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

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Chapter
10

Kabazi V, Sub-Unit III/4: Artefacts

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This chapter presents the analysis of materials from 7 levels assigned to sub-unit III/4 of Kabazi V which were investigated between 2002 and 2003. Results of previous excavations within the same sub-unit between 1993 and 1995 have already been published (Yevtushenko 1998b). However, the material described in Yevtushenko's publication comprises only a small number of artefacts from a limited excavation area measuring just a few square metres. On the other hand, the more recent investigations concentrated on a much larger area, and hence yielded bigger collections of artefacts. As such, these assemblages help to identify in much more detail the characteristics of the sub-unit III/4 occupations. Accordingly, sub-unit III/4 appears to comprise a total of 7 levels, which are separated by "ephemeral" sterile lenses (Chapters 1 and 2, this volume); this contrasts to results from the 1993-1995 field campaigns which suggested that this was just a single level. Whereas levels III/4-2, III/4-3, III/4-4, III/4-5, and III/4-6 were each excavated over an area of 11 m², level III/4-1 was uncovered in 14.5 m², and level III/4-1A in just over 1 m². The densities of artefacts per cubic metre sediment are as follows: III/4-1: 1,080.6 items, III/4-2: 1,005 items, III/4-3: 775 items, III/4-4: 705 items, III/4-5: 852.8 items, and III/4-6: 622.2 items. Objects from sub-unit III/4 that are connected with human activity comprise, 1) ashy clusters, and 2) a pit with flint artefacts in level III/4-2 (Chapters 2 and 16, this volume).

The description of artefacts adheres to a classification system after Gladilin (1976) which was adopted for Crimean Middle Palaeolithic studies by Chabai and Demidenko (1998). Based on the results from typological and technological analyses, all levels are palimpsests which feature both Levallois-Mousterian and Crimean Micoquian characteristics.

Structure of Artefact Assemblages

The archaeological levels assigned to sub-unit III/4 are very thin, each not thicker than a single bone or artefact. The total amount of artefacts from sub-unit III/4 numbers 50,514 items (Table 10-1) which can be subdivided into three main groups.

The first group comprises 50,469 flint items, which again can be subdivided into seven artefact categories, these being chips, flakes, tools, blades, chunks, cores, and preforms (Table 10-1). The majority of flint artefacts (97.7%) comprise chips (flakes less than

3 cm in length or width). The sum of flakes, blades, chunks, and cores constitutes just 2.57% of the total number of flints. Among the latter, flakes are the most numerous, composing 59.79% in the essential count (Table 10-1).

In the essential count, tools make up a near quarter (23%) of all artefacts (Table 10-1). Among tools the most common are unifacial specimens. The bifacial tool index, in relation to all tools, and including retouched and unidentifiable pieces, amounts to 6.8%; under exclusion of the retouched and unidentifiable pieces, this index lies at 2.4%. On the whole, values for both indexes are very low, and correspond to mixed collections, as previously attested at such sites as Starosele (4.9% to 5.4%); Kabazi I (3.4%); Holodnaya Balka (1.7%), excavated by A. A. Formozov in the 1950s; the lower layer of Bakchisaraiskaya (4%), investigated by D. A. Krainov; and GABO (4.1%), upper layer (Kolosov *et al*., 1993; Chabai 2004c, p. 73, Tab. II-6).

Two further groups of archaeological material from sub-unit III/4 include bone tools and pebbles. None of the 31 pebbles shows visible traces of use as a hammerstone or retoucher (Table 10-1). Bone artefacts consist of retouchers, these making up 1.21% in the essential count (Table 10-1).

Sub-unit III/4 assemblages are characterised by their "intermediate" status between Micoquian and Western Crimean Mousterian (WCM) traditions. For example, whereas the observed percentages of tools are common for Micoquian site-workshops, the percentage of cores, especially in level III/4-1, are more consistent with Western Crimean Mousterian (WCM) assemblages. Further, the presence of preforms of bifacial tools is a Micoquian feature, while their absence, especially in level III/4-1, is a WCM attribute. Finally, the percentages of bifacial tools appear too low for the Micoquian, but too high for the WCM.

Chunks

Chunks are not numerous, but were found in all levels (Table 10-1). About 37% of all fragments stem from level III/4-1. As a rule, chunks are fragments of bad quality raw material, usually pieces of flint plaquettes. Generally, they do not exceed 5 cm in maximum dimensions. There are only seven fragments larger than 5 cm which were found in the three archaeological levels III/4-1 (4), III/4-2 (2), and III/4-5 (1). The largest chunk is 67.78 mm long, 50.81 mm wide, and 31.11 mm thick, and is from level III/4-1. Five chunks from levels III/4-1 (1), III/4-2 (2) and III/4-5 (2) were tested by either a single or a small number of removals. In fact, these fragments are discarded raw material blocks which became fragmented during a first stage of reduction.

Preforms

Seven preforms originate from levels III/4-2, III/4-3, III/4-5 and III/4-6; all are unfinished bifacial tools. The basic characteristic feature of this artefact category is the absence of pronounced retouched edges, which means that they cannot be assigned to the bifacial tools. The edges of the preforms are wavy in profile, and in plan show denticulated outlines. Three preforms are complete, the longest piece being 82.38 mm, with a maximum width of 72.61 mm. The thickness of these artefacts ranges from 8.36 to 21.06 mm. Flint plaquettes and natural flakes served as blanks for the manufacture of these preforms, which are a common feature in Crimean Micoquian assemblages, especially at on-site workshops, such as at Zaskalnaya V, Zaskalnaya VI, and at Kabazi V, III/1, III/1A and III/2.

Cores

Cores were found in five levels; they were not discovered in levels III/4-1A and III/4-6. The total number of cores for sub-unit III/4 is 27 items, fifteen of which were found in level III/4-1 (Table 10-1). Cores are represented by the following typological classes: radial cores (N=7); a discoid core (N=1); a unidirectional core (N=1); a unidirectional alternate core (N=1); bidirectional cores (N=5); a bi-transverse core (N=1); an orthogonal core (N=1); and eleven cores of unidentifiable type. Radial cores comprise four cores with a rounded flaking surface (Fig. 10-1, *1*) and 3 broken items. Three of the bidirectional cores have a rectangular flaking surface (Fig. 10-1, *2*), while one is sub-cylindrical. The unidirectional rectangular, unidirectional alternate rectangular, orthogonal rectangular (Fig. 10-2, *1*), and bi-transverse rectangular (Fig. 10-1, *3*) cores all occur once each in the sub-unit III/4 core assemblage. All cores from the sub-unit are heavily exhausted; only 6 specimens are larger (in length or width) than 6 cm. The largest core is 66.5 mm long and 44.17 mm wide and stems from level III/4-1. A total of 21 cores are thinner than 20 mm, while only two are thicker than 3 cm. Finally, 15 of the 27 cores are fragmented. All of the above observations are indicative of a high degree of core utilization in sub-unit III/4. In spite of their exhausted conditions, some important core attributes are still

Flint artefacts	III/4-1	III/4-1A	III/4-2	III/4-3	III/4-4	III/4-5	III/4-6	Total:	%	ess %
Chunks	17	1	4	4	12	7	2	47	0.09	·
Preforms	·	·	1	2	·	1	3	7	0.01	0.66
Cores	15	·	2	4	3	3	·	27	0.06	2.54
Chips	13,434	530	7,930	5,025	5,717	8,064	5,873	46,573	97.67	·
Flakes	191	6	110	82	79	82	72	622	1.31	58.52
Blades	54	2	33	18	22	10	7	146	0.31	13.73
Tools	70	·	45	43	33	41	29	261	0.55	24.55
Total:	**13,781**	**539**	**8,125**	**5,178**	**5,866**	**8,208**	**5,986**	**47,683**	**100.00**	**100.00**

Pebble & bone artefacts	III/4-1	III/4-1A	III/4-2	III/4-3	III/4-4	III/4-5	III/4-6	Total:
Pebble fragments	20	·	4	2	3	1	1	31
Bone retouchers	3	·	2	2	1	5	1	14
Total:	**23**	**·**	**6**	**4**	**4**	**6**	**2**	**45**

Table 10-1 Kabazi V, sub-unit III/4: artefact totals.

visible. First, the majority of cores have lateral supplementary platforms, whereby both main and supplementary platforms are usually faceted. Second, the core assemblage comprises mainly bi-, unidirectional and radial core types which are consistent with typological transformation of cores in the WCM assemblages from Kabazi II, Unit II (Chabai 1998b, Usik 2003). This type of core assemblage has never been found in association with a homogeneous Crimean Micoquian tool-kit.

Blank variability

Most blanks are chips (Fig. 10-3), whereby regular chips and chips with a broken butt are most common (90.19 %) (Table 10-2). Further blanks comprise, in descending order, bifacial thinning and rejuvenating chips, flakes, blades, bifacial thinning flakes, and bifacial thinning blades (Table 10-2). Blanks which are thought to document processes involved in bifacial tool production make up 7.89 % of the total amount of blanks. The "bifacial thinning" blanks discovered in the assemblages from sub-unit III/4 are of a non-uniform character. If we disregard chips from the 0.1 to 0.9 mm metric range, the ratio of "bifacial thinning" blanks in such levels as III/4-1, III/4-2, III/4-3, III/4-4 and III/4-6 (Fig. 10-4) are much lower than observed previously in other Micoquian complexes in the Crimea. Moreover, the number of bifacial thinning flakes and blades, without all chips, in archaeological levels III/4-1, III/4-3 and III/4- 4 shows a sharp drop (Fig. 10-5). Indeed, in the Micoquian complexes of Chokurcha I, Unit IV; Buran-Kaya III, level B; and Kabazi V, level III/2 (Chabai 2004c, Demidenko 2004a, Chapter, this volume) "bifacial thinning" flakes and blades are twice as numerous as in the aforementioned assemblages from sub-unit III/4. The low percentage of "bifacial thinning" blanks in levels III/4-1, III/4-3 and III/4-4 clearly demonstrates that flakes and blades resulted mainly from core reduction. The role of bifacial tool production in the fabrication of flakes and blades appears to have been only minor.

Blade ratios also vary in the assemblages from sub-unit III/4. The lowest blade index was noted for levels III/4-3 (14.18), III/4-5 (12.97) and III/4-6 (11.32). Generally, blade indexes such as these are common to homogeneous Micoquian complexes, and also to some WCM assemblages. In other levels (III/4-2, III/4-4 and III/4-1) blade indexes fluctuate between 20 and 20.96, clearly characteristic of a WCM industry.

Although all levels of sub-unit III/4, especially III/4-1 and III/4-4, contain enough blades to be classed WCM industries, they have also produced too much bifacial thinning and rejuvenation blanks for them to be attributed to the Levallois-Mousterian techno-complex. At the same time, very high blade indexes, as well as extremely low ratios of bifacial thinning and rejuvenation blanks means that the assemblages from sub-unit III/4 cannot be identified as Crimean Micoquian. Further, it should be stressed that sub-unit III/4 levels differ from one another with regard to their blade indexes and in the percentages of bifacial thinning blanks. For example, level III/4-6 has yielded the lowest blade index (11.32) but the highest percentage of bifacial thinning blanks (11.32 %), while level III/4-1 has produced the highest blade index (20.96) but the lowest percentage of bifacial thinning blanks (3.55 %).

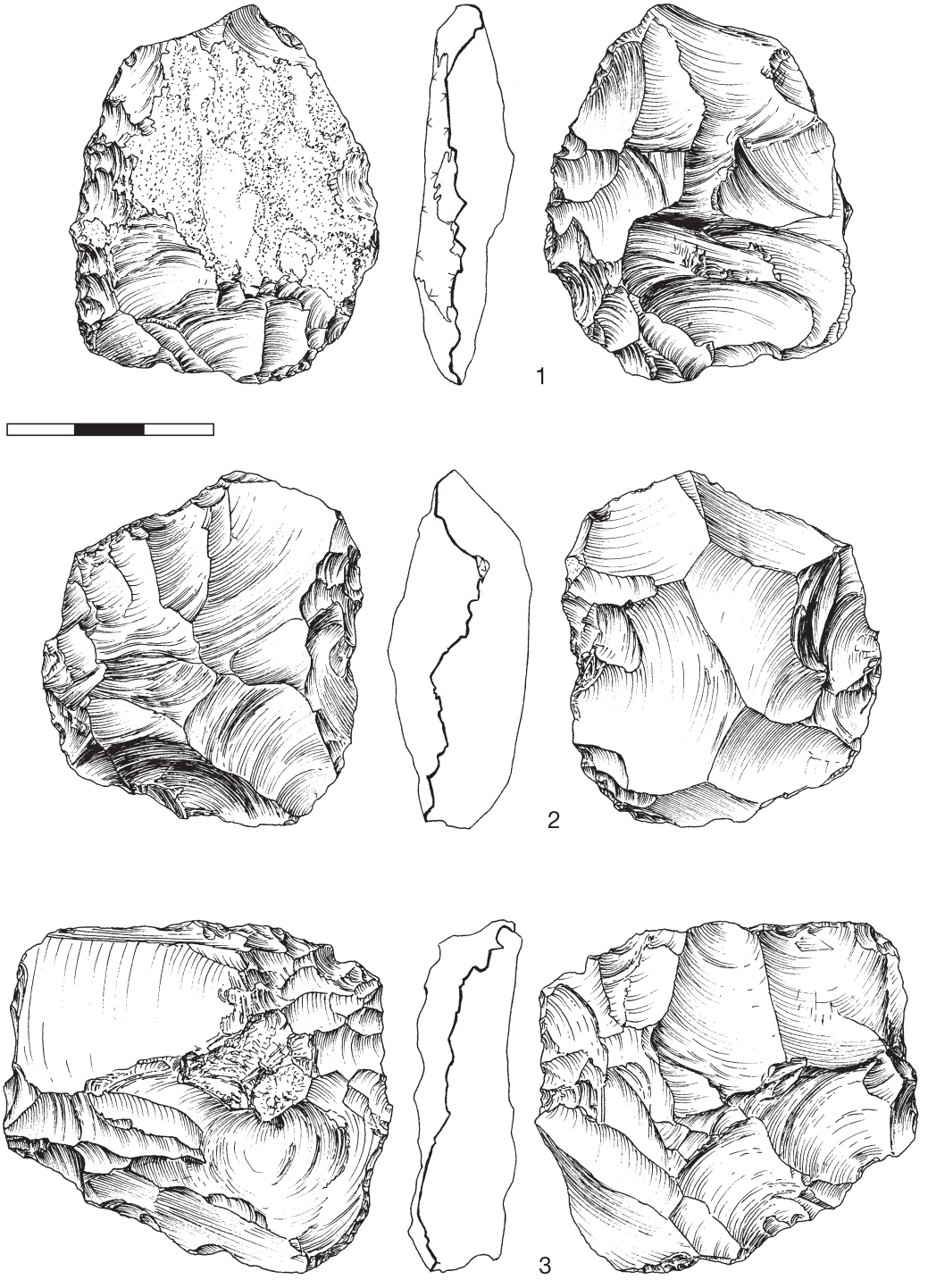

Fig. 10-1 Kabazi V, sub-unit III/4, levels III/4-1 (1), III/4-3 (2), III/4-5 (3). Cores: 1 – radial; 2 – bidirectional; 3 – bi-transverse.

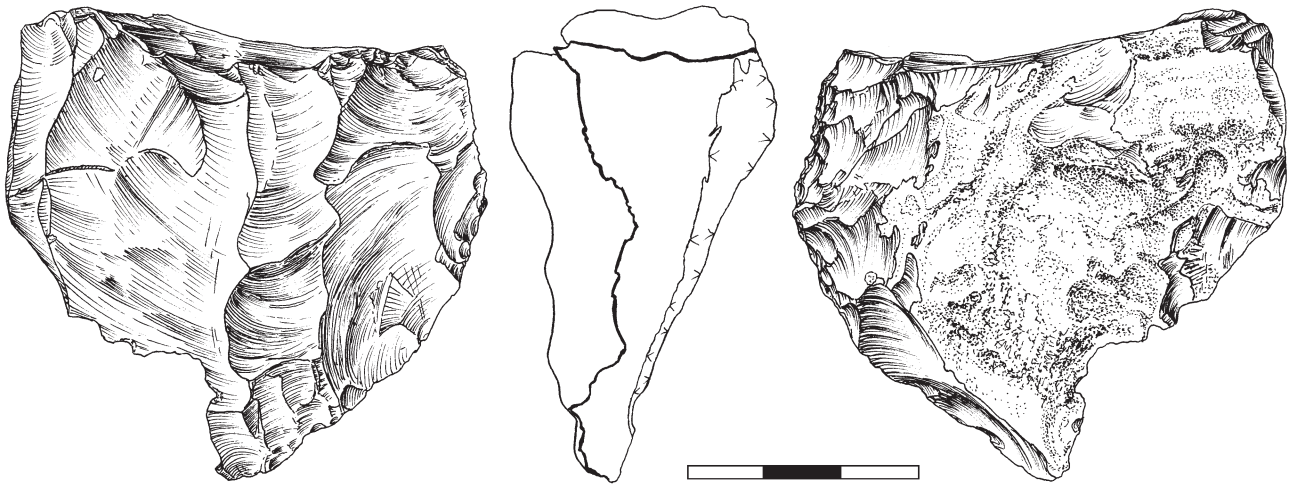

Fig. 10-2 Kabazi V, sub-unit III/4, level III/4-3. Core – orthogonal.

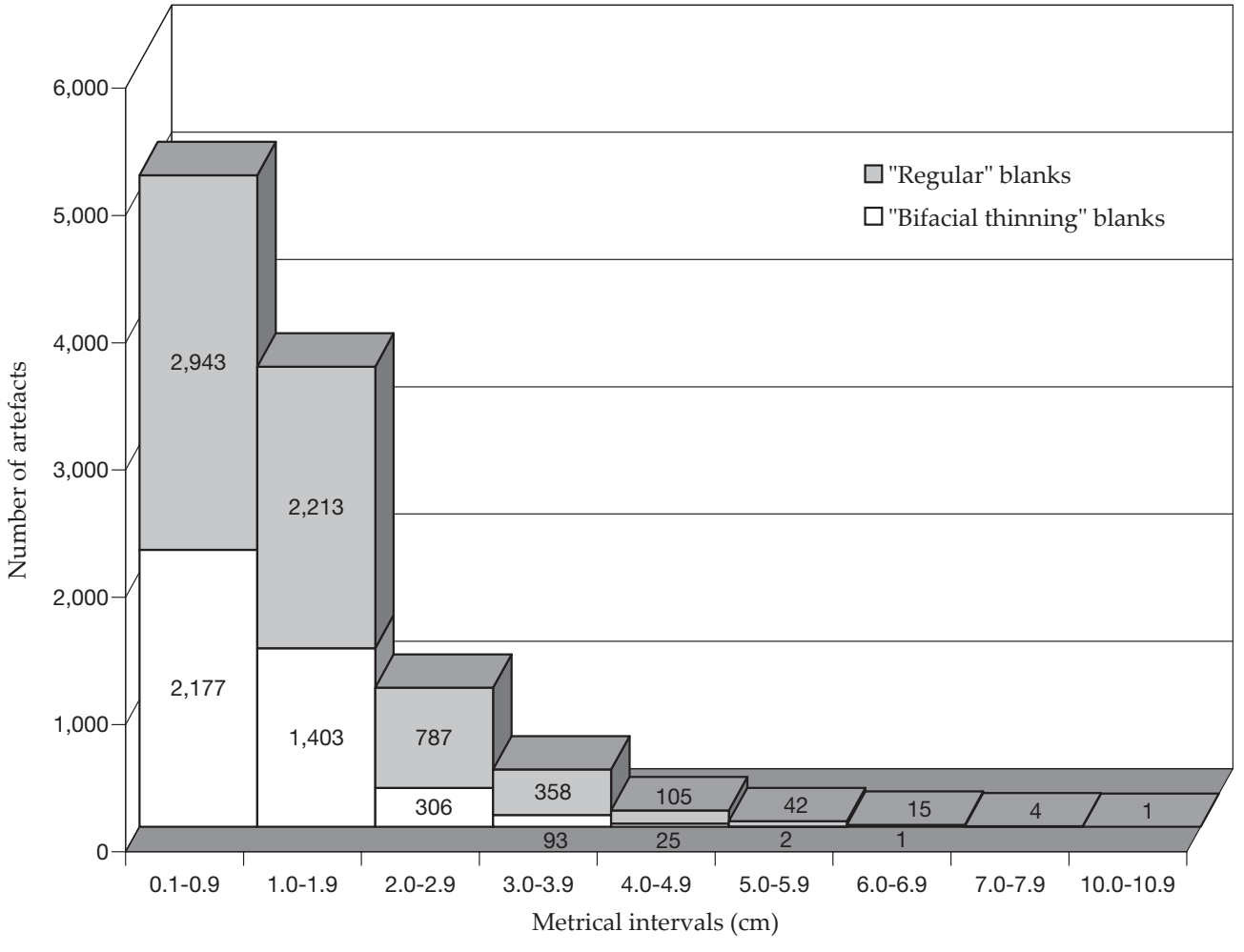

Fig. 10-3 Kabazi V, sub-unit III/4: "regular" and "bifacial thinning" blanks, by metrical intervals.

	III/4-1	III/4-1A	III/4-2	III/4-3	III/4-4	III/4-5	III/4-6	Total:	%
Chips * **	12,681	501	7,299	4,670	5,219	7,221	5,311	42,902	90.15
Bifacial thinning ** & rejuvenating chips *	753	29	631	355	499	845	562	3,674	7.73
Flakes **	235	5	127	112	95	100	82	756	1.59
Bifacial thinning flakes **	10	1	21	9	9	14	12	76	0.16
Blades **	64	2	35	19	25	16	12	173	0.36
Bifacial thinning blades **	1	·	2	1	1	1	·	6	0.01
Total:	**13,744**	**538**	**8,115**	**5,166**	**5,848**	**8,197**	**5,979**	**47,587**	**100.00**

* including pieces with broken butts ** including tools

Table 10-2 Kabazi V, sub-unit III/4: blank variability as numbers and percentages of each type.

	cm	III/4-1	III/4-1A	III/4-2	III/4-3	III/4-4	III/4-5	III/4-6	Total:	ess %
Regular	1.0 - 1.9	632	33	404	228	304	342	242	2,185	47.37
	2.0 - 2.9	230	6	113	86	116	130	93	774	16.78
Bifacial	1.0 - 1.9	261	9	206	140	194	330	186	1,326	28.74
	2.0 - 2.9	47	1	46	19	48	68	39	268	5.81
Rejuvenating	0.1 - 0.9	6	·	1	2	·	·	4	13	0.28
	1.0 - 1.9	6	1	12	4	6	3	4	36	0.78
	2.0 - 2.9	1	·	2	·	2	3	3	11	0.24
Broken	1.0 - 1.9	2,264	148	1,455	1,085	1,332	1,955	1,137	9,376	·
	2.0 - 2.9	346	14	251	185	185	282	183	1,446	·
Other chips	0.1 - 0.9	9,641	318	5,440	3,276	3,530	4,951	3,982	31,138	·
	Total:	**13,434**	**530**	**7,930**	**5,025**	**5,717**	**8,064**	**5,873**	**46,573**	**100.00**

Table 10-3 Kabazi V, sub-unit III/4: grouped maximum dimensions for different kinds of chips.

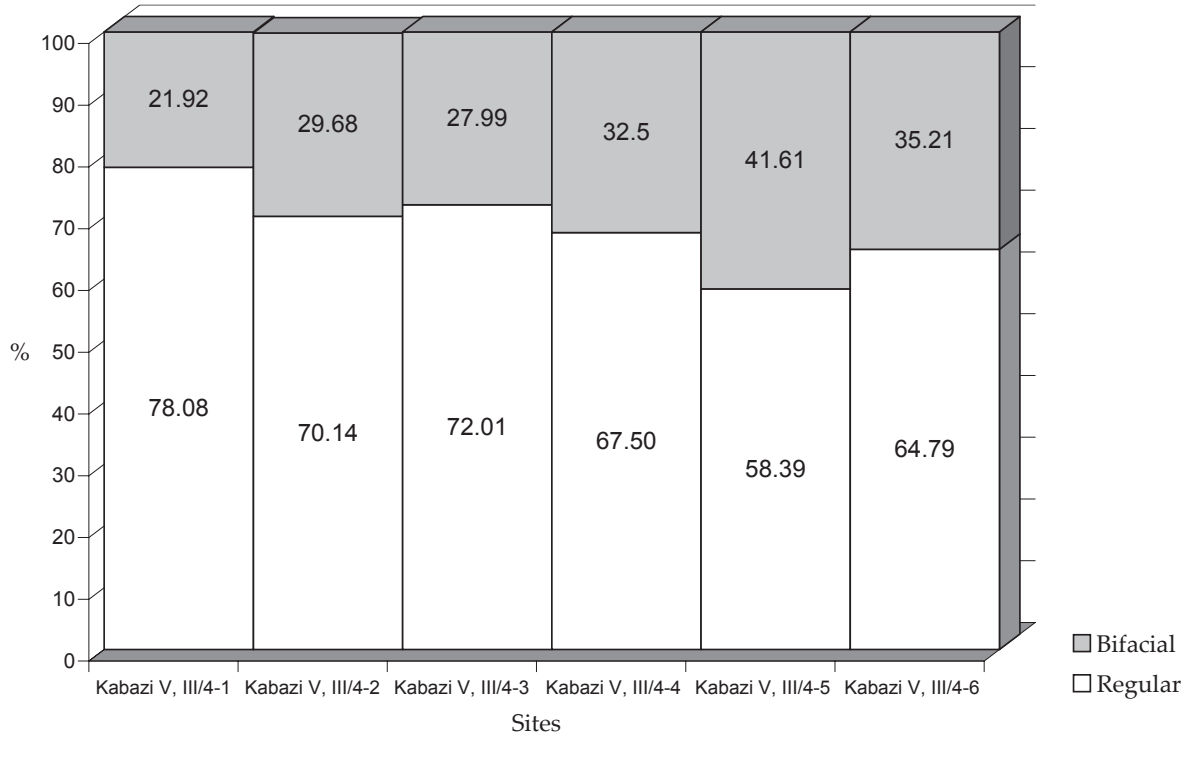

Fig. 10-4 Kabazi V, sub-unit III/4: percentage of "regular" and "bifacial thinning" blanks, with chips (1.0 – 2.9 cm).

Chips

Chips have been subdivided into five groups: "regular", bifacial thinning chips, rejuvenating chips, broken chips, and chips smaller than 10 mm (Table 10-3). Due to the small size of artefacts in the later group, it proved difficult to differentiate between regular items and items from bifacial thinning. At the same time, rejuvenating chips were clearly visible, even in the smallest metrical intervals. All the above listed groups of chips occur in all levels of sub-unit III/4. In fact, chip assemblages from sub-unit III/4 levels can be subdivided into three groups. The first, as defined for level III/4-1, is characterised by the lowest percentage of bifacial thinning and rejuvenating chips (27.13 %). The second group was found in levels III/4-2, III/4-3, and III/4-4. In these levels the amount of bifacial thinning and rejuvenating chips ranges from 34.45 % to 37.31 %. The third group, found in levels III/4-5 and III/4-6, is characterised by the highest amount of bifacial thinning chips (41.33 – 46.12 %) in sub-unit III/4. With the exception of archaeological level III/4-1, the ratio of "bifacial" chips is never less than 34 %, which is characteristic for Micoquian complexes. For example, whereas the ratio of "regular" and "bifacial" chips in level III/2 (Crimean Micoquian) at Kabazi V are 64.15 % and 35.85 %, respectively, in level IV/1 (WCM) at the same site they make up 92.37 % and 7.63 % of chips between 1.0 cm and 2.9 cm. Rejuvenating chips from all metrical intervals comprise only 1.27 % of all chips. It should be noted that rejuvenating chips in this sub-unit consist solely of reshaping chips from bifacial tool tips. Rejuvenating chips comprise 3.72 % of the sum of bifacial thinning and rejuvenating chips.

Flakes and blades

On average, blades comprise 17.7 % (Table 10-2). The blade index ranges from 20.96 in level III/4-1 to 11.32 in level III/4-6. A total of 8.1 % of flakes and blades stems from bifacial tool reduction processes. At the same time, a little over 3 % of blades and flakes in level III/4-1 are linked with bifacial technology. While the bifacial thinning blades and flakes in level III/4-2 make up more than 14.2 %, rejuvenating pieces are observed on neither of these. The available cores suggest some blade production, especially in level III/4-1. On the other hand, the presence of bifacial tools and preforms of bifacial tools in assemblages of sub-unit III/4 is indicative of bifacial flaking.

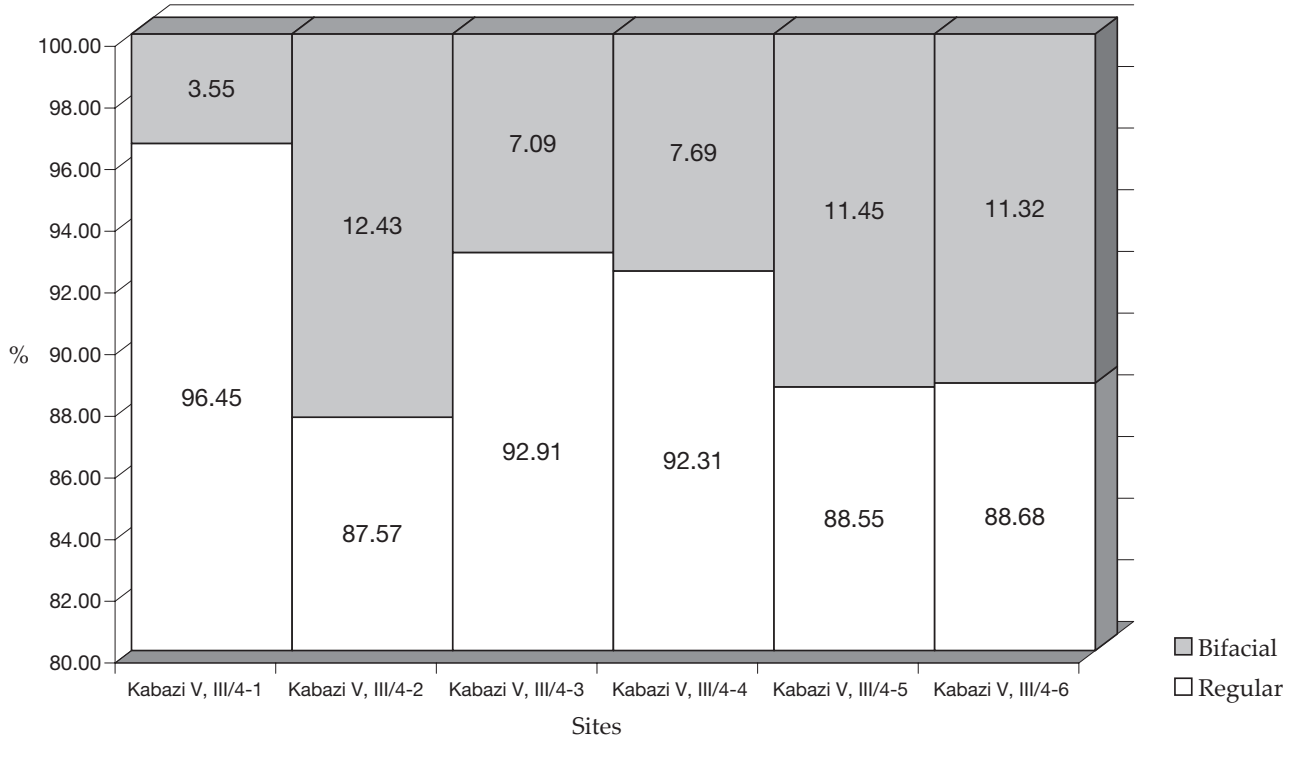

Fig. 10-5 Kabazi V, sub-unit III/4: percentage of "regular" and "bifacial thinning" blanks, with-out chips.

Blank dimensions

A prevalence of length over width was identified as a general trend among blanks, and is observed in four blank assemblages, in levels III/4-1, III/4-2, III/4-3 and III/4-4 (Table 10-4, Fig. 10-6), with the most elongated proportions identified in levels III/4-1, III/4-2, III/4-3. In the blank assemblage from level III/4-5 length and width relations varied only slightly. In level III/4-6 blank dimensions are characterised by mainly transverse proportions. Also, in practically all archaeological levels of sub-unit III/4 blades are clearly longer than flakes, with the exception of level III/4-4 where blades are on average just 1 mm longer. At the same time, flakes from this level are the longest of all flake assemblages in sub-unit III/4. An opposite situation was observed in level III/4-5. Here, blades are the longest recorded, while flakes are the shortest. In all archaeological levels of sub-unit III/4 the blanks chosen for tool production display maximal dimensions of length, width and thickness. The only exception is the tool-kit from level III/4-5, where blanks selected for tool production have the smallest sizes in comparison to blanks without secondary treatment (Table 10-4). Moreover, tool sizes from level III/4-5 are the smallest among all tools from sub-unit III/4. All these observations might suggest that tools from archaeological level III/4-5 were not made on site. The tool-kit of level III/4-5 was probably brought to the site, used, and then discarded. Another possible interpretation could involve a lack of technological links between tool and debitage assemblages in level III/4-5. The tools and debitage assemblages initially originated in different occupations and after, due to the post-depositional transportation, they were mixed in level III/4-5.

Platform dimensions

In all levels of sub-unit III/4 the platforms of "regular" blanks are wider and thicker than those on "bifacial thinning" blanks. Among regular blanks, blade platforms are both considerably more narrow and thinner than platforms on flakes (Table 10-4). This heterogeneity in the dimensions of platforms can be more or less linked with striking platform preparation. As a whole, in archaeological levels III/4-1, III/4-2 and III/4-3, plain platforms and cortex-covered platforms are the smallest (Fig. 10-7), while all types of prepared platforms (dihedral, polyhedral and faceted) are wider and thicker. In archaeological levels III/4-4, III/4-5 and III/4-6 the predominance in the sizes of prepared butts is slightly diluted due to an increase in the amount of plain platforms. This is most clearly expressed in the material from archaeological level III/4-6; among platforms those with faceted butts are not the biggest. However, in archaeological levels III/4-1, III/4-2, III/4-3, III/4-4 and III/4-5 these platform types are available in sufficient number, and form "cluster" zones in the scatterplott (Fig. 10-7). In level III/4-6 the faceted striking platforms are the least numerous among pieces with prepared striking platforms, and show a "dispersed" concentration in the scatterplott. The last type of distribution of faceted platforms is characteristic for all "bifacial thinning" blanks of sub-unit III/4 (Fig. 10-8).

The faceted platforms prevail among all types of prepared butts, especially in archaeological levels III/4-1, III/4-2, III/4-4 and III/4-5. These indicate an intended manufacture of blades and flakes with frequent elongated proportions, as are characteristic for Levallois-Mousterian industries.

Surface cortex

In sub-unit III/4 a total of 61.77% of blanks have retained some cortex coverage (Table 10-5). Blanks with dorsal cortex include 73.56% of flakes, 16.72% of blades, 8.96% of bifacial thinning flakes, and 0.76% of bifacial thinning blades. In each of these groups of blanks most pieces display only the minimal percentage of cortex coverage, i.e. no more than a quarter of the dorsal surface. With the exception of flakes, there are similar percentages of blanks without cortex and blanks with <25% cortex coverage (Table 10-5). Among all types of blanks a dominance of partly corticated blanks is characteristic. The ratio of corticated to non-corticated flakes lies at 1.55; the same ratio for bifacial thinning flakes is 2.04, and for blades and bifacial thinning blades these ratios are 1.74 and 1.68, respectively. Blanks with more than 50% cortex coverage on their dorsal surface are not numerous, accounting for just 17.46% of the total amount of blanks. The majority of the latter are primary blanks, and make up 9.58% of all blanks. High percentages of blanks with cortex coverage are a characteristic feature of all Crimean Middle Palaeolithic industries based on plaquette raw material exploitation.

Dorsal scar patterns

There is an incredible number of varieties of dorsal scar types and patterns in the sub-unit III/4 assemblages. However, three types of dorsal scar pattern appear to dominate among all kinds of flakes and regular blades, these being the converging, unidirectional, and unidirectional-crossed variations (Table 10-6). Particularly numerous are blanks with a converging scar pattern; these make up about half (44.32%) of all bifacial thinning flakes. The bila-teral, radial and four-directional dorsal scar types are represented by only a few items each. The

	Blank types	III/4-1	III/4-2	III/4-3	III/4-4	III/4-5	III/4-6
Length	flakes including tools	35.81	35.39	32.88	37.22	30.85	33.98
	blades including tools	42.83	42.72	40.66	38.30	47.94	41.52
	blanks (flakes & blades)	35.35	35.07	33.00	34.81	29.94	32.19
	tools	43.45	46.95	38.83	46.85	35.00	42.56
Width	flakes including tools	32.08	29.09	31.05	33.44	31.06	35.63
	blades including tools	17.26	17.86	17.33	17.00	17.68	17.96
	blanks (flakes & blades)	29.09	26.04	26.67	28.75	29.68	33.36
	tools	33.24	31.01	34.96	31.75	27.55	35.59
Thickness	flakes including tools	7.55	6.56	7.15	7.64	6.65	7.23
	blades including tools	5.08	6.38	5.56	6.02	5.91	6.96
	blanks (flakes & blades)	6.88	6.11	6.49	6.73	6.80	6.65
	tools	8.56	8.80	8.13	9.06	5.81	8.91
Platform width	flakes including tools	17.29	17.94	19.34	15.97	15.74	17.41
	blades including tools	10.74	10.42	8.36	9.17	11.73	9.71
	blanks (flakes & blades)	15.74	16.29	17.79	14.75	15.40	17.11
	tools	16.78	17.95	18.13	15.57	14.63	17.33
Platform thickness	flakes including tools	5.10	4.77	5.21	4.76	4.48	4.43
	blades including tools	4.16	3.79	3.67	3.94	3.56	4.35
	blanks (flakes & blades)	4.68	4.39	4.96	4.55	4.35	4.23
	tools	5.97	6.10	5.13	4.94	4.40	5.74

Table 10-4 Kabazi V, sub-unit III/4: average of size of debitage (mm).

four-directional scar pattern is characteristic for regular blades only. Blanks with a radial type of dorsal scar pattern are the most representative among bifacial thinning flakes. Cortex, lateral, bidirectional and crested types of scar patterns are not numerous, but occur in all groups of blanks, with the exception of bifacial thinning blades. The cortex and bidirectional types of scar patterns are the most representative among flakes. The lateral and crested types are mostly characteristic for blades. However, in each group of blanks these types do not exceed 9%. Due to the small number of bifacial thinning blades in sub-unit III/4 it is difficult to evaluate objectively the preferences in relation to dorsal scar pattern types. However, five of eight bifacial thinning blades display converging scar patterns. The unidirectional, unidirectional-crossed and bidirectional-crossed types are recorded for three bifacial thinning blades.

Axes

On-axis blanks are the most common variant at 72.3% (Table 10-7). Among the off-axis blanks the bifacial thinning flakes dominate (64.77%).

Shapes

The most frequent shapes observed for artefacts from sub-unit III/4 are rectangular, crescent and trapezoidal. These make up from 11.46% up to 16.71% of all blanks (Table 10-8). Triangular and irregular types are not numerous, they constituting 9.77% and 6.76%, respectively. No more than 2% of all blanks are leaf shaped, a ratio also observed for trapezoidal elongated and ovoid shaped pieces. However, it should be noted that this above structure is characteristic for "regular" flakes only. Among bifacial thinning flakes the most frequently observed pieces are trapezoidal (25%) or crescent shaped (22.73%) (Table 10-8). All remaining identified shapes prove less significant, although among these the irregular shapes appear more or less important (14.77% of all blanks). The rectangular shape, so frequent among "regular" flakes, is of little significance among bifacial thinning flakes (10.23%). Ovoid and leaf shaped pieces are the least commonly encountered. Most "regular" blades are either rectangular (26.59%) or crescent shaped (20.81%), with other shapes not exceeding 7.5% of

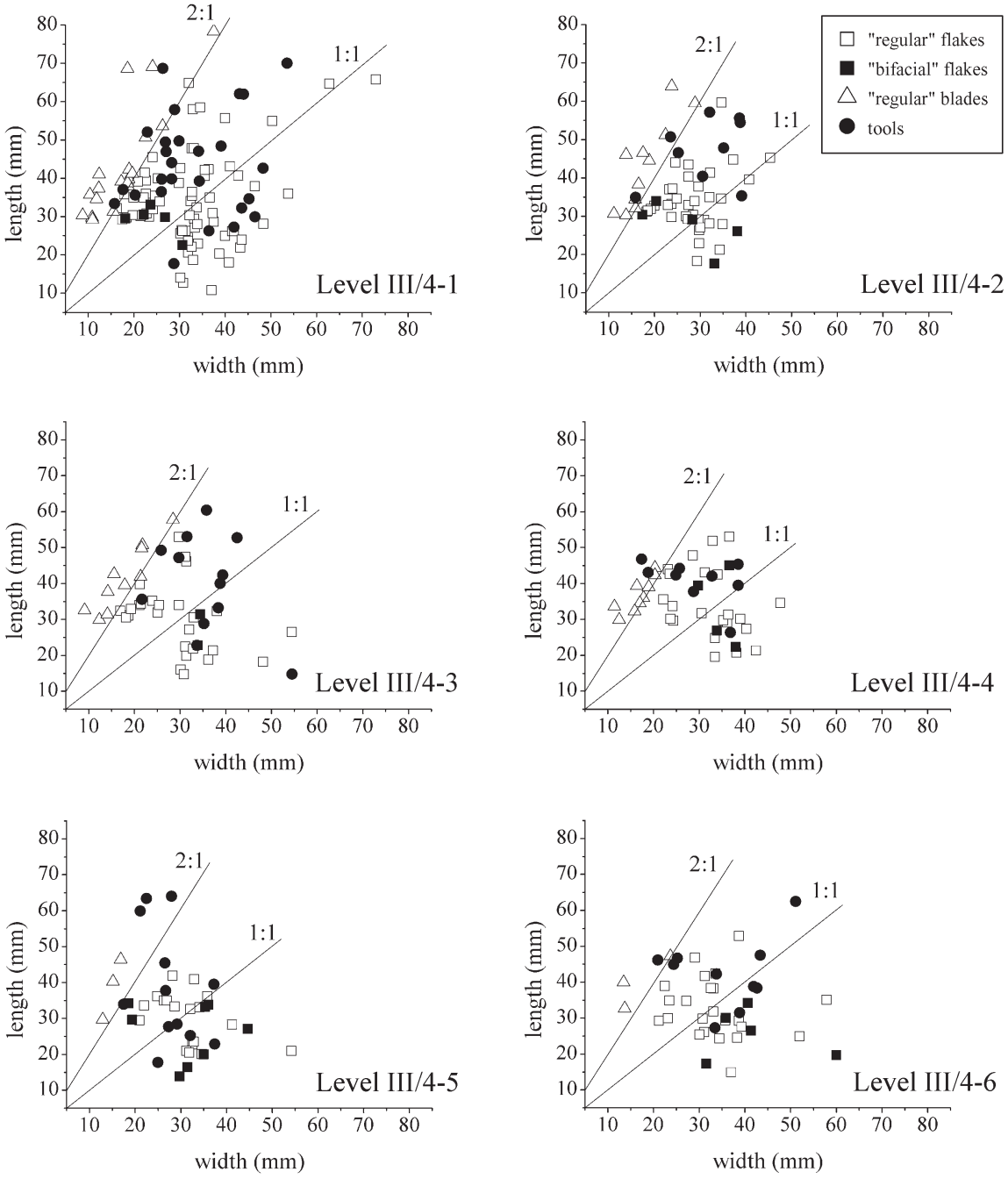

Fig. 10-6 Kabazi V, sub-unit III/4: length/width scatterplot for "regular" and "bifacial thinning" blanks and unifacial tools, by levels.

their total (Table 10-8). Further, the highest percentage of leaf shaped pieces (5.78 %) was found among regular blades. Ovoid and trapezoidal shapes are completely absent. There are only a few trapezoidal elongated shaped pieces. In shape, bifacial thinning blades closely resemble "regular" blades (Table 10-8), but this conclusion remains hypothetical due to the statistical incompleteness of the former.

Lateral profiles

The "general" structure of types of lateral profiles of all blanks coincides with structure for "regular" flakes. Among other blank types a number of differences can be observed (Table 10-9). For the most part, "regular" flakes include blanks with an incurvate medial profile (41.71 %), followed by blanks with twisted (21.11 %), flat (11.68 %), incurvate

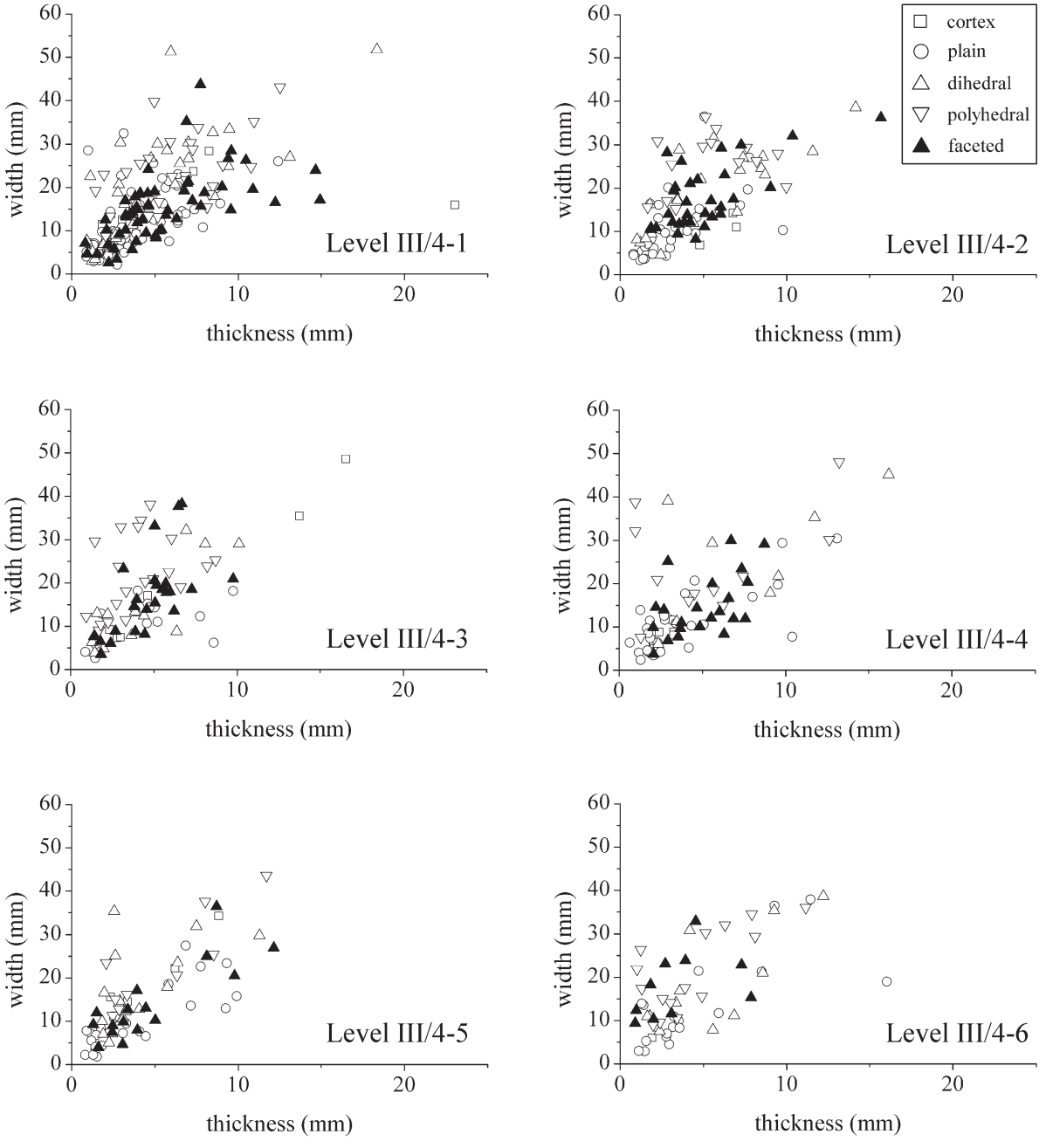

Fig. 10-7 Kabazi V, sub-unit III/4: width/thickness scatterplot for blanks, after platform types and by levels.

distal (9.55%), and convex (5.53%) profiles. It should be noted, however, that pieces with a convex profile are characteristic for "regular" flakes only. Among bifacial thinning flakes, as well as "regular" flakes, the highest ratio of blanks (50%) displays an incurvate medial lateral profile. Bifacial thinning flakes with incurvate distal lateral profile are also numerous and make up 30.68%. Twisted and flat lateral profiles are less representative, at 12.5% and 5.68%, respectively (Table 10-9). Among "regular" blades those with a twisted lateral profile are most numerous; blades of this type make up 53.18%, followed by pieces with incurvate medial profile (31.79%). Poorly represented among flakes are blanks with a flat lateral profile, although this type is well represented among "regular" blades (11.56%). Less than

2 % of blades have an incurvate distal lateral profile. Bifacial thinning blades comprise – practically in equal proportions – blanks with incurvate medial and twisted profiles (Table 10-9).

Distal profiles

The feathering distal profile is the most commonly encountered type of end termination among all blanks from sub-unit III/4 (Table 10-10); in the case of bifacial thinning flakes, this type occurs on 46.59 % of pieces, while among flakes it is found on 30.4 % of artefacts. Blanks with hinged terminations are also numerous, varying from between 16.18 % and 28.41 %, the former value being characteristic for blades. Both flakes and blades show a very low maintenance of blanks with blunt and overpassed end terminations. In total, overpassed and blunt types do not exceed 4 %. Blanks with an overpassed distal profile are rare, not exceeding 1.1 % among "regular" flakes and blades, but 2.27 % among bifacial thinning flakes (Table 10-10).

Cross-sections at midpoint

For flakes and blades the most frequently noted midpoint cross-sections are triangular and trapezoidal. However, it should also be noted that whereas triangular cross-sections dominate among "regular" blanks, "bifacial thinning" blanks display mostly trapezoidal cross-sections (Table 10-11). Triangular cross-sections are more characteristic for "regular" blades (57.23 %), whereas trapezoidal cross-sections are more common among bifacial thinning flakes (42.05 %). Less representative types of midpoint cross-sections for "regular" flakes are convex, lateral steep, polyhedral, and flat types; this observation also applies to bifacial thinning flakes. A distinctive feature of bifacial thinning flakes is a dominance of polyhedral cross-sections over lateral steep cross-sections. Flat midpoint cross-sections are characteristic for flakes only (Table 10-11). Blades are characterised by triangular and trapezoidal midpoint cross-sections, followed in descending order by lateral steep, convex, and polyhedral types (Table 10-11).

Platform preparation

Practically in all archaeological levels of sub-unit III/4 cortex platforms are the most seldomly observed (Table 10-12), that is with the exception of the flake assemblage from level III/4-3 in which cortex platforms make up 18.18 % of all identifiable types, and even prevail above plain and dihedral types. Plain platforms constitute 31.84 % of all identifiable platforms; they dominate exclusively among "bifacial thinning" flakes. As a whole, in all archaeological levels of sub-unit III/4 prepared

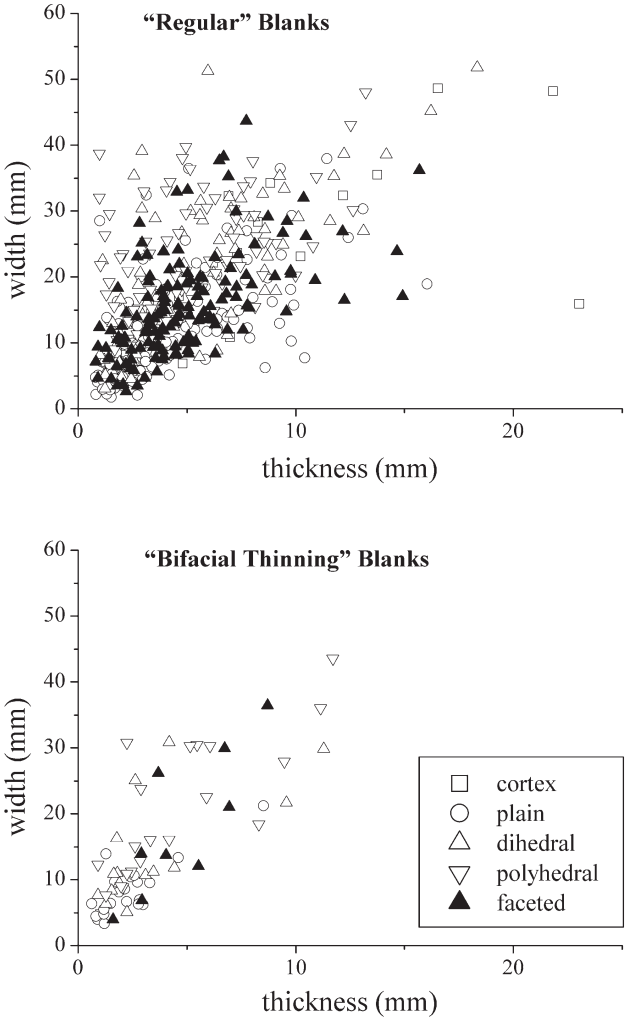

Fig. 10-8 Kabazi V, sub-unit III/4: width/thickness scatterplot for all "regular" and "bifacial thinning" blanks, after platform types.

platforms are the most widespread type (60.8 %). Among "regular" flakes and blades there are various degrees of butt preparation (Table 10-13). For example, "regular" flakes from archaeological levels III/4-5 (Ifs=18.75) and III/4-6 (Ifs=17.77) are characterised by the lowest Ifs indexes, but at the same time have also yielded the highest Ifs index for "regular" blades (62.5 and 100 respectively). Besides in archaeological levels III/4-1 and III/4-5 the blades with facetted platforms prevail above the blades with dihedral and polyhedral butts, making not less than 40 % among the whole blades. Only in the two levels III/4-2 and III/4-3 does the sum of dihedral and polyhedral platforms exceed the quantity of facetted butts. As a whole, in all levels of sub-unit III/4 the Ifs for blades (III/4-1 Ifs= 41.02,

	III/4-1	III/4-1A	III/4-2	III/4-3	III/4-4	III/4-5	III/4-6	Total:	%
Flakes & tools on flake									
0 %	102	1	47	48	36	38	31	303	29.96
1-25 %	75	2	33	32	34	31	24	231	22.85
26-50 %	22	·	20	17	10	14	14	97	9.59
51-75 %	14	2	11	7	7	6	7	54	5.34
76-100 %	24	·	16	8	10	9	9	76	7.52
Total:	**237**	**5**	**127**	**112**	**97**	**98**	**85**	**761**	**75.27**
Bifacial thinning and rejuvenating flakes & tools on bifacial thinning and rejuvenating flake									
0 %	1	·	8	4	3	9	3	28	2.77
1-25 %	4	1	5	3	2	2	3	20	1.98
26-50 %	1	·	4	2	1	·	1	9	0.89
51-75 %	1	·	2	·	1	2	2	8	0.79
76-100 %	2	·	2	·	2	2	3	11	1.09
Total:	**9**	**1**	**21**	**9**	**9**	**15**	**12**	**76**	**7.52**
Blades & tools on blade									
0 %	23	1	15	9	7	5	2	62	6.13
1-25 %	21	1	10	6	11	4	1	54	5.34
26-50 %	9	·	7	3	5	3	2	29	2.87
51-75 %	7	·	·	1	1	2	2	13	1.29
76-100 %	4	·	3	·	1	2	1	11	1.09
Total:	**64**	**2**	**35**	**19**	**25**	**16**	**8**	**169**	**16.72**
Bifacial thinning blades & tools on bifacial thinning blade									
0 %	·	·	·	1	1	1	·	3	0.30
1-25 %	·	·	2	·	·	·	·	2	0.20
26-50 %	·	·	·	·	·	·	·	·	·
51-75 %	·	·	·	·	·	·	·	·	·
Total:	**·**	**·**	**2**	**1**	**1**	**1**	**·**	**5**	**0.49**

Table 10-5 Kabazi V, sub-unit III/4: flakes and blades – percentage of dorsal cortex.

III/4-2 Ifs=40, III/4-3 Ifs=30, III/4-4 Ifs=27.27, III/4-5 Ifs=62.5) are higher than for blades from Kabazi V, III/2 (Ifs=7.69). With exception of level III/4-6 (Ifs=100), these also lie below values observed for Kabazi V, IV/1 (Ifs=64.47). These high Ifs indexes for the majority of levels from sub-unit III/4 suggest the presence of blade production. Blade production most certainly took place in archaeological levels III/4-1, III/4-2 and III/4-5. In each of the archaeological levels III/4-1, III/4-3, III/4-5 and III/4-6 more than 40 % of tools with identifiable striking platforms have faceted platforms (41.93 %, 47.36 %, 44.44 % and 42.85 %, respectively). The lowest ratio of tools with faceted platforms is noted in level III/4-2 (25 %); in level III/4-3 they make up 35.29 % of tools with identifiable platforms.

Platform lipping

A total of 69.73 % of all identifiable blanks have unlipped platforms (Table 10-14), although unlipped platforms prevail among "regular" blanks only, semi-lipped and lipped platforms being less common. The semi-lipped and lipped platforms occur in more or less equal proportions. The sum of semi-lipped and lipped types constitutes 30.27 % of all identifiable platforms. There are no lipped platforms among "regular" blades. On the other hand, the overwhelming majority of "bifacial thinning" flakes and blades are – as to be expected – characterised by lipped platforms.

Platform angles

Whereas 65.97 % of identifiable flakes display

	III/4-1	III/4-1A	III/4-2	III/4-3	III/4-4	III/4-5	III/4-6	Total:	%
Flakes & tools on flake									
Cortex	19	·	14	7	8	4	5	57	5.64
Lateral	14	·	6	5	6	4	4	39	3.86
Bilateral	2	·	1	·	1	2	·	6	0.59
Radial	2	·	3	2	1	2	·	10	0.99
Converging	64	·	40	27	25	34	29	219	21.66
Unidirectional	40	3	28	20	20	16	17	144	14.24
Unidirect.-crossed	40	·	11	17	14	13	8	103	10.19
Bidirectional	22	·	5	17	7	12	4	67	6.63
Bidirect.-crossed	15	1	6	5	5	5	4	41	4.06
Crested	4	1	1	2	5	1	3	17	1.68
Unidentifiable	15	·	12	10	5	5	11	58	5.74
Total:	**237**	**5**	**127**	**112**	**97**	**98**	**85**	**761**	**75.26**
Bifacial thinning and rejuvenating flakes & tools on bifacial thinning and rejuvenating flake									
Cortex	1	·	1	·	·	·	1	3	0.30
Lateral	·	·	1	1	·	·	·	2	0.20
Bilateral	·	·	·	·	1	·	·	1	0.10
Radial	·	·	1	2		1	1	5	0.49
Converging	5	1	11	3	3	6	2	31	3.07
Unidirectional	3	·	1	·	1	2	2	9	0.89
Unidirect.-crossed	·	·	6	·	1	4	3	14	1.38
Bidirectional	·	·	·	1	2	1	2	6	0.59
Bidirect.-crossed	·	·	·	2	1	1	·	4	0.40
Crested	·	·	·	·	·	·	1	1	0.10
Total:	**9**	**1**	**21**	**9**	**9**	**15**	**12**	**76**	**7.52**
Blades & tools on blade									
Cortex	3	·	2	·	·	1	1	7	0.69
Lateral	2	·	4	1	1	1	1	10	0.99
Bilateral	·	1	1	·	·	·	·	2	0.20
Radial	·	·	·	1	·	·	·	1	0.10
Converging	20	1	12	5	8	9	4	59	5.84
Unidirectional	16	·	4	5	12	2	2	41	4.06
Unidirect.-crossed	10	·	2	2	2	1	·	17	1.68
Bidirectional	4	·	4	1	·	·	·	9	0.89
Bidirect.-crossed	4	·	1	3	2	2	·	12	1.19
Fourdirectional	1	·	·	·	·	·	·	1	0.10
Crested	2	·	5	1	·	·	·	8	0.79
Unidentifiable	2	·	·	·	·	·	·	2	0.20
Total:	**64**	**2**	**35**	**19**	**25**	**16**	**8**	**169**	**16.72**
Bifacial thinning blades & tools on bifacial thinning blade									
Converging	·	·	1	·	1	1	·	3	0.30
Unidirectional	·	·	·	1	·	·	·	1	0.10
Unidirect.-crossed	·	·	1	·	·	·	·	1	0.10
Bidirect.-crossed	·	·	·	·	·	·	·	·	·
Total:	**·**	**·**	**2**	**1**	**1**	**1**	**·**	**5**	**0.49**

Table 10-6 Kabazi V, sub-unit III/4: flakes and blades – dorsal scar patterns.

	III/4-1	III/4-1A	III/4-2	III/4-3	III/4-4	III/4-5	III/4-6	Total:	%
Flakes & tools on flake									
On-axis	115	4	65	53	44	54	34	369	36.50
Off-axis	68	1	33	36	32	25	28	223	22.06
Unidentifiable	54	·	29	23	21	19	23	169	16.72
Total:	**237**	**5**	**127**	**112**	**97**	**98**	**85**	**761**	**75.27**
Bifacial thinning and rejuvenating flakes & tools on bifacial thinning and rejuvenating flake									
On-axis	4	·	10	1	3	3	3	24	2.37
Off-axis	5	1	10	7	6	11	8	48	4.75
Unidentifiable	·	·	1	1	·	1	1	4	0.40
Total:	**9**	**1**	**21**	**9**	**9**	**15**	**12**	**76**	**7.52**
Blades & tools on blade									
On-axis	64	1	34	18	25	16	8	166	16.42
Off-axis	·	1	1	1	·	·	·	3	0.30
Total:	**64**	**2**	**35**	**19**	**25**	**16**	**8**	**169**	**16.72**
Bifacial thinning blades & tools on bifacial thinning blade									
On-axis	·	·	2	1	1	1	·	5	0.49
Total:	**·**	**·**	**2**	**1**	**1**	**1**	**·**	**5**	**0.49**

Table 10-7 Kabazi V, sub-unit III/4: flakes and blades – axes.

obtuse platforms, a right angle platform is found on 34.03% of flakes (Table 10-15). More than half of blades (52.08%) display a right angle platform or something close to it. In archaeological levels III/4-1 and III/4-3 flakes with right angle and obtuse platforms occur in roughly equal numbers, while in archaeological levels III/4-5 and III/4-6 the latter are twice as frequently observed. A common feature of "bifacial thinning" flakes and blades are the dominant role of obtuse platforms, one of the main attributes of this kind of blank.

Tools

Tools were found in all archaeological levels of sub-unit III/4, but level III/4-1A (Table 10-1). A total of 77.78% of tools were made on flakes (Table 10-16); blades served as blanks for 11.49% of tools, with only 0.77% of tools made on chips. Tools on "bifacial thinning" blanks make up 1.91% of the total, and in 1.92% of the cases tools were made on natural flakes. One notched tool was made on an unidirectional residual core (level III/4-4). In sub-unit III/4 the sizes of unifacial tools correspond with the sizes of the largest unretouched blanks (Fig. 10-6). The largest unretouched blanks are often characterised by faceted platforms (Fig. 10-9). In layers III/4-1, III/4-3, III/4-5 and III/4-6 tools on blanks with faceted platforms account for more than 40%. Tools on blanks with maximum dimension below 3 cm are not numerous and include just a few items from levels III/4-4 and III/4-5 (Table 10-17). On average, unifacial tools in all levels of sub-unit III/4 are characterised by a prevalence of length over width (Table 10-4). These unifacial tools proportions are most obvious in levels III/4-1, III/4-2, III/4-3 and III/4-5 (Fig. 10-6). For bifacial tools the average values are as follows: length – 44.52 mm, and width – 38.39 mm. The one complete bifacial tool from layer III/4-3 is 39.19 mm long, 32.03 mm wide, and 15.93 mm thick.

There are ten classes of tools: points, scrapers, denticulates, notches, bifacial points, bifacial scrapers, retouched pieces, thinned pieces, burins, and unidentifiable retouched fragments. The most numerous are scrapers (74.4% in the essential count) (Table 10-17). Whereas points comprise 12% of tools in the essential count, other types of unifacial tools do not exceed values of 4% (Table 10-17). Bifacial tools are represented by points and scrapers, typical for the Crimean Micoquian; in sum, this accounts for just 2.4% of all identifiable tools, not including retouched and thinned pieces.

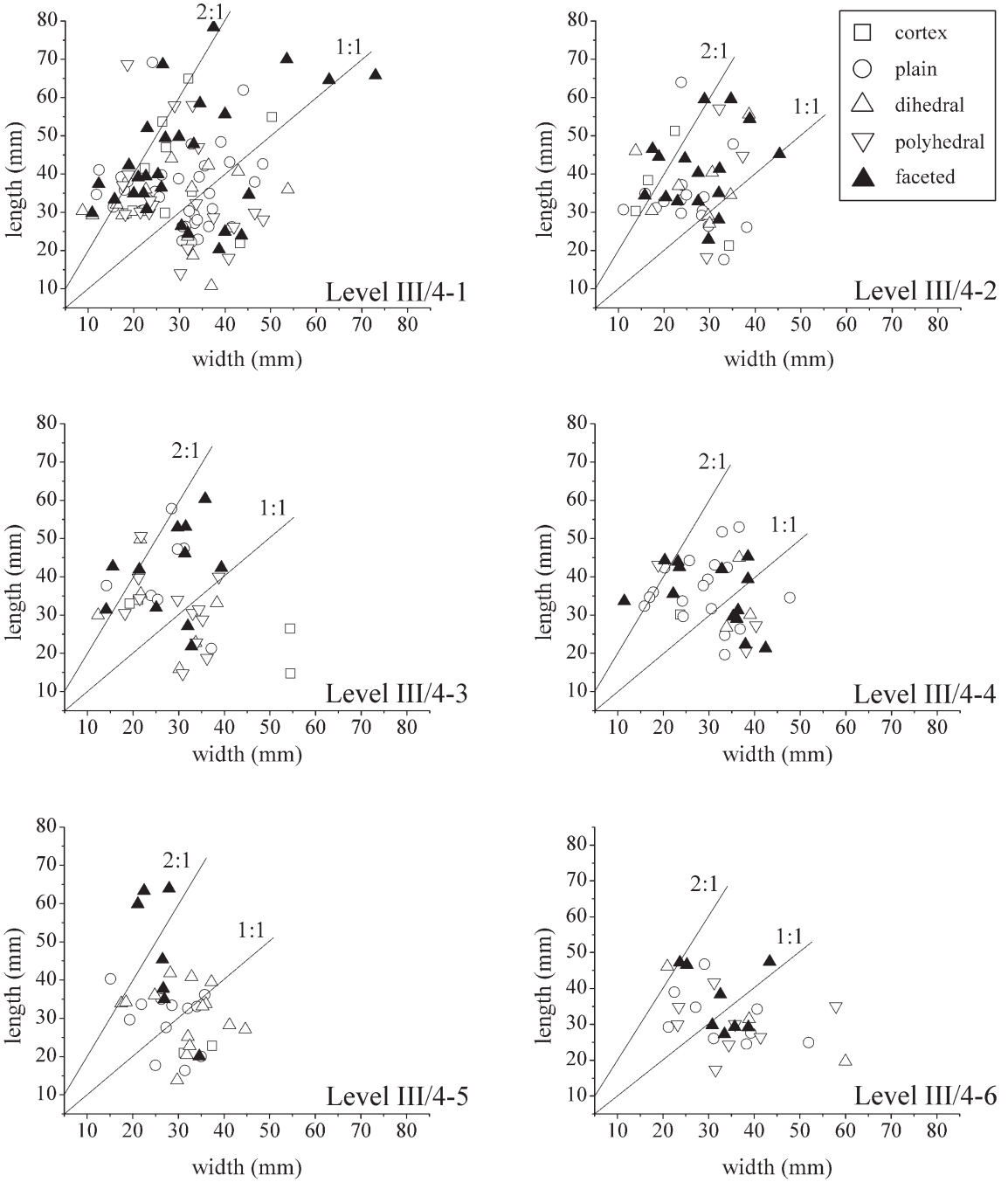

Fig. 10-9 Kabazi V, sub-unit III/4: length/width scatterplot for blanks, after platform types.

	III/4-1	III/4-1A	III/4-2	III/4-3	III/4-4	III/4-5	III/4-6	Total:	%
Flakes & tools on flake									
Rectangular	45	1	15	13	11	17	11	113	11.18
Triangular	27	·	16	13	11	5	8	80	7.91
Trapezoidal	27	1	12	11	12	16	13	92	9.10
Trapezoidal elongated	4	·	2	3	3	3	·	15	1.48
Ovoid	7	·	5	3	·	2	1	18	1.78
Leaf shaped	5	·	2	3	·	1	·	11	1.09
Crescent	23	1	18	6	16	16	15	95	9.40
Irregular	9	2	4	12	8	5	6	46	4.55
Unidentifiable	90	·	53	48	36	33	31	291	28.78
Total:	**237**	**5**	**127**	**112**	**97**	**98**	**85**	**761**	**75.27**
Bifacial thinning and rejuvenating flakes & tools on bifacial thinning and rejuvenating flake									
Rectangular	1	·	1	1	2	2	1	8	0.79
Triangular	3	·	4	1	1	·	·	9	0.89
Trapezoidal	1	·	1	3	4	5	2	16	1.58
Trapezoidal elongated	·	·	1	·	·	·	1	2	0.20
Ovoid	·	·	1	·	·	·	·	1	0.10
Leaf shaped	·	·	1	·	·	·	·	1	0.10
Crescent	2	·	4	2	1	6	4	19	1.88
Irregular	·	·	5	1	1	·	2	9	0.89
Unidentifiable	2	1	3	1	·	2	2	11	1.09
Total:	**9**	**1**	**21**	**9**	**9**	**15**	**12**	**76**	**7.52**
Blades & tools on blade									
Rectangular	17	·	5	3	10	6	3	44	4.35
Triangular	4	1	2	2	1	2	1	13	1.29
Trapezoidal elongated	·	·	1	·	·	·	·	1	0.10
Leaf shaped	6	1	1	·	1	1	·	10	0.99
Crescent	15	·	8	4	2	2	3	34	3.36
Irregular	2	·	2	·	3	1	·	8	0.79
Unidentifiable	20	·	16	10	8	4	1	59	5.84
Total:	**64**	**2**	**35**	**19**	**25**	**16**	**8**	**169**	**16.72**
Bifacial thinning blades & tools on bifacial thinning blade									
Rectangular	·	·	1	·	·	1	·	2	0.20
Crescent	·	·	1	1	1	·	·	3	0.30
Irregular	·	·	·	·	·	·	·	·	·
Total:	**·**	**·**	**2**	**1**	**1**	**1**	**·**	**5**	**0.49**

Table 10-8 Kabazi V, sub-unit III/4: flakes and blades – shapes.

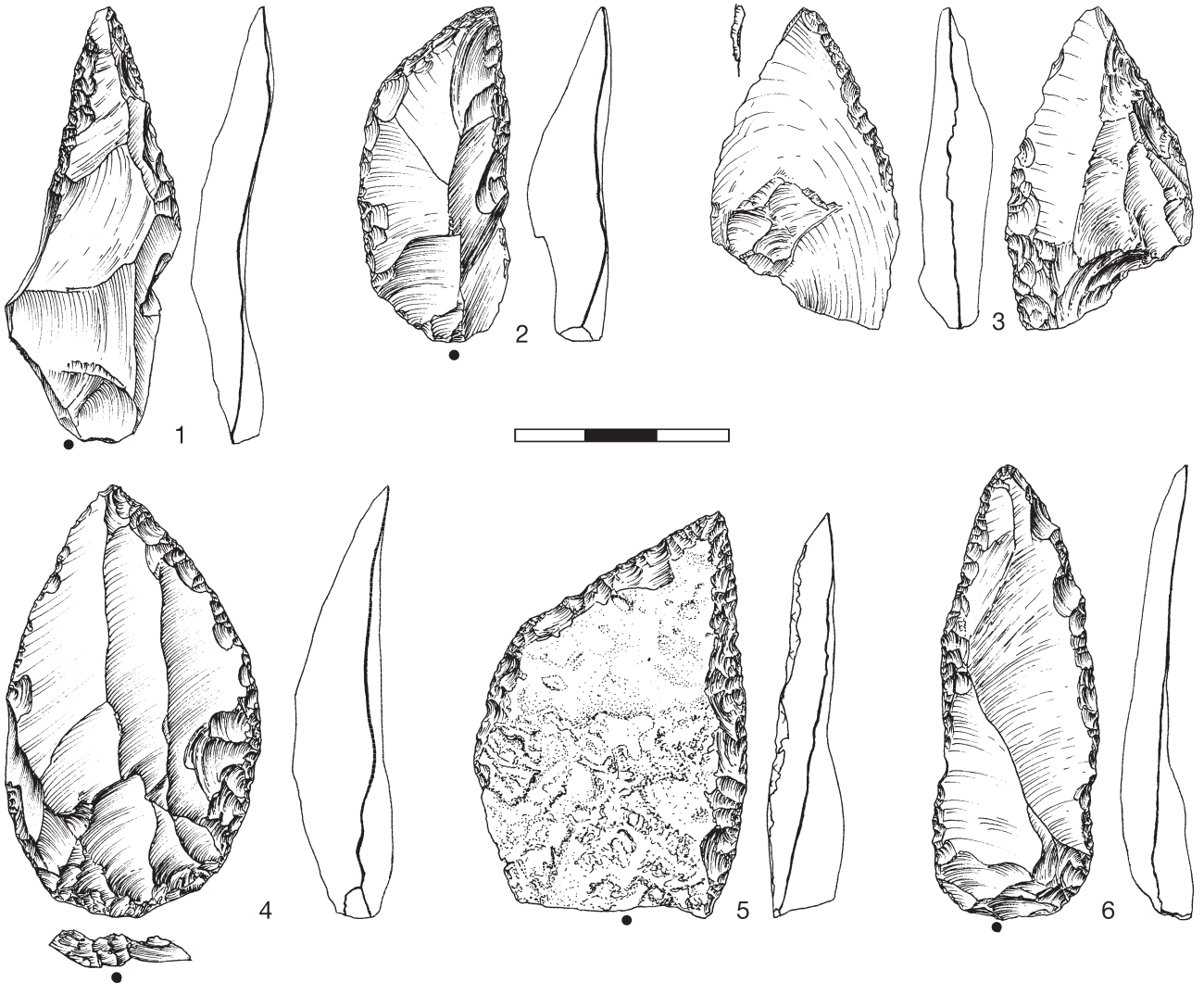

Fig. 10-10 Kabazi V, sub-unit III/4, levels III/4-2 (3, 5), III/4-3 (4, 7), III/4-5 (1, 6), III/4-6 (2). Points: 1 – distal; 2, 5 – semi-crescent; 3 – sub-leaf alternative; 4 – sub-leaf; 6 – sub-triangular elongated; cores: 7 – orthogonal.

Points

Points were found in five of the seven levels of sub-unit III/4 (Table 10-17), although about half of all points (46.67 %) stem from level III/4-3. Points were made on both flakes (13 items) and blades (2 items). Those blanks chosen for point production are relatively large, ranging from 45 to 63.3 mm in length, and were removed mainly on-axis. Off-axis blanks were used for only 3 points, while 8 points were made on on-axis blanks; the axes of four further pieces could not be identified. The points from sub-unit III/4 comprise approximately equal ratios of semi -crescent (Fig. 10-10, *2, 5*) and sub-leaf (Fig. 10-10, *3, 4*) pieces. Lateral, distal (Fig. 10-10, *1*), sub-triangular elongated (Fig. 10-10, *6*) and semi-trapezoidal points are also recorded with one point each. Whereas three points have an alternative retouch, all others display a dorsal retouch. Points were produced using combinations of non-invasive, scalar, flat and/or semi-steep retouch. In sum, the point assemblage comprises artefacts and technological elements which are characteristic of both the WCM (distal and lateral points on blades, the absence of invasive retouch) and Micoquian (semi-crescent and semi-trapezoidal shapes) traditions.

Scrapers

Scrapers were found in six of the seven levels of sub-unit III/4 (Table 10-17), with the highest number

	III/4-1	III/4-1A	III/4-2	III/4-3	III/4-4	III/4-5	III/4-6	Total:	%
Flakes & tools on flake									
Flat	36	·	13	12	12	10	9	92	9.10
Incurvate medial	107	4	45	51	40	40	27	314	31.06
Incurvate distal	24	·	11	11	9	6	14	75	7.42
Twisted	36	1	27	14	26	31	20	155	15.33
Convex	11	·	9	8	5	3	7	43	4.25
Unidentifiable	23	·	22	16	5	8	8	82	8.11
Total:	**237**	**5**	**127**	**112**	**97**	**98**	**85**	**761**	**75.27**
Bifacial thinning and rejuvenating flakes & tools on bifacial thinning and rejuvenating flake									
Flat	·	·	2	1	·	1	·	4	0.40
Incurvate medial	6	1	8	3	5	8	7	38	3.76
Incurvate distal	2	·	6	4	2	5	3	22	2.18
Twisted	1	·	5	·	2	1	2	11	1.09
Unidentifiable	·	·	·	1	·	·	·	1	0.10
Total:	**9**	**1**	**21**	**9**	**9**	**15**	**12**	**76**	**7.52**
Blades & tools on blade									
Flat	10	·	6	·	3	1	·	20	1.98
Incurvate medial	16	·	10	10	9	7	1	53	5.24
Incurvate distal	1	·	·	1	·	·	1	3	0.30
Twisted	35	2	19	7	13	8	6	90	8.90
Unidentifiable	2	·	·	1	·	·	·	3	0.30
Total:	**64**	**2**	**35**	**19**	**25**	**16**	**8**	**169**	**16.72**
Bifacial thinning blades & tools on bifacial thinning blade									
Incurvate medial	·	·	1	·	1	·	·	2	0.20
Twisted	·	·	1	1	·	1	·	3	0.30
Total:	**·**	**·**	**2**	**1**	**1**	**1**	**·**	**5**	**0.49**

Table 10-9 Kabazi V, sub-unit III/4: flakes and blades – lateral profiles.

recovered from level III/4-1, and the lowest from level III/4-6. Scrapers have been subdivided into 44 types, assigned to four basic morphological groups: transverse and diagonal (N=14), simple (N=41), double (N=13), and convergent (N=25). A total of 59.14 % of scrapers have one retouched edge, 13.98 % are bilateral scrapers, and 26,88 % are converging scrapers. In 87.1 % of cases, scrapers were made on flakes; only 10.75 % were made on blades, and just 2.15 % on natural flakes. On-axis blanks were preferred, and account for 74.07 % of all identifiable blanks. There are 35 unbroken scrapers, twenty of which are larger than 4 cm. Scrapers were produced using different combinations of scalar, flat and/or semi-steep, and sometime invasive, retouch. Ventral thinning was observed on 16.13 % of scrapers.

Transverse and diagonal scrapers

Transverse and diagonal scrapers were found in five of the seven levels of sub-unit III/4 (Table 10-17). Most characteristic for transverse scrapers are tools with a straight working edge. Diagonal scrapers are represented in more or less equal ratios by tools with convex and concave working edges. Transverse scrapers are subdivided into the following types: transverse-straight, transverse-convex, transverse-convex, thinned base, and transverse-concave. On the other hand, diagonal scrapers are represented by just two types of scrapers: diagonal-convex (Fig. 10-11, *2*) and diagonal-concave (Fig. 10-11, *1*). All transverse and diagonal scrapers were produced on flakes. Of 12 identifiable blanks 11 were made on off-axis flakes.

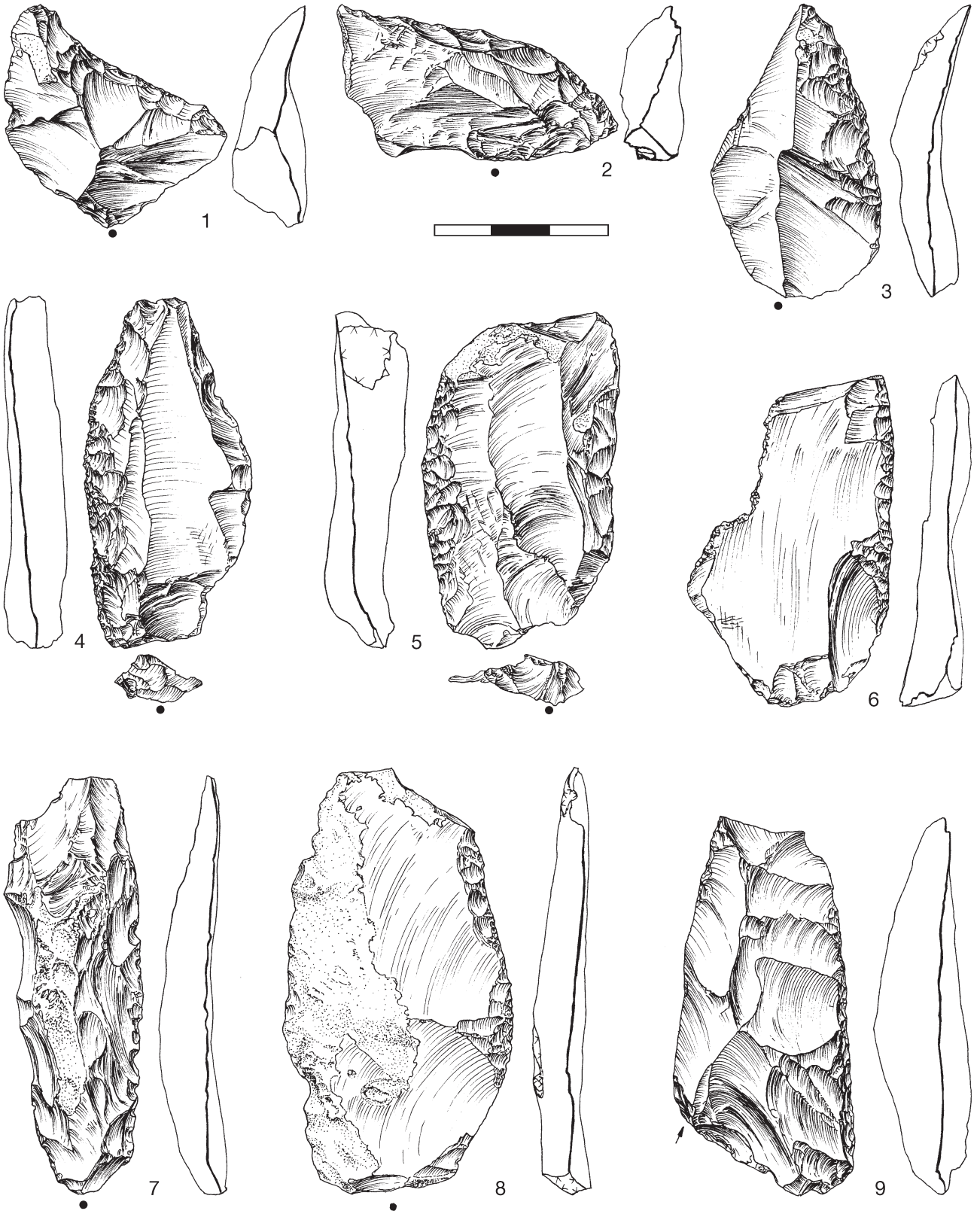

Fig. 10-11 Kabazi V, sub-unit III/4, levels III/4-1 (4, 6, 7, 8), III/4-3 (1, 3, 5), III/4-4 (2). Scrapers: 1 – diagonal concave; 2 – diagonal convex; 3, 4, 5, 7, 8 – simple convex; 6, 9 – simple straight.

	III/4-1	III/4-1A	III/4-2	III/4-3	III/4-4	III/4-5	III/4-6	Total:	%
Flakes & tools on flake									
Feathering	79	2	36	31	31	32	21	242	22.72
Hinged	64	3	29	29	22	26	24	213	20.00
Overpassed	4	·	·	1	2	·	1	9	0.85
Blunt	10	·	7	2	4	3	2	28	2.63
Retouched	20	·	15	17	14	9	14	90	8.45
Missing	60	·	40	32	24	28	23	214	20.09
Total:	**237**	**5**	**127**	**112**	**97**	**98**	**85**	**796**	**74.74**
Bifacial thinning and rejuvenating flakes & tools on bifacial thinning and rejuvenating flake									
Feathering	5	·	10	3	6	8	5	37	3.66
Hinged	2	·	3	2	2	4	2	15	1.48
Overpassed	·	·	·	1	·	·	1	2	0.20
Blunt	·	·	1	1	·	·	·	2	0.20
Retouched	·	·	·	·	·	1	1	2	0.20
Missing	2	1	7	2	1	2	3	18	1.78
Total:	**9**	**1**	**21**	**9**	**9**	**15**	**12**	**76**	**7.52**
Blades & tools on blade									
Feathering	25	1	11	8	11	5	2	63	6.23
Hinged	7	·	5	3	5	4	2	26	2.57
Overpassed	1	·	1	·	·	·	·	2	0.20
Blunt	1	·	3	1	1	·	1	7	0.69
Retouched	2	·	1	·	·	2	1	6	0.59
Missing	28	1	14	7	8	5	2	65	6.44
Total:	**64**	**2**	**35**	**19**	**25**	**16**	**8**	**169**	**16.72**
Bifacial thinning blades & tools on bifacial thinning blade									
Feathering	·	·	·	1	·	1	·	2	0.20
Hinged	·	·	1	·	·	·	·	1	0.10
Missing	·	·	1	·	1	·	·	2	0.20
Total:	**·**	**·**	**2**	**1**	**1**	**1**	**·**	**5**	**0.49**

Table 10-10 Kabazi V, sub-unit III/4: flakes and blades – distal profiles.

Simple scrapers

Simple scrapers were found in six of the seven levels from sub-unit III/4 (Table 10-17). These scrapers are most numerous in levels III/4-1 and III/4-5. Deficits of such scrapers are observed in levels III/4-4 and III/4-6. In accordance with the shape of their working edge, simple scrapers are subdivided into different types. There are pieces with straight working edges (N=9) (Fig. 10-9, *6, 9*), with convex edges (N=28) (Fig. 10-11, *3, 4, 5, 7, 8*), with concave edges (N=3), and with wavy edges (N=1). Most scrapers display a dorsal retouch; only one simple convex scraper from level III/4-3 has a ventral retouch (Table 10-17). Ventral thinning is not characteristic among simple scrapers, with only four tools (all convex scrapers) showing signs of this feature; one piece was bi-terminally thinned, two items display a thinned base, and one scraper has a truncated-faceted distal end (Table 10-17). Two backed (Fig. 10-12, *1, 2, 5*) and

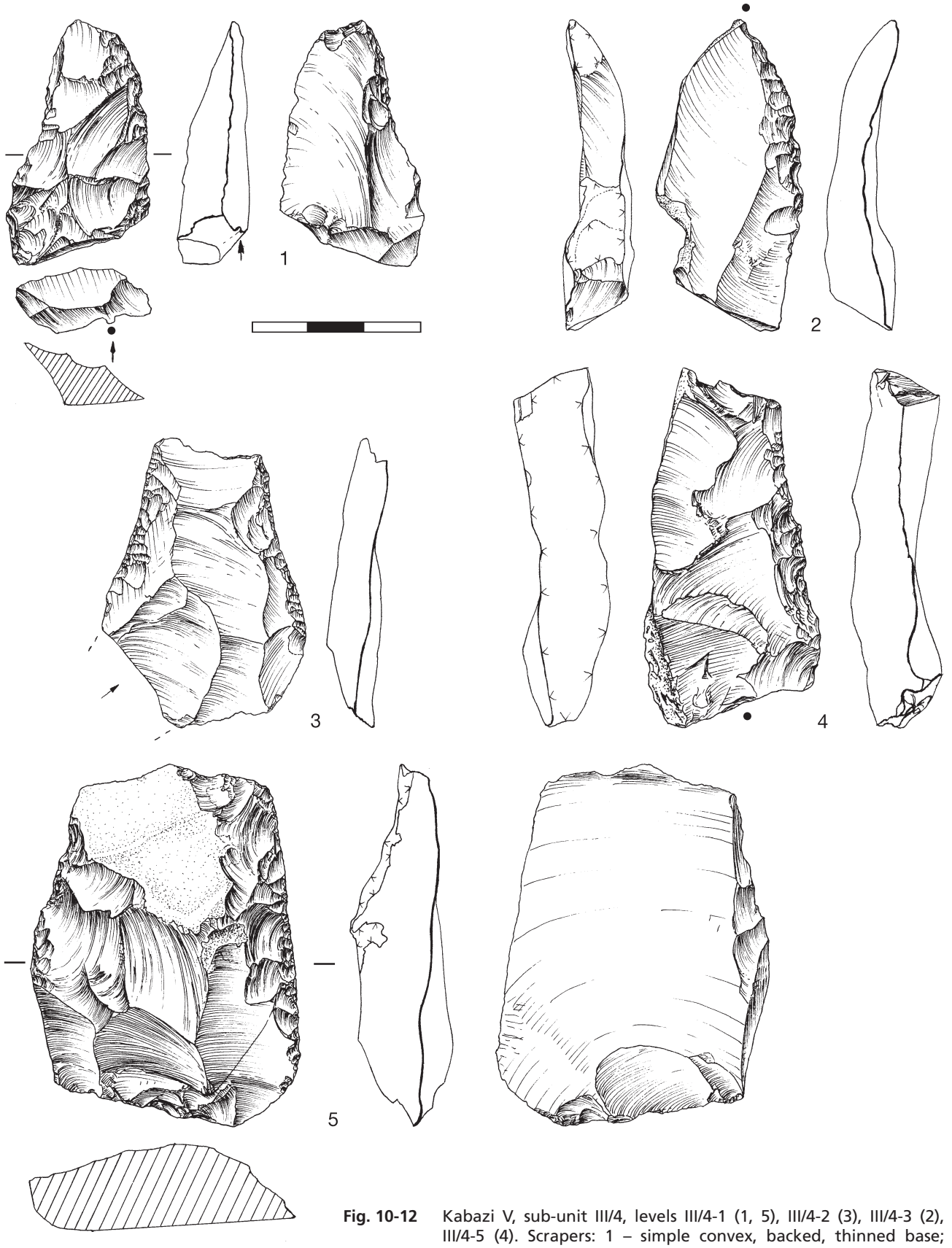

Fig. 10-12 Kabazi V, sub-unit III/4, levels III/4-1 (1, 5), III/4-2 (3), III/4-3 (2), III/4-5 (4). Scrapers: 1 – simple convex, backed, thinned base; 2 – simple convex, backed; 3 – double con-cave; 4 – simple concave, naturally backed; 5 – simple straight, backed, thinned base.

	III/4-1	III/4-1A	III/4-2	III/4-3	III/4-4	III/4-5	III/4-6	Total:	%
Flakes & tools on flake									
Flat	1	·	1	2	2	4	·	10	0.99
Triangular	73	2	47	38	33	47	28	268	26.51
Lateral steep	22	·	16	6	8	4	9	65	6.43
Trapezoidal	82	3	27	30	33	24	24	223	22.06
Polyhedral	8	·	2	3	1	2	7	23	2.27
Convex	18	·	12	9	12	7	4	62	6.13
Unidentifiable	33	·	22	24	8	10	13	110	10.88
Total:	**237**	**5**	**127**	**112**	**97**	**98**	**85**	**761**	**75.27**
Bifacial thinning and rejuvenating flakes & tools on bifacial thinning and rejuvenating flake									
Flat	·	·	·	·	·	·	·	·	·
Triangular	4	·	12	4	1	6	2	29	2.87
Lateral steep	·	·	·	2	·	·	·	2	0.20
Trapezoidal	3	·	5	3	6	6	6	29	2.87
Polyhedral	·	1	1	·	1	1	2	6	0.59
Convex	2	·	2	·	1	2	2	9	0.89
Unidentifiable	·	·	1	·	·	·	·	1	0.10
Total:	**9**	**1**	**21**	**9**	**9**	**15**	**12**	**76**	**7.52**
Blades & tools on blade									
Triangular	36	1	21	9	15	10	4	96	9.50
Lateral steep	6	·	4	1	·	1	·	12	1.19
Trapezoidal	19	1	8	8	9	4	3	52	5.14
Polyhedral	2	·	·	·	·	·	·	2	0.20
Convex	1	·	2	·	1	1	1	6	0.59
Unidentifiable	·	·	·	1	·	·	·	1	0.10
Total:	**64**	**2**	**35**	**19**	**25**	**16**	**8**	**169**	**16.72**
Bifacial thinning blades & tools on bifacial thinning blade									
Triangular	·	·	·	·	1	·	·	1	0.10
Lateral steep	·	·	·	1	·	·	·	1	0.10
Trapezoidal	·	·	2	·	·	1	·	3	0.30
Total:	**·**	**·**	**2**	**1**	**1**	**1**	**·**	**5**	**0.49**

Table 10-11 Kabazi V, sub-unit III/4: flakes and blades – cross-sections.

four naturally backed (Fig. 10-12, *4*) simple scrapers were recovered from levels III/4-1, III/4-3 and III/4-5.

Whereas 85.37% of simple scrapers were made on flakes, 12.2% were made on blades, and 2.44% on natural flakes. Seven scrapers were made on off-axis blanks, the rest on on-axis blanks. Simple scrapers are, on average, 51.57 mm long and 34.43 mm wide.

Double scrapers

Double scrapers were discovered in six levels (Table 10-17), the most common type being the double-convex scraper (N=4). Further, there are two examples of double-convex distally thinned scrapers (Fig. 10-13, *1, 4*). All other types of double scrapers are

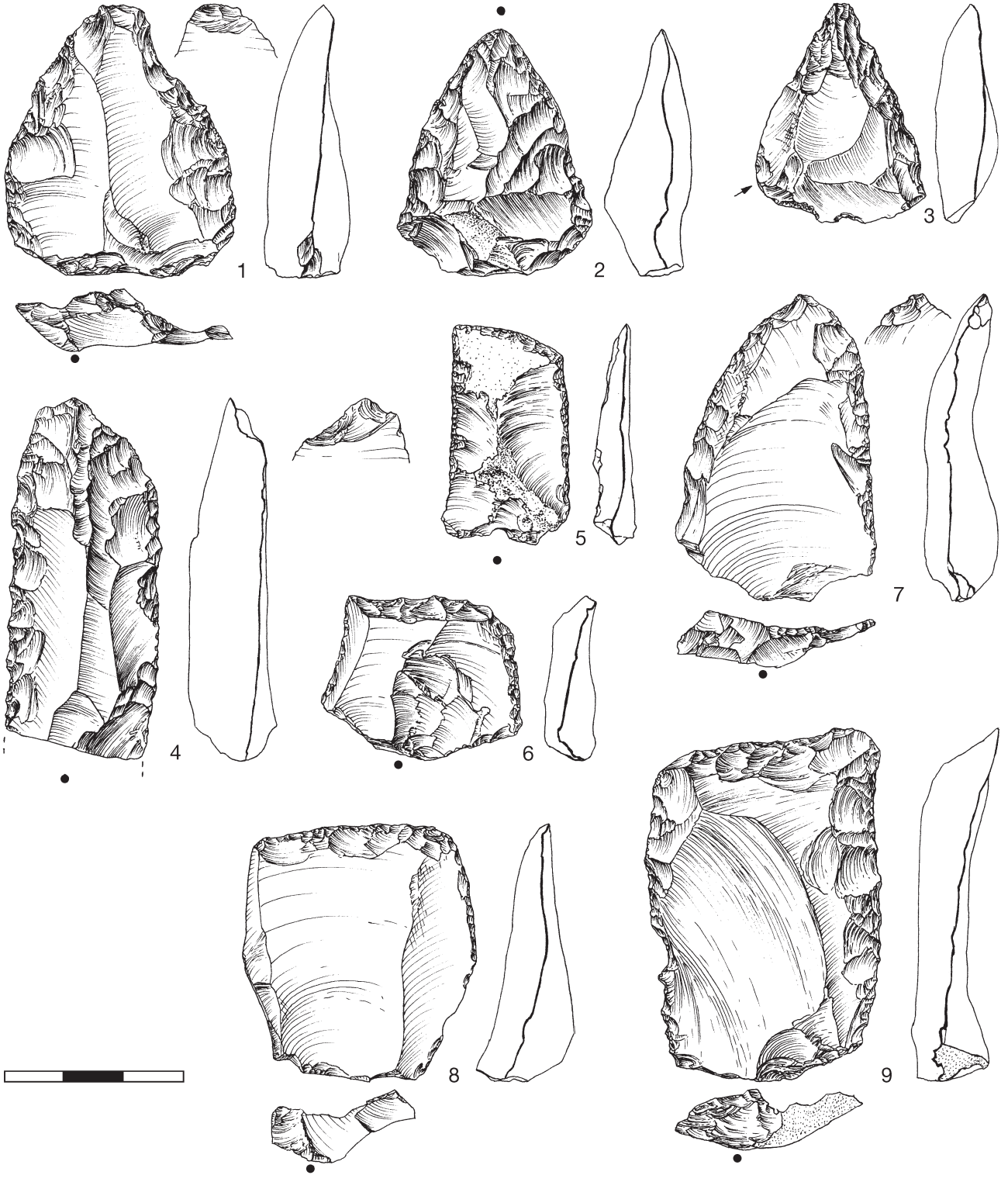

Fig. 10-13 Kabazi V, sub-unit III/4, levels III/4-1 (3, 5, 7), III/4-2 (9), III/4-3 (8), III/4-4 (1), III/4-6 (2, 4, 6). Scrapers: 1, 4 – double convex, terminally thinned; 2, 3 – semi-leaf; 5, 9 – sub-rectangular; 6, 8 – semi-rectangular; 7 – semi-leaf, terminally thinned.

	III/4-1	III/4-1A	III/4-2	III/4-3	III/4-4	III/4-5	III/4-6	Total:	%
Flakes & tools on flake									
Cortex	12	·	2	12	3	5	2	36	3.56
Plain	50	·	16	11	25	19	15	136	13.45
Dihedral	24	2	14	8	6	10	8	72	7.12
Polyhedral	23	·	10	14	8	5	12	72	7.12
Facetted	38	2	19	21	16	9	8	113	11.18
Crushed	18	·	10	9	4	15	7	63	6.23
Missing by retouch	3	·	3	1	1	2	6	16	1.58
Missing	69	1	53	36	34	33	27	253	25.02
Total:	**237**	**5**	**127**	**112**	**97**	**98**	**85**	**761**	**75.27**
Bifacial thinning and rejuvenating flakes & tools on bifacial thinning and rejuvenating flake									
Cortex	1	·	·	·	·	·	·	1	0.10
Plain	4	1	9	·	3	4	4	25	2.47
Dihedral	1	·	5	1	2	3	3	15	1.48
Polyhedral	2	·	3	5	2	5	3	20	1.98
Facetted	1	·	4	·	2	3	1	11	1.09
Crushed	·	·	·	1	·	·	·	1	0.10
Missing	·	·	·	2	·	·	1	3	0.30
Total:	**9**	**1**	**21**	**9**	**9**	**15**	**12**	**76**	**7.52**
Blades & tools on blade									
Cortex	1	·	3	·	2	·	·	6	0.59
Plain	11	1	7	3	5	1	·	28	2.77
Dihedral	7	·	1	3	·	2	·	13	1.29
Polyhedral	4	·	·	1	1	·	·	6	0.59
Facetted	16	·	7	3	3	5	1	35	3.46
Crushed	6	1	1	3	7	2	2	22	2.18
Missing by retouch	·	·	·	1	·	·	·	1	0.10
Missing	19	·	16	5	7	6	5	58	5.74
Total:	**64**	**2**	**35**	**19**	**25**	**16**	**8**	**169**	**16.72**
Bifacial thinning blades & tools on bifacial thinning blade									
Plain	·	·	1	·	·	·	·	1	0.10
Dihedral	·	·	·	1	·	1	·	2	0.20
Polyhedral	·	·	·	·	·	·	·	·	0.00
Facetted	·	·	1	·	1	·	·	2	0.20
Total:	**·**	**·**	**2**	**1**	**1**	**1**	**·**	**5**	**0.49**

Table 10-12 Kabazi V, sub-unit III/4: flakes and blades – platform types.

		III/4-1	III/4-2	III/4-3	III/4-4	III/4-5	III/4-6
Regular flakes	Ifs	25.85	28.05	31.81	27.58	18.75	17.77
	Ifl	57.82	67.07	65.15	51.72	50.00	62.22
Regular blades	Ifs	41.02	40.00	30.00	27.27	62.50	100.00
	Ifl	69.23	45.00	70.00	36.36	87.50	100.00

Table 10-13 Kabazi V, sub-unit III/4: faceting indexes for regular flakes and blades.

	III/4-1	III/4-1A	III/4-2	III/4-3	III/4-4	III/4-5	III/4-6	Total:	%
Flakes & tools on flake									
Unlipped	138	2	46	54	41	37	35	353	34.92
Semi-lipped	8	1	15	8	15	11	9	67	6.63
Lipped	1	1	·	2	1	·	·	5	0.49
Unknown	90	1	66	48	40	50	41	336	33.23
Total:	**237**	**5**	**127**	**112**	**97**	**98**	**85**	**761**	**75.27**
Bifacial thinning and rejuvenating flakes & tools on bifacial thinning and rejuvenating flake									
Semi-lipped	·	·	2	·	·	3	·	5	0.49
Lipped	9	1	19	6	9	12	11	67	6.63
Unknown	·	·	·	3	·	·	1	4	0.40
Total:	**9**	**1**	**21**	**9**	**9**	**15**	**12**	**76**	**7.52**
Blades & tools on blade									
Unlipped	31	·	18	7	10	8	1	75	7.42
Semi-lipped	7	1	·	3	1	·	·	12	1.19
Unknown	26	1	17	9	14	8	7	82	8.11
Total:	**64**	**2**	**35**	**19**	**25**	**16**	**8**	**169**	**16.72**
Bifacial thinning blades & tools on bifacial thinning blade									
Lipped	·	·	2	1	1	1	·	5	0.49
Total:	**·**	**·**	**2**	**1**	**1**	**1**	**·**	**5**	**0.75**

Table 10-14 Kabazi V, sub-unit III/4: flakes and blades – platform lipping.

represented by one example each in the sub-unit III/4 assemblage: double-straight; double-convex, distally truncated-faceted; convex-wavy; convex-wavy, distally truncated-faceted; convex-concave, bi-terminally thinned; double-concave (Fig. 10-12, *3*), and double-wavy. With the exception of one double convex-wavy tool which is alternatively retouched, all other double-edge scrapers are characterised by dorsal retouch. Three of the 13 double scrapers have ventral thinning: two distally thinned pieces and one bi-terminally thinned piece. Two more double scrapers have truncated-faceted distal ends. Nine of the thirteen double scrapers were produced on flakes, all others on blades. Most blanks (N=9) were on-axis removals.

Convergent scrapers

Convergent scrapers are the second most numerous of the four different morphological scraper groups, being found in five of seven levels of sub-unit III/4 (Table 10-17). Based on the morphology of their retouched edges, convergent scrapers are subdivided into six main shapes; there are three leaf-shaped convergent

	III/4-1	III/4-1A	III/4-2	III/4-3	III/4-4	III/4-5	III/4-6	Total:	%
Flakes & tools on flake									
Right, 90°	71	2	24	31	24	11	14	177	17.51
Obtuse, > 110°	76	2	37	33	33	37	30	248	24.53
Unknown	90	1	66	48	40	50	41	336	33.23
Total:	**237**	**5**	**127**	**112**	**97**	**98**	**85**	**761**	**75.27**
Bifacial thinning and rejuvenating flakes & tools on bifacial thinning and rejuvenating flake									
Obtuse, > 110°	9	1	21	6	9	15	11	72	7.12
Unknown	·	·	·	3	·	·	1	4	0.40
Total:	**9**	**1**	**21**	**9**	**9**	**15**	**12**	**76**	**7.52**
Blades & tools on blade									
Right, 90°	19	1	13	6	7	4	·	50	4.95
Obtuse, > 110°	20	·	5	4	4	4	1	38	3.76
Unknown	25	1	17	9	14	8	7	81	8.01
Total:	**64**	**2**	**35**	**19**	**25**	**16**	**8**	**169**	**16.72**
Bifacial thinning blades & tools on bifacial thinning blade									
Obtuse, > 110°	·	·	2	1	1	1	·	5	0.49
Total:	**·**	**·**	**2**	**1**	**1**	**1**	**·**	**5**	**0.75**

Table 10-15 Kabazi V, sub-unit III/4: flakes and blades – platform angles.

scrapers, three are triangular, four are trapezoidal, five are rectangular, five are crescent-shaped, and one is hook-like. Due to fragmentation, four tools could not be assigned to a morphological group. Leaf-shaped scrapers comprise semi-leaf dorsal types (Fig. 10-13, *2*, *3*), one of which displays a distal thinning (Fig. 10-13, *7*). Of the three triangular scrapers only one is really triangular, a tool with a thinned base and back, while the other two are sub-triangular dorsal and are alternatively retouched. Trapezoids are subdivided into semi-trapezoidal elongated dorsal (N=1), semi-trapezoidal inversely retouched (N=1), semi-trapezoidal dorsal distally thinned (N=1; Fig. 10-14, *2*) and sub-trapezoidal dorsal (N=1) types. The convergent scrapers with rectangular edges comprise two semi-rectangular (Fig. 10-13, *6*, *8*) and three sub-rectangular (Fig. 10-13, *5*, *9*) pieces. Crescent-shaped scrapers include pieces which can be assigned to four different sub-types: semi-crescent dorsal (N=2), semi-crescent alternative (N=1; Fig. 10-14, *4*), semi-crescent dorsal, thinned back (N=1; Fig. 10-14, *1*), and sub-crescent dorsal (N=1; Fig. 10-14, *3*). There is only one hook-like scraper. All tools were made on blanks with maximum dimension in excess of 3 cm. The overwhelming majority of blanks were made on on-axis flakes.

Burins

Upper Palaeolithic tool types are represented by burins (Table 10-17). Burins were found in levels III/4-1, III/4-2, III/4-3 and III/4-4. They are subdivided into the following types: angle burin, double angle burin, dihedral burin, and burin on a concave truncation (Fig. 10-15, 3). All burins are fragmented.

Denticulates

Denticulates were found in levels III/4-1, III/4-3, III/4-5 and III/4-6 (Table 10-17). All were made on flakes, including one natural flake. Denticulates are represented by the following types: straight dorsal (N=2), convex dorsal (N=2), and one alternatively retouched fragment.

Notches

Notched tools were found in three levels (Table 10-17). Four notches were made on flakes, and one from level III/4-4 on a residual core. Three types of notches were distinguished: lateral (N=2); transverse (N=2); and lateral-transverse (N=1).

	III/4-1	III/4-2	III/4-3	III/4-4	III/4-5	III/4-6	Total:	%
Tool on natural flake	·	2	2	·	·	1	5	1.92
Tool on core	·	·	·	1	·	·	1	0.38
Tool on chip	·	·	·	1	1	·	2	0.77
Tool on flake	53	39	37	25	29	20	203	77.78
Tool on blade	10	3	2	4	7	4	30	11.49
Tool on bifacial thinning chip	·	·	·	·	1	·	1	0.38
Tool on bifacial thinning flake	2	·	·	·	·	1	3	1.15
Tool on bifacial thinning blade	·	1	·	·	·	·	1	0.38
Unidentifiable	5	·	2	2	3	3	15	5.75
Total:	**70**	**45**	**43**	**33**	**41**	**29**	**261**	**100.00**

Table 10-16 Kabazi V, sub-unit III/4: blank types used for tool production.

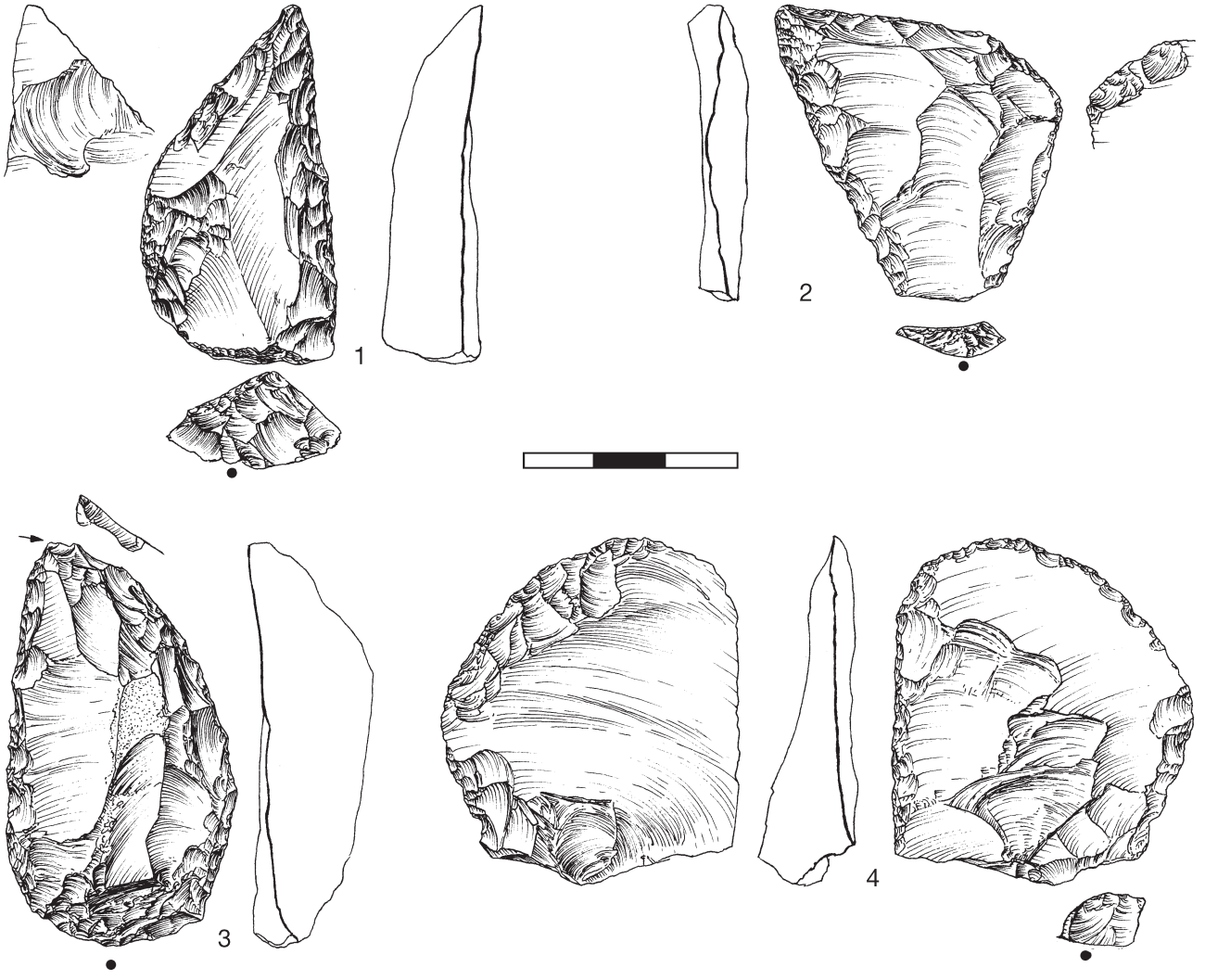

Fig. 10-14 Kabazi V, sub-unit III/4, levels III/4-1 (1), III/4-2 (3), III/4-4 (2), III/4-6 (4). Scrapers: 1 – semi-crescent, thinned back; 2 – semi-trapezoidal, terminally thinned; 3 – sub-crescent; 4 – semi-crescent, alternative.

Bifacial tools

Bifacial tools (Table 10-17) were found in levels III/4-2 and III/4-3. One of the bifacials is the distal part of a point. Two other bifacials are hook-like scrapers. Only one scraper from level III/4-3 is complete; this piece is 39.19 mm long, 32.03 mm wide, and 15.93 mm thick. Its edges were treated using a denticulate retouch.

Retouched pieces and thinned pieces

Retouched pieces were found in six levels of sub-unit III/4 (Table 10-17) where they make up 29.89 % of the total number of tools (Fig. 10-15, *1, 2, 4, 5*). Most retouched pieces were made on flakes (78.21 %), with blades serving as blanks for 20.51 % of retouched pieces; only one chip blank was identified among the retouched pieces. The most common type of retouched pieces is a flake or blade with one dorsally retouched lateral edge, followed by flakes with a dorsally retouched transverse edge. The remaining 28.03 % of retouched pieces fall into one of twelve further types (Table 10-17). Two retouched pieces have a distal thinning (Fig. 10-15, *1*), and one is a distally truncated faceted piece. Four truncated-faceted pieces were discovered in three levels (Table 10-17); all are distally truncated-faceted flakes on a ventral surface.

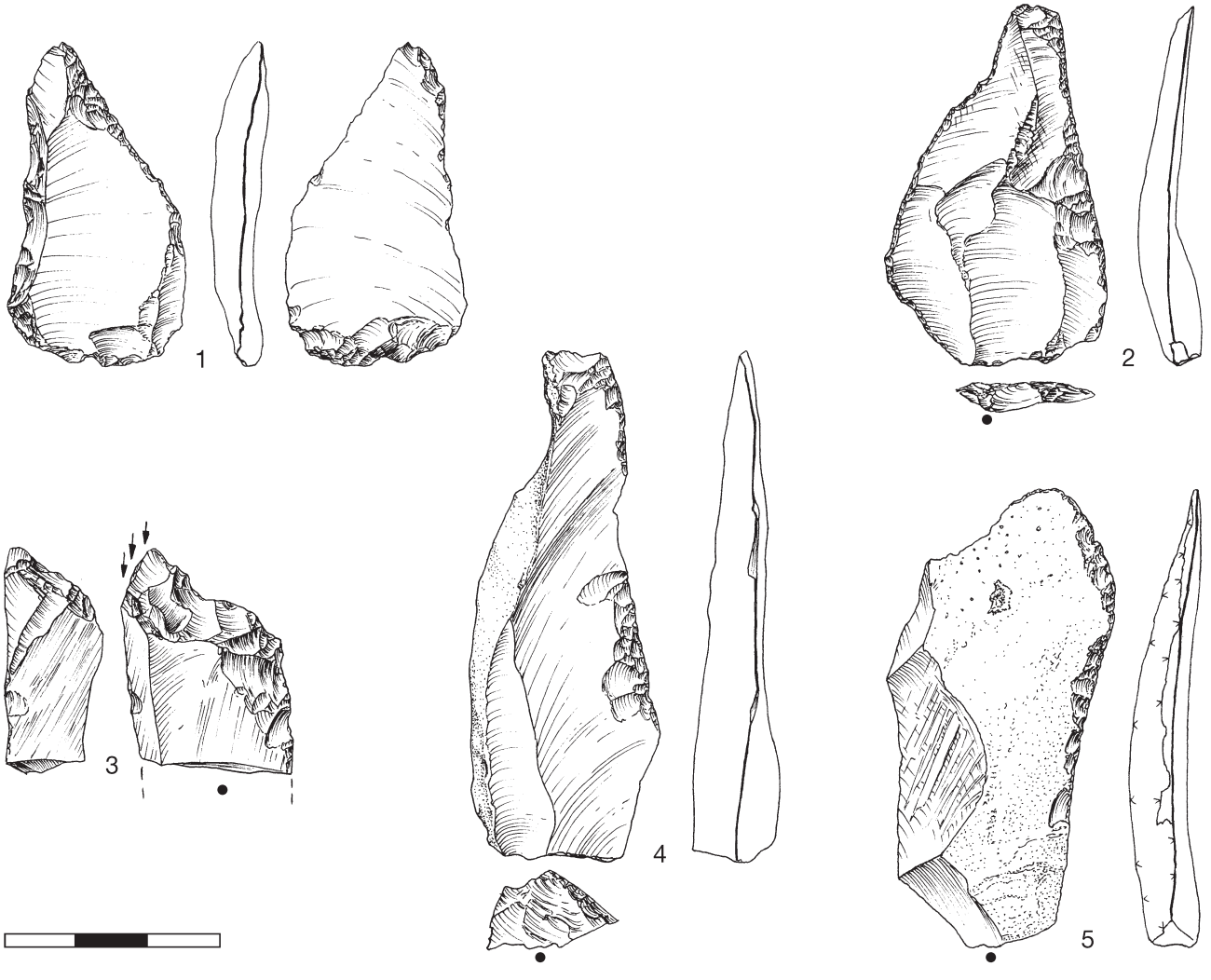

Fig. 10-15 Kabazi V, sub-unit III/4, levels III/4-1 (1, 3, 5), III/4-5 (2), III/4-6 (4). Retouched pieces: 1 – flake with retouch, bi-terminally thinned; 2 – flake with retouch; 3 – burin on the concave truncation; 4, 5 – blade with retouch.

	III/4-1	III/4-2	III/4-3	III/4-4	III/4-5	III/4-6	Total:	%	esse %
Points									*12.0*
Lateral, dorsal	·	·	1	·	·	·	1	0.38	0.8
Distal, dorsal	·	·	·	·	1	·	1	0.38	0.8
Sub-leaf, dorsal	·	·	1	·	·	·	1	0.38	0.8
Sub-leaf, alternate	·	1	·	·	·	·	1	0.38	0.8
Semi-trapezoidal, alternate	·	·	·	·	·	1	1	0.38	0.8
Sub-triangular, dorsal	1	·	1	·	·	·	2	0.77	1.6
Sub-triangular, dorsal, elongated	·	·	·	·	1	·	1	0.38	0.8
Semi-crescent, dorsal	·	1	·	·	·	1	2	0.77	1.6
Sub-crescent, dorsal, thinned back	1	·	·	·	·	·	1	0.38	0.8
Unidentifiable, dorsal	·	·	3	·	·	·	3	1.15	2.4
Unidentifiable, alternate	·	·	1	·	·	·	1	0.38	0.8
Scrapers									*74.4*
Transverse-straight, dorsal	·	2	2	1	·	·	5	1.92	4.0
Transverse-convex, dorsal	·	·	1	·	1	·	2	0.77	1.6
Transverse-convex, dorsal, thinned base	·	·	·	1	·	·	1	0.38	0.8
Transverse-concave, dorsal	·	·	·	·	1	·	1	0.38	0.8
Diagonal convex, dorsal	·	·	·	1	1	·	2	0.77	1.6
Diagonal concave, dorsal	1	·	1	·	1	·	3	1.15	2.4
Straight, dorsal	5	·	1	1	1	·	8	3.07	6.4
Straight, dorsal, naturally backed	·	·	·	·	1	·	1	0.38	0.8
Convex, dorsal	6	4	3	2	6	·	21	8.05	16.8
Convex, ventral	·	·	1	·	·	·	1	0.38	0.8
Convex, dorsal, backed, thinned base	1	·	1	·	·	·	2	0.77	1.6
Convex, dorsal, distally truncated-faceted	·	·	·	·	1	·	1	0.38	0.8
Convex, dorsal, bi-terminally thinned	·	1	·	·	·	·	1	0.38	0.8
Convex, dorsal, naturally backed	·	·	1	·	·	·	1	0.38	0.8
Convex, dorsal, naturally backed, distally thinned	1	·	·	·	·	·	1	0.38	0.8
Concave, dorsal	1	1	·	·	·	·	2	0.77	1.6
Concave, dorsal, naturally backed	·	·	·	·	1	·	1	0.38	0.8
Wavy, dorsal	·	·	·	·	·	1	1	0.38	0.8
Double straight, dorsal	1	·	·	·	·	·	1	0.38	0.8
Double convex, dorsal	2	·	1	·	1	·	4	1.53	3.2
Double convex, dorsal, distally thinned	·	·	·	1	·	1	2	0.77	1.6
Double convex, dorsal, distally truncated-faceted	1	·	·	·	·	·	1	0.38	0.8
Double convex-wavy, alternative	·	·	·	1	·	·	1	0.38	0.8
Double convex-wavy, dorsal, distally truncated-faceted	·	·	·	1	·	·	1	0.38	0.8
Double convex-concave, dorsal, bi-terminally thinned	·	1	·	·	·	·	1	0.38	0.8
Double concave, dorsal	·	1	·	·	·	·	1	0.38	0.8
Double wavy, dorsal	·	1	·	·	·	·	1	0.38	0.8
Semi-leaf, dorsal	1	·	·	·	·	1	2	0.77	1.6
Semi-leaf, dorsal, distally thinned	1	·	·	·	·	·	1	0.38	0.8
Triangular, dorsal, thinned base & back	·	·	·	·	·	1	1	0.38	0.8
Sub-triangular, dorsal	·	·	1	·	·	·	1	0.38	0.8
Sub-triangular, alternate	·	·	1	·	·	·	1	0.38	0.8
Semi-trapezoidal, dorsal, elongated	1	·	·	·	·	·	1	0.38	0.8
Semi-trapezoidal, ventral	·	·	·	1	·	·	1	0.38	0.8
Semi-trapezoidal, dorsal, distally thinned	·	·	·	1	·	·	1	0.38	0.8
Sub-trapezoidal, dorsal	·	1	·	·	·	·	1	0.38	0.8
Semi-rectangular, dorsal	·	·	1	·	·	·	1	0.38	0.8
Sub-rectangular, dorsal	2	1	·	·	·	·	3	1.15	2.4
Semi-crescent, dorsal	·	·	·	1	·	2	3	1.15	2.4
Semi-crescent, alternate	·	·	·	·	·	1	1	0.38	0.8
Semi-crescent, dorsal, thinned back	1	·	·	·	·	·	1	0.38	0.8
Sub-crescent, dorsal	·	1	·	·	·	·	1	0.38	0.8
Hook-like, dorsal	1	·	·	·	·	·	1	0.38	0.8
Convergent, dorsal, unidentifiable	·	2	1	·	·	1	4	1.53	3.2

Table 10-17 Kabazi V, sub-unit III/4: tools.

	III/4-1	III/4-2	III/4-3	III/4-4	III/4-5	III/4-6	Total:	%	esse %
Upper Paleolithic types									*3.2*
Burins	1	1	1	1	·	·	4	1.53	3.2
Denticulates									*4.0*
Straight, dorsal	·	·	2	·	·	·	2	0.77	1.6
Convex, dorsal	·	·	·	·	1	1	2	0.77	1.6
Unidentifiable, alternate	1	·	·	·	·	·	1	0.38	0.8
Notches									*4.0*
Lateral, dorsal	·	·	·	1	·	·	1	0.38	0.8
Lateral, ventral	·	·	·	1	·	·	1	0.38	0.8
Transverse, dorsal	·	·	·	·	1	·	1	0.38	0.8
Transverse, ventral	·	·	·	·	·	1	1	0.38	0.8
Lateral-transverse, dorsal	·	·	·	·	1	·	1	0.38	0.8
Bifacial points									*0.8*
Unidentifiable	·	1	·	·	·	·	1	0.38	0.8
Bifacial scrapers									*1.6*
Hook-like	·	1	1	·	·	·	2	0.77	1.6
Retouched pieces									
On chip, lateral, dorsal	·	·	·	1	·	·	1	0.38	·
On flake, lateral, dorsal	10	3	6	6	4	5	34	13.03	·
On flake, lateral, dorsal, bi-terminally thinned	·	·	·	·	·	1	1	0.38	·
On flake, lateral, ventral	·	1	·	·	1	·	2	0.77	·
On flake, lateral, alternative	·	·	1	·	1	·	2	0.77	·
On flake, lateral-transverse, dorsal	·	·	·	·	1	·	1	0.38	·
On flake, bilateral, dorsal	1	2	·	·	·	·	3	1.15	·
On flake, bilateral, alternative	·	·	·	·	1	·	1	0.38	·
On flake, bilateral, dorsal, terminally truncated-faceted	·	·	·	1	·	·	1	0.38	·
On flake, bilateral-transverse, dorsal	·	1	·	1	·	·	2	0.77	·
On flake, transverse, dorsal	5	1	2	1	3	·	12	4.60	·
On flake, transverse, alternative	·	·	·	1	·	·	1	0.38	·
On flake, transverse, dorsal, thinned base	1	·	·	·	·	·	1	0.38	·
On blade, lateral, dorsal	3	4	1	4	1	1	14	5.36	·
On blade, bilateral, dorsal	1	·	·	·	1	·	2	0.77	·
Truncated-faceted pieces									
Truncated-faceted	1	·	·	·	1	2	4	1.53	·
Unidentifiable									
Unifacial tools fragments	13	11	5	1	4	5	39	14.94	·
Bifacial tools fragments	5	1	1	2	3	3	15	5.75	·
Total:	**70**	**45**	**43**	**33**	**41**	**29**	**261**	**100.00**	**100.0**

Table 10-17 Continued.

Unidentifiable tools

All tiny tools fragments were attributed to unidentifiable tools. These tool fragments are encountered in six levels from sub-unit III/4. Unifacial unidentifiable tools comprise 14.94 % of the entire tool assemblage. Fragments of bifacial tools comprise 5.75 %.

Bone retouchers

Bone retouchers were discovered in six levels of sub-unit III/4 (Table 10-1) and belong to two different types: there are nine simple bone retouchers, and five double retouchers. For a more detailed description of the retouchers, see Chapter 15 , by A. Veselsky.

Pebbles and tools on pebbles

A total of 31 pebbles stem from six levels of sub-unit III/4, with most pebbles found in level III/4-1 (Table 10-1). Most are fragmented and show no traces of use. Only two pebbles are complete; these have an average length of 39.68 mm, an average width of 27.03 mm, and an average thickness of 6.89 mm.

This is the most comfortable size for pebbles used as stone retouchers. While the majority of pebbles are of sandstone (N=23), six are of a specific type of limestone usually encountered on the banks of the Alma river, one is of a rare quartzite, and one is of either tufa or travertine.

Artefacts from the Pit, Level III/4-2, Square 9AA

The artefact assemblage from the pit comprises 2,786 items. Refits of flint blanks discovered in the pit show that all these artefacts stem from the production of just one bifacial tool (see Chapters 2 and 16 for detailed description of the pit and refits). All blanks larger than 3 cm were refitted. Further, 22 flakes and blades were conjoined from its fragments. A cast of the missing bifacial preform was made by filling the empty corpus of the refitted nodule with a paraffin based wax. This "reconstructed" bifacial preform is 14.23 cm long, 6.11 cm wide, and 1.78 cm thick. It should also be noted that only artefacts from the pit could be refitted, i.e. neither artefacts from the neighbouring squares nor from archaeological level III/4-2 as a whole could be refitted.

More than 50% of the chips have "lips". The flake assemblage from the pit is characterised by a dominance of items with transverse proportions (Fig. 10-16, *1*). Blades are rare, and blades with faceted platforms are absent (Fig. 10-16, *2*). Both the converging and unidirectional scar patterns are dominant among both flakes and blades. More than 80% of blanks retain some cortex on their dorsal surfaces. Prepared platforms are mainly of dihedral and polyhedral types. Blanks with faceted platforms are rare. The widths of striking platforms rarely exceed 20 mm, and maximum thickness is rarely in excess of 5 mm (Fig. 10-16, *3*). As a whole, the flint complex from the pit is characterised purely by blanks from bifacial tool production. On the other hand, there is a significant difference between the typological and statistical attributes between the blank assemblage from pit and that from level III/4-2; in the latter core treatment was dominant.

The artefact cache from the pit is only the third time that such a situation has been recorded for the Crimean Middle Palaeolithic. In layer III of Zaskalnaya V, a small pit 18 cm in diameter and 3 cm deep yielded 84 unretouched blanks *"produced from one nodule of a yellow colour"* (Kolosov 1983, p. 46-47). In layer III of Zaskalnaya VI, a pit with a "cache" of 8 bifacial tools was discovered (Kolosov, 1986, p. 19; fig. 4, p. 20-21).

Discussion: Characteristic Features of Sub-Unit III/4 Artefact assemblages

Archaeological complexes from sub-unit III/4 have each produced evidences of two technological processes, firstly, the production of bifacial tools, and secondly, core reduction. Developed core technologies are characteristic of Western Crimean Mousterian (WCM) industries, which themselves are a variant of the Eastern European Levallois-Mousterian. The predominant method of flaking in Eastern Micoquian industries can be termed plano-convex bifacial. In the Kabazi V sequence, more or less homogeneous assemblages belonging to these techno-complexes have been identified in levels III/1, III/1A, III/2, and IV/1.

The presence of bifacial technology in levels III/4-2, III/4-3, III/4-5, and III/4-6 is evidenced by bifacial tool preforms (Table 10-1). These are a common feature of Crimean Micoquian assemblages, especially for site-workshops, as at Zaskalnaya V, Zaskalnaya VI, Kabazi V, III/1, III/1A and III/2. Products of this type are completely absent in levels III/4-1, III/4-1A and III/4-4.

Cores were identified in all levels, except in III/4-1A and III/4-6 (Table 10-1). More than a half of all cores stem from level III/4-1. A distinctive feature for the majority of cores is the occurrence of lateral supplementary platforms (fig. 10-1, *1, 2, 3*; 10-2, *1*). Also, both main and supplementary platforms are usually faceted. The typological structure of cores, which are represented mainly by bi-directional, unidirectional, and radial types, is consistent with typological transformation processes studied in WCM assemblages from Kabazi II, Unit II (Chabai 1998b, Usik 2003). Such core assemblages have never been found in association with a homogeneous Crimean Micoquian tool-kit.

The ratio of different blank types varies from level to level in sub-unit III/4. In most levels the percentage of "bifacial thinning" chips does not correlate with that in Crimean Micoquian assemblages, such as Kabazi V, levels III/1A, III/2, but is higher than that in level III/1 of the same site (Table 10-18). The highest percentages of "bifacial thinning chips" (in excess of 40%) are found to be characteristic for levels III/4-5 and III/4-6. Archaeological level III/4-1 is characterised by the lowest percentage of "bifacial thinning chips" (26.76%).

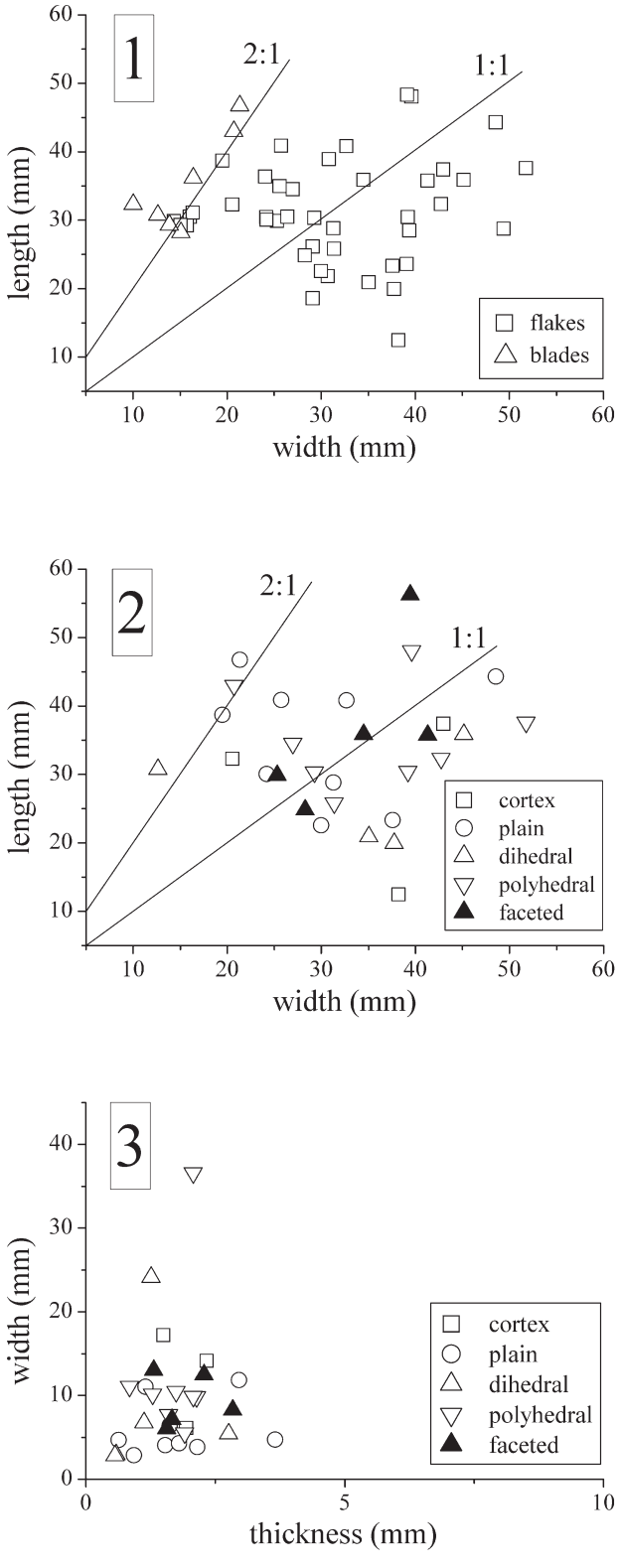

Fig. 10-16 Kabazi V, level III/4-2, pit on square 9AA. 1 – length/width scatterplot for all blanks; 2 – length/width scatterplot for blanks, after platform types; 3 – width/thickness scatterplot for blanks, after platform types.

In this case, the percentage of "bifacial thinning" chips is much lower than observed in homogeneous Crimean Micoquian assemblages, but, at the same time, still exceeds quite considerably parameters noted for WCM industries (Kabazi V, IV/1).

In levels III/4-1, III/4-3 and III/4-4 "bifacial thinning" flakes and blades are relatively rare (Fig. 10-6). Moreover, in levels III/4-3 and III/4-4 percentages of "bifacial thinning" flakes and blades are twice higher than noted for level III/4-1. In levels III/4-2 and III/4-5 the percentages of "bifacial thinning" blanks are the same as those in Kabazi V, levels III/1, III/1A, but lower than in Kabazi V, level III/2 (Table 10-18).

Whereas sub-unit III/4, and especially levels III/4-1, III/4-2 and III/4-4 assemblages, contain sufficient numbers blades to be identified as WCM, they still comprise too many "bifacial thinning and rejuvenation" blanks to be considered part of a Levallois-Mousterian techno-complex. Further, some levels of sub-unit III/4 differ in their blade indexes, and in their ratios of "bifacial thinning blanks". Level III/4-6 yielded the lowest blade index (11.32), but one of the highest ratios of bifacial thinning flakes (12.77 %). On the other hand, level III/4-1 produced the highest blade index (20.96), with the lowest percentage of bifacial thinning blanks (5.62 %)(Table 10-18).

In sum, the strict faceting index for blades in all levels of sub-unit III/4 exceeds considerably values noted for Kabazi V, III/2. At the same time, the same index is lower in all levels of sub-unit III/4 than in level IV/1, the only exceptions being levels III/4-5 and III/4-6 (Table 10-18). Moreover, in levels III/4-1, III/4-3, III/4-5 and III/4-6 the percentages of tools with faceted platforms accounts for more than 40 % of tools with identifiable striking platforms. The lowest percentage of tools with faceted platforms (25 %) is observed in level III/4-2. A high percentage of tools on blanks with faceted platforms indicates that these blanks stem from Levallois-Mousterian cores.

Unifacial tools are dominant in the tool-kits from sub-unit III/4. The most common tool is the simple scraper (Table 10-18). Points are characteristic for both the WCM (distal and lateral types on blades, the absence of invasive retouch) and Micoquian (semi-crescent and semi-trapezoidal shapes) traditions. Truncated-faceted tools, found in archaeological levels III/4-1 and III/4-5, are also considered characteristic of the WCM industry. In all levels of sub-unit III/4 bifacial tools occur mainly as fragments. Complete bifacials were found only in levels III/4-2 and III/4-3. Complete bifacial tools, together with fragments thereof, make up only 6.9 % of all tools in sub-unit III/4. The ratio of bifacial tools to unifacial scrapers and points lies at 2.7 %.

		III/1	III/1A	III/2	III/4-1	III/4-2	III/4-3	III/4-4	III/4-5	III/4-6
"bifacial thinning" chips, 1.0-1.9 cm *		13.86	21.78	27.00	23.37	26.31	29.35	28.96	37.67	32.80
"bifacial thinning" chips, 2.0-2.9 cm *		2.91	5.85	7.11	4.21	5.87	3.98	7.16	7.76	6.88
"bifacial rejuvenating" chips, 1.0-1.9 cm *		1.22	1.08	1.28	0.54	1.53	0.84	0.90	0.34	0.71
"bifacial rejuvenating" chips, 2.0-2.9 cm *		0.30	0.43	0.49	0.09	0.26	·	0.30	0.34	0.53
"bifacial thinning" flakes (%)		5.66	6.75	18.41	4.08	14.19	7.44	8.65	12.28	12.77
"bifacial thinning" blades (%)		4.98	7.01	15.38	1.54	5.41	5.00	3.85	5.88	·
indices of blades		11.22	11.44	9.91	20.96	20.00	14.18	20.00	12.97	11.32
indices of facetting	Ifs	23.52	43.85	14.65	28.20	31.63	28.91	27.84	23.61	17.54
	Ifl	66.24	72.81	52.27	59.48	65.31	68.67	51.89	47.22	63.15
percentage of bifacial tools		21.53	17.20	27.90	2.70					
ratio cores: tools		1 : 54	1 : 19	1 : 70	1 : 4.67	1 : 22.5	1 : 10.75	1 : 11	1 : 13.67	·

* the percentage of the total number of identifiable chips

Table 10-18 Kabazi V. Lithic variability, by level.

To conclude, the technological and typological characteristics of sub-unit III/4 assemblages demonstrate features characteristic for both Levallois-Mousterian and Micoquian techno-complexes. In level III/4-1 the Micoquian influence is reflected to a lesser degree, as is the Levallois-Mousterian component in level III/4-6. In other levels of sub-unit III/4 the Levallois-Mousterian and Micoquian components are represented in approximately equal proportions. The heterogeneous character of the assemblages is most probably a reflection of the geomorphologic situation; the sediments of sub-unit III/4 form a slope (9° to 19.5°), a clear indicator that archaeological material became transported following deposition. The only unaffected (closed) complex is the assemblage of flint artefacts from pit in level III/4-2. Artefacts from this feature bear witness to bifacial tool production, a common activity during the Crimean Micoquian.

Abstract

КАБАЗИ V, ПАЧКА ГОРИЗОНТОВ III/4: АРТЕФАКТЫ

ВЕСЕЛЬСКИЙ А.П.

В пачке горизонтов III/4 обнаружено 7 археологических горизонтов – III/4-1, III/4-1A, III/4-2, III/4-3, III/4-4, III/4-5 и III/4-6, – которые были разделены стерильными прослойками минимальной толщины.

Общее количество находок из пачки горизонтов III/4 составляет 50514 предметов, составляющих 3 основные группы артефактов. Первая группа представлена 50469 кремневыми изделиями и подразделяется на семь категорий артефактов: обломки (47 экз.), чешуйки (49308 экз.), отщепы (673 экз.), пластины (146 экз.), нуклеусы (27 экз.), преформы (7 экз.) и орудия (261 экз.). Вторую и третью группы археологического материала составляют костяные ретушеры (14 экз.) и речные гальки без следов использования (31 экз.).

Главной особенностью структуры археологических артефактов в пачке горизонтов III/4 является наличие признаков, характерных как для микока, так и для леваллуа-мустьерских – западнокрымских индустрий: процент орудий характерен для микокских стоянок-мастерских; процент нуклеусов, особенно в горизонте III/4-1, соответствует западнокрымским леваллуа-мустьерским коллекциям; наличие преформ двусторонних орудий является характерной особенностью микокских индустрий, тогда как их полное отсутствие, в частности в горизонте III/4-1, отличительная черта западнокрымских коллекций; и последнее, процент двусторонних орудий является слишком низким для микока, но в тоже время абсолютно не характерен для гомогенных леваллуа-мустьерских индустрий Крыма.

Орудийный набор в пачке горизонтов III/4 представлен 10 классами: остроконечники, скребла, зубчатые, выемчатые, двусторонние острия, двусторонние скребла, сколы с ретушью, truncated-faceted и неопределимые фрагменты односторонних и двусторонних орудий. Без учета обломков кремня и чешуек орудия составляют практически четверть всех артефактов – 23%. Среди орудий преобладают односторонние изделия. Наиболее представительную группу составляют скребла – 74,4%. По количеству рабочих участков односторонние скребла подразделяются на поперечные/диагональные (14 экз.), продольные (55 экз.), двойные (13 экз.) и конвергентные (25 экз.). Для поперечных/диагональных, продольных и двойных скребел характерны орудия с выпуклым рабочим лезвием. Конвергентные скребла представлены следующими морфологическими группами: полу-листовидные (3 экз.), треугольные и под-треугольные (3 экз.), полу- и под-трапециевидные (4 экз.), полу- и под-прямоугольные (4 экз.), полу- и под-сегментовидные (6 экз.), клювовидные (1 экз.) и неопределимые фрагменты конвергентных орудий (4 экз.).

Остроконечники насчитывают 15 экземпляров и составляют 12% всего орудийного набора. Среди них различаются дистальные (1 экз.), латеральные (1 экз.), под-листовидные (2 экз.), полу-трапециевидные (1 экз.), под-треугольные (3 экз.), полу- и под-сегментовидные (3 экз.), а также неопределимые на уровне отдела фрагменты остроконечников (4 экз.). Остальные типы односторонних орудий в общей сложности не превышают 4%.

Двусторонние орудия представлены острием и скреблом, типичными для крымского микока. В целом они составляют только 2,4% среди определимых орудий. Столь низкий процент двусторонних форм в среднем палеолите Крыма характерен смешанным микокским и леваллуа-мустьерским коллекциям, например, Кабази I, Холодная Балка, нижний слой Бахчисарайской стоянки, верхний слой ГАБО, Староселье, 1953-1956.

Все горизонты, формирующие пачку III/4, являются палимпсестами, сочетающими как леваллуа-мустьерские, так и микокские черты. Наименьшая степень микокской примеси характерна для горизонта III/4-1. Минимальный леваллуа-мустьерский компонент обнаружен в археологическом слое III/4-6. В других горизонтах леваллуа-мустьерские и микокские компоненты представлены приблизительно в равных пропорциях. Главную роль в смешанном характере коллекций сыграл достаточно большой угол падения (от 9° до 19,5°) отложений, в которых аккумулировались археологические горизонты пачки III/4. Такой угол падения отложений предопределил горизонтальное перемещение артефактов, как в процессе, так и после формирования археологических горизонтов. Единственным гомогенным комплексом является коллекция сколов из ямы в горизонте III/4-2. Данные сколы представляют собой отходы производства преформы двустороннего орудия (Глава 16 в этом томе).