Preliminary Study of Lugansk Paleolithic Micro-region of the East of Ukraine

by Victor Vetrov

The publication describes the initial stage of investigations of Lugansk Paleolithic microregion at the East of Ukraine. The archaeological remains of this microregion are represented by the series of the Lower and Middle Paleolithic sites, specialized on utilization of quartzite.

Keywords: Lugansk Paleolithic microregion, Lower Palaeolithic, Middle Palaeolithic, quartzite.

Introduction

During the last decade the study of sites where quartzite was used became one of the critical tasks of the Eastern Ukraine Palaeolithic investigations. The first findings of the quartzite Palaeolithic in Lugansk region were made in 1924 by P. Efimenko (Efimenko 1935). He found the Middle Paleolithic site not far from the River Derkul influx into the Severskyj Donetz River, which was named as “Derkul”. Before the end of the 20th century in the middle Severskyj Donetz, i.e. the East of Lugansk region, different investigators had found about ten similar sites. A. Kolesnik joined all the reviewed material into the group of Middle Palaeolithic artefacts of Derkul type (Kolesnik 2003: 259-261). Within the last years the systematic researches provided by the author revealed more than 40 Paleolithic localities, to a certain degree similar to the primarily found ones. (Vetrov and Skorikov 2010; Vetrov and Skorikov 2011; Vetrov 2012; Karmazinenko and Vetrov 2013; Vetrov 2013; Vetrov et al. 2013). However many of these sites contained very numerous finds, occupied large area and sometimes provided tonnes of artefacts. There were revealed categories of

![Figure 1 The relative area of the microregion is defined by the rectangle measuring 15x50 km, elongated in a South-North direction.](image)
assemblage

archaic stone tools never found before in the East of Ukraine. Thus the task of specialized investigation of the local region of archaeological sites with quartzite industry situated at the East of Lugansk area, i.e. Lugansk Palaeolithic microregion, became important. This work represents the preliminary results of the initial stage of investigation.

The relative area of the microregion is defined by the rectangle measuring 15x50 km, elongated in a South-North direction, as presented on the picture (Fig. 1). The southern edge of this region is defined by the Severskyj Donets River. At this district near Pionerskoje village, the concentration of 25 localities was recovered. The sites are situated on the high bank of the Severskyj Donets, at a distance of 0.5-3 km from the river. One of the sites (Vishniovyj Dol) in this district is situated at the watershed area 4 km from the Luganchik River, the eastern tributary of the Severskyj Donets River. Other sites (Gerasimovka 1-5, Shirokoje 1-2, Krasnyj Derkul 1-8, Nizhnjaya Olkhovaya) are mainly connected with the terraces and watershed part of the east bank of the Derkul River (the western tributary of the Severskyj Donets River), which flows through the area of investigations from the North to the South. Sites are located 0.5-14 km from the river. The most investigated areas are concentrated near Makarovo, Vishniovyj Dol, and Pionerskoje villages.

Archaeological characteristics of the objects

Makarovo – 1-3

These localities were found by the author in 1990 at the Eastern outskirts of Makarovo village in the Lugansk Region. Currently three sites situated at a distance of 100m from each other have been discovered. The area of the site Makarovo-3 (N48°41'20,43" E39°31'15,17") is situated near the eastern edge of the village. The sites Makarovo-1 (N48°41’29,91" E39°31’18,10") and Makarovo-2 (N48°41'49,08" E39°31’31,39") are situated along highway P22, thus partially covered by the roadbed and partially destroyed by fire-protection plowing between highway and forest.

The raw material used for the manufacture of recovered artefacts is mainly gray, or less frequently brown, quartzite. Probably the material was brought to the site by its inhabitants. According to the geological survey the nearest exposures of Paleogene deposits with quartzites are situated about 7-10 km from the Makarovo sites.

The artefacts have been collected from the whole area of the Makarovo-1 site, which is 150 x 50m. Shallow depth of finds occurrence (20-30 cm from the surface) with the depth of plowing in sand up to 50 cm caused the spreading of the artefacts, particular large ones, along the whole length of the fire-lane. All the artefacts from the above mentioned fire-lane were collected, regardless of their type, providing a total sample from that area. The volume of the material, and the undamaged condition of Makarovo-2 and Makarovo-3 sites’ occupation layers, demonstrate that they are similar to the Makarovo-1 site. Thus, we propose that preliminary descriptions of Makarovo-1 technology may characterize all Makarovo sites.

The recording of all artefacts collected from Makarovo-1 was based on three criteria – quantity, weight, and size. Though the number and size were essential criteria of the Palaeolithic materials, in this case the “weight” category was additionally introduced because of the quantity of primary lithic flakes developed by crushing and breaking-up quartzite in a ‘bloc on bloc’ manner. Such technology resulted in numerous irregular waste flakes from crushing and breaking, which was partly used for the manufacturing of other tools and partly disposed of. Thus we provide weight data for all categories of artefacts, since the understanding of the weight parameter is important for the recording of the raw materials expenditure at the different stages of the reduction sequence. Table 1 contains general data for part of the Makarovo-1 complex.

<table>
<thead>
<tr>
<th>Name</th>
<th>Number, pcs.</th>
<th>Weight, kg</th>
</tr>
</thead>
<tbody>
<tr>
<td>Irregular fragments of raw materials:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>waste from crushing and breaking</td>
<td>105</td>
<td>118.5</td>
</tr>
<tr>
<td>Cortical flakes (complete and fragments), debitage</td>
<td>440</td>
<td>20.5</td>
</tr>
<tr>
<td>Secondary flakes, debitage</td>
<td>1521</td>
<td>37</td>
</tr>
<tr>
<td>Artefacts with secondary working</td>
<td>568</td>
<td>142.5</td>
</tr>
<tr>
<td>TOTAL</td>
<td>2634</td>
<td>318.5</td>
</tr>
</tbody>
</table>

Table 1 Number and weight of the artefacts from the site Makarovo-1.
The generalized technological cycle of quartzite knapping at Makarovo sites appears to be as depicted on the picture (Fig. 2). The initial crushing was preceded by the testing of raw materials; by removing a few edge flakes from different sides of the nodules and blocks. It is quite likely that in some cases certain edge flakes could form the surface suitable for further crushing and breaking.

**Figure 2 The generalized technological cycle of quartzite knapping at Makarovo sites.**

The main procedure of the initial fragmentation of big concretions was performed by the ‘bloc on bloc’ method. This is evident due to numerous pieces of quartzite shaped as cubes, tetrahedrons and polyhedrons, probably obtained during the fragmentation of concretions and ‘slabby’ blocks.

It seems that the crushing procedure was not unilinear. Probably due to the physical properties of the raw materials, the inhabitants of Makarovo sites were preferentially making large blanks (mainly for butchering tools). For the tools of the smaller size, the reduction of blocks and larger fragments into smaller pieces was used. It is quite possible that fragmentation might be achieved by co-impacts of blocks with different fragility, fracturing, and weight. It seems that for the assessment of these properties primary testing of the material must be done. Nevertheless, due to the specific procedure of primary splitting, the low quality of raw material, and sandy surface of the sites’ area, the process was defined by numerous waste materials. The impossibility to foresee the quality of the material demanded continuous restocking of raw materials. This is probably the reason of the presence of tested but unused quartzite nodules and blocks at the Makarovo sites.

The next technological stage was the selection of the most suitable blanks for tool production. There are no typical ‘cores’ at Makarovo sites. Thus, all types of tools resulted from fragments or large flakes produced by splitting nodules. This is evident from the presence of cortex on numerous artefacts with secondary processing.

The final stage, the manufacture of the tool itself, is usually identified by a working edge created through the removal of several large flakes. This is followed by minimal rough retouch. The large flakes produced during this process could then be selected for the later manufacture of smaller tools.

**Figure 3 Tool types found at Markarovo sites.**

The available assemblage clearly determines the range of tools (Fig. 3, 4) mainly used at the sites. Among them are various cutting tools (choppers and rough bifaces) and massive sidescrapers. Denticulate and notched tools are represented by multiple varied typologies. Tool blank selection was done according to the function of the tool. For the majority of cutting tools, massive, transversely thickened, and...
often V-shaped blanks were used. Sidescrapers, denticulate, and notched tools were usually produced from flatter blanks with long straight or convex edges, where the working area of the tool was formed.

Thus, considering the technique used for primary splitting, the large number of primitive chopping tools and bifaces, lack of secondary processing, and large size of the scrapers and pointed tools, the early Acheulian age of Makarovo-1-3 sites can be suggested.

Vishniovyj Dol

The site was discovered in 2006 by V. Skorikov and has been investigated together with the author. It is situated 3 km to the South-East of the city of Lugansk, and 3 km to the West of Vishniovyj Dol, Lugansk Region, N48°32'43,10", E39°26'51,10".

The archaeological finds of Vishniovyj Dol (Fig. 5) are represented by a small number of cores, a series of well shaped tools, and numerous quartzite and plate sandstone debitage. The artefacts have not been rolled, have sharp edges, slightly smoothed surfaces, and there is a light patina on some objects. The surface of quartzite flakes often contains traces of very solid and hard lime-sand cement. On some objects this cement remains as small areas in the flake scars, while on the other often large artefacts its thickness can be >1 cm and cover a significant area of the artefact surface.

Figure 4 Tool types found at Makarovo sites.

Figure 5 Tool types found at Vishniovyj Dol.

At Vishniovyj Dol we have found two large irregularly worked cores. Both cores are massive cobbles of brown quartzite approximately 0.8 m in length, from which flakes measuring between 20-40 cm have been struck. At the natural surface of the concretions as well as the negative flake faces, one can clearly see the remains of solid lime-sand cement. The collected artefacts (except quartzite cores) include numerous fragments of plates of grey sand-stone with one or more flake scars.

The characteristic feature of the cutting tools from Vishniovyj Dol is the presence of a natural or artificial dorsal ridge, asymmetry of form, and the presence of shoulders which delineate the wide basal part of the tool body from the narrower distal part on some artefacts. Choppers are dominant in the assemblage, while sidescrapers and spheroids are present in smaller amounts. There are also numerous small tools, including denticulate tools on 'citrus slice' flakes.
Generally the Vishniovyj Dol complex is characterized by a clear early Palaeolithic typological set of tools, with an absence of the Levallois typology, and blade reduction. Big chopping tools are formed by unifacial retouch on massive primary flakes or tablets of quartzite. The citrus slice technique of sandstone knapping is represented by a significant number of smaller tools. Thus with the presence of these rare handaxes, we can presumably assign Vishniovyj Dol to the Aucheulian type.

**Pionerskoje – 1A**

The site was discovered by the author in 2013, 3 km to the South-East from Pionerskoje village, N48°33'23.00" E39°36'09.60". The same year a trial trench 2м² was excavated with V. Stepanchuk.

Geologist S. Karmazinenko determined stratigraphy (Fig. 6) through the analysis of sediment cores that showed recent chernozem (H) layers reworked with more ancient, probably Kaidaki, soil (R1- R2) formed on the Palaeogene sands. Thus, the ancient soil appears to act as the chronologic marker, dated between 240-200 thousands (Blank, M. and Sirenko, N. and Vozgrin, B. and Grushenko Z. 1987: 24-47) years (Stepanchuk and Vetrov 2014: 6-7). There are three cultural horizons fixed in the lower Holocene layer, in the ancient soil and underneath it. The thickness of each horizon constitutes 10 cm and they are separated from each other by sterile layers, containing no archaeological finds.

![Figure 6 Stratigraphy visible at Pionerskoje -1A.](image)

The 1st culture-bearing horizon was identified in the lower part of the modern and the upper part of the ancient soil layers, at the level...
between -0.44 and -0.55 m. The characteristic feature of the 1st culture-bearing horizon is the occurrence of artefacts on the surface and within a solid layer of natural grey and light-brown quartzite debris. During the field inspection it was found that a blanket of quartzite stretches in a North-South direction for approximately 80 m. The artefacts found in the layer of natural quartzite have various levels of preservation, some with intensive white and ochroleucous patina, and often a light lustre. Pits on artefact surfaces contain remains of bright red pigment, which could derive from the soil contacting with artefacts. Similar traces of pigment and a similar state of lithic surface preservation is also seen on some natural quartzite, found in the first cultural horizon and visible in the upper edges of a nearby gully (Fig. 7). It is likely that these finds are the oldest at this site.

Other groups of artefacts have a light white or bluish patina, light surface gloss, and no signs of abrasion. This group also includes older artefacts that have more recent retouch or alteration. The third group of artefacts is, in our opinion, the youngest. These artefacts have a light whitish patina or, in some cases, no patina at all. This group includes artefacts from the two previous discussed groups, which have no patina, or exhibit a slight patina and traces of secondary working.

A significant portion of finds (both knapped and natural quartzite) have mechanical damage, cracking, and breaks. Some fractures are patinated, others are more fresh. Such damage is caused by abrupt changes of temperature, swings in humidity, mechanical pressure, river-rolled impacts, and also natural mineral fracturing. There is a strong possibility that in this case a combination of different factors could be involved. During the excavations we found that when fractures appear, water penetrates the mineral and the patination process can start immediately. Thus, ancient-looking signs of destruction may in fact not be very old. It should be also noted that the geological formation of the quartzite, and time frame for artefact production and use, has not been absolutely dated. It is likely that the oldest finds from the first and second groups, along with the raw material, were transported for some distance, while the artefacts from the third group have been left on the surface of the first culture bearing horizon.

However, it has to be mentioned that redeposition probably occurred only once and ancient artefacts were moved a short distance. This is evidenced by the absence of marked traces of abrasion on the surface of the most ancient artefacts. There are practically no breakages, erosion or any other mechanical damage along the thin edge of the artefacts. We recorded some examples of the refitting of naturally fractured quartzite as well as the knapped quartzite recovered, both of which were recovered not far from each other. This observation is indicative of either an absence of redeposition or great mixing of lithics.

Generally, we consider that the mode of natural and knapped quartzite occurrence match with the outcrop to the certain surface, which is registered as a quantitative and qualitative representation of both knapped and natural quartzite, and correspond to the 3rd provisional sub-horizon of the 1st culture-bearing horizon. This is that sub-horizon where the maximum number of artefacts, found in the first culture-bearing horizon, occurs. There are also numerous instances of natural and split quartzite refitting within this area. The assessment of the depth of bedding of weakly patinated quartzite shows that about 90 percent of the material is situated on the stratigraphic level -45 and -50cm below surface. The concentration of quartzite itself clearly marks this surface along the perimeters of all excavations. At the stratigraphic level measuring -55 – -60cm below surface, the sterile horizon can be identified by the absence of any artefacts.

Figure 8 The excavation of square 1 and 2 at Pionerskoje -1A.

Chronologic position of the first culture-bearing horizon is mainly related with the assessment of quartzite that is not patinated and lightly patinated. This diversity of tools, obtained during the excavations from sq. 1 and part of sq. 2 (Fig. 8) is not matched. Instead, points on blades and four borers on flakes were observed, and presented as almost
identical tools. There are two typical angle burins and miniature burin spall. Scrapers are represented by a small group of 9 samples, among them there is a small sidescraper with retouching of the distal and lateral edges. Other tools are mainly presented by various flakes with miscellaneous retouching. Generally the described set of tools can be associated with the Mesolithic period.

Among the series of intensively patinated artefacts from the first culture-bearing horizon (Fig. 9,10,11), there are massive points, burins, sidescrapers, end-scrapers, fragment of axe, and cutting and notched tools, which can probably be attributed to the Middle Palaeolithic. However, whether redeposition of the material, and mixing with more recent artefacts occurred, cannot be clearly assessed at this time.

The second culture-bearing horizon occurs in the upper part of the ancient soil, at a depth of -0.6 to -0.7 m below surface. Thirty artefacts of intensively patinated quartzite were discovered in this layer: fifteen flakes, thirteen retouched flakes, one denticulate-notched flake, and one notched tool. The preservation of finds and their patination degree makes it possible to suggest their Lower Palaeolithic age.

The compact vertical distribution of finds shows that this is a distinct culture-bearing horizon. It is thought to be a palaeo land surface, marked by two big brown quartzite nodules with extensively corroded surfaces. One was recovered near the North wall, while the second one was found in the North wall. The level of their upper surface is -65.0 and lower - 70.0. The level - 70.0 corresponds to the lower border of the finds bedding in this occupation layer.

The culture-bearing horizon occurred in the lower part of the ancient soil at the level between -0.8 and -0.9 m. Thus this horizon of finds is also separated from the upper layer by the aseptic embedding without any archaeological finds in this part of excavations. The horizon is fixed by three reference levels and represented by 15 artefacts of patinated quartzite. Six of them are retouched flakes and pieces; one is the piece of bifacial tool. Other finds are flakes (Fig. 12). The undamaged
condition and their patination level suggests their Lower Palaeolithic age. The compact vertical distribution of finds indicates that it is distinct culture-bearing horizon. We think that its’ probable daylight surface is marked by the upper level of Paleogenic sands, recovered in the control digging. Therefore at the Pionerskoje-1 site we probable see intact occupation layers of the Mesolithic, Middle and Lower Palaeolithic.

Figure 12 Lithic tool and flakes found in surface deposits at Pionerskoje-1A.

Pionerskoje 3

This site was discovered by the author in 2012 2.3 km to the south-east from Pionerskoje village. A large amount of surface material is spread along the slope of Sukhodol within the area, 200 by 70 m (Fig. 13), equaling 1400 m². Presumably, part of the described area was damaged due to anthropogenic activity related to the period of the Second World War, as evidenced by several dug-out shelters and craters. The main area of the site however, is represented by a denuded surface on the slope, where significant amounts of quartzite artefacts without any damage are spread.

Figure 13 A large amount of surface material is spread along the slope of Sukhodol within the area, 200 by 70 m, equaling 1400 m². In 2013 surface collection was undertaken in an undisturbed area 1 by 4m, likely situated in the central part of the area (Fig. 13) (N48°33’35.40”, E39°35’44.20”). Due to the significant amount of finds, we have been selecting artefacts only from an area two m². The description of material taken from sq. 1 and sq. 2 (Fig. 14) is given below.

Figure 14 2 metre square excavation at Pionerskoje 3.
The artefacts, mainly manufactured from light-grey quartzite, were lying in a solid compact layer with a thickness of 10-15 cm. The lower part of the layer contained corrodated small flakes, pieces and broken black quartzite, underlied by Paleogenic sands.

During analysis of the material, we found that the collected artefacts have different age. Visually the artefacts differed by the condition of the knapped surfaces and were distributed into three groups according to their attributes. The first group was composed of grey quartzite with dim hue or small dark spots (stripes) on it. This is most likely the youngest group series of artefacts (Group 1). The older group (Group 2) was formed by artefacts with surfaces significantly or totally covered by a black weathering polish/deposit. Occasionally, the surface of artefacts displayed yellow or reddish color. It is likely related to the naturally occurring pigments of the soil, where these objects were situated. Their surface was rougher, caused by the destruction of cement binding the quartz grains. The most ancient group (Group 3) of this area includes artefacts completely covered by black tarnish and visible crust of weathering on the surface of splits. Destruction of the artefacts’ surface (which became very fragile and dry because of significant loss of the cement binding quartz grains) is very advanced. Some part of splits and edge retouch negatives can be hardly detected.

Figure 15 The most ancient group of artefacts at Pionerskoje-3 represents a flaking technique based on manufacture of small (3-7 cm) flakes from the radial and irregular cores.

Figure 16 The second group of artefacts represented at Pionerskoje-3 is characterised by large oval and sub-triangular flakes, elongated proportions, and denticulate and notched forms.

Figure 17 The youngest group of artefacts Pionerskoje-3 is represented by cores similar to Levallois, and their products. Tools in this group include scrapers, knives, points, denticulate and notched forms, and retouched flakes.
Though the material collected from sq. 1 and sq. 2 provide a large sample (951 pieces), nevertheless, we can make some certain preliminary conclusions. The most ancient group of artefacts (Group 3) (Fig. 15) represents a flaking technique based on manufacture of small (3-7 cm) flakes from the radial and irregular cores. The more recent group of artefacts (Group 2) (Fig. 16) includes Levallois-type cores. Large oval and sub-triangular flakes from this group often have elongated proportions. The tools are represented by denticulate and notched forms, scrapers, and various retouched knives and flakes. The youngest group of artefacts (Group 1) (Fig. 17) is represented by cores similar to Levallois, and their products. Tools in this group include scrapers that demonstrate typological variability, knives, points, denticulate and notched forms, retouched flakes, and include Levallois flakes with secondary working. Though blade cores are absent, large flake-blades were found (up to 20 cm length) and some were retouched. Such artefacts were likely produced by striking removals from the straight edges at the basal ends of large quartzite blocks. Thus, the most ancient group of finds feasibly relates to the Lower Palaeolithic, and the youngest to the Middle Palaeolithic.

Conclusions

While comparing materials from Makarovo and Vishniowyj Dol with the sites near Pionerskoje, we can see some differences in knapping technique. While having a similar large size, the flakes from Pionerskoje are thinner in transverse section and have dorsal surfaces with numerous negatives. Tools are presented by large chopping artefacts, massive sidescrapers, notched tools, and retouched flakes. Chopping tools were made on flakes with thicknesses 1.5 times greater than length. Rough knapping occasionally produced a symmetric form, close to almond-shaped. While preparing tool blanks, the bulb was often removed. Some of the tools likely represent unfinished forms. Generally, the tools from the sites near Pionerskoje are characterized by more symmetric shapes than elsewhere, though they were produced using economical and often very rough working. Material from some sites (Pionerskoje-1A, Pionerskoje-3) demonstrates elements of Levallois technique and contains elongated flakes and small choppers. Such objects likely belong to the Middle Palaeolithic (sites of Derkul and Titovka type) (Kolesnik 2003; 250-261), however some of the artefacts, based on knapping technique and typology (bifaces, choppers, large sidescrapers) appear to belong to the Lower Palaeolithic.

The future investigation at Pionerskoje should be focused on detailed sorting of the denuded slope of the Sukhodol ravine. This will provide a detailed study of the knapping technology of the Lower and Middle Palaeolithic quartzite through the interpretation of a large sampling of the artefacts. It is critical to identify the stratigraphy of the occupation layer and synchronize the stratified finds and the surface artefacts by their preservation, typology and manufacture technology is very important.

Studying of the Lugansk Palaeolithic microregion provides wide possibilities for a larger investigation of raw material exploitation strategy and knapping technology based on utilization of quartzite. This paradigm, built on the basis of material from the group of sites of the Lower and Middle Palaeolithics, gives the possibility of detailed and reasonable study of one of the earliest phases of the archaeology of Eastern Ukraine.

Acknowledgements

The author thanks Dr.Sc V. Stepanchuk, the Head of Ukrainian Lower Palaeolithic expedition of the Institute of Archaeology of NASU, for the general direction of the investigation of the Lower Palaeolithic sites of the Eastern Ukraine, archaeologists Skorikov V., Ryzhov S., Levchuk P., Klokhko L. and geologists Drs Karmazinenko S., Drs Manichev V. for the participation in the field researches, provided by the author, Shvets-Itozawa E., Vetrova T. for assistance in preparation of the translation for the publication.

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