Eneolithic bifacial implements from the Gumelnița layers of Hârşova and Borduşani *tell* settlements

LOREDANA NIȚĂ

Abstract:

The Eneolithic stratigraphic sequences from Hârșova and Bordușani *tell* settlements provided abundant lithic collections of both knapped and ground stone implements, belonging to the Gumelnița A2 cultural tradition. Among those, there are two types of artefacts for which both the shaping and the recycling stages involve the use of carefully controlled bifacial knapping.

The first type includes axes, made from homogenous, ochre/reddish brown coloured flint; before the abandonment phase, they went through several stages of trimming, serving as cores for producing long and relatively narrow blades, and recycling, through lateral and ventral flaking. The second type consists of triangular flint points of various sizes and morphology; their shaping involves the use of flat, extended retouch, applied to dorsal and ventral surfaces, as well as steep, continuous retouch for the lateral edges and/or the base.

The present contribution aims at discussing the technological stages involved in producing bifacial flint axes and points, their use, such as it can be inferred from macroscopic use-wear observations, as well as their archaeological context and possible analogies with similar artefacts discovered in Gumelnița layers from other Eneolithic sequences.

Rezumat: Piese bifaciale eneolitice în nivelurile gumelnițene din siturile *tell* de la Hârşova şi Borduşani

Secvențele stratigrafice aparținând Eneoliticului din siturile *tell* de la Hârșova și Bordușani au oferit colecții litice bogate, formate din obiecte cioplite și șlefuite, încadrate în faza A2 a culturii Gumelnița. Dintre acestea, se remarcă două tipuri de artefacte realizate prin cioplire bifacială.

Primul tip include topoare din silex de culoare ocru/brun roșcat; înainte de a fi fost abandonate, ele au trecut prin câteva etape de amenajare, în cursul cărora au funcționat ca nuclee pentru obținerea de lame lungi și relativ înguste și etape de reciclare, prin desprinderea de așchii de pe suprafețele laterale și ventrale. Al doilea tip de artefacte cuprinde vârfuri triunghiulare din silex, cu dimensiuni și morfologie variate, pentru a căror amenajare s-a utilizat retușa plată, extinsă, în cazul suprafețelor dorsale și ventrale și retușa continuă, semiabruptă, în cazul marginilor laterale și/sau al bazei.

Articolul de față își propune discutarea etapelor tehnologice de producere ale topoarelor și vârfurilor din silex, utilizarea lor, atât cât poate fi decelată din observațiile asupra urmelor de folosire macroscopice, ca și contextele arheologice din care provin și posibilele analogii cu artefacte similare, descoperite în niveluri gumelnițene din alte secvențe eneolitice.

Keywords: Eneolithic, Gumelnița, axes, points, bifacial tools, flint.

Cuvinte cheie: Eneolitic, Gumelnița, topoare, vârfuri, unelte bifaciale, silex.

Introduction

Hârșova and Bordușani *tell* settlements are located on the right and left banks of the Danube, in south-eastern Romania (Pl. I). Archaeological researches revealed complex cultural sequences, ranging from Boian, Gumelnița A2, Cernavodă II, Hallstatt and La Tène (in Bordușani), and Boian, Gumelnița A2, Cernavodă I (in Hârșova), respectively. The Gumelnița A2 layers in Hârșova are dated between 4350 and 4000 cal BC[1]. Excavation strategies employed aimed at revealing the informational content of methodically defined stratigraphical units, and the broad retrieval of all archaeological material, thus leading to the characterization of anthropic landscape features, such as household areas, circulation spaces, and refuse accumulation extents[2]. To date, the Gumelnița sequences in the two *tell* sites are not fully uncovered, thus our observations remain largely preliminary.

Plate I. Location of Hârșova and Bordușani *tell* settlements (modified after Klimscha 2020, 102, Fig. 1).

1 Bréhard, Bălășescu 2012.
2 Popovici 2010; Popovici et al. 2000, 2003, 2014; Randoin et al. 2000.

The greater part of the 2300 knapped lithic items included in the Bordușani assemblage is formed by less than 5 mm chips/*esquilles* and indefinite fragments (40%), followed by unmodified debitage products (34.5%) and retouched implements (25.4%). Within the retouched pieces category, the bifacial points represent only 0.8%, while the bifacial flint axes amount to 1.8%. In Hârșova, the 5688 knapped lithic collection shows an even more unbalanced proportion between less than 5 mm chips/*esquilles* and indefinite fragments (73.8%) and unmodified debitage products (19.6%) or retouched implements (6.54%). Moreover, while the bifacial points representativity (2.9% of the retouched pieces) is slightly higher than in Bordușani, bifacial flint axes are absent.

Generally, the raw material used in manufacturing most part of the lithic assemblages is the same type of homogenous, grey/dark yellow/ochre coloured chert also employed for bifacial points and flint axes. Its source could be traced in Jurassic and Cretaceous deposits in central and southern Dobrudja[3], and presumably, north-eastern Bulgaria. There are also several isolated occurrences of different types of chert: the lithic assemblage from Hârșova includes a single blade made of a white, matt, homogenous variety, while in Bordușani, two of the points are made from an otherwise poorly represented kind of black chert, with/without whitish inclusions.

The technological structure of the lithic assemblages in the Eneolithic layers from Hârșova and Bordușani follows, roughly, the same pattern: due to the throughout recovery of all archaeological material, the primary debitage products (flakes and blades) and the formal tools (both retouched and polished) are surpassed by the overwhelming number of splinters and indefinite items, mostly resulted from blank production and retooling of the lithic toolkit. Cortical items, core-shaping/rejuvenation products (i.e. crested blades/bladelets, and core tablets), and exhausted cores are severely underrepresented. Most of the laminar blanks and formal tools exhibit flat striking platforms and scarred bulbs, consistent with the use of direct, hard hammer percussion. Nevertheless, there are several clues pointing towards the practice of soft hammer percussion and, in several instances, even pressure debitage (long laminar blanks, with narrow striking platforms, rectilinear dorsal nervures and edges, and diffuse, almost invisible bulbs). Within the formal knapped tools, endscrapers and truncated blades prevail, followed by marginally retouched blades. Some of the latter exhibit direct, abrupt or semi-abrupt bilateral retouch, resulting in a pointed distal tip. Such pointed blades might have been intended for the same function as the bifacially crafted points, especially since few of them exhibit dorsal and ventral spin-off fractures, originating from the tip.

The bifacial points and axes

Our contribution drew its data from a set of 16 bifacial points and 11 flint axes available for analysis from Gumelnița A2 layers in Hârșova and Bordușani (Tab. 1), currently part of collections hosted in Bucharest (The National Museum of Romania History), Constanța (The National History and Archaeology Museum), and Slobozia (The Ialomița County Museum).

Flint axes

The knapped flint axes studied share a series of characteristics: (a) use of good quality, ochre/dark yellow flint; (b) small variation in width and thickness values, probably related to specific hafting requirements; (c) three functional stages – cores, mainly intended for producing long blades, axes, and percussion implements; (d) repeated cycles of use and retooling; (d) abandonment in various archaeological contexts and stages of fragmentation.

In the abandonment stage, the flint axes' morphology exhibits several combinations of features. For most of them, the slightly convex dorsal side (Pl. II) is formed by laminar negatives of various lengths, initiated from the active part area. They are rarely completely preserved, due to the intense flaking involved in reshaping the axe's front and base, which overlaps their proximal and distal extremities; therefore, their length values are only a minimal indicator for the actual size of the laminar blanks obtained. In one case, the dorsal surface is covered with multidirectional flake-like detachments. The ventral, flat side (Pl. III) is formed by bidirectional or multidirectional flake negatives, except one instance where laterally initiated laminar negatives are present. When preserved, their proximal extremity shows wide striking platforms and well-developed percussion bulbs. The parallel lateral sides (Pl. IV) exhibit either crested surface on the items' whole length, or debitage surfaces with lamellar negatives, initiated from the cutting edge area.

Use-wear traces (Pl. V, VI) fall into several categories: (a) extended fractures, proximally and distally located, consistent with violent shock, following launching percussion; (b) macroscopic gloss, probably due to vegetal materials processing, randomly disposed on all or part of the surfaces, especially marked on the cutting edge; some of the gloss-covered surfaces are overlapped by flake-like detachments, either accidental, due to further use,

[3] Haită, Tomescu 1997; Haită 2011.

or intentional, resulting from recycling; (c) small pits covering relatively extended areas of the base and lateral sides, resulted from repeated percussion activities, as the axes' last stage of employment, which led to completely or partially overlapping of other macrotraces. Following intense recycling and breaking, flint axes exhibit different length values, usually between 65 mm and 100 mm; there are several clusters of midpoint width (51-53 and 59-66 mm) and thickness (22-24 and 27-33 mm) values, associated to three clusters of weight values (132-135, 160-190, 200-244 g). In one case, weight and length measurements provided off the charts results – a 140 mm long flint axe, weighing 327 g. The cutting edge is, in all cases, the widest part of the axe (53-57 and 63-65 mm), with a slightly convex outline.

Aside from several cases of random discovery, flint axes were found in different archaeological contexts, such as external occupational areas, substructure trench fillings, household destruction areas. In addition to their economic value, mainly concerning woodworking and the production of long, slender blades (the so-called superblades)[4], flint axes and their exchange driven circulation have been invested with social significance[5]. In similar archaeological contexts (e.g. Atmageaua Tătărască (Sokol), Pietrele, Căscioarele, Gumelnița, Vidra)[6] such artefacts appear largely like those described above, with few notable differences; among the latter, one might stress the occasional increased frequency within the lithic assemblage, as well as slightly bigger length and weight values for complete items, both aspects being presumably related to differences within the economic and social realm.

Bifacial points

The points have triangular, elongated shape, and straight or slightly convex long edges. The outline of the base varies considerably, from straight, to convex or concave; also, it can be shaped by two parallel lobes, separated by the concave negative of a single detachment. As evidenced by one unfinished item (Pl. VII/4), the tip of the point was placed in the proximal extremity of the blank, removing the striking platform and the bulb, while the base occupies the distal extremity.

Most of them are made on laminar blanks, modified through bifacial, flat extended retouch; next, semi-steep, direct/inverse retouch was applied for trimming the edges. In one case, the dorsal side is completely retouched, while on the ventral side, the retouch covers only the margins of the long edges and the base. Average size values range from 34 to 42 mm/57 to 64 mm in length, 28 to 33 mm in median width, and 5 to 7 mm in median thickness; complete specimens weigh 11-18 g. Among the unretouched complete flakes and blades within the lithic assemblages, similar (or higher, given the intensity of trimming the long edges) average values are rather uncommon, which raises the question of whether bifacial points were produced on site, using purposely obtained blanks, or an exchange system was in place, providing such items.

Use-wear traces can be observed on the ventral and dorsal sides of the points, especially on the tip and base areas (Pl. VIII, IX). The fragmented items exhibit straight or oblique perpendicular fractures. In most cases, microchipping and gloss traces occur together, with the former overlapping the latter. There are also small bladelet-like detachments parallel to the long axis of the items, initiating from the tip downwards, on the ventral sides. They appear grouped in sets of two or three; unlike these, isolated flake-like detachments, also initiating from the tip, resemble step-terminated bending fractures.

The axial hafting of triangular bifacial points could follow two options: for the first one, the point of the triangle would constitute the active part of the implement, while the base is either concave, or shaped with two lobes; for the second one, the straight base of the triangle would become the active part, while the tip is inserted into the shaft. Weighing between 11 and 18 g, most Eneolithic bifacial points fall way out of range of the presumed maximal weight for arrow tips[7]. In fact, if mounted on arrows, any point heavier than 10 g would probably have equipped powerful bows of more than 83 lb draw strength (aprox. 37 kg/www.convertunits.com). One might speculate that such bows were most likely intended for big game hunting, or even warfare, although such an inference would be largely premature. Also, the heavier and largest of them might have been employed as hand-thrown or thrusting spear points[8]; in fact, recent analysis[9] proved the thrusting weapons develop the highest level of kinetic energy, thus being the most powerful propulsion mode.

4 Manolakakis 2017.
5 Klimscha 2012, 2014.
6 Dobrescu 2017; Klimscha 2020; Păunescu 1970.
7 Dev, Riede 2012.
8 Boyadzhiev 2014.
9 Coppe et al. 2019.

Table 1. Bifacial items from Gumelnița A2 layers in Hârșova and Bordușani *tell* sites.

Nr.	Type	Preservation/max, length (L), width (W), thickness (T) in mm	Context of recovery	Site
1.	Point	Complete/58 L, 30 W, 5 T	*passim*	Hârșova
2.	Point	Complete/42 L, 23 W, 5 T	*passim*	Hârșova
3.	Point	Complete/36 L, 25 W, 8 T	*passim*	Hârșova
4.	Point	Complete/58 L, 33 W, 7 T	Refuse accumulation area	Hârșova
5.	Point	Complete, partially shaped/49 L, 45 W, 7 T	Refuse accumulation area	Hârșova
6.	Point	Complete/50 L, 30 W, 6 T	Refuse accumulation area	Hârșova
7.	Point	Complete/60 L, 30 W, 7 T	External occupational area	Hârșova
8.	Point	Complete/35 L, 25 W, 7 T	Destruction area of collapsed building	Hârșova
9.	Point	Thermic fractures/64 L, 24 W, 4 T	Destruction area of burnt building	Hârșova
10.	Point	Fragmented/38 L, 42 W, 7 T	Destruction area of collapsed building	Hârșova
11.	Point	Complete/61 L, 41 W, 6 T	Substructure trench filling	Hârșova
12.	Point	Fragmented/36 L, 40 W, 6 T	*passim*	Bordușani
13.	Point	Complete/34 L, 19 W, 5 T	*passim*	Bordușani
14.	Point	Complete, partially shaped/57 L, 25 W, 10 T	Destruction area of collapsed building	Bordușani
15.	Point	Complete/54 L, 28 W, 10 T	Substructure ditch filling	Bordușani
16.	Point	Fragmented/36 L, 33 W, 6 T	External occupational area	Bordușani
17.	Axe	Complete, partially shaped/44 L, 31 W, 23 T	Unknown	Bordușani
18.	Axe	Complete/95 L, 55 W, 30 T	Unknown	Bordușani
19.	Axe	Complete/140 L, 59 W, 27 T	Unknown	Bordușani
20.	Axe	Complete/149 L, 53 W, 30 T	External occupational area	Bordușani
21.	Axe	Fragmented/87 L, 63 W, 22 T	Destruction area of collapsed building	Bordușani
22.	Axe	Fragmented/42 L, 55 W, 20 T	Destruction area of collapsed building	Bordușani
23.	Axe	Fragmented/76 L, 57 W, 27 T	Substructure trench filling	Bordușani
24.	Axe	Complete/84 L, 66 W, 33 T	External occupational area	Bordușani
25.	Axe	Fragmented/41 L, 54 W, 24 T	External occupational area	Bordușani
26.	Axe	Fragmented/65 L, 53 W, 28 T	External occupational area	Bordușani
27.	Axe	Complete/103 L, 57 W, 23 T	*passim*	Bordușani

When they did not constitute random discoveries, bifacial points were recovered from various contexts associated to refuse accumulation areas or destruction areas of former habitation structures; the general impression is that they were either lost or tossed among debris, for both complete and fragmented items. Further types of contexts include circulation/externa occupational areas, immediately outside of habitation structures and substructure trench filling (Tab. 1).

Other Gumelnița sequences also revealed bifacial points within the lithic assemblages[10], sharing, more or less, the same general morphological features exhibited by the points in Bordușani and Hârșova collections: use of high-quality chert, frequent elongated triangular shaping, straight or slightly convex long edges, and the same type of retouch. The outline of the base varies from straight to convex, and to a two-lobe shape, obtained either through the concave negative of a detachment applied at midpoint, or through opposite notches on the long edges. Also, their average median width and thickness values, of 27-33 mm and 4-6 mm, respectively, are roughly the same.

[10] Comșa 1987, 1991; Frînculeasa et al. 2012; Niță, Ștefan 2011; Niță, Ilie 2013; Torcică 2018.

Plate II. Flint axes, dorsal morphology (photo L. Niță).

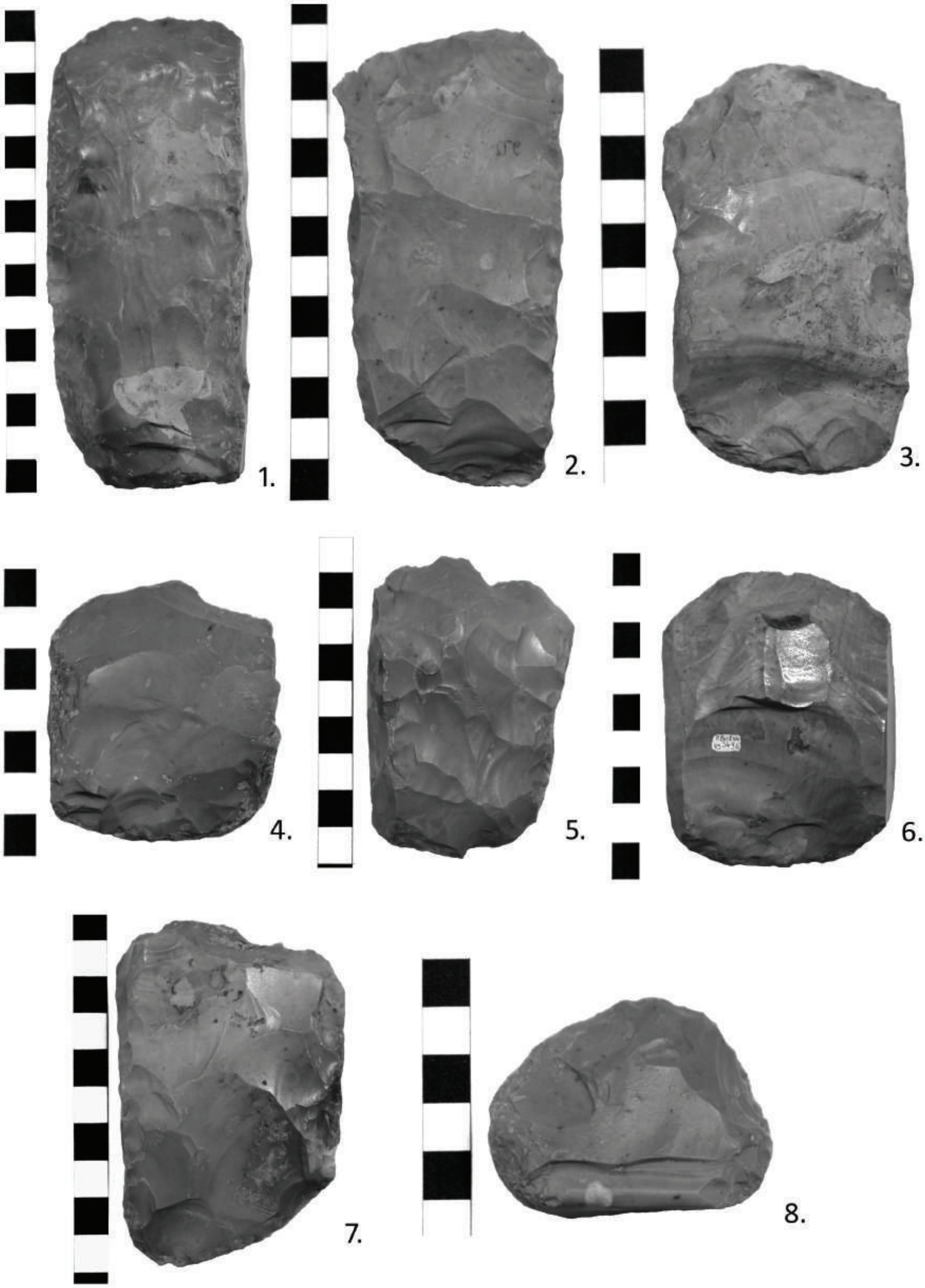

Plate III. Flint axes, ventral morphology (photo L. Niță).

Plate IV. Flint axes, lateral morphology (photo L. Niță).

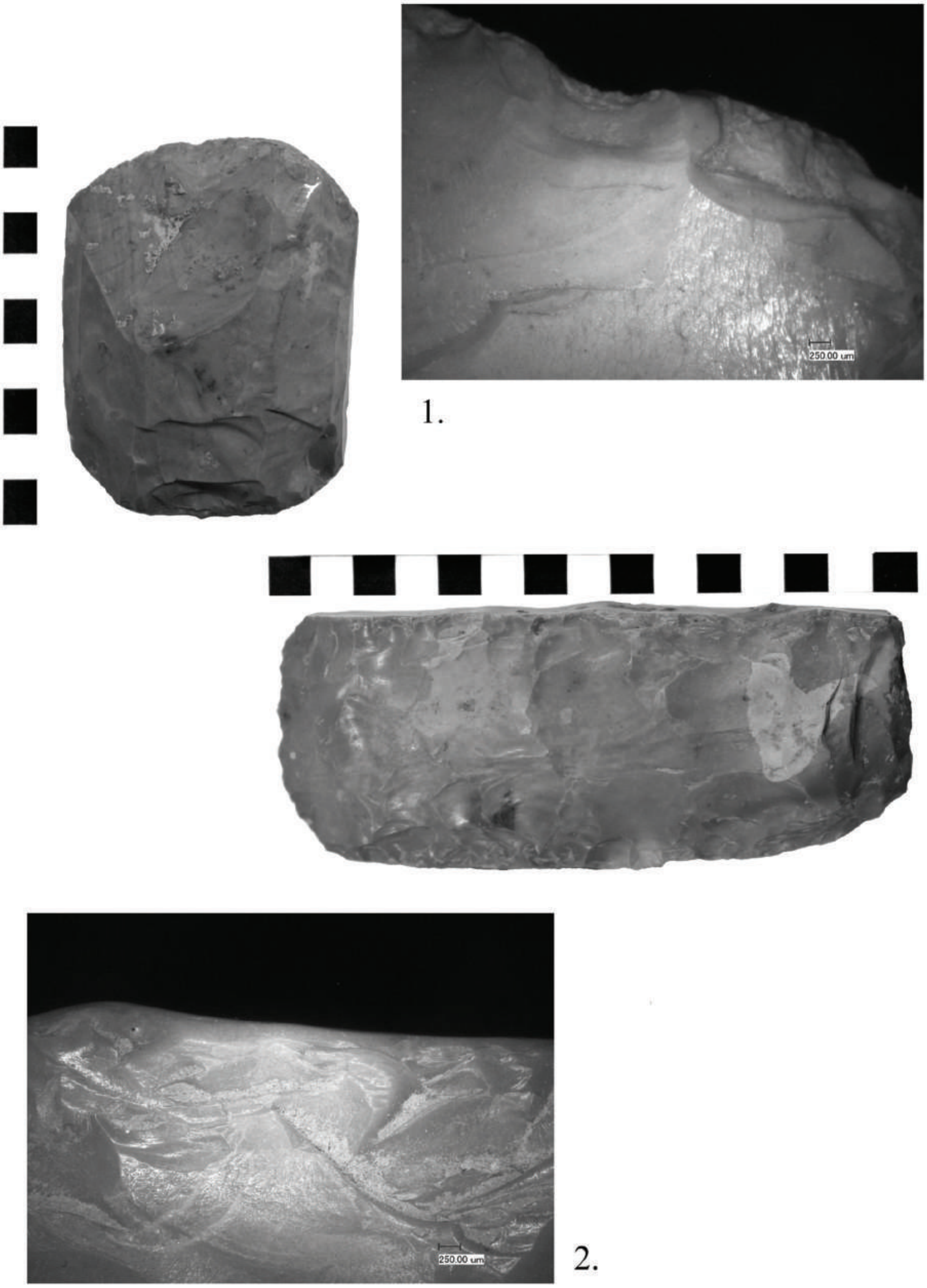

Plate V. Flint axes use wear (x50): detachments from the gloss-covered surface (1); lateral edge rounding (2) (photo L. Niță).

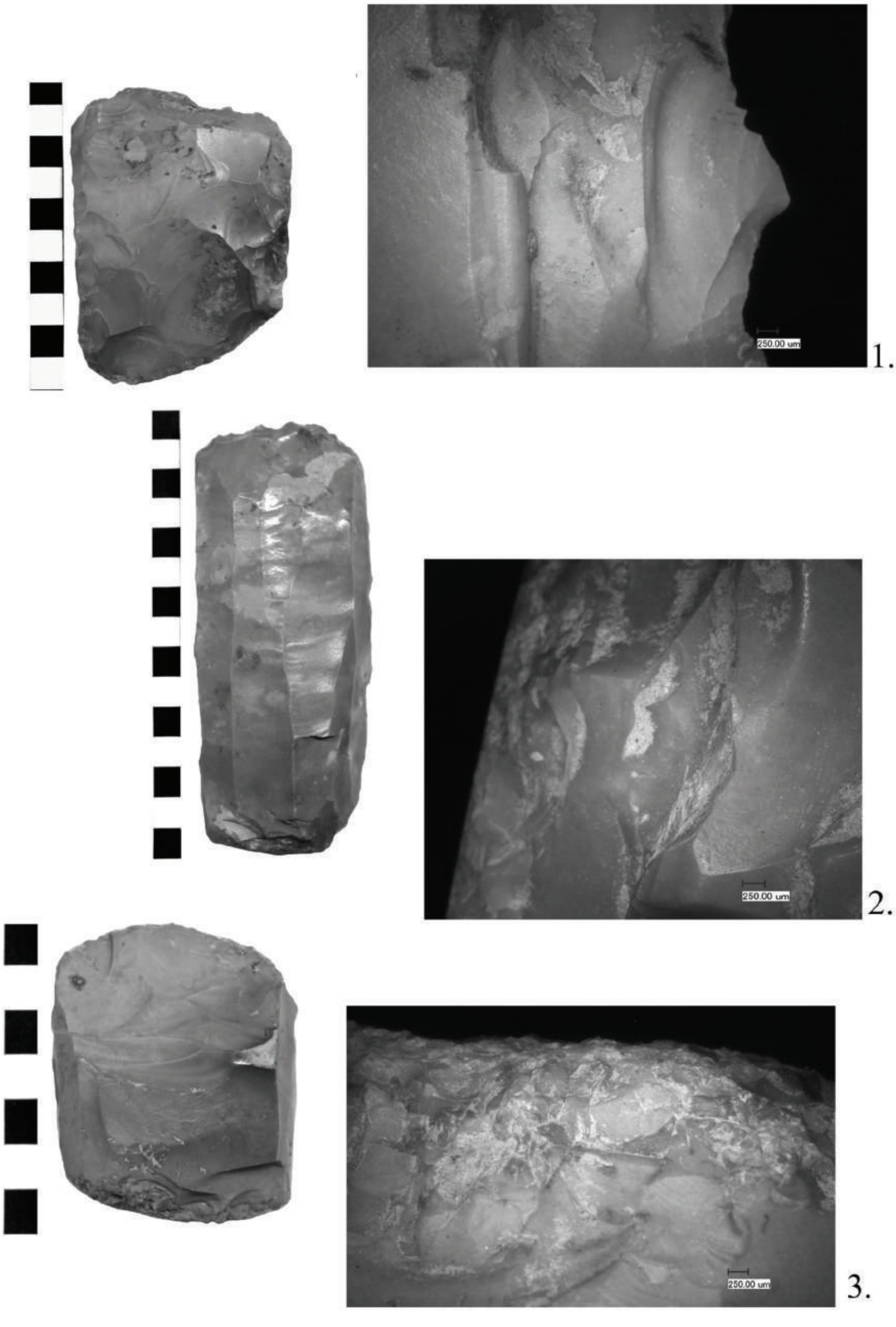

Plate VI. Flint axes use-wear (x50): active front ventral fracture (1); base dorsal fracture (2); base crushing (3) (photo L. Niță).

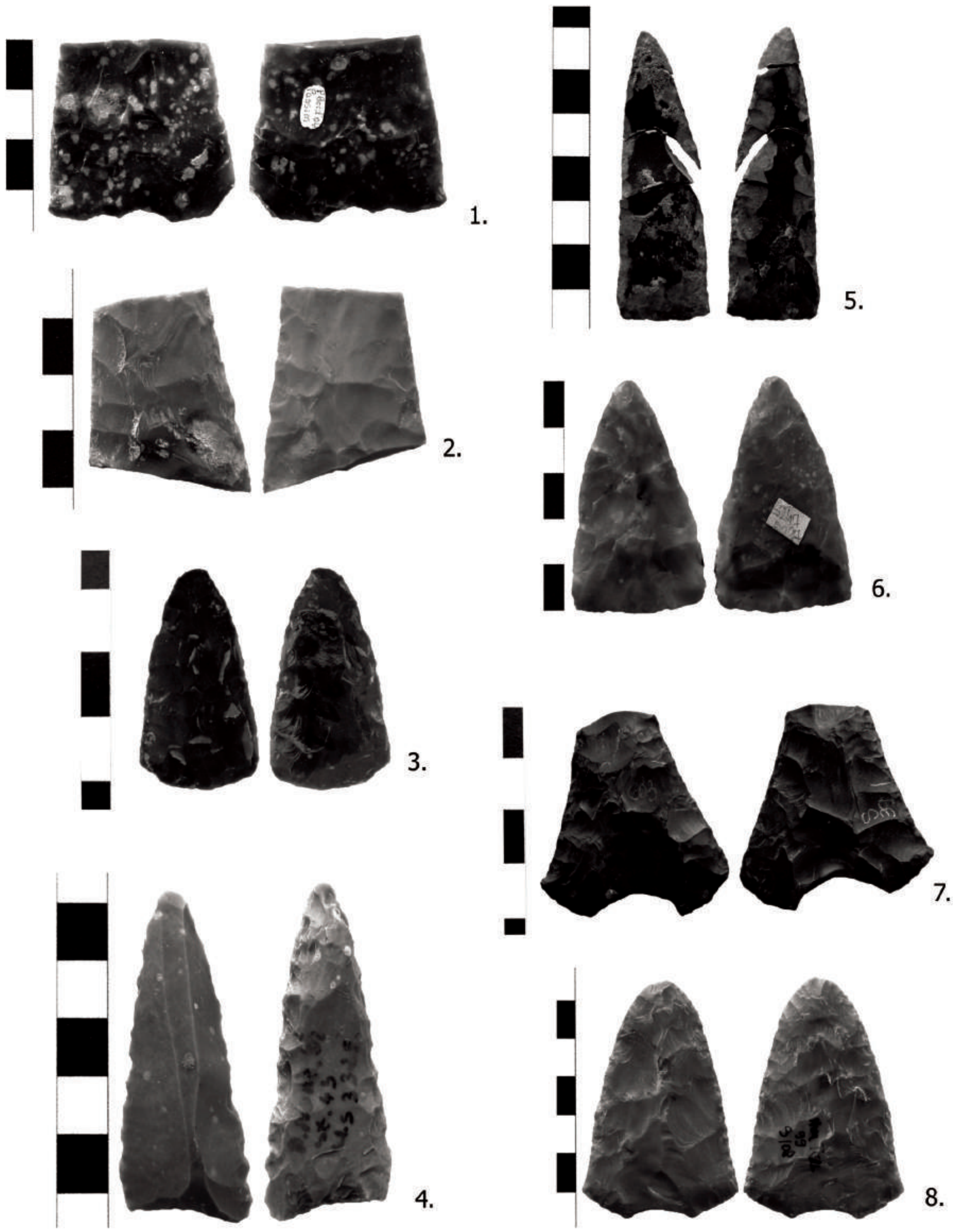

Plate VII. Bifacial points from Bordușani (1, 2, 3, 4), and Hârșova (5, 6, 7, 8) (photo L. Niță).

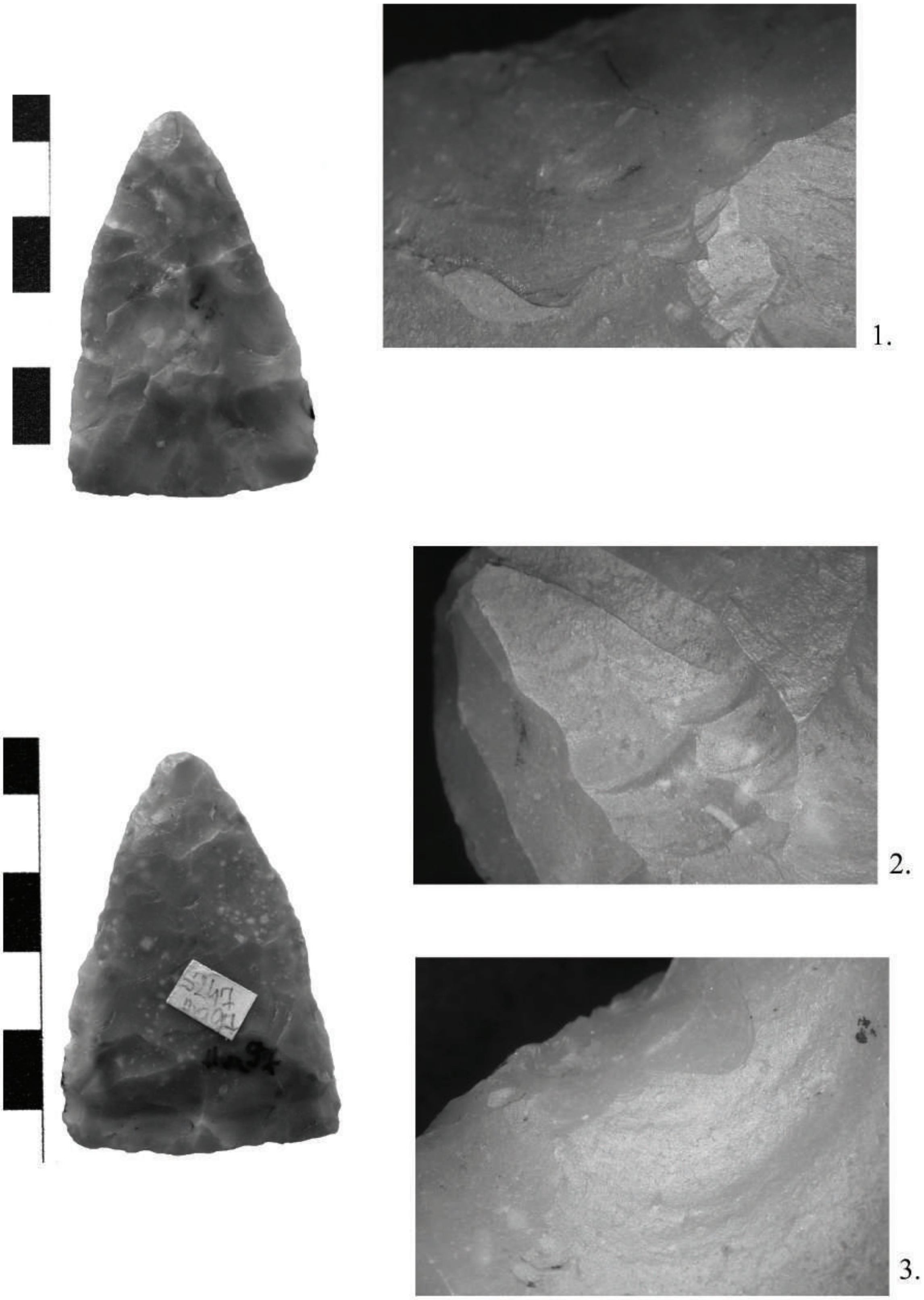

Plate VIII. Bifacial points use-wear (x50): dorsal retooling of gloss-covered tip surface (1); micro ventral detachments from the tip (2); dorsal retooling of gloss-covered base surface (3) (photo L. Niță).

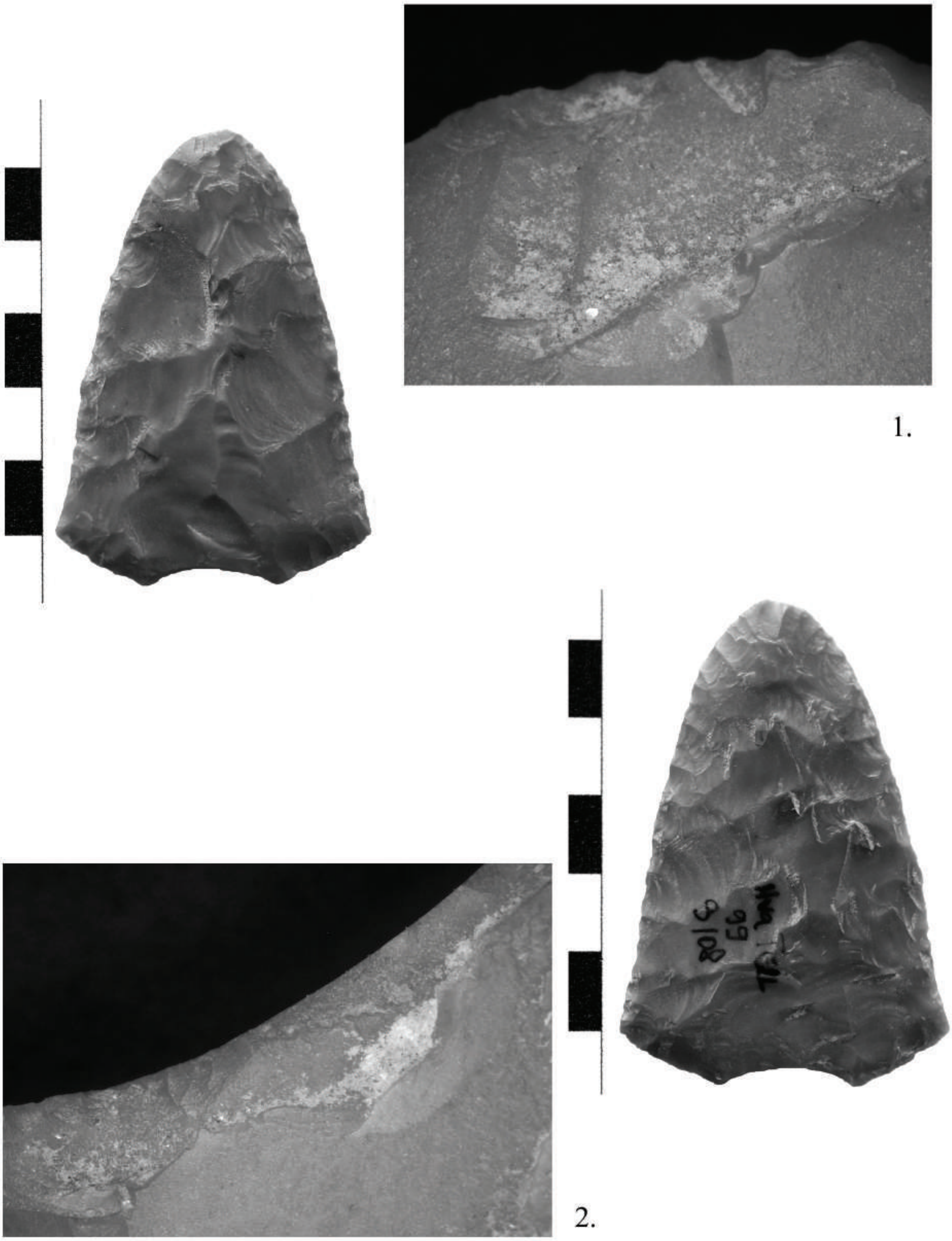

Plate IX. Bifacial points use-wear (x50): dorsal tip fracture (1); ventral base microchipping (2) (photo L. Niță).

Discussion

Bifacial points amount to less than one percent in both Hârșova and Bordușani lithic assemblages. Also, out of all formal tools, bifacial points do not exceed 3% (2.9% – Hârșova; 0.8% – Bordușani). Such a small amount could point either to the trivial role bifacial points played in the economy of the communities or to the difficulties in acquiring or producing such elaborated items of craftsmanship. Evidence for specialized, high-end lithic production is scarce, given the rarity of cores, superblades and flint axes (1.8% of the Bordușani assemblage for the latter) in the studied collections. There are some clues pointing towards the activity of skilled knappers, such as several laminar products originating from pressure debitage. Still, the problem remains if they were actually produced within the community or acquired through different forms of exchange.

As stated above, both collections discussed here did not originate from exhaustively researched archaeological sequences. Additional investigations might provide important information regarding the economic and social role played by bifacially crafted axes and points. When dealing with a presumably complete lithic assemblage, conjoining broken fragments and technological refittings between households and communal areas inventories offer a clearer perspective not only on specific instances of artefacts` production, using, retooling, and recycling, but also on their possible symbolic value. So far, only one of the bifacial points (Pl. VII/8) and one of the flint axes (Pl. II/5, III/5, IV/5) were discovered in substructure trench fillings related to dwelling building, which raises the question of whether it was an accidental or intentional, ritual-related, inclusion. Likewise, most of the issues tackled here, such as diagnostic use-wear, specific types of hafting, and particularly spatial distribution or context of discovery need further studies on larger sets of Eneolithic knapped assemblages.

Acknowledgment

This study is long overdue. Years ago, professor and archaeologist Dragomir-Nicolae Popovici kindly entrusted me with analysing the lithic material from his excavations at Hârșova and Bordușani settlements, offering me the first stirring glimpse into one aspect of the Eneolithic communities’ way of life and considerably heartening my experience in the field of lithic analysis. He was always available for helpful ideas, suggestions, bibliographical support, as well as sharing humorous commentaries and valuable insights from his vast archaeological experience, when needed. He patiently waited for results, allowing me to develop the analysis at my own pace, never trying to speed up the process. There was plenty of time ahead for discussing editorial plans of articles and monographies, or so we thought. Suddenly, there was not. I never got to show him final drafts for this and one other text, and, more importantly, I never got to thank him, to tell him I am grateful for everything. I can only hope he knew.

References

Boyadzhiev 2014	Boyadzhiev, K., *Weapons from the Chalcolithic Period in Bulgaria*, Bulgarian Academy of Sciences, Sofia, 2014.
Bréhard, Bălășescu 2012	Bréhard, S., Bălășescu, A., What’s behind the tell phenomenon? An archaeozoological approach of eneolihic sites in Romania, *Journal of Archaeological Science,* 39, 2012, 3167-3183.
Comșa 1987	Comșa, E., Despre vârfurile de săgeată din silex din arealul culturii Gumelnița, *Cultură și Civilizație la Dunărea de Jos,* III-IV, 1987, 21-28.
Comșa 1991	Comșa, E., Les pointes de fléche en silex de l’aire culturelle Salcutsa, *Starinar* XL-XLI, Beograd, 1991, 61-66.
Coppe et al. 2019	Coppe, J., Lepers, C., Clarenne, V., Delaunois, E., Pirlot, M., Rots, V., Ballistic study tackles kinetic energy values of Palaeolihtic weaponry, *Archaeometry*, 61, 4, 2019, 933-956.
Dev, Riede 2012	Dev, S., Riede, F., Quantitative analysis of Late Glacial projectile points from Northern Europe, *Lithics*, 33, 2012, 40-55.

Dobrescu 2017 Dobrescu, R., Quelques observations d'ordre technologique et typologique sur les industries lithiques découvertes à Atmageaua Tătărască (Sokol, Bulgarie), *Materiale și Cercetări Arheologice,* XIII, 2017, 227-259.

Frînculeasa et al. 2012 Frînculeasa, A., Andreescu, R., Negrea, O., Niţă, L., Frînculeasa, M., Popa, E., Preda, B., Cercetări arheologice în așezarea eneolitică de la Mălăieştii de Jos (jud. Prahova), campaniile 2002-2010, *Materiale și Cercetări Arheologice (S.N.)*, VIII, 2012, 11-57.

Haită 2011 Haită, C., *Esquisse géographique et géologique de Dobroudja. Les zones-sources du materiel lithique*, in Carozza, L., Bem, C, Micu, C. (eds.), *Société et environnement dans la zone du Bas Danube Durant le 5e millenaire avant notre ère*, Iași - București, 2011, 79-88.

Haită, Tomescu 1997 Haită, C., Tomescu, M., Lithic resources. Archaeological researches at Borduşani Popină (Ialomiţa county), preliminary report 1993-1994, *Cercetări Arheologice*, X, 1997, 132-136.

Klimscha 2012 Klimscha, F., „De goûts et des couleurs, on ne discute pas". Datation, répartition et valeur sociale des haches en silex de la culture Gumelnița, in Pétrequin, P., Cassen, S., Errera, M., Klassen, L., Sheridan, A., Pétrequin A.-M. (dirs.), *Jade. Grandes haches alpines du Néolithique européen, Ve et Ive millénaires av. J.-C.*, Les cahiers de la MSHE Ledoux, Besançon, 2012, 1208-1229.

Klimscha 2014 Klimscha, F.,Power and prestige in the Copper Age of the Lower Danube, in Ștefan, C.E., Florea, M., Ailincăi, S.C., Micu, C. (eds.), *Studii privind preistoria sud-estului Europei, volum dedicat memoriei lui Mihai Şimon*, Editura Istros, Brăila, 2014, 131-168.

Klimscha 2020 Klimscha, F., Ner research on the „Kings of Metal": Systems of Social Distinction in the Copper Age of Southeastern Europe, *Journal of Archaeological Research*, 28, 2020, 99-138.

Manolakakis 2017 Manolakakis, L., So long blades... Materiality and symbolism in the north-eastern Balkan Copper Age, in Manolakakis, L., Schlanger, N., Coudart, A., *European Archaeology, Identities& Migrations, Hommages à Jean-Paul Demoule*, Sidestone Press: Leiden, 2017, 265-284.

Niță, Ștefan 2011 Niță, L., Ștefan, C.E., Considerații privind materialul litic din așezarea de la Cunești – „Măgura Cuneștilor" (jud. Călărași), *Studii și Cercetări de Istorie Veche și Arheologie,* 62, 3-4, 2011, 195-207.

Niță, Ilie 2013 Niță, L., Ilie, A., The lithic collection from the Chalcolithic tell of Geangoești (Dâmbovița County), *Studii de Preistorie,* 10, 2013, 119-130.

Păunescu 1970 Păunescu, A., *Evoluția uneltelor și armelor de piatră cioplită descoperite pe teritoriul României*, Editura Academiei R.S.R., București, 1970.

Popovici 2010 Popovici, D.N., Copper Age Traditions North of the Danube River, in Anthony, D.W., Chi J.Y. (eds.), *The Lost World of Old Europe. The Danube Valley, 5000-3500 BC*, Institute for the Study of the Ancient World, New York, 2010, 90-111.

Popovici et al. 2000 Popovici, D., Randoin, B., Rialland, Y., Voinea, V., Vlad, F., Bem, C., Haită, G., Les recherches archéologiques du tell de Hârșova (dép. de Constanța), 1997-1998, *Cercetări Arheologice,* XI (I), 2000, 13-124.

Popovici et al. 2013 Popovici, D., Haită, C., Bălăşescu, A., Radu, V., Vlad, F., Tomescu, I., *Archaeological pluridisciplinary researches at Borduşani–Popină*, Editura Cetatea de Scaun, Târgoviște, 2013.

Popovici et al. 2014 Popovici, D.N., Cernea, C., Cernău, I., Parnic, V., Dimache, M., Hovsepyan, R., Bălășescu, A., Radu, V., Haită, C., Mărgărit, M., Niță, L., Șantierul arheologic Bordușani-Popină, jud. Ialomița (2012-2014), *Cercetări Arheologice,* XXI, 2014, 55-118.

Randoin et al. 2000 Randoin, B., Popovici, D., Rialland, Y., Metoda de săpătură și înregistrarea datelor stratigrafice într-un sit pluristratificat: tell-ul neo-eneolitic de la Hârșova, *Cercetări Arheologice,* XI (I), 1998-2000, 199-234.

Torcică 2018 Torcică, I., Vârfuri de săgeată și suliță din silex din arealul sud-vestic al culturii Gumelnița, *Buletinul Muzeului Județean Teleorman,* 10, 2018, 187-205.

Lista ilustrațiilor

Tabelul 1. Piese bifaciale din nivelurile Gumelnița A2 din siturile *tell* de la Hârșova și Bordușani.

Planșa I. Localizarea siturilor *tell* Hârșova și Bordușani (modificat după Klimscha 2020, 102, Fig. 1).

Planșa II. Topoare din silex, morfologie dorsală (foto L. Niță).

Planșa III.Topoare din silex, morfologie ventrală (foto L. Niță).

Planșa IV. Topoare din silex, morfologie laterală (foto L. Niță).

Planșa V. Urme de uzură pe topoare din silex (x50): desprinderi de pe suprafața acoperită cu lustru (1); urme de tip *edge-rounding* pe suprafața laterală (2) (foto L. Niță).

Planșa VI. Urme de uzură pe topoare din silex (x50): fractură ventrală a frontului activ (1); fractură dorsală a bazei (2); distrugere/zdrobire a suprafaței bazei (3) (foto L. Niță).

PlanșaVII. Vârfuri bifaciale de la Bordușani (1, 2, 3, 4) și Hârșova (5, 6, 7, 8) (foto L. Niță).

Planșa VIII. Urme de uzură pe vârfuri bifaciale (x50): reamenajare dorsală pe suprafața distală acoperită cu lustru (1); micro-desprinderi ventrale din zona vârfului (2); reamenajare dorsală pe suprafața proximală acoperită cu lustru (3) (foto L. Niță).

Planșa IX. Urme de uzură pe vârfuri bifaciale (x50): fractură dorsală a vârfului (1); micro-desprinderi ventrale de pe suprafața bazei (2) (foto L. Niță).

LOREDANA NIȚĂ,
„Valahia” University of Târgoviște,
Lt. Stancu Ion 35, 130105, Târgoviște,
Romania, loredana_nita@yahoo.com