

# QUAESTIONES PRAEHISTORICAE

STUDIA  
IN HONOREM PROFESSORIS  
VASILE CHIRICA

Ediderunt  
Cornelia Magda Lazarovici  
Alexandru Berzovan



EDITURA ACADEMIEI ROMÂNE - EDITURA ISTROS



# *Civilizația românească*

5





# Quaestiones Praehistoricae

*Studia in honorem Professoris Vasile Chirica*





**Acest volum apare prin contribuția financiară  
a Primăriei Municipiului Iași  
în cadrul parteneriatului cu  
Academia Română.**





**Honoraria, 14**

*Redigit:* Victor Spinei

*Illustration of the cover:* flint artefacts discovered at Mitoc – Malu Galben.  
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## **Studia in honorem Professoris Vasile Chirica**

**Ediderunt**

**Cornelia Magda Lazarovici**

**Alexandru Berzovan**



**EDITURA  
ACADEMIEI ROMÂNE**



**MUZEUL BRĂILEI „CAROL I”  
EDITURA ISTROS**

**București – Brăila**

**2018**



Address: EDITURA ACADEMIEI ROMÂNE  
Calea 13 Septembrie nr. 13, sector 5, 050711, București, România  
Tel. 4021-3188146; 4021-3188106; Fax 4021-3182444  
E-mail: edacad@ear.ro

Address: EDITURA ISTROS A MUZEULUI BRĂILEI „CAROL I”  
Piața Traian nr. 3, 810153 Brăila, România  
Tel./Fax 0339401002; 0339401003  
E-mail: sediu@muzeulbrailei.ro

## **Descrierea CIP a Bibliotecii Naționale a României**

**Omagiu. Chirica, Vasile**

**Quaestiones prehistoricae : studia in honorem professoris Vasile Chirica / ediderunt: Cornelia-Magda Lazarovici, Alexandru Berzovan. – București : Editura Academiei Române ; Brăila : Editura Istros a Muzeului Brăilei "Carol I", 2018**

ISBN: 978-973-27-3011-9

ISBN: 978-606-654-314-9

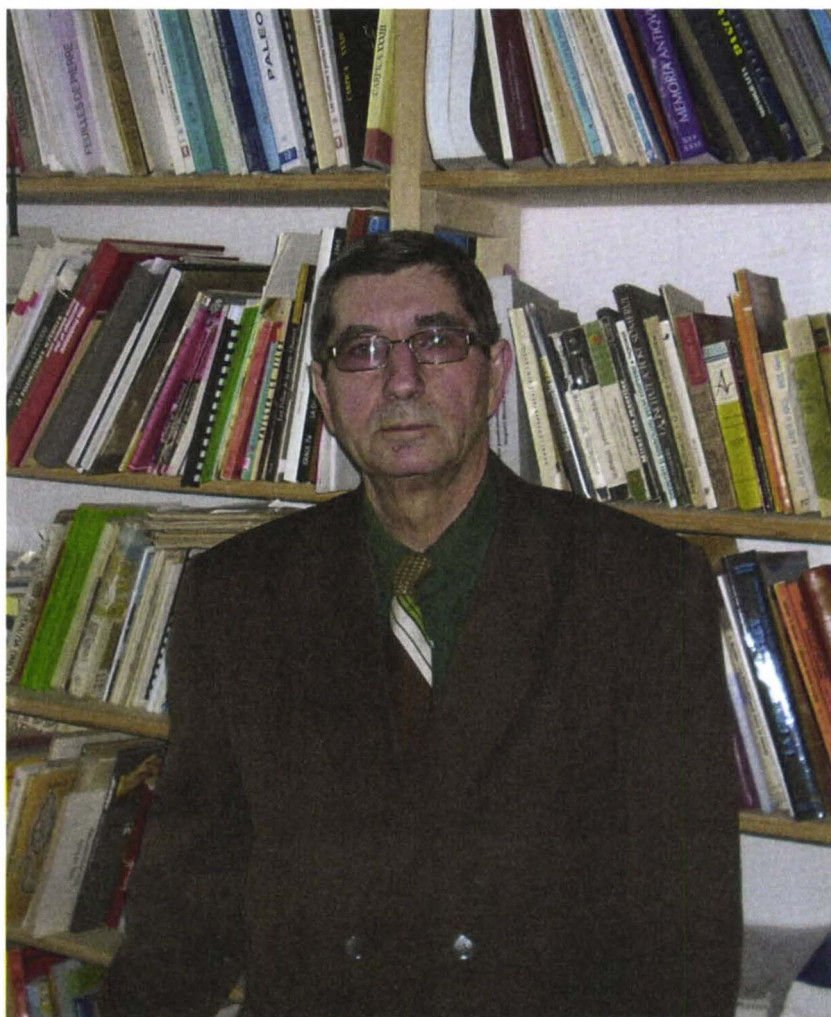
I. Lazarovici, Cornelia-Magda (ed.)

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**Cornelia-Magda Lazarovici** (b. 1953, Iași), scientific researcher I at the Romanian Academy Iași Branch, Institute of Archeology Iași, PhD in history in 1996 with the thesis *Metode de cercetare și tehnici de datare cu privire la cronologia culturii Cucuteni*, held at Alexandru Ioan Cuza University in Iași. The habilitation thesis, *Researches concerning Romanian prehistory*, was held in 2014 at Babeș-Bolyai University, Cluj-Napoca. She has concerns in the field of Neo-Eneolithic civilizations in the South-East European region. Has benefited of different scholarships: DAAD in Germany (1990 and 1997), Fulbright at the San Francisco State University of California (2000), and Rockefeller in Italy (2005). She has undertaken many archaeological excavations, author of numerous books and articles published in the country or in prestigious foreign publishing houses and journals, participating in several national and international scientific events. "Vasile Pârvan" Prize of the Romanian Academy for 2006 for the work *Arhitectura Neoliticului și Epocii Cuprului din România. I. Neoliticul*.

**Alexandru Berzovan** (b. 1986, Caransebeș), scientific researcher at the Romanian Academy Iași Branch, Institute of Archeology Iași; PhD in history in 2015 with the thesis *Bazinul Mureșului Inferior și sud-vestul Munților Apuseni în perioada clasică a Daciei preromane*, held at Alexandru Ioan Cuza University Iași. He has concerns about the Late Iron Age, currently dealing with the East-Carpathian Romanian space. Participant in numerous national and international conferences, published several books, volumes and studies at prestigious publishing houses and journals in the country and abroad (see vol. *Bazinul Mureșului Inferior și sud-vestul Munților Apuseni în perioada clasică a Daciei Preromane*, Ed. Mega, Cluj-Napoca, 2017). In 2018 was awarded the excellency prize of the Iași Branch of the Romanian Academy.











# Contents

Tabula gratulatoria.....	3
List of works of Professor Vasile Chirica.....	5
List of Abbreviations.....	23
<i>Vasile Chirica on his 75<sup>th</sup> birthday (Cornelia-Magda Lazarovici)</i> .....	27
<i>Qu'est-ce que la préhistoire ? (Marcel Otte)</i> .....	35
<i>40 ans des recherches avec Vasile Chirica: Mitoc-Malu Galben (Timothée Libois, Philip. R. Nigst, Paul Haesaerts, Marjolein D. Bosch, William C. Murphree, Tansy Branscombe, Pierre Noiret)</i> .....	53
<i>Typical Gravette retouching on "Nano Gravette points" – meaningful form or formal constraint? Considerations from the study of a Nano Gravette point from Northern Lower Austria in a private collection (Oliver Schmitsberger, Michael Brandl, and Gerhard Trnka)</i> .....	75
<i>Where do we stand? The current state of Paleolithic research in Romania (Mircea Anghelinu)</i> .....	87
<i>Large mammals from Upper Paleolithic site of Valea Morilor (Republic of Moldova) (Laëticia Demay, Teodor Obadă)</i> .....	111
<i>Interpretations of the art of Upper Paleolithic from the space of Central Europe (Mihaela Cazacu-Davidescu)</i> .....	145
<i>Aspects regarding children and adolescents in the Upper Paleolithic (Cristina Cordoş)</i> .....	163
<i>Flint sources in the Middle Prut area (Cornelia-Magda Lazarovici, Gheorghe Lazarovici, Gerhard Trnka)</i> .....	177
<i>Schela Cladovei - a reinterpretation of the osseous industry from the 1965-1968 excavations (Adina Boroneanţ, Monica Mărgărit, Adrian Bălăşescu, Clive Bonsall)</i> .....	197
<i>Vessels with two or more supply/service mouths in Romania. Meanings and contexts (Sabin Adrian Luca)</i> .....	223
<i>The Gumelniţa lithic material discovered at Slava Rusă (Tulcea County), (Florian Mihail, Mihaela Iacob, Dorel Paraschiv)</i> .....	231



<i>Chalcolithic archaeofauna at Fulgeriș (Bacău County, Romania): a preliminary assessment of resources</i> ( <b>Luminița Bejenaru, Lăcramioara-Elena Istina</b> ).....	251
<i>Anthropomorphous representations from Ștefănești-Stârcea, Botoșani County, Romania</i> ( <b>Adela Kovács</b> ).....	263
<i>Bronze Age archaeological materials from Răucești (Neamț County, Romania),</i> ( <b>Vasile Diaconu, Alexandru Gafincu</b> ).....	273
<i>Fortification Hallstattiennes de l'espace carpato-nistrien : évolution et significations</i> ( <b>Nicolae Ursulescu</b> ).....	283
<i>Preliminary considerations regarding a Geto-Dacian fortress (1<sup>st</sup> century BC) at Todirel - Bobeica (Bârnova commune, Iași County)</i> ( <b>Alexandru Berzovan</b> ).....	289



## **Tabula Gratulatoria**

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Dan APARASCHIVEI (Iași)  
Ludmila BACUMENCO (Iași)  
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## List of works of Professor Vasile Chirica

### Volumes

- 1-2. Al. Păunescu, P. Șadurschi, **V. Chirica**, *Repertoriul arheologic al județului Botoșani*, vol. I-II, București, 1976, 375 p., *Awarded with the Romanian Academy Prize „Vasile Pârvan”*.
- 3-4. **V. Chirica**, M. Tanasachi, *Repertoriul arheologic al județului Iași*, vol. I-II, Iași, 1984; 1985, 570 p., *Awarded with the Romanian Academy Prize „Vasile Pârvan”*.
5. **V. Chirica**, *The Gravettian in the East of the Romanian Carpathians*, BAI, III, Iași, 1989, 239 p.
6. **V. Chirica**, I. Borzic, N. Chetaru, *Gisements du Paléolithique supérieur ancien entre le Dniestr et la Tissa*, BAI, V, Iași, 1996, 335 p., ISBN: 973-95892-6-x.
7. **V. Chirica**, *Cu femeia prin milenii. Mit și realitate*, Ed. Helios, Iași, 1997, 246 p., ISBN: 973-98011-0-2.
8. **V. Chirica**, S. Vacariu, *Podgorii ieșene*, Ed. Helios, Iași, 2000, 254 p., ISBN: 973-9362-18-4.
9. **V. Chirica**, *Gisements paléolithiques de Mitoc. Le Paléolithique supérieur de Roumanie à la lumière des découvertes de Mitoc*, BAI, XI, Iași, 2001, 216 p., ISBN: 973-9952-1-7.
- 10-11. **V. Chirica**, D. Boghian, *Arheologia preistorică a lumii (I, Paleolitic-Mezolitic*, 306 p., **V. Chirica**; *II, Neolitic-Eneolitic*, 200 p., D. Boghian), BAI, XII, Iași, 2003, ISBN 973-99952-8-4.
12. **V. Chirica**, D. Aparaschivei, *Institutul de Arheologie-Iași*, BAI, XIII, Iași, 2004, 264 p., ISBN: 973-7755-02-2.
13. **V. Chirica**, I. Borzic, *Gisements du Paléolithique inférieur et moyen entre le Dniestr et la Tissa*, BAI, XIV, Iași, 2005, 385 p., ISBN : 973-7755-05-7.
14. G. Davidescu, **V. Chirica**, M. Cuculea, *Istorie și viață spirituală în zona montană și submontană a Neamțului*, Ed. PIM, Iași, 2005, 190 p., ISBN: 973-716-212-9.
15. **V. Chirica**, Oct.-Liviu Șovan, *Civilisations préhistoriques et protohistoriques dans la zone du Prut Moyen*, BAI, XVI, Ed. PIM, Iași, 2006. ISBN: 978-973716-365-3.
16. I. Borzic, **V. Chirica**, M. Văleanu, *Culture et sociétés pendant le Paléolithique supérieur de la zone carpato-dniestréenne*, BAM, VI, Ed. PIM, Iași, 2006, 442 p., ISBN: 978-973716-495-7.
17. I. Borzic, **V. Chirica**, A. David, *L'Aurignacien moyen et tardif de l'espace carpatique-dniestréen. Le Gisement Climauti II*, BAI, XIX, Ed. PIM, Iași, 2007, 225 p., ISBN: 978-973-716-839-9.



18. **V. Chirica, M.-C. Văleanu, *Umanizarea taurului celest. Mărturii ale spiritualității comunităților cucuteniene de la Ruginoasa-Iași*, BAI, XX, Casa Editorială Demiurg, Iași, 2008, 207 p., ISBN: 973-152-064-3.**
19. **V. Chirica, I. Borziac, *Gisements du Paléolithique supérieur récent entre le Dniestr et la Tissa*, BAI, XXII, Ed. PIM, Iași, 2009, 323 p., ISBN: 978-606-520-326-6.**
20. **G. Davidescu, V. Chirica, M. Cucolea, *De la religiile preistorice la creștinismul românesc. Zona Neamțului – Athosul românesc*, Ed. PIM, Iași, 2009, 257 p., ISBN: 978-606-520-468-3.**
21. **V. Chirica, G. Bodi, *Contribuții la crearea unui sistem informatic geografic pentru modelarea atlasului arheologic al spațiului carpato-nistrean. Stațiuni paleolitice între Carpații Orientali și Nistru*, BAI, XXIV, Ed. PIM, Iași, 2011, 385 p., ISBN : 978-606-13-0485-1.**
22. **V. Chirica, V.-C. Chirica, G. Bodi, *La Vallée du Prut moyen – entre Miorcani et Ripiceni. Stratigraphie géologique et habitats paléolithiques*, BAI, XXV, Ed. PIM, Iași, 2014, 168 p. ISBN 978-606-13-1738-7.**
23. **V. Chirica, V.-C. Chirica, G. Bodi, *Viață și moarte în Paleoliticul superior, Epipaleoliticul și Mezoliticul Europei. Spiritualitatea înmormântărilor*, BAI, XXVI, Ed. PIM, Iași, 2015, ISBN 978-606-13-2406-4, 382 p.**
24. **V. Chirica, V.-C. Chirica, G. Bodi, *Viață și moarte în Paleoliticul superior, Epipaleoliticul și Mezoliticul Europei. Spiritualitatea înmormântărilor*, BAI, XXVI, ed. a II-a, Ed. Cetatea de Scaun, Târgoviște, 2016, 352 p., ISBN: 978-606-537-332-7.**
25. **V. Chirica, *Le gisement paléolithique de Mitoc-Mălu Galben. La classification du Patrimoine archéologique mobil* (réalisé par la coopération de Valentin-Codrin CHIRICA, membre de la Commission VIII de l'UISPP), Ed. PIM, Iași, 2017, 397 p.**
26. **V. Chirica, E. Cordoș, *L'Aurignacien et le Gravettien de Mitoc-Mălu Galben. Patrimoine arheologique mobil* (réalisé par la coopération de Valentin-Codrin CHIRICA, membre de la Commission VIII de l'UISPP), Ed. PIM, Iași, 2018, 260 p.**

## Editings

1. xxx *La civilisation de Cucuteni en contexte européen*, BAI, I, Iași, 1987.
2. xxx *La genèse et l'évolution des cultures paléolithiques sur le territoire de la Roumanie*, BAI, II, Iași, 1987.
3. N. Iorga, *Istoria Românilor* (coord. Gh. Buzatu, V. Spinei), vol. I, partea I-a, *Strămoșii înainte de romani*, București, 1988, text stabilit, note, comentarii, de V. Chirica, V. Mihailescu-Bîrliba, I. Ioniță (V. Chirica : Prefață, Introducere, Cartea I - cap. I-IV; Cartea a II-a, cap. I-III, Postfață, Indice).
4. N. Iorga, *Istoria Românilor*, vol. I, partea a II-a, *Sigiliul Romei*, București, 1988, text stabilit, note, comentarii, de V. Mihailescu-Bîrliba, V. Chirica, I. Ioniță (V. Chirica: Cartea I, cap. I-VI).
5. V. Chirica, *The Gravettian in the East of the Romanian Carpathians*, BAI, III, Iași, 1989.



6. xxx *Le Paléolithique et le Néolithique de la Roumanie en contexte européen*, BAI, IV, Iași, 1991.
7. N. Iorga, *Istoria Românilor*, vol. II, *Oamenii pământului (Până la anul 1000)* București, 1992, text stabilit, note, comentarii, de I. Ioniță, V. Mihailescu-Bîrliba, V. Chirica (V. Chirica: Cartea a IV-a, cap. I-VI).
8. V. Chirica, I. Borziac, N. Chetaru, *Gisements du Paléolithique supérieur ancien entre le Dniestr et la Tissa*, BAI, V, Iași, 1996.
9. C.-V. Chirica, *Arta și religia paleoliticului superior în Europa Centrală și Răsăriteană*, BAI, VI, Iași, 1996.
10. T. Arnăuț, R. Ursu-Naniu, *Vestigii getice din cea de a doua epocă a fierului în interfluviul pruto-nistean*, BAI, VII, Iași, 1996.
11. D. Gh. Teodor, *Meșteșugurile la nordul Dunării de Jos în secolele IV-XI*, BAI, VIII, Iași, 1996.
12. I. Tentiuc, *Populația din Moldova Centrală în secolele XI-XIII*, BAI, IX, 1996.
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14. Em. Pavel, *Jeux à masques en Moldavie*, Iași, 1998.
15. A. Saraiman, V. Chirica (coord.), *Cuaternarul pe teritoriul României*, Ed. Helios, Iași, 1999.
16. V. Chirica, C. M. Mantu, S. Țurcanu, *Scânteia. Cercetare științifică și restaurare*. Catalog, Iași, 1999.
17. V. Chirica și colab., *Palatul Culturii din Iași*. Album, in Romanian, French, English, German, Iași, 1999.
18. M. Petrescu-Dîmbovița ș.a., *Trușești, Monografie arheologică*, Iași, 1999.
19. V. Chirica, A. Ichim, *Monumentul. Tradiție și viitor*, Iași, 2000.
20. V. Chirica, *Gisements paléolithiques de Mitoc. Le Paléolithique de Roumanie à la lumière des découvertes de Mitoc*, BAI, XI, Iași, 2001.
21. V. Chirica, D. Boghian, *Arheologia preistorică a lumii*, vol. I-II, BAI, XII, Iași, 2003.
22. V. Chirica, D. Aparaschivei, *Institutul de Arheologie-Iași*, BAI, XIII, Iași, 2004.
23. V. Chirica, I. Borziac, *Gisements du Paléolithique inférieur et moyen entre le Dniestr et la Tissa*, BAI, XIV, Iași, 2005.
24. G. Davidescu, V. Chirica, M. Cucolea, *Istorie și viață spirituală în zona montană și submontană a Neamțului*, Iași, 2005.
25. V. Chirica, Oct.-Liviu Șovan, *Civilisations préhistoriques et protohistoriques dans la zone du Prut Moyen*, BAI, XVI, Iași, 2006.
26. I. Borziac, V. Chirica, M. Văleanu, *Culture et sociétés pendant le Paléolithique supérieur de la zone carpato-dniestréenne*, Ed. PIM, Iași, 2006.
27. M. Otte, V. Chirica, P. Haesaerts, *L'Aurignacien et le Gravettien de Mitoc-Malu Galben*, ERAUL 72, Liège, 2007, 233 p., ISBN: 978-2-930495-03-3.
28. I. Borziac, V. Chirica, A. David, *L'Aurignacien moyen et tardif de l'espace carpatique-dniestréen. Le Gisement Climauti II*, BAI, XIX, Ed. PIM, Iași, 2007.



29. V. Chirica, M.-C. Văleanu, *Umanizarea taurului celest. Mărturii ale spiritualității comunităților cucuteniene de la Ruginoasa-Iași*, BAI, XX, Casa Editorială Damiurg, Iași, 2008.
30. V. Chirica, M.-C. Văleanu, *Etablissements et habitations préhistoriques. Structure, organisation, symboles. Actes du Coll. de Iași, 10-12 dec. 2007*, BAM, IX, Ed. PIM, Iași, 2008, 355 p.
31. V. Chirica, I. Borziac, *Gisements du Paléolithique supérieur récent entre le Dniestr et la Tissa*, BAI, XXII, Ed. PIM, Iași, 2009.
32. G. Davidescu, V. Chirica, M. Cucolea, *De la religiile preistorice la creștinismul românesc. Zona Neamțului – Athosul românesc*, Ed. PIM, Iași, 2009.
33. S. Țurcanu, *Industria litică cioplită din neoliticul Moldovei*, BAI, XXI, Ed. Univ. „Al. I. Cuza”, Iași, 2009, 283 p., 38 pl.
34. V. Chirica, G. Bodi (ed.), *Arta antropomorfă feminină în preistoria spațiului carpato-nistrean*, dedicated in the memory of dr. doc. Ilie Borziac, BAI, XXIII, Ed. PIM, Iași, 2010, 256 p.
35. V. Chirica, G. Bodi, *Contribuții la crearea unui sistem informatic geografic pentru modelarea atlasului arheologic al spațiului carpato-nistrean. Stațiuni paleolitice între Carpații Orientali și Nistru*, BAI, XXIV, Ed. PIM, Iași, 2011.
36. V. Chirica, V.-C. Chirica, G. Bodi, *La Vallée du Prut moyen – entre Miorcani et Ripiceni. Stratigraphie géologique et habitats paléolithiques*, Ed. PIM, Iași, 2014.
37. V. Chirica, V.-C. Chirica, G. Bodi, *Viață și moarte în Paleoliticul superior, Epipaleoliticul și Mezoliticul Europei. Spiritualitatea înmormântărilor*, BAI, XXVI, Ed. PIM, 2015, 382 p.
38. V. Chirica, V.-C. Chirica, G. Bodi, 2015. *Viață și moarte în Paleoliticul superior, Epipaleoliticul și Mezoliticul Europei. Spiritualitatea înmormântărilor*, BAI, XXVI, ed. a II-a, Ed. Cetatea de Scaun, Târgoviște, 2015, 352 p.
39. V. Chirica, Cr. Ichim, *Les Aurignaciens. Leur création matérielle et spirituelle. Actes du Coll. Int., org. à Iași, 28-30 Janvier 2016*, Cetatea de Scaun, Târgoviște, 2016.
40. V. Chirica, *Le gisement paléolithique de Mitoc-Malu Galben. La classification du Patrimoine archéologique mobil*, (réalisé par la coopération de Valentin-Codrin CHIRICA, membre de la Commission VIII de l'UISPP), Ed. PIM, Iași, 2017, 397 p. ; Ed. PIM, Iași, 2018, 260 p.
41. V. Chirica, Cr. Ichim, *Les Gravettiens. Leur création matérielle et spirituelle, Actes du Coll. Int., org. à Iași et Mitoc, 13-17 mai 2017*, Ed. PIM, Iași, 2017.
42. V. Chirica, E. Cordoș, *L'Aurignacien et le Gravettien de Mitoc-Malu Galben. Patrimoine arheologique mobil* (réalisé par la coopération de Valentin-Codrin CHIRICA, membre de la Commission VIII de l'UISPP), Ed. PIM, Iași, 2018, 260p.



1. **V. Chirica**, 1970. *Ateliere paleolitice și epipaleolitice de prelucrare a uneltelor*, in *Mem.Antiq.*, II, 1970, pp. 7-17.
2. **V. Chirica**, 1971. *Cercetări arheologice de teren în județul Botoșani*, in *Carpica*, IV, 1971, pp. 299-313.
3. **V. Chirica**, 1973. *Piese bifaciale din paleoliticul superior descoperite în regiunea de nord a Moldovei*, in *SCIV*, 24, 1, 1973, pp. 93-101.
4. **V. Chirica**, 1973. *Vârfuri de lance gumelnițene descoperite la Glina*, in *Mem.Antiq.*, IV-V, 1972-1973, pp. 259-263, 393-395.
5. **V. Chirica**, R. Popovici, 1973. *Cercetări arheologice de suprafață la sud de București*, in *MCA*, X, 1973, pp. 353-366.
6. **V. Chirica**, 1974. *Așezarea paleolitică de la Mitoc-Pârâul lui Istrate*, in *Din trecutul judetului Botoșani*, I, 1974, pp. 25-31.
7. **V. Chirica**, 1975. *Descoperiri paleolitice în așezarea de la Mitoc (jud. Botoșani)*, in *ArhMold*, VIII, 1975, Iași, pp. 7-14.
8. **V. Chirica**, 1976. *Habitats aurignaciens dans la zone du Prut Moyen*, in *LX – ème Congrès UISPP*, Nice, 1976, 27 p.
9. **V. Chirica**, M. Tanasache, 1977. *Un brăzdar de plug din corn de cerb, descoperit la Dolhasca (jud. Suceava)*, in *Anuarul Muz. jud. Suceava*, IV, 1977, pp. 309-311.
10. C. Martiniuc, **V. Chirica**, A. Nitu, 1977. *Poziția geomorfologică și cultural-cronologică a așezării Cucuteni A de la Iași - Splai Bahlui*, in *SCIVA*, 28, 2, 1977, pp. 185-194.
11. **V. Chirica**, 1977. *Considerații cu privire la paleoliticul final pe teritoriul României*, in *Cercet.Ist.*, S.N., VIII, 1977, Iași, pp. 109-124.
12. **V. Chirica**, 1978. *Considerații cu privire la complexele de locuire descoperite în stațiunile paleolitice*, in *Carpica*, X, 1978, pp. 21-45.
13. **V. Chirica**, 1979a. *Le Paléolithique final sur le territoire de la Roumanie*, in *Actes du Coll. Int. N.271*, Bordeaux, 1979, pp. 859-867.
14. **V. Chirica**, 1979b. *Morminte sarmatice descoperite la Mitoc (jud. Botoșani)*, in *SCIVA*, 30, 4, 1979, pp. 631-636.
15. **V. Chirica**, 1979c. *Tehnica și tipologia uneltelor din paleoliticul superior în regiunea Prutului Mijlociu*, in *Hierasus*, Anuar '78, I, 1979, pp. 43-62.
16. **V. Chirica**, P. Șadurschi, 1979. *Descoperiri paleolitice și postpaleolitice la Mitoc-Pârâul lui Istrate (jud. Botoșani)*, in *Hierasus*, Anuar '78, I, 1979, pp. 63-74.
17. Al. Păunescu, **V. Chirica**, 1979. *Cercetări arheologice recente în zona Prutului Mijlociu*, in *An. Ac.Rom., Mem.Secț de Șt.Ist.*, IV, II, 1979, pp. 57-69.
18. **V. Chirica** 1980. *Așezările paleolitice de la Mitoc*. Rezumatul tezei de doctorat, Iași, 1980, 25 p.



19. **V. Chirica**, M. Tanasache, 1981. *Cercetări arheologice în așezarea de la Dolhasca (jud. Suceava) și unele considerații privind Gravettianul de pe teritoriul României*, in *Mem.Antiq.*, VI-VIII, 1974-1976 (1981), pp. 267-290.
20. **V. Chirica**, 1981a. *Le Paléolithique supérieur à l'Est des Carpathes*, in *X-ème Congrès UISPP*, Mexico City, 1981, pp. 212-226.
21. **V. Chirica**, 1981b. *Les recherches paléolithiques de Mitoc-Pârâu lui Istrate*, in *Coll.Int. L'Aurignacien et le Gravettien (Périgordien) dans leur cadre écologique*, Krakow, 1981, pp. 7-20.
22. N. Ciudin, D. Popovici, **V. Chirica**, 1981-1982. *Date preliminare privind așezarea Precucuteni III de la Chiperești-Iași*, in *Cercet.Ist.*, S.N., XII-XIII, 1981-1982, pp. 101-111.
23. **V. Chirica**, 1981-1982. *Paleoliticul din zona Prutului Mijlociu*, in *Acta MM*, III-IV, 1981-1982, pp. 9-44.
24. **V. Chirica**, 1982a. *Prima piesă de artă paleolitică din România*, in *Progrese și realizări*, 1982, pp. 15-17.
25. **V. Chirica**, 1982b. *Amuleta-pendantiv de la Mitoc, jud. Botoșani. Notă preliminară*, in *SCIVA*, 33, 3, 1982, pp. 229-231.
26. Oct.-T. Șovan, **V. Chirica**, 1983. *Noi morminte sarmatice în Câmpia Moldovei*, in *Hierasus, Anuar 1983*, V, pp. 79-88.
27. **V. Chirica**, 1983a. *Un vas antropomorf descoperit la Scânteia-Iași*, in *Hierasus, Anuar 1983*, V, pp. 71-78.
28. **V. Chirica**, 1983b. *Unele probleme privind paleoliticul superior la est de Carpați*, in *Hierasus, Anuar 1983*, V, pp. 7-36.
29. **V. Chirica**, 1983c. *Amuleta-pendantiv de la Mitoc și unele aspecte ale artei și magiei în paleoliticul superior est-carpatic*, in *SAA*, I, 1983, Iași, pp. 38-44.
30. **V. Chirica**, Gh. Enache, 1983-1984. *Descoperiri paleolitice și epipaleolitice în Podișul Moldovei*, in *Acta MM*, V-VI, 1983-1984, pp. 15-26.
31. **V. Chirica**, 1984. *Datarea prin C-14 a unor locuiri gravettiene de la Mitoc-Malu Galben (com. Mitoc, jud. Botoșani)*, in *SCIVA*, 35, 1, 1984, pp. 74-79.
32. **V. Chirica**, 1985. *Locuiri aurignaciene pe terasele Prutului dintre Ripiceni și Miorcani. Relațiile lor cu locuirile contemporane de pe terasele Bistriței*, in *Mem.Antiq.*, IX-XI, 1977-1979 (1985), pp. 19-44.
33. **V. Chirica**, 1986a. *Paleoliticul superior din România în lumina cercetărilor de la Mitoc-Botoșani*, in *Documente recent descoperite și infomații arheologice*, București, 1986, pp. 3-11.
34. **V. Chirica**, 1986b. *La chronologie relative et absolue des habitats aurignaciens et gravettiens de la Roumanie*, in *The World Archaeological Congress. The Pleistocene Perspective*, I, Southampton and London, 1986, 32 p.
35. **V. Chirica**, 1986c. *Noi descoperiri de proveniență bizantină în spațiul est-carpatic al României*, in *MMS*, LXII, 3-4, 1986, pp. 259-262.
36. **V. Chirica**, 1987a. *N. Iorga, Istoric al preistoriei și al antichităților de pe teritoriul României*, in *MMS*, LXIII, 2, 1987, pp. 105-110.
37. **V. Chirica**, 1987b. *Mărturii creștine pe teritoriul Moldovei în secolele III-IV*, in *MMS*, 4, 1987, pp. 115-120.



38. A. Nițu, **V. Chirica**, 1987. *Deux vases cucuteniens aux caractères anthropomorphes récemment découvertes dans le Département de Iași*, in *BAI*, I, 1987, pp. 287-290.
39. **V. Chirica**, 1987. *La genèse et l'évolution des cultures du Paléolithique supérieur dans la zone du Prut Moyen d'après les recherches récentes*, in *BAI*, II, 1987, pp. 25-40.
40. M. Cârciumaru, **V. Chirica**, 1987. *Découvertes d'art paléolithique sur le territoire de la Roumanie*, in *BAI*, II, 1987, pp. 63-71.
41. V. Băcăuanu, **V. Chirica**, 1987. *Corrélations géomorphologiques-archéologiques dans le secteur épigénétique de la vallée du Prut*, in *BAI*, II, 1987, pp. 87-96.
42. A. Nițu, **V. Chirica**, 1988. *Două vase cucuteniene cu caractere antropomorfe recent descoperite*, in *Hierasus*, VII-VIII, 1988, pp. 17-37.
43. **V. Chirica**, 1988. *Unele observații cu privire la începuturile paleoliticului superior în zona Prutului Mijlociu*, in *ArhMold*, XII, 1988, pp. 11-21.
44. **V. Chirica**, 1989. *Creștinismul la est de Carpați în lumina mărturiilor arheologice*, in *MMS*, LXV, 1, 1989, pp. 69-75.
45. **V. Chirica**, 1990. *La présence des pointes foliacées dans le Paléolithique supérieur de la Roumanie*, in *Feuilles de pierre*, ERAUL, 42, Liège, 1990, pp. 163-174.
46. D. Monah, **V. Chirica**, 1990. *Între iluzie și deziluzie*, in *Magazin Istoric*, S.N., XXIV, 6(279), 1990, pp. 8-10.
47. **V. Chirica**, 1991a. *Le Paléolithique supérieur et final au nord du Danube Inférieur*, in *Le Bassins du Rhin et du Danube au Paléolithique supérieur: environnement, habitat et systemes d'échange*, ERAUL, 43, Liège, 1991, pp. 1-8.
48. **V. Chirica**, 1991b. *Le Gravettien en Roumanie*, in *Le Bassins du Rhin et du Danube...ERAUL*, 43, Liège, 1991, pp. 9-16.
49. **V. Chirica**, 1991c. *Le Gravettien en Roumanie*, in *BAI*, IV, 1991, pp. 7-15.
50. **V. Chirica**, 1991d. *Le Paléolithique supérieur sur le territoire de la Roumanie*, in *Le Paléolithique supérieur européen. Bilan quinquennal*, ERAUL, 52, Liège, 1991, pp. 21-27.
51. **V. Chirica**, 1991e. *La géochronologie du Gravettien sur le territoire de la Roumanie*, in *XII-ème Congrès UISPP*, Bratislava, vol. II, 1991, pp. 72-75.
52. **V. Chirica**, 1993a. *La chasse et la magie chez les Moustériens, Aurignaciens et Gravettiens du Paléolithique de la Roumanie*, in *Coll. Int.*, Trèignes, 1993, pp. 55-68.
53. **V. Chirica**, 1993b. *Cele mai vechi manifestări cultice și religioase din preistoria României*, in *Teologie și Viață*, 1993, pp. 15-21.
54. M. Otte, **V. Chirica**, 1993. *Atelier aurignacien à Malu Galben-Mitoc (Moldavie)*, in *Préhistoire Européenne*, 3, Liège, 1993, pp. 55-66.
55. **V. Chirica**, C.V. Chirica, 1995. *Les pièces bifaciales et la transition du Paléolithique Moyen vers le Paléolithique supérieur sur le territoire de la Roumanie*, in *Les industries à pointes foliacées d'Europe Centrale, Actes du Coll. Int.*, Miskolc, 1991, *Paléo, Supplément* 1, 1995, pp. 105-110.



56. **V. Chirica**, I. Borzic, 1995. *La présence et l'utilisation du l'ivoire dans le Paléolithique du SE de l'Europe*, in *Le travail et l'usage de l'ivoire au Paléolithique supérieur*, Actes du Col.Int., Ravello, 1992, 1995, pp. 199-210.
57. **V. Chirica**, 1995. *Le Paléolithique de la zone du Prut Moyen*, in *Mem.Antiq.*, XX, 1995, pp. 7-34.
58. M. Otte, **V. Chirica**, C. Beldiman, 1995. *Sur les objets paléolithiques de parure et d'art en Roumanie: une pendeloque en os découverte à Mitoc, district de Botoșani*, in *Préhistoire Européenne*, 7, 1995, pp. 119-152.
59. **V. Chirica**, C.V. Chirica, 1996. *Le milieu géographique et la culture gravettienne*, in *Coll. Int., Nature-Culture*, Liège, 1993, ERAUL, 68, Liège, 1996, pp. 161-180.
60. V. Mihailescu-Bîrlița, **V. Chirica**, 1996. *A Survey of the Development of Computer Applications in Romanian Archaeology*, in *Analecta Praehistorica Leidensia*, 1996, pp. 525-530.
61. **V. Chirica**, Al. Păunescu, Em. Alexandrescu, 1996. *Le Paléolithique supérieur de Roumanie (1991-1996)*, in *Le Paléolithique supérieur européen. Bilan quinquennal, 1991-1996*, ERAUL, 76, Liège, 1996, pp. 41-60.
62. **V. Chirica**, I. Borzic, 1996. *L'Aurignacien tardif des Carpates à Dniestr*, in *XIII Congrès UISPP*, Forlì, vol. VI, 1996, pp. 123-138.
63. **V. Chirica**, 1996a. *Les origines du Gravettien en Roumanie*, in *XIII-ème Congrès UISPP*, Forlì, 1996, vol. VI, 1996, pp. 175-190.
64. **V. Chirica**, 1996b. *La formation des complexes mésolithiques dans les Balkans et en Roumanie*, in *XIII-ème Congrès UISPP*, Forlì, vol. VII, 1996, pp. 79-90.
65. M. Otte, P. Noiret, **V. Chirica**, I. Borzic, 1996. *Rythme évolutif du Gravettien Oriental*, in *XIII-ème Congrès UISPP*, Forlì, vol. VI, 1996, pp. 213-226.
66. M. Otte, P. Noiret, I. Lopez-Bayon, I. Borzic, **V. Chirica**, 1996. *Recherches sur le Paléolithique supérieur de la Moldavie*, in *Archéologie et Préhistoire*, Bull. Soc. Royale Anthropologie et Préhistoire, Bruxelles, 107, 1996, pp. 45-80.
67. **V. Chirica**, 1998a. *Muzeele României între stagnare și dezvoltare*, in *RevMuz*, 3-4, 1998, pp. 61-64.
68. **V. Chirica**, 1998b. *Le Paléolithique de Mitoc*, in *Cercet.Ist.*, S.N., XVII/1, 1998, pp. 47-76.
69. **V. Chirica**, 1998c. *Le Paléolithique supérieur sur le territoire de la Roumanie*, in *Préhistoire d'Anatolie. Genèse de deux mondes*, Actes du coll. int. Liège, 1997, ERAUL, 1985, Liège, 1998, p. 255.
70. **V. Chirica**, C. Kacso, M. Văleanu, 1998. *Contribuții privind prezența obsidianului ca materie primă pe teritoriul României*, in *Carpica*, XVII, 1998, pp. 9-20.
71. **V. Chirica**, 1999. *Mitoc-Malu Galben*, in *CCA.Campania 1998,1999*, p. 72.
72. **V. Chirica**, C. V. Chirica, 1999. *L'influences circum-méditerranéennes dans l'Epipaléolithique du sud-ouest de la Roumanie*, in *Les facies leptolithiques du Nord-Ouest Méditerranéen: Milieux naturels et culturels*, Actes du XXIV-ème Congrès Préhistorique de France, Carcassonne, 1999, pp. 79-91.



73. M. Otte, Pierre Noiret, I. Lopez-Bayon, I. Borzic, **V. Chirica**, 1999. *Région-clef de la Préhistoire orientale. La Moldavie*, in *Archeologia*, 353, 1999, pp. 58-66.
74. **V. Chirica**, 1999a. *Cultura Ripiceni-Brânzeni*, in *Stratum Plus. Vremea sobirati kamnja*, Sankt-Peterburg-Kisinev-Odesa, 1, 1999, pp. 164-167.
75. **V. Chirica**, 1999b. *Arheologia Cuaternarului*, in *Cuaternarul pe teritoriul României* (coord. A. Saraiman, V. Chirica), Helios, Iași, 1999, pp. 207-277.
76. I. Borzic, **V. Chirica**, 1999. *Unele considerații referitoare la Gravettianul dintre Nistru și Carpații Orientali*, in *Tyragefia*, Anuar VIII, 1999, Chișinău, pp. 3-14.
77. **V. Chirica**, 2000a. *Descoperiri arheologice în zona Pașcani*, in *Monografia Pașcani* (coord. Acad. C. Ciopraga), Iași, 2000, pp. 29-44.
78. **V. Chirica**, 2000b. *Creștinismul la est de Carpați. Secolele II-X*, in *Priveghind și lucrând pentru mântuire*. Volum editat la aniversarea a 10 ani de arhipăstorie a Înalt Prea Sfințitului Daniel, Mitropolitul Moldovei și Bucovinei, Iași, 2000, pp. 190-197.
79. **V. Chirica**, A. Cojocaru, 2000. *Multidimensional analysis of the archaeological discoveries from the multiphase Palaeolithic site at Mitoc – Malu Galben*, in *CAA Computer Applications and Quantitative Methods in Archaeology, BAR International Series*, 845, 2000, pp. 49-54.
80. I. Borzic, **V. Chirica**, M. Wanli, 2000. *Considérations concernant le Moustérien sur l'espace compris entre le Dniestr et les Carpates*, in *Les premiers hommes modernes de la Péninsule Iberique. Actes du Coll. de la Commission VIII de l'UISPP*, Lisboa, 2000, pp. 37-44.
81. **V. Chirica**, 2001a. *Recherches sur le Paléolithique supérieur sur le territoire de la Roumanie (1996-2000)*, in *Le Paléolithique supérieur européen, Bilan quinquennal 1996-2001*, ERAUL, 97, Liège, 2001, pp. 45-48.
82. **V. Chirica**, 2001b. *La production laminaire (technique et typologie) à Mitoc sur le Prut (Roumanie)*, in *Productions lamellaires attribuées à l'Aurignacien: chaînes opératoires et perspectives technico-culturelles, Actes du XIV-e Congrès UISPP*, Liège, 2001, pp. 131-139.
83. **V. Chirica**, M. Văleanu, 2001. *L'étude géochimique du sédiment de l'habitat aurignacien de Mitoc-Malu Galben*, in *Praehistoria*, vol. II, Miskolc, 2001, pp. 29-49.
84. M. Văleanu, **V. Chirica**, 2001. *Cercetări arheologice de teren în Podișul Moldovei*, in *Suceava. Anuarul Muzeului Național al Bucovinei*, XXVI-XXVII-XXVIII, 1999-2000-2001, Suceava, 2001, pp. 11-44.
85. **V. Chirica**, 2002a. *Comparaisons faites entre les occupations du Paléolithique supérieur de Belgique et celles de l'Europe centrale et orientale*, in *Praehistoria*, vol. 3, Miskolc, 2002, pp. 203-244.
86. **V. Chirica**, 2002b. *Cercetarea arheologică ieșeană în ultimii 50 de ani. Epoca paleolitică*, in *ArhMold*, XXII, 1999 (2002), pp. 147-150.
87. **V. Chirica**, I. Borzic, M. Văleanu, 2003. *Structures d'habitat dans le Paléolithique supérieur (Aurignacien et Gravettien) entre les Carpates et le Dniestr*, in *Actes du XIV-ème Congrès UISPP, Section 6, Paléolithique*



- supérieur, *Colloques* 6.2; 6.5, Liège, 2001, in *BAR International Series* 1122, 2003, pp. 139-146.
88. **V. Chirica**, 2003. *L'Art mobilier du Paléolithique supérieur en Europe de l'Est et Centrale*, in *Mélanges Jean Gausсен. Préhistoire. Art et Sociétés*, *Bull. de la Soc. Préh. Ariège-Pyrénées*, LVIII, 2003, pp. 99-117.
89. **V. Chirica**, I. Borziac, 2003. *Gravettianul din spațiul carpato-nistrean*, in *ArhMold*, XXIII-XXIV, 2000-2001 (2003), pp. 7-19.
90. **V. Chirica**, M. Văleanu ș.a., 2003. *Mitoc. Com. Mitoc, jud. Botoșani, Valea Izvorului*, in *CCA. Campania 2002*, CIMEC, 2003, pp. 199-200, 436, 492-496.
91. **V. Chirica**, C.V. Chirica, 2003. *Triplul paradox românesc pe drumul integrării culturale europene*, in *Buletin Științific nr. 12*, Universitatea "M. Kogălniceanu", Ed. Cugetarea, Iași, 2003, pp. 73-86.
92. I. Borziac, **V. Chirica**, M. Văleanu, 2003. *Les nucléi et la technique de débitage pendant le Paléolithique supérieur Carpatho-dniestreen*, in *BAR, Int. Series*, 1145, 2003, pp. 31-46.
93. P. Haesaerts, I. Borziac, **V. Chirica**, Fr. Damblon, L. Koulakovska, J. van der Plicht, 2003. *The East Carpathians Loess Record: A reference for the Middle and Late Pleniglacial Stratigraphy in Central Europa*, in *Quaternaire. Revue de l'Association Française pour l'Etude du Quaternaire*, Paris, 14, 3, 2003, pp. 163-188.
94. **V. Chirica**, V.-C. Chirica, 2004. *The translation, copying and printing of the Bible throughout the romanian territory (14 th-18 th centuries)*, in *Studii de istorie veche si medievală. Omagiu profesorului Gh. Postică*, Chișinău, Pontos, 2004, pp. 248-257.
95. P. Haesaerts, I. Borziac, **V. Chirica**, Fr. Damblon, L. Koulakovska, 2004. *Cadre stratigraphique et chronologique du Gravettien en Europe Centrale*, in J. A. Svoboda, L. Sedlackova (eds.), *The Gravettian along the Danube. Proceedings of the Mikulov Conference, Nov. 2002. The Dolni Vestonice Studies*, Bmo, 2004, pp. 33-56.
96. **V. Chirica**, 2004a. *Identitatea unor semne în simbolurile artei paleolitice și neo-eneolitice*, in *Elemente de spiritualitate în spațiul carpato-nistrean. Preistorie*. Simpozion internațional, organizat în cadrul Proiectului INTAS – réseau – 2000-0879, Iași, iulie 2004, pp. 4-9.
97. **V. Chirica**, 2004b. *Institutul de Arheologie-Iași. În căutarea timpului trecut*, in V. Chirica, D. Aparaschivei (ed.), *Institutul de Arheologie-Iași, BAI*, XIII, Iași, 2004, pp. 5-36 (and in English).
98. **V. Chirica**, 2004c. *Quelques observations concernant le Paléolithique supérieur ancien et récent en Europe est-centrale et occidentale*, in *ArhMold*, XXV, 2002 (2004), pp. 5-45.
99. **V. Chirica**, 2004d. *La Grande Déesse et son interprétation dans l'art paléolithique*, in M. Otte (éd.), *La Spiritualité. Actes du colloque de la commission 8 de l'UISPP (Paléolithique supérieur)*, Liège, 10-12 décembre 2003, Liège, ERAUL, 106, 2004, pp. 187-194.
100. **V. Chirica**, 2004e. *Teme ale reprezentării "Marii Zeițe" în arta paleolitică și neolitică*, in *Mem.Antiq.*, XXIII, 2004, pp. 103-127.



101. **V. Chirica**, A. Tuffreau, P. Auguste, S. Bălescu, M. Văleanu, A. Doboș, G. Popescu, 2004. *Mitoc, com. Mitoc, jud. Botoșani, Punct: Valea Izvorului*, in CCA. Campania 2003, CIMEC, 2004, pp. 200-203.
102. **V. Chirica**, I. Borzic, M. Văleanu, 2004. *L'Aurignacien et la période de transition dans la région carpato-dniestrine*, in *Actes du XIV-ème Congrès UISPP, Section 6, Le Paléolithique supérieur, Sessions générales et posters, Liège, 2001, BAR International Series, 1272*, 2004, pp. 243-260.
103. **V. Chirica**, O. Constantinescu, 2004. *Descoperiri arheologice pe Valea Trotușului*, in *Carpica*, XXXIII, 2004, pp. 10-40.
104. **V. Chirica**, I. Borzic, 2005a. *Le Paléolithique supérieur européen. Eléments d'art et de spiritualité*, in V. Spinei, C.-M. Lazarovici, D. Monah (eds.), *Scripta praehistorica. Miscellanea in honorem nonagenarii magistri M. Petrescu-Dîmbovița oblata*, Ed. Trinitas, Iași, 2005, pp. 69-101.
105. **V. Chirica**, I. Borzic, 2005b. *Considérations générales concernant le Paléolithique moyen entre le Dniestre et la Tissa*, in *Carpica*, XXXIV, 2005, pp. 5-36.
106. **V. Chirica**, I. Borzic, 2005c. *Le Paléolithique supérieur ancien entre la Dniestr et la Tissa*, in *ArhMold*, XXVII, 2004 (2005), pp. 19-32.
107. **V. Chirica**, A. Tuffreau, P. Haesaerts, S. Bălescu, A. Doboș, G. Popescu, M. Văleanu, 2005. *Mitoc – com. Mitoc, jud. Botoșani, Valea Izvorului*, in CCA. Campania 2004, CIMEC, 2005, pp. 240-242.
108. **V. Chirica**, C.-V. Chirica, 2005. *Analyse technotypologique de la production laminaire à Mitoc sur le Prut (Roumanie)*, in *Archéo Logique*, 1, Paris-Luxembourg, 2005, pp. 465 - 477.
109. **V. Chirica**, 2005. *Epoca paleolitică*, in P. Roman, D. Ciobanu (coord.), *In memoriam Ion Nestor*, Buzău, 2005, pp. 51-56.
110. **V. Chirica**, C. Mihăilescu, 2005. *La géologie et la géomorphologie de Mitoc*, in *ArhMold*, XXVIII, 2005, pp. 41-55.
111. I. Borzic, P. Haesaerts, **V. Chirica**, 2005. *Cadrul cronostatigrafic al paleoliticului superior din spațiul cuprins între Carpații Orientali și Nistru*, in *Revista Arheologică*, S.N., I, 2, Chișinău, 2005, pp. 168-201.
112. C. D. Niță, E. Muscă, C. Lazăr, **V. Chirica**, M. Văleanu, 2006. *Information Management in Archaeological Atlases*, in H. N. Teodorescu (ed.), *Advances in Intelligent Systems and Technologies*, 2006, pp.171-177.
113. I. Borzic, **V. Chirica**, At. Prepeliță, 2006. *L'écologie et la synergie des collectivités humaines de l'espace carpatique-dniestréen pendant le Paléolithique supérieur*, in *ArhMold*, XXIX, 2006, pp. 7-34.
114. **V. Chirica**, 2006a. *Opinions concernant l'art et les religions paléolithiques sur la base d'une grande découverte*, in *ArhMold*, XXIX, 2006, pp. 185-191.
115. **V. Chirica**, 2006b. *Les plus anciennes peintures paléolithiques d'Italie*, in *ArhMold*, XXIX, 2006, pp. 193-198.
116. **V. Chirica**, 2006c. *Artă și religii preistorice. Sanctuarele paleoliticului superior european*, in *Prelegeri Academice*, vol. V, No. 5, 2006, pp. 7-34; 145.



117. I. Borzic, **V. Chirica**, 2006. *Considerații referitoare la evoluția paleoliticului final și epipaleoliticului în spațiul dintre Nistru și Carpații Orientali (aspecte paleoecologice și tehnico-tipologice)*, in *Revista Arheologică*, II, 1-2, Chișinău, 2006, pp. 1-34.
118. **V. Chirica**, 2007a. *Historique des recherches paléolithiques en Roumanie et à Mitoc-Malu Galben*, in M. Otte, V. Chirica, P. Haesaerts (dir.), *L'Aurignacien et le Gravettien de Mitoc-Malu Galben*, ERAUL 72, Liège, 2007, pp. 7-9.
119. **V. Chirica**, 2007b. *Les structures d'occupation de Mitoc-Malu Galben (1978-1990 et 1991-1997)*, in M. Otte, V. Chirica, P. Haesaerts (dir.), *L'Aurignacien et le Gravettien de Mitoc-Malu Galben*, ERAUL 72, Liège, 2007, pp. 167-172.
120. **V. Chirica**, 2007c. *Le Paléolithique de Mitoc dans le cadre du Paléolithique de la Roumanie*, in M. Otte, V. Chirica, P. Haesaerts (dir.), *L'Aurignacien et le Gravettien de Mitoc-Malu Galben*, ERAUL 72, Liège, 2007, pp. 173-182.
121. **V. Chirica** & C. Mihăilescu, 2007. *Mitoc-Malu Galben: caractérisation du cadre naturel*, in M. Otte, V. Chirica, P. Haesaerts (dir.), *L'Aurignacien et le Gravettien de Mitoc-Malu Galben*, ERAUL 72, Liège, 2007, pp. 11-14.
122. **V. Chirica** & P. Noiret, 2007. *Mitoc-Malu Galben: industrie osseuse et témoins esthétiques*, in M. Otte, V. Chirica, P. Haesaerts (dir.), *L'Aurignacien et le Gravettien de Mitoc-Malu Galben*, ERAUL 72, Liège, 2007, pp. 143-144.
123. M. Otte, P. Noiret, **V. Chirica**, I. Borzic, 2007. *Mitoc-Malu Galben: étude de l'industrie lithique*, in M. Otte, V. Chirica, P. Haesaerts (dir.), *L'Aurignacien et le Gravettien de Mitoc-Malu Galben*, ERAUL 72, Liège, 2007, pp. 85-136; 185-218.
124. M. Otte, **V. Chirica**, 2007. P. Haesaerts & P. Noiret, *Conclusions*, in M. Otte, V. Chirica, P. Haesaerts (dir.), *L'Aurignacien et le Gravettien de Mitoc-Malu Galben*, ERAUL 72, Liège, 2007, pp. 183-184.
125. I. Borzic, **V. Chirica**, A. David, Th. Obadă, 2007. *Planigrafia nivelului superior de locuire din stațiunea aurignaciană Climăuți II de pe Nistrul Mijlociu. Locuința « din oase și pământ »*, in *Revista Arheologică*, S.N., vol. III, 1-2, Chișinău, 2007, pp. 74-88.
126. P. Haesaerts, I. Borzic, **V. Chirica**, F. Damblon, L. Koulakovska, 2007. *Cadre stratigraphique et chronologique du Gravettien en Europe centrale*, in *Paleo*, 19, 2007, pp. 31-51.
127. I. Borzic, **V. Chirica**, 2008a. *Paleoliticul superior din spațiul carpato-nistrean: Aspecte culturo-genetice și cronostratigrafice*, in *Tyragetia. Arheologie. Istorie Antică*, Serie Nouă, vol. II (XVII), Nr. 1, Chișinău, 2008, pp. 9-36.
128. I. Borzic, **V. Chirica**, 2008b. *Périodisation culturelle, chronologie relative et radiométrique des facies du Paléolithique supérieur de l'espace carpato-dniestréen*, in V. Chirica, M.-C. Văleanu (éds.), *Etablissements et habitations préhistoriques. Structure, organisation, symbole. Actes du Coll. de Iași, 10-12 déc. 2007*, BAM, IX, 2008, pp. 7-50.



129. **V. Chirica**, B. Minea, 2008. *La maison dans la vie des communautés humaines paléolithiques*, in V. Chirica, M.-C. Văleanu (éds.), *Etablissements et habitations préhistoriques. Structure, organisation, symbole. Actes du Coll. de Iași, 10-12 dec. 2007*, BAM, IX, 2008, p. 99-131.
130. P. Haesaerts, I. Borzic, V. P. Chekha, **V. Chirica**, F. Damblon, N. I. Drozdov, L. A. Orlova, S. Pirson, J. van der Plicht 2009. *Climatic signature and radiocarbon chronology of middle and late pleniglacial loess from Eurasia: comparison with the marine and greenland records*, in *Radiocarbon*, Vol. 51, No. 1, 2009, pp. 301-318.
131. A. Tuffreau, **V. Chirica**, S. Bălescu et P. Haesaerts, 2009. *Nouvelles recherches sur le gisement paléolithique de Mitoc Valea Izvorului (département de Botoșani), Fouilles 2003-2004*, in *MCA*, V, 2009, pp. 21-33.
132. M. Zahariade, **V. Chirica**, R. Alaiba 2009. *Descoperiri din secolul al IV-lea în subunitățile geografice ale Podișului Central Moldovenesc. O privire specială asupra județului Iași*, in M. Zahariade, R. Alaiba, V. V. Alaiba, O. Levițki, R. Simalcsik, A. Simalcsik, V. Chirica, Ileana-Ildiko Zahariade, *Cunoașterea prin cercetări interdisciplinare a vechilor așezări rurale din spațiul carpato-dunărean*, Ed. Junimea, Iași, 2009, pp. 27-37.
133. **V. Chirica**, C.-V. Chirica, 2009. *Paleoliticul și Epipaleoliticul-Mezoliticul de pe teritoriul Transilvaniei și din zonele învecinate*, in *Mem.Ant.*, XXV-XXVI, 2008-2009, Piatra Neamț, pp. 7-73.
134. **V. Chirica**, M.-C. Văleanu, C.-V. Chirica, 2009. *Le motif d'orante dans l'Art et les religions paléolithiques*, in *Praehistoria*, 9-10, 2008-2009, Miskolc, 2009, pp. 307-332.
135. **V. Chirica**, M.-C. Văleanu, C.-V. Chirica, 2010. *Motivul orantei în arta și religiile paleolitice și neo-eneolitice*, in V. Chirica, G. Bodi (ed.), *Arta antropomorfă feminină în Preistoria spațiului carpato-nistean*, BAI, XXIII, Ed. PIM, Iași, 2010, pp. 159-204.
136. P. Haesaerts, I. Borzic, V. P. Chekha, **V. Chirica**, N. I. Drozdov, L. Koulakovska, L. A. Orlova, J. Van der Plicht, F. Damblon, 2010. *Charcoal and wood remains for radiocarbon dating Uppar Pleistocene loess sequences in Eastern Europe and Central Siberia*, in *Palaogeography Palaeoclimatology Palaeocology*, 291, 2010, pp. 106-127.
137. I. Borzic, **V. Chirica**, 2010. *Paleoliticul mijlociu, paleoliticul superior și epipaleoliticul – mezoliticul în spațiul carpato-nistean*, in *ArhMold*, XXXIII, 2010, pp. 26-68.
138. **V. Chirica**, 2011. *Elemente de artă religioasă în sanctuarele paleoliticului superior*, in *ArhMold*, XXXIV, 2011, pp. 19-52.
139. **V. Chirica**, G. Bodi, C. V. Chirica, 2012. *Teme iconografice, reprezentate în creația artistică religioasă preistorică*, in *ArhMold*, XXXV, 2012, pp. 47-73.
140. V.-C. Chirica, **V. Chirica**, 2012. *Spirituality of paleolithic burials: offerings of decorative and body ornamenting items*, in R. Kogălniceanu, R.-G. Curcă, M. Gligor, S. Stratt (Eds.), *Homines, Funera, Astra. Proceedings of International Symposium on Funerary Anthropology, June 2011*, BAR, Int. Series 2410, 2012, pp. 1-19.



141. V.-C. Chirica, G. Bodi, **V. Chirica**, 2012. *Le phénomène funéraire dans le Paléolithique de l'Europe. La spiritualité de la déposition d'offrandes dans les tombeaux*, in *SAA*, XVIII, 2012, pp. 5-80.
142. **V. Chirica**, G. A. Bilavski, G. Bodi, L. Munteanu, C. Hriban, B. Minea, M.-C. Văleanu, 2012. *Raport de cercetare arheologică preventivă Iași, jud. Iași, punct: str. Cucu/Elena Doamna (cod sit: 95079.55)*, in *CCA. Campania 2011*, CIMEC, 2012, pp. 223-225.
143. **V. Chirica**, V.-C. Chirica, 2013. *Roumanie et République Moldave*, in P. Noiret (éd.), *Le Paléolithique supérieur européen. Bilan quinquennal 2006-2011*, Liège, UISPP, Commission VIII, ERAUL 130, Liège, 2013, pp. 13-19.
144. **V. Chirica**, M. Anghelinu, V.-C. Chirica, 2014. *Roumanie – 2011/2013*, in P. Noiret, D. Leesch (eds.), *Le Paléolithique supérieur d'Eurasie. Bilan 2014*, UISPP, Commission VIII, ERAUL 142, Liège, 2014, pp. 19-41.
145. **V. Chirica et alii** 2014. *Mitoc, com. Mitoc, jud. Botoșani. Punct: Malu Galben*, in *CCA. Campania 2013*, CIMEC, 2014, pp. 81-83, 347-351.
146. V.-C. Chirica, G. Bodi, **V. Chirica**, 2014. *Éléments de sacralité de la violence en préhistoire*, in *Transylvanian Review*, Vol. XIX, Supplement No. 2, 2010, *Worlds in Change II. Transforming East-Central Europe*, 2014, pp. 27-58.
147. V.-C. Chirica & **V. Chirica**, 2014. *Communautés humaines sur les terrasses des rivières Bistrita, Prout et Dniestr et leur création matérielle et spirituelle pendant le Paléolithique supérieur*, in M. Otte & Foni Le Brun Ricalens (coord.), *Modes de contacts et de déplacements au Paléolithique Euroasiatique. Actes du Colloque international de la Commission 8 (Paléolithique supérieur) de l'UISPP, Université de Liège, 28-31 mai 2012*, ERAUL 140 & ArchéoLogique 5, Liège, 2014, pp. 139-169.
148. V.-C. Chirica, **V. Chirica**, 2015. *Vivre et mourir dans le Paléolithique de l'Europe. Les communautés humaines et leur environnement*, in R. Kogălniceanu, M. Gligor, R.-Gabriela Curcă, S. Stratton (eds.), *Homines, Funera, Astra 2. Life Beyond Death in Ancient Times. (Romanian Case Studies). Proceedings of the International Symposium on Funerary Anthropology, 23-26 September 2012. "1 Decembrie 1918" University (Alba Iulia, Romania)*, Archaeopress Archaeology, 2015, pp. 1-18.
149. **V. Chirica**, V.-C. Chirica, 2015. *Comunități umane ale Paleoliticului superior european. Utilizarea resurselor*, in V. Spinei, N. Ursulescu, V. Cotiugă (eds.), *Orbis Praehistoriae Mircea Petrescu-Dâmbovița – in memoriam*, Honoraria, 11, Ed. Univ. "Al. I. Cuza" Iași, 2015, pp. 61-87.
150. **V. Chirica**, P. Noiret, Ph. Nigst, G. Bodi, V.-C., Chirica, M. Vornicu, 2015. *Mitoc, com. Mitoc, jud. Botoșani. Punct: Malu Galben*, in *CCA. Campania 2014*, Institutul Național al Patrimoniului, 2015, pp. 153-156, 472-478.
151. V.-C. Chirica et **V. Chirica**, 2015. *Gisements du Paléolithique supérieur à l'Est des Carpates Orientaux*, in C. Croitoru, G.-D. Hanceanu (eds.), *Miscellanea Historica et Archaeologica. In Honorem Vasile Ursachi Octogenarii*, Bibliotheca Archaeologica Istros, Seria Honoraria, Ed. Istros, Brăila, 2015, pp. 51-112.



152. **V. Chirica**, M. Vornicu, 2015. *The palaeolithic discoveries from Mitoc - Malu Galben (Romania). The Aurignacian I and I inferior layers*, in *ArhMold*, XXXVIII, 2015, pp. 201-224.
153. **V. Chirica**, 2016. *La présence des pièces carénés dans les technocomplexes du Paléolithique supérieur*, in V. Chirica, Cr. Ichim (eds.), *Les Aurignaciens. Leur création matérielle et spirituelle*, BAI, XXVII, Ed. Cetatea de Scaun, Târgoviște, 2016, pp. 169-255.
154. **V. Chirica**, B. Minea, 2016. *Technique and typology of stone items of levels I lower and I of Mitoc-Malu Galben*, in *ArhMold*, XXIX, 2016, pp. 159-178.
155. **V. Chirica**, P. Noiret, Ph. Nigst, P. Haesaerts, D.- M.Vornicu, G. Bodi ș.a. 2016. *Mitoc, jud. Botoșani, Punct Malu Galben*, in *CCA. Campania 2015*, București, 2016, pp. 62-63, 335-338; și <http://patrimoniul.gov.ro>.
156. **V. Chirica**, V.-C. Chirica, 2016. *Découvertes archéologiques concernant les manifestations cultiques dans les sanctuaires paléolithiques de l'Europe*, in C.-E. Ursu, A. Poruciuc, C.-M. Lazarovici (eds.), *Between Earth and Heaven Symbols and Signs. Papers presented at the International Symposium "From Symbols to Signs. Signs, Symbols, Rituals in Sanctuaries, Suceava, Romania, 11-13 September 2015*, Ed. Karl. A. Romstorfer, Suceava, 2016, pp. 9-42.
157. **V. Chirica**, B. Minea, 2017. *Mitoc-Malu Galben – le niveau IV gravettien. Ateliers de taille du silex. Eléments de technologie et de typologie lithique*, in *ArhMold*, XL, 2017, pp. 7-36
158. **V. Chirica**, V.-C. Chirica, 2017. *Survivances aurignaciennes dans le milieu gravettien*, in V. Chirica, Cr. Ichim (eds.), *Les Gravettiens. Leur création matérielle et spirituelle, Actes du Coll. Int. Iași-Mitoc, 22-26 mai 2017*, BAI, XXIX, 2017, pp. 13-60.
159. **V. Chirica**, B. Minea 2017. *Locuirile aurignaciene de la Mitoc-Malu Galben. Creația materială și spirituală a comunităților umane*, in *Mem. Ant.*, XXXI-XXXII (2015-2016), Piatra Neamț, 2017, pp. 33-68.
160. **V. Chirica**, V.-C. Chirica, 2017. *Life and death in Praehistoire. Man and Fire at the Gravettians and Magdalenians of Europe*, in *Homines, Funera, Astra*, 3-4, 2017, *Death and Fire/ Time and cause of Death*, pp. 7-35, under print.
161. **V. Chirica**, V.-C. Chirica, 2017. *Des preuves matérielles des manifestations de spiritualité dans les sanctuaires du Paléolithique Supérieur européen*, in C.-E. Ursu, A. Poruciuc, C.-M. Lazarovici (eds.), *Symbols and Signs as a Communication system. In memory of Gheorghe Dumitroaia*, seria Ethnoreligion III, Ed. Karl. A. Romstorfer, Suceava, 2017, pp. 5-57.
162. **V. Chirica**, 2017. *Cercetările arheologice din Câmpia Moldovei. Colaborarea permanentă cu Muzeul Județean de Istorie din Botoșani*, in *AMS*, XVI, 2017, Ed. Quadrant, pp. 17-27.

### **Notes, medallions, chronicles, homages**

1. **V. Chirica**, *Emilia Zaharia (1903-1979)*, in *AlIAI*, 16, 1979, pp. 671.



2. Al. Păunescu, P. Șadurschi, **V. Chirica**, *Considerații de ordin metodologic privind realizarea Repertoriului arheologic județean*, in *SCIVA*, 30, 1979, 2, pp. 229-238.
3. **V. Chirica**, *Cercetătorul Anton Nițu la 70 de ani*, in *ArhMold*, X, 1985, pp. 101-103.
4. **V. Chirica**, *Coll. Int. La genese et l'évolution des cultures paléolithiques sur le territoire de la Roumanie*, in *BAI*, II, 1987, pp. IX-XIII.
5. **V. Chirica**, *Colocviul internațional "Aurignacianul și Gravettianul (Perigordianul) în cadrul lor ecologic"*, in *ArhMold*, XI, 1987, pp. 285-286.
6. **V. Chirica**, *O addenda et corrigenda incompletă și incorectă*, in *AIIAI*, XXIV, 1987, 1, p. 489-491.
7. **V. Chirica**, C. Asăvoaie, *Bibliographie du Paléolithique et d'Épipaléolithique de la Roumanie (1978-1986)*, in *BAI*, II, 1987, pp. 165-172.
8. **V. Chirica**, *Simpozionul internațional "Cultura Cucuteni în context european"*, in *Acta MM*, V-VI, 1988, pp. 567-570.
9. **V. Chirica**, *O viață închinată arheologiei: Profesorul Mircea Petrescu-Dîmbovița la 80 de ani*, in *Europa XXI*, Iași, 1995, pp. V-XV.
10. **V. Chirica**, *Anton Nițu, 1911-1995*, in *ArhMold*, XVIII, 1995, pp. 365-367.
11. **V. Chirica**, *Silviu Sanie la 60 de ani!*, in *ArhMold*, XIX, 1996, pp. 5-8.
12. **V. Chirica**, *Dan Gh. Teodor la a 65-a aniversare*, in *Cercet. Ist.*, SN, XVII/1, *Istorie veche și arheologie*, 1998, pp. 9-18.
13. **V. Chirica**, *Avant-propos for the volume Em. Pavel, Jeux à masques en Moldavie*, Iași, 1998, pp. 3-4.
14. **V. Chirica**, *Valori ale culturii universale la Palatul Culturii din Iași*, Catalog, Iași, 1999 (in Romanian, English, French, German).
15. **V. Chirica**, *Cuvânt înainte*, in *Scânteia, cercetare arheologică și restaurare*, Catalog, Iași, 1999, pp. 11-12.
16. **V. Chirica**, *Varatecul în doliu*, in *Teologie și Viață*, S.N., XI (LXXVII), 8-12, 2001, pp. 225-228.
17. **V. Chirica**, *In memoriam – arheologul Nicolae Pușcașu*, in *Candela Moldovei*. Buletinul oficial al Mitropoliei Moldovei și Bucovinei, XI, 2002, 6-7, pp. 33.
18. **V. Chirica**, *Cotnari – repere istorico-arheologice*, in *Gazeta podgorenilor*, SN, VIII, 2004, 78, pp. 8.
19. **V. Chirica**, *Alexandru Păunescu (3 March 1931 – 1 May 2003)*, in *Dacia*, N.S., XLVIII, 2004, pp. 379-384.
20. **V. Chirica**, *Alexandru Păunescu (3 martie 1931-1 mai 2003)*, in *ArhMold*, XXVIII, 2005, pp. 427-433.
21. V. Spinei, **V. Chirica**, *Bibliotheca Archaeologica Iassiensis pe fâgașul unor noi perspective*, in V. Mihailescu-Bîrliaba, *Numismatica*, I, BAI, XV, Ed. Univ. "Al. I. Cuza", Iași, 2005, pp. 7-9.
22. **V. Chirica**, *Maica Nazaria – ctitor al evlaviei străbune*, in Stavr. Iosefina Giosanu, *Stavrofora Nazaria Niță. Un model de stareșă a vremurilor tulburi – în memoriam*, Filocalia, 2008, pp. 187-194.
23. **V. Chirica**, *Prof. univ. dr. habil. Ilie Borziciac la 60 de ani*, in *ArhMold*, XXXII, 2009 (2010), pp. 410-411.



24. **V. Chirica**, *Omagiu bunului prieten și coleg (hommage à un bon ami et collègue)*, in V. Chirica, G. Bodi (ed.), *Arta antropomorfă feminină în preistoria spațiului carpato-nistrean*, volum de studii, dedicat memoriei dr. doc. Ilie Borzic, Ed. PIM, Iași, 2010, pp. 7-26.
25. **V. Chirica**, *Gheorghe Dumitroaia la aniversare*, in *ArhMold*, XXXIII, 2010 (2011), pp. 419-424.
26. **V. Chirica**, *Institutul de Arheologie, Iași (1990-2010)*, in *Academica*. Revistă editată de Academia Română, XXI, 245, Nr. 3, martie 2011, pp. 69-71.
27. **V. Chirica**, *Profesorul Nicolae Ursulescu la vârsta împlinirilor*, in *ArhMold*, XXXVI, 2013, pp. 376-378.
28. **V. Chirica**, *Vasile Munteanu, așa cum l-am cunoscut*, in *Anuarul Muzeului Etnografic al Moldovei*, Ed. Palatul Culturii, Iași, 2014, pp. 425-431.
29. **V. Chirica**, *Mircea Petrescu-Dâmbovița, Profesorul și Omul*, in V. Spinei, N. Ursulescu, V. Cotiugă (eds.), *Orbis Praehistoriae Mircea Petrescu-Dâmbovița – in memoriam*, Honoraria, 11, Ed. Univ. "Al. I. Cuza" Iași, 2015, pp. 639-644.

### Reviews and bibliographic notes

1. D. de Sonnevile-Bordes, *La Préhistoire moderne. L'age de la pierre taillée*, Périgueux, 1972, in *Dacia*, N.S., XX, 1978, pp. 295-297.
2. M. Brudiu, *Paleoliticul superior și epipaleoliticul din Moldova*, București, 1974, in *AIIAI*, XIII, 1976.
3. Dr. J.-G. Rozoy, *Les derniers chasseurs*, Campiègne, 1978, vol. I-III, in *Dacia*, N.S., XXIV, 1980, p. 379-381; printed as in *AIIAI*, XVII, 1980, pp. 697-700.
4. M. Otte, *Le Paléolithique supérieur ancien en Belgique*, Bruxelles, 1979, in *Dacia*, N.S., XXV, 1981, pp. 391-393.
5. Dr. J.-G. Rozoy, *Typologie de l'Epipaléolithique (Mésolithique) franco-belge*, Campiègne, 1978, in *SCIVA*, 31, 1982, 2, pp. 325-326.
6. Jean Gaussen, *Le Paléolithique supérieur de plein air en Périgord*, Paris, 1980, in *Dacia*, N.S., XXVI, 1982, pp. 181-191.
7. M. Otte, *Le Gravettien en Europe Centrale*, vol. I-II, Bruges, 1981, in *ArhMold*, X, 1985 (fr.), pp. 105-110.
8. D. Monah, Șt. Cucos, *Așezările culturii Cucuteni din România*, Iași, 1985, in *ArhMold*, XI, 1987, pp. 267-268.
9. M. Cârciumaru, *Mărturii de artă preistorică în România*, București, 1987, in *Cahiers Ligures de Préhistoire et de Protohistoire*, N.S., 4-5, 1987-1988.
10. G. Kourtessi-Philippakis, *Le Paléolithique de la Grèce continentale*, Paris, 1986, in *ArhMold*, XIII, 1990 (fr.), p. 246-247; printed also in *BAI*, IV, 1991, pp. 465-468.
11. M. Dewez, *Le Paléolithique supérieur récent dans les grottes de Belgique*, Louvain, 1987, in *BAI*, IV, 1991, pp. 469-471.
12. J.-Ph. Rigaud, *La grotte Vaufray*, Chalons-sur-Marne, 1989, in *BAI*, IV, 1991, pp. 463-465.
13. N. Ursulescu, C.-M. Lazarovici (coord.), *Cucuteni – 120 – Valori universale*, Iași, 2006, in *ArhMold*, XXX, 2007 (2008), pp. 363-368.



14. C. Beldiman, *Industria materiilor dure animale în Preistoria României. Resurse naturale, comunități umane și tehnologie din Paleoliticul superior până în Neoliticul timpuriu*, în *Studii de Preistorie*. Asociația Română de Arheologie. *Supplementum* 2/2007, Ed. Pro Universitaria, 2007, 370 p., 42 fig., in *ArhMold*, XXXIII, 2010 (2011), pp. 331-333.
15. M. Gligor, *Așezarea neo- și eneolitică de la Alba Iulia – Lumea Nouă în lumina noilor cercetări*, Ed. Mega, Cluj-Napoca, 2009, 264 p, 217 pl., in *ArhMold*, XXXIII, 2010 (2011), pp. 342-344.



## **List of abbreviations**

<i>AAC</i>	- <i>Acta Archaeologica Carpathica</i> . Krakow.
<i>Acta MM</i>	- <i>Acta Moldaviae Meridionalis</i> . Vaslui.
<i>AIGR</i>	- <i>Anuarul Institutului Geologic al României</i> . București.
<i>AIAl</i>	- <i>Anuarul Institutului de istorie și Arheologie "A. D. Xenopol"</i> Iași.
<i>Am. Antiq.</i>	- <i>American Antiquity</i> .
<i>Am J. Play</i>	- <i>American Journal of Play</i> . New York.
<i>Am J. Phys. Anthropol</i>	- <i>American Journal of Physical Anthropology</i> . New York.
<i>Amm sc. Soc.</i>	- <i>Acta Musei Moraviae. Scientiae Sociales</i> . Brno.
<i>AMP</i>	- <i>Acta Musei Porolisensis</i> . Zalău.
<i>AMS</i>	- <i>Acta Moldaviae Septentrionalis</i> . Botoșani.
<i>AnB</i>	- <i>Analele Banatului</i> . Timișoara.
<i>Antiquity</i>	- <i>Antiquity</i> . Cambridge University Press.
<i>Anthropologie (Brno)</i>	- <i>Anthropologie</i> . Moravske Museum, Brno.
<i>AP3A</i>	- <i>Archeological Papers of the American Anthropological Association</i> .
<i>Archaeol. Anthropol. Sci.</i>	- <i>Archaeological and Anthropological Sciences</i> .
<i>AȘUI Nat.</i>	- <i>Analele Științifice ale Universității Alexandru Ioan Cuza Iași. Științele Naturii</i> . Iași.
<i>ArhMold</i>	- <i>Arheologia Moldovei</i> , Iași.
<i>AIGR</i>	- <i>Anuarul Institutului Geologic al României</i> , București.
<i>AJPA</i>	- <i>American Journal of Physical Anthropology</i> .
<i>AKB</i>	- <i>Archäologisches Korrespondenzblatt</i> . Mainz am Rhein.
<i>BAI</i>	- <i>Bibliotheca Archaeologica Iassiensis</i> . Iași.
<i>BAM</i>	- <i>Bibliotheca Archaeologica Moldaviae</i> . Iași.
<i>BAM-S</i>	- <i>Brukenthal Acta Musei</i> . Sibiu.
<i>Be-Ja</i>	- <i>Bulgarian e-Journal of Archaeology</i> .
<i>BMA</i>	- <i>Bibliotheca Memoriae Antiquitatis</i> . Piatra Neamț.
<i>Boreas</i>	- <i>Boreas. Collegium Boreas</i> .
<i>Bull. Mus. Natl. Hist. Nat. B.</i>	- <i>Bulletin du Muséum National d'Histoire Naturelle</i> . Paris.
<i>BSPF</i>	- <i>Bulletin de la Société préhistorique française. Études et travaux</i>
<i>Camb. Archaeol J.</i>	- <i>Cambridge Archaeological Journal</i> .
<i>CCA</i>	- <i>Cronica Cercetărilor arheologice din România</i> .
<i>CCDJ</i>	- <i>Cultură și Civilizație la Dunărea de Jos</i> . Călărași.



<i>Cerc. Arh.</i>	- <i>Cercetări Arheologice</i> . București.
<i>Cercet. Ist.</i>	- <i>Cercetări Istoric</i> . Iași.
<i>Com. Geol-Geogr.</i>	- <i>Comunicări de Geologie-Geografie</i>
<i>Curr. Anthropol.</i>	- <i>Current Anthropology</i> . Chicago.
<i>Deinsea</i>	- <i>Annual of the Natural History Museum Rotterdam</i> .
<i>E Afr Wildl J</i>	- <i>East African Wildlife Journal</i> . Oxford.
<i>E &amp; G</i>	- <i>Eiszeitalter und Gegenwart</i> . Quaternary Science Journal.
<i>EJA</i>	- <i>European Journal of Archaeology</i> .
<i>ERAUL</i>	- <i>Études et Recherches Archéologiques de l'Université de Liège</i> .
<i>Evol Anthropol.</i>	- <i>Evolutionary Anthropology</i> .
<i>Geol J</i>	- <i>Geological Journal</i> .
<i>GSA</i>	- <i>Geological Society of America Bulletin</i> .
<i>Izv. Imp. Akad. Nauk.</i>	- <i>Izvestia Imperatorskoi Akademii Nauk</i> . Moskva.
<i>JAMT</i>	- <i>Journal of Archaeological Method and Theory</i> .
<i>JAS</i>	- <i>Journal of Archaeological Science</i>
<i>J. Anthropol. Archaeol.</i>	- <i>Journal of Anthropological Archaeology</i> .
<i>J Mammal</i>	- <i>Journal of Mammalogy</i> . Oxford.
<i>JRGZ</i>	- <i>Jahrbuch des Römisch-Germanischen Zentralmuseums</i> . Mainz.
<i>JVP</i>	- <i>Journal of Vertebrate Paleontology</i> . Talyor and Francis.
<i>J Zool</i>	- <i>Journal of Zoology</i> . London.
<i>L'Anthropologie</i>	- <i>L'Anthropologie</i> . Paris.
<i>MCA</i>	- <i>Materiale și Cercetări Arheologice</i> . București.
<i>Mem. Antiq.</i>	- <i>Memoria Antiquitatis</i> . Piatra Neamț.
<i>Mem. Musee Prehist.</i>	- <i>Mémoires du Musée de Préhistoire d'Ile de France</i> . Paris.
<i>MGA</i>	- <i>Münchner Geowissenschaftliche Abhandlungen</i> . München.
<i>MM</i>	- <i>Mesolithic Miscellany</i>
<i>MPK</i>	- <i>Mitteilungen der Prähistorischen Kommission</i> . Wien.
<i>MMS</i>	- <i>Mitropolia Moldovei și Sucevei</i> . Iași.
<i>Nature</i>	- <i>Nature</i> . London.
<i>NAR</i>	- <i>Norwegian Archaeological Review</i> .
<i>Neb Anthro</i>	- <i>Nebraska Anthropologist</i> . University of Nebraska.
<i>Oxf. J. Archaeol</i>	- <i>Oxford Journal of Archaeology</i> . Oxford.
<i>Pal Z</i>	- <i>Paleontologische Zeitschrift</i> .
<i>Paleo</i>	- <i>Paleo. Revue d'archéologie préhistorique</i> .
<i>PAM</i>	- <i>Préhistoire Anthropologie Méditerranéennes</i> . Aix-en-Provence.



- Philos Trans Royal Soc. B.* - *Philosophical Transactions of the Royal Society of London. Series B, Biological Sciences.* London.
- PLOS One* - *Public Library of Science Journal.*
- PNAS* - *Proceedings of the National Academy of Sciences of the United States of America.*
- Préhistoire ariègeoise* - *Bulletin de la Société préhistorique de l'Ariège.* Ariège.
- Préhistoire européenne* - *Préhistoire européenne, Liège.*
- Proc. Br. Acad* - *Proceedings of the British Academy.* London.
- Proceedings ZIN* - *Proceedings of the Zoological Institute.* RAS, Moskva.
- RMM* - *Revista Muzeelor și Monumentelor.* București.
- RRP* - *Romanian Reports in Physics.* București.
- Quartär* - *Internationales Jahrbuch zur Erforschung des Eiszeitalters und der Steinzeit, Hugo Obermaier-Gesellschaft für Erforschung des Eiszeitalters und der Steinzeit e.V.*
- QuaternInt* - *Quaternary International, International Union for Quaternary Research.*
- Quaternaire* - *Quaternaire. Association française pour l'étude du Quaternaire.*
- Revista Arheologică* - *Institutul Patrimoniului Cultural, Chișinău.*
- SAA* - *Studia Antiqua et Archaeologica.* Iași.
- SCIV, SCIVA* - *Studii și Cercetări de Istorie Veche, Studii și Cercetări de Istorie Veche și Arheologie.* București.
- SP* - *Studii de Preistorie.* București.
- Stuttg. Beitr. Naturkd.* - *Stuttgarter Beiträge zur Naturkunde.* Stuttgart.
- Traité de zoologie* - *Traité de zoologie, anatomie, systématique, biologie.*
- World Archaeol* - *World Archaeology, Routledge.*







## VASILE CHIRICA ON HIS 75<sup>th</sup> BIRTHDAY

Vasile Chirica celebrates this year 75 years of life and 50 years of activity in the field of prehistoric research, an opportunity for us to celebrate and write a few lines about him and his contribution to investigating the misteries of the Paleolithic and not only !

Born on July 3<sup>rd</sup> in Vișani (Bârnova commune), Iași County, Vasile Chirica started his activity at the Institute of History and Archeology "A. D. Xenopol" in Iași (1968), and since 1990 he has been working at the Institute of Archeology, both institutions under the jurisdiction of the Iași Branch of the Romanian Academy. From the very beginning, he was attracted to the Paleolithic, a historical epoch that he researched with interest and passion, making important contributions to the knowledge about its evolution and characteristics. Moreover, his doctoral thesis, *Așezările paleolitice de la Mitoc* (The Paleolithic settlements of Mitoc) (1980) is related to the same period, and was coordinated by M. Petrescu-Dîmbovița.

The activity of our colleague includes several directions, as he asserted himself as a researcher, as a teacher and as leader of some cultural institutions.

A field archaeologist in the first place, Vasile Chirica participated in or led numerous archeological excavations in the country (Cucuteni-Cetățuia, Glina, Ripiceni-Izvor, Văleni, Mitoc, Ohaba Ponor, Baia de Fier, Nandru (*Peștera Curată, Peștera Murdară*), Gura Cheii-Râșnov, Mamaia Sat, Țibănești, Ceahlău (Dârțu, Podiș, Bistricioara-Lutărie), Cremenea-Sita Buzăului), but also took part in researches from other areas, such as Cosăuți (Republic of Moldova), Molodova (Ukraine), La Micoque (France). But, of all the mentioned archaeological sites, the most important is without question the one from Mitoc, on the banks of the Prut River. Here he organized systematic researches over quite a lot of decades (1978-2017) in several of the most eloquent points for the Paleolithic (in some cases also with later archaeological remains), namely *Malu Galben, Valea lui Stan, Pârâul lui Istrati* or *Valea Izvorului*. The results of the Mitoc researches have been the subject of many highly regarded articles, studies, or synthetical works, which he has signed on his own or with his collaborators.

His contribution to the Paleolithic was animated by the modernization of the researches on this era, the realization of a new scheme of the Paleolithic geocronology in Romania in a European context, as well as the access of the specialists to the archaeological and historical realities on the territory of Romania. The collaboration with well-known specialists such as Marcel Otte, Paul Haesaerts, Alain Tuffreau, Pierre Noiret, Philip Nigst and others allowed



Vasile Chirica to once again valorise the discoveries of Mitoc and to highlight the importance of the Paleolithic in this part of Europe, by expanding the interdisciplinary research and the datings. We should also note his contribution to the valorization of the results of researches on the Carpathian-Dniestr or the Dniester-Tisza Paleolithic space, which was not well known, writing several synthetic works with Ilie Borzic and other authors, much needed for the understanding of the Paleolithic in Central and Eastern Europe.

We also mention the work he has carried out together with other specialists in the realization of the archeological repertoires of the Botoșani and Iași counties, which have become models for similar works related to other counties of Romania. The accomplishment of these works consisted of long-lasting, detailed labor, which offers specialists, as well as the public, valuable information on the richness of archaeological remains from different periods, along with important historical data from medieval and post-medieval documents.

Always open to new challenges, Vasile Chirica participated with other colleagues in rescue excavations, contributing to the knowledge of objectives endangered due to anthropogenic interventions or the development of urban life. He is also interested in the development of a geographic information system, suggesting some solutions for modeling the archaeological atlas of the Carpatho-Dniestrian space in the volume realised with George Bodi. Lately, he aims to valorise the Paleolithic heritage resulting from his researches at Mitoc, where he has trained several colleagues, so far publishing several volumes.

Always involved in the scientific life of our institute, he has long served as a scientific secretary, contributing through his experience in solving important research issues. At present he is the Head of the Department of Prehistoric Archeology of the Institute of Archeology in Iași. At the same time he is an expert in archeological goods – prehistoric archeology (2004) and an expert archaeologist (2008).

From 1997 to 2000 he was director of the Moldova National Museum Complex in Iași, thus contributing to the development of museology and heritage in Iași.

The teaching activity also attracted him, thus he worked as a professor at the Faculty of History within the “Alexandru Ioan Cuza” University in Iași, as well as at the Faculty of History and Geography within the “Mihail Kogălniceanu” University in Iași. Together with Dumitru Boghian, he wrote two volumes on the prehistoric archeology of the world, which enjoyed the interest of the students as well as of the specialists.

At the same time, since 2002, he has been a PhD supervisor at the Institute of Archeology in Iași, in the field of *Prehistoric Archeology. Art and prehistoric religions*, guiding the PhD theses of several young colleagues. He also coordinated postdoctoral research projects (2012-2013, *Socio-humanist sciences in the context of globalist evolution – development and implementation of the postdoctoral study and research program*).

Vasile Chirica also has the merit of being among the initiators of the *Bibliotheca Archaeologica Iassiensis* series, whose publishing has long been his



responsibility and where he and other colleagues have published valuable works of archeology and history.

His publishing activity also reflects the interest in other research areas. Thus, this category includes the volume referring to the Iași vineyards, signed together with Silviu Văcaru, as well as the studies or volumes about the Cucuteni culture or other historical periods. We also remind that Vasile Chirica contributed to the reintegration into the contemporary culture of the first three volumes of *Istoria Românilor* (History of the Romanians) by Nicolae Iorga.

An important place in the work of Vasile Chirica occupies the interest for prehistoric art and religion, seeking to discover aspects of the spirituality of human communities by knowing the elements of the individual and collective sacred in prehistory. In relation to this interest is also the work referring to *Zona Neamțului – Athosul românesc* (The Neamț Zone – the Romanian Athos), published in collaboration with other authors.

He has published 26 volumes so far, and 162 studies and articles, which he has written alone or with other colleagues. As editor, he contributed to the appearance of 42 volumes. We must not forget the numerous reviews, bibliographic notes, homage works and obituaries (43). The titles can be found in the List of publications attached to this volume.

He participated with original works at numerous national or international symposia (Nice, Bordeaux, Cracow, Nitra, Mexico, Mayence, London, Mainz, Brno, Montignac, Tréignes, Bratislava, Miskolc, Ravello, Trento, Liège, Carcassone, Leiden, Forlì, Vila Nova de Foz Côa, Zaraisk, Mikulov, Iași, Eyzies-de-Tayac, Lisboa, Florianopolis-Brasil, Alba Iulia), where he presented his own research or highlighted important prehistoric discoveries from Romania.

He also collaborated in international projects (with specialists from France, Belgium, Ukraine, Republic of Moldova), such as the *INTAS- Réseau-2000-0879* of the EU (2000-2005), *Le Paléolithique supérieur ancien autour des Carpates* (2003-2005), as well as the one initiated by McGill University, Montréal (Canada), *The beginning of the European Paleolithic Superior. The Study of the human behavior in the preparation and of the artefacts in the sites from Mitoc: Malu Galben and Valea Izvorului* (2004-2005) or recently on the European project *La transition de l'Aurignacien au Gravettien à l'Est des Carpates* (2013-2016), under the auspices of the Universities of Liège, Belgium and Cambridge, United Kingdom.

To these we add the participation in some national projects, as a director or member: CNCSIS Project 648/2006 *Religie, artă și societate în Preistoria Europei, cu privire specială la spațiul carpatic*, (2006-2008) Director; CNCSIS Project 517/2007, *Cunoașterea prin cercetări interdisciplinare a vechilor așezări rurale din spațiul carpato-dunărean: Gara Banca, punctul Șapte Case: preistorie, sec. III-IV, olăritul în sec. III-IV.*, (2007-2009), member; Project POSDRU ID 61104 (2010-2013).

In recognition of his work and contribution to the research of the Paleolithic, he was elected as a member of the VIII<sup>th</sup> Committee, *Issues of Late Paleolithic* of the International Union of Pre- and Proto-Historical Sciences



(1979-2013) and member of the Standing Council of the same organisation (2004-2012), and since 2014 he is a member of the Honor Committee. To this we have to add other national distinctions: *The "Vasile Pârvan" Prize of the Romanian Academy* for the Archaeological Repertories of the Botoșani (1978) and Iași Counties (1986); Diploma of the "Alexandru Ioan Cuza" University of Iași (1984/1985); Diploma *Personality of the year 2000*, for achievements in the field of museology and archeology, Cambridge (2000); *Romanian Literary Fund Award* for the work *Podgorii ieșene*; Diploma and Jubilee Medal *120 years since the establishment of the Roman Catholic Bishopric in Iași*, 2004; Diploma of the Botoșani County Directorate for Culture, Religious Affairs and Patrimony (2006); Diploma of Excellence from the "Iulian Antonescu" Museum Complex in Bacău (2007); Anniversary Diploma – Ministry of Defense – 15<sup>th</sup> Mechanized Brigade "Podu Inalt", 130 years since its founding (2007); Diploma of Excellence from the "Mihail Kogălniceanu" University of Iași (2007).

At the same time, Vasile Chirica is a member of several editorial staffs of specialized magazines from the country (*Arheologia Moldovei* since 1987/No. XI, *Cercetări Istorice*, S. N., tome XVII/1 and XVII/2, *Annales d'Université "Valahia" – Târgoviște*, *Analele Universității Creștine "Dimitrie Cantemir"*, Series History – S. N.) and abroad (*Préhistoire Européenne*, Liège-Belgium; *Praehistoria*, Miskolc University-Hungary).

As can be seen from the brief review of his scientific activity, Vasile Chirica has multiple activities, being one of the most representative researchers of the Institute of Archeology in Iași, whose work is recognized and appreciated both nationally and internationally.

Thus, in reaching this beautiful age, we can only wish him health, a long life and ongoing success in the personal activity! We also hope that at least some of his vivacity and tenacity will be transferred to those who will continue his researches and concerns about the Paleolithic!

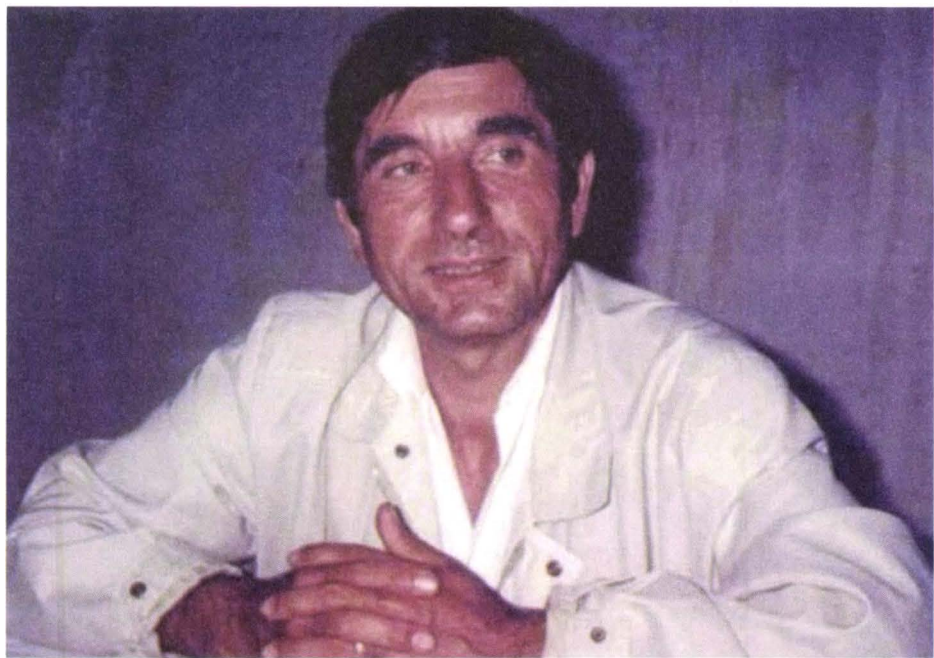
We have chosen some photos that illustrate a few moments from Vasile Chirica's work.

**Cornelia-Magda Lazarovici**





Vasile Chirica together with his colleagues from the Archeological Department of the Institute of History and Archeology "A. D. Xenopol", 1970.



Vasile Chirica, 2012.





Vasile Chirica in his office at the Institute of Archeology Iași, 2013.



Vasile Chirica together with Ligia Chirica and students of « M. Kogălniceanu » University at Cetatea Neamțului, 2007.





Vasile Chirica together with Ligia Chirica and Mihai Cucolea at Cămîrzani Monastery, 2007.



Vasile Chirica PhD supervisor, Iași, 2016, together with Lăcrămioara Istina (candidate) and members of the doctoral committee, Prof. Dr. Alexander Rubel, Dr. Magda Lazarovici.





Vasile Chirica at the Archaeological Symposium at Chișinău, 2018.



## Qu'est-ce que la préhistoire ?

MARCEL OTTE<sup>1</sup>

Fondée sur la matérialité, la préhistoire est d'abord un contact, visuel et tactile. Les objets et les traces donnent à voir, à penser et à sentir, tout autrement qu'un texte écrit ou qu'un récit oral. Nos sens reçoivent d'abord un stimulus qui les guide vers la réflexion, et la justification rationnelle ne vient qu'à la suite de cet éveil à la lucidité autant qu'au rêve. L'activité intellectuelle tendue vers la préhistoire touche au plus profond les aspirations et les désirs troubles qui agitent chacun d'entre nous sur son origine, sur sa propre nature, donc sur sa destinée. Sans rien savoir du pourquoi, nous cherchons, et cette activité nous tient tout entier en concentration, bien avant une éventuelle et authentique quête d'une réalité historique aléatoire, qui ne servira au mieux que de prétexte. La préhistoire se fonde sur l'émotion d'abord, sans laquelle elle n'existe pas. Comme une musique, comme un poème, elle est portée par un besoin essentiel d'harmonie, de mystère et d'une vague notion de « vérité », toujours rêvée mais jamais réelle. Il faut savoir l'avouer (Fig. 1).

L'évolution humaine se fonde sur un défi lancé à la biologie : ce primate a choisi la bipédie, par goût d'aventure et poussé par l'audace. Aucune autre justification ne peut expliquer, car « tout était prêt » avant de quitter la protection forestière. Toute tentative non prévue aurait été anéantie par les dangers présents dans les paysages ouverts. Parmi tous les primates, seuls les hominidés ont tenté et réussi cette opposition radicale avec leur destin naturel. La compensation existentielle à cette déficience anatomique a été produite par l'emploi d'outils « extra-somatiques », c'est-à-dire extérieurs au corps, et contre les lois de l'environnement géographique. Ces objets façonnés, incluaient les réflexions qui les ont fait naître et elles restent encore lisibles sur les stigmates de taille, comme des séquences linguistiques fossilisées. Ces objets prolongement des mains mais aussi ils donnent un sens aux membres qui en sont dépourvus : ils indiquent la valeur des gestes dans leurs réalisations et dans leur aptitude à transformer le monde alentour. Le véritable défi de l'esprit à la condition originelle enclenche toute l'aventure humaine, encore active sous nos yeux. Le premier primate qui l'a

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<sup>1</sup> Université de Liège, Belgique, mail : marcel.otte@uliege.be



tentée fut doté d'une audace irréversible : tous ses descendants n'ont plus eu ce choix, ils devaient poursuivre sur cette voie sans cesse (Fig. 2).

La « modernisation » du squelette humain s'est poursuivie constamment selon cette ligne directrice. La locomotion bipède entraîne, sans discontinuité, le redressement du squelette et la libération des bras donc des mains. Les forces de stabilisation de la charpente imposent un arrondissement perpétuel du crâne afin de l'équilibrer sur la colonne. Il n'est donc pas nécessaire de chercher un point d'origine des hommes modernes : ce processus eu lieu partout sur la terre et à tous moments de notre évolution. Il est encore en cours actuellement, parfois jusqu'à l'exagération de cet effet mécanique, lorsque la tête possède cette tendance à tomber vers l'arrière. La modernisation de notre anatomie et notre encéphale est une simple conséquence lointaine de la bipédie. Il s'agit d'un processus lié à la gravité universelle, sans aucun rapport ni avec la cognition, ni avec la capacité du cerveau, ni avec l'une ou l'autre « espèce » humaine supérieurement évoluée. Ce processus mécanique prend simplement de l'ampleur selon la densité des échanges démographiques qui l'accroissent à mesure du rythme imposé par le temps et par les uniformisations biologiques. Comme dans tout espace ouvert, ces tendances s'uniformisent davantage qu'en milieux restreints. Symétriquement, les populations d'anatomie archaïque procèdent d'isolats endogamiques dans lesquels les traits originels sont non seulement conservés mais surtout accentués telles des caricatures, autant dans les îles actuelles qu'en Europe pléistocène, relativement protégées des apports extérieurs (Fig. 3).

Dès lors, l'humanité a quitté la protection forestière grâce autant à ses règles sociales qu'à ses conquêtes balistiques, sur le temps et sur la distance par le jet à bras tournoyants ou par le relâchement d'arcs tendus. Les contraintes passent alors de la biologie à la culture car les lois nouvelles permettent la libération vis-à-vis de la nature mais elles imposent des coutumes, qui forment les nouvelles règles destinées à garantir la survie et le respect réciproque. À ce titre, elles tendent à se sacrifier car elles entrent parmi les moyens de subsistance, donc donnent les clefs de la vie elle-même. C'est en tous les cas sous cette forme que les règles sociales s'instituent et se perpétuent. Elles passent désormais comme les voies obligatoires d'une vie, en prolongement à celles refusées spontanément par les lois naturelles. Ces codifications passent alors par le langage, le récit mythique et les comportements codés propres à chacune de générations et à chacune des fonctions sociales. L'humanité constitue ses propres cadres de règles, qu'une nouvelle audace devra forcer, ouvrir au titre perpétuel de la liberté, devenue davantage conceptuelle que physique (Fig. 4 ; 5).

L'outil devient le symbole de cette opposition à la nature, et son perfectionnement se fera comme une sournoise entreprise de pénétration perpétuelle de l'esprit contre les forces naturelles afin d'imposer la volonté humaine, toujours plus subtile, plus puissante. Les mythologies ont incarné cette tendance fondamentale dans l'espace des dieux qui forment les peuples par l'usage d'armes redoutables, tel le glaive, l'épée ou le marteau. L'outil, devenu arme, se retourne alors contre la pensée qui la fait naître. Il devient la trace de la subordination des hommes entre eux, et le symbole des forces naturelles mises au profit de l'existence humaine. Toute nouvelle forme ainsi inventée devient donc



une création inouïe opposée aux productions biologiques naturelles. Il incarne cette pensée audacieuse, autant dans sa silhouette que dans son efficacité suggérée, tel un signe de sa puissance (Fig. 6).

Mais toute tendance technique, tournée vers la mise en évidence d'une perfection efficace, exprime surtout la force évolutive tendue vers l'équilibre, la symétrie et l'élégance. Aucune contrainte technique n'agit plus alors dans le sens imposé par des lois physiques, mais elle agit précisément en sens opposé, vers un jeu avec leurs contraintes. Comme si le geste tendait à dépasser les obligations imposées par la matière, afin de se laisser uniquement guider par le goût de la forme pure, inédite, créative. Toute entreprise vers une meilleure efficacité sur le réel va fatalement aboutir à des résultats exactement inversés : l'idée de cette réalisation mécanique sera alors reléguée au statut de symbole, aux sources des quêtes purement esthétiques. Un peu comme les épées d'apparat, jamais utilisées en combat mais toujours davantage expressive de l'idée du prestige conféré par la victoire, dès qu'elles ne sont plus qu'un signe. Les hallebardes des gardes suisses ne peuvent plus être utilisées depuis longtemps, elles sont réduites à des formes pures et relèvent de fonctions exclusivement ostentatoires. Dès le paléolithique ancien, cette tendance esthétique l'emporte sur celle mise au service de l'efficacité, et elle se trouve à la source de nos confusions typologiques actuelles, car leur emploi est alors extrêmement limité dans l'espace et dans le temps : elles sont entrées dans les champs des variations dues aux seuls choix traditionnels qu'elles incarnent (Fig. 7).

Parmi toutes ces créations techniques opposées à la nature, se place la maîtrise du feu, la plus emblématique, car elle offre des possibilités immenses à l'emprise de la conscience, réellement devenue « démiurgique ». La chaleur dans le froid, la lumière dans l'obscurité, les modifications de la matière sont désormais au service de la conscience et de la volonté humaine. Tout cet arsenal donne à l'esprit humain, bien davantage que ces réalisations extraordinaires : il offre surtout la conviction que toute force peut être comprise et mise au service de la conscience dans ses activités pratiques. L'homme se défie aux dieux, c'est là où la mythologie vient apporter témoignage de cette dimension proprement métaphysique : c'est là où Prométhée est condamné pour avoir volé aux dieux les clefs de ce pouvoir et de les donner aux hommes. Car, sur le long terme, la pensée métaphysique n'a rien de l'anecdote, elle donne une explication à des situations longues et vécues aux origines des temps, elle justifie les fonctionnements actuels et leur donne une explication cohérente, et ainsi affermit les coutumes, y compris celles opposées à l'ordre du monde (Fig. 8).

Mais le feu, est d'abord un « foyer », là où la famille et le groupe se rejoignent et se protègent. C'est autour du feu que les règles sont transmises et que les enseignements sont prodigués. C'est là aussi que se manifestent les esprits lors des danses rituelles. C'est là encore où les contes sont rappelés et où les informations sont partagées, les projets définis. Autour des foyers, la société conforte surtout sa cohésion et sa perpétuité. En ce sens, le feu est sacré, c'est lui qui établit le rapport fondamental entre les esprits solidaires et la nature hostile : les animaux ne s'en approchent pas et les lois climatiques s'y inversent (Fig. 9).



Mais l'usage du feu transforme aussi de façon définitive la matière, elle transcende ses caractéristiques naturelles, sur le mode alchimique. Les métaux changent de statut, passent d'un élément à un autre, offrent des combinaisons inédites, et modifient profondément les sociétés qui en maîtrisent les méthodes de traitement. D'abord ostentatoire, le métal brille puis se combine en matériaux nouveaux aux critères mécaniques inconnus dans leurs états naturels. Il confère donc un prestige à ceux qui s'en rendent maîtres, même si ce n'est pas d'abord dans le domaine spécifique de l'efficacité technique. Le symbole de cette conquête s'impose d'abord et bien avant tout rapport à la réalité pratique. Les objets décoratifs en bronze n'offrent aucun avantage sinon de prestige, l'or est malléable et le cuivre s'altère. Pourtant sur leurs prémices, toute la sidérurgie va faire basculer l'évolution humaine, de la production alimentaire vers la puissance économique exponentielle et sans autre but que s'accroître sans fin. Le contrôle des techniques va à l'encontre des intentions initiales, car elles évoluent en totale autonomie par leur seule dynamique, tel un astre se meut dans l'espace infini, poussé sur son impulsion initiale. Tout développement technologique va dans le même sens, lancé par une idéologie, il se retourne très vite vers ses concepteurs et vers leurs intérêts, il n'obéit plus qu'à ses seuls principes (Fig. 10).

Dressés contre les lois de la gravité, les monuments établissent un rapport entre cosmos et la terre humanisée, ils perpétuent une intention, ils donnent corps à un idéal en lui offrant une pérennité ostentatoire, imposée à tous comme une montagne ou un élément d'ordre naturel. Ils demeureront davantage que la vie organique, davantage même que les sociétés qui les ont voulus, ils en sont les garanties pour l'éternité, au moins dans leur vocation première. Partout, les sociétés humaines ont tenté de capturer le temps et le paysage en pétrifiant une pensée dans un signe gigantesque et ferme. Ces marques spectaculaires nous sont parvenues quelques fois dès le néolithique, mais il suffit de pénétrer dans une grotte décorées profondément pour se sentir imprégné par la pérennité de la roche où ces décors sont placés. Ils s'y imposent contre le temps, via des images matériellement durables, bien au-delà des concepteurs mythologiques, bien après la disparition des artistes, car les mythes sont conçus pour combattre l'éphémère, et le monument est là pour leur transmettre cette éternité, il en porte le témoignage évident (Fig. 11).

Dans un processus de glissement structurellement analogue, la force animale, massif, redoutable, dangereux, est transposée d'une observation coutumière vers une capture offerte par sa seule image. Le procédé est évident dans les civilisations récentes qui procèdent par l'illustration mythologique. Mais tous les cranes et les vestiges massifs d'animaux préservés forment images tout autant, dès les phases les plus anciennes de l'humanité. Seul leur symbole importe donc, sous la forme analogique d'un trophée, ou sous la forme réaliste des ossements eux-mêmes, voire sous la forme symbolique du mot, du rêve, du concept. Ce glissement va jusqu'à affecter les religions récentes, qui voient la réincarnation de divinités aux formes animales, en opposition systématique avec les dieux éthérés et abstraits imposés par les religions du Livre. La plupart du temps, l'abstraction n'a pas convenu aux esprits tenaillés par le besoin d'une réalité analogue à celle vécue : toute hérésie a trouvé son fondement dans cette attirance vers le réel vécu au quotidien (Fig. 12).



La même phobie du monde sauvage ne s'applique plus seulement à l'image ou à l'idée mais s'étend bientôt au comportement animal : sa force pousse inmanquablement la métaphysique à dompter aussi sa façon d'être, à lui imposer nos manières de faire et de vivre, à le domestiquer. Seul le statut élevé d'un animal sauvage justifie l'entreprise de sa maîtrise, elle agit comme vecteur du défi, opposé à l'homme contre toute nature, contre tout ce qui n'est pas lui. Ces forces sauvages entrent d'abord dans le mythe où elles restent intouchables, puis elles surgissent en termes de comportement dans les pratiques rituelles, enfin elles aboutissent à des coutumes d'élevage où elles perdent toute sacralité. Toutefois, nous ne domestiquons pas tous les espèces, et nous ne livrons qu'une frange de liberté mesurée aux « animaux de compagnie », qui précisément sont intégrés socialement car ils incarnent cette sauvagerie nostalgique. La domestication constitue un pas supplémentaire dans l'emprise de la pensée symbolique sur le monde. Elle incarne la puissance sur le comportement dangereux, elle le rend compréhensible, car intégré aux règles sociales. La sauvagerie est alors perdue au profit des activités profanes, sinon de manière très significative dans des « jeux », tels la corrida ou les rodéos, où une partie des risques est restituée à la vitalité naturelle et où ils témoignent encore de ces défis originels (Fig. 13).

Le plus beau combat se joue toutefois contre sa propre mort, et contre l'absurdité du temps vécu personnellement déroulé au dépend de nous-mêmes. La sépulture vient lutter contre cette angoisse offrant un substitut à la durée perdue dans la réalité, mais indiquée par les aménagements ultérieurs à l'existence commune. Les vestiges des défunts donnent un destin aux vivants : ils sont ainsi distingués des vestiges animaux, qui suivent un autre sort symbolique que le nôtre. Toute une gamme de signes les désignent dont les couleurs de la vie (ocres), les armes, les images animales, les fonctions des vivants, les offrandes, comme destinées à un prolongement de l'existence. Souvent, les crânes seuls portent des traitements particuliers car c'est là où la conscience se tient durant la vie. Ils sont isolés, séparés, aménagés, et modelés, tels des masques. L'image humaine est alors créée en substitution à la face vivante. Cette illusion analogique peut dès lors persister indéfiniment, en conservant les traits physiques du vivant et les aspects sereins qui lui donnent accès à la perpétuité. L'histoire des masques s'amorce là, à la rencontre entre l'individu et son rôle : le premier est fugace, le second persiste et se replace indéfiniment sur d'autres visages, y compris sur ceux d'autres défunts. Le masque théâtral ne possède pas d'autre fonction, pas d'autre origine, pas d'autre justification, y compris en Afrique, en Mélanésie, ou aux Amériques. Il s'agit toujours d'offrir un rôle fixé d'avance à une contingence qui, elle, varie indéfiniment, précisément dans les phases successives des états de la vie d'un individu. Le masque fige un instant et lui impose un rôle déterminé à l'avance et définitivement. Les premières sépultures ont provoqué cette avalanche sans fin qui nous trouble encore à chaque festival, à tous les carnivals et aux théâtres de nos rues, car un visage exhibé en société est encore un masque (Fig. 14).

La véritable conquête sur l'existence passe par l'alimentation qui transfère l'énergie d'une vie à l'autre, et partout cet échange est à la fois à fondement végétal et essentiellement une affaire féminine, comme la naissance



des êtres humains elle-même! Cette attraction vers les graines sauvages, charnues et énergétiques, se place autant chez les peuples prédateurs qu'agriculteurs. Les céréales sauvages sont récoltées autour de l'habitat par les femmes et par les enfants, sans prestige, mais sous une forme absolument cruciale : la vie elle-même du groupe y trouve ses ressources. La chasse est laissée aux défis destinés à structurer la société, elle n'a de valeur que symbolique, spectaculaire comme chez les classes sociales qui les pratiquent encore dans nos milieux culturels. Aux deux extrémités de la consommation, se placent les rituels soit de sélection et des récoltes destinées à la revitalisation, soit de restitutions d'une partie des énergies récoltées par une offrande aux forces naturelles qui les ont fait croître (Fig. 15). La relation à la vitalité est une affaire grave, qui n'a rien à voir avec les festivités excessives liées à l'abattage du gibier, tout est ici serein et attentif, respectueux autant des forces naturelles que de la distribution au sein du groupe social. Cette sacralité ne peut être exercée que par les femmes dans leurs fonctions génératrices, discrètes et coutumières, comme elles le sont dans la procréation. Cette gravité discrète s'oppose à l'ostentation de la chasse et de ses excès, d'autant plus expressifs qu'ils se savent inutiles, voire marginaux. Leur motivation symbolique exclusive organise le groupe et combat les êtres d'aspect dangereux, ils sont laissés aux jeunes hommes fin de tester leur bravoure.

Une fois enclenchée, la domestication des céréales provoque des bouleversements sans fin, la démographie doit augmenter pour rencontrer les tâches diverses nouvelles, la nature s'appauvrit en réduisant sa diversité, et les déplacements coloniaux s'imposent. La maladie s'implante dans tous les paysages sous contrôle. Les besoins en terre nouvelles sont sans limite, l'expansion s'étend en tuant surtout l'esprit sauvage des hommes restés prédateurs : ils en perdent les valeurs et l'audace, comme les Aborigènes actuels. Moins qu'une modification des ressources, le néolithique est surtout une perte de foi, une réduction des mythes et un passage progressif aux religions avec des dieux et panthéons : tout le cosmos sera à l'image de l'homme et sous son emprise, même les forces inconnues. L'idéologie néolithique se diffuse bien plus rapidement que l'économie qui la suit : elle fascine car elle impose sa loi aux forces naturelles, comme s'il s'agissait d'un progrès de la conscience sur le déroulement du monde. Aucune bataille aucune guerre ne peut lutter longtemps contre le flux des idées, et nous en sommes toujours là : les illusions idéologiques touchent loin au-delà des frontières, et elles tuent bien plus sûrement que les armes (Fig. 16).

Les concentrations démographiques s'ensuivent inévitablement. Elles exigent l'écriture qui inhibe l'imagination et le récit oral. Les règles sont inscrites, elles perpétuent des lois auxquelles on peut retourner, se référer. Ce n'est plus le ciel pris à témoins, c'est la loi qui s'impose via le texte écrit, codifié, figé. Il devient synonyme de l'ordre, de la raison, du bien et de la justice. Les rapports ne subissent plus d'initiative, de compassion, de liberté, sinon si elles sont référentielles à des codes, dépassés dans l'existence, mais consensuels (Fig. 17).

Toutefois, toute loi appelle à la révolte, exactement comme les contraintes naturelles ont conduit à l'audace de la bipédie, ou au façonnement des outils, à la maîtrise du feu. L'esprit humain ne se satisfait jamais par des



contraintes : c'est la loi implacable imposée par la préhistoire humaine, perpétuellement recommencée : l'aventure donne sa substance à l'existence, sa valeur doit être perpétuellement renouvelée, entretenue, défendue. Plus que jamais, les contacts tissés de façon aussi serrée à travers les sociétés actuelles limitent les initiatives et leurs espaces. La Préhistoire nous met devant nos responsabilités. Le dogmatisme des cardinaux s'est trouvé confronté à la force des mystiques, car l'humanité alterne toujours la règle et l'audace (Fig. 18).

Désormais, notre lucidité nous interdit l'accès à la satisfaction de laisser les mythologies ou les « lois naturelles » expliquer toutes situations neuves et traversées au fil du temps (Fig. 19). Et, par la conscience, nous avons échappé au déterminisme biologique. Mais l'exercice exacerbé de cette conscience nous impose aujourd'hui d'assumer la pleine responsabilité de nos choix. Toute la préhistoire humaine a démontré que seules nos décisions ont guidé notre évolution. Ce qui a fait l'homme ce ne sont ni les contraintes environnementales, ni ses propres composantes biologiques, mais toujours ses propres décisions, fondées sur ses rêves et systématiquement opposées précisément aux lois, naturelles ou humaines. Cette leçon donnée par la préhistoire nous impose de savoir où sont nos devoirs, et nous indique que seuls nos choix nous ont toujours « déterminés », et que nous sommes devenus totalement responsables de ce que nous allons devenir (Fig. 20).

Légendes des figures ont été réalisées avec l'aide de David Delnoy.





Fig. 1. Seul, le mystère fascine en préhistoire. Il appelle et se tend vers nous. Les réalités ne sont que des prétextes au rêve (Dame d'Elche, art ibérique protohistorique).



Fig. 2. La bipédie fut la première audace, elle a été compensée par l'usage d'objets, extérieurs à l'anatomie.



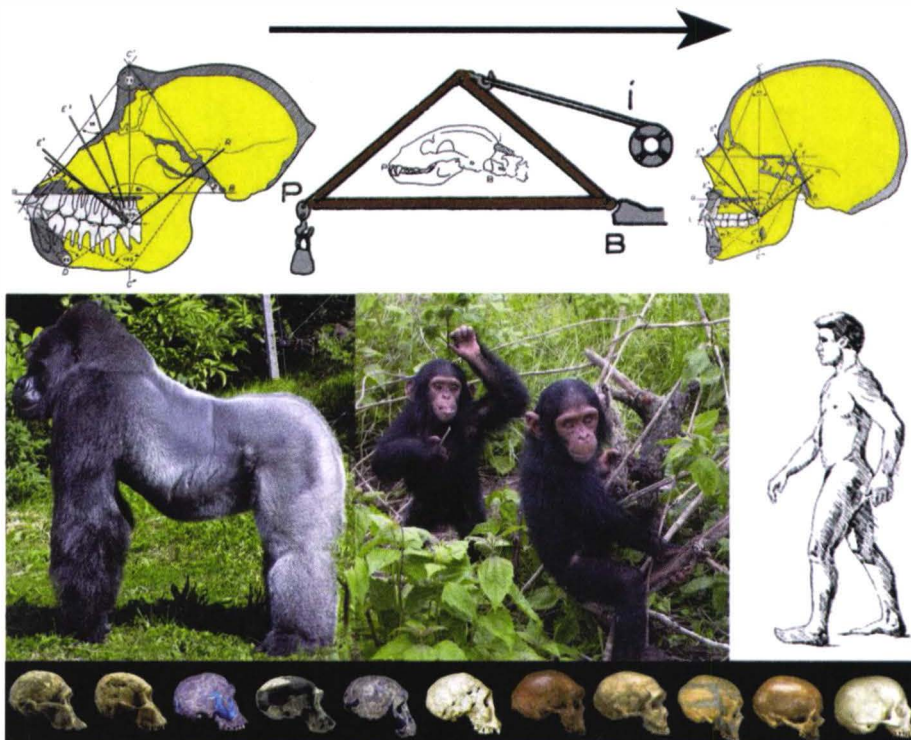


Fig. 3. L'arrondissement du crâne n'est que l'effet rétroactif de la bipédie. Aucune région, aucune période ne constitue le point d'origine de ce processus mécanique totalement universel.

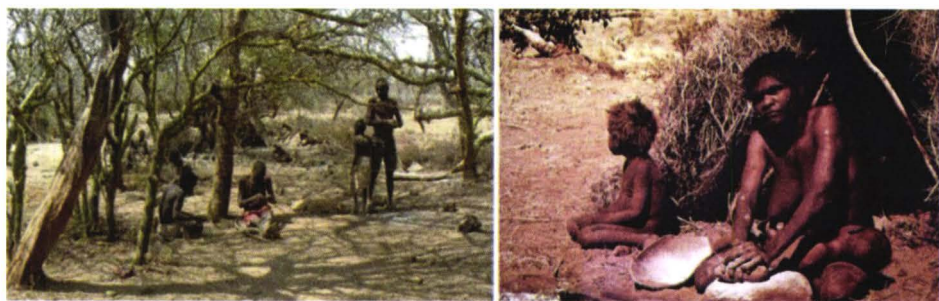


Fig. 4. Quitter la protection forestière implique des compensations culturelles en cascades, manifestées dans l'habitat, les partages et les règles d'organisation sociale. L'élaboration du bagage conceptuel s'était enclenchée, sans limite et sans frein.



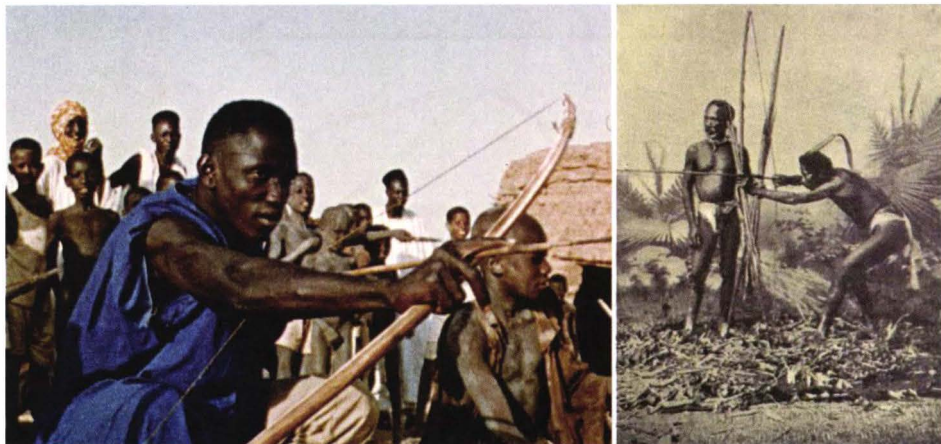


Fig. 5. Les procédés balistiques fondés sur les tensions relâchées permettent la conquête de la distance et de la vitesse. Ils ont fait de l'homme un concurrent des dieux (arc africain et armes des « negritos » aux Philippines).



Fig. 6. L'outil et son geste sont devenus les symboles de la puissance humaine, en prolongement des membres, dont l'action a connu une signification cruciale : ils changent le monde bien davantage que lorsqu'ils étaient réduits aux seules fonctions locomotrices.





Fig. 7. La tendance esthétique l'emporte toujours sur la seule efficacité (biface de Syrie, d'après Jean-Marie Le Tensorer ; nef de la cathédrale d'Amiens). Les fonctions mécaniques sont assurées symboliquement (couverture, outil), mais l'évidence est d'ordre harmonieux.

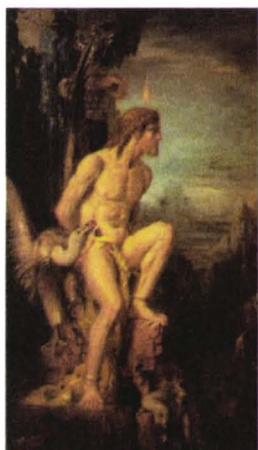


Fig. 8. Le feu incarne la puissance totale maîtrisée mise au service des hommes par l'exercice de sa conscience, et déployée contre la volonté des dieux.





Fig. 9. En outre, le feu devient « foyer » : il rassemble, il protège, c'est là où l'éducation peut être renouvelée, et les cérémonies accomplies collectivement et ostensiblement (Boschimans).

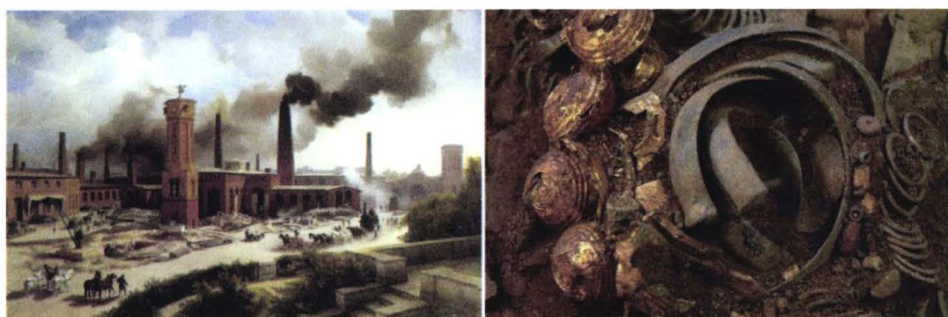


Fig. 10. Par le feu, les métaux changent de nature, ils lancent des conquêtes sans contrôle et loin des impulsions intentionnelles qui les avaient fait naître. Ils incarnent la puissance humaine devenue « démiurgique ».



Fig. 11. Les monuments dressent leur masse au nom d'une idéologie, qu'ils tentent de perpétuer définitivement. Ils s'installent entre deux puissances éternelles et hors d'atteinte où ils s'encastrent : l'horizon et le cosmos.





Fig. 12. L'image de l'animal incarne sa force et sa sauvagerie réelles ; elle offre à l'homme le moyen de leur imposer son emprise (Lascaux et Raphaël, Le Veau d'Or).



Fig. 13. Les comportements dangereux de l'animal sauvage forment le substrat mythique d'un acte aux origines de la domestication (Cadmus et Iroquois).





Fig. 14. Le combat contre le temps prend sa forme la plus vive lorsqu'il est mené par rapport à sa propre existence, dans le rituel funéraire et dans l'expression figée des masques (sépulture du Cavillon ; crânes sur modelés d'Aswad, Syrie).



Fig. 15. L'alimentation du groupe humain est assurée par la récolte des céréales (domestiques ou sauvages). Ces tâches vitales sont confiées aux seules femmes procréatrices ; la mise à mort sanglante de l'animal est réservée aux seuls hommes, mais elle n'est pas vitale pour ce groupe (récoltes de riz sauvage en Afrique ; restitution d'une partie de la récolte de maïs domestique dans le Sud-Ouest américain).





Fig. 16. Le Néolithique s'abat comme une maladie, il réduit la riche variété sauvage et s'impose comme une idéologie conquérante, c'est le début de la fin, pour nous inclus.



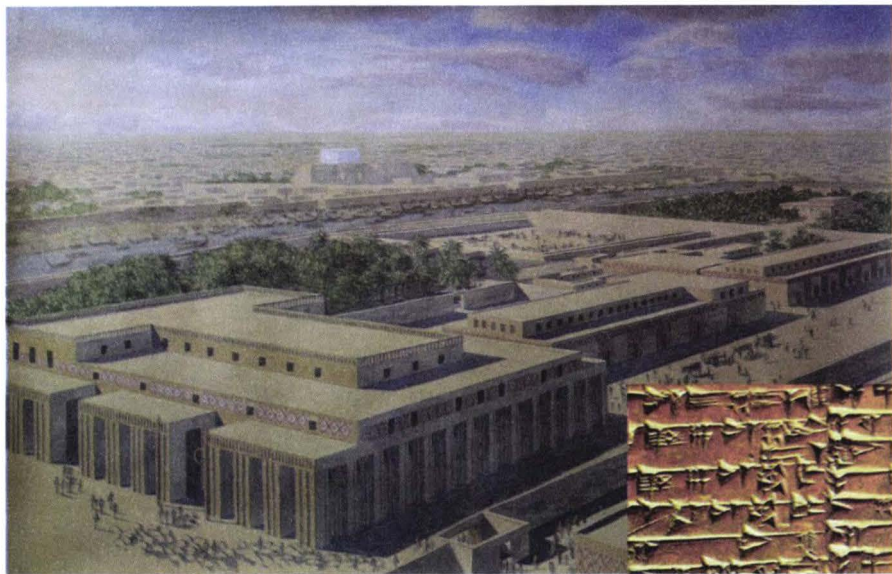


Fig. 17. La Cité engendre l'écriture, et bientôt la Loi fige la pensée. À terme, elle suscite la réaction au nom d'une sacralité perdue (Sumer, cité et écriture).



Fig. 18. Les règles religieuses tentent de coordonner les appels à la sacralité, mais les mystiques bouleversent régulièrement cet ordre au nom de la Vérité (Léon X, Raphaël; et Saint François).



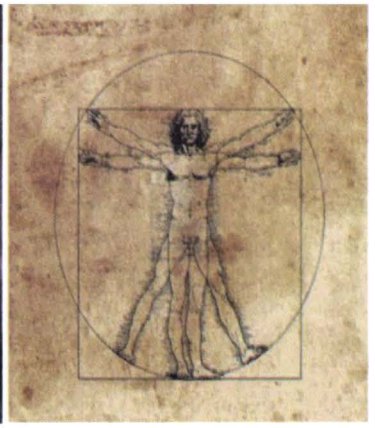


Fig. 19. La lucidité vient contrebalancer la pensée mythique. La préhistoire humaine enseigne la responsabilité de nos choix, nous avons toujours cherché à échapper au déterminisme naturel (les dieux de l'Olympe guident nos vies, et l'Homme de Vitruve, Léonard, impose la mesure humaine au cosmos).



Fig. 20. Le signe impose une intelligence directement perceptible en dépit de l'action du temps. Il s'oppose aux lois biologiques, il ne reproduit jamais mais il désigne toujours (dessin de tête de cheval, Tito Bustillo).







## 40 ans des recherches avec Vasile Chirica : Mitoc-Malu Galben

TIMOTHÉE LIBOIS<sup>1</sup>, PHILIP R. NIGST<sup>2</sup>, PAUL  
HAESAERTS<sup>3</sup>, MARJOLEIN D. BOSCH<sup>4</sup>, WILLIAM C.  
MURPHREE<sup>2</sup>, TANSY BRANSCOMBE<sup>2</sup>, PIERRE NOIRET<sup>1</sup>

**Résumé :** Reconnue comme gisement préhistorique depuis la fin du XIX<sup>ème</sup> siècle, la station paléolithique de Mitoc-Malu Galben a attendu jusqu'en 1978 pour que son potentiel archéologique commence à être pleinement exploité. Vasile Chirica y entame à cette date des fouilles de grande ampleur, révélant une stratigraphie læssique complexe au sein de laquelle se succèdent occupations aurignaciennes et gravettiennes. Dès lors, les travaux de Vasile Chirica sur ce gisement exceptionnel permettront d'ouvrir son étude à la communauté scientifique. En collaboration avec d'autres chercheurs, le site fera l'objet de fouilles par une équipe internationale à partir des années 1990. Au fil du temps, toutes ces recherches ont permis d'établir Mitoc-Malu Galben comme l'une des séquences de référence du Paléolithique supérieur et de la transition Aurignacien-Gravettien à l'est des Carpathes. Dernièrement, quatre campagnes de fouille ont été conduites de 2013 à 2016. À travers diverses approches interdisciplinaires menées sur le site et le matériel extrait, les données les plus récentes permettent encore à l'heure actuelle de fournir de nouveaux éléments pour mieux appréhender ces deux paléocultures. Ce texte se propose de revenir brièvement sur ces résultats.

**Mots-clefs :** Roumanie, Paléolithique supérieur, Aurignacien, Gravettien

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<sup>1</sup> Service de Préhistoire, Université de Liège, Liège, Belgique

<sup>2</sup> Department of Archaeology, University of Cambridge, Cambridge, UK

<sup>3</sup> Institut royal des Sciences naturelles de Belgique, Bruxelles, Belgique

<sup>4</sup> McDonald Institute for Archaeological Research, University of Cambridge, Cambridge, UK



**Abstract:** *Although recognized as a prehistoric site at the end of the 19<sup>th</sup> century, the Palaeolithic site of Mitoc-Malu Galben had to wait until 1978, when Vasile Chirica started large-scale excavations, for its archaeological potential to be fully exploited. These excavations revealed a long loess-paleosol sequence in which successive Aurignacian and Gravettian occupations occurred. Therefore, the work of Vasile Chirica at this exceptional site opened its potential to the scientific community. In collaboration with other researchers, the site was excavated by an international team in the 1990s. Over time, the research directed by Vasile Chirica has established Mitoc-Malu Galben as one of the reference sequence for the Upper Palaeolithic and the Aurignacian-Gravettian transition east of the Carpathians. Recently, four excavation campaigns were conducted from 2013 to 2016. The renewed research at the site is characterised by an interdisciplinary approach, both in the field as well as in the lab, and provides new elements to better understand site formation processes, stratigraphy, and human behaviour during the Early and Mid Upper Palaeolithic. This text summarises briefly these results.*

**Keywords:** *Romania, Upper Palaeolithic, Aurignacian, Gravettian*

## **1. Introduction**

Depuis maintenant 40 ans, le site de Mitoc–Malu Galben (MMG) a fait l'objet de fouilles archéologiques ! Dès 1978, et jusqu'à la fin du XX<sup>ème</sup> siècle, ce sont près de vingt campagnes de fouilles qui y furent menées année après année. Si MMG a pu s'inscrire comme référence dans la compréhension du Paléolithique supérieur en Europe orientale, c'est bien entendu grâce à la ténacité et à l'enthousiasme de Vasile Chirica. Inlassablement, il a fouillé cette large butte, qui attendait depuis des milliers d'années la délivrance de ses trésors... C'est avant tout le fruit de son travail que d'avoir mis au jour cette longue stratigraphie lœssique riche de ces restes d'occupations aurignaciennes et gravettiennes.

D'autre part, si le site présente actuellement une telle importance dans le paysage paléolithique moldave, c'est aussi grâce aux liens que Vasile Chirica a su établir avec d'autres chercheurs, d'Europe et du reste du monde. Très tôt, il collabora activement avec plusieurs scientifiques, dont une équipe belge en compagnie de laquelle seront menées plusieurs campagnes de fouilles dans les années 1990. Ces nouveaux liens seront porteurs de résultats convaincants, permettant notamment de progresser dans la compréhension stratigraphique et archéologique du site.

Dans les années 2010, Vasile Chirica pousse à la reprise de ce partenariat, qui mènera à la réalisation de plusieurs campagnes de fouilles entre 2013 et 2016. Si les résultats les plus récents des études menées sur le site ont pu être obtenus, c'est en premier lieu grâce à l'héritage transmis par Vasile Chirica au travers de MMG. Il n'y a donc nul meilleur hommage pour un tel chercheur que de montrer comment certaines recherches perdurent à la suite de ses propres travaux...



## 2. Historique des recherches

Située dans le nord-est de la Roumanie (département de Botoșani), la station de MMG s'inscrit au sein d'une butte sur la rive droite du Prut. Directement adjacent au ruisseau Ghireni, le site se trouve à environ 450 m de leur confluence. De ce fait, les sédiments constituant sa séquence s'inscrivent dans une double pente, orientée vers les deux cours d'eau.

Dès la fin du XIX<sup>ème</sup> siècle, le village de Mitoc est connu pour receler des restes d'artefacts lithiques préhistoriques, faisant de celui-ci le premier site paléolithique reconnu en Roumanie<sup>1</sup>. Dans la première moitié du XX<sup>ème</sup> siècle, N. Moroșan met au jour et étudie plusieurs stations paléolithiques de référence au sein de ce territoire ; à Mitoc plus particulièrement, il identifie quatre stations, dont celle de Malu Galben, et attribue alors celles-ci à une « industrie Paléolithique supérieur assez développée »<sup>2</sup>. Dans la seconde moitié du XX<sup>ème</sup> siècle, les recherches centrées sur le Paléolithique en Roumanie passent sous la direction de l'Académie roumaine. Dans cette nouvelle phase, les premiers travaux menés à Mitoc–Malu Galben correspondent aux sondages effectués par C. Nicolăescu-Plopșor et N. Zaharia en 1956-1957. Les deux chercheurs identifient à des profondeurs différentes, *a priori* erronément, des industries relevant du Paléolithique ancien, du Moustérien et de l'Aurignacien<sup>3</sup>.

Par la suite, il faudra attendre 1978 pour que V. Chirica y entreprenne des fouilles extensives<sup>4</sup>. Jusqu'en 1990, il fouille sans interruption et dévoile une séquence lœssique de près de 14 m de haut, au sein de laquelle il identifie en succession des vestiges d'occupations gravettiennes puis aurignaciennes. L'aspect actuel du site est le résultat direct des fouilles de V. Chirica. Les campagnes de fouilles successives ont en effet mené à la formation de l'impressionnante excavation à l'emplacement du site, d'une vingtaine de mètres de côté pour près de 10 mètres de profondeur (Fig. 1).

Déjà dans les années 1980, V. Chirica collabore avec K. Honea (University of Illinois, USA) pour réaliser les premières dates radiocarbone de MMG<sup>5</sup> au sein d'un programme de datation de sites paléolithiques roumains<sup>6</sup>. À

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<sup>1</sup> V. Chirica, *Gisements paléolithiques de Mitoc. Le paléolithique supérieur de Roumanie à la lumière des découvertes de Mitoc*, BAI, XI, Helios, Iași, 2001.

<sup>2</sup> N. N. Moroșan, *Le Pléistocène et le Paléolithique de la Roumanie du Nord-Est (les dépôts géologiques, leur faune, flore et produits d'industrie)*, in *AIGR*, XIX, București, 1938.

<sup>3</sup> V. Chirica, *Historique des recherches paléolithiques en Roumanie et à Mitoc-Malu Galben*, in M. Otte, V. Chirica & P. Haesaerts (dir.), *L'Aurignacien et le Gravettien de Mitoc-Malu Galben (Moldavie Roumaine)*, ERAUL, 72, Liège, 2007, pp. 7-9.

<sup>4</sup> *Ibidem*.

<sup>5</sup> K. Honea, *Tranziții culturale în Paleoliticul superior timpuriu și cronostratigrafia de la Mitoc–Malu Galben (jud. Botoșani)*, in *ArhMold*, XVII, 1994, pp. 117-146.

<sup>6</sup> Idem, *The chronology of Romania's Palaeolithic*, in V. Chirica (éd.), *La genèse et l'évolution des cultures paléolithiques sur le territoire de la Roumanie*, Actes de la



partir de 1991, les travaux de terrain sont menés en collaboration avec des chercheurs belges : P. Haesaerts et F. Damblon (Institut royal des Sciences naturelles de Belgique), ainsi que M. Otte et P. Noiret (Université de Liège, Belgique). Les fouilles de 1992 à 1995 seront donc dirigées en partenariat avec l'équipe belge, afin de contrôler la stratigraphie, échantillonner les différents niveaux archéologiques et effectuer de nouvelles datations. Grâce à ces travaux, les différents horizons appréhendés par V. Chirica furent clairement identifiés et délimités (quatre niveaux gravettiens et cinq niveaux aurignaciens), et replacés au sein de la stratigraphie sédimentaire réétudiée par P. Haesaerts. Les résultats de cette collaboration et des fouilles antérieures prirent finalement la forme d'un volume monographique<sup>7</sup>.

Si l'intensité des recherches s'est par la suite estompée, un regain d'activité survint en 2012 avec l'établissement d'un nouvel accord de collaboration entre l'Académie roumaine, Filiale de Iași, et l'Université de Liège. Celui-ci a alors mené à la réalisation de quatre campagnes de fouilles de 2013 à 2016<sup>8</sup>, impliquant P. Noiret (Université de Liège, Belgique), Ph. R. Nigst (University of Cambridge, UK) et P. Haesaerts (Institut royal des Sciences naturelles de Belgique). Ces recherches vont alors permettre de moderniser les techniques de fouille appliquées et de réaliser des recherches interdisciplinaires.

### 3. Nouvelles fouilles (2013-2016)

La décision d'entreprendre de nouvelles campagnes de terrain à MMG fait suite à la constatation en 2011 de la dégradation d'une portion de la paroi nord, impliquant l'effondrement de matériel *in situ*<sup>9</sup>. Confirmée en 2012, ce

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*Session scientifique de Iași-Botoșani (22-25 octobre 1985)*, BAI, II, Iași, 1987, pp. 49-61.

<sup>7</sup> M. Otte, V. Chirica & P. Haesaerts (dir.), 2007, *L'Aurignacien et le Gravettien de Mitoc-Malu Galben (Moldavie Roumaine)*, ERAUL, 72, Liège, 2007.

<sup>8</sup> V. Chirica, P. Noiret, Ph. R. Nigst & P. Haesaerts, 2014, *Mitoc, com. Mitoc, jud. Botoșani. Punct : Malu Galben*, in *CCA. Campania 2013*, a XLVIII-a sesiune națională de rapoarte arheologice, Oradea, 5-7 iunie 2014, Muzeul Țării Crișurilor Oradea, 2014, p. 88-90; V. Chirica, P. Noiret, Ph. R. Nigst, G. Bodi & M. Vornicu, *Mitoc, com. Mitoc, jud. Botoșani. Punct : Malu Galben*, in *CCA. Campania 2014*, a XLIX-a sesiune națională de rapoarte arheologice, Pitești, 28-30 mai 2015, Muzeul Județean Argeș, 2015, pp. 153-156; V. Chirica, P. Noiret, Ph. R. Nigst, P. Haesaerts, G. Bodi, M. Vornicu & M. Bosch, *Mitoc, jud. Botoșani. Punct : Malu Galben*, in *CCA. Campania 2015*, a L-a Sesiune Națională de Rapoarte Arheologice, Târgu-Jiu, 26-28 mai 2016, Muzeul & Biblioteca Județeană Gorj, 2016, pp. 62-63; V. Chirica, P. Noiret, Ph. R. Nigst, P. Haesaerts, G. Bodi & M. Vornicu, *Mitoc, jud. Botoșani. Punct : Malu Galben*, in *CCA. Campania 2016*, a LI-a sesiune națională de rapoarte arheologice, București, 24-27 mai 2017, Muzeul Național de Istorie a României, 2017, pp. 96-97.

<sup>9</sup> P. Noiret, P. Haesaerts, M. Vornicu, G. Bodi, T. Branscombe, T. Libois, M. Bosch & P. R. Nigst, *Nouvelles recherches de terrain à Mitoc-Malu Galben 2013-2015*, in V. Chirica V. & C. Ichim (éds.), *Les Aurignaciens : leur création matérielle et spirituelle. Actes du Colloque international de Iași (28-31 janvier 2016)*, BAI, XXVII, Ed. Cetatea de Scaun, Târgoviște, 2016, pp. 13-49.



constat mena à l'établissement d'un partenariat entre l'Académie roumaine et l'Université de Liège afin de poursuivre plusieurs objectifs (outre la sauvegarde du matériel menacé) : réalisation de nouvelles fouilles à MMG, recours à des méthodes d'enregistrement dans les trois dimensions à la station totale, nouvelle étude de la stratigraphie, exploitation du matériel issu de ces fouilles par des recherches interdisciplinaires, incluant l'analyse technologique du matériel lithique et l'analyse micro-morphologique d'échantillons de sédiments<sup>10</sup>.

Prévues à l'origine pour être menées en 2013 et 2014, les fouilles furent reconduites en 2015 et 2016. Trois secteurs en particulier furent investigués, le long des parois nord et sud ainsi que dans le coin sud-ouest du site (Fig. 2).

La campagne de 2013 fut menée selon deux axes de recherches. D'une part, plusieurs sondages stratigraphiques (*Trench* 13-1 à 13-13) furent effectués (Fig. 3), permettant également de placer correctement le système d'enregistrement et les nouvelles découvertes dans le quadrillage et le système altimétrique des fouilles précédentes. D'autre part, les travaux furent menés contre la paroi nord (*Trench* 13-A), afin de fouiller le paquet instable de sédiments (Fig. 4). Menée principalement dans les carrés N1, N2 et N3, cette fouille a permis de retrouver du matériel issu des ensembles « Gravettien II » (Unité sédimentaire [US] 6b) et, dans une moindre mesure, « Gravettien I » (US 7b).

La campagne de 2014 s'est quant à elle focalisée sur la fouille de vestiges de l'ensemble « Aurignacien I » (US 11a) dans la zone sud-ouest du site (*Trench* 14-A) (Fig. 5). Ce sont ainsi les carrés K-I/10 et I-H-A/11 qui ont été fouillés. En outre, une portion de la paroi nord a été fouillée en N4 (*Trench* 14-B), dans la continuité des fouilles de 2013, afin de terminer la portion de banquette instable.

Les fouilles de 2013 et 2014 n'ayant pas permis de documenter les derniers ensembles aurignaciens du site (« Aurignacien III » et « Aurignacien III supérieur »), la campagne de 2015 a visé à retrouver ceux-ci le long de la paroi sud (*Trench* 15-A) (Fig. 6). Elle a permis d'extraire du matériel issu du niveau « Aurignacien III supérieur » dans les unités 8b et 9a. La fouille a été principalement menée dans les carrés I1 à I4. En parallèle, la fouille du coin sud-ouest contenant du matériel de l'ensemble « Aurignacien I » a été poursuivie dans les carrés K/10-11 (*Trench* 15-B).

La campagne 2016 a cette fois visé à excaver la zone sous-jacente à celle fouillée en 2013 (et 2014) contre la paroi nord (*Trench* 16-A), dans les carrés L3, M3 et M4 (Fig. 7). Les unités sédimentaires 9b et 10b ont été atteintes, permettant de trouver du matériel attribué respectivement aux ensembles « Aurignacien III » et « Aurignacien I ». La fouille du coin sud-ouest a aussi été finalisée dans les carrés K-I/11 (*Trench* 16-B), tandis que deux larges sondages stratigraphiques ont été creusés à proximité de la paroi sud, dans les carrés A-H/6 (*Trench* 16-1) et A-B/1-2 (*Trench* 16-2), afin d'examiner le bas de la séquence sédimentaire.

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<sup>10</sup> *Ibidem*.



## 4. Résultats

### 4.1. Méthodologie

#### 4.1.1. Méthode de fouille

La méthode de fouille appliquée à MMG est calquée sur celle de précédents travaux menés à Willendorf II<sup>11</sup> et Grub-Kranawetberg<sup>12</sup>, consistant en l'enregistrement de chaque pièce dans les trois dimensions et dans son contexte stratigraphique détaillé. Cette méthodologie implique de fouiller des unités stratigraphiques incluant des unités et sous-unités géologiques, ainsi que des horizons archéologiques (*Archaeological horizons*, AH), ceux-ci étant étiquetés séparément. Pendant la fouille, tous les objets de plus de 5 mm sont laissés en place et enregistrés individuellement avec une station totale (Leica TCR805power). On mesure un point au centre de chaque objet après l'avoir enlevé. Deux points sont enregistrés sur les objets allongés, un à chaque extrémité de l'axe long, permettant alors d'analyser les processus de formation du site<sup>13</sup>. Les sédiments sont recueillis à l'intérieur de chaque unité stratigraphique par quart de mètre carré sur des surfaces arbitraires, et sur une épaisseur de moins de 1 cm ; l'épaisseur maximale est cependant définie à 2,5 cm. Les sédiments recueillis sont ensuite tamisés à l'eau (maille de ~ 1,2 mm) pour récupérer la fraction fine. Dans les situations stratigraphiques difficiles, nous utilisons des fouilles verticales pour contrôler au maximum la position microstratigraphique de chaque découverte. L'analyse de la stratigraphie, de l'enregistrement lithologique et de la description pédo-sédimentaire des dépôts fouillés sont effectués sur le terrain par concertation entre géologue et archéologues<sup>14</sup>.

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<sup>11</sup> P. R. Nigst, P. Haesaerts, F. Damblon, C. Frank-Fellner, C. Mallol, B. Viola *et al.*, *Early modern human settlement of Europe north of the Alps occurred 43,500 years ago in a cold steppe-type environment*, *PNAS*, 111(40), 2014, pp. 14394-14399.

<sup>12</sup> P. R. Nigst, T. B. Viola, M. Doneus & W. Antl-Weiser, *Digitale Dokumentation paläolithischer Grabungen*, *Archäologie Österreichs*, 15(1), 2004, pp. 36-48; P. R. Nigst, B. T. Viola & W. Antl-Weiser, *Digital Documentation of Palaeolithic Excavations: A Case Study*, in C. Neugebauer-Maresch & L. R. Owen (éds.), *New Aspects of the Central and Eastern European Upper Palaeolithic - methods, chronology, technology and subsistence*, Verlag der Österreichischen Akademie der Wissenschaften, Vol. 72, Wien, 2010, pp. 311-317.

<sup>13</sup> D. M. Mark, *Analysis of Axial Orientation Data, Including Till Fabrics*, *GSA*, 84(4), 1973, pp. 1369-1374; Idem, *On the Interpretation of Till Fabrics*, *Geology*, 2(2), 1974, p. 101-104; P. Bertran & J.-P. Texier, *Fabric Analysis: Application to Paleolithic Sites*, in *JAS*, 22(4), 1995, pp. 521 – 535; A. Lenoble & P. Bertran, *Fabric of Palaeolithic levels: methods and implications for site formation processes*, in *JAS*, 31(4), 2004, p. 457 – 469; S. P. McPherron, *Artifact orientations and site formation processes from total station proveniences*, in *JAS*, 32(7), 2005, pp. 1003 – 1014; Idem, *Additional statistical and graphical methods for analyzing site formation processes using artifact orientations*, *PLoS One*, 13(1), 2018, e0190195.

<sup>14</sup> P. R. Nigst, P. Haesaerts, F. Damblon, C. Frank-Fellner, C. Mallol, B. Viola *et al.* *Early modern human settlement of Europe north of the Alps...*



Une grande partie du processus de documentation est numérique et suit Nigst *et al.*<sup>15</sup>. Tous les points mesurés (emplacements, points de contrôle au sol pour rectifier les photographies numériques, points de surface et de contour, emplacements d'échantillons, etc.) sont codés et stockés dans un ordinateur de poche (Trimble Recon) avec le logiciel EDM Mobile<sup>16</sup>. Toutes les informations supplémentaires (type de point, type d'objet, unité stratigraphique, horizon archéologique etc.) sont également enregistrées dans cet appareil. Ces données sont synchronisées avec une base de données Microsoft Access à l'aide du logiciel SIG NewPlot<sup>17</sup>.

#### 4.1.2 Traitement du matériel

Chaque fois que cela a été possible, les ossements ont été attribués à l'espèce, en identifiant l'élément du squelette et la portion de l'ossement. Pour les NISP (nombre de spécimens identifiés), tous les spécimens qui ont pu être identifiés à la fois pour l'espèce et l'élément ont été pris en compte. Les calculs de NMI (nombre minimum d'individus) prennent en considération le côté, l'âge et la taille de l'os<sup>18</sup>. Les analyses incluent les marques anthropiques (dont les traces de découpe et d'impact de percussion) et les modifications animales (dont mâchonnement, etc.), ainsi que d'autres attributs tels que les altérations, les traces de brûlures, de décalcification et de racines. L'étude des artefacts lithiques implique analyse par attributs et remontages. L'analyse des attributs suit le système décrit par Nigst<sup>19</sup>, également utilisé par Branscombe<sup>20</sup> et Libois<sup>21</sup>. Les

<sup>15</sup> P. R. Nigst, T. B. Viola, P. Haesaerts, S. Blockley, F. Damblon, C. Frank *et al.*, *New research on the Aurignacian of Central Europe: A first note on the 2006 fieldwork at Willendorf II*, in *Quartär*, 55, 2009, pp. 9-15; P. R. Nigst, P. Haesaerts, F. Damblon, C. Frank-Fellner, C. Mallol, B. Viola *et al.*, *Early modern human settlement of Europe north of the Alps...*

<sup>16</sup> <http://www.oldstoneage.com/software/default.shtml>; S. P. McPherron & H. L. Dibble, *Using Computers in Archaeology: A Practical Guide*, McGraw-Hill, Boston, 2002.

<sup>17</sup> <http://www.oldstoneage.com/software/default.shtml>; S. P. McPherron & H. L. Dibble, *op. cit.*

<sup>18</sup> Voir, entre autres, R. L. Lyman, *Quantitative paleozoology*, Cambridge University Press, Cambridge, 2008.

<sup>19</sup> P. R. Nigst, 2012, *The Early Upper Palaeolithic of the Middle Danube Region*, Leiden University Press, Leiden, 2012; Idem, *First Modern Human Occupation of Europe: The Middle Danube Region as a Case Study*, in K. Boyle, R. J. Rabett & C. O. Hunt (éds.), *Living in the Landscape: Essays in Honour of Graeme Barker*, McDonald Institute for Archaeological Research, Cambridge, 2014, pp. 35-47 ; P. R. Nigst, P. Haesaerts, F. Damblon, C. Frank-Fellner, C. Mallol, B. Viola *et al.*, *Early modern human settlement of Europe north of the Alps...*

<sup>20</sup> T. Branscombe, *Attribute analysis of an Upper Palaeolithic lithic assemblage from Mitoc-Malu Galben : Is this assemblage "Aurignacian", and if so what does this mean ?*, Undergraduate Dissertation (non publié), University of Cambridge, 2016.

<sup>21</sup> T. Libois, *Mitoc – Malu Galben (Roumanie) : Analyse par attributs des ensembles lithiques Aurignaciens et Gravettiens issus des fouilles 2013-2016 et intégration des données dans une approche comparative multiscalaire*, Mémoire de Master (non publié), Université de Liège, 2017.



remontages ont été effectués selon des approches standards<sup>22</sup>. L'analyse de la fraction fine (tamisages) est basée sur Betran *et al.*<sup>23</sup> et décrite en détail dans Murphree<sup>24</sup>.

#### 4.2. Stratigraphie sédimentaire

Telle que comprise actuellement, la stratigraphie sédimentaire de MMG découle principalement des travaux de P. Haesaerts, entamés dès 1991<sup>25</sup> et dont les résultats furent notamment exposés dans le cadre de la monographie du site<sup>26</sup>. Cependant, celui-ci n'a jamais cessé d'étudier la séquence épisodiquement, et encore plus particulièrement lors des dernières campagnes de fouille, permettant d'apporter des révisions mineures.

P. Haesaerts a identifié à MMG 13 unités sédimentaires (Fig. 8), représentant chacune une phase de sédimentation distincte<sup>27</sup>. La première moitié de la séquence (US 13 à 7) est constituée de dépôts limoneux, les premières unités (US 13 à 11) comportant également des dépôts d'origine colluviale. L'unité 7 montre le début d'apports éoliens, initiant la phase de dépôts de lœss enregistrée dans la seconde moitié de la séquence (US 6 à 1). Chaque unité est généralement associée à une phase de stabilisation marquée par une pédogenèse<sup>28</sup>. Selon les épisodes climatiques, celles-ci se marquent par des gleys de toundras (périodes froides) et des sols humifères (périodes tempérées). Au sein de ces dépôts se succèdent plusieurs horizons archéologiques relativement distincts, incluant 5 ensembles aurignaciens (US 12b à 8b) et 4 ensembles gravettiens (US 7b à 4a).

Les nouveaux travaux sur la stratigraphie à MMG ont permis d'apporter une meilleure résolution de certaines phases de la séquence. C'est ainsi le cas de l'unité 5, jusqu'alors séparée en deux sous-unités. De nouvelles observations sur la paroi nord ont permis d'y distinguer un horizon humifère (5b), difficile à distinguer jusqu'alors car affecté par le gley de toundra sus-jacent (5a). De même, l'unité 11 était jusqu'à présent la moins détaillée de la séquence. Des

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<sup>22</sup> D. Cahen & L. H. Keeley, 1980, *Not less than two, not more than three*, in *World Archaeo*, 12(2), 1980, pp. 166-180; D. Cahen, *Refitting stone artefacts: why bother?*, in G. Sieveking & M. H. Newcomer (éds.), *The human uses of flint and chert. Proceedings of the fourth international flint symposium held at Brighton Polytechnic 10-15 April 1983*, 1987; E. Ciesla, S. Eickhoff, N. Arts & D. Winter (éds.), *The Big Puzzle. International Symposium on Refitting Stone Artefacts*, 1990.

<sup>23</sup> P. Bertran, A. Lenoble, D. Todisco, P. M. Desrosiers & M. Sørensen, *Particle size distribution of lithic assemblages and taphonomy of Palaeolithic sites*, in *JAS*, 39(10), 2012, pp. 3148-3166.

<sup>24</sup> W. C. Murphree, *Examining Site Formation Processes through the Analysis of Small Fraction Materials*, Mémoire de Master (non publié), University of Cambridge, 2017.

<sup>25</sup> P. Haesaerts, *Stratigraphie du gisement paléolithique de Mitoc Malu Galben (District de Botoșani, Roumanie) : étude préliminaire*, in *Préhistoire européenne*, 3, 1993, pp. 67-71.

<sup>26</sup> Idem, *Mitoc-Malu Galben : Cadre stratigraphique et chronologique*, in M. Otte, V. Chirica & P. Haesaerts (dir.), *L'Aurignacien et le Gravettien de Mitoc-Malu Galben (Moldavie Roumaine)*, ERAUL, 72, Liège, 2007, pp. 15-41.

<sup>27</sup> *Ibidem*.

<sup>28</sup> *Ibidem*.



relevés sur la paroi sud ont permis d'y repérer un horizon humifère assez épais (11a) et de distinguer les limons lœssiques (11b) des colluvions lités (11c) sous-jacents. Cette nouvelle étude de la stratigraphie porte donc à 10 le nombre d'horizons humifères enregistrés à MMG.

#### 4.3. Étude des processus de formation

La qualification d'une occupation archéologique passe par une estimation du degré de déplacement du matériel archéologique et des éventuels phénomènes post-dépositionnels. Ni géologie, ni archéologie ne permettant d'approfondir cet aspect à MMG, la position du matériel avait jusqu'alors été peu questionnée, confortée par l'*a priori* d'un matériel largement *in situ*. D'une part, les dépôts lœssiques impliquent en effet une accumulation semi-continue des sédiments, recouvrant et emprisonnant rapidement les vestiges sans les déplacer<sup>29</sup>. D'autre part, le matériel dans son contexte permet généralement d'observer des vestiges alignés à la stratigraphie sédimentaire et des amas de débitage délimités dans l'espace (incluant des remontages entre pièces proches), supposant un haut degré de cohérence des occupations retrouvées.

Les dernières campagnes de fouille ont cependant impliqué pour la première fois à MMG de tamiser à maille fine les sédiments excavés, permettant d'appréhender ce genre de questions. Ainsi, une sélection de tamisages a été étudiée dans le cadre d'un mémoire de Master à l'Université de Cambridge<sup>30</sup>. Les ensembles concernés sont l'« Aurignacien I » fouillé de 2014 à 2016 dans le coin sud-ouest, et l'« Aurignacien III supérieur » fouillé en 2015 le long de la paroi sud. La méthodologie appliquée correspond à une analyse de la taille des éléments telle que proposée par Bertran *et al.*<sup>31</sup>.

Les éléments ont d'abord été triés par nature (silex, os etc.) et par taille (différentes classes selon leur largeur maximum). Ont ensuite été pris en compte pour chaque lot d'éléments la quantité de pièces, leur poids total et la distribution spatiale par carré. Les données archéologiques ont ainsi été comparées à des données expérimentales, incluant plusieurs degrés de déplacement<sup>32</sup>.

De l'étude de Murphree<sup>33</sup> ressort le fait que les deux ensembles ont été soumis à un phénomène de tri de la fraction fine ; si le tri est peu intense pour l'ensemble « Aurignacien III supérieur », des déplacements importants peuvent être mis en cause pour l'« Aurignacien I ». Plusieurs hypothèses explicatives sont à envisager. En comparaison avec certaines données expérimentales, il apparaît qu'un phénomène de ruissellement n'est pas à exclure ; compte tenu du pendage naturel des sédiments, cela serait parfaitement justifié, sans aller à l'encontre des processus sédimentaires. Une autre explication d'origine naturelle correspond à l'influence de conditions environnementales périglaciaires, susceptibles d'engendrer des solifluctions. Enfin, des phénomènes anthropiques ne sont pas

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<sup>29</sup> *Ibidem*.

<sup>30</sup> W. C. Murphree, *op. cit.*

<sup>31</sup> P. Bertran, A. Lenoble, D. Todisco, P. M. Desrosiers & M. Sorensen, 2012, *op. cit.*

<sup>32</sup> W. C. Murphree, *op. cit.*

<sup>33</sup> *Ibidem*.



inenvisageables, bien que rien ne permette d'associer ce tri à une certaine gestion des matières premières ou à la fonction du site. Si la cause exacte de ce tri de la fraction fine n'est pas éclaircie, la question est désormais posée.

#### 4.4. Archéozoologie

Si la découverte d'ossements à MMG est relativement récurrente (bien que peu fréquente), ceux-ci sont généralement découverts dans un état de détérioration avancée, due à l'action de divers processus taphonomiques. Outre des altérations de surface (écaillages, craquelures, esquillements, etc.)<sup>34</sup>, les restes osseux sont fragmentés sous le poids des sédiments<sup>35</sup> et emprisonnés dans une gangue de concrétion limoneuse limitant la visibilité à environ 25% (Fig. 9)<sup>36</sup>.

L'ensemble des ossements issus des fouilles 1978-1995 fut étudié par I. López Bayón & A. Gautier<sup>37</sup>, permettant de mettre en évidence les modes d'exploitation des ressources carnées à MMG. Les fouilles 2013-2016 ont permis de retrouver 54 ossements individuels au sein des différents horizons archéologiques abordés. Malheureusement, tous ceux-ci n'ont pas été étudiés à l'heure actuelle. Seuls les ossements de la campagne de 2015 (étudiés par M. D. Bosch) ont permis de fournir de nouvelles informations<sup>38</sup>.

Aucune nouvelle espèce n'a été identifiée, et aucune modification anthropique ou animale n'a été observée. Les résultats les plus concluants concernent l'ensemble « Aurignacien III supérieur ». Quatre des six restes se rapportent à *Equus ferus* et l'une des dents à un ongulé indéterminé ; ceux-ci correspondent à au moins deux individus. Étant situés juste en dessous de la nappe principale de vestiges lithiques, ces ossements ne peuvent toutefois y être directement associés<sup>39</sup>.

#### 4.5. Technologie lithique

Comme prévu par les objectifs de la reprise de collaboration, le matériel lithique issu de ces fouilles, abondant, a été étudié du point de vue de la technologie. Tous ensembles confondus, le décompte actuel des pièces lithiques comprend près de 5800 artefacts. Tous ont été encodés dans une base de données selon une liste d'attributs technologiques définis par P. R. Nigst, semblables à

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<sup>34</sup> P. Noiret, P. Haesaerts, M. Vornicu, G. Bodi, T. Branscombe, T. Libois, M. Bosch & P. R. Nigst, *op. cit.*

<sup>35</sup> I. López Bayón & A. Gautier, *Mitoc-Malu Galben : Analyse archéozoologique des ateliers de taille*, in M. Otte, V. Chirica & P. Haesaerts (dir.), *L'Aurignacien et le Gravettien de Mitoc-Malu Galben (Moldavie Roumaine)*, ERAUL, 72, Liège, 2007, pp. 145-166.

<sup>36</sup> P. Noiret, P. Haesaerts, M. Vornicu, G. Bodi, T. Branscombe, T. Libois, M. Bosch & P. R. Nigst, *op. cit.*

<sup>37</sup> I. López Bayón & A. Gautier, *op. cit.*

<sup>38</sup> P. Noiret, P. Haesaerts, M. Vornicu, G. Bodi, T. Branscombe, T. Libois, M. Bosch & P. R. Nigst, *op. cit.*

<sup>39</sup> *Ibidem.*



ceux utilisés, par exemple, dans le cadre de sa thèse<sup>40</sup>. Le matériel a été étudié au sein de deux travaux universitaires ; l'« Aurignacien III supérieur » fouillé en 2015 a fait l'objet d'une *Undergraduate Dissertation* à l'Université de Cambridge<sup>41</sup> tandis que le reste du matériel a été étudié dans le cadre d'un mémoire de Master à l'Université de Liège<sup>42</sup>.

Le large ensemble « Aurignacien I » fouillé dès 2014, riche de plus de 2500 pièces, rassemble du matériel correspondant à des comportements différents. L'un est orienté vers le test préalable de nodules de silex en vue d'une production, tandis que l'autre relève d'une production laminaire<sup>43</sup> ; cependant, les pièces relatives à ce second comportement sont en quantité trop restreintes que pour en fournir les caractéristiques. Le mélange de matériel couplé à d'autres observations (absence de production de lamelles, dégâts de surface observés sur les pièces, etc.) a permis de suggérer la présence de phénomènes post-dépositionnels<sup>44</sup>, particulièrement à cet emplacement où les sédiments présentent un pendage accentué. Cette hypothèse a été soutenue par l'étude des processus de formation du site menée sur les tamisages (*cfr.* 4.3 ci-dessus).

Le petit ensemble « Aurignacien I » fouillé en 2016 ne contient quant à lui que 41 pièces, mais se distingue par sa cohérence au sein d'un ensemble associant restes lithiques, ossements et charbons de bois. De fait, cette petite occupation semble moins refléter un atelier de débitage qu'une occupation aux activités diversifiées. Bien qu'étant attestées, les activités de taille ne peuvent pas être détaillées, les vestiges lithiques comprenant majoritairement des débris.

L'ensemble « Aurignacien III », fouillé aussi en 2016, comprend 197 éléments, incluant une majorité d'éclats de décortilage, aux caractéristiques assez atypiques. Des remontages exhaustifs ont pu être effectués, permettant d'associer la majorité des éclats à deux nodules distincts<sup>45</sup>. De plus, les données se corrélaient spatialement, les restes relatifs à ces deux nodules étant, en contexte, distants de près d'un mètre.

L'étude technologique menée sur l'ensemble « Aurignacien III supérieur » fouillé en 2015, comprenant 429 pièces, a permis de mettre en évidence les caractéristiques de production des éclats, lames et lamelles incluses<sup>46</sup>. Plus spécialement, la composante lamellaire s'en distingue par des particularités à rapprocher d'une production sur nucléus carénés, typiques de l'Aurignacien, mais non retrouvés lors de ces fouilles. Ce type de production apparaît de ce fait attesté dans les derniers niveaux aurignaciens de MMG<sup>47</sup>. Des remontages exhaustifs, effectués par la suite, ont permis de confirmer l'indépendance des lamelles par rapport aux autres pièces ; la majorité des éclats et des lames est en

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<sup>40</sup> P. R. Nigst, *op. cit.*

<sup>41</sup> T. Branscombe, *op. cit.*

<sup>42</sup> T. Libois, *op. cit.*

<sup>43</sup> *Ibidem.*

<sup>44</sup> *Ibidem.*

<sup>45</sup> *Ibidem.*

<sup>46</sup> T. Branscombe, *op. cit.*

<sup>47</sup> P. Noiret, P. Haesaerts, M. Vornicu, G. Bodi, T. Branscombe, T. Libois, M. Bosch & P. R. Nigst, *op. cit.*



effet associée au sein d'un seul remontage, plaçant clairement les lamelles dans une chaîne opératoire indépendante. La grande cohérence des remontages dénote cependant avec l'observation d'un tri de la fraction fine (*cfr.* 4.3 ci-dessus).

L'ensemble « Gravettien I », fouillé en 2013, est trop réduit pour en tirer des conclusions générales, malgré un corpus de plus de 600 pièces. Les premiers résultats permettent cependant de suggérer une forte ressemblance technologique avec l'ensemble « Gravettien II »<sup>48</sup>, malgré la singularité des dynamiques de débitage observée dans ce dernier.

Enfin, l'ensemble « Gravettien II » abordé en 2013 et 2014 a fourni un corpus de plus de 1500 pièces. Son étude a permis de définir plus particulièrement les modalités du débitage laminaire mis en œuvre, que ce soit pour la préparation et l'entretien des nucléus, ou la production des lames elle-même<sup>49</sup>. Les informations les plus intéressantes se retrouvent dans l'examen des morphologies des nucléus, exploités indistinctement sur face large ou étroite. Bien que les lames issues de ces deux types de nucléus soient supposées morphologiquement différentes, la production laminaire présente dans cet ensemble ne permet pas de déterminer avec certitude s'il s'agit d'une recherche volontaire ou d'une production inconditionnée de lames d'un certain gabarit. L'absence d'outillage n'a malheureusement pas permis d'éclaircir la compréhension d'un tel phénomène. De façon intéressante, il peut être précisé que l'examen de matériel « Gravettien II » fouillé dans les années 1990 semble présenter les mêmes caractéristiques technologiques, et reflèteraient donc une forme de récurrence<sup>50</sup>.

## 5. Perspectives

En dépit de ces nouveaux résultats, certaines études doivent être poursuivies, tandis que d'autres sont encore à effectuer. Ainsi, une partie du matériel n'a pas encore été analysée : il reste à étudier plus de la moitié des ossements, en particulier ceux relatifs au Gravettien ; les autres tamisages doivent également être analysés. Le matériel lithique est quant à lui entièrement étudié ; les données qui en ont été extraites peuvent cependant encore faire l'objet de certains approfondissements.

Lors des quatre campagnes de fouille, un certain nombre d'échantillons de diverses natures furent extraits. Entre 2013 et 2015, 9 échantillons de sédiments ont été pris en vue d'effectuer des analyses micro-morphologiques. Leur imprégnation ayant atteint son terme, leur analyse est en cours par C. Mallol à l'Université de La Laguna (Ténérife). En outre, 8 échantillons furent prélevés en 2014 et 2015 pour une analyse du micro-débitage, qui reste à accomplir. En

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<sup>48</sup> T. Libois, *op. cit.*

<sup>49</sup> T. Libois, G. Bodi, P. Nigst & P. Noiret, *Mitoc – Malu Galben (Roumanie) : quelques aspects de la technologie lithique gravettienne en Moldavie*, in V. Chirica & C. Ichim (éds.), *Les Gravettiens : leur création matérielle et spirituelle. Actes du Colloque international de Iași (12-16 mai 2017)*, BAI, XXIX, Ed. Cetatea de Scaun, Târgoviște, 2018, pp. 78-105.

<sup>50</sup> T. Libois, *op. cit.*



2016, P. Haesaerts a également pris une série d'échantillons pour le paléomagnétisme dans la partie inférieure de la stratigraphie du site ; aucun résultat n'est encore disponible.

Les données topographiques résultant de l'enregistrement à la station totale n'ont pas non plus encore été formellement exploitées. L'étude approfondie de celles-ci permettra en effet d'apporter un lot d'informations nouvelles concernant les processus de formation du site, notamment au travers de l'examen des orientations des artefacts. Ces données pourront également être couplées aux différentes bases de données liées aux analyses technologiques ou aux remontages par exemple.

## **6. Conclusion**

Aujourd'hui encore, MMG continue de fournir des résultats convaincants à propos des problématiques liées au Paléolithique supérieur ancien et à la transition Aurignacien-Gravettien. Alors que Vasile Chirica avait su exploiter le site dès 1978 pour assurer la présence de ces deux traditions culturelles à l'est des Carpates, il a su ensuite ouvrir le site à l'international, collaborant avec des chercheurs du monde entier pour aborder le site sous tous ses aspects. Ainsi, Mitoc est célèbre grâce à son enregistrement pédo-stratigraphique et archéologique qui s'est établi comme une référence pour la première moitié du Paléolithique supérieur en Europe. Pour le matériel lithique, l'analyse technologique s'ajoute désormais à l'étude typologique, dans la lignée de nombreux sites européens. Tout ceci a été rendu possible par l'opiniâtreté de Vasile, sa volonté farouche de fouiller le site et la certitude que les découvertes en faisaient un jalon majeur de notre connaissance du Paléolithique supérieur européen. Qu'il en soit à jamais remercié !

## **Remerciements**

Les travaux menés de 2013 à 2016 à Mitoc – Malu Galben ont été financés par deux projets émanant des Fonds spéciaux pour la Recherche de l'Université de Liège accordés à Pierre Noiret en 2013 et 2016. La recherche de Philip R. Nigst est soutenue par le programme EC FP7 Marie Curie (projet NEMO-ADAP, bourse n° 322261), par la Leakey Foundation, le McDonald Grants and Awards Fund, le Isaac Newton Trust et la British Academy. La recherche de Marjolein D. Bosch est soutenue par le programme EC Horizon 2020 Marie Skłodowska-Curie (projet EU-BEADS, bourse n° 656325). En outre, il tient lieu de remercier nos collègues roumains de l'Institut d'Archéologie de Iași, en particulier George Bodi et Mariuca Vornicu, sans qui ces travaux n'auraient pas pu être menés. Cette fois de plus n'est cependant pas celle de trop ; il nous est donc donné l'occasion de remercier encore Vasile Chirica, l'homme à l'origine de tous les travaux effectués à Mitoc – Malu Galben.





Fig. 1. Mitoc – Malu Galben. État du site en juillet 2013 (photo : P. Noiret).

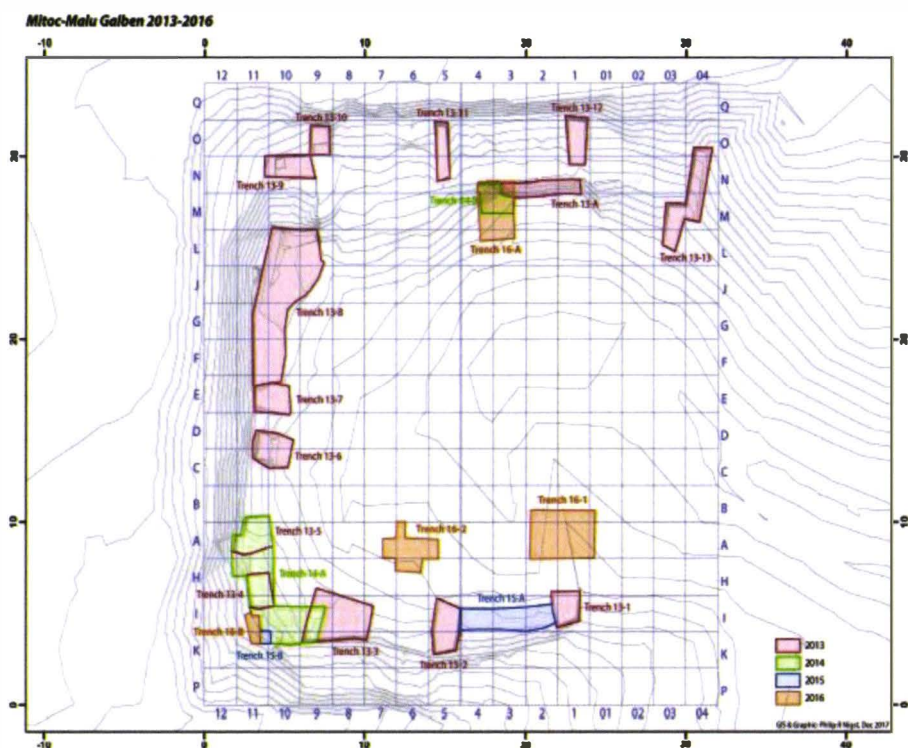


Fig. 2. Mitoc – Malu Galben. Carte des sondages géologiques (Trench 13-1 à 13-13, 16-1 et 16-2) et archéologiques (Trench 13-A, 14-A, 14-B, 15-A, 15-B, 16A et 16-B) des fouilles 2013-2016. Le nord est en haut de la carte ; échelle en mètres [système de quadrillage local] (SIG & graphique : Philip R. Nigst 2018).





Fig. 3. Mitoc – Malu Galben. Vue des sondages stratigraphiques (de gauche à droite : Trench 13-1 à 13-8 ; juillet 2013 ; photo : P. Noiret).



Fig. 4. Mitoc – Malu Galben. Fouille en banquette d'une nappe de vestiges appartenant à l'ensemble « Gravettien II » le long de la paroi nord du site (Trench 13-A ; juillet 2013 ; photo : P. Noiret).





Fig. 5. Mitoc – Malu Galben. Fouille de l'ensemble « Aurignacien I » dans le coin sud-ouest du chantier (Trench 14-A ; juillet 2014 ; photo : P. Noiret).



Fig. 6. Mitoc – Malu Galben. Fouille en banquettes de vestiges relatifs à l'ensemble « Aurignacien III supérieur » dans la zone méridionale du site (Trench 15-A ; juillet 2015 ; photo : P. Noiret).





Fig. 7. Mitoc – Malu Galben. Sondage archéologique dans les niveaux aurignaciens le long de la paroi nord. Le niveau est à ce moment-là entre « Aurignacien III » et « Aurignacien I » (Trench 16-A ; juillet 2016 ; photo : P. Noiret).



# MITOC-MALU GALBEN (2014)

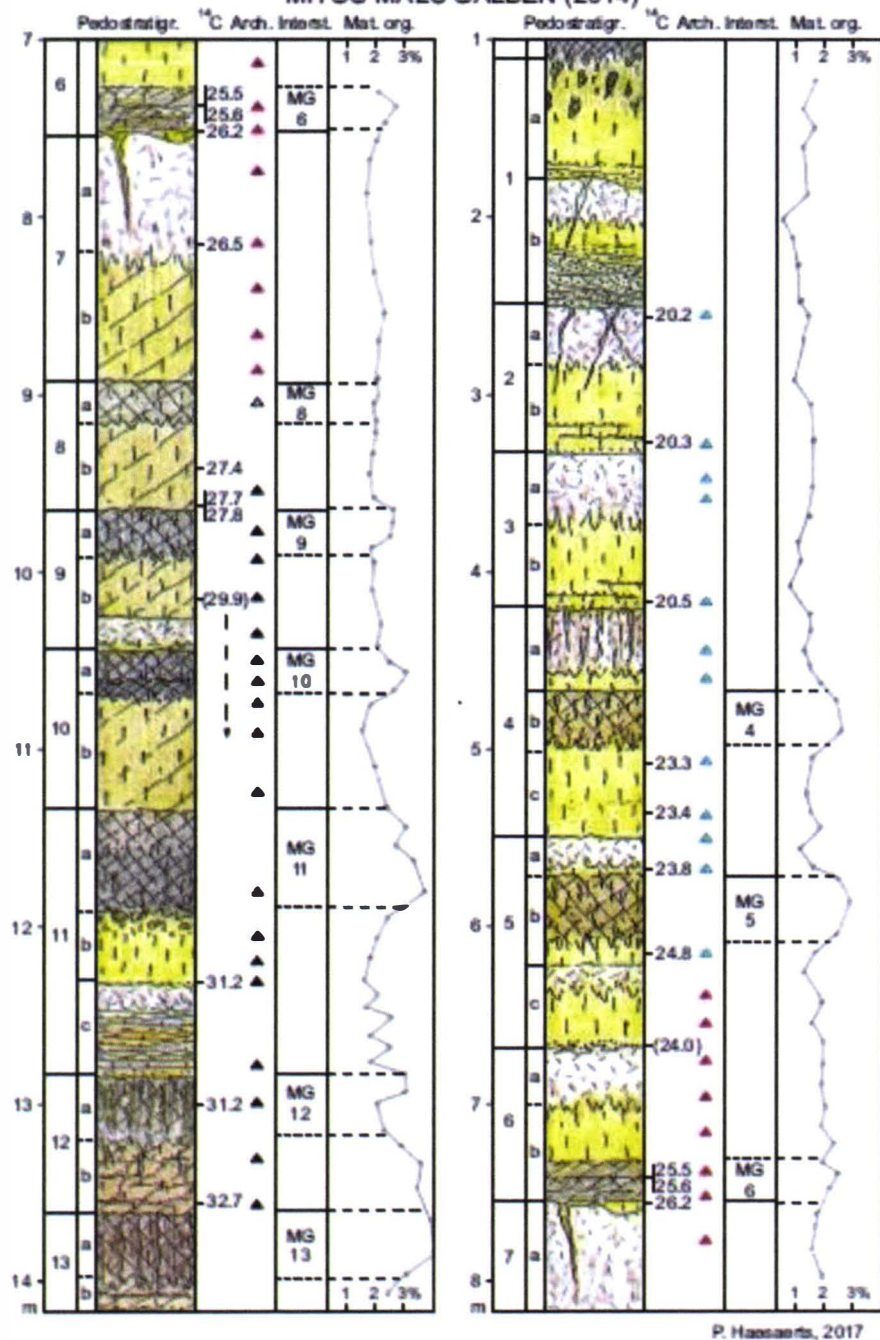


Fig. 8. Mitoc – Malu Galben. Stratigraphie générale (Dessin: P. Haesaerts, 2017).





Fig. 9. Mitoc – Malu Galben. Mandibule de cheval (MMG-I3-31, « Aurignacien III supérieur », US 9b) présentant un concrétionnement limoneux typique pour beaucoup de restes fauniques découverts entre 2013 et 2016 (photo : Marjolein D. Bosch).

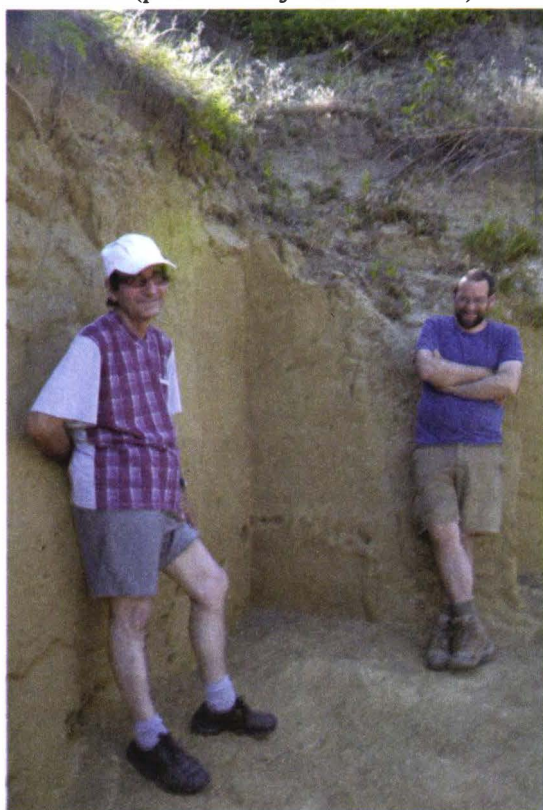


Fig. 10. Vasile Chirica et Philip Nigst lors de la campagne 2015 des fouilles de Mitoc – Malu Galben (juillet 2015 ; photo : P. Noiret).





Fig. 11. Paul Haesaerts et Vasile Chirica lors de la campagne 2016 des fouilles de Mitoc – Malu Galben (juillet 2016 ; photo : P. Noiret).



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*B*



*C*





*D*

Fig. 12. Les équipes de fouille de Mitoc – Malu Galben. A-D: 2013 à 2016  
(photos : P. Noiret)



# Typical Gravette retouching on “Nano Gravette points” – meaningful form or formal constraint?

## Considerations from the study of a Nano Gravette point from Northern Lower Austria in a private collection

OLIVER SCHMITSBERGER\*, MICHAEL BRANDL\*\* AND  
GERHARD TRNKA\*\*\*

**Abstract:** *In a Gravettian site in Lower Austria, Ollersdorf, a Nano Gravette point was discovered in 1998. This kind of stone implement is part of the typical Gravettian tool kit, however, their function remains largely unclear. Use wear analysis of the Ollersdorf artefact revealed that the Nano Gravette point was used in an unexpected way, which challenges the meaning and usefulness of the morphological design of this particular stone tool.*

**Keywords:** *Gravettian; Lower Austria; Stillfried area; Nano Gravette point; backed retouch; use wear analysis; microlithic tool*

### Introduction

In the current paper we present an extraordinary lithic object recovered from a Gravettian site in Lower Austria. Typologically, the specimen can be defined as a Gravette point, however, due to its exceptionally small dimensions it is classified as a “Nano-Gravette point”, a lithic tool type which is only occasionally reported and deserves attention, specifically regarding its purpose and functionality. Hence, the main scientific question concerns its practical use. In the course of stereomicroscopic investigations it was possible to show that the stone tool was actually used, which is discussed in further detail.

### The site and finding circumstances

The Gravettian site called “Heidenberg” in Lower Austria (Ollersdorf in the Angern and der March municipality, Gänserndorf district) is part of a dense Upper Palaeolithic site cluster in the surroundings of Stillfried, approximately 40 km northeast of Vienna<sup>1</sup>. The find spot, which will

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\* Österreichischen Akademie der Wissenschaften, Wien;  
Oliver.Schmitsberger(at)oeaw.ac.at



subsequently be referred to as Ollersdorf site, is located at an altitude between 232 and 239 meters above sea level on a ridge gently sloping to the south and southeast, at the transition from the Wienviertel Uplands to the Marchfeld plain (Fig. 1).

The main concentration of finds is situated in the northern part of the slope at 237-238 meters. The locale provides excellent visibility especially to the south, into the Marchfeld and the Morava<sup>2</sup>-Danube plain, and to the east over the Morava Valley towards the Carpathian foothills (Fig. 2).

The geology in the area of the site comprises of Late Pleistocene Loess<sup>3</sup>.

Archaeological layers were initially discovered in the course of pipeline constructions in 1998 by the local researcher Herbert Preisl, who examined the trenches and reported the Palaeolithic site. Subsequently, Walpurga Antl from the Natural History Museum in Vienna undertook a rescue excavation. Parts of the site were again destroyed by pipeline trenching in the years 2007 and 2009, with rescue excavations resumed in 2007<sup>4</sup>. In 2009 on the other hand only few finds could be retrieved from the material excavated by the pipeline construction, because the trench had already been backfilled before an archaeological examination could take place.

In 1998 H. Preisl salvaged the sediment backhoed from the cultural layers for wet sieving, and discovered the Nano Gravette point presented in this contribution (Fig. 3).

## Dating and cultural assignment

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\*\* Institut für Urgeschichte und Historische Archäologie, Universität Wien;  
Michael.Brandl@oeaw.ac.at

\*\*\* Institut für Urgeschichte und Historische Archäologie, Universität Wien;  
gerhard.trnka@univie.ac.

<sup>1</sup> W. Antl-Weiser, *Grub/Kranawetberg and Ollersdorf/Heidenberg (Lower Austria) - two Gravettian camp sites in Eastern Austria*, in *Venus 08 - Art and Lifestyle, Symposium Vienna 10-14 November 2008, Wissenschaftliche Mitteilungen aus dem Niederösterreichischen Landesmuseum 19*, St. Pölten, 2008, pp. 59–77, Fig. 1.

<sup>2</sup> The “March” River at the border between Austria and Slovakia.

<sup>3</sup> R. Peticzka, D. Riegler, *Sedimentologisch-bodenkundliche Untersuchungen im Bereich Stillfried an der March - Grub Kranawetberg*, in R. Peticzka (ed.), *Beiträge zur Quartärforschung und Landschaftsökologie - Gedenkschrift zum 60. Geburtstag von Spyridon Verginis*. Institut für Geographie und Regionalforschung Universität Wien 2004, pp. 47-54; T. Sprafke, *Löss in Niederösterreich Archiv quartärer Klima- und Landschaftsveränderungen*. Würzburg University Press, Würzburg, 2016, p. 31.

<sup>4</sup> W. Antl, *KG Ollersdorf*, in *Fundberichte aus Österreich*, 37, Wien, 1998, p. 676; Eadem, *KG Ollersdorf*, *Fundberichte aus Österreich*, 46, Wien, 2007, pp. 609-610; W. Antl-Weiser, *Grub/Kranawetberg and Ollersdorf/Heidenberg...*



Typologically and according to a  $^{14}\text{C}$  date (VERA-366:  $25\,450 \pm 90$  BP)<sup>5</sup>, the archaeological horizons of the Ollersdorf site belong to the Gravettian stage of the Upper Palaeolithic period<sup>6</sup>. In his private collection in Dürnkrot (Lower Austria), H. Preisl retains 186 stone tools from this location. The finds from the salvage excavations in the years 1998 and 2007 are stored at the Natural History Museum in Vienna. In H. Preisl's assemblage, the high proportion of burin spalls (c. 40 pieces) is conspicuous, which are complemented by nine, predominantly heavily exploited, burins of varying shape. In contrast, fragments of Gravette points and other backed stone tools are rather scarce<sup>7</sup>. The burin spalls were sometimes modified, specifically noteworthy is e.g. a double drill on a spall. Apparently, a specific activity area of the site was excavated by the construction work, as evidenced by the dominance of burins and burin spalls. Apart from that, the dominance of these particular tools in combination with the prevalence of narrow, very regular blades and bladelets suggests a connection a neighbouring site (Mannersdorf-Zwiefelhau, find material also in the Preisl collection), for which the spatial extent was established through surface collections. Unfortunately, this is not the case in Ollersdorf.

The raw material spectrum of the Ollersdorf stone tool assemblage includes chert, radiolarite and erratic flint and is generally of high quality, most of the artefacts show no or only very light surface alteration (patina). However, raw material determination has only been conducted visually and is preliminary.

### **The Nano Gravette point from Ollersdorf – raw material, morphology, technology, use traces**

The Gravette point from Ollersdorf (Fig. 3) has the following dimensions:

Length: 14.1 mm

Width: 2.9 mm

Thickness: 1.1 mm

The raw material is erratic (Scandinavian) flint, most likely of Maastrichtian age.

<sup>5</sup> W. Antl, F. Fladerer, *Outlook to the east: the 25 ky BP gravettian Grub/Kranawetberg campsite (Lower Austria)*, in J. Svoboda, L. Sedláčková (eds.), *The Gravettian along the Danube. Proceedings of the Mikulov Conference*, 20.-21. November 2002, in *Dolnověstonické studie*, 11, Brno, 2004, p. 121.

<sup>6</sup> W. Antl-Weiser, *op. cit.*, p. 75; O. Jöris, C. Neugebauer-Maresch, B. Weninger, M. Street, *The Radiocarbon Chronology of the Aurignacian to Mid-Upper Palaeolithic Transition along the Upper and Middle Danube*, in C. Neugebauer-Maresch, L. R. Owen (eds.), *New Aspects of the Central and Eastern European Upper Palaeolithic - methods, chronology, technology and subsistence*. MPK, 72, Wien, 2010, p. 106, Tab. 1.

<sup>7</sup> Compare W. Antl-Weiser, *op. cit.*, p. 75.



Apparently the unmodified blank was a burin spall<sup>8</sup>. In the Ollersdorf assemblage, the transition between burins and bladelet cores is fluent, hampering a clear assignment of such specimens to one of these two groups.

One lateral side was backed on the full length, while the opposite side shows retouching on the proximal and distal ends. Proximal retouching is on the dorsal side, while the distal end was modified on the ventral side (Fig. 4). Additionally, the tip is minimally broken. Based on its dimensions, the artefact corresponds well with the definition of Nano Gravette points: Thickness <2.5 mm, width <4 mm<sup>9</sup>. The sharp edge displays use wear along the un-retouched medial length in the form of chipping on the ventral side, which indicates cutting or scraping. A use as drill can be excluded based on the use traces (Fig. 5).

### Nano Gravette points in Middle Upper Palaeolithic find complexes

Nano Gravette points are an integral element of Gravettian assemblages, worth mentioning are for instance the Geißenklösterle or Azé sites, both belonging to the older western Gravettian<sup>10</sup>. Comparative finds from both, the older (Pavlovian) and younger (“Willendorf-Kostenki I/5-Avdeev-Culture“) eastern Gravettian, are also known from Lower Austria. Examples exist from the Pavlovian site of Krems-Wachtberg<sup>11</sup> and Willendorf II<sup>12</sup>. The problem here is that the measurements are rounded to millimetres, which is misleading because an indicated width of 4 mm could either mean that the artefact is situated close below or just above the defined threshold. Considering this constraint, at Willendorf II Nano Gravette points exist in layer 5<sup>13</sup>, layer 8<sup>14</sup>, and layer 9<sup>15</sup>. Potentially, a “microlithic tool” from the recent excavations at Krems-Wachtberg could also correspond to the definition of a Nano Gravette point<sup>16</sup>.

Two Micro Gravette points from the Stillfried-Wallschnitt site, which is located in the immediate surroundings of Ollersdorf, are situated right at the

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<sup>8</sup> Concerning bladelet reduction on burins see A. Taller & H. Floss, *Die lithische Technologie der Gravettien-Fundstelle Azé-Camping de Rizerolles (Dép. Saône-et-Loire)*, in *AKB*, 41/2, Mainz, 2011, pp. 165-166.

<sup>9</sup> A. Taller & H. Floss, *op. cit.*, p. 168.

<sup>10</sup> L. Moreau, *Geißenklösterle. The Swabian Gravettian in its European context*, in *Quartär*, 57, Rahden/Westf., 2010, pp. 79-93; A. Taller & H. Floss, *op. cit.*

<sup>11</sup> Th. Einwögerer, *Die jungpaläolithische Station auf dem Wachtberg in Krems, NÖ. Eine Rekonstruktion und wissenschaftliche Darlegung der Grabung von J. Bayer aus dem Jahre 1930*, in *MPK*, 34, Wien, 2000, pp. 109-110, Table 30, Inv. No. 215.

<sup>12</sup> F. Felgenhauer, *Willendorf in der Wachau. Monographie der Paläolith-Fundstellen I-VII, Teil 1-3*, in *MPK*, 8-9, Wien, 1956-1959.

<sup>13</sup> *Ibidem*, No. 43752 – Fig. 29/9 –  $w=3/th=2$ , No. 43751 – Fig. 29/8 –  $w=4/th=2$ , uncertain No. 43750 – Fig. 29/23 –  $w=2/th=1$ , No. 43770 – Fig. 29/18 – without further indication, assigned according to the drawing.

<sup>14</sup> *Ibidem*, No. 44180 – Fig. 37/8 –  $w=3/th=1$ , although the published Fig. indicates a thickness of 2 mm.

<sup>15</sup> *Ibidem*, No. 44632 – Abb. 43/12 –  $w=3/th=2$ .

<sup>16</sup> R. Thomas and J. Ziehaus, *Spatial and chronological patterns of the lithics of hearth 1 at the Gravettian site Krems-Wachtberg*, in *QuaternInt*, 351, 2011, Elsevier Ltd and INQUA, Fig. 3/5.



border of the Nano Gravette classification, with their maximum widths of 5 mm each and thicknesses of 1,5 and 2 mm respectively. They are clearly separable from the other Micro Gravette points from this site, but minimally fail the criterion defined for Nano Gravette points<sup>17</sup>. A “medial fragment of a Micro Gravette point” with a width of 4 mm and a thickness of 1.5 mm could meet the criteria, however, the problem of rounding (in this case to half millimetres) is raised again<sup>18</sup>.

Perhaps the thresholds need to be defined more flexible according to each individual assemblage – as suggested by Taller & Floss<sup>19</sup> – in order to capture more realistic “size categories”, e.g. in Willendorf II and Stillfried.

Nano Gravette points are generally wide spread, but do not appear in every Gravettian assemblage. In this context it has to be assumed that – especially in find complexes excavated during earlier campaigns – they are (significantly?) underrepresented. However, pieces of such small dimensions like the Ollersdorf specimen are apparently exceptions.

### The function?

The use of the Ollersdorf artefact as projectile point can be excluded not only based on its small dimensions, but specifically due to its fragility (i.e. the “needle”-shape with a maximal thickness of only 1.1 mm, which would immediately break on impact).

An implementation as a lateral projectile reinforcement is also barely conceivable with only a maximum width of 2.9 mm, since the hafting would take more than half of the tool's width. The remaining cutting edge would be too small to achieve incisions deep enough to significantly injure potential prey. The resulting entry wound would hence only be widened to a minimal extent by insignificantly scratching the tissue.

In contrary, Loredana Niță et alii<sup>20</sup> argue for a use as projectile points of partly “microlithic implements” from three Romanian Upper Palaeolithic sites based on the breakage patterns. However, these retouched/backed bladelets are slightly or significantly larger and date differently (to the Aurignacian and Epigravettian).

Marina Araújo Igreja<sup>21</sup> suggests a possible function as both, implements of projectiles and cutting tools, based on use wear analysis.

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<sup>17</sup> F. Felgenhauer, *Ein jungpaläolithisches Steinschlägeratelier aus Stillfried an der March, Niederösterreich. Zur Herstellungstechnik von Mikrogravettespitzen*, in *Forschungen in Stillfried*, 4, Wien, 1980, pp. 27-28, No. 9 and 15, Plate 2.

<sup>18</sup> *Ibidem*, p. 31, No. 74, Plate 4.

<sup>19</sup> A. Taller & H. Floss, *op. cit.*, p. 169.

<sup>20</sup> L. Niță, M. Anghelinu, V. Sitlivy, M. Mărgărit, F. Dumitru, *Little tools or little weapons? Testing the use of Aurignacian and Epigravettian bladelets as projectile implements*, in *AAC*, 47, Kraków, 2012, pp. 5-29.

<sup>21</sup> M. De Araújo Igreja, *La tracéologie des industries lithiques gravettiennes de la Vigne-Brun (Loire, France) : une consommation de l'outillage en rupture avec la fonction présumé du site*. In: Nejma Goutas, Laurent Klaric, Damien Pesesse,



The function of Nano Gravette points was also reflected for the Azé assemblage<sup>22</sup>, however, the authors did not achieve a satisfactory result. Christine Neugebauer-Maresch (pers. comm.) proposed a possible function as tattooing needle. On the other hand, such an instrument could be produced with less effort, and the use traces also contradict this hypothesis. A function as micro drill, which was suggested for micro Gravette points in the neighbouring Grub-Kranawetberg site (pers. comm. Walpurga Antl) would also be worth a consideration based on the needle-like shape. Type and location of the use traces on the Ollersdorf specimen however unambiguously exclude its use as a drill. As already mentioned the use traces indicate some kind of a cutting or whittling activity, although it is not possible to reveal the actually performed task(s). The fact that chipping as a result of use is only present at the cutting edge opposite the backing suggests that it was most likely hafted, which has to be assumed for reasons of usability in any case. Consequently, the Nano Gravette point would have been mounted on the dull back, indicating that the piece was most likely part of a composite tool. Only a function for which the cutting depth is less important than the sharpness of the linear cutting edge is conceivable. The use traces, i.e. multiple phases of chipping/splintering 90° to the cutting edge (Fig. 5), indicate whittling, rasping or smoothing activities removing smallest irregularities on the surface of medium hard organic materials (possibly wood, bone, ivory, mollusc shells). This allows reconstructing the kinetics applied predominantly transversally to the working edge, and not paralleling to it.

One possibility regarding its function would be in the production of adornments.

Specifically during the Gravettian, a rich and diverse bead industry – mainly but not exclusively from ivory – is attested, e.g. for the neighbouring site of Grub-Kranawetberg<sup>23</sup>.

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Patricia Guillermin (eds.), *À la recherche des identités gravettiennes: actualités, questionnements et perspectives, Actes de la table ronde sur le Gravettien en France et dans les pays limitrophes, Aix-en-Provence, 6-8 octobre 2008*, Mémoire de la Société Préhistorique Française 52, Paris, 2011, p. 36.

<sup>22</sup> A. Taller & H. Floss, *op. cit.*, p. 168: Nano Gravette points are “...produced according to the same technological pattern, but in some cases so small that a use as projectile points is questionable”.

<sup>23</sup> W. Antl-Weiser, *Paläolithischer Schmuck von der Gravettienfundstelle Grub/Kranawetberg bei Stillfried, Niederösterreich*, in *Annalen des Naturhistorischen Museums in Wien*, 101 A, Wien, 1999, pp. 23–41; Eadem, *L'industrie en os et en ivoire du site gravettien à Grub/Kranawetberg près de Stillfried (Note préliminaire)*. in: D. Vialou, J. Renault-Miskovsky et M. Patou-Mathis (eds.), *Comportements des hommes du paléolithique moyen et supérieur en Europe: territoires et milieux*, ERAUL 111, Liège, 2005; Eadem, *Adornments from Grub-Kranawetberg and possible contacts at the end of the Pavlovian (abstract)*, in *Hugo Obermaier Gesellschaft, 51st. Annual Meeting in Ljubljana 14th -18th of April*, Erlangen, 2009, p. 13; W. Antl-Weiser & M. Bosch, *The use of Ivory at the Gravettian Site Grub/Kranawetberg, Lower Austria*, in *Anthropologie Brno*, 53/1–2, Brno, 2015, pp. 233–244.



There is ample evidence that fine work can be (and has been) accomplished with relatively crude tools, however the reverse argument that fine tools can be used for coarse work is in this case not permitted. The Ollersdorf artefact is definitely only suitable for the very finest works.

Chipping on the edge opposite of the retouched back was in some cases interpreted as the result of pressure applied in the course of retouching of a stone tool fixed in a clamp<sup>24</sup>, however this procedure would produce only occasional and irregular scars. Conversely, the Ollersdorf tool shows a dense sequence of micro chipping on the working edge. Additionally, it has been suggested by several authors that the concept of retouching in a clamp has to be rejected because it is unnecessary (e.g. Bolus<sup>25</sup>).

### **Form follows tradition?**

Regardless which function the Ollersdorf Nano Gravette point may have had, the question arises to what extent classical Gravette point morphology makes sense at specimens of such small dimensions. Therefore, the individual elements of the morphological design will be considered separately and examined according to their functional relation.

1. Backed retouch: In order to achieve the “needle-shape” as well as a hafting support and for stabilising the edge, the steep backed retouch makes practical sense and is therefore reasonable.

2. The sharp (cutting) edge opposite of the back is retouched on both, the proximal and distal ends. These retouches are rather doubtful regarding their functionality. They are neither necessary for achieving the desired shape of the stone tool, nor do they represent a practical element. On the contrary, the cutting edge was partially dulled. For the interpretation of the tool as a micro-drill, this retouch would make sense for stabilising the cutting edge and to achieve a tip, however, according to the use traces the piece was definitely not used as a drill. It seems that the retouched tip was never intended to be used, or at least was never used in contrast to the heavily worn cutting edge. It would however be conceivable that the broken end of the tip – given that it was already broken in the course of retouching – prevented such a use, or it was only used to a minimal extent, which prevented the formation of recognisable use wear. It is also possible that the tip broke off during its use, which would have erased all use traces.

3. The ventral proximal retouch: This modification has to be regarded as functionally senseless. Such a retouch is normally applied to chip off the bulb for facilitating the hafting. Considering the dimensions of the present stone tool, such a modification was practically useless, and possibly had a merely “symbolic” meaning, since the material removed by retouching can only have

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<sup>24</sup> F. Felgenhauer, *Ein jungpaläolithisches Steinschlägeratelier aus Stillfried an der March, Niederösterreich...*, p. 20.

<sup>25</sup> M. Bolus, *Rückenmesser*. In Harald Floss (Hrsg.), *Steinartefakte vom Altpaläolithikum bis in die Neuzeit*. Tübingen Publications in Prehistory, Tübingen, 2012, p. 431.



been within a fraction of a millimetre. Hence, this modification has to be interpreted as the consequence of a “compulsive” formal design.

Consequently, the shaping of this under-dimensioned implement into a typical Gravette point with all associated, however useless, attributes has to be seen from the viewpoint of a “meaningless formal tradition”. Naturally, the underlying motivation remains unclear. It could have been the consequence of ingrained habits or a “formal regulation” practiced amongst the Gravettian community. The principle “form follows function” thus pertains to normally-sized- and partly also for Micro Gravette points, however, this apparently does not necessarily apply to Nano Gravette points, specifically if all stylistic elements of a typical Gravette point are present, however lacking any functionality at the same time.



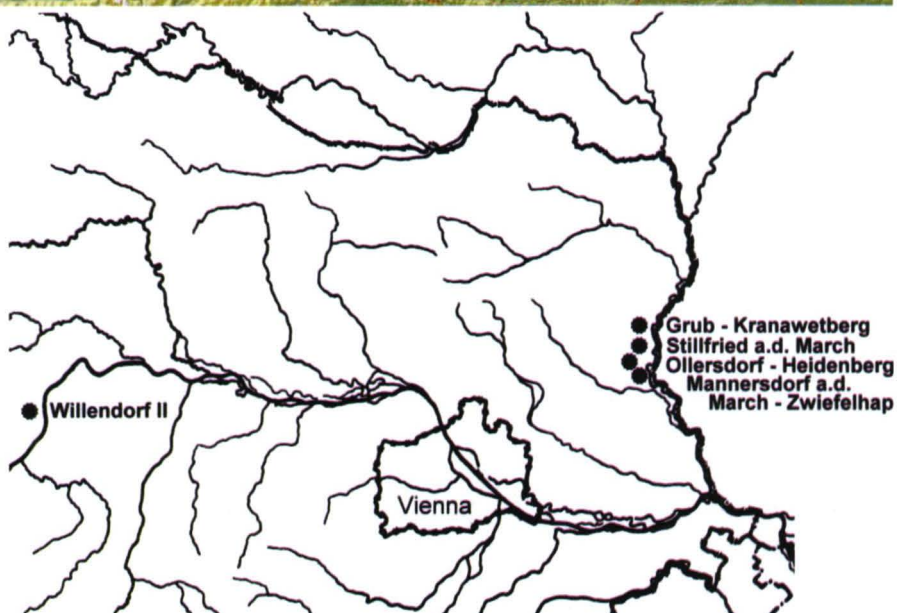


Fig. 1. Map of northern Lower Austria with the sites mentioned in the text.



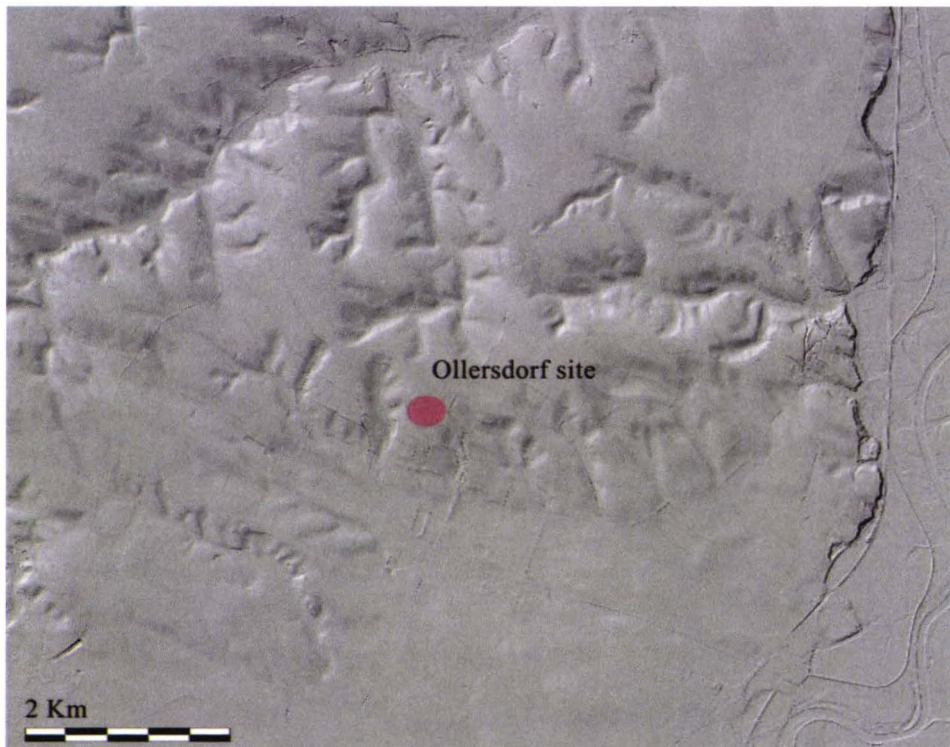


Fig. 2. LiDAR map of the surroundings of the Ollersdorf site.  
Source: NÖGIS, Land Niederösterreich.

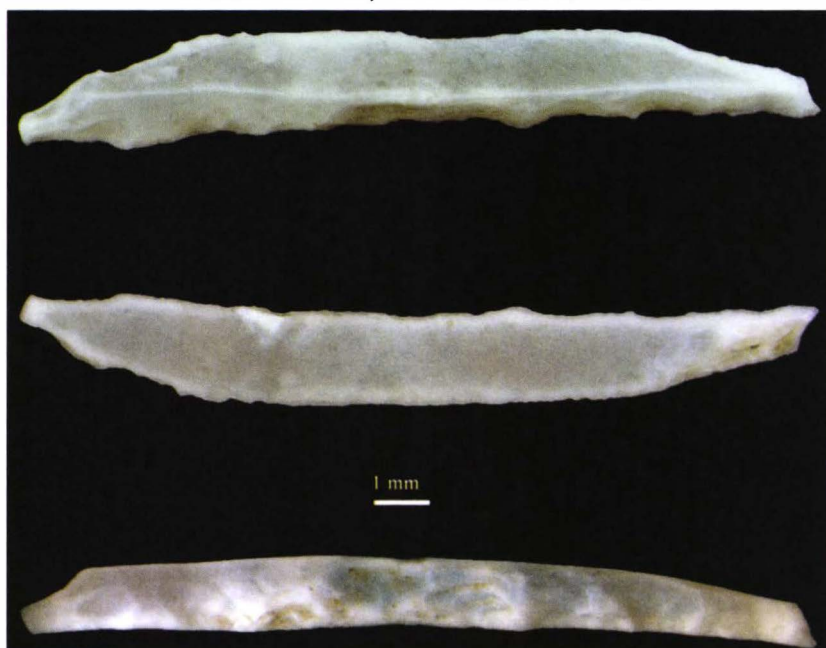


Fig. 3. The Ollersdorf Nano Gravette point.



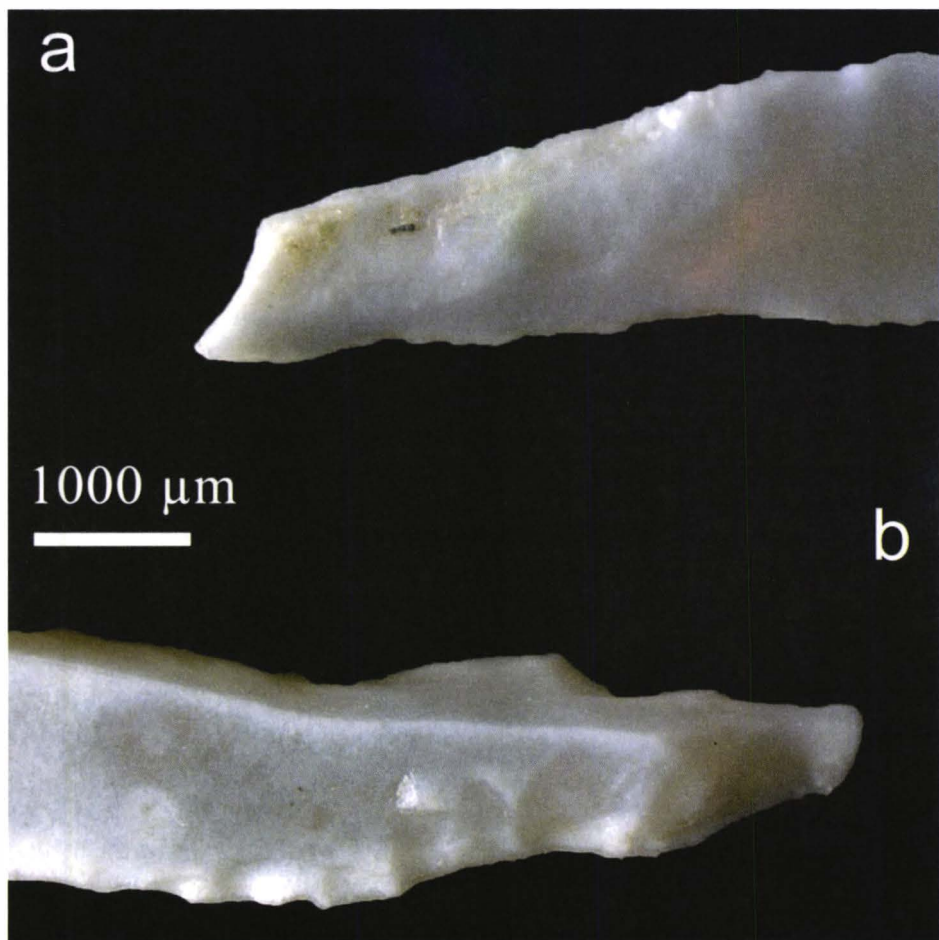


Fig. 4. Retouch patterns on the Ollersdorf Gravette point: a) proximal ventral; b) distal dorsal.



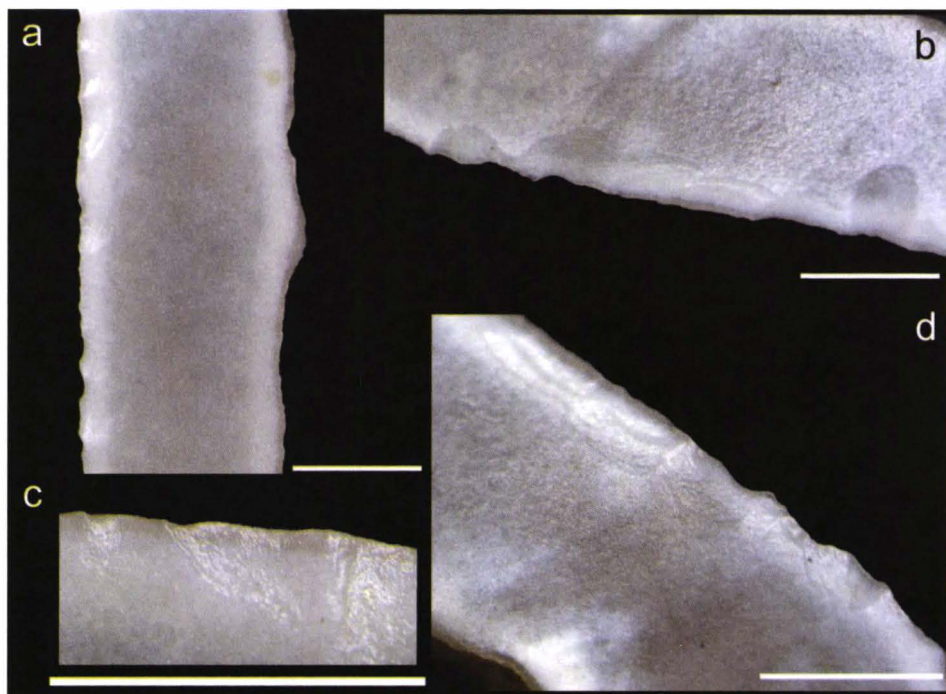


Fig. 5. Use wear traces on the Ollersdorf Gravette point:  
a) ventral medial use wear on the lateral side (left); b and d) detail of the use traces (chipping/splintering); c) slight rounding on the used edge.  
Length of the bar = 1 mm.

Photo credits: all photos by the authors.



# Where do we stand? The current state of Paleolithic research in Romania

MIRCEA ANGHELINU

**Abstract:** *By the year 2000, Romanian Palaeolithic research was still tied, in theoretical and methodological terms, to the natural sciences foundations already laid in the '50's. Despite enormous empirical progresses, including large scale excavations and more systematic approaches to lithic industries, the acknowledged chrono-cultural framework was still mixing protochronisms, unusual retardations and peculiar evolutionary trends. Built on an abstract logic of technological evolution and ignoring the vital coordinates of hunter-gatherer's life, this narrative left the Romanian Pleistocene record outside the mainstream research in the rest of Europe.*

*The picture changed consistently in the last two decades, on both theoretical and empirical terms. First, by switching attention from lithic typology to actual hunter-gatherer societies and lifestyles, several contributions laid the foundation for a consistently changed image of Paleolithic times. Systematic reassessments of previous archaeological information – from the Lower Paleolithic to the dawn of Mesolithic –, coupled with renewed chronometric measurements reassembled the chrono-cultural framework. Higher-resolution geological archives had drawn a more accurate image on past landscape and environmental dynamics. A series of exceptional discoveries – including paleoanthropological finds and parietal art – promoted Romania into a key position in understanding Pleistocene cultural and paleoanthropological dynamics in this part of Europe. These encouraging settings contrast, unfortunately, to the size of the Paleolithic research community in Romania asking for a consistent investment in future training and education.*

**Keywords:** *Romanian Paleolithic, Archaeological theory, Hunter-Gatherer society.*

## 1. Introduction

It takes wisdom and modesty to realize that scientific knowledge has an incurably provisional character and to admit that erecting an intellectual edifice on these soft clay foundations is the normal state of being of any researcher. It is precisely the position Vasile Chirica, now reaching its 75 anniversary, defended for decades. I find appropriate to honor his contribution to Romanian



archaeology with a brief (and therefore far from exhaustive) analysis of the current state of Paleolithic archaeology in Romania.

A lot of things have changed in the last decades of Paleolithic research worldwide; in fact, very few things we used to know as students – e.g. the chronology of the Lower Paleolithic, the branches of the paleoanthropological tree, the Pleistocene human geography, migration paths and timing etc. – remained untouched by the new finds and by the substantial theoretical and methodological input of the last decades. Along with the new lab techniques and methodologies – DNA and isotope sampling, C14 ultrafiltration, elaborate taphonomic and site-formation studies, multi-proxy high-resolution paleoenvironmental reconstructions etc. – came an increasingly elaborated theoretical framework, blending various trends of neo-evolutionary thinking, hunter-gatherers' ethnography and a lot of experimental/replicative work. The waves of these progresses have eventually reached the shores of Romanian archaeology. Apart from the positive knowledge they produced, however, they also brought to light the yet massive mission lying in front of the present generation of Romanian Paleolithic archaeologists.

## 2. Romanian Paleolithic archaeology by the year 2000

The Romanian Paleolithic research, emerged in interwar times through the seminal activity of M. Roșka in Transylvania and N. N. Moroșan in Moldavia and further revived by C. S. Nicolăescu-Plopșor and his students, is now getting closer to a centennial age. Building a research tradition and assuring its survival in a Central-Eastern European country with a syncopated political, economic and cultural history is, of course, an outstanding achievement. But apart from their merits in terms of intellectual continuity, traditions – cultural phenomena by default – also carry their share of inertia and ready-made answers for questions that might have (long) lost their meaning<sup>1</sup>.

Around year 2000, a series of consistent and highly detailed contributions<sup>2</sup> gathered virtually all data available regarding the Paleolithic times

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\* Facultatea de Științe Umaniste, Universitatea Valahia, Târgoviște, [mircea\\_anghelinu@yahoo.com](mailto:mircea_anghelinu@yahoo.com)

<sup>1</sup> G. A. Clark, *Accidents of History: Conceptual Frameworks in Paleoarchaeology*, in M. Camps, P. R. Chauhan (eds.), *Sourcebook of Paleolithic Transitions*, Ed. Springer, New York, 2009, pp. 19-42; S. L. Kuhn, *Emergent Patterns of Creativity and Innovation in Early Technologies*, in S. Elias (ed.), *Origins of Human Innovation and Creativity, Developments in Quaternary Sciences*, no. 16, 2012, pp. 69-87.

<sup>2</sup> V. Chirica, I. Borziak, N. Chetaru, *Gisements du Paléolithique supérieur ancien entre le Dniestr et la Tissa*, BAI, V, Ed. Helios, Iași, 1996; M. Cărciumaru, *Le Paléolithique en Roumanie*, Ed. Jérôme Millon, Grenoble, 1999; Al. Păunescu, *Paleoliticul și epipaleoliticul de pe teritoriul Moldovei cuprins între Carpați și Siret*, Ed. Satya Sai, București, 1998; idem, *Paleoliticul și mezoliticul de pe teritoriul Moldovei cuprins între Siret și Prut*, Ed. Satya Sai, București, 1999; idem, *Paleoliticul și mezoliticul de pe teritoriul Dobrogei*, Ed. Satya Sai, București, 1999; idem, *Paleoliticul și*



across present-day Romania. These syntheses were not only displaying the richness of the local Paleolithic record: they were also exposing the research principles that have been guiding the Romanian Paleolithic times since its inception in interwar times. I have discussed critically these paradigmatic foundations elsewhere<sup>3</sup>, so I will not insist upon them here. However, as the key features of this 'straight archaeology'<sup>4</sup> Romanian-style can help understanding the magnitude of changes that took place in the last decades, it is worth reminding them in brief. Before mentioning them, however, one should take notice of the very context Romanian Paleolithic archaeologist had to work in during the Communist decades.

The Communists invested massively in (Paleolithic) archaeology, particularly in the first decades after 1947 and especially in connection to several huge infrastructural projects (e.g. the Bicaz, Stâncă-Costești or Iron Gates dams). This ideologically motivated generosity, which literally buried archaeologists in tones of artifacts (and in the related need of processing primary field data), came nevertheless with an increasingly neat isolation from the Western academic world, severely limiting the circulation of people and ideas. This isolation alone can easily explain why Romanian prehistoric research as a whole was (and is still) discussing 'fresh' research models precisely when they start (or finish!) to lose popularity in their intellectual homelands. As a consequence, Romanian Paleolithic archaeology was still defending a Mortillet-style unilineal evolutionism by 1960's, discovered F. Bordes in late 1970's and has never been troubled by processual (not to mention post-processual) thinking before 2000. The outcome of this long isolation was a tiny, hard-working but self-referential research community, with an educational background in history (that is, humanities), wrestling with the immense Pleistocene geology and the exotic Paleolithic cultural landscape. According to a regrettable complex many socio-cultural scientists experience in relation to 'hard' sciences since 19<sup>th</sup> century on, this led to a naïve fascination for a formal scientific backing of archaeological data. However, this appeal for 'science' has had much less appealing outcomes: it led to an uncritical trust in the results of natural scientific *methods*, coupled with a poor understanding of what a truly scientific archaeology is and should be. In terms of theory, it evacuated all serious concerns for the scale, nature and actual meaning of the Paleolithic archaeological record *as a human made record*. In more practical terms, it led to a narrow empiricist stance for which detailed

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*mezoliticul din spațiul cuprins între Carpați și Dunăre*, Ed. Agir, București, 2000; idem, *Paleoliticul și epipaleoliticul din spațiul transilvan*, Ed. Agir, București, 2001.

<sup>3</sup> M. Anghelinu, *Evoluția gândirii teoretice în arheologia românească. Concepte și modele aplicate în preistorie*, Cetatea de Scaun, Ed. Cetatea de Scaun, Târgoviște, 2004 ; idem, *O paleontologie a "omului etern": arheologia paleoliticului din România*, Cerc. Arh., no. XIII, 2006, pp. 135-158; idem, L. Niță, V. Sitlivy, T. Uthmeier, I. Bălțean, *Looking around Peștera cu Oase : the Beginnings of Upper Palaeolithic in Romania*, in *QuaternInt*, no. 274, 2012, pp. 136-157.

<sup>4</sup> Cf. J. Sackett, *Straight archaeology French style: The phylogenetic paradigm in historic perspective*, in G. A. Clark (ed.), *Perspectives on the Past. Theoretical Biases in Mediterranean Hunter-Gatherer Research*, University of Pennsylvania Press, 1991, pp. 109-142.



description of lithics and wide chronological frames were enough for concluding archaeology's mission. Any concern dangerously approaching behavioral or social issues was instinctively seen as a step away from 'science' and a drift into the shadowy realm of 'speculation'.

The weight of natural history inheritance in the Romanian Paleolithic research was not truly affected by the cultural-historical descriptivist touch noticeable after 1970, on the contrary. Much like in the case of its French counterpart, which massively inspired Romanian Paleolithic archaeology, the Bordian touch fortified the paleontologically-inspired taxonomy, with various 'cultural species' (Acheulean, Mousterian, Aurignacian etc.) mimicking organic evolution and lacking any scalable socio-cultural meaning. The teeth and bones of these extinct paleo-cultural dinosaurs were the 'typical' lithic tools. Understandably, this allowed for a straight cultural lineage, guided by an abstract logic of technological evolution/improvement devoid of any explicit socio-cultural content and heading from the Lower Paleolithic to Epigravettian and Mesolithic. Fossil indexes were straightly applied to material culture, as if cultural and genetic transmission rules coincided. Occasionally, Bordes' statistical treatment of type tools added the much needed 'hard-science' touch by means of... cumulative graphs. Furthermore, in the lack of a local intellectual tradition of anthropological thinking, the virtually complete unawareness of hunter-gatherers' ethnography made room for a highly stereotyped image of Paleolithic lifestyles.

The humanistic background of most practitioners may also explain several other key features of this research paradigm: (1) the sheer disinterest for paleoanthropological issues (thought to simply linger behind cultural evolution, itself measured by changes in lithic shapes and sizes); (2) the straightforward interpretation of natural processes involved in sites' formation (with sometimes dramatically erroneous age estimations based on layers' depth/thickness and a systematic underestimation of palimpsests in favor of allegedly homogenous lithic 'assemblages'); (3) the poor understanding of the limits of natural sciences and especially of the chronometric methods in use (e.g. radiocarbon) – mixing a naïve faith in 'hard data' with sometimes hasty manipulations (e.g. adding/subtracting the standard errors to fit previous chronological expectations); (4) a limited concern for horizontal settlement topography and additional contextual data; and (5) a straightforward geochronological interpretation of paleoenvironmental data available (e.g. soil geochemistry/morphology, pollen diagrams etc.).

Although varying in its articulation between individual researchers, this basic model carried several crucial consequences. First, it allowed for excavation, recording and curation methods guided solely by lithic typology and inbuilt evolutionary biases (e.g. 'cruder' Aurignacian vs. 'superior' Gravettian). It also led to *ad-hoc* evolutionary schemes oddly decoupled from major paleoanthropological issues, hanging on a poor chronometric support (e.g. a single date = a cultural 'stage'). The final outcome was a highly peculiar chrono-cultural taxonomy, lacking analogies even in neighboring areas of Central and Eastern Europe.



For instance, the Lower Paleolithic (LP) in Romania was thought to date back to 2 Ma, thanks to the allegedly worked bones/choppers at Bugiulești-Tetoiu. In contrast, with the exception of some undated 'pre-Mousterian' finds and several layers clearly deposited beyond the limits of radiocarbon method (e.g. Cioarei-Boroșteni Cave), the Middle Paleolithic (MP) in Romania was surprisingly young, with most occurrences belonging to (late stages of the) Marine Isotope Stage (MIS) 3, sometimes comfortably within the limits of the radiocarbon method (37-32 ka calBP). Moreover, although allegedly still bearing archaic Mousterian traces, the Aurignacian in Romania – itself occasionally a sort of 'transitional' industry<sup>5</sup> – appeared many millennia later than in most European areas, after 35 ka calBP, only to survive alongside Gravettian to the Late Glacial Maximum (LGM) and beyond<sup>6</sup>.

To conclude, by the year 2000, Paleolithic research in Romania was still about (formally retouched) lithics and the resulting (dry) narrative went in terms of coherence and ambition only as far as the lithics themselves allowed<sup>7</sup>. Such a descriptive stage, focused on formal labeling and chrono-spatial ordering of the empirical data was, of course, the natural step in the birth of any professional archaeological tradition everywhere in the world<sup>8</sup>. It was just the duration that made the difference: due to political and intellectual isolation, Romanian Ice Age research remained frozen for decades into a juvenile stage. In my view, the resulting chrono-cultural anomalies – which among others left the Romanian Paleolithic record outside the mainstream European research – were less harmless than the natural-scientific groundwork of this research model, poorly equipped to deal with archaeology's actual subject matter: past *people*. In fact, what this research model was missing was the very specificity of Paleolithic lifestyles.

<sup>5</sup> M. Anghelinu, L. Niță, *What's in a Name: The Aurignacian in Romania*, in *QuaternInt*, no. 351, 2014, pp. 172-192.

<sup>6</sup> F. Mogoșanu, *Paleoliticul din Banat*, Ed. Academiei, București, 1978; Al. Păunescu, *Paleoliticul și epipaleoliticul de pe teritoriul Moldovei cuprins între Carpați și Siret...*; idem, *Paleoliticul și mezoliticul din spațiul cuprins între Carpați și Dunăre...*; idem, *Paleoliticul și epipaleoliticul din spațiul transilvan...*

<sup>7</sup> Supplementary contextual data (usually paleoenvironmental or paleontological 'kitchen lists') was often added without being integrated *causally* into the main narrative, especially if one chooses to ignore K. Flannery's 'Mickey Mouse' inferences (e.g. cold Pleistocene stages led to the occupation of caves, large scatters of charcoal and lithics indicate large, sedentary settlements, knapping stone was the most important activity of the 'Paleolithic man', etc). A simple explanation for many of these awkward causal connections would be, of course, the patent mismatch of temporal scales involved in the slow accumulation of the archaeological record and the explanatory mechanisms invoked, usually referring to short-term human decisions (cf. S. L. Kuhn, *op. cit.*).

<sup>8</sup> B. G. Trigger, *A History of Archaeological Thought*, Ed. Cambridge University Press, Cambridge, 1989.



### 3. Introducing ‘the hunter-gatherer’

The most remarkable progresses recorded in the last decades of Paleolithic research in Romania clearly belong to the empirical realm. I would start, however, by mentioning first a series of theoretical novelties. As the research model dissected above suggested, guiding concepts and theories are as important as their methodological extensions, for they are comprehensive, metaphysically articulated<sup>9</sup> and often located at safe distance from the direct feedback of field practice. In fact – and for obvious reasons, e.g. no experimental feedback –, true paradigmatic revolutions initiated *because* of practical failures of the core theory in the field were rare if not altogether absent in archaeology: we had to wait for changes in socio-political contexts, new intellectual fashions or innovations in neighboring disciplines like sociology, anthropology or natural sciences<sup>10</sup>. But as K. Popper used to repeat, the actual source of scientific inspiration matters less, as long as it allows us to identify new research problems and to solve them by building adequate theories that stand empirical scrutiny at least temporary. The important point is that whatever the source, any paradigmatic change ‘upstream’ will by necessity have (potentially massive) consequences ‘downstream’.

Since 1989, Romanian archaeology opened widely to Western ideas and got acquainted with most important theoretical trends in European and North-American archaeology. Many references to and, more rarely, applications and analyses inspired by processual, neo-evolutionary and even post-processual thought appeared. Most of these contributions lie beyond my objectives here, but several brought forward a key concept for Paleolithic research: the hunter-gatherer.

For practitioners working in the Western, especially Anglophone academic environment, presenting ‘the hunter-gatherer’ as a conceptual novelty may surely appear odd. In the Romanian archaeological context, however, putting forward an ethnographically-loaded concept was quite revolutionary. Irrespective of their (much debated) evolutionary status<sup>11</sup>, hunter-gatherers do represent a typologically valid cluster of societies. Their economy, demography, technology, lifestyle and worldviews contrast often sharply with the constellation features of other socio-economic types like horticulturalists, farmers and herders, not to mention urban/state social formations. While there are undoubtedly huge differences between the Pleistocene natural and social worlds and the contexts and lives of recent/extant ethnographically hunter-gatherers, there are obvious reasons (demographic scale, socio-economic patterns, recurrent adaptive pressures etc.) for using this category of societies in educating our imagination regarding at least some Paleolithic and Mesolithic contexts.

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<sup>9</sup> G. A. Clark, *op. cit.*

<sup>10</sup> B. G. Trigger, *op. cit.*, pp. 4-12.

<sup>11</sup> R. L. Bettinger, *Hunter-gatherers: archaeological and evolutionary theory*, Ed. Plenum Press, New York, 1991; R. L. Kelly, *The Lifeways of Hunter-Gatherers. The Foraging Spectrum*, Cambridge University Press, Cambridge, 2013.



Most of the (actually very few) contributions referring to hunter-gatherers' ethnography aimed at updating local knowledge and reviewing the anthropological literature either in relation with hunter-gatherers' settlement systems<sup>12</sup>, technology<sup>13</sup>, or social organization<sup>14</sup>. While not particularly innovative in terms of the anthropological background, at least when viewed from the perspective of the huge amount of literature available worldwide, these contributions were however the first explicit attempts to put the information coming from hunter-gatherers' ethnography in the service of prehistoric archaeology. Unfortunately, due to their rather general objectives, these contributions left basically untouched the actual Paleolithic record of Romania. The same observation holds for studies focused on even more wide-ranging topics, like cultural macro-evolution, paleo-demographic and paleoanthropological issues and so on<sup>15</sup>.

A more coherent and (so far) singular attempt to actually read Romanian archaeological data through ethnographically-grounded models was proposed by J. Riel-Salvatore and co-workers<sup>16</sup>. Much like previous contributions, the paper

<sup>12</sup> M. Anghelinu, *Espace et logements des communautés de chasseurs-cueilleurs. Les implications portant sur la typologie de sites paléolithiques*, in V. Chirica, M.-C. Văleanu (eds.), *Etablissements et habitations préhistoriques. Structure, organisation, symbole, Actes du Colloque de Iasi, 10-12 decembre 2007*, Ed. Pim, Iași, 2008, pp. 51-64; idem, *Looking for collectors and finding foragers: Notes on settlement variability during the European Upper Paleolithic*, in F. Gogâltan, C. Cordoș (eds.), *Prehistoric settlements: social, economic and cultural aspects. Seven studies in the Carpathian area*, Ed. Mega, Cluj-Napoca, 2016, pp. 5-29.

<sup>13</sup> L. Niță-Bălășescu, M. Anghelinu, M. Mărgărit, *Chronicle of an Endless Variability? Ethnoarchaeology and the Palaeolithic Lithic Technology*, in V. Cotiugă, S. Caliniuc (eds.), *Acts of the First Arheoinvest Congress. Interdisciplinary Research in Archaeology, Iași, 10th-11th of June 2011*, BAR-IS 2433, Ed. Arheopress, Oxford, 2012, pp. 173-180.

<sup>14</sup> M. Anghelinu, L. Niță, *Cei uitați. Femeile și copii în cercetarea epocii paleolitice*, în V. Chirica, G. Bodi (eds.), *Arta antropomorfă feminină în preistoria spațiului carpato-nistrean*, Ed. Pim, Iași, 2010, pp. 34-108; M. Anghelinu, *On Paleolithic Social Inequality. The Funerary Evidence*, in R. Kogălniceanu, R. G. Curcă, M. Gligor, S. Stratton (eds.) *Homines, Funera, Astra, Proceedings of the International Symposium on Funerary Anthropology, 5-8 June 2011, Alba Iulia (Romania)*, BAR-IS 2410, Ed. Archaeopress, Oxford, 2012, pp. 31-43; idem, *Rădăcinile paleolitice ale (in)egalității sociale. O sinteză*, in M. Cârstea, S. Damian (eds.), *Românii în istoria Europei*, Târgoviște, Ed. Cetatea de Scaun, 2013, pp. 1-38.

<sup>15</sup> M. Anghelinu, *Macro-evoluția: o perspectivă alternativă asupra dinamicii socio-culturale în preistorie*, in D. Căprăroiu, M. Anghelinu, I. Oncescu, R. Cărciumaru (eds.), *Arheologie și istorie în spațiul carpato-balcanic*, Ed. Cetatea de Scaun, Târgoviște, 2011, pp. 9-56; idem, *Fitting the ladder to the tree. A common-sense view on the cognitive evolution of the Pleistocene human lineage*, in *Arheologia Moldovei*, nr. XXXVI, 2013, pp. 7-24; idem, *Stasis and change in Paleolithic times. A brief assessment of the Lower and Middle Paleolithic evolutionary dynamics*, in *SP*, no. 11, 2014, pp. 19-31.

<sup>16</sup> J. Riel-Salvatore, G. Popescu, M. C. Barton, *Standing at the gates of Europe: Human behavior and biogeography in the Southern Carpathians during the Late Pleistocene*, in *J. Anthropol Archaeol*, vol. 27, no. 4, pp. 399-417.



also referred to ethnographically documented hunter-gatherers 'ideal types' (e.g. foragers vs. collectors<sup>17</sup>). However, the approach itself was inspired by human behavioral ecology (HBE) and focused on mobility, land-use and technological organization of lithic production across the transition from MP to Upper Paleolithic (UP) in Southern Carpathians and used empirical data from a dozen of Romanian Paleolithic settlements. Despite the drawbacks inherent to the empirical dataset used, the approach underscored the potential a theoretically-coherent, quantitative approach has in reassessing old archaeological data. In fact, such approaches may prove particularly important in the present state of Paleolithic research in Romania, with high-resolution fresh data accumulating very slowly, but with a large amount of old archaeological data/collections available for quantitative reassessments.

Although feeding from different theoretical sources (processualism, macro-evolutionary and dual-inheritance theory, HBE etc.), these contributions should be credited at minimum for a focus shift from qualitative description of lithics to a systematic reflection on the truly specific features of hunter-gatherer lifestyles (low demography, flexible social structure, mobility and organization of technology etc). By anthropologically rephrasing the archaeological inquiry, they opened new analytical windows to be hopefully explored empirically in the years to come.

#### **4. Actual people: paleoanthropological finds**

Another fertile avenue for Romanian Pleistocene research was opened in the last years by several important paleoanthropological finds/reassessments. The taphonomic and anthropological reconsideration and numerical dating of some older paleoanthropological finds, supplemented by new discoveries, underscored the key position Romania holds in understanding crucial episodes of human biological and cultural evolution. It also drew attention on the local Paleolithic and consequently attracted research funds, spurring a wider involvement of foreign scholars in the research of the Romanian Pleistocene record.

The Lower and Middle Pleistocene paleoanthropological record is still missing in Romania. The Neanderthal record remained scanty and the only significant progress made was the U-Th chronological reassessment (>62 ka calBP) of the Neanderthal footprints in the Vârtop Cave<sup>18</sup>. Romanian Carpathian caves provided, however, some of the earliest evidence for the presence of Anatomically Modern Humans (AMH) in Europe. The partially preserved human skull found in the Cioclovina Uscată Cave has now a secure attribution to the

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<sup>17</sup> R. L. Binford, *Willow smoke and dogs' tails: hunter-gatherer settlement systems and archaeological site formation*, in *American Antiquity*, no. 45, 1980, pp. 4-20.

<sup>18</sup> B. Onac, I. Viehmann, J. Lundberg, S. E. Lauritzen, C. Stringer, V. Popiță, *U-Th ages constraining the Neanderthal footprint at Vârtop Cave, Romania*, in *Quaternary Science Reviews*, no. 24, 2005, pp. 1151-1157.



Upper Palaeolithic: two radiocarbon ages of ca. 33 ka cal BP<sup>19</sup> point to a Late Aurignacian/Early Gravettian time range.

The reassessment of Peștera Muierii AMH finds led to equally important conclusions<sup>20</sup>. The six skeletal elements found there in 1952 belong to three different individuals. Four of these pieces (cranium, mandible, scapula, and tibia) belong to a female (Muierii 1); a temporal bone and a fibular diaphysis belong to two other individuals (Muierii 2 and 3). Muierii 1 and Muierii 2 provided direct radiocarbon ages of 34-35 ka calBP, suggesting a single/close in time depositional episode(s).

The most widely advertised paleoanthropological discovery, however, took place at the Peștera cu Oase (Anina). The remains of two AMH individuals (Oase 1 and Oase 2) were found during the speleological and archaeological exploration (2002-2004) of the complex karst system here<sup>21</sup>. The Oase 1 mandible was directly dated to ca. 40 ka cal BP and the many features in common between the two individuals suggest a comparable age for Oase 2<sup>22</sup>. Much like in the case of Cioclovina, although clearly displaced by hydraulic processes and found in secondary position in a mammal bones accumulation, the human fossils at Oase are very well preserved, with minimum evidence of geological abrasion and no traces of carnivore gnawing. The numerical chronology recommends the Oase fossils as the oldest directly dated AMH in Europe. Significantly, much like the AMH fossils in Muierii and Cioclovina caves, both individuals at Oase display a mosaic of anthropometric features supporting the Neanderthal/AMH admixture<sup>23</sup>. Recent paleogenetic studies actually confirmed the partially Neanderthal ancestry of the Oase fossils<sup>24</sup>.

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<sup>19</sup> A. Soficaru, C. Petrea, A. Doboș, E. Trinkaus, *The human cranium from the Peștera Cioclovina Uscață, Romania: Context, age, taphonomy, morphology and paleopathology*, in *Curr. Anthropol.*, no. 48, 2007, pp. 611-619.

<sup>20</sup> Idem, A. Doboș, E. Trinkaus, *Early modern humans from the Peștera Muierii, Baia de Fier, Romania*, in *PNAS (USA)*, no. 103, 2006, pp. 17196-17201; A. Doboș, A. Soficaru, E. Trinkaus, *The Prehistory and Paleontology of the Peștera Muierii (Romania)*, Ed. ERAUL, Liège, 2010.

<sup>21</sup> E. Trinkaus, Ș. Mîlotă, R. Rodrigo, M. Gherase, O. Moldovan, *Early modern human cranial remains from the Peștera cu Oase, Romania*, in *Journal of Human Evolution*, no. 45, 2003, pp. 245-253; idem, J. Zilhão, H. Rougier, R. Rodrigo, Ș. Mîlotă, M. Gherase, L. Sarcină, O. Moldovan, I. C. Bălțean, V. Codrea, S. E. Bailey, R. G. Franciscus, M. Ponce de Léon, C. P. E. Zollikofer, *The Peștera cu Oase and Early Modern Humans in Southeastern Europe*, in N. J. Conard (ed.), *When Neanderthals and Modern Humans Met*, Ed. Kerns, Tübingen, 2006, pp. 145-164.

<sup>22</sup> H. Rougier, Ș. Mîlotă, R. Rodrigo, M. Gherase, L. Sarcină, O. Moldovan, J. Zilhão, S. Constantin, R. G. Franciscus, C. P. E. Zollikofer, M. Ponce de Léon, E. Trinkaus, *Peștera cu Oase 2 and the cranial morphology of early modern Europeans*, in *PNAS (USA)*, no. 104, 2007, pp. 1165-1170.

<sup>23</sup> *Ibidem*.

<sup>24</sup> Q. Fu, M. Hajdinjak, O. T. Moldovan, S. Constantin, S. Mallick, P. Skoglund, N. Patterson, N. Rohland, I. Lazaridis, B. Nickel, B. Viola, K. Prüfer, M. Meyer, J. Kelso, D. Reich, S. Pääbo, *An early modern human from Romania with a recent Neanderthal ancestor*, in *Nature*, vol. 524, 2015, pp. 216-219.



No secure archaeological context has been yet found for any of these fossils. Cioclovina and Muierii find contexts were likely associated to the undiagnostic UP lithics recovered in those caves. The recent chronological reassessment, at 40 ka calBP, of the neighboring Banat Early Aurignacian open-air settlements<sup>25</sup>, may provide a hypothetical cultural correlate for the Oase fossils. If so, given the current lack of an alternative archaeological correlate, the long-ranging conclusion would simply be that the makers of Early Aurignacian were at least in part a mixed population of aboriginal Neanderthals and Near East AMH newcomers.

Unfortunately, although the AMH finds in Romania do contribute to the better understanding of a crucial evolutionary stage notorious for its scarcity of human fossils, none of these discoveries can be properly interpreted in behavioral terms. For instance, despite the good preservation state, suggesting a protected environment during bodies' decomposition, the original disposal of the corpses remains unknown. The systematic presence of several individuals in each case also suggests burial contexts – a rare occurrence for this UP interval across Europe.

The older find (1965) of ca. 400 footprints overlapping those of cave bears discovered in the Ciur - Izbuca Cave have also been recently reassessed. 51 footsteps were still preserved and traces of 7 AMH children and adults were identified, with a chronology ranging between 36.5 and 28.7 ka cal BP<sup>26</sup>. Much like in the case of Vârtopeș footprints, no supporting archaeological context has been found in this cave.

The contrast between the number of UP paleoanthropological finds in caves and the inexpressive or missing archaeological contexts remains puzzling. A superficial human penetration into the Carpathian area during the Late Pleistocene might have some paleo-environmental explanation<sup>27</sup>; the use of caves for symbolic (funerary?) depositions and less for domestic purposes might have a cultural explanation; the lack of contemporary Aurignacian/Gravettian open air/cave sites in the surrounding areas can, however, only be explained through insufficient field researches.

The last years also brought the certification of the oldest, Paleolithic age human burial in Romania, at Climente II Cave. The <sup>14</sup>C ages of the male buried in this cave and recovered in the 1960's fall within the time-range of the Bølling-

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<sup>25</sup> C. Schmidt, V. Sitlivy, M. Anghelinu, V. Chabai, H. Kels, T. Uthmeier, T. Hauck, I. Bălțean, A. Hilgers, J. Richter, U. Radtke, *First chronometric dates (TL and OSL) for the Aurignacian open-air site of Românești-Dumbrăvița I, Romania*, in *JAS*, no. 40, 2013, pp. 3740-3753.

<sup>26</sup> D. Webb, M. Robu, O. Moldovan, S. Constantin, B. Tomus, I. Neag, *Ancient Human Footprints in Ciur-Izbuca Cave, Romania*, in *AJPA*, no. 155, 2014, pp. 128-135.

<sup>27</sup> T. C. Hauck, F. Lehmkuhl, C. Zeeden, J. Böskén, A. Thiemann, J. Richter, *The Aurignacian way of life: Contextualizing early modern human adaptation in the Carpathian Basin*, in *QuaternInt*, under press, 2017, DOI: <https://doi.org/10.1016/j.quaint.2017.10.020>.



Allerød warm period (ca 14.7-12.9 ka calBP)<sup>28</sup>. Interestingly enough, contextual evidence and paleodietary data point to a certain degree of behavioral and cultural continuity between the regional Late Paleolithic populations and the subsequent Mesolithic around the Iron Gates.

## 5. Reassessing previous archaeological knowledge

Expectably, the greatest deal of research effort of the last decades has been invested in the systematic chrono-cultural reassessment of the preexisting archaeological record, often connected to fresh but usually small-scale field researches. One of the explanations stands in the theoretical background of the new generation of practitioners, now following different research agendas by means of new methodologies. Another (and related) explanation is provided by the increasing number of international research teams working in Romania and following research objectives better connected to the Western European state of knowledge. The greater involvement of foreign research teams and the improved access to well-equipped labs had dramatic effects, leading to a consistently changed picture of the Romanian Paleolithic as a whole.

### 5.1. The Lower Paleolithic

The early stages of human presence in Romania remain poorly known to this day. In fact, as the most recent reviews suggests<sup>29</sup>, the entire LP in Romania stands in little more than 1000 lithics, recovered from no less than 65 findspots! Many of them lack any clear anthropic intervention; only two dozen come from (poorly described) stratigraphical contexts and several bifacial forms likely belonged to (undated) MP context.

However, there are no particular biogeographic or paleoenvironmental grounds to dismiss the very existence of a LP in Romania: at least from the Middle Pleistocene on, LP contexts at even more northerly latitudes are well documented across Europe<sup>30</sup>. The case became even stronger after the recent finds at Dealu Guran (Dobrudja): several *in situ* lithics were OSL-dated at 300-400 ka BP<sup>31</sup>, certified for the first time, in a chronometrically controlled context, the presence of LP in Romania. Although lacking formal tools, the Mode 1 flakes at Dealu Guran document the presence of the 'little tools tradition' of the Central

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<sup>28</sup> C. Bonsall, A. Boroneanț, A. Evatt, A. Soficaru, C. Nica, L. Bartosiewicz, G.T. Cook, T. F. G. Higham, C. Pickard, *The 'Clisurean' finds from Climente II cave, Iron Gates, Romania*, in *QuaternInt*, no. 423, 2016, pp. 303-314.

<sup>29</sup> A. Doboș, *The Lower Palaeolithic of Romania: A Critical Review*, in *PaleoAnthropology*, 2008, pp. 218-233; idem, R. Ioviță, *Paleoliticul inferior din România: o reevaluare din perspective descoperirilor din situl Dealul Guran*, in *MCA* (SN), no. XI, 2015, pp. 5-18.

<sup>30</sup> R. Rocca, *Depuis l'Est ? Nouvelles perspectives sur les premières dynamiques de peuplement en Europe*, in *L'Anthropologie*, vol. 120, no. 3, 2016, pp. 209-236.

<sup>31</sup> A. Doboș, R. Ioviță, *op. cit.*



European LP<sup>32</sup> and suggest that similar future finds are still possible. The state of preservation and location of this settlement point, however, to the formation processes that might impede on the easy identification of new LP sites: the same open environment and old lake basins that might have attracted an early human colonization into the area have also been covered by a thick loess cover in the ensuing stages of the Pleistocene<sup>33</sup>.

## 5.2. Getting (much) older: the Middle Paleolithic

In contrast to the LP, the MP in Romania has been identified since interwar times and systematically studied since 1950's. As the most recent reassessment points out<sup>34</sup>, the total number of settlements is, nonetheless, far from impressive: apart from allegedly MP surface/unverified finds, a little more than 20 open-air and cave sites have been actually investigated archaeologically. With the exception of the huge open-air site at Ripiceni-Izvor, preserving more than 55,000 lithics, all the others provided significantly smaller assemblages, ranging between a few dozen and 5,000 lithics.

No new MP settlement has been systematically investigated in the last decades. Apart from two comprehensive and methodologically fresh reviews of previous finds<sup>35</sup>, no significant progresses were thus made in the empirical realm. One exception is the publication of the original MP industry with leafpoints and possibly dated to Interglacial times at Abri 122 in SE Transylvania<sup>36</sup>. Although currently lacking regional analogies, the settlement belongs to a complex karstic system suggesting that further finds are possible in the near future.

The image on the Romanian MP has nonetheless consistently changed in terms of chronology. As mentioned, the chronology of the MP industries by the year 2000 was by far the most striking feature of the Romanian Mousterian.

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<sup>32</sup> R. Rocca, *op. cit.*

<sup>33</sup> K. E. Fitzsimmons, U. Hambach, *Loess accumulation during the last glacial maximum: Evidence from Urluia, southeastern Romania*, in *QuaternInt*, no. 334-335, 2014, pp. 74-85.

<sup>34</sup> A. Doboş, *The Middle Palaeolithic Research in Romania. Past and Current Issues*, in *MCA (SN)*, no. XIII, 2017, pp. 5-14.

<sup>35</sup> C. Pop, *The Middle Palaeolithic of present day Romania: a critical review*, Vancouver MA thesis, The University of British Columbia, 2013; G. Popescu, *Late Pleistocene Hunter-Gatherer Settlement and Ecology of the Romanian Carpathians and Adjacent Areas*, PhD Dissertation, Arizona State University, Tempe, 2015.

<sup>36</sup> D. Veres, M. Cosac, C. Schmidt, G. Murătoareanu, U. Hambach, K. Hubay, S. Wulf, D. Karátson, *New chronological constraints for Middle Palaeolithic (MIS 6/5-3) cave sequences in Eastern Transylvania, Romania*, in *QuaternInt*, under press, 2017, <http://dx.doi.org/10.1016/j.quaint.2017.07.015>; M. Cosac, G. Murătoareanu, D. Veres, L. Niţă, C. Schmidt, U. Hambach, A. Radu, R. Cuculici, D. L. Buzea, M. Mărgărit, V. Dumitraşcu, Ş. Vasile, A. Petculescu, I. Dénes, *Multi-proxy archaeological investigations of a Middle Palaeolithic occupation context in Eastern Transylvania, Romania*, in *QuaternInt*, under press, 2017, <https://doi.org/10.1016/j.quaint.2017.09.014>.



Pollen-based geochronological estimations, much like the classical radiocarbon measurements done in the 1980', systematically framed most MP occurrences into (occasionally very) late stages of MIS3. Despite the very limits of the radiocarbon method and the huge standard errors reported, most Romanian authors admitted both the short MP chronology and the Mousterian survival beyond the conventional boundary of the UP, at least in some of the Carpathian caves.

The last two decades saw this long-lasting thesis fading away, especially because of the application of luminescence dating techniques that documented a systematic trend towards older ages, occasionally reaching the Middle Pleistocene. Virtually all MP layers reassessed proved consistently older than previously thought: Mitoc-Valea Izvorului (MIS 6 – 160 ka BP<sup>37</sup>), Ripiceni-Izvor (52 ka calBP, but possibly also MIS 6); Zăbrani (MIS4); Cuza Vodă (>55 ka BP); Mamaia-Sat (MIS7/MIS9<sup>38</sup>); Coșava and Românești Dumbrăvița (MIS 4, MIS5?<sup>39</sup>); Abri 122 (MIS 6/5-3<sup>40</sup>) etc. The idea of a Late Mousterian in the Carpathian caves was not thoroughly dismissed, as no new sampling/dating has been undertaken in the respective settlements. However, the only AMS ages available from the area (ranging around 45 ka calBP<sup>41</sup>) fall within the conventional limits of the late MP across Europe. Moreover, the stratigraphical segregation between MP and UP layers in all known cave or open-air contexts and the recent chronological reassessment at 40 ka calBP of the earliest Aurignacian in SW Romania<sup>42</sup> make the hypothesis of a late Mousterian survival in Romania unlikely. The only counter-example is currently provided by the thin MP layer ISRL dated to 35±5 ka BP at Boinești, in NW Romania<sup>43</sup>, but the size and taphonomic integrity of this collection, mixing blade/lets and flake technology, makes the original MP attribution tentative.

<sup>37</sup> S. Balescu, A. Tuffreau, R. Dobrescu, P. Auguste, J.-J. Bahain, M. Lamothe, A. Petculescu, Q. Shao, *Nouvelles données sur la chronologie des sites paléolithiques en context loessique du Nord-Est et du Sud-Est de la Roumanie (Périphérie orientale des Carpates)*, in *L'Anthropologie*, 2018, under press, <https://doi.org/10.1016/j.anthro.2018.02.001>; A. Doboș, *op. cit.*;

<sup>38</sup> S. Balescu, A. Tuffreau, R. Dobrescu, P. Auguste, J.-J. Bahain, M. Lamothe, A. Petculescu, Q. Shao, *op. cit.*

<sup>39</sup> H. Kels, J. Protze, V. Sitlivy, A. Hilgers, A. Zander, M. Anghelinu, M. Bertrams, F. Lehmkuhl, *Genesis of loess-like sediments and soils at the foothills of the Banat Mountains, Romania – Examples from the Paleolithic sites Românești and Coșava*, in *QuaternInt*, no. 351, 2014, pp. 213-230.

<sup>40</sup> M. Cosac, G. Murătoareanu, D. Veres, L. Niță, C. Schmidt, U. Hambach, A. Radu, R. Cuculici, D. L. Buzea, M. Mărgărit, V. Dumitrașcu, Ș. Vasile, A. Petculescu, I. Dénes, *op. cit.*

<sup>41</sup> A. Doboș, *op. cit.*

<sup>42</sup> C. Schmidt, V. Sitlivy, M. Anghelinu, V. Chabai, H. Kels, T. Uthmeier, T. Hauck, I. Bălțean, A. Hilgers, J. Richter, U. Radtke, *op. cit.*

<sup>43</sup> A. Tuffreau, R. Dobrescu, S. Balescu, M. C. Văleanu, *Boinești (département de Satu-Mare), Moustérien, Aurignacien et processus taphonomiques*, in *MCA* (SN), no. IX, 2013, pp. 7-40.



### 5.3. Back in line: the Upper Paleolithic

The UP research of the last two decades experienced a similar trend in terms of chronological resettling. However, the reconsideration of the UP was far more systematic and consistent, thanks to a richer archaeological record and to some spectacular finds that spurred several international research projects in Romania.

Geographically, the UP research in Romania covered virtually the entire country, from the Lower Danube<sup>44</sup> and Banat<sup>45</sup> to Oaş-Maramureş<sup>46</sup>, and from Danube's Iron Gates<sup>47</sup> to the Bistriţa<sup>48</sup> and Prut Valley in NE Romania<sup>49</sup>. Reviewing all the new data is certainly beyond the scope of the present review, especially as highly-detailed publications are already available. I would resume my presentation to the most significant changes in relation to the inherited chrono-cultural framework.

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<sup>44</sup> R. Dobrescu, A. Tuffreau, S. Balescu, *Le gisement paléolithique supérieur ancien de la «Viil » à Ciuperceni (Vallée du Danube)*, in *MCA* (SN), no. XI, 2015, pp. 19-42.

<sup>45</sup> V. Sitlivy, V. Chabai, M. Anghelinu, T. Uthmeier, H. Kels, L. Niţă, I. Bălţean, A. Vesselsky, C. Țuţu, *Preliminary reassessment of the Aurignacian in Banat (South-western Romania)*, in *QuaternInt*, no. 351, 2014, pp. 193-212; idem, V. Chabai, M. Anghelinu, T. Uthmeier, H. Kels, A. Hilgers, C. Schmidt, L. Niţă, I. Bălţean, A. Veselsky, T. Hauck, *The earliest Aurignacian in Romania: New investigations at the open air site of Româneşti-Dumbrăviţa I (Banat)*, in *Quartär*, no. 59, 2012, pp. 85-130.

<sup>46</sup> A. Tuffreau, R. Dobrescu, S. Balescu, M. C. Văleanu, *op. cit.*

<sup>47</sup> C. Bonsall, A. Boroneanţ, A. Evatt, A. Soficaru, C. Nica, L. Bartosiewicz, G.T. Cook, T. F. G. Higham, C. Pickard, *op. cit.*

<sup>48</sup> L. Steguweit, M. Cărciumaru, M. Anghelinu, L. Niţă, *Reframing the Upper Palaeolithic in the Bistriţa Valley (northeastern Romania)*, in *Quartär*, nr. 56, 2009, p. 139-157; M. Anghelinu, L. Niţă, L. Steguweit, *Not that original after all: the chrono-cultural framework of the Upper Paleolithic on the Bistriţa Valley (North-Eastern Romania)*, in *ArhMold*, XXXV, 2012, pp. 7-46; idem, L. Niţă, G. Murătoreanu, *Le Gravettien et l'Épigravettien de l'Est de la Roumanie: une reevaluation*, in *L'Anthropologie*, under press, 2018, <https://doi.org/10.1016/j.anthro.2018.03.002>.

<sup>49</sup> V. Chirica, *Gisements paléolithique de Mitoc. Le Paléolithique supérieur de Roumanie à la lumière des découvertes de Mitoc*, Ed. Helios, Iaşi, 2001; P. Haesaerts, I. Borziak, V. Chirica, F. Damblon, L. Koulakovska, J. van der Plicht, *The East Carpathian loess record: a reference for the Middle and Late Pleniglacial stratigraphy in Central Europe*, in *Quaternaire*, vol. 14, no. 3, 2003, pp. 163-188; idem, I. Borziak, V. Chirica, F. Damblon, L. Koulakovska, *Cadre stratigraphique et chronologique du Gravettien en Europe Centrale*, in J. A. Svoboda, L. Sedlachkova (eds.), *The Gravettian along the Danube. Actes du Colloque de Mikulov (20-21 novembre 2002)*, The Dolni Vestonice Studies 11, Ed. Institute of Archaeology, Brno, 2004, pp. 33-57, P. Noiret, *Le Paléolithique supérieur de la Moldavie*, Ed. ERAUL, Liège, 2009.



By 2000, Romanian UP comprised three technocomplexes: Aurignacian, Gravettian and Epi/Tardigravettian. The inner subdivisions of these units, much like the chronological and cultural ties connecting them varied according to different authors<sup>50</sup>. There was, however, a certain agreement on the continuity between Aurignacian, Gravettian and Epigravettian (with the latter sometimes labeled as Late Gravettian), especially in Eastern Romania, where these technocomplexes have been (or thought to have been) identified in chronological succession *in situ*. For many authors, the Aurignacian was some sort of 'incomplete' UP<sup>51</sup>, still carrying a MP technological inheritance: the 'true' UP was actually the Gravettian. However, the late persistence of Aurignacian industries in Banat, along the Bistrița River in Eastern Carpathians, but also in Southern Romania was largely agreed. So was the inherent chronological parallelism between the Late Aurignacian and certain (sometimes late) stages of the Gravettian. Overall, all these continentally-acknowledged UP technocomplexes were thought to display a surprisingly young chronology, albeit this postulate was only weakly supported by radiocarbon dates.

For instance, with the exception of Mitoc-Malul Galben, which by then had already provided several radiocarbon ages around 34 ka calBP<sup>52</sup>, none of the allegedly Aurignacian occurrences in caves or open air proved older than 32 ka calBP, with most reliable ages clustered between 28 and 25 ka calBP and some geochronological estimations recording the last breath of this technocomplex in Tardiglacial times<sup>53</sup>. The oldest Gravettian was again reported at Mitoc-Malul Galben around 31 ka calBP, with all the remaining Gravettian/Epigravettian occurrences ranging between 26 and 15 ka calBP. Unsurprisingly, given these chronological unconformities, the Romanian UP remained somehow out of picture and largely irrelevant for most of the key questions raised by European Paleolithic research, like the very emergence and spread of the UP, the transition between its main technocomplexes or their actual adaptive and behavioral content.

This isolation vanished in the last years. Virtually no component of this paleo-cultural landscape survived the reassessments undertaken in the last decade. The throughout reexamination of previous publications and collections<sup>54</sup>, supplemented by further field researches led to a consistently changed picture that can be summarized as it follows.

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<sup>50</sup> Compare, for instance, C. S. Nicolăescu-Plopșor, Al. Păunescu, F. Mogoșanu, *Le Paléolithique de Ceahlău*, in *Dacia* (N.S.), no. X, pp. 5-114, F. Mogoșanu, *Despre stratigrafia și periodizarea Gravetianului din Moldova*, *SCIIVA*, tom 37, no. 2, pp. 159-162, and Al. Păunescu, *Paleoliticul și epipaleoliticul de pe teritoriul Moldovei cuprins între Carpați și Siret...*

<sup>51</sup> C. S. Nicolăescu-Plopșor, Al. Păunescu, F. Mogoșanu, *op. cit.*; Al. Păunescu, *op. cit.*

<sup>52</sup> V. Chirica, I. Borziciac, N. Chetaru, *op. cit.*

<sup>53</sup> F. Mogoșanu, *Paleoliticul...*

<sup>54</sup> L. Niță-Bălășescu, *Le paléolithique supérieur de la Vallée de Bistrița dans le contexte des recherches de Poiana Cireșului, Piatra Neamț (nord-est de la Roumanie)*, Ed. Cetatea de Scaun, Târgoviște, 2008; P. Noiret, *op. cit.*; M. Anghelinu, L. Niță, L. Steguweit, *op. cit.*; idem, L. Niță, G. Murătoareanu, *op. cit.*



### 5.3.1. The Aurignacian

The recent reassessments of the Banat settlements at Tincova, Coșava and Românești-Dumbrăvița<sup>55</sup> indicate that far from representing a late survival of the Central European Krems-Dufour tradition, the Early Aurignacian in Banat stands as the oldest UP presence recorded in Romania, around 40 ka calBP. A possibly Aurignacian presence was similarly dated to MIS3 along the Lower Danube settlement at Ciuperceni<sup>56</sup>, and suggested for Vădastra<sup>57</sup>. No consistent Aurignacian features have been re-certified in the Eastern Carpathians collections<sup>58</sup>, or in the more southerly parts of Romania<sup>59</sup>. The new AMS chronology in Eastern Carpathians could only positively prove a consistent Gravettian (>32 ka calBP) and Epigravettian presence, with hints to (possibly Aurignacian) older stages (34-35 ka calBP)<sup>60</sup>. With the remaining occurrences (Oaș, Carpathian caves) still undated, the idea of an unusually late Aurignacian (i.e., later than the Late Aurignacian at Mitoc-Malul Galben at 32 ka calBP) seems untenable today.

The inner variability of the Aurignacian phenomenon in Romania is at present hard to grasp, given the chronologically and geographically scattered occurrences. In contrast to previous views, however, some certain features are its fully laminar structure and likely alloigenous origin, lacking any connections to the local MP. While the loess domain east of Carpathians seems to host only late Aurignacian stages, the Danubian and Western areas point to an Early

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<sup>55</sup> C. Schmidt, V. Sitlivy, M. Anghelinu, V. Chabai, H. Kels, T. Uthmeier, T. Hauck, I. Bălțean, A. Hilgers, J. Richter, U. Radtke, *op. cit.*; V. Sitlivy, V. Chabai, M. Anghelinu, T. Uthmeier, H. Kels, L. Niță, I. Bălțean, A. Vesselsky, C. Țuțu, *op. cit.*; idem, V. Chabai, M. Anghelinu, T. Uthmeier, H. Kels, A. Hilgers, C. Schmidt, L. Niță, I. Bălțean, A. Veselsky, T. Hauck, *op. cit.*

<sup>56</sup> R. Dobrescu, A. Tuffreau, S. Balescu, *op. cit.*

<sup>57</sup> *Ibidem.*

<sup>58</sup> L. Niță-Bălășescu, *op. cit.*

<sup>59</sup> M. Cărciumaru, O. Cârșina, M. Anghelinu, M. Cosac, M. Mărgărit, L. Niță, M. Pleșa, *Șantierul arheologic Lapoș-Poiana Roman*, in *Ialomița. Studii și cercetări de arheologie, istorie, etnografie și muzeologie*, no. IV, 2003-2004, pp. 9-32; M. Anghelinu, L. Niță *op. cit.*; M. Cosac, G. Murătoareanu, Al. Radu, *Așezarea paleolitică de la „Malu Dinu Buzea”, sat Cremenea, com. Sita Buzăului, jud. Covasna. O sinteză a campaniilor 2010-2013. Date geomorfologice și stratigrafice*, in A. Stavilă, D. Micle, A. Cîntar, C. Floca, S. Forțiu (eds.), *ArheoVest I: In Memoriam Liviu Măruia, Interdisciplinaritate în Arheologie și Istorie, Timișoara, 7 decembrie 2013*, Vol. I, Ed. JATEPress Kiadó, Szeged, 2013, pp. 25-34; idem, A. Popa, D.-L. Buzea, A. Chiricescu, G. Murătoareanu, A. Radu, *Prospecțiuni geomagnetice și cercetări arheologice în situl paleolitic de la Constanda-Lădăuși, punct “Borșoșu” (com. Barcani, jud. Covasna)*, in S. Forțiu, A. Cîntar (eds.), *ArheoVest II: In Honorem Gheorghe Lazarovici, Interdisciplinaritate în Arheologie, Timișoara, 6 decembrie 2014*, vol. II, Ed. JATEPress Kiadó, Szeged, 2014, pp. 513-527.

<sup>60</sup> M. Anghelinu, L. Niță, G. Murătoareanu, *op. cit.*



Aurignacian presence, possibly connected to the initial spread of this technocomplex towards Central Europe<sup>61</sup>. The recent geochemical assessment of the obsidian from the Aurignacian series at Buşag and Călineşti I in Oaş<sup>62</sup> indicate for the first time the use of the G3 Ukrainian source in a Paleolithic context in Romania. It is worth noticing, however, that the samples from Oaş macroscopically resemble by their grey patina two obsidian samples from Româneşti-Dumbrăviţa I GH3 Aurignacian<sup>63</sup>. Much like in the Banat cases (e.g. Coşava, Româneşti), these samples, suggesting a longer depositional span and therefore more intense hydration, contrast macroscopically and geochemically with the G1 and G2 sources identified in the Gravettian/Epigravettian series in both areas. The find not only fortifies the original labeling as Early Aurignacian for the Oaş layers involved, but also points to a long distance raw material transfer to the Banat settlements (that is, from North to South). As a consequence, it is perhaps wiser to see the Early Aurignacian along the Eastern rim of the Carpathian Basin as a long-lasting cultural phenomena, involving complex mobility patterns – certainly more complicated than the more or less straight arrow heading from the Balkans to Central Europe.

### 5.3.2. The Gravettian/Epigravettian

The last decades confirmed the geographical and chronological amplitude of the Gravettian phenomenon in Romania, particularly well represented across the Moldavian loessic domain. The most representative sequence remained Mitoc-Malul Galben (MMG) on the Prut river<sup>64</sup>, which provided the best dated and most complex litho-stratigraphic sequence covering the 35-23 ka calBP interval. In fact, until recently MMG provided the backbone for the regional Gravettian, clearly comprising at least three major stages: Early Gravettian (31-29 ka calBP); a shouldered points horizon (ca. 28-25 ka BP) and a Late Gravettian/Early Epigravettian (24-23 ka BP)<sup>65</sup>. However, recent researches in the Eastern Carpathians suggest a more complicated and certainly much longer story for the Gravettian *sensu lato* in Eastern Romania.

Although displaying a lower resolution in terms of paleoenvironmental dynamics when compared to MMG, the loess-like deposits on the Bistriţa terraces at Poiana Cireşului, Bistricioara Lutărie I, III, La Mal, and Ceahlău-

<sup>61</sup> T. C. Hauck, F. Lehmkuhl, C. Zeeden, J. Böskén, A. Thiemann, J. Richter, *op. cit.*

<sup>62</sup> R. Dobrescu, A. Tuffreau, C. Bonsall, *L'utilisation de l'obsidienne au Paléolithique supérieur dans le nord-ouest de la Roumanie*, in *L'Anthropologie*, under press, 2018, <https://doi.org/10.1016/j.anthro.2018.02.002>.

<sup>63</sup> V. Sitlivy, V. Chabai, M. Anghelinu, T. Uthmeier, H. Kels, A. Hilgers, C. Schmidt, L. Niţă, I. Bălţean, A. Veselsky, T. Hauck, *op. cit.*

<sup>64</sup> P. Haesaerts, I. Borziak, V. Chirica, F. Damblon, L. Koulakovska, J. van der Plicht, *op. cit.*; P. Noiret, *op. cit.*

<sup>65</sup> V. Chirica, *op. cit.*; P. Haesaerts, I. Borziak, V. Chirica, F. Damblon, L. Koulakovska, *op. cit.*; P. Noiret, *op. cit.*



Dârțu had been recently shown<sup>66</sup> to host an equally complex and considerably longer paleo-cultural sequence, which can be summarized as follows: (1) an early stage of the UP (Late Aurignacian, Early Gravettian?) going beyond 32 ka calBP; (2) an Early classical Gravettian, ranging between 30-29 ka calBP; (3) a shouldered points Late Gravettian horizon dated around 27-25 ka calBP; (4) a Late Gravettian/Early Epigravettian focused around the LGM at 24-22 ka calBP; (5) a post-LGM Early Epigravettian around 21-19 ka calBP; (6) a Late Epigravettian, younger than 18 ka cal BP and likely reaching the last stages of the Pleistocene (Younger Dryas). Each of these stages is currently represented at several sites along the Bistrița River. The dense palimpsests reported in some cases (Bistricioara Lutărie I, III, La Mal) indicate complex cultural and natural formation processes, suggesting that the sketch above is at best a rough approximation of a much more complex story. It is worth stressing the relative synchronicity between the Prut and the Bistrița Gravettian stages, especially as many other reported Gravettian/Epigravettian settlements lay in between these geographical extremities. Lithic raw material transfers also indicate extensive mobility networks connecting these Eastern Romanian occurrences with the Lower Danube, Central Europe and the steppe domain further to the east<sup>67</sup>. Moreover, both the Prut and the Bistrița settlements point to a long-lasting paleo-demographic and cultural network connecting at least Eastern Romania to Central Europe and Eastern steppes across the LGM threshold to Late Glacial times.

Several other Epigravettian occurrences have been also reassessed, often in contrast to original interpretations (e.g. Aurignacian) beyond the eastern loessic domain, around the Carpathian range<sup>68</sup> or in Banat<sup>69</sup>. These occurrences strengthened the initial image of a Gravettian confined to eastern, open steppe-tundra biotopes, followed by a gradual expansion from multiple sources, by Epigravettian times, into more diverse environmental contexts, including lower latitudes and higher altitudes.

Summing up, in contrast to previous knowledge, the Gravettian/Epigravettian in (Eastern) Romania appears today (1) consistently

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<sup>66</sup> L. Steguweit, M. Cârciumaru, M. Anghelinu, L. Niță, *op. cit.*; M. Anghelinu, L. Niță, L. Steguweit, *op. cit.*; idem, L. Niță, G. Murătoareanu, *op. cit.*

<sup>67</sup> O. N. Crandell, L. Niță, M. Anghelinu, *Long-Distance Imported Lithic Raw Materials at the Upper Palaeolithic Sites of the Bistrița Valley (Carpathian Mts.), Eastern Romania*, in *Lithics. Journal of the Lithic Studies Society*, 34, 2013, pp. 30-42; Al. Ciomei, *Petrographic analysis of raw materials from Lespezi-Lutărie: implications for Upper Palaeolithic sites from the Middle and Lower Bistrița Valley*, in *MCA* (SN), nr. XI, 2015, pp. 43-80.

<sup>68</sup> M. Cârciumaru, O. Cârșina, M. Anghelinu, M. Cosac, M. Mărgărit, L. Niță, M. Pleșa, *Șantierul arheologic Lapoș-Poiana Roman*, in *Ialomița. Studii și cercetări de arheologie, istorie, etnografie și muzeologie*, no. IV, 2003-2004, pp. 9-32; M. Cosac, G. Murătoareanu, Al. Radu, *op. cit.*

<sup>69</sup> C. Schmidt, V. Siltiviy, M. Anghelinu, V. Chabai, H. Kels, T. Uthmeier, T. Hauck, I. Bălțean, A. Hilgers, J. Richter, U. Radtke, *op. cit.*; V. Siltiviy, V. Chabai, M. Anghelinu, T. Uthmeier, H. Kels, A. Hilgers, C. Schmidt, L. Niță, I. Bălțean, A. Veselsky, T. Hauck, *op. cit.*



older, (2) subsequent and not contemporary to Late Aurignacian stages in the area, and (3) connected to wider cultural and demographic movements at a continental scale. While no traces of the idiosyncratic evolutionary pattern suggested 20 years ago survived the reassessments undertaken in the last years, more researches are clearly needed to complete the new framework with high-quality behavioral data.

The rarity/absence of well-documented Gravettian settlements in Southern Romania and Transylvania stays puzzling, given the pan-continental extension of the Gravettian phenomenon. Preservation issues, insufficient field researches or yet unknown past environmental boundaries provide possible explanations.

### 5.3.3. The Late Paleolithic

The Late Paleolithic in Romania – here narrowly understood as comprising the last stages of the Pleistocene revolving around the Younger Dryas event – remains poorly known, despite an actually overwhelming empirical record. In fact, except for the recently reassessed Climente II context and few surface finds in Dobrogea (e.g. Țibrinu), an impressive number of settlements, usually conflated under the Epigravettian/Tardigravettian label, likely belong to this stage but lack a numerical chronology. For instance, virtually all pluristratified UP sites along the Bistrița River include such late Epigravettian elements in an Aeolian geological unit below the recent soil, providing OSL ages between 8 and 15 ka BP. Many other similar occurrences spread across Romania in heavily eroded archives close to surface have been reported<sup>70</sup>. These layers, much like the isolated Swiderian spots in Eastern Carpathians (e.g. Ceahlău-Scaune) point to a severely underestimated record of Late Paleolithic hunter-gatherers in need of consistent future researches, all the more as Mesolithic traces in Romania are, with the prominent exception of the Iron Gates, still elusive<sup>71</sup>.

## 6. Where do we stand, then? Concluding remarks

As the brief review above suggests, the Romanian Paleolithic looks very different than two decades ago. The Lower, Middle and Upper Paleolithic have been resettled chronologically, by means of new chronometric methods/protocols. The Paleolithic record of present day Romania is much more visible at a regional/continental scale. The amazing potential for future research also became clear: apart from the exceptional or truly unique

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<sup>70</sup> Al. Păunescu, *Paleoliticul și epipaleoliticul de pe teritoriul Moldovei cuprins între Carpați și Siret...*; idem, *Paleoliticul și mezoliticul de pe teritoriul Moldovei...*; idem, *Paleoliticul și mezoliticul de pe teritoriul Dobrogei...*; idem, *Paleoliticul și mezoliticul din spațiul cuprins între Carpați și Dunăre...*; idem, *Paleoliticul și epipaleoliticul din spațiul transilvan...*

<sup>71</sup> A. Boroneanț, *The Tardenoisian in Romania – a false problem*, in *SP*, no. 2, 2005, pp. 17-46.



paleoanthropological and parietal art<sup>72</sup> finds, new informative-rich settlements are mushrooming even in areas thought to have been well covered by field surveys (e.g. Bistrița Valley). Moreover, the Romanian karst includes thousands of fossil caves, of which only a few dozen have been archaeologically explored for Pleistocene remains. The impressive loess cover of Eastern and Southern Romania provides not only extensive and high-resolution paleoclimatic archives, but also excellent preservation conditions for Paleolithic settlements. In fact, various new proxies contribute now to a superior understanding of past landscapes and climate dynamics<sup>73</sup>. These recent assessments, albeit rarely connected to Paleolithic archaeological sequences, improved massively our knowledge on the regional Pleistocene climatic evolution. While we are yet far from being able to fit the bulk of archaeological data into this improved paleoclimatic picture<sup>74</sup>, future collaborative efforts will certainly accomplish it. As it is becoming increasingly clear, the territory of present-day Romania, split by the Carpathian orographic barrier, experienced different paleoenvironmental regimes during the Pleistocene and acted as a watershed for different cultural trajectories tightly connected to European-wide phenomena. All the important progresses above might be however viewed as improvements along a traditional research line already focused on time-space systematics and paleoenvironmental contextualization of Paleolithic cultural evolution. There were, however, some other changes that might bring deeper consequences.

Twenty years ago, Paleolithic research in Romania was about chronicling stone tools ‘traditions’ by means of type-fossils, according to a

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<sup>72</sup> J. Clottes, M. Besesek, B. Gély, C. Ghemiș, M. Kenesz, V. T. Lascu, M. Meissonier, M. Philippe, V. Plichon, F. Prud'homme, V. A. Radu, T. Rus, R. L. Tociu, *Découverte d'une nouvelle grotte ornée paléolithique en Roumanie, département du Bihor*, in J. Clottes (dir), *L'art pléistocène dans le monde, Actes du Congrès IFRAO, Tarascon-sur-Ariège, septembre 2010, N° spécial de Préhistoire, Art et Sociétés, Préhistoire ariégeoise*, no. LXV-LXVI, 2012, pp. 511-528.

<sup>73</sup> See, for instance, C. Zeeden, H. Kels, U. Hambach, P. Schulte, J. Protze, E. Eckmeier, S. B. Marković, N. Klasen, F. Lehmkuhl, *Three climatic cycles recorded in a loess-palaeosol sequence at Semlac (Romania) – Implications for dust accumulation in south-eastern Europe*, in *Quaternary Science Reviews*, no. 154, 2017, pp. 130-142; I. Obreht, U. Hambach, D. Veres, C. Zeeden, J. Böskén, T. Stevens, S. B. Marković, N. Klasen, C. Burow, F. Lehmkuhl, *Shift of large-scale atmospheric systems over Europe during late MIS3 and implications for Modern Human dispersal*, in *Nature. Scientific Reports*, vol. 7, 2017, article number 5848, doi:10.1038/s41598-017-06285-2017.

<sup>74</sup> There is a well-grounded agreement on the importance of local/regional ecological contexts and resource spatial patterning for hunter-gatherers' economy, mobility and social organization (L. R. Binford, *op. cit.*; L. Kelly *op. cit.*). As a consequence, a detailed knowledge on the productivity and short/medium and long-term evolution of relevant environmental parameters remains vital for Pleistocene archaeology – and Romanian Paleolithic research still has a long way ahead in this respect. However, focusing on paleoclimate (admittedly the easiest or at least the fastest job when reassessing an archaeological settlement) may reinforce the view of ‘ecologically-driven and not much more’ Paleolithic humans. We should be aware that climatic and landscape settings provided a general framework limiting but also enabling adaptive solutions which remained squarely *cultural*.



cultural-historical view essentially treating Pleistocene hunter-gatherers like any other (past or present) type of societies. This assimilation/naturalization, blatantly transcending major socio-economic differences, was actually imbedded in the very structure of the culture-historical/‘cultural circles’ research model, for which the identification of (learnt) mental templates and ‘typical’ products is the bread and butter of interpretation. As a consequence, no *qualitative* difference separates, heuristically, a burin from a decorated pot or a bronze axe, despite obvious differences in terms of technology, function, life cycle, symbolic investment etc.: the formal features of all these artifacts equally mark the presence of a certain para-ethnic socio-cultural unit. The paleontological index-fossils model traditionally used in Romanian Paleolithic research may be viewed as a particular case of this essentialist taxonomic practice. Unfortunately, such a perspective ignored several aspects of crucial importance precisely because they were highly specific to Pleistocene human societies: (1) the reductive (i.e. irreversible) nature of the lithic knapping technologies and the debatable iconic/stylistically significant role of lithic tools in general; (2) the temporal *scales* involved in the accumulation of the Paleolithic record and in the formation processes creating the archaeological settlements of Pleistocene age<sup>75</sup>, and (3) the very nature of hunter-gatherer social and economic worlds, including as a rule high-mobility, light, portable and versatile technologies, open social networks, flexible kinship rules, reduced territoriality and so on. These reasons alone should suffice for treating cultural (and therefore archaeological) variability of Paleolithic societies *at a different scale* than the one applied for Chalcolithic villagers, with the related adjustment of causal explanations. We are now aware that Paleolithic humans and their world was different in many respects from the Neolithic farmers’ and Romanian peasants’, which populated, for better or (rather) worse, the imagination of many Romanian archaeologists<sup>76</sup>, most of them history graduates hoping that an almost natural-scientific, ‘objective’ practice of describing and numbering lithics would liberate them from the need of an imaginative and theoretically coherent narrative. Paleolithic people were hunter-gatherers, not passive bearers of styles of shaping and retouching lithic blanks. They were few in numbers, lived in odd environmental and social contexts, moved a lot and often far and lived according to cultural rules that can be at best indirectly approached through ethnographic analogies. As a consequence, they must have had peculiar values and worldviews<sup>77</sup>, radically different symbolic geographies<sup>78</sup> and foreign (to us) social universes<sup>79</sup>. The boundaries of their ‘art’,

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<sup>75</sup> M. C. Barton, M. P. Neeley, *Phantom cultures of the Levantine Epipaleolithic*, in *Antiquity*, vol. 70, no. 267, 1996, pp. 139-147; S. L. Kuhn, *op. cit.*

<sup>76</sup> M. Anghelinu, *The Magic of the Painted Pottery: The Cucutenian and the Romanian Prehistoric Archaeology*, in Gh. Dumitroaia, J. Chapman, O. Weller (eds.), *Cucuteni-120. Time to Sum Up*, Ed. Constantin Matasă, Piatra-Neamț, 2005, pp. 37-48.

<sup>77</sup> A. Barnard, *From Mesolithic to Neolithic modes of thought*, in *Proc. Br. Acad.*, vol. 44, 2007, pp. 5-19.

<sup>78</sup> K. Sterling, *Social Landscapes of the Late Palaeolithic: Marking Meaning in the Magdalenian*, in *EJA*, vol. 18, no. 3, 2015, pp. 380-401.

<sup>79</sup> N. Bird-David, *Size matters! The scalability of modern hunter-gatherer animism*, in *QuaternInt*, no. 464, 2018, pp. 305-314.



‘technology’ – or ‘food’, for that matter<sup>80</sup> –, would never match ours. The rationales behind the choices they made and even their (really) long term outcomes were much more problematic than normally admitted. The traditional artifact-centered perspective in Romania, while taking advantage of the most abundant archaeological record, exiled the Paleolithic exoticism into a single realm, lithic technology, whose relevance for many aspects of past Paleolithic realities is debatable. We should be aware and assume this *cultural specificity* and look for it wherever we can. This realization seems to me the most important accomplishment of the last decades of Paleolithic research in Romania, for it redefines the very mission of research for the current and future generations of researchers; it also invites humanities and social sciences back into a field hanging *volens-nolens* on natural scientific methods, timescales and explanatory templates.

In more practical terms, this new perspective leads nevertheless to another realization, that making sense of the Paleolithic archaeological record is a more challenging task than previously thought. The huge amount of taphonomic studies available today indicates that the formation and preservation of Pleistocene archaeological settlements was far more problematic than the supposed mild artifactual ‘rain’ amassed into Pompeii-like matrixes, traditionally presumed by many Romanian researchers. Various accumulation and erosion regimes blurred the picture recovered archaeologically; many ‘assemblages’ are simply geological aggregates of multiple occupations of various duration/function<sup>81</sup>. Romanian Paleolithic archaeology is still at the beginning of rigorous taphonomic site assessments, but it is easy to figure out the consequences they may have for the acknowledged ‘archaeological layers’, ‘cultural stages’ or even technocomplexes.

Summing up, new and exciting research avenues are currently open for Romanian Paleolithic researchers. Unfortunately, this huge research potential stays in sharp contrast to the size and the institutional support of the present generation of Romanian practitioners. Current research standards – involving small scale excavations, slow recovery techniques, interdisciplinary teams and expensive lab work – further sharpen the dissimilarity between the ‘carrying capacity of the environment’ and a rarefied population of researchers. Thus,

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<sup>80</sup> Cf. J. D. Speth, *Putrid Meat and Fish in the Eurasian Middle and Upper Paleolithic: Are We Missing a Key Part of Neanderthal and Modern Human Diet?* in *PaleoAnthropology*, 2017, pp. 44-72.

<sup>81</sup> In terms of lithics, Paleolithic settlements are usually coarse-grained accumulations mixing artifacts from different stops in various stages of production/use/recycling/reshaping; each stop was likely containing artifacts previously made and discarded at the respective site, some artifacts made, used and discarded on the spot, by-products from making the artifacts carried to the next camp, and so on (M. C. Barton, M. P. Neeley, *op. cit.*; C. M. Barton, J. Riel-Salvatore, *The formation of lithic assemblages*, in *JAS*, no. 46, 2014, pp. 334-352). Without understanding this basic dynamic, no proper understanding of past behaviors seems possible, not to mention truly ambitious objectives like ethnical mapping, mistakenly taken by the traditional paradigm to represent a first and actually very easy step of archaeological interpretation.



among the many future priorities, the training of a new generation of Paleolithic archaeologists with general expertise, supplemented by a large number of specialists in complementary fields (Quaternary geology, taphonomy and archaeozoology, chronometry etc.) appears crucial. Only then we may hope to move beyond the chrono-cultural sketch and think deeply on Paleolithic lives.

### **Acknowledgments**

This work has been supported by a grant of Ministry of Research and Innovation CNCS – UEFISCDI, project number PN III-P4-ID-PCE-2016-0262, within PNCDI III.







# Large mammals from Upper Paleolithic site of Valea Morilor (Republic of Moldova)

LAËTITIA DEMAY\*, TEODOR OBADĂ\*\*

**Abstract:** *The archaeological open air site of Valea Morilor located in Chişinău (Republic of Moldova) was discovered in 2009. According to the paleoenvironmental reconstructions and the first radiocarbon dating, this site could be related to the end of the Upper Pleistocene and particularly to the Last Glacial Maximum. A single layer furnished fireplaces and ashy lenses also as lithic and faunal remains.*

*In order to determine the modalities of acquisition and exploitation of fauna in paleolithic human societies, we have proceeded to the zooarchaeological study of faunal remains. We focus here on paleontological data analysis which permitted to identify species and to better define the individual attribution of the anatomical elements, in connection with biometric study and stages of growth of bones.*

*The faunal spectrum is composed of woolly mammoth, bison, equid, cervid, ursid and polecat. Mammoths are represented by at least six individuals, which are sensu lato adult females and males.*

**Keywords:** *Upper Paleolithic; Dniester valley; Moldova; large mammal; mammoth; zooarchaeology; paleontology*

## Introduction

The open air site of Valea Morilor located in Chişinău (Republic of Moldova) was discovered in 2009 (Fig. I). It was the subject of a rescue excavation following the emptying of the eponymous lake. Three campaigns of excavation were conducted by I. Tentiuc, V. Bubulici, A. Levinschi, V. Bicbaev, who are researchers at the national Museum of Archaeology and History of Moldova, and T. Obadă, paleontologist at the Institute of Zoology of the Academy of Sciences of Moldova.

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\* PhD, Laboratory of Prehistory, University of Liège (Belgium) /Laboratory of Zooarchaeology HNHP CNRS/MNHN of Paris (France), mail: laetitia.demay@mnhn.fr

\*\* Researcher, Institute of Zoology, Academy of Sciences of Moldova, National Museum of Ethnography and Natural History of Moldova, mail: theodorobada@gmail.com



The works were carried out at three excavations. The excavation n°1 reaches a total surface of 1246 m<sup>2</sup>. It was excavated according to three sectors (1A, 1B, 1C). Two other smaller excavations, n° 2 and n° 3, were respectively carried out on 16 m<sup>2</sup> and 4 m<sup>2</sup>, also as a survey (Pit 4, 6 m<sup>2</sup>)<sup>1</sup>. The site is located near the Durlești River, which is characterized by meanders on a terrace made of yellowish-gray clayey silty sands from river water and slope deposits<sup>2</sup>. Indeed, the site is located in a basin forming a floodplain. Mammal bones, charcoals, fireplaces and ashy lenses were situated between 2.95 and 3.10 meters deep, in clayey sands. This is a single layer which varies from 11 cm to 29 centimeters thick. According to the analysis of the malacofauna<sup>3,1</sup>, they are terrestrial molluscs from dry and cold plain. Moreover *S. oblonga* testifies to the proximity of a river. These remains are little altered and have not been moved, indicating their rapid burial in the subsurface and the very low intensity of the current in case of flooding. According to Markova the micromammals are represented by *Ochotona pusilla* (pika), *Spalax zemni* (mole rat) and *Lagurus lagurus* (steppe lemming)<sup>1</sup>. They are also typical of cold steppe.

Radiocarbon dating were realized about faunal remains of the three sectors of excavation n° 1<sup>4</sup> (Tab. I). They furnished results between 20 000 and 21 000 BP.

According to the paleoenvironmental reconstructions and the first dating, this site could be relied to the Last Glacial Maximum.

### Lithic materials

During excavations, 72 flint pieces and seven pebbles were discovered, distributed over the three sectors. It is a semi-transparent gray Cretaceous flint from the Dniester Valley<sup>2</sup>. There is no nucleus. They are mainly chips and retouched blades, as well as a scraper and a chisel. There is no evidence of stigma associated with sedimentary and / or hydraulic movements. A cultural attribution remains difficult for the moment, although the industry presents "epi-Aurignacian" characters.

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<sup>1</sup> T. Obadă, J. van der Plicht, A. Markova, A. Prepeliță, *Preliminary results of studies of the Valea Morilor Upper Palaeolithic site (Chișinău, Republic of Moldova): A new camp of mammoth hunters*, in *QuaternInt*, 276-277, 2012, pp. 227-241.

<sup>2</sup> T. Obadă, S. Covalenco, V. Burlacu, *Upper Paleolithic Site Valea Morilor from Central Moldova*, in *Revista Arheologică*, 7 (1-2), 2011, pp. 96-107.

<sup>3</sup> A. Prepeliță, T. Obadă, J. van der Plicht, *Fauna of terrestrial mollusc of Late Palaeolithic site Valea Morilor*, in Laurenția Ungureanu, A. Munteanu et al. (eds.), *Actual Problems of Protection and Sustainable Use of the Animal World Diversity, International Conference of Zoologists Dedicated to 50<sup>th</sup> Anniversary from the Foundation of Institute of Zoology of ASM/Red. Board I. Toderas (Red. Chief)*, Continental Grup SRL, Chișinău, 2011, pp. 217-218.

<sup>4</sup> T. Obadă, J. van der Plicht, *The Valea Morilor layer (Chisinau, Republic of Moldova) - a new station of mammoth hunters [Le gisement Valea Morilor (Chisinau, Republique de Moldova) - une nouvelle station de chasseurs de mammoths]*, in F. Lacombe et D. Mol (eds.), *Mammoth and their relatives 2: Biotopes, Evolution, and Human Impact, 30<sup>th</sup> August-4 september 2010, Le Puy-en-Velay, Quaternary International*, 276-277, 2010, pp. 227-241.



## Our Contribution

This period is poorly informed about human behavior. It is important to define the origin of the bone assembly in relation to the archaeological remains and the involvement of the anthropic part, particularly to better define the status of the mammoth in paleolithic occupations of the Dniester Valley. Here we present some results of the analyzes, namely paleontological data. Our study focused on medium and large mammal bones to identify species and to better define the individual attribution of the anatomical elements, in connection with biometric study and stages of growth of bones.

## Material and methodology

The material is kept in the Institute of Zoology of Academy of Sciences in Chișinău (Republic of Moldova). Several bones were damaged during excavations and sampling of bones. However a part of osteometric surveys of long bones and tusks were made *in situ*. Several bones were discovered during sifting and cleaning.

Vernacular anatomical terms are used according to Barone's criteria<sup>5</sup> taking into account current nomenclatures.

Osteometric measurements follow the procedures of von den Driesch<sup>6</sup>, and concerning mammoth, of Agenbroad<sup>7</sup>, Lister<sup>8</sup> and Göhlich<sup>9</sup>.

For the identification of mammoths (*Mammuthus primigenius*), age determination was based on epiphyseal stages of long bones and eruption and eruption/wear sequence of the jugal teeth<sup>10; 11; 12; 13; 14; 15; 16; 17</sup>.

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<sup>5</sup> R. Barone, *Anatomie comparée des mammifères domestiques: Ostéologie*, Vigot Frères, Paris, 1986.

<sup>6</sup> A. von den Driesch, *A guide to the Measurement of Animal Bones from Archaeological Sites*, Peabody Museum of Archaeology and Ethnology 1, Harvard University, Cambridge, 1976.

<sup>7</sup> L. D. Agenbroad, *Taxonomy of North American Mammuthus and biometrics of the Hot Springs mammoths*, in L. D. Agenbroad, J. I. Mead (eds), *The Hot Springs Mammoth Site*, Fenske Printing, Rapid City, 1994, pp. 158-207.

<sup>8</sup> A. M. Lister, *Sexual dimorphism in the mammoth pelvis: an aid to gender determination*, in J. Shoshani, P. Tassy (eds.), *The Proboscidea*, Oxford University Press, Oxford, 1996, pp. 254-259.

<sup>9</sup> U. Göhlich, *Elephantoidea (Proboscidea, Mammalia) aus dem Mittel- und Obermiozän der oberen Süßwassermolasse Süddeutschlands: Odontologie und Osteologie*, in *MGA*, (A) 36, 1998, pp. 1-245.

<sup>10</sup> H. F. Osborn, *Proboscidea: a monograph of the discovery, evolution, migration and extinction of the mastodonts and elephants of the world. Vol. II: Stegodontoidea, Elephantoidea*, American Museum of Natural History, New York, 1942, pp. 805-1675.

<sup>11</sup> R. Vaufray, *Proboscidiens fossiles*, in *Traité de zoologie*, 17, 1955, pp. 784-875.

<sup>12</sup> Y. Coppens, *Les éléphants du Quaternaire français: dentition, systématique, signification et préhistoire*, in *Actes du XVIe Congrès Préhistorique de France*, 28 août-5 septembre 1959, Monaco, Société préhistorique française, Paris, 1965, pp. 403-431.

<sup>13</sup> R. M. Laws, *Age criteria for the African elephant Loxodonta a. Africana*, in *E. Afr. Wild. J.*, 4, 1966, pp. 1-37.



Five age classes have been defined:

- juvenile: stage IXa ; from 0 to 8-12 years old
- young adult: stages IXa-XVII ; from 12 to 18-26 years old
- intermediate adult: stages XVII-XVIIIa ; 25-30 years old
- mature adult: stages XVIIIa-XXVI ; 30-50 years old
- old adult: stages XXVI-XXX death ; 50-60 years old

The identification of sex is based on the morphometry of the bones. Concerning Elephantids, the males are generally more massive than the females<sup>8; 17; 18; 19; 20</sup>. For osteometric comparisons, we referred to well-informed specimens (Tab. II).

## Results

The faunal spectrum of Valea Morilor is dominated by woolly mammoth, then an equid, a cervid, a bison, a bear and a polecat (Tab. III).

### Woolly mammoth (*Mammuthus primigenius*)

Woolly mammoth is represented by 588 remains, corresponding to 206 elements (Tab. IV).

Four tusks and fragments of ivory were discovered. Three of them belong to adult *sensu lato*.

Concerning young individuals the circumference of the proximal end of the tusk is generally less than 200 mm, but young males may exceed this size. In adult females, it ranges between 200 and 350 mm<sup>17</sup>. Larger dimensions are attributed to males. Comparing the circumference of the base of a tusk from Valea Morilor with previously described specimens, It is a female adult or a young adult female or a young adult male (Fig. II).

A mandible (n° 70 and n° 81) which was damaged during excavations is associated with two molars. One of them could be studied (Fig. III). According to the dimensions and the number of blades, it would be an M<sub>2</sub>. However, it can also be integrated into the variability of M<sub>3</sub>. In the first case, it is a young adult who died during the XIV to XV stages (around 13-23 years old). In the second case, it is a mature adult who died during stages XXI to XXIII (around 35-42 years old) (Tab. V). Another mandible with two damaged molars was found (n° 83). Again,

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<sup>14</sup> W. A. Krumrey, I. O. Buss, *Age estimation, growth, and relationships between body dimensions of the female elephant*, in *J. Mammal*, 49 (1), 1968, pp. 22-31.

<sup>15</sup> V. L. Roth, *How elephants grow: Heterochrony and calibration of developmental stages in some living and fossil species*, in *JVP*, 4 (1), 1984, pp. 126-145.

<sup>16</sup> V. L. Roth, J. Shoshani, *Dental identification and age determination in *Elephas maximus**, in *J. Zool*, 214, 1988, pp. 567-588.

<sup>17</sup> G. Haynes, *Mammoths, Mastodonts and Elephants, Biology, behavior and the Fossil record*, Cambridge Press, Cambridge, 1991.

<sup>18</sup> A. Averianov, *Sexual dimorphism in the mammoth skull, teeth, and long bones*, in J. Shoshani, P. Tassy (eds.), *The Proboscidea*, Oxford University Press, Oxford, 1996, pp. 280-288.

<sup>19</sup> J. Shoshani, P. Tassy (eds.), *The Proboscidea: evolution and palaeoecology of elephants and their relatives*, Oxford Science Publications, Oxford University Press, Oxford, 1996.

<sup>20</sup> A. M. Lister, *Epiphyseal fusion and postcranial age determination in the woolly mammoth, *Mammuthus primigenius* (Blum.)*, in *Deinsea*, 6, 1999, pp. 79-88.



it may be M<sub>2</sub>, but also M<sub>3</sub> (Tab. IV). This individual died at a higher age at stage XIV. Two other mandibles (n° 578 and n° 83), without molar, of adults *sensu lato* were discovered.

In addition, five entire atlas and two axis - but damaged during excavations - belong to adults *sensu lato*.

Four scapulas, one of left side, two of right side and a fragment of glenoid cavity which is unlateralized. Two of them are pairing (n° 152 and n° 153). Based on known data, it is difficult to differentiate between males and females based on the length (anteroposterior diameter) of the glenoid cavity. For both sex, the size is between 150 and 200 mm<sup>21</sup>. However, according to their proportions, they belong to a young adult. It's the same for the third scapula (n° 52) (Fig. IV).

Six humeri were discovered. All of them present fused epiphyses. Based on total length One of them (n°47, right) appears to belong to a mature male whose death occurred after growth stages XVIII-XX (greater than about 30 -34 years old) (Fig. V A). Two others (n° 51, left; n° 345, left, maximum length greater than 1000 mm) belong to males (Fig. VB et A). They are dead after stages XVIII-XX. Another one (n° 50, left) would correspond to the size of a female, dead after stage XVIa (18-29 years old) (Fig. VC). Two others (n° 251 and n° 533) are unlateralized. Measurements can not be recorded but they belong to *sensu lato* adults. They could be paired. The n° 47 and n° 51 could also be paired.

Six ulnas were discovered. It is a right, two left and three which are unlateralized. The two unlateralized ulnas (n° 265 et n° 531) belong to *sensu lato* adults. According to its total length, the first belongs to an adult male (Fig. VI). The right ulna (n° 346) belongs to a *sensu lato* adult male (Fig. VI). A left ulna (n° 48) is characterized by a fused proximal epiphysis and the fusion of epiphysis of distal end was still occurring. According to the measurements It could correspond to the size of a male (Fig. VI). However, the difference here is not strong enough to be interpreted with certainty.

If it is a female she was dead during stages XVIIIa-XX (around 18-30 years old). If it is a male, he was dead between stages XXII-XXX (between around 36-60 years old). A left ulna (n° 260) is characterized by a fused proximal epiphysis and the distal end is not fused. If it is a female, she was dead during stages XVIa-XVIII (around 18-30 years old). If it is a male, he was dead during stages XVIIIa-XXI (around 30-40 years old). Another ulna (n° 295) is characterized by fused proximal and distal epiphyses. If it is a female, she was dead after stages XVIIIa-XX (around after 25-35 years old). If it is a male, he was dead after stages XXII-XXX (around after 36-60 years old).

Two left radius present fused proximal and distal epiphyses. The first one (n° 367) belongs to a female (Fig. VII). She was dead after stages XVIIa-XX (after around 25-35 years old). For the second one (n° 430), it belongs to a male (Fig. VII). He was dead during stages XXII-XXX (around 36-60 years old).

Three lunate bones, two rights and a left could belong to three different individuals: a male, a female and a young adult/juvenile (Fig. VIII).

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<sup>21</sup> C. Beauval, P. Michel et J.-P. Tastet, *L'éléphant antique de Soulac (Gironde, France)*, in *Quaternaire*, 9 (2), 1998, pp. 91-100.



Three right triquetrums were discovered. One of them is more massive than the others. It could belong to a male. The others could belong to female(s) or/and young adult(s). The triquetrum n° 200 is paired with the lunate bone n° 198 (Fig. IX).

Two right pisiform bones of small size (Fig. X) were identified.

Two right hamatums were described. The first one could belong to a male and the second one to a female or a young adult (Fig. XI).

Two left metacarpals III (n° 199 and n° 355) and a right metacarpal III (n° 256) are of small sizes (Fig. XII).

Two right metacarpals IV were described. One of them (n° 154) is small (Fig. XIII).

Two hip bones were discovered. They are too damaged to be measured.

Seven femurs, three left and four right, were discovered. A left femur (n° 285) is totally fused. It could belong to a male (Fig. XIV A), which is dead after XVIIIa-XX (after 25-35 years old). Another left femur (n° 528) is also totally fused. It belongs to a female (Fig. XIV A). She was dead after stages XVIIIa-XX (after 25-35 years old). A left femur (n° 530) is totally fused. It belongs to a male which was dead after stages XVIIIa-XX (after 25-35 years old) (Fig. XIV A). A right femur (n° 532) belongs to a male (Fig. XIV A). The distal end is fused, but not the proximal epiphysis. So this individual was dead during stages XVIIIa-XX (between around 25-35 years old). This femur and a proximal epiphysis (n° 226) could potentially be backed together. A right femur (n° 286) is very damaged. It is a fragment of a proximal diaphysis and a fused epiphysis. It could belong to a female (Fig. XIV B). She was dead after stages XVIIIa-XX (after 25-35 years old). This femur could be potentially paired with the n° 528. A right femur (n° 49) was identified. It is a fragment of a distal diaphysis and a fused epiphysis which belongs to a male (Fig. XIV C). He is dead between stages IXa-XVIa (between around 9-26 years old). A right distal epiphysis of a femur (n° 92) belongs to a female or a juvenile (Fig. XIV C). This individual is dead before stage XVIa (18-26 years old).

Two patellas are small-sized (Fig. XV). They could potentially be paired.

Four tibias, two unilateralized and two right, were discovered. A tibia (n° 234), belongs to a *sensu lato* adult. Another tibia (n° 529) belongs to a male (Fig. XVI A). It is totally fused, so he died after stages XVIIIa-XX (after 25-35 years old). A totally fused right tibia (n° 344) belongs to a *sensu lato* adult. If she is a female, she was dead after stages XVIa-XVII (18-29 years old). If he is a male, he was dead after stages XVIIIa-XX (after 25-35 years old). A part of the diaphysis with the fused proximal epiphysis of a right tibia (n° 55). It is a female (Fig. XVI B), which was died after stage XVIa (after 18-29 years old).

Four talus were identified. Two of them could be paired (n° 73 and n° 76), which probably belong to a male (Fig. XVII). A left talus (n° 77) and another one (n° 339), which is very damaged could be paired.

Six naviculars, three left and three right, were discovered. Two left naviculars (n° 4 and n° 385), belong to young adults and/or female adults (Fig. XVIII). One of them could be paired with a right navicular (n° 271). A right and left naviculars (n° 267 and n° 145) belong to a male. A right navicular (n° 74) can not pair with others; It could belong to a young adult or a female adult.



Two cuboids (n° 330 and 384), one right and one left, belong to a young adult or a female adult (Fig. XIX). They could be paired. Another very damaged cuboid (n° 403) was discovered.

Two right meso-cuneiform, could belong to male adults (Fig. XX).

A left ento-cuneiform was discovered. It is a robust individual, however we have few specimens of comparison between males and females (Fig. XXI).

A right metatarsal I was identified. It seems to belong to a robust individual (Fig. XXII). A left metatarsal II is small-sized. It could belong to a young adult or a female adult (Fig. XXIII).

At last, a sesamoid was discovered and unidentified metapodials.

According to the reassemblies and the possible pairings, the mammoths are represented by at least six individuals: two young adults, a sensu lato adult, an adult female adult and two male adults (Table VI).

#### Horse/Equid (*Equus* sp.)

An equid is represented by six elements: fragments of two incisors (Fig. XXIV), a fragment of a deciduous molar and fragments of at least three other molars. This is a juvenile individual.

#### Bison (*Bison* sp.)

A bison is represented by two elements: a fragment of bony core and a left M<sub>3</sub> (Fig. XXV ; Tab. VII). This is a mature adult, who was dead between 6-15 years old.

#### Bear (*Ursus* sp.)

Four bones of bear were discovered: a deciduous canine, a right M<sub>2</sub>, a left P<sup>4</sup> and a right I<sup>1</sup> (Fig. XXVI). Based on teeth eruption and wear stages, it is a juvenile of about a year (Tab. VIII). Comparing the dimensions of P<sup>4</sup> with data obtained about brown bear (*Ursus arctos*) and cave bear (*U. spelaeus*)<sup>22; 23</sup>, they correspond rather to the second species (Fig. XXVII). It would have become extinct around 24 000 BP<sup>24</sup>.

#### Other species

A polecat (*Mustela putorius*) is represented by a fragment of left hemi-mandible with a M<sub>1</sub> (Fig. XXVIII).

A phalanx of a small mammal, possibly belonging to a large mustelid (*G. gulo* or *M. meles*) has also been discovered, as well as a fragment of antler.

### **Conclusions**

To conclude the faunal spectrum of Valea Morilor is composed of woolly mammoth, largely dominant, associated with some remains of bison, equine, cervid, ursid and polecat. The biometric study of bones has made it possible to better define the individual attribution of the anatomical elements, in connection with the stages of growth. Mammoths are represented by at least six individuals, adult male, female, and female. The archeozoological study, through

<sup>22</sup> G. F. Baryshnikov, *Morphometrical variability of cheek teeth in cave bears*, in *Scientific Annals, School of Geology*, 98, 2006, pp. 81-102.

<sup>23</sup> Idem, *Late Pleistocene brown bear (*Ursus arctos*) from the Caucasus*, in *Russian Journal of Theriology*, 9 (1), 2010, p. 9-17.

<sup>24</sup> M. Pacher, A. J. Stuart, *Extinction chronology and palaeobiology of the cave bear (*Ursus spelaeus*)*, in *Boreas*, 38 (2), 2009, pp. 189-206.



quantitative analysis methods and taphonomy, will allow us to determine the conditions for setting up this assemblage, in order to highlight the anthropogenic impact.

### Acknowledgements

This study was financed by project ATM (Actions Thématiques du Muséum) 2016 titled *Utilisation des ressources animales par les derniers Néanderthaliens et les premiers Homo sapiens en Moldavie et en Ukraine occidentale*, led by S. Péan (zooarchaeologist, UMR 7194 HNHP CNRS/MNHN).

We wish to express our thanks to the academician I. Toderaş and all members of the Institute of Zoology who permitted to process to this study. We also thank M. Patou-Mathis, P. Noiret and M. Otte for their advice and support.

Sector	Dating	References	Material
1A	20 770 $\pm$ 90	GrA-46004	mammoth bone
1B	20 570 $\pm$ 80	GrA-52424	mammoth bone
1C	20 560 $\pm$ 80	GrA-52425	mammoth bone

Tab. I. Radiocarbon dating from Valea Morilor.



Individual	Year of discovery	Localization	Age	Sex	Height at withers (in cm)	Chronology and dating	References
Rastorf	1967	Germany, Baden-Württemberg	>25 y.o.	F	250	End of Upper Pleistocene	25
Kastykhtakh	2008	Russia, Taimyr	38-45 y.o.	F	224	32 070-30 565 BP	26
Oyakh river	1988-1991	Russia, Siberia	adult s.l.	F	215 (240)	-14 000 BP	27
Sanga-Yuryakh	1908	Russia, Yakutia	54-60 y.o.	F	/	39-37 000 BP	28, 29
Ahlen	1910	Germany, North Rhine-Westphalia	31-34 y.o.	M	320	41 000 BP	30
Borna	1908-1909	Germany, Saxony	25-30 y.o.	M	320	Upper Pleistocene	31
Polch	1936	Germany, Rheinland-Pfalz	60-70 y.o.	M	320	Upper Pleistocene	32
Pfännerhall	1963	Germany, Saarland	~60 y.o.	M	300	Saalian	33
Siegsdorf	1976	Germany, Upper Bavaria	49-52 y.o.	M	360	47 000 BP	34
Condover	1906	Britain, Shropshire	28 y.o.	M	/	14 000 BP	35
Lena (= Adams)	1799	Russia, Siberia	43-50 y.o.	M	320	34 450 ± 2 500 BP	36, 37
Burakovka	1900	Russia, Siberia	30-35 y.o.	M	265	End of Upper Pleistocene	38
Lyakhov (= Atkhamova or Volosovitch)	1914	Russia, Lyakhovsky Islands	~30 y.o.	M	/	49 000 BP	39, 40
Tolmyn	1948	Russia, Taimyr	30-35 y.o.	M	265	11 450 ± 250 BP	41
Sorok	1988-1991	Russia, Siberia	adult s.l.	M	235	-14 000	42, 43

Tab. II. Specimens of *M. primigenius* for osteometric comparisons; references 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43

- 25 R. Ziegler, *An extraordinary small mammoth (Mammuthus primigenius) from SW Germany. Geologie und Paläontologie*, in *Stuttg. Beitr. Naturkd.*, Series B 300, 2001, pp. 1-41.
- 26 I. V. Kirillova, F. K. Shidlovskiy, V. V. Titov, *Kastykhtakh mammoth from Taimyr (Russia)*, in *Mammoths and their Relatives 2: Biotopes, Evolution and Human Impact, 2<sup>nd</sup> International Conference, 30 August - 4 September 2010, Le Puy-en-Velay, Quaternary International*, 2012, pp. 276-277, 269-277.
- 27 A. Averianov, *Kutomanov's Mammoth*, in *Proceedings ZIN*, 256, 1994, pp. 111-135.
- 28 K. A. Vollosovich, *Raskopki Sanga-Yuryakhskogo mamonta v 1908 g. (Excavations of the Sanga-Yuryakh mammoth in 1908)*, in *Izv. Imp. Akad. Nauk.*, 6 (3), 1909, pp. 437-458 (in Russian).
- 29 W. E. Garutt, *Das Mammut Mammuthus primigenius (Blumenbach)*, A. Ziemsen Verlag, Wittenberg Lutherstadt, 1964.
- 30 P. Siegfried, *Das Mammut von Ahlen, Mammonteus primigenius Blumenbach*, in *Pal Z*, 33 (3), 1959, pp. 172-184.
- 31 J. P. Felix, *Das Mammut von Borna*, Voigtländer, Leipzig, 1912.
- 32 W. V. Koenigswald, *Das Mammut von Polch bei Mayen (Eifel)*, in *E & G*, 39, 1989, pp. 87-97.
- 33 V. Toepfer, *Die Mammutfunde von Pfännerhall im Geiseltal*, Veröffentlichungen des Landesmuseums für Vorgeschichte, Halle/Saale, 1957, pp. 1-58.
- 34 R. Ziegler, *Das Mammut (Mammuthus primigenius Blumenbach) von Siegsdorf bei Traunstein (Bayern) und seine Begleitfauna*, in *MGA*, 26, 41994, pp. 9-80.



Species	NR	MNE	MNI
<i>M. primigenius</i>	588	206	6
<i>Equus</i> sp.	6	6	1
<i>Bison</i> sp.	2	2	1
Bovine	2	2	
Cervid	1	1	1
<i>Ursus</i> sp.	4	4	1
<i>M. putorius</i>	2	2	1
<b>NISP</b>	<b>607</b>	<b>225</b>	
Large-sized mammal	497		
Large- or medium-sized mammal	169	1	
Medium-sized mammal	50		
Small-sized mammal	9	3	1
Herbivorous	28		
Carnivorous	2	1	
<b>NRi</b>	<b>130</b>		
<b>NRt</b>	<b>1490</b>	<b>228</b>	<b>12</b>

Tab. III. Counting of faunal remains of Valea Morilor.

**NR:** number of remains; **MNE:** minimal number of elements; **MNI:** minimum number of individuals; **NISP:** number of identified specimens; **NRi:** number of unidentified remains; **NRt:** total number of remains.

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- <sup>35</sup> A. M. Lister, *Late-glacial mammoth skeletons (Mammuthus primigenius) from Condover (Shropshire, UK): anatomy, pathology, taphonomy and chronological significance*, in *Geological Journal*, 44, 2009, pp. 447-479.
- <sup>36</sup> M. Adams, *Some Account of a Journey to the Frozen-Sea, and of the Discovery of the Remains of a Mammoth*, in *The Philadelphia Medical and Physical Journal*, 1 (3), 1808, pp. 120-137.
- <sup>37</sup> E. W. Pfitzenmayer, *A Contribution to the Morphology of the Mammoth, Elephas Primigenius Blumenbach; With an Explanation of My Attempt at a Restoration*, in *Annual report of the Board of Regents of the Smithsonian Institution*, 1907, pp. 326-334.
- <sup>38</sup> Idem, *Mammuteichen und Urwaldmenschen*, Brockhaus, Leipzig, 1926.
- <sup>39</sup> Y. Coppens, *Le mammoth de l'Atrikanova (Sibérie)*, in *Bull. Mus. Natl. Hist. Nat. B.*, 2nd Series 3D, 1958, pp. 402-406.
- <sup>40</sup> K. A. Vollosovitch, *The mammoth from the island Bolshoi Liakhovsky*, in *Zap. mineral. Obsch*, 2nd Series, 50, 1914, pp. 305-339.
- <sup>41</sup> V. E. Garutt, V. B. Dubinin, *On the skeleton of Taimyr mammoth*, in *Zoological Journal*, 30 (1), 1951, pp. 17-23.
- <sup>42</sup> N. K. Vereshchagin, A. Tikhonov, *A Study on Mammoth Tusks*, in *Proceedings ZIN*, 149, 1986, pp. 3-14.
- <sup>43</sup> E. N. Maschenko, S. S. Gablina, A. S. Tesakov, A. N. Simakova, *The Sevsk woolly mammoth (Mammuthus primigenius) site in Russia: taphonomic, biological and behavioral interpretations*, in *QuaternInt*, 142-143, 2006, pp. 147-165.



Elements	Number of remains	Minimal number of elements			
		L	R	Und.	Tot.
tusk	20			4	4
mandible	4			4	4
lower cheek teeth	4	2	2		4
unilateralized cheek teeth	10			1	1
atlas	5			5	5
axis	2			2	2
cervical vertebra	2			2	2
undetermined vertebra	27			19	19
thoracic vertebra	19			16	16
lumbar vertebra	8			8	8
rib	56	7	1	24	32
scapula	9	1	2	1	4
humerus	6	3	1	2	6
radius	2	2			2
ulna	9	2	1	3	6
lunatum	3	1	2		3
triquetrum	3		3		3
pisiform	2		2		2
trapezium	1		1		1
trapezoid	1		1		1
hamatum	2		2		2
metacarpal III	3	2	1		3
metacarpal IV	2		2		2
pelvis	3	1		1	2
femur	8	3	4		7
patella	2			2	2
tibia	4		2	2	4
talus	4	2	1	1	4
navicular	6	3	3		6
cuboid	3	1	1	1	3
internal cuneiform	1	1			1
medial cuneiform	2		2		2
metatarsal I	1		1		1
metatarsal II	1			1	1
undetermined carpal/tarsal	5			5	5
undetermined metapodial	7			7	7
undetermined phalanx	1			1	1
proximal phalanx	8			8	8
intermediate phalanx	5			5	5
distal phalanx	2			2	2
sesamoid	1			1	1
undetermined short bone	5			5	5
undetermined long bone	7			6	6
undetermined flat bone	1			1	1
bone	311				

Tab. IV. Inventory of mammoth bones from Valea Morilor.



n°	lat.	number of plates	eruption and wear stages	laminae frequency	enamel thickness (in mm)	vestibulo-lingual diameter (in mm)	mesio-distal diameter (in mm)
70 (with 81)	R	x18x	10xE 4D 4C	11	2,5	70	205
83	R	/	/	10	2	73	/
	L	/	/	10	2	73	/

Tab. V. Data about molars of mammoths from Valea Morilor.  
(E: worn; D: little worn; C: in eruption)











element	n°	lar.	subclasses	IV	V	VI	VII	VIII	IX	X	XI	XII	XIII	XIV	XV	XVI	XVII	XVIII	XIX	XX	XXI	XXII	XXIII	XXIV	XXV	XXVI	XXVII	XXVIII	XXIX	XXX
humer		285 L	M																											
humer		528 L	P																											
humer		530 L	M'																											
humer		532 R	M																											
humer		286 R	F?																											
humer		49 R	M																											
humer		92 R	/																											
humer		226 /	/																											
pectus		80 /	F, M, YA																											
pectus		255 /	F, M, YA																											
thor		234 /	/																											
thor		529 /	M																											
thor		344 R	/																											
thor		55 R	F																											

maximal height (in mm)		maximal height	hand	M-L	A-P	M-L	A-P
		1095	110				
		830	180				
		985	115				
		1040					
			138				
						244	209
						172	180
			144				
		maximal height					
		105					
		109					
		maximal height		M-L	A-P	M-L	A-P
				PE	PE	DE	DE
		-715					
			174				

Tab. VI (3). Data about bones of mammoths from Valea Morilor.







element	n°	lat.	sex/classes	IV	V	VI	VII	VIII	IX	X	XI	XII	XIII	XIV	XV	XVI	XVII	XVIII	XIX	XX	XXI	XXII	XXIII	XXIV	XXV	XXVI	XXVII	XXVIII	XXIX	XXX	XXXI	maximal length	osteometry (in mm)		
pisiform	268	R	F, M, YA																													103			
	341	R	F, M, YA																													111			
hamatum	371	R	M																														A-P	M-L	D-V
hamatum	75	R	F, YA																													141	118	111	
hip bone	527	/	/																													90	118	94	
hip bone	87	L	/																																
talus	73	L	M																														A-P	M-L	
talus	76	R	M																													134	165		
talus	77	L	/																																
talus	339	/	/																																
avicular	4	L	F, YA																														A-P	M-L	D-V
avicular	385	L	F, YA																													70	109	30	
avicular	271	R	F, YA																													72	31		
																																63			

Tab. VI (5). Data about bones of mammoths from Valea Morilor.







criteria	maximum height	maximum height of the crown	vestibulo-lingual diameter	mesio-distal diameter	stage <sup>(44)</sup>
Measurements (in mm)	68	41	11	33,5	g

Tab. VII. Osteometric data and wear the molar of bison from Valea Morilor.

set of teeth	Lat.	mesiodistal diameter (in mm)	vestibulo-lingual diameter (in mm)	wear stages <sup>(45)</sup>	eruption <sup>(46)</sup>	age classes
<sup>dC</sup> low	R	/	/	worn	between 1 and 15 months old	juvenile
M2	R	/	/	stage III	> 8 months old	juvenile
<sup>p</sup> <sup>4</sup>	R	19,7	12	little worn	> 6 months old	juvenile
<sup>I</sup> <sup>1</sup>	R	7,8	11,2	little worn	> 8 months old	juvenile

Tab. VIII. Eruption and wear stages of teeth of bear from Valea Morilor (wear stages<sup>45</sup>; eruption<sup>46</sup>).

<sup>44</sup> J. Toennies, *Bison Aging Techniques*, University of Iowa, Geoscience Department, in *World Wide Web*: <http://nmita.iowa.uiowa.edu/paleo/bison.htm>, 2003.

<sup>45</sup> M. C. Stiner, *Mortality analysis of Pleistocene bears and its paleoanthropological relevance*, in *Journal of Human Evolution*, 34, 1998, pp. 303-326.

<sup>46</sup> P. Andrews, A. Turner, *Life and death of the Westbury Bears*, in *Annales Zoologici Fennici*, 28 (3-4), 1991, pp. 139-149.



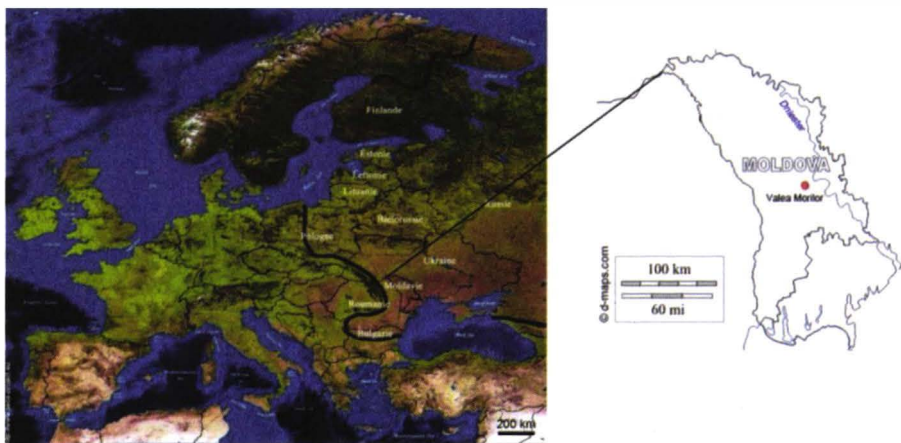


Fig. I. Location of Paleolithic site of Valea Morilor in Republic of Moldova.

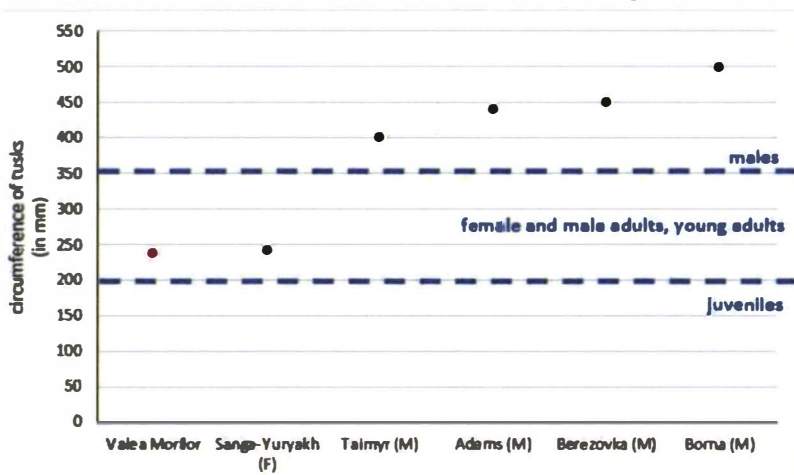


Fig. II. Circumference of proximal part of tusks from Valea Morilor and specimens of references.



Fig. III. Left mandible and molar of mammoth, in occlusal view, from Valea Morilor. (© L. Demay)



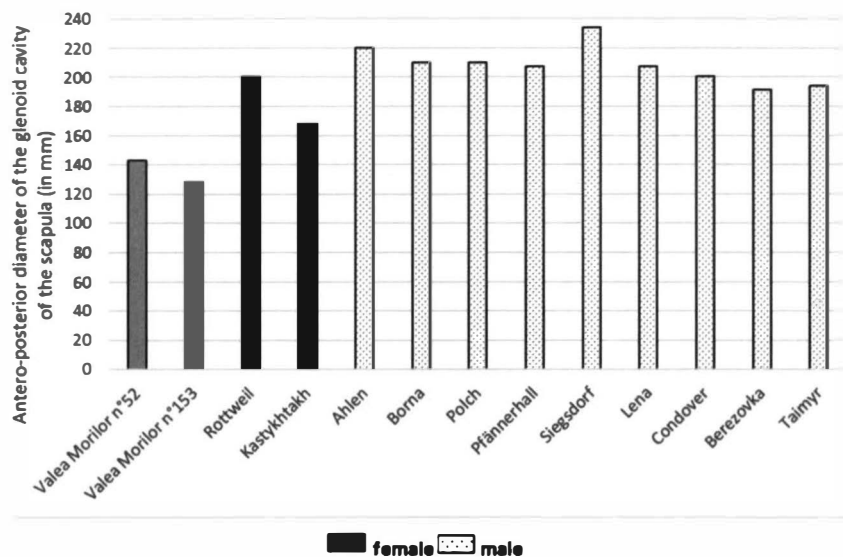


Fig. IV. Osteometry of scapulas of mammoths from Valea Morilor and specimens of references.



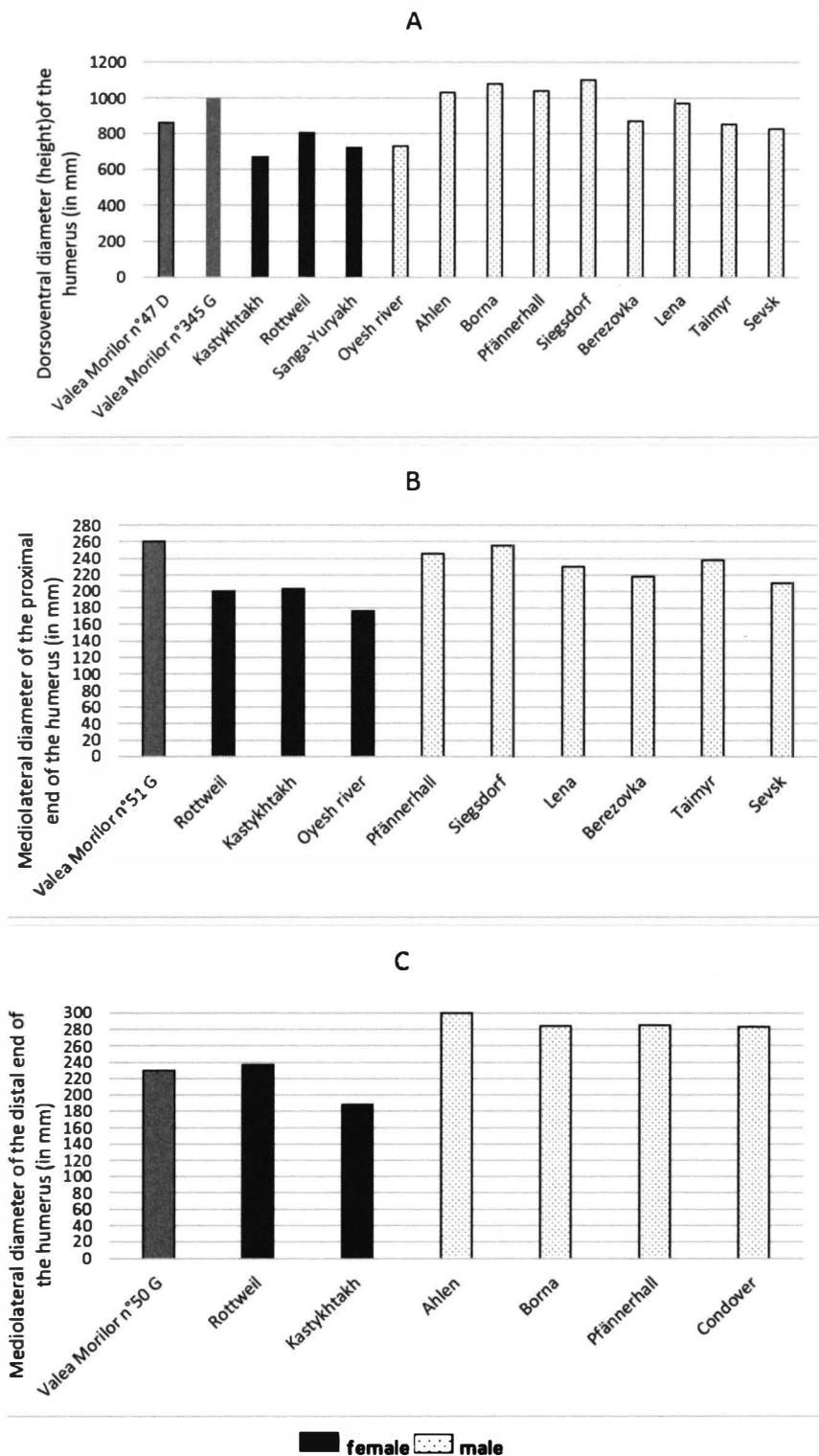


Fig. V. Osteometry of humerus of mammoths from Valea Morilor and specimens of references.



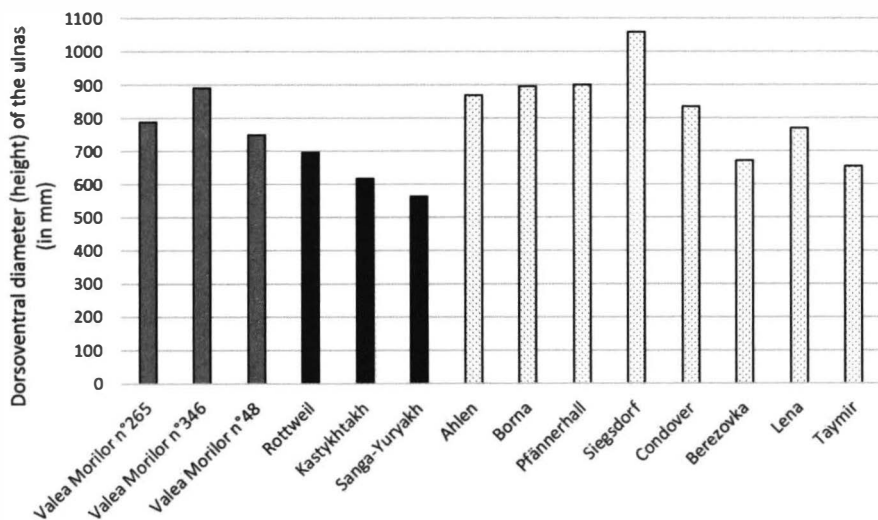


Fig. VI. Osteometry of ulnas of mammoths from Valea Morilor and specimens of references.

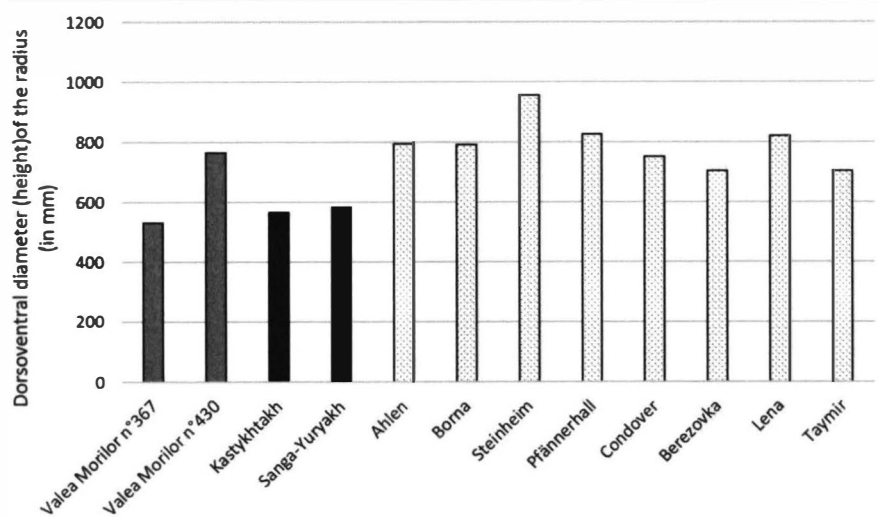
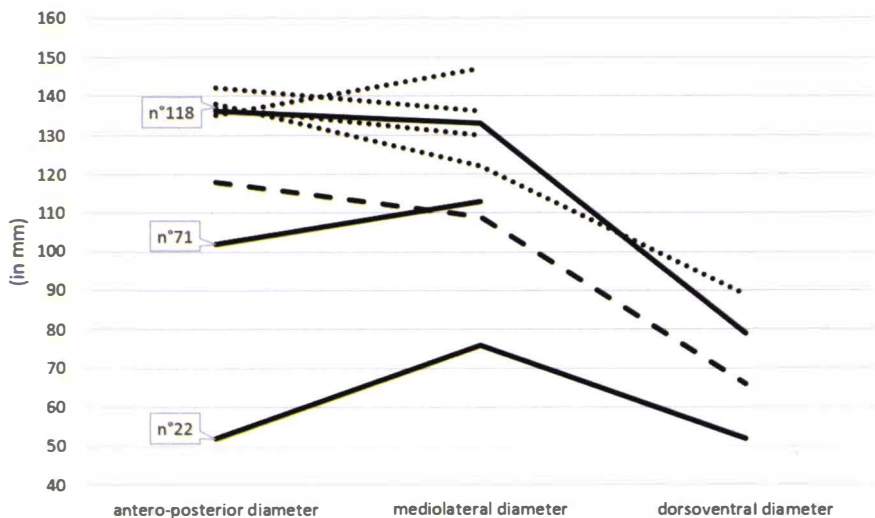


Fig. VII. Osteometry of radius of mammoths from Valea Morilor and specimens of references.





--- female .... male —specimens from Valea Morilor

Fig. VIII. Osteometry of lunatums of mammoths from Valea Morilor and specimens of references.

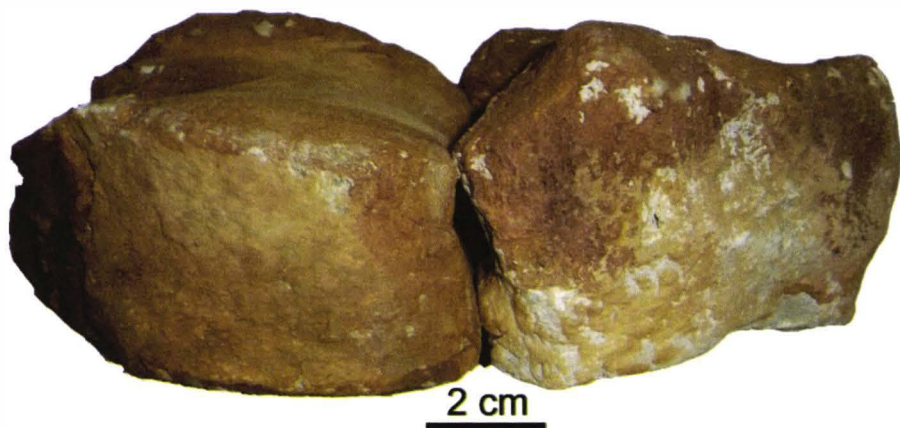


Fig. IX. Reassembly of right lunatum and triquetrum of *M. primigenius* from Valea Morilor.



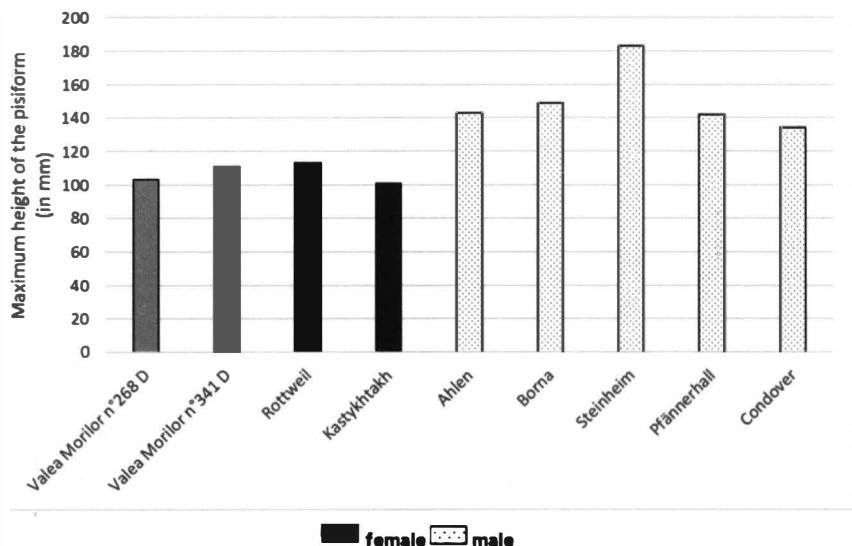


Fig. X. Osteometry of pisiforms of mammoths from Valea Morilor and specimens of references.

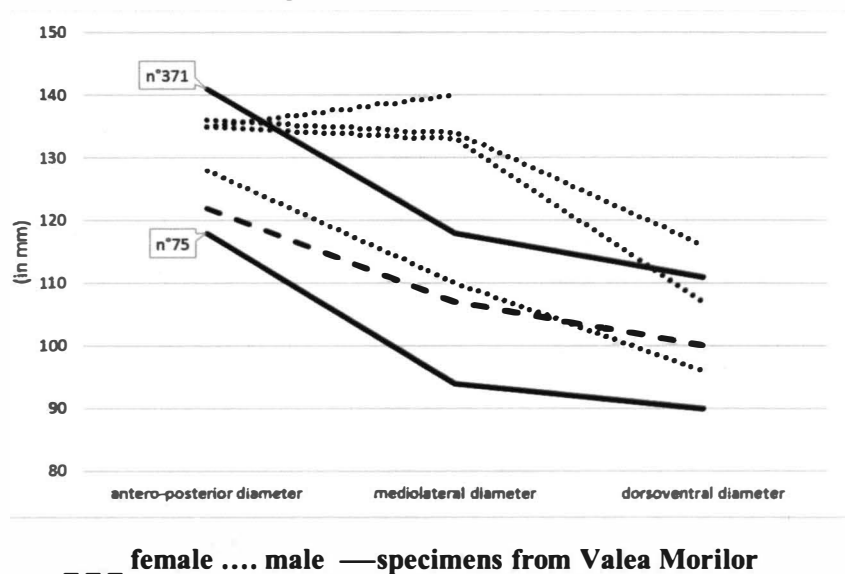


Fig. XI. Osteometry of hamatums of mammoths from Valea Morilor and specimens of references.



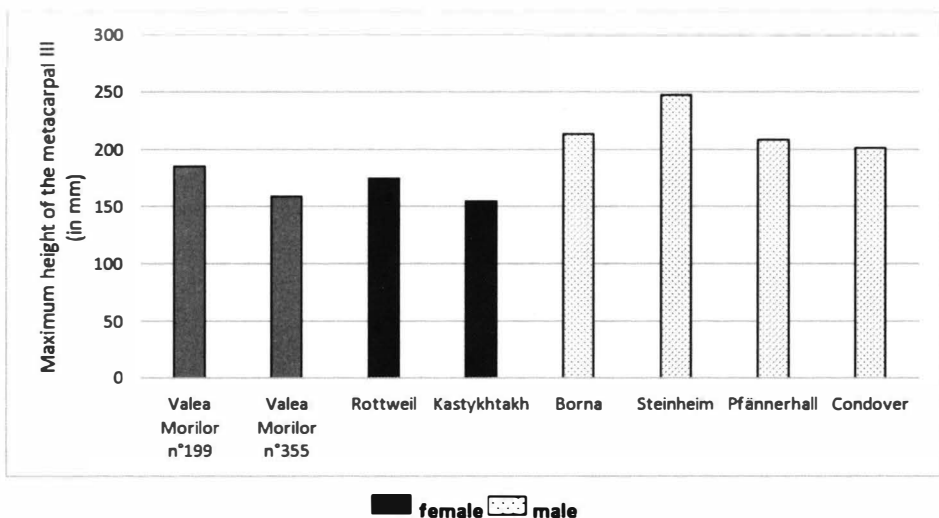


Fig. XII. Osteometry of metacarpal III of mammoths from Valea Morilor and specimens of references.

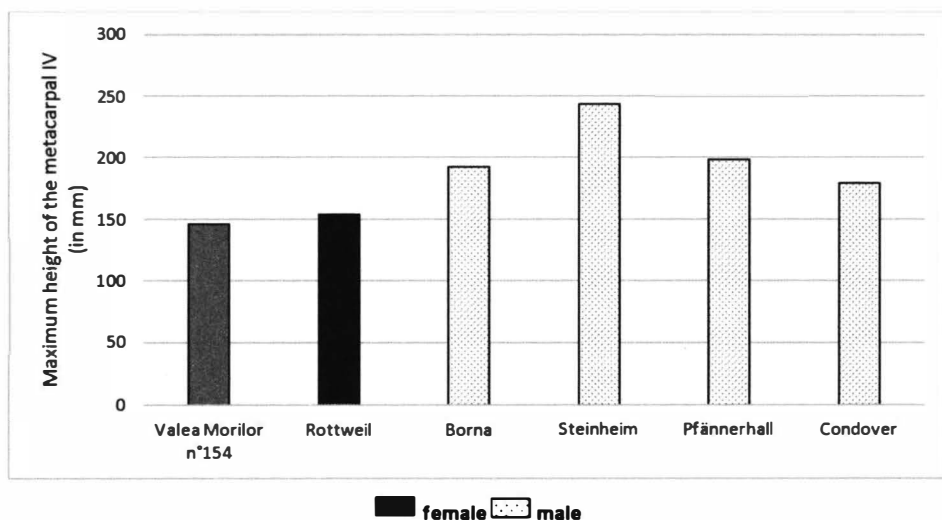


Fig. XIII. Osteometry of metacarpal IV of mammoths from Valea Morilor and specimens of references.



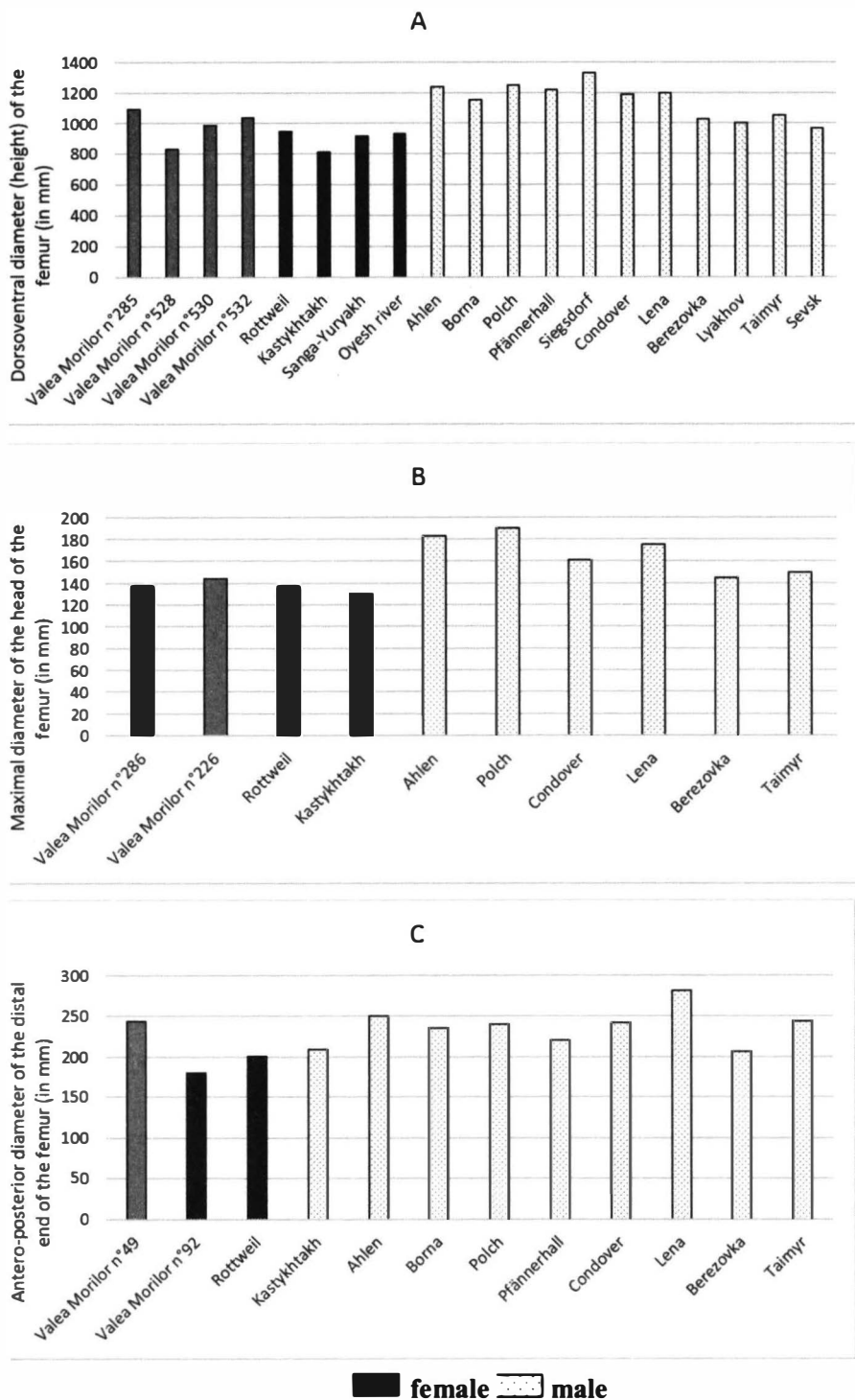


Fig. XIV. Osteometry of femurs of mammoths from Valea Morilor and specimens of references.



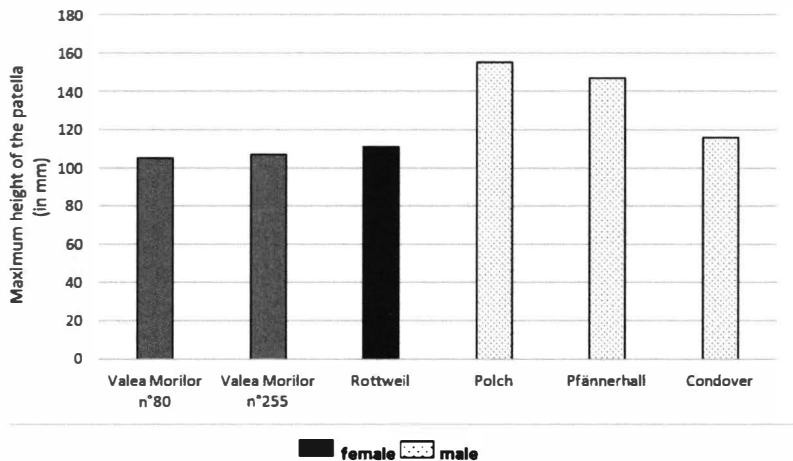


Fig. XV. Osteometry of patellas of mammoths from Valea Morilor and specimens of references.

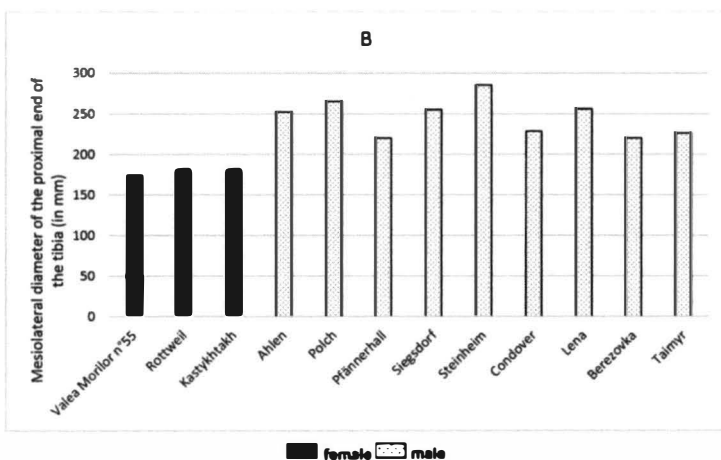
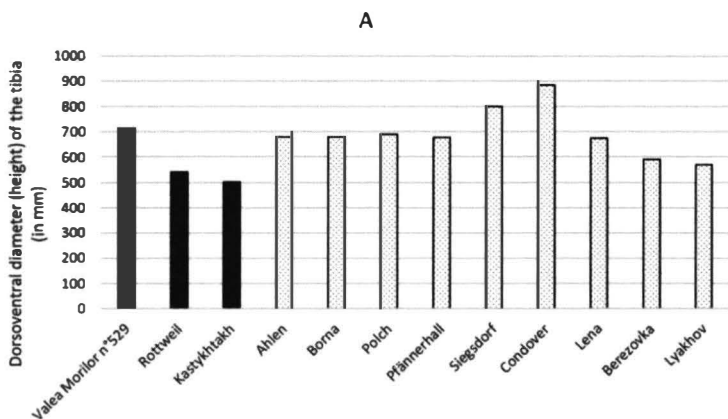


Fig. XVI. Osteometry of tibias of mammoths from Valea Morilor and specimens of references.



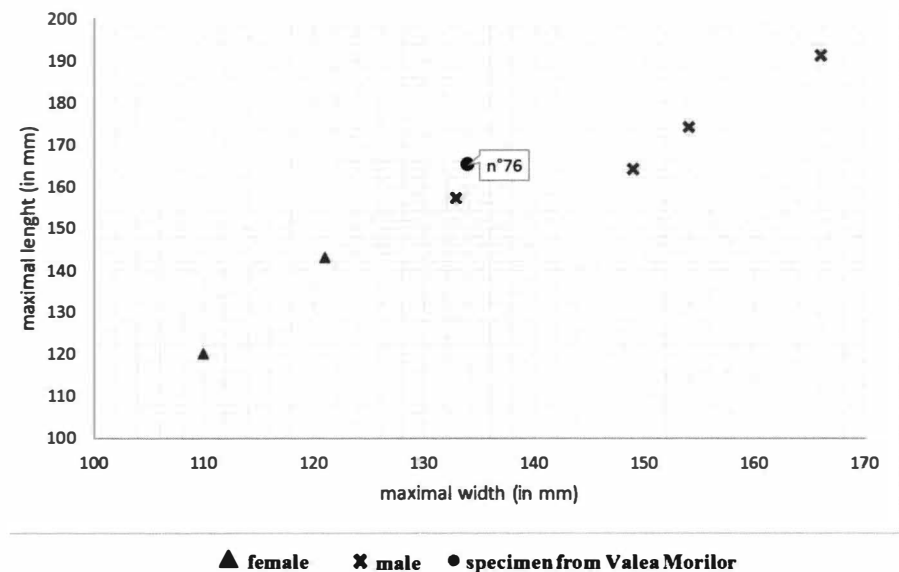


Fig. XVII. Osteometry of a talus of mammoth from Valea Morilor and specimens of references.

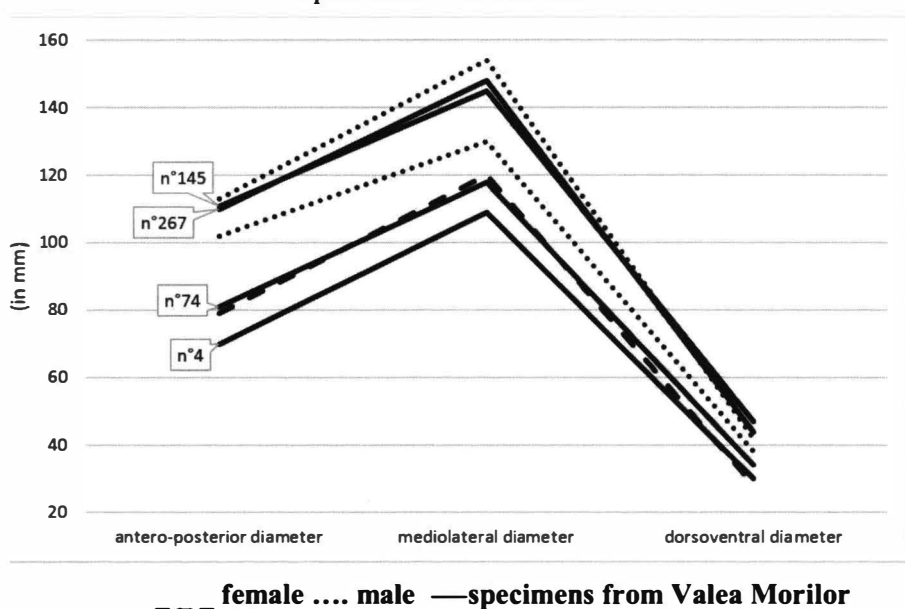
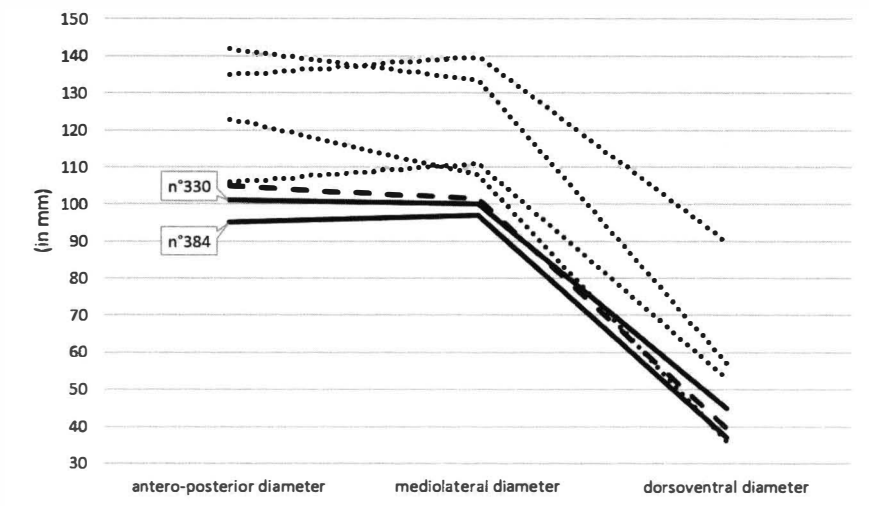


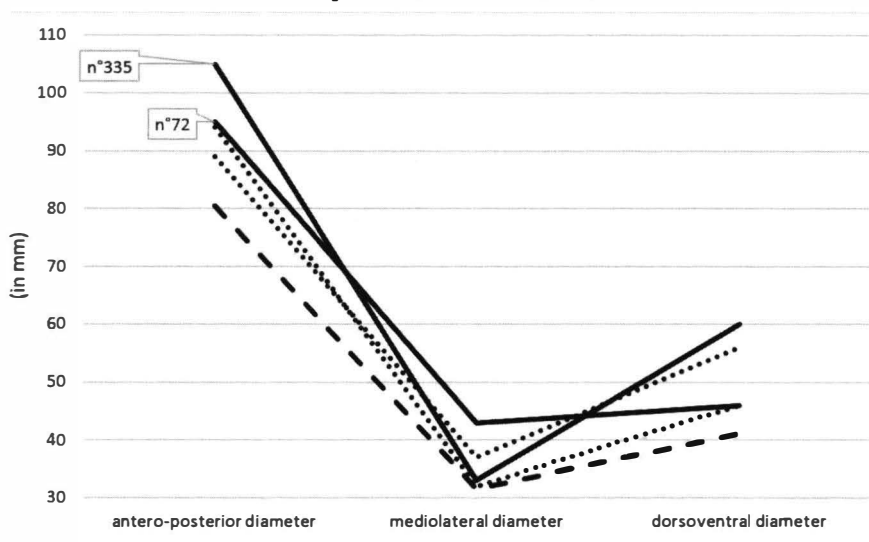
Fig. XVIII. Osteometry of naviculars of mammoths from Valea Morilor and specimens of references.





--- female .... male —specimens from Valea Morilor

Fig. XIX. Osteometry of cuboids of mammoths from Valea Morilor and specimens of references.



--- female .... male —specimens from Valea Morilor

Fig. XX. Osteometry of meso-cuneiforms of mammoths from Valea Morilor and specimens of references.



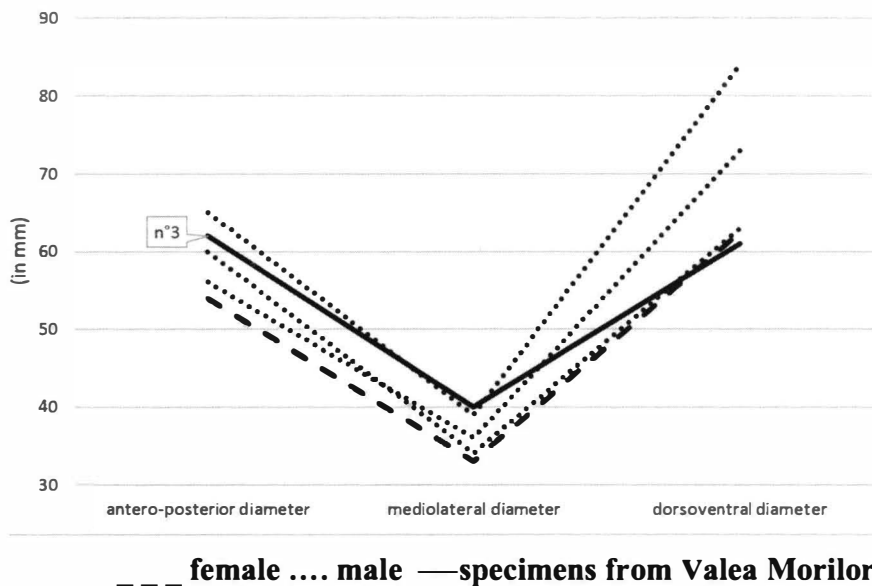


Fig. XXI. Osteometry of ento-cuneiforms of mammoths from Valea Morilor and specimens of references.

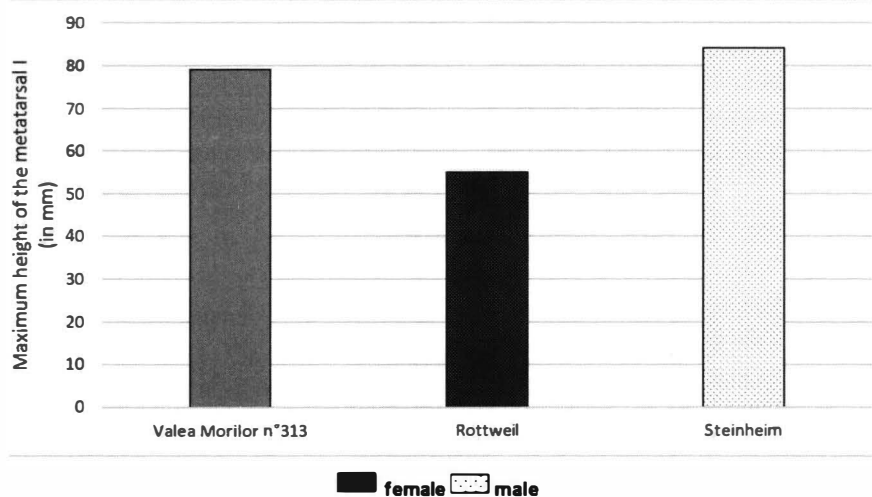


Fig. XXII. Osteometry of metatarsal I of mammoths from Valea Morilor and specimens of references.



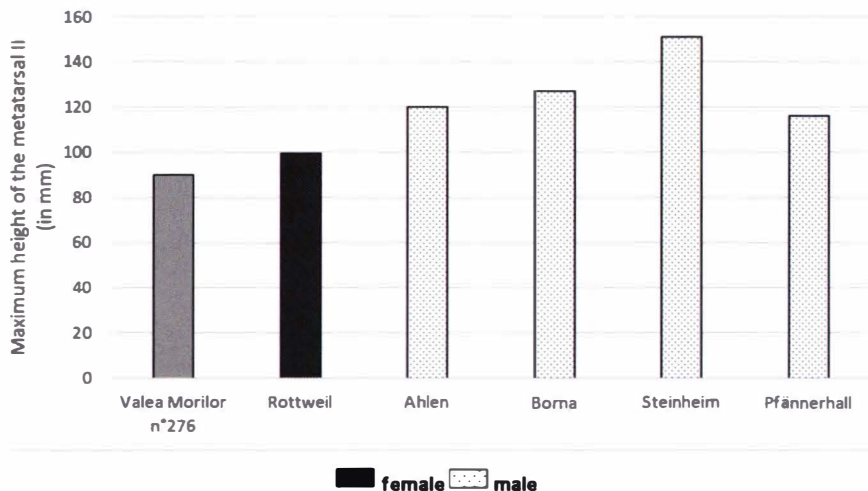


Fig. XXIII. Osteometry of metatarsal II of mammoths from Valea Morilor and specimens of references.

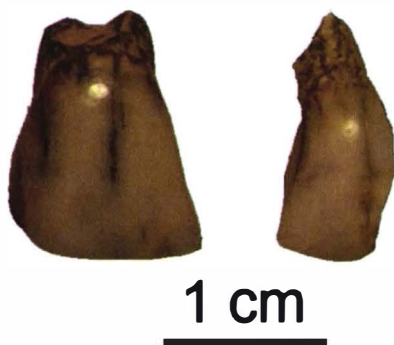


Fig. XXIV. Incisors of *Equus* sp. from Valea Morilor. (© L. Demay).



Fig. XXV. Left M<sub>3</sub> of *Bison* sp., in lingual view, from Valea Morilor. (© L. Demay).



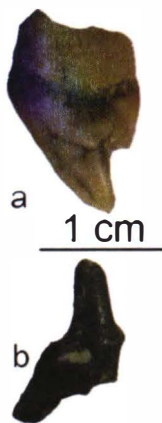


Fig. XXVI. Teeth of bear from Valea Morilor. a: right  $I^1$ , in mesial view; b : right  $dC_{low}$ , in buccal view. (© L. Demay)

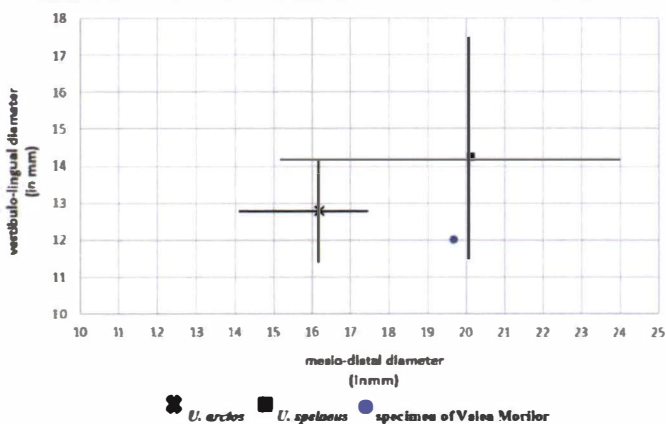


Fig. XXVII. Osteometric comparisons of  $P^4$  from Valea Morilor and of brown bears and cave bears.



Fig. XXVIII. Fragment of left hemi-mandible and  $M_1$  of *M. putorius*, in lingual view, from Valea Morilor. (© L. Demay)







# Interpretations of the art of Upper Paleolithic from the space of Central Europe

MIHAELA CAZACU-DAVIDESCU\*

**Abstract:** *The analysis of Paleolithic culture and civilization has opened new horizons to understanding the way of life and thinking of people who have contributed to the evolution of the Human Cognitive. For expressing beauty and attraction opposite the Paleolithic art-cave art or mobile art, many studies and articles, books have been written and many figures of speech have been used: epithets and personifications (Venus of Willendorf-Prehistoric Mother Goddess), artistic images or hyperboles (Altamira-the Sistine Chapel of Prehistory) and some were likened as style with the abstract sculptures of Constantin Brâncuși and Jean Arp (Venus of Engen). We have questioned whether there is a symmetry of proportions and representations in this beauty of the Paleolithic figurines. In the literature is mentioned the meeting of the golden ratio in the living world, e.g in the growth model of shells or in the pattern of spiral growth of pine cones and some authors bring up in discussion the human cognitive preference for the "golden ratio". We will seek this report in the dimensions of three Paleolithic female statues: Venus of Willendorf, Venus I of Dolni Vestonice and Venus of Moravany. In the end are presented some of the most representative treasures of paleolithic art and the institutions that host them.*

**Key words:** *Paleolithic art, Human Cognitive, golden ratio.*

In analysis of Upper Palaeolithic culture and civilization we consider necessary reporting to certain point of reference whose corroborated data-the study of loess soils (geological point of view); the study of paleoclimate (geographical point of view) and archaeological research provide an overview as complex and unitary as possible.

Following the glaciers that dominated Europe during the last Ice Age remained the loessic sediments covering 1/10 of the surface. Loess is a product of the last glaciations, in the form of a very fine particle size. It consists mostly of quartz granules and particles of calcium oxide, which gives the soil good aeration, water storage and mineral levels, so soils derived from loess are very fertile. In Germany, for example, soil quality is assessed using an index, and the



maximum value of 100 was attributed to the loessic soil at Eickendorf<sup>1</sup> located in the Magdeburger Börde Plains. The geology and geography of the Quaternary in Central Europe has been the subject of many papers, studies, researches since the end of the nineteenth century. We will remember Franz Ritter von Hauer, Deputy Director of the Society for Geological Studies in Vienna (1866-1885), the prestigious institution had the merit to be the first company to systematically study the topography, geology and mineral resources of the alpine regions, one of its main contributions being the Geology Manual of the former Austro-Hungarian Monarchy. It was one of the first maps showing the extent of loess deposits, including the regions of Lower Austria with the Danube Basin, Bohemia and Moravia, areas of Poland, the Carpathians and Transylvanian Plateau. Recent Analysis of the loessic sequence at Nussloch<sup>2</sup> (Rhine Valley) has led to values indicating an increased sedimentation rate (1 to 2 m in 1000 years for more than 10 m)<sup>3</sup> and <sup>14</sup>C dating of organic matter in the loess layer showed that during the Upper Pleniglacial the loess deposition was rapid and discontinuous, as a result of a succession of fast storage phases, separated by the shutdown or reduction in intensity of the winding sedimentation stream.

In addition, a parallel was observed between Henrich 2 event and one of the main storage periods of the loess from 22.000-23.000 years ago<sup>4</sup>. Comparison with magnetic susceptibility<sup>5</sup> recording and granule size data shows that the storage period of the loess, characterized by a large grain size index is correlated with an increase in the amount of ferromagnetic minerals from the Rhine Alluvial Plain and corresponded with a frequency of storms from the N-NV<sup>6</sup>. The thermal minimum of continental Europe occurred 25000 BP, before the highest aridity (23000 BP)<sup>7</sup>. The increase of precipitation amount has started 22000 BP ago and was followed by the maximum extension of the fenoscandinavian ice sheet<sup>8</sup>. Data on paleoclimate evolution and glaciation dynamics in north-western Europe are consistent with those in the French Central

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\* Institutul de Arheologie Iași, mail: cazacudavidescu@gmail.com

<sup>1</sup> Source internet: <https://www.ufz.de/index.php?en=35690>, Helmholtz Centre for Environmental Research (UFZ)

<sup>2</sup> P. Antoine, D.-D. Rousseau, C. Hatte, A. Zöller Lang, M. Fontugne, O. Moine, *Événements éoliens rapides dans les loess du Pléniglaciaire supérieur Weichselien: l'exemple de la sequence de Nussloch (Vallée du Rhin-Allemagne)*, in *Quaternaire* 13 (3-4), 2002, pp. 199-208.

<sup>3</sup> *Ibidem*.

<sup>4</sup> *Ibidem*.

<sup>5</sup> Temporary magnetization law for linear and isotropic materials:  $M_t = \chi_m H$ ; where  $\chi_m$  is a scalar size dependent on the nature of the substance called magnetic susceptibility;  $M$  is the magnetization of the body and  $H$  is the intensity of the magnetic field

<sup>6</sup> P. Antoine, D.-D. Rousseau, C. Hatte, A. Zöller Lang, M. Fontugne, O. Moine, *op. cit.*

<sup>7</sup> B. Van Vliet-Lanoe, B. Valadas, V. Vergne, *La Paleogeographie de l'Europe Centre-Occidentale au Weichselien. Reflexions sur les paleosols et l'inertie climatique: La place du Massif Central*, in *Quaternaire* 2 (3/4), 1991, pp. 134-146.

<sup>8</sup> *Ibidem*.



Massif<sup>9</sup> for the period since the last Interglaciation to Holocen, with some small differences that have to take into account the thermal effects of the phenoscandinav ice shield and the “Mediterranean” heat reservoir. For the French Central Massif, the maximum extent of glaciation tends to be associated with sudden cooling, event restricted to northern Europe. Because of the altitude, permafrost has expanded earlier and more extensive than in the surrounding regions and probably reached the lower regions including the southern ones<sup>10</sup>. Research of Willendorf II (Austria), Dolni Vestonice, Pavlov and Stranska Skala (Czech Republic) sites has allowed for a well-documented reconstitution of a loessic sequence in the Middle Danube Region<sup>11</sup> for Middle Pleniglacial ( $\pm 45000$  to 26000 BP) but chronologically limited to the Late Pleniglacial (26000 to 10000 BP) due to the low number of sites in that area belonging to this period of the Upper Palaeolithic.

At Pavlov I, the Gravettian cultural layer is well developed, relatively thin, dark (brown or gray to black) with clear anthropogenic traces visible in places with intense occupation<sup>12</sup>. Although it was initially thought that Pavlov I is “younger” than Dolni Vestonice, dating <sup>14</sup>C of the coal samples taken from the Gravettian layer have shown clearly that both sites belong to a relatively short period between the millennia of 27000-25000 BP<sup>13</sup>. The deposition of the Gravettian layer which allowed the sampling for geocronological framing, occurred under conditions of limited loessic deposition from the late Interpleniglacial in which thin layers of loess are interstratified with anthropogenic deposits; a massive loess deposition followed later in OIS2 and was „sealed” by the archaeological layer<sup>14</sup>. For the Oriental Carpathians zone, the study of Mitoc-Malu Galben (NE Romania), Coșăuți (Republic of Moldova) and Molodova (Ukraine) sites, manage to obtain extremely useful data, on the loess deposits in that area<sup>15</sup>.

From the point of view of numerous paleolithic sites researched in the European space, those in the enlarged territory of Central Europe offers among the most important discoveries of Paleolithic mobile art. Much has been written about these findings, synthesis, studies or articles on certain types of objects, settlements, complexes or graves, etc.

Compared to cultures appeared outside the European area in Gravettian

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<sup>9</sup> *Ibidem.*

<sup>10</sup> *Ibidem.*

<sup>11</sup> P. Haesaerts, I. Borziak, V. Chirica, F. Damblon, L. Koulakovska, *Cadre stratigraphique et chronologique du Gravettien en Europe Centrale*, in *The Gravettian along the Danube. Proceedings of the Mikulov Conference, 20.-21 November 2002 (The Dolni Vestonice Studies, vol. 11)*, Institute of Archaeology, AS CR, Brno, 2004.

<sup>12</sup> J. A. Svoboda (ed.), *Pavlov I Southeast. A Window into the Gravettian Lifestyles (The Dolni Věstonice Studies, vol. 14)*, Academy of Sciences of the Czech Republic, Institute of Archaeology at Brno, Polish Academy of Sciences, Institute of Systematics and Evolution of Animals, Brno, 2005, pp. 29.

<sup>13</sup> *Ibidem.*

<sup>14</sup> *Ibidem.*

<sup>15</sup> P. Haesaerts, *op. cit.*



and Magdalenian we are really seeing an extraordinary flowering of art, but even in Europe, art appears in a small number of sites, usually focusing on certain regions<sup>16</sup>.

For certain, such a limited incidence of creative activities is not related to an increased local requirement of symbolic communication, but more likely with the position on which, such a „unpractical” relaxation creation has taken over the local community’s value scale<sup>17</sup>.

Martin Oliva<sup>18</sup> believes that the term „art” for the first stages of evolution of humanity is acceptable with some reservations. During the Paleolithic, man and his ability to think, were in full evolving. Clearly, considers Martin Oliva, in the initial stages of development the Paleolithic man was not able to create things which, if it were produced by the modern man, we might consider them art. Related to the interpretation of Paleolithic art, the issue is sensitive, because like in any other analysis, for the interpretation of artistic emotion related to an object of Paleolithic art we must find the thought of it—the thought of the Paleolithic man who created them. We emphasize here, a Constantin Noica allegation: “human sciences are all recognizing: the thought is found in them”<sup>19</sup>.

Indeed, the Paleolithic man was aware of what surrounds him, since mobile art, cave paintings and engravings transmit with power the excitement of the first people over time. The artifacts discovered—whether they are tools, artwork, anthropo or zoomorphic statuettes are tangible proof of the ingenuity and remarkable creativity that goes back over millennia. Knowledge must also be punctuated, acquired and inherited in making and using tools and why not—in the artistic expression. Based on this knowledge base, technology evolves. Including media storage and transfer knowledge base from oral forms to computerized databases<sup>20</sup>. Our brain recognizes „patterns” when sees a „new” image and our neurons have the ability to „stop” awareness of things which does not change and to sharpen the perception of things that „change” which is the basis of the optical illusions. Does our brain recognize a certain state of „symmetry” and associates it with beauty, which could explain perception of Paleolithic art as a fascinating and impressive one, transmitted over dozens of millennia through a fluid that links the creator to his creation and audience.

Concerns about the symmetry of forms and human representations through painting or sculpture have been at least since antiquity.

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<sup>16</sup> M. Oliva, *Umeni Moravského Paleolitu. Atlas sbírky Ustavu Anthropos Moravského zemského muzea/Palaeolithic Art of Moravia. The Anthropos Collection of the Moravian Museum (Anthropos. Studies in Anthropology, Palaeoethnology, Palaeontology and Quaternary Geology*, vol. 38/NS 30, 2015), Moravské Zemské Muzeum, Brno, 2015, pp. 56.

<sup>17</sup> *Ibidem*.

<sup>18</sup> M. Oliva, *op. cit.*, pp. 54.

<sup>19</sup> M. Voicu, *Secolul XXI sau Cum descinde secolul XXI din mileniul II*, București, Ed. Academiei Române, 2006, pp. 156; C. Noica, *Jurnal de idei*, București, Humanitas, 1990.

<sup>20</sup> M. Voicu, *op. cit.*, p. 139.



Orienting after ideas and theories of Roman scholar and architect Marcus Vitruvius Pollio, author of „De Architectura libri” in which he discusses symmetries and proportions of building temples, during the Renaissance, Leonardo da Vinci created „Vitruvian Man” and proposes a series of canons of neoclassical painting „canons proportions”. Leonardo observes that the representation of a human body is symmetrical within a circle and a square.

Paleolithic figurative art, through the technique of execution, shapes and decorations, the styling of the representations fits into a unique artistic system. The figurative traditions are different cultural (Aurignacian, Gravettian, Magdalenian) but from aesthetic point of view respects the anatomical proportions and female statuettes, although stylistically accentuated on feminine forms, respect the symmetry of the forms. French preistorist Jean Clotte, for whom Paleolithic art is a focal point of its research considers that art results from the projection of a vision of world, which surrounds people and which nuances and transforms this reality before it is created<sup>21</sup>. Using type Venus figurines means that behind them is an idea expressed by the image of a woman, but this female figure is not a true representation of a real-life woman, but takes over the elements that identify her as a woman changing it in a way that the fundamental idea demands<sup>22</sup>.

Henri Leroi-Gourhan tried to identify a design scheme that connects most of the Paleolithic figurines<sup>23</sup>. His approach, taken over by Henri Delporte tries to detect a geometric composition in the figures. He noticed that inside the silhouette statues can be included accurately a rhomb. The longer diagonal makes the connection between the head and the legs and includes the diameter of a circle which covers the thorax and pelvic area and includes the chest. Accordingly, the center of significance of the figurines, focuses on the central area of the rhomb<sup>24</sup>. Sibylle Wolf used comparative analysis of the proportions of the Venus III figurine, a small sculpture made from ivory tusk, which is part of the collections of the RGZM Museum in Mainz, to determine if this can be included in the sequence of feminine figurines coming from the Dolni Vestonice site in Moravia, from where its origin was postulated<sup>25</sup>.

We ask ourselves whether in this beauty of the Paleolithic figurine, is a symmetry of proportions and representations. Kimberly Elam, Director of Graphic and Interactive Communication at the College of Art and Design, Ringling, Sarasota, Florida, USA, author of numerous papers and graphic design studies, in the work „Geometry of Design” discusses about human cognitive

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<sup>21</sup> W. Antl-Weiser, *Die Frau von W. Die Venus von Willendorf, ihre Zeit und die Geschichte (n) um ihre Auffindung (Veröffentlichungen der Prahistorischen Abteilung, 1)*, Verlag des Naturhistorischen Museums, Wien, 2008, p. 127.

<sup>22</sup> *Ibidem*.

<sup>23</sup> W. Antl-Weiser, *op. cit.*, pp. 136-137.

<sup>24</sup> *Ibidem*.

<sup>25</sup> S. Wolf, *Eine neue Venusstatuette vom Jungpaläolithischen Fundplatz Dolni Vestonice (Mähren)*, in *JRGZ*, 55, 2008, teil 1, Mainz, Verlag des Römisch-Germanischen Zentralmuseums, 2011, pp. 1-42.



preference for „golden ratio”<sup>26</sup> and extends the idea exemplifying the encounter of this number and report in the living world. In the shells growth patterns, which are logarithmic spirals with „golden section” proportions or in the spiral growth pattern of the pine cones<sup>27</sup>. The author discusses the Stonehenge ensemble (3100 BC-2200 BC) which she considers to have golden proportions between its concentric circles, as an early proof of the human cognitive preference for the golden ratio<sup>28</sup>.

Could we „descend” this preference until the „dawn of humanity”? We will analyze the dimensions of the elements of three Paleolithic female statuettes: Venus from Willendorf, Venus I from Dolni Vestonice and Venus from Moravany, based on their photos<sup>29</sup>.

The symmetry of Willendorf Venus figurine was stipulated by Walpurga Antl-Weiser, curator at Alt-u. Jungsteinzeitlichen Sammlungen des NHM Wien in the book „Die Frau von W”<sup>30</sup>, accompanied by a description: the head with coiffure, without face, appears inclined to the right, thin arms resting on heavy breasts. The wrists are wearing cut bracelets. Thighs are depicted in a natural form, but shortened, the belly is proeminent. The beauty of the presentation and rendering of this figure has passed the test of time, through the perfection and harmony of the forms. Curves are so natural that they could not have been invented in any case, and this fact makes from the figure, a valuable source of history regarding the lifestyle of those people<sup>31</sup>. To calculate the dimensions of the three paleolithic figures was used the Corel Draw X8 program for: height, neck width, breast length, foot length, foot width, waist width, bust length, as shown in Fig. 1 and also for measuring the distance between shoulders, hips, breasts and the vertical length between shoulders and breasts and from breasts to hips, as shown in fig. 1b and 1c.

The data obtained (in cm) according to fig. 1, were included in the following table:

Measures	Venus of Willendorf	Venus of Moravany	Venus I of Dolny Vestonice
Height	11,93	11,31	13,42
neck width	3,24	1,13	1,44
breast length	3,24	3,45	2,98

<sup>26</sup> K. Elam, *Geometry of Design. Studies in Proportion and Composition*, Princeton Architectural Press, New York, 2001, p. 6.

<sup>27</sup> *Ibidem*.

<sup>28</sup> *Ibidem*.

<sup>29</sup> Figures are processed after photographs from the following bibliographic resources: for Venus in Willendorf - W. Antl-Weiser, *op. cit.*, p. 146; for Venus in Moravany-W. Antl-Weiser, *op. cit.*, p. 155 (copy of Venus von Moravany, Slowakei, Original aus Elfenbein); for Venus in Dolni Vestonice- M. Oliva, *op. cit.*, p. 85.

<sup>30</sup> W. Antl-Weiser, *op. cit.*, p. 117.

<sup>31</sup> *Ibidem*, p. 119.



foot length (l.p.)	3,09	3,34	3,45
foot width	2,94	1,7	2,16
waist width	5,19	3,65	5,55
bust length (l.b.)	5,3	5,04	5,71

According to mathematics, two quantities are in a „golden ratio” if their ratio is the same as the ratio between their sum and the highest of the quantities ( $\frac{a+b}{a} = \frac{a}{b} = \tau$  (tau) sau  $\phi = 1,618 \dots \sim 1,62$ )

If we select the length of the bust (l.b.) and the length of the legs (l.p.) we will get the values:

	Venus of Willendorf	Venus of Moravany	Venus I of Dolni Vestonice
a =l.b.	5,3	5,04	5,71
b =l.p.	3,09	3,34	3,45
$\frac{a+b}{a}$	1,583	1,663	1,604
$\frac{a}{b}$	1,715	1,509	1,655

The average value for each of the two ratios is 1,6166... (average value of 1,583; 1,663 and 1,604) corresponding to  $\frac{a+b}{a}$  and 1,6263... (the average values of 1,715; 1,509 and 1,655) corresponding to  $\frac{a}{b}$ , values very close to the irrational number 1,618... which fits the dimensions of the bust and legs of the three paleolithic figures into a report with a value very close to the golden ratio.

In support of these statements, also come the calculations, according to Fig. 1b and 1c on the symmetry of proportions between shoulders, hips and breasts.



Distance (cm)	Venus of Willendorf		Venus I of Dolni Vestonice		Venus of Moravany	
	Front view	Profile view	Front view	Profile view	Front view	Profile view
Shoulders (S)	3.31	1.44	3.31	1.18	4.00	1.85
Breasts (B)	4.63	4.20	3.62	2.98	3.68	2.35
Hips (H)	5.29	4.86	5.46	3.68	4.10	2.83
From shoulders to breasts (S_B)	2.14	2.92	3.23	3.03	2.67	2.70
From breasts to hips (B_H)	1.27	2.56	2.01	2.37	1.24	1.77
Simetry proportion number	1.296	1.209	1.2703	1.303	1.609	1.62

The ratio of symmetry was calculated according to the following mathematical calculations:

$$[(B)-(S)]*(S\_B)*0,5=A ; [(H)-(B)]*(B\_H)*0,5=C.$$

Then we calculate the ratio between their sum and the highest of the quantities.

According to these data, the proportion of symmetry, by reference to golden number (1,618...) are: for V. I from Dolni Vestonice of 78.51% front view and 80.53% profile view; for V. from Willendorf 80.09% front view and 74.72% profile view and for V. from Moravany 99.44% front view and 99% profile view.

We can afirm, completing K. Elam assertions that assist to a cognitive preference of Paleolithic representations of anthropomorphic feminine figurines for these values close to golden ratio, but further studies are needed, possibly even corroborated with statistical data about the dimensions of the female population from the area of Austria, from where Venus of Willendorf comes, from the Czech Republic, where Venus of Dolni Vestonice comes and Slovakia where from Venus of Moravany originates.

The anthropo and zoomorphic representations of the Upper Paleolithic from the European territory benefitted by a current favorable for image figuration. They are not mentioned in literature cases of scratches or deliberate removal of any painted or engraved images, but were discovered broken figures- for example Venus of Dolni Vestonice was discovered on July 13, 1925, in a layer of ash, broken into two pieces. In the Neolithic, sometimes occur clear situations of fragmentation, as found in Catalhoyuk<sup>32</sup> deliberate removal of the head of a statue before being deposited in the layer<sup>33</sup>. The respective stone figurine, without head, has been emphasized legs and buttocks and marked a public triangle, and the vertical centerline which separates the legs is executed less careful than the rest of the figurine. Near this, the archaeological excavations

<sup>32</sup> I. Hodder, *New discoveries and our interpretations of Çatalhöyük*, in *Heritage Turkey*, 5, 2015, British Institute at Ankara, Ankara, 2015, pp. 21-22.

<sup>33</sup> The excavations took place between 25 June and 22 August and 110 researchers took part simultaneously (note Ian Hodder, *op. cit.*)



led to the discovery of a gypsum-shaped head with the inserted obsidian eyes<sup>34</sup>. The head was found attached to the wall above the researched dwelling, looking or watching the entrance into the side storage room, as if the eyes monitored everything that came in or out of the side chamber. There are many other examples of Neolithic or Copper Age noted in different parts of Europe<sup>35</sup>.

We will point to the end a part of the most representative treasures of paleolithic art, discovered in the Central European space and the institutions hosting them. We will list here first the Museum of Natural History in Vienna, inaugurated on August 10, 1889, in the presence of Emperor Franz Joseph I. We enumerate among the exhibits of the museum two « old ladies » sharing the same cabinet: Venus from Willendorf (29500 BP) magnificent female representation carved in oolitic limestone with a height of 11,1 cm and Venus of Galgenberg, discovered in Stratzing, also in Austria, not far from Willendorf, the statue carved in serpentinite of green color measures 7,2 cm in height and weighs 10g.

The Dolni Vestonice I site has provided among many artifacts a series of female anthropomorphic figurines called „Venus” and numbered with roman numbers: Venus of Dolni Vestonice I<sup>36</sup>, V „Hottentotka”<sup>37</sup>, VIa<sup>38</sup>, Vīb<sup>39</sup>, VII<sup>40</sup>, VIII<sup>41</sup>, IX<sup>42</sup>, X<sup>43</sup>, XII<sup>44</sup>, XIII<sup>45</sup>, XIV<sup>46</sup>, XV „da Vinci”<sup>47</sup> and XVI<sup>48</sup> (Fig. 2, Fig. 3) which are part of, along with other artifacts found in the eponymous site but also in other paleolithic sites discovered on the territory of Moravia, from the Anthropos collection of the Moravian Museum in Brno<sup>49</sup> (Moravské Zemské Muzeum, Brno). Venus III discovered at Dolni Vestonice is part of the collections of the RGZM Museum in Mainz<sup>50</sup>. Pavlov and Dolni Vestonice sites I and II have provided important artistic objects from organic matter (ivory, horn, antler, bone, shells) or ceramic material (burnt clay). Tertiary fossils predominantly molluscs, used by Gravettian population for making decorative objects or for utility purpose discovered in the Pavlov I site, are kept in the Institute of Archeology of the Academy of Sciences of the Czech Republic from

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<sup>34</sup> I. Hodder I., *op. cit.*

<sup>35</sup> John Chapman, *Fragmentation in Archaeology : People, Places and Broken Objects in the Prehistory of South Eastern Europe*, Routledge, London, 2012.

<sup>36</sup> M. Oliva, *op. cit.*, p. 85 (fig. 26).

<sup>37</sup> *Ibidem*, p. 107 (fig. 86).

<sup>38</sup> *Ibidem*, p. 86 (fig. 27).

<sup>39</sup> *Ibidem*, p. 86 (fig. 28).

<sup>40</sup> *Ibidem*, p. 87 (fig. 29).

<sup>41</sup> *Ibidem*, p. 87 (fig. 31).

<sup>42</sup> *Ibidem*, p. 87 (fig. 32).

<sup>43</sup> *Ibidem*, p. 89 (poz. 35).

<sup>44</sup> *Ibidem*, p. 110 (fig. 90).

<sup>45</sup> *Ibidem*, p. 108 (fig. 87).

<sup>46</sup> *Ibidem*, p. 109 (fig. 88).

<sup>47</sup> *Ibidem*, p. 106 (fig. 84).

<sup>48</sup> *Ibidem*, p. 87 (fig. 30).

<sup>49</sup> *Ibidem*.

<sup>50</sup> S. Wolf, *Eine neue Venusstatuette vom mittel-jungpaläolithischen Fundplatz Dolni Věstonice (Mähren)?*, in *Acta Musei Moraviae, Scientiae Sociales*, 93/2008, pp. 69-98.



Brno<sup>51</sup>. List with pieces of organic material (bone, antler, ivory, perforated teeth) and ceramic from Pavlov, discovered during 1954-1956 are published in a catalog and the pieces are stored in the Paleolithic and Paleoethnology Laboratory of the Institute of Archeology (Dolní vestonice)<sup>52</sup> ASCR. The collection counts 1081 objects and weighs 1176,9 g<sup>53</sup>.

The Schloss Hohentubingen Museum in Tübingen, Germany hosts the oldest representation of a horse-The Vogelherd horse- a carved statuette of mammoth ivory with a height of 2,5 cm, a horizontal length of 4,8 cm and a thickness of 0,7 cm.

The Prehistory Museum in Blaubeuren, Germany hosts the oldest female representation known Venus of Hohlenfels (also known as Venus of Schelklingen), carved from mammoth ivory with a height of 6 cm.

The National Bank of the Slovak Republic is supposed to host one of the treasures of paleolithic art, Venus of Moravany, which it considers unanimous, that it represents a turning point in the evolution of plastic art, by carving in mammoth ivory of a human figure-the height of the statue is about 7 cm. Interestingly, although it was discovered in 1938 in Podkova, near Moravany, it was sent to Abbé Breuil for analysis, it was determined that belongs to Paleolithic art, but returned „home” in Slovakia, only in 1967. Maybe this explains why replicas of it can be found at the Castle Museum in Bratislava, the Museum of natural History in Vienna and the Slovak Academy of Sciences in Nitra, but the original is inaccessible to the general public.

Venus from Monruz or Venus from Neuchâtel (about 10000 BC) is one of the smallest Venus figurines. It measures 16 mm in height and is of the type of a pendant or earring and is carved in gagat (black lignite, a black fossilized wood) in the shape of a very stylized female body. It was discovered in July 1990 with the occasion building a motorway (A5) in Monruz, Neuchâtel, Switzerland, at 5 m in the ground, in a 15000 year old camp belonging to the Magdalenian hunters, beside hearths, ceramic fragments and traces of red ochre. Subsequently, the entire hunting camp was excavated, resulting in a block of 400 tons „the Monruz-mega-block”, currently stored at the Luthien Archeological Park Museum of the largest archeological museum in Switzerland, the Neuchâtel. Venus of Monruz, resembles Venus of Engen, the largest pendant figurine from dozens of pendants of lignite excavated from Petersfels (Baden-Württemberg) in Germany. Venus of Engen, belonging to the Magdalenian art, dated 13000 BC, is a masterpiece of plastic art, described as „Lalinde-Gonnertsdorf”, in the style of „femmes sans tête” (headless women) of semi-abstract form, remarkably modern, being likened to style with abstract sculptures of Constantin Brancusi and Jean Arp.

Venus from Gonnertsdorf represents a generic title for a group of Venus Magdalenian figurines, with dimensions which varies between 5,4 and 8,7 cm in length, discovered by Gerhard Bosinski with the occasion of excavations carried

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<sup>51</sup> J. A. Svoboda, *op. cit.*, p. 374.

<sup>52</sup> *Ibidem*, p. 399.

<sup>53</sup> *Ibidem*, p. 415.



out between 1968 and 1976 in Neuwied, a town on the Rhine. The figurines are made from sculpted bone, deer antler and mammoth ivory and are dated between 15000-11500 BP. In the same place was discovered slate slabs engraved with feminine and animal figures very stylized. Most of female are shown in profile, without head. The Monrepos Museum, in Neuwied, hosts engraved plaques and Gonnarsdorf figurines attributed to the Upper Paleolithic.

Similar to the paleolithic female statuettes from Gonnarsdorf is Venus of Pekarna (Moravia) dated to 14500 BP, assigned also to Magdalenian.

Carved in mammoth ivory, has a height of 45 mm, a width of 17 mm and a thickness of 14 mm. It is stored in the Moravian Museum in Brno, Czech Republic (Anthropos Moravské Zemské Muzeum, Brno). A copy of it is exposed at the Archaeological Museum in Dolní Věstonice, exhibited in the „Archaeological Exposition”. Also, in the Pekarna cave were found engravings of horse heads, antelopes and bison made on bones of horse jaw.

Venus of Petřkovice (known also as Venus of Landek) belong to Gravettian/Willendorf Kostenki Culture, dated to 25-28000 BC. The figure represents a woman's torso, has a height of 4,6 cm and is made of hematite. It is deposited at the same institute mentioned earlier, The Institute of Archaeology in Brno of the Academy of Sciences of the Czech Republic.

The Wilczyce site was discovered in 1994 on the occasion of the systematic archaeological survey<sup>54</sup> of the loessic area from Sandomierz Plateau, where in the filling layers of a wedges of ice<sup>55</sup> were found Magdalenian traces. The site, considered unique among the paleolithic ones<sup>56</sup> by way of conservation, in which artifacts were practical „sealed” in the crack formed by ice wedges is similar as historical importance with Pompei<sup>57</sup>. Site research led to the discovery of numerous artifacts of stone, bone and ivory tools, 2 bone figures (horse bone); 2 mammoth ivory figures (one 92 mm in length, 32 mm in width and 15 mm in thickness, considered masculine and the other, reconstituted from several fragments, is 220 mm in size and resembles the statue discovered at Gonnarsdorf); 58 feminine stylized figures of stone, of which 36 are completely finished<sup>58</sup> (Venus figurines of Wilczyce) and a necklace from perforated polar fox fangs (necklace from Wilczyce). Stone figurines have dimensions which varies between 26 and 83 mm and are divided in three categories<sup>59</sup>. The pieces

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<sup>54</sup> The archaeological survey was part of the "Archaeological Picture of Poland" National Program.

<sup>55</sup> Large masses of ice that appear in thermal contraction cracks in permafrost. Under periglacial conditions, the alternation of freezing and thawing can lead to the formation of vertical, narrow and deep ice stones. After melting, they tend to fill up with sediment.

<sup>56</sup> R. Schild (ed.), *Wilczyce: a Late Magdalenian Winter Hunting Camp in Southern Poland*, Institute of Archaeology and Ethnology Polish Academy of Sciences, Warsaw, 2014.

<sup>57</sup> *Ibidem*.

<sup>58</sup> T. Borón, H. Królik, T. Kowalski, *Female Figurines*, in R. Schild (ed.), *op. cit.*, p. 319-334.

<sup>59</sup> *Ibidem*.



are preserved in two major Polish institutions. The Institute of Archaeology and Ethnology of the Polish Academy of Sciences in Warsaw and the Institute of Archaeology of Marie Curie-Skłodowska University in Lublin<sup>60</sup>.

From the short data presented it can be observed that together with parietal art, the Paleolithic sculptural opened new horizons, both in terms of the topic approached, materials and techniques used, as well as semantics of representations.

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<sup>60</sup> *Ibidem*, p. 319.



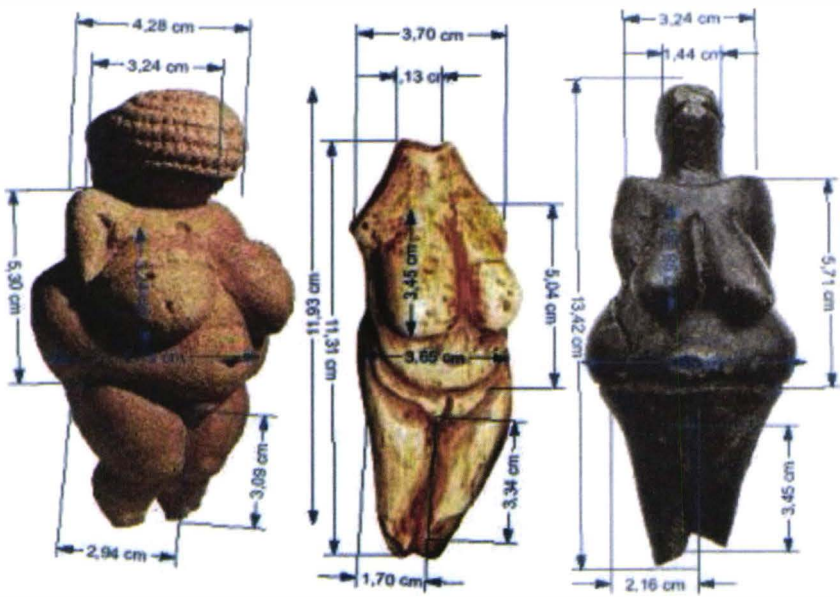


Fig. 1a. Processed images with three feminine paleolithic figurines of Venus type. Left: Venus of Willendorf apud W. Antl-Weiser, *op. cit.* p. 146; Center: Venus of Moravany apud W. Antl-Weiser, *op. cit.*, p. 155 (copy of Venus von Moravany, Slowakei, Original aus Elfenbein); right: Venus I of Dolni Vestonice apud M. Oliva, *op. cit.*, p. 85.



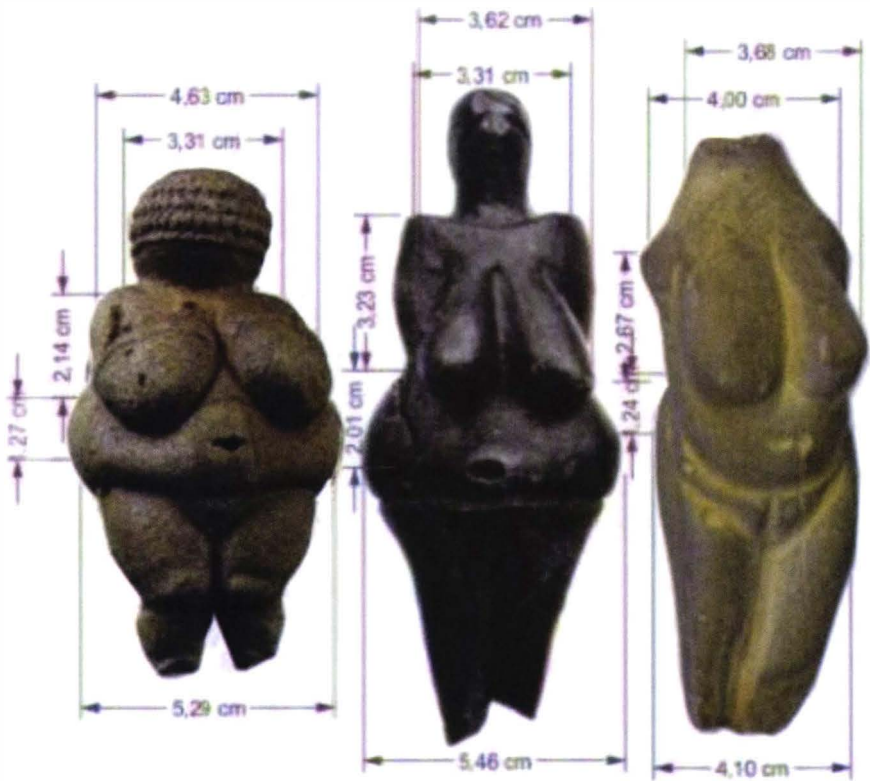


Fig. 1b. Processed images with three feminine paleolithic figurines of Venus type (front view). Left: Venus of Willendorf apud W. Antl-Weiser, *op. cit.* p. 146; Center: Venus I of Dolni Vestonice apud M. Oliva, *op. cit.*, p. 85 ; Right : Venus of Moravany apud W. Antl-Weiser, *op. cit.*, p. 155 (copy of Venus von Moravany, Slowakei, Original aus Elfenbein).



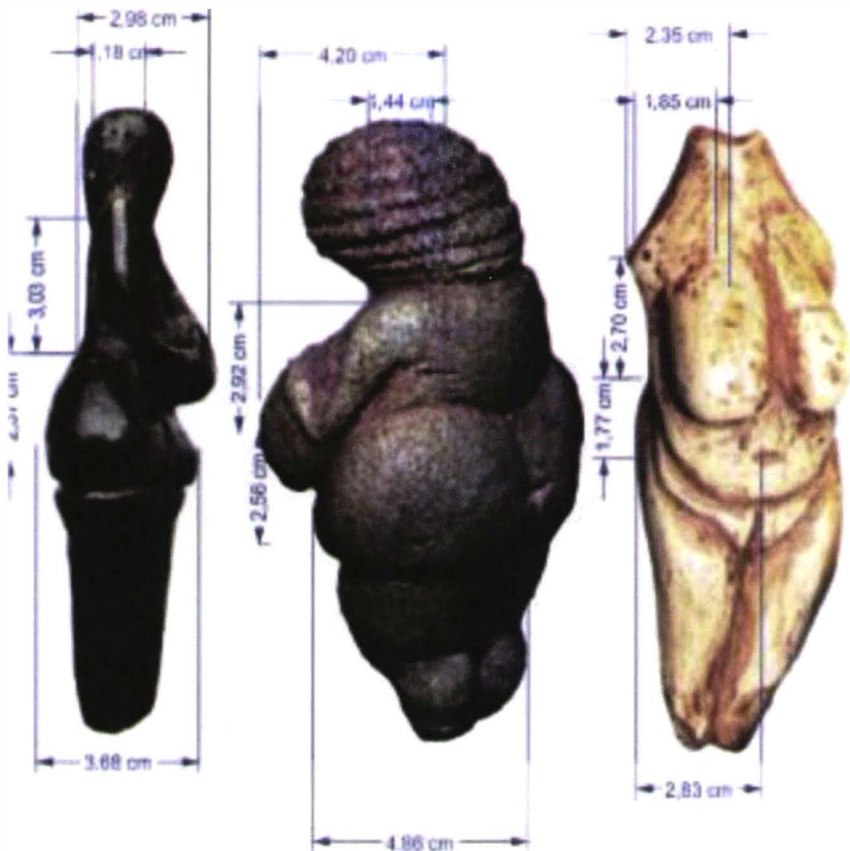


Fig. 1c. Processed images with three feminine paleolithic figurines of Venus type (profile view). Left: Venus I of Dolni Vestonice apud M. Oliva, *op. cit.*, p. 85 ; Center : Venus of Willendorf apud W. Antl-Weiser, *op. cit.* p. 146; Right : Venus of Moravany apud W. Antl-Weiser, *op. cit.*, p. 155 (copy of Venus von Moravany, Slowakei, Original aus Elfenbein).





Fig. 2. Anthropomorphic feminine figurines from Dolni Vestonice-Venus Type (apud M. Oliva, *op. cit.*).



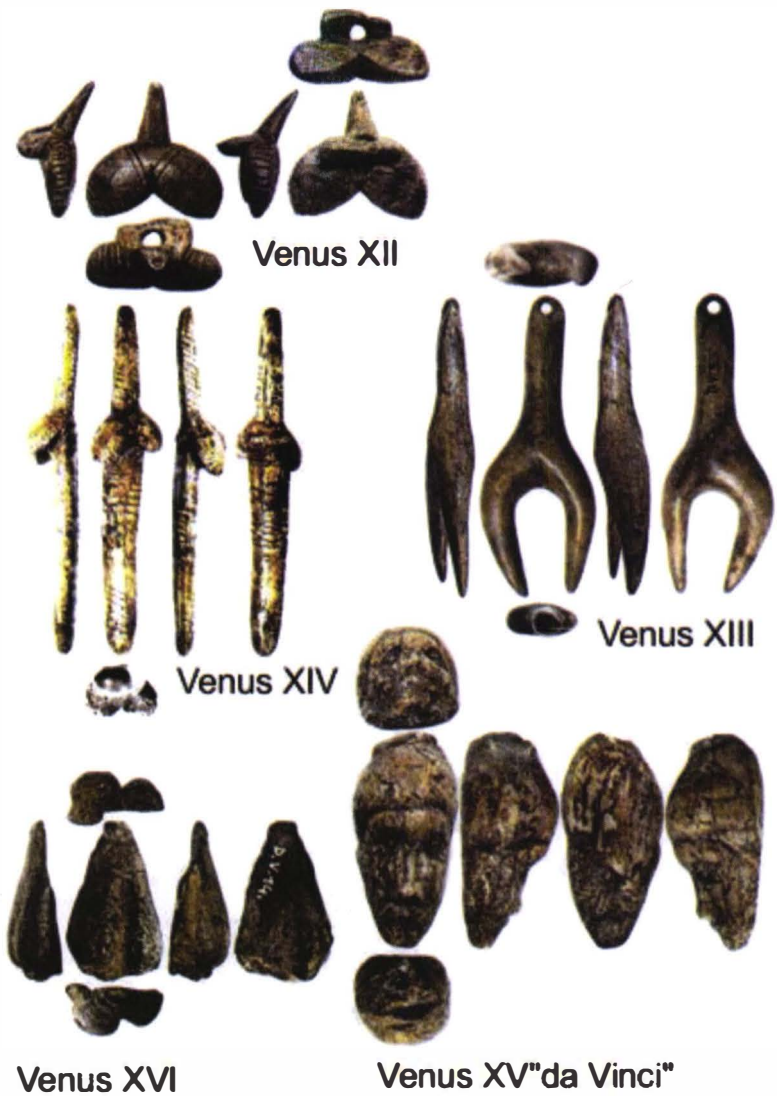


Fig. 3. Anthropomorphic feminine figurines from Dolni Vestonice-Venus Type (apud M. Oliva, *op. cit.*).







# Aspects regarding children and adolescents in the Upper Palaeolithic

CRISTINA CORDOȘ\*

**Abstract:** *The archaeology of children has come a long way over the past decades and many related aspects were investigated, yielding significant results. However, worldwide the subject still remains a peripheral one and furthermore, if we exclude the mentioning of children in funerary contexts, it was generally overlooked by Romanian archaeologists so far. Nevertheless, children represent an important segment of any society, past or present, not only in terms of percentage, but also if we consider their role as successors. Although in many cases it might be difficult to identify the traces left by children in archaeological contexts, this situation should not be used as an excuse to completely ignore their role and contribution within past communities. In the present article, focused on the European Upper Palaeolithic, we will examine the available archaeological evidence which attest to the presence of children and adolescents, confident that they do hold some clues in regards to age stages, attitudes towards children, their experiences, as well as their social and economic role within the community.*

**Keywords:** *archaeology of children, Upper Palaeolithic, age categories, hunter-gatherer, social learning*

## Introduction

Growing up in the European Upper Palaeolithic was, certainly, not easy. High rates of infant mortality are documented among most prehistoric and historic communities and, even if the insignificant number of burials do not allow demographic projections for this period, we have no reason to believe that things were any different for the hunter-gatherers inhabiting Europe during a period characterized by extreme climatic events. Therefore, the first major test which these people had to pass was to survive infancy. Having passed this test, the road to adulthood would still have been long and arguably dangerous. However, the childhood of prehistoric hunter-gatherers is a puzzle that still misses most of its pieces. Whether ethnographic sources could be used to fill these gaps is debatable, even if cross-cultural ethnographic research suggests that subsistence strategies do have an important impact on defining childhood, the role of

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\* Institute of Archaeology Iași, Romania, mail: elenacordos@gmail.com



children, and age categories<sup>1</sup>. Although not as abundant as one would expect, ethnographic sources focused on historic hunter-gatherer communities portray various aspects relating to childhood and children (infancy and childcare, play, activities and learning, age categories, social and economic role, rites of passage)<sup>2</sup>, some emphasizing the similarities, but many also revealing the various and sometimes substantial differences. Therefore, the generic outline proposed for these communities in regards to infants, children and adolescents (i.e., infants are kept close by their mothers, indulging most of their demands, punishment for bad behaviour is virtually absent, children spend the majority of their time playing within mixed age groups, adolescents enjoy the freedom to explore and learn, both children and adolescents are not necessarily expected to contribute economically) should not be taken for granted. This outline, based mostly on communities living in warm climates where resources are abundant all year around appears even less convincing when referring to prehistoric hunter-gatherers, especially those inhabiting Europe during the Upper Palaeolithic. Considering this situation, it seems more appropriate to look for clues mainly within the archaeological record. However, compared to other periods, the Upper Palaeolithic is not particularly known for its rich archaeological sites and diversity of artefacts. Can we, therefore, expect to find the traces left by children and take a step closer to understanding their life experiences and role within the community? This question leads to an entirely new discussion.

## The archaeology of children

The call made by Grete Lillehammer almost 30 years ago, urging archaeologists to explore the child's world was not left unanswered and although

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<sup>1</sup> C. R. Ember, C. M. Cunnar, *Children's Play and Work: The Relevance of Cross-Cultural Ethnographic Research for Archaeologists*, in *Childhood in the Past*, Vol. 8, No. 2, 2015, pp. 87-103.

<sup>2</sup> N. Bird-David, *Studying Children in "Hunter-Gatherer" Societies. Reflections from a Nayaka Perspective*, in B. S. Hewlett, E. L. Michael (eds.), *Hunter-Gatherer Childhoods: Evolutionary, Developmental, and Cultural Perspectives*, New Brunswick, N. J.; London: Aldine Transaction, 2005, pp. 92-105; M. Konner, *Hunter-Gatherer Infancy and Childhood: The !Kung and Others*, in *Hunter-Gatherer Childhoods...*, pp. 19-64; P. Gray, *Play as a Foundation for Hunter-Gatherer Social Existence*, in *Am. J. Play*, Vol. 1, No. 4, Spring 2009, pp. 476-522; D. F. Lancy, *The anthropology of childhood: cherubs, chattel, changelings*, Cambridge University Press, 2015; G. G. Politis, *Children's Activity in the Production of the Archaeological Record of Hunter-Gatherers. An Ethnoarchaeological Approach*, in P. Funari, A. Zarankin, E. Stovel (eds.), *Global Archaeological Theory, contextual voices and contemporary thoughts*, New York, 2005, pp. 121-144; B. S. Hewlett, H. N. Fouts, A. H. Boyette, B. L. Hewlett, *Social learning among Congo Basin hunter-gatherers*, in *Philos Trans Royal Soc. B.*, Vol. 366(1567), 12 April 2011, pp. 1168-1178; C. R. Ember, C. M. Cunnar, *op. cit.*; D. Owens, B. Hayden, *Prehistoric Rites of Passage: A Comparative Study of Transegalitarian Hunter-Gatherers*, in *J. Anthropol. Archaeol.*, Vol. 16, 1997, pp. 121-161.



it still remains a peripheral direction of research, the impact of children on material culture and their role in past societies has been addressed and discussed ever since in many occasions, fully establishing a new theoretical concept: the archaeology of children<sup>3</sup>. If this endeavour is to a certain extent easier when dealing with direct sources (child burials, skeletal remains), significant challenges must be overcome in order to identify and interpret indirect sources. Without compelling evidence, seldom present in the archaeological records, it is difficult to determine if an artefact was created by a child or for a child and, more so, which was its intended purpose.

Either as a consequence of these challenges or simply due to lack of interest, Romanian archaeological research rarely approached children as the main subject. Obviously, they were not completely ignored, but their presence in the archaeological records was generally filtered and pushed towards the adult perspective. Only a couple of exceptions dealing with toys or miniature objects<sup>4</sup> attempted an actual focus on children outside the funerary *bubble*. In another instance, they were associated with women, both seen as *neglected* social categories, when discussing their economic role and social status<sup>5</sup>. One may wonder if approaching this topic is even necessary, seeing that Romanian archaeologists managed just fine without it so far. The answer is simple and

<sup>3</sup> G. Lillehammer, *A Child Is Born: The Child's World in an Archaeological Perspective*, in *NAR*, Vol. 22, No. 2, 1989, pp. 89-105; Idem, *The world of children*, in J. Sofaer Derevenski (ed.), *Children and Material Culture*, Routledge, London, New York, 2000, pp. 17-26; Idem, *Archaeology of Children (Arqueologia de la infancia)*, in *Complutum*, Vol. 21, No. 2, 2010, pp. 15-45; Idem, *25 Years with the 'Child' and the Archaeology of Childhood*, in *Childhood in the Past*, Vol. 8, No. 2, 2015, pp. 78-86; J. Sofaer Derevenski (ed.), *Children and Material Culture*, Routledge, London, New York, 2000; K. A. Kamp, *Where Have All the Children Gone?: The Archaeology of Childhood*, in *JAMT*, Vol. 8, No. 1, 2001, pp. 1-33; Idem, *Dominant Discourses; Lived Experiences: Studying the Archaeology of Children and Childhood*, in *AP3A*, Vol. 15, No.1, Special Issue: *Children in Action: Perspectives on the Archaeology of Childhood*, 2005, pp. 115-122; Idem, *Children and their Childhoods: Retrospectives and Prospectives*, in *Childhood in the Past*, Vol. 8, No. 2, 2015, pp. 161-169; J. E. Baxter, *Introduction. The Archaeology of Childhood in Context*, in *AP3A*, Vol. 15, 2005, pp. 1-9; Idem, *Making Space for Children in Archaeological Interpretations*, in *AP3A*, Vol. 15, 2005, pp. 77-88; F. T. Bugarin, *Constructing an Archaeology of Children: Studying Children and Child Material Culture from the African Past*, in *AP3A*, Vol. 15, 2005, pp. 13-26; J. Hildebrand, *Children in Archaeological Lithic Analysis*, in *Neb. Anthro.*, Vol. 27, 2012, pp. 25-42.

<sup>4</sup> A. Rustoiu, *Miniature Objects: Context and Functionality. The Miniature Vessels from the Late Iron Age Settlement at Sighişoara – Wietenberg Revisited*, in O. Tutilă, N. C. Rîşcuţia, I. V. Ferencz (eds.), *Archaeological small finds and their significance, Proceedings of the Symposium on Games and Toys*, Ed. Mega, Cluj-Napoca, 2016, pp. 43-58; A. Adamescu, D. Prisecaru, O. Gheorghe, *Child in Time. Reconsideration of Some Small Finds Discovered in the Prehistoric Settlements from Galaţi County*, in *Archaeological small finds and their significance...*, pp. 17-24.

<sup>5</sup> M. Angheliniu, L. Niţă, *Cei uitaţi: Femeile şi copiii în cercetarea Paleoliticului*, in V. Chirica, G. Bodi (eds.), *Arta antropomorfă feminină în preistoria spaţiului Carpato-Nistrean. Volum dedicat memoriei Prof. Dr. Doc. Ilie Borzic*, Ed. Pim, Iaşi, 2010, pp. 33-108.



obvious. Children are an important component of every society as they embody the future; therefore the study of past societies would be incomplete without taking into account a significant part of those societies. Unquestionably, archaeology greatly benefited from gender studies, which proposed new ways of interpreting data. In a similar manner, an emphasis on age as a variable in the creation of material culture also has a great potential to increase our understanding of the past.

As the question of importance was easily answered, one may ask if it is possible to identify and accurately interpret the traces left by children. Direct evidence, such as graves and skeletal remains belonging to children are, in general, recognized without difficulty. A great deal of data can be obtained from funerary contexts and osteological remains, allowing projections relating to demographic trends (birth rates, mortality rates), living standards (diet, health, stress factors)<sup>6</sup>, as well as inferences regarding the social and economic role of children<sup>7</sup>. Beyond mortuary archaeology, the identification of children is more complicated, but the outcome can be very interesting and rewarding. Several theoretical and methodological frameworks were proposed and positive results were obtained in many occasions, using technological and spatial analysis, learning and tool production, ethnographic sources, experimental archaeology, etc.<sup>8</sup>. We can mention the work of Grete Lillehammer, with a focus on establishing the necessary theoretical aspects, which provided also some constructive models of research based on Scandinavian data<sup>9</sup>. Other important contributions regarding the theory and methodology behind this topic were made by Kathryn Kamp<sup>10</sup> and Jane Eva Baxter<sup>11</sup>. We should also mention here the results obtained by studying fingerprints found on ceramics<sup>12</sup>, which allowed insights into the production process and the economic role of children, or the spatial analysis regarding possible distribution patterns of artefacts used by

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<sup>6</sup> S. Wilander, *The Cultural Construction of Childhood in Scandinavia, 3500 BC—1350AD*, in *Current Swedish Archaeology*, Vol. 6, 1998, pp. 185-204; L. Humphrey, *Interpretation of the growth of past populations*, in *Children and Material Culture...* 193-205; A. Chamberlain, *Minor concerns: a demographic perspective on children in past societies*, in *Children and Material Culture...*, pp. 206-212.

<sup>7</sup> F. Fahlander, *Mesolithic Childhoods: Changing Life-Courses of Young Hunter-Fishers in the Stone Age of Southern Scandinavia*, in *Childhood in the Past*, Vol. 5, 2012, pp. 20-34; J. E. Baxter, *Introduction. The Archaeology of Childhood ...* pp. 3-5; G. Lillehammer, *A Child Is Born...*, pp. 97-98.

<sup>8</sup> J. Hildebrand, *op. cit.*, p. 26.

<sup>9</sup> G. Lillehammer, *A Child Is Born...*, pp. 80-105; Idem, *The world of children...*, pp. 17-26; Idem, *Archaeology of Children...*, pp. 15-45; Idem, *25 Years with the 'Child'...*, pp. 78-86.

<sup>10</sup> K. A. Kamp, *Where Have All the Children Gone?...*, pp. 1-33, Idem, *Dominant Discourses: Lived Experiences...*, pp. 115-122

<sup>11</sup> J. E. Baxter, *Introduction. The Archaeology of Childhood ...*, pp. 1-9.

<sup>12</sup> K. A. Kamp, N. Timmerman, G. Lind, J. Graybill, I. Natowsky, *Discovering childhood: Using fingerprints to find children in the archaeological record*, in *Am. Antiq.*, Vol. 64. No. 2, 1999, pp. 309-315.



children<sup>13</sup>. Fortunately, flint-knapping and lithic technology also proved as a potential fertile ground for identifying children or the work of novices<sup>14</sup>.

As mentioned above, the archaeology of children is no longer a recent trend, but for various reasons it still remains on the fringe of mainstream research. However, important progress was made so far. First of all, children were acknowledged as active participants in creating the archaeological record, not only as a randomizing factor, but as a predictable and explicable one<sup>15</sup>. Their role in past communities was re-evaluated, determining researchers to reconsider their importance in understanding how those societies functioned and survived for many generations. The studies mentioned above, as well as many more dealing with this topic, proved that the challenges which obstruct the identification of children through archaeological methods are not insurmountable<sup>16</sup> and that the results can be very interesting and promising, changing and enriching our perspective on the past.

### Children and adolescents in the Upper Palaeolithic

From a biological point of view, the early human lifespan can be divided in 5 separate stages: infancy (0 ~ 4 years old), early childhood (4 ~ 6 years old), middle childhood or juvenile period (6 ~ 11 years old), adolescence (11 ~ 18 years old), and adulthood (after 18 years old)<sup>17</sup>. Nevertheless, age and its equivalent life cycles are also socially constructed, reflecting the beliefs, needs and expectations of every society. Therefore, *childhood is simultaneously a biological and cultural phenomenon*<sup>18</sup> and the dual relationship between nature and culture can be used as an analytic tool<sup>19</sup> only as long as we make the clear distinction between them. Otherwise, we might be tempted to project our own perception of childhood onto past societies. As advised by Kamp, when studying prehistoric children the archaeologist should first try to determine the significant cultural age categories of the society and their basic characteristics<sup>20</sup>. Regardless of how different these may be from one case to another, a general pattern dictated by biological developments should be visible<sup>21</sup>, as physical strength or cognitive

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<sup>13</sup> J. E. Baxter, *Making Space for Children ...*, pp. 77-88.

<sup>14</sup> See J. Hildebrand, *op. cit.*, for a short history of research.

<sup>15</sup> J. E. Baxter, *op. cit.*, p. 78.

<sup>16</sup> H. B. Schwartzman, *Materializing Children: Challenges for the Archaeology of Childhood*, in *AP3A*, Vol. 15, 2005, pp. 123-131.

<sup>17</sup> J. L. Thompson, A. J. Nelson, *Middle Childhood and Modern Human Origins*, in *Human Nature. An Interdisciplinary Biosocial Perspective*, Vol. 22, No. 3, 2011, p. 250.

<sup>18</sup> K. A. Kamp, *Children and their Childhoods ...*, p. 162.

<sup>19</sup> G. Lillehammer, *Archaeology of Children...*, p. 24.

<sup>20</sup> K. A. Kamp, *Where Have All the Children Gone?...*, p. 4.

<sup>21</sup> L. Buchet, I. Ségu, *L'âge au décès des enfants: âge civil, âge biologique, âge social?* in F. Gusi, S. Muriel, O. Carme (eds.), *NASCITURUS, INFANS, PUERULUS VOBIS MATER TERRA. La muerte en la infancia/ La mort dans l'enfance/ La mort a l'infancia/ The death in the childhood*, Castelló de la Plana, Servicio de Investigaciones Arqueológicas y Prehistóricas (Colección de Prehistoria y Arqueología), 2008, pp. 33-36.



capacities have a great influence in successfully conducting certain activities. For instance, it is highly unlikely that in a certain prehistoric community toddlers would have been expected to hunt or build shelters. Weaning/walking or the onset of puberty (especially for girls) are also key notions in a child's development, as in most societies they mark the leap from a dependent to a semi-dependent and ultimately independent stage. Nevertheless, trying to establish cultural age categories for the Upper Palaeolithic is problematic, since this time frame does not translate into a single, uniform society, but a multitude of human communities which varied greatly through space and time. Therefore, a diversity of attitudes towards childhood and children, such as the one encountered within the ethnographic records, must be considered. Unfortunately, given the meagre nature of available data, high resolution local images depicting aspects regarding Palaeolithic children are far from our reach. As truthfully put by Roveland, for the present study we are also compelled to conveniently compress thousands of years of prehistory and vast areas<sup>22</sup>. Subsequently, for the sake of coherency we divided the archaeological data into direct and indirect sources. Regarding direct archaeological sources, we can mention burials and skeletal remains, as well as footprints, handprints/hand stencils, and fingerprints.

Burials and other funerary contexts are considered by archaeologists as a vital source of information in regards to the social organisation of a society, reflecting also disparities between age groups. Unfortunately, such funerary features are rare in the Upper Palaeolithic. Furthermore, at a first glance they display no obvious differentiation between adults and children based on distribution, grave goods or type of feature<sup>23</sup>, which might only tell us that at least in some cases children were deeply cared for and regarded as worthy members of the community. However, the detailed study conducted by Henry-Gambier on 21 Gravettian burials attributed to immature individuals provides more data in regards to potential age groups and attitude towards children. In his opinion the so-called *Italian anomaly*, where no graves belonging to children younger than 12 years old were found, might indicate that the life stage between 12 and 18 years old *marque un changement de statut et de rôle, suggérant une organisation sociale où l'âge intervient*<sup>24</sup>. Nevertheless, this situation is strictly particular to Italy. In the Western extremity of Europe, the situation is somehow reversed, as no adolescents are encountered, while in Central and Eastern Europe infants and younger children are considerably better represented than adolescents<sup>25</sup>. Although the author takes into consideration the stage of research and quality of data in these cases, it could still reflect a potential differentiated mortuary treatment related to age groups. Henry-Gambier notes the absence of

<sup>22</sup> B. Roveland, *Footprints in the clay. Upper Palaeolithic children in ritual and secular contexts*, in *Children and Material Culture...*, p. 29.

<sup>23</sup> F. B. Harrold, *A comparative analysis of Eurasian Palaeolithic burials*, in *World Archaeol.*, Vol. 12, no. 2, 1980, p. 202.

<sup>24</sup> D. Henry-Gambier, *Les sujets juvéniles du Paléolithique supérieur d'Europe à travers l'analyse des sépultures primaires: L'Exemple de la culture gravettienne*, in F. Gusi, S. Muriel, O. Carme (eds.), *NASCITURUS, INFANS, PUERULUS VOBIS MATER TERRA...* 2008, pp. 340-341.

<sup>25</sup> *Ibidem*, p. 340.



tools and weapons in burials assigned to children younger than 5 years (with one certain exception at Mal'ta), fact which he also considers as an indication of age group roles<sup>26</sup>. However, if we do take into consideration the burial from Figuier<sup>27</sup>, this observation seems less plausible. A different attitude towards infants and children based on Upper Palaeolithic burials is discussed by Zilhão<sup>28</sup>. According to him, compared to the previous known burials (i.e. Middle Palaeolithic), in the Upper Palaeolithic children received a different mortuary treatment when compared to adolescents and adults, particularly through the separate location of burials. However, his observation in regards to the absence of ritualized infant burials, fact which he attributed to a potential delayed personhood, was rendered obsolete by the burials found at Krems-Wachtberg. The two burials (one double, one single) were assigned to newborn infants (9-10 months/ 0-3 months) and included grave goods, such as ochre pigments and ivory beads, strongly suggesting a ritualized interment<sup>29</sup>. Speaking of grave goods, some children or adolescent graves are particularly rich (ex: Sunghir 2, 3; Arene Candide; Mal'ta 1), containing thousands of ivory beads and hundreds of perforated animal teeth, mammoth tasks, pendants, pins, bracelets, etc<sup>30</sup>. Such spectacular graves have fuelled discussions regarding social inequalities and the existence of potential *elites*. In regards to children, we may ask if the apparent higher social status was simply inherited, and therefore it reflects more on the adult parents, or gained by the children themselves through various means (visible physical deformity was speculated as a potential factor<sup>31</sup>). Another aspect possibly pertaining to age groups and attitude towards children is the association of individuals within multiple burials. Younger children are associated with other children or adults of both genders, while adolescent individuals are only associated with adults in one case, at Balzi Rossi<sup>32</sup>.

Another type of direct sources is represented by footprints, handprints/hand stencils, and fingerprints. Several small footprints attributed to children and adolescents were found preserved on cave floors at Le Tuc d'Audoubert, L'Aldène, Fontanet, Pech Merle, Montespan, and Réseau

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<sup>26</sup> *Ibidem*, p. 342.

<sup>27</sup> L. Slimak, H. Plisson, *La sépulture paléolithique de l'enfant du Figuier (Ardèche, France). Emboîtement d'une symbolique funéraire*, in *PAM*, Vol. 14, 2008, pp. 29-38.

<sup>28</sup> J. Zilhão, *Burial Evidence for the Social Differentiation of Age Classes on The Early Upper Paleolithic*, in D. Vialou, J. Renault-Miskovsky, M. Patou-Mathis (dir.), *Comportements des hommes du Paléolithique moyen et supérieur en Europe: territoires et milieux*, Liège: ERAUL 111, 2005, p. 231- 241.

<sup>29</sup> T. Einwögerer, H. Friesinger, M. Händel, C. Neugebauer-Maresch, U. Simon, M. Teschler-Nicola, *Upper Palaeolithic infant burials*, in *Nature*, vol. 444, 16 November 2006, p. 285.

<sup>30</sup> V. Formicola, A. P. Buzhilova, *Double Child Burial From Sunghir (Russia): Pathology and Inferences for Upper Paleolithic Funerary Practices*, in *Am J. Phys. Anthropol.*, Vol. 124, 2004, pp. 189-190; D. Henry-Gambier, *op. cit.*, tab. 4, pp. 351-352.

<sup>31</sup> V. Formicola, A. P. Buzhilova, *op. cit.*, pp. 195-196.

<sup>32</sup> D. Henry-Gambier, *op. cit.*, p. 340.



Clastres<sup>33</sup>. In the cases where sets of footprints were associated to a single incursion, children are always represented, occasionally accompanied by adults. At Réseau Clastres, the footprints of at least three children and an adolescent were identified, the smallest belonging to a child around 10 years old<sup>34</sup>, while at Le Tuc d'Audoubert the footprint of a 2/3 year old was found<sup>35</sup>. As some of these caves also contain artistic representations, the footprints were considered by some as traces of initiation ceremonies<sup>36</sup>, while others suggested the possibility that children participated in creating the rock art<sup>37</sup>. Another argument which would support this last assumption is the presence of children as active and rather prolific finger fluters (grooves left by dragging the fingers across the soft clay or moonmilk) in at least four caves (El Castillo, Las Chimeneas, Rouffignac and Gargas)<sup>38</sup>. These footprints and finger grooves, as well as some handprints or hand stencils found at Altamira, Gargas, Bedeilhac, Fontanet, and Cosquer<sup>39</sup>, prove that young individuals (infants, children and adolescents) were present in those caves, sometimes leaving their mark in hard-to-reach places. Very interesting are the analysed fingerprints found on the burned clay objects discovered at Pavlov I<sup>40</sup>. Although only a small percentage of these prints were positively determined, it is improbable that adult males were involved in modelling or handling the clay objects. Instead, it seems that children (some approximately 10 years old) or females were the creators. The authors of the study do not exclude the possibility that these clay objects were entirely made by children and served, in fact, as toys<sup>41</sup>. In these circumstances, it might not be at all far-fetched to believe that the Věstonice Venus is the work of a child or adolescent<sup>42</sup>, as suggested by the analysed partial fingerprint. As easily noticed, most of these direct archaeological sources are not always interpreted without ambiguity. We can only hope that future discoveries will bring more data and clarify some of the aspects discussed above.

Indirect archaeological sources relating to childhood and children are even more elusive. Yet, since it is now obvious that adults are not the sole creators of archaeological records, the traces left by children should be abundant. Based on ethnographic data, a methodological approach regarding the identification of

<sup>33</sup> J. Clottes, R. Simonnet, *Le réseau René Clastres de la Caverne de Niaux (Ariège)*, in *BSPF*, tome 69, n°1, 1972, pp. 321-322; B. Roveland, *op. cit.*, p. 32-33.

<sup>34</sup> J. Clottes, R. Simonnet, *op. cit.*, p. 322.

<sup>35</sup> L. Van Gelder, *Counting the Children: The Role of Children in the Production of Finger Flutings in Four Upper Palaeolithic Caves*, in *Oxf. J. Archaeol.*, Vol. 34, No. 2, 2015, pp. 120-121.

<sup>36</sup> D. Owens, B. Hayden, *op. cit.*, pp. 153-156.

<sup>37</sup> B. Roveland, *op. cit.*, pp. 32-33.

<sup>38</sup> L. Van Gelder, *op. cit.*, pp. 119-138.

<sup>39</sup> *Ibidem*, pp. 120-121.

<sup>40</sup> M. Králik, V. Novotný, *Dermatoglyphics of ancient ceramics*, in J. Svoboda (ed.), *Pavlov I - Southeast. A window into the Gravettian lifestyles*, Academy of Sciences of the Czech Republic, Institute of Archaeology, Brno, 2005, pp. 449-497.

<sup>41</sup> *Ibidem*, p. 472.

<sup>42</sup> J. M. Adovasio, O. Soffer, J. Page, *The invisible sex: uncovering the true roles of women in prehistory*, Harper & Collins, New York, 2007, p. 176.



activities involving children in the production of the archaeological record of hunter-gatherer communities was advanced by Politis<sup>43</sup>. In his study, he identifies three classes of artefacts relating to children's activities: class I – artefacts used exclusively for play and usually made by the children themselves (this category also includes unaltered objects, such as stones, shells, etc); class II – artefacts which imitate adult objects, but in a smaller size or/and lower quality and are made either by adults for children or by children; class III- adult artefacts, sometimes broken, used by children as improvised toys. In some cases, especially class III artefacts, he admits that it is virtually impossible to distinguish between adult artefacts and children artefacts, situation when their location within the site might be more revealing. Furthermore, he identifies some feature/structures within residential camps that resulted from the activity of children<sup>44</sup>. Although this model is fairly persuasive, applying it to the Upper Palaeolithic record proves rather difficult, mostly due to the limited array of artefacts which survived the passage of time. Artefacts made out of perishable materials are extremely rare in most archaeological site, while for the Palaeolithic, the standard discoveries consist of stone or bone tools and faunal remains. Regarding structures, they are also uncommon and usually limited to hearths. Nevertheless, the study is very helpfully in understanding the role of children in the formation of archaeological sites, determining its reader to keep on open mind when interpreting some of the finds. The involvement of children or adolescents into the creation of art or objects with ritual connotations is only briefly mentioned by Politis<sup>45</sup>. However, the idea that children contributed to the creation of Palaeolithic parietal art was debated on several occasions<sup>46</sup> and, as mentioned above, it is supported by some direct evidence (footprint, handprints, finger fluting). Other clues in this regard might be delivered by the re-evaluation and the analysis of other types of Palaeolithic art. For instance, based on the recent interpretations provided by experienced indigenous tracker, the footprints found in the proximity of the two clay bison from Tuc d'Audoubert belong to a 38 years old male and a 14 years old boy. According to the trackers, the famous pattern of footprints to which they added some previously unobserved foot and knee prints, describe the actual modelling process, with the two individuals making two separate trips between the location of the bison and the pit used as a raw material source, in order to carry the necessary clay<sup>47</sup>. However, it is impossible to determine if the 14 years old artist was still perceived as a sub-adult by his community, even if from a biological point of view he was yet in his early teens. Inferences regarding the participation of children/adolescents were also made in regards to the Magdalenian portable art. A lot of 280 of decorated objects worked in mineral or organic materials were analyzed in terms of quality of execution and raw material. Based on these criteria, three separate groups were identified, attributed

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<sup>43</sup> G. G. Politis, *op. cit.*, pp. 121-143.

<sup>44</sup> *Ibidem*, pp. 127-130.

<sup>45</sup> *Ibidem*, p. 140.

<sup>46</sup> L. Van Gelder, *op. cit.*, p. 121.

<sup>47</sup> A. Pastoors, T. Lenssen-Erz, T. Ciqae, U. Kxunta, T. Thao, R. Bégouën, M. Bieselee, J. Clottes, *Tracking in Caves: Experience Based Reading of Pleistocene Human Footprints in French Caves*, in *Camb. Archaeol J.*, Vol. 25, No. 3, 2015, pp. 558-559.



to engravers possessing different levels of expertise and skill ranging from very low to high<sup>48</sup>. Although the author of the study does not explicitly identify the beginners as children or adolescents, this interpretation is implied throughout the study.

Burials, footprints, fingerprints or art works represent but a small and rather exceptional side of the Upper Palaeolithic archaeological record, restricted to some areas and time frames. Lithic artefacts, on the other hand, are commonly found in all sites. Therefore, the identification of children was also analysed and discussed in regards to lithic artefacts and technology<sup>49</sup> and notions such as apprentice, novice, beginner, and skill level were frequently employed. Stone knapping is a reductive process and, due to the nature of the raw material, mistakes are impossible or hard to correct. Also, as observed in ethnographic sources or experimental replications, it requires extensive practice in order to be constantly performed with success. Consequently, the work of beginners should leave plenty of traces with distinctive features, recognizable in the archaeological record (limited control over technological principles, unused/unusable final products, restricted access to good raw material, etc<sup>50</sup>). Nevertheless, a certain degree of variability can be expected from all knappers, including the most experienced ones<sup>51</sup>. As Ferguson pointed out, the terms *novice* and *child* are not interchangeable since the level of expertise is not determined solely by age<sup>52</sup>, but we can agree that at least some of these beginners were children and adolescents, based on ethnographic sources and the extended period of time necessary to acquire this skill. Also, it is highly probable that children playfully imitated the actions conducted by adults (including stone knapping) often without their advice. As suggested by some analyzed Scandinavian lithic assemblages, this activity also leaves distinct traces, which indicate no understanding of the

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<sup>48</sup> O. Rivero, *Master and apprentice: Evidence for learning in palaeolithic portable art*, in *JAS*, Vol. 75, 2016, pp. 89-100.

<sup>49</sup> A. Fischer, *A Late Palaeolithic 'school' of flint-knapping at Trollesgave, Denmark. Results from refitting*, in *Acta Archaeologica*, Vol. 60, 1990, pp. 33-49; J. J. Shea, *Child's Play: Reflections on the Invisibility of Children in the Paleolithic Record*, in *Evol. Anthropol.*, Vol. 15, 2006, pp. 212-216; F. Sternke, M. Sørensen, *The Identification of Children's Flintknapping Products in Mesolithic Scandinavia*, in McCartan, R. Schulting, G. Warren, P. C. Woodman (eds.), *Mesolithic horizons. Papers presented at the Seventh International Conference on the Mesolithic in Europe, Belfast 2005*, Oxbow Books, Oxford, 2007, pp. 720-726; R. Ferguson, *The When, Where, and How of Novices in Craft Production*, in *JAMT*, Vol. 15, 2008, pp. 51-67; A. Högberg, *Playing with Flint: Tracing a Child's Imitation of Adult Work in a Lithic Assemblage*, in *JAMT*, Vol. 15, 2008, pp. 112-131; J. Hildebrand, *op. cit.*, pp. 25-42; N. Finlay, *Kid-knapped Knowledge: Changing Perspectives on the Child in Lithic Studies*, in *Childhood in the Past*, Vol. 8, No. 2, 2015, pp. 104-112.

<sup>50</sup> L. Grimm, *Apprentice flintknapping. Relating material culture and social practice in the Upper Palaeolithic, in Children and Material Culture ...*, pp. 54-55.

<sup>51</sup> N. Finlay, *Blank Concerns: Issues of Skill and Consistency in the Replication of Scottish Later Mesolithic Blades*, in *JAMT*, Vol. 15, 2008, pp. 68-90.

<sup>52</sup> J. R. Ferguson, *op. cit.*, p. 56.



technology employed by experienced knappers (improvised techniques and non-standardized products)<sup>53</sup>.

The presence of inexperienced or less experienced knappers was observed in several Upper Palaeolithic sites in Europe, potentially attesting to activities conducted by young individuals. Often, the discussion was centred on notions such as *skill level*, *learning* and *apprenticeship*. In the Magdalenian site at Pincevent, interpreted as a reindeer hunting camp, the analysis of the lithic assemblage revealed different levels of expertise (level 1, level 2 and level 3 flintknappers). Based on the aspect of the lithic assemblage and the absence of any selection of products for further use, the level 3 flintknappers were considered to be apprentices, most likely children in an early stage of learning, focused more on applying concepts than producing usable pieces<sup>54</sup>. Their access to raw material seems to have been restricted to nodules of average/lower quality or cores abandoned by more experienced knappers<sup>55</sup>. A small fire hearth located at some distances from the main structures and surrounded by some crushed bones and a few mediocre flakes and blades (the latter collected from around other hearths) might represent further evidence of children activities at Pincevent. It is possible that a group of children came to this location with *scavenged* goods, in order to nibble the scraps<sup>56</sup> or maybe just to play/mimic adult activities.

At Etiolles, a site with abundant good quality raw material, the work of so-called apprentices was also observed, knappers showing here different levels of skill as well. As in Pincevent, the beginners were concentrated on learning rather than being productive, using less valuable blocks of raw material or abandoned cores<sup>57</sup>. An interesting situation was documented in the famous unit U5. Here, the most experienced knappers sat in the central area of the dwelling, close to the hearth. The intermediary skilled knappers sat around them, while the less experienced knappers were located further away<sup>58</sup>. Convincing evidence of apprentice flintknappers was also found at Tercis, where beginners attempted to create lithic projectile pieces, working with a low quality raw material<sup>59</sup>. The spatial distribution might suggest a pattern somehow similar to the one in Etiolles, with the experienced knapper in the middle, surrounded by novices<sup>60</sup>. In

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<sup>53</sup> A. Högberg, *op. cit.*, p. 119.

<sup>54</sup> C. Karlin, M. Julien, *Prehistoric technology: a cognitive science?*, in C. Renfrew, E. B. W. Zubrow (eds.), *The ancient mind. Elements of cognitive archaeology*, Cambridge University Press, 1994, p. 162.

<sup>55</sup> *Ibidem*, p. 163; P. Bodu, *Les chausseurs Magdaléniens de Pincevent: quelques aspects de leurs comportements* simultaneously published in English as 'The Magdalenian hunters of Pincevent: aspects of their behavior', in *Lithic Technology*, Vol. 21, No. 1, 1996, p. 56.

<sup>56</sup> P. Bodu, *op. cit.*, p. 57.

<sup>57</sup> Karlin, Julien, *op. cit.*, p. 163.

<sup>58</sup> N. Pigeot, *Éléments d'un modèle d'habitation magdalénienne (Etiolles)*, in *Bulletin de la Société préhistorique française. Études et Travaux / Hommage de la SPF à André Leroi-Gourhan*, tome 84, No. 10-12, 1987, p. 363.

<sup>59</sup> A. Simonet, *Did Gravettian apprentices make projectile elements in Tercis (Landes, France)?*, in *Paleo*, Vol. 23, 2012, pp. 249-276.

<sup>60</sup> *Ibidem*, p. 268.



all the above mentioned cases, it seems that beginners were imitating the gestures of a skilled knapper, receiving possibly some verbal instructions as well. Many of the typical patterns noticed at other sites (limited control of necessary techniques, use of raw material with a lower quality, knapping conducted in a peripheral area, no selection of usable products) were seen in Solvieux, a site which also yielded evidence of novice work. However, an important difference it is worth mentioning: the beginner not only imitated the masters at work, but also received some practical help in preparing the core and detaching more difficult elements<sup>61</sup>. The site in Trollesgave (Denmark) offers a last glimpse at a master flintknapper and a pupil working close together in a Late Palaeolithic context<sup>62</sup>.

The above mentioned cases show that lithic assemblages commonly found in Palaeolithic sites do have a great potential in revealing activities conducted by young individuals. However, the number of sites which yielded substantial evidence is still limited. It is possible that the involvement of children or adolescents into flintknapping was limited to particular sites or situations, depending on the quality or abundance of the raw material, type of settlement, safety constraints, or other relevant aspects. Nevertheless, it is very likely that such evidence went unnoticed in many cases or they were simply seen as curiosities created by adults for unknown reasons.

## Conclusions

Although the presence of children and adolescents is limited in the archaeological record of the Upper Palaeolithic, they are far from being invisible. The traces they left are found in various places, from deep dark caves and extremely rich graves to the most common camps. More important, however, is the amount of information transmitted by these sources in regards to the life experiences and roles held by children and adolescents within their community. The passage through specific cultural age categories, possibly also marked by biological and cognitive thresholds, could have been celebrated amid a variety of ceremonies. However, considering the most recent interpretations, it is less likely that the footprints found in some caves do attest to adolescent secret initiations, as other age categories seem to be equally represented. Based on funerary contexts, it could be inferred that some transformations in the role or social status of children did occur around the age of 5 years and, again, around the age of 12 years (at least in some regions and time frames). The theory of a generalized delayed personhood proposed by Zilhão for the Upper Palaeolithic should, however, be regarded with caution, since we do have clear evidence of ritualized infant burials. The elaborate graves attributed to children or adolescents suggest that they were fully included within the social practices of the community, regardless of how the apparent higher social status was achieved.

There is little evidence of how age categories influenced the participation in different activities, such as collecting resources, flintknapping, hunting, etc. Based on ethnographic sources, it is possible that the integration of children as

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<sup>61</sup> L. Grimm, *op. cit.*, p. 58.

<sup>62</sup> A. Fischer, *op. cit.*, pp. 33- 49.



productive members of the community was achieved gradually, starting in playful manner. The idea of apprenticeship stages, either in formal or informal settings, was discussed in regards to lithic technology or the production of portable art. If the existence of formal stages is still debatable, a clear focus on learning rather than efficiency is well attested in several instances. Once again, it is hard to establish a connection between age groups and this particular process of skill acquiring and practicing. Regarding stone knapping, experimental studies showed that even if smaller children are capable of producing flakes, a certain degree of physical strength, as well as more developed motor skill and cognitive capabilities are necessary in order to apply, or at least try to apply well defined technical concepts. Same circumstances were most likely valid for the production of portable art, especially on hard materials, such as bone or stone. Therefore, the late childhood and the adolescence seem to be the stages more appropriate for learning and practicing more elaborate skills. Fortunately, the ceramic pieces from Pavlov still retain the prints of their makers and, if the age estimations are accurate, children as young as 10 were involved in their creation, a fact which has important implication for our understanding of art and objects with ritual connotations.

Even if we are still unable to pinpoint the social status or economic role of children, they undoubtedly shaped their communities, starting with the infants that required constant care and supervision, to the children and adolescents that slowly learned to contribute to the wellbeing of the group.







## Flint sources in the Middle Prut area

CORNELIA-MAGDA LAZAROVICI\*, GHEORGHE LAZAROVICI\*\*,  
GERHARD TRNKA\*\*\*

**Abstract:** *In this article we have presented our investigation during several years (2001, 2004, 2005, and 2011) on the Middle Prut Valley searching for flint sources. We sketch the geological background, as well as the Prut valley characteristics in this area. The landscape is changing because of the human activities and especially related with stone quarries.*

**Key words:** *Middle Prut Valley, flint sources*

The Middle Prut area is one of the most important areas with flint deposits in Romania, as evidenced by the many prehistoric discoveries, with numerous reference sites for the Paleolithic, the Copper Age and other historical periods. The importance of this area with a raw material indispensable to the life of the prehistoric communities was also emphasized in the specialized literature (geological and archaeological) since the end of the 19<sup>th</sup> century. Here we present our own investigations over the course of several years to explore raw material.

### Geological and geographic data

The Prut River, which springs from the Wooded Carpathians (today in Ukraine), has three important sectors: 1) the valley sector, north of Rădăuți Prut; 2) the epigenetic sector, between Rădăuți Prut and Stânca-Ștefănești; 3) the broad-valley sector south of Ștefănești.

In the present study we are interested in the second, epigenetic sector, where the Prut cut through the oldest geological formations in the Plateau of Moldavia<sup>1</sup>. Thus, after the division of the argillaceous marl complex with volhynian sand intercalations (Lower Sarmatic), the Prut deepened into bugolvia deposits, represented to the north by argillaceous marl layers, and to

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\* Institutul de Arheologie Iași, Romania, mail: magdamantu@yahoo.com

\*\* Universitatea Lucian Blaga, Sibiu, Romania, mail: ghlazarovici@yahoo.com

\*\*\* Institut für Urgeschichte und Historische Archäologie, Universität Wien, Austria, mail: gerhard.trnka@univie.ac.at

<sup>1</sup> V. Băcăuanu, *Cîmpia Moldovei, studiu geomorfologic*, Ed. Academiei R.P.R., București, 1968, p. 433.



the south, between Liveni and Stânca-Ștefănești, by limestone reefs (tolthry) that appear only locally, passing sideways into marl. After passing the buglovian deposits, the Prut sectioned the tortonian deposits, characterized by the gypsums that appear in the right bank, at Ivancăuți (today in Ukraine) and Cuzlău, quartz sands with flint nodules, between Rădăuți Prut and Miorcani, and by a limestone-marl layer towards Liveni. Only between Rădăuți Prut and Miorcani, the Prut has also sectioned older, cenomian senomian deposits, belonging to the upper Cretaceous, composed of chalky limestone<sup>2</sup>.

The epigenetic (middle) sector of the Prut has two distinct subsectors: a) the first one between Rădăuți Prut and Mitoc where the river valley has a narrow transverse profile, with no upper terraces on the right slope and no limestone bars; b) in the second subsector, south of Mitoc, the Prut Valley is wider, with terraces and tolthry.

Due to the meandering course of the riverbed, it was noticed that from the terrace level of 130-140 m, the Prut terraces pass from one side to the other, which shows that since the late Pleistocene, the territory crossed by the river had a slightly rugged relief, with a low inclination, characteristic of the plains<sup>3</sup>. In a comprehensive study, Vasile Băcăuanu found that on the Romanian side of the Prut there are sectors where the terraces are missing, places where only a few terraces with different altitudes can be seen, as well as sectors where their series is complete or almost complete<sup>4</sup>.

In the area of the quarry of Mitoc-*Pârâul lui Istrate* (Fig. 9) we found that there are the traces of a higher terrace where we found older alluviums (gravels remaining from the old riverbeds of the late Pleistocene), in which there were smaller rolled flint-blocks, below which were the limestones exploited in the quarries in whose voids were also flint blocks. These situations are similar to those mentioned by M. Cârciumar, at Crasnaleuca<sup>5</sup>; at the same time, they confirm the opinion of Vasile Băcăuanu regarding the remains of terraces from the late Pleistocene<sup>6</sup>.

We must also remind that there are other views on the Prut terraces in our area of interest<sup>7</sup>.

M. Cârciumar and his collaborators<sup>8</sup> made a synthesis of the sources of raw materials used by the Paleolithic, Mesolithic and Epipaleolithic communities on the territory of Romania, also presenting data regarding the sector that interests us from the Prut Valley. The first to refer to the flint deposits

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<sup>2</sup> Idem, *Observații geomorfologice asupra Văii Prutului dintre Rădăuți și Stînca Ștefănești*, in *AȘUI Nat.*, anul VII (1961), fasc. 2, p. 432 ff.

<sup>3</sup> *Ibidem*, p. 434.

<sup>4</sup> Idem, *Cîmpia Moldovei*, p. 148.

<sup>5</sup> M. Cârciumar, M. Anghelinu, E.-C. Nițu, M. Cosac, G. Murătoreanu, *Geo-archéologie du Paléolithique Moyen, Paléolithique Supérieur, Epipaléolithique et Mésolithique en Roumanie*, Ed. Cetatea de Scaun, Târgoviște, 2007, p. 15.

<sup>6</sup> V. Băcăuanu, *op. cit.*

<sup>7</sup> Al. Păunescu, *Ripiceni-Izvor. Paleolitic și Mezolitic. Studiu monografic*, Ed. Academiei Române, București, 1993, pp. 17-18.

<sup>8</sup> M. Cârciumar, M. Anghelinu, E.-C. Nițu, M. Cosac, G. Murătoreanu, *op. cit.*



between Rădăuți (now Rădăuți-Prut) and Liveni was Grigore Ștefănescu<sup>9</sup> (purple marl with flint nodules), followed by Ion Simionescu<sup>10</sup> (who mentioned cretaceous calcareous marl containing flint blocks). M. Cărciumaru and his collaborators also mentioned the presence near Crasnaleuca (81<sup>st</sup> border guard post) of calcareous marl overgrown with conglomerates of flint<sup>11</sup>.

The same mentioned between Rădăuți Prut and Mitoc a profile of calcareous marl overlaid with Tortonian conglomerates, containing also less cemented flint elements<sup>12</sup>.

It should also be noted that there is a description for the quarry profile in Rădăuți Prut, where the Cretaceous limestone contained uniformly spread silicious accidents, of gray-white color, but also with yellow-brown shades to the sides (horn-shaped)<sup>13</sup>. The tortonian age deposits also have flint nodules, varied in shape (ovoid, spheroidal, ellipsoid, wand; sometimes with perforations) and size, that can also represent different genetic types<sup>14</sup>.

The specialized literature mentions the presence of flint in the Tortonian age conglomerates at Mitoc-Pârâul lui Istrati<sup>15</sup>, the boulders of the same material between Rădăuți-Prut and Crăiniceni or the conglomerates with flint at Teioasa and Bajura; to these are added the silicious sands with flint from Miorcani and Păltiniși, as well as the pieces of flint exposed by erosion between Rădăuți and Liveni<sup>16</sup>.

From a geographic point of view, the area we refer to is part of the northern part of the Moldavian Plain or the Plain of Upper Jijia and Bașeu (or the Plain of Săveni)<sup>17</sup>. For example, Băcăuanu did not consider the Prut to be a geomorphological boundary, the relief having the same characteristics both to the

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<sup>9</sup> Gr. Ștefănescu, *Relațiune sumară de lucrările Biuroului Geologic în campania anului 1885*, in *Anuarul Biroului Geologic*, București, III, 1, (1885), 1888, pp. 8-47; apud M. Cărciumaru, M. Anghelinu, E.-C. Nițu, M. Cosac, G. Murătoreanu, *op. cit.*, p. 15.

<sup>10</sup> I. Simionescu, *Constituția geologică a țărmului Prutului și Nordul Moldovei (La constitution géologique de la rive du Pruth au Nord de la Moldavie)*, Academia Română, Fondul V. Adamachi, 1901, T. II, 7, 1902, pp. 15-16; Idem, *Contribuțiuni la geologia Moldovei dintre Siret și Prut (Contributions à la géologie de la Moldavie entre le Siret et le Pruth)*, Academia Română, Publicațiile Fondului Vasile Adamachi, București, T. II, nr. IX, 1903, pp. 73-116; apud M. Cărciumaru, M. Anghelinu, E.-C. Nițu, M. Cosac, G. Murătoreanu, *op. cit.*

<sup>11</sup> M. Cărciumaru, M. Anghelinu, E.-C. Nițu, M. Cosac, G. Murătoreanu, *op. cit.*

<sup>12</sup> *Ibidem*.

<sup>13</sup> C. N. Albu, C. Gheorghiu, I. Popescu, *Depozitele sedimentare de la Rădăuți-Prut (The sedimentary deposits of Rădăuți-Prut) (Les dépôts sédimentaires de Rădăuți-Prut)*, in *Com. Geol.-Geogr.*, 1, (1957-1959), 1960, pp. 9-23; apud M. Cărciumaru, M. Anghelinu, E.-C. Nițu, M. Cosac, G. Murătoreanu, *op. cit.*, p. 16.

<sup>14</sup> M. Cărciumaru, M. Anghelinu, E.-C. Nițu, M. Cosac, G. Murătoreanu, *op. cit.*

<sup>15</sup> I. Atanasiu, N. Macarovici, *Les sédiments miocènes de la partie septentrionale de la Moldavie (depart. de Dorohoi, de Botoșani et de Iași)*, in *Anuarul Comitetului Geologic*, vol. II. XXIII, 1950, pp. 269-317; apud M. Cărciumaru, M. Anghelinu, E.-C. Nițu, M. Cosac, G. Murătoreanu, *op. cit.*

<sup>16</sup> M. Cărciumaru, M. Anghelinu, E.-C. Nițu, M. Cosac, G. Murătoreanu, *op. cit.*

<sup>17</sup> *Monografia geografică a R.P.R.*, I, 1960, p. 246.



west, in the Plain of Jijia, and to the east, in the Bălți Plain<sup>18</sup>, including both in the geomorphological subregion of the erosion plain of the middle Prut<sup>19</sup>.

On the right slope of the Prut valley, but also of some of its affluents, between Stâncă-Ștefănești and Mitoc, there are also limestone formations, which have a length of about 35 km and a width of 2-3 km<sup>20</sup>.

Flint, a variety of silicious sedimentary rock, made up of chalcedony, opal and quartz, was one of the basic raw materials used by prehistoric communities to produce tools or weapons. Its procuring in eastern Romania was ensured by the presence of rich deposits in the Middle Prut area.

Prehistorians consider that there was also a chain of exchange provided by the communities located in the proximity of the sources and those at greater distances. Undoubtedly, such exchange existed with other communities close to other sources of flint, and we think primarily of those in the area of the Dniester or its affluents, as well as those from the Eastern Carpathians.

The members of the prehistoric communities gathered the flint nodules brought to light by the flow of the Prut and probably only in exceptional cases dug the limestone to remove the larger nodules. The increase in Prut's flow due to the rains, as well as the frost and the thaw, brought to surface the flint nodules of various sizes that could easily gathered to realise prehistoric tools and weapons. The waters of the Prut have carried such materials over long distances, over 120 km, to Sculeni<sup>21</sup>, but also lower, to Țuțora, as testified by amateur fishermen<sup>22</sup>.

But flint was an important raw material in other periods too. We think of it's use to light fire with steel and tinder, a habit preserved in some areas until the 1930s<sup>23</sup>. It was also used for flintlock firearms, rifles and pistols needed for war or for hunting (17<sup>th</sup> century – early 19<sup>th</sup> century). If the weapons of this kind used in Banat were mainly from Bulgaria (where there are also high-quality flint deposits) or Albania<sup>24</sup>, the firearms used in the Habsburg Empire were made in various other commercial centers, which included flint from the Dniester and perhaps even from the Prut (above the middle area, near the springs of the two rivers).

We also have to mention that during the last 40 years, the Prut terraces have undergone anthropic interventions which have led to the disappearance of areas with considerable flint nuclei in the limestone. Thus, during the archaeological excavations in the point *Valea lui Stan* at Mitoc, in the years

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<sup>18</sup> V. Băcăuanu, *Cîmpia Moldovei*, p. 9.

<sup>19</sup> *Ibidem*; Al. Păunescu, P. Șadurschi, V. Chirica, *Repertoriul arheologic al județului Botoșani*, vol. I și II, București, 1976, p. 23.

<sup>20</sup> V. Băcăuanu, *op. cit.*, p. 27, pp. 196-197.

<sup>21</sup> N. N. Moroșan, *Le Pléistocène et le Paléolithique de la Roumanie du Nord-Est*, in *AIGR*, tomul 19, București, 1938, pp. 1-160; apud M. Cărciumaru, M. Anghelinu, E.-C. Nițu, M. Cosac, G. Murătoreanu, *op. cit.*, p. 16.

<sup>22</sup> Information Corneliu Istrati.

<sup>23</sup> Information for Moldova (more precisely Vaslui county), Corneliu Istrati.

<sup>24</sup> Z. Markov, *Pistoale balcanice cu cremene din colecția Muzeului Banatului Timișoara*, in *AnB*, S.N., XIX, 2011, p. 313-332.



1977-1978<sup>25</sup> one could see cliffs about 3 m wide on the right bank where there were numerous flint nodules; today they are gone. The use of limestone and sandstone for different constructions has in some cases led to the disappearance of these traces and to the collapse of some portions of the terrace. Also, industrial exploitation has caused the landscape to change over portions of the Prut terraces.

Thus, during the expeditions we made in the northern part of Moldova, in the Middle Prut area (Fig. 1, 5), but also on the territory of Bessarabia in some points or on the current territory of Ukraine (in the Dniester area), we noticed that people are using chalky marls of Cenomanian age or sandstone, for building fences or even foundations for houses. Some fragments of this kind retain even small inserts of flint nodules, as we noticed in a fence at Mitoc (Fig. 22).

We investigated on several occasions (2001, 2004, 2005, 2011) the Middle Prut area, in the part between Ripiceni and Miorcani, looking for flint nodules in a clear stratigraphic position.

The first area to mention is that of Miorcani. On the territory of this locality we discovered two points with flint nodules. The first point is located in the northern part of the village (about 1.3 km north-northeast of the village) and it appears in the Botoșani Repertory under the name of *Vărărie*<sup>26</sup>. It is a quarry for the exploitation of sandstone/cemented limestone (GPS N - 47°51'886, E - 025°37'081, altitude 540 m), (Fig. 2). In this case, the work done by mechanized means destroyed a large portion of the Prut bank. During the 2005 investigations, we only found portions with a clearer stratigraphy in a few areas of the quarry. Some mechanically dislodged blocks kept pieces of flint nodules. The color of the flint differs, from whitish beige to gray, the colors being determined by the conditions of sedimentation, but also by the influence of sunlight (Fig. 3). On the other bank of the Prut too, there were limestone formations, which seemed to be unaffected by modern exploitation (Fig. 4).

The second point on the territory of the same village was investigated a few years later (2011). It is located right on the current shore of the water and it is known by the locals as „mine” (GPS N - 48°20'062, E - 026°90'1865, altitude 104 m), (Fig. 6). In fact, a tunnel was dug in the lower terrace of the Prut River for extracting quartz sands and flint nodules (used in ball mills for the production of porcelain<sup>27</sup>). This exploitation began in 1967, with the aim of procuring raw materials for the Dorohoi porcelain and glass factory; to a small extent, a private company (MINDO S.A.) continues the exploitation today, but not at Miorcani, but in Hudești. In the mentioned point, right on the bank of the Prut, even presently there are numerous flint nodules of different colors (Fig. 7). We also found flint nodules higher on the second terrace of the Prut (Fig. 7b).

At Mitoc we investigated two points where there are still profiles in which flint nodules of different sizes are still visible. At *Pârâul lui Istrati* there was a local quarry for the extraction of stone and sand (Fig. 8). In the 2001

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<sup>25</sup> Excavations by C.-M. Lazarovici in an epipaleolithic settlement.

<sup>26</sup> Al. Păunescu, P. Șadurschi, V. Chirica, *op. cit.*, p. 210, no. 7.

<sup>27</sup> Information provided by Mrs. Asaftei from Botoșani, who worked in the former porcelain factory of Dorohoi.



research, we also found certain parts of profile that conserved some of the original stratigraphy (Fig. 9). From place to place there were also limestone plates containing flint nodules of different sizes (Fig. 10). The second point, *Cotu Mare*, was studied on the occasion of two visits, in 2001 (Fig. 11-13) and then in 2011 (Fig. 14-15). During the 2001 investigation, we noticed that a layer of flint nodules of different sizes appeared on certain parts of the profile under the limestone plates (Fig. 12). At the base of the bank we found numerous flint nodules, various in shape, size or color (Fig. 13). When we returned to the same place in 2011, the flint nodules below the limestone plates in the terrace profile were much more visible (Fig. 14). At the same time, near the water of the Prut, we found large fragments of nodules fallen from the upper part of the terrace (Fig. 15).

A third point, also in the perimeter of the village Mitoc, would be in the area near *Malu Galben*, where nearby, at *Valea Izvorului*, there are small fragments of rolled flint, coming from the fragmentary terrace above (Fig. 16).

In the perimeter of the Ripiceni village today only minuscule areas from the old stratigraphic configuration can be identified. There is a small portion of the point called Stâncă Ripiceni (GPS N -47°57'705, E -027°07'975, altitude 82 m), (Fig. 17), where N. N. Moroșan performed researches in 1926 and identified four levels of inhabitation attributed to the Late Paleolithic<sup>28</sup>. The point of Ripiceni-*La Izvor* (GPS: N - 47° 57' 940, E-027° 08' 423, altitude 98 m) is largely under the water of the Stâncă Costești reservoir, but small pieces of flint nodules or even flint fragments under processing, as well as typical tools can be found on the shore (Fig. 19). There is another quarry nearby, that exploits the sand in the area (Fig. 18). Although we visited the extraction area, we did not find flint nodules, nor did the workers working here give us any further information.

Near this point, in the place named by the villagers *La Conac*, there is another area with large limestone slabs, with a fragmentary profile (Fig. 20), where flint nodules also appeared on the surface, probably disturbed by different works in the area (Fig. 21).

In the present study we presented the situation in some areas with flint on the Middle Prut valley. Our research has not yet included the Rădăuți Prut and Darabani areas, because there are no quarries, as far as we know. Also, for reasons of logistics (approvals, permits), we have not investigated the left bank of the Prut River, in Bessarabia.



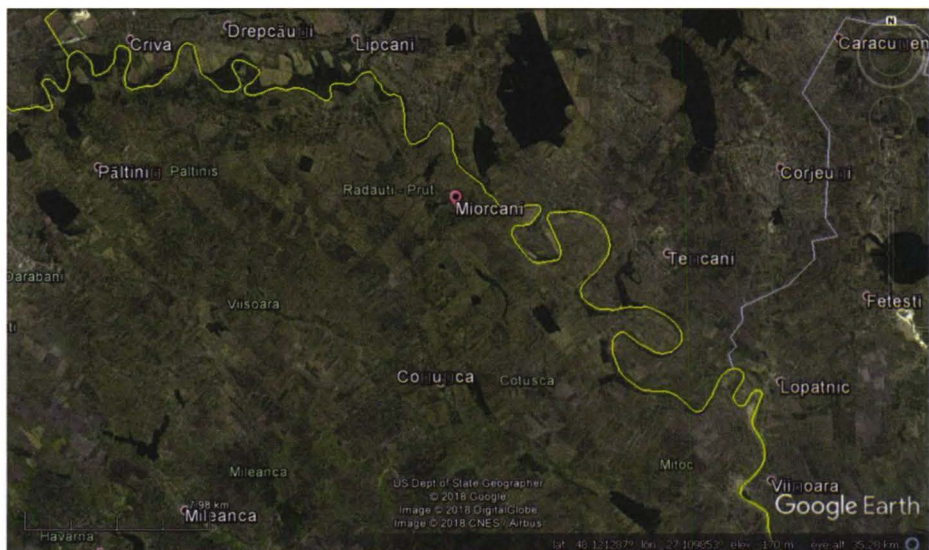


Fig. 1. Middle Prut area, after Google Earth, access 2. 04. 2018.



Fig. 2. Miorcani quarry from the point named *Vărărie* (photo G. Trnka, 2005).

<sup>28</sup> Al. Păunescu, *Ripiceni-Izvor.....* p. 12.





Fig. 3. Miorcani, small flint nodules in the limestone of the quarry (photo G. Trnka, 2005).



Fig. 4. Miorcani, view from the quarry to the left bank of the Prut River, with limestone formations (photo G. Trnka, 2005).



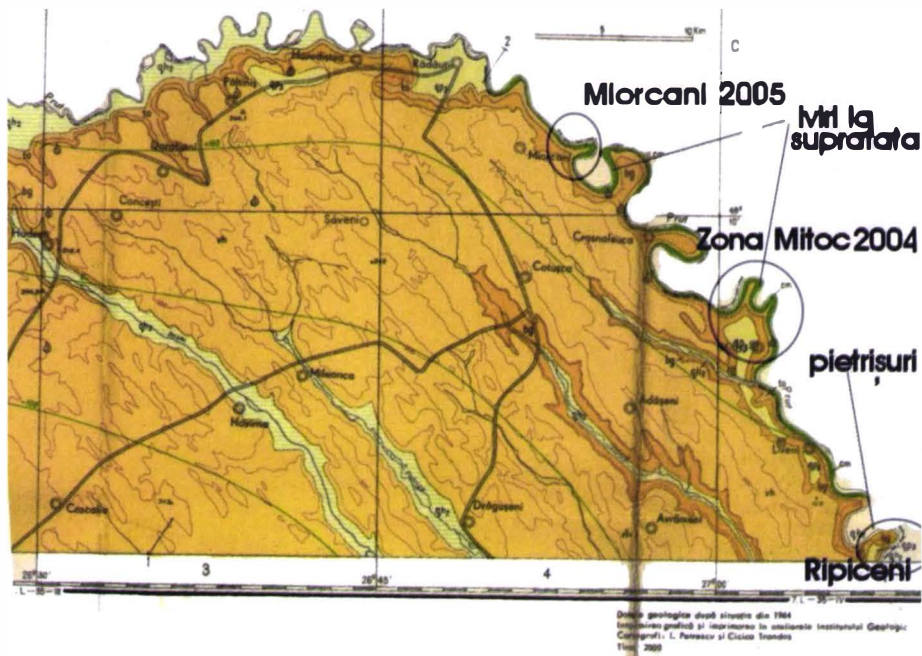


Fig. 5. Detail with the geological map (1964) of Miorcani-Mitoc zone; dark orange area = bg = marls, sandstones, limestone reefs of Buglovian.



Fig. 6. Prut in the area of the Miorcani „quarry” (photo Gh. Lazarovici, 2011).



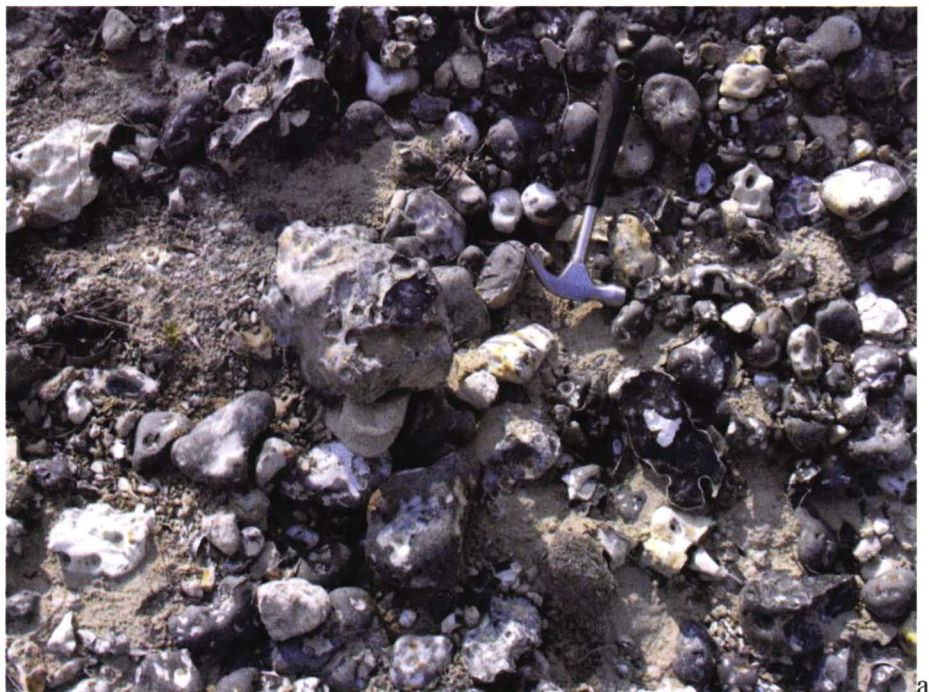


Fig. 7. Flint nodules in the area of so call Miorcani „quarry” (a) and some examples (b-c) (photo Gh. Lazarovici, 2011).







Fig. 8. Mitoc, overview with the quarry from *Pârâul lui Istrati* (photo Gh. Lazarovici, 2001).



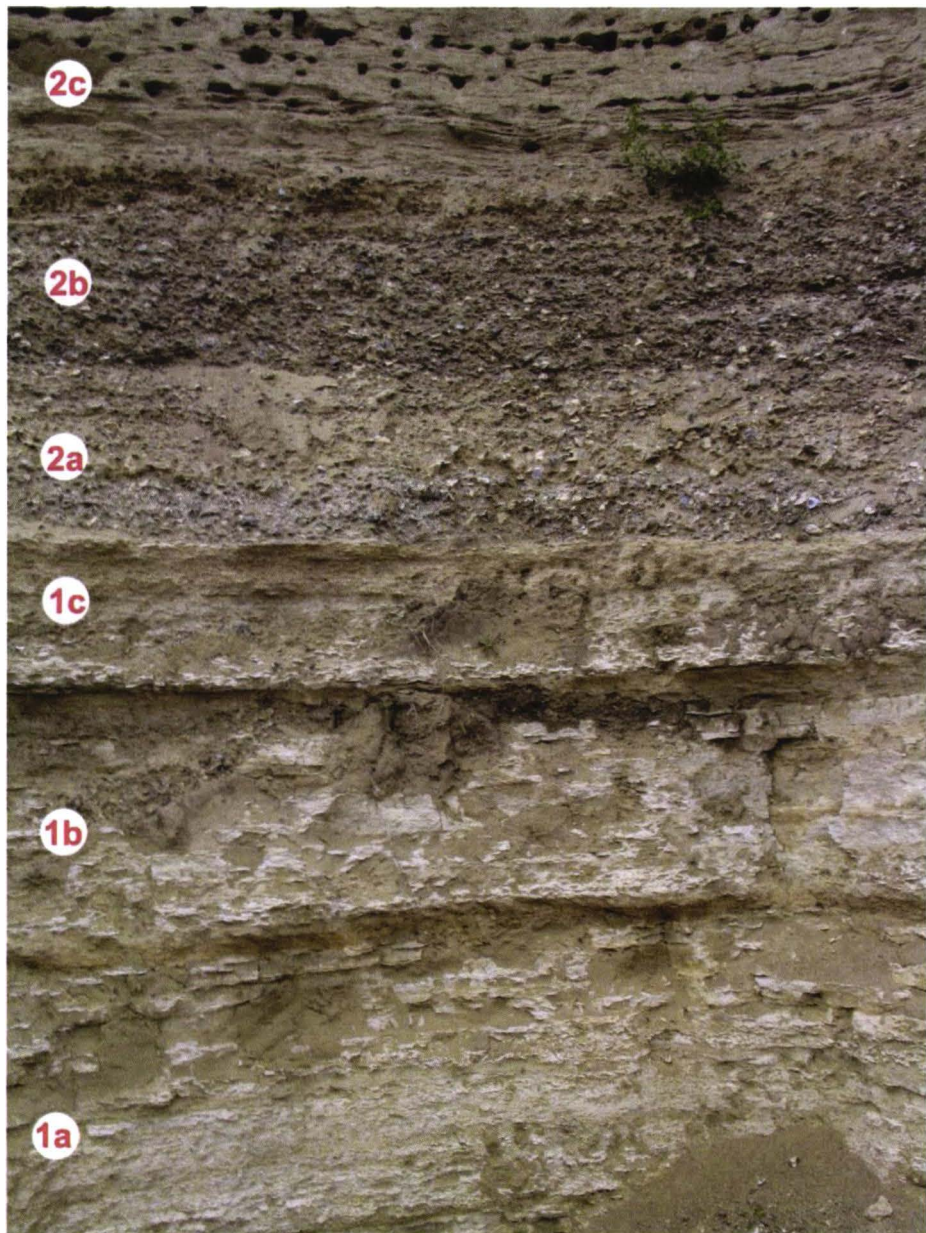


Fig. 9. Mitoc-Pârâul lui Istrati, profile (photo Gh. Lazarovici, 2001):  
Stratigraphy: 1. calcareous marls; 2a-2b, conglomerates and gravel in the upper  
terrace of the Prut River; 2c, windy soils.





Fig. 10. Mitoc-Pârâul lui Istrati, flint nodules of different colours and nuances (photo Gh. Lazarovici, 2001).

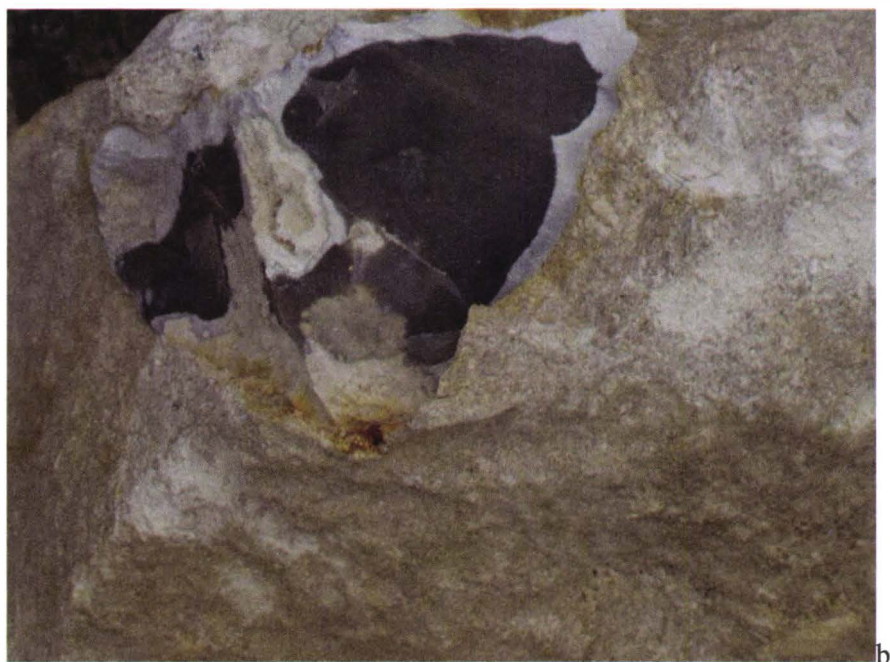






Fig. 11. Overview of the Cotu Mare area from Mitoc (photo M. Lazarovici, 2002).

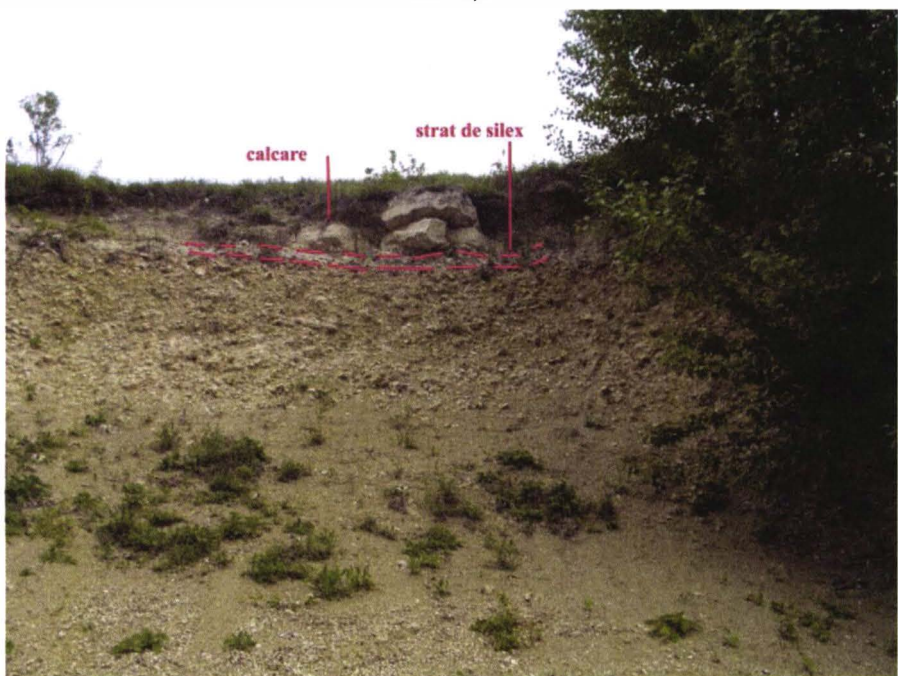


Fig. 12. Mitoc-Cotu Mare, profile section on the bank of the Prut River with limestone and small flint nodules (photo Gh. Lazarovici, 2002).





a

Fig. 13. Mitoc-Cotu Mare, various fragments of flint nodules (a-b) at the base of the Prut River bank (photo Gh. Lazarovici, 2002).



b





Fig. 14. Mitoc-Cotu Mare, part of the same profile in 2011 (photo Gh. Lazarovici).



Fig. 15. Mitoc-Cotu Mare, 2011, flint nodules of different shapes and colors, near the Prut River water (photo Gh. Lazarovici).





Fig. 16. Mitoc-*Valea Izvorului*, photographed from Malul Galben (photo Gh. Lazarovici 2001). Traces from the trenches of the Second World War and recent limestone exploitations.



Fig. 17. *Stânca-Ripiceni*, the highest area (foto Gh. Lazarovici 2001).





Fig. 18. Ripiceni-Izvor, with the point of sand exploitation.



Fig. 19. Ripiceni-Izvor, fragments of flint run by the Prut River.





Fig. 20. Ripiceni-*La conac*, 2011 (photo Gh. Lazarovici).



Fig. 21. Ripiceni-*La conac*, flint nodules (photo Gh. Lazarovici, 2011).





Fig. 22. Mitoc, fence with flint nodules in chalky marls.



# Schela Cladovei - a reinterpretation of the osseous industry from the 1965-1968 excavations

ADINA BORONEANȚ\*, MONICA MĂRGĂRIT\*\*, ADRIAN  
BĂLĂȘESCU\*\*, CLIVE BONSTALL\*\*\*

**Abstract:** *Schela Cladovei is one of the most important Mesolithic–Neolithic sites in Southeast Europe. The range of archaeological materials recovered from this site in over five decades of archaeological investigation is considerable, yet very few details have been published. In this paper we review the osseous assemblage from the first three seasons of excavation at Schela Cladovei, conducted by Vasile Boroneanț between 1965 and 1968. The significance of the present study lies in its recognition and discussion of apparent technological changes at the transition from the Mesolithic to the Early Neolithic. The evidence suggests there was much greater emphasis on the use of antler during the Mesolithic, with one major artefact category dominating the Schela Cladovei assemblage: bevelled tools. Similarly, wild boar and dog teeth may also have been more important during the Mesolithic at Schela Cladovei. Both antler and tusk tools were probably employed in woodworking activities. Points were the only tool type made of bone. There is a difference between the points associated with the 'Mesolithic' and 'Early Neolithic' artefact series, with projectile points identified only in the 'Mesolithic' series. Further research on the entire collection from Schela Cladovei, supported by direct AMS <sup>14</sup>C dating of individual artefacts, is required to reliably document trends in bone manufacturing over the Mesolithic to Early Neolithic time range.*

**Keywords:** *Iron Gates, Mesolithic, Neolithic, raw materials, technological analysis; use-wear marks.*

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\* Institute of Archaeology "Vasile Pârvan" București, Romania, mail: boro30@gmail.com

\*\* University Valahia, Târgoviște, Romania, mail: monicamargarit@yahoo.com.

\*\*\* Romanian National Historical Museum, București, Romania, mail: abalasescu2005@yahoo.fr.

\*\*\*\* University of Edinburgh, mail: C.Bonsall@ed.ac.uk



Schela Cladovei (Mehedinți County, Romania) is a key site for the Mesolithic and Early Neolithic of Southeast Europe. It is one of very few open-air settlements in the Iron Gates section of the Danube Valley dating to the early post-glacial period before 7600 cal BP that has not been flooded by dam construction on the Lower Danube. Traces of Mesolithic and/or Early Neolithic settlement were identified at several locations along the bank of the Danube at Schela Cladovei with all but the main site (Schela Cladovei-Canton) now submerged.

The main site was discovered in 1964 and the first phase of excavations (directed by V. Boroneanț) was undertaken in 1965 and 1967–1968. A second phase of excavations, also directed by Vasile Boroneanț, took place between 1982 and 1991. From 1992 to 1996 the excavation became a joint Romanian–British research project, co-directed by V. Boroneanț and C. Bonsall. Further work was undertaken in 1997 (by V. Boroneanț), 2001–2 (by A. Boroneanț), and 2007-onwards (by A. Boroneanț and C. Bonsall).

The excavations yielded a vast quantity of archaeological features, artefacts and burials. General information on the site, its stratigraphy, cultural sequences, archaeological features and main categories of finds were published by the principal excavator<sup>1</sup>. Given the complexity of the site and the large quantity of finds, subsequent publications focused on particular years of excavation<sup>2</sup> or funerary practices<sup>3</sup>. The relative and absolute chronology of the site have been discussed in various publications<sup>4</sup>.

The present paper deals with the osseous assemblage uncovered during the first phase of excavations (1965, 1967–1968), considered from the dual perspectives of technology and human-animal interactions.

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<sup>1</sup> V. Boroneanț, *Recherches archéologiques sur la culture Schela Cladovei, de la zone des Portes de Fer*, in *Dacia*, N.S., XVII, 1973, pp. 15–39; Idem, *Paleoliticul superior și epipaleoliticul din Zona Porților de Fier*, PhD, București, 1981; Idem, *Paléolithique supérieur et Epipaléolithique dans la zone des Portes de Fer*, Ed. Silex, București, 2000.

<sup>2</sup> A. Boroneanț, V. Boroneanț, *Schela Cladovei 1965–1968. După 40 de ani*, in *SP*, 6, 2009, pp. 6–24; A. Boroneanț, K. McSweeney, C. Bonsall, *Schela Cladovei 1982 – A supplement to the original excavation report of Vasile Boroneanț*, in *AnB*, S.N., Arheologie-Istorie, 22, 2014, pp. 17–31.

<sup>3</sup> A. Boroneanț, C. Bonsall, *The 1965–1968 excavations at Schela Cladovei (Romania) revisited*, in E. Starnini (ed.), *Festschrift for Paolo Biagi*, Archeopress, BAR 2528, Budapest, 2013, pp. 35–54.

<sup>4</sup> Al. Păunescu, *Paleoliticul și mezoliticul din spațiul cuprins între Carpați și Dunăre*, Ed. AGIR, București, 2000; C. Bonsall, *The Mesolithic of the Iron Gates*, in: G. Bailey, P. Spikins (eds.), *Mesolithic Europe*, Cambridge, 2008, pp. 238–279; C. Bonsall, R. Vasić, A. Boroneanț, M. Roksandic, A. Soficaru, K. McSweeney, A. Evatt, Ü. Agurauja, C. Pickard, V. Dimitrijević, T. Higham, D. Hamilton, G. Cook, *New AMS 14C dates for human remains from Stone age sites in the Iron Gates reach of the Danube, southeast Europe*, in *Radiocarbon* 57(1), 2015, pp. 33–46; A. Boroneanț, C. Bonsall, *op. cit.*



## The excavations

The 13 trenches excavated were located on either side of a rivulet crossing the site from north to south and flowing into the Danube (fig.1/a). No optical surveying instruments were available at that time and trenches were set out and plans drawn with the aid of measuring tapes. Levels were recorded in relation to the ground surface at the nearest point rather than a fixed datum. Dry sieving was employed more or less throughout the excavations.

Five pit features were interpreted as the foundations of Early Neolithic pithouses: G2/SB, G2/SB1, G3/SB1, L1/L3S, and L2/L3S. Eight smaller pits (possibly for storage or waste) were also identified. At least two features recognized during the 1965–8 excavations at Schela Cladovei were interpreted as Mesolithic ‘pithouses’: L1/SB and L1/L2. No other pits dating unequivocally to the Mesolithic were recognized.

## Stratigraphic sequence and absolute chronology

The site occupies an alluvial flat bordering the Danube, which is probably part of the pre-dam floodplain<sup>5</sup>. This feature is underlain by 1.5–2.0m of silty Holocene river alluvium resting upon older, very poorly sorted fluvial gravels that show evidence of having been deposited in a periglacial environment. During the Holocene the fine alluvial sediments were transformed into a calcareous brown earth soil eliminating all traces of the original sedimentary stratification<sup>6</sup>.

On the basis of these excavations, V. Boroneanț identified three main periods of occupation at Schela Cladovei: Dacian, Early Neolithic (Starčevo-Criș) and Mesolithic<sup>7</sup> with sporadic traces of mediaeval and modern occupations.

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<sup>5</sup> C. Bonsall, M. Macklin, A. Boroneanț, C. Pickard, L. Bartosiewicz, G. Cook, T. Higham, *Chapter Nine. Rapid Climate Change and Radiocarbon Discontinuities in the Mesolithic–Early Neolithic Settlement Record of the Iron Gates. Cause or Coincidence?* in P. F. Biehl, O. P. Nieuwenhuyse (eds.), *Climate and Cultural Change in Prehistoric Europe and the Near East*, The Institute for European and Mediterranean Archaeology. Distinguished Monograph Series, IEMA Proceedings, Volume 6, State University of New York Press, 2016, pp. 195–210.

<sup>6</sup> V. Boroneanț, C. Bonsall, K. McSweeney, R. W. Payton, M. G. Macklin, *A Mesolithic burial area at Schela Cladovei, Romania*, in A. Thévenin (ed.), *L'Europe des Derniers Chasseurs: Épipaléolithique et Mésolithique*, Paris, Éditions du Comité des Travaux Historiques et Scientifiques, 1999, pp. 385–390.

<sup>7</sup> In the context of the Iron Gates, V. Boroneanț considered the terms *Mesolithic* and *Epipaleolithic* as synonymous. Al. Păunescu used *Epipaleolithic* for the communities living there at the end of the Pleistocene and *Mesolithic* for the hunter-gatherers of the first part of the Holocene. For further discussions on terminological inconsistencies, see: A. Boroneanț, *Aspecte ale tranziției de la mezolitic la neoliticul timpuriu în zona Porțile de Fier*, Ed. Mega, 2012, Cluj-Napoca; C. Bonsall, M. Macklin, A. Boroneanț, C. Pickard, L. Bartosiewicz, G. Cook, T. Higham, *op. cit.*; C. Bonsall, A. Boroneanț, *Lateglacial Hunter-Gatherers in the Iron Gates: A Brief Review of the Archaeological and Chronological Evidence*, in R. Krauss, H. Floss (eds.), *Southeast Europe before Neolithisation, Proceedings of the International Workshop within the Collaborative Research Centres sfb 1070 'RessourcenKulturen'*, Schloss



Within the Early Neolithic he recognized two phases (Criș I and II), while two phases of Mesolithic occupation (I and II) were also distinguished (Boroneanț 2000). Excavations at Schela Cladovei from 1992 onwards have found no evidence of discrete phases of occupation during either the Mesolithic or the Early Neolithic.

A large series of single-entity AMS <sup>14</sup>C dates on animal and human bone from Schela Cladovei indicates that Mesolithic activity occurred between c. 9200–8200 cal BP, and Early Neolithic occupation between ca. 7950-7750 cal BP.

### The osseous assemblage

V. Boroneanț<sup>8</sup> listed among the identified bone tool types, arrow points (*pointes de flèches*), awls (*poinçons*), daggers (*poignards*), a double tool (*spatula-chisel/spatule-ciseau*), a few indeterminate artefacts and a significant number of bone fragments (Table 1).

Arrow points	complete	4	2
	fragmented		
Awls	complete		6
	fragmented	1	
Daggers	complete		
	fragmented		
Spatula-chisel	complete		
Indet (fragments)			
Total			2

Table 1. Bone tool categories (after V. Boroneanț, *Paléolithique supérieur et Epipaléolithique dans la zone des Portes de Fer*, Ed. Silex, București, 2000, pp. 128-129).

The antler tools<sup>9</sup> (Table 2) comprised hoes (*serfouettes simples/fouilleurs*), planters (*plantoirs*), hoes with perforation/‘ploughshares’ (*serfouettes-socs*), daggers (*poignards*), sockets (*manches*), a large number of fragments from indeterminate tools, debitage waste, and complete antlers interpreted as raw material (three shed pieces and two preserving part of the cranial bone).

*Hohentübingen, 9<sup>th</sup> of May 2014*, Ressourcen Kulturen Band 1, Tübingen, 2016, pp. 149-168.

<sup>8</sup> V. Boroneanț, *Paléolithique supérieur et Epipaléolithique*..., pp. 128-129.

<sup>9</sup> *Ibidem*, pp. 143-144.



<b>Simple hoes</b>	complete	3
	fragmentary	0
<b>Perforated hoes (ploughs)</b>	complete	
	fragmentary	
<b>Planters</b>	complete	
<b>Daggers</b>	fragmentary	
<b>Sockets</b>	complete	
	fragmentary	
<b>Indet (fragments)</b>		8
<b>Debitage waste</b>		1
<b>Raw material</b>		
<b>Total</b>		59

Table 2. Antler tool categories (after V. Boroneanț, *op. cit.*, pp. 143-144).

All antler pieces except two of the daggers came from red deer, while the other two were from roe deer. Three wild boar tusk items were also identified by V. Boroneanț: an endscraper (*grattoir*), a fragment of a combined tool (piercer-endscraper/*poinçon-grattoir*) and a fragment of a small knife/*petit couteau*<sup>10</sup>. All artefacts described by V. Boroneanț were attributed to the Mesolithic, the collection thus comprising a minimum of 224 items.

A. Păunescu<sup>11</sup> also offered also a brief account of the composition and typology of the osseous assemblage. rj

### Brief considerations on faunal remains

Very few of the faunal remains from the 1965–8 excavations at Schela Cladovei have survived. They comprise just 365 fragments excavated in 1968 from the area of the so-called ‘Epipaleolithic feature’ – L1/L2 (fig. 1/b). The remains belong mostly to mammals (95.9% – 350 fragments), followed by fish (2.5% - 9 fragments) and birds (0.3% - one fragment). The less than perfect sieving technique and the possibility that the faunal remains were partially studied and sorted by A. Bolomey may explain the small number of fish remains, in contrast to what was observed for the 1992-1996 excavations<sup>12</sup>.

<sup>10</sup> *Ibidem*, p. 155.

<sup>11</sup> Al. Păunescu, *op. cit.*, pp. 445-449.

<sup>12</sup> L. Bartosiewicz, C. Bonsall, V. Boroneanț, S. Stallibrass, *Schela Cladovei: a preliminary review of the prehistoric fauna*, in *MM*, 16, 1995, pp. 2-19; *Idem*, *Size*



For 230 mammal remains (63.9%) it was possible to identify the species. Only eight taxa are present: one domesticate (*Canis familiaris*) plus wild cattle (*Bos primigenius*), horse (*Equus* sp.), red deer (*Cervus elaphus*), roe deer (*Capreolus capreolus*), wild boar (*Sus scrofa*), bear (*Ursus arctos*) and hare (*Lepus europaeus*). The most frequent remains are those of red deer (83.9%) followed by roe deer and wild boar (both 4.5%) and dog (4%). The other taxa represent less than 1%. Of particular interest is a roe deer neurocranium still preserving the antlers, suggesting the animal was killed between April and November<sup>13</sup>.

## Methodology

Most of the surviving assemblage is part of the collections of the 'Vasile Pârvan' Institute of Archaeology in București. However, an unknown number of artefacts were included in the former permanent exhibit of the Iron Gates Region Museum in Drobeta Turnu Severin and were not available for study – in part this accounts for the difference in the number of artefacts published by V. Boroneanț and those presented here.

For the present study, the artefact types were identified following the *Fiches typologiques de l'industrie osseuse préhistorique*<sup>14</sup>, taking into consideration the morphology of the active front/working edge of the artefacts. It follows that the typological categories identified are different from those of V. Boroneanț and/or A. Păunescu<sup>15</sup>. The artefacts came both from features and 'cultural layers' as recognized during the 1965–8 excavations. We divided the assemblages into 'Mesolithic' and 'Early Neolithic' series based on contextual information written on or accompanying the artefacts. Ultimately, however, this chronological division reflects the original stratigraphic/typological phasing of the site by V. Boroneanț – as yet, there are no direct <sup>14</sup>C dates for any of the pieces recovered in the 1965–8 excavations. In addition to formulating a new typological classification of the artefacts, other aims of the present study were to identify (where possible) the *chaîne opératoire* of their manufacture and to determine their function starting from the morphology and presence/absence of use-wear traces.

Macroscopic and microscopic examination of the technological and wear traces on the archaeological artefacts was undertaken. The location and character of manufacturing marks and use-wear were systematically recorded. Microscopic examination and photography were undertaken with a Keyence VHX-600 digital microscope at magnifications of ×30 to ×150. Our

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*ranges of prehistoric cattle and pig at Schela Cladovei (Iron Gates region, Romania), in AnB, S. N., Arheologie-Istorie, 1, 2006, pp. 23–42.*

<sup>13</sup> E. Schmid, *Atlas of Animal Bones*, Elsevier, Amsterdam-London-New York, 1972, p. 90.

<sup>14</sup> H. Camps-Fabrer (ed.), *Fiches typologiques de l'industrie osseuse préhistorique. Cahier III: Poinçons, pointes, poignards, aiguilles*, Aix-en-Provence, 1990; H. Camps-Fabrer, P. Cattelain, S.-Y. Choi, E. David, J.-L. Pasqual-Benito, N. Provenzano, D. Ramseyer (eds.), *Fiches typologiques de l'industrie osseuse préhistorique. Cahier VIII. Biseaux et tranchants*, Treignes, 1998.

<sup>15</sup> V. Boroneanț, *op. cit.*; A. Păunescu, *op. cit.*



interpretations were based on equivalent research undertaken in other parts of Europe and elsewhere<sup>16</sup>.

## The Mesolithic assemblage

### Bone

Bone was the raw material employed for the manufacture of 26 points made on flat blanks. For the production of these blanks two methods of longitudinal débitage were employed: *quadri*-partition (n=24) and *bi*-partition (n=2). In the former case, for five of the points (made on the diaphyses of long bones from large mammals) the débitage procedures could not be determined owing to later interventions (fig. 2/a, f). The meso-distal part of the artefacts was regularized by scraping (n=5) (fig. 2/b, g), followed toward the distal end by abrasion (n=1) (fig. 2/c), thus creating a circular section. At the proximal end a hafting area was created by two converging oblique facets. The technique used was longitudinal scraping (fig. 2/e) followed in two cases by abrasion (fig. 2/h). Where preserved, the tips are heavily worn, with significant loss of material and a microscopic polish (fig. 2/d).

In the case of a point made on the proximal metatarsal of *Capreolus capreolus*, (fig. 2/i) a flat blank was also employed but this was obtained by double *grooving* (fig. 2/j). The débitage edges were left unworked, the same as the proximal end (non-fused). At the distal end an active front was created by *scraping* applied around the entire circumference. The point is slightly fractured, acquiring an oblique linear morphology. Use-wear is present at the periphery of the active front (fig. 2/k), indicating that the artefact had been used. For the manufacture of the seventh point *grooving* (fig. 3/b) – this time associated with percussion – was employed. The entire surface was finished by *scraping* (fig. 3/c), followed at the distal end by abrasion (fig. 3/d), applied to the entire circumference. The tip is heavily rounded with marked use-wear overlapping the technological striations (fig. 3/e). The same débitage method, combining

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<sup>16</sup> e.g. A. Averbouh, *Technologie de la matière osseuse travaillée et implication paléolithique; l'exemple des chaînes d'exploitation du bois de cervidé chez les magdaléniens des Pyrénées*, unpublished PhD thesis, Paris I Panthéon-Sorbonne, 2000; N. Provenzano, *Les industries en bois de Cervidés des Terramares émilliennes*, unpublished PhD thesis, Université Aix-Marseille II, Marseille, 2001; Y. Maigrot, *Ivory, bone and antler tools production systems at Chalain 4 (Jura, France): late Neolithic site, 3<sup>rd</sup> millennium*, in H. Luik, A. M. Choyke, C. E. Batey, L. Lõgas (eds.), *From hooves to horns, from mollusc to mammoth – manufacture and use of bone artefacts from prehistoric times to the present – Proceedings of the 4th Meeting of the ICAZ Worked Bone Research Group at Tallinn, 26th–31st of August 2003*, Muinasaja teadus 15, Tallin, 2005, pp. 113–126; A. L. van Gijn, *The use of bone and antler tools: two examples from the Late mesolithic in the Dutch coastal zone*, in St. Gates, C. Pierre, R. Walker (eds.), *Bones as tools: current methods and interpretations in worked bone studies*, BAR International Series 1622, Oxford, 2007, pp. 81–92; A. Legrand, I. Sidéra, *Methods, means, and results when studying European bone industry. Chapitre 5*, in C. Gate, R. Walker (eds.), *Bones as tools: current methods and interpretations in worked bone studies, Congrès de la SAA, Montréal, Avril 2004*, BARIntSer 1622, Oxford, 2007, pp. 291–304.



*grooving* and percussion, was used on the diaphysis of a bone from a large mammal (fig. 4/a). Although with a much-degraded surface and also fractured, the item preserves the longitudinal groovings specific to *grooving* (fig. 4/b). The active front was created by *scraping* (fig. 4/e) applied at the distal end around the entire circumference. Although fractured, the periphery of the active front preserves macroscopic wear (fig. 4/d), resulting from the use of the artefact. The proximal end is heavily compacted (fig. 4/c) indicating it was an intermediary item, employed during indirect percussion.

Another point (fig. 4/f), possibly used in hunting activities, was obtained by *quadri*-partition. During *débitage*, though barely observable, *grooving* was also employed (fig. 4/g), its traces obliterated by the longitudinal *scraping* applied afterwards. The proximal extremity displays a round morphology, finished by abrasion (fig. 4/h). The same method of finishing by abrasion was employed also for the creation of the active front (fig. 4/j). Unfortunately, the latter has a small *en languette* fracture, probably of functional origin (fig. 4/i).

In some cases (fig. 3/f, 4/k) only percussion was employed to ensure the *quadri*-partition of the bone. The *débitage* edges and the proximal extremity were left unworked or were partly shaped by bilateral *scraping*. Most items were mesial fragments and the degree of finishing of the edges could not be determined. The tip was created by *scraping* only, applied at the distal end over the entire circumference of the piece (fig. 3/g, fig. 4/l). With one exception, the distal extremity is slightly fractured on all items (fig. 3/h). In the case of the former (fig. 4/m), the tip is very worn, acquiring a round morphology, but no use-wear patterns could be identified due to varnish covering the artefact.

Two items (the first on a proximal metatarsal bone of *Capreolus capreolus* and a second on a proximal metapodial of *Bos* sp.) were bi-partitioned by percussion. The *débitage* edges were finished for only one of the items. The tip of the same artefact was created by longitudinal *scraping* around the circumference, applied only at the distal end. The tip is fractured but the use-wear is still visible and the traces of *scraping* are gone. The second artefact (fig. 3/i) has the *débitage* edges and the tip finished by abrasion. The latter appear to have been fractured in two stages (first a longitudinal fracture while the tip continued to be used, until the transversal fracture of the extremity happened). The artefact is heavily used with the technological striations blurred.

A bone fragment (fig. 3/j) of (fig. 3/j) undetermined function was decorated. It appears to be a flat blank probably obtained by indirect percussion. On its upper face was engraved a pattern made of series of intersecting oblique lines (fig. 3/k), forming rhombs. The lines are very fine and rather irregularly placed.

Two other bone fragments, also of undetermined function and origin, preserve on their surfaces traces of *longitudinal* *scraping*.

### ***Antler***

The antler of *Cervus elaphus* served as raw material for the manufacture of one typological category only – bevelled tools. All segments of an antler were



used – various parts of the beam and the tines from the brow to the crown. From the beam were made seven bevelled tools. Five of them (fig. 5/a-b) preserved the anatomical volume. In the case of the sixth, the blank type could not be determined because of extensive breakage. The seventh item was made on a flat blank. Segmentation from the beam was done by percussion applied around the entire circumference. The same procedure is seen in another of the items where it was employed for the separation of a tine. At the distal end, an oblique facet was created by flaking, resulting in an *en biseau* active front.

One item (fig. 6/a), unfortunately fractured both longitudinally and transversally, exhibited a transverse hafting system, represented by a perforation with a circular morphology, created by rotation (fig. 6/b). One of the tines was removed by *sciage à la ficelle* segmentation. The active front was created by flaking and was then finished by longitudinal *scraping* (fig. 6/c). The artefact was heavily used, the distal extremity acquiring a very compact aspect, with loss of material that modified its morphology from convex to linear (fig. 6/d-e). Another item (fig. 6/f), also fractured longitudinally, displayed on its upper face a few short oblique incisions, their intersection forming a geometric pattern which may represent intentional decoration (fig. 6/h-i). The active front was created by unifacial percussion. The extremity is heavily compacted (fig. 6/g), acquiring a linear shape, probably following the use of the artefact in percussion actions.

The seventh item (fig. 6/c) appears to have been manufactured on a flat blank, but it is possible (given that it is the only bevelled tool of this type) that initially the blank was a volume one which fractured longitudinally though the item continued to be used. The segmentation was done also around the entire circumference. The active front was created by percussion, applied unifacially. All these bevelled tools were used in percussion thus generating substantial change in the initial volume of the active front. Thus, the *fil du tranchant* – initially with a convex morphology – is for all items very compacted and exhibits an irregular morphology, with significant loss of material.

Tines were used for the manufacture of six bevelled tools (fig. 5/d). The segmentation from the main beam was done by percussion around the entire circumference, followed by detachment by flexion. The active front was unifacially created by percussion and was modified by use of the artefact, with significant loss of material. The morphology evolved from convex to concave (1 example) or linear (2 examples). It is certain that this item was used in indirect percussion as a wedge.

One of the bevelled tools (fig. 5/e) preserved functional traces, no longer observable on the other items. Detachment was done by percussion (fig. 5/f) around the entire circumference. At the distal end, the active front was created by unifacial percussion (fig. 5/g). Some of the percussion traces are still visible, but they are overlain by heavy use-wear lustre. The *fil du tranchant* is irregular, with a flake-like fracture facet on the upper face (fig. 5/h). Microscopically, at the extremity fine longitudinal striations can be observed associated with a heavy lustre (fig. 5/i).

Other products and sub-products of the *chaînes opératoires* are also represented. Two items are considered to be preforms. The first (fig. 7/a) is



represented by a tine segmented by percussion over a small area, followed by detachment by flexion. At the distal end, a bevelled active front was created by percussion. The artefact was not finished and shows no traces of use. The second preform (fig. 7/b) came from the antler beam and was segmented by percussion around approximately two-thirds of the circumference, then detached by flexion. At the distal end, the bevelled active front was created by percussion. This process was not finished, the active front preserving a rather coarse aspect.

Blanks were made on three beam segments of axis and three tine segments. One of them (fig. 7/c) is the only one with a flat morphology. It was segmented around the entire circumference by percussion at one extremity, and percussion and bending at the other. The next step was bipartition by indirect percussion. There are no finishing traces, the artefact being abandoned during the manufacturing stage. Other beam fragments were segmented by percussion at both extremities.

The first tine fragment (fig. 7/d) was segmented by *sciage à la ficelle* (fig. 7/e), followed by detachment by bending. At the opposing extremity, segmentation was done by percussion (fig. 7/f) around the entire circumference. The compact tissue had not been sufficiently pecked through at the moment the bending occurred, resulting in a segmentation accident. The second tine fragment was segmented by percussion at both ends.

The six items representing debitage waste are derived from tines. Their small size did not allow for their transformation into tools. Four such tines were segmented by percussion, applied on variable surfaces, the detachment taking place by flexion (fig. 7/g). Two other pieces of debitage came from the basal part of the antler, indicating the exploitation of both shed antlers (fig. 7/h) and antlers cut from the skull (fig. 7/i). Segmentation from the rest of the beam was done by flexion.

*Indeterminates* include items with varying degrees of fragmentation, lacking the active front, so that their complete morphology (and, implicitly, functionality) could not be determined. Four beam segments (fig. 8/a-b) have a perforation either created by rotation (2 examples) or percussion-and-rotation (2 examples), with flattened inner walls. The rotation striations are no longer visible, suggesting a long period of use. In one case, a small part of the active front is still present, suggesting the creation of (a probable bevelled) active front by fine flaking (fig. 8/d).

A beam fragment (fig. 8/e) was segmented at the preserved extremity by *sciage à la ficelle* (fig. 8/f), while two other beam fragments preserved the traces of segmentation by percussion. Two antler fragments retained a small portion of the active front (fig. 8/g).

The assemblage also includes seven small fragments originating from the compact tissue of the antler, showing traces of segmentation by percussion. But it could not be established whether these were fragments of finished products or debitage waste.



## Tooth

Teeth from two species of mammal were used for manufacturing tools: dog (*Canis familiaris*) and wild boar (*Sus scrofa*). The functions of three dog teeth (two canines and one incisor) are uncertain (fig. 8/h). All three items exhibit similar traces of use, suggesting similar functions. Their surfaces are unworked except for the tip area where human intervention is visible in the form of a shallow depression with abrasion marks (one example), and with two such depressions located on opposite facets of the tooth (2 examples) (fig. 8/i-j). These are a consequence of use, the pieces having been used for scraping or sharpening.

From a lower *Sus scrofa* tusk was produced a small bevelled tool (fig. 9/a) on a flat blank, made by percussion bipartition of the tooth. Unfortunately, the artefact was fractured. For its manufacture the lower part of the tusk was used – i.e. toward the root, where the root is thinner and hollow. The débitage edges were trimmed by longitudinal *scraping* (fig. 9/c). The active front is the result of the action of *scraping* transverse to the long axis of the piece. As is evident on the active front, the artefact was resharpened many times (fig. 9/b). The use-wear traces were probably erased during the resharpening process.

The same raw material (lower wild boar tusk) was used for a *scraper* (fig. 9/d) on a flat blank produced by longitudinal débitage. The exact technique employed for the débitage could not be determined, because of later interventions. The entire lower face was shaped by longitudinal *scraping* (fig. 9/e). Thus, two concavities formed at the extremities, serving as active parts, thereby creating a double-tool. The point had no functional utility; it developed through use of the artefact. The non-functional side exhibits 12 transverse incisions made by *sawing* (fig. 9/f), probably for aesthetic reasons.

The purpose of two fragments could not be determined as their functional parts could not be reconstructed. The first (fig. 9/g) was made on a flat blank, but the bipartition procedure could not be determined. The inferior face was shaped by longitudinal *scraping* (fig. 9/h). Nothing remained of the active area. The second fragment (fig. 9/i) preserves a small portion of the active front – suggesting a possible small bevelled tool, resharpened by *scraping* (fig. 9/j).

## The Neolithic assemblage

In the 'Neolithic' series there are five points, which differ in both morphology and manufacturing technique. The first item (fig. 10/a) was made on the rib of a large mammal. The blank was in fact a flake resulting from débitage of the bone by successive partitions. The technique for obtaining the blank could not be determined because the débitage edges were subsequently shaped by *scraping*. The lower face was very carefully shaped by eliminating the spongy tissue and traces of longitudinal *scraping*. At the distal end, abrasion (fig. 10/b) was employed all around the circumference. The tip is very fine, heavily worn, the wear leading to the formation of small flat area (fig. 10/c).

The second item (fig. 10/d) was made from the cortical part of the diaphysis of a large mammal bone. It could not be established whether the blank was obtained by successive bipartitions or by extraction. It is certain though that



one of the techniques employed was *grooving* (fig. 10/e). The entire surface of the artefact was shaped by abrasion, proximal end included, the item thus acquiring a circular cross-section. The tip exhibits a slight fracture, but it is obvious that the artefact had been used (fig. 10/f).

The third point (fig. 10/g), also made on a fragment of the diaphysis of a bone from a large mammal was obtained by percussion through longitudinal *débitage*. The artefact was exposed to fire, turning it black. The *débitage* edges were left mostly unworked. At the distal end, to shape the active front *scraping* was used around the entire circumference (fig. 10/h). Unfortunately, the tip is fractured (fig. 10/i).

The last two points were made on metapodial bones of either goat or sheep (*Ovis aries/Capra hircus*). The method employed was bifacial abrasion. Most probably, bipartition was achieved by indirect percussion. The epiphysis of the bone was preserved (fig. 10/k). The shaping of the tip was done by bilateral abrasion (fig. 10/l) ensuring the convergence of the *débitage* edges. The tips of both pieces are fractured. These two points belong to a type that appears at the beginning of the Neolithic and is common throughout continental Europe<sup>17</sup>.

A small bone fragment (diaphysis, large mammal) was segmented at both extremities by *sciage à la ficelle* (fig. 9/k). The artefact was too small to be turned into a tool – most probably, an error occurred during manufacture and the item was discarded as *débitage* waste.

## Discussion

The ‘Mesolithic’ assemblage comprises 79 artefacts made of three types of raw material: 43 of antler (*Cervus elaphus*, exclusively), 29 of bone and 7 of mammal tooth. As mentioned above, antler was both collected probably during specialized collecting expeditions (shed antler) and removed from the carcasses of hunted animals (massacred antler).

In the case of bone, fragments of long bone diaphyses from large mammals (probably the species hunted) were employed. The wild boar tusks clearly come from hunted animals. The presence of dog bones in large numbers is not uncommon in the Iron Gates sites, where they were at times part of the human diet. Thus, dog teeth could have been obtained from the food waste, making their acquisition quite easy. A similar situation was observed at Ostrovul Banului<sup>18</sup>.

The ‘Neolithic’ assemblage is very small (only six items), which makes comparisons with the ‘Mesolithic’ series difficult. Noteworthy is the presence of domestic species (ovicaprines) among the raw materials used and the lack of antler tools, which may reflect cultural changes at the Mesolithic–Neolithic transition.

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<sup>17</sup> I. Sidéra, *Nouveau regard sur la néolithisation. Les industries osseuses de l'Anatolie au Bassin parisien via la Méditerranée*, De Boccard, Paris, 2012.

<sup>18</sup> M. Mărgărit, A. Boroneanț, C. Bonsall, *Analiza morfologică și funcțională a pieselor din materii dure animale din situl mezolitic de la Ostrovul Banului (jud. Mehedinți)*, in *Banatica*, 27, 2017, pp. 39–72.



Cultural layer	Raw material	Typological category	Number of items
Mesolithic	Bone	Point	26
		Indeterminate	3
	Antler	Bevelled tool	13
		Preform	2
		Blank	6
		Debitage waste	6
		Indeterminate	16
	Tooth	Worked canine	3
		Bevelled tool (small)	1
		<i>Racloir</i>	1
		Indeterminate	2
Neolithic	Bone	Point	5
		Debitage waste	1
<b>TOTAL</b>			<b>85</b>

Table 3. Main typological categories, according to raw material.

There are typological categories that predominate for each of the raw materials: bevelled tools in the case of antler, points in the case of bone, and *scrapers* for tusk. In the case of antler, the anatomical volume was preserved. When longitudinaldebitage was employed, it was done by percussion. Transversedebitage was achieved by direct percussion or *sciage à la ficelle*. Among the techniques of surface modification, percussion was the only one employed to create the oblique front of the bevelled tools. On the decorated antler artefact (fig. 6/h-i) incision was also used. Volume modification is represented by perforations, either by rotation or percussion-and-rotation.

Tusk was transformed exclusively by longitudinaldebitage of the raw material block, employing bipartition by percussion. For surface modification, mainly *scraping* was used. In one case use of *sawing* was noted, in order to create small transverse incisions, with a purely aesthetic aim. Dog tooth was not modified.

Bone is the only raw material where comparison between the 'Mesolithic' and 'Neolithic' series was possible. In both cases longitudinaldebitage was used. Two transformational methods were noted in the 'Mesolithic' series: *quadri*-partition and bipartition. Fordebitage, the predominant technique was diffuse direct percussion, followed by double grooving or a combination of *grooving* and percussion. For surface modification grooving was the technique most often employed, followed by abrasion, and in the case of the decorated item, incision.



For the Neolithic assemblage, the methods employed for transformation of bone included *quadri*-partition, shaping and, possibly, extraction. Longitudinal debitage was achieved by means of percussion, *grooving* and abrasion. Transverse debitage was used in the 'Mesolithic' series for segmentation of antler and was done by percussion and *sciage à la ficelle*. For surface modification *scraping* and abrasion were used in equal measure.

As regards the function of the 'Mesolithic' assemblage, there seems to have been specialization in certain kinds of activities. Antler bevelled tools have very damaged extremities – heavily fractured, with concave or linear morphologies. On some items these were associated on proximal extremities with compaction and flaking. This suggests their use in direct percussion (for the artefacts with transversal perforation) or indirect percussion for the other items. Bevelled tools fall into the category of tools for working wood (splitting wood, bark peeling, etc.). *Sus scrofa* tusk tools also appear to have been used for woodworking<sup>19</sup>. In this case, the very fresh aspect of the scraping indicates periodic resharpening of the active front.

Points were associated mainly with domestic activities such as perforation of hides and weaving of textile fibres. The varying degree of hardness of the worked materials is reflected also in the different form and development of the use-wear at the active extremity: rounded points in the case of soft materials, and fractured points for harder materials. Projectile points, associated with hunting, were present only in the 'Mesolithic' assemblage.

## Conclusions

In this paper we have sought to clarify some aspects of the bone and antler industry at Schela Cladovei, as represented by the small assemblage recovered in excavations between 1965 and 1968. We have reviewed previous interpretations of the bone and antler artefacts from the site, and presented new information based on detailed techno-typological and use-wear analyses.

For the moment, correlations with other Iron Gates sites are possible only for the Middle and Late Mesolithic periods<sup>20</sup>, and specifically that part of the time range (c. 10,000–8200 cal BP) for which there are direct dates on osseous artefacts<sup>21</sup>. Among the sites studied so far (Icoana, Răzvrata, Ostrovul Banului, Schela Cladovei, Ostrovul Corbului) there are few variations in choice of raw materials (deer antler, diaphyses of mammal long bones and wild boar tusk), typology (bevelled antler tools, bone points and tusk scrapers and small bevelled

<sup>19</sup> Y. Maigrot, *Technical and functional study of ethnografic (Irian Jaya, Indonesia) and archaeological (Chalain and Clairvaux, Jura, France, 30th century BC) tools made from boars' tusks*, in S. Beyries, P. Petrequin (eds.), *Ethno-archaeology and its transfers* (Papers from a session held at the European Association of Archaeologists Fifth Annual Meeting in Bournemouth 1999), BARIntSer 983, Oxford, 2001, pp. 67–79.

<sup>20</sup> cf. M. Mărgărit, V. Radu, A. Boroneanț, C. Bonsall, *Experimental studies of personal ornaments from the Iron Gates Mesolithic*, in *Archaeol. Anthropol. Sci.*, 2017, fig. 2; <https://doi.org/10.1007/s12520-017-0522-5>

<sup>21</sup> C. Bonsall, *op. cit.*; A. Boroneanț, C. Bonsall, *op. cit.*



tools) and technology (predominantly longitudinal exploitation of bone and tusk blanks and transverse exploitation of antler)<sup>22</sup>. The Mesolithic inhabitants of the Iron Gates seem to have used hard animal raw materials (antler, bone and tooth) for a limited range of activities: woodworking, hunting, and perforation of various materials.

Although the assemblage from the 1965–8 excavations is rather small, marked differences between the ‘Mesolithic’ and ‘Neolithic’ series in both the raw materials and technologies hint at significant changes across the Mesolithic–Neolithic transition at Schela Cladovei. However, this remains a working hypothesis until verified by direct AMS <sup>14</sup>C dating of representative series of artefacts.

### Acknowledgments

The study of the archzeozoological remains (Adrian Bălăşescu) was funded UEFISCDI grant: PN-III-P4-ID-PCE-2016-0676.

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<sup>22</sup> M. Mărgărit, M., Boroneanţ, *Industria materiilor dure animale din situl mezolitic de la Alibeg (jud. Caraş-Severin)*, in MCA, XIII, 2017, pp.15-30; Idem, *The Mesolithic osseous industry from Răzvrata (the Iron Gates region)*, in M. Mărgărit, A. Boroneanţ (eds.), *From hunter-gatherers to farmers: human adaptations at the end of the Pleistocene and the first part of the Holocene. Papers in Honour of Clive Bonsall*, Ed. Cetatea de Scaun, Târgovişte, 2017, pp. 81-92; M. Mărgărit, A. Boroneanţ, C. Bonsall, *op. cit.*; M. Mărgărit, A. Boroneanţ, M. Balint, A. Bălăşescu, C. Bonsall, *Interacţiuni om-mediul în situl mezolitic de la Icoana (Porţile de Fier)*, in SP, 14, 2017, pp. 37-77.



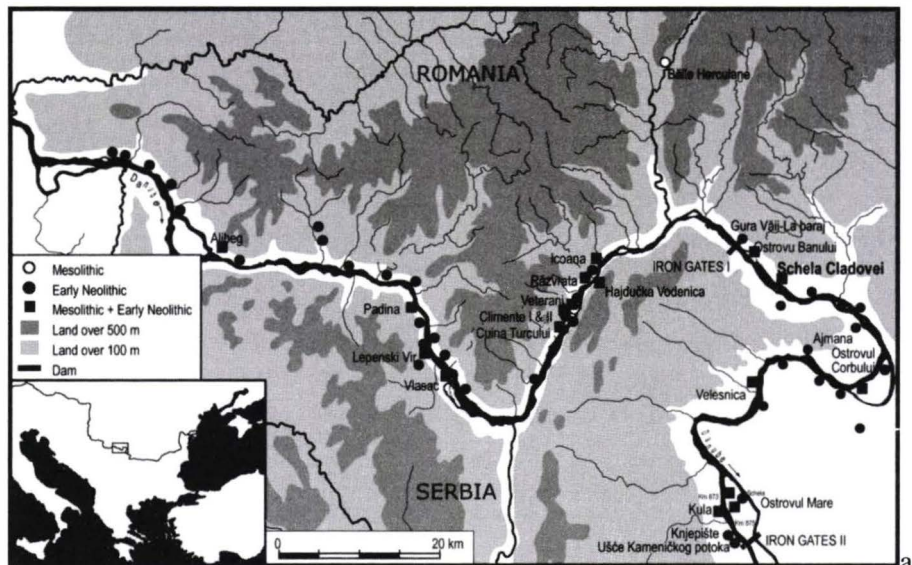


Fig. 1. Map of main Mesolithic and Early Neolithic sites in the Iron Gates (a); Mesolithic feature L1/L2 (b).





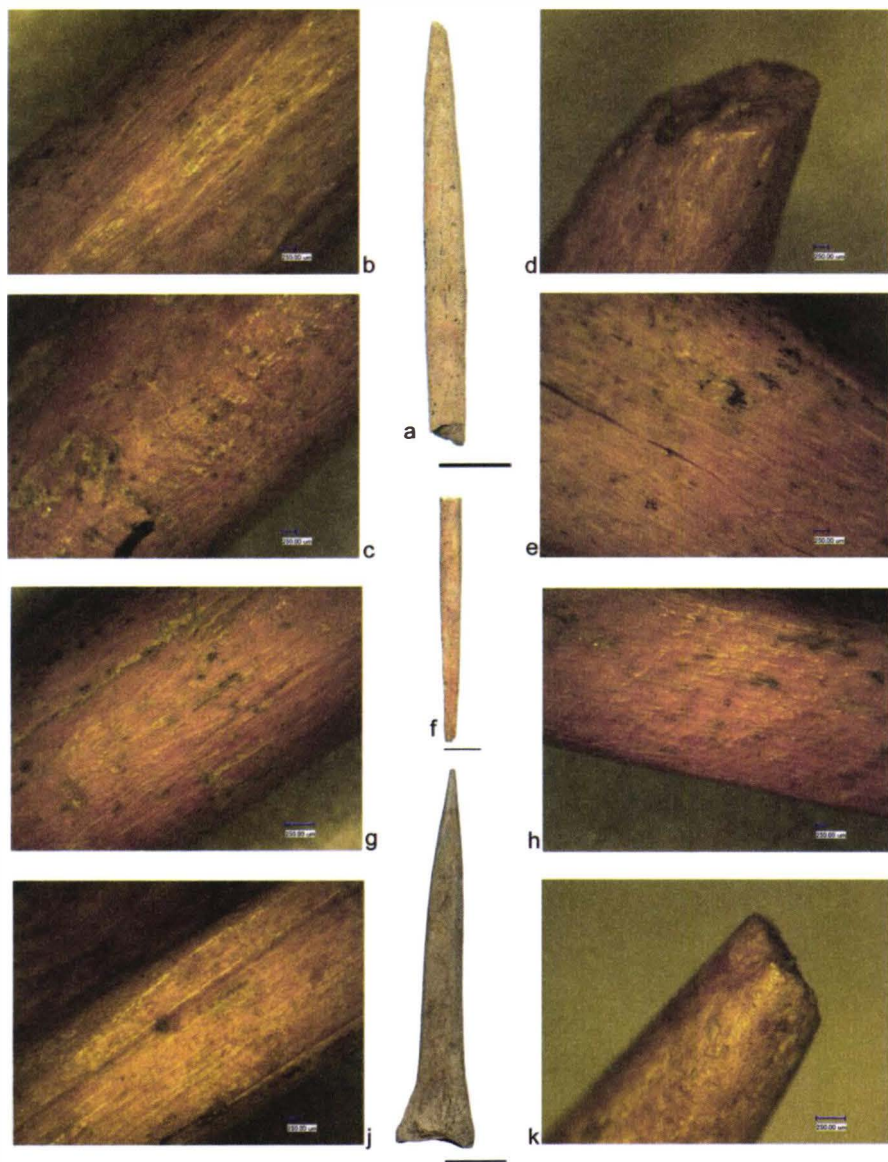


Fig. 2. 'Mesolithic' bone points: a, f, i, various point types; b, e, g, surface shaping by *scraping*; c, h, surface shaping by abrasion; d, k, details of the active front; j, traces left by longitudinal debitage by grooving.



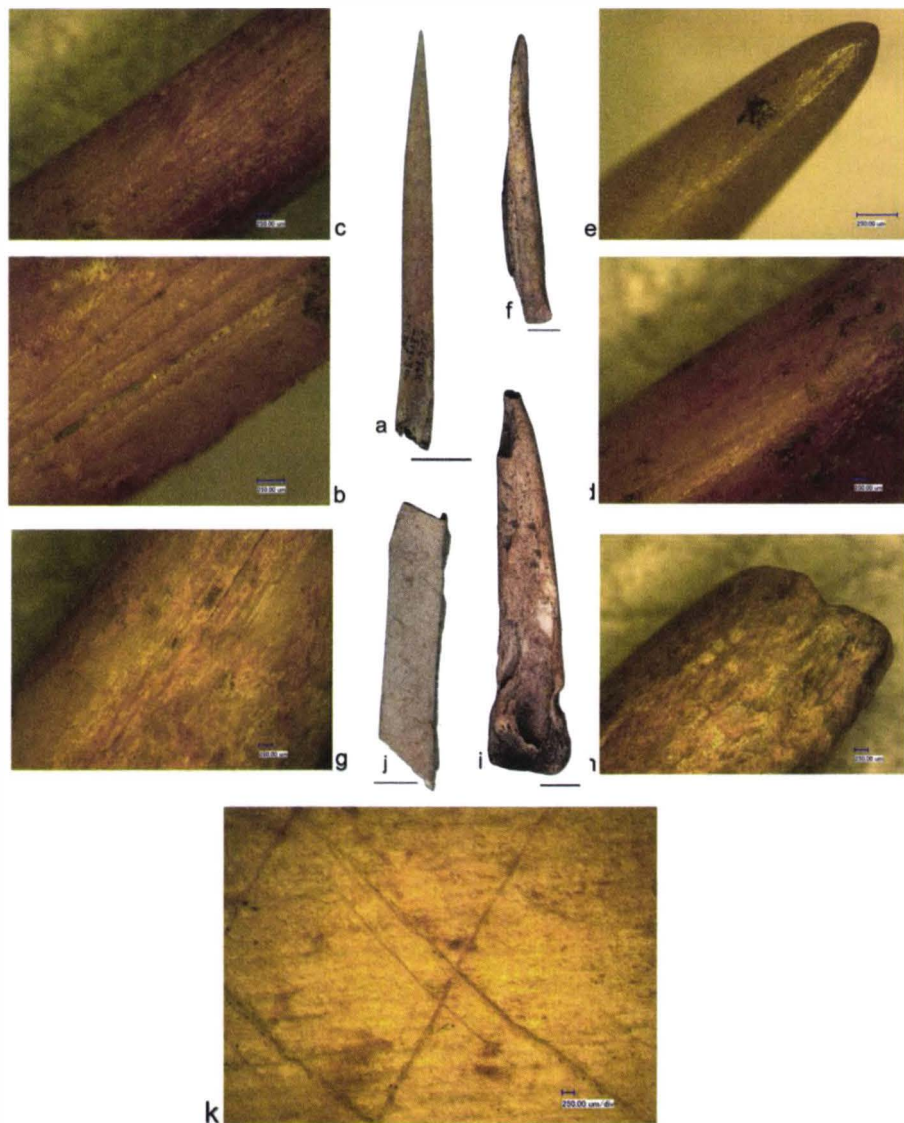


Fig. 3. 'Mesolithic' bone artefacts: a, f, i, various point types; b, traces left by longitudinal debitage by grooving; c, g, surface shaping by *scraping*; d, surface shaping by abrasion; e, h, details of the active front; j, decorated bone fragment; k, detail of the decoration.



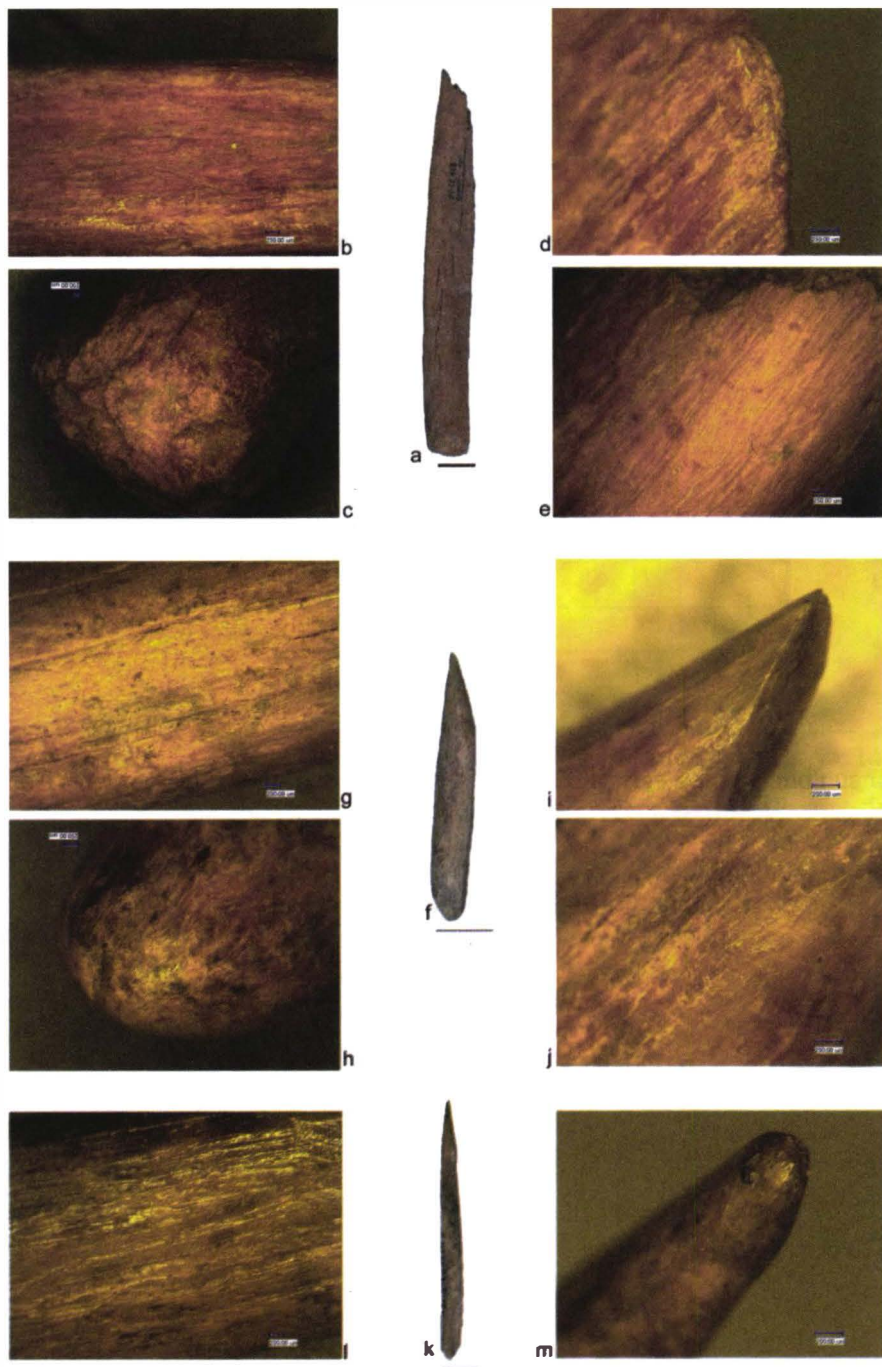


Fig. 4. 'Mesolithic' bone points: a, f, k, various point types; b, g, debitage by grooving; c, h, details of the proximal end; d, i, m, details of the active front morphology; e, l, surface shaping by scraping; j, surface shaping by abrasion.



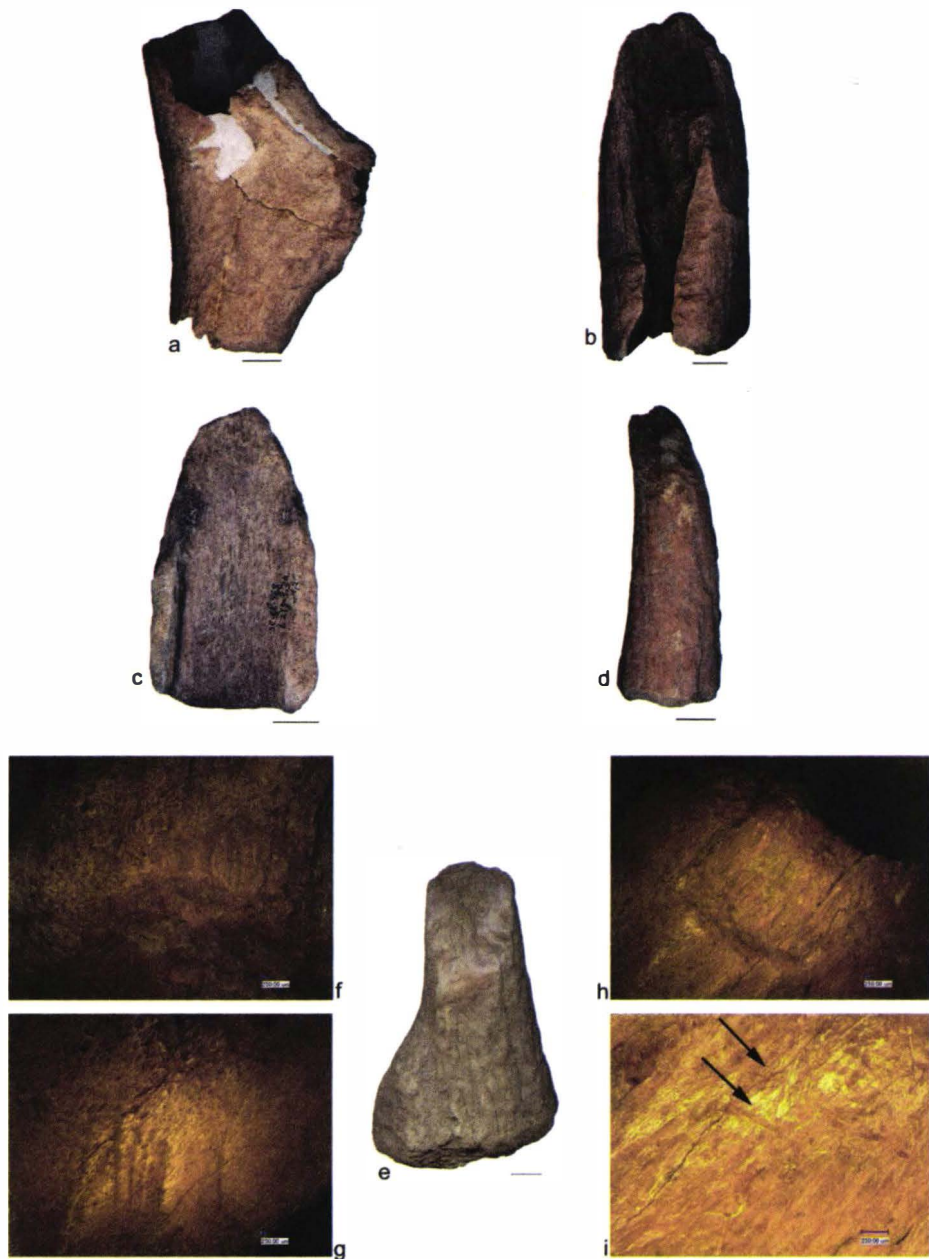


Fig. 5. 'Mesolithic' antler (*Cervus elaphus*) bevelled tools: a-e, various types of bevelled tools; f, segmentation by percussion; g, shaping of the active front by percussion; h, functional fracture of the active front; i, details of use-wear traces.



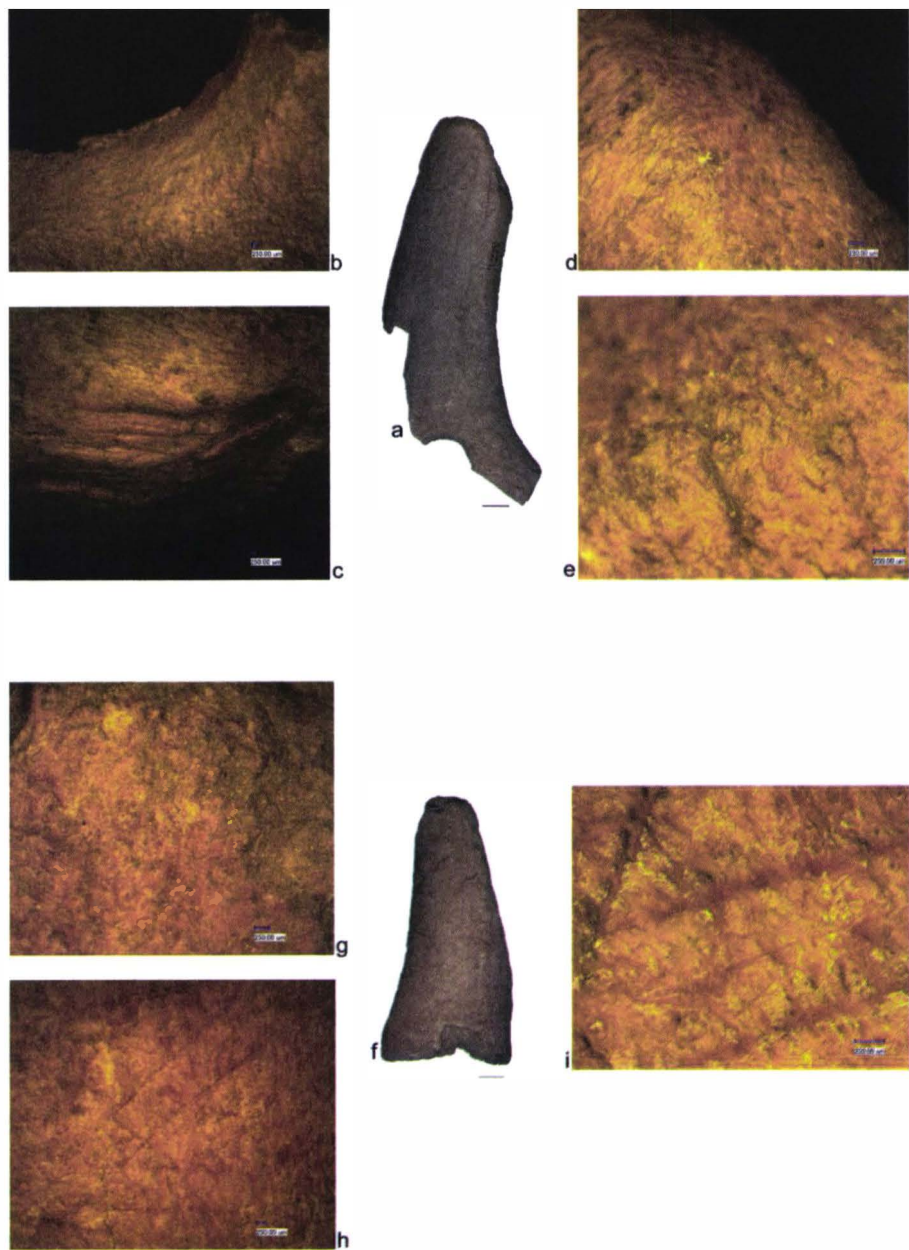


Fig. 6. 'Mesolithic' antler (*Cervus elaphus*) bevelled tools: a, f, various types of bevelled tools; b, detail of the perforation; c, shaping of the active front by scraping; d-e, g, details of the active front morphology; h-i, details of the incisions.





Fig. 7. 'Mesolithic' antler (*Cervus elaphus*) artefacts: a-b, preforms; c-d, blanks; e, segmentation by *sciage à la ficelle*; f, segmentation by percussion; g-i, debitage waste.



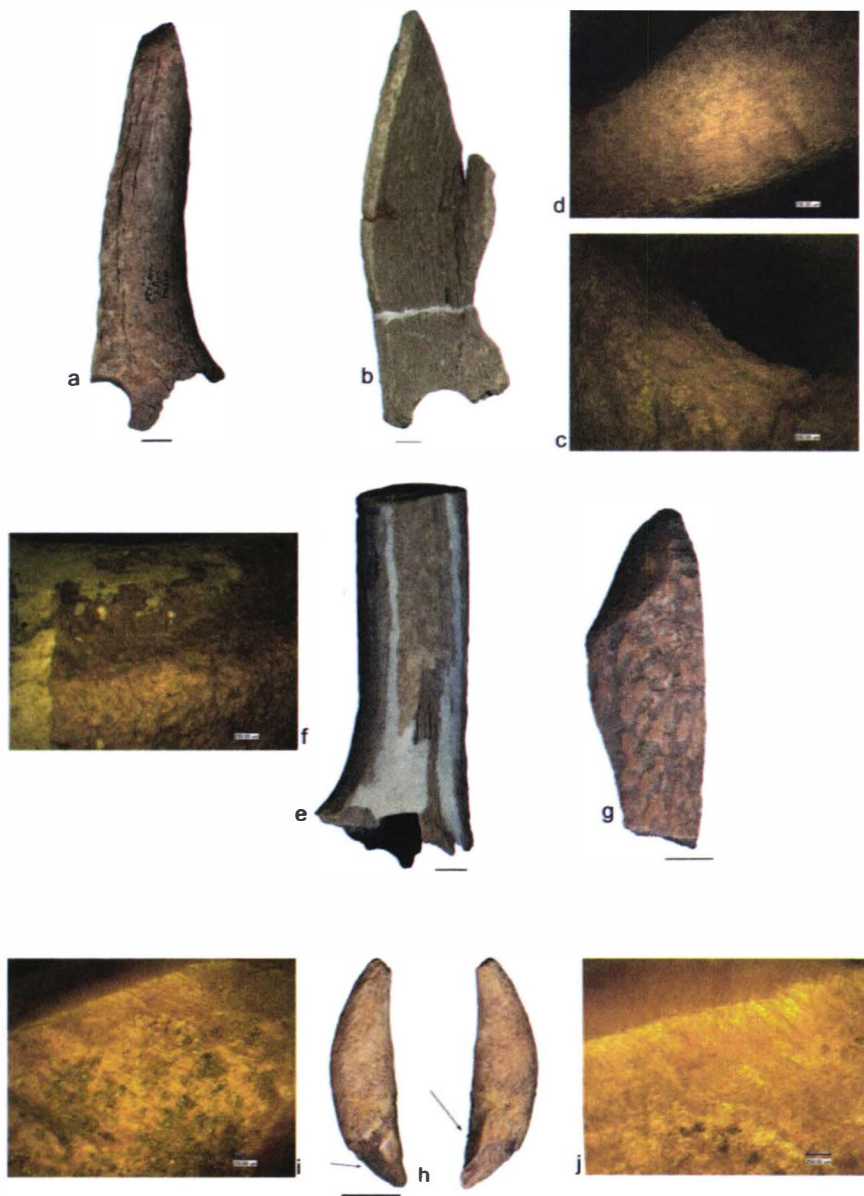


Fig. 8. 'Mesolithic' antler (*Cervus elaphus*) and tooth (*Canis familiaris*) artefacts: a, b, e, g, *Indeterminates*; d, shaping of the active front by percussion; c, detail of the perforation; f, segmentation by *sciage à la ficelle*; h, tooth modified by use; i-j, details of the worn/used surfaces.



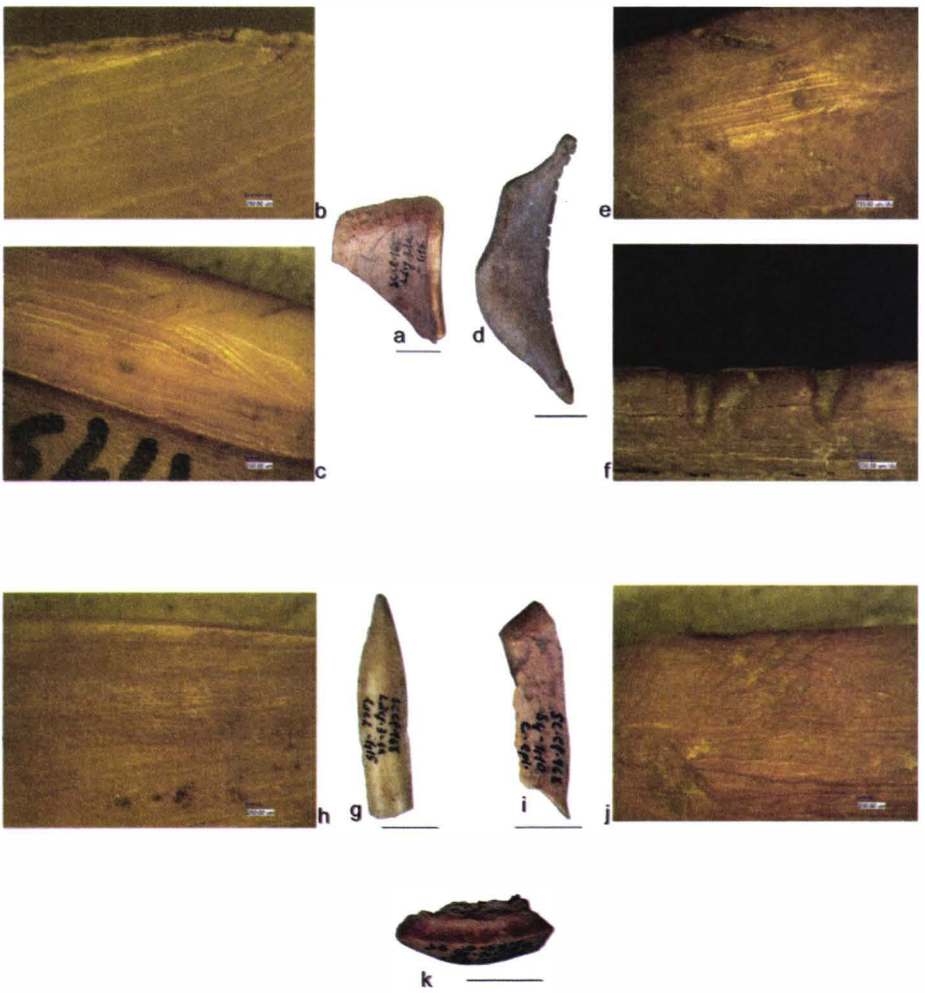


Fig. 9. ‘Mesolithic’ tusk (*Sus scrofa*) and ‘Neolithic’ bone artefacts: a, small bevelled tool; d, scraper; g, i, *indeterminates*; b, c, e, h, j, details of the traces left by scraping; f, transverse incisions made by scraping; k, debitage waste segmented by *sciage à la ficelle*.





Fig. 10. 'Neolithic' bone tools: a, d, g, j, various types of points; b, l, shaping by abrasion; c, f, i, details of the active front morphology; e, traces left by longitudinal debitage by grooving; h, surface shaping by scraping; k, traces left by longitudinal debitage by abrasion.







## Vessels with two or more supply/service mouths in Romania.

### Meanings and contexts

SABIN ADRIAN LUCA\*

**Abstract:** *These lines attempt to clarify the meaning of this type of vessel, also pointing to links with similar vessels in Southeast Europe.*

**Key words:** *ritual vessels used to mix liquids, Neolithic and Eneolithic, meaning, links to Southeast Europe*

The occasion of writing these lines is given by the discovery of an archaeological feature at Cristian I, Sibiu County, Romania, called feature C<sub>58</sub><sup>1</sup>. It is part of a consecration sanctuary from the arrival of the first wave of Neolithic people in the southern and south-eastern area of Transylvania, comprising – the sanctuary – pits with ritual deposits, but also pits that served as the base of light wooden constructions (buildings)<sup>2</sup>.

The C<sub>58</sub> feature has the stratigraphic data published in our book and we do not think they need to be resumed<sup>3</sup>. Now we are interested in the characteristics of the two ceramic artifacts from the inventory of the pit<sup>4</sup>. From the very beginning we noticed that both – the ceramic artifacts – have unique characteristics, far from the typical characteristics of the period. While one of them (vessel 1) had two liquid supply holes – as we observed<sup>5</sup> – (Fig. 1-2), the second one had a strange shape and it could only be related to later, Vinča

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\* Universitatea „Lucian Blaga” din Sibiu, [sabinadrian.luca@ulbsibiu.ro](mailto:sabinadrian.luca@ulbsibiu.ro);  
Muzeul Național Brukenthal, [sabin.luca@brukenthalmuseum.ro](mailto:sabin.luca@brukenthalmuseum.ro)

<sup>1</sup> S. A. Luca, *Living under the Gods/Viața trăită sub zei*, Ed. Academiei Române, București/Ed. Karl A. Romstorfer, Suceava, 2015, pp. 66-69.

<sup>2</sup> *Ibidem*, pp. 21-121; S. A. Luca, F. Marțiș, A. Tudorie, A. Luca, „*Consacrarea ritualică*” a primei colonizări neolitice din România. Sanctuarul de gropi de la Cristian I, județul Sibiu. Partea I. Fundarea, in *Apulum*, 50, 1, 2013, pp. 1-22; Idem, “*The Ritual Consecration*” of the First Neolithic from Romania. *The Pits Sanctuary from Cristian I, Sibiu County. Part I. The Foundation*, in *BAM-S*, 8, 1, Muzeul Național Brukenthal, Sibiu, 2013, pp. 11-28.

<sup>3</sup> S. A. Luca, *Living under the Gods*, p. 66, fig. 33.

<sup>4</sup> Vessels 1 and 2 – S. A. Luca, *op. cit.*, pp. 66-67; fig. 34-37; photos 36-37.

<sup>5</sup> S. A. Luca, *op. cit.*, pp. 66-67, fig. 35-37; photos 36-37.



typologies (vessel foot)<sup>6</sup>. But, for the second vessel, the typological resemblance is only formal, because *it is a finished container*, so it does not show the necessary connection to the vessel whose support would have been the “foot”. The only possibility is – in this case – that the vessel is not a foot, but a grinder/crusher for a physical operation of pressure, exerted on a softer base, grains or powders (otherwise it would have been destroyed at the first pressing/blow for crushing).

Analyzing more closely the vessel with two mouths from here (Fig. 1), it was observed that within it there are remnants of a black deposit, a fragile film (Fig. 2). This is seen from the middle of the vessel to the bottom<sup>7</sup>. The analysis of the film has led us to a discovery amazing for us. Its composition is artificial, having no direct equivalent in nature, being – in fact – the result of human activity, therefore an artificial or “unknown” substance, as Aurica Ion, the author of the analysis, said<sup>8</sup>.

Corroborating previous observations, vessel 2 also has a role – determined, this time – for its emergence in this archaeological feature: to help crumbling organic residues, much weaker in texture than the composition of burnt clay. This operation was done – in our opinion – by pressing.

One thing should be clarified. Why does the pot have two mouths? The answer is plausible only if we think of the *uniqueness* of the product that results from the *ritual process* of creating a substance. A *unique* substance has *unique properties* and it should not be obtained by anyone. Or, in this case, being a mixture of two substances – *unknown to those who may assist in the process of creating it* – one has a *unique* vessel (we will see how rare and how it evolves over time), but also the possibility of crushing with another *unique* object in order to reach the *unique purpose*. Suddenly, there are so many secrets that a common man cannot get to know its *essence*, its *secret*.

Consequently, we believe that we are faced with a discovery showing that in the ritual process truly *unique substances* are used, nonexistent in this state in nature, being created by special people who defiantly defend the way of preparation, precisely in order to have an ascendant on the contemporary community. In this case (the one from Cristian I), the substance obtained can have *magical qualities*, being either a special *paint* or a *liquid* with qualities over the natural ones.

We conclude this brief description by pointing out that the radiocarbon data in this site is around 7,000 BP<sup>9</sup>. From the point of view of the relative timeline of the Starčevo-Criș culture, these discoveries comprise the IB phase of the culture<sup>10</sup>.

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<sup>6</sup> *Ibidem*, p. 67, fig. 34.

<sup>7</sup> *Ibidem*, foto 37.

<sup>8</sup> *Ibidem*, p. 67, analyze 1.

<sup>9</sup> *Ibidem*, p. 220.

<sup>10</sup> Gh. Lazarovici, *The Anzabegovo-Gura Baciului axis and the first stage of Neolithization Process in Southern-Central Europe and the Balkans*, in N. Tasić, C. Grozdanov (eds.), *Homage to Milutin Garašanin*, Beograd, 2006, p. 117, Fig. 6b; S. A. Luca and C. Suciuc (eds.), *The first Neolithic Sites in the Central/South-east European Transect, volume II, Early Neolithic (Starčevo-Criș) Sites on the territory*



The oldest analogy for this type of vessel is that of Hacilar<sup>11</sup>. It is, in fact, a sacred pair (there is an anthropomorphic figure on each neck of the vessel), with hands brought towards the breasts and very bulging body. The vessel is also ornamented with paint.

In Starčevo-Criș culture there are such vessels at Donja Branjevina<sup>12</sup>.

As for the Donja Branjevina vessel – clearly having a similar utility to that from Cristian I –, it is zoomorphic (Fig. 1). Unfortunately, the head and the tail have not been preserved, which could have helped us to determine the species represented. However, the utility of the vessel is – obviously – the same as that of the vessel with two mouths from Cristian I. So is the absolute and relative dating of the Starčevo-Criș culture.

Towards the end of the Starčevo-Criș culture, in phase IVA, there is another discovery of this type, the vessel from Zăuan (Photo 3)<sup>13</sup>. It was discovered about 5 meters away from the domestic altar<sup>14</sup> (made up of several anthropomorphic artifacts, including the “Venus of Zăuan”). The vessel is also associated with a clay mask<sup>15</sup>. The container has a ring-shaped, hollow bottom with a high concavity – betraying a chronological and cultural horizon of the Starčevo-Criș culture contemporary with Vinča A<sub>2</sub>. The author of the discovery also suspects the existence of anthropomorphic parts (head), hard to prove, however<sup>16</sup>. It is significant that the manner of making, the burning and the mixture from which the ceramic vessel was made belong precisely to the chronological and cultural horizon Starčevo-Criș IVA-Vinča A<sub>2</sub>, as it was defined by Gh. Lazarovici<sup>17</sup>.

For the Developed Neolithic from Romania, more precisely in the Banat culture, we have two such vessels. The first, that of Parța<sup>18</sup>, was found in tell I, trench 10, square 13, at the depth of -1.30 (Photo 4). In this case, the two mouths are opposite at an angle of 90°. It is clear that it had a much more specialized use than the other vessels (taking ritual sips directly from the vessel).

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of Romania, BAR, International Series 2188, Kraków, 2011, pp. 12-13, Fig. 9; S. A. Luca, *op. cit.*, p. 221.

<sup>11</sup> H. Schwarzberg, *Durch menschliche Kunst und Gedanken gemacht*, in *Münchner Archäologische Forschungen*, 1, München, 2011, Taf. 5.

<sup>12</sup> S. Karmanski, *Donja Branjevina. Archaeološka Monografija*, Odžaci, 2000, p. 114, 316-317, T.XXXIX, Slika 118, 169.

<sup>13</sup> E. Lakó, *Piese neolitice de cult de la Zăuan*, in *AMP*, 1, 1977, Zalău, p. 44-45; M. Wullschleger with J. Chamay and F. van der Wielen-van Ommeren, *Neolithische Kunst in Rumänien*, Olten, Artem, 2008, p. 51, foto 3.

<sup>14</sup> E. Lakó, *op. cit.*, p. 43.

<sup>15</sup> *Ibidem*, p. 44.

<sup>16</sup> *Ibidem*, pp. 44-45.

<sup>17</sup> Gh. Lazarovici, *Neoliticul Banatului, Bibliotheca Musei Napocensis* 4, Cluj-Napoca, 1979, pp. 50-53 (Starčevo-Criș).

<sup>18</sup> M. Moga, *Muzeul regional al Banatului*, in *RMM*, I, 3, 1964, p. 295; Gh. Lazarovici, *Așezarea neolitică de la Parța*, in *Tibiscus*, 2, 1972, p. 12, pl. I/5-6; Gh. Lazarovici, Fl. Drașovean, Z. Kalmar, *Parța. Monografie arheologică, Bibliotheca Archaeologica et Historica Banatica*, 13, Muzeul Național al Banatului, Timișoara, 2001, volumul I, fig. 257; volumul 2, fig. 30/12; XXX 2008, pp. 138-139, photo 93.



The second vessel from the Developed Neolithic is from Bucovăț-Cremenîș<sup>19</sup>. It was found in the settlement from Banat and it is published by E. Lakó (Fig. 2). Gh. Lazarovici – the one who closely followed the research of this site – does not publish it (the vessel)<sup>20</sup>.

In the Eneolithic too, there are such vessels in the Gumelnița culture, at Oltenița (Photo 5)<sup>21</sup> or at Kurilo-Kremenica<sup>22</sup>. In the case of the vessel from Oltenița, it is ornamented in the style of the mentioned culture, but the mouths are extremely tall.

Also in the Eneolithic, in the Cucuteni culture can be documented vessels with two mouths, at Hoisești<sup>23</sup>, or with three mouths, at Costești-Cier<sup>24</sup>. The emergence of vessels with three mouths for mixing shows that more complicated rituals appear in some communities. It is hard to guess what this “complication” is, without analyzes of the contents of the vessel.

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Since the oldest Neolithic, we find another type of vessel – actually, two vessels, united – with two mouths for feeding/use at Deronia-Mostonga<sup>25</sup>.

This type of vessel also appears in the Sopot-Lengyel culture<sup>26</sup>, but also in the Cucuteni culture, such as the vessel from Parincea-Gâtul Grecului<sup>27</sup>. Such vessels are also located in Germany at Untereisenheim<sup>28</sup> and Heilbronn-Neckargertach<sup>29</sup>. Their use seems to be, rather, to mix liquids during direct sipping, so two liquids are mixed only by sipping.

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<sup>19</sup> E. Lakó, *op. cit.*, p. 45.

<sup>20</sup> Gh. Lazarovici, *Neoliticul Banatului*, volumul 1, p. 70-122, 188 (poz. 14, fig. 23 – references to Bucovăț group); volume 2, pl. I/F, XII, XXII/B1-9, XXIII-XXV.

<sup>21</sup> Oltenița: M. Wulschleger with J. Chamay and F. van der Wielen-van Ommeren, *op. cit.*, p. 105, fig. 53.

<sup>22</sup> P. F. Biehl, *Studien zum Symbolgut der Kupferzeit und des Neolithikums in Südosteuropa*. Saarbrücker Beiträge zur Altertumskunde, Bd. 64, Dr. Rudolt Habelt Verlag, Bonn, 2003, vol. 2, Taf. 53/624.

<sup>23</sup> C.-M. Lazarovici, Gh. Lazarovici, S. Țurcanu, *Cucuteni. A Great Civilisation of the Prehistoric World*, Iași, 2009, p. 177, Cat. 76.

<sup>24</sup> *Ibidem*, p. 98, Fig. 1.

<sup>25</sup> H. Schwarzberg, *Durch menschliche Kunst und Gedankengemacht*, in *Münchener Archäologischer Forschungen*, 1, 2011, Taf. 9/4; V. Becker, *Anthropomorphe plastik der westlichen Liniarbandkeramik*, in *SBA*, 68, Bonn, 2011, Taf. 131.

<sup>26</sup> C.-M. Lazarovici, Gh. Lazarovici, *Bucrania – Symbol and Sign. Monumental Bucrania. Part I*, in C. E. Ursu, A. Poruciu, C.-M. Lazarovici (eds.), *Between Earth and Heaven. Symbols and Signs. In memory of Henrieta Todorova*, Ed. Karl A. Romstorfer, Suceava, 2009, p. 231, Fig. 109e.

<sup>27</sup> I. Mareș (coord.), *Cucuteni culture art and religion/Kultura Cucuteni sztuka i religia*, Ed. Accent print, Suceava, 2009, p. 96, no. 169 – Cucuteni B.

<sup>28</sup> H. Schwarzberg, *op. cit.*, Taf. 62/3.

<sup>29</sup> *Ibidem*, Taf. 63/3.



At Tiszalúk-Sarkad, in Hungary<sup>30</sup> there is a quadrilateral vessel, specific to the period, but formed by joining two containers. In all likelihood, this is a variant of the type previously described.

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Finally, the last type of vessel using this dual mouth is that of Ichstedt<sup>31</sup>, in fact an anthropomorphic variant of an *askos*-type vessel, apparently having a role similar to the two previously described.

\*

Some conclusions are necessary.

First of all, we note that these artifacts – often – have anthropomorphic (Hacilar, Parța-tell I, Ichstedt) or zoomorphic attributes (Donja Branjevina). They are clearly linked to one of the rare human activities, namely to worship activities. The rarity of the appearance of these vessels shows us – once again – the same thing. Also, we believe that the vessels were made for a **one-time use** or for a **very small number of uses**, for a rare holiday, taking place – perhaps – only at very long intervals (that is why almost all of them are whole) and are stored – consequently, after use – in hardly accessible places. If you want, they're hidden.

Then, one can see that the vessels have – most of the times – two necks, usually parallel and tall (Hacilar, Cristian I, Zăuan-Dâmbul Cimitirului, Bucovăț-Cremeniș, Oltenița, Kurilo-Kremenica, Hoisești). As the time passes – with absolute rarity – three-necked vessels appear, suggesting the use of three substances to obtain the final mixture (Costești-Cier).

Also towards the end of the Eneolithic, communicating vessels appear, used for the same purpose (Deronia-Mostonga, Sopot-Lengyel, Parincea-Gâtul Grecului, Untereisenheim and Heilbronn-Neckargertach), but – again very rarely – also vessels for drinking liquids mixed on the spot (Ichstedt, Tiszalúk-Sarkad).

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Finally, we must thank all those who helped us to remove the vessel from Cristian I in good conditions from the soil (Claudiu Munteanu, Anca Nițoi, Adrian Georgescu, Florentina Marțiș, Adrian Luca), but also Professor Dr. Marin Cârciumaru (Târgoviște), due to whom we learned the chemical composition of the substance inside the vessel.

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<sup>30</sup> P. Patay, *Die kupferzeitliche Siedlung Tiszalúk-Sarkad*, in *PRAE in Honorem Henrieta Todorova*, Sofia, 2007, p. 164, Abb. 13/2.

<sup>31</sup> H. Becker, *op. cit.*, Taf. 77.





Photo 1. Cristian I. Feature C<sub>58</sub>. Ceramic vessel with two mouths for feeding/use. Starčevo-Criș I culture. Early Neolithic.



Photo 2. Cristian I. Feature C<sub>58</sub>. Ceramic vessel with two mouths for feeding/use. Starčevo-Criș I culture. Early Neolithic. Detail of the interior deposit.



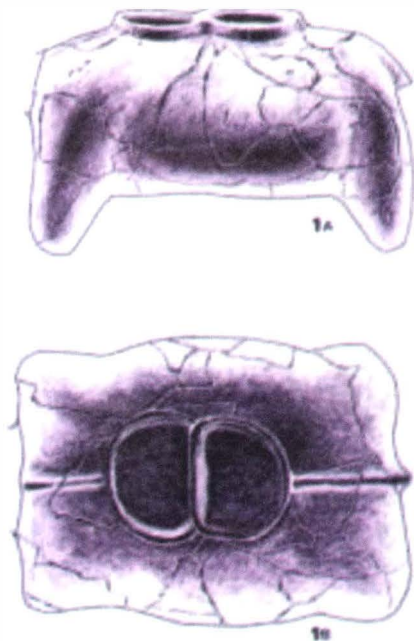


Fig. 1. Donja Branjevina.  
Zoomorphic vessel with two mouths  
for feeding/use. Starčevo-Criș I  
culture. Early Neolithic.



Photo 3. Zăuan-Dâmbul Cimitirului.  
Ceramic vessel with two mouths  
for feeding/use. Starčevo-Criș IVA  
culture. Early Neolithic.

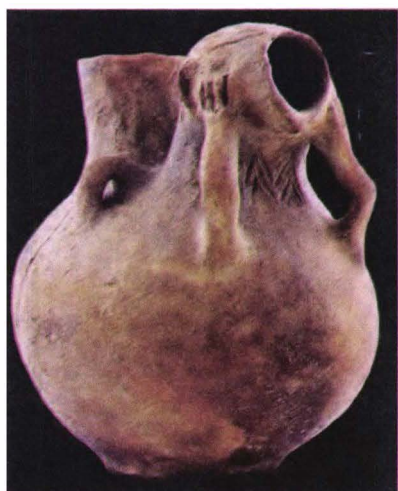


Photo 4. Parța, tell I. Vas  
Antropomorphic vessel with two  
mouths for feeding/use. Banat  
culture. Developed Neolithic.

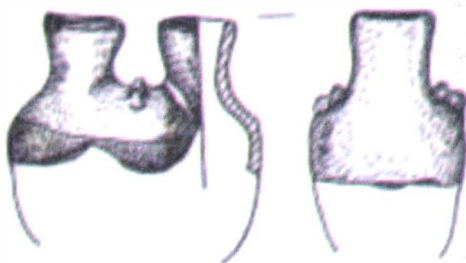


Fig. 2. Bucovăț-Cremeniș. Vessel with two  
mouths for feeding/use. Banat  
culture. Developed Neolithic.





Photo 5. Oltenița. Vessel with two mouths for feeding/use. Gumelnița culture. Eneolithic.



# **The Gumelnița lithic material discovered at Slava Rusă (Tulcea County)**

**FLORIAN MIHAIL\*, MIHAELA IACOB\*\*, DOREL  
PARASCHIV\*\*\***

**Abstract:** *The material presented in this contribution is composed of polished stone and flint objects discovered during the excavations and field researches deployed at the archaeological site Ibida (Slava Rusă). In our analysis were approached several aspects whose knowledge and interpretation contributes to a better understanding of the circuit covered by an object, between the stage as raw material block and that of an abandoned piece: the determination of the raw material, the typological distribution as well as making observations regarding the technology and use, where it was possible.*

**Key words:** *Ibida, Eneolithic, Gumelnița, lithic, flint, polished stone.*

## **Introduction**

The lithic material that is analysed in this contribution was identified during several archaeological campaigns between 2001-2012. The objects did not appear in a well preserved Gumelnița layer, the latter being disturbed by the roman habitation. A considerable number of objects were found while excavating the roman necropolis, but an important percentage originated from the surface researches done in the area of this archaeological site. Short mentions upon the existence of a Gumelnița habitation, attested in various research sectors from Ibida citadel such as Sector P (Pl. I/2), Curtina G (Pl. I/3) or Roman-Byzantine necropolis (Pl. I/2), were made in the archaeological literature<sup>1</sup>.

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\* Institutul de Cercetări Eco-Muzeale Tulcea, mail : [florianhamangia@yahoo.com](mailto:florianhamangia@yahoo.com).

\*\* Institutul de Cercetări Eco-Muzeale Tulcea.

\*\*\* Institutul de Cercetări Eco-Muzeale Tulcea.

<sup>1</sup> C. Bem, *Le corpus des stations Gumelnița entre Danube et Mer Noire (avec un regard sur Boian-Spanțov et Cernavoda I)*, in L. Carozza, C. Bem, C. Micu (eds.), *Société et environnement dans la zone du Bas Danube durant le 5<sup>ème</sup> millénaire avant notre ère*, Ed. Universității „Alexandru Ioan Cuza”, Iași, 2011, pp. 56-57; M. Iacob, V. H. Baumann, D. Paraschiv, C. Chiriac, N. Mirițoiu, M. Paraschiv, *Slava Rusă, com. Slava Cercheză, jud. Tulcea (Ibida). Punct: Cetatea Fetei*, in *CCA. Campania 2001*, București, 2002, p. 292; M. Iacob, D. Paraschiv, V. H. Baumann C. Chiriac, D. Aparaschivei, L. Mihăilescu-Bârliba, N. Mirițoiu, A. Soficaru, N. Sultana, V.



## Flint objects

The group of flint objects are formed of 45 exemplars, whose description and analyse will be presented in the next lines.

### Raw material

In what concerns the type of raw material, the macroscopic observations highlighted three big groups (Pl. II/1). The first two, have a homogeneous character, situated in contrast with heterogeneity of the third. From the first group (21 exemplars) are part objects that were obtained of a flint well known in the archaeological literature dedicated to the cultural complex KGK VI, under the name *balkanic flint*. This denomination is due to the fact that the most important deposits were identified in the Prebalkan Platform, located in the north-east of Bulgaria<sup>2</sup>. This type of raw material is yellow-honey (blonde), white spotted<sup>3</sup>.

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- Popescu, S. Stanc, A. Neagu, V. Nicolau, L. Istudor, G. Băcuță, M. Paraschiv, G. Nuțu, V. Piftor, *Slava Rusă, com. Slava Cercheză, jud. Tulcea [Ibida]*, in *CCA. Campania 2002*, București, 2003, pp. 298-299; M. Iacob, S. Pârâu, D. Paraschiv, M. Petrescu V. Panait, A. Doboș, (*L*)*Ibida. Slava Rusă*, Bibliothèque Istro-Pontique. Série Monumentae, Tulcea, 2005, p. 9; M. Iacob, D. Paraschiv, G. Nuțu, C. Chiriac, D. Aparaschivei, L. Munteanu, L. Mihăilescu-Bîrliba, S. Stanc, A. Doboș, G. Popescu, N. Mirițoiu, A. Soficar, N. Sultana, M. Gătej, C. Haită, A. Neagu, A. Suharovschi, V. Piftor, N. Midvichi, F. Scurtu, A. I. Merciu, F. Creangă, O. M. Meiu, *Slava Rusă, com. Slava Cercheză, jud. Tulcea (Ibida). Punct: Cetatea Fetei*, in *CCA. Campania 2004*, București, p. 351; M. Iacob, D. Paraschiv, G. Nuțu, C. Chiriac, D. Aparaschivei, L. Munteanu, L. Mihăilescu-Bîrliba, S. Stanc, A. Doboș, G. Popescu, I. Achim, A. Neagu, N. Mirițoiu, A. Soficar, N. Sultana, M. Gătej, M. Mocanu, A. Suharovschi, D. Ene, N. Midvichi, I. Constandache, V. Covaci, C. Muja, *Slava Rusă, com. Slava Cercheză, jud. Tulcea (Ibida). Punct: Cetatea Fetei*, in *CCA. Campania 2005*, București, 2006, p. 331; M. Iacob, D. Paraschiv, G. Nuțu, M. Mocanu, C. Chiriac, D. Aparaschivei, L. Munteanu, L. Mihăilescu-Bîrliba, A. Neagu, A. Doboș, G. Popescu, I. Achim, N. Mirițoiu, A. Soficar, M. Gătej, S. Stanc, V. Piftor, N. Midvichi, S. Lazăr, Gheorghită, C. Prisacaru, E. Adam, F. Picinicu, R. Zaharia, M. Perju, M. Lehoneac, I. Șerbănescu, A. Costaș, C. Iacob, B. Voicu, M. Nagă, I. Acrudoe, G. Dumbravă, V. Cotoran, *Slava Rusă, com. Slava Cercheză, jud. Tulcea (Ibida). Punct: Cetatea Fetei*, in *CCA. Campania 2006*, București, p. 336.
- <sup>2</sup> L. Manolakis, *Les industries lithiques énéolithiques de Bulgarie*, Internationale Archäologie, 88, 2005, Verlag Marie Leidorf GmbH · Rahden/Westf, p. 35; C. Bonsall, M. Gurova, Ch. Hayward, C. Nachev, N. Pearce, *Characterization of "Balkan Flint" artefacts from Bulgaria and the Iron Gates using LA-ICP-MS and EPMA*, in *Interdisciplinary Studies, XXII-XXIII*, 2010, p. 10; L. Niță, C.-E. Ștefan, *Considerații privind materialul litic din așezarea de la Cunești-, Măgura Cuneștilor" (jud. Călărași)*, in *SCIVA*, 62, 2011, 3-4, p. 196; M. Gurova, *Early Neolithic site of Kovačevo: a case study of 'Balkan Flint' formal toolkit*, in *Studia Praehistorica*, 14, 2011, p. 72; Eadem, *Prehistoric flint assemblages from Bulgaria: a raw material perspective*, in *CCDJ*, XXVIII, 2011, p. 98; Eadem, *'Balkan Flint' – fiction and/or trajectory to Neolithization: Evidence from Bulgaria*, in *Be-Ja*, 1, 2012, p. 15; M. Gurova, P. Andreeva, E. Ștefanova, Y. Ștefanov, M. Kočić, D. Borić, D., *Flint raw material transfers in the Prehistoric Lower Danube Basin: An integrated analytical approach*, in *JAS: Reports*, 2016, p. 423; P. Biagi, E. Starnini, *Pre-Balkan Platform Flint in the Early Neolithic Sites of the Carpathian Basin: Its Occurrence and Significance*, in A. Anders and G. Kulcsár with G. Kalla, V. Kiss and G. Szsabó



The grain has a high quality, and its aspect is and often shiny. The second group (13 exemplars) contains elements obtained from a yellowish with various shades flint and rarely from a grey one. The grain is medium quality, while the aspect is matte and opaque. The last group is formed of six components (10 exemplars). The best representation (four ex.) was determined for a brown with small white inclusions flint. At the contact with the cortical area it presents a white line. Other two exemplars have a grey colour, high quality grain, shiny and opaque aspect. Rare white inclusions, with a sporadic disposition are visible in this type of raw material too. Through a single element were attested the next types of flint: beige, high quality grain, semi-translucent and shiny aspect; black, high quality grain, shiny and opaque; reddish, high quality grain, shiny and translucent; white, medium quality grain, matte and opaque aspect; dark greyish limestone with numerous white inclusions.

### **Blanks**

The production of blanks is dominated by blades (31 exemplars) (Pl. III/a). Most of them represent mesial fragments (21 ex.), the rest being, with one exception, proximal fragments. Between these, we determined 17 blades with trapezoidal section and six with triangular section. In what concerns the type of raw material used for knapping the blades, the ratio is balanced. From the first type of raw material (*balkanian flint*) were obtained 18 exemplars, while from the second type, we determined 13 exemplars. The other blades were knapped from black, white and grey flint. The ratio width/thickness (Pl. II/2) shows a pronounced uniformity of blades morphology, the vast majority being situated between 17-25 mm (width) and 4-8 mm (thickness).

The proximal fragments derived from *balkanian flint* blades present characteristics specific to indirect percussion technique, attested also on other Gumelnița sites from Northern Dobrogea<sup>4</sup>. The characteristics of the blades knapped from the other types of raw material are partly different. Some present a bulb not very pronounced and angle butt/axis inferior to 80°, which corresponds to direct percussion executed with a soft hammer. Others have a flat butt and pronounced thickness that seem to point as technique the direct percussion with a hard hammer<sup>5</sup>. The vast majority of blades come from the full *débitage* stage, but

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(eds.), *Moments in Time. Papers presented to Pál Raczky on His 60<sup>th</sup> Birthday*, Budapest, 2013, p. 48.

<sup>3</sup> P. Biagi, E. Stanini, *op. cit.*, p. 48.

<sup>4</sup> R. Furestier, F. Mihail, *L'industrie lithique taillée de Taraschina*, in L. Carozza, C. Bem, C. Micu (eds.), *Société et environnement dans la zone du Bas Danube durant le 5<sup>ème</sup> avant notre ère*, Ed. Universității „Alexandru Ioan Cuza”, Iași, 2011, p. 374; Carozza et alii 2014, p. 250; F. Mihail, C.-E. Ștefan, *Obiecte din piatră și materii dure animale descoperite în tell-ul de la Baia, jud. Tulcea*, in C.-E. Ștefan, M. Florea, S.-C. Ailincăi, S. Micu (eds.), *Studii privind preistoria sud-estului Europei. Volum dedicat memoriei lui Mihai Șimon*, Muzeul Brăilei. Ed. Istros, 2014, p. 271.

<sup>5</sup> J. Pelegrin, *Les techniques de débitage laminaire au Tardiglaciaire : critères de diagnose et quelques réflexions*, in *Mem. Musée Prehist.*, 7, Paris, 2000, p. 77.



we also identified an exemplary resulted from the stage of preparing the nucleus (Pl. VII/7).

The five flakes were knapped from different types of raw material. Three of them represent robust exemplars (30-40 mm). All were obtained through hard direct percussion.

We have also identified three exemplars of laminar flake type. One was knapped of greyish limestone and it is conserved as a mesial fragment (width-22 mm; thickness-8 mm). The other two elements were obtained of beige flint.

### Typology

From the 45 exemplars discovered at Slava Rusă, 39 represent finished objects. The typology is dominated by the blades with retouched edges (Pl. VI/6-7; VII) and end-scrapers (Pl. VI/1-4; 8) (Tab. 1), a situation typical to the Gumelnița sites<sup>6</sup>.

For the objects with retouched edges (15 ex.) were used six different types of flint, the best representation having the *balkanic* and the yellowish flint. The vast majority (10 ex.) were made on blades. We noticed a preference for the mesial fragments (five ex.) and for the unbroken blanks (four ex.). Three objects present pronounced traces of use-wear, as bluntness and gloss. The bluntness was observed on two exemplars, in one case occupying both edges and the proximal extremity. One exemplary, made on laminar flake, presents on one of the edges a very developed area of gloss.

The ten end-scrapers identified in this group were worked, almost entirely, on *balkanic flint* (six ex.) (Pl. VI/1-4, 8). Nine objects were made on blades, and in one case, on a flake. We noticed a preference for proximal (five ex.) and mesial (three ex.) fragments. From the dimensions point of view the end-scrapes group is rather homogeneous (Pl. II/3).

With the exception of an *unguiforme* end-scraper, the rest are simple ones. Traces of use-wear were observed on two exemplars as bluntness (on the front) and gloss (on an edge).

A good numerical presence, related to the dimensions of the analysed group, also have the objects with retouched edges. These constitute elements used under the form obtained during the *debitage*, without posterior transformations. In this case there were registered only blades for whose *debitage* it wasn't noticed a preference for a certain type of raw material. On the edges of three blades is visible the gloss (Pl. IV-V).

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<sup>6</sup> R. Furestier, F. Mihail, *op. cit.*, p. 374-375; F. Mihail, C.-E. Ștefan, *op. cit.*, pp. 272-274; L. Carozza, C. Micu, S. Ailincăi, F. Mihail, J.-M. Carozza, A. Burens, M. Florea, *Cercetări în așezarea-tell de la Lunca (com. Ceamurlia de Jos, jud. Tulcea)*, in C.-E. Ștefan, M. Florea, S.-C. Ailincăi, C. Micu (eds.), *Studii privind preistoria sud-estului Europei. Volum dedicat memoriei lui Mihai Șimon*, Muzeul Brăilei, Ed. Istros, 2014, p. 250; R. Furestier, F. Mihail, L. Manolakis, S. Philibert, L. Carozza, C. Micu, *Les industries lithiques énéolithiques de la Dobroudja du Nord*, in MCA, S.N., XIII, 2017, p. 219.



The reuse of end-scrapers as splintered pieces (Pl. III/b; VI/5; VIII), confirmed on some of the Gumelnița settlements from the Northern Dobroudja<sup>7</sup>, was also observed on the material from Slava Rusă (six ex.). Other four objects were too affected by this type of functioning and it is no longer possible to establish their anterior forms.

The last type identified is represented by a blade that has truncations at both extremities, normal towards the proximal extremity and oblique towards the distal extremity.

### **Polished stone objects**

Less numerous, the polished stone group is formed of 16 elements.

#### *Typology*

The main criterion in defining the types was the shape of the active part. The two smaller groups resulted are presented hereinafter.

#### *I. Artefacts with linear active part*

##### **I.A. Chisel.**

In this type was introduced only one well preserved exemplar (L-26 mm; W-17 mm; T-9 mm)<sup>8</sup> made of limestone (Pl. IX/1; XI/1).

The chisel has a rectangular form. The edges, the butt and the active part are all straight. The surface conserves the traces of shaping through abrasion, executed longitudinal on the edges and oblique on the two faces. The active part was worked through the same technique, but with more intensity. The traces of use-wear are visible on the butt, as bluntness. The reworking of the active part, on both faces, indicates the development of an important use-wear also on this area.

##### **I.B. Adze.**

This type is represented by two artefacts (1. L-46 mm; W-43 mm; T-13 mm; 2. L-105 mm; W-49; T-38 mm), both made of basalt (Pl. IX/2-3; XI/2).

The first adze has a trapezoidal shape. The edges and the active part are straight. The butt is not regular because of the deterioration. One of the faces is slightly convex, while the other is rectilinear. The intense polishing, through abrasion, eliminated the traces created during the shaping. The use-wear is very pronounced and visible at both extremities. Both, the butt and the active part are blunt. They are covered by gloss and the negatives appeared by the detaching of flakes. Another prove of the intense use-wear is the reworking of the active part, which got an oblique aspect.

The second adze has also a trapezoidal shape. The faces and the edges are convex. The butt appears to have been straight, while the active part is much deteriorated. Its surface bears the traces of shaping and polishing through

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<sup>7</sup> R. Furestier, F. Mihail, *op. cit.*, p. 376; L. Carozza, C. Micu, S. Ailincăi, F. Mihail, J.-M. Carozza, A. Burens, M. Florea, *op. cit.*, p. 253; F. Mihail, C.-E. Ștefan, *op. cit.*, p. 277.

<sup>8</sup> Size abbreviations: L-length; W-width; T-thickness.



abrasion. The butt and the active part are very fragmented because of the cracks produced during the functioning.

#### I.C. Axe

##### I.C.a. Flat axe

Three such artefacts we have identified, two made of basalt and one of limestone. The first two are in a precarious state of preservation (Pl. IX/4-6).

The first exemplar conserves only one of the faces. Its shape appears to have been trapezoidal, with convex edges. The surface indicates an intense polishing. The use of this object in activities that necessitated the reception of hard shocks led to its breaking. On the surface of the active part are visible the negatives of the flakes detached during the functioning.

The second axe preserves the distal extremity and partially, the mesial one. The axe has a reduced volume (W-37 cm; T-22 cm) and had a rectangular shape. The active part has a convex shape, while the edges are straight. The polishing was executed on the faces and the active part, while the edges are only shaped. The distal extremity is blunted and presents detachments of small dimension flakes. The breaking of the object and by this, the loss of the proximal extremity can be linked with the functioning.

The last flat axe is well preserved (L-112 mm; W-50 mm; T-35 mm) (Pl. XI/3). The artefact has a rectangular shape. The butt and the active part are convex. One of the edges is straight, while the other is oblique. The faces have an irregular aspect because of the traces produced through direct percussion during the shaping. The abandon happened before finishing the working process. This object did not enter in the functional circuit.

##### I.V.b. Perforated axe

We have identified two perforated axes, both made of basalt (Pl. IX/7-8). The two artefacts are precarious preserved. They were broken around the perforations and conserved the distal extremity and partially the mesial part. The perforations are circular.

The first axe (W-36 mm; T-38 mm) has straight faces, convex edges and active part (Pl. XI/4). The entire surface was very well polished. During this action were eliminated the traces of shaping. In the central area was perforated through circular movement. The active part is used. Its surface presents traces of bluntness, gloss and also the negatives from the detachment of small flakes.

The second perforated axe has straight faces, convex edges and a linear active part. Its surface was only shaped, unlike the previous artefact presenting many irregularities. The perforation wasn't finalized. The breaking of the axe probably happened while making it. This object never entered the functional circuit.

## *II. Artefacts where the active part is the partial or total part surface of the artefact*

### II.A. Hammerstone

Three such objects were identified. The hammerstones were made of limestone (two ex.) and quartzite (one ex.) (Pl. X/3-4, 6).



All have oval shape (1. 61/52 mm; 2. 74/59 mm; 3. 83/69 mm), that became irregular because of the usage. The surfaces were regularized through abrasion, performed more pronounced on the quartzite exemplar. The objects made of limestone present cracks on a large part of their surfaces. Some of the negatives visible on them stand prove for the *debitage* of flakes, probably made in order to test these raw material blocks. The quartzite hammerstone is a little bit flattened on two areas, aspect due to a short use as a grinder.

## II.B. Whetstone

In this type entered two objects made of shale, both fragmented (Pl. X/1-2).

The two blocks were used for the most part in their natural form. The edge of one whetstone was regularized through abrasion. The orientation of the functioning traces differ: on one's surface they are traverse and have a compact organization, while on the second, the striations are longitudinal and have a sporadic disposition. On the whetstone with transverse striations it is visible that the central area of the superior face became concave because of the intense usage. The rarity that characterizes the traces from the other whetstone corroborated with the total lack of technical gestures point out the use for a very short time.

## II.C. Grinder

The only object from this type was made of shale and is well preserved (Pl. X/5). Its shape is rectangular, with rounded edges (L-129 mm; W-80 mm; T-49 mm). The surface was regularized through an intense executed abrasion. One of the faces is much flattened because of the usage. On its surface is visible a group of longer striations with an oblique disposition. These striations correspond to a short usage as whetstone.

## II.D. Quern

In this type were included two exemplars with a precarious state of preservation, made of sandstone (Pl. X/7-8).

The preserved fragments are too small in order for us to be able to determine the shape of the objects. One of the raw material blocks was used in its natural form. The superior face became concave during the functioning. The second was shaped through direct percussion and abrasion. We remark a very intense shaping, more than is typical for this kind of tool. The traces of use wear are also very pronounced and they are present as gloss and bluntness.

## Observations

Between the flint objects it was determined a predominance of those made of *balkanic flint*, situation similar to that registered on other Gumelnița sites from Northern Dobroudja<sup>9</sup>. At Slava Rusă we remark the existence of a balance between the imported raw material and the one considered to be local. In absence

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<sup>9</sup> L. Carozza, C. Micu, S. Ailincăi, F. Mihail, J.-M. Carozza, A. Burens, M. Florea, *op. cit.*, p. 247; F. Mihail, C.-E. Ștefan, *op. cit.*, p. 268; R. Furestier, F. Mihail *op. cit.*, p. 365.



of a consistent group of objects and of researches on a clear Gumelnița context, we cannot develop this observation.

The small group analysed on this occasion fits the Gumelnița *pattern* also from blanks production and typology perspective. In the blanks production, the vast predominance of blades stands out. They are mostly represented by mesial fragments. Most part of the inventory is composed of finished objects, situation influenced by the archaeological context. To give an example, there are small chances for the shaping flakes, which usually have reduced dimensions, to appear during the field researches or in context such as the one from Slava Rusă in which the Gumelnița habitation was largely disrupted by the posterior roman presence. Despite the reduced number of objects, the typological inventory presents an image typical to Gumelnița series, characterized by the predominance of end-scrapers and blades with retouched edges or the reuse of end-scrapers as splintered pieces.

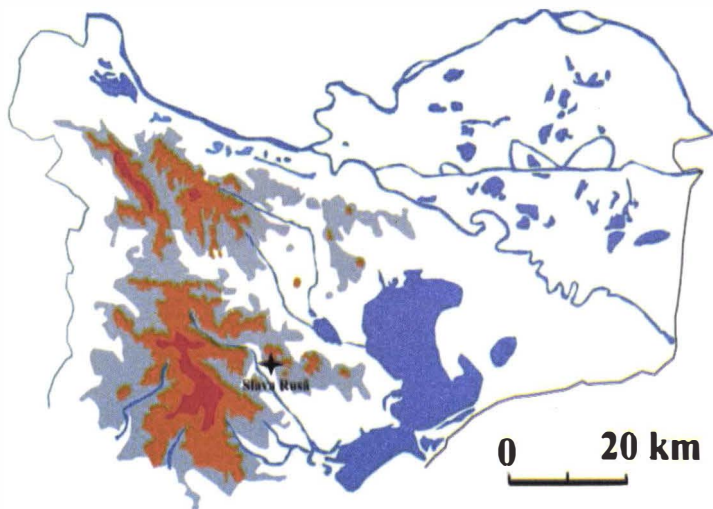
In what concerns the polished stone objects we remark the preference for transforming the volcanic rocks (basalt) in objects with a linear active part (axes, adzes), as well as transforming the sedimentary rocks (sandstone, shale) in objects with tribological role. This relation between the physical characteristics of the worked rocks and the type of tool/weapon was also observed on other Gumelnița sites from Northern Dobroudja<sup>10</sup>. The vast majority of the objects are used, with a variable intensity. The identification of an axe fragmented during working, seems to indicate, that at least in some measure, this process was deployed on the site or in its proximity.

<b>Finished objects/Blanks</b>	<b>Blade</b>	<b>Flake</b>	<b><i>Eclat laminaire</i></b>	<b>Indet.</b>	<b>Total</b>
End scraper	9	1			10
Blades with lateral retouches	11	2	1	1	15
Blades with utilization retouches	6			1	7
Splintered pieces	4			2	6
Truncation	1				1
Total	31	3	1	4	39

Table. 1. The ratio between the finished objects and the used blanks.

<sup>10</sup> F. Mihail, C. Micu, *Polished stone objects at Trestenic tell settlement (Nalbant, Tulcea county)*, in Peuce, S.N., XIV, Tulcea, 2016, p. 33.





1



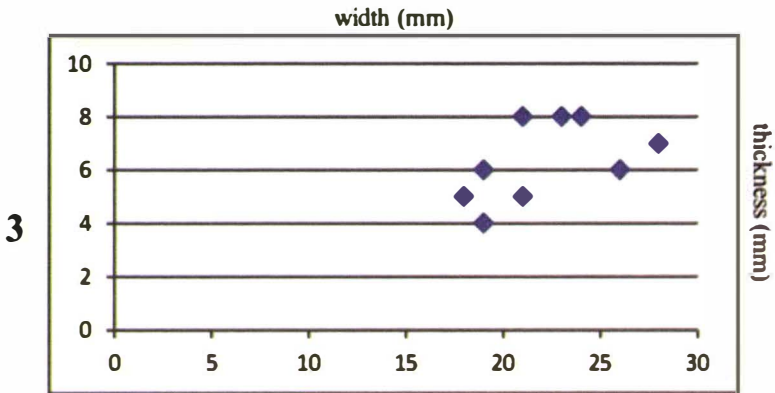
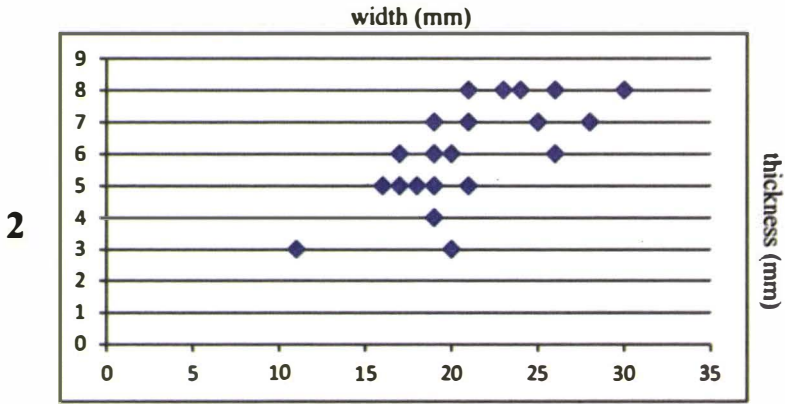
2



3

Pl. I. The geographical position of the locality Slava Rusă (1); The areas where most of the Gumelnița lithic objects were found: Sector P and the roman necropolis (2) and Curtina G (3).





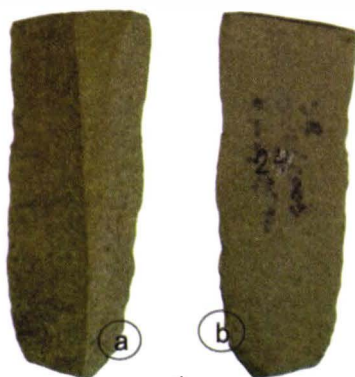
Pl. II. 1. The types of raw material identified in the group of Gumelnița flint objects discovered at Slava Rusă; 2. Ratio width/thickness blades; 3. Ratio width/thickness end-scrapers.





Pl. III. Flint objects from Slava Rusă: a, blade fragments; b, splintered pieces.





1



a



b



2



a



b

Pl. IV. Blades from Slava Rusă: 1, blade with gloss on the edge; 2, blade with gloss (a) and bluntness (b) on the edge.





1



a



b



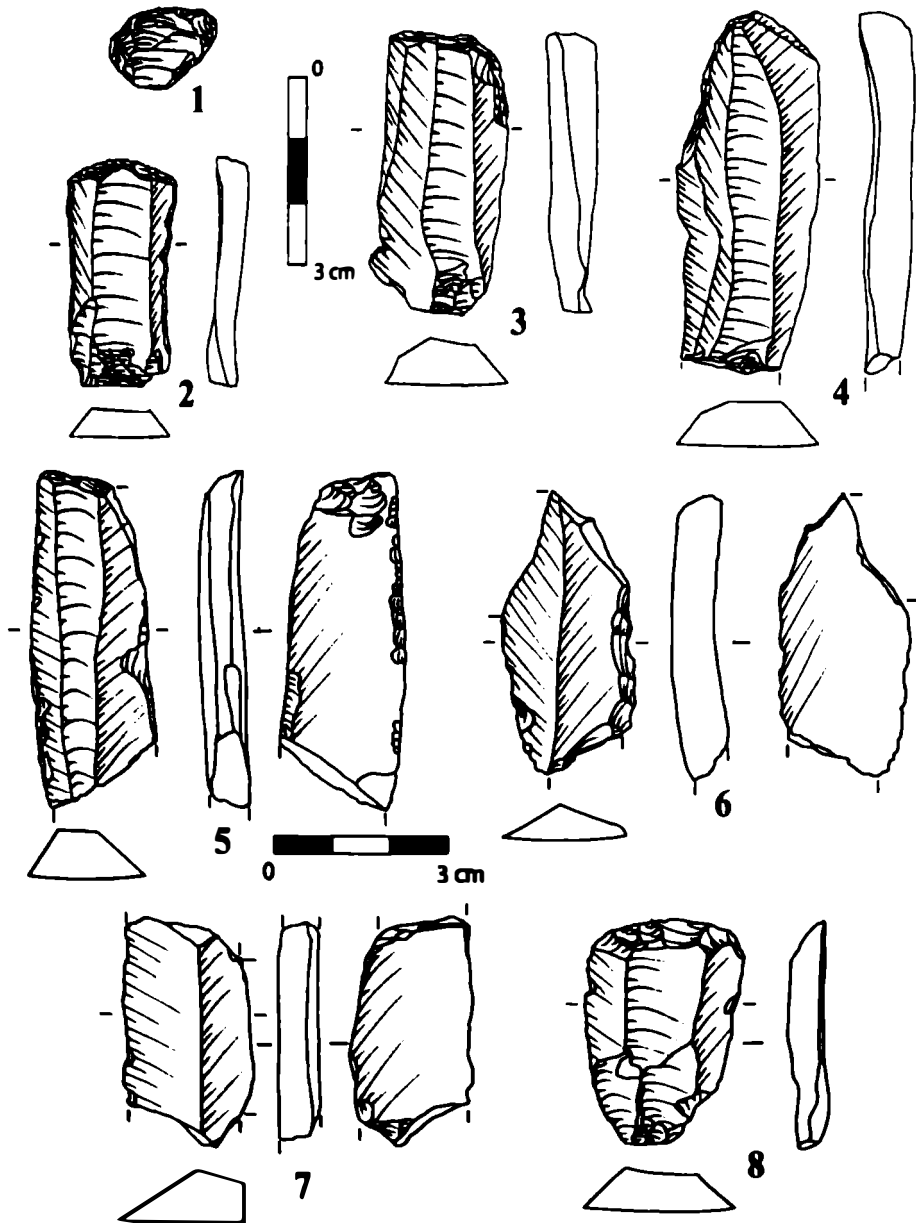
2



a

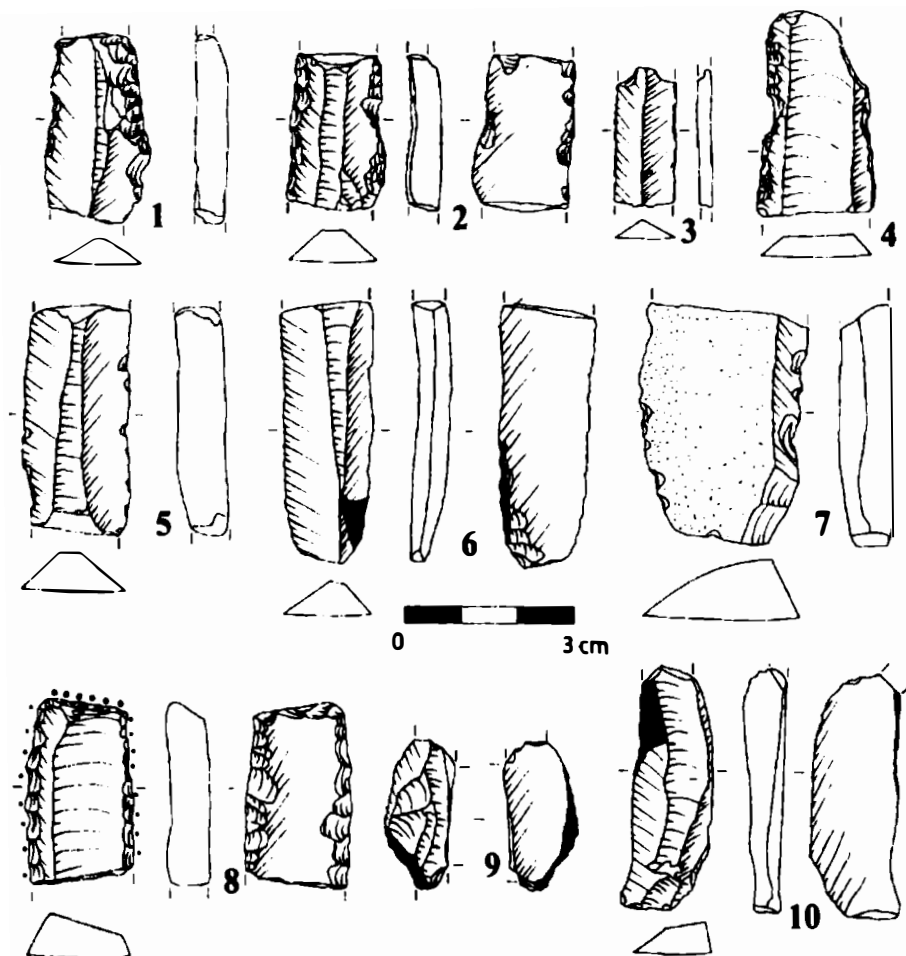
Pl. V. Flint objects from Slava Rusă with gloss on the edges.





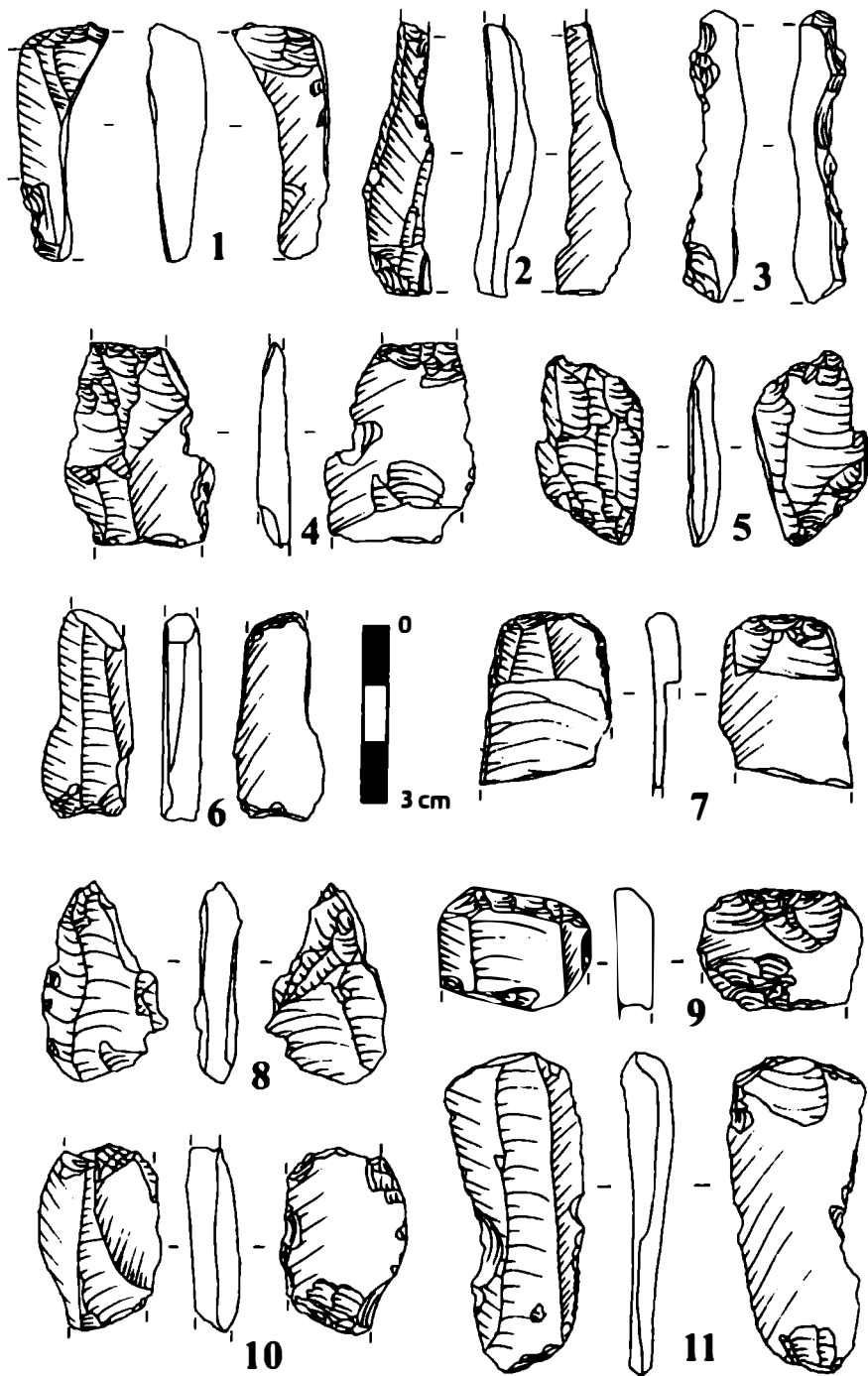
Pl. VI. Flint tools discovered at Slava Rusă.





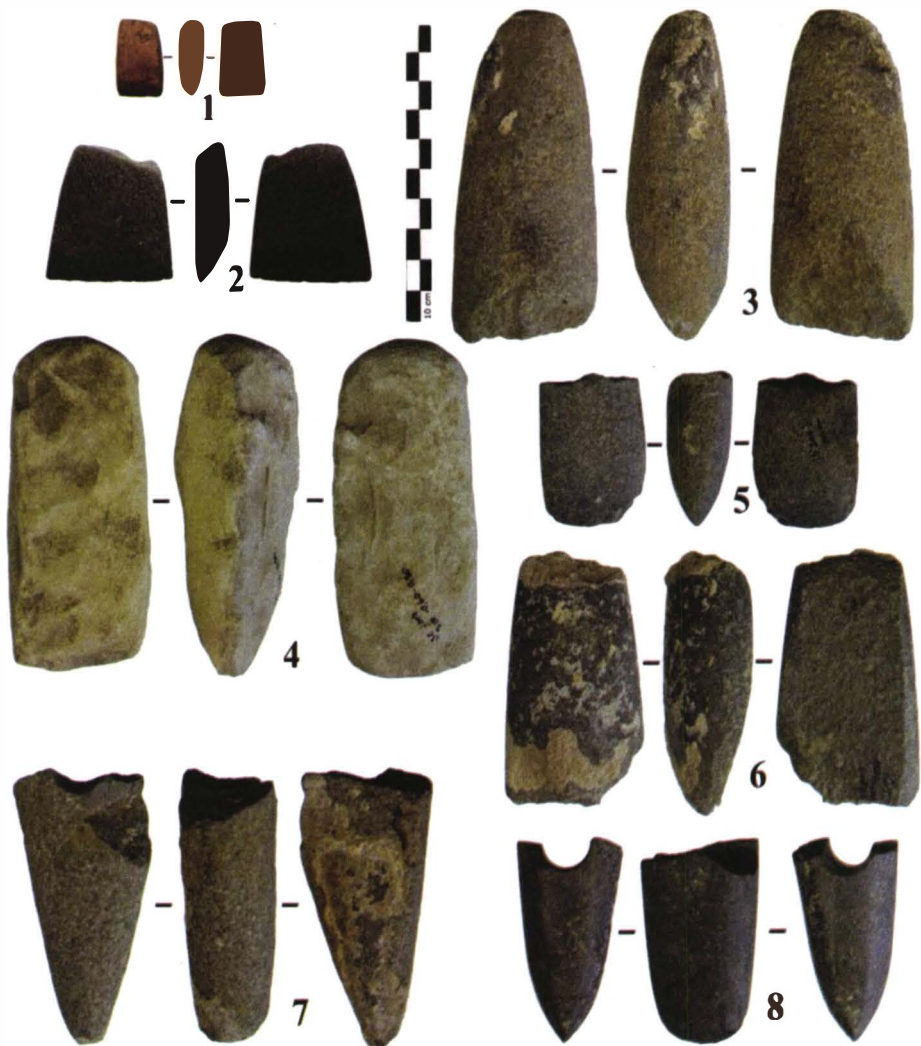
Pl. VII. Flint blades dicovered at Slava Rusă.





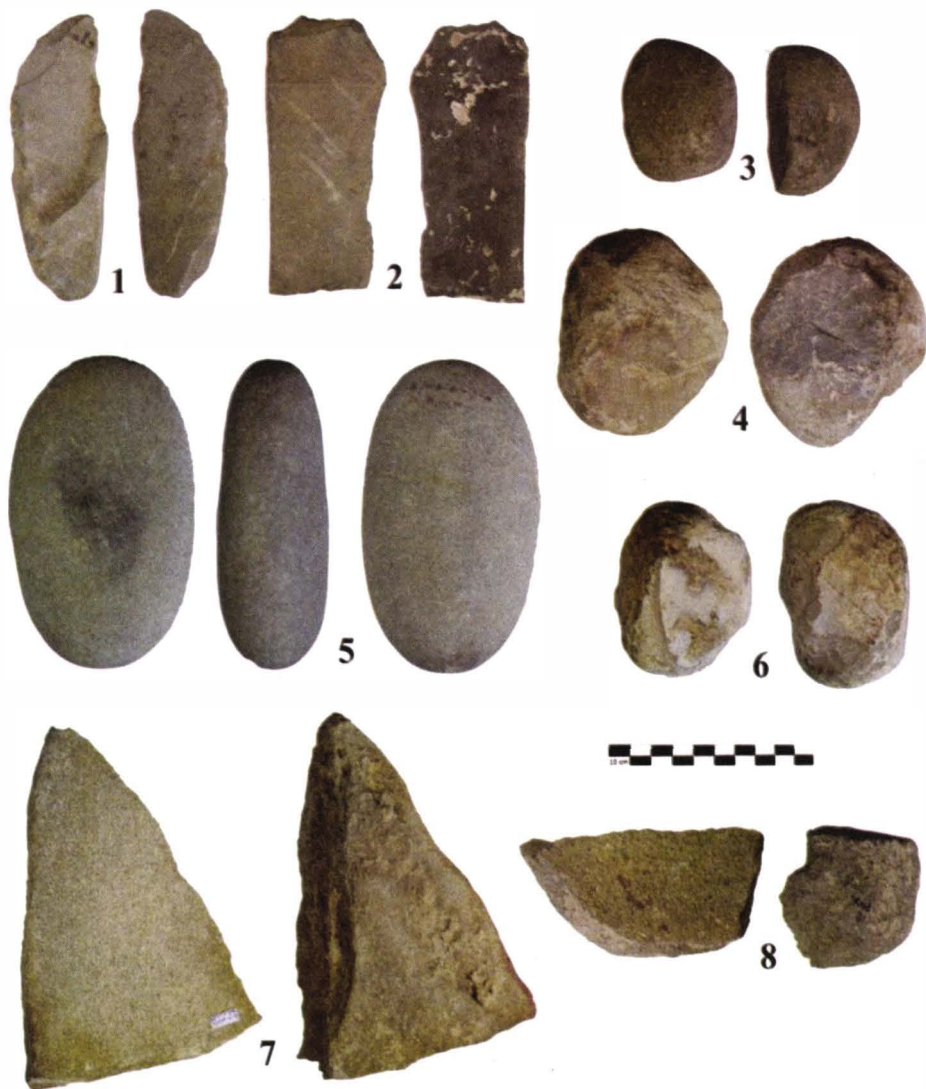
Pl. VIII. Flint splintered pieces discovered at Slava Rusă.





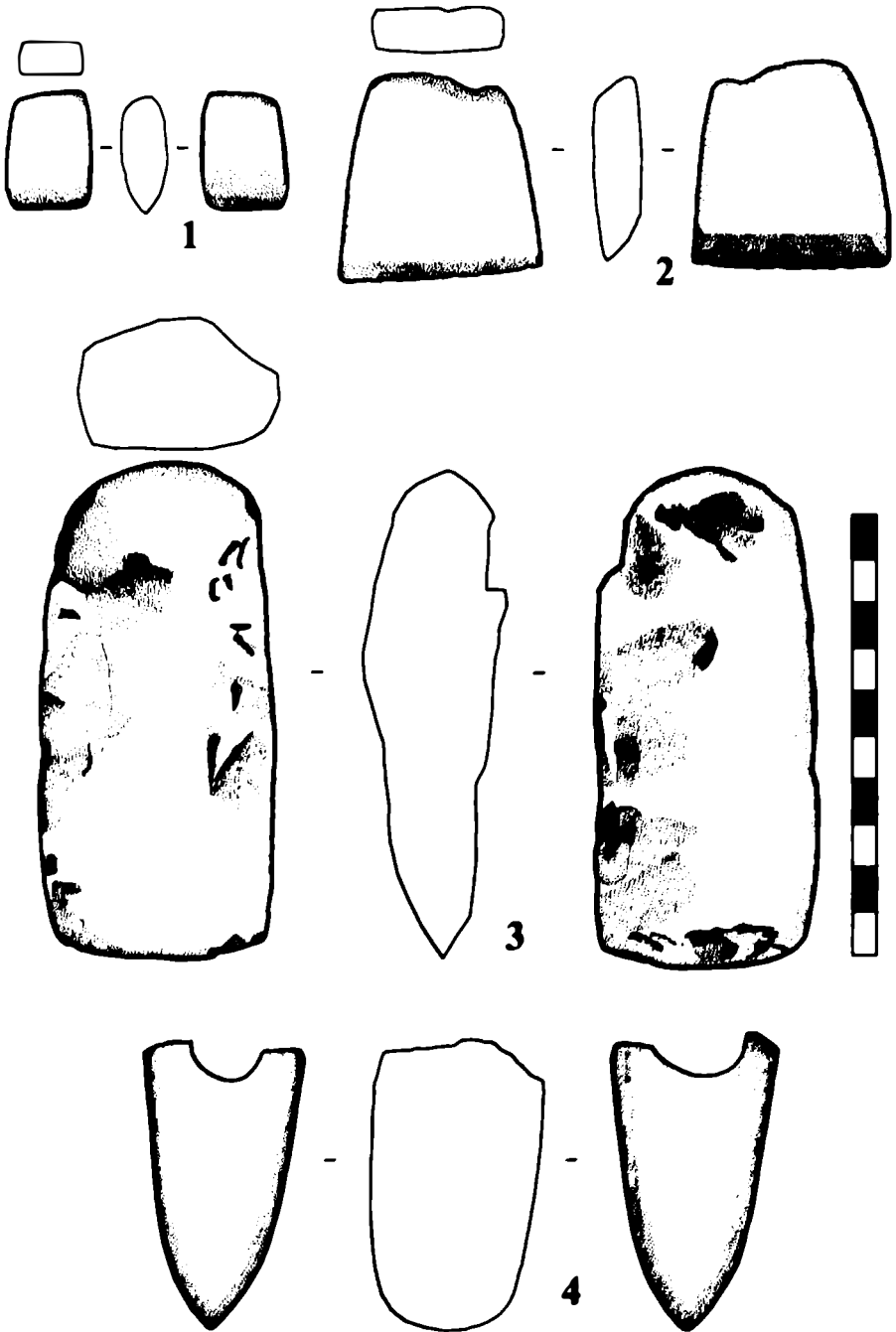
Pl. IX. Polished stone objects discovered at Slava Rusă: 1, chisel; 2, adze; 3-8, axes.





Pl. X. Polished stone objects discovered at Slava Rusă: 1-2, whetstones; 3-4, hammerstones; 5, grinder; 6, hammerstone; 7-8, querns.





Pl. XI. Polished stone objects discovered at Slava Rusă: 1, chisel; 2, adze; 3-4, axes.







# Chalcolithic archaeofauna at Fulgeriș (Bacău County, Romania): a preliminary assessment of resources

LUMINIȚA BEJENARU\*, LĂCRĂMIOARA-ELENA ISTINA\*\*

**Abstract:** *The present study is an archaeozoological approach to the Chalcolithic site of Fulgeriș (Bacău County, Romania), that reveals the main animal resources used by the prehistoric community of Cucuteni A culture. The faunal remains, discovered during the excavations from 2005 to 2014, are described in terms of frequency, using as quantification parameter the number of identified specimens (NISP), as well as in terms of age selection. The main animal resources, emphasized by the archaeozoological analysis were, as following: animal husbandry, hunting and harvesting of molluscs. As domestic animals, cattle, sheep/goat and pig are prevailing in terms of frequency. Hunting was well practiced, having a secondary importance as meat resource; red deer was the preferred game species. Harvesting of molluscs seems to have been of very low importance.*

**Keywords:** *Archaeozoology, Chalcolithic, Cucuteni culture, Fulgeris, animal resources*

## Introduction

The prehistoric settlement from Fulgeriș - *La 3 cireși/Dealul Fulgeriș* (Bacău County, Romania) is located in the Tutova Hills, on the left side of the Siret River. Fulgeriș occupies the western part of the Tutova Hills as a subunit of the Bârlad Plateau. The limits that best point to the contact of some distinct areas of the natural environment are, in particular, the southern one - the Fulgeriș stream, and the north-western one - the Soci stream; so, the site occupies an interfluvial area. The eastern limit is represented by a small tributary of the Fulgeriș stream and to the west by Cristea Hill, extending the Fulgeriș Hill, which delimits the western boundary of the Bârlad Plateau towards Siret (Fig. 1).

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\* "Alexandru Ioan Cuza" University of Iași, Faculty of Biology, Romania; Romanian Academy – Iași Branch, "Olga Necrasov" Centre of Anthropological Research; corresponding author, lumib@uaic.ro

\*\* "Iulian Antonescu" Museum Complex of Bacău, Romania, mail. lacramioaraist@yahoo.com



The archaeological site is known from the surface investigations undertaken in the '60s of the 20<sup>th</sup> century by the archeologists Marilena Florescu and Viorel Căpitan; then, in the '80s, Viorel Căpitanu<sup>1</sup> made an archaeological survey, mentioning that a rich site belonging to the Cucuteni culture was discovered.

The stratigraphy of the archaeological site at Fulgeris is as follows: the oldest level is dated in the Chalcolithic period, the Cucuteni culture, stage A3; follows a level dating to the Bronze Age, the Monteoru culture; the last level of habitation being from Iron Age, the Geto-Dacian period, 1<sup>st</sup> century BC – 1<sup>st</sup> century A.D.

Latest archaeological excavations were carried out during the years 2003-2015<sup>2</sup>, when an area of 693.5 m<sup>2</sup> was explored (the entire site covers an area of about one hectare and a half).

The surface was delineated by the archaeomagnetic scans made on the site in 2009 by a team of the ARHEOINVEST Department ("Alexandru Ioan

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<sup>1</sup> V. Căpitanu, *Cercetări arheologice de suprafață pe teritoriul județului Bacău (II)*, in *Carpica*, XIV, 1982, p. 148.

<sup>2</sup> Al. Artimon, L. E. Istina, M. A. Istina, I. David, *Fulgeriș, com. Pâncești, jud. Bacău, Punct Dealul Fulgeriș/ La 3 cireși*, in *CCA. Campania 2003*, București, 2004, pp. 124-125; L. E. Istina, F. A. Tencariu, *Fulgeriș, com. Pâncești, jud. Bacău, Punct Dealul Fulgeriș/ La 3 cireși*, in *CCA. Campania 2004*, București, 2005, pp. 152-153, pl. 15; L. E. Istina, *Observații privind cercetările arheologice în situl cucutenian de la Fulgeriș, jud. Bacău. Campania 2004*, in *Carpica*, XXXIV, 2005, pp. 55-74; L. E. Istina, D. O. Boldur, M. A. Istina, *Fulgeriș, com. Pâncești, jud. Bacău, Punct Dealul Fulgeriș/ La 3 cireși*, in *CCA. Campania 2005*, București, 2006, pp. 162-166, pl. 29; L. E. Istina, D. O. Boldur, D. David, L. Ursachi, *Fulgeriș, com. Pâncești, jud. Bacău, Punct Dealul Fulgeriș/ La 3 cireși*, in *CCA. Campania 2006*, București, 2007, pp. 158-160, pl. 36; L. E. Istina, D. David, *Fulgeriș, com. Pâncești, jud. Bacău, Punct Dealul Fulgeriș/ La 3 cireși*, in *CCA. Campania 2007*, București, 2008, pp. 139-141; L. E. Istina, *Fulgeriș, com. Pâncești, jud. Bacău, Punct: Dealul Fulgeriș/ La 3 cireși*, in *CCA. Campania 2008*, București, 2009, pp. 301-303; L. E. Istina, A. Asăndulesci, D. M. Vornicu, B. Venedict, R. Balaur, *Fulgeriș, com. Pâncești, jud. Bacău, Punct: Dealul Fulgeriș/ La 3 cireși*, in *CCA. Campania 2009*, București, 2010, p. 123; L. E. Istina, D. David, *Fulgeriș, com. Pâncești, jud. Bacău, Punct: Dealul Fulgeriș/ La 3 cireși*, in *CCA. Campania 2010*, București, 2011, p. 9; L. E. Istina, V. Bucșă, *Fulgeriș, com. Pâncești, jud. Bacău, Punct: Dealul Fulgeriș/ La 3 cireși*, in *CCA. Campania 2011*, București, 2012, p. 117; L. E. Istina, V. Bucșă, S. Gania, F. A. Tencariu, *Fulgeriș, com. Pâncești, jud. Bacău, Punct: Dealul Fulgeriș/ La 3 cireși*, in *CCA. Campania 2012*, București, 2013, pp. 162-163; L. E. Istina, V. Bucșă, *Fulgeriș, com. Pâncești, jud. Bacău, Punct: Dealul Fulgeriș/ La 3 cireși*, in *CCA. Campania 2013*, București, 2014, pp. 179-182; Idem, *Fulgeriș, com. Pâncești, jud. Bacău, Punct: Dealul Fulgeriș/ La 3 cireși*, in *CCA. Campania 2014*, București, 2015, pp. 200-202, Fig. 1-14; L. E. Istina, *Situl arheologic de la Fulgeriș-La 3 cireși/ Dealul Fulgeriș*, in *Monumente istorice băcăuane*, 2015, III; L. E. Istina, D. Prisecaru, *Fulgeriș, com. Pâncești, jud. Bacău, Punct Dealul Fulgeriș/ La 3 cireși*, in *CCA. Campania 2015*, București, 2016, pp. 243-245, Fig. 135; L. E. Istina, *Așezarea cucuteniană de la Fulgeriș. Catalogul descoperirilor arheologice*, Ed. Magic Print, Onești, 2016.



Cuza" University of Iași), coordinated by Dr. Vasile Cotiugă and Dr. Andrei Asăndulesei<sup>3</sup>. Archaeomagnetic scanning was resumed in 2015 by a mixed team belonging to the Institut für Ur- und Frühgeschichte, Friedrich-Alexander - Universität Erlangen-Nürnberg and the Institute of Archeology Iași, the coordinator of this project being Dr. Carsten Mischka<sup>4</sup>.

In the archaeological researches undertaken between 2003 and 2015, a number of 16 sections were traced through which the remains of 9 Cucuteni dwellings were investigated, 60 closed complexes (usually household pits) – of which 32 are dated to the Cucuteni level, 3 dates from the Bronze Age and 25 belong to the Geto-Dacian period, as well as 2 ditches of defense dated to the Chalcolithic period, Cucuteni culture, Phase A3.

A first archaeozoological study was carried out on a sample of remains from the 2003-2004 campaigns<sup>5</sup>. The present paper explores the faunal remains discovered during the excavations from 2005 to 2014 in order to assess preliminarily the animal resources used in the economy of the Cucuteni community at Fulgeriș.

### Archaeological context

The faunal remains of Cucuteni culture from Fulgeriș analyzed in this article belong to the following archaeological complexes (Fig. 2): five dwellings (L3, L6, L7, L8 and L9), five pits (Gr. 40, Gr. 44, Gr. 51, Gr. 53A), and a ditch (Ș1).

Dwelling L3. The remains of this house were found in the sections S IV-V / 2005 and S VII / 2006, being located in the western part of these, at a depth of -0.40-0.60 m. It's a surface, no-floor house; among the burned fragments from the crushed clay walls, many ceramic fragments, fauna remains, and other inventory pieces have been discovered.

Dwelling L6. The house L6 was discovered in Section XII, in 2011, between the depths of -0.35-0.75 m, on a sloping ground. It's a no-floor house, and the fragments of clay walls retain the shape of the wood that were used in construction. Regarding the inventory of this dwelling, several vessels, anthropomorphic items, objects made of clay, as well as archaeozoological material were discovered.

Dwelling L7 was discovered in the eastern part of section S XIII / 2012, mainly between the depths -0.25-0.60 m. It's a surface, no-floor house, with a

<sup>3</sup> A. Asăndulesei, L. Istina, V. Cotiugă, F. A. Tencariu, Șt. Caliniuc, R. Balaure, A.-P. Crețu, C. Nicu, B. Venedict, *Cesium magnetometer survey in the Cucuteni settlement of Fulgeriș-La trei cireși, Bacău County, Romania*, in *RRP*, 64 (3), 2012, pp. 878-890.

<sup>4</sup> C. Mischka, D. Mischka, Al. Rubel, *Geomagnetic survey of Cucuteni-settlements in Moldova – results of the FAU – campaign 2015*, in *ArhMold*, XXXIX, 2016, pp. 339-341.

<sup>5</sup> S. Haimovici, D. M. Vornicu, *Studiul arheozoologic al resturilor faunistice din situl Fulgeriș-Cucuteni A (comuna Pâncești, județul Bacău)*, in *Carpica*, 34, 2005, pp. 355-370.



rather rich inventory, consisting of trichrome pottery, miniature vessels, female statuettes, other objects made of burned clay, as well as skeletal remains of animals.

Dwelling L8 was identified in the section S XIV / 2013, between the depths -0.25-0.80 m; it is near the dwelling L7, the distance between them being of about 1 m. From this house, besides the faunal remains, several other objects were found, such as: miniature vessels, anthropomorphic items, various objects made of burnt clay and a bronze ring.

Dwelling L9 was found in the section S XV / 2014, between the depths -0.25-0.75 m, located in the northern part of the house L8. Fragments of ceramics, of clay walls, and debris from the fireplace were found in this house. Other artifacts collected from the surface of this dwelling consist of silex and stone tools, pots, anthropomorphic statuettes decorated with incisions, as well as archaeozoological material.

Pit Gr. 15 was discovered in sections S IV / 2005 and S VII / 2006, at the depths -0.30-0.50 m. In the filling of the pit were found ceramic pieces, faunistic remains and fragments of clay walls.

Pit Gr. 40, small, was identified in section S XII / 2011, at a depth of -0.40 m. Certain fragments of ceramics, a miniature pot, two fragments of unprocessed river stone, some bones and fragments of clay wall, a fragment of worked bone, and a fragment of zoomorphic figurine have been discovered. Near this pit, at a depth of -0.40-0.45 m, a lot of snail shells appeared, and underneath there was discovered a bottom of a vessel inside which there were two shells of snails. We mention that snail remains have not been analyzed from archaeological point of view.

Pit Gr. 44, found in section S XIII / 2012, is small and roughly circular. The pit was deepened to 1.20 m. The archaeological material in this pit is modest and highly fragmented (pottery, bones and some fragments of clay wall).

Pit Gr. 51 appeared in Section S XIV / 2013 and S XV / 2014. It was found from a depth of about 0.60 m and deepened to -1.10-1.20 m. From this pit we can mention the following archeological discoveries: ceramic fragments, burned clay pieces, as well as faunal remains.

Pit Gr. 53A was discovered in Section S XV / 2014, superimposed by an Iron Age pit (Gr. 53). Researching the 53A pit, at a depth of -1.55 m was discovered a whole Cucuteni vessel, which demonstrates that it was deliberately deposited in this pit. A skeleton of an animal, not yet analyzed from archaeological point of view, was found in the pit 53A which was taken to a depth of -1.20-1.25 m. The Cucuteni pit Gr. 53A deepened to - 1.65 m.

Ditch Ş1 shaft was found in section S XI / 2010, with the current opening of 9.70 m and the maximum depth -2.50 m. In this ditch, Cucuteni pottery, as well as some bone remains were found.

### **Archaeozoological analysis**

The archaeozoological sample, comprising the fauna remains found in the archaeological site of Fulgeriş during 2005-2014, belongs to several periods,



as shown in Table 1: Chalcolithic (Cucuteni culture), Bronze Age (Monteoru culture) and the Iron Age (Geto-Dacian period).

The archaeozoological analysis was carried out at the Faculty of Biology, in "Alexandru Ioan Cuza" University of Iași, firstly aiming to anatomical, taxonomic and tafonomic identification, age estimation and quantification of data<sup>6</sup>.

We mention that the fauna remains found in the pit Gr. 52 are a special category with burial character; this sample was the subject of another work<sup>7</sup>. Ceramic fragments, human and animal remains, as well as coal traces have been discovered in this pit (-0.95-1.00m). The human remains belong to a single incomplete skeleton of a child with the age at death of 38-40 weeks (probably new-born). Animal remains belong to the red deer (*Cervus elaphus*), with 8 skull fragments, 2 isolated teeth and 2 phalanges.

The faunal remains attributed to the Cucuteni culture and analyzed in the present paper, have a significant degree of fragmentation and dispersion, mainly due to the butchery processes and consumption. Thus, of the 2038 remains attributed to mammals - the best represented taxonomic group (Table 1), only about 48% of them were specifically identified. A total of 43 bone fragments were burned, and about 50 were gnawed by dogs.

The quantification of faunal remains by taxa and Cucuteni archaeological structures is shown in Table 2.

From the dwelling L8, 1025 faunistic remains were recovered, representing the highest part (49.70%) of the archaeozoological sample attributed to the Cucuteni level. The house L8 also show the largest variety of the identified species, with an almost equal representation, as number of remains, of domestic and wild species (Table 1).

From the other Cucuteni dwellings, fewer fauna remains was recovered – 250 from L3, 315 from L6, 17 from L7 and 144 from L9. There were also few skeletal remains in the pits - only 2 in Gr. 15, 52 in Gr. 40, 20 in Gr. 44, 92 in Gr. 21 and 114 in Gr. 53A. Only 4 fragments were collected from the ditch Ș1, and 27 residues were considered as belonging to the Cucuteni culture level as a whole.

The archaeozoological study highlights three animal food resources for the Cucuteni community of Fulgeriș, which, expressed in terms of local economy, are: animal husbandry, hunting and harvesting of molluscs.

Animal husbandry. Following the percentage distribution of the animal remains grouped by paleoeconomic categories, with the exclusion of the

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<sup>6</sup> M. Udrescu, L. Bejenaru, C. Hrișcu, *Introducere în arheozoologie*, Ed. Corson, Iași, 1999.

<sup>7</sup> L. Bejenaru, A. Simalcsik, L. E. Istina, *New-born and deer remains in a pit of the prehistoric site from Fulgeriș (Bacău County, Romania)*, in *Book of Abstracts, Death and Children from Prehistory to Middle Ages, International Symposium on Funerary Anthropology "Homines, Funera, Astra"*, Sixth edition, "1 Decembrie 1918" University of Alba Iulia, 15-18 October 2017, pp. 18-19.



unidentified mammals (Table 1, Fig. 3), there is a higher proportion of the domestic mammalian species (about 60% NISP).

Among them, in the total sample of which were excluded the unidentified mammals, most numerous are those of cattle, sheep/goat and pig, with frequencies close together, about 21% NISP, 19% NISP, respectively 18% NISP. We mention that in the previously analyzed sample<sup>8</sup> there are almost the same proportions, quite close to each other, for these domestic animals (i.e. 27%, 23%, and 18% respectively). From this point of view, the Chalcolithic site of Fulgeriș is similar to others of Cucuteni A culture, such as those of Fetești<sup>9</sup>, Trușești<sup>10</sup>.

At a relatively long distance, the following two domestic species are the dog (1.8% NISP) and the cat (0.5% NISP). Identifying domestic cat in the Chalcolithic site of Fulgeriș is still not very safe, but her presence in this cultural context cannot be excluded, since according to recent research, this species was already domesticated and spread in Neolithic Central Europe. Archaeological and genetic evidence suggest that the appearance of the Near Eastern cats in Central Europe coincide with the peak of Neolithic settlement density, moreover most of those cats belonged to the same mtDNA lineages as those domesticated in the Near East<sup>11</sup> (Baca *et al*, 2018).

Estimating ages in the domestic species with the highest frequency, we find the slaughter of both immature and mature specimens. Thus, for the large and small horned domestics (cattle and sheep/goat) there are almost equal proportions of the two age categories, but in the case of pig the immature specimens predominate.

**Hunting.** The remains of wild animals (mammals, birds and turtles) show a fairly high frequency (about 38% of the total sample of which were excluded the unidentified mammals), indicating an increased hunting rate (Table 1, Fig. 3).

The wild mammals are represented by 7 different species as ecological requirements: of forest (i.e. red deer, wild boar and probably fallow deer), of clear and open field (i.e. aurochs, roe deer and hare) and of aquatic (i.e. beaver). As frequency of remains, the red deer prevails by about 24%, exceeding even the cattle, followed by the roe deer (about 6%), wild boar (about 5%), hare (about 2%), aurochs (0.7%) and beaver (0.2%). The same situation was also noted in the previous study<sup>12</sup>, with an increased hunting rate, centered on the red deer; from this earlier study we have, in addition to our list, the following species: *Ursus arctos* (bear) and *Equus ferus* (wild horse).

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<sup>8</sup> S. Haimovici, D. M. Vornicu, *op. cit.*

<sup>9</sup> R. Cavaleriu, L. Bejenariu, *Cercetări arheozoologice privind cultura Cucuteni, faza A*, Ed. Universității „Al. I. Cuza”, Iași, 2009.

<sup>10</sup> S. Haimovici, *L'étude de la faune néolithique de Trușești*, in *AȘUI Nat.*, VI (2), 1960, pp. 355-376.

<sup>11</sup> M. Baca, D. Popović, H. Panagiotopoulou, A. Marciszak, M. Krajcarz, M. T. Krajcarz, D. Makowiecki, P. Węgleński, A. Nadachowski, *Human mediated dispersal of cats in the Neolithic Central Europe*, 2018, doi: <https://doi.org/10.1101/259143> BioRxiv.

<sup>12</sup> S. Haimovici, D. M. Vornicu, *op. cit.*



Estimated ages for the hunted mammalian species are mostly mature, excepting the red deer for which many immature specimens have been identified (about 40%).

Birds remains, not specifically identified, would most likely belong to wild species and were therefore included in the hunted animal category; turtle was also included in this category.

The Cucuteni A assemblages in eastern Romania shows an average frequency of about 23% representing the wild animal remains. In this context, the archaeozoological sample from Fulgeriș is above this average with the proportion of hunted animals. Comparing to other sites of Cucuteni A culture, in terms of the wild animal frequency, and of the favourite venison (i.e. red deer), we found similarities especially with the sites of Trușești<sup>13</sup> and Dragușeni<sup>14</sup>.

Mollusc harvesting is proven by 13 shell fragments, one belonging to the river mussel (i.e. *Unio* sp.) and another 12 to snails (i.e. *Helix* sp.). Their proportion is extremely low, only about 1% of the sample (Table 1, Fig. 3). However, the molluscs were used in prehistory for both feeding purpose and as raw material, and there are Chalcolithic archaeozoological samples, of Cucuteni A culture, in which the frequency of this category of remains is significant (e.g. Trușești<sup>15</sup>, Hoisești<sup>16</sup>).

## Conclusions

The faunal remains discovered in the Cucuteni A site of Fulgeriș (Bacău County, Romania) have a significant degree of fragmentation and dispersion, mainly due to the butchery processes and consumption; because of this, only about half of them were specifically identified.

The majority of animal remains have been identified as mammalian, and only few pieces as birds, turtle and molluscs. However, the Cucuteni A settlement of Fulgeriș has valorised a relative large faunal spectrum, 20 animal taxa being identified in the archaeozoological sample, both domestic and wild.

The remains of cattle, sheep/goat and pig are the most frequent in the domestics category; for these taxa we found the slaughter of both immature and mature specimens. The hunting, centered on the red deer (both immature and mature specimens), has a secondary importance, according to the frequencies of animal remains.

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<sup>13</sup> S. Haimoici, *op. cit.*

<sup>14</sup> Al. Bolomey, G. El Susi, *Animal remains*, in S. Marinescu-Bilcu, Al. Bolomey, *Drăgușeni. A Cucuteni Community*, Ed. Enciclopedică București & Wasmuth Verlag Tübingen, 2000, pp. 159-177.

<sup>15</sup> S. Haimoici, *op. cit.*

<sup>16</sup> R. Cavaleriu, L. Bejenaru, *op. cit.*



	<i>Chalcolithic (Cucuteni culture)</i>	<b>Bronze Age</b>	<b>Iron Age</b>	<b>Total</b>
<b>Taxon</b>	NISP	NISP	NISP	NISP
<i>Bos taurus</i> (Cattle)	210	90	21	321
<i>Ovis aries/Capra hircus</i> (Sheep/Goat)	182	55	25	262
<i>Sus domesticus</i> (Pig)	191	51	21	263
<i>Canis familiaris</i> (Dog)	18	1	1	20
<i>Felis catus domestica?</i> (Cat)	5	1	0	6
<b>Total domestic mammals</b>	<b>606</b>	<b>198</b>	<b>68</b>	<b>872</b>
<i>Bos primigenius</i> (Aurochs)	7	1	1	9
<i>Cervus elaphus</i> (Red deer)	238	49	25	312
<i>Capreolus capreolus</i> (Roe deer)	57	21	6	84
<i>Cervus dama?</i> (Fallow deer)	1	0	0	1
<i>Sus scrofa</i> (Wild boar)	52	16	6	74
<i>Lepus europaeus</i> (Hare)	17	3	1	21
<i>Sciurus vulgaris</i> (Squirrel)	0	1	0	1
<i>Castor fiber</i> (Beaver)	2	1	0	3
<i>Meles meles</i> (Badger)	0	0	1	1



<i>Vulpes vulpes</i> (Fox)	0	0	2	2
<b>Total wild mammals</b>	<b>374</b>	<b>92</b>	<b>42</b>	<b>508</b>
Unidentified mammals	1058	233	85	1373
Aves (Birds)	10	1	0	11
<i>Emys orbicularis</i> (pond turtle)	1	0	0	1
<i>Helix</i> sp.	12	28	0	40
<i>Unio</i> sp.	1	3	1	5
<b>Total</b>	<b>2062</b>	<b>555</b>	<b>201</b>	<b>2614</b>

Table 1. Distribution of fauna remains by taxa and periods (NISP = number of identified specimens).

Taxon	Chalcolitic (Cucuteni culture)											
	L3	L6	L7	L8	L9	G15	G40	G44	G51	G53 A	Ş1	N
	NIS P	NIS P	NIS P	NIS P	NIS P	NIS P	NIS P	NIS P	NIS P	NISP	NIS P	NI SP
<i>Bos taurus</i>	9	41	4	105	26	-	1	7	9	4	-	4
<i>Oviesaries/Capra hircus</i>	11	46		86	5	-	4		3	22	-	5
<i>Canis familiaris</i>	1	4	-	4	-	-	2	-	1	6	-	-
<i>Felis catus domestica?</i>	2	-	-	1	-	-	-	-	2	-	-	-
<b>Total domestic mammals</b>	<b>41</b>	<b>123</b>	<b>5</b>	<b>294</b>	<b>43</b>	<b>1</b>	<b>7</b>	<b>8</b>	<b>22</b>	<b>53</b>	<b>0</b>	<b>9</b>
<i>Bos primigenius</i>	3	-	1	2	-	-	-	-	-	1	-	-
<i>Cervus elaphu</i>	30	22	-	144	17	-	-	-	13	10	-	2



<i>s</i>												
<i>Capreolus capreolus</i>	8	6	1	34	2	-	-	-	5	1	-	-
<i>Cervus dama?</i>	-	1	-	-	-	-	-	-	-	-	-	-
<i>Sus scrofa</i>	5	14	-	26	1	-	-	-	3	2	1	-
<i>Lepus europaeus</i>	8	-	-	5	2	-	-	-	2	-	-	-
<i>Castor fiber</i>	-	-	-	2	-	-	-	-	-	-	-	-
<b>Total wild mammals</b>	<b>54</b>	<b>43</b>	<b>2</b>	<b>213</b>	<b>22</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>23</b>	<b>14</b>	<b>1</b>	<b>2</b>
Unidentified mammals	155	148	10	513	74	-	45	12	46	38	3	14
Aves	-	-	-	-	-	-	-	-	-	9	-	-
<i>Emys orbicularis</i>	-	-	-	1	-	-	-	-	-	-	-	-
<i>Helix</i> sp.	-	1	-	2	5	1	-	-	1	-	-	2
<i>Unio</i> sp.	-	-	-	1	-	-	-	-	-	-	-	-
<b>Total</b>	<b>250</b>	<b>315</b>	<b>17</b>	<b>1025</b>	<b>144</b>	<b>2</b>	<b>52</b>	<b>20</b>	<b>92</b>	<b>114</b>	<b>4</b>	<b>27</b>

Table 2. Quantification of fauna remains attributed to the Cucuteni settlement (L = dwelling, G = pit, S = ditch, N = level, NISP = number of identified specimens).





Fig. 1. Southwest view of Fulgeriș Hill, with archaeological site.

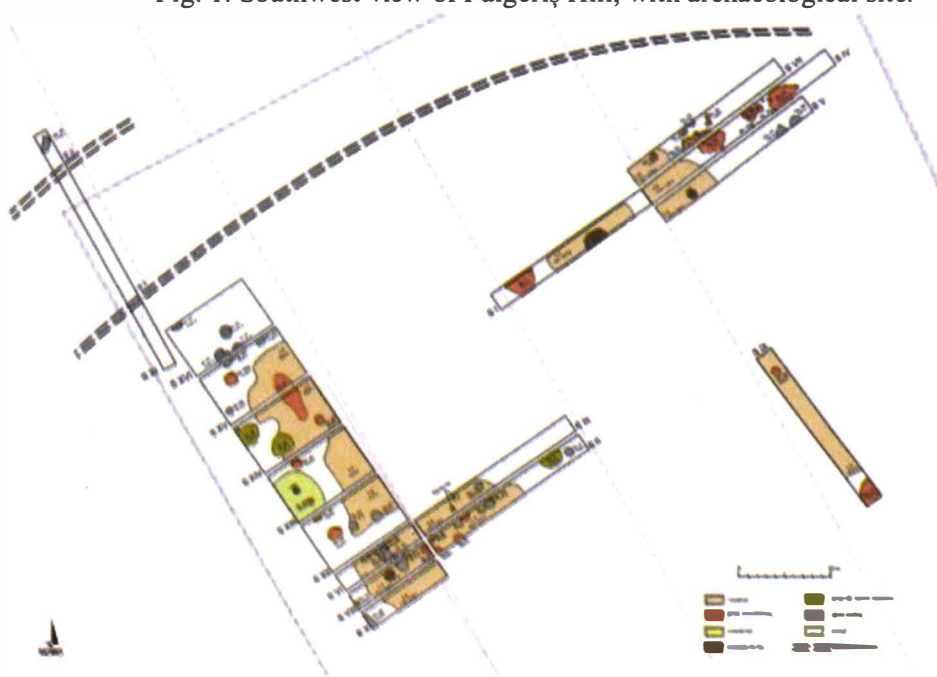


Fig. 2. General plan of the excavation with the location of dwellings, pits and ditches discovered during 2003-2015.



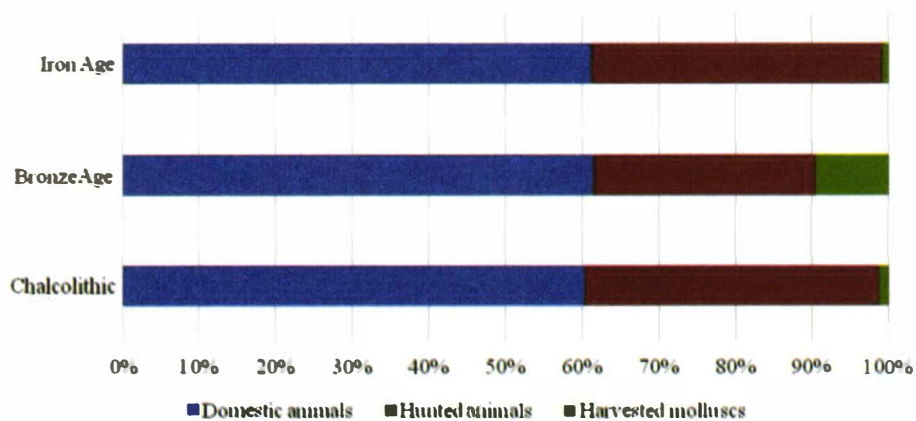


Fig. 3. Percentage distribution of animal remains (NISP) grouped by paleoeconomic categories.



# **Anthropomorphous representations from Ștefănești-Stârcea, Botoșani County, Romania**

**ADELA KOVÁCS<sup>1</sup>**

**Abstract:** During 1974-1975 preventive excavations were made at the site Ștefănești-Stârcea/La Bulboană, Botoșani County, Romania. The excavation team was coordinated by Anton Nițu and Paul Șadurschi. They published some preliminary reports concerning the excavations from Ștefănești, but a complete article describing the preventive work on the sites excavated in 1974-1975 was in plan. At Ștefănești-Stârcea were excavated three houses and four pits. The ceramic material is very rich and a large number of the vessels discovered were restored. The distinctive characteristic of the ceramic from Stârcea site is the snake pattern, over-repeating, on many types of vessels. The site was framed in Cucuteni B2 and has analogies on the ceramic material and anthropomorphous representations with famous Cucuteni B2 sites from Republic of Moldova, like Costești IV, Petreni and Brânzeni VIII. At Botoșani County Museum there is the preliminary report and manual drawings concerning the excavations performed at the site. In Botoșani County Museum deposits were found three anthropomorphous statuettes from this site, of different shapes and sizes, unpublished so far. Our paper is presenting these statuettes, referring to their discovery context and the analogies from the neighboring areas.

**Key words:** Copper Age, Cucuteni Culture, anthropomorphous statuettes

## **History of the researches-origin of the artifacts**

The research at Ștefănești-Stârcea/La Bulboană, Botoșani County, was carried out between 1974 and 1975, coordinated by Anton Nițu from the Institute of Archeology Iași along with Paul Șadurschi from the Botoșani County Museum. The preliminary report was presented on Saturday, March 25, 1978, at the Scientific Communications Session organized by the Botoșani County Museum. The manuscript was handed over for publishing to the journal *Arheologia Moldovei*, for the no. 9, issue 1980, but for lack of space, the material was not inserted in that issue. The only report currently in existence was published in 2004: Anton Nițu and Paul Șadurschi: *The archaeological survey carried out at Cucuteni B2 Ștefănești – “La Stârcea” (1974-1975)*, in *Acta Moldaviae Septentrionalis*, no. 3, 2004, pp. 296-312. The scientific archives at

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\* Muzeul Județean Botoșani, [adelina\\_ab@yahoo.com](mailto:adelina_ab@yahoo.com).



the Botoșani County Museum preserve the original drawings made by the research team, a preliminary report written on a typewriter, with handwritten corrections on the edges and images of the discovered artifacts, along with photos and drawings of the archaeological material.

The site (RAN code 39177.01) is known under several names, such as “*Bulboana lui Stârcea*”, “*La Bulboană*”, “*La Stârcea*”, “*La curte*”, and was discovered in 1956 by surface research carried out by N. Zaharia, M. Petrescu-Dîmbovița and Em. Zaharia<sup>2</sup>. Other surface researches were made in 1973 by Al. Păunescu, P. Șadurschi, V. Chirica<sup>3</sup>.

The Cucutenian settlement is at the S-SE end of Ștefănești town, on the terrace on the right side of Bașeu, in the major riverbed of the Prut River. The terrace is flat, being cut into an old major riverbed of the Prut. On the SE side the terrace goes down slightly. On the N-NW side, the edge of the terrace is steep, being undermined and hollowed by the waters of the Prut and Bașeu. The area of the settlement was approximated at that time at approx. 3 ha. The researched area is 180 square meters.

According to the research team's description, the stratigraphy of the site is as follows:

- the tillable layer approx. 20 cm thick;
- old soil of gray color, 30 - 50 cm thick;
- brown soil containing archaeological material, 40 cm;
- argillaceous soil with black - brown pigments;
- archaeologically sterile soil.

The 1974-1975 survey was occasioned by the floods of 1974, when the waters partially sunk a large pit (Pit 1). After the withdrawal of the waters were, the high-school students in Ștefănești collected the fragments of “a large vessel with prominent shoulder” (document from the MJB Archive) that they transported to school.

It is noted that sporadic remains of dwelling from the Iron Age (late Hallstatt-early Latène) were found, consisting both of ceramic fragments and a bronze arrow with two edges. Three incineration urns belonging to the 3<sup>rd</sup>-1<sup>st</sup> centuries CE, as well as a series of ceramic fragments belonging to the medieval period (15<sup>th</sup>-16<sup>th</sup> centuries) were above the Cucutenian layer. These materials were later analyzed and published with the data existing in MJB by the researchers Ion Ioniță and Octavian Liviu Șovan in 2013<sup>4</sup>.

The entire material resulting from the research at Ștefănești-Stârcea/La Bulboană was marked, specifying both the site of origin and the place of their discovery, which made it easier to identify the materials coming from this site. The ceramic material, both restored, and the fragments in the Botoșani County Museum will be the subject of a future study.

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<sup>2</sup> N. Zaharia, M. Petrescu-Dîmbovița, Em. Zaharia, *Așezări din Moldova. De la paleolitic până în secolul al XVIII-lea*, Ed. Academiei, București, 1970, pp. 281-282.

<sup>3</sup> Al. Păunescu, P. Șadurschi, V. Chirica, *Repertoriul arheologic al județului Botoșani*, București, 1976, pp. 255-259.

<sup>4</sup> I. Ioniță, O. L. Șovan, *O necropolă a dacilor liberi de la Ștefănești jud. Botoșani*, in *Revista Forum Cultural*, no. 50-an XIII, no. 3, septembrie 2013, pp. 5-11.



Regarding the published report, compared to the report in the archive of MJB and the marked ceramic material, there are a number of inaccuracies. A single dwelling (numbered L1) is marked in the published plan<sup>5</sup>. In the archived plan there are drawn three different dwellings and the same four pits which are also marked on the published plan (Fig. 3). However, the correlation is difficult, as long as a consistent number of ceramic fragments bear the mark as belonging to Housing 4 which does not appear on any of the said plans. The dwellings are described as without platform or daub. Two of them, respectively L.2 and L.3, are cut by a military trench that passes through them.

The most spectacular artifacts discovered at Ștefănești-Stârcea/La Bulboană are those belonging to anthropomorphic representations. Until now, three fragmentary artifacts, previously unpublished, have been identified (in the exhibition and in warehouses) by the research team.

### Catalogue of the artifacts

1. Female anthropomorphic statuette (Fig. 4). Inv. No. MJB: 7040. Context: Dwelling 1; Description: Statuette preserved fragmentary, a fragment of the torso, hips, knees, and the sole leg with which the statuette ends; vertical position; oxidizing burning, brick color. The upper part is fragmented in the torso area. The torso is oval in section. The statuette widens slightly in the area of the hips. The abdomen is very slightly bulging, without marking the navel. The legs at the front are not demarcated, being spindle-shaped, and on the rear side there is only a small, barely visible groove. The knees are not marked. The single foot has a conical shape and ends with a small sole. There is red slip all over the surface of the artifact, and the décor is formed of 20 black, oblique lines arranged in spirals, in some parts barely visible. Although the black lines are wiped off the sides of the artifact, it can be assumed that they surrounded the body of the statuette. The statuette belongs, according to dimensions and manner of realization, in the category of spindle-shaped statuettes. Dimensions: Preserved height = 103 mm; Body width = 28 mm; Body thickness = 19 mm; Hip Diameter = 26 mm; Leg diameter = 7 mm.

2. Male anthropomorphic statuette (Fig. 5). Inv. Nr. MJB 18581. Context: Dwelling 2. Description: statuette from which only the legs have been preserved, the torso and the head missing since ancient times; vertical position. oxidizing burning, brick color. The statuette has wide hips, with an oval section. The hips are demarcated by narrowing the artifact. At the front, the legs are demarcated by a barely marked incision, down to the knees, where it widens slightly. The knees are marked by a barely visible bump. The knees continue with the unique, conical foot, slightly fragmented above the sole. On the rear side the buttocks are marked through the same technique, the item being incised with a stick. The incision does not go further than the thigh area. On the front side the genital organ is barely marked with a slight bulge, with paste drawn from the sides. On the right hip there is another small bulge, specific to male statuettes that have been decorated with an oblique band on the body. On the front and on the right leg there are traces of recent cuts, probably caused during the discovery.

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<sup>5</sup> A. Nițu, P. Șadurschi, *op. cit.*, p. 298, fig. 1.



Dimensions: Preserved height = 51 mm; Body width = 22 mm; Body thickness = 10 mm; Leg diameter = 19 mm.

3. Head of a feminine anthropomorphic statuette (?) (Fig. 6). MJB Inv No. 18580. Context: Pit 2. Description: statuette from which only the head (fragmentary) and a small part of the neck were preserved. Position: (probably) vertical. Oxidizing burning, brick color. The surface of the artifact is very smooth, with polishing traces made with a tool on the back. The head has a relatively oval shape, it is stylized, made by pressing from the sides, forming two lobes separated by a pronounced median ridge, representing the nose. The mouth is marked by a very short incision immediately below the nose. Another incision, below that of the mouth, could suggest the beard. The eyes are not marked. The left ear is anatomically placed, shaped like a semicircular lobe, and it has a string of nine perforations, some of which do not pierce the artifact completely. Beneath the ear there are traces of polishing with a tool, possibly made of wood. The neck has a relatively rectangular shape and it is a direct extension of the head. The dorsal part is relatively flat, with a very slight bulge in the medial part. Above the head, the artifact features a flat, semi-circular disc. The demarcation between the disc and the ear lobe was made with a stick. The head comes from a statuette that is probably spindle-shaped and large in size. Dimensions: Preserved height = 75 mm; Thickness of the face = 26 mm; Disc length: 44 mm.

### Discussions and analogies

The anthropomorphic representations from Ștefănești-Stârcea find the most numerous analogies in the eastern area of the Cucuteni culture, considering also the area of evolution of the culture. The analogies correspond technologically to the statuettes specific to the B2 phase of the culture, observed and defined by D. Monah. He notes that at this stage the statuettes are molded from a good, homogeneous paste, and the presented items are no exception to this. From the point of view of burning, they are generally well burned, probably in pottery kilns. Most statuettes in the Cucuteni B phase are distinguished by a harmonious, proportionate realization.

It is noteworthy that item-catalogue no. 1 (MJB Inv. No. 7042) has red slip on the outer surface and was very well polished. The position of the statuette is vertical, with a single leg, with several black lines painted on the legs. The same type of ornamentation of the body is found in the case of several statuettes, discovered at Ghelăiești<sup>6</sup>, Costișa<sup>7</sup>, Cucuteni-Cetățuia<sup>8</sup>, all belonging to phase B. The single-legged statuettes, finished with a small cone or a very narrow sole, such as the statuette cat. no. 2, have the closest analogies starting with phase A-B at Rakovec<sup>9</sup>, Nemirovo<sup>10</sup>, Lipcani<sup>11</sup>, Krinički<sup>12</sup>, Caracușani<sup>13</sup>, but also in phase B,

<sup>6</sup> D. Monah, *Plastica antropomorfă a culturii Cucuteni-Tripolie*, BMA, III, Piatra Neamț, 1997, p. 384, fig. 132/2.

<sup>7</sup> *Ibidem*, p. 384, fig. 132/7.

<sup>8</sup> *Ibidem*, p. 398, fig. 146/8.

<sup>9</sup> *Ibidem*, p. 405, fig. 131/2.

<sup>10</sup> *Ibidem*, p. 405, fig. 131/3.



at Ghelăiești<sup>14</sup>. The same kind of black painting, in successive stripes, placed horizontally, is found on one of the phase B statuettes, discovered at Calu-Piatra Șoimului<sup>15</sup>. Unfortunately, this item is missing the upper part of the body, but we can suspect that it had small, slightly demarked breasts, considering the realization canons of this type of statuette. The slightly bulging abdomen, made by adding material, could suggest an incipient pregnancy<sup>16</sup>.

Male statuettes are not very common in the Cucutenian environment. Unfortunately, the artifact discovered at Ștefănești-*Stârcea*-catalog no. 2 (Inv. No. MJB 18581) does not allow many observations, being poorly preserved and damaged on the left leg, including the research process, with several recent cuts visible. Male statuettes with close legs are found in phase B, at Varvareuca<sup>17</sup>, Koszówce<sup>18</sup>, Răcuțești Munteni<sup>19</sup>, Costești-Baia<sup>20</sup>, Mihoveni<sup>21</sup>, Moldova<sup>22</sup>.

The statuette head-catalogue no. 3 (MJB Inv. No. 18580) was discovered in Pit 2 and was registered in MJB inventories only in 2018, as it has been unnoticed in the institution's deposits so far. The manner of modeling is a special one, not having eyes. The only facial features are those with the pronounced median ridge. This ridge is nevertheless associated in most cases with one or two perforations in the eye area throughout the development of phase B, and is encountered in many situations<sup>23</sup>.

In the upper part of the head there is an elongation which in the present case we interpret as a hair accessory that decorates and adorns the character. The ear with multiple perforations is found rather in the Gumelnița environment, being not very specific to the Cucuteni culture.

A row of perforations around the head, along with the representation of the eyes, are found at Caracușani<sup>24</sup>, Košilovcy-several copies<sup>25</sup>. Some of the best-known statuettes with a disc-shaped head, a median ridge and two large perforations representing the eyes and a string on the outside of the disc, are those found at Ofatinți, Republic of Moldova, which also have piercings in the shoulder area<sup>26</sup>.

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<sup>11</sup> *Ibidem*, p. 407, fig. 133/6-7.

<sup>12</sup> *Ibidem*, p. 398, fig. 124/6.

<sup>13</sup> *Ibidem*, p. 402, fig. 128/9, 11.

<sup>14</sup> *Ibidem*, p. 423, fig. 149/9.

<sup>15</sup> *Ibidem*, p. 411, fig. 137/5.

<sup>16</sup> *Ibidem*, p. 136.

<sup>17</sup> *Ibidem*, p. 414, fig. 140/4; p. 416, fig. 142/3.

<sup>18</sup> *Ibidem*, p. 414, fig. 140/4, 6.

<sup>19</sup> *Ibidem*, p. 415, fig. 141/2.

<sup>20</sup> *Ibidem*, p. 415, fig. 141/3, 10.

<sup>21</sup> *Ibidem*, p. 416, fig. 142/1.

<sup>22</sup> *Ibidem*, p. 416, fig. 142/2, 4-9.

<sup>23</sup> *Ibidem*, p. 135.

<sup>24</sup> A. P. Pogoșeva, *Die Statuetten der Tripolje-Kultur. Beiträge zur allgemeinen und vergleichenden Archäologie*, no. 7, 1985, p. 194, fig. 617a.

<sup>25</sup> *Ibidem*, p. 210, fig. 797; 211, fig. 800, 801; 212, fig. 804, 805.

<sup>26</sup> *Ibidem*, p. 233, fig. 981; 234, fig. 982, 983, 984.



Hair accessories have been identified especially in the last stage of development of the Cucuteni culture, also considering the more realistic representation canons than those used in the past.

At Krinički, the hair of the statuette is tied in the lower part with an “en violon” accessory<sup>27</sup>, and in the case of the Suškova statuette, the accessory hung on the statuette’s hair is disc-shaped<sup>28</sup>. The one from Pavolovca<sup>29</sup> shows a kind of ornament over the head that was perforated, or rather the ornament formed a perforated disc. However, the closest analogy is found in the site of Costești IV, Republic of Moldova, a site on the bank of the Prut River, which we explain by the fact that the material culture of Ștefănești-Stârcea and Costești IV is very similar. The statuette we are referring to was published by V. Marchevici and presents the same way of rendering the facial features, but also the same way of rendering the overhead ornament<sup>30</sup>.

The settlement is framed in the final sequence of the Cucuteni B2 stage and it presents decorative aspects characteristic of the Cucutenian ceramics in the Prut area and the Subcarpathian depression, as well as in the interference area of the Cucuteni culture with Galitsia and Trypillie areas. The settlement is located not only geographically, but also stylistically close to the Liveni settlements and two other sites on the opposite bank of the Prut River, namely Costești IV and Badragii Vechi.

The most important aspect to be noted for this particular type of statuettes is that they, although formally and technologically resemble, do not form series, each of them being in fact a unique item. This is also the case of the artifact from Ștefănești-Stârcea, which may have the hair represented, maybe even a hairstyle or head ornament, which unfortunately did not reach us.

### **Abbreviation used**

RAN – Repertoriul Arheologic Național = National Archaeological Repertoire

MJB – Muzeul Județean Botoșani = Botoșani County Museum

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<sup>27</sup> *Ibidem*, p. 197, fig. 652.

<sup>28</sup> *Ibidem*, p. 201, fig. 706a.

<sup>29</sup> *Ibidem*, p. 237, fig. 1012.

<sup>30</sup> V. I. Marchevici, *op. cit.*, p. 48, fig. 73/3.



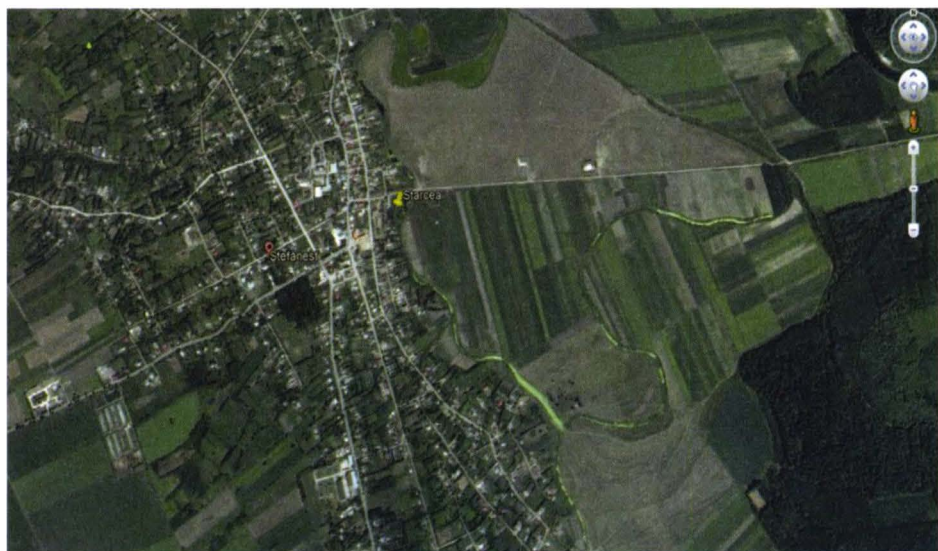


Fig. 1. Placement of the site Ștefănești – „La Stârcea”- Location on Google Earth.

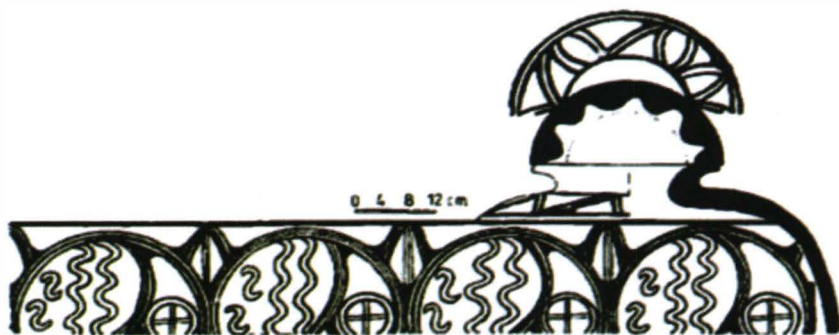


Fig. 2. Vessel with snakes discovered in Pit 1 by children from the Ștefănești school<sup>31</sup>.



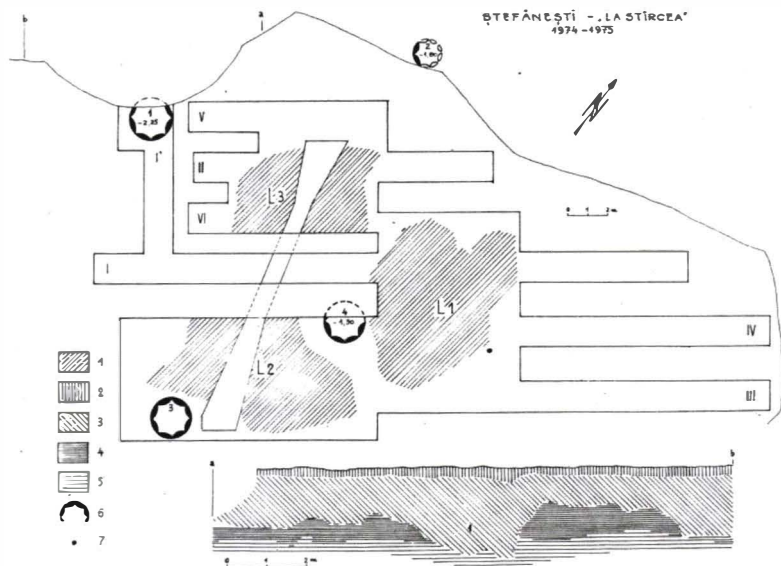


Fig. 3. The unpublished plan of the researches from 1974-1975 (MJB archive).

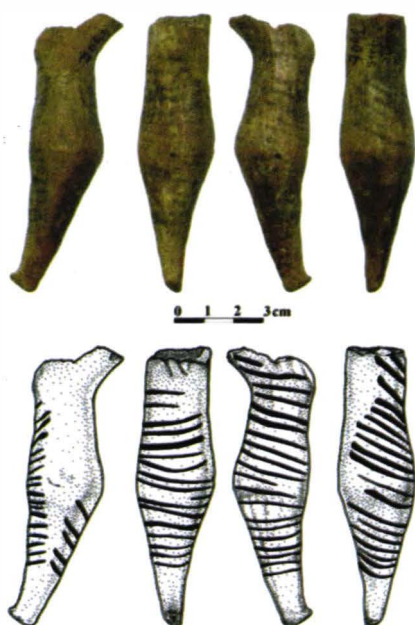


Fig. 4. Feminine anthropomorphic statuette. Inv. No. MJB: 7040. Context: Dwelling 1 (drawing and photo S. Ciupu).

<sup>31</sup> A. Nițu, P. Șadurschi, *Sondajul arheologic efectuat în așezarea Cucuteni B2 Ștefănești – „La Stârcea” 1974-1975*, in *AMS*, no. 3, 2004, p. 299, fig. 3.



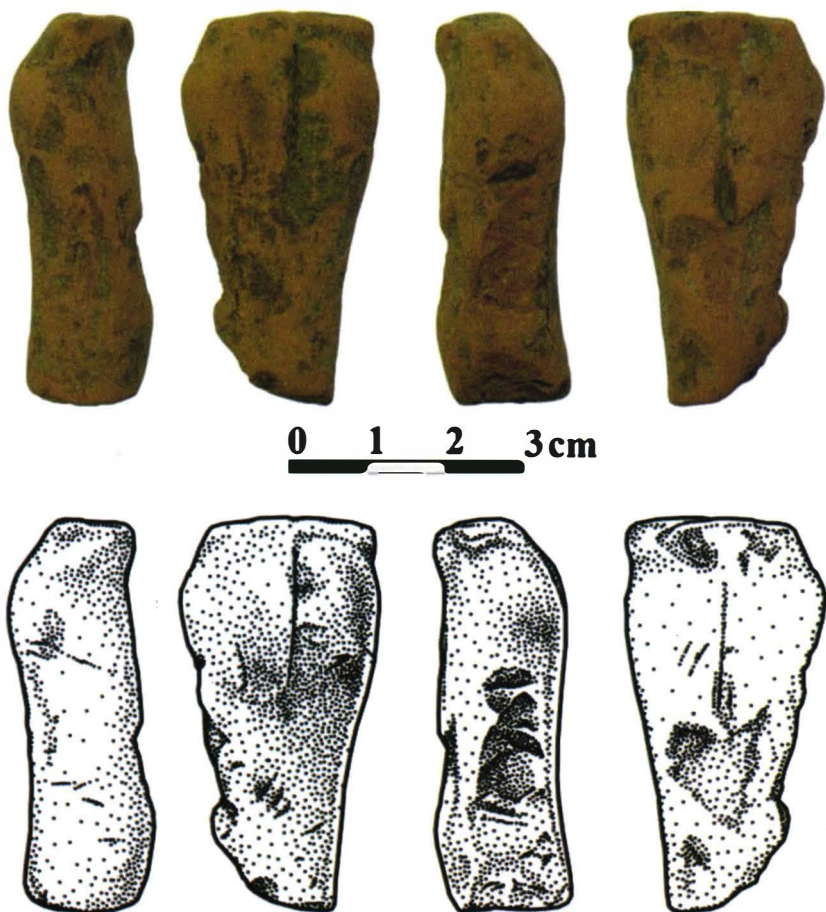


Fig. 5. Male anthropomorphic statuette. Inv. No. MJB 18581. Context: Dwelling 2 (drawing and photo S. Ciupu).



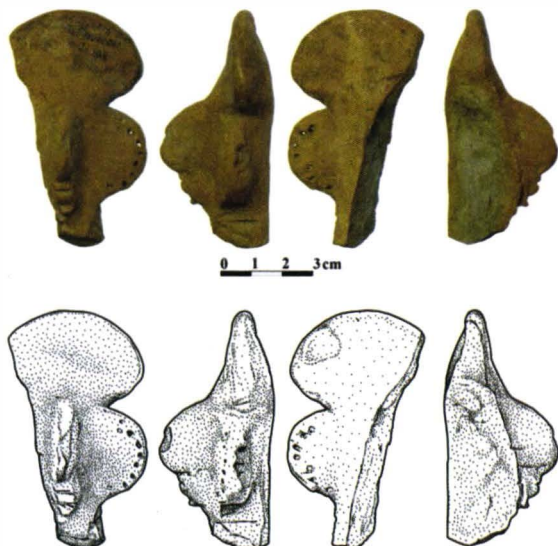


Fig. 6. Head of a feminine anthropomorphic statuette (?). Inv. No. MJB. 18580. Context: Pit 2 (drawing and photo S. Ciupu).

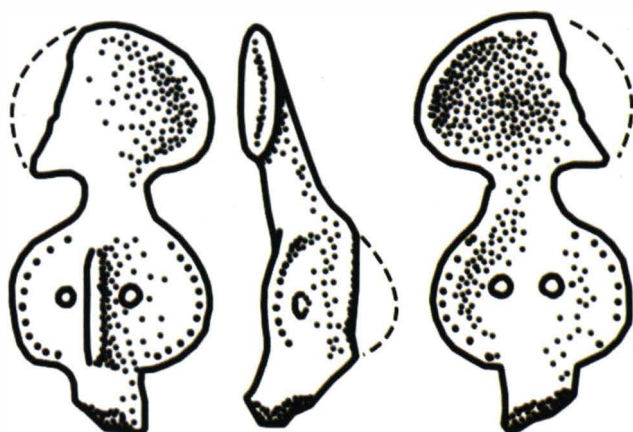


Fig. 7. Statuette with a disc above the head, discovered at Costești IV<sup>32</sup>.

<sup>32</sup> V. I. Marchevici, *Pozdnetripolskie Plemena Severnoi Moldavii*, Chișinău, 1981, p. 48, fig. 73/3.



# **Bronze Age archaeological materials from Răucești**

## **(Neamț County, Romania)**

**VASILE DIACONU<sup>1</sup>, ALEXANDRU GAFINCU<sup>2</sup>**

**Abstract:** *The reopening of the archaeological researches in the Eneolithic settlement from Răucești-Dealul Munteni (Neamț County) casted a new light on several important aspects related to this site, including the post-eneolithic habitations. The aim of this paper is to present only the Bronze Age discoveries from this site. Thus, in the old excavations several Noua pottery pieces are briefly mentioned, during the 2015-2017 research many ceramic fragments belonging to the all three great periods of the Bronze Age were recovered. Although we lack the discovery of archaeological complexes assigned to this period, the ceramic material identified denote short-living habitations attributed to the Târpești group (Early Bronze Age), to the Komariv culture (Middle Bronze Age) and to Noua culture (Late Bronze Age). Certainly, the Bronze Age habitations from Răucești must be related to the presence of rich natural resources in the close proximity of the settlement, but especially with the salt resources available in the area, that attracted the old populations.*

**Key words:** *Sub-Carpathians, Răucești, Bronze Age, pottery, salt sources*

Over the millennia, the human communities manifested a special interest for the Sub-carpathian area. Thus, the sub-mountain area, especially the depressions and the plateau areas, have been inhabited in all historical periods.

The northern part of the Moldavian Sub-carpathians has natural features (topography, natural resources, climate) which attracted the prehistoric agro-pastoral communities, the density of the habitation being very high in Neo-Eneolithic and Bronze Age<sup>3</sup>. Moreover, these humans were attracted by the salt resources which are abundant in the area.

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<sup>1</sup> Complexul Muzeal Județean Neamț, mail: diavas\_n82@yahoo.com

<sup>2</sup> Complexul Muzeal Județean Neamț, mail: alexandru.gafincu@yahoo.com

<sup>3</sup> Gh. Dumitroaia, *Materiale și cercetări arheologice din nord-estul județului Neamț*, in *Mem. Antiq.*, II, 1992, pp. 64-143; V. Diaconu, *Recunoașteri arheologice de suprafață în zona orașului Târgu Neamț*, in *Mem. Antiq.*, XXIV, 2007, pp. 87-119; Idem, *Comunități umane din bronzul târziu în Subcarpații Moldovei. Observații privitoare la dinamica teritorială*, in *Cercet. Ist.*, XXVII-XXIX (2008-2010), Iași, 2011, pp. 45-



The prehistoric site from Răucești is among these examples, where Cucuteni Culture and Bronze Age archaeological materials have been found<sup>4</sup>.

The archaeological site from Răucești - *Dealul Munteni* is located in the southern part of the Răucești village, on an extension of the Pleșului Ridge, which is a section of the Neamțului Sub-carpathians<sup>5</sup> (Fig. 1). In this lower part of the Pleșului Ridge the slopes are oriented approximately North-West – South-East. The southern slopes have a gentle angle, while the northern slopes are mostly steep. The promontory which was inhabited by the prehistoric communities is protected by slopes from North-West, North and North-East, which provided defensive advantages.

This extension of the Pleșului Ridge, which was inhabited by Eneolithic and Bronze Age people, is located between two lower areas: the Neamț Depression and the Moldova River corridor. Situated at 410-415 m above sea level<sup>6</sup>, the archaeological site from Răucești has a good view over an important sector of the Moldova River Valley, towards East and North, but also over a large area of the middle and lower Ozana River basin.

Regarding the topography, we can consider that the two river valleys were used by the prehistoric communities to travel from West to East, from the sub-mountain area to the plateau, and from South to North. This fact is very important because not far from Răucești there are salt sources, such as the source from Oglinzi<sup>7</sup>, which was exploited for human and animal necessities.

The archaeological research in the Răucești site started in 1978, and continued in 1979 and 1986, resulting in several Cucuteni dwellings and features (phases A and B)<sup>8</sup>. In 2015, the excavations were resumed, and besides the

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66; Idem, *Depresiunea Neamț. Contribuții arheologice*, BMA, XXVIII, Ed. Constantin Matasă, Piatra Neamț, 2012.

<sup>4</sup> Among others, see Gh. Dumitroaia, *Săpăturile arheologice din județul Neamț*, in *Mem. Antiq.*, IX-XI, (1977-1979), 1985, p. 737; Idem, *Săpăturile arheologice din județul Neamț* (1986), in *Mem. Antiq.*, XV-XVII, (1983-1985), 1987, p. 293.

<sup>5</sup> I. Donisă, Al. Ungureanu, *Subcarpații Neamțului*, in: L. Badea, D. Bugă (coord.), *Geografia României*, vol. IV, *Regiunile pericarpatice: Dealurile și Câmpia Banatului și Crișanei, Podișul Mehedinți, Subcarpații, Piemontul Getic, Podișul Moldovei*, Ed. Academiei Române, București, pp. 336-337.

<sup>6</sup> See Topographical military map, 1984 (available for viewing on: [portal.geomil.ro/arcgis/home/](http://portal.geomil.ro/arcgis/home/), accessed 22.01.2018).

<sup>7</sup> Gh. Dumitroaia, *Materiale și cercetări arheologice din nord-estul județului Neamț*, pp. 85-86; Idem, *Depunerile neo-eneolitice de la Lunca și Oglinzi, județul Neamț*, in *Mem. Antiq.*, XIX, 1994, pp. 70-78; O. Weller, M. Alexianu R. Brigand, *Cercetări sistematice asupra izvoarelor de apă sărată din Moldova. Bilanțul explorărilor din anii 2004-2007 efectuate în special în județul Neamț*, in *Mem. Antiq.*, XXIV, 2007, p. 157.

<sup>8</sup> D. Monah, Șt. Cucos, *Așezările culturii Cucuteni din România*, Ed. Junimea, Iași, 1985, p. 137; Gh. Dumitroaia, *Săpăturile arheologice din județul Neamț*, p. 737; Idem, *Plastica antropomorfă din așezarea cucuteniană de la Răucești - „Munteni”, jud. Neamț*, in *Mem. Antiq.*, XV-XVII, (1983-1985), 1987, p. 21; Idem, *Săpăturile arheologice din județul Neamț* (1986), p. 293; Idem, *Materiale și cercetări arheologice din nord-estul județului Neamț*, p. 83, no. 3; Șt. Cucos, *Contribuții la*



Eneolithic artefacts, Bronze Age materials have been found, which will be presented in this study. For this site, brief information about the discovery of Bronze Age ceramic fragments were already available. However this data is poor, and there are no references about the conditions of their discovery<sup>9</sup>.

During the last three archaeological campaigns (2015-2017)<sup>10</sup> several trenches were opened in different areas of the settlement. In almost all of the areas pottery attributed to the Bronze Age was discovered<sup>11</sup>. These archaeological materials were usually located in the topsoil layer or in the next layer, but distinct features were not identified. In most cases, these remains were found together with Cucuteni B ceramics, but in a layer disturbed by ploughing. It is important to mention that Bronze Age ceramics were found in the filling of the semi-circular ditch, which was partially researched, but no features from the Bronze Age (such as pits) could be identified. Most likely, the Cucutenian ditches were partially covered after the Eneolithic habitation ended, and were overlapped by short-term Bronze Age habitations.

There are dozens of ceramic shards attributed to Bronze Age according to manufacturing technology, shapes and decoration. These have features specific to different archaeological cultures, starting from Early Bronze Age to Late Bronze Age.

The Early Bronze Age pottery was found in the north-eastern part of the settlement. One notices fragments from profiled vessels, with medium size and overturned, jagged rims (Fig. 2/2-4). These are made from a relatively homogenous paste, with crushed shards and sand in the composition. These pots were unevenly burnt, but in a semi-oxidized atmosphere, as shown by the brown/brick-red colour of the shards. This type of pot is found in several archaeological sites from the Moldavian Sub-Carpathians, belonging to the Târpești cultural group. We can mention here similar discoveries from the eponymous site<sup>12</sup>, others near the salt-spring from Țolici<sup>13</sup>, and some in the

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*repertoriul arheologic al județului Neamț*, in *Mem. Antiq.*, XVIII, 1992, p. 44; Idem, *Faza Cucuteni B în zona subcarpatică a Moldovei*, BMA, VI, Piatra Neamț, 1999, pp. 26-27; D. N. Popovici, *Cultura Cucuteni. Faza A. Repertoriul așezărilor (I)*, BMA, VIII, Ed. Constantin Matasă, Piatra Neamț, 2000, p. 175.

<sup>9</sup> Șt. Cucos, *Contribuții la repertoriul arheologic al județului Neamț*, p. 44; Gh. Dumitroaia, *Materiale și cercetări arheologice din nord-estul județului Neamț*, Fig. 19.5, 7.

<sup>10</sup> Gh. Dumitroaia, V. Diaconu, C. Preoteasa, C. Mischka, I. Tasimova, A. Niessner, M. Hattermann, *Răucești, com. Răucești, județul Neamț. Punct-Dealul Munteni*, in *CCA. Campania 2015*, București, 2016, pp. 69-70; C. D. Nicola, V. Diaconu, C. Preoteasa, A. M. Gafincu, M. Danu, *Răucești, com. Răucești. Punct – Dealul Munteni*, in *CCA. Campania 2016*, București, 2017, p. 113.

<sup>11</sup> V. Diaconu, *Repertoriul descoperirilor atribuite epocii bronzului din județul Neamț*, BMA, XXXVI, Ed. Constantin Matasă, Piatra Neamț, 2016, p. 60, no. 33.

<sup>12</sup> S. Marinescu-Bîlcu, *Târpești. From Prehistory to History in Eastern Romania*, BAR, I.S. 107, Oxford, 1981, Fig. 209.25, Fig. 211.5, 6, 11; Fl. Burtănescu, *Epoca timpurie a bronzului între Carpați și Prut, cu unele contribuții la problemele perioadei premergătoare epocii bronzului în Moldova*, Bibliotheca Thracologica, XXXVII,



settlement from Văratec (Neamț County)<sup>14</sup>. Some ceramic fragments decorated with different types of imprints and conical buttons can be assigned to the same chronological period (Fig. 2/1, 5-11). Analogies are found in the settlements belonging to Târpești cultural group<sup>15</sup>, and in sites assigned to Early Bronze Age from the Suceava Plateau<sup>16</sup>, and even farther south, at Scânteia (Iași County)<sup>17</sup> and Poienеști (Vaslui County)<sup>18</sup>.

The fact that no features from this period have been identified, and the small number of ceramic fragments, allows us to assume that there was a short-lived dwelling in that location.

Similar ceramic fragments were discovered in the archaeological sites located near the brine springs from Țolici and Gârcina (Neamț County)<sup>19</sup>. It can be stated that Early Bronze Age human communities sought and used this natural resource. We consider that the small distance (approximately 6 km) between the Răucești settlement and the salt source from Oglinzi was one of the reasons why the members of an Early Bronze Age community lived here for some time. We also consider important the fact that the distance between this settlement and the closest contemporaneous sites from Târpești and Gârcina, is 10-15 kilometres. This fact can be related to a division of the territory, and the corresponding resources, between Early Bronze Age communities.

For the Middle Bronze Age, we identified a small batch of ceramic fragments among the archaeological materials, which according to paste, shapes and decoration elements, can be attributed to the Komariv culture. Although the pottery remains are few, we managed to delimit two main ceramic categories: semifine and coarse. This latter category is distinguished by a non-homogeneous paste, in which degreasers such as crushed shards, sand and microgravel have important proportions. For this reason, the fragments are sometimes friable and have uneven surfaces.

Among the pots we could identify, we mention the medium sized tulip-vessels (Fig. 3/1-3, 11), the bithronconical vessels with splay rim (fig. 3/5), and

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București, 2002, Pl. XXII.2.3; V. Diaconu, *Repertoriul descoperirilor atribuite epocii bronzului din județul Neamț*, Fig. 77.1, 4.

<sup>13</sup> V. Diaconu, D., Garvăn, *Materiale arheologice din bronzul timpuriu descoperite la Țolici-Hălăbutoaia, jud. Neamț*, in *Mem. Antiq.*, XXV-XXVI (2008-2009), 2010, p. 297, Fig. 3.1, 2; Fig. 4.1, 2; V. Diaconu, *op. cit.*, Fig. 77.13.

<sup>14</sup> V. Diaconu, *op. cit.*, p. 77, Fig. 82/8-10.

<sup>15</sup> Fl. Burtănescu, *op. cit.*, Pl. XXI.5; V. Diaconu, D., Garvăn, *op. cit.*, Fig. 6.7.

<sup>16</sup> Gh. Dumitroaia, *Comunități preistorice din nord-estul României. De la cultura Cucuteni până în bronzul mijlociu*, BMA VII, Ed. Constantin Matasă, Piatra Neamț, 2000, Fig. 37.4; B.-P. Niculică, *Epoca bronzului în Podișul Sucevei*, Ed. Karl A. Romstorfer, Suceava, 2015, Pl. XXV.2, Pl. XXVI.5, Pl. XXVIII.1.

<sup>17</sup> Fl. Burtănescu, *op. cit.*, Pl. XV.3, 4.

<sup>18</sup> Fl. Burtănescu, *op. cit.*, Pl. XXVII.3; C.-M. Lazarovici, M. Babeș, M., *Poienеști - Așezări preistorice*, Ed. Karl A. Romstorfer, Suceava, 2015, Fig. III.6.5.

<sup>19</sup> Gh. Dumitroaia, D. Garvăn, R. Munteanu, O. Weller, R. Brigand, *Gârcina, com. Gârcina, jud. Neamț. Punct Slatina-Cozla II-III*, in *CCA. Campania 2011*, București, 2012, p. 56; V. Diaconu, *op. cit.*, p. 44, no. 67.



the small cups (Fig. 3/10), all specific to the southern area of the Komariv culture<sup>20</sup>.

As decorative elements, we mention the triangles filled with stripes (Fig. 3/7, 10), and groups of oblique lines (Fig. 3/8, 9). For these, there are good analogies in other archaeological sites from the southern part of the Komariv area, in the settlements from Preutești<sup>21</sup> and Mihoveni<sup>22</sup> (Suceava County), as well as in Lunca<sup>23</sup> and Târpești<sup>24</sup> (Neamț County).

The closest Middle Bronze Age discoveries are from the Lunca<sup>25</sup>, Boroaia<sup>26</sup>, Târpești<sup>27</sup>, Grumăzești<sup>28</sup>, and Topolița<sup>29</sup> sites, located at 10 to 15 kilometres from Răucești.

It is interesting to mention that at 700 meters West from the settlement located at *Dealul Munteni*, on another promontory, another Bronze Age site was found<sup>30</sup>, which we believe can be assigned to the Middle Bronze Age period, thus it might be possible that the two settlements were contemporary.

Some of the archaeological materials discovered in all excavated areas belong to Late Bronze Age, and can be assigned to Noua Culture. Until now, only pottery fragments were found. Through paste characteristics, burning and shapes, these materials resemble the ceramic materials discovered in similar Late Bronze Age sites from all East-carpathian area.

The pottery discovered can be included in the coarse category, because of the high quantity of sand and microgravels that have been added to the paste.

Among the shards, we identified shapes characteristic to Noua culture. The most common shape is the middle-sized sack-pot in different versions (Fig. 4/1, 2, 4-10, 12). A characteristic element of this type of pot is the girdle, simple or with alveoli, located on the neck of the pot (Fig. 4/1, 2, 4, 6-8, 12). Also, there are some ceramic fragments decorated with small protuberances with alveoli (Fig. 4/9).

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<sup>20</sup> R. Munteanu, *Începutul bronzului mijlociu în depresiunile marginale ale Carpaților Orientali*, BMA, XXIV, Ed. Constantin Matasă, Piatra Neamț, 2010, p. 143, 144, Fig. 73; B.-P. Niculică, *op. cit.*, p. 230, 231.

<sup>21</sup> B.-P. Niculică, *op. cit.*, Pl. LXXIV.3.

<sup>22</sup> Gh. Dumitroaia, *op. cit.*, Fig. 105.6; R. Munteanu, *op. cit.*, Fig. 75.9; B.-P. Niculică, *op. cit.*, Pl. LXX.5.

<sup>23</sup> Gh. Dumitroaia, *op. cit.*, Fig. 101.5, 6; Fig. 103.6-9.

<sup>24</sup> R. Munteanu, *op. cit.*, Fig. 78.10.

<sup>25</sup> Gh. Dumitroaia, *op. cit.*, 145, 146; R. Munteanu, *op. cit.*, p. 54, no. III.8.

<sup>26</sup> B.-P. Niculică, *op. cit.*, p. 125, 126.

<sup>27</sup> R. Munteanu, *op. cit.*, p. 55.

<sup>28</sup> V. Diaconu, *op. cit.*, p. 46, Fig. 28.2.

<sup>29</sup> V. Diaconu, *op. cit.*, p. 69, Fig. 71. 2, 4.

<sup>30</sup> In this site the archaeological materials belonging to Costișa and Noua cultures were found, plus a fragment from a bronze socketed axe. The artefacts discovered by V. Diaconu in 2015 suggest a Middle Bronze Age habitation. The shards identified can be assigned to Komariv people (see V. Diaconu, *op. cit.*, pp. 59-60).



A high quantity of Noua pottery was discovered in the trench IV/2015, in the area of the Eneolithic defensive ditch, but the presence of any archaeological feature was not found.

Some of the Noua materials have paste and shape characteristics similar with the ones specific to the Komariv culture. The assignment of the atypical fragments to any of these cultures is uncertain and problematic.

In a four kilometres radius from the Răucești settlement several sites and isolated discoveries belonging to the Late Bronze Age have been recorded. This aspect supports the idea that this area was intensely inhabited by the Noua culture populations. It is sufficient to mention the sites of Ungheni<sup>31</sup>, Săvești<sup>32</sup>, and a few more on the territory of Răucești village<sup>33</sup>.

The recent research conducted in the Răucești settlement identified habitation traces from the Bronze Age, besides Eneolithic remains. In the researched trenches only Bronze Age ceramic fragments were found. Other possible archaeological features we think were destroyed through ploughing, and numerous human activities which affected the site.

In the Early and Middle Bronze Age occupying a dominant place was a usual choice, and this can be frequently seen in the Sub-carpathian area, but for the Noua culture this fact is unusual. Besides, at approximately 800 meters East from the Răucești site, in the place called *Trofinești*, another Late Bronze Age site located in a dominant position was discovered. The existence of these unusual settlements, small in size and very intense, may be due to topographic conditions, but they are closely related to the presence of natural resources (quality of the soil, water sources) or other landscape characteristics (slopes, exposure to the sun).

The introduction of the above information in the scientific circuit helps first of all to complete the repertoires of the Bronze Age discoveries. The fact that traces of habitation throughout the Bronze Age have been identified in the same site indicates that this space may have met some additional living conditions, compared to other settlements. The dominant topographic position, good control over an important segment of the valley of Moldova, and the existence of nearby salt sources are just a few of the special elements that were favourable to prehistoric communities.

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<sup>31</sup> Gh. Dumitroia, *Materiale și cercetări arheologice din nord-estul județului Neamț*, p. 90; Idem, *Cultura Noua pe teritoriul județului Neamț*, în *Carpica*, XXIII/2, 1992, p. 138.

<sup>32</sup> Gh. Dumitroia, *Săpăturile arheologice din județul Neamț (1986)*, p. 294; Idem, *Materiale și cercetări arheologice din nord-estul județului Neamț*, p. 89; *Cultura Noua pe teritoriul județului Neamț*, p. 135; M. Benea, V. Diaconu, Gh. Dumitroia, *Preliminary Data on Bronze Age pottery from Săvești (Neamț County)*, in *Studia Chemia*, 1, 2015, pp. 89-98.

<sup>33</sup> See the bibliographical references at V. Diaconu, *op. cit.*, pp. 59-60, no. 128-132.





Fig. 1. Map of the studied area.



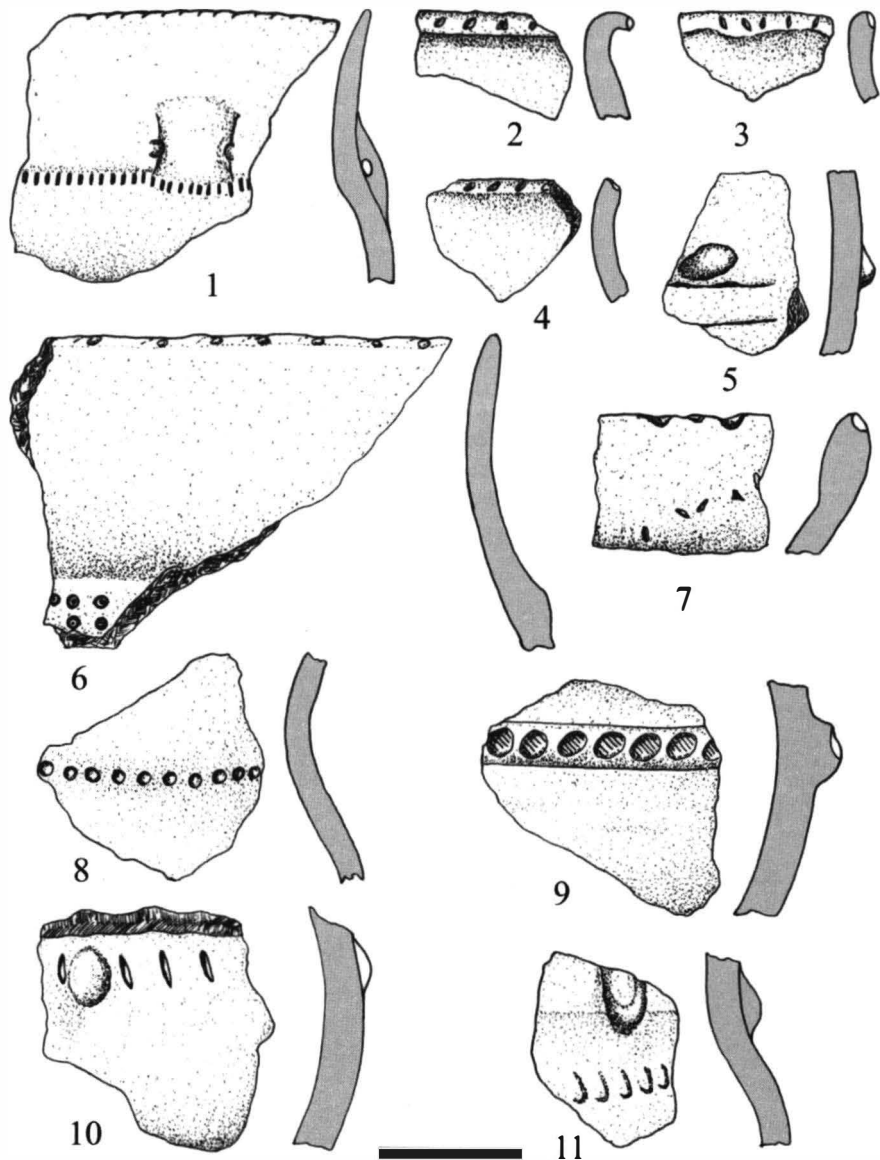


Fig. 2. Răucești: 1-11, ceramics, Early Bronze Age.



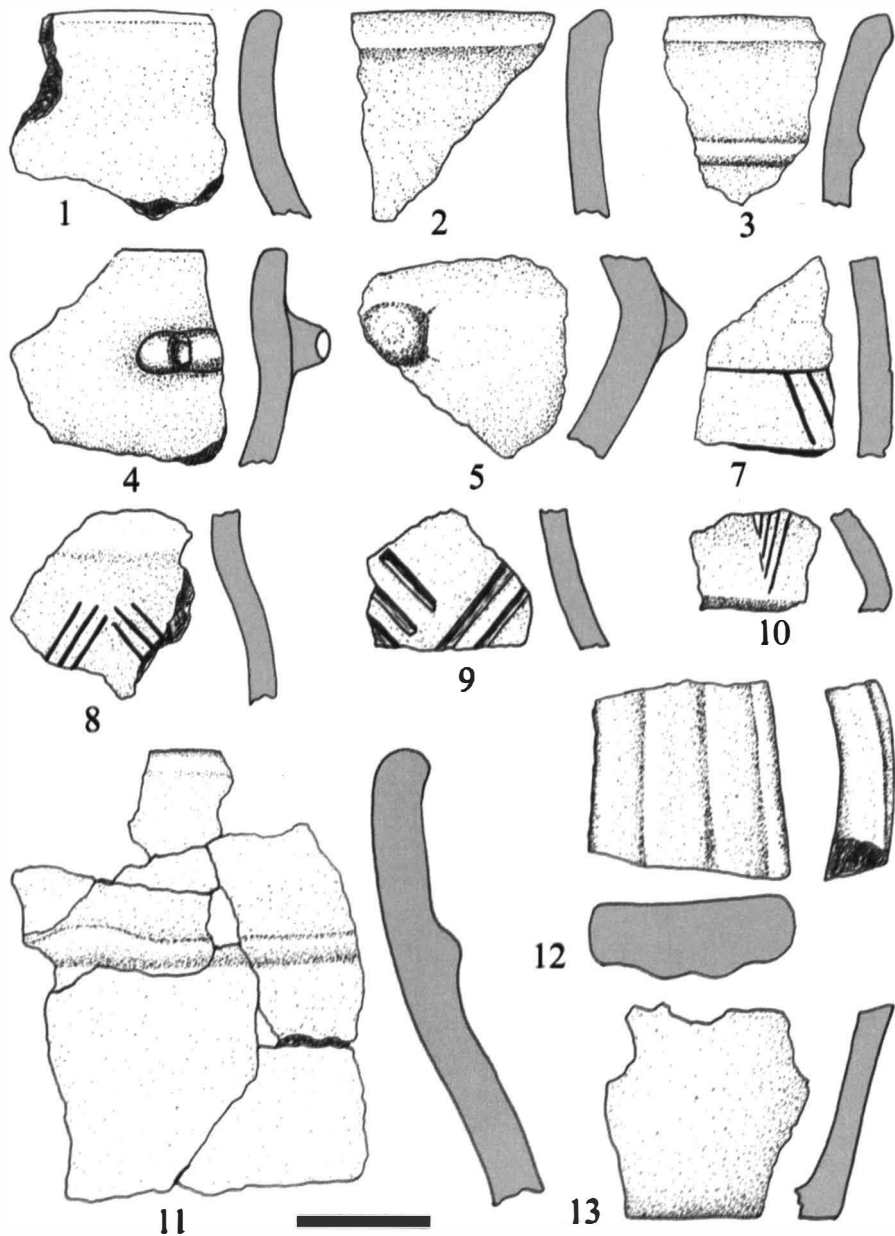


Fig. 3. Răucești: 1-13, ceramics, Middle Bronze Age.



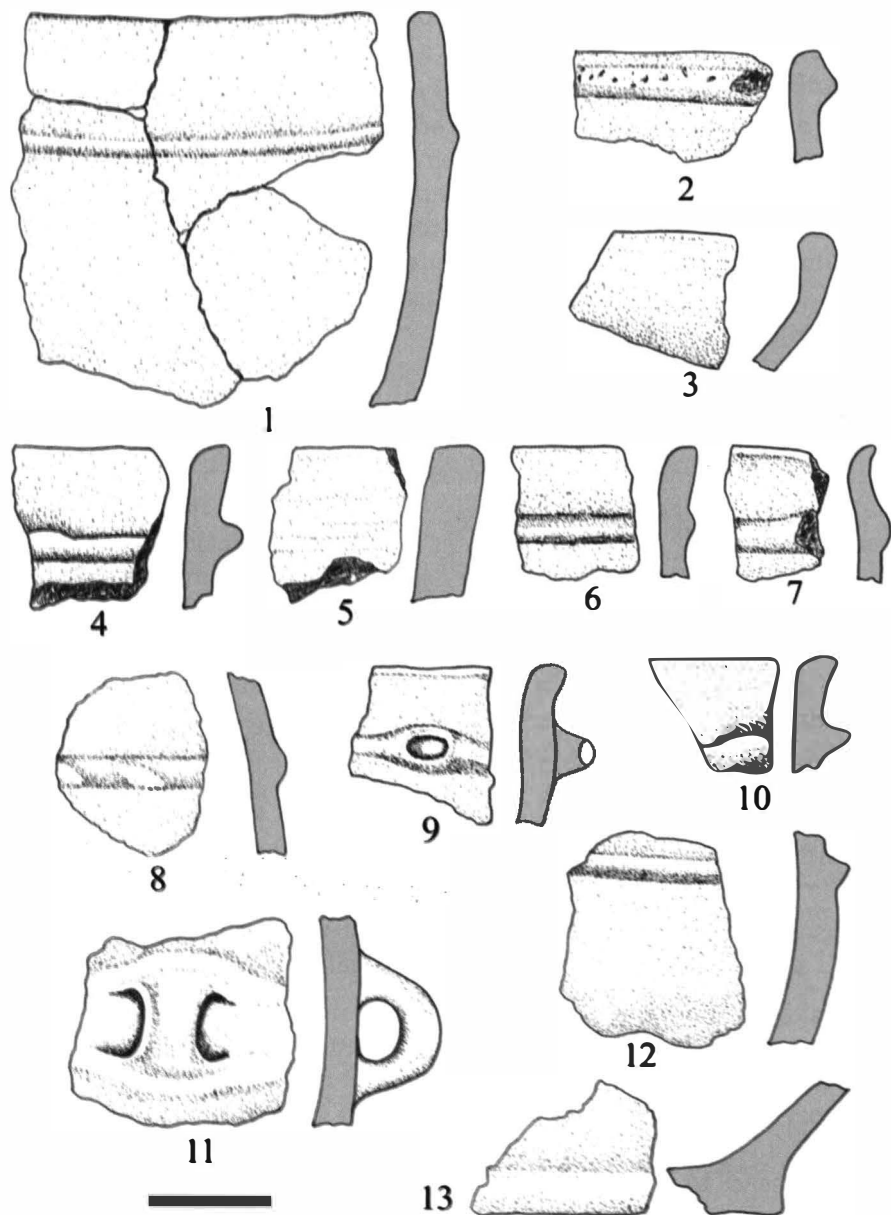


Fig. 4. Răucești: 1-13, ceramics, Late Bronze Age.



# Fortifications Hallstattiennes de l'espace Carpato-Nistrien: évolution et significations

NICOLAE URSULESCU\*

**Résumé:** *Les grandes fortifications en terre (avec des fossés et des vallums adjacentes) sont attribuées aux Gètes, la branche septentrionale de nombreux peuples des Thraces. Leur présence unitaire et concentrée entre les Carpates Orientales et le fleuve de Nistre indique une possible autorité politique dans cette zone, semblable à celle des Odrises de Balkans. Le nom de Tyragètes donné par les auteurs antiques à des tribus gétiques de la zone de Nistre (l'ancien Tyras) paraît à confirmer cette hypothèse.*

**Mots clés:** *Moldavie, Hallstatt, Gètes, fortifications, structure politique.*

Les fouilles intensives initiées il y a 70 ans dans le complexe médiéval Orheiul Vechi ont également favorisé la recherche des vestiges d'autres périodes, situés dans le voisinage de la grande cité. Parmi ceux, l'habitat fortifié de Butuceni, initialement étudié (entre 1947 et 1950) par Gheorghe Smirnov (mais seulement avec des résultats sommaires publiés<sup>1</sup>), puis, à partir de 1983, par des fouilles exhaustives, sous la direction du professeur Ion Niculiță et de son équipe<sup>2</sup>, s'est avéré d'une grande importance. La publication des résultats (y compris par une monographie)<sup>3</sup> concernant le complexe des fortifications successivement aménagées sur le promontoire situé au nord du village de Butuceni et entouré par un méandre de la rivière de Răut a largement contribué à la connaissance de l'histoire et de l'archéologie de la période gétique de l'espace Carpates - Nistre.

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\* Université „Alexandru Ioan Cuza” de Iași, Faculté d'Histoire; n.ursulescu@gmail.com

<sup>1</sup> G. D. Smirnov, *Arkheologicheskie issledovaniia Starogo Orkheja*, in *Kratkie soobščeniia Instituta Arkheologii*, 56, 1954, pp. 24-39; Idem, *Arkheologicheskie razvedki v nizhnem techenii r. Reut*, in: *Materialy i issledovaniia po arkheologii i etnografii Moldavskoi SSR*, Kishinev/Chișinău, 1964, p. 248-254.

<sup>2</sup> A. Zănoici, *Fortificațiile geto-dacice din spațiul extracarpatic, în secolele VI-III a. Chr.*, Bibl. *Thracologica XXV*, București, 1998, p. 123-124; I. Niculiță, Silvia Teodor, A. Zănoici, *Butuceni. Monografie arheologică*, Bibl. *Thracologica XXVI*, București, 2002, p. 13-15; T. Amăuț, *Vestigii ale sec. VII-III a. Chr. în spațiul de la răsărit de Carpați*, Chișinău, 2003, p. 196.

<sup>3</sup> I. Niculiță, S. Teodor, A. Zănoici, *op. cit.*, 2002.



Parmi ces résultats, d'un intérêt particulier semble être la preuve que tant les Gètes des VIIe – IIIe siècles que ses prédécesseurs (et probablement leurs ancêtres) du début de premier millénaire av. J.-Chr., qui ont créé la culture Saharna-Solonceni (Cozia-Brad, à l'est de Prut), aient utilisé le site. Les premières sources écrites concernant le territoire carpato-danubien nous permettent d'attribuer sans conteste les fortifications de Hallstatt récent à la population gétique, qui existait déjà, à ce moment-là (VIe s. av. J-C), dans le cadre du grand bloc des Thraces et, en conséquence, son histoire ethnoculturelle mène directement au début de Hallstatt ancien. De telles situations de présence dans le même endroit des fortifications successives du début et de la fin du Hallstatt ont été aussi certifiées en d'autres sites, aussi bien à l'est du Prut (comme Saharna, Horodiște-Țâpova)<sup>4</sup> qu'entre les rivières de Prut et de Siret (par exemple, à Brad<sup>5</sup>, Răcățiu<sup>6</sup>, Poiana<sup>7</sup>, Căndești<sup>8</sup>). Ces fortifications, qui sont situées dans des points stratégiques et qui ont connu une amélioration graduelle des structures composants, correspondent, selon la plupart des chercheurs, à des étapes de développement d'une population locale, bonne connaisseur du potentiel défensif de quelques lieux dotés avec une bonne défense naturelle, capables de fournir protection pour les établissements ouverts d'alentour et d'arrêter, s'il était nécessaire, les raids des peuplades nomades des zones de steppe (dans ce cas, les Cimmériens et, puis, les Scythes) ou éventuellement les attaques des communautés tribales voisines.

Au regard de l'Âge du Bronze, le système défensif des cités hallstattiennes est beaucoup mieux réalisé, ce qu'il correspond probablement à un système social mieux structuré. Ainsi, à l'époque de Hallstatt, le système défensif est mieux adapté à la forme du terrain. Il y a des forteresses entourées de deux ou même trois anneaux défensifs, composés des fossés, des vallums et des palissades. En conséquence, on constate l'existence d'une variété croissante des

<sup>4</sup> I. Niculiță, A. Zanoci, T. Arnăuț, *Habitatul din mileniul I a. Chr. în regiunea Nistrului mijlociu (siturile din zona Saharnei)*, Chișinău, 2008; I. Niculiță, A. Zanoci, M. Băț, *Cercetări geospațiale și arheologice în microzona Horodiște-Țâpova (raionul Rezina, Republica Moldova)*, in *Tyragetia*, s.n., VIII [XXIII], 2014, 1, pp. 235-252.

<sup>5</sup> V. Ursachi, *Zargidava. Cetatea dacică de la Brad*, Bibl. Thracologica X, București, 1995; Idem, *Scurtă prezentare a descoperirilor arheologice din perioada primei epoci a fierului – Hallstatt – și din epoca geto-dacică, sec. IV î. Hr – sec. I d. Hr.*, in *Carpica*, XXXVI, 2007, pp. 42-127.

<sup>6</sup> Viorel Căpitanu, *Noi contribuții la cunoașterea civilizației geto-dacice în bazinul Siretului mijlociu. Cetatea dacică de la Răcățiu (antica Tamasidava)*, in *Carpica*, XXIII/1, 1992, pp. 131-192.

<sup>7</sup> Radu Vulpe et alii, *Activitatea șantierului arheologic Poiana-Tecuci 1950*, in *SCIV*, II, 1951, I, p. 177-216; R. Vulpe, Silvia Teodor, *Piroboridava. Așezarea geto-dacică de la Poiana*, Bibl. Thracologica XXXIX, București, 2003.

<sup>8</sup> Marilena Florescu, A. Florescu, *Aspecte ale civilizației geto-dacice în zona de curbură a Carpaților Răsăriteni*, in *SAA*, I, 1983, pp. 72-93; Idem, *Cercetările arheologice de la Căndești-Coasta Banului, com. Dumbrăveni (jud. Vrancea)*, in *MCA*, XV (Brașov, 1981), 1983, pp. 119, 121; A. László, *Începuturile epocii fierului la est de Carpați. Culturile Gáva-Holihady și Corlăteni-Chișinău pe teritoriul Moldovei*, Bibl. Thracologica VII, București, 1994, p. 171.



types de fortifications en termes de forme, de grandeur et de systèmes d'emplacement des éléments défensifs<sup>9</sup>.

D'autre part, il y a aussi des différences entre les fortifications du début de Hallstatt et celles de la fin de la période, tant en termes de dimensions que par l'introduction de nouvelles techniques de construction. L'interruption de l'existence des fortifications de l'étape ancienne du Hallstatt, saisie pour les VIIIe et VIIe siècles av. J.-C., on peut expliquer non par un changement des populations (comme de certains chercheurs ont tenté d'éclaircir la situation), mais peut-être principalement en raison de l'état d'instabilité et des troubles, causés par les raids des Cimmériens et, puis, des premières vagues des Scythes. Cependant, les communautés locales, qui avaient construit les anciennes fortifications hallstattiennes, n'ont pas quitté le territoire, de sorte qu'en commençant de la fin du VIIe siècle les fortifications réapparaissent, dans certains cas, même sur les mêmes sites. Bien sûr, le nouveau système de fortification connaît des changements, parfois même importants, qui correspondent pleinement à une société bien meilleure organisée au plan social et militaire. Alors que les premières fortifications du Hallstatt ancien ont été principalement utilisées comme lieux de refuge, celles de la fin du Hallstatt sont effectivement habitées, comme en témoigne leur inventaire de façon beaucoup plus riche et le système de défense plus élaborée.

Parmi d'autres, maintenant, des cassettes intérieures, réalisées par des poutres en bois, parfois avec de la pierre, apparaissent à quelques vallums (par exemple, à *Cotnari-Dealul Cătălina*)<sup>10</sup>, ce qu'il donne une plus grande stabilité au système défensif. Ce système constructif se retrouvera, dans une forme évoluée, aux cités de la période classique de l'histoire des Daces. Il n'est pas exclu que les Gètes eussent pris et adapté cette solution constructive du monde grec, ce qui est également compatible avec la présence de marchandises grecques dans ces fortifications. Cette réalité historique représente un autre argument à l'appui de l'hypothèse que les fortifications fussent aussi les sièges des dirigeants locaux. Ils avaient, bien entendu, une situation matérielle suffisante pour attirer la présence des marchands grecs dans les territoires qu'ils les dirigeaient. Peut-être que l'autorité dont jouissaient ces souverains au sein de leurs communautés était bien connue aux Grecs des colonies pontiques, qui pouvaient ainsi se rendre sans des risques plus grands dans ces endroits éloignés.

Une autre question importante, saisie dans les recherches de Butuceni et confirmée ensuite dans de nombreuses autres situations, est celle de l'existence de quelques systèmes complexes de places fortifiées, généralement situées dans les bassins de certaines rivières ou de leurs secteurs. Ainsi, sept habitats fortifiés (Butuceni, *Mășcăuți-Poiana Ciucului*, *Mășcăuți-Dealul cel Mare*, *Potârca*, *Cot*, *Selitra*, *Scoc*) ont été découverts dans le bassin de la rivière de Răut, autour lesquels se trouvaient d'autres sites ouverts et non fortifiés<sup>11</sup>.

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<sup>9</sup> A. Zanoci, *op. cit.*, 1998.

<sup>10</sup> A. C. Florescu, *Unele considerațiuni asupra cetăților traco-getice (hallstattiene) din mil. I î.e.n. de pe teritoriul Moldovei*, in *Cercet. Ist.*, s.n., II, 1971, pp. 103-118; Idem, *Cotnari*, in D. M. Pippidi (coord.), *Dicționar de istorie veche a României*, București, 1976, p. 190.

<sup>11</sup> I. Niculiță, S. Teodor, A. Zanoci, *op. cit.*, 2002, p. 13.



Un important groupe de forteresses datant dès le début du Hallstatt (le groupe culturel Holyhrady-Grănicești) est situé dans le bassin supérieur du Nistre, en particulier sur les affluents à gauche du fleuve: Lisičniki, Krivce, Grusev, Voloka, Homiakov, Horodnitsa, Fedorovka; certains d'entre eux ont été réutilisés dans la période récente du Hallstatt<sup>12</sup>.

La situation la plus éloquente se trouve dans le bassin moyen du fleuve de Nistre, où les douzaines de fortifications hallstattiennes connues à présent contrôlaient pratiquement tous les gués de la rivière, interdisant ainsi l'accès à l'intérieur de l'espace Prut - Nistre<sup>13</sup>.

De tels groupement de forteresses du Hallstatt récent semblent avoir existé aussi à l'ouest du Prut, comme il est suggéré, par exemple, par les découvertes sur le cours supérieur de la rivière de Bahlui, autour de la grande forteresse de Cotnari-Dealul Cătălina<sup>14</sup>, celles du cours moyen du Prut (Moșna, Răducăneni-Bazga, Arsura, Bunesti-Averești etc.) ou celles de la ligne de la rivière de Siret, avec les fortifications de Brad, Răcătău, Brăhășești, Căndești, Poiana, etc.

Normalement, on soulève la question si ces groupements de fortifications hallstattiens sont seulement que le résultat de quelques circonstances aléatoires ou le produit de certaines actions coordonnées par un pouvoir politique et militaire, dont l'autorité était exercée sur un territoire. Bien que les sources antiques ne nous donnent pas, malheureusement, des indices concernant la situation socio - politique de la région Carpates - Nistre (comme dans le cas des Thraces méridionaux, mieux connus au monde hellénique), cependant la logique des faits nous donnent le droit à considérer comme valable, du point de vue historique, la deuxième variante. Nous croyons qu'aussi les parallèles qui peuvent être établis avec d'autres périodes historiques viennent à l'appui de cette assertion. Nous pensons particulièrement à ces petits centres de pouvoir de Haut Moyen Âge, de l'espace carpatique (*les Romanies populaires*, selon N. Iorga)<sup>15</sup>, concentrés principalement sur les bassins des rivières ou des parties de celles-ci (les soi-disants *principautés de vallée*<sup>16</sup>, situés généralement dans le cadre favorable de certaines dépressions, drainée par ces cours d'eau), qui ont perpétué un certain degré d'autonomie et des aspects de la vie traditionnelle jusqu'aux temps modernes, étant mentionné encore aujourd'hui sous le nom de « pays ». Ils remplissaient le rôle des structures étatiques de caractère local et par leur unification progressive les Etats féodaux eux-mêmes ont apparu; mais, ces «

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<sup>12</sup> Iu. N. Maleev, *Gal'statskie gorodishcha v zapadnoj Podolii i Prikarpatje*, in: *Mezhplemennye svyazi epokhi bronzы na territorii Ukrainy*, Kiev, 1987, p. 86-101.

<sup>13</sup> Maia Kașuba, Vasile Haheu, Oleg Levițki, *Vestigii traco-getice pe Nistrul Mijlociu*, Bibl. Thracologica XXXI, București, 2000; I. Niculiță, A. Zanoci, T. Arnăuț, *op. cit.*, 2008.

<sup>14</sup> A. C. Florescu, *op. cit.*, 1971, pp. 103-118; A. Florescu, M. Florescu, *Cetățile traco-getice din secolele VI-III a. Chr. de la Stăncești, Târgoviște*, 2005, p. 151.

<sup>15</sup> N. Iorga, *La Roumaie danubienne et les barbares au VIe siècle*, in *Revue belge de philologie et d'histoire*, I, 1924, pp. 35-50.

<sup>16</sup> R. Popa, *Premisele cristalizării vieții statale românești*, in N. Stoicescu (coord.), *Constituirea statelor feudale românești*, Editura Academiei, București, 1980, pp. 25-39.



pays » ont gardé, en grande partie, leurs traditions et même certains privilèges par rapport à l'autorité centrale.

En comparant les deux situations historiques, avec toutes les réserves imposées par leur éloignement dans le temps, on peut supposer cependant – pour la période hallstattienne aussi – l'existence de telles formations zonales politico-militaires, dont l'existence est suggérée justement par la découverte des groupements de fortifications au cours de la première période d'Âge du Fer. Il est également nécessaire de prendre en considération l'existence d'une population thrace qui a évolué sur place pendant de plusieurs siècles, ce qui implique l'accumulation progressive de quelques expériences bénéfiques sous l'aspect sociale, militaire et politique.

Nous considérons que l'utilisation du terme "Tyragètes" (*Τυραγέτας / Tyragetae*)<sup>17</sup> par les sources anciennes pourrait aussi être invoquée pour soutenir l'existence d'une forme supérieure d'organisation des Gètes, du moins dans la région du Nistre. Ce nom avait peut-être non seulement une signification géographique (les Gètes de Tyras, le nom ancien du fleuve de Nistre), mais il voulait aussi saisir une certaine individualisation de ce groupe gétique, qui avait réussi à réaliser une organisation politico-militaire digne de mention, comme l'indiquait avant tout l'élévation de l'impressionnant système de fortifications de la zone moyenne de la rivière de Nistre, mais aussi la série de forteresses le long des routes principales à l'intérieur. Ce grandiose système de fortifications du Hallstatt récent suggère qu'il y avait probablement une conception d'ensemble sur une défense efficace de tout le territoire entre le Nistre et le Prout. L'individualisation de ce groupe gétique a persisté, dans la mémoire des auteurs antiques, quelques siècles après la disparition de leurs forteresses – un événement qui eut lieu au cours de III<sup>e</sup> siècle av. J.-C. Les mentions sur les Tyragètes se trouvent à Strabon (à l'époque de l'empereur Auguste), à Pline l'Ancien (I<sup>er</sup> siècle après J.-C.) et à Ptolémée (II<sup>e</sup> siècle après J.-C.). Tous les trois présentent la situation de leur temps, quand les Tyragètes vivaient mélangés avec les Bastarnes et les Sarmates, alors que leur ancienne puissance politico-militaire était tombée depuis longtemps. De plus, Ptolémée les considère à tort comme étant Sarmates<sup>18</sup>, probablement à cause du fait que dans le II<sup>e</sup> siècle après J.-C. le territoire entre Prout et Nistre a été largement envahi par les tribus Sarmates<sup>19</sup>. Ainsi, même si les anciennes fortifications de Tyragètes avaient cessé d'exister au cours du troisième siècle avant J.-C., par suite des attaques des Celtes et des Bastarnes, cependant, l'individualité de ce groupe gétique s'est maintenu encore dans la mémoire de l'Antiquité pendant au moins un demi-millénaire.

En conclusion, nous croyons que l'émergence et le développement des fortifications hallstattiennes, remarquables par leurs systèmes défensifs, leurs dimensions et la complexité de l'organisation interne, reflètent une évolution notable des changements démographiques, économiques, sociaux, politiques et

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<sup>17</sup> Strabon, *Geographia*, II, 5, 12; VII, 1, 1; VII, 3, 17; Plinius Secundus (cel Bătrân), *Naturalis historiae*, IV, 12, 82; VI, 7, 19 (avec un forme faux: *Thyssagetae*); Ptolemaios, *Geographia*, III, 5, 11; III, 10, 7.

<sup>18</sup> Ptolemaios, *Geographia*, III, 10, 7.

<sup>19</sup> V. I. Grosu, *Khronologija pamjatnikov sarmatskoj kul'tury Dnestrovsko-Prutskogo mezhdurecija*, Chişinău, 1990.



militaires au sein des communautés qui les ont construit. Ils sont un indice de ces changements et aident à former une image complexe de l'évolution de la civilisation thraco-géto-dace dans son ensemble.



**Preliminary considerations regarding the Geto-Dacian fortress  
(1<sup>st</sup> century BC – 1<sup>st</sup> century AD) from  
Todirel – Dealul Bobeica  
(Bârnova commune, Iași County)**

**ALEXANDRU BERZOVAN\***

**Abstract:** *Our interest for the antiquities of the Late Iron Age in the East Carpathian Region of Romania has determined us to organise a number of field surveys on the territory of Iași County. Through the present study we aim to present a new and possibly very important archaeological objective that we discovered in September 2017, the fortress of Todirel - Dealul Bobeica. The fort is located on a hill that offers a good viewshed. It was defended on the north-eastern side by two ditches and a possible rampart, while on the southern side it is defended by a larger ditch. The archaeological material that we recovered from the surface - including fragments from a Heraclea Dressel 2-4 type amphora and an iron brooch- suggest a dating during the 1<sup>st</sup> century BC and the beginning of the next, in the classical period of Ancient Dacia. In the Moldavian Plateau, there are very few archaeological sites with materials from this period and they are mostly concentrated towards the Siret valley. However, at Dumbrava and possibly at Ciurea are a number of settlements that could date from the same period; more importantly, they are located less than a few kilometers away from the Todirel fortress.*

**Keywords:** *Late Iron Age, Field survey, Fortress, Ditch and rampart, Amphorae, Heraclea – Dressel 2-4 type.*

## **Introduction**

Our interest in the antiquities of the Late Iron Age in the Eastern Carpathian region has led us to conduct a series of extensive archaeological surveys on the territory of Iași County in order to locate the objectives that were already known in the literature as well as to identify new ones. Of particular interest for us is the forested area of the Iași Hills (Colinele / Coasta Iașilor), situated at the contact between the northern area of the Central Moldavian Plateau and the Moldavian Plain (Fig. 1). Although located near major traffic routes, this area is, as of yet, insufficiently known from an archaeological point of view.



In the present study we aim to present a new archaeological point that we discovered and mapped in September 2017: the fortress of Todirel – *Dealul Bobeica*, situated on the border of Bârnova commune.

### Description and materials

The fortress occupies a high promontory, with a good viewshed, located on the interfluvium between the Nicolina brooks with the tributary of the Damian Creek (to the east) and the Bătrânelui Brook (west) at the following coordinates: 47°03'06.73 N", 27°37'18.42 E" (WGS 84); 340-344 m absolute height and 150 - 200 m relative height (Fig. 2).

The size of the fortress is relatively modest: approx. 113 m in length and 30 m in width. In the north-eastern part, the fort is defended with two ditches of approx. 7-8 m wide and a current depth of approx. 1.5 m, separated by what seems to be a rampart. On the southwestern side, there is a slightly better preserved ditch with a width of approx. 8 meters and 3 m deep. On the other sides the fort is delimited by steep natural slopes. So we have a "closed promontory" type fortification (Fig. 3).

The archaeological materials (Fig. 4 and 5) recovered from the surface are not very rich and consists exclusively of fragments of ceramic pots and burnt adobe. We note the presence of a vessel fragment ornamented with a girdle and a flattened button with alveoli (Fig. 4/3). Several fragments belong to a pot with almost straight walls, hand-worked (Fig. 4/1). Of interest are also a rim (Fig. 4/2) and a base (Fig. 4/4) that belonged to handmade fruitbowls. We also notice a gray, lightly polished fragment that belonged to vessel made on the potter's wheel (Fig. 5).

Of particular interest are a series of amphoric fragments that can give us useful clues about the fort's chronology. The fragments come from a single artifact (Fig. 6), a Heraclea, Dressel 2-4 type amphorae<sup>1</sup>. These containers are characterized by a slim shape, the rounded rim is on the outside and the throat is slightly swollen, while the handles are bifid and superimposed. The neck is separated from the cylindrical body through a firm line, while the bottom of the vessel is conical, small.

The amphorae in question are the most important vessels in the western and eastern Mediterranean during the early Roman period. Their origin must be sought in Italy, from where they spread throughout the Roman Empire. Amphorae of this type are most common in the period between the 1<sup>st</sup> century BC and 1<sup>st</sup> century AD, during the reign of Augustus.

From the steep slopes of the hill, a Latene D type iron fibula was recovered (Fig. 7). It is quite well preserved, presenting a bilateral spring and a large outer chord. Catalogued by A. Rustoiu as type 10 A<sup>2</sup>, this type of fibulae are widespread across the entire Ancient Dacia appearing sporadically even in the

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<sup>1</sup> The determination was made by our colleague, dr. Honcu Ștefan, from the Iași Institute of Archaeology, specialist in Roman and Hellenistic pottery, to whom we offer our thanks.

<sup>2</sup> A. Rustoiu, *Fibulele din Dacia preromana*, București, 1997, pp. 43-44.



neighbouring regions<sup>3</sup>. There is however a visible concentration of these fibulae in the East Carpathian area, which could indicate their possible. Regarding their chronology, this type of fibula has been used since the end of the 1<sup>st</sup> century BC until the middle or the third quarter of the 1<sup>st</sup> century AD<sup>4</sup>. Considering its size, the fibula from Todirel – *Dealul Bobeica* could have been used to fix a cloak made of thick fabric or a fur coat.

## Discussions

If we accept that the dating of the recovered materials coincides with the dating of the fortification elements - and for now we have absolutely no reason to question this - the small fortress from *Dealul Bobeica* could be broadly framed in the horizon of the 1st century BC and the early part of the next. Thus, it could be the first fortress from the classical period of Ancient Dacia known at this moment in the Iași County.

In the area of Moldavian Plateau, the vestiges attributed to this period are rather modest, the few certain discoveries concentrating in the Western area, near the Siret Valley. The situation coincides ultimately with some written sources such as the *Geōgraphikē Hyphēgēsis* of Klaudios Ptolemaios), which mention Hierassus (likely today's Siret) as the eastern border of Ancient Dacia (III,8,3).

However, in the area near the city of Iași, just in the immediate vicinity of the Todirel fortress at distances of only a few kilometers, we know of a number of archaeological sites with finds dated between the 2<sup>nd</sup> century BC and 2<sup>nd</sup> century AD: Dumbrava – *Marginea de est a satului*<sup>5</sup>, Dumbrava - *Căprărie*<sup>6</sup>, possibly Ciurea – *Botul Cihanului*<sup>7</sup>. They are within the viewshed of the small fortress that we presented. Thus, it seems possible that a nucleus of dwellings in the hills of the south of Iași, within the suburban Ciurea and Bârnova commune, existed during the above mentioned timeframe.

It remains for new archaeological research to bring additional data into this discussion

## Acknowledgments:

We offer thanks to ABA Prut-Bârlad for putting to our disposal the digital terrain model (DTM) that enabled us more accurately map this fort.

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<sup>3</sup> *Ibidem*.

<sup>4</sup> *Ibidem*.

<sup>5</sup> V. Chirica, M. Tanasachi, *Repertoriul Arheologic al Județului Iași*, I, p. 80; S. Sanie, T.-E. Marin, *Așezările geto-dacice din spațiul carpato-nistean (sec. II a.Chr. - II p.Chr.)*, in S. Sanie, T.-E. Marin (eds.), *Geto-dacii dintre Carpați și Nistru (secolele II a.Chr. - II p.Chr.)*, Ed. Universității Al. I. Cuza, Iași, 2012, p. 26.

<sup>6</sup> S. Sanie, Ș. Sanie, *Cercetările Arheologice de la Dumbrava (com. Ciurea, jud. Iași)*, in *Cercet. Ist.*, IV, 1973, pp. 61-92; S. Sanie, Ș. Sanie, *Așezarea de la Dumbrava (com. Ciurea, jud. Iași)*, in S. Sanie, T.-E. Marin (eds.), *Geto-dacii dintre Carpați și Nistru (secolele II a.Chr. - II p.Chr.)*, Ed. Universității Al. I. Cuza, Iași, 2012, pp. 393-424.

<sup>7</sup> V. Chirica, M. Tanasachi, *op. cit.* p. 77; S. Sanie, T. Marin, *op. cit.* p. 23.





Fig. 1. Map of the Moldavian Plateau with the position of the Todirel - Dealul Bobeica fortress.

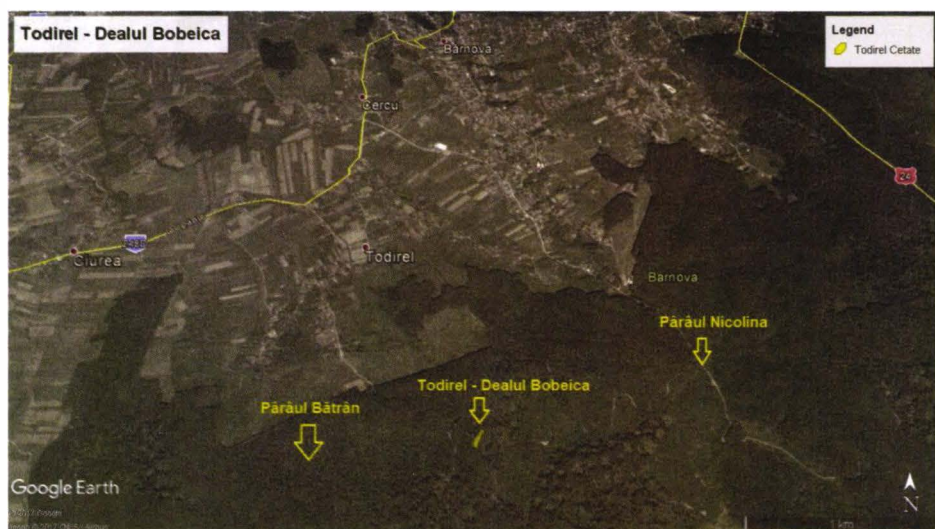


Fig. 2. Todirel - Dealul Bobeica Fortress. Google Earth satellite image.



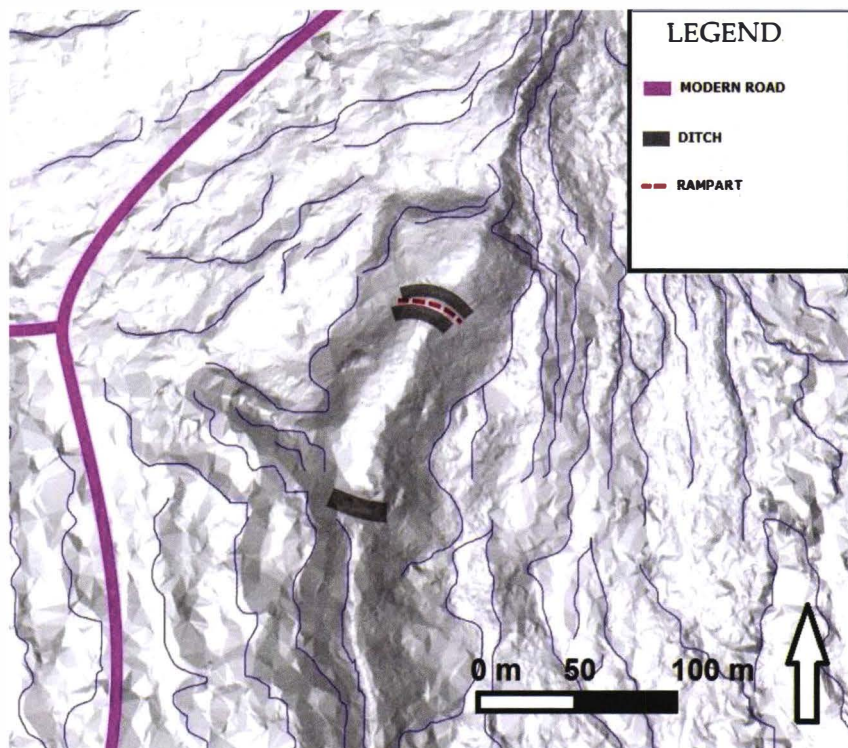


Fig. 3. Todirel - *Dealul Bobeica*. Plan of the fortifications.

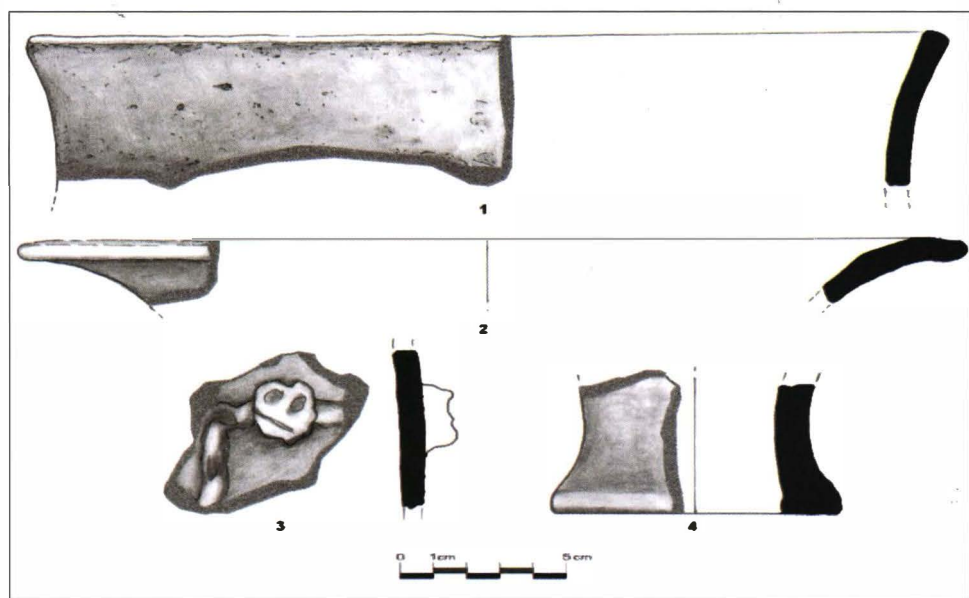


Fig. 4. Todirel - *Dealul Bobeica*. Handmade Pottery (drawings by A. Berzovan).



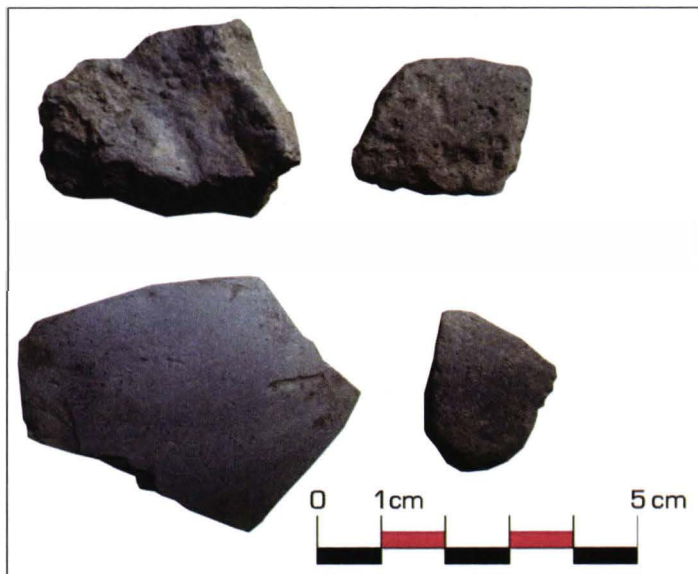


Fig. 5. Todirel – *Dealul Bobeica*. Pottery and burnt adobe fragments (photo by Alexandru Berzovan).

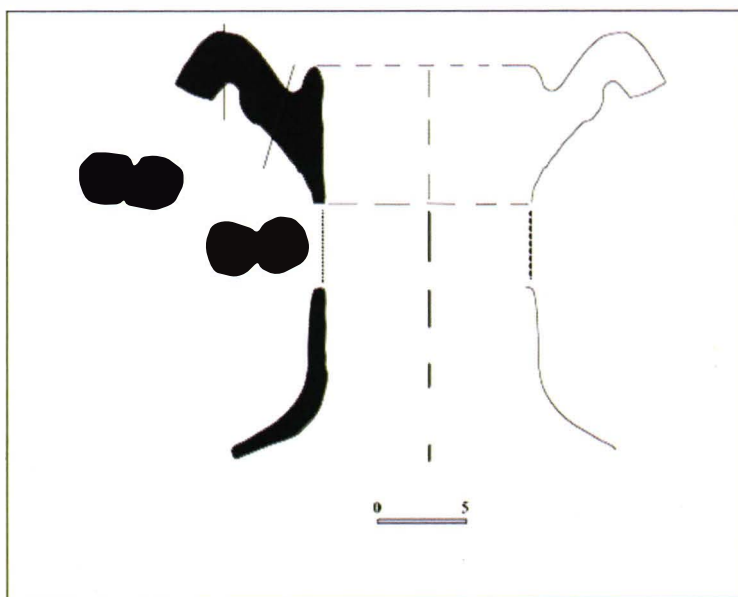


Fig. 6. Todirel - *Dealul Bobeica*. Heracleea Dresel 2-4 type Amphora (drawing by Ștefan Honcu).



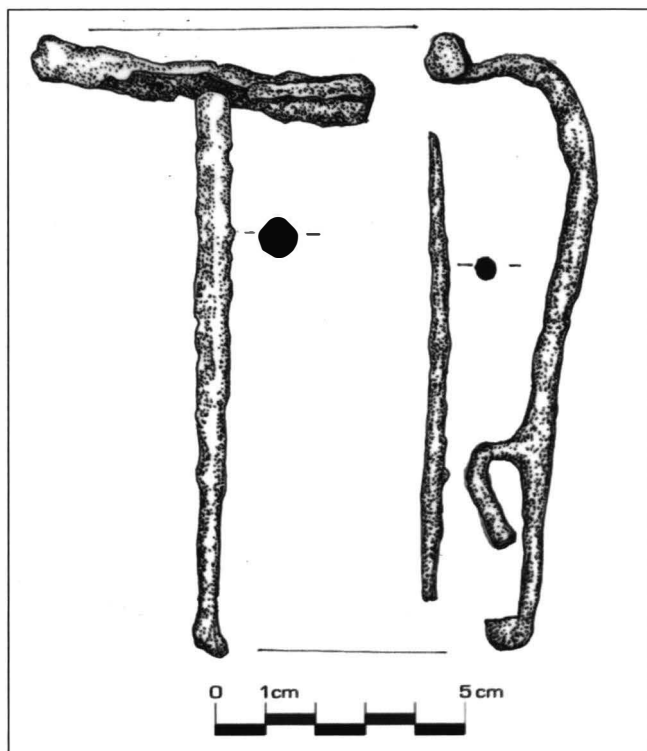


Fig. 7. Todirel – Dealul Bobeica. 10A type iron fibula (drawing by Romeo Ionescu).



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