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15 - COMPARISONS BETWEEN THE SIUREN I ASSEMBLAGES FROM THE 1920S LOWER AND MIDDLE LAYERS AND THE 1990S UNITS G AND F

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Introduction

The data on the assemblages from the 1990s excavations Units H-G-F and inter-unit comparisons (in separate chapters in this volume) are not complete enough to understand the site's entire archaeological record relating to these cultural deposits. This becomes clear when we take into consideration the rather limited area (12 sq. meters) excavated during the 1990s in comparison to the entire area of the rock-shelter (about 350 sq. meters) and parts previously excavated in 1879-1880 (about 60 sq. meters) and 1926-1929 (about 120 sq. meters). The significant difference in these areas warns us against directly applying all of the data on 1990s Units onto archaeological finds recovered during the previous excavations from stratigraphically corresponding cultural deposits, or to consider them as characteristic of the site's entire archaeological context, before detailed comparisons of these new data to existing data have been completed. Such comparisons are crucial if we recall the doubts expressed about the correspondence of data from new limited excavations to old collections for some Paleolithic sites, for example, La Ferrassie (Périgord, France) (Rigaud 1988:395). In the present case, we should, first, only view the new 12 sq. meter area excavated as a "standard-setting sample" for the site, excavated using modern field methods and the archaeological material analyzed using the latest techno-typological approaches and definitions. Only then can we evaluate the data provided from previous investigations and try to compare them with the new.

In doing so, however, some problems are encountered. The area excavated by K.S. Merejkowski in 1879-1880, about 60 sq. meters in the inner area of the rock-shelter was only once and very briefly discussed scientifically in the archaeological literature by Vekilova (1957:283-288), compared to the finds recovered from the 1920s excavation areas. As shown in Chapter 1 "History...", the Lower and Upper layers of the 19th century excavations are broadly comparable to the Lower and Middle layers of the 1920s excavations. But these comparisons were based only on the presence of some very indicative tool types in the 19th century artifact assemblages, while Vekilova's descriptions of most cores, tools and debitage categories were often limited to comments on their similarity to artifacts from the 1920s excavations with no illustrations provided. Such limited data from the 19th century excavations limit correlation of the 1920s Lower and Middle layers to layers in the rock-shelter's inner part investigated in 1879-1880 to a questionable degree of probability. Our current analysis of the site's old excavated areas and their finds is thus limited to data from the 1920s investigations published by Bonch-Osmolowski (1934) and Vekilova (1957). It is worth noting, however, that despite very important general descriptions of the Siuren I finds made by Bonch-Osmolowski, his data do not contain any concrete statistics. So, only data on the Siuren I Lower and Middle layers in Vekilova's publication could be used for detailed comparative analyses with the 1990s excavation results, while Bonch-Osmolowski's observations, as well as the present author's personal conclusions and remarks on part of the 1920s collection at Kunstkamera Museum (St.-Petersburg, Russia) made in November 1999, can be used to add to responses to specific questions.

The 1920s Lower and Middle layers correspond stratigraphically to the 1990s Units G and F, respectively, excluding Unit H from the comparative analyses despite its strong techno-typological similarity to Unit G. Comparative analyses should be done separately for each corresponding Layer and Unit through descriptions and understanding of stratigraphic position, the spatial distribution of artifacts and the techno-typological industrial characteristics of the lithics due to the existence of certain differences between the Layers/Units under discussion.

Comparisons of 1920s Lower Layer and 1990s Unit G

Stratigraphy

According to Bonch-Osmolowski's stratigraphic profiles published and described by Vekilova (1957:242, fig. 4 on p. 240, fig. 6 on p. 243, fig. 7 on p. 244 and fig. 8 on p. 245) (see fig. 2, p. 13 and fig. 2 and 3, p. 21-22), the 1920s Lower layer was "sandwiched" between two lower rock-fall levels of huge limestone blocks (3rd and 4th rock-fall levels in the site's new 1990s stratigraphy) with sediment thickness varying from 0.8 to 2.0 meters depending on excavated area. These profiles are also marked

by Bonch-Osmolowski's artificial horizons in accordance with their number and deposition in the sediments, varying from 7 to 8. This number of horizons in the Lower layer is explained by Bonch-Osmolowski's method for excavating the thick Siuren I layers-"usually defining three horizons (about 10-30 cm thick each): above a hearth level, a hearth level itself and below a hearth level" (Vekilova 1957:248), that is, in correspondence with three hearth/ashy lenses clearly visible in the stratigraphic profiles. The 1990s excavations are strongly in accordance with the 1920s excavations in this respect as three hearth/ashy lenses were identified in Unit G: Gb1-Gb2, Gc1-Gc2 and Gd.

Spatial distribution of artifacts

Data related to the spatial distribution of artifacts are obtained from Bonch-Osmolowski's and Vekilova's plans of the Lower layer and the spatial distribution of artifacts shown (Vekilova 1957: fig. 11 on p. 247, fig. 13 on p. 258) (see fig. 1, p. 20) and the number of lithic artifacts for selected squares mentioned by Vekilova (1957:258). It is clear that the Lower layer is represented throughout the entire western and central areas excavated, breaking off in between squares on the И/К-12 line, but was completely absent in small excavated areas in the eastern part of the site. The Lower layer was thus found in about 85 sq. meters during the 1920s excavations. The uneven distribution of the Lower layer is marked by variation in lithic frequency. The western part, with three 2x2 meter squares (10-В, Г and 11-Г; totaling 12 sq. meters), shows the richest concentration for the Lower layer with 4518 flints (n=1892, 1358, 1268 lithic artifacts per square respectively). To this area we can also connect two neighboring squares 12-В, Г (about 6 sq. meters) with the number of lithics ranging from 600 to 900 per square. Only sq. 12-Ж in the site's central area, also with finds numbering between 600 and 900, is comparable to squares 12-В, Г, while all other squares contained less than 600 flints each. It is important to note that the areas poorest in finds (less than 100 lithics per square) are located near the rock-shelter's western, right side wall (squares 6-Е, 7-Е, Д, 8-Г, 9-В, Г, Д with a total area of about 22 sq. meters) and at the Lower layer's southernmost edge (sq. 12-И). Such variability in quantity of lithics across the Lower layer seems to be dependent on both the varying occurrence of artifacts in the assumed three hearth/ashy lenses (occupational floors) and on the nature of these hearth/ashy lenses with much higher finds concentrations assumed around each distinct hearth area.

The new area excavated in the 1990s (squares 10, 11-Ж, З-12 sq. meters) is located between the richest 1920s squares 10-В, Г, 11-Г, 12-В, Г and 12-Ж. The total number of artifacts for all four levels defined (Ga, Gb1-Gb2, Gc1-Gc2 and Gd) is 4709, averaging 1569 artifacts per single 2 x 2 m square from these three squares, using Bonch-Osmolowski's grid system. These artifact counts bring together the site's new area and the three richest squares 10-В, Г, 11-Г (from 1268 to 1892 finds) from Bonch-Osmolowski's investigations. Although hearth/ashy lenses are characteristic for both the new 1990s area and the 1920s neighboring squares 12-Ж, З (see the stratigraphic profile on line 12-А-Н (Vekilova 1957: fig. 4 on p. 240) (see fig. 2, p. 13), it nonetheless seems unlikely that the new area is really similar to the 1920s squares with the most numerous finds. Taking into consideration that systematic screening of all deposits was not conducted during Bonch-Osmolowski's investigations, and even when it was done, the screened pieces were not separated by particular square, but were grouped as simply "screened items", we can easily assume that most of the small chips and microblades were ignored and lost, with just knives and picks used on sorting processes of occupational floors. Playing with this suggestion, it is not hard to imagine the presence of only about 25% of the chips and microblades actually found in the 1990s excavations Unit G if Bonch-Osmolowski's field methods had been applied. Accordingly, the actual artifact count of 4709 would decrease to 2924. Dividing this new number over three squares gives an average 974 lithic artifacts per one 2x2 square. Such an average flint density is intermediate between the richest (1200-1900 items) and the less representative (600-900 items) squares, and certainly closer to the latter. There is also planigraphic evidence pointing to the site's western part as the richest area of the Siuren I Lower layer and Unit G. Most of the Unit G finds were found in the northern part of the new 1990s excavations area, leading towards this western center.

Thus, the spatial distribution analysis of the Siuren I Lower layer and Unit G definitely demonstrates interconnections between and similarity of the areas excavated during the 1920s and the 1990s field campaigns, allowing us to consider them as together representing a single complex of occupational floors with hearth/ashy lenses and comparable numbers of finds.

Assemblages

Bonch-Osmolowski's Lower layer lithic collection in Vekilova's accounts (1957: tabl. 6 on p. 260) numbers about 15500 pieces. As an aside, this is the largest lithic assemblage for the Siuren I 1920s excavations because it is even more than the quantity from both Middle and Upper layers taken together. The approximate nature of the Lower layer's lithics is explained by inexact counting of debitage and debris categories, as well as of some tool types. The following flint artifact categories were precisely counted: 85 core-like pieces (43 cores and 42 core fragments), 622 tools (610 pieces with secondary treatment and 12 hammerstones) and 45 burin spalls. Approximately counted artifact categories are the following: about 200 blades with mostly irregular and/or marginal retouch, about 1000 blades and bladelets *sensu lato*, more than 500 flakes, about 50 core tablets, about 30 crested pieces and about 13000 "chunks and flint fragments". On the basis of Vekilova's flint descriptions and our personal observations of part of the Lower layer artifacts in St.-Petersburg (November 1999), it is clear that this category is composed of many broken flakes, blades, chunks and complete bladelets, microblades and different chips as well. The represented "too rough" debitage and debris counts do not allow us, unfortunately, to structure them in accordance with their actual roles in primary flaking processes or their particular morphology - even, for instance, in distinction between bladelets and microblades. Therefore, information comparable to that from the 1990s Unit G assemblage could be only obtained from cores and tools from Bonch-Osmolowski's investigations. The only additional good exception is composed of Vekilova's raw material characteristics. In this respect, she noted (1957:258-259) the prevalence of gray flints, the rare representation of local

black flints and a medium but very characteristic role, particularly for the Lower layer, of meso-local colored flints on which about 20% of all tools and about 10% of all cores were made. Vekilova's core and tool characteristics can be understood in modern Paleolithic terminology as follows.

All 43 cores were subdivided into Upper Paleolithic "prismatic" (38 pieces) and "discoidal" cores (5 pieces). The "prismatic" cores appear to be predominantly bladelet single-platform ones with usually acute angles and abrasion for striking platforms and of generally small and medium size (length-5-6 cm and width-3-4 cm) (1957:259) (fig. 1:1-4). The "discoidal" cores are described only through the example of one seemingly truly discoidal core on gray flint with overall small size (length-4.8 cm and width-4.0 cm) (1957: p. 260 and fig. 14, 5 on p. 261) (fig. 1:5). The presence of core tablets and crested pieces are technologically in good agreement with Upper Paleolithic bladelet and some blade core reduction.

Upper Paleolithic "Indicative Tool Types" (n=205) are composed of 85 end-scrapers, 76 burins, 4 composite tools, 29 scaled tools, 9 perforators and 2 "Chatelperron points". End-scrapers were subdivided by Vekilova (1957:264-266) into specimens on blades (45 items), flakes (12 items) and "thick" pieces (28 items) where the latter ones terminologically would generally correspond to "carinated end-scrapers". According to Vekilova's descriptions, it is possible to distinguish the following end-scraper types among "45 end-scrapers on blades": 32 simple, 1 double simple, 10 simple on differently retouched blades with usually light scalar and/or irregular/marginal retouch (1957: fig. 16, 1, 3 on p. 264) (fig. 2:1-2), 1 shouldered flat (1957: fig. 16, 6 on p. 264) (fig. 2:3) and 1 nosed flat (1957: fig. 16, 7 on p. 264) (fig. 2:4). The "10 end-scrapers on flakes" (1957: fig. 16, 2, 10 on p. 264) (fig. 2:5-6) do seem to be truly of this type. The "28 thick/carinated end-scrapers" in terms of our classification system would be mainly defined as "bladelet carinated cores". All written descriptions, the three illustrated pieces (1957: fig. 14, 4, 6 on p. 261 and fig. 16, 4 on p. 264) (fig. 1:3-4; 2:7) and our own personal observations of pieces in November 1999 allow us to describe these "thick/carinated end-scrapers" as having elongated but narrow fronts with regular bladelet removals that is typical of cores rather than end-scrapers. Vekilova additionally specially pointed out that the piece on fig. 16, 4 (fig. 2:7) is "... the best example of this tool type from the Lower layer" (1957:266) which corresponds exactly to the "bladelet carinated single-platform cores" of our definitions. So, in this situation, we should admit that if carinated end-scrapers are present in the Lower layer, they seem, at best, to be fairly rare, no more than a few examples, that were not recognized in Vekilova's descriptions. At the same time, such "recalculation" reduces the number of common end-scrapers, which become less than for burins in the Lower layer; the number of bladelet cores in their "carinated variation" also increases. Burins are represented by the following types: angle (32), dihedral (17), on truncation (15) and "multifaceted" (12) ones (1957:262). The latter "multifaceted" type is neither well-described nor illustrated, leaving us with no clear understanding of their morphology. Other burin types are typically Upper Paleolithic with predominant manufacture on blades. In Vekilova's opinion, the main morphological feature of burins is the characteristic presence of a single facet on the verge of each burin, even for double burins. Because of this, we can assume the absence of carinated forms among dihedral burins. My own observations of burins at Kunstkamera Museum in November 1999 revealed the presence of only two piece which could be considered carinated burins. The predominance of angle (1957: fig. 15, 7 on p. 263) (fig. 2:13) and on truncation (1957: fig. 15, 1-2, 4, 6 on p. 263) (fig. 2:10-12) types over dihedral burins (1957: fig. 15, 3 on p. 263) (fig. 2:14) is indicative of the Lower layer. Composite tools (1957:266) are only represented by end-scraper/burins (1957: fig. 15, 5 on p. 263, fig. 16, 8 on p. 264) (fig. 2:8) with no clear specifications for their specific morphology. Scaled tools (1957:266-268) were not identified as such by Bonch-Osmolowski in the Siuren I Lower layer assemblage. Checking his inventory books for lithic descriptions at Kunstkamera Museumin in November 1999 allowed the present author to recognize that most scaled tools were identified by him as either "Mousterian tools"-side-scrapers or simply retouched pieces – an understandable choice in the 1920s when scaled tools were not a commonly acceptable tool type for Upper Paleolithic industries in the 1920s. So, it is certainly to Vekilova's merit that scaled tools were recognized (**1957**: fig. 17, 1-8 on p. 265) (fig. 1:6-13). Perforators are described by Vekilova (1957:269) as having only irregular secondary treatment and, accordingly, not formally defined types. Illustrations of some perforators (1957: fig. 18, 1, 7-8 on p. 267) (fig. 2:15-17) confirm her morphological observations and even allow us to exclude several dubious examples. The "2 Chatelperron points" (1957:269-270) are blades with, however, not abrupt but semi-steep scalar lateral retouch (Bonch-Osmolowski 1934: fig. V, 4; Vekilova 1957: fig. 18, 3 on p. 267) (fig. 2:18) that instead places them strictly typologically into the retouched blades tool category.

Retouched pieces, as noted by Vekilova (1957:270-272), are composed of about 200 pieces with blady metric proportions of the following size ranges: length from 2.5 to 12 cm and width from 1.0 to 3.3 cm with most about 6 cm long and 2 cm wide. From these metric data, there is a clear presence of bladelets *sensu stricto* and an odd absence of flakes among retouched pieces. There is, unfortunately, only a single illustrated piece (1957: fig. 16, 5 on p. 264) (fig. 2:9): a large blade (length-9.9 cm and width-2.8 cm) with irregular bilateral dorsal retouch. Supposing this item is a typical example of Vekilova's defined retouched pieces, we could argue that blades with irregular and/or marginal retouch are the most characteristic for the Lower layer's retouched pieces. Although we should not exclude the presence of blades with regular scalar retouch among Vekilova's retouched pieces, signs of indicative tool types such as blades with "Aurignacian-like heavy retouch" do not appear to occur in the Lower layer.

"Non-geometric microliths" (365 pieces) are the most numerous and typical Upper Paleolithic tool category for the Lower layer assemblage. Their typological classification was made by Vekilova before common recognition of Aurignacian bladelet types in Paleolithic Archaeology and she thus did not identify any of the Siuren I "non-geometric microliths" as Aurignacian (1957:268-269). Rather, she defined the following four retouched bladelet types based on retouch: "with alternate retouch" (213), "with backed edge" (97), "with light retouch"

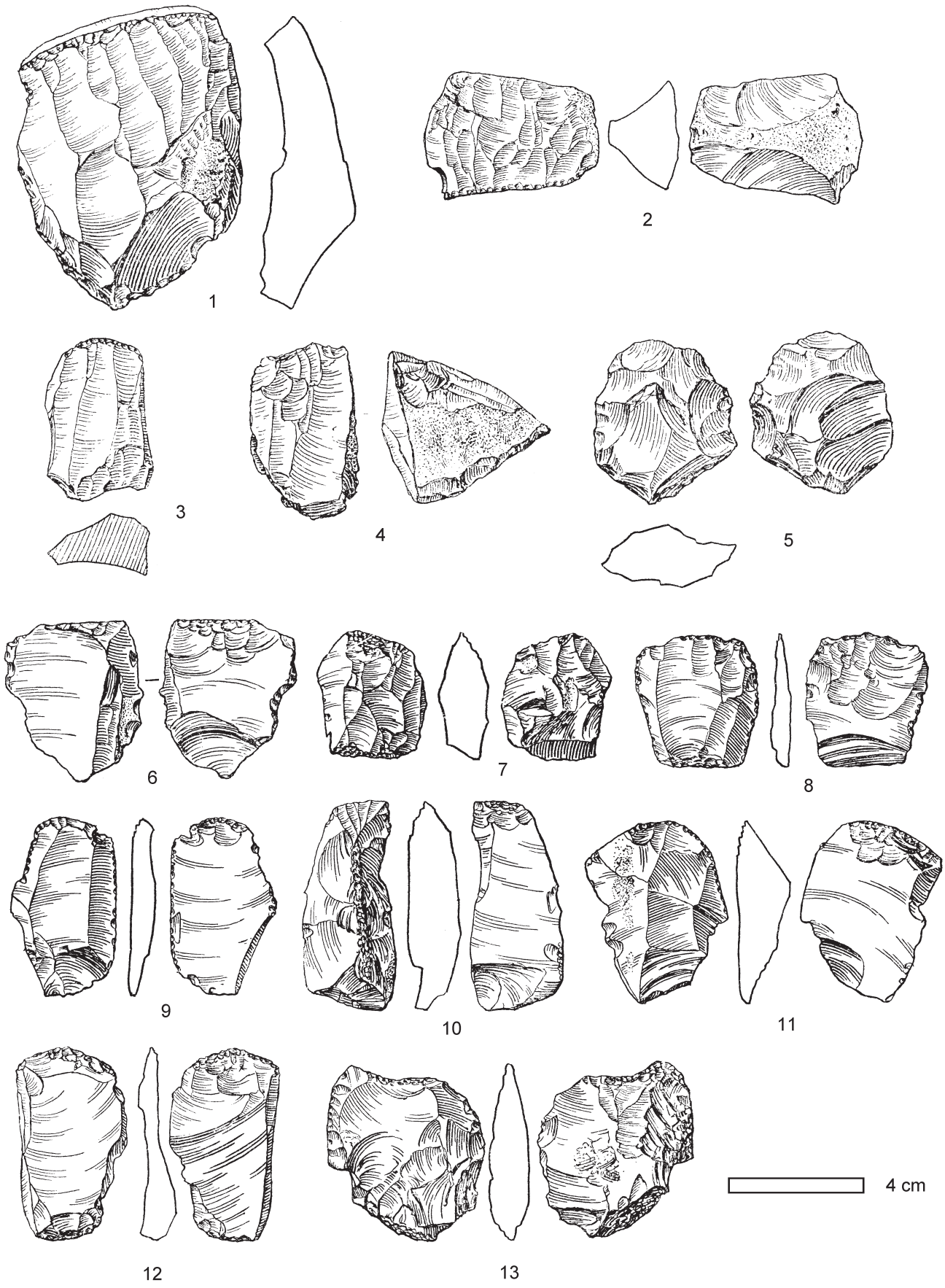

Figure 1 - Siuren I. Finds from the Lower layer during the 1920s excavations. Flint Artifacts – Cores and tools. 1-5, cores (redrawn from Vekilova 1957: fig. 14, 1, 3-6, p. 261); 6-13, scaled tools (redrawn from Vekilova 1957: fig. 17, 1-8, p. 265).

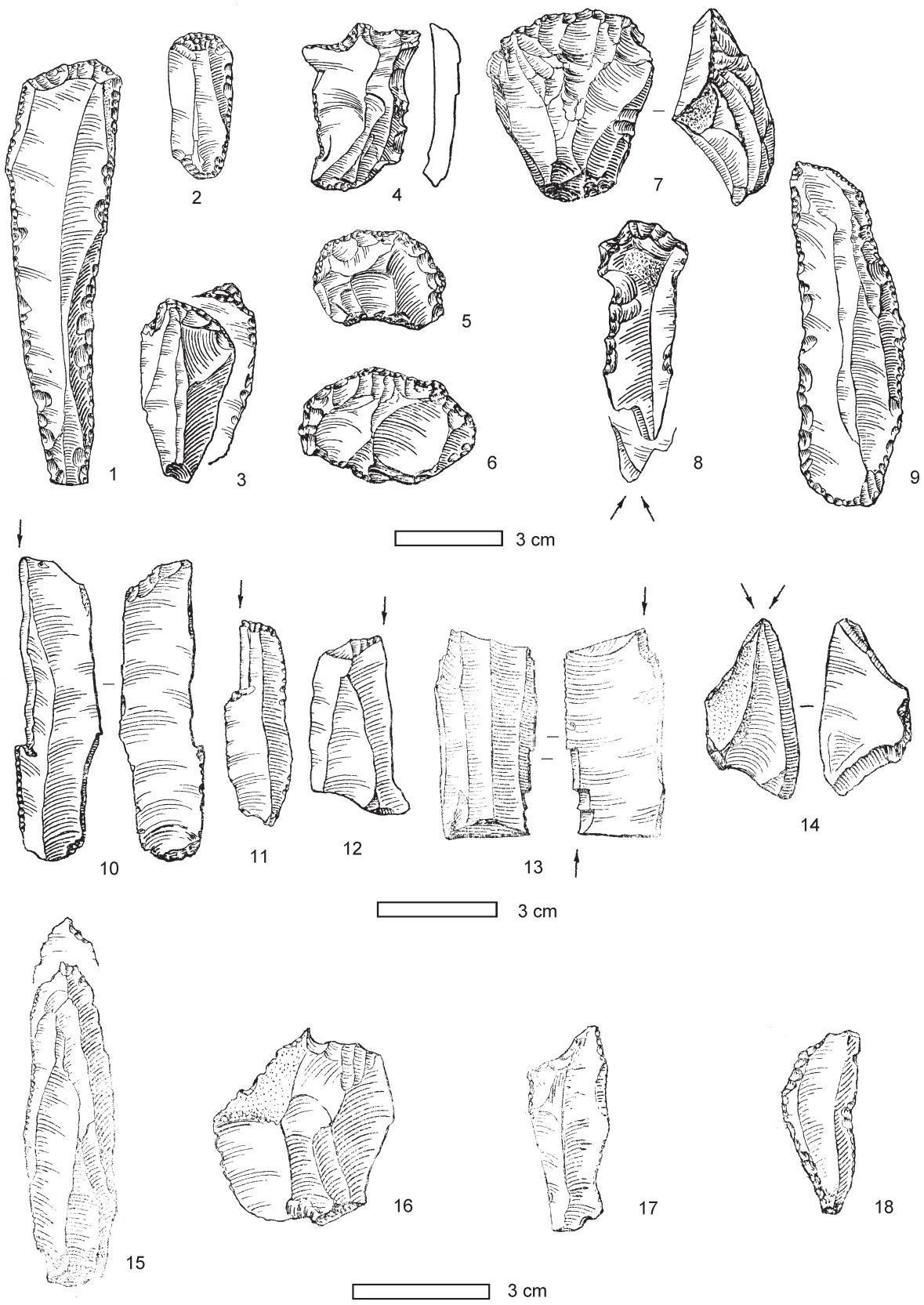

Figure 2 - Siuren I. Finds from the Lower layer during the 1920s excavations. Flint Artifacts – Cores and tools. 1-6, end-scrapers (redrawn from Vekilova 1957: fig. 16, 1-3, 6-7, 10, p. 264); 7, bladelet "carinated" core (redrawn from Vekilova 1957: fig. 16, 4, p. 264); 8, simple flat end-scraper/dihedral burin (redrawn from Vekilova 1957: fig. 16, 8, p. 264); 9, blade with a bilateral dorsal irregular retouch (redrawn from Vekilova 1957: fig. 16, 5, p. 264); 10-12, burins on truncation (redrawn from Vekilova 1957: fig. 15, 1, 4, 6, p. 263); 13, double angle burin (redrawn from Vekilova 1957: fig. 15, 7, p. 263); 14, dihedral burin (redrawn from Vekilova 1957: fig. 15, 3, p. 263); 15-17, "perforators" (redrawn from Vekilova 1957: fig. 18, 1, 7-8, p. 267); 18, "Chatelperron point"/blade with semi-steep scalar retouch lateral edge treatment (redrawn from Vekilova 1957: fig. 18, 3, p. 267).

(50) and "with denticulated edge" (5). In Vekilova's view, common features of retouched bladelets consist in their representation by mostly broken pieces, the near-absence of twisted general profiles, length from 1.8 to 4.2 cm and width from 0.4 to 1.2 cm. The width range points to the presence of at least some retouched microblades (0.4-0.6 cm wide). Here it is also worth noting Bonch-Osmolowski's remark that "almost all bladelets were used for retouching processes" (1934:152). Use of Vekilova's descriptions and illustrations of retouched bladelets allows us to make some specifications on her defined types within the retouched bladelets tool category. "Bladelets with alternate retouch" are the most typical (1957: fig. 18, 4, 9, 11-12 on p. 267) (fig. 3A:1-4). There are 25 complete items (12.4%) out of 202 pieces with alternate retouch. Taking into account the illustrated pieces, we suggest the existence of the following variations among them: microblades (1957: fig. 18, 12 on p.267) (fig. 3A:3) and bladelets (1957: fig. 18, 4 on p. 267) (fig. 3A:1) with bilateral alternate retouch ("Dufour bladelet" type), and even including some very wide (1.1 cm) bladelets (1957: fig. 18, 11 on p. 267) (fig. 3A:2), and "Krems points" with bilateral alternate retouch on microblades (1957: fig. 18, 9 on p. 267) (fig. 3A:4). Eleven more fragmented bladelets sensu lato among "pieces with alternate retouch" have only ventral retouch. The reason why Vekilova included bladelets with lateral ventral retouch in this type was that almost all of these items have retouch always along the bladelets' left lateral side on the ventral surface, which was interpreted by her as representating the first stage of production of bladelets with alternate retouch. "Bladelets with backed edge" include 10 complete items (10.3%) out of 97 pieces. This type actually appears to be represented by "Krems points" with bilateral dorsal retouch on bladelets (1957: fig. 18, 5-6 on p. 267) (fig. 3A:5-6), pieces on microblades (1957: fig. 18, 10 on p. 267) (fig. 3A:7) and bladelets with dorsal bilateral or lateral retouch ("pseudo-Dufour bladelet" type) and just a few true backed microblades and bladelets. The exact number of each of these variations is not clear from Vekilova's data, but my own observations of actual pieces in St.-Petersburg in November 1999 suggests strongly that broken "Krems points" are dominant among them. "Bladelets with light retouch" include 5 complete items (10%) out of 50 examples of this type. Although none of these pieces were illustrated, Vekilova's observation that "fine pointing retouch forms usually one and rarely two bladelets' lateral edges" (1957:269) clearly supports their attribution according to our classification system as microblades/bladelets with dorsal bilateral and lateral retouch ("pseudo-Dufour bladelet" type). "Bladelets with denticulated edge" were only counted and not described by Vekilova. The absence of abrupt retouch for these pieces does, however, allow us to consider them as microblades/bladelets with dorsal microdenticulated lateral edge formed by fine and/or semi-steep retouch, also confirmed by personal observations of these rare bladelets in St.-Petersburg in November 1999.

In addition to these Upper Paleolithic tool types in the Lower layer, this assemblage contains a significant series of "pieces of Mousterian forms" using Vekilova's definition. According to her data (1957:270), there are 40 such tools represented by 36 unifacial and 4 bifacial tools. Unifacial tools were further subdivided into 27 points and 9 side-scrapers. Transforming Vekilova's descriptions into our own classification system, points are mainly represented by small-sized pieces (usually no more than 4 cm long and/or wide) with semi- and sub-trapezoidal, triangular and leaf shapes sometimes with additional basal ventral thinning (**1957**: fig. 19, 1-3, 5 on p. 271) (fig. 3B:1-4), as well as rarer examples of larger items - e. g., a sub-triangular piece 6 cm long and 3.2 cm wide (1957: fig. 19, 7 on p. 271) (fig. 3B:5) and another similar sub-triangular item 5.4 cm long and 2.8 cm wide (Bonch-Osmolowski 1934: fig. IV, 8). At the same time, three times less common scrapers are only said to be represented by examples that are "quite massive, not regularly shaped by secondary treatment" (1957:270) and illustrated by a single piece - a simple convex dorsal scraper 5.1 cm long and 4.5 cm wide (1957: fig. 19, 6 on p. 271) (fig. 3B:6). Our own observations of about 20 unifacial Middle Paleolithic tool types at Kunstkamera Museum allows the present author to say that scrapers are actually more common than points and the reverse statement by Vekilova is explained by her consideration of all convergent and asymmetric tools as points. Vekilova classified four bifacial tools as "*miniature hand-axes*" - the tool type definition widely used for many bifacial tools descriptions of the Crimean Middle Paleolithic industries during the 1930s-1960s. The only illustrated bifacial item (1957: fig. 19, 4 on p. 271) (fig. 3B:7) is a basally fragmented sub-triangular/leaf-shaped "plano-convex" scraper 5.1 cm long and 4.0 cm wide. Among the materials of the Lower layer at Kunstkamera Museum, in addition to this bifacial piece, there is only one more bifacial tool - a distal fragment of a bifacial symmetric piece with "plano-convex" shaping.

There are also some non-flint artifacts in the Lower layer assemblage. Unfortunately, aside from hammerstones, Vekilova only noted among them a complete limestone pebble with a number of long shallow striations (1957: fig. 25 on p. 292 with no scale) - quite possibly a grinding tool in accordance with our classification system.

Now let us summarize these data on the Siuren I Lower layer assemblage based mainly on Vekilova's descriptions. Regarding the primary flaking processes, bladelet production from both "regular" and especially "carinated" single-platform cores with acute striking platforms is dominant. The following three tool type groups are connected to the Upper Paleolithic typological component: "Indicative Upper Paleolithic tool types" - 205 items/26.6%, "retouched pieces" - about 200 items/26% and "non-geometric microliths" - 365 items/47.4%. The Aurignacian typological indicators among them are most prominently expressed by "Dufour bladelets" and "Krems points" with bilateral alternate retouch and "Dufour bladelets" with lateral ventral retouch - respectively, 202 pieces/55.34% and 11 pieces/3.01% among all 365 "non-geometric microliths" taken as 100%, although quite a few fragmented "Krems points" with bilateral dorsal retouch should also be added here, although the eaxct number is not known, as well as less common carinated end-scrapers, for which the exact quantity is also not known. Transferring Vekilova's many "thick end-scrapers" into bladelet "carinated" cores leads to a slight overall predominance of burins over end-scrapers. The near-absence of carinated burins and a subordinate position of dihedral type in comparison to dominant angle and on truncation types are characteristic for burins. Other Upper Paleolithic tool types (composite tools,

perforators, retouched blades) are neither numerically nor morphologically well-defined. The only exception in this regard is a series of typical scaled tools. On the other hand, the "Middle Paleolithic techno-typological components" also comprise the morphologically expressive series of finds.

Before presenting final conclusions on the 1920s Lower layer assemblage and the 1990s Unit G assemblage, it seems very useful to additionally summarize the results of classification analysis using modern typological criteria of part of the Lower layer flints by J. Hahn in Leningrad (Hahn 1977). The following are the representation of the general tool types in Hahn's calculations for 249 tools (1977: tab. 3 on p. 338): simple end-scrapers - 14 items/5.6%, end-scrapers on retouched pieces - 2 items/0.8%, carinated end-scrapers - 5 items/2.0%, nosed end-scrapers - 2 items/0.8%, angle burins - 11 items/4.4%, burins on truncation - 16 items/6.4%, dihedral burins - 9 items/3.6%, truncations - 19 items/7.6%, scaled tools- 5 items/2.0%, retouched blades- 41 items/16.5%, bladelets with fine retouch - 101 items/40.6%, Middle Paleolithic unifacial tool types: points- 12 items/4.8% and scrapers - 5 items/2.0%, notched pieces - 6 items/2.4% and other tools - 1 item/0.4%. The structure of these tool types confirms the following typological characteristics already noted using Vekilova's data: the predominance of burins (36/14.4%) over end-scrapers (23/9.2%), the absence of carinated burins and the very minor occurrence of dihedral

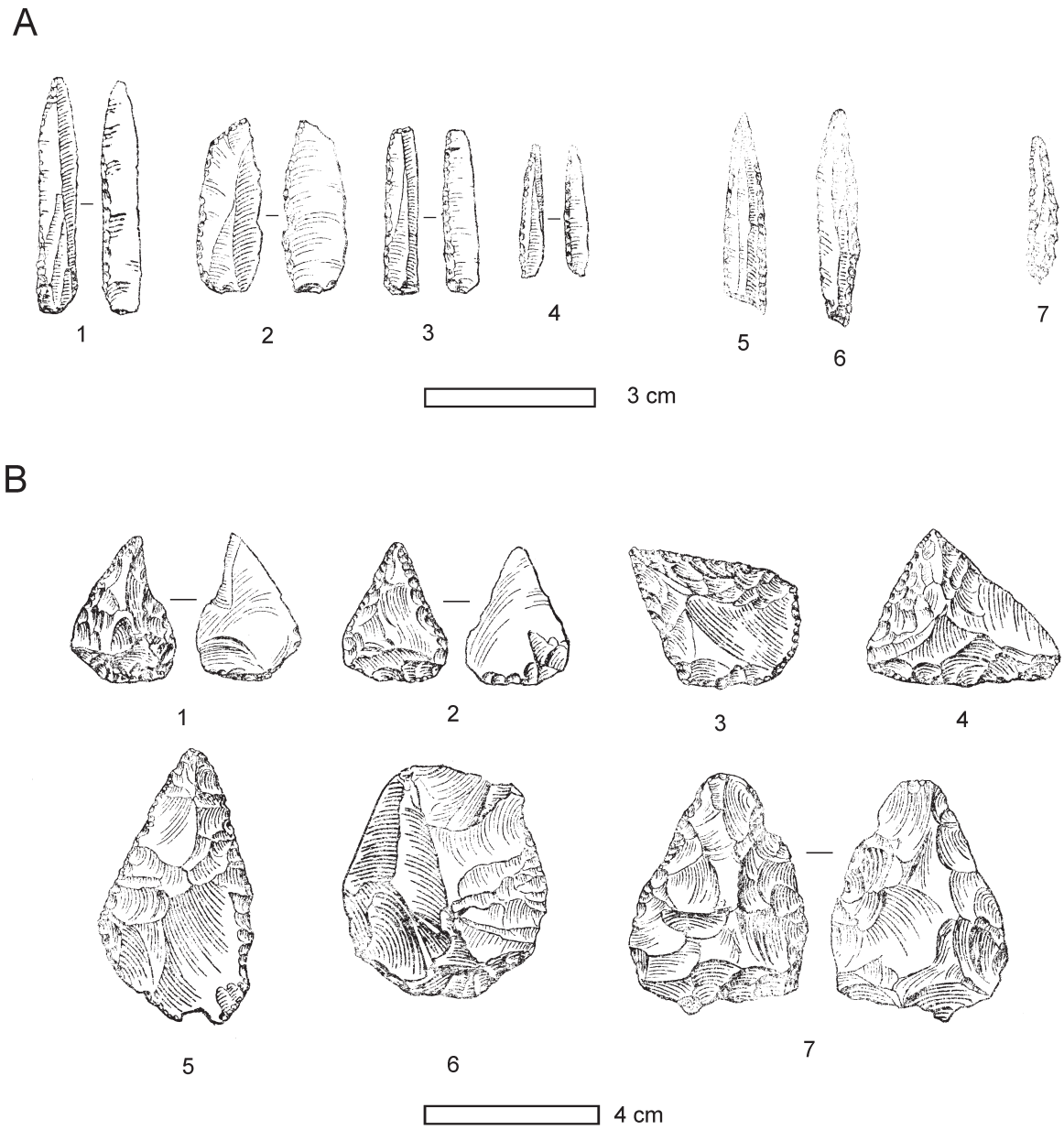

Figure 3 - Siuren I. Finds from the Lower layer during the 1920s excavations. Flint Artifacts – tools. A. "Non-geometric microliths" (redrawn from Vekilova 1957: fig. 18, 4-6, 9-12, p. 282). 1-2, Dufour type bladelet, on bladelets with alternate retouch; 3, Dufour type bladelet, on microblade with alternate retouch; 4, Krems point, on microblade with alternate retouch; 5-6, Krems points, on bladelets with bilateral dorsal retouch; 7, pseudo-Dufour type bladelet, on microblade with bilateral dorsal retouch. B. Middle Paleolithic tool types (redrawn from Vekilova 1957: fig. 19, 1-7, p. 282). 1-6, various unifacial tools; 7, "miniature hand-axe"/bifacial "plano-convex" scraper.

type among burins, a number of differently retouched blades, the presence of scaled tools, the notable proportion of Middle Paleolithic types (6.8%) and, finally, the most abundant representation of retouched bladelets *sensu lato*. On the other hand, discrepancies with Vekilova's data could also be noted: the absence in Hahn's counts of perforators and Middle Paleolithic bifacial tools that can certainly be explained by his examining only a sample and not all finds, and the appearance of truncations and notched pieces not defined by Vekilova at all. The newly recognized type was nosed end-scrapers, although Hahn did not describe their particular morphology: shouldered or nosed and thick or flat features. At the same time, Hahn's structure of retouched bladelets *sensu lato* is worth noting because it is very different from Vekilova's data and is as follows using our classification system: "Dufour bladelets" with bilateral alternate retouch- 80 items/79.2%, including two with additional distal retouch; "Dufour bladelets" with lateral ventral retouch - 4 items/3.96%; "pseudo-Dufour bladelets" with bilateral dorsal retouch - 9 items/8.91%; "pseudo-Dufour bladelets" with lateral dorsal retouch - 5 items/4.95%; "Krems points" with bilateral alternate retouch - 1 item/1.0% and "Krems points" with bilateral dorsal retouch - 2 items/1.98% (Hahn 1977: p.141, Tab. 15 on p. 350, Tafel 182, 1-18).

So, combined together with some corrections, Vekilova's and Hahn's data on the Siuren I 1920s Lower layer assemblage certainly appear to be quite similar and comparable as well to the 1990s Unit G assemblage. This latter complex of finds has already been described and thoroughly analyzed in previous chapters and will not be discussed in the same way here. It is instead more useful to agree that these two assemblages actually represent the same find complex, recovered during two different excavation campaigns with some differences explained by differences in field methods and techno-typological approaches to lithic analyses. Accepting this conclusion, it is thus better to create a general techno-typological definition of the Siuren I Lower layer/Unit G assemblage for common industrial understanding of the site's entire archaeological record relating to the respective cultural bearing sediments. On the other hand, for further detailed and comparative analyses of these Siuren I materials with other Crimean and not only Crimean Paleolithic industries, it would be better to use only the industrial characteristics and statistics for the Unit G assemblage.

Thus, the Siuren I Lower layer/Unit G lithic finds are composed of two industrial components: the most dominant and numerous Upper Paleolithic, namely, the Aurignacian component and although not abundant quantitatively but quite clear morphologically, Middle Paleolithic component with strict techno-typological analogies with assemblages of the Crimean Micoquian Tradition.

The Upper Paleolithic/Aurignacian find complex is with no doubt attributable to the Aurignacian 0/Archaic Aurignacian of Krems-Dufour type. It is technologically characterized by a clear dominance of bladelet production with the almost exclusive exploitation of bladelet single-platform cores with acute angles and edge abrasion for plain striking platforms, among which the "carinated" sub-pyramidal and sub-cylindrical types should be particularly noted as most indicative of the Aurignacian. Associated with these cores are bladelet "carinated" double-platform cores with orthogonal-adjacent and bidirectional-perpendicular disposition of plain striking platforms, while blade/bladelet and bladelet "regular" double-platform bidirectional cores with opposite striking platforms and the same flaking surface are quite rare, suggesting that they did not play a major role in primary flaking processes. This technological direction toward bladelet production is clearly connected to the abundance of "non-geometric microliths" in the typological structure of this find complex (from about 40% in the Lower layer collection to about 60% in the Unit G collection of all tools), among which the most morphologically characteristic and numerous are Archaic Aurignacian types with semi-steep micro-scalar and/or micro-stepped retouch - "Dufour bladelets" with bilateral alternate retouch, as well as some "Krems points" with bilateral alternate and bilateral dorsal retouch. Other Upper Paleolithic tools are represented by the following categories in order of decreasing frequency: burins, for which angle and on truncation/lateral retouch types are dominant, including notable but rare dihedral and the near-complete absence of the Aurignacian carinated type; end-scrapers with rare but typical Aurignacian carinated and thick/flat shouldered/nosed types and dominance of the simple type mainly on unretouched blades; scaled tools; truncations; perforators; retouched blades with only a single exceptional piece with "Aurignacian-like heavy retouch".

The Middle Paleolithic/Micoquian find complex has clear technological and typological features which can be summarized on the basis of 5 cores and 40 tools (36 unifacial and 4 bifacial items) from the 1920s Lower layer and 17 tools (14 unifacial and 3 bifacial pieces) from the 1990s Unit G. All of the Middle Paleolithic pieces from Unit G were found in three hearth/ashy levels - Gd, Gc1-Gc2 and Gb1-Gb2. At the same time, the Middle Paleolithic artifacts of the Lower layer were also recognized in different artificial horizons of this cultural sediment unit. We attribute this find complex to the Kiik-Koba type industry of the Crimean Micoquian; detailed discussion is presented in a separate chapter of the present volume.

Comparisons of the 1920s Middle Layer and the 1990s Unit F

Stratigraphy

The 1920s Middle layer was claimed to be associated with sediments above the rock-fall level of huge limestone blocks (3rd Pleistocene rock-fall level in the site's new 1990s stratigraphy) covering the top of the Lower layer and overlain by the next Pleistocene rock-fall level of huge limestone blocks (2nd in the site's new 1990s stratigraphy) (Vekilova 1957: p. 242, fig. 4 on p. 240, fig. 6 on p. 243, fig. 7 on p. 244, fig. 8 on p. 245 and fig. 9 on p. 246) (see fig. 2, p. 13 and fig. 2 and 3, p. 21-22). The thickness of the Middle layer's sediments varied from 0.6 to 1.2 m in the rock-shelter depending on area excavated. On the basis of Bonch-Osmolowski's stratigraphic profiles published by Vekilova and some of her specific comments on the Middle layer's features (1957:306), it is possible to argue that this layer contained several separate hearths which in some squares created two hearth/ashy compact lenses at different depths. Strangely enough, the number of Bonch-Osmolowski's artificial horizons

does not exceed three on the site's profiles, although we know that he usually practiced multi-horizon excavations of cultural deposits with such features in them. The 1990s excavations in general confirmed the 1920s excavations stratigraphic data with, however, the following clarifications. First, the new investigations revealed the twofold stratigraphic structure of this unit, with some dispersed finds of Unit E lacking any particular features of the weakly, if at all, expressed occupation floor at its top and below this, four stratigraphically defined levels of Unit F (Fa1-Fa2, Fa3, Fb1-Fb2 and Fc) separated from this Unit E by almost of 0.5 m of sterile deposits (see fig. 4 and 5, p. 23 and see fig. 1, p. 29). Unit E is most likely in stratigraphic correspondence with the lower limits of the 1920s Upper layer and will be discussed in the chapter on the Upper layer/Units E-A stratigraphy and archaeological finds. Second, three of the four levels of Unit F (Fa3, Fb1-Fb2 and Fc) contain some compact or separate hearth/ashy lenses or clusters, among which the most impressive is level Fb1-Fb2 because such features were even characteristized here by a common grayish color.

Spatial distribution of artifacts

Objective information for spatial analysis was available in Bonch-Osmolowski's and Vekilova's quite detailed plans for the Middle layer finds distribution (Vekilova 1957: fig. 11 on p. 247, fig. 13 on p. 258) (see fig. 1, p. 20), as well as the approximate quantity of lithics and data on hearths for some specific squares of the 1920s excavations (Vekilova 1957:306). These sources of information show that the Middle layer in the excavated areas (totalling about 95 sq. meters) was represented by a clearly lower artifact density than the Lower layer, and, in addition, was not distributed throughout the entire western and central areas excavated by Bonch-Osmolowski in the 1920s, as was also noted for the Lower layer. The Middle layer was absent at the site's western edge near the rock-shelter's right side wall (squares 6-Е, 7-Е, Д, 8-Г), in the western area near the rock-shelter's backwall (squares 10-Г, В and 12-В, Б) and at the southern edge of the central area (squares 12-Н, М, Л). Moreover, in these three areas, the neighboring squares have less than 100 pieces for each of the following 2 x 2 m squares: 9-Д, Г, 10-Д, 11-Г, 12-К. Among the remaining 17 squares (about 70 sq. meters), only six squares (24 sq. meters) in the site's central part (12-Ж, З, 16-Е, Ж, 16-И, 15-Ж) contain the highest frequencies of lithics (between 600 and 900 items) but never, however, reaching 1000 items for any particular square as is the case for the three squares of the Lower layer. Two other squares (15-Е and 16-З) with flint frequencies between 300 and 600 pieces are closely associated spatially with the six densest in find squares, comprising the main occupational area for the Siuren I Middle layer in its central part with a total of eight squares (32 sq. meters) containing no less than 4000 lithic artifacts. Taking only into account the lowest limits for these squares, with 600 items for six squares and 300 items for two more squares, the complete assemblage of the Middle layer totals about 5632 flints as calculated by Vekilova (**1957**: Tabl. 7 on p. 274). These lithic quantitative data are also supported by Vekilova's comments about the site's central area, the most intensively occupied: "almost in each square was recognized a hearth", "in some squares (15 -Е, 12-Ж) were found two hearth/ashy lenses», «the most numerous quantity of animal bones was noted in sq. 16-Е» (1957:306). On the other hand, only one other square for the Middle layer (13-Г) also contains 300-600 lithics, while in the remaining eight squares were found only 100-300 flint artifacts.

The new 1990s excavations area (squares 10, 11-Ж, З-12 sq. meters) is spatially associated with the main central occupational area of the 1920s excavations. But, by its lithic frequencies, 1990s Unit F is clearly different from the Middle layer. The total number of flint artifacts for all four defined levels (Fa1-Fa2, Fa3, Fb1-Fb2 and Fc) is composed of 7575 items, where 91.08% (6900 pieces) was recovered from only level Fb1-Fb2. So, these numerical data point to more finds during the 1990s excavations in an area of 12 sq. meters than the finds obtained from an area of about 95 sq. meters in the 1920s. Does this represent very different densities in different areas of the site or do they simply reflect different field methods applied during the campaigns in the 1920s and in the 1990s? Both possibilities should be discussed, although the latter clearly played a more significant role. The stratigraphic sequence of the 1990s Unit F shows quite varying features of occupation floors, artifact density and their spatial distribution for each of the four defined archaeological levels even within the limited area of 12 sq. meters. For instance, lowermost level Fc (63 flints) was only observed on the basis of two small and disconnected clusters of finds with one hearth and one ashy lens showing other finds distributed toward the unexcavated southern area in squares И, К-10, 11, while the stratigraphically overlying level Fb1-Fb2 (6900 flints) was represented over the entire excavated area with five hearth and four ashy clusters. Thus, differing representation of each of the Middle layer/Unit F archaeological levels in particular areas of the site could certainly influence find quantities. At the same time, this cannot be the only reason that the richest area for the Middle layer is located in the central area with eight squares or 32 sq. meters located near the new 1990s excavation area. As proposed for discussion of differences in find density for the Lower layer/Unit G archaeological contexts, we should also take into account the fact that Bonch-Osmolowski did not systematically sieve all of the sediments, resulting in the loss of finds during his 1920s excavations at Siuren I. Let us again, as for the Unit G assemblage, imagine the presence of only 25% of all microblades and chips in the Unit F assemblage, where the remaining 75% of these tiny flints would not have been collected by Bonch-Osmolowski due to lack of sieving, and then compare such results with the numerical data for the 1920s Middle layer. This estimation results in a change in total from 7575 pieces to 3669 for Unit F. Dividing this new number over three full 2 x 2 m squares of the new 1990s excavation area gives an average of 1223 pieces per square. Yet none of the 1920s excavated squares of the Middle layer contained more than 900 flints.

Thus, we are driven to the conclusion that the new 1990s excavation area does represent the richest area at Siuren I area for this archaeological set of occupation levels, which certainly had varying spatial distribution and density across the entire area excavated (more than 100 sq. m), with quite possibly a varying number of archaeological levels in the different areas of rock-shelter and, accordingly, different artifact frequencies. In sum, the higher 1990s artifact density is not simply due to improved field methods, but also reflects the real richness of the Middle layer in this area.

Keeping in mind that most of the tiny flint artifacts were lost from the 1920s Middle layer, we now compare the Middle layer and the Unit F assemblages to attempt to see how they fit one another and whether they represent a single complex of archaeological finds for Siuren I or not.

Assemblages

According to Vekilova's type-list (1957: tabl. 7 on p. 274), the Siuren I Middle layer is composed of about 5632 lithic artifacts, which is nearly three times less than the total for the Lower layer. Vekilova again did not precisely count "chunks and flint fragments" (about 5000 pieces). The remaining 632 flints are represented by the following artifact categories: 51 core-like pieces (29 cores and 22 core fragments), 189 tools (185 pieces with secondary treatment and 4 hammerstones), 26 burin spalls, 15 "rejuvenation flakes of thick end-scrapers' fronts", 265 blades and bladelets, 40 flakes, 26 core tablets and 20 crested pieces. About 5000 "chunks and flint fragments" are actually composed of broken flakes, blades chunks and complete bladelets, microblades and chips as well, as became clear after review by the present author of some of the Middle layer flints at Kunstkamera Museum in November 1999. From Vekilova's data, it is also clear that an objective description of the Middle layer debitage is, unfortunately, impossible, because even the counted blades/bladelets and flakes are too briefly and generally described (1957:272-274) to be informative. Therefore, we concentrate only on the cores and tools for techno-typological analyses of this assemblage and compare the results with the Unit F assemblage. Some separate typological comments about the Middle layer flints by Bonch-Osmolowski (1934), Anikovich (1992) and myself (November 1999, in St.-Petersburg) will be used here as well.

Regarding the raw materials used in the Siuren I Middle layer for primary and secondary flint treatment processes, Vekilova specially noted the great dominance of gray flints and the rarity (but with no specific counts) of colored flints (1957:272), also observed for Unit F.

All 29 cores were subdivided by Vekilova (1957:272) into 26 Upper Paleolithic "prismatic" items and 3 "discoidal" pieces. The "prismatic" cores are said to be mostly single-platform examples with acute angles of plain striking platforms. Their illustrations are, unfortunately, limited to just one piece (1957: fig. 20, 1 on p. 273) (fig. 4:1) that by its morphology is not very clear. It can be only supposed that it is a bladelet narrow flaked core with a heavily overpassed crested blade refitted to it. The "discoidal" flake cores are also illustrated by a single item (1957: fig. 20, 2 on p. 273), a quite typical radial example with one non-Levallois centripetal flaking surface (fig. 4:2). At the same time, it could be a pre-core of a bladelet core like the previous core, if our interpretation is correct. The presence of 26 core tablets and 20 crested pieces are technologically in good correspondence with the "prismatic" cores.

The Upper Paleolithic "Indicative Tool types" (n=123) are composed of 64 end-scrapers, 52 burins, 3 composite tools and 4 perforators. End-scrapers were typologically subdivided by Vekilova (1957:276) into specimens on blades (26), on flakes (13) and thick pieces (25) where the latter obviously consists of "carinated pieces". Vekilova's "26 end-scrapers on blades" correspond to the modern definition of simple end-scrapers on blades (1957: fig. 20, 8-11 on p. 273) (fig. 4:3-6), although one piece is more likely to be a simple end-scraper on flake (1957: fig. 20, 3 on p. 273) (fig. 4:7) and the presence of a double simple end-scraper was also noted. These simple end-scrapers are mainly made on complete blades (17 items) of small size (length-3-4 cm, width-1.1-3.2 cm) with a notable absence of lateral retouch. The "13 end-scrapers on flakes" are difficult to understand because the sole illustrated item instead better fits into the modern category of flat nosed end-scrapers (1957: fig. 20, 7 on p. 273) (fig. 4:8). The only other information on "end-scrapers on flakes" concerns the common size for six complete pieces: length - 2.5-4.0 cm and width - 2.5-3.8 cm. The "25 thick end-scrapers" have lengths of 1.5-3.5 cm, width of 0.8-2.5 cm and thickness of 3.0-5.5 cm; blank types are "worked out prismatic cores and core-like chunks" (1957:276). Based on the illustrated items, it is clear that some of these end-scrapers are bladelet "carinated" cores - double-platform bidirectional-perpendicular ones with sub-cylindrical shape (1957: fig. 20, 5-6 on p. 273) (fig. 4:9-10), although most of the other "thick end-scrapers" are said to be like another illustrated piece (1957: fig. 20, 4 on p. 273) (fig. 4:11) that appears to be a very typical carinated end-scraper. So, the actual number of carinated end-scrapers in the Middle layer will be probably a little less than indicated by Vekilova, although such a decrease does not seem to be as drastic as it was for the Lower layer's "thick/carinated end-scrapers" where most were considered to be bladelet "carinated" cores. Here it is worth noting the "15 rejuvenation flakes of thick end-scraper's fronts" (1957:276). Vekilova compared them morphologically with core tablets, but insisted on a different definition for these items because of their small size and overall thinness. Unfortunately, none of these artifacts was illustrated, leaving classification in question.

Summing up the data for the Middle layer end-scrapers, we note the prevalence of simple end-scrapers on unretouched blades and the carinated type, as well as the presence of some flat nosed and double simple types, and flake end-scrapers (?). Burins are represented by the following types: multifaceted (25), dihedral (16), angle (9) and on truncation (2) (1957:274-276). They are made on "well-made blades" with dimensions as follows: length - 2.8-7.8 cm and width - 0.9-4.3 cm. The most abundant "multifaceted" type according to four illustrated pieces actually seems to occur only for dihedral (1957: fig. 21, 5-6 on p. 275) (fig. 4:12-13) and carinated types (1957: fig. 21, 2, 4 on p. 275) (fig. 4:14-15). Morphologically, Vekilova's "16 dihedral burins" are similar to the "multifaceted" burins, although they were illustrated by a single double dihedral symmetric example (1957: fig. 21, 1 on p. 275) (fig. 4:16). Taking this into consideration, the dihedral and the carinated burins together certainly form the most dominant burin group - 41 items/78.84% of all the Middle layer's 52 burins. Real "busked burins" with a characteristic lateral notch appear to be absent, although Bonch-Osmolowski (1934:152) noted five typical examples of this burin type but with no convincing illustrations, suggesting only the presence of carinated burins in the Middle layer assemblage. The "9 angle burins" are not illustrated and Vekilova states only their number with a single comment on a

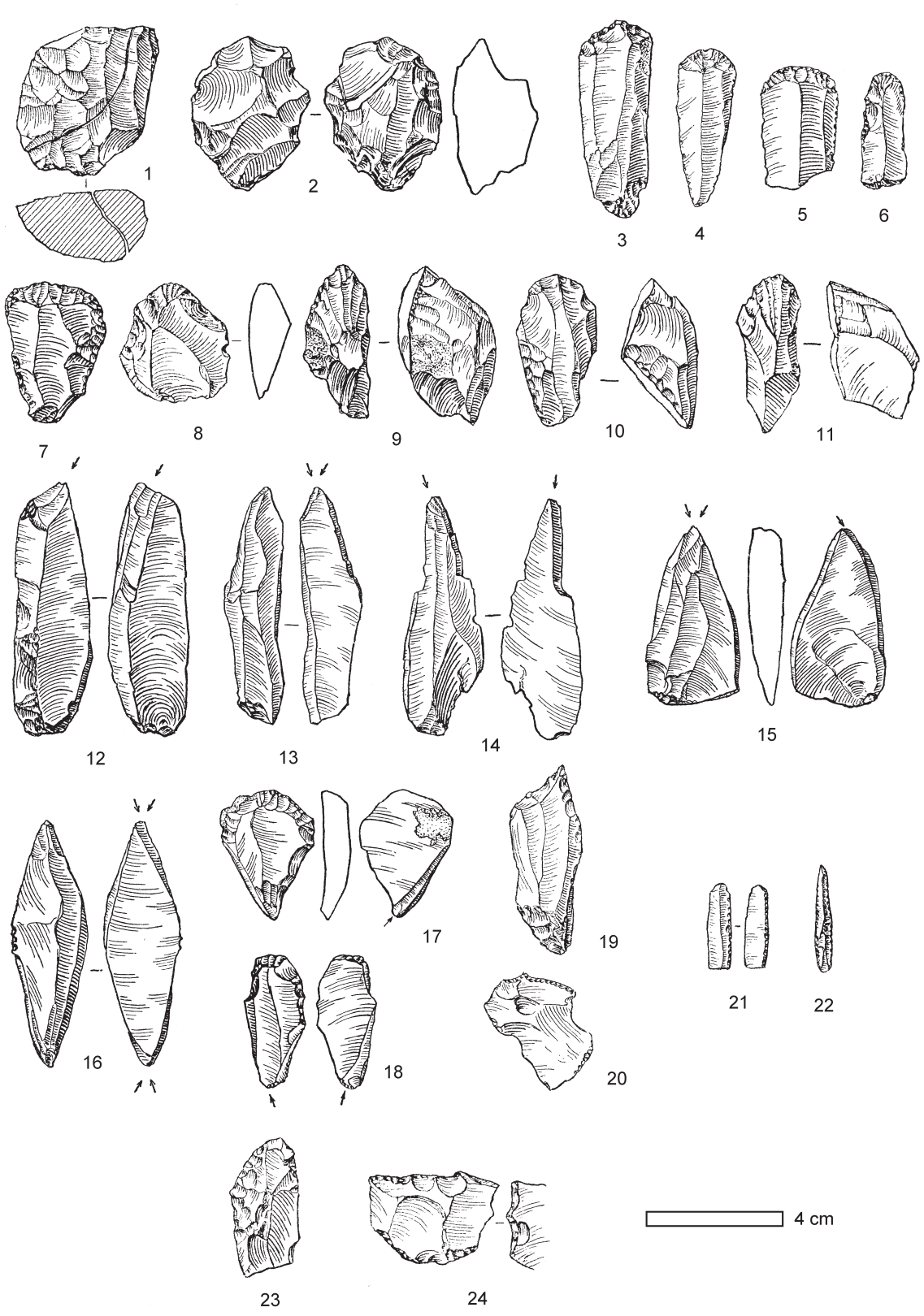

Figure 4 - Siuren I. Finds from Middle layer during the 1920s excavations. Flint Artifacts – Cores and Tools. 1-2, cores (redrawn from Vekilova 1957: fig. 20, 1-2, p. 273); 3-8, end-scrapers (redrawn from Vekilova 1957: fig. 20, 3, 7-11, p. 273); 9-10, "carinated" double-platform bidirectional-perpendicular sub-cylindrical "thick end-scrapers"/bladelet cores (redrawn from Vekilova 1957: fig. 20, 5-6, p. 273); 11, carinated end-scraper (redrawn from Vekilova 1957: fig. 20, 4, p. 273); 12-13, dihedral burins (redrawn from Vekilova 1957: fig. 21, 5-6, p. 275); 14-15, carinated burins (redrawn from Vekilova 1957: fig. 21, 2, 4, p. 275); 16, double dihedral symmetrical burin (redrawn from Vekilova 1957: fig. 21, 1, p. 275); 17-18, simple flat end-scrapers/dihedral burins (redrawn from Vekilova 1957: fig. 21, 7, 9, p. 275); 19-20, perforators (redrawn from Vekilova 1957: fig. 20, 13-14, p. 273); 21, Dufour type bladelet, on bladelet with alternate retouch (redrawn from Vekilova 1957: fig. 20, 16, p. 273); 22, pseudo-Dufour type bladelet, on microblade with bilateral dorsal retouch (redrawn from Vekilova 1957: fig. 20, 17, p. 273); 23, "Mousterian point"/pointed blade (redrawn from Vekilova 1957: fig. 20, 13, p. 273); 24, "Mousterian side-scraper"/flake with irregular retouch (redrawn from Vekilova 1957: fig. 20, 12, p. 273).

double angle burin. The "2 burins on truncation" are both illustrated (1957: fig. 21, 3, 8 on p. 275), showing typical examples made on an almost complete blade and a distal blade fragment. Taking into account some reduction of Vekilova's number of "thick end-scrapers", we assume a near-equal representation of end-scrapers and burins in the Middle layer tool-kit. Three composite tools (1957:276) are represented only by end-scraper/burin variations where end-scrapers' fronts are always simple flat and burins are always dihedral (1957: fig. 21, 7, 9 on p. 275) (fig. 4:17-18). Four perforators (1957:276) are composed of apparently typical pieces on both flakes and blades (1957: fig. 20, 14-15 on p. 273) (fig. 4:19-20).

Retouched pieces are composed of 18 blades and 12 flakes with some retouch (1957:276). Their retouch characteristics and placement are not discussed by Vekilova; in conjunction with the lack of illustrations for these pieces, suggests probable only marginal and/or irregular retouch since "well retouched pieces" would certainly have been drawn.

"Non-geometric microliths" (26 pieces) only constitute 14.05% of all tools with secondary treatment, strikingly different in terms of quantity to the Lower layer tool-kit where "non-geometric microliths" form about 40% of all tools. Their typological classification was done by Vekilova in the same manner as for the Lower layer's "non-geometric microliths". Vekilova (1957:276) distinguished the following three retouched bladelet types: "with alternate retouch" (14), "with backed edge" (2) and "with light retouch" (10). No real description of the retouched bladelets was, however, done. She only noted that their quantity reduced by almost 15 times in comparison to the Lower layer's retouched bladelets *sensu lato*, as well as a remark on their general decrease in size that corresponds to Bonch-Osmolowski's (1934:152) observations. The only two illustrated pieces (1957: fig. 20, 16-17 on p. 273) are a distal part of bladelet *sensu stricto* with bilateral alternate retouch (length - 2.2 cm and width - 0.7 cm) (fig. 4:21) and a complete microblade with fine marginal bilateral dorsal retouch (length - 3.0 cm and width - 0.5 cm) (fig. 4:22) according to our classification system. Such data on the prevalence of bladelets *sensu lato* with bilateral alternate retouch (53.85% of all "non-geometric microliths") in the Middle layer, as well as their smaller overall size and numerical decrease in comparison with the Lower layer's retouched bladelets and microblades have led many archaeologists to agree with her conclusions on both the high morphological similarity of the retouched bladelets in these two Siuren I layers and on some patterns in their development through time (e.g., Anikovich 1992:224).

The remaining six tools with secondary treatment in the Middle layer assemblage were defined by Vekilova (1957:276) as representing "Mousterian forms": 5 points and 1 side-scraper. Taking into consideration the certain importance of this tool group, it is significant to cite directly Vekilova's descriptions of these tools: "Of three complete points, two pieces represent an example of use of Mousterian point as a burin. The third point is made on a broken in its lower part massive blade 3.5 cm long, 2.0 cm wide with secondary treatment only at the pointed end. The other examples are far less expressive" (1957:276). Although Vekilova did not precisely correlate the two illustrated "Mousterian forms" with the described items, it is possible to do so. Her "third Mousterian point", morphologically much better, actually fits into the typical Upper Paleolithic tool category of "pointed blades" (1957: fig. 20, 13 on p. 273) (fig. 4:23). The second illustrated piece (1957: fig. 20, 12 on p. 273) is said to be a side-scraper. Given the obvious irregular retouch on this piece, we disagree with this attribution, considering it instead to be a retouched flake (fig. 4:24). Regarding these new proposed definitions, the two illustrated "Mousterian forms" thus do not appear to be Middle Paleolithic tool types. Moreover, the two "Mousterian points used as burins" (not illustrated) are quite likely simply burins on truncation/lateral retouch. Remembering the "far less expressive" morphology noted for the other two "Mousterian points", we suggest that they are also not truly Middle Paleolithic. So, analysis of the "Mousterian forms" defined by Vekilova in the Middle layer assemblage rather points out the absence of any Middle Paleolithic tool types. This conclusion is in agreement with Bonch-Osmolowski's and Anikovich's observations for the so-called Middle Paleolithic tool types there as well. Bonch-Osmolowski (1934:150, 152) noted "the sharp decreasing of a number of Mousterian forms" in the Middle layer in comparison to the Lower layer with a comment noting "only two massive rough side-scrapers having casual character" without respective illustrations. Anikovich (1992:224), on the other hand, completely rejected their presence in the Middle layer-"there are no obvious archaic forms (sidescrapers, Mousterian points, small hand axes)". Thus, the Middle Paleolithic tool types claimed for the Siuren I Middle layer are rather burins and retouched flakes and blades, in some cases similar to "archaic forms" but not properly attributable to the Middle Paleolithic.

The data on the Siuren I Middle layer assemblage can be summarized as follows. In contrast to the Lower layer, this find complex is composed of exclusively Upper Paleolithic pieces lacking Middle Paleolithic tools, where three "discoidal" cores defined by Vekilova could be either very exhausted cores or precores for future Upper Paleolithic blade/bladelet narrow edged flaking with forming of a crested ridge. Technologically, bladelet "regular" and "carinated" single-platform cores with plain acute striking platforms are the most dominant, associated with which are bladelet "carinated" double-platform bidirectional-perpendicular with sub-cylindrical shape cores defined by us among Vekilova's "thick end-scrapers". Carinated end-scrapers and burins (the latter tool type is nearly absent in the Lower layer) are the most characteristic Aurignacian tool types among the Upper Paleolithic "Indicative tool types". Some flat nosed end-scrapers and bladelets with bilateral alternate retouch are also included in the Aurignacian tool types group. Aside from the carinated burins, dihedral burins are considerably more common than angle and on truncation/lateral retouch burins, making this dominance along with the carinated type as one of the most characteristic typological features for this tool-kit. Other Upper Paleolithic "Indicative tool types" are represented by rare perforators, while scaled tools and some "well-retouched" blades common in the Lower layer are entirely absent. "Non-geometric microliths" constitute only about 14% of the tools; in numerical comparison to burins and end-scrapers, they are only about half as common as each of these distinctive Upper Paleolithic tools, while in the Lower layer's tool-kit "non-geo-

metric microliths" were the most significant tool group (about 40%) and were about 4.5 times more common than either end-scrapers or burins. All in all, these techno-typological features point out the Aurignacian affinity of the Siuren I Middle layer assemblage, that has often been interpreted as reflecting further development through time of the Lower layer's flint treatment traditions by all specialists, without taking into consideration their Aurignacian or non-Aurignacian attribution.

The 1990s Unit F's assemblages leave a twofold impression based on general techno-typological comparisons to the features of the Middle layer assemblage. The prevalence of bladelet "regular" and "carinated" single-platform cores, near-equal representation of end-scrapers and burins, the presence of typical carinated end-scrapers and burins, the dominant position of dihedral and carinated burins among burin types, the occurrence of a flat shouldered end-scraper and composite tools only in the end-scraper/burin variation, as well as the absence of scaled tools, "well retouched" blades and Middle Paleolithic tool types in Unit F certainly reflect the main industrial characteristics of the Middle layer. On the other hand, the Unit F "non-geometric microliths" are numerically and morphologically very different from the Middle layer's retouched bladelets; in addition, abundant unretouched microblades and bladelets are the main products of the primary flaking processes in Unit F. Such discrepancies in the retouched and unretouched microblades and bladelets between Unit F and the Middle layer assemblages should be considered more thoroughly, through typological and numerical analyses that could lead to understanding of the reasons causing them. Unfortunately, Bonch-Osmolowski's and Vekilova's data on microblades and bladelets in the Middle layer's debitage structure are completely unclear. Therefore, we cannot state anything definite on this matter, especially in comparison to Unit F's unretouched microblades and bladelets. In this situation, we are left only with the possibility of comparing the retouched "non-geometric microliths" of these two complexes.

The 26 "non-geometric microliths" of the Middle layer can be briefly described and summarized as follows. Bladelets *sensu lato* with bilateral alternate retouch number 14 pieces (53.85%.) Bladelets *sensu lato* with lateral ventral retouch are not noted, while the other bladelets *sensu lato* most likely have bilateral and lateral dorsal retouch (12 pieces/46.15%). The two pieces "with backed edge" noted by Vekilova could either be actual "pieces with abrupt retouch" or "pieces with fine marginal or semi-steep retouch". The retouched "non-geometric microliths" illustrated by Vekilova include one bladelet with bilateral alternate retouch and one microblade with bilateral dorsal retouch, which does not help in determining the proportions of bladelets and microblades among the Middle layer's "non-geometric microliths", although their length (3.0 cm for the complete piece and 2.2 cm for the broken piece) may show the existence of some rather long examples. At the same time, "non-geometric microliths" constitute only 14.05% of all tools with secondary treatment in the Middle layer assemblage. Now let us turn to the Unit F "non-geometric microliths". All 77 pieces are subdivided by retouch into "pieces with fine and/or semi-steep retouch" - 74 items/96.1% and "pieces with abrupt retouch" - only 3 items/3.9%. The former group is composed of such items, with a clear dominance of fine marginal retouch. Pieces with bilateral alternate retouch account for 9 items/11.7% and notably all are microblades based on their dimensions. Microblades are again only characteristic for pieces with lateral ventral retouch - 26 items/33.8%. So, all "Dufour bladelets" (35 items/45.5%) were made exclusively on microblades with none made on bladelets. "Pseudo-Dufour bladelets" (33 items/42.8%) are characteristized by the following sub-types: microblades with lateral dorsal retouch - 24 items/31.1%, microblades with bilateral dorsal retouch - 6 items/7.8% and bladelets with lateral dorsal retouch - only 3 items/3.9%. The remaining 6 "pieces with fine and/or semi-steep retouch" (7.8%) include 4 bladelets and 1 microblade with dorsal retouch at the distal end (actually, truncated pieces), and another microblade with a dorsal lateral micronotch. These latter pieces were not noted, however, among the Middle layer's "non-geometric microliths", making them irrelevant for our typological comparisons. "Pieces with abrupt retouch" (1 bilaterally and 2 unilaterally backed pieces-3.9%) again occur only on microblades. Thus, among the 77 "non-geometric microliths" in Unit F, only 7 bladelets (9.1%) are present while only 3 bladelets (4.2%) are characteristic for all pieces with lateral and bilateral continuous retouch - the only known items for the Middle layer. At the same time, it should be recalled that Unit F's "non-geometric microliths" also constitute 42.8% of all tools with secondary treatment.

Thus, the Middle layer's "non-geometric microliths" (26 items), according to Vekilova's data, show a slight prevalence of pieces with bilateral alternate retouch (53.85%) over pieces with bilateral and lateral dorsal retouch (46.15%), and a complete absence of pieces with lateral ventral retouch, while Unit F's "non-geometric microliths" are again characteristized by the near-absence of "pieces with abrupt retouch" (3.9%), some presence of pieces with distal retouch and a lateral micronotch (together 7.8%) and, very different from the Middle layer composition, "pieces with fine and/or semi-steep" continuous lateral retouch: pieces with bilateral alternate retouch - 11.7%, pieces with lateral ventral retouch - 33.8% and pieces with bilateral and lateral dorsal retouch - 42.8%. The only similarity is the proportion of bladelets *sensu lato* with bilateral and lateral dorsal retouch: 42.8% and 46.15%. On the other hand, the proportions of "Dufour bladelet" sub-types with bilateral alternate and lateral ventral retouch are, however, completely different in these two complexes. Such differences could even lead to the hypotheses that either different Aurignacian industries were excavated in the 1920s and in the 1990s, or a single Aurignacian industry with significantly varying activity in the different areas excavated for the Middle layer and Unit F was present, reflected in the composition of "non-geometric microliths". Moreover, these hypotheses could be further supported by the very different quantity of "non-geometric microliths" in these two assemblages: 14.05% in the Middle layer and 42.8% in Unit F for all tools with secondary treatment. Nevertheless, we insist that the Middle layer and Unit F assemblages represent the same Aurignacian industry in which all major tool categories and types correspond to one another. There are two ways to resolve the "non-geometric microliths" question.

The first consists in using only published data and their different interpretations. It seems useful here to turn back again to

the different excavations methods applied during the 1920s and the 1990s campaigns at Siuren I. As already discussed, the find density of Unit F's four distinct stratigraphically defined archaeological levels taken together is higher in comparison with the data for the Middle layer even taking into account a hypothetical loss estimation of 75% of all microblades and chips for the Unit F assemblage given the non-systematic sieving of sediments during the Siuren I 1920s excavations. In this case, a hypothetically larger quantity of lost tiny flint artifacts for the Middle layer than was artificially estimated for the Unit F assemblage seems to be quite possible. Bonch-Osmolowski's brief remarks on the retouched bladelets *sensu lato* of the Middle layer in comparison to the Lower layer seem to be quite indicative on this matter. "Bladelets become considerably much less numerous quantitatively and smaller in size. Such decreasing is so remarkable that the results of the first field season gave me the reason to suggest their absolute disappearance. However, with the later excavations the presence of small series of these tools in the Middle layer was established as well" (Bonch-Osmolowski 1934:152). These comments by the director of the Siuren I 1920s excavations definitely show the "hard fate" of the Middle layer's "non-geometric microliths". Taking into account that more than 90% of the Unit F "non-geometric microliths" were microblades based on metric parameters, it is not surprising to see retouched microblades in the 1920s Middle layer deposits only during excavations of the site's central area. If we agree to connect most of the Middle layer's "non-geometric microliths" with the site's central area, which contains the six richest squares (24 sq. meters) with lithics numbering between 600 and 900 items per square, we could conclude that less than 1 retouched bladelet *sensu lato* per 1 sq. meter was found during Bonch-Osmolowski's excavations. At the same time, dividing Unit F's 77 "non-geometric microliths" across the excavated area of 12 sq. meters gives an average of more than 6 retouched bladelets *sensu lato* per 1 sq. meter for the 1990s excavations. Keeping in mind such numbers of "non-geometric microliths" in the two find complexes per 1 sq. meter, and hypothetically excluding part of the sieving for Unit F, we may assume recovery of only 10-15 retouched bladelets and microblades in Unit F where most would be rather long as is the case of two such retouched items illustrated by Vekilova. Thus, given these reasons underlying the difference in frequency of "non-geometric microliths" in the two assemblages, such quantitative discrepancies may not be significant. Yet different typological structures of the Middle layer and Unit F "non-geometric microliths" still constitute a definite problem. At present, based only on the published data, it is impossible to explain unambiguously the strong prevalence of pieces with lateral ventral retouch over pieces with bilateral alternate retouch (correlation 2.88:1) for Unit F's "Dufour bladelets" and, at the same time, only the presence of pieces with bilateral alternate retouch for "Dufour bladelets" in the Middle layer. Before examination of some of the 1920s materials at Kunstkamera Museum in November 1999, we had two possible explanations for this. The first was that the representation of different sub-types (with alternate or ventral retouch) is not very important within the broadl "Dufour bladelets" type, keeping in mind the stability (about 45%) of "pseudo-Dufour bladelets". The second was that different activities carried out by human groups at the site involving the laterally retouched bladelets *sensu lato* recovered in the Middle layer and Unit F could also have influenced retouch placement for this tool type, although this explanation does not contradict the first.

The second approach is to address the "non-geometric microliths" problem with examination of some of the 1920s materials in St.-Petersburg. This has led to another, quite unexpected and more likely, suggestion. During observation of the Middle layer's finds from Bonch-Osmolowski's final field season (1929), a series of 12 retouched bladelets and microblades from squares 15, 16-E was studied. Surprisingly, 9 of these "non-geometric microliths" were quite typical for the 1920s excavations Lower (!) layer. These include 5 bladelets and 4 microblades with bilateral alternate semi-steep micro-scalar and micro-stepped retouch with flat or incurvate general profiles and, moreover, 6 of these pieces were made on the colored flints so typical of the Lower layer. The remaining 3 of the 12 "non-geometric microliths" from this area are the following: 1 twisted microblade with lateral ventral retouch, 1 twisted microblade with lateral dorsal retouch and 1 incurvate microblade with bilateral dorsal retouch. All of these items have semi-steep micro-scalar retouch. Based on all of these features, the 12 "non-geometric microliths" clearly fall within the morphological range of such pieces in the Lower layer. The additional observation of other tool categories from these two squares revealed that none of the carinated burins, so typical for the Middle layer, were present. It was also recognized that during that final field season, part of the Lower layer flints was labeled as "layer 3", not as "layer 4" as had been done during previous seasons. Taking all these data together into consideration, we can assume that Vekilova included some actual materials of Bonch-Osmolowski's Lower layer in her descriptions of the Middle layer, which would have led to the prevalence of alternately retouched bladelets in this layer. This hypothesis finds additional support in the results of our observations of the 1927 Middle layer's four «non-geometric microliths» from squares 12-Ж, З, Г. These items only have fine marginal retouch and can be generally described as follows: 1 twisted microblade with lateral ventral retouch, 1 incurvate microblade with lateral ventral retouch, 1 flat microblade with bilateral alternate retouch and 1 twisted microblade with bilateral dorsal retouch. The presence of only microblades, fine marginal retouch with, finally, two instances of lateral ventral placement, twisted general profiles certainly point to the great similarity of these Middle layer's "non-geometric microliths" to those in Unit F. Thus, after understanding the quantitative differences, which were more dramatic than represented by Vekilova - since of the 14 bladelets with bilateral alternate retouch no more than 5 items actually remain, reducing the overall quantity of 26 «non-geometric microliths» to 15 or even 12 pieces -, we have a quite solid basis for explanation of the typological differences between Vekilova's data on the 1920s Middle layer «non-geometric microliths» and the 1990s Unit F "non-geometric microliths". We can finally conclude that "non-geometric microliths" from the 1920s Middle layer and the 1990s Unit F have the same basic characteristics. Both objective (Bonch-Osmolowski's excavations methods) and subjective (some mistakes by Vekilova during analysis of some of the 1920s materials) reasons prevent us from using data on the 1920s Middle layer "non-geometric microliths" for further comparative analysis with other Aurignacian industries and, therefore, for such comparisons only data for the 1990s Unit F "non-geometric microliths" will be used.

Thus, these considerations of the "non-geometric microliths" enable us to argue that the industry in the Middle layer and Unit F is the same one: Late/Evolved Aurignacian of Krems-Dufour type. Of the analyzed data relating to the Middle layer and Unit F, the 1990s excavations area of 12 sq. meters appears to be the area with the highest density of lithic artifacts among the entire area (about 110 sq.) excavated during both campaigns. This can be seen not only by the average number of lithics per each 2 x 2 meter square and the high amount of unretouched and retouched microblades and bladelets in the Unit F assemblage in comparison with the Middle layer assemblage, but also in the correlation of the most Indicative Upper Paleolithic tool categories such as end-scrapers and burins. For these, 18 end-scrapers and 19 burins, including broken items for the two categories, were identified in the Unit F tool-kit, while, from Vekilova's counts, 54 end-scrapers and 52 burins (although we assume a near-equal number of burins and end-scrapers given that their overall number is reduced through transfer of bladelet «carinated» cores among them into the cores category) in the Middle layer tool-kit. Thus, there are about three times more end-scrapers and burins in the Middle layer than in Unit F. At the same time, the 1990s excavations area (12 sq. meters) is about 8 times smaller than the overall 1920s excavations areas (about 95 sq. meters) or about 6 times smaller than the 1920s excavation areas (about 70 sq. meters) which contained 2x2 m squares with artifact density more than 100 items. With such comparisons, it is clear that artifact density and possibly intensity of occupations were, for the 1990s excavations area, at least twice as high on average than the 1920s excavations, whether 95 or 70 sq. meters. Other tool classes and types cannot be used for these comparisons as, on one hand, truncations, denticulated and notched pieces, unidentifiable tool fragments were not distinguished in the Middle layer assemblage by Bonch-Osmolowski and Vekilova, while, on the other hand, perforators and "Mousterian forms" do not appear occur at all in the Unit F assemblage. In addition, direct comparisons between retouched pieces of the two complexes would not be correct because of Vekilova's unclear typological criteria for their recognition in the Middle layer.

Thus, despite a quite comparable general tool count (about 180 pieces for each assemblage), the Middle layer and Unit F tool-kits cannot be used for various all-around comparative analyses. However, it is still possible to create a general techno-typological description of these Siuren I complexes that reflects all distinct features according to the system, adding unique characteristics of each assemblage to the whole.

The Siuren I Middle layer/Unit F Late/Evolved Aurignacian of Krems-Dufour type industry's techno-typological characteristics can thus be summarized as follows. Technologically, primary flaking processes were most intensively directed towards production of many small microblades and bladelets with mostly typical twisted general profiles and "off-axis", almost "déjeté" axis removal from bladelet single-platform "regular" and Aurignacian types "carinated" cores with plain acute angle striking platforms with edge abrasion, as well as from Aurignacian carinated end-scrapers and burins that often approach our definition for bladelet narrow flaked cores based on dimensions. Typologically, Aurignacian tool types are most prominently expressed by carinated end-scrapers and burins, flat/thick shouldered/nosed end-scrapers and, finally, such impressive Aurignacian indications as the quite numerous (about 40% in the Unit F tool-kit) mostly twisted microblades and a few bladelets with fine marginal retouch, about half of which are "Dufour bladelets" (mainly pieces with lateral ventral retouch and some pieces with bilateral alternate retouch) and half "pseudo-Dufour bladelets" with lateral dorsal and bilateral dorsal retouch, with, at the same time, a near-absence of «pieces with abrupt retouch» and no indicative Aurignacian «non-geometric microlith» types such as "Krems points". Regarding the common Upper Paleolithic "Indicative Tool types", we note the near-equal presence of end-scrapers and burins, the definite prevalence of dihedral and carinated burin types over angle and on truncation/lateral retouch burin types and, at least, some presence of perforators and truncations with the notable complete absence of "well-retouched" blades and scaled tools. Despite the presence of "Mousterian forms" in the Middle layer claimed by Vekilova, no truly Middle Paleolithic core and tool types are present in this 1920s and 1990s Aurignacian find complex. This "*summa summarum*" of the common techno-typological data for the Siuren I Middle layer and Unit F assemblages can be used as a description of the general characteristics of this find complex within the Siuren I archaeological sequence and also for comparisons between it and other European Aurignacian industries with small "Dufour and pseudo-Dufour bladelets *sensu lato*", which also have similar morphological features including twisted general profiles, "off-axis" removal directions and fine marginal retouch, while the probable precise position of the Siuren I Aurignacian industry would be more likely determined with some additional techno-typological characteristics of the Unit F assemblage alone, identified by application of the detailed classification system and attribute analysis.

Concluding remarks

In sum, then, detailed comparisons between the Siuren I find complexes of the 1920s Lower and Middle layers and the 1990s Units G and F allow us, first, to reach clear conclusions regarding the comparability of the assemblages resulting from these two campaigns and, second, to create on the basis of such comparability a common general techno-typological description for both the Siuren I Lower layer/Unit G assemblages and the Siuren I Middle layer/Unit F assemblages as two Aurignacian assemblages combining the most indicative flint characteristics of the two collections for each complex. The Middle Paleolithic industrial component of the 1920s Lower layer/1990s Unit G is not considered here, but will be discussed separately in this volume. The detailed descriptions of the 1990s Units G and F assemblages, comparative inter-level and inter-unit analyses corroborate the 1920s data of the site excavator (Bonch-Osmolowski) and the main publisher of the recovered finds (Vekilova). Further and final discussions of the Siuren I Aurignacian Lower layer/Unit G and Middle layer/Unit F find complexes with the addition of data on the Unit H assemblage, will be presented in the concluding chapters of the present volume during analysis of the Siuren I archaeological sequence as a whole and the place and role of the Siuren I Aurignacian in the context of the European Aurignacian.