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16 - INTERPRETATION OF THE MIDDLE PALEOLITHIC COMPONENT IN THE EARLY AURIGNACIAN UNITS H AND G AND THE 1920S LOWER LAYER

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Introduction

Both the 1920s and the 1990s excavations at Siuren I led to the remarkable discovery of distinctive Middle Paleolithic cores and tools in the lower part of the sequence (1990s Units H and G and 1920s Lower layer) which also contain much more abundant Upper Paleolithic material attributed to the Aurignacian 0/Archaic Aurignacian of Krems-Dufour type. Since the 1920s excavations, such co-occurrence of Middle and Upper Paleolithic artifacts has been one of the most intriguing topics of debate regarding the Siuren I archaeological context. Discovery of the same "association" of Middle and Upper Paleolithic artifacts during the 1990s excavations requires further discussion, presented here with an attempt to propose a possible resolution of the issue.

Before presenting our own analysis, it is necessary to once again specifically recall that the Middle Paleolithic cores and tools found in the 1920s *Lower* layer were always considered to be an integral part of the Upper Paleolithic industry. Three specialists who personally studied these artifacts at very different times (1920s - 1930s, early 1950s, late 1980s) entirely independently came to this same conclusion, which is without exception shared by all other archaeologists who have ever discussed the Siuren I *Lower* layer finds. Their opinions are summarized here.

G.A. Bonch-Osmolowski discussed the Siuren I *Lower* layer Middle Paleolithic type pieces in the general context of Middle-Upper Paleolithic transition. "*Presence of some Mousterian tool types in Aurignacian, especially in the Lower Aurignacian sites, is not a rare case at all but indeed composes one of the characteristic features of this stage. ... we see in them (Yu. D. - Mousterian tool types) a quite natural survival of old forms in the new stage of cultural development. This survival, from our point of view, once again proves the straight succession of both stages (Yu. D. - Mousterian and Aurignacian*)" (1934:150).

E.A. Vekilova completely supported the Bonch-Osmolowski's "unilinear evolutionary Paleolithic development" view, so common for that time in the history of Paleolithic archaeology, while additionally specifying the Shaitan-Koba Mousterian industry as the direct predecessor for the Siuren I Upper Paleolithic with "Mousterian forms" (1957:313-314).

More recently, the opinion of M.V. Anikovich: "*We cannot interpret the "Mousterian complex" in the lower layer of Siuren I as a result of mechanical admixture, since there is about the same ratio of Middle and Upper Paleolithic forms throughout the sequence. Moreover, the deposits of the lower layer yielded none of the fauna characteristics of Middle Paleolithic sites in the Crimea (such as mammoth, woolly rhinoceros, wild donkey, cave bear). Thus, the collection from the lower layer of Siuren I must reflect ties between local "Mousterians" and, probably, intruders, who brought with them developed Upper Paleolithic cultural traditions. The material in the middle layer shows the rapid obsolescence of Middle Paleolithic traditions and a complete dominance of Upper Paleolithic techniques. The likely geological age of the lower and middle layers* (Yu. D. - ca. 20000-18000 BP as proposed by Anikovich.) suggests that the Middle-Upper Paleolithic transition occurred in the Crimea much later than in most of Europe"(1992:224-225). Accordingly, Anikovich's conclusions also confirm the genuine inclusion of Middle Paleolithic tool types within the Siuren I Lower layer Upper Paleolithic complex, but his cultural interpretation differs from Bonch-Osmolowski and Vekilova. Non-local roots for the Upper Paleolithic complex were assumed for which human group(s), after contact with local Crimean "Mousterians", incorporated some Middle Paleolithic techno-typological traits into their own flint traditions. This interpretation of the cultural exchange process, proposed by M.V. Anikovich, can only be seen as a miraculous example of "reverse acculturation" because none of the Crimean Middle Paleolithic industries contain any Upper Paleolithic/Aurignacian cores and tools.

All in all, despite some differences in cultural interpretations of the Middle Paleolithic techno-typological component in the Siuren I Lower layer, there has never been any objection to the industrial integrity of this find complex as a whole.

New methodological approach

For new discussion of the "Siuren I Middle Paleolithic problem", it is proposed to begin once again, excluding these previous interpretations in order to keep open the possibility of other interpretations. Indeed, we are quite sure that all possible different explanations should be evaluated here, out of which one of the suggestions may finally be the most probable. Such

an approach to discussion of the problem is much more fruitful than a simple attempt to prove just one possibility; this methodological approach avoids the obvious subjectivity of having only one preferred hypothesis and, at the same time, any colleague may evaluate the various explanations and accept one of them, if it seems probable to him/her. Such an *"alternative hypotheses"* approach has not often been used in Paleolithic archaeology, although it was sometimes applied with certain convincing conclusions (e.g., Gladilin & Sitlivy 1987; d'Errico *et al.* 1998).

For proposal and analysis of several alternative hypotheses, we should also avoid the main assumption that served as the basis for previous explanations, - namely the consideration that finding Middle and Upper Paleolithic artifacts together in the same sediment unit represents occupations of a single human group with a single flint treatment tradition. Without this assumption, it becomes much more productive to propose alternative hypotheses related to both *natural* and *human/cultural factors* which could have influenced the presence of Middle Paleolithic artifacts in the Upper Paleolithic/Aurignacian archaeological levels.

We begin with *natural factors* that may have affected the site's stratigraphy.

Hypothesis 1

The 1920s Lower layer/1990s Units H and G Middle Paleolithic cores and tools come from a distinct cultural layer or rather thin level within the sedimentary units under discussion, whether interstratified between other Upper Paleolithic/Aurignacian levels or the stratigraphicly lowest one within the sequence of these levels.

Here we should first note that this hypothesis was the main one for our team prior to the Siuren I 1990s excavations. At first sight, the stratigraphic profiles of the 1920s excavations, published by both Bonch-Osmolowski (1934) and Vekilova (1957) certainly allow us to consider such a possibility. Taking into consideration the presence of both the stratigraphically separated three continuous hearth/ashy levels within the *Lower* layer sedimentary unit and the very abundant Upper Paleolithic/Aurignacian finds with only 5 cores and 40 tools of Middle Paleolithic types among a total of 15500 lithic artifacts (which includes 43 cores and about 810 tools in Vekilova's accounts from all investigated areas totaling ca. 85 sq. meters for this *Lower* layer), the suggestion of the existence of a "very ephemeral" Middle Paleolithic level with a limited number of artifacts accompanied or, more likely, unaccompanied by hearths is not at all unexpected. Moreover, the probability of such a "Middle Paleolithic ephemeral level" could explain why it was not identified by Bonch-Osmolowski during his excavations.

This hypothesis, unfortunately, found no support during the 1990s excavation. Both the lowest archaeological level Gd of Unit G (the stratigraphic analog of the 1920s *Lower* layer) and the newly found lowermost Unit H are not of Middle Paleolithic character only, but rather repeat the pattern of the *Lower* layer with a few Middle Paleolithic artifacts among much more dominant Upper Paleolithic/Aurignacian finds. Thus, half of this hypothesis, in supposing the existence of a "Middle Paleolithic level" at the base of the Siuren I archaeological sequence, is not confirmed. At the same time, the other two archaeological levels (Gc1-Gc2 and Gb1-Gb2) of Unit G with hearth/ashy features also have the same proportional occurrence of Middle and Upper Paleolithic tool types in their tool-kits as is known for level Gd and Unit H. Precise frequencies of Middle Paleolithic tool types for these four tool-kits are as follows: Unit H - 3 pieces among all 69 tools - 4.3% and without two "non-flint tools" - 4.5%; level Gd - 1 piece among all 77 tools - 1.3% and without two "non-flint tools" - again 1.3%; level Gc1-Gc2 - 13 pieces among all 210 tools - 6.2% and without 2 "non-flint tools" - 6.3%; level Gb1-Gb2 - 3 pieces among all 71 tools - 4.2% with no "non-flint tools" present. The Middle Paleolithic tools could be supplemented by some very characteristic "retouch flakes and chips" resulting from secondary treatment processes Middle Paleolithic tools - 7 items in Unit H, 3 in level Gd, 8 in level Gc1-Gc2 and 4 in level Gb1-Gb2, although including them in percentage calculations would be not methodologically appropriate. Despite the small statistical range between 1.3% and 6.3% for Middle Paleolithic tools in these four tool-kits, the lowest ratio for the lower level of Unit G (Gd) is remarkable given that this level is the most probable analog for the 1920s excavations *Lower* layer's lowest hearth/ashy lens that was initially considered by us as Middle Paleolithic. Recalling Anikovich's observation (**1992**: 224) of "*about the same ratio of Middle and Upper Paleolithic forms throughout the sequence*" of the *Lower* layer, we should completely reject the idea of the existence of any kind of independent Middle Paleolithic level in the sediments of the 1920s *Lower* layer/1990s Units H and G.

Hypothesis 2

Both a Middle Paleolithic and several Upper Paleolithic/Aurignacian archaeological levels were present in the Siuren I 1920s Lower layer/1990s Units H and G deposits, but they differed in spatial distribution across the site: two distinct find spots (a Middle Paleolithic and an Upper Paleolithic one) in the large rock-shelter's excavated areas totaling about 160 sq. meters for all excavations in 1879-1880 (about 60 sq. meters), 1926-1929 (about 85 sq. meters) and 1995-1997 (12 sq. meters).

Data examined for discussion of hypothesis 1 are again relevant as arguments refuting hypothesis 2. For the 12 sq. meters excavated in the 1990s, the presence of both Middle and Upper Paleolithic artifacts in the expected ratios is characteristic for three levels of Unit G and the single level of Unit H. Thus, hypothesis 2 is not supported by the latest Siuren I data. Now let us discuss the spatial distribution data for distinct Middle and Upper Paleolithic cores and tools from the 1920s excavations. Bonch-Osmolowski (1934) did not specifically comment on this matter, simply stating that Middle and Upper Paleolithic artifacts were found together, although Middle Paleolithic cores were not recognized by him at that time. About sixty years after Bonch-Osmolowski, M.V. Anikovich (1992) just "echoed" the site's excavation "data" on this subject. E.A. Vekilova also simply noted the presence of both Middle and Upper Paleolithic cores and tools in the Siuren I Lower layer during her analysis of the "Mousterian forms" (1957: 270), but in her description of Bonch-Osmolowski's excavations, we find an important comment on the discovery in the rock-shelter's

western area (squares 10-Б, 11-В, 12-А, Б) in the *Lower* layer of "perforated shells of *Aporrhais pes-pelicani*, bone points and typical for this layer flint tool complex composed of burins, end-scrapers, bladelets with alternate retouch and backed retouch, a tool of Mousterian form. In the same layer in square 11-В was recognized the very important find - a human molar (Yu. D.- *Homo sapiens*)" (1957:239). So, there is at least one documented fact concerning the actual occurrence of Middle and Upper Paleolithic artifacts together in the Siuren I *Lower* layer in Vekilova's data. Some special observations on the precise location of the Middle Paleolithic pieces and of the most typologically indicative Upper Paleolithic/Aurignacian pieces in the 1920s *Lower* layer's different squares and artificial horizons were made for some of these materials on the basis of labels on the flints and Bonch-Osmolowski's inventory lists by the present author in November 1999 at the Department of Archaeology in St.-Petersburg Kunstkamera Museum. Of 27 Middle Paleolithic tools in that collection, 23 items can be situated in the following squares and horizons: squares - 9-В; 10-Б; 11-Б/В, В, Г, Д; 12-А, Б/В, Б, В, Г, Д, Е and horizons (from top to bottom) - 1-5 and 7-8. In these same squares and horizons, Upper Paleolithic/Aurignacian types including *"*Dufour bladelets*"* with alternate retouch, scaled tools, carinated end-scrapers, bladelet "carinated" cores, simple end-scrapers and burins on lateral retouch were also found. Combining all these data with the common (although not specifically stated) belief of all specialists on the association of Middle and Upper Paleolithic types in all areas excavated in the 1920s (about 85 sq. meters), we should again, as for the 1990s much smaller excavation block, reject hypothesis 2 for these larger investigated areas. But there is still Merejkowski's *Lower* layer excavated area about 60 sq. meters. Surprisingly enough, this quite large inner area near the back-wall yielded not a single Middle Paleolithic artifact, while tools comparable to the *Lower* layer Upper Paleolithic/Aurignacian tool types, including 5 carinated end-scrapers and/or bladelet "carinated" cores, 18 bladelets *sensu lato* with alternate bilateral retouch and 1 scaled tool are present (Vekilova 1957:285-286). Any suggestion of a possible unrecognized presence of Middle Paleolithic types in Merejkowski's *Lower* layer assemblage (1137 items including 111 tools) cannot be accepted because Vekilova classified these finds of the late 19th century excavations through constant comparisons with Bonch-Osmolowski's *Lower* layer flints and, if there were some or even a single "Mousterian form" there, she would surely have recognized it. There is thus no other conclusion than that the site's *Lower* layer significant interior portion studied in 1879-1880 contains only Upper Paleolithic/Early Aurignacian of Krems-Dufour type industry finds. Accordingly, this leaves some room for speculations on hypothesis 2.

Summing up all the data for discussion of hypothesis 2, we are left with a twofold impression. On one hand, the rock-shelter's inner western and central areas, and central areas around the drip-line zone (about 100 sq. meters in total) of the 1920s *Lower* layer/the 1990s Units H and G sedimentary units are distinguished by the "co-existence" of both Middle and Upper Paleolithic cores and tools. On the other hand, the rock-shelter's inner central area (about 60 sq. meters) of the 1879-1880 *Lower* layer deposits contains only Upper Paleolithic/Aurignacian artifacts. Thus, hypothesis 2 finds partial support in one discrete Upper Paleolithic/ Aurignacian area, while another, larger Middle and Upper Paleolithic/Aurignacian areas does not conform to "the differential spatial distribution" proposal of hypothesis 2. The impossibility of full acceptance for hypothesis 2 does not mean, however, that we should not keep in mind some spatial differences revealed during discussions of the other hypotheses.

Hypothesis 3

An independent Middle Paleolithic archaeological level existed within 1920s Lower layer/1990s Units H and G, but it was destroyed because of natural causes either by cryoturbation or by erosion and/or water processes and, therefore, the Middle Paleolithic artifacts were found in all archaeological levels with Upper Paleolithic/Aurignacian pieces in the sedimentary units.

For hypothesis 3, these sediments we should be divided into two distinct parts – the 1920s *Lower* layer/the 1990s Unit G, and the 1990s Unit H. This subdivision is explained by a clear-cut stratigraphic separation of these two sedimentary units given the presence of a huge limestone block horizon. The natural causes for sediment disturbance may have been different or had a varying influence for each. Of course, such analysis can be only done for the 1990s excavations.

The single archaeological level of Unit H was sandwiched between huge limestone blocks of the fourth and the fifth rock-fall horizons with little or no archaeologically sterile sediments above and below the culture bearing deposits. Three hearth/ashy levels of Unit G (Gd, Gc1-Gc2, Gb1-Gb2), recalling that level Ga is highly likely the top of level Gb1-Gb2, are also enclosed by horizons of huge limestone blocks (the third and fourth rock-fall horizons) where culturally sterile sediments, separating the archaeological levels, were almost exclusively composed of thin horizons of pure limestone éboulis. Despite some possible differences in condition and preservation of these two sedimentary units, neither visible natural disturbances caused by cryoturbation nor rolled gravel as evidence of water streams were identified. The presence of discrete hearth/fireplaces and/or ashy clusters in each of the four archaeological levels (H, Gd, Gc1-Gc2, Gb1-Gb2) also points to the absence of serious disturbance for these levels. At the same time, as sometimes happens, possible natural disturbance processes and their evidence could not be easily identified during excavation (e.g., see papers in Goldberg *et al.* 1993), but in such cases some influence of these processes on the condition and preservation of both archaeological/paleontological finds and limestone éboulis should be represented. Variability in traces commonly left by such natural disturbance processes are discussed separately below.

Water stream action, sometimes attaining a degree of disturbance causing erosion is usually evidenced by the presence of heavily or slightly but still recognizably rolled and/or worn surfaces for at least some flint artifacts (which are additionally always considerably patinated), animal bones and limestone éboulis. Such disturbances are known for "true caves" with karstic rejuvenation and both caves and rock-shelters with raised water levels of adjacent rivers or significant water sources as seas and

lakes. These kinds of natural processes may also affect cave and rock-shelter sediments around the drip-line zone because of water flowing from a higher plateau or directly from the overhang of a cave or rock-shelter. Karstic rejuvenation is unrelated to Siuren I since it is a true rock-shelter. The other two natural disturbance processes are theoretically possible for the Siuren I deposits and finds and should be evaluated. The condition of all limestone éboulis is "fresh and angular " in the 1920s *Lower* layer/1990s Units H and G sedimentary units, commonly accepted since the work of V.I. Gromov (1948:249-250) on the site stratigraphy. Animal bones also show good preservation with no signs of abrasion. Flint artifacts of both Middle and Upper Paleolithic types have the same surface characteristics – little or no patina and no rolled/worn features. So, erosion and/or water stream disturbance processes do not appear to be a factor affecting the archaeological layers and artifacts. This conclusion finds additional support in comparison of the 1920s *Lower* layer/1990s Units H and G *in situ* sediments with the underlying deposits. The latter, basal for the rock-shelter and archaeologically sterile, are formed of dark yellowish-brown clay with many rolled river pebbles in vertical position and heavily worn limestone éboulis identified during both the 1920s and 1990s excavations (Vekilova 1957:242). This basal sedimentary unit, about 3 meters in overall thickness, according to data from Bonch-Osmolowski's sondages, was subject to water action during flooding of the Belbek River and are highly likely connected to alluvial deposits. Therefore, during that time, this large rock-shelter was not convenient for long-term occupations or even short-term visit by Paleolithic groups.

Cryoturbation processes usually cause more mechanical damage for archaeological material, especially lithic artifacts with serious breakage of edges. It is, for instance, well-known for many Hungarian Paleolithic cave sites, among which the most famous is Szeleta Cave thoroughly discussed by Ph. Allsworth-Jones (1986:83-89, 108-111 and see also appendix "site stratigraphies"). Stratigraphic layer 4 of Szeleta Cave with the Lower archaeological find complex ("Lower Szeletian") was significantly affected by cryoturbation processes. In addition to numerous heavily worn limestone éboulis and animal bones, many lithic artifacts have significant mechanical damage from cryoturbation, evidenced by the presence of "pseudo-truncated and abrupt alternate retouch" and "pseudo-heavily denticulated" edges so typical of bifacial leafpoints. The present author was able to personally see such damaged lithic pieces from Szeleta Cave during the international conference "Les industries à pointes foliacées d'Europe centrale" at Miskolc Herman Ottó Muzeum (Hungary) in 1991 through the courtesy of Árpád Ringer to whom I am greatly indebted. By the way, lack of acceptance of cryoturbationally damaged "pseudo-heavily denticulated" bifacial leafpoints in the cave's "Lower Szeletian" caused definite misunderstanding in some interpretations of this Paleolithic complex, either in proposial of its generic links with the Shubalyuk Middle Paleolithic (e.g., Vértes 1960) or, as expressed by M.V. Anikovich (Grigorieva & Anikovich 1991), its great industrial similarity to the technologically and typologically transitional industry of Korolevo II, complex II, in the Ukrainian Transcarpathian region (Gladilin & Demidenko 1989) where, on the other hand, the presence of some bifacial leafpoints with denticulated-like edges is surely explained by their unfinished/spoiled morphology (Demidenko & Usik 1993a; 1995). Regarding the Siuren I 1920s *Lower* layer/1990s Units H and G surface preservation for limestone éboulis, animal bones and flint artifacts, not even minor cryoturbation damage is present that would evidence the action of such natural damage processes.

Thus, for hypothesis 3, which proposes the existence of a Middle Paleolithic level possibly destroyed by natural processes in the Siuren I sedimentary units to explain the presence of some Middle Paleolithic types pieces in all archaeological hearth/ashy levels with an Upper Paleolithic/Early Aurignacian of Krems-Dufour type industry, there is no support either in the stratigraphic context or in the condition and preservation of finds, and it should thus be rejected.

Hypothesis 4

Middle Paleolithic artifacts are known to occur at numerous localities throughout the Crimean Mountains region, both in in situ *position in different rock-shelters and caves and also as surface finds from destroyed open-air and rock-shelter sites or occasionally isolated artifacts found on mountain plateaus and slopes. Taking this into consideration, we cannot exclude a situation in which Middle Paleolithic flints may be present in the Siuren I Upper Paleolithic/Aurignacian lower cultural bearing sediments due to their washing in by water action from the plateau situated directly above the site. They would, therefore,, first penetrate sediments below the rock-shelter's drip-line and then be partially distributed in other inner areas of the rock-shelter.*

Acceptance or rejection of hypothesis 4 can be made with the following comments in mind.

First, such "falling" of Middle Paleolithic flints would have had to be strictly limited to the time span of the 1920s Lower layer/1990s Units H and G deposition events because no typologically convincing Middle Paleolithic artifact types have been found above these sediments. Such a restricted period for Middle Paleolithic flints "falling" into the rock-shelter seems highly unlikely.

Second, surface characteristics for Middle Paleolithic flints show that they were, at least for some time, exposed to open sunlight on the plateau; the quite possible influence of deflation processes, as well as "driving" them some distance on the plateau slope should have produced definite and easily visible features - patina, lustre, abrasion and/or abrupt breakage of edges. As we already know, however, none of these are observed on the Siuren I Middle Paleolithic artifacts.

Finally, the discovery of definite retouch flakes and a tiny chip from secondary treatment processes for Middle Paleolithic bifacial and unifacial tool types in each of the four archaeological hearth/ashy levels of 1990s Unit G (Gd, Gc1-Gc2, Gb1-Gb2) and Unit H with identical fresh condition and preservation, as the Middle Paleolithic tools themselves have, clearly refutes hypothesis 4.

Now, after discussion of the several natural processes which could have been responsible for the Middle Paleolithic cores

and tools in the 1920s Lower layer/1990s Units H and G with rejection of all of these hypotheses, we consider *human/cultural factors* which may have influenced the "mixing" of Middle and Upper Paleolithic artifacts in these deposits.

Hypothesis 5

Here we return to the old "evolutionary idea" of Bonch-Osmolowski (1934) and Vekilova (1957) in considering the Siuren I "Mousterian forms" as "survivals" of the Crimean Middle Paleolithic industries, possibly having direct links with the Siuren I Lower layer Upper Paleolithic complex. In other words, we should discuss the possibility of a local Middle-Upper Paleolithic transition in the Crimea reflected in the materials from the 1920s Lower layer/1990s Units H and G Upper Paleolithic assemblages and regional Middle Paleolithic industries where the Siuren I Middle Paleolithic component would represent evidence of such a transition.

For analysis of hypothesis 5, we summarize the main techno-typological features of both the Upper and Middle Paleolithic components in the archaeological deposits. This is necessary because for any real considerations of a "transition", we need to know the kinds of Middle and Upper Paleolithic industries that would possibly have been involved. These "industrial summaries" are rather easy to construct on the basis of the detailed techno-typological analyses of the assemblages from Units H and G and their comparison with the 1920s Lower layer assemblage.

The 1920s Lower layer/1990s Units H and G Upper Paleolithic industrial component is technologically characterized by the dominant production of bladelets and microblades from "regular" and "carinated" bladelet cores, as well as by the following typological data:- rare but typical carinated end-scrapers, a series of well-made simple flat end-scrapers mainly on unretouched blades, an absence of carinated burins and a dominance of angle and on truncation burins, among "non-geometric microliths" (more than 60% of all tools) the most represented being non-twisted rather large Dufour bladelets with alternate bilateral micro-scalar and/or micro-stepped retouch, the presence of some Krems type points including its alternately retouched variant on bladelets *sensu lato,* scaled tools, perforators and retouched blades, with only a single piece with "Aurignacian-like heavy retouch" among the latter tools. This Upper Paleolithic complex is industrially well-placed within the framework of the European Early Aurignacian of Krems-Dufour type according to our terminology, and its European analogies (Aurignacian 0/ Archaic Aurignacian/Proto-Aurignacian). At the same time, this Early Aurignacian of Krems-Dufour type complex at Siuren I is unique in Crimea.

The 1920s Lower layer/1990s Units H and G Middle Paleolithic industrial component, on the other hand, is technologically characterized by only flake production evidenced by rare (n=5) non-Levallois radial cores and tool blanks with only flake proportions and the following typological trends: a dominance among unifacial tools of different convergent points and scrapers with more than one retouched edge (semi- and sub- trapezoidal, triangular and leaf shapes) often with various dorsal and ventral additional thinning, along with the presence of simple, double and transversal scrapers and a series (7 items from all 60 tools - 11.66%) of bifacial tools with basic "plano-convex" secondary treatment ,sometimes becoming "bi-convex" only after heavy multiple rejuvenation, as is the case of a semi-leaf/triangular point with concave base from level Gc1-Gc2. The bifacial tools have the same shape types characteristic of unifacial convergent tools. The prevalence of small size dimensions (no more than 4 cm long and/or wide) for a majority of unifacial and bifacial tools is also notable. Moreover, several (n=23) distinct retouch flakes and chips from secondary treatment processes of Middle Paleolithic bifacial and unifacial tools in the Units H and G assemblages were identified. The morphology of these retouch flakes and chips are clearly evidence of "on-site" production and rejuvenation of Middle Paleolithic bifacial and unifacial tools with a strong emphasis on thinning and rejuvenation, while "on-site production" is only seen on 3 (of 23) pieces - one bifacial shaping flake (Unit H) and two partially-cortical retouch flakes (levels Gc1-Gc2 and Gb1-Gb2) and another bifacial shaping flake used as a blank for a semi-trapezoidal dorsal scraper from level Gc1-Gc2. These techno-typological data on the Siuren I Middle Paleolithic component have direct analogies in the Middle Paleolithic/Crimean Micoquian Tradition industries: the Ak-Kaya, Kiik-Koba and Starosele types (e.g., see Kolosov *et al.* 1993; Marks & Chabai 1998). Thus, the Siuren I Middle Paleolithic "transitional survival" component, based on its basic techno-typological features and unique retouch pieces from tool production and rejuvenation clearly point to "predecessors" in the Middle Paleolithic/Crimean Micoquian Tradition for a "hypothetical transition".

It is worth noting here Bonch-Osmolowski's and Vekilova's opinions on "Crimean Mousterian predecessors" for the Siuren I Lower layer Upper Paleolithic industry. Bonch-Osmolowski (1934) did not specify a particular kind of Crimean Mousterian, but described it simply as local Mousterian. Vekilova (1957:313-314) identified the Shaitan-Koba site as a possible "Mousterian predecessor" for a "transition". This choice is explained by the assumed youngest chronological and industrial position for the Shaitan-Koba Middle Paleolithic complexes in Bonch-Osmolowski's scheme of "Crimean Early Paleolithic and Mousterian unilinear evolutionary development" (1934:143-148), characterized by some primary blade reduction and more or less elongated proportions for points and scrapers. Since that time, the Shaitan-Koba assemblages have been attributed to an early stage of the Western Crimean Mousterian industry (Chabai 1998), techno-typologically characterized by non-Levallois radial and parallel, and Levallois radial reduction strategies, a moderate blade index (9-16%-20%), a complete absence of bifacial tool production traditions and a dominance among large-sized unifacial tools of scrapers (about 80% of which are of simple type) and points with elongated proportions. Obviously, neither the Siuren I Middle Paleolithic component nor the Crimean Micoquian Tradition complexes have industrial connections with the Shaitan-Koba Early Western Crimean Mousterian. At the same time, a suggestion of the possibility of the Shaitan-Koba complexes being "predecessors" for the Siuren I Upper Paleolithic/Early Aurignacian of Krems-Dufour type industrial component only would not be supported by the respective techno-typological data for the former complexes. The Shaitan-Koba assemblages lack primary bladelet flaking, its blade production was accompanied by more significant roles of

non-Levallois and Levallois radial knapping methods, as well as only single and very atypical Upper Paleolithic tool types (end-scrapers and burins) present (Kolosov 1972). Moreover, in the context of Western Crimean Mousterian development through time (Chabai 1996; Chabai & Marks 1998), its Late Stage (Kabazi II site, levels II/1A-II/6) dated after the Hengelo Interstadial of the Würm Interpleniglacial and, accordingly, chronologically penecontemporaneous with the Siuren I Upper Paleolithic/Aurignacian industry, is marked by only "very final" Middle Paleolithic characteristics: exclusive blade production (with no bladelet reduction) and secondary blade modification into simple and double scrapers and elongated points, including some with abrupt retouch (obliquely truncated blades), and the remarkable absence of simple typical end-scrapers or "non-geometric microliths". Taking all these data into consideration, the Shaitan-Koba Middle Paleolithic complexes must be excluded from our "transition analysis".

Thus, on the basis of direct analogies between the Siuren I Middle Paleolithic techno-typological component and the Crimean Micoquian Tradition industries, the latter complexes are the only candidates for a hypothetical transition towards the Siuren I Upper Paleolithic/Early Aurignacian of Krems-Dufour type industry with "Middle Paleolithic elements", taking it as a single integral find complex. It is now necessary to define Upper Paleolithic techno-typological elements, and especially specific elements in the Siuren I 1920s Lower layer/1990s Units H and G assemblages, Early Aurignacian of Krems-Dufour type or, at least, some definite trends toward their possible "future appearance" in the Middle Paleolithic/Crimean Micoquian Tradition industries.

None of these Middle Paleolithic industries (Ak-Kaya, Kiik-Koba and Starosele types) contain any such Upper Paleolithic/Aurignacian elements. Technologically, they are neither characterized by bladelet primary flaking (including the absence of Aurignacian bladelet "carinated" cores) nor even blade production that usually has a minor representation among debitage pieces and tool blanks (basically less than 10%) with strong flake production using non-Levallois radial and parallel reduction methods. Typologically, Upper Paleolithic tool types (end-scrapers, burins, perforators) may occur in these industries, but are atypical both quantitatively (always less than 5% of all tools) and morphologically (no specifically Aurignacian types and only simple, mainly atypical, forms which may not necessarily be classifiable as Upper Paleolithic). All in all, the Middle Paleolithic/Crimean Micoquian Tradition industries appear to be "quite conservatively" Middle Paleolithic and even if we imagined a sort of "industrial explosion" toward Upper Paleolithic development, the starting elements for the "origin" of true Upper Paleolithic/Aurignacian techno-typological features are completely absent.

So, on the basis of flint treatment methods, the 1920s Lower layer/1990s Units H and G Upper Paleolithic/Early Aurignacian of Krems-Dufour type industrial component has no hypothetical or even highly imaginable links with the Middle Paleolithic/Crimean Micoquian Tradition industries which, therefore, cannot no longer be considered as "predecessors" in the "transitional problem" under discussion.

Moreover, such a transition from the Middle Paleolithic/Crimean Micoquian Tradition industries to the Siuren I Upper Paleolithic/Early Aurignacian of Krems-Dufour type industry complex would be additionally complicated by the very different human remains associated with these complexes. Found by Bonch-Osmolowski in 1926 in the Siuren I Lower layer, a human molar with modern morphological features, along with a common attribution to modern *Homo sapiens* as the only population associated with the European Aurignacian, supports modern *Homo sapiens* as the makers of the Siuren I Upper Paleolithic/Early Aurignacian of Krems-Dufour type industry complex. On the other hand, findings by Bonch-Osmolowski and Kolosov of definite Neanderthal remains at sites with the Ak-Kaya industry: Zaskalnaya-V and VI, Prolom-II and the type-site of the Kiik-Koba industry - Kiik-Koba Cave, upper layer (Bonch-Osmolowski 1940; Gladilin 1979; Yakimov & Kharitonov 1979; Danilova 1979a, 1979b; 1983; Kolosov *et al.* 1993; Smirnov 1991) surely allow us to consider Neanderthals as responsible for the Middle Paleolithic/Crimean Micoquian Tradition industries. Keeping in mind such paleoanthropological differences, we would be additionally forced to accept the highly unlikely hypothesis that the transition also included local transformation from Neanderthals to modern humans over a very short time period around ca. 30,000 years BP.

We consider that the physical anthropology data figuratively serve as a "final nail in the coffin" for the question of a local Middle-Upper Paleolithic transition.

Hypothesis 6

The occurrence of Middle Paleolithic artifacts in the Siuren I archaeological sequence may be explained by either collecting by Upper Paleolithic/Aurignacian Homo Sapiens groups of such unusual lithic pieces on open surfaces of Crimean Middle Paleolithic sites and/or were directly received through exchanges with Crimean Middle Paleolithic Neanderthals. These suggestions principally repeat the arguments of M. Oliva (1981:12-13, 1984:210) on the "intrusive presence" of "Szeletian typological elements" (scrapers and bifacial leafpoints) in Moravian Bohunician sites (but contra see, for example, Svoboda 1988:171, 1990:202; Allsworth-Jones 1986:143-144, 1990:185-187). These possible explanations are also partially in accordance with the proposal by Anikovich (1992:225) for Siuren I: "... ties between local "Mousterians" and, probably, intruders, who brought with them developed Upper Paleolithic cultural traditions" that we already called in the beginning of this Chapter as a "reverse acculturation model".

First, during analysis of hypothesis 6, we have to keep in mind that such cultural explanations are only possible if we fully accept the basic contemporaneity of Middle Paleolithic/Crimean Micoquian Tradition Neanderthals and Siuren I Upper Paleolithic/Early Aurignacian of Krems-Dufour type *Homo sapiens* in the Crimea around 30000 years BP. Two AMS dates recently obtained for the Kiik-Koba industry at Buran-Kaya, layer B (28,840 ± 460 BP, OxA-6673; 28,520 ± 460 BP., OxA-6674) (Pettitt 1998:331) seem to support this assumption with quite firm arguments. Without such contemporanety, there is no sense in discussing hypothesis 6.

The collection of "strange-looking" lithic artifacts which were absolutely unknown or, at least, not typical of the reduction

strategies of the modern human "collectors" is, of course, possible to imagine. But all such cases known by the author for Paleolithic archaeology (unfortunately very rarely published) do not show subsequent use and rejuvenation of these unusual items exactly in the same manner as did the original makers of these artifacts. Having retouch flakes from Middle Paleolithic tools (as well as from thinning and rejuvenation) in the 1990s Units H and G, we are driven to the definite conclusion that some interactions existed between Middle and Upper Paleolithic human groups, whether we accept "a collecting possibility" or not. This is especially evident because of identical morphology and reduction techniques observed for tools from the Siuren I Middle Paleolithic and the Middle Paleolithic/Crimean Micoquian Traditions.

Thus, positive resolution of hypothesis 6 is possible only with the general acceptance of the contemporanety of Upper Paleolithic modern *Homo sapiens* and Middle Paleolithic Neanderthals in the Crimea and, moreover, actual interactions between them. This would place the problem under discussion within theoretical questions regarding the Middle-Upper Paleolithic transition that are basically beyond the framework of concrete considerations. In other words, we must put forward the following question: Is it possible to consider interactions between Crimean Neanderthals and modern humans in which modern humans borrowed reduction and tool production techniques from Neanderthals, incorporating them into their own technological tradition? At the same time, this question must be addressed with scientific data that supports or refutes such interaction.

We start with facts that could point out towards acceptance of hypothesis 6. The present author was initially inclined to believe that the homogeneity of the 1920s Lower layer/1990s Units H and G assemblages during the 1990s excavations was the result of some kind of interaction between human groups (supposedly so different) of local Middle Paleolithic and "foreign" Upper Paleolithic complexes, elaborating Anikovich's interpretation but for a much earlier time span (ca. 30,000 years BP) than he had assumed. Therefore, all "positive arguments" were thoroughly gathered.

The presence of not only typologically clear Middle Paleolithic tool types indistinguishable from the Crimean Micoquian Tradition in each of the four archaeological hearth/ashy levels of Unit G (Gd, Gc1-Gc2, Gb1-Gb2) and Unit H, with the additional discovery of retouch flakes and chips from secondary treatment processes ("on-site" production and especially rejuvenation of Middle Paleolithic bifacial and unifacial tools) again in each of these four archaeological levels, are compelling arguments. This is further strengthened by the same fresh condition and preservation characteristics of both Middle and Upper Paleolithic cores and tools in these levels. Also, in terms of spatial distribution of Middle and Upper Paleolithic pieces throughout the 12 sq. meter zone in the 1990s, there are no differences and no separation of these groups.

One more "positive argument" concerns the flint types used in the Siuren I complexes. Vekilova recognized a certain importance of colored flint in the Siuren I Lower layer industry - about 20% of all tools, remarkably noting its application for only Upper Paleolithic tool production and surprisingly no mention of its use for Middle Paleolithic tool production (1957:258-270). Therefore, one could assume use of this colored flint (the source still unknown, but likely distant from the site) only for Upper Paleolithic/Aurignacian reduction along with gray flints at Siuren I, while the Middle Paleolithic industrial component would be characterized by the use of gray flints alone. It is also important to remember that none of the Crimean Middle Paleolithic industries (not only sites and industries of the Crimean Micoquian Tradition) is known for the use of such colored flints, but this suggestion is not supported by the data from the 1990s excavations. The following definite Middle Paleolithic artifacts are identified on colored flint: a transversal wavy dorsal scraper with additional ventral basal thinning and bipolar dorsal thinning of both lateral edges in Unit H (fig.4:5 on p. 130), a semi-trapezoidal ("déjeté") ventral scraper (fig.6:8 on p. 199), a retouch flake in level Gc1-Gc2 and a retouch flake in level Gb1-Gb2. Special study of the use of different flint types on 27 Middle Paleolithic tool types from the 1920s excavations conserved at the Department of Archaeology at the St.-Petersburg Kunstkamera Museum was undertaken by the present author in November 1999. Despite the clear prevalence of gray flints (25 tools), two unifacial scrapers were identified on colored flints - sq. 12-B/horizon 4 and sq. 11-Г/horizon 3. So, exploitation of both colored flints imported from a long distance and less distant gray flints (from outcrops of no more than 7-10 km in straight distance) is characteristic for both Middle and Upper Paleolithic industrial components of the 1920s Lower layer and the 1990s Units H and G assemblages, once more strengthening support for hypothesis 6.

Now, however, let us turn to possible facts and thoughts which would contradict hypothesis 6.

These first concern technology. Indeed, there are strong technological differences. The Upper Paleolithic/Early Aurignacian of Krems-Dufour type industry is based on the production of blades and especially bladelet *sensu lato* and tools made on blades and bladelets *sensu lato* obtained from cores, as well as blanks produced from mainly carinated end-scrapers which served as cores. The Middle Paleolithic/Crimean Micoquian Tradition is directed towards the primary production of flakes from non-Levallois radial and parallel cores, with Middle Paleolithic points and scrapers made on such flake blanks, as well as the use of flat flint nodules and plaquettes for bifacial tool production in "plano-convex manner".

These distinct differences, as well as the absence of any Upper Paleolithic/Aurignacian techno-typological features in the Middle Paleolithic/Crimean Micoquian Tradition industries have been already discussed with respect to hypothesis 5 and point towards the following interpretation. For *Homo sapiens* groups of the Siuren I Upper Paleolithic/Early Aurignacian of Krems-Dufour type industry, incorporation of the Neanderthal Middle Paleolithic/Crimean Micoquian Tradition rduction techniques, particular thinning, rejuvenation and use traditions into their own system would mean either some obvious reorganization of the system or just a simple repeating and "echoing" of the Middle Paleolithic tool types. The first possibility of a

"reorganization of the Upper Paleolithic/Aurignacian system" is not at all reflected in the Siuren I assemblages. As will be shown later in the present volume, the Siuren I Aurignacian component perfectly fits into the European Early Aurignacian of Krems-Dufour type industry which is not characterized at all by Middle Paleolithic techno-typological elements, if we exclude typological misiterpretations of "retouched flakes", and, at the same time, having the same general and particular techno-typological Upper Paleolithic core, debitage and tool categories, sub-categories and types and morphological characteristics. Thus, the existence in these Siuren I assemblages of two separate but integral Upper and Middle Paleolithic components with, at least, 90% dominance of the former should be called into question. Then, if we continued to accept the integral part of the Middle Paleolithic pieces within the Siuren I Upper Paleolithic, we are forced to consider the often claimed "imitation explanation " as part of an "acculturation model". For Siuren I, this would be a very unusual suggestion because traditionally such an explanation is used to interpret the appearance of some distinct Upper Paleolithic features (e.g., blade technology, bone/antler tools and especially personal ornaments) in the European Chatelperronian, Szeletian and Uluzzian industries associated with Neanderthals (whether actually discovered in association or simply assumed) under the influence ("acculturation") of Aurignacian *Homo sapiens* newcomers (e.g., Mellars 1989). Although this and other aspects of the "acculturation model" is remain at the level of claims and speculations for understanding the processes of the Middle-Upper Paleolithic transition in Europe (see, for instance, D'Errico *et al.* 1998 with comments and reply; Zilhao & d'Errico 1999), we repeat that one-way cultural influence is generally assumed for European Neanderthals from Aurignacian *Homo sapiens* for development of their technology and "lifestyle" towards Upper Paleolithic "modern" forms. On the other hand, with the Crimean Siuren I problem, there would again be one-way cultural influence, but in the opposite direction - Aurignacian *Homo sapiens* would have undergone a process of introducing Middle Paleolithic techniques into their own system as an integral and unmodified part from Crimean Micoquian Tradition Neanderthals. If we were to further continue to play with the "imitation explanation of acculturation model", we must accept "reverse acculturation" for the Siuren I Aurignacian *Homo sapiens* (why not?), who, from their side, left no archaeologically visible evidence of their interactions with local Neanderthals in the Crimean Micoquian Tradition industries.

Such a situation at Siuren I, with the necessity of accepting the "imitation explanation" and even a "reverse acculturation model" is surely unknown for the European Early Upper Paleolithic and, therefore, should be viewed, if at all, very cautiously and, from our point of view, seems not very likely to have occurred in the Crimea.

So, hypotheses 5 and 6 regarding *human/cultural factors* do not provide us with convincing data and interpretations to explain the presence of a Middle Paleolithic component in the 1920s Lower layer/1990s Units H and G, either, although hypothesis 6 will be probably supported by some of our "more daring colleagues" for further speculation on the question. From our point of view and based on the available data, there is only hypothesis left for consideration, consisting of a combination of both *human/cultural* and *natural factors*.

Hypothesis 7

*Instead of viewing of the Siuren I cultural remains as left by human (*Homo sapiens*) groups with the same technological traditions - Early Aurignacian of Krems-Dufour type industry with some Middle Paleolithic elements, we assume several alternative visits to the Siuren I rock-shelter by both the Upper Paleolithic/Early Aurignacian of Krems-Dufour type* Homo sapiens *and the Middle Paleolithic/Crimean Micoquian Tradition Neanderthals, where visits by modern humans were much more intensive and prolonged than those of the Neanderthals. Accordingly, during a short time span of a couple of thousand years around 30000 BP for these visits, sedimentation processes and their rates were not rapid enough for the composition of distinct Middle and Upper Paleolithic levels intercalated within the stratigraphic sequence, creating instead a sequence of Upper Paleolithic levels with some Middle Paleolithic artifacts present in each.*

We now analyze possible data that would support hypothesis 7.

First, some data on intensity, duration and nature of both the Middle and the Upper Paleolithic occupations will be summarized.

Occupations

The 1920s Lower layer/1990s Units H and G Middle Paleolithic/Crimean Micoquian Tradition component is composed of only definitively identified 5 cores, 60 tools and 22 retouch flakes and chips, while all possible Middle Paleolithic debitage pieces based on morphological features are impossible to separate exactly from the abundant unretouched flints in these units. Of course, taking into account the correlation of Middle Paleolithic tool types (20 pieces) to retouch products (23 pieces) from the 1990s excavations, we may assume the presence of about 40 more retouch flakes and chips from Middle Paleolithic tool production processes in the Lower layer assemblage, which were not identified by any of the specialists who either excavated the site (G.A. Bonch-Osmolowski) or studied the flint assemblages (e.g., E.A. Vekilova, J. Hahn, M.V. Anikovich). Actually, retouch products from rejuvenation processes of Middle Paleolithic tools are indeed present in the 1920s Lower layer assemblage. This was determined by the present author in November 1999 during observation of some of the debitage and waste product artifacts recovered in 1927 and conserved at the Department of Archaeology in the St.-Petersburg Kunstkamera Museum. During these brief studies, two bifacial thinning flakes (sq. 12-Г/horizon 4 (fireplace) and sq. 12-Ж/horizon 2) and three small resharpening chips of unifacial convergent (asymmetrical) tool tips (2 items from sq. 12-E with no indication of a particular horizon and one item from sq. 11-Г/horizon 4) were identified. Thus, the Middle Paleolithic industrial component would be composed of 5 cores, 60 tools and perhaps about 60 retouch flakes and chips that totals, at best, no more than 130 artifacts. Although unidentified/unidentifiable debitage pieces would certainly increase the sample, we do not think it would do so significantly because of the rarity of cores, the absence of easily morphologically recognizable unretouched flakes and the

abundance of tool retouch by-products. Taking all of this into consideration, we consider that the total possible number of Middle Paleolithic artifacts would be no more than 200 pieces. For the areas excavated during the 1920s and the 1990s, about 100 sq. m total, this yields on average 2 artifacts per square meter; the 1990s sample taken alone contains 43 pieces (but no supposed debitage included) for 12 sq. m, or 3.6 artifacts per square meter. Keeping in mind the latter ratio, even the unlikely doubling of the average for both excavation campaigns give us only about 4 artifacts per square meter. It should also be recalled that this estimated artifact density is not the result of a single human occupation event, but actually corresponds to several (at least four) occupations based on the number of archaeological hearth/ashy levels of the 1920s Lower layer/1990s Units H and G where the Middle Paleolithic flints were found: the Siuren I occupations by the Middle Paleolithic/Crimean Micoquian Tradition Neanderthals. Thus, the assumed number of Middle Paleolithic pieces for each occupational episode was very limited, from nearly single examples to no more than 100 pieces in all artifact categories, excluding debris. This obvious rarity of Middle Paleolithic artifacts, where tools account for about 30% and about 30% more by retouch flakes and chips from secondary treatment processes of tools (these percentages are given with only the supposed (!) debitage unretouched items), allows us to suggest very special characteristics for Middle Paleolithic occupations by Neanderthals at Siuren I in the 1920s Lower layer/1990s Units H and G. Considering as well both core rarity (5 cores versus 60 tools - correlation 1 to 12) and the presence of retouch flakes and chips from mainly on-site tool thinning and rejuvenation processes and very few signs of on-site tool production, we can express some definite thoughts on these occupation events.

The Middle Paleolithic tools were mainly brought into the rock-shelter as finished products and their subsequent use was accompanied by quite intensive thinning and rejuvenation. The limitation of technological activity to these specific aspects was due to the long distance to flint sources and by the poor raw material base limiting primary core reduction and tool production at the site. The presence of only a few cores and retouch flakes from initial shaping of tools, as well as the location of the nearest outcrops with good quality flints about 7-10 km in straight direction from the rock-shelter certainly support this. Thus, flint treatment processes were very limited and restricted even for the assumed most representative Middle Paleolithic occupations at the rock-shelter, without mentioning the entire Siuren I Middle Paleolithic component. These subjective factors (Demidenko 1996) explain the common industrial features of the Siuren I Middle Paleolithic component as corresponding to formal techno-typological criteria of Kiik-Koba type in the Crimean Micoquian Tradition industries. Moreover, these activities are not related to the rock-shelter's all excavated areas being completely absent for its central inner part (the 1879-1888 excavations of K.S. Merejkowski) that makes the Neanderthals occupations once more restricted in terms of the rock-shelter's space use, too. All in all, the Siuren I Middle Paleolithic/Crimean Micoquian Tradition Neanderthals occupation episodes were of very short duration with the only aspect of intensive activity focused on multiple thinning and rejuvenation of tool leading to the appearance of numerous and different bifacial and unifacial convergent tool forms with more than one edge retouched that at the same time points to the special character of frequent ephemeral visits here.

The 1920s Lower layer/1990s Units H and G Upper Paleolithic/Early Aurignacian of Krems-Dufour type industrial component is very different in all aspects of occupation characteristics from the site's Middle Paleolithic component. These differences are discussed below.

The Upper Paleolithic component contains a much more abundant lithic assemblage with about 15500 flints in the 1920s Lower layer and almost 5000 flints in the 1990s Units H and G from about 100 excavated square meters, on average about 200 items per sq. m. This is about 50 times more than the estimated (and without identified retouch flakes and chips and debitage pieces from the 1920s Lower layer) artifact density of 4 items per 1 sq. m on average for the Middle Paleolithic component. On the other hand, for both industrial components, we have fairly precise data on only three artifact categories (core-like pieces, tools and waste from tool production and rejuvenation) and another, possibly more objective, estimation of artifact density can be done for only these artifacts. In this case, the Middle Paleolithic component is composed of only 87 items for about 100 sq. meters - less than 1 piece per sq. m, while the Upper Paleolithic component is composed of no less than 1300 items for the same area - more than 13 pieces per sq. m. So, artifact density, as well as other possible comparative estimations definitely show that average artifact density is more than 10 times higher for the Upper Paleolithic occupations in comparison to that for the Middle Paleolithic occupations.

At the same time, the presence of all artifact categories in the Upper Paleolithic collections from Units H and G clearly evidences strong "on-site" activities that included primary and secondary flint treatment processes at Siuren I, where possibly only some but not many finished tools were brought to the rock-shelter.

Next, the majority of hearths, fireplaces and/or ashy clusters in four archaeological levels of the 1920s Lower layer/1990s Units H and G are more likely connected with *Homo sapiens* Upper Paleolithic occupations. This inference of association with the Upper Paleolithic find complexes is explained through the presence of such features in more or less long-term and intensive short-term occupations with rather abundant artifacts, and rarely in ephemeral Middle and Upper Paleolithic sites with small assemblages, which is in complete correspondance with all data on the find complexes of Early Aurignacian of Krems-Dufour industry at Siuren I.

Finally, let us also recall the distribution of these Upper Paleolithic archaeological levels in the central inner part rock-shelter more than 60 sq. meters in total area and 1137 flint artifacts where 131 items are composed of core-like pieces, tools and burin spalls excavated by Merejkowski in 1879-1888. With the previously described data, this "spatial fact" additionally points out that *Homo sapiens* groups at the time of these occupations probably used the entire space of the rock-shelter for living and activity needs.

The totality of these data allows us to make the following basic conclusions on the Upper Paleolithic *Homo sapiens* occupations at Siuren I in the 1920s Lower layer/1990s Units H and G, as well as probably the lower layer of the late 19th century excavations. The presence of about 200 flints per sq. m for the combined sample of the 1920s and 1990s excavations and more than 400 flints for the separate sample of the 1990s excavations, the occurrence of all artifact categories numerically well-represented in this component, the discovery of distinct hearths, fireplaces and/or ashy clusters and the distribution of the material across the entire investigated areas of about 160 sq. m testify to the clear dominance of "on-site" flint treatment processes carried out during frequent visits by *Homo sapiens* to the rock-shelter and to characteristic "intensive short-term camp" features, especially with intensive bladelet *sensu lato* production, retouching and probable use.

Thus, the differences between the Middle and the Upper Paleolithic components, interpreted as evidence of alternating frequent occupations at Siuren I by anthropologically different human groups, point out that the much more intensive and, highly likely, longer duration occupation by modern *Homo sapiens* of the entire area of the rock-shelter, with more than 20000 lithic artifacts in four stratigraphically distinct archaeological levels, could actually "envelop" no more than 200 lithic pieces of very ephemeral Neanderthal occupations noted in only some areas of the rock-shelter.

Sedimentation rates

These supposed processes of "absorption" of Middle Paleolithic artifacts by Upper Paleolithic levels also need to be confirmed by consideration of sedimentation rates in the Siuren I stratigraphy. From a general geological point of view (e.g., Gromov 1948; Ivanova 1969, 1983), very rapid sedimentation processes at the rock-shelter had always been proposed. The main agencies for the site's depositional components were angular limestone éboulis and products of their dissolution of cryoclastic origin - from intensive weathering and exfoliation of the limestone bedrock that, nevertheless, do not alone enable estimation of sedimentation rates. It is only possible to express some thoughts on this matter with comparisons to other Crimean sites. In light of this, we should not forget about Kabazi II, a Middle Paleolithic open-air site, the only Crimean Paleolithic site for which a geological attempt was undertaken to estimate sedimentation rates (Ferring 1998). There were three main depositional processes at the site: weathering and exfoliation of huge limestone slabs and boulders, colluvial and pedogenesis processes. So, for Kabazi II Unit II with 14 occupational surfaces (Chabai 1998:181-182), "*a sedimentation rate for the 3.3 m of deposits of 0.08 cm/year*" (Ferring 1998:177) is assumed, very rapid deposition indeed. For Siuren I, it is worth recalling that colluvial and pedogenesis processes, so active at Kabazi II, play little or no role. The sedimentation rate at Siuren I could thus not be as rapid as at Kabazi II. Even acceptance of the Kabazi II sedimentation rate for the Siuren I deposits, about 1 m thick (excluding the thickness of the huge limestone block between Units H and G) does not contradict the proposed ideas of hypothesis 7. Simple calculations show that 1920s Lower layer/1990s Units H and G sequence "was constructed" over a period of about 1000-2000 years ca. 30000 years BP, based on AMS dates for the site. In this case, on one hand, the sedimentation rate was not rapid enough to create stratigraphically separate intercalated Middle and Upper Paleolithic archaeological levels, but, on the other hand, was quick enough for the composition of at least four distinct archaeological Upper Paleolithic levels that "enveloped" rare Middle Paleolithic finds. At the same time, if the sedimentation rate was really slow, we would most likely see only a single rather thick Upper Paleolithic layer with some Middle Paleolithic artifacts in it, which is not the case at Siuren I.

Combining the data on the specific characteristics of Middle and Upper Paleolithic human occupations at Siuren I and the probable sedimentation rate for the deposition sequence, hypothesis 7 seems to offer the best explanation. Indeed, at present, of the seven hypotheses discussed, only the last one, suggesting several alternating visits of Siuren I by both Upper Paleolithic *Homo sapiens* and Middle Paleolithic Neanderthals around ca. 30000 years BP to explain the discovery of Middle Paleolithic artifacts within the Upper Paleolithic archaeological levels seems to be the most probable on the basis of data from the site and modern theoretical points of view on the Middle-Upper Paleolithic transition.

Here we admit that alternative visits by two human groups with different technological traditions leading to the appearance of one or even several archaeological levels with different techno-typological components due to unique aspects of sedimentation processes at Paleolithic sites is rather unusual and/or very rarely used in analyses of Paleolithic sites to explain assemblage variability. Nevertheless, such cases are noted as being theoretically possible in site formation processes and probable "industrial mixing" at Paleolithic sites. For instance, Rigaud and Simek in their thought-provoking article noted that "*... at the present time we cannot be sure that the assemblages available for analysis correspond to individual occupation events. In fact, we can probably assume the opposite. ... In sites where deposition is slow, it is very probable that many brief occupations, perhaps seasonal or annual, would appear as a single unit*" (1987:54). Moreover, there are also several very convincing analyses of some Paleolithic sites showing near simultaneous occupations of a site by human groups with different technological traditions.

One such case for the Ukrainian Paleolithic is worth discussing here. The single-layer open-air Late Mesolithic site (Boreal period, about 6000 years BC) of Mirnoe in the northwestern Black Sea region was investigated in 1969-1976 by V.N. Stanko (1982). Eight concentrations with flint and bone artifacts and faunal remains were identified in a 700 sq. m zone among the site's other areas where altogether 1807 sq. meters were excavated. Techno-typological analysis of the materials undertaken separately for each concentration by Stanko revealed a unique view of the industry. Concentration "N 1" (29 sq. meters) was characterized by the exclusive presence of "Kukrek culture" type pieces: "pencil-shaped" cores, an abundance of bladelets and microblades among the debitage, "Kukrek armatures", backed bladelets and microblades with some points, bone slotted points. Three other concentrations - "N 2" (25 sq. m), "N 12" (21 sq. m) and "N 13" (28 sq. m) - contained only "Grebeniki culture" type pieces: prismatic and non-volumetric flat cores, a dominance

of flakes in debitage, geometric trapezes. The remaining four concentrations - "N 3-8" (294 sq. m), "N 9-11" (140 sq. m), "N 14-16" (93 sq. me) and "N 17-18" (66 sq. m) were considered to be a "mixed" occurrence of artifacts from both "Kukrek and Grebeniki cultures", although for each of the latter four concentrations some distinct "pure microconcentrations" with either "Kukrek" or "Grebeniki" finds were also noted (Stanko 1982:60-81) . The various spatial distributions of the two Late Mesolithic "cultures" in the same archaeological layer of the Mirnoe site was interpreted by Stanko as a kind of co-existence and interaction of two different human groups at the settlement (1982:79-81, 116). On the other hand, we could instead propose alternating visits of "Kukrek and Grebeniki cultures" human groups to the Mirnoe site where the four "pure concentrations" with areas of 21-29 sq. meters could represent "culturally" distinct individual occupation events, while the four "mixed concentrations" with sizes of 66-294 sq. meters are probably traces of several individual occupation events by each of these "cultures", but in the same areas with a very short time period between occupations making spatial separation of the "Kukrek and Grebeniki cultural complexes" occupations impossible, although the presence of "pure microconcentrations" within each of these four "mixed concentrations" is notable. Here it would not be hard to imagine either a situation in which artifacts were of much greater density at the Mirnoe site if the separate "culturally" distinct concentrations were considered a single concentration, or if Stanko had analyzed the entire site as a single assemblage, the Mirnoe Late Mesolithic industry would definitely have "heterogeneous features" and interpretation of the technological tradition would remain very speculative, even to the point of suggesting "synchretic" industrial amalgamations. Nevertheless, our proposal to explain the Mirnoe Late Mesolithic Kukrek and Grebeniki cultures by "alternating visits" to the large open-air site area (about 700 sq. meters) of the Early Holocene deposits can also be applied to the co-existence of Middle and Upper Paleolithic materials at Siuren I in a much more limited area of the rock-shelter (about 100 sq. meters) of the Upper Pleistocene sediments. This strengthens our "alternating visits" hypothesis for Siuren I, which also has a "pure concentration" (about 60 sq. meters) with only Upper Paleolithic/Early Aurignacian of Krems-Dufour type industry from Merejkowski's 19th century excavations.

Moreover, further application of the "alternating visits" hypothesis to other Crimean Paleolithic rock-shelter sites (namely, Final Paleolithic ones) would allow us to avoid creating several new discrete cultures of synchretic character for the Crimean Final Paleolithic, as was absolutely unconvincingly proposed by V.Yu. Cohen (Bibikov *et al.* 1994; Cohen 1996; Cohen & Gorelik 1998). For example, the co-occurrence of "Swiderian" and "Shan-Koba" industrial components leads Cohen to propose a "Siuren II Final Paleolithic culture", as well as the discovery of "Epi-Tardigravettian" ("Shan-Koba Mesolithic culture", according to Yanevich [1993]) and "Shan-Koba" industrial components in mixed position are interpreted by Cohen as "Shan-Koba, layer 4 Final Paleolithic culture". As it seems now, application and development of the "alternating visits" hypothesis to these questions may lead to a much more realistic and clearer picture of the distribution and development of Crimean Final Paleolithic industries through time.

Concluding remarks

Discussions of the problem of the co-occurrence of Middle and Upper Paleolithic artifacts at Siuren I and the analysis of several alternative hypotheses have led us to the following conclusions.

There is no separate archaeological horizon with exclusively Middle Paleolithic finds at Siuren I (*hypothesis 1*).

All possible natural, post-disturbance processes and other means for the integration of Middle Paleolithic artifacts in Upper Paleolithic archaeological levels (*hypotheses 3-4*) should be unambiguously rejected.

The evolutionary idea of development of the Siuren I Upper Paleolithic/Early Aurignacian of Krems-Dufour type industry with some "Middle Paleolithic survival elements" from the local Middle Paleolithic/Crimean Micoquian Tradition industries (*hypothesis 5*) is also not appropriate, because the techno-typological industrial features and physical anthropology data (Neanderthals vs. *Homo sapiens*) are too different for any possible transitional processes at ca. 30000 years BP to have taken place in these archaeological complexes.

Possible contacts and interactions between the Upper Paleolithic *Homo sapiens* and the local Middle Paleolithic Neanderthals (*hypothesis 6*) do not seem to be very likely because in this case we would have to accept a "reverse acculturation model" where only "archaic" human groups introduced techno-typological elements into the technological tradition of "modern" human groups, which were accepted and used with no changes by *Homo sapiens*, while Neanderthals, at the same time, did not incorporate any Upper Paleolithic/Aurignacian elements in their tradition.

At present, the only possible explanation, in our opinion, involves "alternating visits" of Siuren I at ca. 30000 years BP by both Middle Paleolithic Neanderthals (frequent very ephemeral occupations) and Upper Paleolithic *Homo sapiens* (frequent occupations with "intensive short-term camps"). Given the sedimentation processes and rates, Upper Paleolithic levels "absorbed" the rare Middle Paleolithic artifacts (*hypothesis 7*), creating an archaeological sequence with only Upper Paleolithic levels containing some Middle Paleolithic pieces, instead of actual interstratification of Middle and Upper Paleolithic levels.

Finally, in light of the "Siuren I Middle Paleolithic problem" and the proposed explanation, further elaboration of the "alternating visits" hypothesis for analyses of Paleolithic sites and their assemblages would be quite fruitful and useful. It is especially worth consideration for assemblages with "heterogeneous industrial features", as already pointed for the Crimean Final Paleolithic industries, which should not be regarded as "discrete cultures with synchretic characteristics" without thorough discussion of potential explanations, among which the "alternating visits" hypothesis would certainly play a crucial role.