THE CHIPPED STONE INDUSTRY FROM THE CHALCOLITHIC IN EASTERN ROMANIA: A LITERATURE REVIEW. I. RAW MATERIAL PROCUREMENT AND THE BLADE TECHNOLOGY

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Abstract:
This paper addresses the archaeological literature on the subject of the chipped stone industry of the Chalcolithic communities that inhabited the east of nowadays Romania, namely Precucuteni and Cucuteni (5th and 4th millennium BC).[1] The first part of the study focuses on how the Romanian archaeologists approached the first two stages of the chaîne opératoire: the raw material procurement and the technology of producing knapped stone tools (especially the elongated supports). These aspects were analysed through the literature published until now, regarding aspects as petrographic determination of raw materials, available information on the morphology of the cores and on blade attributes, on the reduction sequences and procedures. Although rewarding in what considers the raw materials supply, the information proves scarce in what concerns the organisation of technology. The causes of this unbalance are sought in the specificity of the development of the study of Prehistory in Romania. Consequently, perspectives for the further investigations and new directions of research are proposed.
Keywords: *Romanian archaeology; Precucuteni and Cucuteni communities; chipped stone assemblages; raw material acquisition; lithic technology; blade industry.*

INTRODUCTION

At 130 years of research on the Cucuteni and Precucuteni communities that lived in the 5th and 4th millennia BC in nowadays eastern Romania there are a lot of un-asked questions about their chipped stone industry. Although some progress was made in understanding various aspects of producing and using stone tools in Chalcolithic of eastern Romania, the scarcity of fundamental data from the archaeological literature makes it difficult, even today, to provide a proper *chaîne opératoire* for the lithic artifacts. How the preferences for certain raw materials change/evolved in time and geographic areas? How did the use of certain raw materials influence the specificity of blade debitage? What characterises the production of lithic artifacts (both in technological and social terms)? What are the sequences of production and how did they change during the evolution of the Cucuteni communities? Why did they change? What are novelties that were introduced throughout time and under which internal/external agencies? Can change in lithic technology be traced concomitant with the other changes from society and other technologies? What is the formal toolkit of the communities and how did it evolve? What lead to the disappearance of some tool types and their replacement with other?

This paper approaches the Romanian archaeological literature on the subject of the chipped stone assemblages discovered in the settlements of Precucuteni and Cucuteni cultures (Table 1; Pl. I) in order to answer some of the above questions. Despite the impressive number of artefacts (see Table 1) that were available for study, the information that can be gathered from the Romanian archaeological literature on this specific technology is unequal, the background of the research differing from one author to another. Since the questions cover a large area of research, the paper was divided in two parts. The first part considers the first two stages of the *chaîne opératoire:* raw material procurement and debitage, especially on the blade industry; the subsequent part will approach the tool types (understood as the modification of supports in order to obtain standardised morphologies) and the functionality of assemblages.

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[1] We dedicate this paper in honour of Professor Dr. Dumitru Boghian at his 65th anniversary.

Although the Precucuteni/Cucuteni Chalcolithic phenomena expanded on a vast area that today is integrated in Romania, Republic of Moldavia and Ukraine, this historiographical presentation will be limited to the Romanian territory. In this study are not discussed the publications regarding the lithic assemblages from the sites left of Prut River, since those publications were written in a different cultural and political context than the ones from Romania. The former belonging of the Ukraine and Republic of Moldova to the USSR had a big impact on the development of the archaeological work and, subsequently, in the analysis of the archaeological artefacts, being quite distinct from the manner in which Romanian archaeology evolved.[2]

THE SOURCES

ON THE RAW MATERIALS

The procurement of the raw materials that the Chalcolithic people needed for making stone tools was always of interest for the Romanian archaeologists, even from the Antiquarians period. In this respect, Diamandi called on the expertise of geologist G. Cobălcescu to determine the origin of the flints from the eponymous site at Cucuteni; he assigned it to the deposits from Russia.[3] Schmidt considered that the sandstone and limestones used in the same prehistoric site were of local origin while the flint was typical for the industries from the Valleys of Dniester, Dnieper, Siret and Prut Rivers.[4] Of long-distance origins was regarded, by Matasă, the flint from Frumușica,[5] while for the Izvoare site Vulpe assumed that the main source of raw materials (flint, sandstone, basalt, andesite) is in the Bistrița valley, considering only the obsidian as a rock coming from long-distance.[6] It must be said that at that moment the flint sources from the Prut River valley were already known in the archaeo-geological literature through the work of Gr. Ștefănescu[7] and I. Simionescu[8] from the end of the 19th century beginning of the 20th. H. Dumitrescu, after consulting the geologist Em. Protopopescu Pache, stated that the sources of the flint used by the Cucuteni community from Hăbășești can be found on the upper valleys of Prut and Dniester Rivers.[9] Along with flint items, a few made from basalt (both cores and tools), originating in the Carpathian Mountains were discovered at the site.[10]

The first petrographic research on thin-sections and chemical and spectral analysis on Chalcolithic implements were made at the Geologic State Committee and were presented by Al. Păunescu.[11] Flint was identified as raw material in the settlements at Traian – *Dealul Viei* and *Dealul Fântânilor*, Larga Jijia, Hăbășești and glauconitic sandstone for the assemblage in *Dealul Viei*.[12] Păunescu acknowledged the sources of raw materials used by the Prehistoric populations in the Cenomanian deposits of flint that cropped out on Prut (between Rădăuți and Ștefănești) and Dniester Rivers and in the Ceahlău Mountains.[13] For the other raw materials of a lower quality, the Carpathian Mountains were seen as the main source.[14]

The crucial work of A. Muraru who made petrographic analysis on thin-sections on the assemblages from Târpești,[15] Ghelăieşti-Nedeia, Hlăpeşti, Văleni-Piatra Neamț, Podei-Tg. Ocna[16] and Drăgușeni[17] revealed that in these

[2] For an overview of Romanian archaeology see ANGHELINU 2014.

[3] DIAMANDI 1889: 583. At that time the area where the Volhynian flint can be found was included in the Russian Empire; unfortunately, the text does not specify the exact deposits.

[4] SCHMIDT 1932: 105.

[5] MATASĂ 1946.

[6] VULPE 1957.

[7] ŞTEFĂNESCU 1888.

[8] SIMIONESCU 1906.

[9] DUMITRESCU 1954: 226.

[10] DUMITRESCU 1954: 236-242.

[11] PĂUNESCU 1970: 223-227.

[12] PĂUNESCU 1970: 223-224.

[13] PĂUNESCU 1970: 83-84.

[14] PĂUNESCU 1970: 83-84.

[15] MARINESCU-BÎLCU *et al.* 1981; MARINESCU-BÎLCU *et al.* 1985

[16] CUCOȘ, MURARU 1985: 605-641.

[17] MURARU 2000: 59-62.

settlements, along with the flint brought from the deposits from the Prut River were also used rocks as sandstone and chert, that have their origins in the Carpathian area.[18]

The petrographic determination of the artefacts from Preuteşti, made by Catană, showed, that along with flint, raw materials originating in the Carpathian area[19] were also used.

For the lithic collection at Dobreni, the primary petrographic analysis of Grasu & Catană was included in the article of Cotoi. He provided tables with the percentage of each raw material: flint had highest percentage followed by brown bituminous marls, silicified quartz sandstones, lyddites, Audia sandstone, obsidian, gaize-spongolites and chert.[20] Cotoi & Grasu are also the authors of the only book regarding the rock sources used in Chalcolithic, book based on petrographic analysis and good knowledge of sources.[21]

The first synthesis that dealt only with the Precucuteni-Cucuteni lithic assemblages belong to Boghian who gathered all the existing data on raw material, technology and typology.[22] The author mentioned three main sources of flint used by the Chalcolithic communities: the flint from the Prut valley and the one from the Dniester (acknowledging their common geologic origin and proposing the term of Prut-Dniester flint), and the flint from the Volhynian Platform.[23]

The obsidian artefacts found at Poduri and Valea Lupului were spectrographically analysed by Cârciumaru and his team, stating that they have their origins in north-western Romania (Oaș-Maramureș area) and Tokay Mountains.[24]

The petrographic determination of Haită for the Cucuteni A-B site from Traian showed that, along with flint, rocks from the terraces and riverbeds of Bistrița and Cracău (sandstones and various siliceous rocks) were used.[25]

For the last decade, it must be remarked the work of O. Crandell. He thin-sectioned artefacts from several Precucuteni sites (Târgu Frumos,[26] Topolița and Săcălușești[27]) and compared them with the petrographic analysis he made on geologic sources of knappable raw materials from Romania. He highlighted the long-distance exchange of the Balkan flint artefacts and the use of rocks of local origin in the sub-Carpathian areas.[28]

Recently, Spinei published an inventory of the Volhynian flint items from the Cucuteni settlements west of Prut river,[29] discussing their provenance and ways of acquisition for the Cucuteni communities.

On technology and blade production

All of the excavation reports regarding Cucuteni sites contained information on the chipped stone artefacts, as raw material macroscopic determination and usually an enumeration of classes and types. In this paper mention will be made only of works of greater extend (see Table 1: monograph chapters and articles dedicated only to this specific problem), but, if the case, relevant information from other works is also mentioned.

In the monograph of the Cucuteni site, Schmidt considered the flint technology from the settlement as being not very fine, but rather rough.[30] He listed the main tool types and saw two main traditions characterising the assemblage: an autochthonous one (the blade industry) and a foreign one with northern influences (the sickles and the flint axes).[31]

For the Frumușica site, Matasă presented the blades and the retouched items with their dimensions;[32] he noticed the presence of a visible bulb of percussion on some artefacts.[33]

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[18] CUCOȘ, MURARU 1985: 605-641.

[19] URSULESCU, IGNĂTESCU 2003: 123-126.

[20] COTOI 2000: Table IV.

[21] COTOI, GRASU 2000.

[22] BOGHIAN 1995: 7-41; BOGHIAN 1996: 277-342; BOGHIAN 1996A: 4-36; BOGHIAN 2008; BOGHIAN 2009: 117-146.

[23] BOGHIAN 2009: 117-146.

[24] CARCIUMARU *et al.* 2001.

[25] BEM 2007: 175-177.

[26] CRANDELL, VORNICU 2015.

[27] CRANDELL 2012.

[28] CRANDELL 2012; CRANDELL, VORNICU 2015.

[29] SPINEI 2015; SPINEI 2016.

[30] SCHMIDT 1932: 46-50.

[31] SCHMIDT 1932: 46-50.

[32] MATASĂ 1946: 84-85, 161; PL. LIX-LX.

[33] MATASĂ 1946: 84-85.

To H. Dumitrescu we own a thorough description of the knapped stone collection from Hăbășești, with quantitative information and description of cores, blades and retouched types.[34]

In the monograph of the Izvoare site, Vulpe stated that the lithic collection from the Chalcolithic settlements is very rich but his presentation is focused on enumerating the most representative types, without a separation between the Precucuteni and Cucuteni layers.[35]

Al. Păunescu's work on the evolution of the chipped stone industries in prehistoric Romania summarizes, in a fortunate manner, the main features of the Precucuteni and Cucuteni collections. The tables presenting the number of knapped items discovered in sites as Traian, Larga Jijia, Truşeşti and Hăbăşeşti are relevant for an analysis of the intensity of stone knapping and for studying the frequency of each type in the assemblages.[36]

Some of Păunescu's assertions were included by Marinescu-Bîlcu in the monograph of the Precucuteni culture,[37] while for Ghigoești-Trudești and Târpești, she used the typological observations made by Maria Bitiri.[38]

A lack of interest for the quantitative aspects of the Precucuteni chipped stone assemblage can be found in the monograph of the Târpești site.[39] For the Cucuteni knapped stone industry from the same site, Marinescu-Bîlcu offered a more complex description, noticing the small number of the chipped stone artefacts, but also their high fragmentation.[40]

In their paper dealing with the retouched assemblage from Târgu Frumos, Boghian and Tudose remarked that in this settlement existed a certain specialization in flintknapping.[41] The materials from Târgu Frumos was reanalysed, 18 years later, in the PhD thesis of the author of this article, offering also details on the knapping techniques.[42]

Concerning the chipped stone collection from the Cucuteni A settlements in Scânteia,[43] Mantu enumerated the types of artefacts discovered inside the settlement, crested blades and small cores included.[44] In the same manner, she later described the artefacts from Poienești.[45]

The small collection from Preuteşti was presented by Ursulescu & Ignătescu who managed to refit two cortical flakes made of marl and spoke about the existence of a small knapping workshop inside the site.[46] The catalogue of the artefacts presents the metric characteristics of the lithic items.[47]

One of the largest chapters dedicated to the chipped stone assemblage from a Cucuteni settlement is the one from the monograph of Truşeşti site.[48] The criteria that the author used for classifying the blades in categories are a mixture of their supposed functionality, their length and the presence of retouches.[49]

The presentation of the collection discovered at Drăguşeni (both at *Ostrov* and *În deal la Lutărie*) abounds in contextual information but relevant data on the technology of blade producing and the percentages of retouched types are also presented.[50]

The lithic items from Dobreni, where all the phases of Cucuteni were attested, were considered to show retardation based on the typological scarcity, small sizes of blades, high percentage of tools made on flakes, less elaborate processing of some pieces and the use of rocks with mechanical properties inferior to flint.[51]

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[34] DUMITRESCU 1954: 224-245.

[35] VULPE 1957: 243-247.

[36] PĂUNESCU 1970: 168-170, 185-191.

[37] MARINESCU-BÎLCU 1974.

[38] MARINESCU-BÎLCU 1974: 44-45.

[39] MARINESCU-BÎLCU 1981: 27-28, 52-53.

[40] MARINESCU-BÎLCU 1981: 52.

[41] BOGHIAN, TUDOSE 1994: 150.

[42] VORNICU 2012.

[43] MANTU, ŞTIRBU, BUZGAR 1995: 115-132.

[44] MANTU, ŞTIRBU, BUZGAR 1995: 115-120.

[45] LAZAROVICI, BABEŞ 2015: 119-122.

[46] URSULESCU, IGNĂTESCU 2003: 38.

[47] URSULESCU, IGNĂTESCU 2003: 123-126.

[48] FLORESCU 1999: 231-248. Although in the monograph of the site there is no clear differentiation between artefacts discovered in each layer, their division on layers was facilitated by the rich contextual information.

[49] FLORESCU 1999: 235-236.

[50] MARINESCU-BÎLCU 2000: 51.

[51] COTOI 2000: 255.

Culture/Phase	Settlements (reported number of chipped stone artefacts)
Precucuteni	1. Traian-*Dealul Viei* (1184);[52] 2. Larga Jijia (124 –flakes not included);[53] 3. Trifești;[54] 4. Ghigoești (no quantitative information);[55] 5. Isaiia (989);[56] 6. Andrișeni (no precise number);[57] 7. Târpești (no quantitative information);[58] 8. Târgu Frumos (more than 6000).[59]
Cucuteni A	9. Hăbășești (834);[60] 10. Trușești (374);[61] 11. Hoisești (313);[62] 12. Cucuteni (29);[63] 13. Preutești (67);[64] 14. Scânteia (289);[65] 15. Ruginoasa (243);[66] 16. Poienești (120);[67] 17. Copălău – *Răzima;*[68] 18. Costești (67);[69] 19. Giurgești (52);[70] 20. Fulgeriș (98);[71] 21. Drăgușeni (over 1600).[72]
Cucuteni A-B	Cucuteni (5);[73] Costești (65); Traian – *Dealul Fîntînilor* (946 – flakes not included);[74] 22. Corlăteni (no quantitative information).[75]
Cucuteni B	Cucuteni (118);[76] 23. Ghelăiești (352);[77] 24. Văleni-Piatra Neamţ (149);[78] 25. Hlăpești (26);[79] 26. Podei – Târgu Ocna (70);[80] 27. Fetești (no quantitative information).[81]
Mixed layers	28. Izvoare (no quantitative information);[82] 29. Frumușica (*circa* 100);[83] 30. Răucești (360);[84] 31. Dobreni (161).[85]

Table 1. The Precucuteni-Cucuteni settlements referred to in this paper.

The stone collection discovered during the investigations of Petrescu-Dîmbovița at the Cucuteni was analysed in early 2000's by Văleanu, the author giving contextual information where possible.[86]

In the monograph of the Cucuteni A-B site from Traian – *Dealul Fântânilor*, Bem made a description of the chipped stone materials.[87]

[52] ȚURCANU 2006; ȚURCANU 2009.
[53] PĂUNESCU 1970.
[54] ICONOMU 1998.
[55] MARINESCU-BÎLCU 1974.
[56] VORNICU 2017.
[57] PĂUNESCU 1970: 170.
[58] MARINESCU-BÎLCU 1974; MARINESCU-BÎLCU 1981.
[59] VORNICU 2012.
[60] DUMITRESCU 1954; PĂUNESCU 1970: appendix 11D, 186-188.
[61] FLORESCU 1999.
[62] BODI 2010.
[63] SCHMIDT 1932; VĂLEANU 2004.
[64] URSULESCU, IGNĂTESCU 2003.
[65] MANTU, ȘTIRBU, BUZGAR 1995.
[66] ȚURCANU 2012.
[67] LAZAROVICI, BABEȘ 2015.
[68] DIACONESCU 1994.
[69] VORNICU 2014.
[70] BOGHIAN 2014: 47.
[71] VORNICU 2015.
[72] MARINESCU-BÎLCU 2000.
[73] VĂLEANU 2004.
[74] PĂUNESCU 1970; BEM 2007.
[75] PĂUNESCU 1970.
[76] VĂLEANU 2004.
[77] CUCOȘ, MURARU 1985.
[78] CUCOȘ, MURARU 1985.
[79] CUCOȘ, MURARU 1985.
[80] CUCOȘ, MURARU 1985.
[81] BOGHIAN *et al.* 2012: 187-200.
[82] VULPE 1957.
[83] MATASĂ 1946, 84-85, 161.
[84] DIACONU, DUMITROAIA 2016.
[85] COTOI 2000.
[86] VĂLEANU 2004: 135-154.
[87] BEM 2007: 175-177.

Bodi categorized the lithic artefacts from Hoisești in two classes: cores and debitage products.[88] Diagrams dealing with the frequency of the raw materials, the types of retouched products and the archaeological context of the assemblage are also provided.[89]

Some of the most eloquent analyses in terms of technology of the chipped stone collections are those for Traian – *Dealul Viei*[90] and Ruginoasa[91] made by Țurcanu.

Remarks on the assemblages from neighbouring sites at Costești[92] and Giurgești[93] were presented by Vornicu and Boghian. The chipped stone artefacts from Fulgeriș were analysed both techno- typological and from a use-wear perspective.[94] The presentation of the assemblage from Răucești was recently published without specifying the context, since not all the artefacts have a strict cultural attrition.[95]

The analysis of the flint collection from the Precucuteni site at Isaiia showed a typical assemblage for the beginning of Chalcolithic.[96] All the sequences of flint reduction were carried inside the settlement, as attested by the structure of assemblage: nodules, cores and core maintaining elements, high frequency of cortical flakes, large amount of debris, and the flint hammers.[97]

ON SOME SHORTCOMINGS

The data from the archaeological literature about the lithic assemblages discovered in the Cucuteni settlements is uneven. The main cause of this inequality is the lack of a common methodology in analysing the archaeological collections.

For the Romanian archaeologists sourcing the raw materials that the Prehistoric populations needed for making tools was of more interest than the technological aspects of the flint industry. Patterns of raw material procurement were observed but there is still a lot of work to be done. The main shortcoming is not the lack of petrographic analysis on archaeologic artefacts, but the systematic petro-geochemical analysis of geological flint deposits from the Prut and Dniester rivers and their comparison with the archaeological artefacts.

As for the lithic technologies of the Cucuteni communities, the work done before the eight decade of the 20th century is typical for an archaeology that was establishing its basis and looking for a self-identity. Păunescu's breakthrough study[98] showed a path to be followed by archaeologists that might be interested in the characterisation, in terms of typology and technology, of the Cucuteni lithic assemblages. Al. Păunescu tried one of the first characterization of the archaeological cultures in terms of lithic inventory (using the typology of the retouched pieces and technological aspects of knapping), with the purpose of creating a coherent evolutionary schema of the chipped stone tools from Prehistoric Romania.[99] Through this approach, the lineages and inheritances of material culture (technological traditions) were followed from one Prehistoric community to another. This specific research, with an emphasis placed on technology, was later approached by Țurcanu[100] who successfully managed to find the perpetuations of various technologic traditions throughout Neolithic and Early Chalcolithic of eastern Carpathian area.

But, most of the archaeologists that dealt with the chipped stone collections and tried to follow Păunescu's path lacked the foundation of lithic analysis. This can be seen in the shortcomings from the published works: no common vocabulary was used, not every author considered necessary to provide quantitative data on the collections, no

[88] BODI 2010: 57-68, Pl. 18-27.
[89] BODI 2010: graphics 1-10.
[90] ȚURCANU 2006: 131–154; 2009.
[91] ȚURCANU 2012: 149-160.
[92] VORNICU 2014: 38-46.
[93] BOGHIAN 2014: 47.
[94] VORNICU 2015: 11-32.
[95] DIACONU, DUMITROAIA 2016: 631-648.
[96] VORNICU 2017: 191-203.
[97] VORNICU 2017: 191-203.
[98] PĂUNESCU 1970.
[99] PĂUNESCU 1970
[100] ȚURCANU 2009.

differentiation was made between functionality and the typology of the artefacts, the misidentification of technological aspects.

This is a consequence of the specific way in which the research on Chalcolithic developed in Romania. The main interest of the archaeologists was to establish the features of the Cucuteni culture in several geographic units and to have a strong chronology on the development of this culture. To this positivist approach that was based on the typological study of the ceramics was added a preoccupation for the interdisciplinary analysis of the materials from the excavations, especially those that could help reconstructing the environment. But, for the techno-typological characterisation of the industries, the enumeration of the types/classes (many times there was, in fact, no differentiation and no real taxonomy used for classifying the lithic items[101]) was considered sufficient.

The absence of specialisation in analysing the products of a certain Prehistoric technology was, in my opinion, the main causes of the stagnation of the lithic studies. When characterising the lithic industry of a settlement (both technologically and typologically), constructing a rigorous methodology for investigating the techno-morphologic attributes of the artefacts is crucial. It requires understanding of the knapping techniques, good knowledge on the organisation of reduction sequences, knowing what characteristics to observe in order to get the sought answers. In other words, requires a researcher to have some degree of specialisation in this kind of analysis. Fortunately, in last decades specialists trained in the study of lithic artefacts started to deal with the Cucuteni assemblages.[102]

This *status quo* of the Romanian archaeological research lead to the non-existence of a theoretical program designed for understanding the socio-economic impact of the technologies and technologic traditions in the development of the Prehistoric communities. This, although the importance of studying the tools for understanding Prehistoric economy was postulated, under the influence of the mandatory Marxist ideology, since the 50's. As an example, are the ideas Dumitrescu[103] regarding the necessity of the analytical research of stone tools.

WHAT DO WE KNOW ABOUT THE CUCUTENI LITHIC ASSEMBLAGES FROM THE LITERATURE?

Regardless of this state of art, a few characteristics can be ascertained for the lithic industry of the Chalcolithic societies from north-eastern Romania, as described in the literature.

The most common raw material used by the Cucuteni communities west of Prut river was the flint originating in the Cretaceous deposits from the Moldavian Platform, that cropped out on the Prut and Dniester Rivers. In the settlements from the sub-Carpathian area can be noticed a generalized use of Carpathian origin rocks along with flint.[104] Artefacts that were made from stones that have their primary deposits in areas remote of Cucuteni territories were also discovered, as those made of Balkan flint[105] and obsidian,[106] showing that the products of chipped stone industry were circulated in long distance, between communities that had a different cultural background. The Balkan flint artefacts were circulated between the Cucuteni and southern territories as long as the Gumelnița – Kodjadermen – Karanovo VI communities exist, while the obsidian was present in all the Eneolithic timespan, from Precucuteni I to the end of Cucuteni B. An uninterrupted flow of flint came from the Volhynian Platform throughout all Chalcolithic from west of Prut River; the intensity of this flow seems to have increased in the later periods of Cucuteni (A-B and B).

Knapping activities were attested in the Precucuteni-Cucuteni sites by the presence, in the assemblages, of cores, core shaping elements, flakes from initial stages of core reduction, various debris. Depending on the number and density of these items, it can be stated that the intensity of knapping was high in settlements as Târgu Frumos, Larga Jijia, Trușești, Hăbășești, Drăgușeni – *Ostrov*. Not all these settlements were situated in the close vicinity of the geological deposits of flint (Plate 1). This hints to the fact that, during the Chalcolithic, some individuals (artisans?) were circulating the raw materials and flint artefacts between communities. The idea also finds support in the fact that in some settlements

[101] See the case of Trușești: FLORESCU 1999.

[102] See the mentioned works of Tudose (Țurcanu) and Vornicu.

[103] See the introduction to the chapter "Unelte de producție": DUMITRESCU 1954: 225-226.

[104] DUMITRESCU 1954; VULPE 1957; MARINESCU-BÎLCU, MURARU, CÂRCIUMARU 1981; CUCOȘ, MURARU 1985; COTOI 2000; URSULESCU, IGNĂTESCU 2003; ȚURCANU 2009.

[105] CRANDELL, VORNICU 2015.

[106] CÂRCIUMARU *et al.* 2001.

(Fulgeriș and Ruginoasa) the debitage of flint was not practiced, fact proved by the absence of cores and the scarcity of knapping debris, the high percentages of retouched products when compared with blanks (as the case of Fulgeriș). Also, must be mentioned the fact that not only the flint from Prut river was knapped inside these settlements but also other types, brought from long-distance territories as is the case of the Volhynian flint.[107]

The cores discovered in the Cucuteni sites attest that the debitage was set in two directions: the main one in obtaining blades and a secondary one in obtaining flakes. When the blade cores became unfeasible, they were transformed into flake cores or re-used as hammers.

The lithic technology of the Precucuteni communities was considered as originating in the chipped stone industries of the Linearbandkeramik and Boian cultures, especially in the former, through its microlithism and the high production of endscrapers.[108] The blade cores from the Precucuteni sites are unidirectional and bi-directional, conical and prismatic in shape (Pl. II.1-4).[109] The blade technology in the first two phases of Precucuteni produced small specimens, with regular edges, wide of 12-18 mm[110] and thin of 2-5 mm,[111] as those from: Traian – *Dl. Viei* (Pl. III.1), Larga Jijia,[112] Trifești,[113] Isaiia (Pl. III.2). At Traian – *Dealul Viei*,[114] Țurcanu observed different reduction strategies for flint and sandstone. For flint, the first step in preparing the cores was to lay out a striking platform through removal of the top of the nodule. For sandstone such a preparation was not necessary since the natural morphology of the rock was considered: the lateral side of the boulders became a debitage plan and their narrowest face was used as a striking platform.[115] Țurcanu remarked that the flint blades had punctiform butts and a not very prominent bulb.[116] She considered that sandstone was knapped with a hammer harder than the one used for flint.[117]

For the next phase of Precucuteni, at Larga Jijia were discovered cores bearing negative of the small, thin and slender blades[118] (Pl. II.2). At Isaiia, are attested small blade cores (around 50 mm in length:[119] Pl. II.3), of the same shapes as in the previous phase, usually uni-directional.[120] They had their striking platform created through small flake removals.[121] Some of them had a circularly debitage surface, while others a semi-circular one.[122] Both indirect percussion and pressure were used for blade and bladelet removal,[123] but at the moment it is impossible to state if the two techniques represent two different technological traditions. At Isaiia was also attested the re-shaping and maintenance of cores.[124] The blades from this site, in almost half of the cases, have plain butts and another quarter facetted.[125] The bulbs are of different morphologies no specific attributes of the bulbs was related to a specific type of butt.

In the last Precucuteni phase, at Târgu Frumos, the same shape of cores perpetuates, with both circular and semi-circular debitage (Pl. II.4), with the striking platforms shaped in the same manner as Isaiia, fact that can be seen both on the cores but also on the butts of blades. The cores are larger in dimensions than at Isaiia; an increase in the number of the cores that were 50-70 mm long was seen.[126] This tendency is noticeable also in the blade assemblage where blades that

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[107] For the settlement at Copălău M. Diaconescu mentions a 3 kg blade core (DIACONESCU 1994). The specimen, that can be seen in the permanent exhibition of the Botoșani County Museum, is of Volhynian flint.

[108] PĂUNESCU 1970; BOGHIAN 1996: 287; ȚURCANU 2006.

[109] PĂUNESCU 1970; MARIENSCU-BÎLCU 1981: 28; ȚURCANU 2009; VORNICU 2012; 2017.

[110] See ȚURCANU 2009: Fig. 32.

[111] VORNICU 2017: Fig. 5.

[112] PĂUNESCU 1970.

[113] ICONOMU 1998: 22.

[114] ȚURCANU 2009.

[115] ȚURCANU 2006.

[116] ȚURCANU 2006: 134.

[117] ȚURCANU 2006: 137.

[118] PĂUNESCU 1970: 169.

[119] The same sizes are also typical for the Traian – *Dealul Viei* as can be seen from the plates in ȚURCANU 2009.

[120] VORNICU 2017: 195.

[121] VORNICU 2017: 195.

[122] VORNICU 2017: 195.

[123] VORNICU 2017: 191-203.

[124] VORNICU 2017.

[125] VORNICU 2017: 197.

[126] VORNICU 2012. This was also noticed by BOGHIAN 1996: 291.

have their width under 20 mm have similar percentages to those wider than 20 mm.[127] Blades up to 150 mm in length are part of the collection from this site (Pl. III.3);[128] these specimens are usually slender and they foretell the similar items from Cucuteni A. Core maintenance and shaping elements (both tablets and various crested specimens) are part of the assemblage.

In the Precucuteni layer in Târpești the chipped stone assemblage is composed from: prismatic and pyramidal cores (some microlithic), but as can be seen from the published plates most of the cores are over 50 mm in length.[129] They are similar to those from Târgu Frumos through their shape, wide debitage surface and platform. Thus, it can be noted that the cores are already larger that in Precucuteni II, the negatives found on them showing the removal of wider and longer blades than in the previous phases.

The cores from Cucuteni A were described in several instances as having small metric characteristics[130] as those from Scânteia,[131] Poienești[132] (Pl. II.7) and Hoisești.[133] The blade cores from Hoisești are prismatic, and have negatives of short blades on a single face.[134] In this settlement the flake cores, which are amorphous, prevail over the blade cores[135] Larger cores were discovered at Hăbășești[136] (Pl. II.2-5), Drăgușeni[137] (Pl. II.6) and Trușești[138] (Pl. II.8). The specimens from Trușești are either cylindrical (from which long blades were detached through indirect percussion), bipolar pyramidal with a slightly oblique striking platform (from which short irregular blades were knapped), prismatic (with negatives of straight profile blades) and irregular.[139] At Drăgușeni there is a variety of shapes and dimensions in the core collection;[140] typical are the ones with a long debitage surface, with large striking platforms, and negatives of thin, long blades; their distal ends were shaped through flake removals.[141]

Păunescu observed that in the Precucuteni culture, the percentage of the microlithic artefacts was very high (73.50%), while in the Cucuteni period the medium sized items prevailed.[142]

The length of the blades from Hăbășești ranges between 30 to 150 mm, their width and thickness growing exponentially with the length; there is a category of blades wider than others.[143] H. Dumitrescu mentions the existence of small blades of under 70 mm in length, narrow (less than 7-8 mm) and thin (1-2 mm).[144] Very few blades have a straight profile; the large blades are curved in profile[145] (Pl. III.4). The author observed the high fragmentation of the artefacts and the fact that numerous blades were cortical.[146] The variety of blades is large in the Cucuteni A layer at Costești also: massive blades, thin long blades with regular and parallel edges, bladelets.[147] This variety was also noticeable for the butts of the blades; the uses of hard hammer percussion, punch and pressure techniques are attested by the morphology of the flint

[127] VORNICU 2012.

[128] VORNICU 2012; CRANDELL, VORNICU 2015.

[129] MARINESCU-BÎLCU 1981: 27-28; Fig. 41.32-33,35.

[130] "Small metric characteristics" is the phrase used by the authors that published the analysis of the assemblages. In many cases they do not give metric estimations.

[131] MANTU, ȘTIRBU, BUZGAR 1995: from Pl. 2.23-23 – the cores are less than 50 mm in length.

[132] LAZAROVICI, BABEȘ 2015.

[133] BODI 2010: Pl. 18.

[134] BODI 2010: 59

[135] BODI 2010: 60.

[136] DUMITRESCU 1954: 233. Although the cores are describbed as small, in the plates from the monography can be seen that they are ussualy longer than 50 mm.

[137] MARINESCU-BÎLCU 2000.

[138] FLORESCU 1999.

[139] FLORESCU 1999: 235.

[140] MARINESCU-BÎLCU 2000.

[141] MARINESCU-BÎLCU 2000.

[142] PĂUNESCU 1970: 230.

[143] DUMITRESCU 1954.

[144] DUMITRESCU 1954.

[145] DUMITRESCU 1954.

[146] DUMITRESCU 1954: 231.

[147] VORNICU 2014.

items from the settlement.[148] In Hoisești[149] (Pl. III.8) and Preutești[150] (Pl. III.7) the majority of the artefacts are medium-sized. For Drăgușeni was noticed a category of straight profile blades, narrow and thin, with parallel edges (Pl. III.5).[151] Most of the blades from Trușești are short and medium sized, few longer;[152] they usually have regular ridges and the bulb of percussion is present.

Although most of the authors stipulate that in the Cucuteni A phase the medium-long blades are the most common,[153] in a few sites there is a predominance of small sized assemblage as it was observed for the Fulgeriș (width: 10-18 mm; thickness: 2-6 mm)[154] (Pl. III.6), Ruginoasa (width: 14-18 mm; thickness: 3-7 mm)[155] (Pl. III.10) and Târpești (the blades are small, narrow, with parallel edges).[156] The blades at Ruginoasa have a straight profile, regular and parallel edges, being produced through soft percussion or pressure.[157] The blades from Fulgeriș are mainly *plein débitage*, with rectilinear and parallel edges, straight or slightly curved in profile.[158]

Thus, in Precucuteni III and during Cucuteni A the debitage of small sized, regular blades, typical for the Neolithic period, was being replaced by a technology designed to produce larger blades, not as regular and straight as the small ones. This change was also noticeable in the Trypillia area,[159] affecting thus the whole cultural area.

For the next two phases, the information on the blade debitage is scarcer. At Traian – *Dealul Fîntînilor* the cores have prismatic and conical shapes,[160] are elongated and were circularly debitaged.[161] The longest of the blades have 140-190 mm and a curved profile.[162] The bulbs of the blades are diffuse and most of the butts are plain.[163] At the end of Cucuteni A-B phase from Costești the majority of the blades have regular edges and arisses and are wide (up to 30 mm); their butts are mainly plain with a lip (other types were also registered, but in small amounts).[164]

The only core from the site at Cucuteni was found in the Cucuteni B1a layer, being prismatic in shape.[165] The cores from the sites from the sub-Carpathian area were described as small, large ones being rare.[166] But, the dimensions of the blades are still varied, large specimens that go up to 150 mm in length were found.[167] The flint blades are mostly of medium dimensions, but longer items (100-150 mm) were also discovered.[168]

Thus, for the last two phases of Cucuteni can be seen that the blades are becoming wider and longer (up to 30 mm in width and 190 mm in length) but also more regular than in the Cucuteni A; plain butts are reported for Cucuteni A-B. Could these changes be linked with the proliferation of the Volhynian flint artefacts in the west of Prut area or with the profound societal and economic changes that were taking place inside the Cucuteni-Trypillia communities?

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[148] VORNICU 2014.

[149] BODI 2010: 59.

[150] URSULESCU, IGNĂTESCU 2003.

[151] MARINESCU-BÎLCU 2000: 51.

[152] FLORESCU 1999: 235.

[153] A problem in estimating the real size of the blades is the fact that most of the authors provide data on the length of the blades, ignoring the width and thickness.

[154] VORNICU 2015.

[155] ȚURCANU 2012.

[156] MARINESCU-BÎLCU 1981: 52.

[157] ȚURCANU 2012: 150.

[158] VORNICU 2015: 11-32.

[159] КИОСАК 2016; RADOMSKYI 2018.

[160] PĂUNESCU 1970.

[161] BEM 2007: 176.

[162] PĂUNESCU 1970: 188-189.

[163] BEM 2007: 177.

[164] VORNICU 2014.

[165] VĂLEANU 2004: 140. According to the Fig. 55.1 this item is medium long.

[166] CUCOȘ, MURARU 1985: 608-609.

[167] CUCOȘ, MURARU 1985: 609.

[168] CUCOȘ, MURARU 1985: 609.

In the published data can be seen the fact that in Precucuteni and Cucuteni the crested blades are rarely reported, appearing only in the settlements at Isaiia,[169] Târgu Frumos,[170] Drăgușeni,[171] Poienești,[172] Scânteia,[173] Ruginoasa,[174] Costești;[175] in the plates from the Hăbășești monograph can also be seen some crested blades.[176] Cortical blades are mentioned for most of the sites, proving that in many cases the exploitation of the cores for the lamellar debitage was made without an anterior preparation of the debitage surface.

It must be remarked the fact that in all settlements is attested a high fragmentation of the blades, this being a characteristic for the Precucuteni and Cucuteni cultures.

PERSPECTIVES

This overview of the Romanian archaeological literature on the subject of raw material acquisition and blade debitage during the Chalcolithic at the west of Prut River was necessary in order to have an objective view of the state of art and to draw some directions for the future of the lithic studies for the Chalcolithic communities in eastern Romania.

As seen from the previous pages there is much information available on the raw material diversity, but there is still a lot of work to be done in order to have a proper understanding of the organisation of raw material acquisition. Future research should focus on discriminating, at both at a petrographic and chemical level, the various outcrops from the Prut and Dniester Rivers, and those from the Volhynian Platform.[177]

As for the technology and blade industry there still are a lot of gaps be bridged. Filling the blanks requires information on the metric characteristics of the blades and cores, on the specificity of core preparation and core exploitation, on the attributes of blades (butts, bulbs, distal ends, regularity of edges, profiles, cross-sections). Also, technological specimens as the tablets, flancs, crested blades seem to have been overlooked in the collections. One simple example of where the lack of information can lead is the fact that the macrolithisation of flint implements during the Copper Age cannot be sustained, at the moment, in the light of the data from the archaeological literature in Romania. If for the Precucuteni and Cucuteni A there are some the numerical data regarding the metric characteristics of the chipped stone assemblages, for the Cucuteni A-B and B phases no remark can be made in that direction. To this *blank* situation can be added the lack of information on attributes which makes impossible to speak about the evolution, in terms of technology, of the flint industries especially in the end of Chalcolithic in eastern Romania. Thus, constructing a rigorous methodology for analysing the attributes of the stone artefacts might provide answer to some of the questions enunciated in the introduction, but also to many others.

A last mention should be made on the fact that this analysis must be made depending on the various raw materials from which they were made. This direction might lead to distinguishing various technological traditions in the east of Romania Copper Age but also in recognizing the impact that other communities had on the lithic technology. For example, it would be easier to find if the changes in lithic industry in Precucuteni III were caused by the contact with the highly skilled flint artisans of Gumelnița-Kodjadermen – Karanovo VI culture. Or if, maybe, internal agencies lead to this shift in technology.

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[169] VORNICU 2017: 197.

[170] VORNICU 2012.

[171] MARINESCU-BÎLCU 2000: 55.

[172] LAZAROVICI, BABEȘ 2015.

[173] MANTU, ȘTIRBU, BUZGAR 1995: 115.

[174] ȚURCANU 2012: 152.

[175] VORNICU 2014.

[176] DUMITRESCU 1954: Fig. 11.5.

[177] As SZTÁNCSUJ *et al.* 2015 noticed discriminating between the Prut and Volhynian flint proved to be difficult even through PGA Analysis.

BIBLIOGRAPHY

ANGHELINU 2014 Anghelinu, M., *Evoluția gândirii teoretice în arheologia românească. Concepte și modele aplicate în preistorie*. Ed. Cetatea de Scaun, Târgoviște

BEM 2007 Bem, C., *Traian – Dealul Fântânilor. Fenomenul Cucuteni A-B*, Ed. Cetatea de Scaun, Târgoviște.

BODI 2010 Bodi, G., *Hoiești – La Pod. O așezare cucuteniană pe valea Bahluiului*, in col. BAM, XIII, Ed. Pim, Iași.

BOGHIAN 2014 Boghian, D, *Artefactele cioplite din eșantionul Giurgești – Dealul Mănăstirii*, in: Boghian, D., Enea, S.-C., Ignătescu, S., Bejenaru, L., Stanc, S. M., *Comunitățile cucuteniene din zona Târgului Frumos. Cercetări interdisciplinare în siturile de la Costești și Giurgești*, Ed. Universității "Alexandru Ioan Cuza" Iași, Iași, 47.

BOGHIAN 2009 Boghian, D., *Din nou despre unele surse de materie primă pentru confecționarea utilajului litic al comunităților complexului cultural Precucuteni*-Cucuteni, in: *Suceava*, 34-36(2007-2009), 117146.

BOGHIAN 2008 Boghian, D., *Di alcune fonti di materia prima per l'utensileria litica delle comunità del complesso culturale Precucuteni-Cucuteni*, in: Ursulescu, N., Kogălniceanu, R., Crețu, C. (eds.), *Cucuteni. Tesori di una civiltà preistorica dei Carpazi. Atti del convegno italo-romeno, Roma, 18 ottobre 2007*, Roma – Iași, 39-70.

BOGHIAN 1996 Boghian, D., *Unele considerații asupra utilajului litic al comunităților Precucuteni-Cucuteni-Tripolie*, in: Dumitroaia, Gh., Monah, D. (eds.), *Cucuteni aujourd'hui: 110 ans depuis la decouverte en 1884 du site eponyme*, in col. BMA, II, Piatra Neamț, 277-342.

BOGHIAN 1996A Boghian, D., *Unele considerații asupra utilajului litic al complexului cultural Precucuteni-Cucuteni/Tripolie (II)*, in: *Codrul Cosminului*, 2, 4-36.

BOGHIAN 1995 Boghian, D., *Unele considerații asupra utilajului litic al complexului cultural Precucuteni-Cucuteni/Tripolie (I)*, in: *Codrul Cosminului*, 1, 7-41.

BOGHIAN *et al.* 2012 Boghian, D, Frunză, Gh., Suciu, C., Ignătescu, S., *Traceological Analysis of a Series of Lithic Chipped Tools from the Settlement of Fetești – La Schit, Adâncata Commune, Suceava County, Romania*, in: Cotiugă, V., Caliniuc, Șt. (eds.), *Interdisciplinarity Research in Archaeology. Proceedings of the First Arheoinvest Congress, 10-11 June 2011, Iași, Romania*, BAR International Series 2433, Archaeopress, Oxford, 187-200.

BOGHIAN, TUDOSE 1994 Boghian, D., Tudose, S., *Considerații preliminare asupra utilajului litic din așezarea precucuteniană de la Târgu Frumos,* in: ArhMold, 17, 147-159.

CÂRCIUMARU *et al.* 2001 Cârciumaru, M., Popovici, D., Cosac, M., Dincă, R., *Spectographic Analysis of Neo-Eneolithic Obsidian supply sources*, in: *Annales d'Université "Valahia" Târgoviște*, Serie d'Archéologie et d'Histoire, 2-3/2000-2001, 117-127.

COTOI 2000 Cotoi, O., *Lithic Tools in the Cucuteni Settlement of Dobreni – Mătăhuia Hill*, in: SAA, VII, 253-66.

COTOI, GRASU 2000 Cotoi, O., Grasu, C., *Uneltele din piatră șlefuită din Eneoliticul Subcarpaților Moldovei*, Ed. Corson, Iași.

CRANDELL 2014 Crandell, O., *Artefacte silicioase din așezări neolitice și ale epocii cuprului din România: un studiu integrat*, PhD disertation, Babeș-Bolyai University in Cluj, manuscript.

CRANDELL 2012 Crandell, O., *Petrographic Evidence of Intercultural Tradeduring the Chalcolithic. Examples from Neamț County, Romania*, in: Diaconu, V., *Depresiunea Neamț. Contribuții arheologice*, in col. BMA, XXVIII, Ed. Constantin Matasă, 147-158.

CRANDELL, VORNICU 2015 Crandell, O.-N., Vornicu, D.-M., *Aspects of Long Distance Trade by the Precucuteni Culture*, in: *Transylvanian Review*, 24/2 (Summer), 85-108.

CUCOȘ, MURARU 1985 Cucoș, Șt., Muraru, A., *Studiu tipologic și petrografic al uneltelor litice din câteva așezări Cucuteni B*, in: *Memoria Antiquitatis*, 9-11/1977-1979, 605-641.

DIACONU, DUMITROAIA 2016 Diaconu, V., Dumitroaia, Gh., *Lithic Assemblages from the Cucuteni site of Răucești*, in: Preoteasa, C, Nicola, C.-D. (eds.) *Cucuteni Culture within the European Neo-Eneolithic Context. Proceedings of the International Colloquim Cucuteni -130, 15-17 october 2014, Piatra-Neamț, Romania. In memorian Dr. Dan Monah. In memoriam dr. Gh. Dumitroaia*, Ed. Constantin Matasă, Piatra-Neamț, 631-648.

DIAMANDI 1889 Diamandi, M., *Station préhistorique de Coucouteni (Roumanie)*, in: *Bulletins et Mémoires de la Société d'Anthropologie de Paris*, 12(3), 582-599.

DIACONESCU 1994 Diaconescu, M., *Aşezarea cucuteniană de la Răzima – Copălău, judeţul Botoşani*, in: *Hierasus*, 9, 126-133.

DUMITRESCU 1954 Dumitrescu, H., *Unelte de producţie,* in: Dumitrescu, Vl., Dumitrescu, H., Petrescu-Dîmboviţa, M., Gostar, N., *Hăbăşeşti. Monografie arheologică*, Ed. Academiei R.P.R., Bucureşti, 224-273.

FLORESCU 1999 Florescu, M., *Unelte şi arme din silex,* in: Petrescu-Dîmboviţa, M., Florescu, M., Florescu, A. C., *Truşeşti. Monografie arheologică,* Ed. Academiei Române, Complexul Muzeal Naţional Moldova Iaşi, Bucureşti-Iaşi, 231-248.

LAZAROVICI, BABEŞ 2015 Lazarovici, C.-M., Babeş, M., *Poienești – aşezări preistorice*, in col. BAM, XXII, Ed. Karl A. Romstorfer, Suceava.

MANTU, ŞTIRBU, BUZGAR 1995 Mantu, C.-M., Ştirbu, M., Buzgar, N., *Consideraţii privind obiectele din piatră, os şi corn de cerb din aşezarea cucuteniană de la Scânteia (1984-1990)*, in: ArhMold, 18, 115-132.

MARINESCU-BÎLCU 2000 Marinescu-Bîlcu, S., *Stone Tools*, in: Marinescu-Bîlcu, S., Bolomey, A., *Drăguşeni. A Cucuteinan Community*, Bucureşti/Tübingen, 49-57, Fig. 31-50.

MARINESCU–BÎLCU 1981 Marinescu–Bîlcu, S., *Tîrpeşti. From Prehistory to History in Eastern Romania*, BAR Internation Series 107, Oxford.

MARINESCU–BÎLCU 1974 Marinescu–Bîlcu, S., *Cultura Precucuteni pe teritoriul României*, Ed. Academiei R.S.R., Bucureşti.

MARINESCU-BÎLCU, CÂRCIUMARU, MURARU 1985 Marinescu-Bîlcu, S., Cârciumaru, M., Muraru, A., *Contribuţii la ecologia locuirilor pre- şi protoistorice de la Tîrpeşti*, in: *Memoria Antiquitatis*, 9-11/1977-1979, 643-684.

MARINESCU-BÎLCU, MURARU, CÂRCIUMARU 1981 Marinescu-Bîlcu, S., Muraru, A., Cârciumaru, M., *Contributions to the ecology of Pre- and Protohistoric habitations at Tîrpeşti*, in: *Dacia*, N.S., 25, 7-31.

MATASĂ 1946 Matasă, C., *Frumuşica. Village prehistorique a ceramique peinte dans la Moldavie du nord Roumanie*, Monitorul Oficial şi Imprimeria Statului, Imprimeria Naţională, Bucureşti.

MONAH 1999 Monah, D., *Cercetarea ieşeană asupra neo-eneoliticului din Moldova în perioada 1949-1999*, in: ArhMold, 22, 151-158.

PĂUNESCU 1970 Păunescu, Al., *Evoluţia uneltelor şi armelor de piatră cioplită descoperite pe teritoriul României*, Ed. Academiei R.S.R., Bucureşti.

RADOMSKYI 2018 Radomskyi, I., *Changing techniques of flint knapping in Chalcolithic times as an indicator of changes in the economy*, in: *Vita Antiqua*, 10, 92-104

SCHMIDT 1932 Schmidt, H., *Cucuteni in der oberen Moldau, Rumänien: die befestigte Siedlung mit bemalter Keramik von der Steinkupferzeit bis in die vollentwickelte Bronzezeit*, Verlag von Wlater de Gruyter & co., Berlin und Leipzig.

SIMIONESCU 1906 Simionescu, I., *Constituţiunea geologică a ţărmului Prutului din Nordul Moldovei,* in: *Acad. Rom., Publicaţiile Fondului V. Adamachi*, 2(1901-1906), 15-16.

SKAKUN 20007 Skakun, N., *Excavations at Bodaki (Ukraine) and the Importance of Flintworking Activities in the Eneolithic*, in: *Memoria Antiquitatis*, 24, 329-354.

SPINEI 2016 Spinei, V., *Items made of Volhynian Flint in Eneolithic Complexes from Moldavia, west of Prut*, in: *Eurasia Antiqua*, 22, 41-100.

SPINEI 2015 Spinei, V., *Piese de silex volhynian în complexele eneolitice din Moldova de la vest de Prut*, in: Spinei, V., Ursulescu, N., Cotiugă, V. (eds.), *Orbis Praehistoriae. Mircea Petrescu-Dîmboviţa – in memoriam*, Ed. Universităţii „Alexandru Ioan Cuza", Iaşi.

SZTÁNCSUJ *et al.* 2015 Sztáncsuj, S. J., Biró, K. T., Kasztovszky, Z., Józsa, S., Gméling, K., Marót, B., Lithic Implements at Ariuşd (Erősd). A Preliminary Report, in: *Communicationes Archaeologicae Hungariae* (2014), 19-36.

ŞTEFĂNESCU 1888 Ştefănescu, Gr., *Relaţiune sumară de lucrările Biroului Geologic în campania anului 1885*, in: *Anuarul Biroului Geologic*, 3, 8-47.

ȚURCANU 2012 Țurcanu, S., *Industria litică,* in: Lazarovici, C.-M., Lazarovici, Gh., *Ruginoasa – Dealul Drăghici. Monografie Arheologică*, in col. BAM, XX, Ed. Karl A. Romstorfer, Suceava, 149-160.

ȚURCANU 2009 Țurcanu, S., *Industria litică cioplită din neoliticul Moldovei*, in col. BAI, XXI, Ed. Universității "Alexandru Ioan Cuza", Iași.

ȚURCANU 2006 Țurcanu, S., *Trăsăturile industriei litice cioplite din prima fază a culturii Precucuteni. Așezarea de la Traian – Dealul Viei (jud. Neamț),* in: Ursulescu, N., Lazarovici C.-M. (eds.), *Cucuteni 120 – valori universale. Lucrările simpozionului național Iași, 30 Septembrie 2004*, in col. BAI, XVII, Ed. Sedcom Libris, Iași, 131-154.

URSULESCU, IGNĂTESCU 2003 Ursulescu, N., Ignătescu, S, *Preuteşti – Haltă. O aşezare cucuteniană pe Valea Şomuzului Mare*. Ed. Demiurg, Iași.

VĂLEANU 2004 Văleanu, M.-C., *Unelte din piatră*, in: Petrescu-Dîmbovița, M., Văleanu M.-C., *Cucuteni – Cetățuie. Monografie arheologică. Săpăturile din anii 1961-1966*, Muzeul de Istorie și Arheologie Piatra-Neamț, 136-143.

VORNICU 2017 Vornicu, D.-M., *The Chipped Stone Assemblage from the Early Chalcolithic Settlement at Isaiia – Balta Popii*, in: MCA, 13, 191-211.

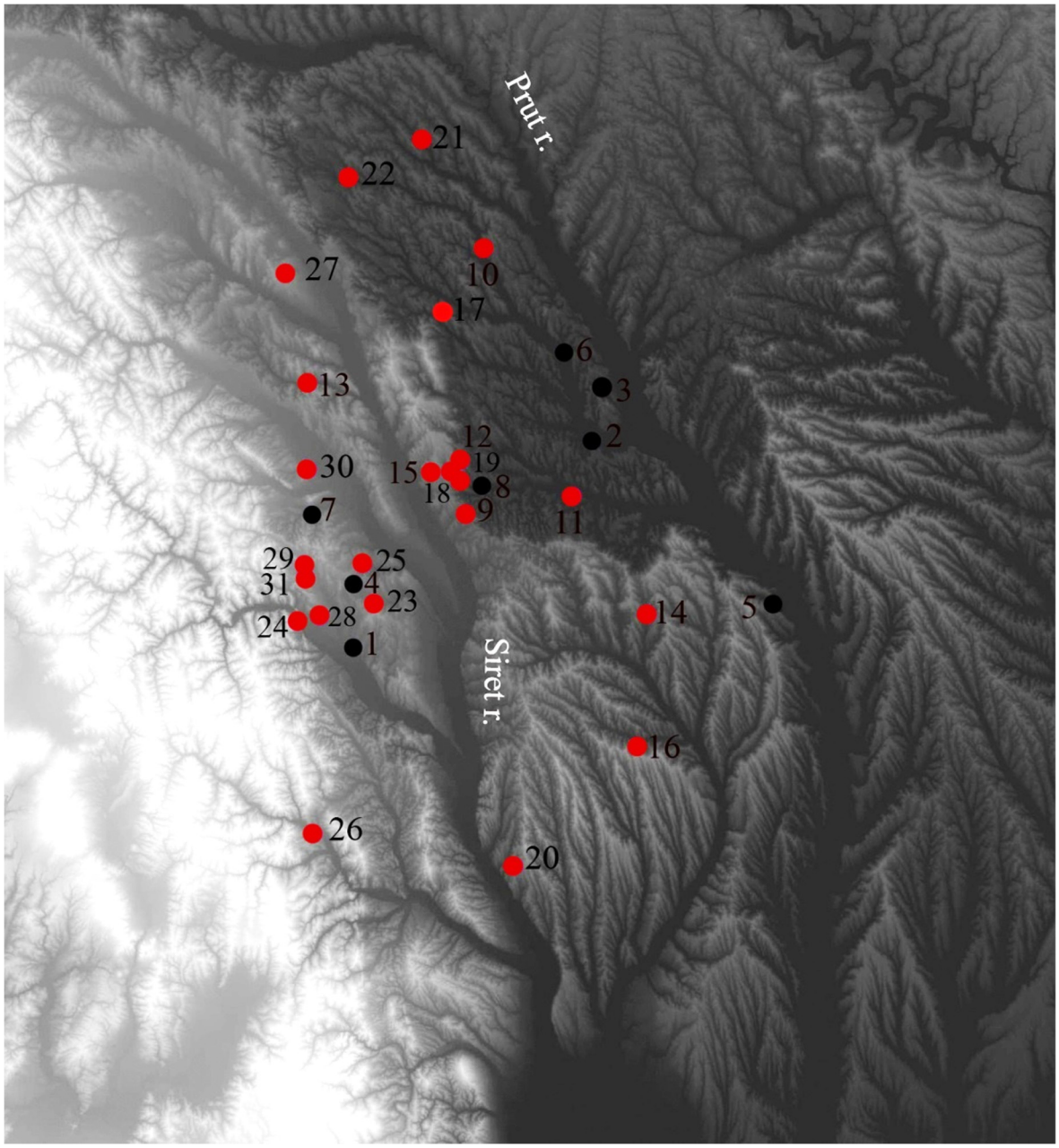
VORNICU 2015 Vornicu, D.-M., *Industria litică cioplită din aşezarea eneolitică de la Fulgeriş (campaniile de săpături 2003-2014)*, in: *Carpica*, 44, 11-32.

VORNICU 2014 Vornicu, D.-M., 2014, *Artefactele cioplite din silex şi alte roci din eşantionul Costeşti-Cier*, in: Boghian, D., Enea, S.-C., Ignătescu, S., Bejenaru, L., Stanc, S. M., *Comunitățile cucuteniene din zona Târgului Frumos. Cercetări interdisciplinare în siturile de la Costești și Giurgești*, Ed. Universității "Alexandru Ioan Cuza" Iași, 38-46.

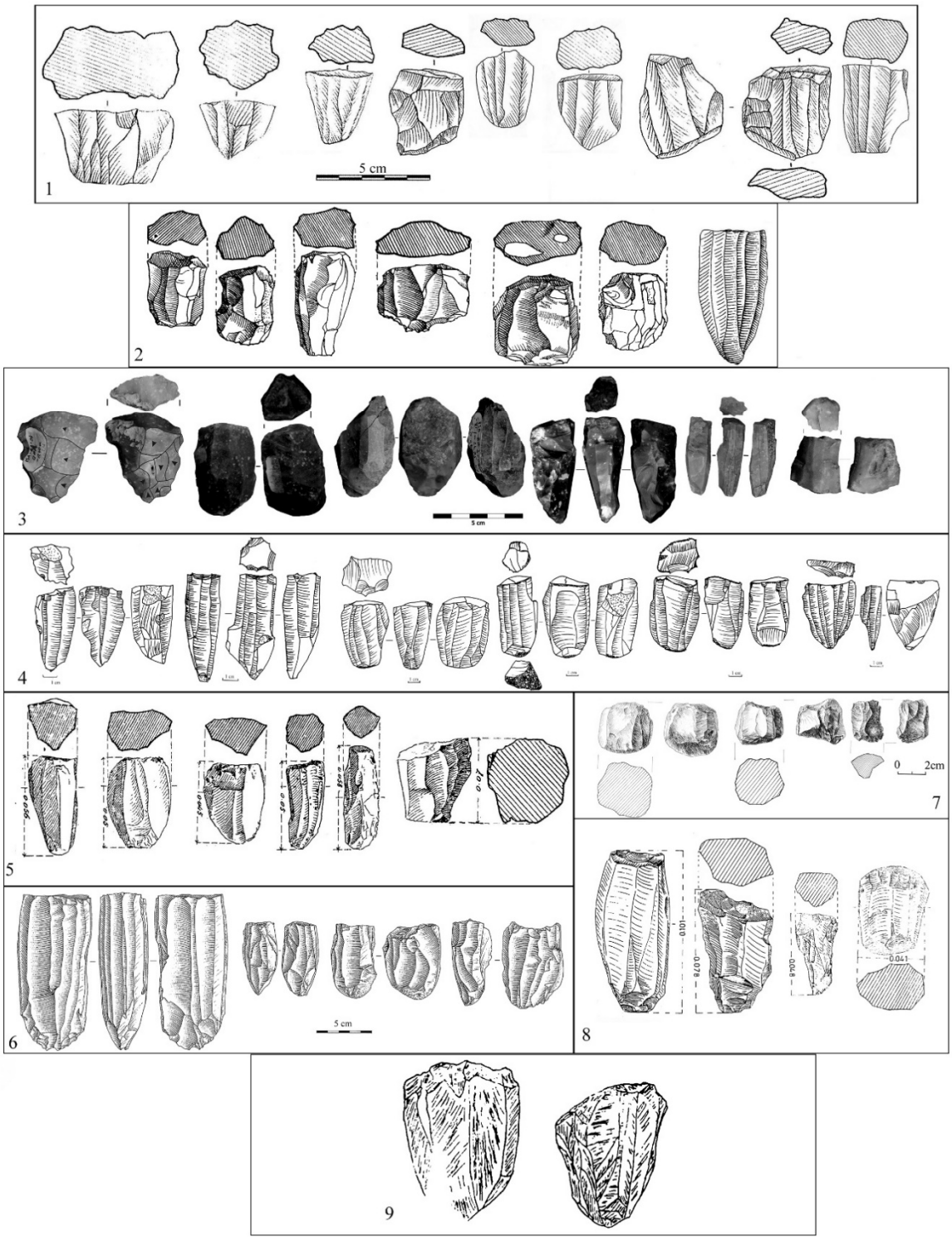
VORNICU 2012 Vornicu, D-.M., *Industria litică cioplită a comunităților Precucuteni. Studiu de caz: aşezările de la Isaiia și Târgu Frumos*, Phd dissertation, "Alexandru Ioan Cuza" University in Iași, manuscript.

VULPE 1957 Vulpe, R., *Izvoare. Săpăturile din 1936-1948*, Ed. Academiei R.P.R., București.

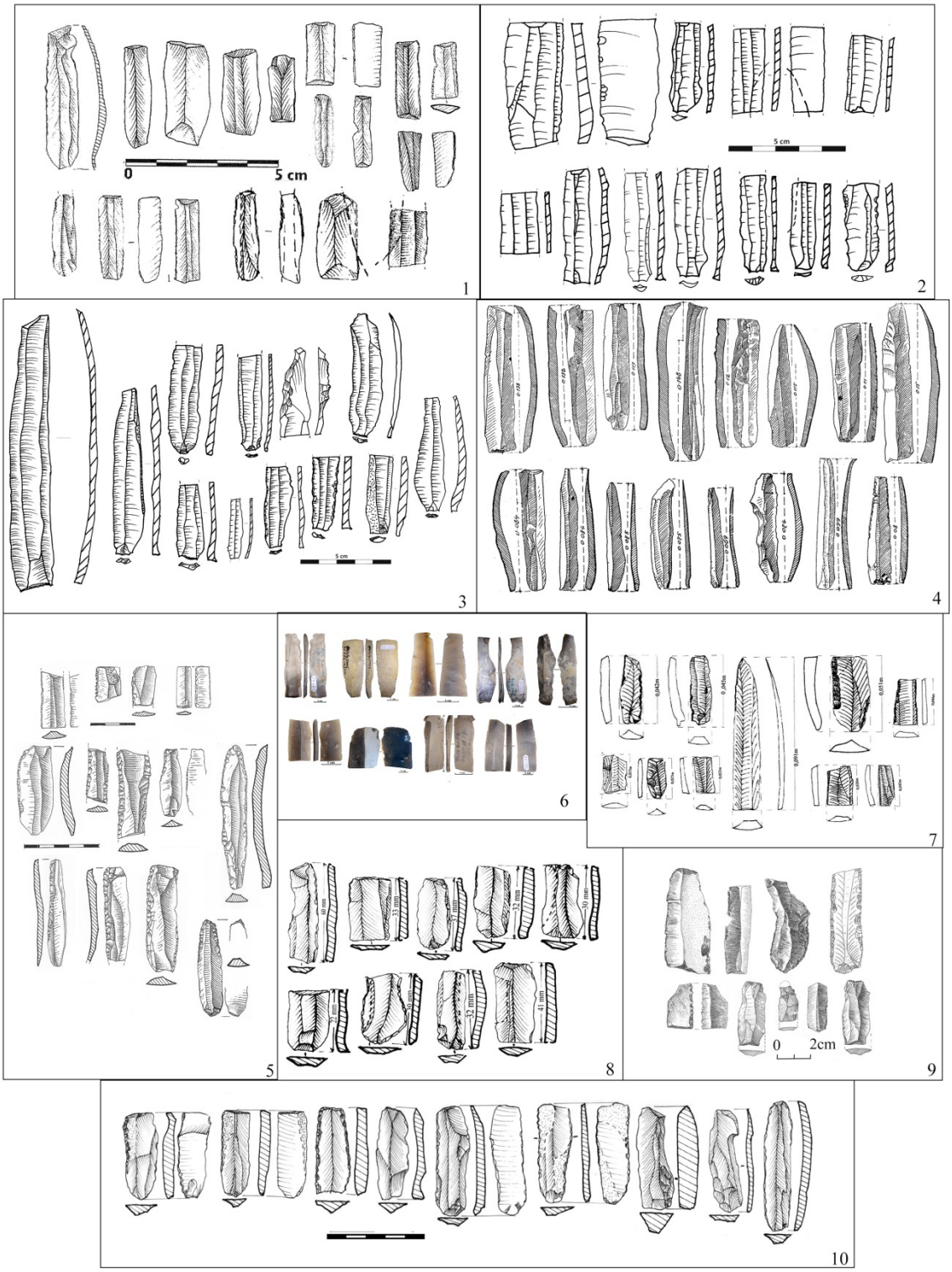
КИОСАК 2016 Киосак, Д., *К интерпретации кремнеобработки Прекукутень-Триполье А*, in: *Tyragetia*. Arheologie. Istorie Antică. Serie Nouă, 10 [25], 1, 147-163.



Pl. I. Localization of the Precucuteni and Cucuteni mentioned in the text.
The number of the sites correspond with the numbers from table 1.



Pl. II. Cores from Precucuteni/Cucuteni sites. 1. Traian – *Dealul Viei* (ȚURCANU 2009); 2. Larga Jijia (MARINESCU-BÎLCU 1974, PĂUNESCU 1970); 3. Isaiia (VORNICU 2017); 4. Târgu Frumos (redrawn from VORNICU 2012); 5. Hăbășești (DUMITRESCU 1954); 6. Drăgușeni (MARINESCU-BÎLCU 2000); 7. Poienești (BABEȘ, LAZAROVICI 2015); 8. Trușești (FLORESCU 1999); 9. Ghelăești & Văleni (CUCOȘ, MURARU 1985).



Pl. III. Blades from Precucuteni/Cucuteni A sites. 1. Traian – *Dealul Viei* (ȚURCANU 2009); 2. Isaiia (VORNICU 2017); 3. Târgu Frumos (redrawn from VORNICU 2012); 4. Hăbășești (DUMITRESCU 1954); 5. Drăguşeni (MARINESCU-BÎLCU 2000); 6. Fulgeriș (VORNICU 2015); 7. Preutești (URSULESCU, IGNĂTESCU 2003); 8. Hoisești (BODI 2010); 9. Poienești (BABEȘ, LAZAROVICI 2015); 10. Ruginoasa (ȚURCANU 2012).