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**A.A. Anoikin^{1, 2}, A.G. Rybalko¹, T.U. Khudjageldiev³,
P.M. Sosin⁴, A.F. Sharipov³, and R.N. Kurbanov^{5, 6}**

¹*Institute of Archaeology and Ethnography,
Siberian Branch, Russian Academy of Sciences,
Pr. Akademika Lavrentieva 17, Novosibirsk, 630090, Russia
E-mail: anui1@yandex.ru; rybalko@archaeology.nsc.ru*

²*Altai State University,
Pr. Lenina 61, Barnaul, 656049, Russia*

³*Donish Institute of History, Archaeology and Ethnography,
National Academy of Sciences of Tajikistan,
Pr. Rudaki 33, Dushanbe, 734025, Republic of Tajikistan
E-mail: tura959@mail.ru; abdullo.sharipov.1985@mail.ru*

⁴*Institute of Water Problems, Hydropower and Ecology,
National Academy of Sciences of Tajikistan,
Pr. Aini 12A, Dushanbe, 734025, Republic of Tajikistan
E-mail: psosin46@mail.ru*

⁵*Lomonosov Moscow State University,
Leninskie Gory 1, Moscow, 119991, Russia
E-mail: roger.kurbanov@gmail.com*

⁶*Institute of Geography,
Russian Academy of Sciences,
Staromonetny per. 29, bldg. 4, Moscow, 119017, Russia*

Lakhuti-IV: A New Site of the Loessic Paleolithic in Tajikistan

We present the findings of excavations at the Early Paleolithic site of Lakhuti-IV in the middle reaches of the Obi-Mazar River, Republic of Tajikistan. The geological and geomorphological situation in the area is reconstructed, and Pleistocene deposits are described. On the basis of the available chronostratigraphic constraints, we can determine time of formation of the cultural layer that is associated with deposits of the fifth buried soil (pedocomplex 5, dated to ~0.5 Ma ago). Characteristics of archaeological finds (662 artifacts) from eight cultural horizons are discussed. Primary reduction is dominated by the simplest parallel, radial, and slice cores. Among flakes, “citrus slices” and decortication chips are the most frequent. Tools include numerous flakes and retouched fragments. Single-edged side-scrapers on large flakes, denticulate-notched tools, and unifaces are abundant. The concentration of artifacts is very high for the Khovaling Loess Plateau. Lakhuti IV is the first site of the Loessic Paleolithic where artifacts occur in distinct archaeological horizons. Industries associated with pedocomplexes 6–4 in the region (Obi-Mazar-VI, Lakhuti-I, -IV, etc.) show common features, such as primary reduction techniques (slice, radial, simple parallel) and the composition of the toolkits (choppers, unifaces, single-edged side-scrapers, etc.). The findings allow us to draw more reliable parallels with contemporaneous industries of other regions. The closest similarities to industries of the Karatau culture are seen among the Soanian industries in northern Hindustan and the Early Paleolithic assemblages of southwestern China.

Keywords: *Tajikistan, Early Paleolithic, assemblage, stratigraphy, loess, soil complex.*

Introduction

Currently, many Early Paleolithic sites are known in Eurasia. They are unevenly distributed across the continent, and differ in the degree to which they have been studied. While in Eastern Europe, Near East (Levant), Hindustan Peninsula, Southeast Asia, and in the Caucasus, Early Paleolithic sites are numerous, they are much fewer in the center of the continent—although this was where the migration routes taken by humans passed throughout the Pleistocene. On the basis of modern archaeological and paleogeographic data, several major migration corridors have been reconstructed, one of which crosses Central Asia, branching toward the Caspian, Siberia, and China. During the second half of the 20th century, in Tajikistan, which is located in the center of the region, over a dozen Paleolithic sites were discovered, including those attributable to its earliest stages. Most of the sites were found in association with loess paleosol deposits (Ranov, Schäfer, 2000).

In Central Asia, the high sensitivity of landscapes to climate changes—primarily, to humidity—resulted in formation of series of interglacial polygenetic paleosols, whose deposits are represented by corresponding pedocomplexes (PC). These were formed during warm and humid periods, while loess formation proceeded under dry and cold conditions. The probable length of one loess-soil cycle in the Pleistocene equaled ~100 ka years (Dodonov, 2002). The most complete loess-paleosol sequences (up to 200 m thick) known in Tajikistan comprise up to 40 PCs; they form the basis for the detailed stratigraphic scheme of the Pleistocene for the entire region (Ibid.; Ding et al., 2002). Those deposits correlate with the earliest archaeological records of human presence in Central Asia during

the period known as the Loessic Paleolithic (Ranov, Schäfer, 2000; Ranov, 1995).

V.A. Ranov—the discoverer of loess sites in Tajikistan—used this term to describe Early and Middle Paleolithic industries bound up with watershed loesses and paleosols buried within them. Complexes of this sort were recorded in various regions—Central Asia, China, Eastern Europe, and others. According to Ranov, these complexes share several common traits: association of archaeological materials primarily with paleosols; artifact scatters, which normally do not form distinct archaeological horizons; lithic assemblages dominated by primary reduction products; scarcity of tools; and an almost complete absence of faunal remains (Ranov, Schäfer, 2000). Typical Loessic Paleolithic industries, found at some sites in Tajikistan, particularly, in the Obi-Mazar River valley, in the southeastern part of the country, on the Khovaling Loess Plateau, were discovered by Ranov in the 1970s and studied by him, with short breaks, until his death in 2006 (Lazarenko, Ranov, 1977; Ranov, Zhukov, 1982; Ranov, 1986; Ranov, 1995; Ranov, Schäfer, 2000; Ding et al., 2002; Schäfer et al., 2003; Ranov, Karimova, 2005). The studies were resumed in 2019. In 2021, a new Paleolithic site of Lakhuti IV was discovered in the Obi-Mazar River valley (Anoin et al., 2021). The objective of this study is to introduce the first findings of interdisciplinary studies at this site, and to assess the place of its lithic industry in the general context of the Early Paleolithic of the region.

Findings

In summer of 2021, members of the Joint Russian-Tajik Geoarchaeological Expedition carried out investigations in the middle reaches of the Obi-Mazar River, in the environs of Lakhuti village (Fig. 1). Archaeological reconnaissance was also conducted in a 1 km long exposure on the right side of the valley, where in the 1970s to 1990s Paleolithic sites of Obi-Mazar IV, Obi-Mazar VI, and Lakhuti I were discovered (Ranov, 2005; Ranov, Karimova, 2005). A large landslide that occurred there in 2016 significantly altered the landscape. Today, the central part of the exposure looks like a cirque with distinct Upper and Middle Pleistocene paleosols (Fig. 2). During reconnaissance work, P.M. Sosin found

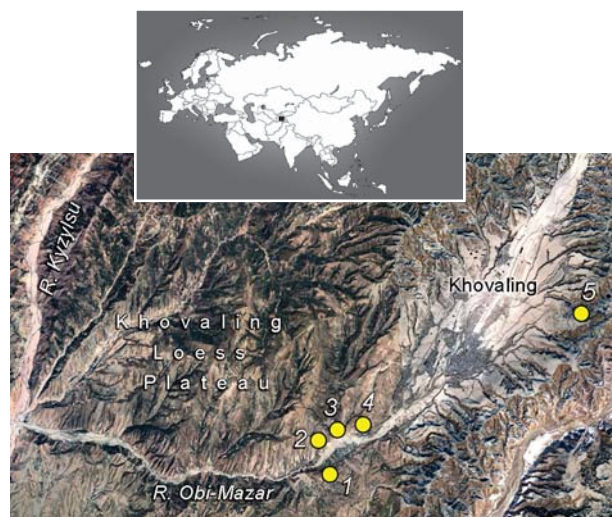


Fig. 1. Map showing location of the key Loessic Paleolithic sites in the Obi-Mazar valley.

1 – Kuldara; 2 – Obi-Mazar; 3 – Lakhuti IV; 4 – Lakhuti I; 5 – Khonako I–III.



Fig. 2. Location of Lakhuti IV, Obi-Mazar, and Lakhuti I within Obi-Mazar exposure.

an accumulation of lithic artifacts, occurring *in situ* in the wall of the exposure within PCs 5 and 6. Later on, reconnaissance excavations were conducted in the place of the highest concentration of archaeological remains within PC 5. They confirmed the presence of an Early Paleolithic site, which was named Lakhuti IV (Anoin et al., 2021).

The site is located on the right bank of the Obi-Mazar River, at a height of ~50 m above the modern water level and at an altitude of ~1300 m above sea level. In this area, the river erodes a thick sequence of Quaternary sediments comprising ancient alluvium (30–40 m thick) overlain by loess and paleosol series. The base of the section is composed primarily of alluvial pebbles. The thickness of these sediments is maximal in the southwestern part; its surface declines towards the northeast, sinking under the modern alluvium level. The subaerial complex consists of thick loess and paleosol series (up to 70 m) including up to seven PCs.

All the archaeological remains excavated at Lakhuti IV in 2021 were found within PC 5, whose total thickness in that place does not exceed 3.8 m. A pedocomplex is normally a polygenetic body formed by several buried soils. Some of them are separated by thin loess horizons, while others are superimposed. Each paleosol corresponds to a warming/wetting phase within an interglacial. The profile of a PC comprises sediments

of the initial (Boreal) stage of soil formation in its lower part (horizons LB+Bca); then follow the sediments of optimal (horizons Bt and Bm) and final (horizon BL) stages (Lomov, Sosin, Sosnovskaya, 1982).

Culture-bearing layers are overlain by sediments of the final stage of soil formation (carbonized, porous, dense loam of brownish-yellow color); their visible thickness is up to 0.8 m. The PC itself includes three distinct paleosols. The upper paleosol is lumpy-cloddy, brownish-yellow, medium loam, with carbonates in small pores, rodent burrows up to 5 cm in diameter, and concretions reaching 8 cm; the thickness is 0.5 m. The middle paleosol is lumpy-nutty, brown, heavy loam, with rare carbonate concretions up to 3 cm in size; the thickness is 1.4 m. The bottom of the PC rests on a thick carbonate crust (Sca), which had formed in the earliest paleosol by eventual decarbonization at the optimal stage of pedogenesis. It is a loess-like loam, strongly impregnated with carbonates, which adds a whitish-brown hue to the sediment; the thickness is 0.7 m. Generally speaking, the appearance of this profile corresponds to the characteristics of PC 5 described for loess-paleosol series of Tajikistan (Dodonov, 2002). According to existing geological data, the age of PC 5 in the Obi-Mazar valley is ~0.5 Ma (Ranov, Schäfer, 2000; Dodonov, 2002).

In 2021, a pilot pit (4.0 × 1.5 m), oriented along the slope, revealed the main part of the PC 5 profile down



Fig. 3. Lakhuti IV site.

1 – northwestern wall of the 2021 excavation; 2 – concentration of hammerstones in cultural horizon 6.

to the carbonate crust level. The total excavation depth was 2.5 m (Fig. 3, 1). Owing to the abrupt slope of the exposure ($\sim 50\text{--}60^\circ$), the excavated area (6 m^2 on the pit floor) on the upper levels was much smaller. Within the final and optimal paleosols, lithic artifacts were found in subhorizontal positions, following the general extension of the sediments. They were recorded in eight provisional cultural horizons, separated by archaeologically sterile zones (Fig. 4). No differences in the lithological composition of the layer were found between culture-bearing and sterile sediments.

The archaeological collection from Lakhuti IV consists of 662 artifacts. They were found in one PC and do not differ in technical and typological characteristics, which allows us to consider them as a single industry. Because the artifacts are rather few, they can be analyzed only in toto.

Analysis of the collection has demonstrated that core-shaped pieces form a significant share of primary reduction products (18 spec., $\sim 8\%$ without debitage) (see *Table*). Several planar techniques were employed: radial single-faced (7 spec.) (Fig. 5, 2, 4, 7, 9), slice akin to the last (2 spec.) (Fig. 6, 2, 6), and simple unidirectional parallel (4 spec.) (see Fig. 5, 1). No preliminary preparation of cores was carried out, or it

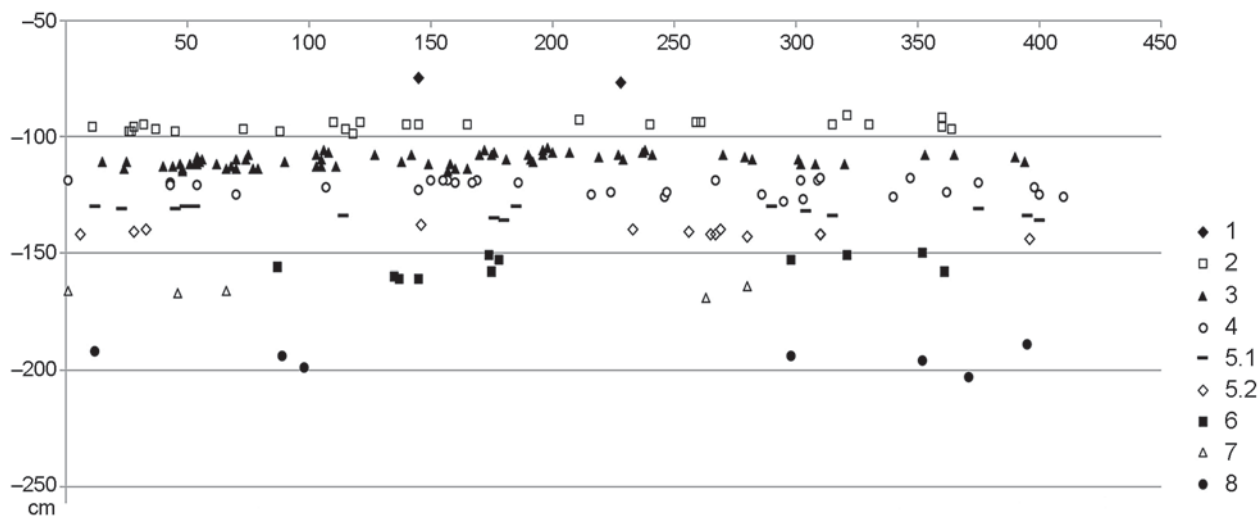


Fig. 4. Projection of artifacts at Lakhuti IV on the northwestern wall of the 2021 excavation (depth, 1.5 m). Figures accompanying conventions refer to cultural horizons.

Composition of lithic industry from Lakhuti IV

Category/group	Cultural horizon								Total	
	1	2	3	4	5	6	7	8	spec.	%
Pebbles	–	–	2	1	3	5	–	–	11	1.7
Split pebbles	–	2	3	2	1	–	1	–	9	1.4
Cores	–	1	10	2	2	1	1	1	18	2.7
Core-shaped pieces	–	–	1	2	2	–	1	–	6	0.9
Flakes:	6	55	77	42	40	8	4	15	247	37.3
cortical	–	5	5	3	2	–	–	2	17	2.6
large	–	2	3	1	–	–	–	1	7	1.1
medium	–	3	–	2	2	–	–	1	8	1.2
small	–	–	2	–	–	–	–	–	2	0.3
semi-cortical	–	5	2	1	5	1	1	1	16	2.4
large	–	2	1	–	3	–	–	1	7	1.1
medium	–	1	1	1	2	1	–	–	6	0.9
small	–	2	–	–	–	–	1	–	3	0.5
non-cortical	6	45	70	38	33	7	3	12	214	32.3
large	–	2	18	12	7	1	–	4	44	6.6
medium	2	11	34	19	10	3	3	2	84	12.7
small	4	32	18	7	16	3	–	6	86	13.0
Small flakes (≤1.5 cm)	2	24	26	18	12	4	–	1	87	13.1
Fragments	8	56	47	27	19	4	7	4	172	26.0
Chips	2	10	20	14	6	3	4	–	59	8.9
Scales	4	19	11	9	10	–	–	–	53	8.0
<i>Total</i>	22	167	197	117	95	25	18	21	662	100

was carried out at a minimal level, when just one or two flakes were detached. Convenient natural planes were used as striking platforms. Flaking surfaces were not prepared; core-trimming elements or rejuvenation spalls are absent. Cores on large massive flakes (2 spec.) were knapped within the framework of the same strategy. Their ventral faces were used as ready-made planes for the detachment of blanks (see Fig. 6, 5, 7). No traces of any preparation or rejuvenation are visible on such cores either. The collection comprises heavily exhausted cores (3 spec.).

The larger part of the debitage consists of waste (~70 %); which, apart from fragments and chips, includes small flakes (<1.5 cm in size) and scales, which can be regarded as evidence of secondary reduction of blanks at the site. Blade forms are absent. In the category of flakes, “citrus slices” of various sizes account for ~10 % (see Fig. 5, 10); one fifth of them are “wedges”. Flakes of this kind were first identified by Ranov, who

described them as longitudinally fragmented “citrons”, triangular in longitudinal section, and considered them as typical products of the slice technique. Among flakes, decortication chips reflecting the initial stage of core reduction amount to ~5 %; however, ~75 % of flakes retain cortex to some degree. Medium and small flakes form roughly equal percentages; large flakes are somewhat less numerous. Most striking platforms are natural (76 %); plain platforms are rare. The assemblage contains hammerstones (8 spec.) fashioned on elongated pebbles, varying in size and weight and showing traces of microflaking on one or two ends.

The toolkit (~8 % of the assemblage, without debitage and hammerstones), along with retouched fragments (5 spec.), comprises single-edged side-scrapers on large flakes (4 spec.) (see Fig. 5, 8; 6, 1), denticulate-notched (5 spec.) (see Fig. 5, 3, 6), and unifaces (4 spec.) (see Fig. 5, 5; 6, 3), occurring in roughly equal proportions. Some parallel cores can be

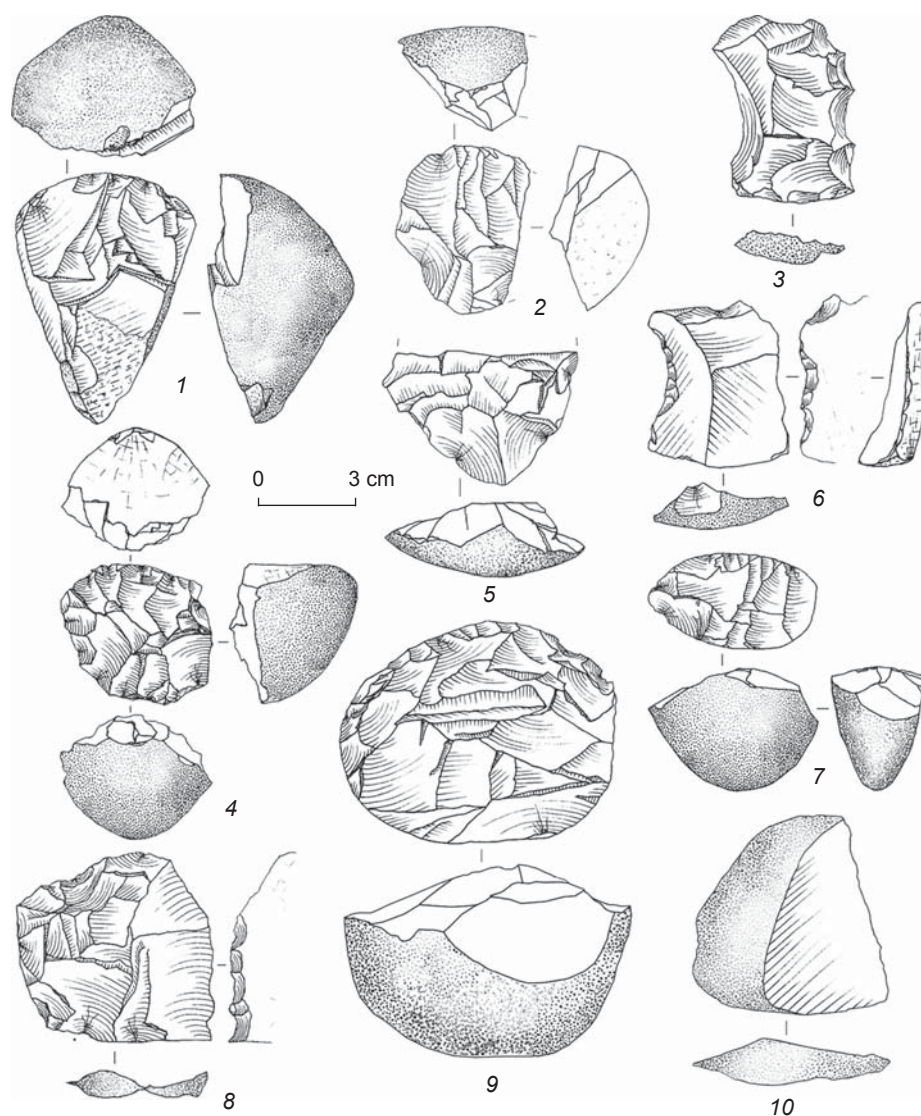


Fig. 5. Lithic artifacts from cultural horizons 2 (2, 10) and 3 (1, 3–9) of Lakhuti IV. Drawings by T.U. Khudjageldiev.

1, 2, 4, 7, 9 – cores; 3 – denticulate tool; 5 – fragment of uniface; 6 – notched tool; 8 – side-scraper; 10 – “citrus slice”.

interpreted as choppers, with working edges located at an angle of $\sim 60^\circ$ (see Fig. 6, 4). The collection also contains two atypical end-scrapes and a retouched knife.

Unifaces—small, plano-convex, rounded implements—are the most impressive type of tools. Their convex surfaces retain cortex, while the plane (or slightly convex) faces bear scars of flattening centripetal removals, varying in size, that resemble relatively thin flakes of shaping rather than traces of the detachment of target blanks produced by radial technique.

Thus, in terms of primary reduction and composition of toolkit, the Lakhuti IV complex

conforms to the technological and typological characteristics of Early Paleolithic industries, and this conclusion is supported by the age of enclosing deposits. This lithic industry is invariable throughout its existence, falling within the period when PC 5 formed, i.e., MIS 13 (530–480 ka BP). Differences in the total number of artifacts and in the share of certain types of implements in various horizons (core-shaped pieces in horizon 2, hammerstones in horizon 6, etc.) are likely caused by various subsistence activities and their intensity, as well as by the fact that the excavation area is small.

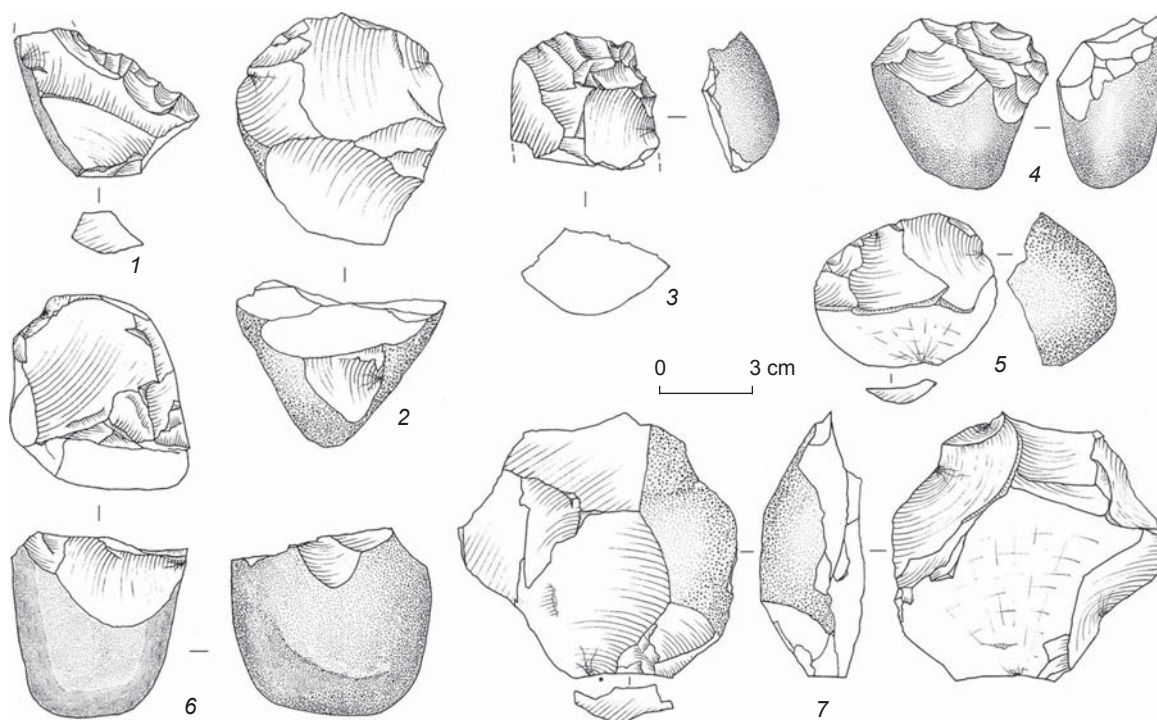


Fig. 6. Lithic artifacts from cultural horizons 4 (1, 93, 6), 5 (2), 6 (4), and 8 (5, 7) of Lakhuti IV. Drawings by T.U. Khudjageldiev.

1 – side-scraper; 2, 5–7 – cores; 3 – fragment of uniface; 4 – chopper.

Discussion

At present, aside from Lakhuti IV, six Paleolithic sites abundant in archaeological remains are known in the Obi-Mazar valley: Kuldara (PCs 12 and 11), Obi-Mazar VI (PC 6), Lakhuti I (PC 5), Obi-Mazar IV (PC 4), Khonako III (PCs 2 and 4), and Dusti (PC 1). The total excavated area exceeds ~400 m², and the accumulated collection of artifacts is relatively small, ~5000 specimens (Ranov, Schäfer, 2000). On the basis of data obtained by paleomagnetic analysis of sediments and correlation of pedocomplexes with the oxygen isotope scale, the ages of the sites were estimated: PCs 12 and 11 – ~0.9 Ma; PCs 6–4 – ~0.6–0.4 Ma; PCs 2 and 1 – ~0.2–0.1 Ma (Ibid.; Ranov, Karimova, 2005).

Technocomplexes from Obi-Mazar IV and VI, Lakhuti I, and Khonako III (PC 4) are chronologically closest to the Lakhuti IV assemblage.

The industry from Obi-Mazar VI, with an age of ~0.6 Ma, is the earliest among the mentioned sites. The excavated area there totals 115 m², the number of finds is 148 specimens (Ranov, Schäfer, 2000; Khudjageldiev, 2007). Manuports and flaked pebbles form a fairly high percentage (~15 %). Cores are few (~3 %). Two of them are of the slice variety; three cores are irregular parallel, with multiple striking faces.

The cores are unprepared. Debitage comprises a large portion of waste (~30 %): fragments, small flakes, and chips. Some flakes are elongated. Most flakes are large. Striking platforms are normally plain; natural platforms are less common. Cortical flakes are numerous (>40 %); “citrus slices” and “wedges” are present. The toolkit is dominated by side-scrapers made on pebbles or large flakes, deliberately fashioned by removals of fine flakes. The assemblage contains several choppers, as well as isolated notched implements and atypical end-scrapers (Khudjageldiev, 2007).

The assemblage at Lakhuti I is associated with PC 5, i.e. its age is ~0.5 Ma. The excavated area totals 100 m²; 1047 artifacts were discovered (Ranov, Schäfer, 2000; Schäfer et al., 2003). Manuports form a high percentage (~25 %), some of these were probably used as hammerstones. The group of cores (~2 %) is dominated by simple parallel forms (irregular, with one flaking surface); however, there appeared rare artifacts with prepared platforms and conjugate flaking surfaces. The assemblage comprises slice cores. Few cores display the radial system of flaking.

Waste products are numerous in the debitage. Most flakes are 3–5 cm in size. Several items resemble blades in terms of proportions. Striking platforms are mostly plain; natural platforms are less common; some of

them are dihedral. Cortical flakes, “citrus slices”, and “wedges” are numerous. Choppers constitute one third (~11 %) of the tools. The toolkit comprises numerous side-scrappers on small pebbles or flakes, including “citrus slices”, deliberately shaped by fine flaking and irregular retouching. There were found denticulate-notched implements; some pointed items, including Tayacian points; atypical end-scrappers; and knives. A few finely crafted unifaces were also identified (Ranov, 1986; Ranov, Schäfer, 2000).

The artifact collection (1341 spec.) from Obi-Mazar IV is the most numerous of all Loessic Paleolithic assemblages in Tajikistan. The total excavated area reaches 40 m². The artifacts were found in PC 4, whose age is ~0.4 Ma. The share of manuports in the assemblage is insignificant (~5 %). Cores (~3 %) are small, most of them measure 3–5 cm. Most cores were utilized by radial technique, with one flaking face used. There are many small parallel cores, with various numbers of faces and platforms for detaching small flakes (some of them elongated). The assemblage contains a few slice cores. Many core-shaped pieces demonstrate traces of preliminary preparation with subsequent technical trimming. Waste products constitute ~70 % of the collection. Flakes are normally small, rarely medium-sized. Many of them are fragmented. Decortication chips form ~15 %. Most striking platforms are plain; natural platforms are numerous; some platforms are dihedral. “Citrus slices” and “wedges” are few in number. There are about a dozen small blades of regular geometric shape. The category of tools (~3 %) is dominated by notched implements and atypical end-scrappers. Indistinct denticulate and pointed implements are negligible in number. Choppers are absent (Ranov, Schäfer, 2000; Ranov, 2005).

The Obi-Mazar IV assemblage is chronologically close to a small collection of artifacts (183 spec.) found in PC 4 at Khonako III. The excavated area at that site measures 33 m². The share of manuports there is significantly higher (~11 %) than at Obi-Mazar IV. Core-shaped pieces (~2 %) consist of typologically unidentifiable fragments and various-sized radial single-faced cores. Waste products constitute ~30 % of the assemblage. Most flakes are small; medium-sized ones are less frequent. The share of decortication chips reaches ~25 %. Most striking platforms are natural or plain, though dihedral platforms form an appreciable percentage. “Citrus slices” and “wedges” account to ~7 %. There are several small blades. Among tools (~20 %), the most representative categories are side- and end-scrappers (together with combined forms). Notched implements, choppers, and burins are slightly less numerous. Indistinct knives, as well as denticulate and

pointed implements, are few in number. The assemblage contains a proto-handaxe (?) on a large flake, and a proto-limace (Ranov, Khudjageldiev, Schäfer, 2004).

Another site, which is relatively contemporaneous with Lakhuti IV, though located outside the Obi-Mazar valley, is Karatau (Yavan Region in the upper reaches of the Vakhsh River). The excavated area at the site measures ~500 m². Archaeological material (931 spec.) was found in PCs 5 and 6 (~0.6 Ma ago). Primary reduction was characterized by simple parallel and slice techniques. Cores were unprepared. Debitage comprises numerous waste products (~50 %), mostly fragments. The category of flakes contains numerous decortication chips, and some “citrus slices” and “wedges” (~8 %). Tools (~9 %) consist mostly of choppers; then follow atypical end-scrappers and notched implements. Side-scrappers are unstandardized, though some specimens are deliberately fashioned by stepped retouch. There are a few notched and pointed implements, and unifaces (6 spec.) (Ranov, 1988).

Ranov attributed all these industries, as well as small collections from the Kuldara and Karamaidan sites, to a single Karatau culture (Ibid.; Dodonov, Ranov, Sharapov, 1989), which, in his view, existed in the region in the Early and Middle Pleistocene, ~0.9–0.4 Ma years ago (Ranov, Schäfer, 2000; Ranov, Karimova, 2005). Its late stage, corresponding to 0.6–0.4 Ma ago, can be characterized as follows. Primary reduction was based on unidirectional parallel technique, with one or several flaking faces utilized; cores were unprepared or underwent just a minimal treatment, when one or two elements were detached. Slice technique was also employed. Younger assemblages demonstrate radial flaking. Manuports and waste products, consisting mostly of fragments, form a high percentage (up to 70 %). Most flakes are large or medium-sized; blades are few and random. Decortication chips are numerous; other technical variants are absent. “Citrus slices” are numerous, as are “wedges”, apparently resulting from the fragmentation of the former (Ranov, 2005). Striking platforms are plain; natural platforms are numerous; eventually, dihedral ones appear, and their number rises over time. Tools consist primarily of choppers and various simple side-scrappers, including those fashioned on pebbles. There are plenty of notched implements and atypical end-scrappers. “Younger” assemblages comprise points, including the Tayacian variety. Flakes and fragments with irregular retouch are numerous. A specific feature is the presence of unifaces of a standard shape, with traces of secondary treatment; they are represented both by isolated pieces and by small series. The Lakhuti IV industry shows a good agreement with this context.

As compared to other industries of the Loessic Paleolithic of Tajikistan, Lakhuti IV shows a much higher concentration of artifacts—approximately 110 specimens per 1 m². This is thrice higher than at the most representative site, Obi-Mazar IV; at other sites, the concentration is usually ~1–6 specimens per 1 m². The reason behind such a high concentration of finds at Lakhuti IV is not clear, one of the possibilities being the nature of the paleorelief at the time when the site functioned.

Another feature of Lakhuti IV is the distinct distribution of artifacts between several cultural horizons. This was not reported from other sites of the Loessic Paleolithic. Such a distribution allows one to reconstruct the stages in the peopling of the area in more detail, and to trace possible changes in primary reduction and in toolkit composition over relatively short timespans within a single PC.

Notably, the absence of cultural horizons is inherent in the notion of the Loessic Paleolithic. Ranov, who had proposed this term, pointed out that industries of the Loessic Paleolithic are characterized by mostly scattered finds and their “suspended position” (Ranov, Schäfer, 2000: 20). However, at one site—Obi-Mazar IV—the scholar found a distinct cultural horizon approximately 10 cm thick, though it was recorded on a short section only (pit No. 2 of 1984) (Ranov, 2005). The thickness of a cultural layer is usually 20–25 cm; elements of a normal cultural horizon, such as any structures or concentrations of wastes, are absent (Ibid.: 17). At Lakhuti IV, several distinct cultural horizons up to 10 cm thick were traced, as well as those up to 20 cm thick, the latter possibly evidencing multiple habitation episodes separated by short time-intervals unattested by deposition. In addition to that, cultural horizon 6 contained a local concentration (0.5 × 0.5 m) of pebbles, with evidence of their use as hammerstones. It is possible that these finds represent the remains of a production area (see Fig. 3, 2).

As compared to other sites in the region, Paleolithic industries from PCs 6–4 in the Obi Mazar valley display some specificity. Almost all Early Paleolithic assemblages in the western and northern parts of Middle Asia were collected from surface. Their cultural and chronological attribution is determined primarily by the presence of large bifacial implements (Kazakhstan and Turkmenistan) (Vishnyatsky, 1996; Derevianko, 2017). Lithics of this sort are absent in industries of Tajikistan. The few stratified Early Paleolithic sites outside Tajikistan whose age is close to that of Lakhuti IV, such as Koshkurgan and Shoktas in southern Kazakhstan, display markedly different industries (Rannepaleoliticheskiye mikroindustrialnye komplekсы..., 2000).

At the southern border of Tajikistan, in Afghanistan, reliable Early Paleolithic sites are unknown. For example, collections of handaxes, cleavers, and choppers from the Dasht-i Nawar Lake area and from the Darra-i Dadil Gorge were not considered by Ranov as Paleolithic. In his opinion, the only assemblage in the region that could be correlated with the final stages of the Early Paleolithic is represented by solitary finds, including a bifacial implement, from the Hazar Sum valley (Ranov, Karimova, 2005).

Assemblages from the Karatau culture are distinguished by industrial specifics: wide application of slice, radial, and simple parallel techniques; a great number of choppers and unifaces; absence of distinct bifacial implements; a high percentage of tools fashioned on flakes (side-scrapers and notched pieces). The closest similarities to industries of the Karatau culture are seen among the Soanian industries in northern Hindustan and the Early Paleolithic assemblages of southwestern China.

Soanian pebble and flake industries, generally attributable to the Final Middle Pleistocene, are concentrated mostly in the piedmont zone of the southern Himalayas, and associated with sediments on high terraces in the upper reaches of the Indus, Soan, Satlej, etc., that is, geomorphologically they are close to the Loessic Paleolithic assemblages of Tajikistan (Sali, 1990; Petraglia, 2010). Soanian industries are based on similar raw material—alluvial pebbles. Some parallels can also be traced in their composition (Chauhan, 2005). Primary reduction is characterized by the prevalence of discoid (radial) and unidirectional parallel cores, as well as of multiplatform (irregular) nuclei derived from the latter. Slice flaking is normally not mentioned in relation to Soanian assemblages, though, judging by schemes given in some publications, certain choppers appear to be the exhausted cores of this type (Chauhan, 2007: 417), while implements interpreted as discoid cores/side-scrapers correspond to unifaces in Early Paleolithic assemblages of Tajikistan (Chauhan, 2005). The presence of rare and inexpressive implements showing some elements of bifacial treatment does not contradict the conclusion about similarity, since isolated pieces of this sort were also encountered in the Obi-Mazar valley (Lakhuti I, Khonako III) (Ranov, Zhukov, 1982; Ranov, Khudjageldiev, Schäfer, 2004). In Soanian industries, unifacial treatment was applied primarily, while bifacial technique was used seldom and unsystematically. This feature distinguishes Soanian industries from Acheulean assemblages spread in central and southern regions of Hindustan. As some specialists believe, the differences are not only cultural, but also caused by the choice of raw material (gravel

versus detritus) (Chauhan, 2005; Petraglia, 2010). For instance, the greater number of choppers and unifaces in these assemblages could have been determined by the pebble base of the Soanian industries. The unifaces were manufactured by techniques similar to those used for making bifacial tools in Acheulean industries (Petraglia, 2010). However, the original shape of a pebble allowed flaking from only one surface, in order to produce a planoconvex or biconvex tool. In the majority view, the choice of raw material is mostly due to cultural differences (Derevianko, 2018).

A similar composition of artifact assemblages and a similar strategy of pebble utilization were registered at certain Early Paleolithic sites of southwestern China, which are contemporaneous or older. There, in the manufacture of heavy-duty tools, along with bifacial technique, unifacial working was predominantly practiced (Lei et al., 2020). The findings relating to Early Paleolithic industries of Tajikistan, then, suggest a mostly southeastern direction of ties. This conclusion, however, is tentative and further studies are required to substantiate it.

The subsequent evolution of Paleolithic industries in Tajikistan can be traced on the basis of finds from Khonako sites, also located in the Obi-Mazar valley. Abundant archaeological material from the Middle Paleolithic was recorded there in several places in association with PCs 2 and 1. It differs radically in appearance from earlier assemblages (Schäfer, Ranov, Sosin, 1998).

In collections from PC 2, primary reduction was aimed at manufacturing blade blanks, representing 45 % of the detached pieces. Unidirectional parallel flaking prevailed. Several cores can be described as proto-prismatic. The main tool classes are single-edged side-scrapers and knives on blades. There is a Mousterian point in the collection (Ranov, Schäfer, 2000; Schäfer, Ranov, Sosin, 1998). The industry from PC 1 is less numerous; though, according to researchers, it is obviously Mousterian, with a significant share of Levallois products. The industry is oriented towards the production of flakes, and generally looks more archaic than materials from PC 2 (Schäfer, Ranov, Sosin, 1998: 133).

The connection of the assemblages to preceding Early Paleolithic complexes is not obvious. In some publications, Ranov attributed artifacts of PC 2 to the final Karatau culture (Ranov, Karimova, 2005: 166), while believing it more likely that early blade industries had been introduced to the region by migrants from the Near East (Ranov, Schäfer, 2000).

Conclusions

A new stage of excavations at the loess sites in Tajikistan has demonstrated that the Obi-Mazar valley, while being comparatively well explored, is a prospective zone in the search for new Early Paleolithic sites. Findings at Lakhuti IV, discovered there in 2021, extend the knowledge of the Loessic Paleolithic in the region, and show a good agreement with the general context of the Early Paleolithic in Tajikistan. The distinctive feature of the site is a high concentration of artifacts, associated with several cultural horizons. In the course of further studies, this will hopefully help in reconstructing, in more detail, the stages of the early peopling of that part of the valley. Also, the findings are relevant to detecting types and zones of subsistence activities, and to tracing possible changes in primary reduction, and in the toolkits, over a relatively short chronological interval. As the analysis has demonstrated, lithic assemblages associated with PCs 6–4 are similar in terms of both the most common primary knapping techniques (slice, radial, and simple parallel) and the composition of toolkit (choppers, unifaces, single-edged side-scrapers, etc.). The results will help to find parallels with contemporaneous industries of other regions, primarily of northern Hindustan (Soanian) and East Asia.

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