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4 – The Ust-Karakol Upper Paleolithic variant

4.1 THE UST-KARAKOL AND ANUY SITES

In this chapter, assemblages attributed in the literature to the Ust-Karakol variant (see *e.g.* Derevianko and Shunkov, 2005) are described. These assemblages are mainly Ust-Karakol 1 sector 1 OH5.1-5.3 and sector 2 strata 11-8, Anuy II OH11 and OH12, and Anuy III stratum 12. Given that no specific taphonomic studies have been undertaken on this material, the present study focuses on artifacts that are recognized as typical of these assemblages and absent from the Kara-Bom variant. These are mainly bladelet and microblade cores. The main characteristics of the blade production are also described. Due to sample size and to taphonomic issues, the approach is here mainly qualitative, although some quantitative data are used to support some specific observations.

4.1.1 UK1-1 OH 5.1-5.3

UK1-1 has yielded assemblages that were previously attributed to the 'cultural level 3' of the lithological unit 5 (Derevianko *et al.*, 1987). Following the results of the taphonomic analysis presented in the previous chapter, cultural level 3 has been divided in five distinct Occupation Horizons (OH 5.1 to 5.5) on the basis of the artifact distribution (see also Slavinsky, 2007). OH5.1 to 5.3 have yielded small assemblages (N= circa 300). These three assemblages are similar to each other as they include a series of bladelet and microblade cores (Figure 152). The features observed on these pieces are in contrast with the material from OH5.4 and OH5.5.

As indicated by preforms and by the cortex on some of the pieces (Figure 152: 2, 4), bladelet and microblade core blanks are mainly small pebbles or slabs of metamorphic material. These pebbles are likely collected in the nearby Anuy river bed (Postnov *et al.*, 2000; Derevianko, Postnov, and Kulik, 2004; Anoikin and Postnov, 2005). Most of them are Mode A9 cores, with a flaking surface located on a narrow face and extending on the broad faces (semi-turning) with unidirectional scars. Some cores show a second flaking surface, roughly perpendicular to the other one and corresponding to Mode A8 type of cores (Figure 152: 3, 4). Striking platforms are cortical or reshaped by frontal, radial and sub-radial tablet removals with only rare traces of abrasion preserved on their external edges. These elements indicate that although the reduction sequence is likely oriented toward the production of microblades, starting from small pebbles, striking platform management and orientation changes lead to relatively exhausted cores.

The blade production is not well documented in these assemblages mainly due to the absence of cores. However, as indicated in previous reports, the assemblage lacks bladelet and microblades. The small size of the negatives on the cores suggests that these elements would be underrepresented in the assemblage unless sediments are screened with a 2 mm mesch.

4.1.2 UK1-2

The assemblage of UK1-2, strata 11-8 are subject to taphonomic issues and the integrity of the levels is questionable. If some of the unpublished refits come from a single level, others clearly indicate vertical movement between levels and admixture from the underlying levels (see Chapters 3 and 5). In this study, strata 11-8 are therefore considered together. In spite of these issues, UK1-2 strata 11-8 show specificities that are worth mentioning, as analogies can be found in the neighboring sites. A qualitative evaluation of the laminar technology is proposed

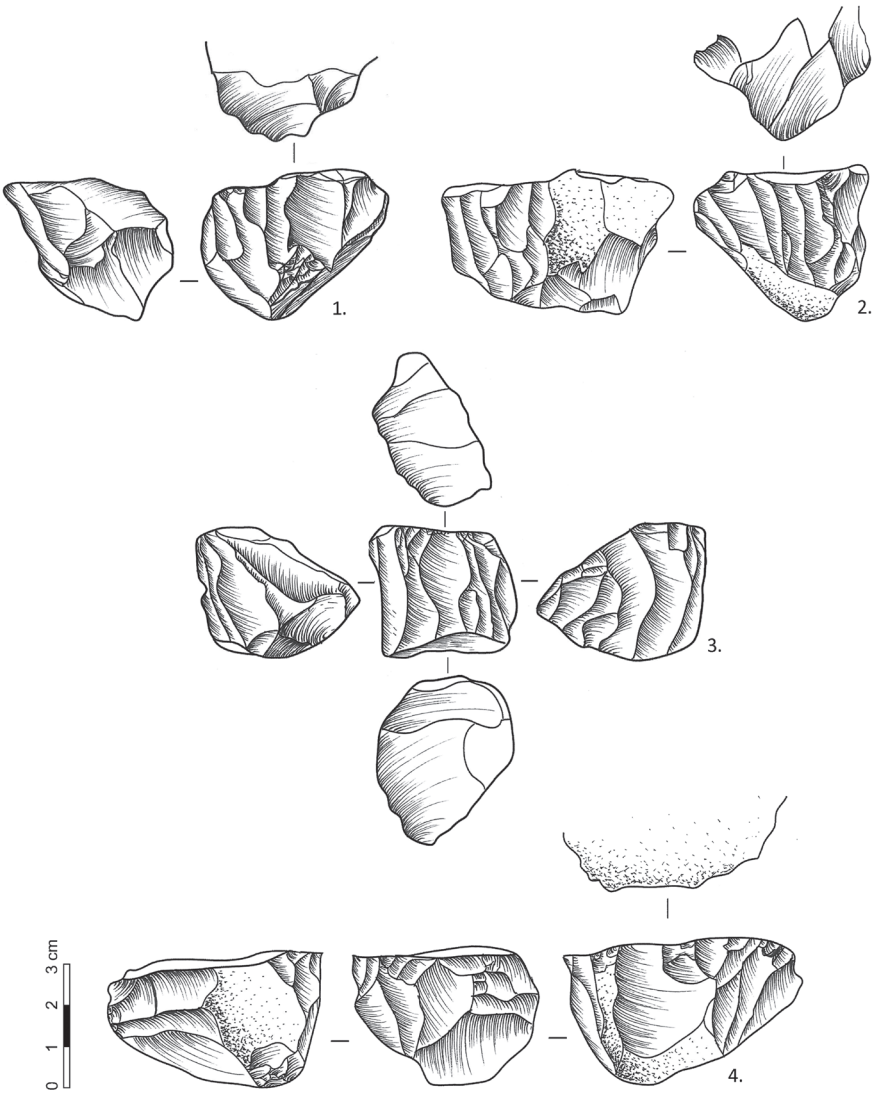

Figure 152: UK1-1, OH5.1-5.3, bladelet and microblade cores

here based on a sample of 195 blanks (105 blades, 67 bladelets, 7 microblades, 16 laminar flakes), 30 retouched blanks (25 blades and 5 bladelets) and 33 cores and preforms.

A series of bladelet and microblade cores is among the most diagnostic feature of this assemblage. Most of these cores are of Mode A type as they are produced on small blocks, slabs and pebbles of metamorphic rock. The main modes observed are Mode A1 (Figure 153: 1, 2, 8), A9 (Figure 153: 4) and A8 (Figure 153: 5-7). The reduction is mainly unidirectional following a frontal or a semi-turning path that starts from a narrow edge of the blank. Reduction is mainly convergent and takes place on a triangular flaking surface. Mode A8 shows orientation changes through the use of a separate flaking surface located on a narrow edge of the core. The negatives clearly indicate that those surfaces are used one after the other in a rather opportunistic fashion, according to suitable angles and convexities offered by the core morphology. Crests are used to initialize the reduc-

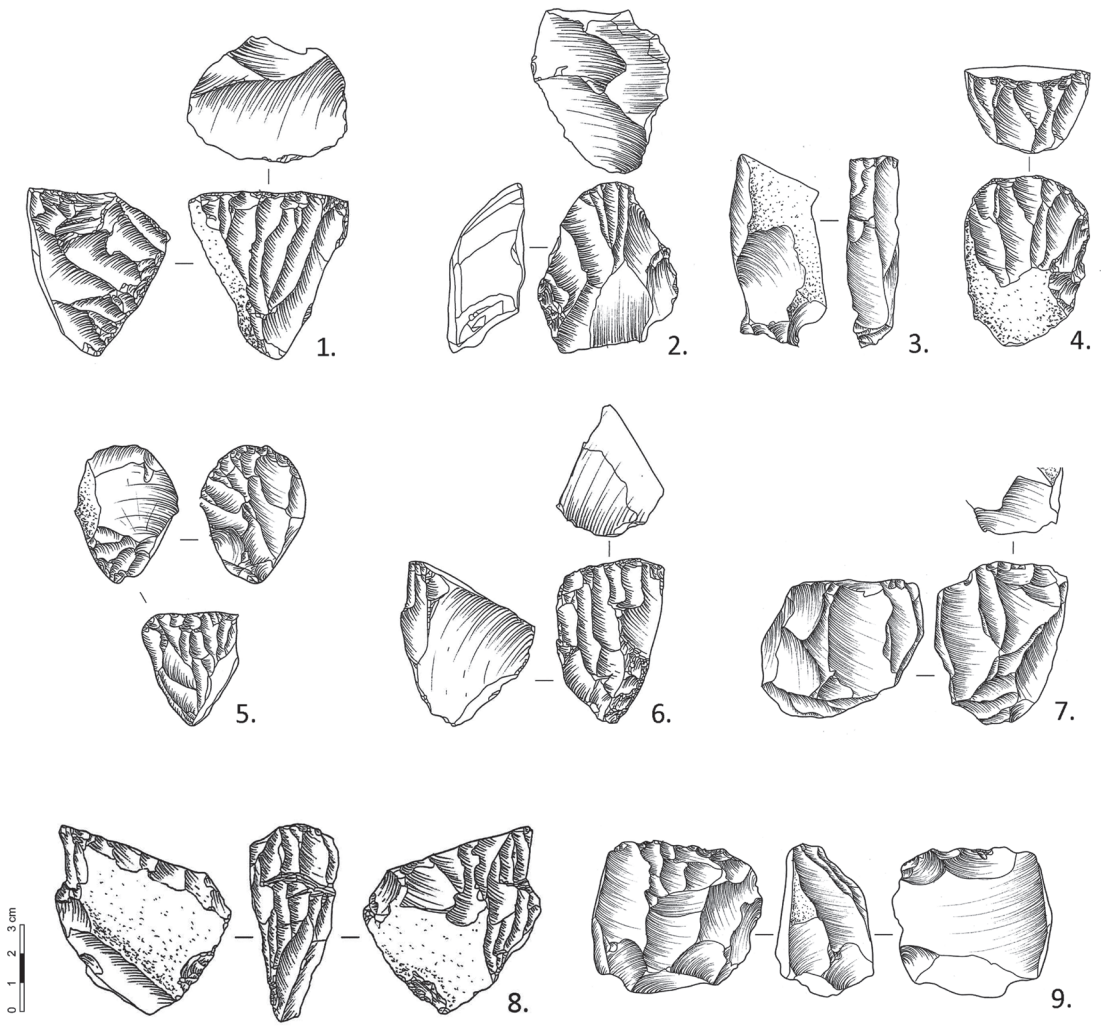

Figure 153: UK1-2, strata 11-8, bladelet and microblade cores (redrawn and modified after Derevianko *et al.*, 2003)

tion process (Figure 154: 12) and management operations are visible on the cores (tablet removals, distal crest) and are also documented by the occurrence of technical blanks. In cases of hinged factures, small blades are used for reshaping the flaking surface. Convexities are shaped by the removal of lateral flake at the corner between the flaking surface and the side of the core (Figure 154: 9, 11), or by the preparation of a crest at the back of the core. Bladelet overshots are occasionally used in order to keep the flaking surface triangular (Figure 153: 1). Striking platforms are cortical, plain or on natural surfaces and are sometimes reshaped by tablet removals. Some of the external edges of the striking platforms still bear traces of abrasion. The reduction of these cores is well documented in the assemblage, from the preform to the exhausted core. Beside this mainstream production, a single Mode A4 core (Figure 153: 9) and two examples of Mode B cores (Figure 153: 3) occurs in the sample. The Mode A4 core can be typed as a truncated-facetted piece. One Mode B cores is produced on a thick cortical blade and show unidirectional removal, and the second one is extremely reduced and produced on a jasper-like material.

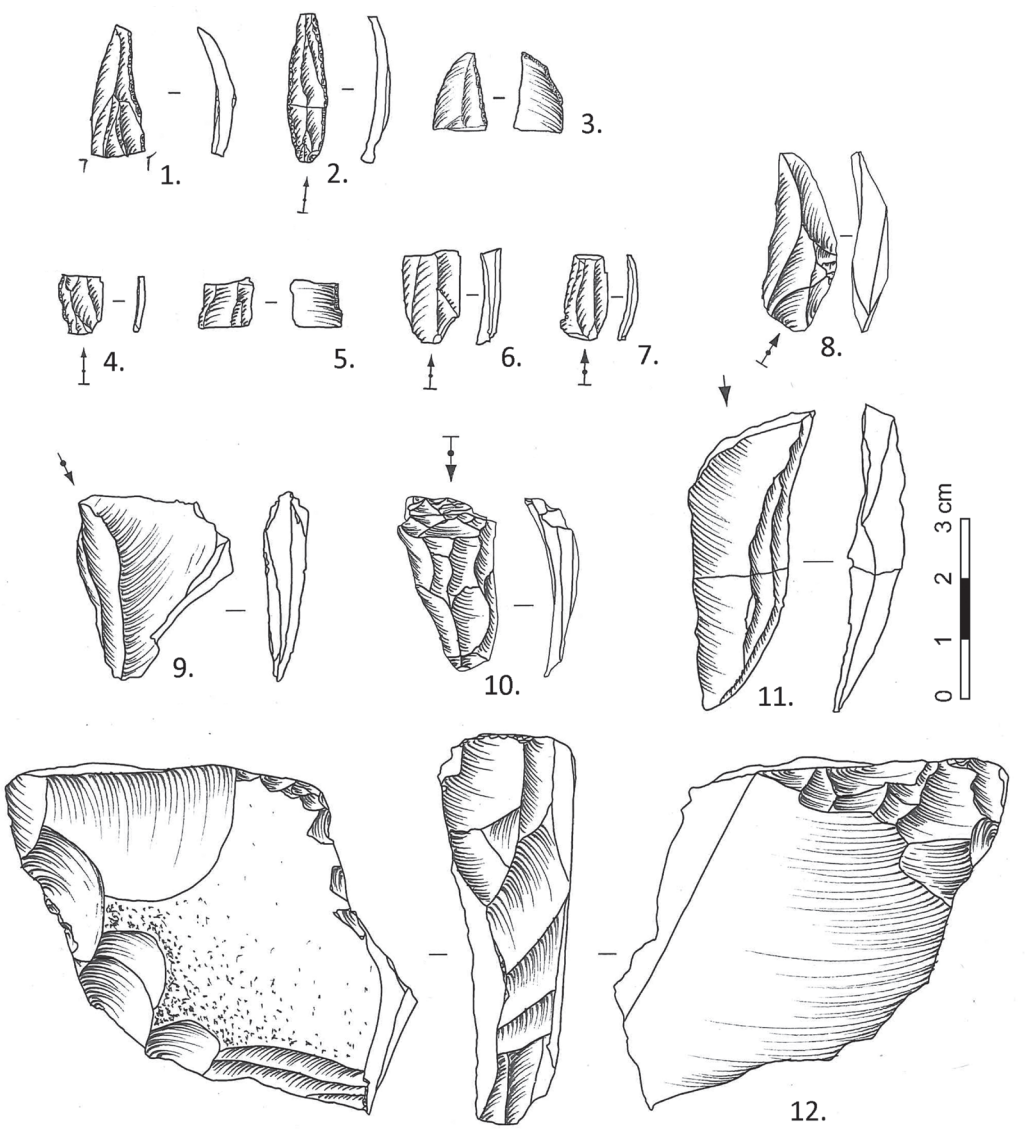

Figure 154: UK1-2, strata 11-8, retouched blanks (1-5), unretouched blanks (6-8), technical pieces (9-11) and core preform (12)

The bladelet and microblade blanks are generally highly fragmented (on a sample of 79, there are only 8 complete, 30 proximal, 15 mesioproximal, 19 mesial, 6 mesio distal and 1 distal). For the most part, the dorsal scar patterns on small segments could not be determined. All determined patterns are unidirectional (N=23). Blanks observed are relatively poorly standardized. The majority have a plain platform associated with a thin abrasion of the external ridge and with a lip (N=42). A few blanks have a punctiform platform (N=5). Profiles are mainly straight (N=41) or slightly curved (N=17) and sections are trapezoidal or triangular. Five of the blanks are retouched (Figure 154). A proximal and a mesiodistal fragment bear a direct, thin, continuous retouch respectively on the left and right edge. A mesial fragment shows inverse retouch on the left edge and can be typed as a fragment of Dufour bladelet, though classical Dufour bladelets usually bear inverse retouch along their right edge. A distal fragment of bladelet/blade

displays alternate, thin retouch. Although the shape of the complete blank is unknown, its section is unusually thick (3.6 mm). The most complete retouched bladelet is a pointed unidirectional blank, with a curved profile, bearing bilateral thin to semi-steep retouch. Although being rather small, this retouched piece is comparable to Font-Yves, Krems, El-wad or Arjeneh point types (*e.g.* Garrod, 1957; Hole and Flannery, 1967; Demars and Laurent, 1992).

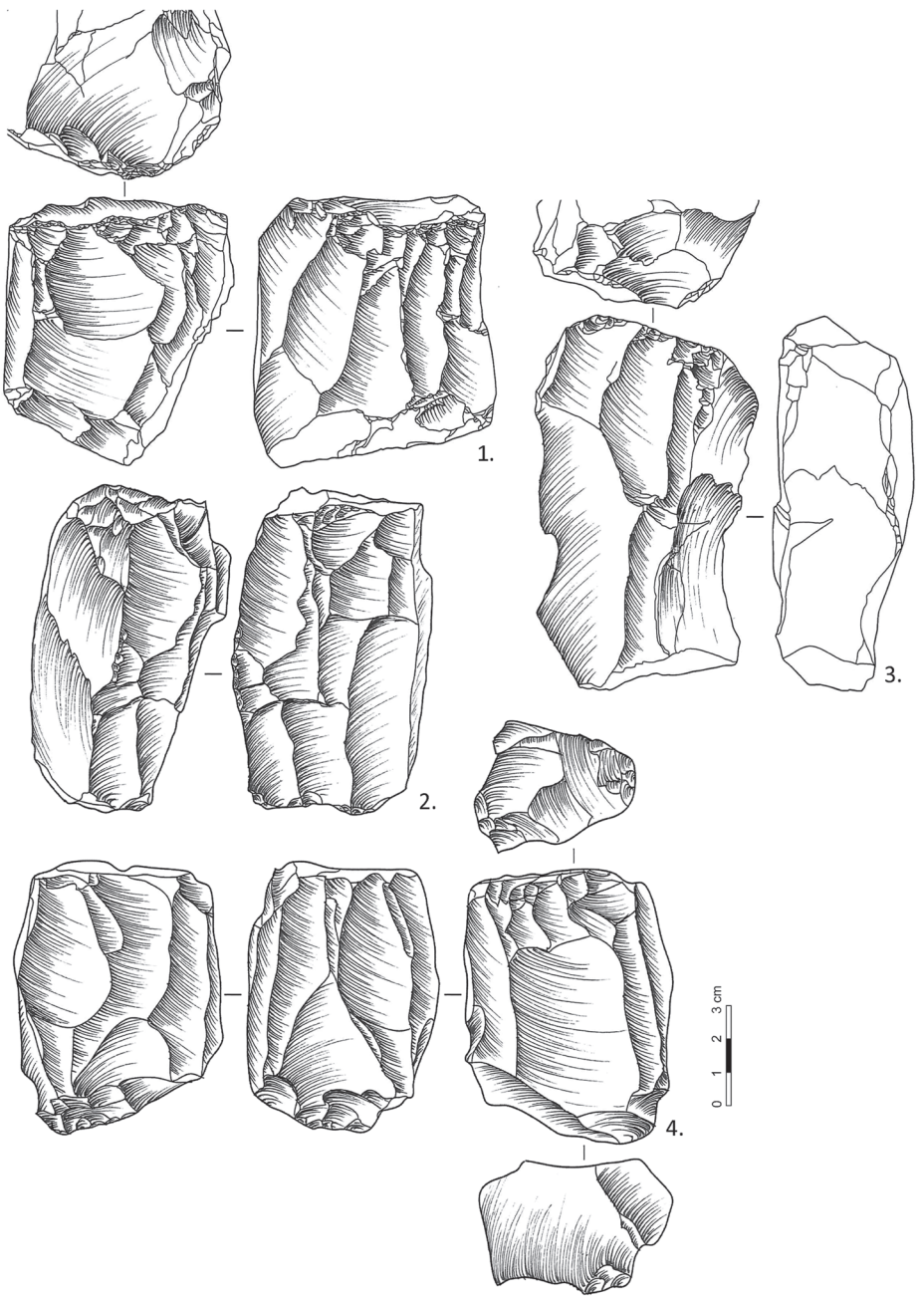

Figure 155: UK1-2, strata 11-8, blade cores (redrawn and modified after Derevianko *et al.*, 2003)

Some general observations can be proposed regarding the blade production. Blade cores are mainly produced on blocks of metamorphic material. They show a certain degree of morphological variability, and include Mode A3 (Figure 155: 1), A4 (Figure 155: 2, 3) and A10 (Figure 155: 4) core types. Some of the cores show a clear unidirectional patterning, even though they may display attempted platform switches at the end of the reduction. Some others show a clear bidirectional patterning with a reduction from two opposed platforms on a wide surface. Cores display frequent exploitation of a wide face, only occasionally extending on one or two lateral surfaces. This observation is, however, balanced by the cubic shape of some of the cores, indicating a rather advanced reduction process. Most of the blade cores show negatives of blanks with parallel edges, with one of them testifying of the production of convergent blanks (Figure 156). Striking platforms show frequent tablet removals and occasional abrasion of the external edge.

Blades are mostly fragmented (28 proximal, 22 mesioproximal, 25 mesial, 14 mesiodistal, 1 distal) with only 13 complete blanks among 104 artifacts. Except for 4 bidirectional and 17 undetermined, the dorsal patterning is mostly unidirectional, with 84 artifacts. 14 cortical blanks are identified, 4 blanks have less than 20% cortex, 4 blanks display 20 to 40% cortex and 6 have 40 to 60% cortex. Crested elements are present but poorly documented (N=3); however, side blades (N=9) show flaking surface management by using cortical edges (N=4) and natural crests. Platforms are mainly plain (N=45) but also facetted (N=12). Although it is not possible to determine with certitude the modes of percussion in use, diagnostic features (small size platforms, abrasion, lip) seem to mostly indicate the use of organic hammer. Other features (facetted and thick platforms, thick bulbs, scaled bulbs) in the assemblage, however, could also indicate the use of stone hammer. The use of hard hammer is definitely recognizable on some of the flakes and laminar flakes. From a more general point

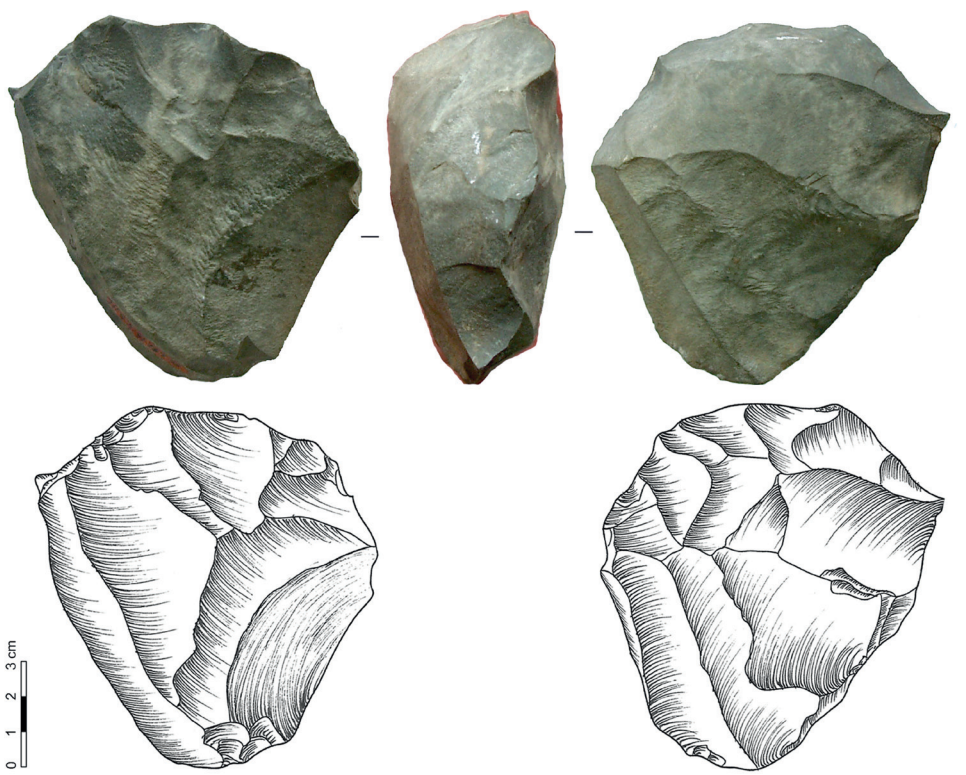

Figure 156: UK1-2, strata 11-8, blade core

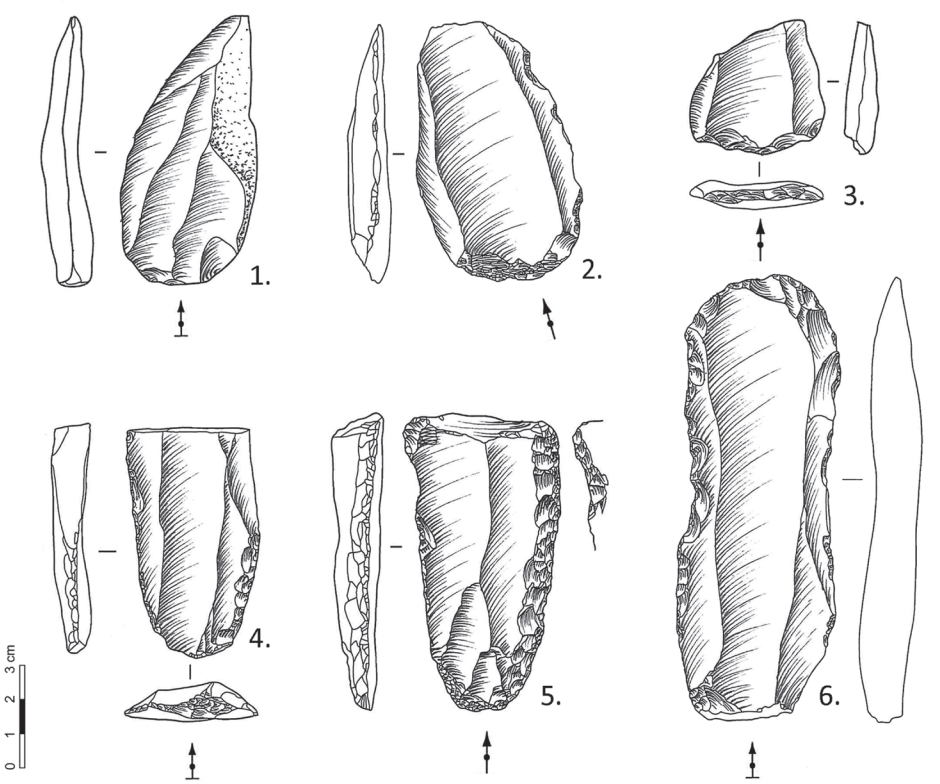

Figure 157: UK1-2, strata 11-8, convergent blanks (1-3), retouched blanks with parallel edges (4-6) (redrawn after Derevianko *et al.*, 2003)

of view, blades show mainly parallel edges, as convergent blanks are mainly flakes and laminar flakes (Figure 157: 1-3).

A few retouched blades are cortical (N=4). The rest of them show mainly unidirectional dorsal patterning (Figure 157: 46). Among the 25 retouched blanks, 8 endscrapers are identified, one of which is produced on a cortical crested blade showing some proximal burin removals. Notable is the occurrence of a fragment of a backed blade and a mesiodistal fragment of a bifacial piece likely produced on a blade blank. A fragment of leafpoint occurs in stratum 11 (Derevianko *et al.*, 2003, Fig. 154, num. 15). Most common types of retouch are thin and scaled, which are sometimes combined on the same piece. One artifact is typed here as a core-like tool as it shows lamellar removals on the distal end of a neocrested blade.

All in all, the UK1-2 assemblage is recognizable mainly in terms of bladelet and microblade production. The blade production is difficult to categorize given the taphonomic issues discussed above. It seems that different features coexist and some elements such as convergent blade cores and blanks, facetted platforms, bidirectional flat-faced cores, and occasional Mode B cores can be found in low frequency. This specific issue will be treated in the forthcoming Chapters.

4.1.3 ANUY II

Located along the right bank of the eponymous Anuy River, about 70 m downslope from Denisova Cave, the site of Anuy II was excavated starting from 1988. During the first campaign, excavations were carried out over a surface of 35 m² and revealed the presence of Paleolithic artifacts. Further excavations were

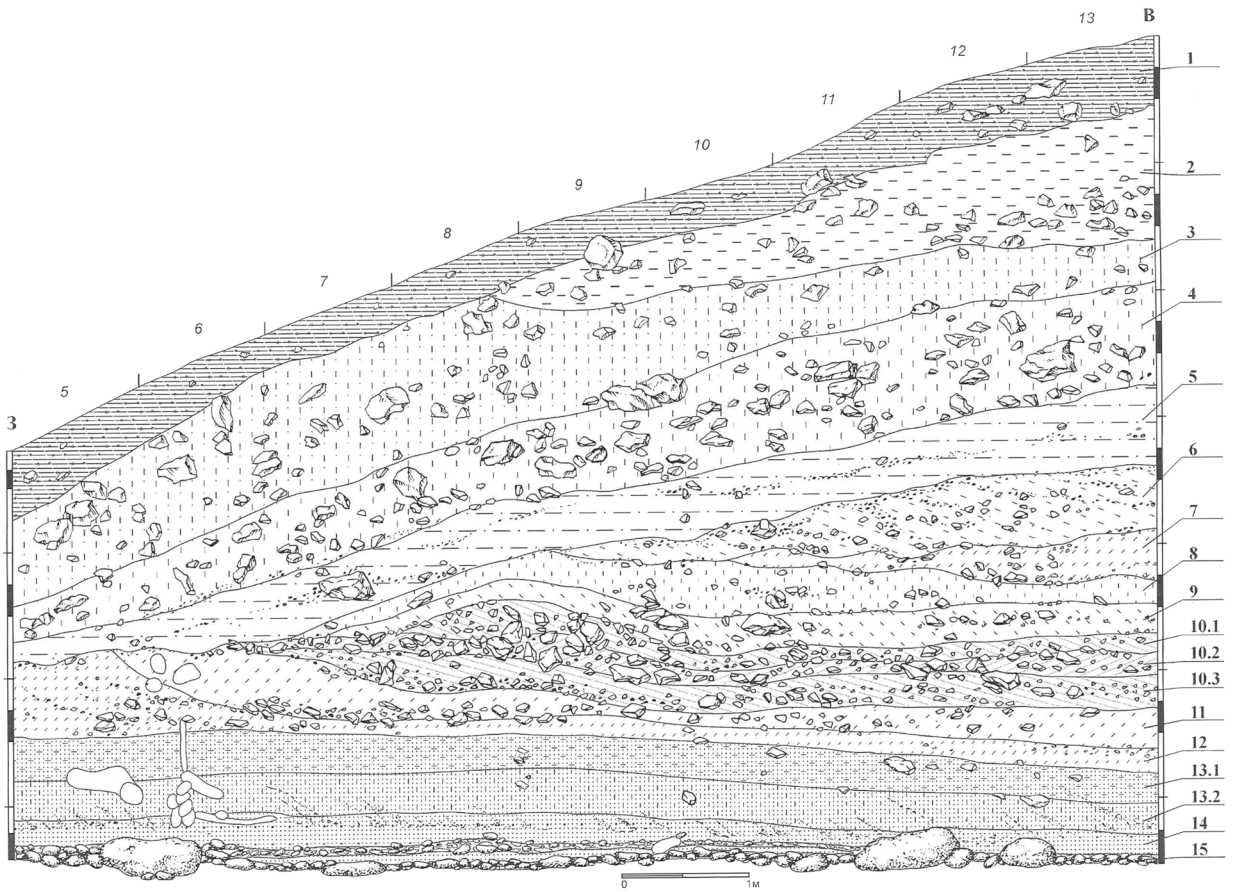

Figure 158: Anuy II, northern section (after Derevianko *et al.*, 2003)

conducted in 1990-1991, extending the excavated area to 79 m² (Derevianko, Markin, *et al.*, 2001). The 6.5 m stratigraphic section is divided into 15 lithostratigraphic units (Figure 158).

The bottom of the section (stratum 15) is composed of rounded river pebbles, rising about 3.5 m from the modern river surface and is covered by laminated alluvial sands (stratum 14). A thick layer of sandy-loam is then sub-divided in two sub-strata (13.2 and 13.1), respectively described as homogenous sandy-loam with thin gravels and as darker laminated sediments with traces of humus and charcoal. The middle part of the section (stratum 12-6) is characterized by a dark brown loam sediment matrix with the occurrence of laminated structures but containing coarse gravels and blocks. The geometry of the deposit indicates that the deposition of the stratum 11 affected deeply the underlying stratum 12, a mechanism of deposition that repeated with the stratum 10. The middle part of the section is truncated by the deposition of a thick and dense loam layer (stratum 5). The overlying strata are described as coarse gravels and blocks in a loam matrix (stratum 3 and 4), loess-like loam (stratum 2) and modern humic cover (stratum 1).

Archeological material is grouped by Occupation Horizons (OH) which are mainly located in the lower part of the section. The correlation between OH and lithostratigraphic strata is summarized in Table 105.

OH are said to be minimally 10 cm thick and separated by sterile horizons (Derevianko, Markin, *et al.*, 2001). Combustion features have been detected in

Stratum	OH
8	1
9	2
10.1	3
10.2	4
10.3	5
11 upper	6
11 lower	7
12	8
13.1 upper	9
13.1 lower	10
13.2 upper	11
13.2 lower	12

Table 105: Anuy II, correlation between lithostratigraphic strata and occupation horizons (OH)

various states of conservation. The most convincing features are ash lenses of circa 15 cm deep located in shallow depressions associated with OH12 (Derevianko *et al.*, 2003: Fig. 173). This evidence is interpreted as 'fire places' and has been use to infer the 'in situ' character of the layers (Derevianko *et al.*, 2003).

Conventional radiocarbon dates obtained from strata 13 to 10 and indicate ages ranging from 28 ka to 20.5 ka (Table 106) (Orlova, 1995; Derevianko, Agadjanian, Baryshnikov, *et al.*, 1998).

Palynological studies conducted by Malaeva suggest a succession of two main alternating flora spectra (Malaeva, 1995; Derevianko, Agadjanian, Baryshnikov, *et al.*, 1998; Derevianko, Markin, *et al.*, 2001; Derevianko *et al.*, 2003). The first is characterized by the dominance of birch pollen and pine-tree pollen and suggests a rather dry climate (strata 15-13; 9-7; 4-lower; 3). The second shows a dominance of dark coniferous taxa and is interpreted as reflecting damp conditions. This succession is observed throughout the whole sequence up to 1 m below the surface. Fauna are poorly preserved and only 9 specimens out of 560 have been attributed to a species. Fauna identified consist of a Bison sp. tooth fragment from stratum 13 and small mammals *(Asiscalops sp., Citellus sp., Microtinae gen., Myospalax sp)* similar to the current Altaic fauna were found in stratum 13 to 11. A shell fragment of *Bivalvia* is associated with stratum 13.

Stratum	Sample	Radiocarbon (^{14}C BP)	Lab number
10.1 (OH3)	Charcoal	21,280 ± 440	SOAN-3007
10.2 (OH4)	Charcoal	21,502 ± 584	IGAN-1431
11 (OH6)	Charcoal	21,502 ± 1,547	IGAN-1430
12 (OH8)	Charcoal	20,350 ± 290	SOAN-2863
12 (OH8)	Charcoal	22,610 ± 140	SOAN-2862
12 (OH8)	Charcoal	24,205 ± 420	SOAN-3006
13.1 (OH9)	Charcoal	27,125 ± 780	SOAN-2868
13.2 (OH12)	Charcoal	26,810 ± 290	SOAN-3005
13.2 (OH12)	Humates	27,930 ± 1,594	IGAN-1425

Table 106: Anuy II, chronological data

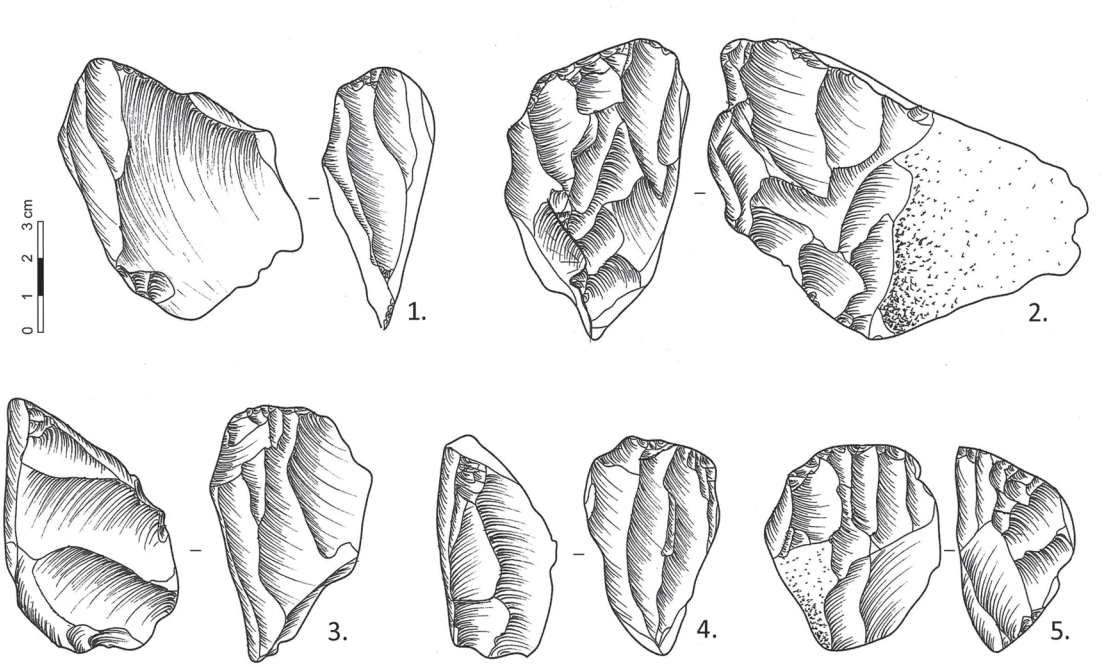

Figure 159: Anuy II, OH8 (3, 5), OH9 (4), OH10 (2), small blade/bladelet cores (redrawn after Derevianko *et al.*, 2003)

99 % of the 15000 artifacts from Anuy II are associated with OH6-12. Based on their typo-technological similarities, the OHs are considered by authors as belonging to a single techno-complex (Derevianko, Markin, *et al.*, 2001). The raw material is mainly collected in the nearby Anuy river bed and shows a majority of metamorphic rocks (Postnov *et al.*, 2000; Derevianko, Postnov, and Kulik, 2004; Anoikin and Postnov, 2005). The main characters of the laminar reduction sequences are summarized below.

The production of small blade, bladelet and microblade blanks is attested to mainly by the occurrence of a series of cores and by a few retouched blanks.

Among the bladelet cores, Mode A1 (Figure 159: 1-4), A3 (Figure 159: 5) and A8 (Figure 159) are the most common. Mode A1 show a flaking surface located on a narrow edge of a thick flake with unidirectional convergent removals. The flaking surface maintains a triangular shape by the production of a crest (Figure 159: 2), by keeping a convergent orientation to the removals (Figure 159: 1), or by the removal of lateral laminar flakes from the striking platform or from an inverse provisionary platform (Figure 159: 4; see also Derevianko *et al.*, 2003, Fig. 178). Some of these cores display a crested back which illustrates a management of the flaking surface convexities (Figure 159: 3). Striking platforms are plain, and their external edges show the remains of a thin abrasion. The general morphology of these cores is prismatic and testifies of a genuine volumetric laminar reduction. Mode A3 have a flaking surface located on a broad face and bear unidirectional removal negatives. These cores also show traces of abrasion on the external edge of the striking platform. Although their general morphology is comparable to thick endscrapers carinated endscrapers (Demars and Laurent, 1992), genuine Mode A3 cores are rare. More common is the Mode A8 type core that shows a minimum of two reduction phases (Figure 160). It combines Mode A1 and A3 as it displays two separate flaking surfaces, located on the broad and the narrow face. It is usually not easy to distinguish the chronology of the two faces and removals from the broad face can also play a role in the management of convexities and flaking surface shape.

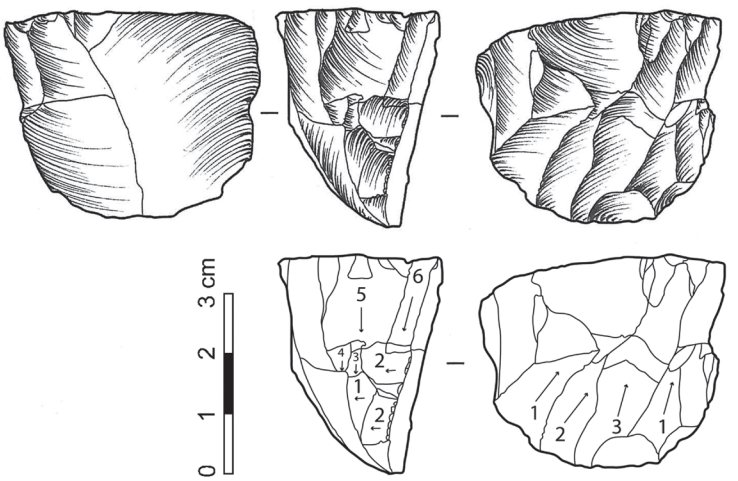

Figure 160: Anuy II, OH8, bladelet/microblade core

In addition, two atypical Mode B cores are reported. The first one is produced on a neocrested spall and shows a single hinged removal (Derevianko *et al.*, 2003: Fig.178, num.1). Its atypical character is inferred from its small size and from the absence of a clear laminar removal. The second is produced on a thin spall that shows two cortical faces (Figure 161). The blank is, therefore, not directly linked with a continuous blade reduction and is closer to a Mode A2 type.

Beside the production of small laminar elements, the production of larger blade blanks is attested to by the occurrence of blanks, retouched blades and blade cores. While the general pattern of reduction seems unidirectional and parallel, bidirectional cores occur occasionally among the set. Bidirectional cores are of two kinds, some of which are semi-turning and others are on a flat surface (Figure 162).

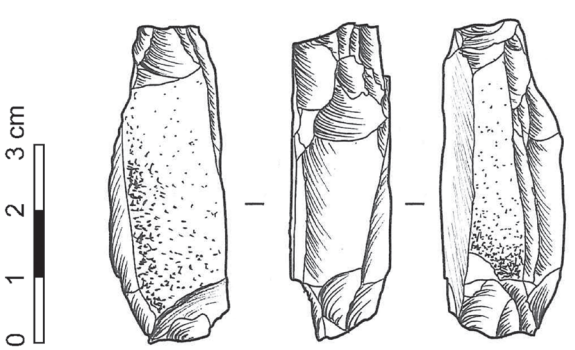

Figure 161: Anuy II, atypical Mode B core (OH12)

Circa 1500 blade blanks were uncovered in the lower part of the Anuy II sequence. The platforms are mainly plain, although a infrequent occurrence of facetted platforms can be observed (see also Derevianko, Markin, *et al.*, 2001). Although no quantitative data could be recorded on this material, observations on the dorsal patterning of the retouched blades seem to indicate that a majority of unidirectional blanks were selected. Among the retouched blades, endscrapers are frequent. This type of tool is also associated with flake and cortical flake blanks. Some of the endscrapers can be categorized as core-like tools as their general morphology is comparable to carinated and nosed endscrapers, but they bear microblade removals of a highly reduced size (Figure 163; Derevianko *et al.*, 2003: Fig. 182).

Some retouched blades also show burin spalls removal. The main types are burin on truncation (Figure 164: left) and burin on retouched blades. They are typed as tools due to the reduced numbers of removals observed and to the morphology of the spalls. Notable is a blade fragment displaying bifacial retouch.

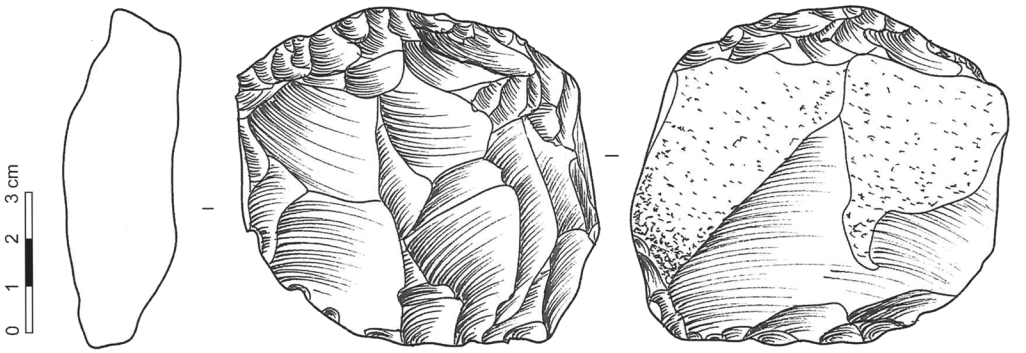

Figure 162: Anuy II, bidirectional core, (OH12), (redrawn after Derevianko *et al.*, 2003)

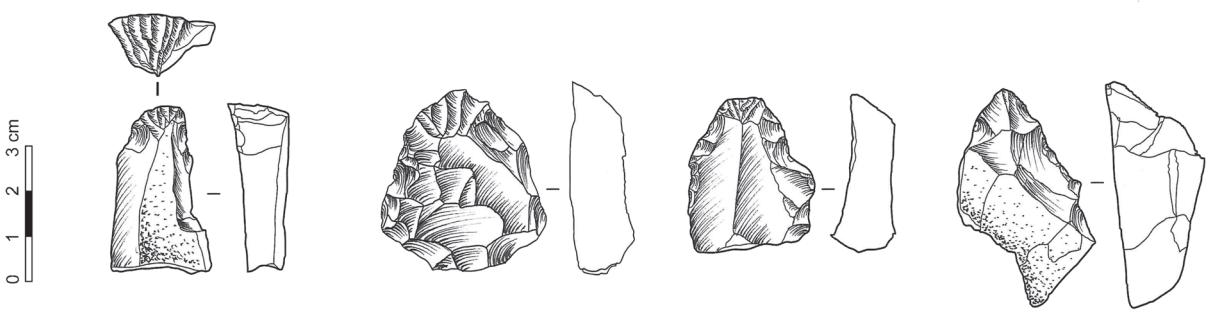

Figure 163: Anuy II, endscrapers (OH11)

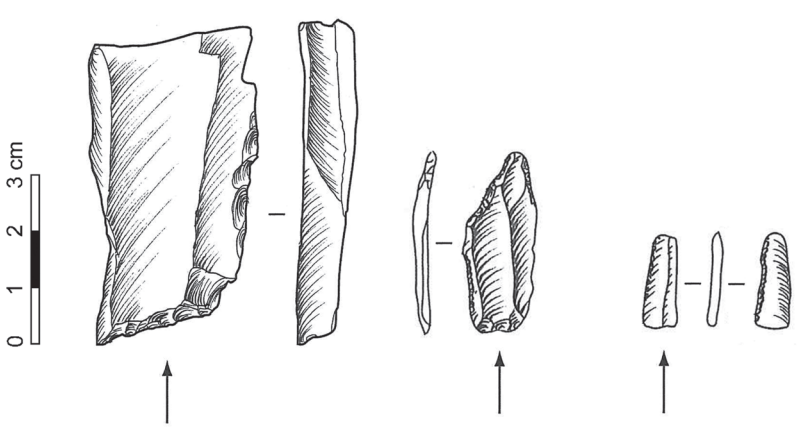

Figure 164: Anuy II, left, burin (OH12); middle, pointed bladelet (OH9); right, Dufour bladelet (OH10)

Given the good representation of bladelet and microblade cores, a relatively small number of blanks have been discovered (N=136). Among these blanks, just a few were retouched (N=19), among which is a single Dufour bladelet (Figure 164: right) bearing alternate retouch and a series of pointed bladelets displaying a distal truncation by semi-abrupt and abrupt retouch and some occasional proximal and mesial retouch (Figure 164: middle).

4.1.4 ANUY III

The Anuy III site is located on the left bank of the Anuy River, about 1.3 km downstream from its confluence with the Karakol (N 51°23'35'', E 84°40'49'') (Derevianko, Shunkov, *et al.*, 2000). A six meters thick profile has been divided into 21 lithological strata (Figure 165) (Derevianko, Shunkov, *et al.*, 2000). The lowermost stratum corresponds to a bedrock made of alluvial pebbles (stratum 21) followed by greenish sandy-loam (stratum 20), a thick laminated loam matrix (stratum 19) and a by a light-brown loam with oxide and manganese stains (stratum 18). The middle part of the section (strata 17-13) corresponds to laminated loam of various colors, and the upper part of the profile shows a succession of loam sediments (strata 12-4), followed by a loess like fine grained with some traces of laminated sediments at the bottom (stratum 3-2).

About 1500 small mammal remains have been uncovered throughout the entire section. Changes in the composition of the spectra have been used to define three main climatic units (Agadjanian and Shunkov, 1999). The lower part of the profile (strata 18-13) has yielded a relatively poor assemblage that indicates cool and rather humid conditions *(Asioscalops sp., Myospalax myospalax, Clethrionomys sp., Lagurus sp., Stenocranius gregalis, Microtus oeconomus, Spermophilus undulates)*. The lack of burrowing animals is interpreted as reflecting a strong frost penetration during the winter time. The middle part of the profile (strata 12-5) seems to correspond to a climatic improvement as shown by the increase of mole and zokor remains, the presence of vole, forest vole and pika. The upper part of the sequence (strata 4-2) suggests a humid but rather cold climate. The changes in small mammal populations also suggest fluctuations within these three main periods. From a chronological point of view, the Anuy III section has yielded a single RTL date, 54 ± 14 ka (RTL-962) coming from stratum 12. Further chronological attributions are inferred by researchers (see *e.g.* Derevianko and Shunkov, 2002) based on an interpretative correlation of the lithostratigraphy with the sequence of Ust-Karakol 1 sector 2. An attribution to Erma-

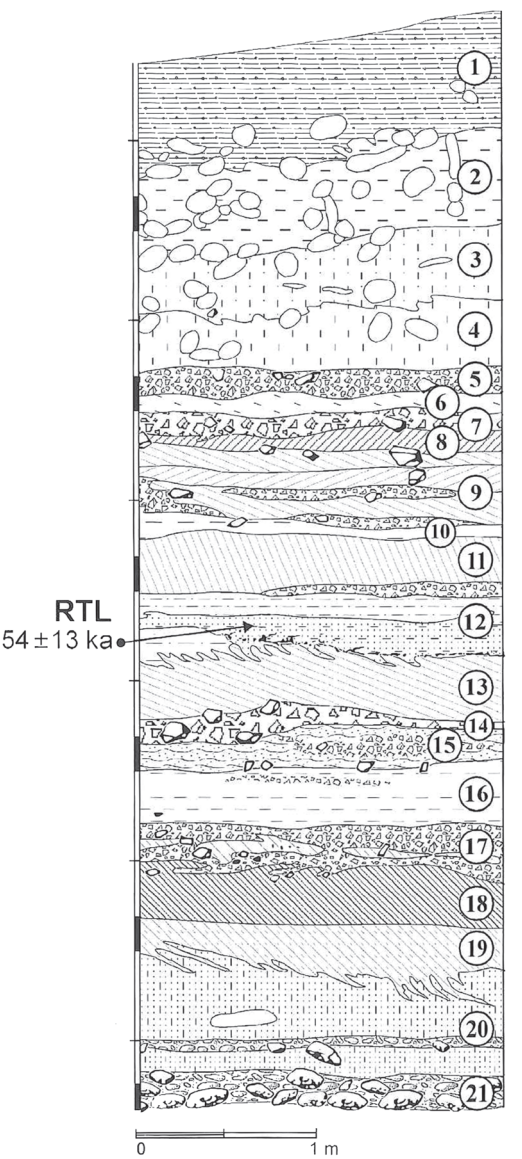

Figure 165: Anuy III, stratigraphic column with RTL sample location (after Derevianko and Shunkov, 2002)

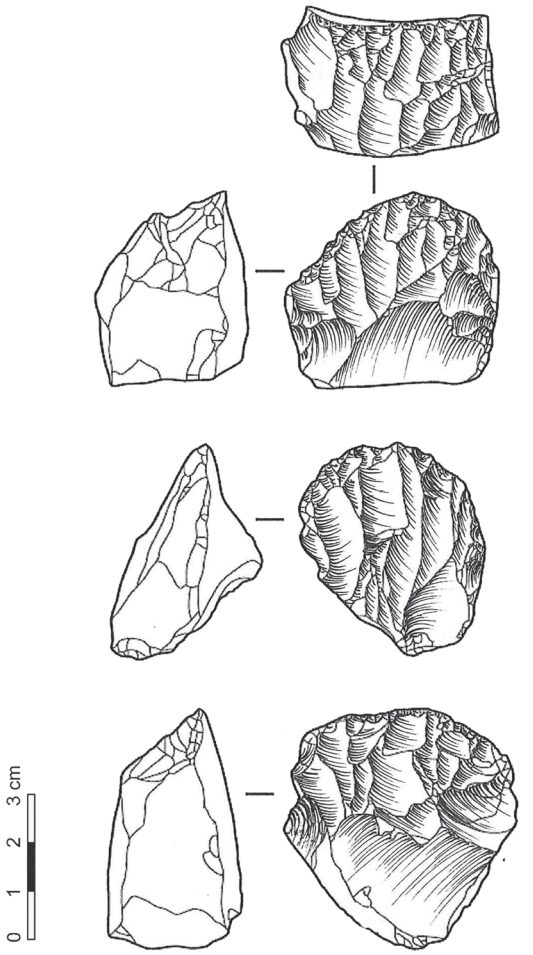

Figure 166: Anuy III, stratum 12, microblade cores (redrawn and modified after Derevianko *et al.*, 2003)

kovo (OIS 5-4) for strata 18-13 is proposed with and an approximate age between 100-90 ka for stratum 18. Strata 12-10 are estimated between 50-29 ka and strata 8-4 are attributed to the end of the Karginian stage or beginning of the Sartan (OIS3-2). Strata 3 and 2 are attributed to the Sartan. This correlation remains hypothetical and is not supported by radiometric data.

Archeological material uncovered in strata 18, 16, 15 and 13 have been attributed to the regional Middle Paleolithic and the archeological material from strata 12, 11, 9, 4, 3 and 2 to the Upper Paleolithic (Derevianko, Shunkov, *et al.*, 2000). A relatively small collection of artifacts has been found within stratum 12 (N=59, including 4 cores and 23 retouched tools). This assemblage, however, includes diagnostic elements such as bladelet and microblade cores (N=4) and a series of retouched bladelet and microblades (N=7). As for the nearby site of Ust-Karakol 1, the raw material is mainly local. It consists of pebbles of metamorphic but also sedimentary rocks, collected along the Anuy river bed (Kulik and Shunkov, 2000). Bladelet and microblade cores include mainly Mode A3 (N=3) and Mode A6 (N=1). Mode A3 cores (Figure 166) display a flaking surface on a broad face of a pebble blank, and have semi-turning unidirectional removals. Striking platforms are plain and their external edges show clear traces of a thin abrasion. Although having a prismatic morphology, some of

these artifacts fall into the definition of carinated endscrapers (Demars and Laurent, 1992).

The Mode A6 core is a small blade core on a block (cortical back) with two separated flaking surfaces (Figure 167). The main one is located on a broad face and bears removal negatives that show two opposed platforms. The second flaking surface is located on a narrow face and bears unidirectional removals. The upper striking platform is reshaped by laterally removed tablets, as the reshaping of the lower platform is frontal. The reduced size of this core seems to indicate a production of small blanks at the end of the reduction.

A series of small blanks is associated with this assemblage. In total, 4 bladelets and 9 microblades, including 7 retouched microblades, are attributed to stratum 12 (Figure 168). Most of them are fragmented, with 1 proximal, 7 mesioproximal, 3 mesial and 1 mesiodistal fragment. A single artifact is complete. Preserved platforms are all plain. Except for one of the unretouched bladelet blanks, all platforms are less than 1mm thick (Mean=0.7 ± 0.1 mm). The width of the retouched artifacts is clearly lower than 6 mm (Mean=3.3 ± 0.7 mm) and unretouched artifacts are between 5 and 6 mm in width (Mean=6 ± 1 mm). The thickness of retouched artifacts (Mean=1.4 ± 0.2 mm) also differs from the unretouched blank (Mean=1.8 ± 0.5 mm).

The complete microblade is unretouched and is 17.2 mm long. All dorsal scar patterns are unidirectional. Profiles of retouched artifacts are straight (N=4), slightly curved (N=1) or curved (N=2). Profiles of unretouched blanks are curved (N=3), slightly curved (N=1) and straight (N=1), with one being undetermined. All cross sections are trapezoidal except one triangular. Retouch is only direct and mainly continuous, with equal proportions on the left edge (N=3) and the right edge (N=3). One mesioproximal fragment has retouch located on the left proximal end. The type of retouch include steep (N=2), semi-steep (N=2), and combinations between semi-steep and thin (N=1) and semi-steep and steep (N=1). Typologically, two of the microblades are backed pieces (Demars and Laurent, 1992). The blade production of stratum 12 is poorly documented (N=9) and is not discussed here.

To summarize, EUP assemblages are mainly characterized by a production of bladelets and microblades independent from the larger blade production. Blades are mainly detached from volumetric unidirectional

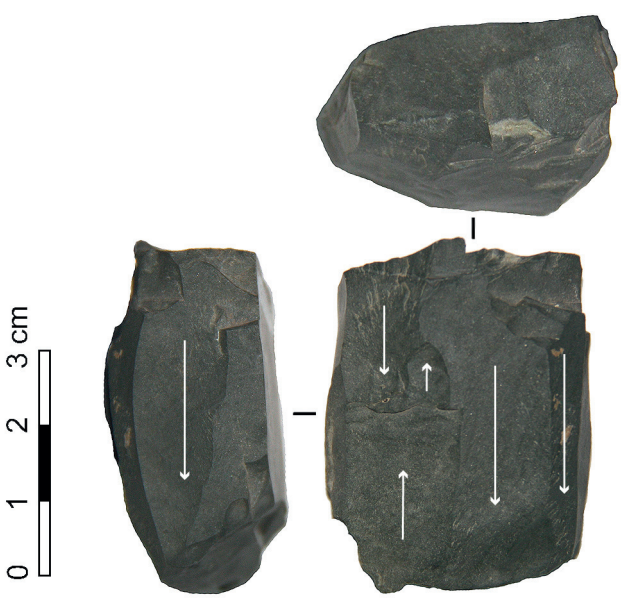

Figure 167: Anuy III, stratum 12, small bidirectional core

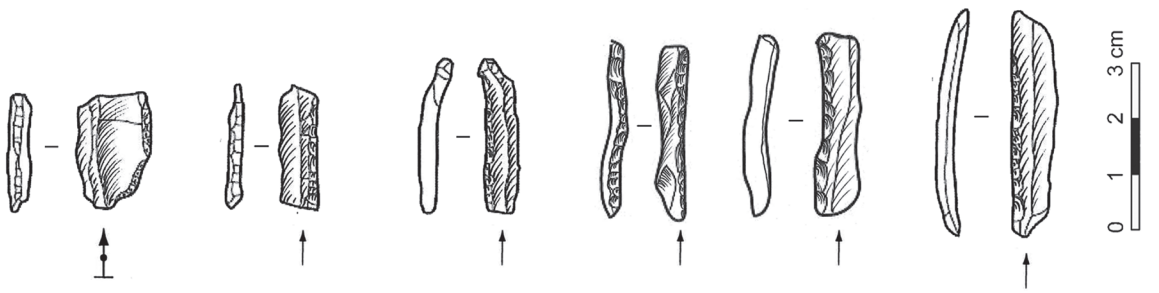

Figure 168: Anuy III, stratum 12, retouched blade and microblades (redrawn and modified after Derevianko *et al.*, 2003)

cores and testify to the use of soft hammer. In the following chapters, the results of the present analysis are compared with the published material and a comparative synthesis is proposed.