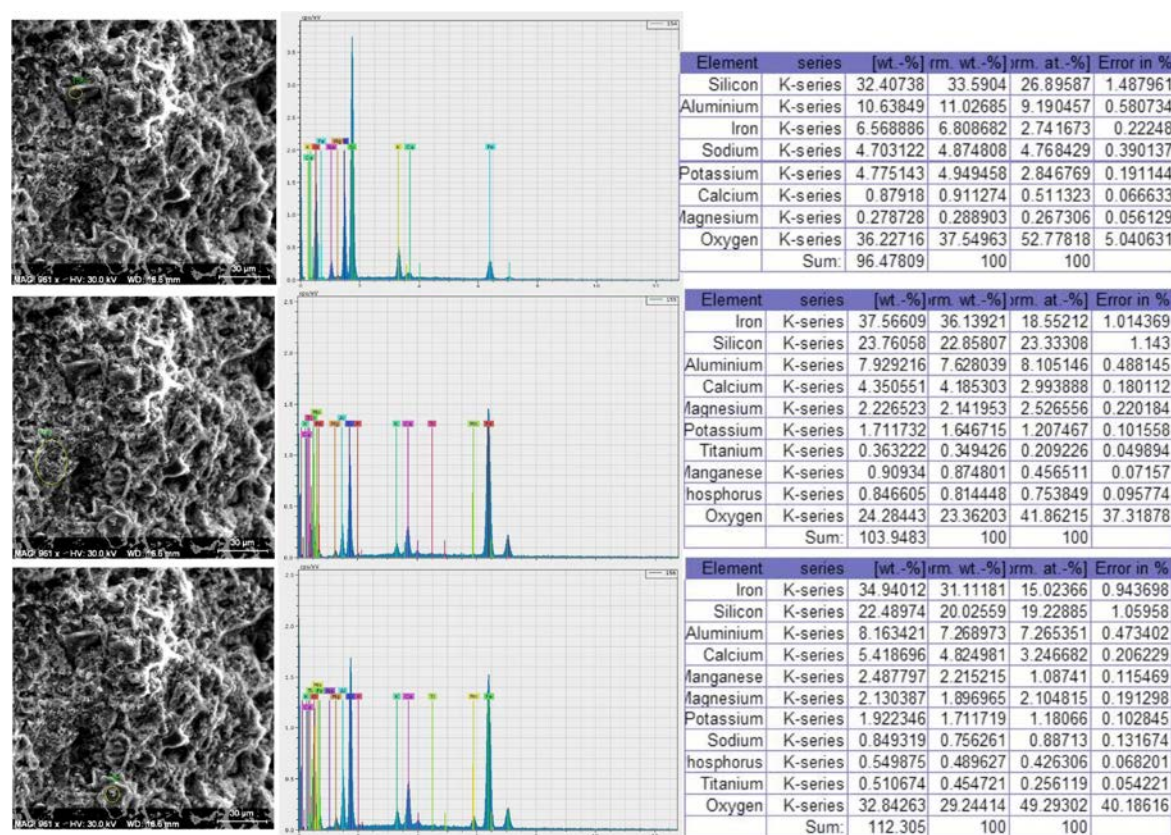


Figure 1. Tăcuta–Dealul Miclea/Paic. The micrographies, spectra and chemical composition of the particles of the red pigment sample (T.I/2011, P.1, □3a, -1.20m).



The archaeometric investigations were accomplished through optical microscopic techniques (OM) and the electronic scanning microscopy, coupled with the X-ray spectrometry (SEM-EDX), in order to emphasize the chemical composition and the technology of making the painting and the pottery, as well as the chemical nature, the origin and the usage of mineral pigments. The analyses were made with the *Carl Zeiss Axio Imager A1m* (100×) microscope with an AXIOCAM-type camera and with specialised software. For the quantitative and the qualitative microanalyses the SEM VEGA II LSH-TESCAN electronic microscope was used, with QUANTAX QX2 EDX detector.

The chemical-physical analyses emphasised the similarities and the differences between the painted ceramics before and after firing and the fact that the mineral pigments represent iron oxides (Figure 1), used in different painting formulas, which can also be found on vessels; the same analyses show the big resemblance between the raw mineral pigment fragments and the red dye applied on the ceramics after the firing.

X-RAY FLUORESCENCE ANALYSIS ON PIGMENTS IDENTIFIED ON GUMELNIȚA CERAMIC VESSELS AND FIGURINES FROM THE ARCHAEOLOGICAL COLLECTION OF THE "THE PRINCELY COURT" COMPLEX MUSEUM, TÂRGOVIȘTE

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Keywords: Chalcolithic, Gumelnița culture, X-ray fluorescence, pigment analysis, ceramic, anthropomorphic figurines.

The Gumelnița–Karanovo VI culture is widely known by the splendid graphite ceramics, though red and white pigments were also in use for special recipients and figurines. Several pigments analysis have already been made for artefacts of the contemporaneous Cucuteni–Tripolye culture, well-known through its painted ceramic, while no such attempts have been made so far for the Gumelnița culture.

The article presents the results of X-ray fluorescence analysis on pigment samples collected from pottery items and anthropomorphic figurines from the Gumelnița sites of Geangoești, Moara din Groapă, and Corbii Mari (Dâmbovița County). Pigment drawings from four anthropomorphic ceramic figurine fragments from Geangoești with white, red or black decoration were compared with pottery pigment samples.

The XRF analysis confirmed the use of iron-rich clay for the red pigment, and the use of two different, possibly local, sources for the white pigment in Geangoești and Moara din Groapă artefacts. The chemical composition of the black pigment sample of the anthropomorphic figurine from Geangoești indicated the use of chromite.

We are aware that additional analyses are necessary in order to obtain more information about the used pigments, and the technical issues regarding the production of paints in the Gumelnița culture. Moreover, geological and ethnographic data are required for identifying the raw material source-areas.



TESTING TECHNOLOGICAL CHOICES: ANALYTICAL STUDY OF POTTERY FROM THE ARCHAEOLOGICAL SITE OF CUCUTENI–CETĂȚUIE

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Keywords: Chalcolithic, Cucuteni culture, pottery samples, clay samples, compositional analysis.

The present study is a multi-analytical approach on the characterization of several potsherd samples selected from the eponymous site of the Cucuteni culture. In particular, chemical, mineralogical and morphological characteristics of the pottery samples were analysed in order to reveal the technological choices of the Cucuteni community.

Chemical composition of the clays has been obtained by means of X-ray fluorescence (XRF). The spectroscopic method Fourier Transform Infrared Spectroscopy (FT-IR) has been employed to find the lower limit of firing temperature. The upper limit of firing temperature was evaluated by X-ray diffraction (XRD) identification and Rietveld quantitative analysis of the minerals found in the potsherds and clay samples (Figure 1).

Mineral magnetic studies were performed and proved that all samples were highly magnetically enhanced materials. Further scanning electron microscopy (SEM) on potsherds (Figure 2) and clay samples have been used for microstructural analysis and to trace the subsequent development of vitrification stages.

The dataset for this investigation contains pottery fragments selected to represent the technological diversity of the Cucuteni culture's potsherds. Some firing experiments were carried out on clay samples collected from the area nearby the Cucuteni–Cetățuie archaeological site toward elucidating the technology of pottery manufacture. The selected clay materials have compositions similar to those of potsherds, which were produced in oxidizing atmosphere at temperature range between 800 and 1050 °C.

The results obtained from the different analytical techniques provide the information for understanding the technological choices implemented for the production of pottery and combined with the laboratory experiments on clay samples found to give useful information about the firing temperature of the potsherds.

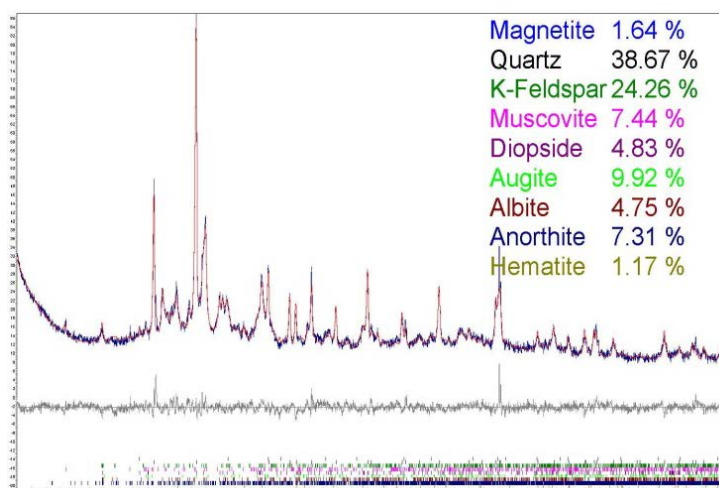


Figure 1. Rietveld quantitative analysis of Cucuteni pottery sample.

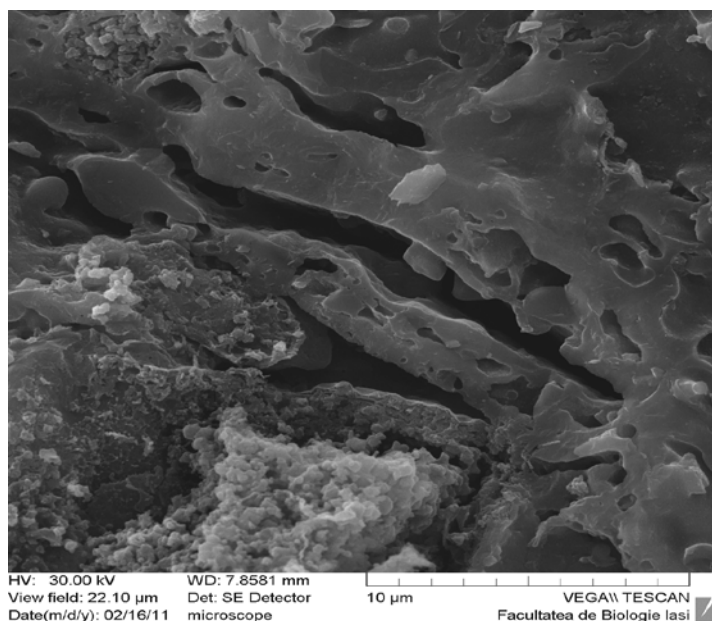


Figure 2. SEM micrograph for the Cucuteni pottery sample.

CERAMOGRAPHIC ANALYSES ON BATCHES OF PRECUCUTENI III AND HORODIȘTEA-ERBICENI ARCHAEOLOGICAL ARTEFACTS

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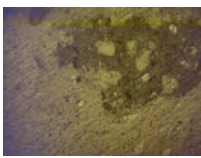






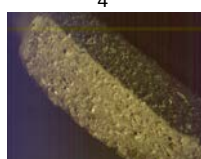


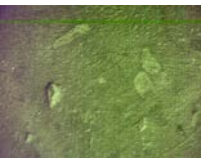





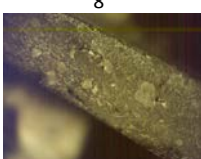
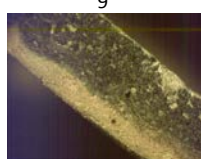





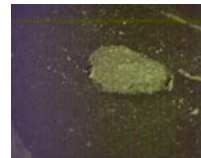
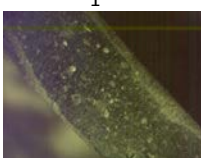

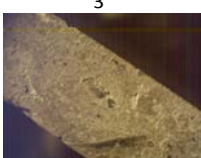

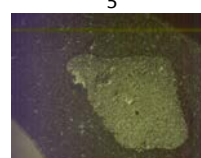

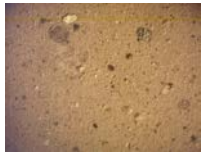
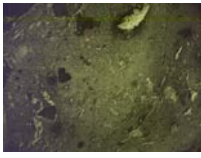

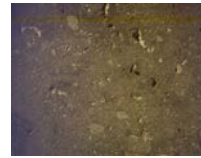

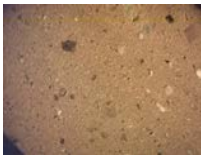












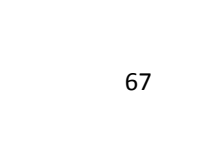
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Keywords: Chalcolithic, Precucuteni culture, Horodișteă–Erbiceni culture, spectral analyses, electron microscopy, micro hardness, stereo-microscopy.

Continuing the concerns about the ceramographic analyses, the authors present the results obtained on the Early Chalcolithic archaeological artefacts (Precucuteni III), found in the site of Șcheia–Silișteă Șcheii, and of the Late Chalcolithic (Horodișteă–Erbiceni), from the multi-layered site of Fetești–La Schit (Adâncata commune), both in Suceava County. The batches include 10 pottery shards per each site, covering all categories (fine and household use), (Table 1). The physicochemical investigations were performed in the Laboratory of Instrumental Analysis and the Research Laboratory (Department of Food Engineering) and the Laboratory of Materials Science and Technology (Faculty of Mechanical Engineering, Mechatronics and Management), using a spectral X-ray dispersion analyser, of *Shimadzu EDX 900 HS* type, to determine the chemical composition (elemental and oxides), the electron microscope *SEM VEGA II LMU-Tescan* to highlight the microstructures, Vickers and Martens tests carried out with a *Shimadzu HMV* micro hardness tester device, for the determination of micro hardness, the *OPTIKA* stereo microscope with *QIMAGING Go 3* digital camera, connected to the *PC*, and the metallographic microscope to achieve comparative study, through stereo microscopic investigation (100×, 200×), based on digital image analysis using specialized software.



Table 1. Comparative stereomicrographies.
I. The ceramic batch Precucuteni III (*Șcheia–Siliștea Șcheii*);
II. The ceramic batch Horodiștea–Erbiceni (*Fetești–La Schit*).

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The comparative analyses aimed at completing the ceramographic database, initiated in the previous years, to highlight the physicochemical and technological features of this wide range of artefacts, produced and used by the Neolithic and Chalcolithic communities who lived in the Suceava Plateau.

The results emphasize, in the case of the Precucuteni III batch, some technological and physical-mechanical elements (composition, inclusions, microstructure, micro hardness, porosity and density) announcing the upcoming Cucuteni ceramics, while the batch Horodișteea–Erbiceni (painted and with crushed shell) shows a gradual change of the Cucuteni B traditions and the assimilation of northern and eastern influences.

AN ARCHAEOMETRIC STUDY OF SEVERAL CERAMIC FRAGMENTS FROM THE KOMARIV (KOMARÓW) SETTLEMENT OF ADÂNCATA–SUB PĂDURE, SUCEAVA COUNTY

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Keywords: Middle Bronze Age, Komariv (Komarów) civilisation, archaeometry, ceramics, quartzite, silicalite.

Between 2000 and 2006 the tumular necropolis from Adâncata–*Imaș* and the associated settlement Adâncata–*Sub Pădure* (Suceava County, Romania), both belonging to the Middle Bronze Age—the Komariv (Komarów), were investigated. On this occasion, both sites produced ceramic remains similar from a typological and technological point of view, of which noteworthy are those with lithic inclusions in the paste, which are visible to the naked eye (silicalite, quartzite). In the paper, the authors present the results of the archaeometric investigations performed on a batch of 10 ceramic fragments originating from the settlement of Adâncata–*Sub Pădure*. Thus, the types of inclusions used for manufacturing the ceramic ware by the Komariv craftsmen were identified in order to elucidate the technological process and to establish the sources of the raw materials ("local" and/or "alogenous", silicalite and quartzite vs. flint). The archaeometric investigations were conducted in the laboratory of the Arheoinvest Platform from UAIC Iași, using optical microscopy (OM) and electronic scanning microscopy, coupled by X-ray spectrometry (SEM-EDX), which allowed for highlighting the chemical composition and the production technology of the ceramics correlated with the types of inclusions identified. The analyses were made using a Carl Zeiss Axio Imager A1m (100×) microscope fitted with a AXIOCAM camera and running on a dedicated software. For the quantitative and qualitative micro-analyses, a SEM VEGA II LSH-TESCAN electronic microscope with QUANTAX QX2 EDX detector was used.

The physical-chemical analyses revealed the similarities and differences between the types of inclusions used for producing the ceramic ware, the prevalence of local sources of raw mineral materials (silicalite, quartzite), richer and easier to exploit, over flint, which was brought from distances of over 100km and was, obviously, more expensive.

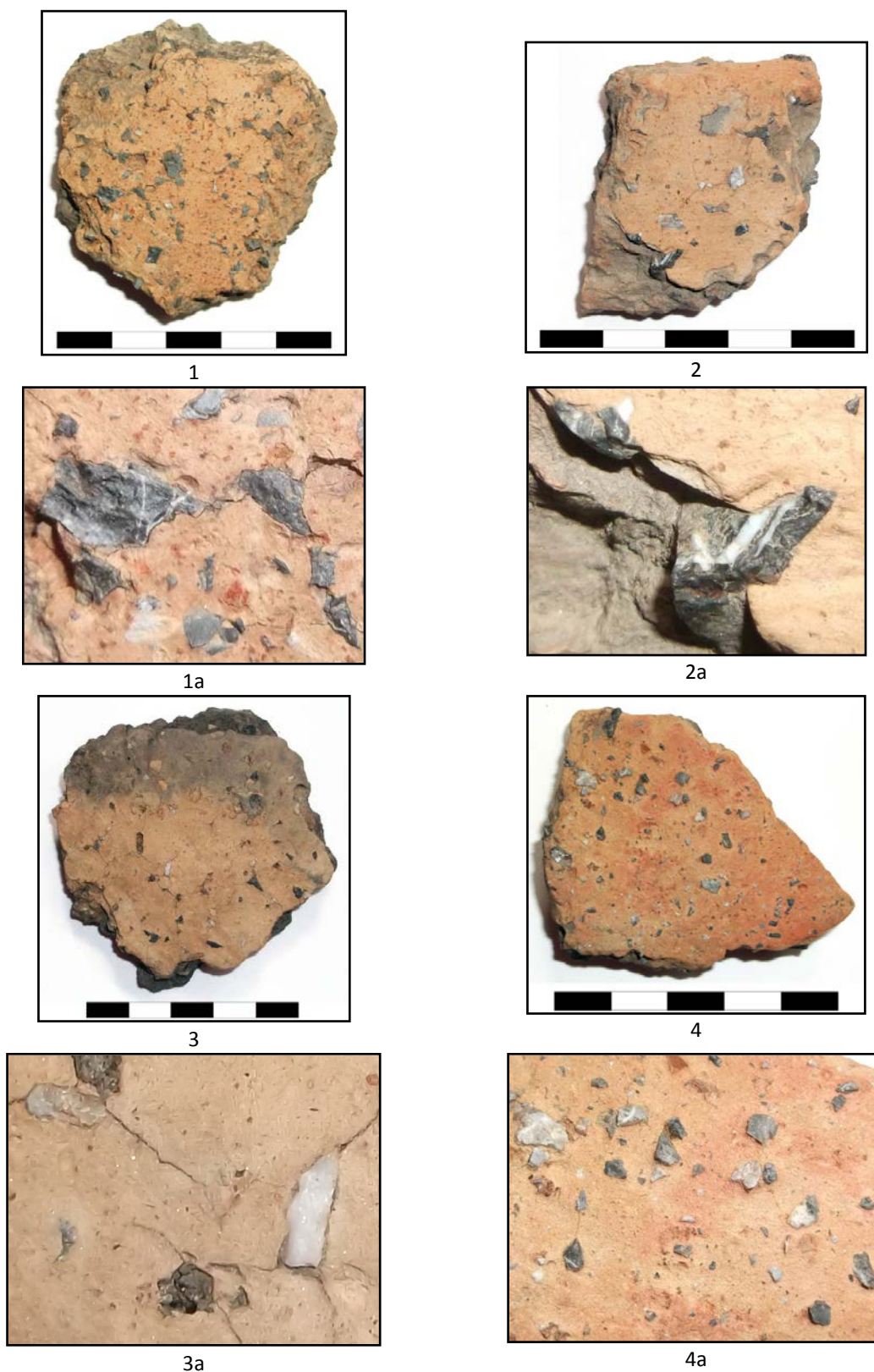


Figure 1. The Komariv (Komarów) ceramic fragments from Adâncata. 1–4: analysed fragments; 1a–4a: details with specific inclusions determined: quartzite and silicalite.



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THIRD ARHEOINVEST CONGRESS

Interdisciplinary Research in Archeology



IAȘI
6th-8th JUNE 2013

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