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KABAZI V: INTERSTRATIFICATION OF MICOQUIAN & LEVALLOIS-MOUSTERIAN CAMP SITES

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Chapter
11

Kabazi V, Sub-Unit III/5: The Staroselian Industry

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The materials from sub-unit III/5 were recovered from finer-grained deposits in stratum E3 (lithological layer 12A) which had developed due to weathering of the clay bedrock in the rock-shelter. Nevertheless, in this same layer there is also some evidence of pedogenic processes (Ferring 1998: 274-279; Chapter 1, this volume). It should also be noted that owing to the softness of the fossiliferous Eocene clays (Eb) these deposits would have accumulated relatively rapidly.

The ash-enriched sediments which contained the materials constituting sub-unit III/5 were between 30 cm and 50 cm deep (Table 11-1). During the 2003 excavations this sub-unit was subdivided into seven levels. All of these are representative of living floors, each marked by fireplaces, "carpets" of artefacts, as well as faunal remains. In some parts of the excavated area there are obvious sterile lenses between levels III/5-1A, III/5-1, and III/5-1B. However, in other areas these are almost entirely lacking. Certainly, these three levels were deposited separately from the lower level III/5-2, as is clearly visible in all excavated units. In the same way, level 5-2 is separated from the lower level III/5-3 by sterile deposits. Additionally, in some parts of the excavated area, similar sterile deposits are also evident between horizons III/5-3 and II/5-3B, as well as between horizons III/5-3B and III/5-3B2.

Most likely, the levels comprising sub-unit III/5 form several so-called "palimpsests". Although – and as shown for the Middle Palaeolithic site of Les Cannalettes (France) – even a relatively thin horizon might represent a "palimpsest" of several short-term occupations (Meignen, Brugal 2001).

Methodology of Artefact Descriptions

Artefacts recovered in occupations belonging to sub-unit III/5 at Kabazi V are described according to the typological classification used previously for investigation of Crimean Middle Palaeolithic sites (Chabai 1998c, 1998d, 2004b; Chabai, Demidenko 1998; Demidenko 2004a; Marks, Monigal 1998; Yevtushenko 1998b, 2004), with some modifications.

The flint artefacts have been subdivided into seven categories: cores, preforms, tools, flakes, blades, chunks and chips (Table 11-2). The assemblages of Kabazi V, sub-unit III/5 were made on flints of various colours. Most of the artefacts, ca. 90%, are on a grey flint; small numbers of dark brown and yellow flints also occur. The majority of grey flints have a

Levels	*Minimal thickness*	*Maximal thickness*	*Area*	*Artefacts total*	*Density* per sq.m*	*Artifacts essential*	*Density** per cu.m*
III/5-1A	4 cm	4 cm	9 sq.m	8,376	930.7	133	369.4
Sterile	<1 cm	3 cm	·	·	·	·	·
III/5-1	2 cm	2 cm	13 sq.m	10,208	785.2	212	815.4
Sterile	<1 cm	<1 cm	·	·	·	·	·
III/5-1B	2 cm	2 cm	9 sq.m	5,681	631.2	81	450.0
Sterile	3 cm	5 cm	·	·	·	·	·
III/5-2	4 cm	4 cm	13 sq.m	31,150	2,396.2	481	925.0
Sterile	4 cm	4 cm	·	·	·	·	·
III/5-3	1 cm	2 cm	18 sq.m	13,897	772.1	245	907.4
Sterile	<1 cm	4 cm	·	·	·	·	·
III/5-3B	2 cm	2 cm	11 sq.m	17,237	1567.0	258	1,172.7
Sterile	<1 cm	10 cm	·	·	·	·	·
III/5-3B2	2 cm	4 cm	8 sq.m	18,804	2,350.5	272	1,133.3

* average means of all stone artefacts per square meter
** average means of essential artefacts per cubic meter

Table 11-1 Kabazi V, sub-unit III/5: vertical and horizontal distribution of artefacts by levels.

	III/5-1A		**III/5-1**		**III/5-1B**		**III/5-2**	
	N	***ess %***	**N**	***ess %***	**N**	***ess %***	**N**	***ess %***
Cores	2	*1.50*	3	*1.42*	1	*1.23*	5	*1.04*
Preforms	1	*0.75*	1	*0.47*	·	·	6	*1.25*
Tools	43	*32.33*	63	*29.72*	18	*22.22*	129	*26.82*
Flakes	72	*54.14*	129	*60.85*	57	*70.37*	284	*59.04*
Blades	15	*11.28*	16	*7.55*	5	*6.17*	57	*11.85*
Chunks	63	·	135	·	78	·	277	·
Chips	8,180	·	9,861	·	5,522	·	30,392	·
Total:	**8,376**	***100.00***	**10,208**	***100.00***	**5,681**	***100.00***	**31,150**	***100.00***

	III/5-3		**III/5-3B**		**III/5-3B2**		**Total:**	
	N	***ess %***	**N**	***ess %***	**N**	***ess %***	**N**	***ess %***
Cores	7	*2.86*	4	*1.55*	5	*1.84*	27	*1.61*
Preforms	2	*0.82*	1	*0.39*	1	*0.37*	12	*0.71*
Tools	84	*34.29*	90	*34.88*	69	*25.37*	496	*29.49*
Flakes	130	*53.06*	138	*53.49*	169	*62.13*	979	*58.20*
Blades	22	*8.98*	25	*9.69*	28	*10.29*	168	*9.99*
Chunks	159	·	230	·	205	·	1,147	·
Chips	13,493	·	16,749	·	18,327	·	102,524	·
Total:	**13,897**	***100.00***	**17,237**	***100.00***	**18,804**	***100.00***	**105,353**	***100.00***

Table 11-2 Kabazi V, sub-unit III/5: artefact totals by levels.

thin white or bluish patina, which often forms after flints have been exposed by archaeologists.

The flotation of worked sediments and the usage of screens during excavations resulted in the recovery of even the smallest artefacts. As a result, the vast majority of artefacts recovered in each assemblage are chips. Chips are pieces of debitage smaller than 29 mm in their maximum dimensions. Hence, most chips were too small to study their attributes, such as platform characteristics, scar patterns, shapes, etc. The chips in each assemblage have been subdivided according to their maximum dimensions into three metric interval classes: large (with maximum dimension between 29,9 and 20,0 mm), medium (19,9 mm to 10,0 mm), and small (less 10,0 mm). There is no evidence that chips were used as blanks for tool production in any of the assemblages of sub-unit III/5.

Chunks have been subdivided into a several types: broken flint plaquette, amorphous broken pieces, natural blanks (pieces similar to flakes, but without striking platforms and bulbs of percussion) and small broken fragments of unidentifiable debitage. Although chunks are listed under debris, some chunks might have been used as blanks for tool production. Also, some of the largest chunks might have been used as blanks for cores and/or bifacial tools.

The category of cores includes cores and fragments of broken cores. On the basis of the number of working surfaces, these have been subdivided into unifacial and bifacial cores. Further, according to the number and arrangement of striking platforms and scar position on flaking surfaces, these unifacial and bifacial cores have been assigned to several different types. Unifacial cores are represented by the following types: unidirectional, unidirectional transverse, bi-directional, bi-directional transverse, orthogonal crossed, and three-directional crossed. Among bifacial cores, there are unidirectional alternate, bi-directional alternate, orthogonal alternate, multidirectional alternate, and radial alternate (discoid) types.

Preforms include pieces which fail to exhibit continuous edge retouch or a regular core working surface. Typologically, preforms are subdivided into preforms of bifacial tools (pre-tools), preforms of cores (pre-cores) and unidentifiable (broken) pieces.

Blades and flakes with maximal dimensions larger than 29 mm and without traces of secondary treatment are considered as debitage. Blades are blanks with a maximum length of more than twice their maximum width. Flakes are blanks with a maximum length less than twice their maximum width. Additionally, flakes are divided into two types: regular flakes, which are longer than they are wide, and transverse flakes, which are wider than they are long.

An attribute analysis of blanks is undertaken in this chapter. Blanks include debitage lacking traces of secondary treatment, as well as flake tools and blade tools. Blanks have many potential attributes, although the most important are their dimensions, scar pattern, cortex, shape, blank axis, lateral and distal profiles, as well as the characteristics of their striking platforms. Due to the small blade samples, these have been merged with the flakes for the analysis of most attributes. Excluded from blank analyses are bifacial tools, cores, chunks, chips, unidentifiable debitage, and unidentifiable tool fragments.

Tools include regularly retouched unifacial and bifacial implements, irregularly retouched pieces, and broken fragments of tools. Unifacial and bifacial tools have been subdivided into several tool classes, such as points, scrapers, denticulates, notches, end-scrapers, burins, truncated-faceted tools, and perforators. In this chapter, the criteria used in the assignment to the different classes of bifacial and unifacial tools of items with continuous retouch adhere to traditional conventions. However, here it is perhaps necessary to reiterate descriptions of some of the tool classes, i.e. denticulates, notched tools, truncated-faceted tools, and retouched pieces, as these same terms have also been used to refer to quite different items.

Notched tools are characterised by any blank (flake, blade, chunk, etc.) with continuously retouched notches on either one or more more edges.

Denticulate tools are characterised by any blank (flake, blade, chunk, etc.) with a series of retouched notches running down one edge or edges.

Truncated-faceted pieces are characterised by any blanks (flake, blade, chunk, etc.) that exhibit a truncation by method of alternate faceting on one or more edges. Truncated-faceted pieces are defined as a separate tool class unless there are other signs of treatment (retouching, burin blow, etc.). Sometimes, truncated-faceted edges are identified on edges of continuously retouched tools (points, scrapers, denticulates, etc.). In these cases, the truncated-faceted edge or edges are listed only as elements of tool accommodation.

Retouched pieces are characterised by any blank (flake, blade, chunk, etc.) with light marginal, very light marginal (ephemeral), and irregular scalar discontinuous retouch.

According to the number of retouched edges, edge shapes, and edge placement, most tool classes are subdivided into subsets corresponding to overall tool shape. Additional attributes used in the classification of tools are the presence or absence of other typological elements and accommodations, such as backing, thinning, truncation, etc.

For the investigation of the intensity of tool elaboration, several attributes, such as types of retouch, angles of retouch, and retouch extending, were analysed. Taking into account the large numbers of broken and/or uncompleted unifacial tools in all assemblages only complete unifacial points and scrapers were included in these analyses. Each edge of these unifacial tools was studied separately.

The following types of retouch were recognised: scalar, combined (scalar plus sub-parallel) and stepped. Sub-parallel retouch only occurred in combination with scalar retouch. Three ranges of retouch angles were documented: flat (<45º), semi-steep (45º-60º), and steep (>60º).

Based on the extent of retouch, tools have been subdivided into light elaborated (if all working edges have 1-2 retouched rows), medium elaborated (if at least one working edge has multi-row retouch in a strip <5 mm wide), and heavy elaborated (if at least one working edge has multi-row retouch in a strip >5 mm wide).

Most retouched pieces had light marginal or very light marginal (ephemeral) retouch. Only several items from each assemblage display irregular scalar retouch. As retouched pieces exhibit only little modification of their edges, it might be suggested that most of these items were used only briefly and were not resharpened. The typological classification of retouched pieces is shown in separate categories by the position of edge retouch.

Tool fragments were mostly broken tools. These broken tools have different types of retouch but are very small. As such, they provide little typological information and were not useful for assemblage comparisons. These broken tools might be divided into fragments of bifacial and unifacial tools as well as divided into basal fragments, medial fragments, and edge fragments.

Seeing as both cores and bifacial tools are present in assemblages belonging to sub-unit III/5, it follows that blanks (flakes, blades, and chips) can stem either from the exploitation of cores or from bifacial tool shaping/thinning. Also, some debitage samples (mostly chips and small flakes) might come from tool edge modification.

Morphological features for bifacial debitage were documented in several investigations of Middle Palaeolithic assemblages of the Old World (Bordes 1961; Newcamer 1971; Schild, Wendorf 1977; Bradly, Sampson 1986; Demidenko, Usik 1993b; Chabai, Demidenko 1998; Demidenko 2004a, 2004b; Yevtushenko 2003, 2004). It is accepted that blanks that came from bifacial tool shaping/thinning had faceted or plain platforms with lipping, obtuse platform angles, numerous proximally positioned dorsal scars (similar to Upper Palaeolithic "striking platform abrasion"), incurvated or twisted lateral profiles, and expanding/trapezoidal or irregular shapes.

Therefore, tool treatment elements might be distinguished as either by-products of bifacial tool shaping/thinning or as by-products of tool resharpening. For the identification of these two elements, several criteria can be consulted.

The by-products of bifacial tool shaping/thinning need to exhibit: (1) lipped platform, plain or faceted; (2) obtuse platform angle; (3) incurvated or twisted profile; (4) expanding-trapezoidal or irregular shape. It is should be noted that some blanks from obtuse supplementary core platforms might also resemble pieces from bifacial tool shaping/thinning. However, taking into account the absence of cores with supplementary platforms in sub-unit III/5 assemblages, all blanks corresponding to the proposed criteria can be considered as by-products of bifacial shaping.

Elements of tool edge resharpening need to exhibit all aforementioned features of bifacial tool shaping/thinning, plus several further features: (1) few blunt (thick) extremities; (2) generally thin bodies; (3) numerous proximally positioned dorsal scars (similar to Upper Palaeolithic "striking platform abrasion"). In most Middle Palaeolithic studies these blank features have been related only with bifacial thinning. However, this appears questionable, as such resharpening elements might just as equally stem from the thinning of bifacial tools and from the renewal of edges on unifacial tools. Moreover, extensive resharpening of tool edges also took place in industries where bifacial thinning, as well as bifacial tools, are uncommon (Dibble 1988, 1991; Kuhn 1995). In practice, it is often too difficult to separate resharpening elements from bifacial and unifacial tools, if both kinds of tool are present in the tool kit. In fact, only the characteristics of platform preparation, when visible, might provide a relatively clear basis for separating them.

During investigations of Crimean Middle Palaeolithic sites, some specific elements of tool rejuvenation have been recognised among by-products of tool modification (Demidenko 2004a, 2004b; Yevtushenko 2003, 2004). The elements of tool rejuvenation include pointed tips of convergent tools (points and convergent scrapers), basal parts of tools, and parts of tool edges. The clear criteria for identification of rejuvenated tips of bifacial and unifacial points, and convergent scrapers have been proposed by Yu. E. Demidenko (2004a, p.140; 2004b, pp.54-55), and are as follows: (1) small dimensions - as a rule, these are chip-sized elements; (2) expanding or

rhomboidal shape, most predominantly transverse; (3) retouched pointed tip, positioned on transversal termination (unifacial tips have retouch only on obverse or inverse tool surfaces, while bifacial tips exhibit elaboration from both surfaces). To these three criteria could be added our fourth criterion: (4) pointed platform at proximal end of the piece that resulted from a side blow, although often the visible platform is absent. It should be noted that tip fragments came not only from tool rejuvenation. They might also stem from the tool production process, i.e. as by-products of unsuccessful tool shaping. In this publication all rejuvenated pointed tips are included in the tool list as unidentifiable unifacial and bifacial points or as unidentifiable unifacial and bifacial convergent scrapers.

Closely related criteria might also be used for the identification of rejuvenated tool bases: (1) expanding, crescent or rhomboidal shape, predominantly transverse; (2) rounded or canted base tip, positioned on transversal termination (unifacial bases have retouch only on obverse or inverse tool surfaces, while bifacial bases exhibit elaboration from both surfaces); (3) pointed platform at proximal end of the piece that resulted from a side blow, although often the visible platform is absent. The dimensions of rejuvenated bases could vary, e.g. from just chip-sized pieces among unifacial and bifacial tools, to relatively massive pieces among bifacial tools. In this publication all rejuvenated bases are included in the tool list as unifacial or bifacial tool fragments.

Rejuvenated working edges might derive from processes connected with cardinal rejuvenation of tool edges. The criteria for the identification of rejuvenated tool edges are as follows: (1) massive wide platform, lipped or semi-lipped, plain or faceted (2) obtuse platform angle; (3) incurvated or twisted lateral profile; (4) expanding-trapezoidal, rectangular or irregular shape; (5) generally thick bodies at proximal end; (6) numerous proximally positioned dorsal scars ("striking platform abrasion"). In this publication all rejuvenated edges are included in the tool list as unifacial and bifacial tool fragments.

Thus, both technological and typological investigations are based on the analysis of core reduction strategies, the attribute analysis of blanks, tool classification, and additional information from the investigation of other artefact categories and/or specific artefact descriptions.

Artefact Assemblages

Assemblages from sub-unit III/5 comprise a total of 105,353 lithic artefacts: 27 cores, 12 preforms, 496 tools, 979 flakes, 168 blades, 1,147 chunks, and 102,524 chips. Although the individual assemblages from different levels vary in size, they exhibit close proportions among the artefact categories (Table 11-2). All seven artefact assemblages exhibited pronounced typological and technological features of the Crimean Micoquian. Nevertheless, there are certain distinctions between artefact categories in these different levels, and these are highlighted below.

Chips

Chips have been subdivided in three groups according to size: small chips (<10 mm), medium chips (19-10 mm), and large chips (29-20 mm). Small chips are predominant in all assemblages of sub-unit III/5, while medium chips make up just around one-quarter of the total. Large chips comprise less than 5% of all chips (Table 11-3). About 30-40% of chips in each assemblage show traces of cortical coverage. No unifacial tools or retouched pieces with chip dimensions were observed in any of the assemblages from sub-unit III/5.

Chunks

Chunks have been subdivided into four types: broken flint plaquette, amorphous broken pieces, natural blanks, and fragments.

Most chunks constitute fragments of unidentifiable debitage and are characteristic for each level assemblage (Table 11-4). Most fragments are represented by small broken pieces (<30 mm maximum dimensions).

Broken flattish flint plaquettes, amorphous pieces, and natural flakes were met in almost all assemblages (with exception of levels III/5-3 and III/5-3B, where natural flakes were absent), though in different proportions. As a rule, these are of medium sizes. The largest plaquette was from level III/5-3 (80 mm length, 69 mm width, 22 mm thick), the largest amorphous chunk from level III/5-3 (66 mm length, 39 mm width, 24 mm thick), and the largest natural piece from level III/5-3B2 (74 mm length, 40 mm width, 21 mm thick). The majority of chunks on amorphous pieces and natural blanks, as well as on flint plaquettes, exhibit cortex coverage. Parts of such chunks might be interpreted as a provision of raw material. Foremost, this applies to plaquette chunks, as in almost every assemblage cores were

	III/5-1A		III/5-1		III/5-1B		III/5-2	
	N	*ess %*	N	*ess %*	N	*ess %*	N	*ess %*
Chips 29-20 mm	360	*4.40*	496	*5.03*	260	*4.71*	1,252	*4.12*
Chips 19-10 mm	2,019	*24.68*	2,681	*27.19*	1,446	*26.19*	7,058	*23.22*
Chips <10 mm	5,801	*70.92*	6,684	*67.78*	3,816	*69.11*	22,082	*72.66*
Total:	**8,180**	***100.00***	**9,861**	***100.00***	**5,522**	***100.00***	**30,392**	***100.00***

	III/5-3		III/5-3B		III/5-3B2		Total:	
	N	*ess %*	N	*ess %*	N	*ess %*	N	*ess %*
Chips 29-20 mm	517	*3.83*	726	*4.33*	581	*3.17*	4,192	*4.09*
Chips 19-10 mm	3,219	*23.86*	3,872	*23.12*	3,352	*18.29*	23,647	*23.06*
Chips <10 mm	9,757	*72.31*	12,151	*72.55*	14,394	*78.54*	74,685	*72.85*
Total:	**13,493**	***100.00***	**16,749**	***100.00***	**18,327**	***100.00***	**102,524**	***100.00***

Table 11-3 Kabazi V, sub-unit III/5: chip dimensions by levels.

		III/5-1A		III/5-1		III/5-1B		III/5-2	
		N	*ess %*	N	*ess %*	N	*ess %*	N	*ess %*
Types	Plaquettes	1	*0.74*	2	*3.17*	2	*2.56*	5	*1.81*
	Natural flakes	9	*6.67*	1	*1.59*	2	*2.56*	14	*5.05*
	Amorphous	5	*3.70*	1	*1.59*	7	*8.97*	8	*2.89*
	Fragments	120	*88.89*	59	*93.65*	67	*85.90*	250	*90.25*
	Total:	**135**	***100.00***	**63**	***100.00***	**78**	***100.00***	**277**	***100.00***
*Max Dimensions**	<30 mm	4	*26.67*	2	*50.00*	7	*63.64*	8	*29.63*
	30-39 mm	6	*40.00*	1	*25.00*	4	*36.36*	14	*51.85*
	40-49 mm	5	*33.33*	1	*25.00*	·	·	4	*14.81*
	50-59 mm	·	·	·	·	·	·	1	*3.70*
	60-69 mm	·	·	·	·	·	·	·	·
	>70 mm	·	·	·	·	·	·	·	·
	Total:	**15**	***100.00***	**4**	***100.00***	**11**	***100.00***	**27**	***100.00***

		III/5-3		III/5-3B		III/5-3B2		Total:	
		N	*ess %*	N	*ess %*	N	*ess %*	N	*ess %*
Types	Plaquettes	11	*6.92*	9	*3.91*	10	*4.88*	40	*3.49*
	Natural flakes	·	·	·	·	6	*2.93*	32	*2.79*
	Amorphous	14	*8.81*	29	*12.61*	20	*9.76*	84	*7.32*
	Fragments	134	*84.28*	192	*83.48*	169	*82.44*	991	*86.40*
	Total:	**159**	***100.00***	**230**	***100.00***	**205**	***100.00***	**1,147**	***100.00***
*Max Dimensions**	<30 mm	11	*44.00*	14	*36.84*	11	*30.56*	57	*36.54*
	30-39 mm	7	*28.00*	14	*36.84*	15	*41.67*	61	*39.10*
	40-49 mm	4	*16.00*	7	*18.42*	7	*19.44*	28	*17.95*
	50-59 mm	1	*4.00*	3	*7.89*	2	*5.56*	7	*4.49*
	60-69 mm	1	*4.00*	·	·	·	·	1	*0.64*
	>70 mm	1	*4.00*	·	·	1	*2.78*	2	*1.28*
	Total:	**25**	***100.00***	**38**	***100.00***	**36**	***100.00***	**156**	***100.00***

*without fragments

Table 11-4 Kabazi V, sub-unit III/5: chunk types and maximal dimensions*.

observed that had been made on flattish plaquettes.

Although chunks are listed under debris, some chunks might have been used as blanks in the production of tools. There are several unifacial tools made on different types of chunks. These are a lateral convex scraper on a natural flake (level III/5-1A); an atypical end-scraper on a natural flake (level III/5-1); a convergent sub-rectangular scraper on a natural flake, and a notched tool on an amorphous chunk (both from level III/5-3B); and an atypical end-scraper on an amorphous chunk (level III/5B2).

Cores

Cores were found in all levels. There are 19 unifacial and 8 bifacial cores in assemblages from subunit III/5 (Table 11-5). All cores are non-volumetric in concept and were used in the production of flake blanks.

Unifacial cores are composed of 3 unidirectional, 5 unidirectional transverse, 2 bi-directional, 1 bi-directional transverse, 1 orthogonal crossed, 2 three-directional crossed and 5 unidentifiable broken cores (Table 11-5).

The *unifacial unidirectional cores* come from levels III/5-1A, III/5-1 and level III/5-2.

The unidirectional core from level III/5-1A was made on a flint plaquette; core dimensions are 46 mm long, 36 mm wide, and 20 mm thick. The faceted striking platform was positioned on the short edge of the piece. The flattened working surface is sub-rectangular shaped with unidirectional parallel scars from removals. The back surface is flat and is covered by cortex. The core was exhausted.

The core from level III/5-1 was made on an amorphous nodule; core dimensions are 48 mm long, 36 mm wide, and 18 mm thick. The dihedral striking platform was positioned on the short edge of the piece. The flattened working surface is sub-rectangular shaped with unidirectional parallel scars from removals. The back surface was flattened and is partly covered with cortex. The core was exhausted.

The unidirectional core from level III/5-2 was made on an amorphous nodule and is 54 mm long, 47 mm wide, and 20 mm thick. The faceted striking platform is situated on the short edge of the piece. The flattened working surface is sub-rectangular shaped with unidirectional parallel scars from removals from the striking platform. The back surface of the core is convex. The core was exhausted.

Unidirectional transverse cores. One core of this type comes from level III/5-1, one stems from level III/5-2, two others from level III/5-3, and one last piece is from the level III/5B assemblage.

The core from level III/5-1 was made on an amorphous nodule; core dimensions are 30 mm long, 51 mm wide, and 18 mm thick. The plane striking platform is situated on one of the longer edges of the core. The flatted working surface is sub-rectangular in shape with unidirectional parallel scars from removals. The back surface is convex and covered with cortex. The core was exhausted.

The core from level III/5-2 was made on a massive sub-rectangular shaped flake, 48 mm long, 28 mm wide, and 25 mm thick. The faceted striking platform was placed on the lateral edge of the flake. The working surface was formed on the flake's inverse side. The working surface features a series of unidirectional parallel scars from removals from the striking platform. The back surface is convex and partly covered with cortex. The core was exhausted.

One of the cores from level III/5-3 was made on an amorphous nodule and is 30 mm long, 52 mm wide, and 22 mm thick. The plane striking platform is situated on the longer edge of the core. The flattened working surface is sub-rectangular in shape. The back surface is convex and partly covered with cortex. The core was exhausted.

Another unidirectional transverse core from level III/5-3 was made on an amorphous nodule, 30 mm long, 40 mm wide, and 16 mm thick. The plane striking platform was placed upon the longer edge of the core. The flattened working surface is of a sub-trapezoidal shape. The back surface is flat and is without cortex. The core was exhausted.

The unidirectional transverse core from level III/5-3B was made on a flint plaquette and exhibits dimensions of 40 mm length, 44 mm width, and 16 mm thickness. The dihedral striking platform is situated on the longer edge of the core. The flattened working surface is sub-triangular shaped. The back surface is convex and covered with cortex. The core was exhausted.

Bi-directional cores came from level III/5-1A and level III/5-3.

The core from level III/5-1A was made on an amorphous nodule. The core is 50 mm long, 39 mm wide, and 21 mm thick, and displays two plane striking platforms that are situated on the opposing shorter edges of the piece. The flattened working surface is multi-angle shaped and exhibits bi-directional parallel scars from removals from the striking platforms. The back surface is convex and is void of cortex. The core was exhausted.

The core from level III/5-3 was made on an amorphous nodule and is 44 mm long, 61 mm wide, and 33 mm thick. It has two plane striking platforms which were positioned on the opposing

	III/5-1A	III/5-1	III/5-1B	III/5-2	III/5-3	III/5-3B	III/5-3B2	Total: N	Total: %
Unifacial cores	***2***	***3***	·	***2***	***5***	***4***	***3***	***19***	***70.40***
Uni-directional	1	1	·	1	·	·	·	3	11.10
Uni-directional transverse	·	1	·	1	2	1	·	5	18.50
Bi-directional	1	·	·	·	1	·	·	2	7.40
Bi-directional transverse	·	1	·	·	·	·	·	1	3.70
Orthogonal crossed	·	·	·	·	·	·	1	1	3.70
Three-directional crossed	·	·	·	·	1	1	·	2	7.40
Unidentifiable (broken)	·	·	·	·	1	2	2	5	18.50
Bifacial cores	·	·	***1***	***3***	***2***	·	***2***	***8***	***29.60***
Uni-directional alternate	·	·	·	·	·	·	1	1	3.70
Bi-directional alternate	·	·	1	2	·	·	·	3	11.10
Orthogonal crossed alternate	·	·	·	1	·	·	·	1	3.70
Radial alternate (discoid)	·	·	·	·	1	·	·	1	3.70
Multi-directional alternate	·	·	·	·	1	·	1	2	7.40
Total:	***2***	***3***	***1***	***5***	***7***	***4***	***5***	***27***	***100.00***

Table 11-5 Kabazi V, sub-unit III/5: cores by types.

shorter edges of the piece. The flattened working surface of the core is sub-trapezoidal shaped and exhibits bi-directional parallel scars from removals from the striking platforms. The back surface is flattened and partly covered with cortex.

The *bi-directional transverse core* was found in level III/5-1. The core, which was made on a flint plaquette, measures 44 mm long, 66 mm wide, and 20 mm thick. The core displays two plane and faceted striking platforms situated on the opposing longer edges of the piece. The flattened working surface is of a sub-rectangular shape and features bi-directional parallel scars from removals from striking platforms. The back surface is flat and covered with cortex. The core is exhausted.

One *orthogonal crossed core* is from level III/5-3B2. This core was made on a massive transverse flake, its dimensions are 42 mm long, 49 mm wide, and 25 mm thick. The core has two plane striking platforms that are found on adjacent edges of the flake. The sub-rectangular shaped working surface was formed on the ventral surface of the flake. The working surface exhibits the crossed scars from removals from striking platforms. The back surface was flattened and is partly covered with cortex.

Three-directional crossed cores stem from levels III/5-3 and III/5-3B. Both cores were exhausted. The core from level III/5-3 was made on an amorphous piece, and is 52 mm long, 51 mm wide, and 10 mm thick. It exhibits three faceted striking platforms that are positioned on different edges. The flattened working surface is sub-triangular shaped with 3-directional crossed scars from removals from striking platforms. The back surface is convex and is partly covered with cortex.

The core from level III/5-3B was made on a flint plaquette. This piece is 46 mm long, 32 mm wide, and 19 mm thick. The core displays 3 faceted striking platforms that were applied to different edges of the plaquette. The flattened working surface is of a sub-rectangular shape and features 3-directional crossed scars from removals from the striking platforms. The back surface was flattened and is partly covered with cortex.

Unidentifiable cores comprise broken items. One such broken core was discovered in level III/5-3, two in level III/5-3B, and two further pieces in level III/5-3B2.

All broken unifacial cores are represented by small parts of cores with pronounced striking platforms. Whereas two of the cores (one from Level III/5B and another from Level III/5B2) exhibit faceted platforms, the three remaining pieces have plane platforms. The shapes of the working surfaces of these broken cores, as well as their systems of elaboration could not be identified.

Bifacial cores are composed of various types, and include 1 unidirectional alternate, 3 bi-directional alternate, 1 orthogonal crossed alternate, 1 radial alternate (discoid), and 2 multi-directional alternate (Table 11-5) pieces.

The *unidirectional alternate core* is from level III/5-3B2. This core was made on a flint plaquette and measures 48 mm long, 36 mm wide, and 25 mm thick. The core has two alternate working surfaces and one plane striking platform that is positioned on the short edge of the plaquette. Both working surfaces are of a sub-rectangular shape. Each surface exhibits unidirectional parallel scars from removals from the single striking platform. There were some traces of cortex on both surfaces.

Bi-directional alternate cores were found in level III/5-1B and level III/5-2. The core from level III/5-1B was made on an amorphous nodule. This piece is 83 mm long, 37 mm wide, and 32 mm thick, and displays two alternate flattened working surfaces and two faceted and dihedral striking platforms that lie on the opposing shorter edges of the piece. Both working surfaces are sub-rectangular shaped and feature unidirectional parallel scars from removals from each of the striking platforms. There are no traces of cortex on this core.

The first of the bi-directional alternate cores from level III/5-2 was made on a flint plaquette and is 48 mm long, 41 mm wide, and 26 mm thick. The core displays two alternate flattened working surfaces and two faceted and plane striking platforms that lie on opposing short edges of the piece. Both working surfaces are multi-angular shaped and exhibit unidirectional scars from removals from striking platforms. Both surfaces of the core still had traces of cortex.

The second bi-directional alternate core from level III/5-2 was partly broken. This piece is 37 mm long, 28 mm wide, and 20 mm thick. The core has two alternate flattened working surfaces and two opposing striking platforms. Both working surfaces feature unidirectional scars from removals from the striking platforms. There were some traces of cortex on both sides of this core. The core was exhausted.

The *orthogonal crossed alternate core* stems from level III/5-2. This core was made on an amorphous nodule, its dimensions being 63 mm long, 40 mm wide, and 17 mm thick. It exhibits two alternate sub-rectangular shaped working surfaces and two striking platforms. One platform is plane and is located on the short edge of piece, while the other is faceted and is found on its longer edge. Both working surfaces feature unidirectional parallel scars from removals from the striking platforms. Both surfaces of the core show some traces of cortex coverage. The core was exhausted.

The *radial alternate (discoid) core* was found in level III/5-3 and measures 41 mm long, 40 mm wide, and 11 mm thick. It has two alternate working surfaces. Both surfaces are characterised by multi-angular shapes with centripetal scar patterns. The obtuse striking platforms were positioned along the edges of the core. One of the surfaces was covered with a little cortex. The core was exhausted.

Multidirectional alternate cores are known from levels III/5-3 and III/5-3B2. The core from level III/5-3 is 53 mm long, 47 mm wide, and 22 mm thick. It has two alternate multi-angular shaped working surfaces and five striking platforms. One working surface displays 3-directional crossed scars from removals from three faceted striking platforms positioned on the edges of the core. The alternate working surface features bi-directional parallel scars from removals from two further faceted striking platforms. There are still some traces of cortex on both surfaces. The core was exhausted.

The multidirectional alternate core from level III/5-3B2 was made on a flint plaquette. The core dimensions are 59 mm long, 42 mm wide, and 22 mm thick. This piece displays two alternate sub-rectangular shaped working surfaces and three obtuse striking platforms. One working surface exhibits crossed scars from removals from two faceted platforms positioned on adjacent edges of the core. The alternate working surface features unidirectional parallel scars from removals from a faceted striking platform. There are some traces of cortex on both surfaces. The core was exhausted.

Preforms

There are a total of twelve preforms in the assemblages belonging to sub-unit III/5-3: one each in levels of III/5-1A, III/5-1, III/5-3b, III/5-3B2, six in layer III/5-2, and two in layer III/5-3.

The preform from level III/5-1A was made on a sub-rectangular shaped flint plaquette. The dimensions of this piece are 45 mm long, 37 mm wide, and 25 mm thick. This preform is broken and features only a dihedral striking platform formed on one edge of piece, and a single short removal from this same platform. Both sides of this artefact are partly covered with cortex. This piece is most likely the preform for a core (pre-core).

The preform from level III/5-1 was made on a nodule and is 40 mm long, 30 mm wide, and 18 mm thick. The preform is elaborated on both sides by a series of flat removals that were placed along its edges. The shape of this item is close to sub-crescent.

Most likely, it is the preform for a bifacial point or convergent scraper (pre-tool).

Typologically different items also occur as preforms in the level III/5-2 assemblage. Three of these are complete, while a further three are represented by broken pieces.

The biggest preform was made on a flint plaquette measuring 68 mm long, 27 mm wide, and 18 mm thick. Primary elaboration on both sides was achieved by a series of flat and wide removals made from one edge of the plaquette, while the opposite edge was backed. Both sides of piece are partly covered by cortex. This piece may be the preform for a backed bifacial scraper (pre-tool).

Another preform made on an amorphous nodule is 48 mm long, 34 mm wide, and 23 mm thick. This artefact exhibits a coarse bifacial elaboration along its entire perimeter and is of a near subcrescent shape. There are no traces of cortex on either side of the piece. Most likely, this is the preform for a bifacial point or convergent scraper (pre-tool).

A third preform was made on a primary transverse flake measuring 32 mm long, 41 mm wide, and 9 mm thick. Whereas its inverse side is completely thinned , its obverse side bears the signs of a coarse elaboration. This item is of a near subcrescent shape. The obverse surface of the flake shows traces of cortex. This piece may be the preform for a bifacial convergent tool (pre-tool).

Additionally, there are three broken preforms from level III/5-2. All these are coarse elaborated basal ends from bifacial tools or parts of broken pre-cores.

Among the preforms from level III/5-3 one was complete and another was broken. The complete preform was made on a primary flake (79 mm long, 45 mm wide, 17 mm thick). This preform exhibits coarse bifacial elaboration along all perimeters of the blank, which is of an ovoid shape. It is likely that this piece represents the preform for a bifacial scraper (pre-tool).

Another broken preform was made on a thin flint plaquette. This preform is the coarse elaborated basal part of either a bifacial tool or a pre-core.

The preform from level III/5-3B was made on a thin flint plaquette, 63 mm long, 32 mm wide, and 16 mm thick. The item was bifacially elaborated by a series of flat wide removals from one edge of the plaquette, while the opposite edge was backed. This piece may represent the preform for a backed bifacial scraper (pre-tool).

The preform from level III/5-3B2 was made on a massive flint plaquette, is 73 mm long, 57 mm wide, and 40 mm thick. A dihedral striking platform was formed on one edge of the piece from which one short removal it was made. This piece is probably the preform for a core (pre-core).

Blanks

The total blank sample from the seven assemblages of sub-unit III/5 numbers 979 flakes, 182 blades, 288 flake tools, and 44 blade tools (Table 11-6). This sum of blanks has produced a relatively low blade index: Ilam=13,5, even though some assemblages do exhibit a slightly larger ratio of blades. Also, it should be noted that about half of all blades in each of the assemblages are off-axis, and therefore might belong to the atypical blades. Further, the sub-unit III/5A assemblage features a relatively large percentage of transverse flakes in its blank sample (Table 11-6).

Among the 1,479 blanks, 500 are broken and are useful only for a subset of observations. The majority of complete blanks stems from levels III/5-1A, III/5-1, III/5-2, III/5-3, III/5-3B, and III/5-3B2. Taking into account the small blank sample from level III/5-1B, the proportional occurrences of many attributes mean little in this assemblage.

Dorsal scar patterns

Among the several identified scar patterns, only unidirectional-crossed and unidirectional types occur with high frequencies in all assemblages of sub-unit III/5 (Table 11-7). Bi-directional, convergent, three-directional and radial types are also noted on a regular basis in all assemblages, but in much lower proportion. Additionally, it should also be noted that flakes with crested and *débordant* scar patterns occur in some assemblages. Most likely, these pieces stem from the elaboration or rejuvenation of bifacial tool edges, particularly as there are no Levallois cores nor features of Levallois technology in any of the assemblages from sub-unit III/5.

Most blanks in the assemblages have some cortical coverage. Here, blanks with <25% cortex dominated among cortical blanks (Table 11-7), while primary blanks (with cortical coverage >75%) are also present in appreciable portions.

Shape characteristics

The majority of blanks are on-axis, although off-axis blanks are also common in all assemblages (Table 11-8).

Several shape attributes have been documented for the blank assemblages, these include blank shape, blank lateral profile, and profile at distal end. All levels show evidence of close shape patterns, i.e. trapezoidal and irregular blank shapes dominate, followed by rectangular and crescent shapes. Other shape types occur sporadically.

	III/5-1A					III/5-1					III/5-1B					III/5-2				
	Unretouched debitage	Retouched pieces	Unifacial tools	Total:	%	Unretouched debitage	Retouched pieces	Unifacial tools	Total:	%	Unretouched debitage	Retouched pieces	Unifacial tools	Total:	%	Unretouched debitage	Retouched pieces	Unifacial tools	Total:	%
Blades	13	·	1	14	*11.60*	10	·	3	13	*6.50*	3	·	·	3	*3.80*	36	1	5	42	*9.60*
Broken blades	2	1	2	5	*4.10*	6	1	·	7	*3.50*	2	·	·	2	*2.50*	21	1	2	24	*5.50*
Regular flakes	32	2	12	46	*38.00*	39	7	9	55	*27.60*	18	2	4	24	*30.00*	98	7	22	127	*29.00*
Transverse flakes	29	3	3	35	*28.90*	52	3	8	63	*31.70*	18	·	1	19	*23.80*	72	4	12	88	*20.10*
Broken flakes	11	4	1	16	*13.20*	38	4	11	53	*26.60*	21	5	5	31	*38.80*	114	12	28	154	*35.20*
Unidentifiable	·	·	5	5	*4.10*	·	·	8	8	*4.00*	·	·	1	1	*1.30*	·	·	3	3	*0.70*
Total:	**87**	**10**	**24**	**121**	***100.00***	**145**	**15**	**39**	**199**	***100.00***	**62**	**7**	**11**	**80**	***100.00***	**341**	**25**	**72**	**438**	***100.00***

	III/5-3					III/5-3B					III/5-3B2					Total				
	Unretouched debitage	Retouched pieces	Unifacial tools	Total:	%	Unretouched debitage	Retouched pieces	Unifacial tools	Total:	%	Unretouched debitage	Retouched pieces	Unifacial tools	Total:	%	Unretouched debitage	Retouched pieces	Unifacial tools	Total:	%
Blades	15	·	5	20	*8.80*	16	2	3	21	*8.70*	17	2	2	21	*8.10*	110	5	19	134	*8.60*
Broken blades	7	2	3	12	*5.30*	9	1	·	10	*4.10*	11	4	1	16	*6.20*	58	10	8	76	*4.90*
Regular flakes	41	10	11	62	*27.40*	54	4	17	75	*31.10*	61	6	11	78	*30.00*	343	38	86	467	*29.80*
Transverse flakes	53	5	5	63	*27.90*	34	5	13	52	*21.60*	48	3	4	55	*21.20*	306	23	46	375	*24.00*
Broken flakes	36	7	17	60	*26.50*	50	5	18	73	*30.30*	60	7	17	84	*32.30*	330	44	97	471	*30.10*
Unidentifiable	·	·	9	9	*4.00*	·	·	10	10	*4.10*	·	·	6	6	*2.30*	·	·	42	42	*2.70*
Total:	**152**	**24**	**50**	**226**	***100.00***	**163**	**17**	**61**	**241**	***100.00***	**197**	**22**	**41**	**260**	***100.00***	**1,147**	**120**	**298**	**1,565**	***100.00***

Table 11-6 Kabazi V, sub-unit III/5: blank types by levels.

Close patterns are true also for lateral profiles: incurvated profiles dominate in all assemblages, followed by twisted and then flat. The convex profile is always the least frequently attested.

Regarding distal profiles, there appears to be some difference between assemblages. Three modes can be differentiated:

1. Hinged ends are more common then feathering and blunted ends; this is the case in levels III/5-1, III/5-1B, and III/5-2;
2. Feathering ends are more common then hinged and blunted ends; this is the case in levels III/5-3, III/5-3B, and III/5B2;
3. Feathering, blunted and hinged distal ends are present in almost equal portions; as in level III/5-1A.

Platform characteristics

Observations made regarding striking platforms have involved the analyses of butt type, butt angle, and butt lipping (Table 11-9).

Unprepared platforms (the sum of plane and cortical types) dominate in all blank assemblages in subunit III/5. Multiple faceted butts are common among prepared platform types. In sum, blanks have produced moderate faceting indices: IF large=39,6; IF strict=20,1, although some individual levels do exhibit either slightly higher or lower values.

Concerning platform angles, right butts and obtuse butts are represented in very similar ratios in all assemblages, with the exception of level III/5-3, where right butts are particularly dominant, although obtuse butts still do count for 36,5% of all identifiable platforms.

With regard to platform lipping, unlipped butts are the most dominant, although items with lipped and semi-lipped butts are observed in appreciable portions in each of the assemblages.

Blank dimensions and blank selections

In order to better understand and describe the differences between blank production and blank selection all blanks have been assigned to one of three categories:

	III/5-1A		III/5-1		III/5-1B		III/5-2	
	N	ess %	N	ess %	N	ess %	N	ess %
Scar Patterns								
Unidirectional	24	*27.91*	37	*29.84*	6	*13.95*	59	*24.18*
Convergent	6	*6.98*	9	*7.26*	6	*13.95*	21	*8.61*
Unidirect.-crossed	27	*31.40*	37	*29.84*	12	*27.91*	75	*30.74*
Bidirectional	9	*10.47*	14	*11.29*	4	*9.30*	26	*10.66*
3-directional	5	*5.81*	11	*8.87*	5	*11.63*	32	*13.11*
Radial	3	*3.49*	2	*1.61*	2	*4.65*	4	*1.64*
Crested	1	*1.16*	2	*1.61*	3	*6.98*	4	*1.64*
Debordant	5	*5.81*	3	*2.42*	·	·	13	*5.33*
Primary	6	*6.98*	9	*7.26*	5	*11.63*	10	*4.10*
Total:	**86**	***100.00***	**124**	***100.00***	**43**	***100.00***	**244**	***100.00***
Cortex								
None	35	*40.70*	50	*40.32*	15	*34.88*	84	*34.43*
<25%	26	*30.23*	36	*29.03*	16	*37.21*	84	*34.43*
26-50%	8	*9.30*	11	*8.87*	5	*11.63*	30	*12.30*
51-75%	8	*9.30*	12	*9.68*	1	*2.33*	25	*10.25*
>75%	9	*10.47*	15	*12.10*	6	*13.95*	21	*8.61*
Total:	**86**	***100.00***	**124**	***100.00***	**43**	***100.00***	**244**	***100.00***

	III/5-3		III/5-3B		III/5-3B2		Total:	
	N	ess %	N	ess %	N	ess %	N	ess %
Scar Patterns								
Unidirectional	35	*25.74*	41	*31.30*	40	*27.40*	242	*26.59*
Convergent	10	*7.35*	13	*9.92*	16	*10.96*	81	*8.90*
Unidirect.-crossed	37	*27.21*	33	*25.19*	42	*28.77*	263	*28.90*
Bidirectional	19	*13.97*	8	*6.11*	21	*14.38*	101	*11.10*
3-directional	15	*11.03*	23	*17.56*	15	*10.27*	106	*11.65*
Radial	2	*1.47*	5	*3.82*	3	*2.05*	21	*2.31*
Crested	5	*3.68*	3	*2.29*	1	*0.68*	19	*2.09*
Debordant	3	*2.21*	1	*0.76*	1	*0.68*	26	*2.86*
Primary	10	*7.35*	4	*3.05*	7	*4.79*	51	*5.60*
Total:	**136**	***100.00***	**131**	***100.00***	**146**	***100.00***	**910**	***100.00***
Cortex								
None	41	*30.15*	63	*48.09*	45	*30.82*	333	*36.59*
<25%	45	*33.09*	31	*23.66*	54	*36.99*	292	*32.09*
26-50%	16	*11.76*	16	*12.21*	24	*16.44*	110	*12.09*
51-75%	14	*10.29*	14	*10.69*	15	*10.27*	89	*9.78*
>75%	20	*14.71*	7	*5.34*	8	*5.48*	86	*9.45*
Total:	**136**	***100.00***	**131**	***100.00***	**146**	***100.00***	**910**	***100.00***

Table 11-7 Kabazi V, sub-unit III/5: blank dorsal scar patterns and cortical coverage.

	III/5-1A		III/5-1		III/5-1B		III/5-2		III/5-3		III/5-3B		III/5-3B2		Total:	
	N	*ess %*	N	*ess %*	N	*ess %*	N	*ess %*	N	*ess %*	N	*ess %*	N	*ess %*	N	*ess %*
Axis																
On-axis	100	*88.50*	125	*74.40*	39	*61.90*	279	*67.55*	162	*75.00*	134	*66.34*	157	*67.38*	996	*70.74*
Off-axis	13	*11.50*	43	*25.60*	24	*38.10*	134	*32.45*	54	*25.00*	68	*33.66*	76	*32.62*	412	*29.26*
Total:	**113**	***100.00***	**168**	***100.00***	**63**	***100.00***	**413**	***100.00***	**216**	***100.00***	**202**	***100.00***	**233**	***100.00***	**1,408**	***100.00***
Shapes																
Trapezoidal	34	*36.96*	43	*31.85*	20	*39.22*	111	*37.50*	56	*37.33*	57	*37.01*	39	*24.07*	360	*34.62*
Triangular	7	*7.61*	5	*3.70*	2	*3.92*	12	*4.05*	7	*4.67*	9	*5.84*	8	*4.94*	50	*4.81*
Rectangular	13	*14.13*	11	*8.15*	5	*9.80*	35	*11.82*	27	*18.00*	29	*18.83*	23	*14.20*	143	*13.75*
Leaf	2	*2.17*	5	*3.70*	·	·	7	*2.36*	·	·	3	*1.95*	3	*1.85*	20	*1.92*
Crescent	7	*7.61*	5	*3.70*	3	*5.88*	24	*8.11*	11	*7.33*	8	*5.19*	16	*9.88*	74	*7.12*
Ovoid	3	*3.26*	7	*5.19*	3	*5.88*	3	*1.01*	2	*1.33*	5	*3.25*	4	*2.47*	27	*2.60*
Semi-ovoid	·	·	2	*1.48*	2	*3.92*	3	*1.01*	5	*3.33*	·	·	5	*3.09*	17	*1.63*
Irregular	26	*28.26*	57	*42.22*	16	*31.37*	101	*34.12*	42	*28.00*	43	*27.92*	64	*39.51*	349	*33.56*
Total:	**92**	***100.00***	**135**	***100.00***	**51**	***100.00***	**296**	***100.00***	**150**	***100.00***	**154**	***100.00***	**162**	***100.00***	**1,040**	***100.00***
Lateral Profiles																
Incurvate	52	*48.60*	89	*55.63*	38	*57.58*	192	*51.61*	88	*47.83*	110	*55.56*	103	*46.82*	672	*51.42*
Twisted	25	*23.36*	40	*25.00*	15	*22.73*	111	*29.84*	61	*33.15*	55	*27.78*	76	*34.55*	383	*29.30*
Flat	20	*18.69*	21	*13.13*	12	*18.18*	46	*12.37*	25	*13.59*	24	*12.12*	30	*13.64*	178	*13.62*
Convex	10	*9.35*	10	*6.25*	1	*1.52*	23	*6.18*	10	*5.43*	9	*4.55*	11	*5.00*	74	*5.66*
Total:	**107**	***100.00***	**160**	***100.00***	**66**	***100.00***	**372**	***100.00***	**184**	***100.00***	**198**	***100.00***	**220**	***100.00***	**1,307**	***100.00***
Distal Profiles																
Feathering	33	*35.87*	44	*30.34*	17	*26.98*	84	*25.61*	90	*52.33*	81	*52.26*	95	*50.00*	444	*38.78*
Blunt	28	*30.43*	43	*29.66*	16	*25.40*	98	*29.88*	23	*13.37*	28	*18.06*	29	*15.26*	265	*23.14*
Hinged	31	*33.70*	54	*37.24*	29	*46.03*	138	*42.07*	51	*29.65*	45	*29.03*	61	*32.11*	409	*35.72*
Overpassed	·	·	4	*2.76*	1	*1.59*	8	*2.44*	8	*4.65*	1	*0.65*	5	*2.63*	27	*2.36*
Total:	**92**	***100.00***	**145**	***100.00***	**63**	***100.00***	**328**	***100.00***	**172**	***100.00***	**155**	***100.00***	**190**	***100.00***	**1,145**	***100.00***

Table 11-8 Kabazi V, sub-unit III/5: blank shapes and blank profiles.

	III/5-1A		III/5-1		III/5-1B		III/5-2	
	N	***ess %***	**N**	***ess %***	**N**	***ess %***	**N**	***ess %***
Platform type								
Cortex	11	*17.74*	13	*11.82*	5	*14.29*	23	*10.80*
Plain	30	*48.39*	48	*43.64*	12	*34.29*	103	*48.36*
Dihedral	7	*11.29*	15	*13.64*	7	*20.00*	33	*15.49*
Polyhedral	5	*8.06*	16	*14.55*	2	*5.71*	17	*7.98*
Multiple faceted	9	*14.52*	18	*16.36*	9	*25.71*	37	*17.37*
Total:	**62**	***100.00***	**110**	***100.00***	**35**	***100.00***	**213**	***100.00***
Facetage indeces								
IF large	33.9		44.6		51.4		40.9	
IF strict	14.5		16.4		25.7		17.4	
Platform angle								
Right	33	*53.23*	57	*51.82*	17	*48.57*	100	*46.95*
Obtuse	29	*46.77*	53	*48.18*	18	*51.43*	113	*53.05*
Total:	**62**	***100.00***	**110**	***100.00***	**35**	***100.00***	**213**	***100.00***
Lipping								
Unlipped	53	*85.48*	82	*74.55*	24	*68.57*	147	*69.01*
Lipped & Semi-lipped	9	*14.52*	28	*25.45*	11	*31.43*	66	*30.99*
Total:	**62**	***100.00***	**110**	***100.00***	**35**	***100.00***	**213**	***100.00***

	III/5-3		III/5-3B		III/5-3B2		Total:	
	N	***ess %***	**N**	***ess %***	**N**	***ess %***	**N**	***ess %***
Platform type								
Cortex	12	*11.54*	9	*7.76*	17	*13.39*	90	*11.73*
Plain	46	*44.23*	58	*50.00*	76	*59.84*	373	*48.63*
Dihedral	11	*10.58*	13	*11.21*	10	*7.87*	96	*12.52*
Polyhedral	4	*3.85*	6	*5.17*	4	*3.15*	54	*7.04*
Multiple faceted	31	*29.81*	30	*25.86*	20	*15.75*	154	*20.08*
Total:	**104**	***100.00***	**116**	***100.00***	**127**	***100.00***	**767**	***100.00***
Facetage indeces								
IF large	44.2		42.2		26.8		39.6	
IF strict	29.8		25.9		15.8		20.1	
Platform angle								
Right	66	*63.46*	57	*49.14*	73	*57.48*	403	*52.54*
Obtuse	38	*36.54*	59	*50.86*	54	*42.52*	364	*47.46*
Total:	**104**	***100.00***	**116**	***100.00***	**127**	***100.00***	**767**	***100.00***
Lipping								
Unlipped	79	*75.96*	83	*71.55*	87	*68.50*	555	*72.36*
Lipped & Semi-lipped	25	*24.04*	33	*28.45*	40	*31.50*	212	*27.64*
Total:	**104**	***100.00***	**116**	***100.00***	**127**	***100.00***	**767**	***100.00***

Table 11-9 Kabazi V, sub-unit III/5: blank platform preparation, platform angle, and platform lipping.

regular flakes, transverse flakes, and blades (Table 11-10). This approach has led to the observation that in each of the assemblages the average dimensions of retouched pieces and unifacial tools in all these blank groups are greater than those of the unretouched debitage sample.

On other hand, morphological differences among blank types did play a secondary role in blank selection. It is obvious that the primary criterion for tool production was blank size. The longest edge of blades and regular flakes was the lateral edge, while for transverse flakes the longest edge was the distal edge. As follows from statistic data (Table 11-11), most blanks fall into the 30-39 mm category, and a little more than a quarter belong to the 40-49 mm group. The pieces larger than 50 mm are represented by less than 10% of all blanks.

Tool selection patterns exhibit the opposite tendency. Tools prevail on blanks with maximum dimensions in excess of 60 mm, and among those blanks with dimensions >70 mm almost all blanks were unifacial tools or/and retouched pieces (Table 11-11).

Thus, the divisions of blanks by their average dimensions as well as by their maximum dimensions show that the bigger blanks were preferred for tool production.

Tools

Assemblages from sub-unit III/5 comprise a total of 496 tools: 23 bifacial tools, 233 unifacial tools, 126 retouched pieces, and 114 tool fragments. Due to the small tool sample sizes from each level, the percentage of different tool classes as well as tool types can only be regarded as indicative of actual trends (Table 11-12).

Bifacial tools

Bifacial tools comprise 14 bifacial points and 9 bifacial scrapers. Among bifacial tools, 4 were made on a flake, 4 on a flint plaquette, 4 on fully bifacial thinned blanks, and 11 are small tip fragments of tools with unidentifiable morphology (Table 11-13). All bifacial tools were made in plano-convex manner; a combination of stepped, scalar and sub-parallel retouch was used in their treatment.

Among bifacial tools, many items were broken, with only very few complete implements. Average dimensions of these pieces bring very limited insights (Table 11-14). In spite of this, bifacial tools exhibit larger dimensions than unifacial tools, retouched pieces, as well as unretouched blanks (Table 11-10, for comparison).

Bifacial points

On the basis of the shapes among bifacial points the following classes are defined: sub-triangular (N=1), elongated leaf-shaped (N=1), leaf-shaped (N=2), sub-crescent (N=2), and unidentifiable (N=8) (Table 11-12).

The *sub-triangular bifacial point* stems from level III/5-1. This partly broken tool was made on an unidentifiable blank and is 51 mm long, 39 mm wide, and 13 mm thick (Fig. 11-1, *1*). Two edges were retouched from the convex side by stepped and scalar retouch. One of the surfaces shows traces of cortex.

The elongated *leaf-shaped point* was discovered in level III/5-3. This tool was made on an unidentifiable flat blank and is relatively large (Fig. 11-3, *1*): 63 mm long, 25 mm wide, and 12 mm thick. This tool displays no traces of cortex on its surfaces. The working edges were retouched from the convex side by stepped and scalar retouch, while the flat side was only slightly retouched. The basal end of the tool had been thinned.

Both *leaf-shaped points* are from level III/5-3. The first of these was made on an unidentifiable bifacially thinned blank and is relatively small: 43 mm length, 16 mm width, and 11 mm thick. One side of this tool exhibits some traces of cortex. The working edges were retouched from the convex side by stepped retouch, while the flat side is unretouched. The second leaf-shaped point was made on a cortical transverse flake and exhibits larger dimensions: 69 mm long, 34 mm wide, and 14 mm thick. The working edges were retouched from its convex side by stepped and scalar retouch, while the flat side was only slightly retouched. Obviously, this was a reutilised unifacial tool.

Sub-crescent points were recovered from levels III/5-3B and III/5-3B2. The point from level III/5-3B was made on a morphologically unidentifiable blank and measures 54 mm long, 25 mm wide, and 11 mm thick (Fig. 11-3, *4*). There were no traces of cortex on this tool. The working edges were retouched from the convex side by stepped and scalar retouch, while the flat side was not retouched. The sub-crescent point from level III/5-3B2 was on a flint plaquette and is relatively large: 82 mm long, 46 mm wide, and 15 mm thick (Fig. 11-2, *1*). Both sides of the tool are covered with cortex. The working edges display an alternate retouch which was applied from both the convex and flat sides by scalar retouch.

Unidentified bifacial points. All unidentifiable bifacial points comprise pointed terminal parts of broken bifacial items. Two of these come from level III/5-1, three from level III/5-2, two from level III/5-3, and one piece from level III/5-3B2. The point from

	III/5-1A			III/5-1			III/5-1B			III/5-2		
	Blades	Flakes	Transversal Flakes	Blades	Flakes	Transversal Flakes	Blades	Flakes	Transversal Flakes	Blades	Flakes	Transversal Flakes
Debitage												
Length (L), mm	39.4	37.9	28.2	47.6	36.4	28.2	40.7	38.6	28.7	41.6	38.4	26.6
Width (W), mm	16.7	26.4	37.5	19.4	25.9	37.4	14.7	29.3	37.0	17.6	27.7	35.7
Thickness (T), mm	7.5	6.6	6.9	6.8	6.3	7.7	4.7	9.1	7.7	6.3	6.1	6.4
L/W	2.4	1.4	0.8	2.5	1.4	0.8	2.8	1.3	0.8	2.4	1.4	0.7
W/L	0.4	0.7	1.3	0.4	0.7	1.3	0.4	0.8	1.3	0.4	0.7	1.3
T/L*100,%	19.0	17.4	24.5	14.3	17.3	27.3	11.5	23.6	26.8	15.1	15.9	24.1
T/W*100,%	44.9	25.0	18.4	35.1	24.3	20.6	32.0	31.1	20.8	35.8	22.0	17.9
Total number:	**13**	**32**	**29**	**10**	**39**	**52**	**3**	**18**	**18**	**36**	**98**	**72**
Retouched pieces												
Length (L), mm	·	41.0	30.3	·	43.0	32.7	·	39.5	·	52.6	37.3	28.5
Width (W), mm	·	26.5	36.3	·	32.4	45.0	·	29.0	·	23.2	28.6	38.8
Thickness (T), mm	·	5.5	4.7	·	7.6	6.7	·	6.0	·	8.2	7.4	5.3
L/W	·	1.5	0.8	·	1.3	0.7	·	1.4	·	2.3	1.3	0.7
W/L	·	0.6	1.2	·	0.8	1.4	·	0.7	·	0.4	0.8	1.4
T/L*100,%	·	13.4	15.5	·	17.7	20.5	·	15.2	·	15.6	19.8	18.6
T/W*100,%	·	20.8	12.9	·	23.5	14.9	·	20.7	·	35.3	25.9	13.7
Total number:	**·**	**2**	**3**	**·**	**7**	**3**	**·**	**2**	**·**	**1**	**7**	**4**
Unifacial tools												
Length (L), mm	44.0	42.2	32.7	45.7	49.9	28.8	·	45.3	34.0	50.0	41.2	32.8
Width (W), mm	19.0	26.5	43.0	21.7	36.8	38.8	·	31.5	72.0	21.5	31.2	44.7
Thickness (T), mm	8.0	8.5	9.0	6.0	10.3	6.0	·	12.3	13.0	7.0	9.2	9.3
L/W	2.3	1.6	0.8	2.1	1.4	0.7	·	1.4	0.5	2.3	1.3	0.7
W/L	0.4	0.6	1.3	0.5	0.7	1.3	·	0.7	2.1	0.4	0.8	1.4
T/L*100,%	18.2	20.1	27.5	13.1	20.6	20.8	·	27.2	38.2	14.0	22.3	28.4
T/W*100,%	42.1	32.1	20.9	27.7	28.0	15.5	·	39.0	18.1	32.6	29.5	20.8
Total number:	**1**	**12**	**3**	**3**	**9**	**8**	**·**	**4**	**1**	**5**	**22**	**12**

Table 11-10 Kabazi V, sub-unit III/5: average dimensions of unretouched debitage, retouched pieces, and unifacial tools by levels*.

level III/5-1 resulted from the tip rejuvenation of a bifacial point and is 14 mm long, 26 mm wide, and 3 mm thick.

Bifacial scrapers

These pieces are subdivided into lateral straight (N=1), lateral convex (N=1), leaf-shaped (N=1), sub-leaf-shaped (N=1), sub-crescent (N=1), sub-trapezoidal and three convergent unidentifiable types (Table 11-12).

The *lateral straight bifacial scraper* was recovered from level III/5-2. This item was made on a massive flake measuring 51 mm long, 32 mm wide, and 10 mm thick. The single straight working edge was retouched from its convex side by stepped and scalar retouch, while its flat side was lacking retouch. The tool might be interpreted as a reutilised unifacial lateral scraper.

The *lateral convex bifacial scraper* stems from level III/5-2. The tool is made on a massive unidentifiable bifacially elaborated blank (74 mm long, 40 mm wide, and 17 mm thick) and displays a single convex working edge that is elaborated by scalar and stepped retouch. The side opposite the retouched edge was modified by a plane backed accommodation.

The *leaf-shaped bifacial scraper* from level III/5-3 was made on a cortical flake. It is 56 mm long, 32 mm wide, and 11 mm thick (Fig. 11-3, *2*). The working edges were retouched from the convex side by stepped and scalar retouch. This bifacial item is a reutilised unifacial tool.

The *sub-leaf bifacial scraper* (Fig. 11-1, *2*) from level III/5-2 is made on a flint plaquette and is relatively large (125 mm long, 59 mm wide, and 25 mm thick).

	III/5-3			III/5-3B			III/5-3B2			Total		
	Blades	Flakes	Transversal Flakes	Blades	Flakes	Transversal Flakes	Blades	Flakes	Transversal Flakes	Blades	Flakes	Transversal Flakes
Debitage												
Length (L), mm	41.9	38.9	27.1	38.7	39.3	27.6	45.5	39.2	28.2	42.2	38.4	27.8
Width (W), mm	17.6	29.2	37.6	16.3	29.2	38.8	17.8	27.9	38.9	17.2	27.9	37.6
Thickness (T), mm	6.5	7.2	7.5	6.5	6.8	7.2	5.8	6.6	8.5	6.3	6.9	7.4
L/W	2.4	1.3	0.7	2.4	1.3	0.7	2.6	1.4	0.7	2.5	1.4	0.7
W/L	0.4	0.8	1.4	0.4	0.7	1.4	0.4	0.7	1.4	0.4	0.7	1.4
T/L*100,%	15.5	18.5	27.7	16.8	17.3	26.1	12.7	16.8	30.1	14.9	18.0	26.6
T/W*100,%	36.9	24.7	19.9	39.9	23.3	18.6	32.6	23.7	21.9	36.6	24.7	19.7
Total number:	**15**	**41**	**53**	**16**	**54**	**34**	**17**	**61**	**48**	**110**	**343**	**306**
Retouched pieces												
Length (L), mm	·	42.8	38.0	43.0	42.8	34.5	58.5	43.6	28.5	51.4	41.4	32.1
Width (W), mm	·	29.6	46.4	20.5	28.0	47.5	18.5	34.6	42.0	20.7	29.8	42.7
Thickness (T), mm	·	8.9	9.0	4.5	8.8	6.5	5.0	5.4	8.0	5.9	7.1	6.7
L/W	·	1.4	0.8	2.1	1.5	0.7	3.2	1.3	0.7	2.5	1.4	0.8
W/L	·	0.7	1.2	0.5	0.7	1.4	0.3	0.8	1.5	0.4	0.7	1.3
T/L*100,%	·	20.8	23.7	10.5	20.6	18.8	8.5	12.4	28.1	11.5	17.1	20.9
T/W*100,%	·	30.1	19.4	22.0	31.4	13.7	27.0	15.6	19.0	28.5	23.8	15.7
Total number:	**·**	**10**	**5**	**2**	**4**	**5**	**2**	**6**	**3**	**5**	**38**	**23**
Unifacial tools												
Length (L), mm	68.2	44.4	34.8	57.0	43.9	34.5	53.5	45.6	27.8	53.1	44.6	32.2
Width (W), mm	25.2	31.6	48.8	23.0	31.7	42.4	21.5	32.7	47.0	21.9	31.8	48.1
Thickness (T), mm	10.0	8.5	7.6	7.3	7.9	9.1	7.0	9.2	9.3	7.6	9.4	9.1
L/W	2.7	1.4	0.7	2.5	1.4	0.8	2.5	1.4	0.6	2.4	1.4	0.7
W/L	0.4	0.7	1.4	0.4	0.7	1.2	0.4	0.7	1.7	0.4	0.7	1.5
T/L*100,%	14.7	19.1	21.8	12.8	18.0	26.4	13.1	20.2	33.5	14.3	21.1	28.3
T/W*100,%	39.7	26.9	15.6	31.7	24.9	21.5	32.6	28.1	19.8	34.7	29.6	18.9
Total number:	**5**	**11**	**5**	**3**	**17**	**13**	**2**	**11**	**4**	**19**	**86**	**46**

*complete pieces only

Table 11-10 continued.

The working edges were retouched from the convex side by stepped and scalar retouch, while the flat side was given only a slight retouch. Both obverse and inverse surfaces of the tool were covered with cortex. The basal end of the tool exhibits a natural back accommodation.

The *sub-crescent bifacial scraper* comes from level III/5-3B2. The tool was made on a flint plaquette and is relatively large (98 mm long, 56 mm wide, and 18 mm thick; Fig. 11-2, *2*). Both sides of the tool were partly covered with cortex. The working edges were slightly retouched from both the convex and flat side of the piece. This piece represents an unfinished tool.

The *sub-trapezoidal bifacial scraper* is from level III/5-3B. The tool was made on a massive cortical transverse flake (37 mm long, 55 mm wide, and 22 mm thick; Fig. 11-3, *3*). The working edges were retouched from the convex side, using a stepped and scalar retouch, while the flat side was only slightly retouched. This bifacial scraper is a reutilised unifacial tool.

Unidentifiable bifacial convergent scrapers comprise the pointed terminal parts of broken bifacial convergent scrapers. Those were found in levels III/5-1, III/5-2 and III/5-3. The scraper from level III/5-1 is a broken pointed tip fragment (15 mm long, 25 mm wide, and 7 mm thick). There are some traces of cortex on the convex surface of this tool. The item from level III/5-2 was on a flint plaquette (36 mm long, 31 mm wide, and 11 mm thick). The unidentifiable scraper from level III/5-3 is 11 mm long, 18 mm wide, and 3 mm thick.

	III/5-1A					III/5-1					III/5-1B					III/5-2				
	Debitage	Retouched pieces	Unifacial tools	Total:	%	Debitage	Retouched pieces	Unifacial tools	Total:	%	Debitage	Retouched pieces	Unifacial tools	Total:	%	Debitage	Retouched pieces	Unifacial tools	Total:	%
30-39 mm	50	4	3	57	*63.30*	66	3	11	80	*61.10*	27	1	2	30	*61.20*	145	8	11	164	*62.80*
40-49 mm	15	1	10	26	*28.90*	29	4	4	37	*28.20*	10	1	1	12	*24.50*	40	4	22	66	*25.30*
50-59 mm	4	·	1	5	*5.60*	4	3	3	10	*7.60*	4	·	·	4	*8.20*	12	3	4	19	*7.30*
60-69 mm	2	·	·	2	*2.20*	2	·	·	2	*1.50*	1	·	1	2	*4.10*	8	·	2	10	*3.80*
70-79 mm	·	·	·	·	·	·	·	1	1	*0.80*	·	·	1	1	*2.00*	1	1	·	2	*0.80*
80-89 mm	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·
90-99 mm	·	·	·	·	·	·	·	1	1	*0.80*	·	·	·	·	·	·	·	·	·	·
Total:	**71**	**5**	**14**	**90**	***100.00***	**101**	**10**	**20**	**131**	***100.00***	**42**	**2**	**5**	**49**	***100.00***	**206**	**16**	**39**	**261**	***100.00***

	III/5-3					III/5-3B					III/5-3B2					Total:				
	Debitage	Retouched pieces	Unifacial tools	Total:	%	Debitage	Retouched pieces	Unifacial tools	Total:	%	Debitage	Retouched pieces	Unifacial tools	Total:	%	Debitage	Retouched pieces	Unifacial tools	Total:	%
30-39 mm	76	7	6	89	*61.40*	64	4	13	81	*54.70*	80	3	6	89	*57.80*	508	30	52	590	*60.30*
40-49 mm	23	4	7	34	*23.40*	34	6	12	52	*35.10*	29	4	4	37	*24.00*	180	24	60	264	*27.00*
50-59 mm	9	2	2	13	*9.00*	4	·	4	8	*5.40*	11	2	4	17	*11.00*	48	10	18	76	*7.80*
60-69 mm	·	2	2	4	*2.80*	2	·	3	5	*3.40*	3	2	3	8	*5.20*	18	4	11	33	*3.40*
70-79 mm	1	·	2	3	*2.10*	·	·	1	1	*0.70*	2	·	·	2	*1.30*	4	1	5	10	*1.00*
80-89 mm	·	·	1	1	*0.70*	·	1	·	1	*0.70*	1	·	·	1	*0.60*	1	1	1	3	*0.30*
90-99 mm	·	·	1	1	*0.70*	·	·	·	·	·	·	·	·	·	·	·	·	2	2	*0.20*
Total:	**109**	**15**	**21**	**145**	***100.00***	**104**	**11**	**33**	**148**	***100.00***	**126**	**11**	**17**	**154**	***100.00***	**759**	**70**	**149**	**978**	***100.00***

*complete pieces only

Table 11-11 Kabazi V, sub-unit III/5: blanks grouped by maximum dimensions*.

Unifacial tools

There are a total of 233 unifacial tools. These can be divided typologically into 36 points, 168 scrapers, 7 denticulate tools, 7 notched tools, 8 truncated-faceted tools, 2 end-scrapers, 4 burins, and 1 perforator.

The majority of unifacial tools were made on flakes, while only 25 tools were made on blades, and only 5 are on chunks (Table 11-13). There is no evidence that chips were used as blanks for tool production.

The average dimensions of complete unifacial tools (Table 11-10) were different for tools made on blades, on regular flakes, and on transverse flakes. As mentioned above, unifacial tools exhibited larger dimensions than unretouched blanks for all blank types.

Among 233 unifacial tools, 211 were obversely retouched, 5 were inversely retouched, 9 were alternatingly retouched, 4 were alternately elaborated, and 4 exhibited burin facets.

Although the majority of unifacial tools do not exhibit accommodation elements, most assemblages do feature implements with different types of thinning and/or truncations, while backed items were the most seldom (Table 11-15).

The investigations of tool treatment characteristics (Table 11-16) has shown that among 175 complete unifacial tools (17 points and 158 scrapers) from sub-unit III/5, there are 268 retouched edges. This translates to an average of 1.5 retouched edges per tool. If we examine each assemblage separately, each displays values close to this quotient (from 1.4 to 1.6)

Scalar retouch is dominant, followed by the stepped variant. Combined retouch (sub-parallel plus scalar) occurred much less frequently in the assemblages (Table 11-16).

Table 11-12 Kabazi V, sub-unit III/5: tool classification. ▶

	III/5-1A		III/5-1		III/5-1B		III/5-2		III/5-3		III/5-3B		III/5-3B2		Total:	
	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%
Points																
Sub-triangular	·	·	·	·	·	·	2	3.0	·	·	·	·	·	·	2	*0.8*
Sub-leaf	1	*4.4*	·	·	1	*14.3*	·	·	·	·	1	*2.0*	·	·	3	*1.2*
Sub-crescent	1	*4.4*	·	·	·	·	·	·	1	*2.2*	1	*2.0*	·	·	3	*1.2*
Semi-crescent	·	·	·	·	·	·	2	3.0	·	·	·	·	·	·	2	*0.8*
Sub-trapezoidal	·	·	1	*2.8*	·	·	1	1.5	1	*2.2*	·	·	·	·	3	*1.2*
Semi-trapezoidal	1	*4.4*	·	·	·	·	2	3.0	·	·	1	*2.0*	·	·	4	*1.6*
Tip fragment	1	*4.4*	1	*2.8*	1	*14.3*	5	7.5	4	*8.9*	5	*10.0*	2	*7.1*	19	*7.4*
Scrapers																
Transverse straight	·	·	·	·	·	·	3	4.5	1	*2.2*	1	*2.0*	·	·	5	*2.0*
Transverse convex	1	*4.4*	4	*11.1*	1	*14.3*	·	·	2	*4.4*	3	*6.0*	1	*3.6*	12	*4.7*
Transverse concave	·	·	·	·	·	·	·	·	·	·	1	*2.0*	·	·	1	*0.4*
Transverse wavy	·	·	·	·	·	·	1	1.5	·	·	·	·	·	·	1	*0.4*
Transverse-oblique convex	·	·	1	*2.8*	·	·	2	3.0	2	*4.4*	1	*2.0*	1	*3.6*	7	*2.7*
Transverse-oblique wavy	·	·	·	·	·	·	3	4.5	·	·	·	·	·	·	3	*1.2*
Lateral straight	·	·	3	*8.3*	1	*14.3*	7	10.4	4	*8.9*	7	*14.0*	8	*28.6*	30	*11.7*
Lateral convex	6	*26.1*	3	*8.3*	1	*14.3*	6	9.0	7	*15.6*	7	*14.0*	3	*10.7*	33	*12.9*
Lateral concave	·	·	·	·	·	·	5	7.5	·	·	1	*2.0*	·	·	6	*2.3*
Lateral wavy	·	·	1	*2.8*	·	·	1	1.5	1	*2.2*	3	*6.0*	·	·	6	*2.3*
Double straight	·	·	·	·	·	·	·	·	2	*4.4*	·	·	·	·	2	*0.8*
Double convex	1	*4.4*	·	·	·	·	·	·	2	*4.4*	·	·	·	·	3	*1.2*
Double concave	·	·	1	*2.8*	·	·	·	·	·	·	·	·	·	·	1	*0.4*
Double straight-convex	2	*8.7*	1	*2.8*	·	·	·	·	1	*2.2*	1	*2.0*	·	·	5	*2.0*
Double straight-concave	·	·	·	·	·	·	·	·	1	*2.2*	·	·	·	·	1	*0.4*
Double straight-wavy	·	·	1	*2.8*	·	·	·	·	·	·	·	·	·	·	1	*0.4*
Convergent sub-triangular	·	·	1	*2.8*	·	·	1	1.5	·	·	2	*4.0*	·	·	4	*1.6*
Convergent sub-leaf	·	·	·	·	·	·	·	·	·	·	·	·	2	*7.1*	2	*0.8*
Convergent sub-crescent	·	·	·	·	1	*14.3*	1	1.5	·	·	1	*2.0*	1	*3.6*	4	*1.6*
Convergent semi-crescent	·	·	·	·	·	·	1	1.5	·	·	1	*2.0*	2	*7.1*	4	*1.6*
Convergent sub-trapezoidal	·	·	1	*2.8*	·	·	·	·	1	*2.2*	2	*4.0*	1	*3.6*	5	*2.0*
Convergent semi-trapezoidal	1	*4.4*	2	*5.6*	·	·	2	3.0	·	·	3	*6.0*	·	·	8	*3.1*
Convergent sub-rectangular	·	·	·	·	·	·	1	1.5	1	*2.2*	4	*8.0*	·	·	6	*2.3*
Convergent semi-rectangular	·	·	·	·	·	·	1	1.5	3	*6.7*	·	·	1	*3.6*	5	*2.0*
Convergent beck-shaped	1	*4.4*	1	*2.8*	·	·	·	·	·	·	·	·	·	·	2	*0.8*
Convergent amorphous	·	·	·	·	·	·	1	1.5	·	·	·	·	·	·	1	*0.4*
Convergent tip fragment	2	*8.7*	3	*8.3*	·	·	3	4.5	·	·	·	·	2	*7.1*	10	*3.9*
Denticulates																
Transverse	·	·	·	·	·	·	1	1.5	·	·	·	·	·	·	1	*0.4*
Lateral	·	·	1	*2.8*	·	·	3	4.5	1	*2.2*	-	-	·	·	5	*2.0*
Double	1	*4.4*	·	·	·	·	·	·	·	·	·	·	·	·	1	*0.4*
Notches																
Simple distal	1	*4.4*	1	*2.8*	·	·	1	1.5	·	·	·	·	·	·	3	*1.2*
Simple lateral	·	·	1	*2.8*	·	·	·	·	1	*2.2*	1	*2.0*	·	·	3	*1.2*
Double lateral	·	·	1	*2.8*	·	·	·	·	·	·	·	·	·	·	1	*0.4*
Truncated-faceted tools																
Simple lateral	·	·	·	·	·	·	1	1.5	1	*2.2*	·	·	·	·	2	*0.8*
Simple proximal	·	·	·	·	·	·	2	3.0	1	*2.2*	1	*2.0*	·	·	4	*1.6*
Double distal-proximal	·	·	·	·	1	*14.3*	1	1.5	·	·	·	·	·	·	2	*0.8*
End-scrapers																
Atypical	·	·	1	*2.8*	·	·	·	·	·	·	·	·	1	*3.6*	2	*0.8*
Burins																
Atypical simple	2	*8.7*	1	*2.8*	·	·	·	·	·	·	·	·	·	·	3	*1.2*
Atypical multifaceted	·	·	1	*2.8*	·	·	·	·	·	·	·	·	·	·	1	*0.4*
Perforators																
Sub-triangular	1	*4.4*	·	·	·	·	·	·	·	·	·	·	·	·	1	*0.4*
Bifacial Points																
Sub-triangular	·	·	1	*2.8*	·	·	·	·	·	·	·	·	·	·	1	*0.4*
Leaf	·	·	·	·	·	·	·	·	2	*4.4*	·	·	·	·	2	*0.8*
Leaf elongated	·	·	·	·	·	·	·	·	1	*2.2*	·	·	·	·	1	*0.4*
Sub-crescent	·	·	·	·	·	·	·	·	·	·	1	*2.0*	1	*3.6*	2	*0.8*
Tip fragmrnts	·	·	2	*5.6*	·	·	3	4.5	2	*4.4*	·	·	1	*3.6*	8	*3.1*
Bifacial Scrapers																
Lateral straight	·	·	·	·	·	·	1	1.5	·	·	·	·	·	·	1	*0.4*
Lateral convex	·	·	·	·	·	·	1	1.5	·	·	·	·	·	·	1	*0.4*
Convergent leaf	·	·	·	·	·	·	·	·	1	*2.2*	·	·	·	·	1	*0.4*
Convergent sub-leaf	·	·	·	·	·	·	1	1.5	·	·	·	·	·	·	1	*0.4*
Convergent sub-crescent	·	·	·	·	·	·	·	·	·	·	·	·	1	*3.6*	1	*0.4*
Convergent sub-trapezoidal	·	·	·	·	·	·	·	·	·	·	1	*2.0*	·	·	1	*0.4*
Convergent tip fragments	·	·	1	*2.8*	·	·	1	1.5	1	*2.2*	·	·	·	·	3	*1.2*
Sub-total:	***23***	***100.0***	***36***	***100.0***	***7***	***100.0***	***67***	***100.0***	***45***	***100.0***	***50***	***100.0***	***28***	***100.0***	***256***	***100.0***
Retouched pieces	***10***		***15***		***7***		***29***		***25***		***18***		***22***		***126***	
Lateral	8		15		5		25		19		9		14		95	
Distal	2		·		1		3		4		8		6		24	
Bilateral	·		·		1		1		2		1		2		7	
Tool fragments	***10***		***12***		***4***		***33***		***14***		***22***		***19***		***114***	
Unifacial	7		8		4		24		12		15		17		87	
Bifacial	3		4		·		9		2		7		2		27	
Total:	**43**		**63**		**18**		**129**		**84**		**90**		**69**		**496**	

	III/5-1A					III/5-1					III/5-1B					III/5-2				
	Bifacial tools	Unifacial tools	Retouched pieces	Total:	%	Bifacial tools	Unifacial tools	Retouched pieces	Total:	%	Bifacial tools	Unifacial tools	Retouched pieces	Total:	%	Bifacial tools	Unifacial tools	Retouched pieces	Total:	%
Tool on blade	·	3	1	4	*9.30*	·	3	1	4	*6.30*	·	·	·	·	·	·	7	6	13	*10.10*
Tool on flake	·	21	9	30	*69.80*	·	28	14	42	*66.70*	·	10	7	17	*94.40*	1	62	23	86	*66.70*
Tool on chunk	·	1	·	1	*2.30*	·	1	·	1	*1.60*	·	·	·	·	·	·	·	·	·	·
Tool on plaquette	1	·	·	1	*2.30*	2	·	·	2	*3.20*	·	·	·	·	·	3	·	·	3	*2.30*
Tool on unidentifiable blank	2	5	·	7	*16.30*	6	8	·	14	*22.20*	·	1	·	1	*5.60*	12	15	·	27	*20.90*
Total:	**3**	**30**	**10**	**43**	***100.00***	**8**	**40**	**15**	**63**	***100.00***	**·**	**11**	**7**	**18**	***100.00***	**16**	**84**	**29**	**129**	***100.00***

	III/5-3					III/5-3B					III/5-3B2					Total:				
	Bifacial tools	Unifacial tools	Retouched pieces	Total:	%	Bifacial tools	Unifacial tools	Retouched pieces	Total:	%	Bifacial tools	Unifacial tools	Retouched pieces	Total:	%	Bifacial tools	Unifacial tools	Retouched pieces	Total:	%
Tool on blade	·	8	2	10	*11.90*	·	3	3	6	*6.70*	·	3	6	9	*13.00*	·	27	19	46	*9.30*
Tool on flake	2	33	23	58	*69.10*	1	48	15	64	*71.10*	·	31	16	47	*68.10*	4	233	107	344	*69.40*
Tool on chunk	·	·	·	·	·	·	2	·	2	*2.20*	·	1	·	1	*1.50*	·	5	·	5	*1.00*
Tool on plaquette	1	·	·	1	*1.20*	4	·	·	4	*4.40*	2	·	·	2	*2.90*	13	·	·	13	*2.60*
Tool on unidentifiable blank	6	9	·	15	*17.80*	4	10	·	14	*15.60*	*3*	7	·	10	*14.50*	*33*	55	·	88	*17.70*
Total:	**9**	**50**	**25**	**84**	***100.00***	**9**	**63**	**18**	**90**	***100.00***	**5**	**42**	**22**	**69**	***100.00***	**50**	**320**	**126**	**496**	***100.00***

Table 11-13 Kabazi V, sub-unit III/5: blank types used for tool production.

	III/5-1A	III/5-1	III/5-1B	III/5-2	III/5-3	III/5-3B	III/5-3B2	Total:
Length (L), mm	·	>51,0	·	83.3	57.8	54.5	90.0	71.4
Width (W), mm	·	39.0	·	43.7	26.8	31.0	51.0	38.3
Thickness (T), mm	·	13.0	·	17.3	11.3	16.5	16.5	14.9
L/W	·	>1.3	·	1.9	2.2	1.8	1.8	1.9
W/L	·	<0.8	·	0.5	0.5	0.6	0.6	0.5
T/L*100,%	·	<25.5	·	20.8	19.6	30.3	18.3	20.9
#	**0**	**1**	**0**	**3**	**4**	**2**	**2**	**12**

*complete pieces only

Table 11-14 Kabazi V, sub-unit III/5: average dimensions of bifacial tools*.

Concerning retouch angle, assemblages do appear to differ somewhat, whereby there were two observable modes:

1. Semi-steep retouch is predominant, while flat retouch and steep retouch are represented by very similar values (levels III/5-1A, III/5-1, III/5-3, III/5-3B);
2. Semi-step, flat and steep types of retouch are represented by almost equal or very close ratios (levels III/5-2 and III/5-3B2) (Table 11-16).

Now turning to the intensity of tool elaboration, heavy retouched tools dominate, followed by medium elaborated pieces. On the other hand, lightly retouched tools are less numerous in each of the levels (Table 11-16).

Points

These comprise sub-triangular (N=2), sub-leaf (N=3), sub-crescent (N=3), semi-crescent (N=2), sub-trapezoidal (N=3), semi-trapezoidal (N=4), and unidentifiable (N=19) types (Table 11-12).

Both *sub-triangular points* were discovered in level III/5-2. One of these points was made on a blade and exhibits medium obverse retouch.

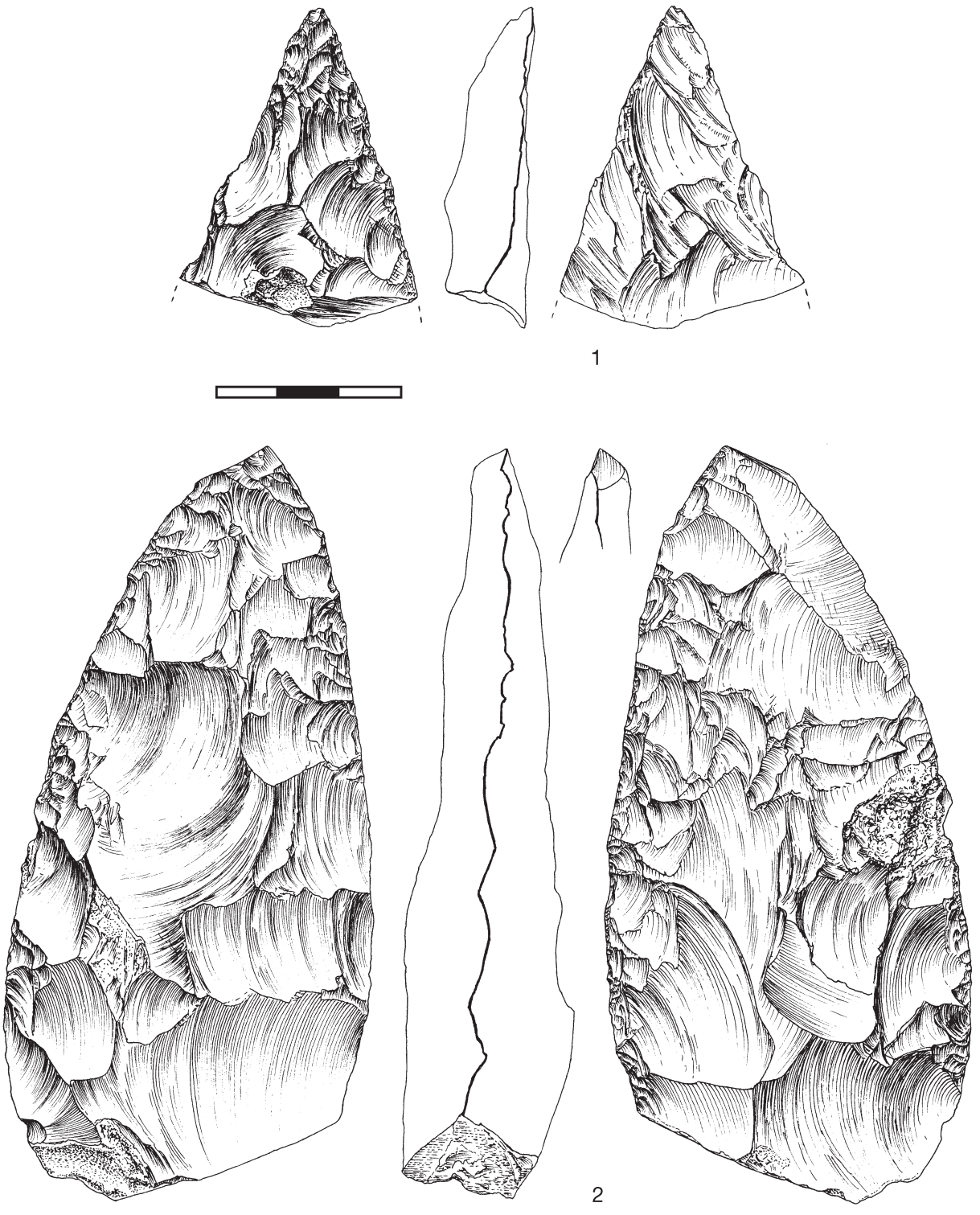

Fig. 11-1 Kabazi V, levels III/5-1 (1) and III/5-2 (2): 1 – bifacial point, sub-triangular; 2 – bifacial scraper, sub-leaf, backed.

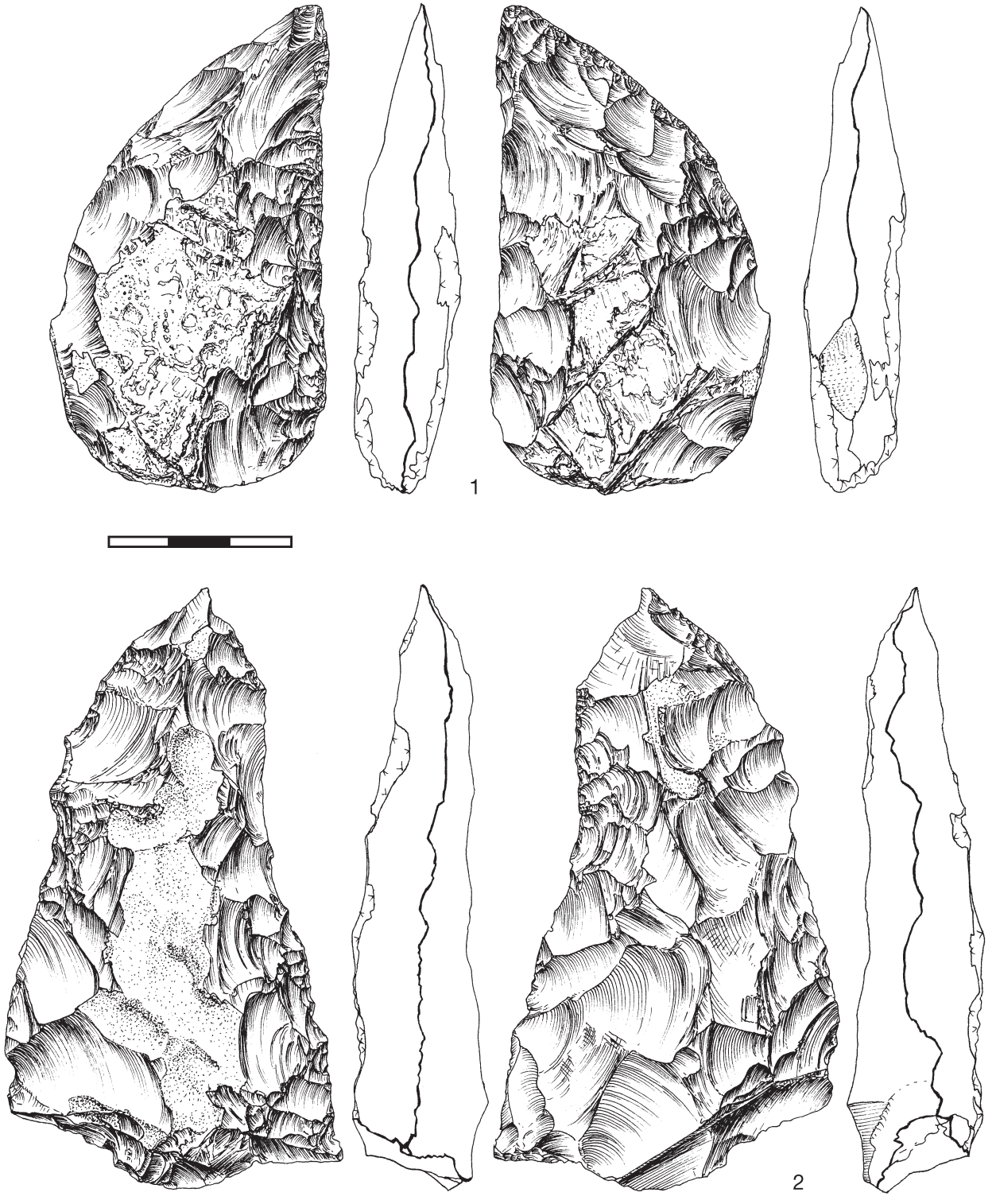

Fig. 11-2 Kabazi V, Level III/5-3B2: 1 – bifacial point, sub-crescent; 2 – bifacial scraper, semi-crescent (unfinished).

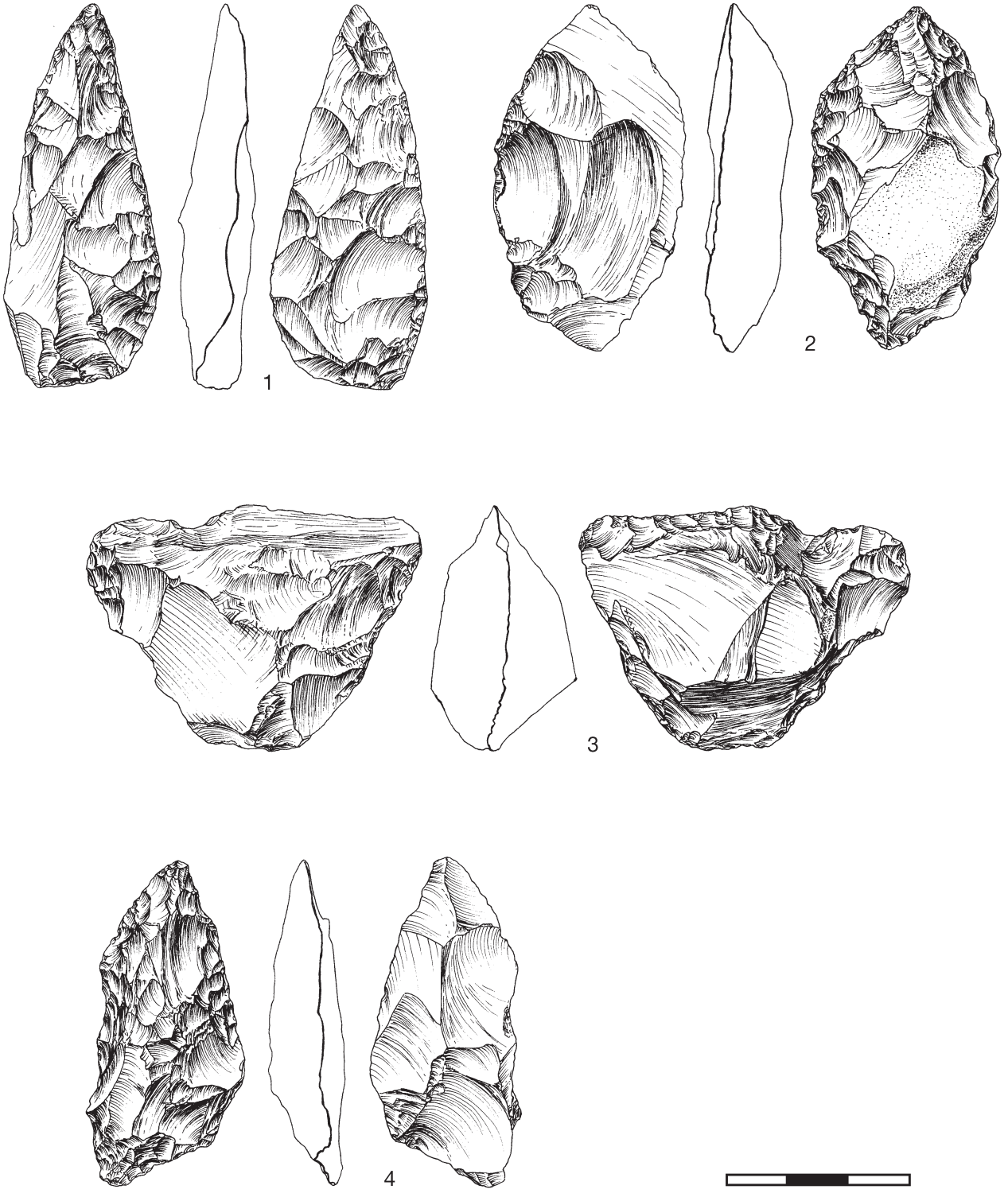

Fig. 11-3 Kabazi V, levels III/5-3 (1, 2), III/5-3B (3, 4): 1 – bifacial point, leaf-shaped, thinned base; 2 – bifacial scraper, leaf-shaped; 3 – bifacial scraper, sub-trapezoidal; 4 – bifacial point, sub-crescent.

	III/5-1A		III/5-1		III/5-1B		III/5-2	
	N	%	N	%	N	%	N	%
None	17	*73.90*	24	*75.00*	5	*71.40*	50	*83.30*
Thinned	3	*13.00*	3	*9.40*	1	*14.30*	5	*8.30*
Backed	·	·	3	*9.40*	·	·	1	*1.70*
Trunckated	3	*13.00*	2	*6.30*	1	*14.30*	4	*6.70*
Total:	**23**	***100.00***	**32**	***100.00***	**7**	***100.00***	**60**	***100.00***

	III/5-3		III/5-3B		III/5-B2		Total:	
	N	%	N	%	N	%	N	%
None	33	*86.80*	37	*77.10*	21	*84.00*	187	*80.30*
Thinned	2	*5.30*	7	*14.60*	4	*16.00*	25	*10.70*
Backed	1	*2.60*	3	*6.30*	·	·	8	*3.40*
Trunckated	2	*5.30*	1	*2.10*	·	·	13	*5.60*
Total:	**38**	***100.00***	**48**	***100.00***	**25**	***100.00***	**233**	***100.00***

* identifiable unifacial tools onlv

Table 11-15 Kabazi V, sub-unit III/5: tool accomodations*.

The second sub-triangular point was on a regular flake and features a heavy obverse retouch. This tool is a reversal form, i.e. the tip of the point was made on the proximal part of the blank.

Sub-leaf points were found in levels III/5-1A, III/5-1B, and III/5-3B. The sub-leaf point from level III/5-1A was made on a regular flake. This tool shows a heavy obverse retouch and an inverse thinning of its base part. The sub-leaf point from level III/5-1B is on transverse flake and has a heavy obverse retouch (Fig. 11-4, *3*), and also features an inverse thinning of its tip. This tool is of a canted *(déjeté)* form. The sub-leaf point from level III/5-3B was made on a regular flake and has a heavy retouch (Fig. 11-4, *4*).

Sub-crescent points were identified in the assemblages from levels III/5-1A, III/5-3, and III/5-3B. The sub-crescent point from level III/5-1A was made on a regular flake and shows a heavy obverse retouch. This sub-crescent point is a reversal form (Fig. 11-4, *6*). The sub-crescent point from level III/5-3 was made on a blade. This heavily elaborated tool was also terminally thinned (Fig. 11-4, *2*). The sub-crescent point from level III/5-3B was also on a blade. Again, this tool has a heavy retouch (Fig. 11-4, *1*), with inverse thinning of both distal and proximal extremities. The point shows clear impact fractures to its tip.

Both *semi-crescent points* are from level III/5-2. The first of these was made on a blade and has a heavy obverse retouch. The surfaces of the tool exhibit the traces of an ancient yellowish patina and lustrage. This point might be interpreted as a tool made on a reutilised ancient blank. The second semi-crescent point is on a regular flake that belongs to the bifacial shaping/thinning blanks. The tool displays a heavy obverse retouch.

Sub-trapezoidal points stem from levels III/5-1, III/5-2, and III/5-3. The sub-trapezoidal point from level III/5-1 has a near canted *(déjeté)* form (Fig. 11-4, *9*). The tool was made on a transversal flake, which might number among those blanks resulting from bifacial tool shaping. The point shows signs of a heavy obverse retouch and features a clear impact fracture to its tip. The sub-trapezoidal point from level III/5-2 was made on a relatively large regular flake and exhibits a heavy obverse retouch. This tool is also among those belonging to the canted *(déjeté)* type (Fig. 11-4, *8*). The sub-trapezoidal point from level III/5-3 was made on a transverse flake, obviously originating from bifacial shaping/thinning. Again, this tool was heavily retouched and is of a near canted *(déjeté)* form.

Semi trapezoidal points are known from levels III/5-1A, III/5-2, and III/5-3B. The semi-trapezoidal point from level III/5-1A was made on a transverse flake and displays a heavy obverse retouch. This point also approaches a canted *(déjeté)* form (Fig. 11-4, *10*). There are two semi-trapezoidal points in the assemblage of level III/5-2. Typologically, these points also approach the already frequently mentioned canted *(déjeté)* form. The first of these was made on a transverse flake. It exhibits a heavy obverse retouch and basal thinning. The second piece was on a regular flake. This item has a heavy

	III/5-1A		III/5-1		III/5-1B		III/5-2	
	N	%	N	%	N	%	N	%
Types of retouch by tool edges								
Sub-parallel + Scalar	1	*4.20*	3	*8.80*	·	·	10	*16.40*
Scalar	15	*62.50*	23	*67.60*	4	*50.00*	31	*50.80*
Stepped	8	*33.30*	8	*23.50*	4	*50.00*	20	*32.80*
Total:	**24**	***100.00***	**34**	***100.00***	**8**	***100.00***	**61**	***100.00***
Angle of retouch by tool edges								
Flat (<45°)	6	*25.00*	8	*23.50*	1	*12.50*	23	*37.70*
Semi-steep (45°- 60°)	11	*45.80*	18	*52.90*	6	*75.00*	22	*36.10*
Steep (>60°)	7	*29.20*	8	*23.50*	1	*12.50*	16	*26.20*
Total:	**24**	***100.00***	**34**	***100.00***	**8**	***100.00***	**61**	***100.00***
Intensity of tool elaboration								
Light elaborated tools	·	·	3	*14.30*	1	*20.00*	3	*7.00*
Medium elaborated tools	4	*26.70*	7	*33.30*	·	·	7	*16.30*
Heavy elaborated tools	11	*73.30*	11	*52.40*	4	*80.00*	33	*76.70*
Total:	**15**	***100.00***	**21**	***100.00***	**5**	***100.00***	**43**	***100.00***
Retouched edges : tools	1.6		1.6		1.6		1.4	

	III/5-3		III/5-3B		III/5-3B2		Total	
	N	%	N	%	N	%	N	%
Types of retouch by tool edges								
Sub-parallel + Scalar	3	*6.70*	5	*7.60*	4	*13.30*	26	*9.70*
Scalar	26	*57.80*	34	*51.50*	15	*50.00*	148	*55.20*
Stepped	16	*35.60*	27	*40.90*	11	*36.70*	94	*35.10*
Total:	**45**	***100.00***	**66**	***100.00***	**30**	***100.00***	**268**	***100.00***
Angle of retouch by tool edges								
Flat (<45°)	15	*33.30*	21	*31.80*	10	*33.30*	84	*31.30*
Semi-steep (45°- 60°)	25	*55.60*	33	*50.00*	11	*36.70*	126	*47.00*
Steep (>60°)	5	*11.10*	12	*18.20*	9	*30.00*	58	*21.60*
Total:	**45**	***100.00***	**66**	***100.00***	**30**	***100.00***	**268**	***100.00***
Intensity of tool elaboration								
Light elaborated tools	8	*26.70*	9	*22.00*	6	*30.00*	30	*17.10*
Medium elaborated tools	7	*23.30*	7	*17.10*	4	*20.00*	36	*20.60*
Heavy elaborated tools	15	*50.00*	25	*60.90*	10	*50.00*	109	*62.30*
Total:	**30**	***100.00***	**41**	***100.00***	**20**	***100.00***	**175**	***100.00***
Retouched edges : tools	1.5		1.6		1.5		1.5	

*complete unifacial points and scrapers only

Table 11-16 Kabazi V, sub-unit III/5: characteristics of unifacial tool elaboration*.

obverse retouch and was laterally thinned (Fig. 11-4, *7*). The semi-trapezoidal point from level III/5-3B was on a transverse flake and is heavily retouched (Fig. 11-4, *5*). Again, this tool can be assigned to those of a canted (*déjeté*) type.

Unidentifiable points. Of the 19 unidentifiable points, one stem from level III/5-1A, one from level III/5-1, one from level III/5-1B, five from level III/5-2, four from level III/5-3, five from level III/5-3B, and two from level III/5-3B2. All unidentifiable points comprise broken pointed tips. Most pieces belong to regular forms, with two points from levels III/5-1B

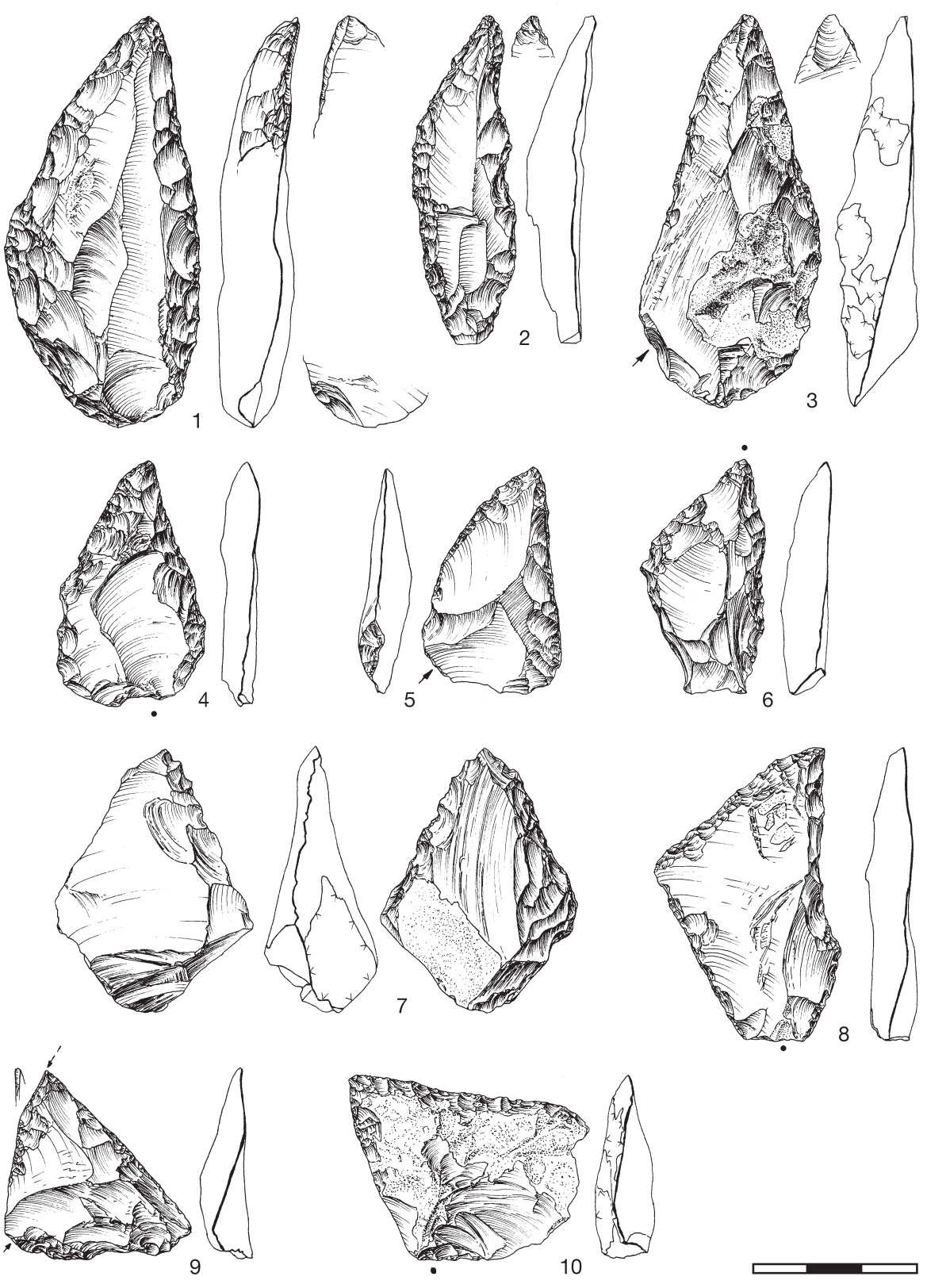

Fig. 11-4 Kabazi V, levels III/5-1A (6, 10), III/5-1 (9), III/5-1B (3), III/5-2 (7, 8), III/5-3 (1, 2, 4, 5): 1 – point, sub-crescent, bi-terminally thinned; 2 – point, sub-crescent, distally thinned; 3 – point, sub-leaf *(déjeté)*; 4 – point, sub-leaf; 5 – point, semi-trapezoidal *(déjeté)*; 6 – point, sub-crescent reverse; 7 – point, semi-trapezoidal, distally thinned; 8 – point, sub-trapezoidal *(déjeté)*; 9 – point, sub-trapezoidal *(déjeté)*; 10 – point, semi-trapezoidal *(déjeté)*.

and III/5-2 approaching clear canted *(déjeté)* forms. In addition, four items from levels III/5-2, III/5-3, III/5-3B, and III/5-3B2 might be assigned to the tip rejuvenated elements.

Scrapers

The joint assemblage from sub-unit III/5 includes 168 scrapers. According to edge placement, these are subdivided into convergent (N=51), double (N=13), lateral (N=75), transverse (N=19), and transverse-oblique (N=10) types.

Convergent scrapers were found in all levels. With reference to their morphological shapes, convergent scrapers can be subdivided into sub-triangular (N=4), sub-leaf (N=2), sub-crescent (N=4), semi-crescent (N=4), sub-trapezoidal (N=5), semi-trapezoidal (N=8), sub-rectangular (N=6), semi-rectangular (N=5), *bec*-shaped (N=2), amorphous shaped (N=1), and unidentifiable (N=10) types (Table 11-12).

Sub-triangular scrapers were observed in levels III/5-1, III/5-2, and III/5-3B. The sub-triangular scraper from level III/5-1 was made on a regular flake. This piece can be descibed as a heavily elaborated obverse retouched tool (Fig. 11-5, *1*). The sub-triangular scraper from level III/5-2 was made on a regular flake and features a heavy obverse retouch. There were two sub-triangular scrapers in level III/5-3B. Both tools were made on transverse flakes and display a heavy obverse retouch. One of these scrapers also has an inversely thinned back side.

Sub-leaf scrapers were discovered in level III/5-3B2. One of these was made on partly broken flake and has a slight obverse retouch. Another was made on a blade and features a heavy obverse retouch (Fig. 11-6, *1*). In spite of its slightly asymmetric shape this tool can be affiliated to those belonging to the *limace* type.

Sub-crescent scrapers are recorded in levels III/5-1B, III/5-2, III/5-B, and III/5-3B2. The sub-crescent scraper from level III/5-1B is made on a regular flake. It is a heavily obverse retouched tool (Fig. 11-5, *3*). The sub-crescent shaped scraper from level III/5-2 was made on a regular flake and also exhibits a heavy obverse retouch. This tool is among those with a reversal form (Fig. 11-5, *6*). The sub-crescent scrapers from levels III/5-3B and III/5-3B2 were made on transverse flakes. These all feature a heavy obverse retouch, and approach clear canted *(déjeté)* forms (Fig. 11-6, *2*). The scraper from level III/5-3B2 exhibits an inversely thinned back (Fig. 11-5, *2*).

Semi-crescent scrapers are observed in levels III/5-2 (N=1), III/5-3B (N=1), and level III/5-3B2 (N=2). The semi-crescent scraper from Level III/5-2 was made on a heavy obverse retouched transverse flake. This tool approaches a canted *(déjeté)* form (Fig. 11-5, *5*). The semi-crescent scraper from level III/5-3B was made on a relatively large flake (67 mm long, 41 mm wide, and 25 mm thick) and has a heavy obverse retouch (Fig. 11-5, *4*). Both semi-crescent scrapers from level III/5-3B2 were on regular flakes and feature a heavy obverse retouch. One of these scrapers exhibits inverse thinning of its terminal tip.

Sub-trapezoidal scrapers were found in levels III/5-1, III/5-3, and III/5-3B2, with one piece, respectively, as well as in level III/5-3B where two items were identified. All sub-trapezoidal scrapers were made on heavy obverse retouched transverse flakes and have been affiliated to the canted *(déjeté)* forms. Also, one scraper from level III/5-3B exhibits an inverse thinning of its basal part (Fig. 11-6, *3*). The scraper from level III/5-3B2 was made on a bifacial shaping/thinning blank (Fig. 11-6, *4*).

Semi-trapezoidal scrapers occur in level III/5-1A (N=1), levels III/5-1 (N=2) and III/5-2 (N=2), and level III/5-3B (N=3). All semi-trapezoidal scrapers have canted *(déjeté)* forms. The scraper from level III/5A was made on a regular flake and has a heavy inverse retouch (Fig. 11-6, *6*). Both semi-trapezoidal scrapers from level III/5-1 feature a heavy obverse retouch. One of these was made on a regular flake. Another scraper was made on a transverse flake and displays an inverse thinning of its basal end. Both semi-trapezoidal scrapers from level III/5-2 are canted *(déjeté)* forms. The first of these was made on a regular flake and has a medium obverse retouch. The second scraper was on a transverse flake and has a heavy obverse retouch. This latter tool exhibits an inverse thinning of both its terminal and basal ends (Fig. 11-6, *5*). The semi-trapezoidal scrapers from level III/5-3B comprise obverse retouched items. The first of these was made on a medium elaborated regular flake, the second on a heavily retouched transverse flake, and the third on a heavily retouched shaping/thinning flake. Also, the scraper made on the transverse flake features an inversely thinned base (Fig. 11-6, *7*).

Sub-rectangular scrapers have been noted in levels III/5-2 (N=1) and III/5-3 (N=1), and with four such pieces from Level III/5-3B. All sub-rectangular scrapers are canted *(déjeté)* forms and display a heavy obverse retouch. The sub-rectangular scraper from level III/5-2 was made on a regular flake. The sub-rectangular scraper from level III/5-3 was made on a transverse flake (Fig. 11-6, *8*). Among the sub-rectangular scrapers from level III/5-3B, two scrapers were made on regular flakes, one scraper was made on a shaping/thinning flake, and one on a chunk. The two tools on regular flakes also exhibit an inverse thinning of their distal ends (Fig. 11-6, *10*).

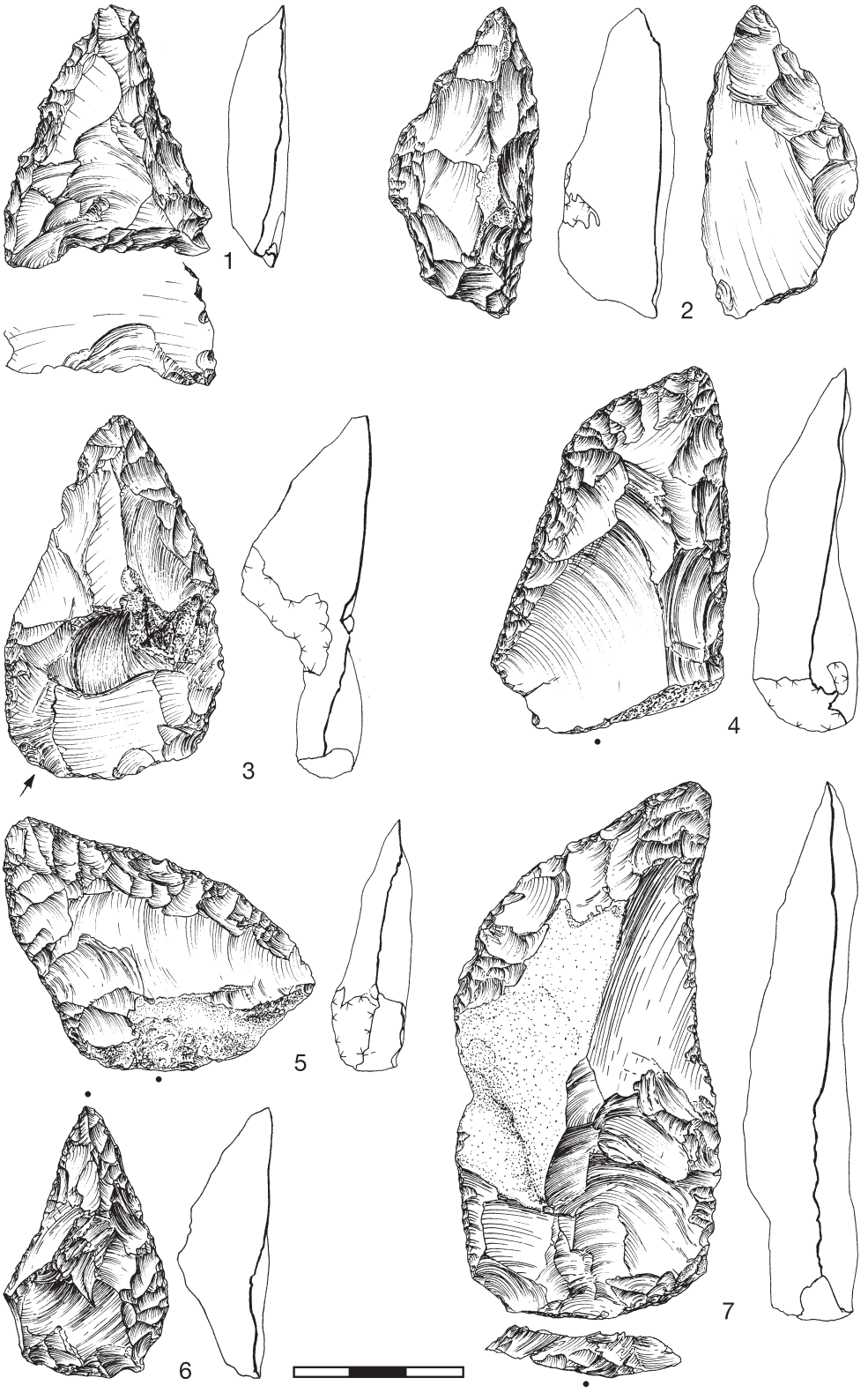

Fig. 11-5 Kabazi V, levels III/5-1 (1, 7), III/5-1B (3), III/5-2 (5, 6), III/5-3B (4), III/5-3B2 (2): 1 – scraper, sub-triangular; 2 – scraper, sub-crescent, thinned back; 3 – scraper, sub-crescent; 4 – scraper, semi-crescent; 5 – scraper, semi-crescent; 6 – scraper, sub-crescent reverse (tool orientation is 180° from the technological orientation of its blank); 7 – scraper, *bec*-shaped *(déjeté)*.

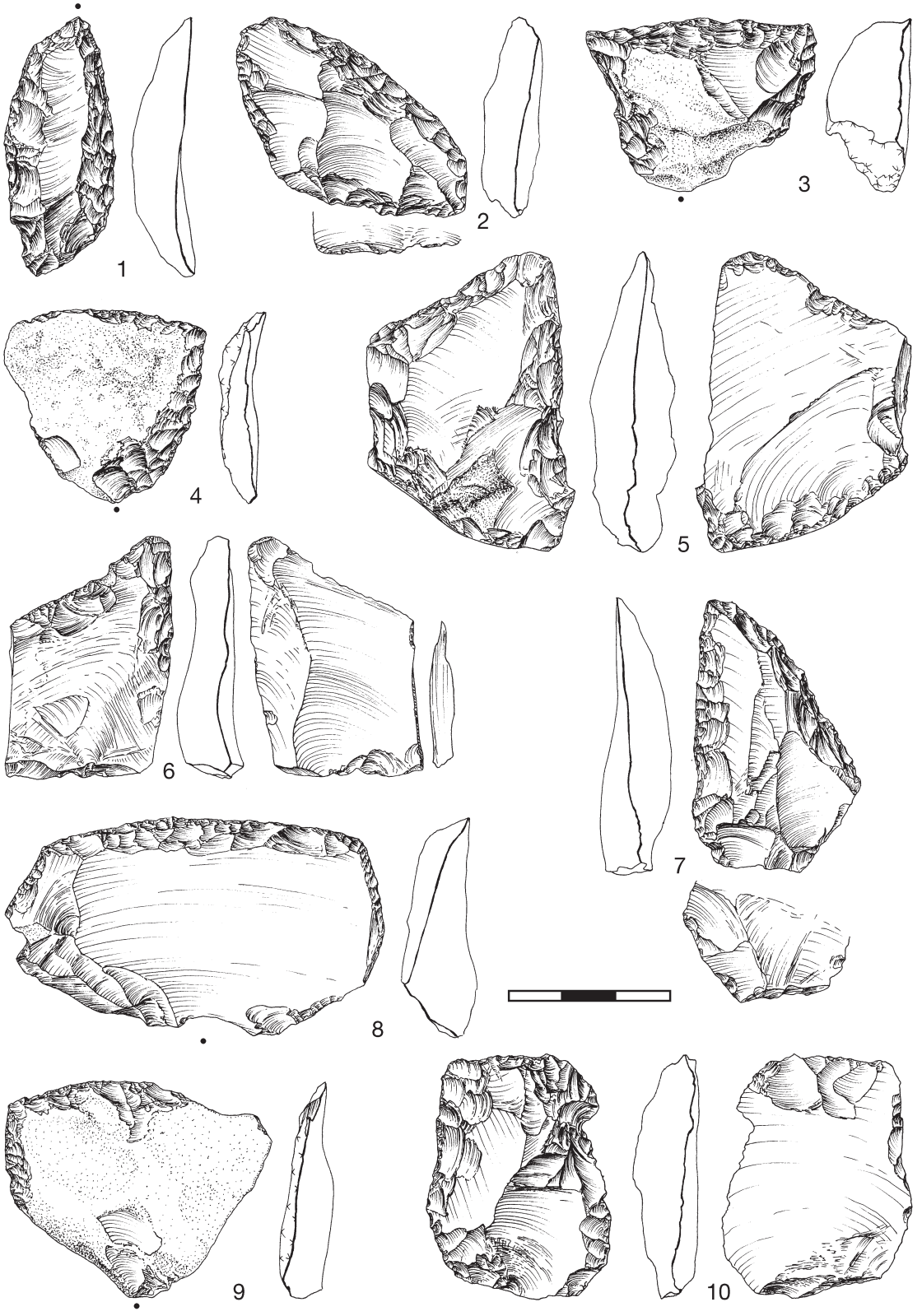

Fig. 11-6 Kabazi V, levels III/5-1A (6), III/5-2 (5, 9), III/5-3 (2, 7, 8), III/5-3B (3, 10), III/5-3B2 (1, 4): 1 – scraper, sub-leaf *"limace"*, reversal; 2 – scraper, sub-crescent *(déjeté)*; 3 – scraper, sub-trapezoidal *(déjeté)*, thinned base; 4 – scraper, sub-trapezoidal *(déjeté)*; 5 – scraper, semi-trapezoidal *(déjeté)*, thinned base; 6 – scraper, semi-trapezoidal *(déjeté)*; 7 – scraper, semi-trapezoidal *(déjeté)*, thinned back; 8 – scraper, sub-rectangular *(déjeté)*; 9 – scraper, semi-rectangular *(déjeté)*; 10 – scraper, sub-rectangular *(déjeté)*, distally thinned.

Semi-rectangular scrapers have been recorded in levels III/5-2 (N=1) and III/5-3B2 (N=1), and level III/5-3 (N=3). Four tools of this group are canted *(déjeté)* scraper forms , and one tool from level III/5-3 is a reversal form. The semi-rectangular scraper from level III/5-2 was made on a transverse flake and has a heavy obverse retouch (Fig. 11-6, *9*). All scrapers from level III/5-3 were made on regular flakes and have a heavy obverse retouch. The semi-rectangular scraper from level III/5-3B2 was made on a regular flake. The base of the scraper was inversely thinned (Fig. 11-7, *1*).

Bec-shaped convergent scrapers are known from levels III/5-1A (N=1) and III/5-1 (N=1). Both these tools show signs of a heavy obverse retouch and are canted *(déjeté)* forms. The scraper from level III/5-1A was made on a regular flake and has a heavy obverse retouch. This piece also exhibits an inverse thinning of both its basal and terminal ends. The *bec*-shaped scraper from level III/5-1 was made on a massive regular flake and has a heavy obverse retouch (Fig. 11-5, *7*).

There is only one example of a *convergent amorphously shaped scraper*. This stems from level III/5-2. It was made on a regular flake and features a heavy obverse retouch.

Unidentifiable convergent tip fragments comprise terminal pointed parts from broken convergent scrapers. All these fragments display an obverse retouched. Of this group, two each come from levels III/5-1A and III/5-3B2, and three each from levels III/5-1 and III/5-2. One of the convergent tip fragments from level III/5-1 is assigned to tool modification elements, while one of the items from level III/5-2, and two from level III/5-3B2, are canted *(déjeté)* forms. The latter piece also exhibits an inversely thinned tip.

Double scrapers, according to their morphology, have been subdivided into double straight (N=2), double convex (N=3), double concave (N=1), straight-convex (N=5), straight-concave (N=1), and straight-wavy (N=1) types (Table 11-12).

Double straight scrapers were found in level III/5-3. One of these was made on regular a flake and was lightly obverse retouched. Another was made on a broken flake and features a heavy obverse retouch.

Double convex scrapers were found in levels III/5-1A and III/5-3. The scraper from level III/5-1A was made on a transverse flake and has a medium obverse retouch. Two double convex scrapers stem from level III/5-3. The first of these was made on a broken regular flake and has a medium obverse retouch. The second was made on a heavily obverse retouched blade (Fig. 11-7, *4*).

The *double concave scraper* was found in level III/5-1. This tool was made on a transverse flake and exhibits an alternate elaboration of its working edges.

Straight-convex scrapers comprise two tools from level III/5-1A, and one tool each in levels III/5-1, III/5-3, and III/5-3B. Both straight-convex scrapers from level III/5-1A show a heavy obverse retouch. One of these was made on a broken regular flake, the other was made on a partly broken blade. The scraper from level III/5-1 was made on a blade and has an alternate retouch. The straight-convex scraper from level III/5-3 was made on a massive obverse retouched blade (Fig. 11-7, *3*). The scraper from level III/5-3B was made on a broken regular flake with obverse retouch.

The *straight-concave scraper* is from level III/5-3. The tool was made on a regular flake and is lightly obverse retouched.

The *straight-wavy scraper* stems from level III/5-1 and was made on a broken, heavily obverse retouched regular flake.

Lateral scrapers number 75 pieces that, on the basis of their edge shapes, have been subdivided into lateral straight (N=30), lateral convex (N=33), lateral concave (N=6), and lateral wavy (N=6) types (Table 11-12).

Lateral straight scrapers are the most numerous group. Among these, three tools stem from level III/5-1, one from level III/5-1B, seven from level III/5-2, four from level III/5-3, seven from level III/5-3B, and eight from level III/5-3B2.

The first of the lateral straight scrapers from level III/5-1 was made on a transverse flake and features a slight obverse retouch. The second tool was made on a regular flake and had been elaborated by means of an obverse medium retouch. The terminal and basal ends of this tool are truncated-faceted (Fig. 11-7, *6*). Finally, the third lateral straight scraper was made on a blade and exhibits faceted back accommodation. The lateral straight scraper from level III/5-B was made on a regular flake and displays a light obverse elaboration.

Among the scrapers from level III/5-2, five tools were made on regular flakes, and two on transverse flakes. All these scrapers are obversely worked by means of a heavy and medium retouch.

Of the straight scrapers from level III/5-3, one was made on a blade (Fig. 11-8, *1*), and three on regular flakes (Fig. 11-8, *6*). All show sign of heavy processing from their obverse sides.

Among the straight scrapers from level III/5-3B, two were on blades, and five were on regular flakes (Fig. 11-7, *10*). Most tools are lightly retouched, only one flake tool features a heavy elaboration. This heavily retouched tool was made on a flake and has

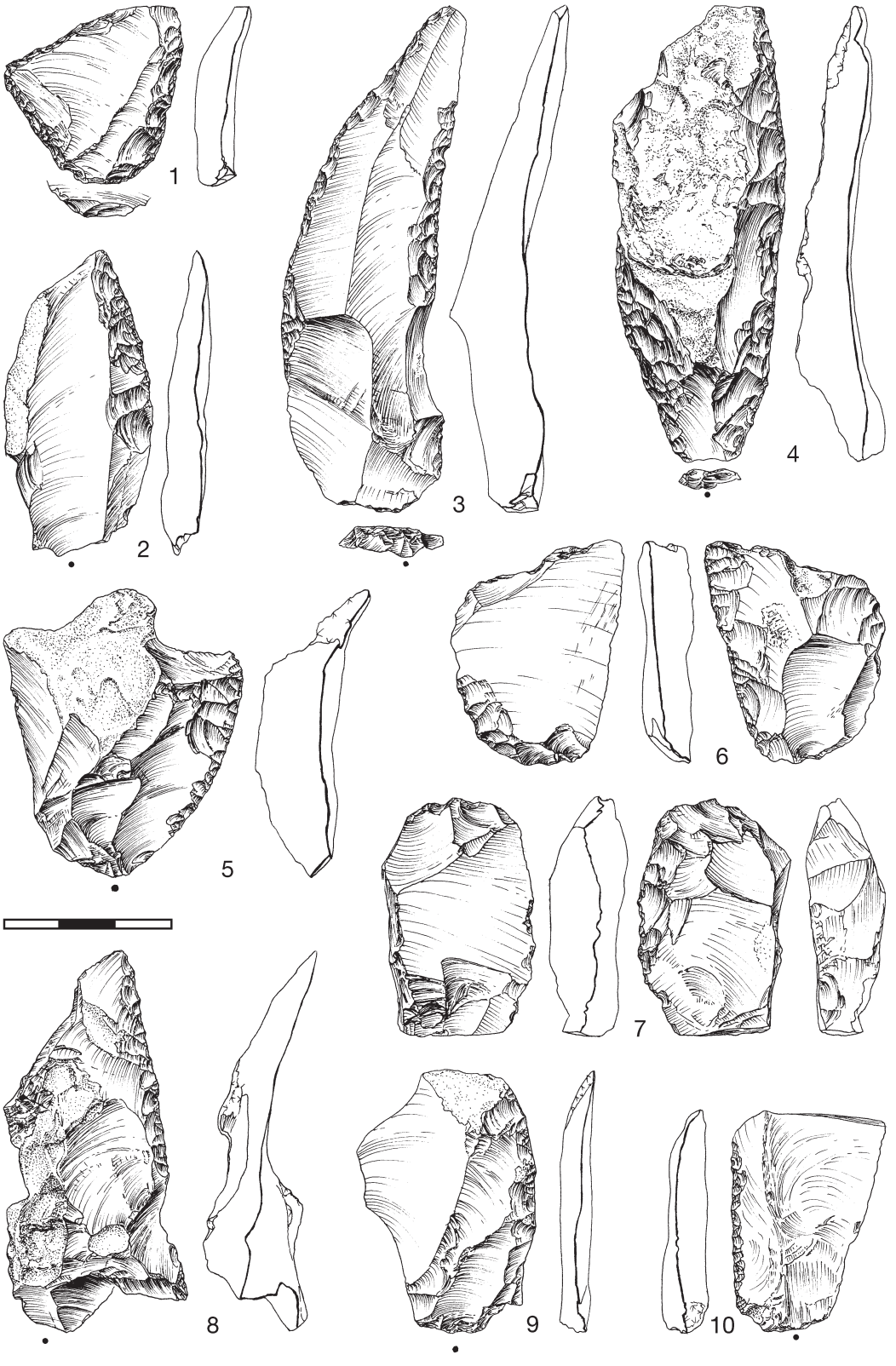

Fig. 11-7 Kabazi V, levels III/ 5-1A (7, 9), III/5-1 (5, 6), III/5-2 (2), III/5-3 (3, 4), III/5-3B (10), III/5-3B2 (1, 8): 1 – scraper, semi-rectangular (canted); 2 – scraper, lateral convex; 3 – scraper, straight-convex; 4 – scraper, double convex; 5 – scraper, lateral convex; 6 – scraper, lateral straight, terminally truncated-faceted; 7 – scraper, lateral convex, terminally truncated-faceted; 8 – scraper, lateral straight; 9 – scraper, lateral convex; 10 – scraper, lateral straight.

a plane back positioned on its blank side, opposite the working edge. One of the lightly retouched flake tools also has natural back accommodation at the same position.

Of the straight scrapers from level III/5-3B2, one was made on a blade, one on a transverse flake, five on regular flakes (Fig. 11-7, *8*), and one on a flake originating from bifacial tool shaping/thinning. Both the tool on the blade and the tool on the transverse flake display a medium retouch. Among the tools on regular flakes, two were heavily and three lightly retouched.

Lateral convex scrapers are the most numerous unifacial tools. Of these, six pieces stem from level III/5-1A, three from level III/5-1, one from level III/5-1B, six from level III/5-2, seven from level III/5-3, seven from level III/5-3B, and three from level III/5-3B2.

Five of the six lateral convex scrapers from level III/5-1A have an obverse retouch, with one piece showing an inverse retouch. Three of the obverse retouched tools were made on a regular flake, one was on a blade, and one was on an amorphous chunk. Among those tools made on regular flakes, two exhibit medium retouch, and one a heavy retouch. One of the scrapers with medium retouch was made on a flake which was a by-product from bifacial shaping/thinning (Fig. 11-7, *9*). The tool on the blade displays a heavy retouched and has a truncated-faceted distal end. The tool made on a chunk has a medium retouch. The inverse retouched scraper was made on a regular flake and features a heavy elaboration (Fig. 11-7, *7*). The distal end of the tool was truncated-faceted.

The lateral convex scraper from level III/5-1B was made on a broken flake and has a heavy obverse retouch.

All lateral convex scrapers from level III/5-1 were made on regular flakes and were worked from their obverse sides: two were lightly retouched, and one was heavily retouched (Fig. 11-7, *5*). Both lightly retouched scrapers were made on blanks which might come from bifacial tool shaping. One of these has a faceted back on the blank side, opposite the working edge.

Among the tools from level III/5-2, two were on blades, and four were on regular flakes. The first of the tools made on a blade has a light obverse retouch, while the other has a heavy obverse retouch (Fig. 11-7, *2*). Two of the scrapers made on regular flakes feature medium obverse retouch, and two have a heavy obverse retouch.

Of the seven convex scrapers from level III/5-3, two were made on blades, three on regular flakes (Fig. 11-8, *2*), and two on flakes which were by-products from bifacial tool shaping/thinning. All of these pieces have an obverse retouch. The tools on blades display a medium elaboration, while tools on trimming-flakes are heavily elaborated. The first of the tools on flakes has a heavy retouch and also exhibits inverse lateral thinning. The second has a natural back which is positioned on its blank side, opposite the medium retouched working edge. Finally, the third of these tools was lightly retouched.

Of the seven convex scrapers from level III/5-3B, two were made on transverse flakes, and five were on regular flakes (Fig. 11-8, *3*). All pieces were obversely retouched. One of the tools made on a transverse flake was heavily retouched, while the other was only lightly worked. One of the tools made on a regular flake exhibits inverse thinning of its base, and another has plane back accommodation that is located on its blank side, opposite its working edge (Fig. 11-8, *5*).

Among the three lateral convex scrapers found in level III/5-3B2, the first was made on a regular flake and has a heavy obverse retouch, the second is on a medium inversely retouched regular flake, and the third is on a flake that is considered a by-product from bifacial tool shaping/thinning. This latter piece shows a light obverse retouch.

In the group of *lateral concave scrapers*, five items are from level III/5-2, and one tool from level III/5-3B. Of the five tools from level III/5-2, three were made on regular flakes, one on a transversal flake, and one on a shaping/thinning flake. The tool on the transversal flake features a heavy obverse retouch and has an inverse thinning of its base. All tools made on regular flakes also exhibit a heavy obverse retouch. On the other hand, the scraper made on the shaping/thinning flake was only lightly worked from its obverse side.

The single lateral concave scraper from level III/5-3B was made on a medium obverse retouched regular flake.

The group of *lateral wavy scrapers* includes one item each from levels III/5-1, III/5-2, and III/5-3, as well as three tools from level III/5-3B. The wavy scraper from level III/5-1 was made on a medium obverse retouched blade. Typologically, this tool can bee assigned to the *raclette* type.

The lateral wavy scraper from level III/5-2 was made on a heavily obverse retouched regular flake.

The lateral wavy scraper from level III/5-3 was made on a partly broken blade and features a light obverse retouch.

Of the three wavy scrapers from level III/5-3B, two have a heavy obverse retouch and were made on regular flakes, and one was made on a transverse flake, a by-product from bifacial shaping/thinning.

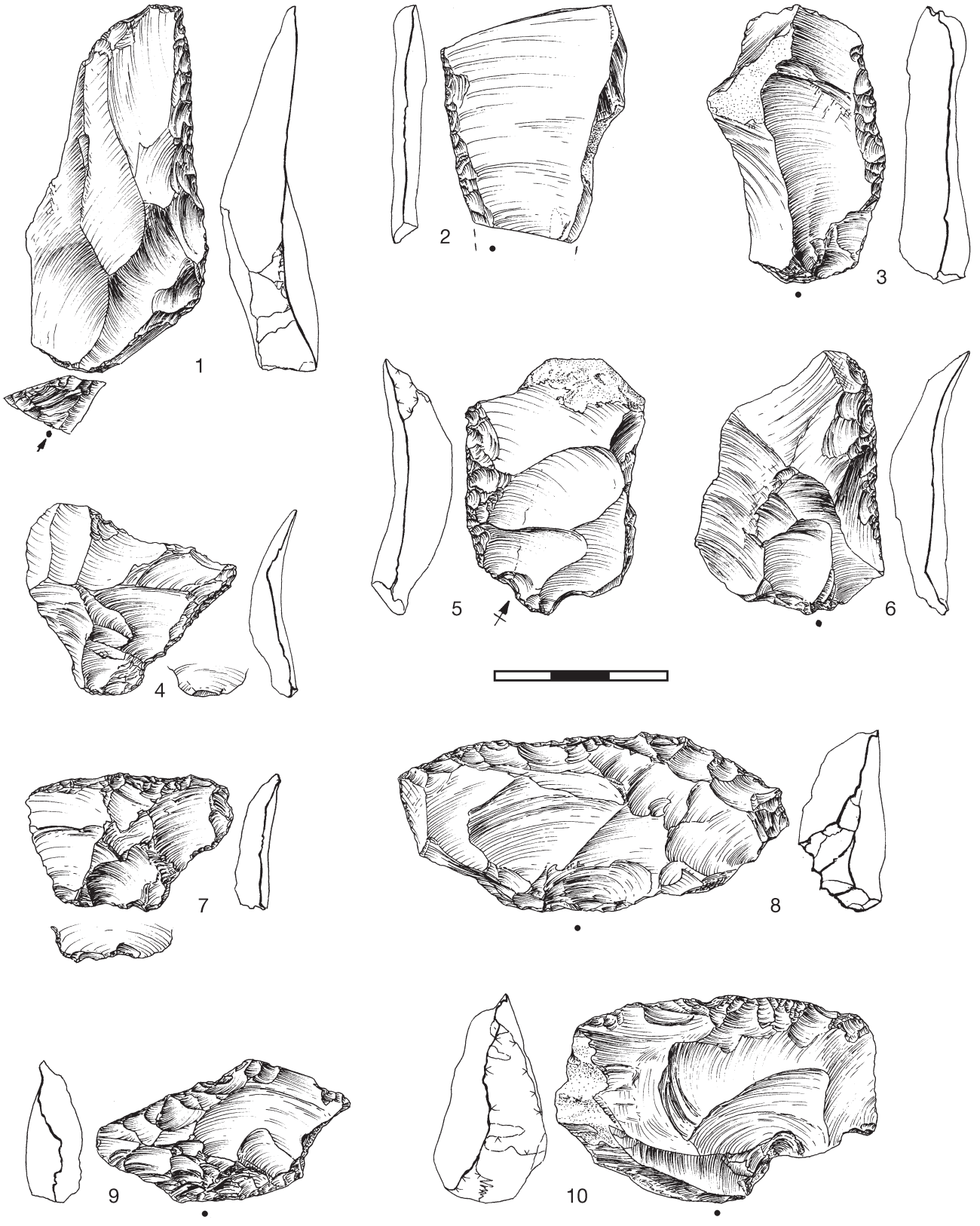

Fig. 11-8 Kabazi V, levels III/5-1 (7), III/5-2 (9), III/5-3 (1, 2, 4, 6), III/5-3B (3, 5, 10), III/5-3B2 (8): 1 – scraper, lateral straight; 2 – scraper, lateral convex; 3 – scraper, lateral convex; 4 – scraper, lateral wavy; 5 – scraper, lateral convex, thinned back; 6 – scraper, lateral straight; 7 – scraper, transversal convex; 8 – scraper, transversal convex; 9 – scraper, transversal straight; 10 – scraper, transversal convex.

The tool has a light obverse retouch (Fig. 11-8, *4*).

Transverse scrapers are subdivided into straight (N=5), convex (N=12), concave (N=1), and wavy (N=1) types (Table 11-12) based on the appearance of their edges.

The group of *transverse straight scrapers* comprises three tools from level III/5-2, and one each from levels III/5-3 and III/5-3B.

All transverse straight scrapers from level III/5-2 were made on transverse flakes, and exhibit a heavy obverse retouch (Fig. 11-8, *9*).

The transverse straight scraper from level III/5-3 was made on a broken flake. This piece has a light obverse retouch. The transverse straight scraper from level III/5-3B was made on a heavily obverse retouched transversal flake.

The group of *transverse convex scrapers* is composed of four tools from level III/5-1, three from level III/5-3B, two from level III/5-3, and one each from levels III/5-1A, III/5-1B and III/5-3B2.

All transverse scrapers from level III/5-1 were elaborated from their obverse sides; three were made on transverse flakes, and one was on a regular flake. The tool made on the regular flake exhibits a truncation of its basal end. Of the tools made on transversal flakes, one features a heavy obverse retouch (Fig. 11-8, *7*), and two have a medium obverse retouch. Both medium worked scrapers exhibit some accommodations: one displays a thinning of it distal and its proximal ends, the other has a faceted back on its lateral edge.

Among the tools from level III/5-3B, one was on a regular flake, and two were on transverse flakes (Fig. 11-8, *10*); all are characterised by a heavy obverse elaboration.

Both scrapers from level III/5-3 were made on transverse flakes, and with a light obverse retouch.

The transverse convex scraper from level III/5-1A was made on a transverse flake. The tool has a heavy obverse retouch, with a thinning of its basal end.

The transverse convex scraper from level III/5-1B was made on a heavily obverse retouched regular flake.

The transverse convex scraper from level III/5-3B2 was made on a transverse flake (Fig. 11-8, *8*) and displays a heavy obverse retouch.

The single *transverse concave scraper* stems from level III/5-3B. The tool was made on a medium obverse retouched transversal flake.

The *single transverse wavy scraper* from level III/5-2 was made on a transverse flake, and has a heavy obverse retouch.

Transverse-oblique scrapers are represented by 10 items; these have been subdivided into convex (N=7) and wavy (N=3) types (Table 11-12).

The group of *transverse-oblique convex scrapers* comprises two tools from level III/5-2, two from level III/5-3, and one each from levels III/5-1, III/5-3B and III/5-3B2.

Both the convex transverse-oblique scrapers from level III/5-2 were made on regular flakes. One of these was worked by means of a heavy obverse retouch (Fig. 11-9, *1*), while the other exhibits a light obverse retouch only.

The first of the transverse-oblique convex scrapers from level III/5-3 was made on a transverse flake, and has a medium obverse retouch (Fig. 11-9, *5*). The second was made on a regular flake, a by-product from bifacial tools shaping / thinning, and exhibits a light obverse retouch.

The transverse-oblique convex scraper from level III/5-1 was made on a regular flake; it exhibits a medium obverse retouch, and has an inversely thinned base.

The transverse-oblique convex scraper from level III/5-3B was made on a transversal flake and has a heavy obverse retouch (Fig. 11-9, *2*).

The transverse-oblique convex scraper from level III/5-3B2 was made on a regular flake and has a heavy retouch from its obverse side (Fig. 11-9, *3*).

All examples of *transverse-oblique wavy scrapers* stem from level III/5-2. Two of these tools, one of which has an inverse thinning of both its basal and terminal ends (Fig. 11-9, *4*), were made on regular flakes and were processed by means of a heavy obverse retouch. The third wavy scraper was made on a regular flake and exhibits a medium obverse retouch.

Denticulate tools

The joint assemblage of sub-unit III/5 features a total of seven denticulate tools. These have been subdivided into transverse (N=1), lateral (N=5), and double (N=1) types (Table 11-12) based on the location of their working edges.

The *transverse denticulate tool* was discovered in level III/5-2. The tool was made on a partly broken transversal flake and has a heavy obverse retouch.

The group of *lateral denticulate tools* comprises three items from level III/5-2, and one each from levels III/5-1 and III/5-3.

The lateral denticulate tool from level III/5-1 was made on a partly broken heavily obverse retouched regular flake.

Among the tools from level III/5-2, one was made on a regular flake, another on a broken blade, and the third on a broken flake. All tools feature a heavy obverse retouch. The tool made on a blade exhibits a faceted lateral back that is located on the

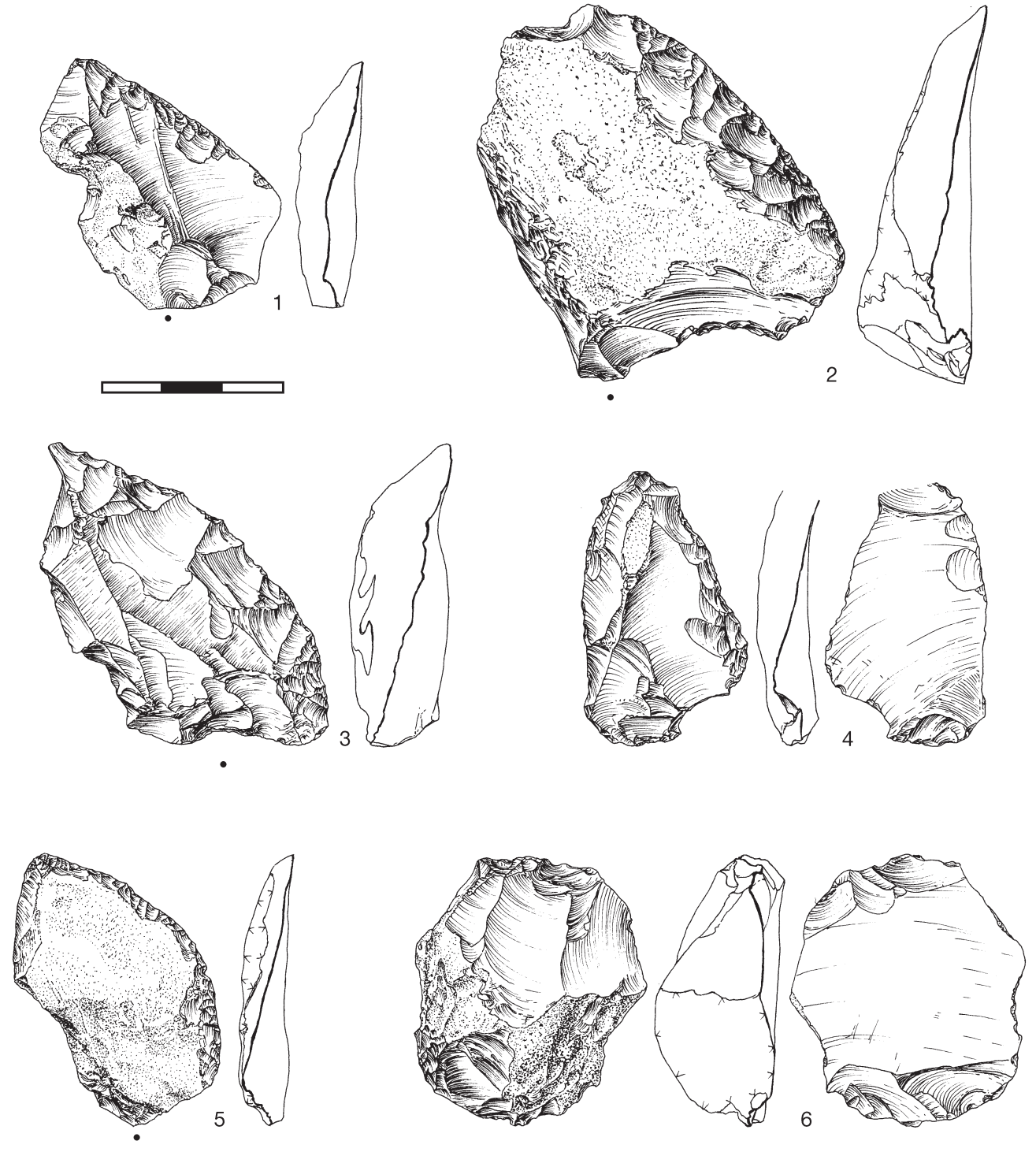

Fig. 11-9 Kabazi V, levels III/5-1B (6), III/5-2 (1, 4), III/5-3 (5), III/5-3B (2), III/5-3B2 (3): 1 – scraper, transversal-oblique convex; 2 – scraper, transversal-oblique convex; 3 – scraper, transversal-oblique convex; 4 – scraper, transversal-oblique wavy, distally thinned; 5 – scraper, transversal-oblique convex; 6 – truncated-faceted tool, terminally and basally elaborated.

blank side, opposite the retouched edge.

The lateral denticulate tool from level III/5-3 that was made on a blade has a medium obverse retouch.

The *double denticulate tool* is from level III/5-1A. This item was made on a broken blade and exhibits alternate elaboration of its lateral working edges. The distal end of this tool blank was truncated-faceted.

Notched tools

The joint assemblage from sub-unit III/5 contains seven notched tools. Based on the location of the retouched notches on these pieces, these items are subdivided into simple distal (N=3), simple lateral (N=3), and double lateral (N=1)types (Table 11-12).

The group of *simple transversal notched tools* comprises one each from levels III/5-1A, III/5-1, and III/5-2.

The notched tool from level III/5-1A was made on a broken flake and has an inversely retouched notch at its distal edge.

The notched tool from Level III/5-1 was made on a transverse flake and also exhibits an obverse retouched notch at its distal edge.

The notched tool from level III/5-2 was made on a transverse flake. The notch with continuous obverse retouch is located at its distal end.

The group of *simple lateral notched tools* is composed of one item each from levels III/5-1, III/5-3, and III/5-3B.

The notched tool from level III/5-1 was made on a partly broken regular flake and exhibits an inversely retouched notch, located at the lateral edge of the blank.

The tool from level III/5-3 was made on a regular flake and exhibits a lightly obverse retouched notch. It is important to note that this notched tool was made on a yellowish flint, of a type different to those otherwise known from this assemblage.

The tool from level III/5-3B was made on a massive chunk; its notch was heavily worked by means of a steeped continuous retouch.

The *double lateral notched tool* (because its two retouched notches are located on opposite lateral sides of the blank) is from level III/5-1. The item was made on a transverse flake and exhibits an alternate elaboration of its notches: one notch has an obverse retouch while the other is characterised by an inverse retouch.

Truncated-faceted tools

The joint assemblage of sub-unit III/5 features a total of eight truncated-faceted tools. According to the position of their truncated edges, these have been subdivided into simple lateral (N=2), simple proximal (N=4), and double distal-proximal (N=2) types (Table 11-12). All truncated-faceted tools exhibit a heavy alternate elaboration.

Simple lateral truncated-faceted tools were recorded in levels III/5-2 (N=1) and III/5-3 (N=1). The tool from level III/5-2 is made on a regular flake, while the tool from level III/5-3 is made on a broken flake.

The group of *simple proximal truncated-faceted tools* is composed of two items from level III/5-2, and one each from levels III/5-3 and III/5-3B.

Whereas the first of the simple proximal truncated-faceted tools from level III/5-2 was made on transverse flake, the other was on a regular flake. The tool from level III/5-3 was made on a regular flake, while the tool from level III/5-3B was on a broken flake.

Double proximal-distal tools were noted in the assemblages from levels III/5-1B (N=1) and III/5-2 (N=1). This type of tools is characterised by the truncation of the blank at its distal and proximal ends by alternate positioned facets. The double proximal-distal tool from level III/5-1B was made on a regular flake (Fig. 11-9, *6*). The tool from level III/5-2 also was made on a regular flake.

End-scrapers

There are two atypical end-scrapers from sub-unit III/5, one stems from level III/5-1, the other from level III/5-3B2 (Table 11-12). Both end-scrapers were made on amorphous chunks and exhibit a heavy obverse stepped retouch on the terminal ends of each of the blanks.

Burins

Four atypical burins have been observed, two each from levels III/5-1A and III/5-1 (Table 11-12). Both burins from Level III/5-1A were made on regular flakes. These burins belong to the type of "simple lateral burin on snap", i.e. the scar from the burin blow came from the unprepared distal end, and is located along the lateral edge of the blank.

One of the burins from level III/5-1 was made on a broken regular flake. Typologically, this is a "simple lateral burin on break", i.e. the scar of the burin blow came from the distal break, and was applied along the lateral edge of the blank. Another burin from level III/5-1 was made on a regular flake. This burin is of a type referred to as "multifaceted burin on base", i.e. the scar series from the burin blows progress from the cant of the blank striking butt, and is located along the lateral edge.

Perforators

There is only one sub-triangular shaped perforator; this stems from level III/5-1A (Table 11-12). It was made on a regular flake and exhibits a heavy obverse retouch.

Retouched pieces

Retouched pieces were found in all levels of subunit III/5. Based on the location of their working edges, retouched pieces are subdivided into lateral (N=95), distal (N=24), and bilateral (N=7) types (Table 11-12).

Among the 126 retouched pieces, 107 were made on flakes, while only 19 tools were made on blades (Table 11-13). There is no indication that chunks or chips were used as blanks for retouched pieces.

The average dimensions of complete retouched pieces are different for pieces made on regular flakes, transverse flakes and blades. As a rule, retouched blanks have larger dimensions than unretouched debitage in each assemblage (Table 11-10).

The majority of retouched pieces have an obverse retouch, whereas only six pieces display an inverse retouch; one piece exhibits an alternating retouch.

Regarding retouch pattern, items with a light marginal retouch dominate, followed by pieces with a very light (ephemeral) marginal retouch. Only a few pieces feature a discontinuous irregular scalar retouch (Table 11-17).

Lateral retouched pieces

The group of lateral retouched pieces comprises 8 items from level III/5-1A, 15 items from level III/5-1, 5 items from level III/5-1B, 25 items from level III/5-2, 19 items from level III/5-3, 9 items from level III/5-3B, and 14 items from level III/5-3B2 (Table 11-12).

Among the lateral retouched pieces from level III/5-1A, one item is on a blade, three are on regular flakes, and four are on transverse flakes. All lateral retouched pieces from level III/5-1A exhibit an obverse retouch.

Lateral retouched pieces from level III/5-1 include one item made on a blade, eleven that are on regular flakes, and three on transverse flakes. All lateral retouched pieces from level III/5-1 feature an obverse retouch.

Among the lateral retouched pieces from level III/5-1B, four items are on regular flakes, and one is on a transverse flake. All lateral retouched pieces from level III/5-1B are characterised by an obverse retouch.

Lateral retouched pieces from level III/5-2 number six items made on blades, fourteen on regular flakes, and five on transverse flakes. Only one lateral retouched regular flake has a lightly inverse retouch, all others exhibit an obverse retouch.

Among the lateral retouched pieces from level III/5-3, 2 were made on blades, 13 on regular flakes, and 4 on transverse flakes. Regular flakes with inverse and alternate retouch were observed in only one case each, respectively, while all others display an obverse retouch.

Lateral retouched pieces from level III/5-3B comprise two items on blades, six on regular flakes, and one on a transverse flake. Only two retouched regular flakes feature an inverse elaboration, all others show an obverse retouch.

Among the lateral retouched pieces from level III/5-3B2, four items are on blades, and ten are on regular flakes. Only one lateral retouched blade was inversely retouched, all others are characterised by an obverse retouch.

Distal retouched pieces

The group of distal retouched pieces comprises 2 items from level III/5-1A, 1 item from level III/5-1B, 3 items from level III/5-2, 4 items from level III/5-3, 8 items from level III/5-3B, and 6 items from level III/5-3B2 (Table 11-12).

Of the two distal retouched pieces from level III/5-1A, the first is on a regular flake, and the second is on transverse flake, both have an obverse retouch.

The distal retouched piece from level III/5-1B is a regular flake with an obverse retouch.

The distal retouched pieces from level III/5-2 comprise one item on a regular flake, and two pieces on transverse flakes; all exhibit an obverse retouch.

Among the distal retouched pieces from level III/5-3, two items are on regular flakes, and two are on transverse flakes; all feature an obverse retouch.

Of the distal retouched pieces from level III/5-3B, one item is on a blade, three are on regular flakes, and four are on transverse flakes. Only one transverse flake exhibits an inverse retouch, all others have an obverse retouch.

Among the distal retouched pieces from level III/5-3B2, three items are on regular flakes, and three items are on transverse flakes; all pieces exhibit an obverse retouch.

Bilateral retouched pieces

The group of bilateral retouched pieces comprises one item each from levels III/5-1B, III/5-2, and III/5-3B, and two items each from levels III/5-3 and III/5-3B2 (Table 11-12). All bilateral retouched pieces display a light obverse retouch. Most pieces were made on regular flakes, only two items from level III/5-3B2 were made on blades.

	III/5-1A		III/5-1		III/5-1B		III/5-2	
	N	%	N	%	N	%	N	%
Ephemeral	3	*30.0*	6	*40.0*	·	·	10	*34.5*
Light marginal	5	*50.0*	9	*60.0*	6	*85.7*	17	*58.6*
Irregular scalar	2	*20.0*	·	·	1	*14.3*	2	*6.9*
Total:	**10**	***100.0***	**15**	***100.0***	**7**	***100.0***	**29**	***100.0***

	III/5-3		III/5-3B		III/5-3B2		Total:	
	N	%	N	%	N	%	N	%
Ephemeral	11	*44.0*	9	*50.0*	11	*50.0*	50	*39.7*
Light marginal	14	*56.0*	7	*38.9*	11	*50.0*	69	*54.8*
Irregular scalar	·	·	2	*11.1*	·	·	7	*5.6*
Total:	**25**	***100.0***	**18**	***100.0***	**22**	***100.0***	**126**	***100.0***

Table 11-17 Kabazi V, sub-unit III/5: characteristics of retouched pieces by retouch types.

Tools fragments

There are 27 bifacial and 87 unifacial unidentifiable tools fragments in the sub-unit III/5 assemblage (Table 11-12), the typological characteristics of which cannot be identified due to their small dimensions.

Bifacial tools fragments

These comprise 15 basal parts of tools, 10 medial parts of tools, and 2 fragments of broken edges. The small dimensions of all fragments have meant that a typology of these pieces could not be observed. All bifacial tools fragments are elaborated in the plano-convex manner.

Basal tools fragments. Three basal fragments come from level III/5-1. Apparently, one of these was made on a flint plaquette, while the blank types used for the two remaining pieces could not be identified.

Five basal fragments stem from level III/5-2. The blank types of these basal fragments could not be identified.

One basal fragment is from level III/5-3. Due to the fact that the obverse and inverse surfaces of this item were covered by cortex, the initial tool had obviously been made on a flint plaquette.

Four basal fragments are from level III/5-3B. Owing to their small dimensions, the blank types of most basal fragments could not be identified; only one piece might have been made on a plaquette.

Two basal fragments were recovered from level III/5-3B2. These might be associated with bifacial tool modification elements.

Medial tools fragments. Three medial fragments were discovered in level III/5-1A. Among them, one piece was made on a plaquette, and two others on unidentifiable blanks.

Three medial fragments were recorded in level III/5-2. The first of these was made on a flint plaquette, while the second blank type could not be identified.

One medial fragments stems from level III/5-3. Once again, due to the small dimensions of this fragment, the blank could not be identified.

Three medial fragments are from level III/5-3B. It would appear that all were made on flint plaquettes.

Edge tools fragments. There are two edge fragments from broken bifacial tools, one from level III/5-1, and the other from level III/5-2. The fragment from level III/5-1 was on a flint plaquette. The fragment from level III/5-2 might be assigned to the bifacial tool modification elements.

Unifacial tools fragments

The unifacial elaborated tools fragments comprise 14 basal fragments of tools, 27 fragments of medial parts of tools, 28 fragments of terminal parts, and 18 fragments of broken edges. Due to the small dimensions of all these fragments, their tool typologies, as well as the blank types used in their production, could not be identified. All unifacial tools fragments display an obverse retouch.

Basal tools fragments. These include one item each from levels III/5-1A, III/5-1, III/5-3, three each from levels III/5-3B and III/5-3B2, and five from level III/5-2.

Medial tools fragments. These number two items from level III/5-3B2, three each from levels III/5-1, III/5-1B, III/5-3B, five from level III/5-3, six from level III/5-1A, and seven from level III/5-2.

Terminal tools fragments. These are composed of four items from level III/5-3B, six from level III/5-3, eight from level III/5-3B2, and ten pieces from level III/5-2.

Edge tools fragments. This group comprises one item from level III/5-1B, four from levels III/5-1, III/5-2, III/5-3B2, and five from level III/5-3B.

Tool treatment elements

Elements of tool shaping/thinning and tool edge resharpening

The joint assemblage of sub-unit III/5 contains a total of 639 complete blanks. These provide data not only concerning their striking platforms, but also with regard to their shapes, as well as their lateral and distal profiles.

Of these complete blanks, 94 pieces feature a lipped platform (plain or faceted), an obtuse platform angle, an incurvated or twisted profile, and an expanding or irregular shape. Therefore, all these pieces fulfil the necessary criteria for assignment to *elements from bifacial tool shaping/thinning*. These items comprise 6 blanks from level III/5-1A, 14 blanks from level III/5-1, 7 blanks from level III/5-1B, 27 blanks from level III/5-2, 9 blanks from level III/5-3, 15 blanks from level III/5-3B, and 16 blanks from level III/5-3B2.

In addition, another 34 pieces correspond to criteria characteristic of *elements from tool edge resharpening* and exhibit (in addition to the aforementioned attributes) only few proximal extremities, generally thin blank bodies, and numerous proximally positioned dorsal scars ("striking platform abrasion"). Among these items, 13 pieces (3 from level III/5-1, 3 from level III/5-2, 4 from level III/5-3, and 3 from level III/5-3B2) have faceted butts and might stem from bifacial tool edge resharpening, while 21 pieces (4 from level III/5-1A, 4 from level III/5-1, 5 from level III/5-2, 2 from level III/5-3, 3 from level III/5-3B, and 3 from level III/5-3B2) exhibit plane butts, and might originate from either bifacial or unifacial tool edge resharpening.

Thus, a total of 128 tool treatment elements are connected with bifacial tool shaping and tool edge resharpening, this amounts to 20,0% of the 639 identifiable blanks. Obviously, this percentage reflects only the **minimal portion** of blanks, as the appreciable part of blanks in each assemblage is broken and features of tool treatment elements are no longer visible.

Among the identified tool treatment elements, there are 16 unifacial tools and 10 retouched pieces made on blanks originating from bifacial tool shaping.

Three of these are from level III/5-1 (one sub-trapezoidal canted point (Fig. 11-4, *9*), and two lateral convex scraper). Two tools are from level III/5-1A (the lateral convex scraper (Fig. 11-7, *9*), and the lateral retouched piece). One piece stems from level III/5-1B (the lateral retouched piece). Two unifacial tools and two retouched pieces were recorded in level III/5-2 (the semi-crescent point, the lateral concave scraper, and two lateral retouched pieces). Eight tools come from level III/5-3 (one sub-trapezoidal canted point, two lateral convex scrapers, the transverse-oblique convex scraper, three lateral retouched pieces, and one bilateral retouched piece).

Five tools were recovered from level III/5-3B (the sub-rectangular convergent scraper, the semi-trapezoidal convergent scraper, the lateral wavy scraper (Fig. 11-8, *4*), the lateral retouched piece, and the bilateral retouched piece).

Three tools are from level III/5-3B2: the sub-trapezoidal convergent scraper (Fig. 11-6, *4*), the lateral straight scraper, and the lateral convex scraper.

Elements of tool rejuvenation

The sub-unit III/5 assemblage features 29 tip fragments from unifacial convergent tools, and 11 tip fragments from bifacial tools (Table 11-12). However, among these, only two bifacial tip fragments and six unifacial tips fulfil to the criteria for rejuvenated elements.

Bifacial rejuvenated tip fragments are related from levels III/5-1 and III/5-3B2.

The terminal fragment of a bifacial point from level III/5-1 has small dimensions (14 mm long, 26 mm wide, and 3 mm thick), and is of a transverse rhomboidal shape. The pointed tip, which is located on the transversal termination, has a small "pointed" striking butt (<1 mm wide and <1mm height).

The tip fragment from level III/5-3B2 has also been classified as a bifacial unidentifiable point. This is a small piece (26 mm long, 20 mm wide, and 5 mm thick) of rhomboidal shape. The pointed tip is located on the transversal termination. The "pointed' striking platform is only small (<1 mm wide, and <1mm height).

Unifacial rejuvenated tip fragments include one tip from a convergent scraper, and the tips from four points.

The terminal rejuvenated fragment of a unifacial convergent scraper was discovered in level III/5-1. The tip is only small (8 mm long, 18 mm wide, and 4 mm thick), and is of a transverse irregular shape. The pointed tip is located on its transversal termination; it has a small "pointed" striking butt (<1 mm wide, and <1mm high).

Terminal rejuvenated fragments from unifacial

points were observed in levels III/5-2, III/5-3, III/5-3B, and III/5-3B2. They number one piece from each of the levels, respectively.

The terminal fragment of a unifacial point from level III/5-2 has only small dimensions (12 mm long, 24 mm wide, and 7 mm thick), and is of a transverse rhomboidal shape. The pointed tip, with a small "pointed" striking butt (<1 mm wide, and <1mm height), is located on its transversal termination.

The tip from level III/5-3 is also small (6 mm long, 21 mm wide, and 3 mm thick). It is of a transverse rhomboidal shape, with a small "pointed" striking butt (<1 mm wide, and <1mm height); the pointed tip is located at the transversal termination.

The unifacial retouched tip from level III/5-3B is irregular in shape and is 28 mm long, 15 mm wide, and 7 mm thick. The butt was broken; the pointed tip is located at the transversal termination.

The tip from level III/5-3B2 is also small (22 mm long, 12 mm wide, and 5 mm thick) and also irregular in shape. The striking butt was broken, and the pointed tip is at the transversal termination of the piece.

Edge resharpening fragments. Only one piece from level III/5-2 corresponds to the identification criteria of a rejuvenated edge. This fragment that is from the edge of a bifacial tool is small (18 mm long, 18 mm wide, and 6 mm thick) and exhibits a massive faceted and obtuse butt (18 mm wide, 6 mm high). It is rectangular in shape and features numerous proximally positioned dorsal scars ("striking platform abrasion").

Base resharpening fragments. Only one bifacially elaborated piece from level III/5-3B2 fulfils the criteria of a rejuvenated base. This fragment from a bifacial tool base is 40 mm long, 16 mm wide, and 15 mm thick). It exhibits a small "pointed" butt (<1 mm wide, <1mm high), is of an irregular shape, and features numerous proximally positioned dorsal scars on both sides.

Inter-Assemblage Comparisons

The essential count (without chips and chunks) reveals close similarities between the structures of assemblages belonging to sub-unit III/5 at Kabazi V (Table 11-2). In all these assemblages unretouched debitage (blades plus flakes) makes up about two-thirds of each essential collection, whereby cores and preforms are few, and tools occur in about the same proportions. The similarity of their essential structures means that these assemblages might have resulted from similar occupation patterns and systems of raw material exploitation.

Although materials from Kabazi V, sub-unit III/5 were described in the previous section, it is useful to again pass review of the similarities and differences observed between the seven assemblages.

Debris

Chips and chunks are listed under debris. Chips are most numerous artefact categories in each of the seven assemblages. All assemblages feature about the same proportions of large, medium and small chips (Table 11-3). It goes without saying that the majority of these pieces are by-products from tool retouching. However, it is impossible to determine exactly which of the chips encountered in each of the metric intervals actually stem from tool retouch and which of these pieces might derive from core reduction. There is no evidence that chips were used as blanks for tool production in any of the assemblages.

Chunks are subdivided into several types: broken flint plaquette, amorphous broken pieces, natural blanks, and small fragments of unidentifiable debitage. Whereas the latter group dominate in all assemblages (Table 11-4), differences can be observed with regard to both the ratios and dimensions of the remaining chunk types (broken flint plaquette, amorphous broken pieces, natural blanks) forming these same assemblages. For instance, the large chunks, with maximal dimensions >50 mm and that might be interpreted as a raw material provisions, are found only in levels III/5-3, III/5-3B, III/5-3B2, and with a few examples in level III/5-2. On the other hand, such pieces are absent in levels III/5-1A, III/5-1, and III/5-1B. Also, natural blanks are only present in small ratios in all assemblages, with the exception of levels III/5-3 and III/5-3B where they are completely absent. At this point, it should be noted that natural blanks are pieces lacking striking platforms and bulbs of percussion, and therefore might stem from the treatment of dried flint raw materials. The presence of natural pieces in assemblages might be indicated by the usage of dried raw materials. This would imply that difficulties may have arisen with regard to fresh raw material access at the site location. Further, this may also suggest that different occupations in sub-unit III are characterised by different raw material collection strategies, or that these occupations may have occurred at different times (seasons) of the year.

Preforms and cores

Preforms and cores make up only small percentages of assemblages . Several large preforms made on flint plaquettes were recovered from levels III/5-2, III/5-3, III/5-3B, and III/5-3B2, while preforms from levels III/5-1 and III/5-1A have relatively small dimensions. These large preforms might be interpreted as provisions of raw material. On the other hand, 10 of 12 preforms might be interpreted as the preforms for bifacial tools (pre-tools), while preforms for cores (pre-cores) are known only from Levels III/5-1A and III/5-3B2.

Unifacial cores dominate in most levels, although bifacial cores are present in appreciable ratios (Table 11-5). A common feature of all core assemblages is the absence of cores with supplementary platforms that might indicate the presence of Levallois technology. Also, blade cores do not occur in any of the assemblages.

In accordance with the quantities and arrangements of striking platforms and scar patterns on core flaking surfaces, complete cores have been subdivided into four groups: (1) unidirectional, unidirectional transverse, and unidirectional alternate cores; (2) bi-directional, bi-directional transverse, and bi-directional alternate cores; (3) orthogonal, three-directional crossed, and orthogonal alternate cores; (4) radial alternate (discoid) and multi-directional alternate cores.

Only cores from groups 1 and/or 2 were identified in all assemblages, while cores from group 3 occur in levels III/5-2, III/5-3, III/5-3B, and III/5-3B2. All multi-platform cores from group 4 were discovered in just two levels, in III/5-3 and III/5-3B2. Thus, cores from all four groups occur only in level III/5-3. It would appear that the occurrences and frequencies of core types could have resulted from clear differences in artefact samples among assemblages.

Potentially, cores from group 1 produced blanks with unidirectional and convergent scar patterns, those from group 2 produced blanks with unidirectional and bi-directional scar patterns, those from group 3 produced blanks with unidirectional and unidirectional/crossed scar patterns, and those from group 4 produced blanks with unidirectional, unidirectional/crossed, convergent, three-directional and radial scar patterns. Thus, according to core occurrences, blanks with unidirectional scar patterns must have dominated, followed by blanks with unidirectional-crossed and bi-directional scar patterns. All other types of scar patterns must occur only sporadically. However, as will be shown below, the investigations of the blanks led to quite different results.

Blanks

The attribute analyses of blanks from all assemblages involved the consideration of several different attributes, including such features as scar pattern, cortex coverage, shape, lateral and distal profiles, dimensions, and the characteristics of striking platforms. Blank assemblages include unretouched debitage (flakes and blades) as well as tools on flakes and tools on blades (Table 11-6). Transverse flakes make up large percentages of each of the assemblages. Also, there are a relatively large number of broken blanks in all samples. Levallois blanks are absent in all assemblages. It should be noted that about half of the blades in each assemblage are off-axis, and therefore might actually be attributed to atypical blades. The relatively low blade indices in each of the levels (Table 11-6), together with the absence of blade cores in all assemblages, might suggest the absence of a purposeful blade technology. Obviously, most of the blades observed in these assemblages are mere by-products resulting from the shaping and thinning of bifacial tools.

Scar patterns

An analysis of the available blank scar patterns indicates that unidirectional and unidirectional/crossed scar patterns are the dominant types in each of the levels (Table 11-7). However, it is evident that the occurrence of scar patterns in blank samples does not correspond to the occurrences of blank scar pattern types suggested from core investigations. An apparent reason for this may lie in the specific features of the assemblages under discussion. As the analyses of tool treatment elements have shown, some blanks (at least 20%) in each of the assemblages might actually stem from bifacial tool shaping/thinning and tool edge resharpening. Thus, many blanks with unidirectional-crossed scar pattern are by-products from bifacial tool treatment.

This conclusion is substantiated by the application of several special technological characteristic (Table 11-18): (1) the ratio of unretouched debitage to cores; (2) the ratio of all blanks to cores; (3) the ratio of tools on blanks to cores; and (4) the ratio of all blanks to cores + bifacial tool + preforms. This last index was chosen because bifacials and preforms (which are in fact pre-cores and/or unfinished bifacial tools) would have been capable of producing blanks. For each assemblage at Kabazi V sub-unit III/5, the ratio of all blanks to cores is fairly high. Although all possible sources for blanks are considered, the ratios of all blanks to cores + bifacial tool + preforms is much lower and no longer appeared to be realistic (Table 11-18). Thus, it is clear that an

	III/5-1A	III/5-1	III/5-1B	III/5-2	III/5-3	III/5-3B	III/5-3B2	Total:
Technological indexes								
IF large	33.9	44.6	51.4	40.9	44.2	42.2	26.8	39.6
IF strict	14.5	16.4	25.7	17.4	29.8	25.9	15.8	20.1
ILam	15.7	10.0	6.3	15.1	14.1	12.8	14.3	13.5
% Levallois blanks	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Special indexes								
Percentage of tools	32.3	29.7	22.2	26.8	34.3	34.9	25.4	29.5
Retouched edges : tools[1]	1.6 : 1	1.6 : 1	1.6 : 1	1.4 : 1	1.5 : 1	1.6 : 1	1.5 : 1	1.5 : 1
Unretouched debitage : cores	43.5 : 1	48.3 : 1	62.0 : 1	68.2 : 1	21.7 : 1	40.8 : 1	39.4 : 1	42.5 : 1
Tool on blanks[2] : cores	16.5 : 1	17.0 : 1	14.0 : 1	17.8 : 1	9.0 : 1	16.5 : 1	9.4 : 1	1.3 : 1
All blanks[2] : cores	60.0 : 1	65.3 : 1	76.0 : 1	86.0 : 1	30.7 : 1	57.3 : 1	48.8 : 1	55.8 : 1
All blanks[2] : cores + bifacials[2] + preforms	·	24.5 : 1	·	23.9 : 1	13.4 : 1	32.7 : 1	27.1 : 1	24.3 : 1
Average density per sq m	930.7	785.2	631.2	2,396.2	772.1	1,567.0	2,350.5	1,347.6
Average density per cu m	369.4	815.4	450.0	925.0	907.4	1,172.7	1,133.3	824.7

[1] among complete points and scrapers [2] without tool fragments

Table 11-18 Kabazi V, sub-unit III/5: technological indices and special indices.

appreciable part of blanks in each of the assemblages stems from bifacial tool shaping/thinning and tool resharpening.

Cortex coverage

All blank assemblages exhibit close patterns relating to cortex coverage (Table 11-7). In each Level, the portion of partly cortical blanks is from half to two thirds of all blanks and primary elements are represented in appreciable portions. The blanks with <25% cortex on dorsal surface dominate among cortical blanks. Such plenty of blanks with cortex means that raw material was delivered on site area by large pieces and without or little decortications.

Shape characteristics

Several shape attributes were recognised and analysed in blank assemblages. These were: blank axis, blank shape, blank lateral profile, and profile at distal end (Table 11-8).

In each assemblage, the majority of blanks are on-axis, although a portion of off-axis blanks is also present (Table 11-8). Most off-axis blanks might stem from bifacial tool shaping / thinning and/or tool resharpening.

All assemblages exhibited the same shape pattern: trapezoidal and irregular shapes are dominant, followed by rectangular and crescent shapes. Other shapes occur sporadically. Since many of the blanks produced in each of the assemblage came from bifacial tool shaping / thinning / resharpening, it is to be expected that their shapes are either expanding or irregular, particularly as thinning blanks are normally struck off-axis. Thus, shape patterns also indicate the presence of a bifacial reduction mode.

Also, similarities between assemblages could be observed for lateral profiles: incurvated profiles dominate in all assemblages, followed by twisted and then flat profiles. The convex profile is always the least common. Both incurvated and twisted profiles account for more than two thirds of all profiles in each assemblage, as would be expected when there is an emphasis on bifacial reduction (Marks, Monigal 1998, p.137).

Regarding distal profiles, there are some differences between assemblages. When hinged distal profiles are combined with blunted distal profiles, blank assemblages can be divided into two groups. In the first group (levels III/5-1A, III/5-1, III/5-1B, and III/5-2) the sum of hinged and blunted profiles account for roughly, or more than, two thirds of all profiles, respectively; in the second group (levels III/5-3, III/5-3B, and III/5-3B2) the feathering profiles dominate over the sum of hinged and blunted profiles. As a rule, distal profiles with blunt and hinged extremities resulted from hard hammer flaking, while feathering distal ends might be associated with the soft hammer mode of detachment.

Also, the blunted and hinged distal end could result from the working of dried raw materials (Marks, Monigal 1998). Therefore, it would appear that the differences between these two groups of assemblages might be best explained by the dominance of the soft hammer mode in assemblages with more feathering profiles, and from the working of dried raw materials in assemblages where hinged/blunted profiles are dominant.

Platform characteristics

The dominance of unprepared (plane plus cortical) platforms is extremely common in each of the assemblage from sub-unit III/5 (Table 11-9). Among the identified types of prepared platforms, the multiple faceted and dihedral butts predominate in all assemblages. Evidently, these specific features reflect closely the faceting indices for blanks from all levels. Since many blanks came from bifacial tool shaping / thinning / resharpening the relatively high faceting indices are to be expected.

Concerning platform angles, all assemblages share similar characteristics: right platforms and obtuse platforms are represented in near equal ratios (Table 11-9). In light of the absence of cores with obtuse supplementary platforms, the majority of blanks with obtuse butts might stem from bifacial tool shaping / thinning. Regarding platform lipping, assemblages are also closely related, here unlipped platforms dominate clearly over butts with lipping (Table 11-9). It is of note that platforms with lipping (lipped and semi-lipped) are commonly associated with the soft-hammer mode of detachment, and frequently stem from bifacial tool shaping/thinning, while unlipped butts might rather be connected with the hard hammer mode of core reduction (Marks, Monigal 1998).

Blank dimensions

All assemblages display the same size pattern among blanks: the average dimensions of retouched pieces and unifacial tools are greater among regular flakes, transverse flakes and blades than among the unretouched debitage sample for all blank types (Table 11-10).

The division of blanks according to their maximal dimensions shows that small blanks dominate in all assemblages: the majority of blanks fall into the 30-39 mm category (Table 11-11). The pattern of tool selection also shows a clear tendency, i.e. that larger blanks were used for tool production.

Tools

All assemblages show a similar tool spectrum: each assemblage features bifacial tools, unifacial tools, retouched pieces, and tool fragments (Table 11-12).

Bifacial tools

Bifacial tools make up only a relatively small percentage of the assemblages from each of the levels (Table 11-12). It should be noted that identifiable bifacial tools are absent in levels III/5-1A and III/5-1B, although bifacially elaborated tool fragments (broken bifacial tools) and/or some bifacial tool treatment elements were noted in each of these levels. Therefore, the bifacial technology is nevertheless attested in all assemblages. Both bifacial tools as well as bifacially worked tool fragments were plano-convex; combinations of stepped, scalar, and, rarer, sub-parallel retouch having been used in their treatment. Most of those were made on bifacially thinned blanks or on thin flint plaquettes, although massive flakes were also used for their production (Table 11-13). The bifacial tools exhibit much larger average dimensions than unifacial tools, retouched pieces, as well as unretouched blanks (Table 11-14 and Table 11-10, for comparison). Due to the small samples of bifacial tools, bifacial convergent shaped tools were only attested in the assemblages through tip fragments, and through the occurrence of convergent scrapers. In spite of this, it should be noted that among the definable bifacial tools, the majority comprises convergent shaped implements of foliates and crescent forms, followed by simple-shaped bifacial backed scrapers, while other bifacial forms are relatively seldom. A similar structure of bifacial tool kits is observed for Starosele industries.

Unifacial tools

These predominate in each of the assemblages from sub-unit III/5 and exhibit the closest typological and technological characteristics.

The majority of unifacial tools were made on flakes, although some tools were made on blades, and a few on chunks (Table 11-13). There is no evidence that chips were used as blanks for tool production. In each assemblage, the average dimensions of complete unifacial tools differ for tools made on blades, for tools made on regular flakes, and for tools made on transverse flakes. As could be shown via the comparative data, unifacial tools exhibit larger dimensions than unretouched blanks for all blank types (Table 11-10, for comparison). Most unifacial tools in each collection display an obverse retouch, while alternate retouched tools, as well as tools with inverse retouch and alternating retouch, occur only rarely.

The majority of unifacial tools show no accommodation elements, although inversely thinned, backed and truncated tools are observed (Table 11-15).

Investigations of tool treatment characteristics were carried out under consideration of bases from complete unifacial points and scrapers (Table 11-16). All assemblages exhibit similar ratios of retouched edges per tool, from 1.5 to 1.6, that is indicative of a high intensity of tool elaboration in each level. This suggestion is confirmed by other tool treatment characteristics. Among retouch types, scalar retouch is dominant, followed by stepped retouch. On the other hand, combined (sub-parallel plus scalar) retouch occurs only rarely. Regarding the retouch angle, the sum of semi-steep and steep retouched edges is dominant in all assemblages, although flat retouch edges always occur in appreciable portions. An analysis of the intensity of elaboration among tools has shown that heavy retouched tools dominate each of the assemblages, while lightly elaborated and medium elaborated tools occur in near similar ratios in all of the statistically representative assemblages.

Typologically, unifacial tools have been subdivided into points, scrapers, denticulates, notches, truncated-faceted tools, burins, perforators, and end-scrapers (Table 11-12). Most tool classes (with the exception of burins, perforators, and end-scrapers) were present in all assemblages. In spite of the small tool sample, the ratios of different tool classes as well as tool types are still suggestive.

The most frequent tool in each of the assemblages is the scraper. Among scrapers, those with a single retouched edge (lateral, transverse, and transverse-oblique) are predominant. Most pieces are convex and/or straight shaped, while scrapers with concave and wavy edges occur in only smaller portions (Table 11-12).

Double scrapers were available in small ratios in just four assemblages from levels III/5-1A, III/5-1, III/5-3, and III/5-3B (Table 11-12).

There are a relatively large numbers of convergent scrapers and points in all levels. Due to the distinction between points and convergent scrapers being somewhat arbitrary, these pieces were combined into one morphological category for comparative purposes. A common feature of all assemblages is the significant ratio of points and convergent scrapers of canted *(déjeté)* forms. The convergent scrapers and points exhibit several different shapes, which might be conjoined in accordance to edge shapes and edge arrangement, into seven groups: (1) sub-triangular shaped; (2) foliate shaped (sub-leaf and semi-leaf); (3) crescent shaped (sub-crescent, semi-crescent, and beck-shaped); (4) simple-canted shaped (semi-trapezoidal and semi-rectangular shaped); (5) complex-canted shaped (sub-trapezoidal and sub-rectangular shaped); (6) amorphously shaped; (7) unidentifiably shaped (broken tip fragments). With exception of the sub-triangular shaped, foliate shaped, and amorphously shaped items, tools from all proposed groups are observed in each of the tool kits (Table 11-12). This might underline the significant typological similarity between assemblages.

Denticulate tools, notched tools, and truncated-faceted tools are observed in most levels. Among these tools, a lateral or transverse positioned retouched edge/notch is common.

Two atypical end-scrapers, burins and perforator appear as rather exotic tools in assemblages. End-scrapers are made on chunks and exhibit typologically close implements. The burins comprise atypical simple and atypical multifaceted forms. The perforator is morphologically close to the points.

Retouched pieces

These are observed in all featured assemblages. The majority were made on flakes, although some were made on blades (Table 11-13). There is no evidence that chunks or chips were used as blanks for retouched pieces. In each assemblage, the average dimensions of complete retouched pieces differs for tools made on blades, for tools made on regular flakes, and for tools made on transverse flakes. From comparative data it has been ascertained that retouched pieces exhibit larger dimensions than unretouched blanks for all blank types (Table 11-10, for comparison). The majority of retouched pieces display an obverse retouch, only few pieces have an inverse and alternating retouch, or exhibit alternate elaboration. Regarding retouch types, pieces with a light marginal retouch dominate, followed by pieces with a very light (ephemeral) marginal retouch, while pieces with a discontinuous irregular scalar retouch occur only rarely (Table 11-17).

In all assemblages, retouched pieces exhibit the same typological pattern: laterally retouched pieces dominate, followed by distally transverse retouched, while bilaterally retouched pieces occur only rarely. It should be noted that such sequence of type occurrence among retouched pieces is similar to the pattern among simple types of unifacial scrapers.

Tool fragments

Tool fragments are composed of small parts of broken tools. All assemblages exhibit the same representation of unifacially and bifacially elaborated implements: unifacial broken tools always dominate over bifacial pieces.

The Pattern of Raw Material Exploitation

Inter-assemblage comparisons make it abundantly clear that all assemblages at Kabazi V, sub-unit III/5 are technologically and typologically homogeneous. Therefore, potentially, all discussed assemblages must also display a close pattern of raw material exploitation.

The closest sources of quality flint raw material are situated in close proximity, at a distance of about 1-1.5 km from the Kabazi V site. This large outcrop, known as Belaya (White) Mountain (another local name is Milnaya (Soap) Mountain) has produced flint nodules and plaquettes with the same characteristics as observed among raw material used for flint artefact production in the assemblages from sub-unit III/5 at Kabazi V. Another outcrop to exhibit such flints has been identified in the valley of the Bodrak River, at a distance of some 5-7 km from the site. In any case, both outcrops are good candidates for local raw material sources.

Analyses of the assemblages have shown that the majority of artefacts display cortical coverage. Many cores, preforms, chunks, and bifacially elaborated tools were made on flint plaquettes. Cortical flakes and blades, as well as primary elements, all make up appreciable portions in each of the blank assemblages (Table 11-7). Since there is good evidence of primary flaking in sub-unit III/5 , initial flint raw material reduction probably took place on-site. Obviously, pieces of raw material (plaquette, nodules, and possibly large natural chunks) were transported from sources to the site. It is important to note that primary flint flaking and the production of blanks for tools were based on core exploitation and bifacial tool shaping/thinning. The blanks obtained from both core exploitation and bifacial tool shaping/thinning were used intensively for unifacial tool production, as well in the production of retouched pieces, all of which took place on-site. All assemblages exhibit moderate percentages of tools and relatively high ratios of retouched edges per tool, features which might have resulted from a high intensity of tool usage and tool modification (Table 11-18). There is no clear evidence of tool import from other sites, although it cannot be ruled out that some may have arrived at the site with the group. In any case, a large part of heavily retouched bifacial and unifacial tools in each of the assemblages is in correspondence with the presence of a large number of tool treatment elements, including several bone retouchers (Chapter 15, this volume). Therefore, many such tools were probably reshaped/rejuvenated on-site. Thus, all stages of primary flaking, tool production and tool usage took place on-site.

According to a functional division of sites proposed by V. Chabai, Crimean Middle Palaeolithic occupations can be divided into several types of killing-butchering stations and short-term hunting camps (Chabai, Marks 1998; Chabai et al. 2000; Marks, Chabai 2001; Chabai 2004c; Chabai, Uthmeier 2006). By definition, killing-butchering sites are characterised by primary butchering of hunted animals, a limited core reduction activity, signatures of fire use, and off-site and/or on-site tool production. On the other hand, short-term hunting camps exhibit evidence for the presence of hearths or other kinds of fire-places, and are characterised by more varied activities than are encountered at killing-butchering sites. Further, they display a higher density of artefacts and faunal remains. There should also be evidence of primary and secondary butchering of hunted animals (represented by a several species), and a diversified tool production/use/discard.

All occupations of Kabazi V, sub-unit III/5 have revealed evidence of hearths and/or fire-places (Chapter 2, this volume), and for the occurrence of varied activities conducted on site. The relatively high density of artefacts per square metre, as well as per cubic metre, in each level of sub-unit III/5 reflects a high density of site occupations (Table 11-18). Thus, all levels appear to represent long-term occupations or series of short occupations (palimpsests). On the other hand, the majority of artefacts are represented by debris (in mean of artefacts per square metre) or unretouched debitage (in mean of artefacts per cubic metre), while each occupation left relatively small numbers of tools and cores. Also, all assemblages are characterised by small ratios of tools on blanks per cores + bifacials + preforms (Table 11-18). These features might be suggestive of the presence of small human groups and/or tool exportation.

The faunal remains do not conflict with the archaeological data (Chapter 6, this volume). Among the faunal remains, the frequency of burned pieces indicates the presence of hearths or fireplaces during all occupations. The fauna from the Kabazi V, sub-unit III/5 occupations includes very small numbers of individuals, usually of steppe (horse, saiga) species. In all occupations there is evidence of intensive bone processing, reflective of several short occupations during probably different seasons.

Obviously, these assemblages were left by small human groups over relatively short periods. Thus, both the archaeological and faunal data indicate that these occupations were seasonal hunting camps, oriented to the selective, possibly encounter-based hunting.

Kabazi V, Sub-Unit III/5 in the Context of the Crimean Micoquian

Essentially, assemblages from sub-unit III/5 at Kabazi V are identical in all ways and, thus, can be attributed to the same industry. Features which include the presence of bifacial tools elaborated in a specific plano-convex manner, by-products from bifacial tool shaping/thinning, an absence of cores with supplementary striking platforms, and a lack of Levallois blanks clearly indicate that all assemblages are characteristic of Crimean Micoquian industries.

The typological variability within the Crimean Micoquian is expressed by the differentiation of three facies: the Staroselian, the Kiik-Koba, and the Ak-Kaya. Whereas all feature the same bifacial technology and similar tool-kits, they do differ in the proportional occurrences of different tool classes (Chabai, Marks 1998, pp.366-367). Further, on the morphological level, there are larger distinctions among the proportional occurrences of bifacial tools, convergent tools, and simple tools. Nevertheless, even these represent continua rather than sharp breaks (Chabai et al. 2000; Chabai 2004c).

In a comparison of assemblages from sub-unit III/5 at Kabazi V with other Crimean Micoquian assemblages, several occupations were selected that are representative of all known facies (Tables 11-19 and 11-20): Staroselian (Starosele, level 1 and Kabazi V, complex C); Ak-Kaya (Zaskalnaya V, level III and Zaskalnaya VI, level III); and Kiik-Koba (Kiik-Koba, upper level and Buran Kaya III, level B).

From a typological perspective, the joint assemblage from sub-unit III/5 exhibits a relatively moderate percentage of points (14.1%) and a high percentage of scrapers (65.6%) with a low percentage of bifacial tools (9.0%). This might be more characteristic for the Staroselian (Table 11-19). On the other hand, the assemblage of Kabazi V, sub-unit III/5 differs clearly from both Ak-Kaya and Kiik-Koba industries in all typological instances.

From a morphological perspective (Table 11-20), the assemblage from sub-unit III/5 at Kabazi V displays a relatively high percentage of simple tools. Whereas this is also characteristic for the Ak-Kaya industry, the sub-unit V assemblages differ from Ak-Kaya in their high percentage of convergent and low percentage of bifacial tools. In fact, the percentage of bifacial tools in sub-unit III/5 is closer to that found in the Staroselian and Kiik-Koba, while the percentage of convergent tools is closer to that of the Staroselian, and much lower than in the Kiik-Koba facies.

Thus, the comparison of the aforementioned facies with the assemblages from sub-unit III/5 at Kabazi V indicates that the typological characteristics and morphological structures of the former are more reminiscent of the Staroselian, than they are of the Ak-Kaya. Further, they are clearly quite different to Kiik-Koba.

Conclusions

Kabazi V, sub-unit III/5 comprises seven occupations which have been attributed to industries belonging to the Crimean Micoquian, and most likely to the Staroselian facies. Preliminary AMS measurements have yielded an age for the occupation in level III/5-3B2 of around 38,780±360 BP (Chapter 3, this volume). All levels exhibit a relatively high density of occupation, intensive inhabitant activity, an on-site mode of primary flaking, as well as on-site tool production and tool use. Both archaeological and faunal investigations show clearly that all occupations in sub-unit III/5 at Kabazi V, were short-term season hunting camps that would have been dependent upon local raw material exploitation, and oriented to selective, possibly encounter-based hunting. On the other hand, each assemblage features only relatively small numbers of regular retouched unifacial and bifacial tools, most of which are heavily elaborated through resharpening and rejuvenation. This might suggest an intensive and relatively long usage of these pieces. Clearly, many such tools were left on-site, and additional tools were made on fresh blanks to replace exhausted ones. Therefore, it is logical that some of these newly made tools were also exported to other hunting stations.

Such a subsistence strategy would have been associated with highly mobile human activities, as demonstrated for the Middle Palaeolithic sites of Les Cannalettes (France) and Borisovskoe Gorge (northwest Caucasus), both situated in mid-altitude mountain regions, and for which the catchment areas for successive occupations would have been limited to a 20/25 km radius (Meignen, Brugal 2001; Hoffecker, Baryshnikov 1998). If this interpretation is also applied to the Crimea, the Kabazi V occupations must have laid at the centre of such a catchment area, particularly as raw material sources are local. Several Middle Palaeolithic sites, such as Starosele, levels 1 and 2, GABO, level 2,

	Points	*Scrapers*	*Bifacials*	*Others*	*Industial facies*
Zaskalnaya V, layer III	11.0	63.3	21.4	4.3	Ak-Kaya
Zaskalnaya VI, layer III	4.1	73.4	19.2	3.4	
Buran Kaya III, layer B	27.3	53.3	12.0	7.4	Kiik-Koba
Kiik-Koba, upper layer	38.2	35.7	11.8	14.3	
Starosele, level 1	16.9	58.1	10.5	14.5	Staroselian
Kabazi V, complex C	18.3	58.3	13.4	10.0	
Kabazi V, sub-unit III/5	14.1	65.6	9.0	11.3	

Table 11-19 Assemblages from Kabazi V, sub-unit III/5 in the typological context of the Crimean Micoquian. (Chabai 2004c; Demidenko 2004b; Marks and Monigal 1998; Yevtushenko 1998b)

	Bifacial tools[1]	*Convergent tools*[2]	*Simple tools*[3]	*Facies*
Zaskalnaya V, level III	23.6	30.4	46.1	Ak-Kaya
Zaskalnaya VI, level III	20.0	26.1	53.9	
Buran Kaya III, level B	13.0	52.3	34.7	Kiik-Koba
Kiik-Koba, upper level	13.8	59.3	26.9	
Starosele, level 1	12.3	41.5	46.2	Staroselian
Kabazi V, complex C	14.8	37.0	48.2	
Kabazi V, sub-unit III/5	10.1	38.4	51.5	

[1] bifacial points and scrapers [2] unifacial points and convergent scrapers

[3] unifacial lateral, transverse, transverse-oblique and double scrapers

Table 11-20 Assemblages of Kabazi V, sub-unit III/5 in the morphological context of the Crimean Micoquian. (Chabai 2004c; Demidenko 2004b; Marks and Monigal 1998; Yevtushenko 1998b)

Chokurcha I, Unit IV are situated no more than 10 to 15 km from Kabazi V and have been attributed to Crimean Micoquian industries (Marks and Monigal 1998; Chabai, Marks 1998; Chabai 2004b). For instance, the assemblages of Starosele, levels 1 and 2 are typologically, technologically, and structurally similar to those from Kabazi V, sub-unit III/5, and belong to the Staroselian facies. Moreover, a series of recent C^{14} AMS dates (Marks et al. 1998, pp.97-99; Chabai 2004c, pp.14-16) of these assemblages (41,200±1,800; 42,500±3,600) show that their age might be statistically identical to the age of occupations at Kabazi V, level III/5-3B2. As has been demonstrated by A. Marks and K. Monigal, the assemblages from Starosele, levels 1 and 2 suggest a complicated on-site / off-site mode of tool production that would have been dependent upon imported raw material and tool importation (Marks, Monigal 1998). Thus, some part of tools and/or raw materials from Kabazi V, sub-unit III/5 might have been exported to Starosele. Thus, hypothetically, all these sites may represent a contemporaneous chain of Micoquian hunting camps in the Western Crimean Midlands.

Abstract

КАБАЗИ V, ПАЧКА ГОРИЗОНТОВ III/5: СТАРОСЕЛЬСКАЯ ИНДУСТРИЯ

ЕВТУШЕНКО А. И.

Пачка горизонтов III/5, состоящая из семи горизонтов (III/5-1A, III/5-1, III/5-1B, III/5-2, III/5-3, III/5-3B, III/5-3B2), залегает в геологическом стратуме E3 (литологический слой 12A), состоящем из мелкоструктурных отложений скального грота, образовавшегося в окаменевшей глине эоценового (Eb) возраста. Поскольку эоценовая глина, из которой сложены стены грота, подвергалась постоянному воздействию природных факторов, ее разложение происходило интенсивно, что способствовало довольно быстрому погребению культурных остатков палеолитических поселений, располагавшихся в гроте. Культурные горизонты залегали в толще общей мощностью 30 – 50 см тонкими прослойками, насыщенными органическими материалами, толщиной от 1 до 4 см каждая (Табл. 11-1). Характер залегания культурных горизонтов позволяет предполагать, что они образовались за короткий период времени, и, вероятно представляют собой серию палимпсестов, которые получились в результате многократных кратковременных посещений грота людьми эпохи среднего палеолита.

Всего, в семи культурных горизонтах было найдено 105353 кремневых артефактов, которые типологически подразделены на 27 нуклеусов, 12 преформ, 496 орудий, 979 отщепов, 168 пластин, 1147 обломков и 102524 чешуек (Табл. 11-2). Хотя кремневые коллекции культурных горизонтов несколько отличаются друг от друга в количественном отношении, они демонстрируют близкие соотношения основных категорий каменных артефактов и сходные технико-типологические характеристики. Все семь культурных горизонтов имеют явные типологические и технологические особенности крымского микока.

В процессе изучения коллекций находок сравнительному анализу были подвергнуты все категории артефактов. Результаты разнообразных исследований помещены в статистические таблицы: метрические параметры чешуек (Табл. 11-3); типология и параметры обломков (Табл. 11-4); типология нуклеусов (Табл. 11-5); различные параметры сколов-заготовок (Табл. 11-6, 11-7, 11-8, 11-9, 11-10, 11-11);, типология и технологические особенности орудийных наборов (Табл. 11-12, 11-13, 11-14, 11-15, 11-16, 11-17); технико-типологические индексы и объективные показатели интенсивности поселений (Табл. 11-18), в период образования пачки горизонтов III/5.

В целом, индустрии культурных горизонтов пачки III/5 характеризуются преобладанием дебитажа, умеренным процентным выражением орудий (в среднем 29,5%), низким содержанием преформ и нуклеусов, среди которых преобладают односторонние с параллельной и подперекрестной системой расщепления плоскостные необъемные ядрища, без подготовленных вспомогательных площадок. Все нуклеусы специализированы для производства отщепов, нуклеусы для пластин отсутствуют. Нуклеусное расщепление не играло значимой роли при производстве сколов-заготовок, среди которых, как минимум, 20% были получены в процессе изготовления двусторонних орудий. Леваллуазские нуклеусы и сколы полностью отсутствуют в коллекциях всех культурных горизонтов пачки III/5. Средние значения технических показателей сколов характерны для микокских индустрий западного Крыма: IF large=36,9; IF strict=20,1; Ilam=13,5. Модель эксплуатации кремневого сырья ориентирована на местные месторождения кремня, расположенные на удалении от 1,5 до 5 км от стоянки. Кремневое сырье доставлялось к месту стоянки, судя по всему, в виде плитчатых конкреций и крупных кусков. Имеющиеся данные позволяют предполагать,

что на месте проводился полный цикл кремнеобработки от первичного расщепления до изготовления орудий и их переоформления. Вероятно, часть изготовленных орудий была унесена на другие стойбища.

Орудийный набор представлен следующими средними типологическими характеристиками (Табл. 11-19): остроконечники составляют 14,1%, скребла 65,6%, двусторонние изделия 9,0%, прочие орудия 11,3%. Среди остроконечников преобладают сегментовидные и листовидные формы, заметной долей представлены трапециевидные угловатые формы (Табл. 11-12). Среди скребел преобладают простые однолезвийные изделия, хотя конвергентные скребла, представленные теми же формами, что и остроконечники, играют заметную роль в коллекции. Зубчатые и выемчатые изделия составляют в сумме лишь 5,5%, скребки, резцы, транкированно-фасетированные изделия и проколки малочисленны. Подавляющее большинство односторонних скребел и остроконечников имеют дорсальную обработку, выполненную, главным образом, чешуйчатой ретушью, далеко заходящей на спинку заготовки. Довольно много орудий обработаны ступенчатой избыточной ретушью. Двусторонние орудия в основном представлены остроконечниками и конвергентными скреблами различных форм, среди которых листовидные и сегментовидные изделия играют заметную роль. Все двусторонние орудия изготовлены в плоско-выпуклой технике, с использованием чешуйчатой и комбинированной ретуши. В целом, технологически и типологически индустрии пачки горизонтов III/5 демонстрируют полный набор характерных черт микокского технокомплекса.

Морфологические характеристики индустрии, подсчитанные для комплекса односторонних и двусторонних скребел и остроконечников, имеют следующие показатели (Табл. 11-20): двусторонние орудия составляют 10,1%, орудия с конвергентными лезвиями 38,4%, простые орудия составляют 51,5%.

Таким образом, типологические и морфологические показатели индустрии Кабази V, III/5 наиболее близки кругу старосельских комплексов крымского микока.

Судя по характеру культурных остатков и интенсивности хозяйственной деятельности, поселения культурных горизонтов Кабази V, III/5 относятся к типу кратковременных охотничьих лагерей, ориентированных на специализированную охоту на стадных животных (сайгу и гидрунтиновую лошадь) в ближайшем окружении от места стоянки (Patou-Mathis, в этом томе).

Для самого нижнего культурного слоя III/5-3B2 имеется предварительная некалиброванная радиоуглеродная дата, сделанная по образцу угля: 38780±360 BP (Глава 3 в этом томе), которая статистически соответствует датам, полученным для стоянки Староселье, слой 1 (41200±1800; 42500±3600) (Marks et al., 1998, p. 97-99; Chabai 2004c, p. 14-16). Учитывая, что индустрии 1-го и 2-го слоев Староселья по всем типологическим и технологическим показателям практически идентичны комплексам Кабази V, III/5, можно предполагать, что эти памятники составляют звенья одной цепи в системе эксплуатации природных ресурсов Крымских предгорий.