Préhistoire d'Anatolie, Genèse de deux mondes, Liège, ERAUL 85, 1998, pp. 339-352.

THE MIDDLE PALEOLITHIC TO AURIGNACIAN TRANSITION IN THE CRIMEA

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INTRODUCTION

The most peculiar features of the Crimean Paleolithic are the abundance of Middle Paleolithic deeply stratified sites and the rarity of Upper Paleolithic ones. The Middle to Upper Paleolithic sites ratio was identified as 5:1. That is, during more than 100 years of field investigations in the Crimea, seven Upper Paleolithic and 35 deeply stratified Middle Paleolithic sites were discovered. Most of the Upper Paleolithic occupations are presented by Late Gravettian assemblages. Thus, for the purpose of transitional studies, just two Upper Paleolithic industries are suitable. These are the Aurignacian assemblages of Siuren-I and the Szeletian-like industry of Buran-Kaya-III, level C. The main subject of this article is the peculiarity of the scenario of the Middle Paleolithic/Aurignacian transition in the Crimea.

There are three main points of view on the problem of the transition from the Middle to Upper Paleolithic in the Crimea. In the mid-1930s, G.A. Bonch-Osmolowski, in the framework of evolutionary theory, placed the "Aurignacien époques industrielles" (Siuren-I) directly after the "Moustérien supérieur époques industrielles" (Shaitan-Koba) of human society development (Bonch-Osmolowski 1934). At the end of the 1950s, A.A. Formosov decided that the local "Late Mousterian" industry of Starosele was a generic base of Szeletian-like Kostenki-Streletian assemblages of the middle Don river (Formosov 1958). And finally, the recent approach to the problem of the Middle to Upper Paleolithic transition was proposed by M.V. Anikovich. He suggested that an extremely late Mousterian population was shifted by Aurignacian ones at about 20,000 BP. He based this on both the presence of Middle Paleolithic artifacts in the Aurignacian complex of Siuren-I, lower layer, and the assumed date for Siuren-I as 20,000 BP (Anikovich 1992). So, the Middle Paleolithic artifacts in the Siuren-I Aurignacian assemblage are supposed to be evidence of acculturation of the local Middle Paleolithic by an intrusive Aurignacian.

New data obtained during the last five years of excavation give the possibility for a new outlook on the problems of the MP to UP transition in the Crimea.

MIDDLE PALEOLITHIC VARIABILITY

Typologically and technologically, the Crimean Middle Paleolithic is represented by two traditions: the Western Crimean Mousterian (WCM) and the Crimean Micoquian (CM).

Typologically, the CM tradition is subdivided on the number of industries: *Ak-Kaya*, *Kiik-Kobien*, and *Staroselean*, which mainly reflect different strategies of raw material exploitation (Chabai, Marks and Yevtushenko 1995; Chabai 1996; Demidenko 1996). Technologically, all of them are based on the same plano-convex manner of bifacial tool production and parallel primitive and/or radial core reduction strategies. Moreover, the toolkits of these industries are represented by similar types: bifacial points and bifacial scrapers, and unifacial converging tools, often with different kinds of ventral thinning. The different ratios of these types were recognized as the basis of typological variability within the CM tradition.

In the Ak-Kaya industry, the technology of raw material reduction is presented by both bifacial tool production and core reduction. There are three main types of cores: radial, multiple platform, and parallel. There was little platform facetting and very few elongated blanks were produced. The Ak-Kaya industry is characterized by the abundance of bifacially flaked tools (IB, ca. 20), but without true handaxes. The most common form is a naturally backed bifacial knife resembling either Bochstein or Klaussennishe types (Fig. 1: 2, 5, 7). Combined, unifacial and bifacial knives and scrapers dominate the tool assemblages (about 80%), while points never account for more than 10%, and denticulates and notches are about 5%. Among the unifacial scrapers, the canted forms are of significant value (Fig. 1: 1, 3, 4, 6). The different canted forms compose about 10% of all toolkits. Scrapers and points with ventral thinning are usual. Upper Paleolithic tool types (endscrapers, burins, perforators, etc.) are very rare (Kolosov, Stepanchuk and Chabai 1993).

The technology of Kiik-Kobien is based on bifacial tool production and almost exclusively radial/discoidal core reduction strategies. Blades are uncommon.

The main typological characteristic feature of Kiik-Kobien is the abundance of both bifacial and unifacial points (Fig. 2: 1-7, 9-10, 12-15, 17-18). On the whole, the points comprise about 40% of all identifiable tools. The unifacial points, as well as scrapers, tend to be canted (Fig. 2: 7-11, 13, 15, 16). The different kinds of ventral thinning were used for both scraper and point elaboration. The bifacials comprise about 15% of the toolkits. Unlike Ak-Kaya, the bifacial backed pieces are represented by a few examples. All of them are made in a plano-convex manner. Denticulates and notches are rare (about 10%), as are Upper Paleolithic tools, represented by a few atypical pieces (Kolosov, Stepanchuk, and Chabai 1993).

The technology of Staroselean industries is based both on bifacial tool production and parallel and/or radial core reduction strategies.

The dominant tool types are the scrapers, which comprise about 60-70% of the tool assemblage (Fig. 3). Of the scrapers, convergent forms are the most common (from 40-50%) and they tend toward trapezoidal, crescent and truly rectangular shapes (Fig. 3: 4, 5, 7, 8). In other words, the canted shapes of scrapers comprise about half of the scraper assemblage. Points rarely exceed 20% of any tool assemblage and they tend to be leaf-shaped or triangular, although they are represented by canted shapes (Fig. 3: 1, 2). The bifacials are mainly represented by plano-convex leaf-shaped and/or semi-crescent points (Fig. 3: 3). Bifacially elaborated backed knives are rare.

The WCM industry demonstrates a complete absence of bifacial technology. Three stages of technological development have been recognized in the evolution of WCM. The earliest is characterized by the balance between blank production from radial and single platform cores. Blades are uncommon. The second technological stage is characterized by a marked increase in the use of single or opposed platform cores, the appearance of Levallois tortoise cores and their products (Fig. 4: 6-8). Blades comprise about 20% of blanks. The third stage has blank production only from single and opposed platform cores. The centripetally prepared Levallois blanks are absent. Some true blade cores were exploited volumetrically, and crested blades and core tablets resulting from core shaping are present. Also, blade production increases to about 35% of all blanks.

Unlike the CM assemblages, where bifacials are common, the WCM technology is based only on unifacial tool production. The unifacial toolkits are different as well. The typological structure of tool assemblages is represented by simple sidescrapers, sometimes double sidescrapers, and different types of points (Fig. 4: 3-8).

In spite of the technological evolution, there is no comparable change in the tool assemblage. Only the toolkits of the third stage of WCM development demonstrate some new typological features. Almost all tools were made on blades. As usual, all are dominated by simple sidescrapers but are not made on blades. Some new types do appear within the class of points. There were distal points, where only the tip is retouched, lateral points on blades with the single retouched edge and retouched tip, and oblique retouched points. Other innovations are oblique truncated blades (Fig. 4: 1, 2) and few backed blades. Neither endscrapers nor burins were found.

So, the core reduction strategy can be characterized as being of Upper Paleolithic mode, while the typological structure of tool assemblages is clearly Middle Paleolithic (Chabai 1996).

THE MIDDLE PALEOLITHIC CHRONOLOGY

The chronology of the above-mentioned Crimean Middle Paleolithic industries was established on the basis of AMS, U-series, and ESR dates for the samples from the seven multi-layered deeply stratified sites (Hedges *et al.* 1996; McKinney and Rink 1996). The absolute and relative chronological position of the CM tradition has been determined by the eight AMS, seven U-series, eleven ESR dates, and by the stratigraphical sequence of Kabazi-II. The lower chronological border of CM is seen in archaeological layer II of GABO and Unit III of Kabazi-II, which are dated by ESR,LU to about 80,000 BP (Table 1). In the case of Kabazi-II, it must be noted that the Micoquian assemblage of Unit III superimposes the Interglacial soil (Chabai 1996). At the same time, the lower chronological border of the CM is mainly a question of absence at the present time of known Last Interglacial assemblages, while the upper chronological border is more problematic. The number of AMS and ESR,LU dates for Zaskalnaya-V, Zaskalnaya-VI, Buran-Kaya-III, and Starosele demonstrate the possibility of

a CM extension to about 40,000-30,000 BP. Both AMS and ESR,LU dates from Starosele, level 1, which are about 40,000 BP, are in excellent agreement (Marks *et al.* 1997). At the same time, the AMS dates from Buran-Kaya-III and Zaskalnaya-V (which are about 32,000-30,000 BP) need to be confirmed by the other methods because of the well-known problems with the application of the radiocarbon system for samples which could be older than 40,000 BP.

The lower and upper chronological borders of WCM are confirmed by the chronology of the Kabazi-II sequence (Table 1). It is the only site in the Crimea where the industries of both CM and WCM were found in the same stratigraphical sequence. The CM occupational levels are disposed directly below those of WCM and are separated from the latter by about 10 cm of sterile sediments (Chabai 1996). Both U-series and ESR,LU dates for the lower part of the WCM sequence are about 55,000-40,000 BP. That is, from the point of view of the Kabazi-II chronostratigraphy, the shift from CM to WCM occurred in the period of time from about 55,000 to about 40,000 BP. At the same time, taking into account the AMS dates from Zaskalnaya-V and Buran-Kaya-III, the unclear character of the upper chronological border of the CM must be noted. On the other hand, the extension of Micoquian industries to about 30,000 BP appears to be unsound from the point of view of Eastern and Central European Micoquian chronology while the chronological border of about 40,000 BP is well documented by the Micoquian industries of Kulna and Ripiceni-Izvor (Valoch 1988; Paunescu 1993).

At the same time, the extension of WCM to about 30,000 BP has been confirmed by AMS, U-series, and ESR,LU dates. Thus, late in both chronological and techno-typological terms, the WCM is the result of local development during at least 20,000 years: that is, from about 50,000 BP to about 30,000 BP. The upper chronological border of the WCM is contemporaneous with or, at least, precedes the Aurignacian industry in the Crimea, which is dated to about 29,000-28,000 BP (Table 1).

THE AURIGNACIAN

The Aurignacian industries were discovered in Siuren-I rock-shelter, with a total of nine occupational surfaces in three archaeological units. The industries from Siuren-I, Units F, G, and H, were identified as the sub-type of Krems-Dufour variant of the Aurignacian (Bonch-Osmolowski 1934; Demidenko *et al.*, this volume). Technologically, the lowest of them, Units G and H, are characterized by the pronounced component of bladelets and microblades. Altogether, they comprise about 40% of the total number of blanks. Both bladelets and microblades with incurvate and twisted profiles are present from 50-70%. Blades do not exceed even 20% of the blanks. The bladelets and microblades are associated with carinated cores (Fig. 5: 9). So, there is no doubt about significant value of bladelet technology in the assemblages of Siuren-I, Units G and H.

Table 1. The absolute chronology of the Crimean Middle Paleolithic and Aurignacian.

	CRIMEAN MICOQUIAN	WESTERN CRIMEAN MOUSTERIAN	AURIGNACIAN
			SIUREN-I, level Ga -- 28,450+-600 (AMS)
		KABAZI-II, level II/1 -- 30,000+-3,000 (U-series)	
30,000 BP	*ZASKALNAYA-VI, layer I -- 30,110 +- 630 (AMS)*	31,550+-600 (AMS)	
		31,700+-2,200 (ESR,LU)	
	BURAN-KAYA-III, layer VII/2 --32,710+-940(AMS)		
	ZASKALNAYA-VI, layer IIIa -- 39,100+-1500 (AMS)		
40,000 BP	STAROSELE, level 1 -- 35,600+-3900 (ESR,LU)		
	STAROSELE, level 1 -- 41,200+-1,800 (AMS)		
	STAROSELE, level 1 -- 41,200+-3,600 (ESR,LU)		
50,000 BP		KABAZI-II, level II/7B -- 51,600+-4,400 (ESR,LU)	
		KABAZI-II, level II/8 -- 47,000+-7,500 (U-series)	
	KABAZI-V, Layer III/1 -- 58,700+-5,600 (U-series)		
60,000 BP			
70,000 BP			
80,000 BP	KABAZI-II, Unit III -- 84,400+-1,600 (ESR,LU)		
	82,000+-6,400 (ESR,LU)		

Moreover, the bladelets and microblades of Dufour and pseudo-Dufour types with fine and/or semi-steep retouch are about 60% of the total number of tools. The majority of bladelets and microblades with secondary treatment were elaborated by alternate (Fig. 5: 2-7, 10, 11) or inverse retouch. That is, the Dufour bladelets and microblades comprise more than half of the toolkits. A few points of Krems type were also found (Fig. 5: 1). Other types of tools - endscrapers, burins, denticulates, notches, and retouched blades - are present in similar numbers. All of them comprise about 30% of tools. Carinated tools are rare. At the same time, Middle Paleolithic tools appear to be the pronounced component of the toolkits of Units G and H, comprising about 10% of all identifiable tools. For instance, endscrapers and/or burins are present in the same percentage. The Middle Paleolithic tools are subdivided into three main types: points, canted scrapers and a single bifacial foliate piece (Fig. 5: 12-15). Typologically, both points and canted scrapers are the closest analogy to the same of CM toolkits. Some of these tools even show basal thinning (Fig. 5: 15) which makes them identical to the CM manner of tool production. At the same time, as observed by Dr. A.I. Yevtushenko (pers. comm.), the edges of points and canted scrapers were elaborated by soft hammer abrasion. That method of tool elaboration was unknown in the Crimean Middle Paleolithic. Also, a single bifacial foliate piece with the concave base found in the Siuren-I Aurignacian assemblage (Fig. 5: 13) is quite different from the Micoquian bifacials made in a plano-convex manner because it is biconvex. Also, its edges were elaborated by soft hammer abrasion. Thus, on one hand, the Middle Paleolithic unifacial toolkits from the Siuren-I Aurignacian show a typological similarity with tools of the CM tradition. On the other hand, Middle Paleolithic tools in Aurignacian assemblages are technologically quite different from those of CM. Additionally, the technology of a single bifacial tool production has nothing in common with CM bifacial technology.

DISCUSSION

A single AMS date of about 28,000 BP (Table 1) is available for Siuren-I, Unit G. So, the latest evidence of WCM directly precedes the Aurignacian of Siuren-I. At the same time, it is clear that neither technological nor typological similarities are seen between them. There is nothing in common between the blade technology of WCM, which was based on opposed platform blade core reduction, and the bladelet technology of Siuren-I Aurignacian, which was based on carinated core flaking. There is no one characteristic to the WCM type of tools found in the Siuren-I Aurignacian assemblage. The relations between Aurignacian and CM are not so clear, due to the unclear upper chronological border of the latter as well as the typological similarity of unifacial points and canted scrapers in both Aurignacian and CM. It must be noted again that typological similarity was found in the morphology of points and canted scrapers while the technology of their secondary treatment in the Siuren-I Aurignacian assemblage, as well as the method of elaboration for the single bifacial foliate piece, biconvex, are unusual for CM.

At the same time, the Aurignacian toolkits in association with unifacial points and canted scrapers are known from the Aurignacian assemblages from Bacho-Kiro, layers 11 and 6a/7, in Bulgaria (Kozlowski *et al.* 1982). The latter is dated similar to Siuren-I, layer G, at

about 29,000 BP. The Aurignacian occupations of Ripiceni-Izvor in Romania are also dated to about the same time (Paunescu 1993). Also, the Aurignacian assemblages from Ripiceni-Izvor demonstrate the combination of the Aurignacian toolkit and bifacial foliate pieces made in a biconvex manner. The same is true for transitional and Upper Paleolithic industries in Moldova (Chirica, Borziak and Chetraru 1996). So, the territories of Moldova and Romania appear to be the contact zone of local transitional industries and intrusive Aurignacian. At the same time, it must be noted that that, unlike the above-mentioned similarities, we are dealing (in the Crimea) with a Krems-Dufour variant of Aurignacian. In neighboring territories, the Krems-Dufour Aurignacian is represented by the assemblages of Tincova, Romanesti-Dumbravita (both in Romania) and Kostenki-I (on the mid Don river in Russia) (Chirica, Borziak, and Chetraru 1996; Rogachev and Anikovich 1984). Middle Paleolithic tools, such as canted scrapers and points, are unknown in these assemblages.

Thus, it looks like the mixture of Aurignacian and Middle Paleolithic tools found in the Crimean Aurignacian is the result of cultural processes which occurred in the territory of Southeastern Europe (Chirica 1995). At the same time, it is not excluded that the Crimean Middle Paleolithic took place in some kind of interactions with the Aurignacian. Finally, the replacement of the local Middle Paleolithic by intrusive Aurignacian occurred in the Crimea by about 30,000 BP.

ACKNOWLEDGMENTS

This work was funded by the International Association for the Promotion of Cooperation with Scientists from the New Independent States of the Former Soviet Union (Project INTAS-93-203). Also, I am grateful to Drs. Yu.E. Demidenko, M. Otte, and A.I. Yevtushenko for fruitful discussions about the problems raised in this paper.

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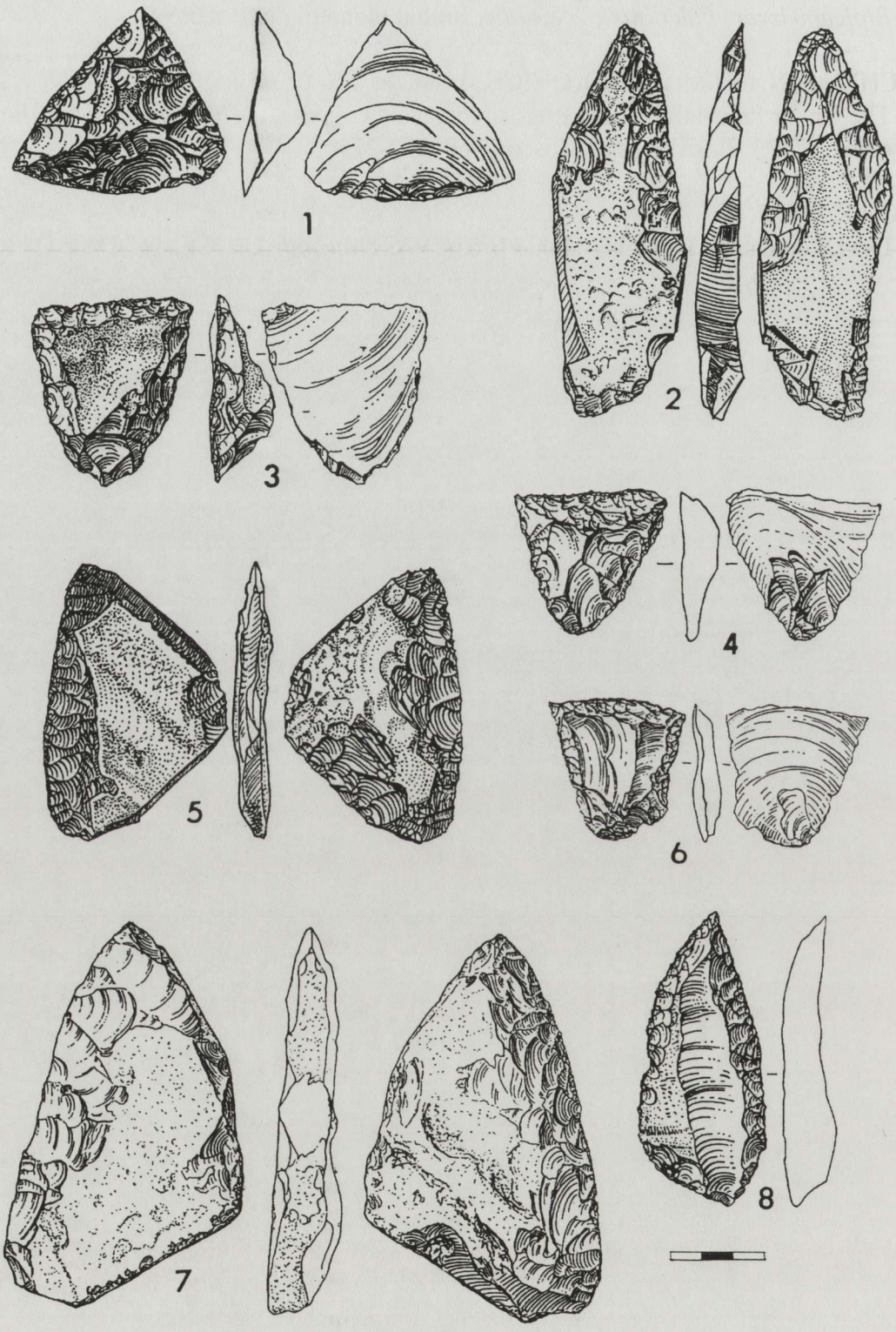

Fig. 1. Ak-Kaya industry (after Kolosov 1983). Zaskalnaya-V, layer II (7), layer III (6-8), layer IV (1-4) and Sary-Kaya (5). Canted scrapers (1, 3, 4, 6). Naturally backed bifacials (2, 5, 7).

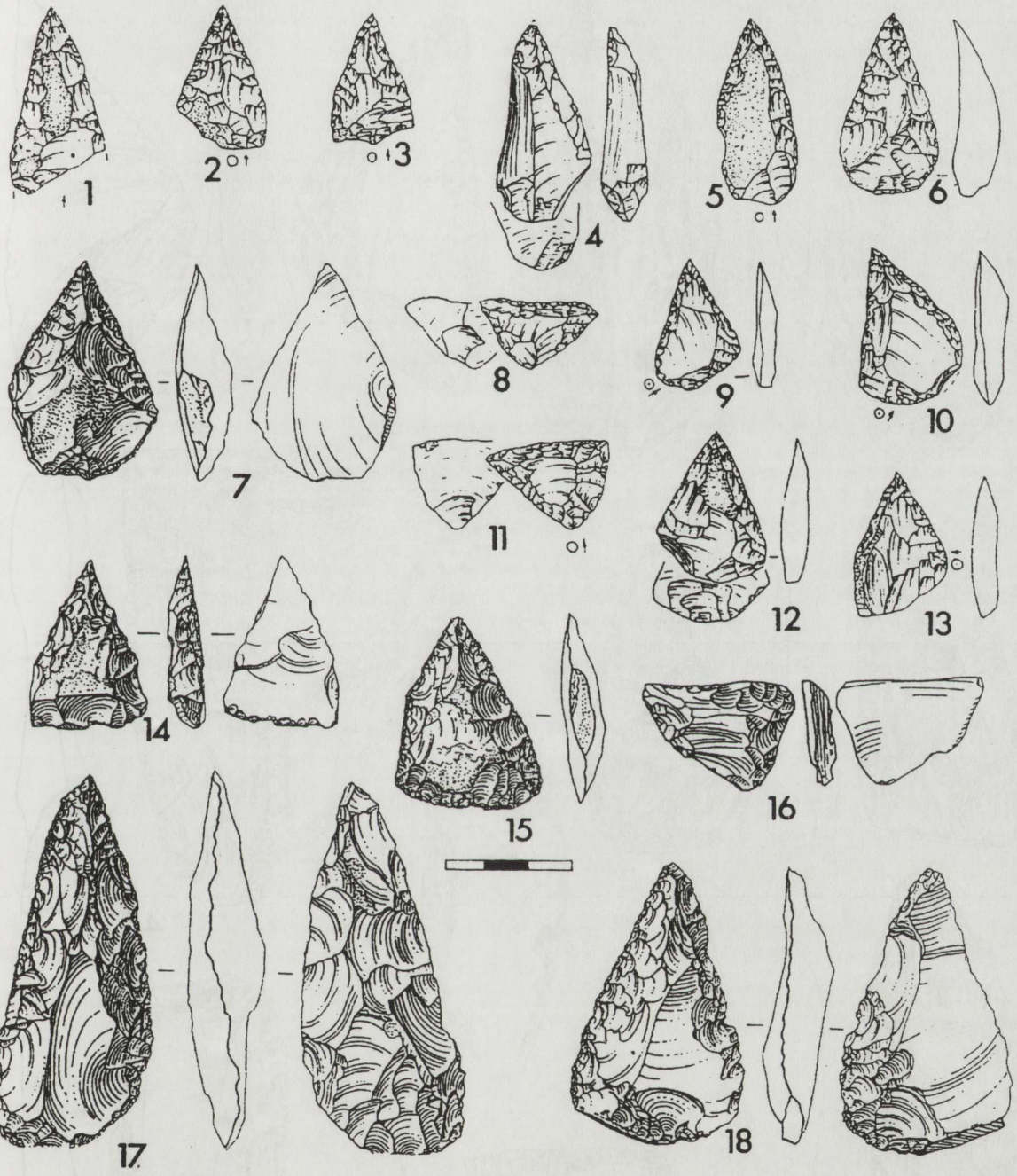

Fig. 2 Kiik-Koba industry (after Kolosov, Stepanchuk and Chabai 1993). Kiik-Koba, upper layer (1-6, 8-13) and Prolom-I (7, 14-18). Different shapes of unifacial (1-7, 9-10, 12-15) and bifacial (17-18) points. Canted scrapers (8, 11, 16).

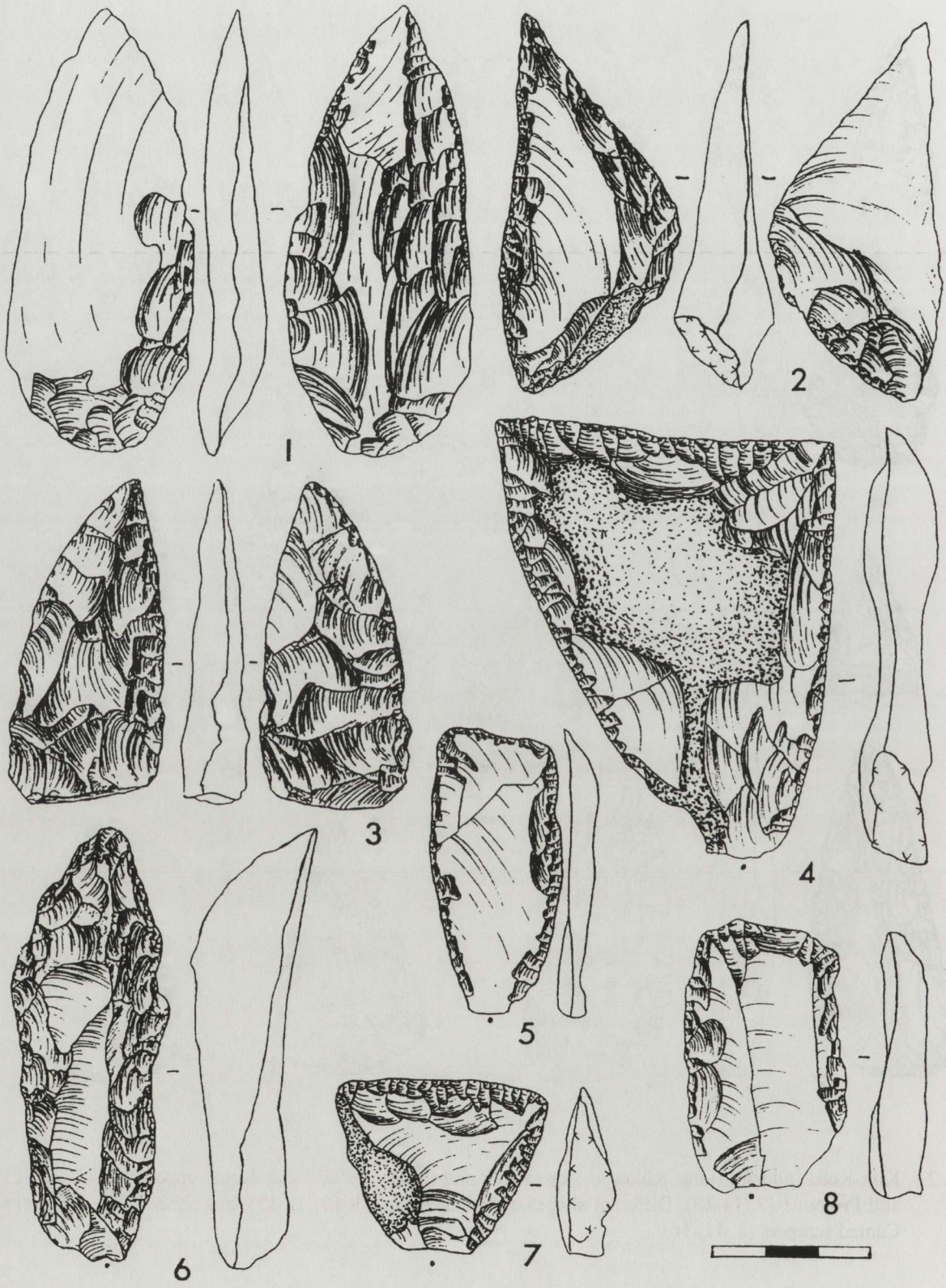

Fig. 3. Staroselean industry. Starosele (1, 5, 7, 8), Kabazi-V (2, 3, 6), Kabazi-II, Unit I (4). Different types of points (1-3), canted scrapers (4, 5, 7, 8) and convergent scrapers (6).

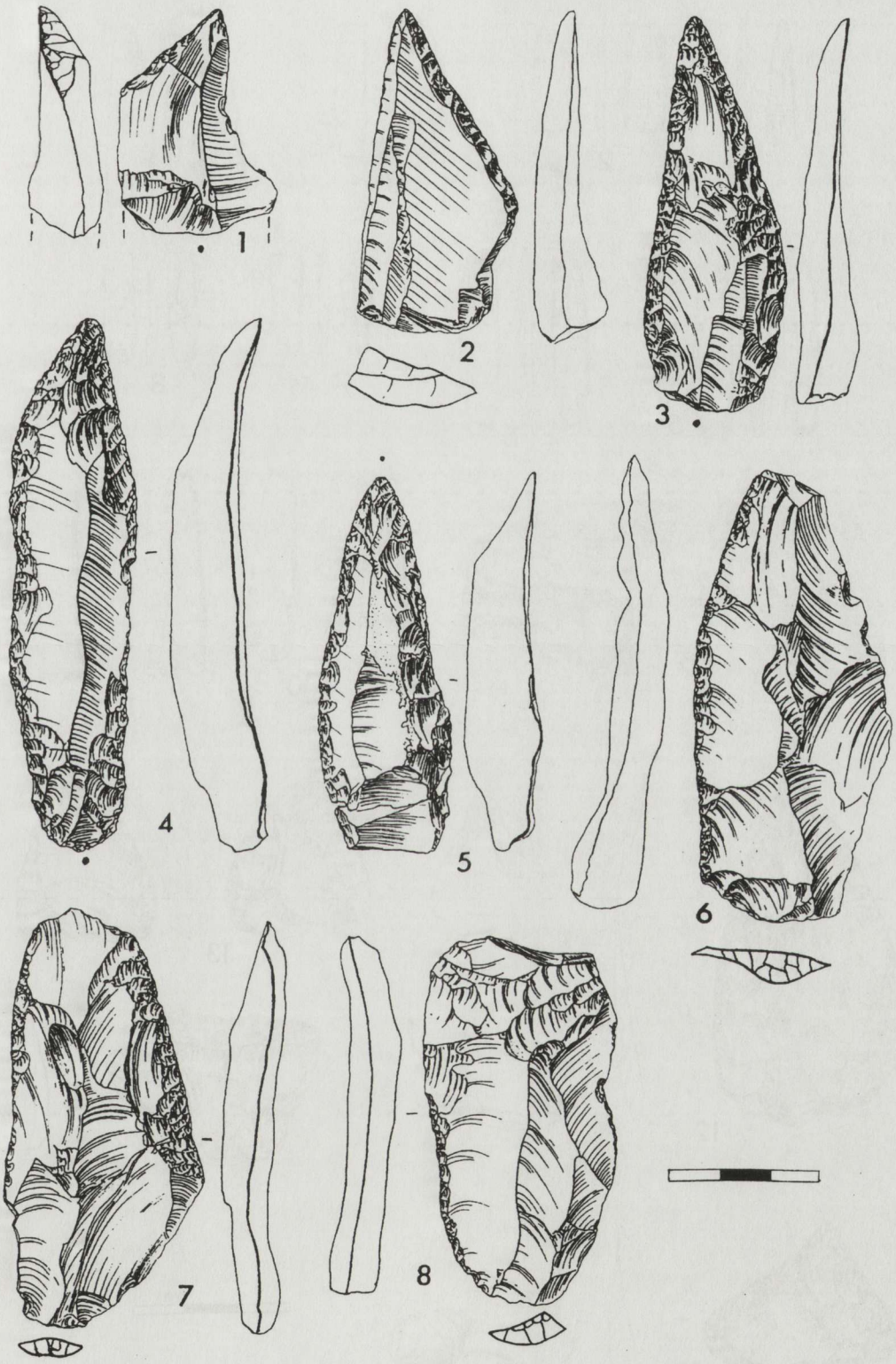

Fig. 4. Western Crimean Mousterian. Kabazi-II, Unit II, level II/1 (1-5), level II/7 (8), and level 8 (6, 7). Obliquely truncated blades (1-2), points (3-5), simple (6, 8) and double (7) scrapers on Levallois blanks.

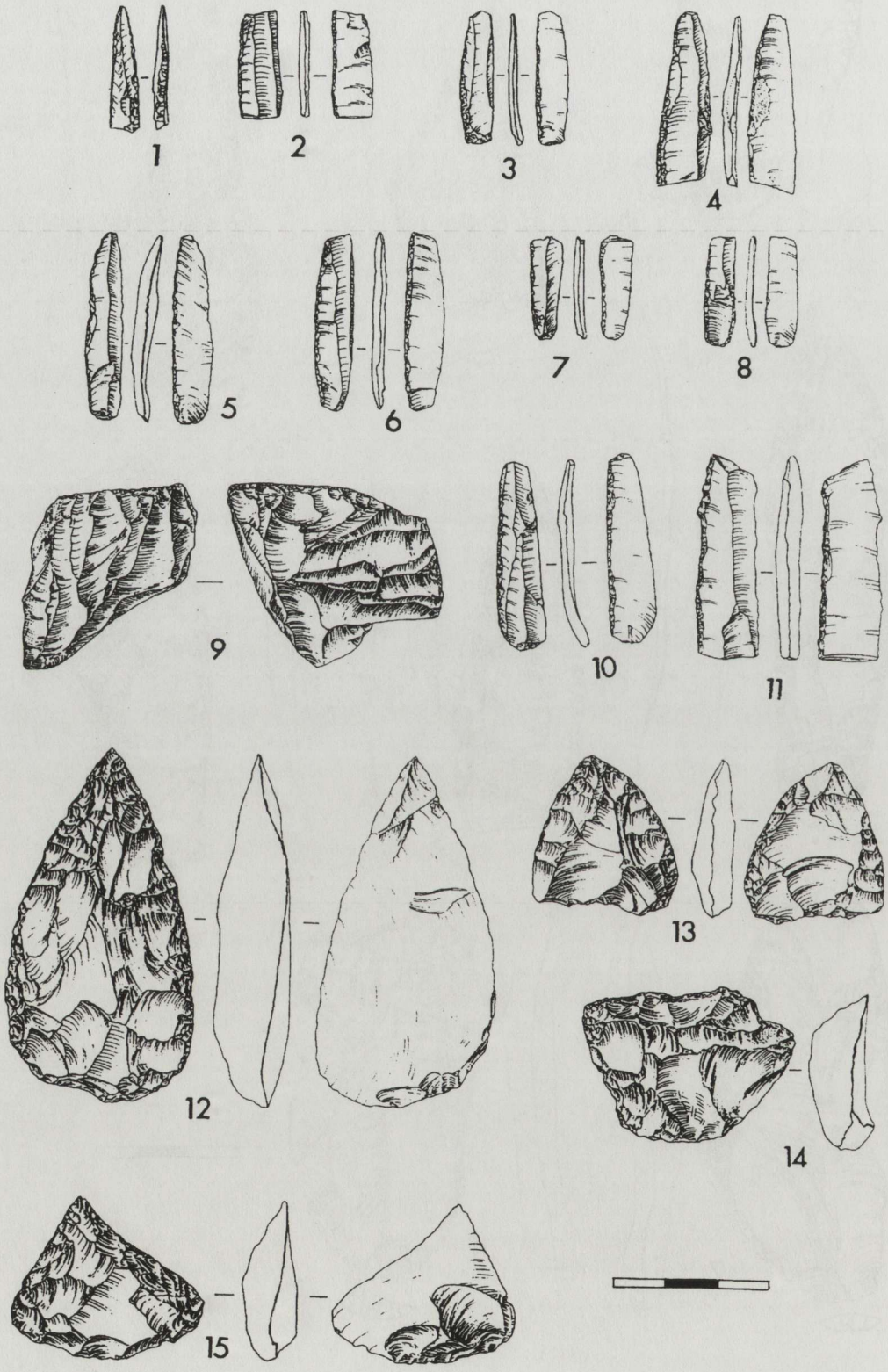

Fig. 5. Aurignacian of Siuren-I, Unit G. Krems point (1), Dufour bladelets and microblades with fine and/or semi-steep alternate retouch (2-7, 10, 11), bilaterally backed microblade (8), carinated core of Siuren type (9), leaf point (12), foliate piece (13), canted scraper (14), and point with thinned base (15).