Valery Manko

Kobuleti: Flint and Obsidian Complexes of Layers 3 and 4

Introduction

The Kobuleti site is located on the territory of the village of Kobuleti in Adjara (Georgia), on a cape on the right bank of the Kintrishi River (Fig. 1). The cape, surrounded by two riverbeds, occupies an area of about 50x50 m and rises 16-25 m above the river level. The cape is situated at an elevation of 60 m. The cape is composed of basalt rocks, and only its upper part is associated with sediments of the palaeo-soil layer. Geographically, the site is located on the Colchis plain, which occupies part of the coastal area. The Kintrishi River flows along the southern part of the plain, bordering the foothills. Today, the Colchis Plain is a subtropical climate zone, but this does not mean that the climate was the same at the beginning of the Holocene when the site was abandoned. At the beginning of the Holocene, the climate of Western Georgia was relatively temperate, and coniferous trees, including fir, spruce, and pine, were widespread. The inhabitants of the site had therefore chosen a strategically favorable place for settlement, only 15 km from the coast, on the banks of a river flowing into the Black Sea, at the boundary of two landscape zones – the valley and the foothills.

Fig. 1.

The history of the study of the Kintrishi Gorge Stone Age began in the 1960s. The first publication appeared in 1964, when the Kobuleti and Khutsubani sites were discovered.[1] The Kobuleti site was investigated by S. Gogitidze between 1977 and 1986.[2] However, his excavations reflected the methodological standards of the time, and he was unable to distinguish separate stratigraphic layers, treating the entire complex as homogeneous – a significant oversight.

Stratified complexes began to emerge when excavations resumed in 2019.[3] The site's materials were found to correspond to at least five layers (0–4), dated between the Final Pleistocene and the onset of the Middle Holocene. Layers 3 and 4, identified in 2023, represent the earliest settlement phase of the site, associated with the Final Pleistocene (Table 1.1). This made it possible, for the first time, to define the earliest stage of the development of the Kobuletian culture.

Despite the similarity of all the identified archaeological layers, the earliest complexes of the site are characterised by a relative paucity of tool types and contain stone tools that are either absent or extremely rare in the Holocene complexes.

The discovery of traces of stone architecture associated with layer 4 of the Kobuleti site came as a great surprise. Before 2023, only above-ground sunken structures associated with pillar pits were found. The change in building traditions at the Pleistocene-Holocene transition was probably a sign of the adaptation of the Kobuleti population to climate change.

Research Methods

The analysis of stone artefacts was conducted using the formal-typological method, with particular emphasis placed on the examination of stone knapping techniques. The studies of P. J. Wilke and J. Pelegrin were consulted for this purpose.[4] The typology employed for analyzing the tools aligns with the framework established by F. Hole and colleagues.[5] This choice of typology is motivated by the geographical proximity of Kobuleti to the Middle East, where M'lefaatian culture sites were present, as well as the cultural affinities between Kobuletian and M'leffaatian cultures.

However, it is important to note that alternative terminology is necessary when describing Kobuletian tools. Hence, the term "burinated pieces" was used in our analysis.[6]

---

[1] Berdzenishvili, Nebieridze, *Stone Age sites.*

[2] Gogitidze, *The Neolithic culture;* Gogitidze, *The Archaeological Sites*.

[3] Chkhatarashvili, Manko, *Kobuleti site: the evidence*, pp. 28-35; Chkhatarashvili (et al.), *South-East Black Sea Coast*, pp. 213-230.

[4] Wilke, *Bullet-Shaped Microblade Cores*, pp. 289-310; Pelegrin, *New Experimental Observations*.

[5] Hole (et al.), *Prehistory and human ecology*; Hole, *Studies in the archeological history*; Hole, *The Jarmo Chipped Stone*, pp. 233-284.

[6] Nishiaki, *Lithic technology of Neolithic Syria*; Nishiaki, *Neolithic flaked stone assemblages from Göytepe,* pp. 169-190.

The stratigraphic method was used to determine the chronological position of the complex. It was found that the complex of Layer 3 is older than the pillar pits of the dwelling in the eastern part of the excavation area and object 40 in the south-eastern part of the excavation area (Table 1). Considering that the above-mentioned objects were dated to the very beginning of the Preboreal, we can assume that layer 3 could be of Final Pleistocene age. Accordingly, Layer 4, which overlapped Layer 3, is even older.

Statistical methods of analysis can only be applied to layer 3 materials. Unfortunately, the materials of layer 4 are very few and the statistical method is not applicable to their analysis.

The comparison of the materials of the earliest complexes of Kobuleti with the complexes of other archaeological cultures is based on the typological method and on the assessment of the diachronic development of the compared cultures.

Materials of Complexes of Layers 3, 4 and Pit 53

The Complexes' Planography and Stratigraphy

Approximately 100 square meters of the site were investigated in 2019-2023. Layer 3 was preserved over an area of approximately 20 square meters in the western part of the excavation area (Fig. 2). Much of layer 3 was destroyed by features of layer 2, including a ground dwelling in the eastern part of the excavation area and pits associated with layers 2, 1 and 0. The top of layer 3 is marked by the entry levels of the deepened features of layer 2. This is the level of the entrance to the excavation of the ground dwelling, features 50 and 40. As feature 40 has been radiocarbon dated (Table 1. 2), it can be argued that layer 3 is associated with the end of the Pleistocene. Layer 4 has not yet been studied. The layer is stratigraphically below layer 2 and has been traced over an area of 12 square meters in the north-western part of the excavation area. Layer 4 is associated with the discovery of a stone structure. It is a wall of massive basalt pebbles brought to the site from the banks of the Kintrishi River. Near the wall there is a pile of pebbles which may be the remains of a destroyed structure.

Fig. 2.

Object 53 is a complex of interlinked pits (Fig. 3) which were constructed simultaneously, with the level of the initial entrance of all three pits merging into a single point. The object is located in the southern part of the excavation area, not fully excavated, and it runs under the southern wall. This pit complex occurred after the construction of the surface dwelling. The level of the entrance was 10-12 cm lower than the entrance of the dwelling pit of layer 2.

Fig. 3.

The stratigraphy of layers 3 and 4 can be traced along three walls of the excavation area. The northern wall gives us an opportunity to trace the alternation of layers 2, 3 and 4.

The northern wall demonstrates the next stratification picture:

1. Lithological level 1 – 0 – 0,18 m. Black humus with mixture of sand. This level contains replaced artefacts, which were washed away during the destruction of the cultural layer in the neighbouring areas. The bottom of lithological level 1 links with the entrance of object 23 (culture level 0).

2. Lithological level 2 – 0,18 – 0,28 m. It's the soil of dark brown color with a mixture of basalt gravels (d 1-5 cm). This level links with the culture layer 2. Culture level 1 is absent in this layer. The presence of culture layer 1 was fixed only in the square of the above-ground dwelling.

3. Lithological level 3 – 0,28 – 0,44 m. It's the soil of light brown color with mixture of basalt gravels (d 1-5 cm). This level links with the culture layer 3. Lithological levels 2 and 3 are linked with ancient Holocene A according to the clas-

sification of N. P. Gerasimenko.[1] These layers were deposited in frames of interval 13500 – 7200 BP uncal. Early dates of Kobuleti site are correspond with this period (Table 1. 1-2).

4. Lithological level 4 – 0,44 – 0,54 m. It's the soil of light grey color with a mixture of basalt gravels (d 1-12 cm). This level links with the culture layer 4. This level linked with stone buildings. Our observations of transects near the site have never been associated with finding a lithic layer of this color and consistency. It is possible that such lithological layers were very infrequently deposited and washed away by heavy rainfall. The preservation of such a layer at the Kobuleti site may be related to the discovery of stone structures that acted as 'traps' for deposits. It is likely that this lithological layer is related to the Allred interstadial.

The stratigraphy along the western wall of the excavation area is very poorly traced, as the wall cuts through many recessed objects. Only in the north-western corner of the excavation area is there a clear boundary between lithological layers 3 and 4. This boundary is marked by the remains of a stone structure.

The southern wall of the excavation area shows the different levels of inclusion of objects associated with layers 2 and 3. Here we see the alternation of strata of lithological layers 1, 2 and 3 as on the north wall, but the entry level of the dated object 40 (Table 1. 2) of layer 2 is associated with the top of lithological layer 2, while the entry level of pit 50 is associated with the bottom of this level. Pit 53, associated with cultural layer 3, has a brownish grey fill with a significant admixture of basalt gravel (d 1-8 cm). The fill is notable for its high charcoal content, amounting to approximately 300 grams.

Stone Complexes

If we compare the complexes of layer 3 with those of later layers, we find the greatest difference in row material. Only one-fifth of the artefacts are obsidian; the rest are flint (Table 2). The later layers demonstrate different statistics. The proportion of obsidian artefacts within stone complexes 40-60 %.[2] The origin of obsidian at the Kobuleti site has already been clarified. Almost all obsidian artefacts are associated with mount Chikiani, 200 km east of the site.[3] Obsidian artefacts are black, sometimes transparent smoky grey, sometimes translucent with black stripes. The flint complex is represented by very homogeneous yellow flint. Such flint is also present in later complexes. At the same time, the flint in the later complexes is more diverse. There is grey and pink flint, clearly from different sources. The yellow flint probably came from the banks of the Kintrishi River, where pebbles of the same color are often found. In addition, the flint

[1] Gerasimenko, *Prirodnaia sreda,* pp. 3-64.
[2] Chkhatarashvili, Manko, *Kobuleti site: the evidence*, pp. 28-35.
[3] Chkhatarashvili, Glascock, *Obsidian at Kobuleti*, pp. 1-8.

from Kobuleti layer 3 often has a fragmentary lime crust, which also distinguishes it from later artefacts.

Thus, stone from only two resources was used. One of the resources was difficult to access, which is reflected in the statistics (Table 2), while the second was associated with a source in the immediate vicinity of the camp. It is possible that this situation is related to the fact that the migrants had little knowledge of the resource base of the South Caucasus and the methods of obtaining stone resources. The complex of layer 3 may reflect the phase of adaptation of the migrants to new living conditions.

The lithic complexes of layer 3 and pit 50 belong to the same chronological interval but should be described separately. This is because the two complexes reflect different episodes in the economy of the site's inhabitants.

The complex of layer 3 contains 2048 artefacts, of which 1156 are flint (82.1%) and 252 (17.9%) are obsidian. It is interesting to note that, despite the predominance of flint, the number of obsidian and flint tools is almost equal (88 and 85 respectively). If we compare the specific weight of the tools in the flint and obsidian complexes, the difference is very significant. Flint implements represent 7.61% of all flints, while obsidian implements represent 33.73%. This circumstance may indicate that the inhabitants of the site had a stable cultural tradition of using obsidian, valued this raw material and considered it preferable for the manufacture of stone tools. Flint was only used out of necessity when obsidian was in short supply. At the same time, the paucity of obsidian artefacts may indicate that the site's inhabitants were more likely to have brought ready-made blades or even tools from a distant source.

The flint complex of layer 3 contains 6 cores and 4 tablets. All cores are single platform, extremely processed. The remaining shape suggests that these cores were originally conical. All cores are single platform, extremely worked. The remaining shape suggests that these cores were conical. Only one core retains a bullet-like shape (Fig. 4. 46). Tablets are also associated with rejuvenation of conical or bullet-like cores. Tablets are also associated with the rejuvenation of conical or spherical cores. Thus, the technique of flint knapping was linked to pressing flaking.

All blades, bladelets and microblades have been produced using the press-flaking method. The blades exhibit curved profiles, while the bladelets and microblades are generally smooth. Intact artefacts are rare; only 8 blades, 8 bladelets, and 2 microblades were recovered. Fragments of these artefacts are nearly 15 times more abundant. There is reason to believe that the purpose of making all types of blades was to obtain a medial segment suitable for making inserts for complex tools. A total of 114 medial segments were found.

The presence of 8 primary, 217 secondary flakes and 532 chips and chunks in the complex indicates that flint knapping may have taken place directly on the site.

Flint was used to make 88 tools (Table 3).

35 burins and 36 burin spalls were found. Burins can be divided into 2 groups. The first group includes burins on flakes and thick blades (thickness 0.5-1.1 cm). The

second group includes burins on thin blades and bladelets (thickness 0.1-0.3 cm). The first group is associated with tools that have the function of burins. The second group is associated with tools that were probably inserts of complex tools. Negatives of burin spalls were formed as a result of the use of such "burins". We will use the term "burinated pieces" to describe the "burins" of the second group.

There are 12 burins in the first group. The following types we can note:

1. Angle burins on broken blades (7 items) Fig. 4. 1, 3, 5, 11, 15-16, 18). 4 burins of this type have semi-steep retouched edges (Fig. 4. 1, 5, 15, 18).

2. Angle burin on unmodified proximal part of blade (Fig. 4. 6). This burin has the facet of a small chunk on the ventral surface, which appeared as a result of hafting.

3. Double angle burin on medial segment of blade (Fig. 4. 10). This burin has negatives of bilateral burin spalls on distal end.

4. Dihedral angle burin on blade (Fig. 4. 8). This burin has a notch on one of the edges.

5. Angle burin on broken massive flake (Fig. 4. 14). This burin has 3 negatives of burin spalls along one side.

6. Burin on oblique truncated facetted flake with semi-steep retouched edge (Fig. 4. 4).

There are 23 "burins" of the second group.

1. Angle burins on broken blades (16 items) (Fig. 4. 2, 13 19-24, 26, 28-30, 32-33). 3 burins of this type have notches (Fig. 4. 20, 29, 32).

2. Double angle burin on medial segment of blade (3 items) (Fig. 4. 7, 17, 25). One burin has negatives of bilateral burin spalls on the distal end (Fig. 4. 7).

3. Bilateral angle burins on broken blades (4 items) (Fig. 4. 9, 12, 27, 31).

The proposed division of burins into 2 groups is rather conventional. We can assign all burins to group 2, but we will always have questions about 0.4-0.5 cm thick objects. The only way to determine this is to analyse whether this or that "burin" could have a burin function. At present, no methodology has been developed to distinguish between the two groups. One of the most important criteria for differentiation will likely be the thickness of negatives of burin spalls.

Only 1 end- and side-scraper was found in a complex of Layer 3 (Fig. 4. 47).

There are 19 retouched segments of blades and bladelets in the complex. Next types of these tools were indicated: segments of blades and bladelets with partly retouched edges (17 items) (Fig. 4. 39-42, 45, 49). The retouch is flat. Only 1 proximal part of the blade has fully retouched edge (Fig. 4. 43). There is 1 massive medial part of the blade with ventral semi-steep retouch (Fig. 4. 44).

All notched segments of blades and bladelets have notches 0,4-0,9 mm in width (Fig. 4. 34-38). Only 1 of such tools is a denticulated piece (Fig. 4. 36).

Only 1 perforator was found. It's a distal segment of the blade with abrupt convergent retouch (Fig. 4. 50).

Only 1 chisel (splintered piece on flake) present in complex (Fig. 4. 48).

Fig. 4.

Microliths include 1 truncated facetted blade (Fig. 5. 1) and 10 segments of blades, bladelets and microblades with abrupt retouched edges (Fig. 5. 2-11). Microliths divided into 2 groups: tools on thick blades (0,3-0,4 cm) 1,2-1,6 cm in width (Fig. 5. 1-2, 6); tools on thin bladelets and microblades (0,1-0,2 cm) 0,3-0,8 in width (Fig. 5. 3-5, 7-11).

Microliths of 1 group can be used like inserts in massive, grooved bone points. On the other hand, we see microfracture traces on 2 microliths, which may be linked with the use of microliths like transverse arrowheads (bending fracture) (Fig. 5. 1-2). All microliths of this group were made on medial segments of blades.

Microliths of 2 group were inserts of grooved bone points. All tools of this group are straight in profiles. 2 tools we can describe as burinated pieces (Fig. 5. 5, 9). The first of them have a negative of short burin spall along abrupt retouched edge (Fig. 5. 5), the second have 2 negatives of counter burin spalls on unretouched edge (Fig. 5. 9). Negatives of burin spalls were appeared in process of use of bone points with numerous inserts, which collided when the arrow hits the animal's body. It is possible that many of the burinated pieces described in the analysis of burins were also bone point inserts. Microliths of this group were made on proximal (2 items) or medial (6 items) segments of bladelets and microblades.

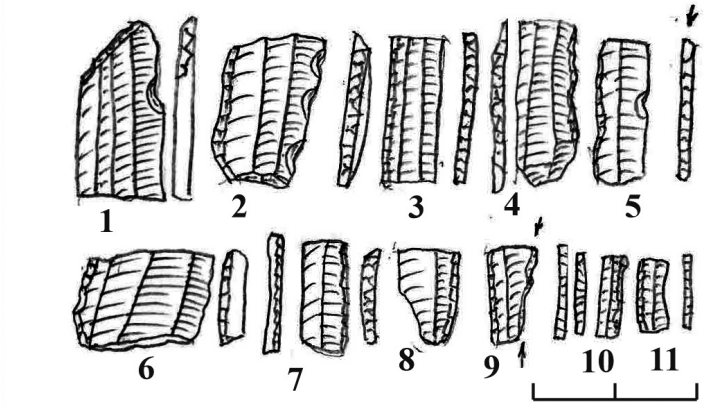

Fig. 5.

The obsidian complex has 252 artefacts, including 85 tools (Table 3).

Two one-platform cores were found. Both cores are associated with the final stage of knapping.

Only 25 blades, bladelets and their segments are present in complex (Table 3). All of them were made with the use of pressing and flaking methods. The most numerous is the bladelets group (17 items), 14 of which are the medial segments of bladelets.

Traces of obsidian knapping are not very distinct. Only 1 primary flake, 35 secondary flakes, 94 cheeps and chunks were found.

There are 85 tools in the complex.

Thirty burins were found. These artefacts are divided into 2 groups too.

The first group include tools, which have a function of real burins. There are only 5 such implements. All of them are 0.5 to 0.7 cm thick. The following types we can note:

1. Angle burins on broken blades (2 items) (Fig. 6. 27, 44). 1 burin of this type have a semi-steep ventral retouched edge (Fig. 6. 44).

2. Bilateral burin on oblique truncated facetted flake (Fig. 6. 10).

3. Dihedral angle burin on flake (Fig. 6. 28). This burin has a notch on one of edges.

4. Symmetric dihedral angle burin on flake (Fig. 6. 26). This burin has a notch on one of the edges.

The artefacts of group 2 (25 items) are all made on blades or bladelets and are between 0.1 and 0.3 cm in thickness.

1. Angle burins on broken blades and bladelets (16 items) (Fig. 6. 1, 5-8, 12-14, 16-19, 24-25, 40). 3 burins of this type have notches (Fig. 6. 24-25, 40).

2. Double angle burin on medial segment of blade (3 items) (Fig. 6. 11, 15, 20). One burin has negatives of bilateral burin spalls on the distal end (Fig. 4. 7).

3. Bilateral angle burins on broken blades (6 items) (Fig. 6. 2-4, 9, 22-23).

4. Double combinate burin: symmetric dihedral and on truncated facetted blade (Fig. 6. 21).

All artefacts of Group 2 have a straight or slightly curved profile except for one (Fig. 6. 40), which may be associated with a group of real burins.

Nine blades with fully or partially retouched edges were found in the complex (Fig. 6. 29-32). Fine retouch was used.

Sixteen blades and bladelets with notches were found. Notches are 0.5 to 0.9 cm wide (Fig. 6. 33-38). Two artefacts have symmetrical notches (Fig. 6. 33-34), two artefacts have 2 notches on one edge (Fig. 6. 35, 38).

All other tools are microliths and linked with their production products.

There are 3 truncated facetted blades (Fig. 6. 39, 43, 49). One of these has a thin and short burin spall and is typologically a burin on a truncated facetted blade (Fig. 6. 43). The burin spall is a trace of a spin-off fracture that occurred as a result of the use of tools such as arrowheads. For this reason, we should consider this microlith as a burinated piece.

There is a microlith on a bladelet with abrupt retouch and a facet of microburin spall on the distal part (Fig. 6. 54). The presence of such a point indicates that the microburin technique was used to produce microliths.

One product can be characterised as a microlith semi-finished product. It is a proximal blade segment with an abruptly retouched edge and a deep notch (Fig. 6.46). It is possible that the notch was prepared to remove the microburin.

One product is a by-product of microlith production. This is the proximal segment of a backed blade (Fig 3.65). This artefact has a long notch. It appears that the bladelet was broken to obtain a uniform medial segment of the backed bladelet.

There is one very unusual microlith. This is a proximal blade segment with an abrupt ventral retouch and another notched edge (Fig. 6. 47). It appears that the notches are banding fractures resulting from the use of the artefact as a transverse arrowhead.

There are 5 microliths on straight proximal segments of blades and bladelets (Fig. 6. 41-42, 50, 58, 63). Two of them are also associated with burinated pieces (Fig. 6. 41-42). Both these artefacts have bipolar retouch.

The bipolar retouch has 2 microliths on medial segments of blade and bladelet (Fig. 6. 51, 61).

Only 2 microliths have both backed edges (Fig. 6. 45, 48). One of them is a burinated piece too (Fig. 6. 45).

All other microliths (9 items) are backed medial segments of blades and bladelets (Fig. 6. 52-53, 55-57, 59-60, 64, 66).

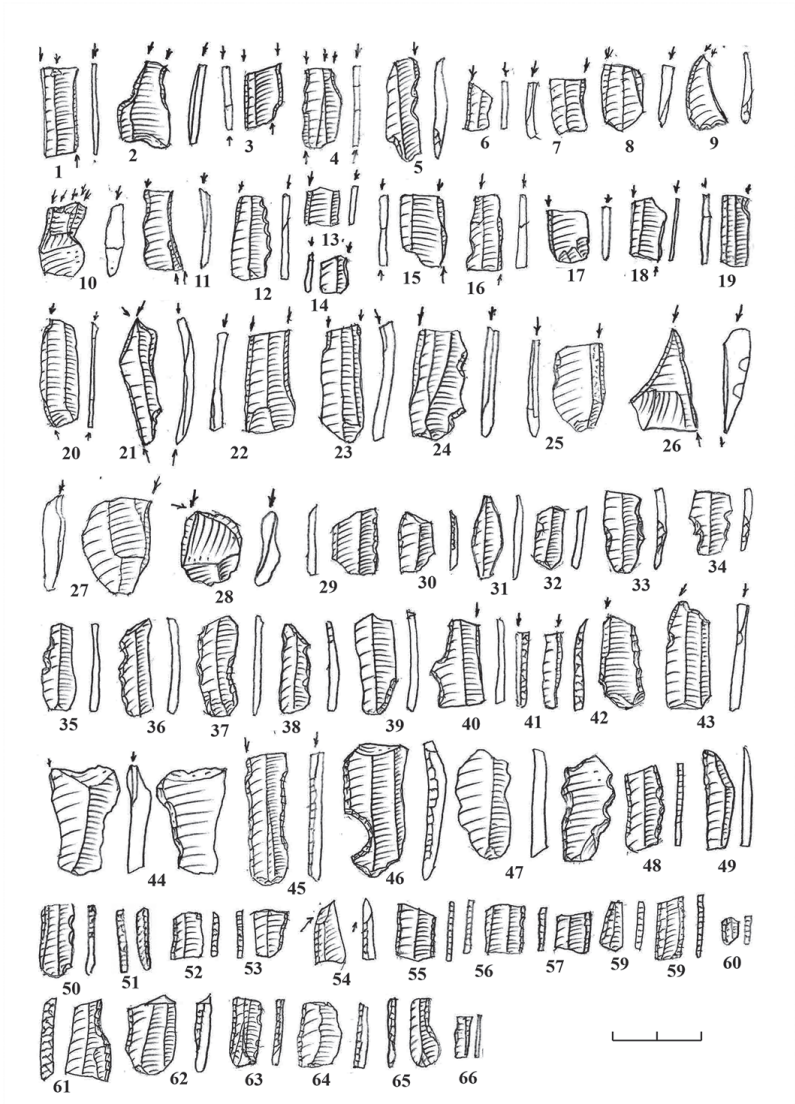

Fig. 6.

The complex of Pit 53 contains 649 artefacts, of which 465 are flint (71,65%) and 184 (28,35%) are obsidian (Table 2).

The flint complex is not associated with the presence of cores and tablets. There are 99 blades, bladelets, microblades and their segments. More than half of these artefacts are bladelets and their segments (50 items). All of these products were made using the pressing flaking method. There are 6 primary and 121 secondary flakes, 185 cheeps and chunks.

Forty-two pieces of modified flint were found (Table 3). Twenty-three of them are burins. Within this typological group, we distinguish between real burins and burinated pieces.

There are 10 real burins. The thickness of the tools of this group is 0,5 – 1,8 cm.

1. Angle burins on broken blades (3 items) (Fig. 7. 2, 12, 29). 1 burin of this type have a semi-steep dorsal retouched edge (Fig. 7. 29).

2. Angle burins on unmodified proximal parts of blades (2 items) (Fig. 7. 4, 7).

3. Bilateral angle burins on broken blades (2 items) (Fig. 7. 3, 6).

4. Dihedral angle burins on flakes (2 items) (Fig. 7. 1, 8).

5. Burin on concave faceted flake (Fig. 7. 9). This tool may represent a modified scraper.

There are 12 burinated pieces. The thickness of tools of this group is 0,1 – 0,3 cm.

1. Angle burins on broken blades (8 items) (Fig. 7. 2, 10-11, 14-15, 31, 34, 36). 1 burin of this type have a semi-steep dorsal retouched edge (Fig. 7. 29).

2. Bilateral angle burin on broken blades (Fig. 7. 19).

3. Angle burin on unmodified proximal parts of blade (2 items) (Fig. 7. 5).

4. Double angle burins on broken blades (2 items) (Fig. 7. 13, 35).

Four scrapers were found in complex. There are end-scraper on blade with removed proximal part (Fig. 7. 30), round scraper on blade (Fig. 7. 26), 2 scrapers on flakes (Fig. 7. 27-28).

There are 5 fine retouched blades (Fig. 7. 16, 24-25), 5 notched bladelets (Fig. 4. 17-18, 32). One of the notched blades is a denticulated piece (Fig. 7. 32). There is a notched flake (Fig. 7. 23) in the complex.

Only 3 microliths were found. One of them is the medial segment of backed bladelet (Fig. 7. 21). There is 1 proximal segment of bladelet with partly backed edge (Fig. 7. 33). This microlith is not a finished implement. One of the microliths is a burinated piece. It's medial segment of backed blade with negative of short burin spall (Fig. 7. 20).

There is very rare tool in complex. This tool is titled "Kashkashok side-blow blade-flakes"[1] or "thin section".[2]

[1] Nishiaki, *Side-blow blade-flakes*, pp. 311-325.
[2] Hole, *The Jarmo Chipped Stone*, pp. 233-284.

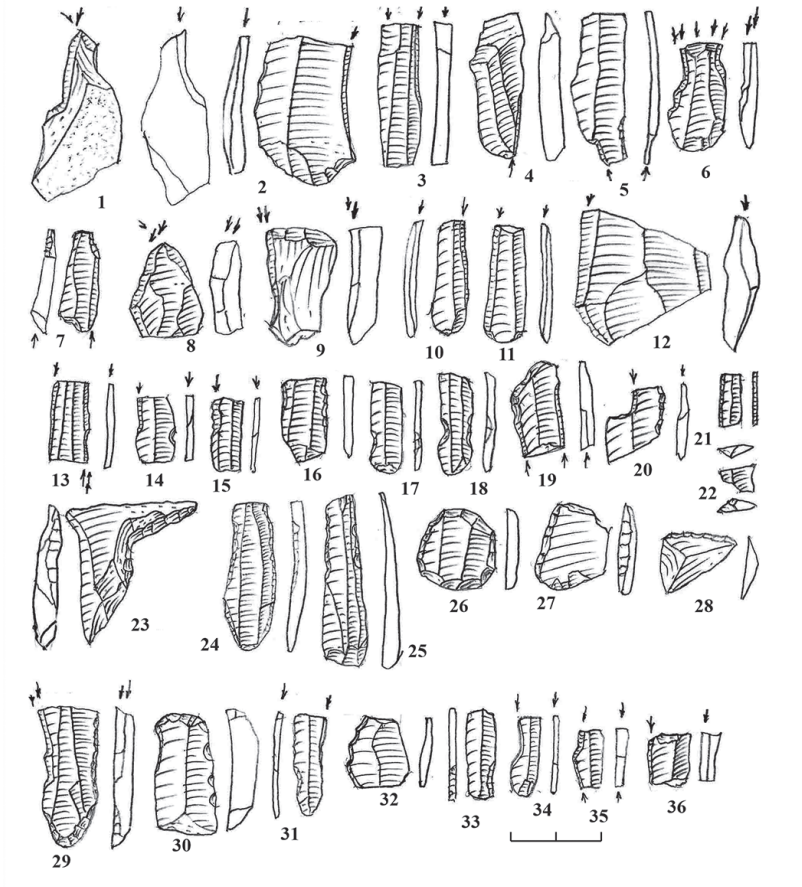

Fig. 7.

The obsidian complex has 184 artefacts (Table 2). Only one one-platform bullet-like core was found (Fig. 8. 36). This core is associated with the final stage of knapping. There are 2 tablets from the conic cores.

Twenty-three blades, bladelets and their segments are present in the complex (Table 3). All of them were made using pressure-flaking techniques. The most numerous are bladelets (14 items), 10 of which are the proximal segments. Only 66 secondary flakes, 35 cheeps and chunks were recovered.

There are 50 modified pieces in the complex.

Twenty-four burins were found. These artefacts are divided into 2 groups.

The first group includes tools that function as true burins (5 items). All of them are 0,6 to 0,7 cm thick. The following types can be noted:

1. Angle burins on broken blades (3 items) (Fig. 8. 5, 7, 24). 1 burin of this type has a semi-steep ventral retouched edge (Fig. 6. 7).

2. Burin on concave facetted massive flake (Fig. 8. 8).

3. Transverse burin on massive blade (Fig. 8. 42).

The artefacts of group 2 (19 items) are all made on blades or bladelets and are between 0.1 and 0.3 cm in thickness.

1. Angle burins on broken blades and bladelets (12 items) (Fig. 8. 6, 11, 13, 16-19, 21, 23, 25, 44-45). 2 burins of this type have notches (Fig. 8. 17, 19).

2. Double angle burin on proximal or medial segments of blade (2 items) (Fig. 8. 14, 20).

3. Bilateral angle burins on broken blades (5 items) (Fig. 8. 9-10, 12, 15, 22).

There are 4 scrapers in the complex. Two end-scrapers were made on massive flakes (Fig. 8. 1-2). One end-scraper (Fig. 8. 3) and one oval scraper (Fig. 8. 4) were made on massive blades.

There are 11 fine retouched blades (Fig. 8. 26, 29, 31-35), 10 notched bladelets (Fig. 8. 27-28, 30, 37, 39-40, 43). One of the notched blades is a denticulated piece (Fig. 8. 28).

There are 2 bladelets and 1 microblade with abrupt retouch (Fig. 8. 38, 41, 46).

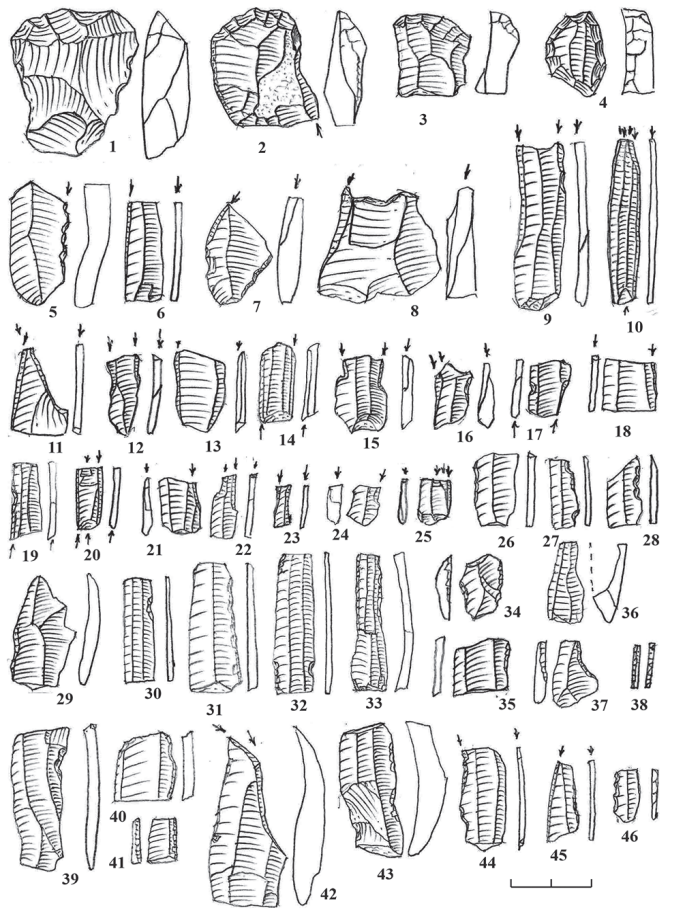

Fig. 8.

Flint and obsidian complexes of Layer 4 were studied on a very small square near a stone wall (Fig. 9). The thickness of the layer is not more than 5 cm. In this respect, we are not sure that the small number of artefacts is unrelated to layer 3. The artefacts could simply have been trampled into the underlying lithological layer. In any case, the character of the finds fully corresponds to layer 3.

Fig. 9.

There are 10 flint and 10 obsidian blades, bladelets and their segments, 6 flint and 4 obsidian modified pieces. Obsidian burinated piece (Fig. 10. 1) and 3 medial segments of abruptly retouched bladelets (Fig. 10. 2-4) were found. One of these microliths has bipolar retouch (Fig. 10. 4). There is a flint oval scraper on a massive primary flake (Fig. 10. 5), 1 notched blade (Fig. 10. 6), 2 burinated pieces (Fig. 10. 7-8), proximal segments of abrupt retouched microblade (Fig. 10. 9) and bladelet (Fig. 10. 10).

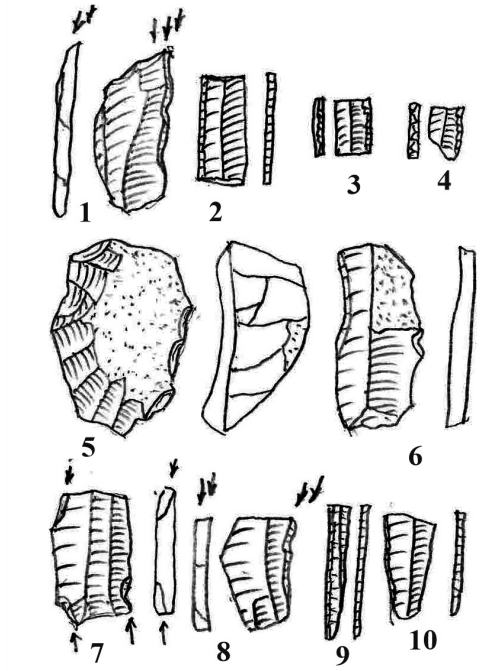

Fig. 10.

Some Remarks about Kobuletian Stone Industry

It should be noted that our observations on the peculiarities of flint and obsidian use have shown that there are no such peculiarities. Both the knapping technique and the typology of the tools are practically identical. One gets the impression that the Kobuletian stone industry was traditionally more associated with obsidian raw material. The number of unused flint blades far exceeds the number of unused obsidian blades. It is likely that many flint blades were considered defective, unsuitable for further use. Overall, the percentage of each type of flint and obsidian tool is about the same. This applies to both the microlith complex and the associated complex of burinated pieces.

Regarding the use of pressing flaking, we observe the use of modes 2 and 3 according to the classification of P. J. Wilke.[1] Not excluded is the use of a wooden grooved fixator for the treatment of conical and bullet-like cores using the methods described by J. Pelegrin.[2]

[1] Wilke, *Bullet-Shaped Microblade Cores*, pp. 289–310.
[2] Pelegrin, *New Experimental Observations*.

Discussion

As we have seen, the stone industry of layer 3 and the hypothesized layer 4 is characterized by pressure-flaked blades, the use of conical and bullet-like cores, and the production of microliths that were inserted into grooved bone points.

If we analyze the economic characteristics of layer 3, it is a very pronounced so-called kill site. In layer 3 we see a large number of microliths (36 items) and burinated pieces (48 items). Thus, 84 out of 173 modified pieces are directly related to the hunting process. The analysis of other tools in the complex confirms this hypothesis. Burins, whose role was related to the production of grooved bone points, predominate. The very small number of scrapers indicates that the site was not used for the processing of skins.

An important place in the conclusions regarding the interpretation of the site as a kill site is the statement that the burinated pieces are associated with the hunting weapon equipment complex. This statement is based on impression rather than analysis. It cannot be said that such an approach is not scientific. One way or another, objective factors such as the thickness of the product considered. Nevertheless, we are obliged to find objective criteria for such a classification. To this end, a graph has been drawn of the relationship between the width and thickness of the items classified as "real burins" and "burinated pieces".

As can be seen, out of 125 artefacts with negatives of burin spalls, 98 have a thickness up to 3 mm. All microliths with negatives of burin spalls are included in this number. Thus, we can assume that backed bladelets and burinated pieces can be associated with the fulfilment of the same function. The presence of burinated pieces with bending fracture (Fig. 1. 12; 3. 4, 10; 5. 6; 6. 10, 16, 20, 25) further convinces us of the fairness of the stated hypothesis. Thus, the assumption arises that the negatives of burin spalls could abruptly destroy retouched edges of microliths. Finds of microliths with partially destroyed, abruptly retouched edges once again confirm the hypothesis. Finally, there is a find of burin spalls with abruptly retouched edges (Fig. 8. 38).

It is not excluded that some of the burinated pieces could fulfil some other functions. This is a question of further study of the described phenomenon. In any case, it will not cancel the observed tendency.

Thus, the number of microliths in the complex may not be less than 125, i.e. more than half of all modified pieces. At least two-thirds of microlites have macrofracture traces, which appear on microlites as a result of their use. It is quite obvious that we can observe such a picture only on kill-sites. It should be noted that the interpretation of the site as a kill site does not imply that it represents a single hunting event. The finds are scattered throughout the area, and some of them are associated with deepened objects. Rather, we are talking about the repeated use of the site for hunting. Unfortunately, we cannot state the exact number of visits, but it cannot be excluded

that it was the constant visit to this site that led to the appearance of the stationary structures of layer 2.

The connection of the complex of layer 3 and hypothetical layer 4 with Kobuletian culture, which has been repeatedly described recently,[1] is undoubted. The presence of pressing flaking, bullet-like cores, tablets of conic cores, and segments of abruptly retouched bladelets convinces us of this.

At the same time, for the first time we find evidence of the connection between the early Kobuletian culture and the local Epigravettian. This connection is illustrated by the presence of a series of segments of bipolar retouched bladelets in the complex (Fig. 5. 4, 8; 3. 41-42, 51, 61; 5. 38). Such microliths appear in the South Caucasus in the Late Palaeolithic. One of the earliest sites with such artefacts is Satsurblia.[2] Microliths with bipolar retouched edges were found in all layers of site. The first appearance of microliths with bipolar retouch was fixed in Layers B/III and B/II. These layers have dates in frames of 25-24 mill. BP cal. (Table 3. 3-5). The production of such microliths had a long tradition. Large series of such wares are present in layer B/I, which is dated in Allerød frames (Table 3. 6). The layer B of the Dzudzuana site,[3] whose complex microliths with bipolar retouching were also found, has similar dates (Table 3. 7-9). It is noteworthy that the date of the upper layers of Satsurblia, Dzudzuana and date of Pit 9 of Kobuleti (Table 3. 1) practically coincide.

Unfortunately, we cannot date Kobuleti stratum 3 in frames of the Allerød period. The date of pit 9 cannot be reliably linked to the complex of layer 3. This date can be linked to layer 4 with traces of stone constructions. The date of pit 9 rather gives us a lower limit for the dating of possible contacts between the bearers of the Epigravettian and Kobuletian cultures. The data of the relative chronology do not allow us to accept this date as the only possible one. The Epigravett traditions in the South Caucasus survived until the beginning of the Holocene. This is confirmed by the materials of the lithic complex of layer B of the Kotias Klde. This complex is dated to the very end of Dryas III and the Preboreal (Table 3. 10-13). This complex is synchronous with Kobuleti layer 2 (Table 3. 2). The materials of layer B of the Kotias Klde[4] are also associated with serial finds of microliths with bipolar retouching.

Thus, the absolute and relative chronology data suggest that the Kobuleti layer 3 dates to between the Late Allerød and the Middle Preboreal. As for the date of layer 4, there is every reason to believe that the date of pit 9 may be related to this layer.

Is there any possibility that such an early date could be related to the Kobuleti culture? As already mentioned, the dates of the upper layers of Satsurblia, Dzudzuana and the lower layers of Kobuleti are very close. At the same time, in the complex of

[1] Manko, Chkhatarashvili, *The Stone Industry of Kobuleti*, pp. 94-106; Manko, Chkhatarashvili, *Transcaucasia and Neolithic*, pp. 19-52.
[2] Pinhasi (et al.), *New Insights of Human Response;* Jones (et al.), *Upper Palaeolithic genomes*.
[3] Bar-Yosef (et al.), *Dzudzuana: An Upper Palaeolithic cave*, pp. 331–349.
[4] Meshveliani (et al.), *Mesolithic Hunters at Kotias Klde*, pp. 47-58.

Dzudzuana layer B we have finds of microliths on thin obsidian abruptly retouched microblades. This circumstance allows us to assume that contacts between the bearers of the Epigravettian and Kobuletian cultures were bilateral.

Does the fact of the coexistence of the Epigravettian and Kobuletian traditions in the South Caucasus imply the possibility of their genetic connection? We categorically reject this possibility. A comparison of the synchronous complexes from Kotias Klde and Kobuleti reveals contrasting traditions. In Kotias Klde the pressure flakes are absent, as are conical and bullet-like cores. On the other hand, asymmetrical triangles, which are found in the Kotias Klde complex, are absent from the Kobuleti complex. Thus, we can only speak of the possibility of cultural contacts between the bearers of two completely different industries. Such contacts led to the appearance of bipolar retouching on microliths from Kobuleti and to the appearance of microliths on microplates in the late Epigravettian complexes.

The fact of interaction and coexistence of the traditions of two cultures occupying practically the same territory has been noted not only in Kobuleti. Finds that can be associated with two cultures at the same time were made during the excavation of layer 5 of the Darkveti site.[1] The finds of conical cores for pressing bladelets, pressed blades and bladelets, abruptly retouched bladelets, burinated pieces are associated with Kobuletian industry. The finds of asymmetrical triangles relate to the traditions of the B layer of the Kotias Klde. Thus, intercultural interaction was not unusual at the end of the Pleistocene and the beginning of the Holocene in the Southern Caucasus.

The idea of the origin of Kobuletian culture on the basis of M'lefaatian has already been proposed.[2] The conclusion about the migration of the M'lefaatian population was based on the similarity of the Kobuletian and M'lefaatian stone complexes. The question arises about the possibility of the existence of M'lefaatian in the Allerød period. The question is controversial, but the data of absolute chronology allow us to admit such a possibility. The most indicative is the series of radiocarbon dates obtained for the M'lefaat site (Table 3. 14-20). As we can see, the range of dates extends from Dryas I to the Preboreal. It is noteworthy that the M'lefaat complex is not mixed and contains artefacts associated with a single industry. Therefore, the possibility of migration of M'lefaatian carriers to the South Caucasus at the end of the Pleistocene cannot be excluded.

The question of the origin of the microburin technique in the Kobuletian cultural complexes, including Kobuleti layer 3, is important. The use of the microburin technique was not necessary to produce abruptly retouched bladelets. In most M'lefaatian complexes such a technique is absent. Accordingly, there is a possibility of contact with bearers of another culture. The appearance of the microburin technique was probably caused by contacts between the bearers of the Kobuleti and Kotias Klde indust-

[1] Nebieridze, *Multilayer Rock Shelter Darkveti*; Korobkova, *The Neolithic Chipped Stone*, pp. 57-90.

[2] Manko, Chkhatarashvili, *Transcaucasia and Neolithic*, pp. 19-52.

ries. Three microburins were found in the complex of layer B of the Kotias Klde. This assumption is highly likely, since layer B is synchronous with layer 2 of Kobuleti. If we assume an earlier age of layer 3, we cannot exclude the Zarzian origin of the microburin technique.

The likelihood of the latter scenario is very high. The fact is that the early M'lefaatians were in contact with the late Zarzians. Traces of interaction between the two cultures are most clearly represented in the Karim Shahir complex.[1] Conical and bullet-like cores, abruptly retouched bladelets, lunates and microburins were found together in this complex. This is undoubtedly evidence of contacts between the carriers of M'lefaatian and Zarzian industry.

Contacts between the M'lefaatian and Zarzian industries are further supported by analyses of Late Zarzian complexes. There are known parallels between M'lefaatian complexes and complexes from the Zarzian sites of Zavi Chemi Shanidar[2] and Warvasi[3] (1996). The authors of these publications do not even exclude the possibility of a M'lefaatian origin based on Zarzian industry. Such an idea could only have arisen at a time when the database on M'lefaatian chronology was still very poor. The appearance of a series of dates from the eponymous site of M'lefaat rules out such a possibility. We can only say that the M'lefaatian and Zarzian industries coexisted at the very end of the Pleistocene. As a result, we can only speak of the mutual influence of the two cultures, but not of a genetic link between them. Thus, the migration of M'lefaatian carriers to the South Caucasus at the end of the Pleistocene may explain the appearance of microburin techniques in the Kobuletian complexes.

Conclusion

1. The complexes of layer 3 and layer 4 are associated with the Kobuletian culture of South Caucasus. These complexes share common features with all other Kobuletian culture complexes (Khutsubani, Bavra Ablari, Bavra, Anaseuli I, etc.), including: the use of hand pressure technique for obtaining blades, bladelets, and microblades; the use of conic and bullet-like cores; the presence of abrupt retouched bladelets and truncated facetted blades and bladelets; the use of burins of various types and the presence of so named "burinated pieces"; the use of end-, round and oval scrapers; the presence of notched and denticulated blades, blades with fine retouch, perforators, chisels.

2. The complex of layer 3 was formed as a result of repeated visits to the territory of the site. Analyses of the flint and obsidian complex suggest that the site can be interpreted as a kill-site.

[1] Howe, *Karim Shahir*, pp. 23-154.
[2] Kozlowski, *From Zavi Chemi to M'lefaat*, pp. 175-182.
[3] Olszewski, *The Lithic Transition to the Early Neolithic*, pp. 183-192.

3. The estimated age of layer 3 may range from Late Allerød to Middle Preboreal.

4. The complexes of the Kobuleti layers 3 and 4 are synchronous with the late Epigravett complexes of the South Caucasus (Satsurblia, layer B/I; Dzudzuana, layer B). The appearance of bipolar retouched bladelets in the Kobuleti complex was caused by contacts with the Epigravettian population.

5. The appearance of microburin techniques in Kobuletian complexes could be related to contacts of the carriers of M'lefaatian and Kobuletian cultures with the Zarzian population.

6. The formation of Kobuletian culture began in the final Pleistocene as a result of the migration of M'lefaatian populations to the South Caucasus. The early stages of cultural development are related to contacts with the carriers of other cultural traditions.

7. The beginning of the development of the Kobuletian culture led to the formation of a large network connecting the territories of the South Caucasus and the Middle East. The emergence of such a network could have become a prerequisite for the further spread of Middle Eastern innovations, including the Neolithic way of life.

Acknowledgement

I would like to thank my wife, Manko Irina Georgievna. All microliths were found only for the reason that she heroically washed all sediments. She was my only assistant in the two-month excavation of the Kobuleti site in the season of 2023.

Table 1. Radiocarbon dates.

Number	Lab. index	Site	Sample	BP, uncalibrated	BC calibrated (95,4%; IntCal 20)	Context	References
1.	SPb-3620	Kobuleti	Charcoal	11473±200 BP	11841-11047	Pit 9	In first
2.	FTMC-ZL16-4	Kobuleti	Charcoal	9655±37	9245-8846	Object 40	Manko, Chkhatarashvili 2020
3.	OxA-29124	Satsurblia	Bone	20580±120	23181-22395	Layer B/III	Golovanova, Doronichev 2020
4.	OxA-29123	Satsurblia	Bone	20860±120	23648-22871	Layer B/III	Golovanova, Doronichev 2020
5.	OxA-29121	Satsurblia	Bone	20610±120	23224-22420	Layer B/II	Golovanova, Doronichev 2020
6.	OxA-34632	Satsurblia	Bone	11415 ± 50	11461-11225	Layer B/I	Jones (et al.), 2015
7.	RTT–3282	Dzudzuana	Bone	11500±75	11553-11236	Unit B	Bar-Yosef (et al.), 2011
8.	RTT–3821	Dzudzuana	Bone	13250±70	14202-13749	Unit B	Bar-Yosef (et al.), 2011
9.	RTT–3278	Dzudzuana	Bone	13860±90	15117-14583	Unit B	Bar-Yosef (et al.), 2011
10.	RTT–4698	Kotias Klde	Bone	9270±60	8693-8304	Layer B	Meshveliani (et al.), 2007
11.	RTT–4702	Kotias Klde	Bone	9840±70	9656-9164	Layer B	Meshveliani (et al.), 2007
12.	RTT–4699	Kotias Klde	Bone	9940±80	9781-9265	Layer B	Meshveliani (et al.), 2007
13.	RTT–4703	Kotias Klde	Bone	10,400±60	10648-10047	Layer B	Meshveliani (et al.), 2007
14.	Gd-4658	M'lefaat	Charcoal	12360±280	13505-11668		Kozlowski 1994
15.	Gd-6149	M'lefaat	Charcoal	10290±180	10715-9451		Kozlowski 1994
16.	Gd-6150	M'lefaat	Charcoal	10890±140	11153-10677		Kozlowski 1994
17.	Gd-4465	M'lefaat	Charcoal	10850±200	11286-10242		Kozlowski 1994
18.	Gd-4652	M'lefaat	Charcoal	13860±300	15811-14021		Kozlowski 1994
19.	Gd-6363	M'lefaat	Charcoal	13540±180	14990-13881		Kozlowski 1994
20.	Gd-6356	M'lefaat	Charcoal	9630±130	9305-8634		Kozlowski 1994

Table 2. Kobuleti. Flint and obsidian artefacts.

Types of artefacts	Layer 3						Pit 53						Layer 3 (total)					
Cores, products of knapping. Tools	Flint	%	Obsidian	%	Total	%	Flint	%	Obsidian	%	Total	%	Flint	%	Obsidian	%	Total	%
Cores	6	0,52%	2	0,79%	8	0,57%	0	0,00%	1	0,54%	1	0,14%	6	0,37%	3	0,69%	9	0,44%
Tablets	4	0,35%	0	0,00%	4	0,28%	0	0,00%	2	1,09%	2	0,27%	4	0,25%	2	0,46%	6	0,29%
Blades	8	0,69%	0	0,00%	8	0,57%	5	1,08%	0	0,00%	5	0,68%	13	0,80%	0	0,00%	13	0,63%
Proximal parts of blades	25	2,16%	2	0,79%	27	1,92%	16	3,44%	1	0,54%	17	2,30%	41	2,53%	3	0,69%	44	2,14%
Medial parts of blades	25	2,16%	1	0,40%	26	1,85%	12	2,58%	1	0,54%	13	1,76%	37	2,28%	2	0,46%	39	1,90%
Distal parts of blades	4	0,35%	0	0,00%	4	0,28%	2	0,43%	1	0,54%	3	0,41%	6	0,37%	1	0,23%	7	0,34%
Bladelets	8	0,69%	0	0,00%	8	0,57%	7	1,51%	1	0,54%	8	1,08%	15	0,93%	1	0,23%	16	0,78%
Proximal parts of bladelets	57	4,93%	3	1,19%	60	4,26%	21	4,52%	10	5,43%	31	4,19%	78	4,81%	13	2,98%	91	4,42%
Medial parts of bladelets	73	6,31%	14	5,56%	87	6,18%	17	3,66%	3	1,63%	20	2,71%	90	5,55%	17	3,90%	107	5,20%
Distal parts of bladelets	7	0,61%	0	0,00%	7	0,50%	5	1,08%	0	0,00%	5	0,68%	12	0,74%	0	0,00%	12	0,58%
Microblades	2	0,17%	1	0,40%	3	0,21%	1	0,22%	0	0,00%	1	0,14%	3	0,19%	1	0,23%	4	0,19%
Proximal parts of microblades	16	1,38%	2	0,79%	18	1,28%	5	1,08%	2	1,09%	7	0,95%	21	1,30%	4	0,92%	25	1,22%
Medial parts of microblades	33	2,85%	2	0,79%	35	2,49%	8	1,72%	4	2,17%	12	1,62%	41	2,53%	6	1,38%	47	2,28%
Distal parts of microblades	7	0,61%	0	0,00%	7	0,50%	0	0,00%	0	0,00%	0	0,00%	7	0,43%	0	0,00%	7	0,34%
Primary flakes	8	0,69%	1	0,40%	9	0,64%	6	1,29%	0	0,00%	6	0,81%	14	0,86%	1	0,23%	15	0,73%
Secondary flakes	217	18,77%	35	13,89%	252	17,90%	121	26,02%	66	35,87%	187	25,30%	338	20,85%	101	23,17%	439	21,34%
Chunks	489	42,30%	89	35,32%	578	41,05%	169	36,34%	34	18,48%	203	27,47%	658	40,59%	123	28,21%	781	37,97%
Cheeps	43	3,72%	5	1,98%	48	3,41%	16	3,44%	1	0,54%	17	2,30%	59	3,64%	6	1,38%	65	3,16%
Burin spalls	36	3,11%	10	3,97%	46	3,27%	12	2,58%	7	3,80%	19	2,57%	48	2,96%	17	3,90%	65	3,16%
Modified pieces	**88**	**7,61%**	**85**	**33,73%**	**173**	**12,29%**	**42**	**9,03%**	**50**	**27,17%**	**92**	**12,45%**	**130**	**8,02%**	**135**	**30,96%**	**265**	**12,88%**
Total	**1156**	**82,10%**	**252**	**17,90%**	**1408**	**100,0**	**465**	**71,65%**	**184**	**28,35%**	**649**	**100,0**	**1621**	**78,80%**	**436**	**21,20%**	**2057**	**100,0**

Table 3. Modified pieces.

Tools	Layer 3						Pit 53						Total					
	Flint	%	Obsidian	%	Total	%	Flint	%	Obsidian	%	Total	%	Flint	%	Obsidian	%	Total	%
Burins	37	42,05%	30	35,29%	67	38,73%	22	52,38%	22	44,00%	44	47,83%	59	45,38%	52	38,52%	111	41,89%
Scrapers	1	1,14%	0	0,00%	1	0,58%	4	9,52%	4	8,00%	8	8,70%	5	3,85%	4	2,96%	9	3,40%
Retouched blades	17	19,32%	9	10,59%	26	15,03%	5	11,90%	11	22,00%	16	17,39%	22	16,92%	20	14,81%	42	15,85%
Notched blades	18	20,45%	16	18,82%	34	19,65%	6	14,29%	10	20,00%	16	17,39%	24	18,46%	26	19,26%	50	18,87%
Perforators	1	1,14%	1	1,18%	2	1,16%	0	0,00%	0	0,00%	0	0,00%	1	0,77%	1	0,74%	2	0,75%
Splintered pieces	1	1,14%	0	0,00%	1	0,58%	0	0,00%	0	0,00%	0	0,00%	1	0,77%	0	0,00%	1	0,38%
Truncated blades	1	1,14%	3	3,53%	4	2,31%	0	0,00%	0	0,00%	0	0,00%	1	0,77%	3	2,22%	4	1,51%
Retouched flakes	2	2,27%	4	4,71%	6	3,47%	1	2,38%	0	0,00%	1	1,09%	3	2,31%	4	2,96%	7	2,64%
Backed bladelets and microblades	10	11,36%	22	25,88%	32	18,50%	3	7,14%	3	6,00%	6	6,52%	13	10,00%	25	18,52%	38	14,34%
Thin section	0	0,00%	0	0,00%	0	0,00%	1	2,38%	0	0,00%	1	1,09%	1	0,77%	0	0,00%	1	0,38%
Total	**88**	**7,61%**	**85**	**33,73%**	**173**	**12,29%**	**42**	**9,03%**	**50**	**27,17%**	**92**	**12,45%**	**130**	**8,02%**	**135**	**30,96%**	**265**	**12,88%**

Cited Sources and Literature

Bar-Yosef (et al.), *Dzudzuana: An Upper Palaeolithic cave* – Bar-Yosef O., Belfer-Cohen A., Mesheviliani T., Jakeli N., Bar-Oz G., Boaretto E., Goldberg P., Kvavadze E., Matskevich Z., *Dzudzuana: An Upper Palaeolithic cave site in the Caucasus foothills (Georgia)*, "Antiquity", 85, 2011, pp. 331-349.

Berdzenishvili, Nebieridze, *Stone Age sites* – Berdzenishvili L., Nebieridze L., *Stone Age sites in Kintrishi Gorge*, Tbilisi, 1964 (in Georgian).

Chkhatarashvili, Glascock, *Obsidian at Kobuleti* – Chkhatarashvili G., Glascock M. D., *Obsidian at Kobuleti (Western Georgia): Evidence for early human contact in Western Transcaucasia during the early Holocene*, "Archaeological Research in Asia", 29, 2022, pp.1-8.

Chkhatarashvili, Manko, *Kobuleti site* – Chkhatarashvili G., Manko V., *Kobuleti site: the evidence of Early Holocene occupation in Western Georgia*, "Documenta Praehistorica", 47, 2020, pp. 28-35.

Ckhatarashvili (et al.), *South-East Black Sea Coast* – Ckhatarashvili G., Manko V., Kakhidze A., Esakiya K., Chichinadze M., Kulkova M., Streltcov M., *South-East Black Sea Coast in Early Holocene Period (According to interdisciplinary archaeological investigations in Kobuleti site)*, "Sprawozdania Archeologiczne", 72(2), 2020, pp. 213-230.

Gerasimenko, *Prirodnaia sreda* – Gerasimenko N. P., *Prirodnaia sreda obitaniia cheloveka na iugo-vostoke Ukrainy v pozdnelednikov'e i golocene (po materialam paleogeograficheskogo izuchenija arheologicheskih pamiatnikov)*, "Arheologicheskii al'manah", 6, 1997, pp. 3-64 (in Russian).

Gogitidze, *The Archaeological Sites* – Gogitidze S., *The Archaeological Sites of the Stone Age in the Kintrishi Valley*, Batumi, 2008 (in Georgian).

Gogitidze, *The Neolithic culture* – Gogitidze S., *The Neolithic culture of the South-Eastern Black Sea Littoral*, Tbilisi, 1977 (in Georgian).

Golovanova, Doronichev, *Environment, Culture and Subsistence* – Golovanova L. V., Doronichev V. B., *Environment, Culture and Subsistence of Humans in the Caucasus between 40,000 and 10,000 Years Ago*, Cambridge, 2020.

Hole (et al.), *Prehistory and human ecology* – Hole F., Flannary K. V., Neely J. A., *Prehistory and human ecology of Deh Luran Plain. An Early Village Sequence from Khuzistan, Iran*, Ann Arbor, Michigan, 1969.

Hole, *Studies in the archeological history* – Hole F., *Studies in the archeological history of the Deh Luran plain: the excavation of Chagha Sefid*, Contributions by M. J. Kirkby & C. Renfrew, Ann Arbor, Michigan, 1977.

Hole, *The Jarmo Chipped Stone* – Hole F., *The Jarmo Chipped Stone*, In: Braidwood R. J., Braidwood L. S., Howe B., Reed C. A., Watson P. J., (eds.), "Prehistoric Archaeology Along the Zagros Flanks", Chicago,1983, pp. 233-284.

Howe, *Karim Shahir* – Howe B., *Karim Shahir*, In: Braidwood R. J., Braidwood L. S., Howe B., Reed C. A., Watson P. J., (eds.), "Prehistoric Archaeology Along the Zagros Flanks", Chicago, 1983, pp. 23-154.
Jones (et al.), *Upper Palaeolithic genomes* – Jones E. R., Gonzalez-Fortes G., Connell S., Siska V., Eriksson A., Martiniano R., McLaughlin R. L., Gallego Llorente M., Cassidy L. M., Gamba C., Meshveliani T., Bar-Yosef O., Mueller W., Belfer-Cohen A., Matskevich Z., Jakeli N., Higham T., Currat M., Lordkipanidze D., Hofreiter M., Manica A., Pinhasi R., Bradley D., *Upper Palaeolithic genomes reveal deep roots of modern Eurasians*, "Nature Communications", 2015, pp.1-8. DOI:10.1038/ncomms991.
Korobkova, *The Neolithic Chipped Stone* – Korobkova G. F., *The Neolithic Chipped Stone Industries of the South Caucasus*, In: Gebel H. G., Kozlowski S. K., (eds.), "Neolithic Chipped Stone Industries of the Fertile Crescent, and Their Contemporaries in Adjacent Regions", Berlin, 1996, pp. 57-90.
Kozlowski, *From Zavi Chemi to M'lefaat* – Kozlowski S. K., *From Zavi Chemi to M'lefaat*, In: Gebel H. G., Kozlowski S. K., (eds.), "Neolithic Chipped Stone Industries of the Fertile Crescent, and Their Contemporaries in Adjacent Regions", Berlin, 1996, pp. 175-182.
Kozlowski, *Radiocarbon dates from aceramic Iraq* – Kozlowski S. K., *Radiocarbon dates from aceramic Iraq*, In: Bar-Yosef O., Kra R. S., (eds.), "Late Quaternary Chronology and Palaeoclimates of the Eastern Mediterranean", 1994, pp. 255-264.
Manko, Chkhatarashvili, *The Stone Industry* – Manko V. O., Chkhatarashvili G., *The Stone Industry of Kobuleti Site*, "Arkheolohiia i davnia istoriia Ukrainy", 4 (37), 2020, pp. 94-106 (In Ukrainian).
Manko, Chkhatarashvili, *Transcaucasia and Neolithic* – Manko V., Chkhatarashvili G., *Transcaucasia and Neolithic*, *Transcaucasia and Neolithic of South of Eastern Europe*, "Arheoligia", 2, 2022, pp. 19-52.
Meshveliani (et al.), *Mesolithic Hunters at Kotias Klde* – Meshveliani T., Bar-Oz G., Bar-Yosef O., Belfer-Cohen A., Boaretto E., Jakeli N., Koridze I., Matskevich Z., *Mesolithic Hunters at Kotias Klde, Western Georgia: Preliminary results*, "Paléorient", 33(2), 2007, pp. 47-58.
Nebieridze, *Multilayer Rock Shelter Darkveti* – Nebieridze L., *Multilayer Rock Shelter Darkveti*, Tbilisi, 2007 (in Georgian).
Nishiaki, *Lithic technology of Neolithic Syria* – Nishiaki Y., *Lithic technology of Neolithic Syria. A series of analyses of flaked stone assemblages from Douara Cave II, Tell Damishilyya, Tell Nebi Mend, and Tell Kashkashok II*, London, 1992.
Nishiaki, *Neolithic flaked stone assemblages* – Nishiaki Y., *Neolithic flaked stone assemblages from Göytepe*, In: Nishiaki Y. and Guliyev F., (eds.), "Göytepe, Neolithic Excavations in the Middle Kura Valley, Azerbaijan", Oxford, 2020, pp. 169-190.
Nishiaki, *Side-blow blade-flakes* – Nishiaki Y., *Side-blow blade-flakes from Tell Kashkashok II, Syria: A technological study*, In: Kozlowski S. K., Gebel H. G. K., (eds.), "Neolithic chipped stone industries of the Fertile Crescent and their contem-

poraries in adjacent regions", Proceedings of the 2nd workshop on PPN chipped lithic industries, Warsaw, 3rd-7th April 1995 (SENEPSE 3), Berlin, pp. 311-325.
Olszewski, *The Lithic Transition* – Olszewski D., *The Lithic Transition to the Early Neolithic in Zagros Region: Zarzian and M'lefaatian Industries*, In: Gebel H. G., Kozlowski S. K., (eds.), "Neolithic Chipped Stone Industries of the Fertile Crescent, and Their Contemporaries in Adjacent Regions", Berlin, 1996, pp. 183-192.
Pelegrin, *New Experimental Observations* – Pelegrin J., *New Experimental Observations for the Characterization of Pressure Blade Production Techniques*, In: Desrosiers P. M. (ed.), "The Emergence of Pressure Blade Making: From Origin to Modern Experimentation", 2012.
Pinhasi (et al.), *Satsurblia: New Insights of Human Response* – Pinhasi R., Meshveliani T., Matskevich Z., Weissbrod L., Miller C., Wilkinson K., Lordkipanidze D., Jakeli N., Kvavadze E., Higham T., Belfer-Cohen A., *Satsurblia: New Insights of Human Response and Survival across the Last Glacial Maximum in the Southern Caucasus*, "PLoS ONE", 9, 2014. e111271. 10.1371/journal.pone.0111271.
Wilke, *Bullet-Shaped Microblade Cores* – Wilke P. J., *Bullet-Shaped Microblade Cores of the Near Eastern Neolithic: Experimental Replicative Studies*, In: Kozlowski S. K. & Gebel H. G., (eds.), *Neolithic Chipped Stone Industries of the Fertile Crescent, and Their Contemporaries in Adjacent Regions*, Berlin, 1996, pp. 289-310.

Valery Manko

Kobuleti: Flint and Obsidian Complexes of Layers 3 and 4

Summary

Excavations carried out in 2023 made it possible to locate and study the earliest layers of the Kobuleti site. These layers date back to the Late Pleistocene or the Pleistocene-Holocene boundary. The complex of layer 3 is represented by materials from the ancient Holocene soil, located in the eastern part of the site, and materials from pit 53. The materials from the soil are exclusively related to the hunting activities of the site's inhabitants. The materials from Pit 53 are more diverse. Layer 4 was located only in the north-eastern part of the site and is associated with the remains of a stone wall and some demolished stone structures. The stratigraphic position of layer 4 is associated with a black colored soil, probably associated with the Allerød Interstadial.

Obsidian and flint were raw materials for the manufacture of stone tools. The Chikiani Mountain location was a major source of obsidian. It should be noted that the percentage of obsidian artefacts in layers 3 and 4 is much lower than in the later layers. This is probably due to the difficulty of obtaining obsidian in conditions of poor knowledge of the area. This may suggest that layers 3 and 4 represent the initial phase of the Kobuleti industry in the South Caucasus.

It is very interesting that all the archaeological layers of the site show cultural similarities. All the complexes, including the earliest, are associated with the use of pressing flaking, conic and bullet-like cores, with finds of backed blades and burinated pieces. The materials of the site are related to the so-called Kobuletian culture, which developed in the South Caucasus in the XI-VII millennia BC. The origin of this culture is related to the migration of bearers of M'lefaatian culture of the Middle East.

The materials of layers 3 and 4 show that the Kobuletian population was in contact with the Late Epigravettian population of Imeretia. The presence of bladelets with abrupt bipolar retouching in the complex shows that there was an exchange of technologies between the bearers of two synchronous cultures. The emergence of the Kobuletian culture led to the formation of an extensive network linking the South Caucasus and the Middle East. The emergence of such a network could have become a prerequisite for the further spread of Middle Eastern innovations, including the Neolithic way of life.

ვალერი მანკო

ქობულეთი: მე-3 და მე-4 ფენების კაჟისა და ობსიდიანის კომპლექსები

რეზიუმე

2023 წელს ჩატარებული გათხრების დროს გამოვლინდა და შესწავლილ იქნა ქობულეთის ნამოსახლარის უძველესი კულტურული ფენები, რომლებიც თარიღდება გვიანი პლეისტოცენით ან პლეისტოცენიდან ჰოლოცენზე გარდამავალი პერიოდით. მე-3 ფენა წარმოდგენილია ძეგლის აღმოსავლეთ სექტორში ჰოლოცენის უძველეს ნიადაგში და ასევე 53-ე ორმოში ნაპოვნი მასალებით. ნიადაგში აღმოჩენილი კომპლექსი შეიცავს მხოლოდ ნადირობასთან დაკავშირებულ არტეფაქტებს, ხოლო 53-ე ორმოში ნაპოვნი ნივთები უფრო მრავალფეროვანია. მე-4 ფენა, რომელიც შემონახულია მხოლოდ ძეგლის ჩრდილო-აღმოსავლეთ ნაწილში, წარმოდგენილია ქვის კედლის ნაშთებით და დანგრეული ქვის ნაგებობების ფრაგმენტებით. სტრატიგრაფიულად იგი უკავშირდება შავი ფერის ნიადაგს, რომელიც, სავარაუდოდ, ალეროიდის ინტერსტადიალის ფაზას განეკუთვნება.

იარაღის წარმოების ძირითადი ნედლეული ობსიდიანი და კაჟი იყო. ობსიდიანის მთავარი საბადო ჭიკიანის მთებში მდებარეობდა. თუმცა, ადრეულ ფენებთან შედარებით, მე-3 და მე-4 ფენებში იგი საგრძნობლად მცირე რაოდენობით გვხვდება. აღნიშნულ სიმწირეს შესაძლოა განაპირობებდა ობსიდიანის მოპოვების სირთულე იმგვარ ვითარებაში, როდესაც გარშემო ტერიტორიას სავარაუდოდ არ იცნობდნენ სათანადოდ. აქედან ალბათ დასაშვებია ვივარაუდოთ: მე-3 და მე-4 ფენები, როგორც ჩანს, სამხრეთ კავკასიაში ქობულეთის ქვის ინდუსტრიის საწყის ეტაპს უნდა განეკუთვნებოდნენ.

უაღრესად ნიშანდობლივია, რომ ადგილზე გამოვლენილი ყველა არქეოლოგიური შრე ამჟღავნებს კულტურულ მსგავსებებს. არტეფაქტების ყველა კომპლექსისთვის, უადრესი ნიმუშების ჩათვლით, დამახასიათებელია წნევით ატკეჩის ტექნოლოგია, კონუსური და ტყვიისებრი ბირთვები, ბლაგვპირიანი და საჭრისის ტიპის ნივთები, რომლებიც ასოცირდება სამხრეთ კავკასიის ქობულეთურ კულტურასთან (ძვ. წ. XI–VII ათასწლეულები). ამ კულტურის წარმოშობა დაკავშირებულია ახლო აღმოსავლეთიდან მლეფაატის კულტურის მატარებელ ჯგუფთა მიგრაციასთან.

ამავდროულად, მე-3 და მე-4 ფენების მასალები მიუთითებს ქობულეთის მოსახლეობასა და იმერეთის გვიან ეპიგრავეტის ჯგუფებს შორის კონტაქტებზე. ბიპოლარული მკვეთრი რეტუშით დამუშავებული ფირფიტები მიანიშნებს, რომ სინქრონული კულტურული ტრადიციების მატარებელ აღნიშნულ ხალხებს შორის ადგილი ჰქონდა ტექნოლოგიური ცოდნის

გაცვლას. ამგვარად, ქობულეთის კულტურის წარმოშობამ შექმნა ფართო ქსელი, რომელიც აკავშირებდა სამხრეთ კავკასიასა და ახლო აღმოსავლეთს. ამ ქსელმა, სავარაუდოდ, საფუძველი ჩაუყარა ახლოაღმო-სავლური ინოვაციების, მათ შორის ნეოლითური ცხოვრების წესის, შემდგომ გავრცელებას.

Figures

Fig. 1. Kobuleti site, view from the left bank of Kintrishi.
Fig. 2. Kobuleti, Layer 3.
Fig. 3. Kobuleti, Pit 53.
Fig. 4. Kobuleti, layer 3. Flint complex.
Fig. 5. Kobuleti, layer 3. Flint microliths.
Fig. 6. Kobuleti, layer 3. Obsidian complex.
Fig. 7. Kobuleti, pit 53. Flint complex.
Fig. 8. Kobuleti, layer 3. Obsidian complex.
Fig. 9. Kobuleti, layer 4. Stone wall.
Fig. 10. Kobuleti, layer 4. Flint (1-4) and obsidian (5-10) complexes.

ილუსტრაციები

სურ. 1. ქობულეთის ნამოსახლარი,
ხედი კინტრიშის მარცხენა სანაპიროდან.
სურ. 2. ქობულეთი, მე-3 ფენა.
სურ. 3. ქობულეთი, ორმო 53.
სურ. 4. ქობულეთი, მე-3 ფენა. კაჟის კომპლექსი.
სურ. 5. ქობულეთი, მე-3 ფენა. კაჟის მიკროლითები.
სურ. 6. ქობულეთი, მე-3 ფენა. ობსიდიანის კომპლექსი.
სურ. 7. ქობულეთი, ორმო 53. კაჟის კომპლექსი.
სურ. 8. ქობულეთი, მე-3 ფენა. ობსიდიანის კომპლექსი.
სურ. 9. ქობულეთი, მე-4 ფენა. ქვის კედელი.
სურ. 10. ქობულეთი, მე-4 ფენა. კაჟის (1-4) და
ობსიდიანის (5-10)კომპლექსები.