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

Edited by
Victor Chabai, Jürgen Richter and Thorsten Uthmeier

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Chapter
16

Kabazi V: Production and Rejuvenation of Bifacial Tools

Andrey P. Veselsky

Bifacial tools constitute pronounced technological and typological components of Micoquian assemblages. For this reason, reconstructions of bifacial tool reduction sequences on the basis of refittings are of crucial significance (Demidenko, Usik 1993b; Austin et al. 1999; Aubry et al. 2003). Such refittings have been undertaken using material from a number of Kabazi V archaeological levels. The most significant of these are two separate series from levels III/4-2 and III/1A, both of which are associated with Micoquian assemblages and display various stages of bifacial tool production.

The Refitting from Level III/4-2

The first of these refittings involved the material recovered from a pit in archaeological level III/4-2 (Chapter 2, this volume). In this pit was found a "cache" consisting of 2,786 pieces, for the most part debitage comprising many chips. Blanks bigger than 3 cm consisted of 44 flakes and 7 blades. The detailed analysis of these artefacts is presented in Chapter 10, this volume. This "cache" is in so far unique in that all 2,786 blanks (chips, flakes and blades) were struck from a single flint nodule. So far, it is the only case in the Crimean Middle Palaeolithic that waste from the production of a single bifacial tool has been found in such a "cache". While the refitted chips, flakes and blades compose the "cover" of this bifacial tool (Fig. 16-1; 16-2), the tool itself was found neither in the pit, nor upon the living surface of level III/4-2. Using the refits from this "cover" the reduction sequence involved in the manufacturing of this particular bifacial tool could be closely studied. Accordingly, the reduction sequence consists of 11 stages. The total number of refitted items by stage, as well as their typological structure, is represented in Table 16-I.

For the production of the bifacial tool a flat flint plaquette (nodule) of sub-trapezoidal shape was chosen. This was 147.63 mm long, 108.83 mm wide, and 28.27 mm thick. To simplify illustration, the two flaking surfaces of the flint plaquette are referred to in the following as flaking surfaces A and B, while the two lateral sides of the plaquette are referred to as sides 1 and 2 (Fig. 16-1; 16-2).

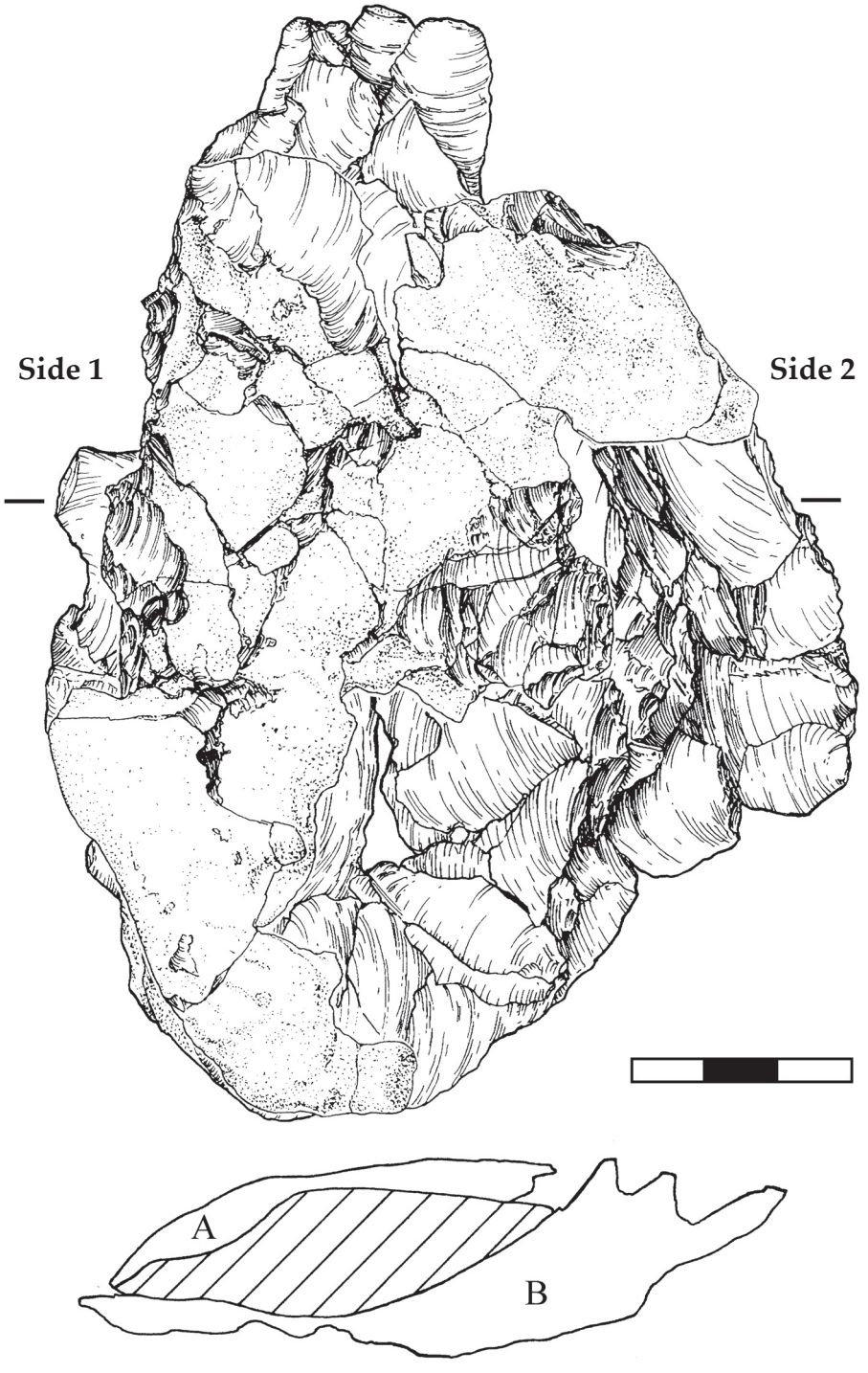

Fig. 16-1 Kabazi V, level III/4-2. Flaking surface A of the refitted flint plaquette and its cross-section.

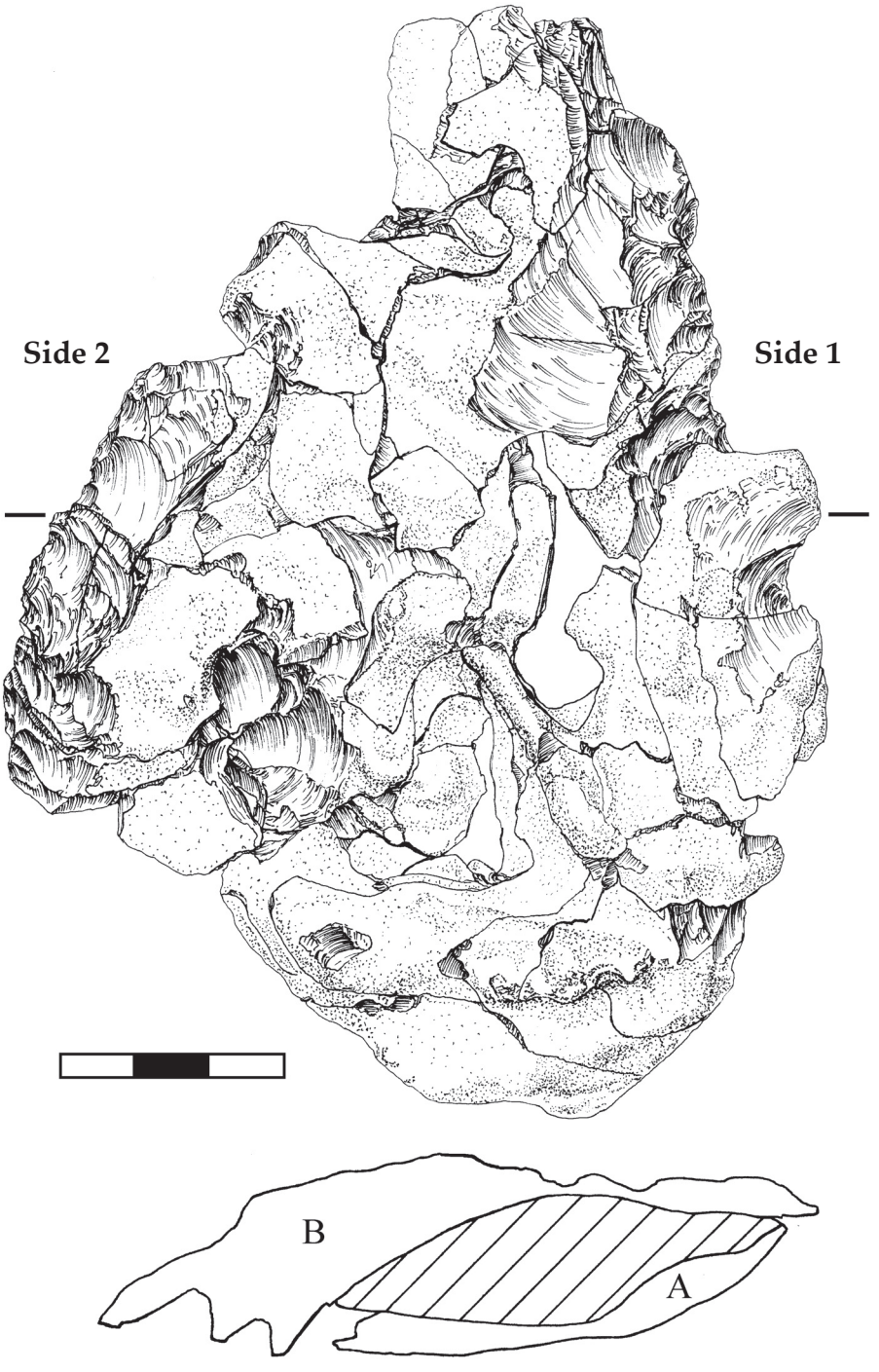

Fig. 16-2 Kabazi V, level III/4-2. Flaking surface B of the refitted flint plaquette and its cross-section.

	The place of flaking		Debitage			
Stages	Surfaces	Sides	Chips	Flakes	Blades	Total:
0	A	1	?	?	?	?
I	A	2	1	1	·	2
Tip thinning	B	tip	·	2	·	2
II	B	1	4	1	·	5
III	A	1	1	4	1	6
IV	B	1	·	2	·	2
V	A	1	·	6	·	6
VI	B	1	4	5	1	10
VIIa	B	2	3	5	·	8
VIIb	B	2	?	?	?	?
VIIc	B	2	2	2	1	5
VIId	B	2	3	2	·	5
VIIe	B	2	·	3	·	3
Tip thinning	B	tip	2	·	·	2
VIII	A	2	4	3	1	8
IX	B	1	·	3	·	3
X	B	2	4	4	3	11
XI	A	1	2	1	·	3
Tip thinning	B	tip	2	·	·	2
		Total:	**32**	**44**	**7**	**83**

Table 16-1 Kabazi V, level III/4-2. Typological structure of refitted artefacts, by reduction stages.

Stages 0 and I, Surface A, Sides 1 and 2

The earliest stage of reduction is documented by one flake and one chip which were detached from side 2 on flaking surface A (Fig. 16-3, 1, 2; 16-4, 1, 2). These pieces were detached perpendicular to the long axis of the nodule. At this point it should be noted that in the following the term "perpendicular" is meant in a relative sense, i.e. it expresses more a tendency than the strict geometrical concept, as the long axis of the plaquette and its lateral edges are not parallel. Therefore, closer to the top of the sub-trapezoidal plaquette the angle between the axis of the detached flakes and the long axis of plaquette is not always 90°.

The small amount of debitage from this first stage of reduction complicates greatly the reconstruction of the exact reduction sequence of lateral side 2. Obviously, the reduction of side 2 was not limited to the detachment of just one flake and one chip. The platforms of flakes and chips detached from surface B at a later stage of reduction (Fig. 16-4, 3, 4, 5, 6) were prepared using the previously struck, but not refitted/missing removals from surface A. Also, at this early stage there are no flakes and chips connected with the reduction of surface B.

The initial stage of the side 1 treatment is connected with flaking surface A only. This conclusion is based on the character of the preparation of the

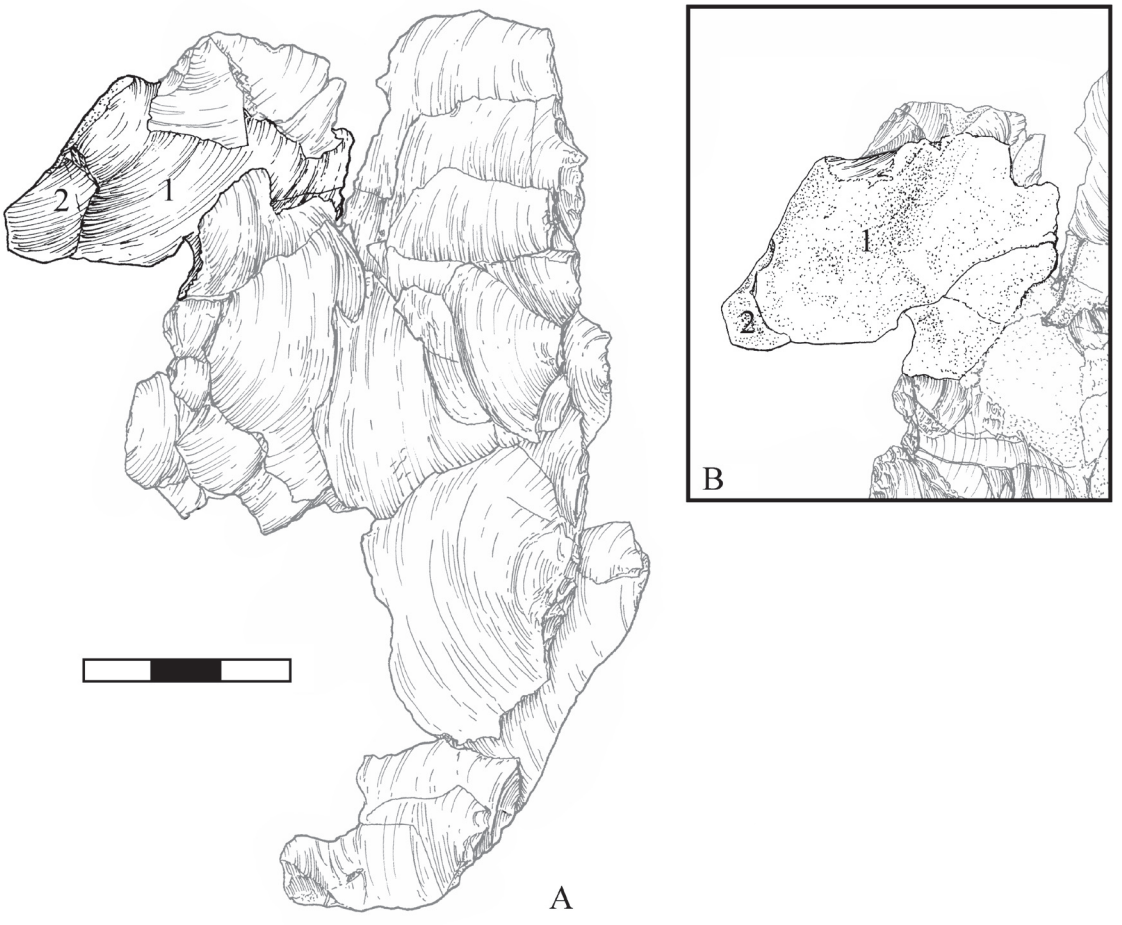

Fig. 16-3 Kabazi V, level III/4-2. Stage I of the flint preform: 1, 2 – refitted artefacts; A – ventral surface; B –mirror image of the dorsal surface. Arabic numerals specify the sequence of removals.

striking platform of a flake which was struck from surface B at a later stage of plaquette reduction (Fig. 16-4, 7). This might be interpreted as evidence of reduction from stage 0 which is not documented by refitted debitage. It is likely that stage 0 reduction did not occur on-site. The base and top of the plaquette at these stages were not processed. In other terms, the tested flint plaquette was brought to the site, with initial flaking from stages 0 and I serving preform preparation. At the same time, such a preform could have later been used to obtain a core (pre-core) or to produce a bifacial tool. Stages 0 and 1 might also have occurred in the opposite order, as there is no evidence of overlapping removals.

As mentioned above, the existing debitage which was detached from surface A at this stage comprised just one flake and one chip. The flake is characterised by transversal proportions and its striking platform and dorsal surface are completely covered by cortex (Fig. 16-3, 1). The striking platform of the chip is also covered by cortex (Fig. 16-3, 2). Both striking platforms are unlipped. No less than 30 % of the dorsal surface of the chip is covered by cortex.

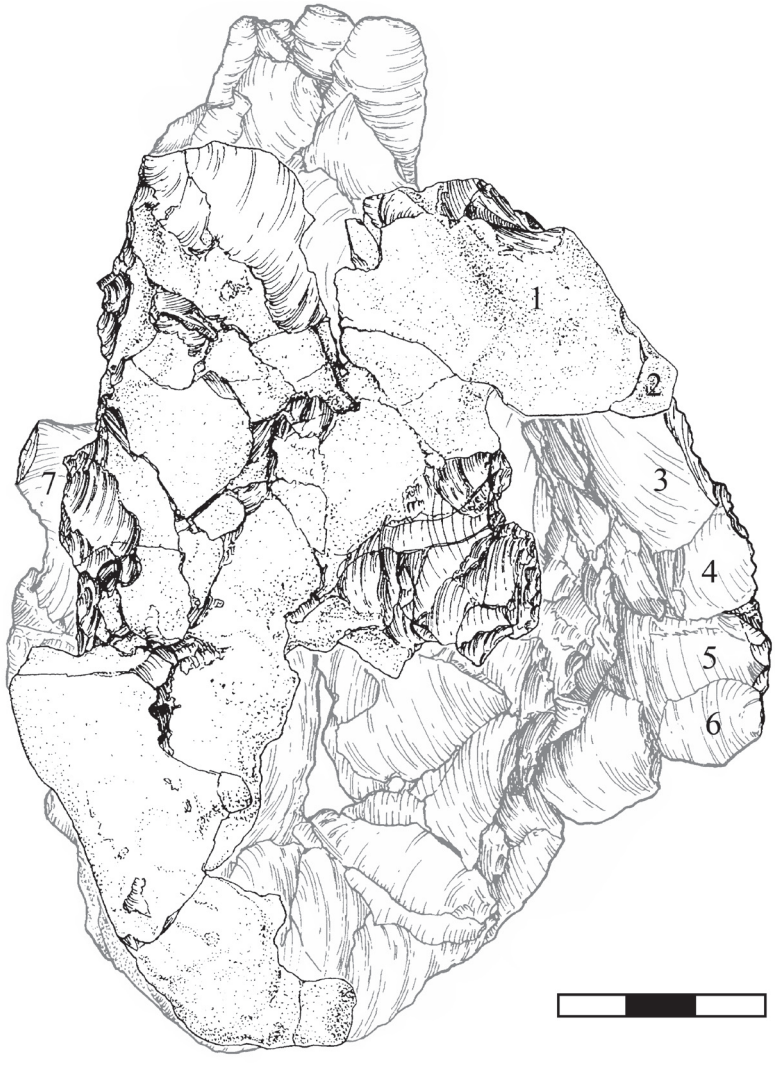

Fig. 16-4 Kabazi V, level III/4-2. Stage I of preform reduction: 1, 2 – refitted artefacts. The assumed stage 0 of flint plaquette reduction: platforms of flakes 3, 4, 5, 6, 7 retain negatives of stage 0 removals. Arabic numerals specify the sequence of removals.

Stage II, Surface B, Side 1

The second stage of plaquette reduction is connected with the exploitation of flaking surface B. At this stage the craftsman's efforts concentrated on working lateral side 1 and the top of the flint plaquette. The refitted debitage comprises seven pieces (Fig. 16-5), of which five were detached from lateral side 1 and two from the tip of the plaquette. Removals 2 and 3 formed a pronounced convexity – protruded ridge on the flaking surface. In the course of further treatment this ridge was detached by subsequent removals (Fig. 16-5, 4, 5). Two more flakes were struck from the tip of the preform. The direction of these removals is parallel to the long axis of the preform (Fig. 16-5, 6, 7). The second stage resulted in a straighter outline of the twisted edge of side 1. In fact, this denotes the beginning of the bifacial tool edge formation. After this stage the preform might undoubtedly be identified as one edge of a bifacial tool preform.

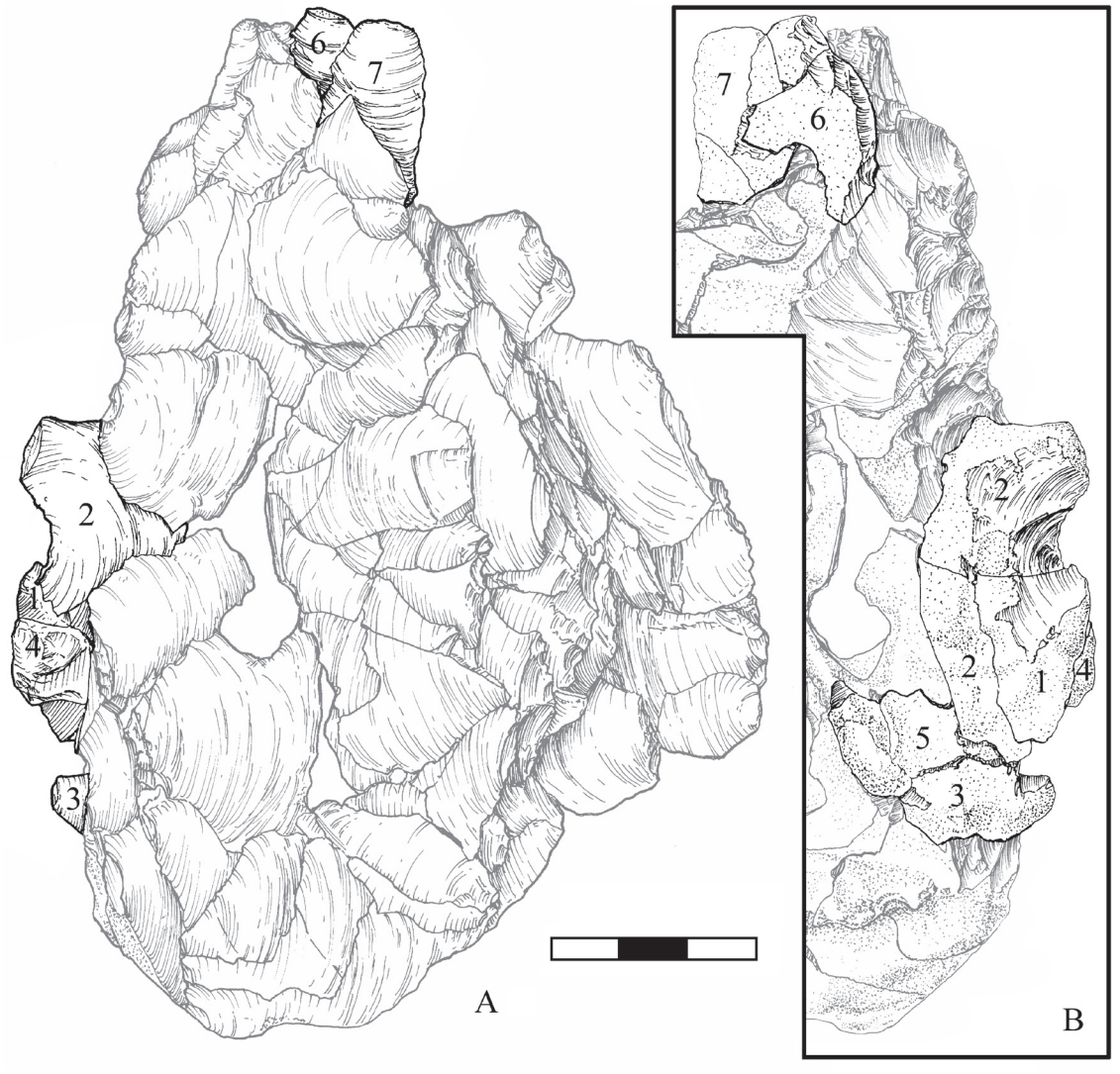

Fig. 16-5 Kabazi V, level III/4-2. Stage II of preform reduction: 1, 2, 3, 4, 5 – refitted artefacts. Tip thinning: 6, 7 – refitted flakes; A – ventral surface; B – dorsal surface. Arabic numerals specify the sequence of removals.

Typologically speaking, the debitage from the second stage and from preform tip thinning comprises 3 flakes and 4 chips. On the whole, the characteristics of the debitage from the first and second stages are similar; flakes are characterised by both longitudinal and transversal proportions, whereby the latter originate from the processing of the lateral edge (Fig. 16-5, 2). All flakes and chips retain more than 50 % cortex cover on their dorsal surfaces (Fig. 16-5, 1, 2, 3, 4, 5, 6, 7). There are two unbroken platforms, both of which are covered by cortex (Fig. 16-5, 6, 7); one of these is lipped (Fig. 16-5, 6), the other is semi-lipped (Fig. 16-5, 7).

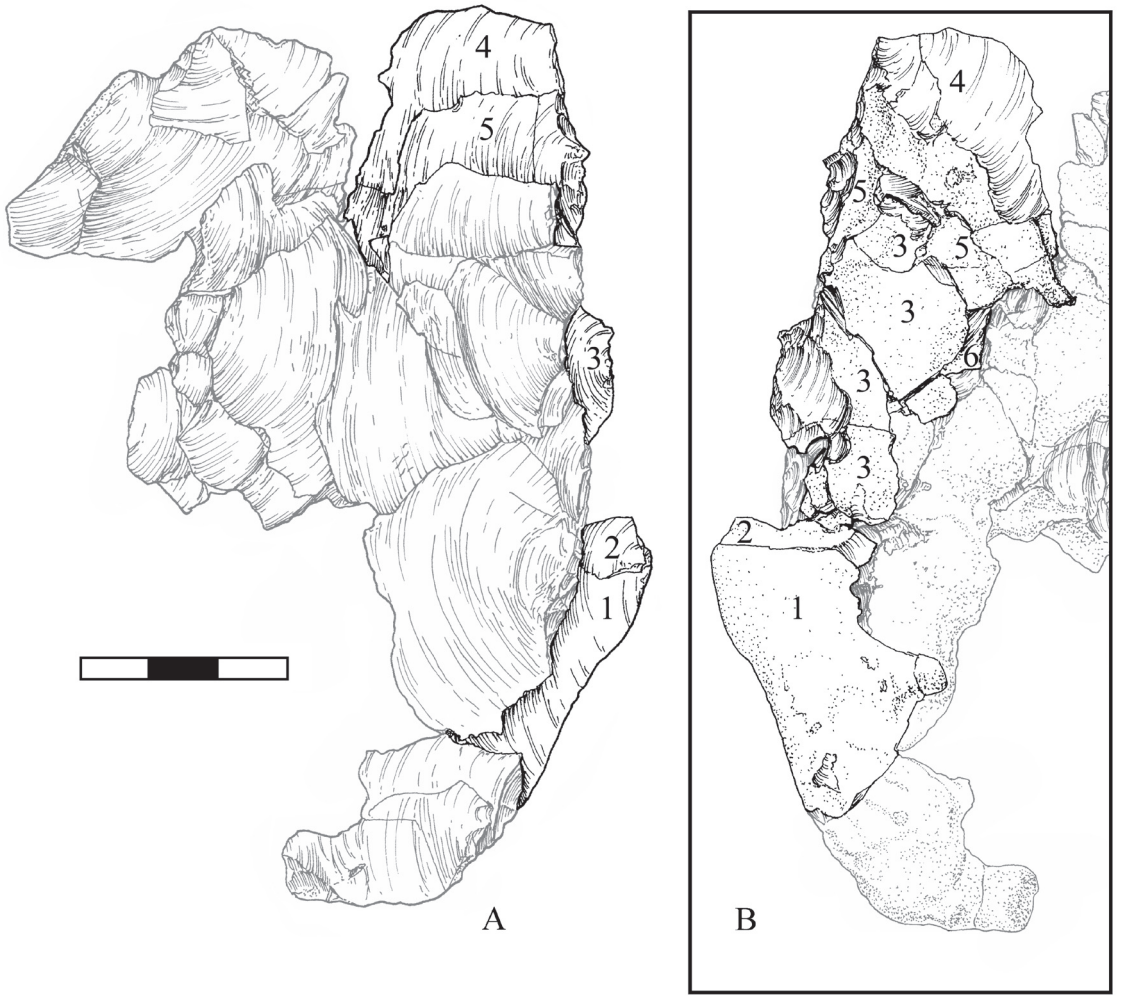

Fig. 16-6 Kabazi V, level III/4-2. Stage III of preform reduction: 1, 2, 3, 4, 5, 6 – refitted artefacts; A – ventral surface; B – dorsal surface. Arabic numerals specify the sequence of removals.

Stage III, Surface A, Side 1

During the third stage the reduction of the same lateral side was continued, though now the opposite surface, i.e. flaking surface A, was processed. Removals followed in divergent directions: toward the base (Fig. 16-6, 1, 2, 3) and toward the tip (Fig. 16-6, 4, 5, 6) of the preform. Each subsequent removal takes away part of a negative of the previous removal, whereby the main technological feature of this stage consists in a more accurate preparation of the striking platforms of flakes prior to their detachment. The method of butt abrasion was employed for those flakes which were removed from the proximity of the preform tip (Fig. 16-6, 3, 4, 5). For this purpose, sandstone pebbles were probably used. The aim of the abrasion technique would have been similar to its later usage in bifacial tool production during the Upper Palaeolithic, i.e. to reduce the edge of the striking platform so as to obtain better control over removals (Bradley et al., 1995).

Typologically the removals from the third stage are represented by 4 flakes, 1 blade and 1 chip. The most part of removals retain about 30 % cortex coverage on their dorsal surfaces (Fig. 16-6, 1, 2, 3, 4, 5). As a rule, cortex remnants are located on the distal ends and on lateral parts of the pieces. The identifiable striking platforms are represented by one corticated (Fig. 16-6, 4) and two plain (Fig. 16-6, 1, 2) butts. There are two unlipped and two semi-lipped platforms.

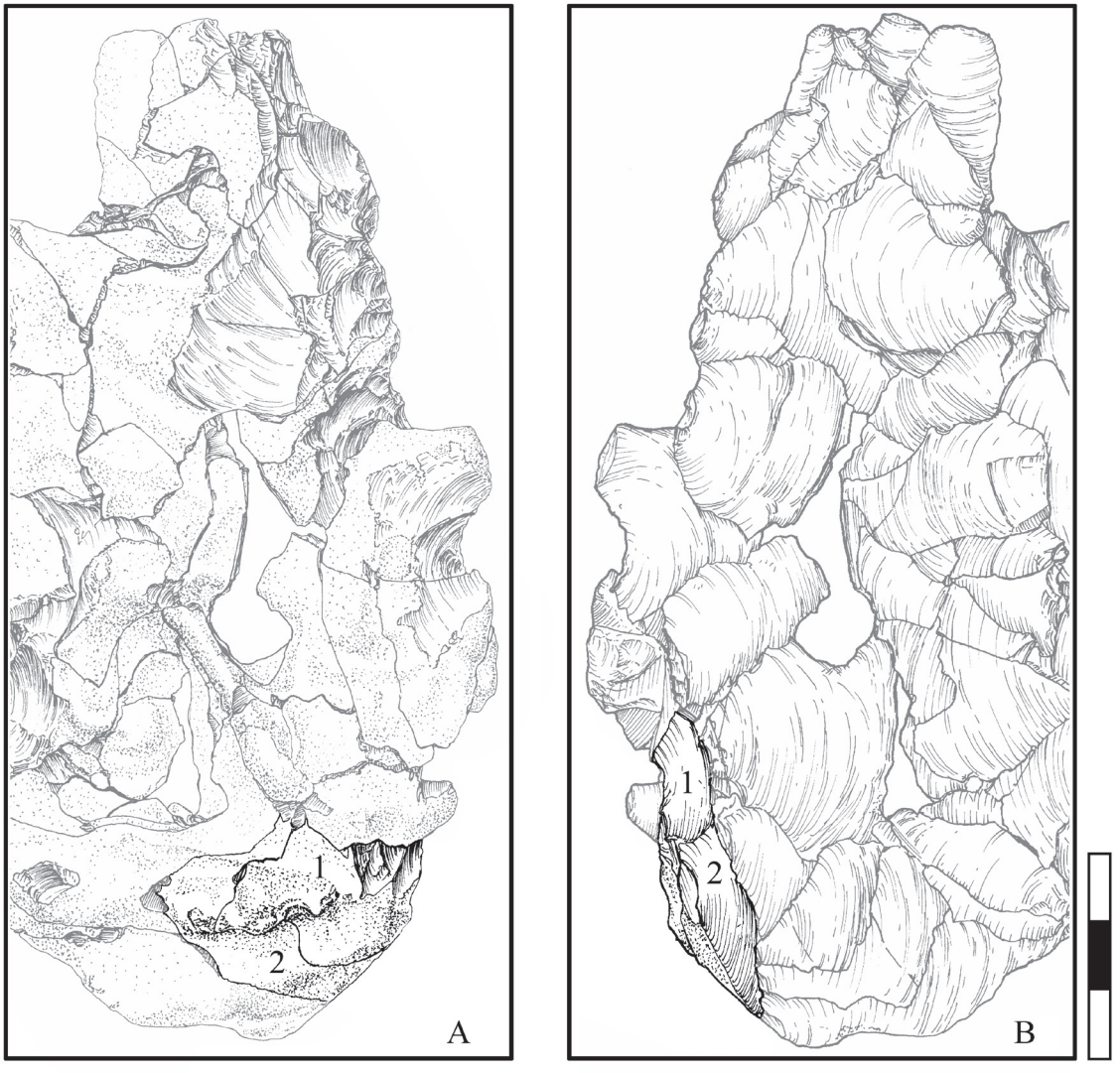

Fig. 16-7 Kabazi V, level III/4-2. Stage IV of preform reduction: 1, 2 – refitted flakes; A – ventral surface; B – dorsal surface. Arabic numerals specify the sequence of removals.

Stage IV, Surface B, Side 1

The processing of the same side continued, but with a change in the flaking surface. Two relatively big flakes were struck from flaking surface B (Fig. 16-7, 1, 2). Due to these removals the elaborated edge increased in length downwards, towards the base of the preform; the edge profile was bestowed a curved contour. The base of the preform remained covered by primary cortex. The first removal shows traces of reduction of the striking platform edge (Fig. 16-7, 1). The second flake was removed without additional preparations. In excess of 50 % of the dorsal surfaces of both flakes are covered by cortex (Fig. 16-7, 1, 2). The unlipped striking platforms of flakes are represented by plain (Fig. 16-7, 2) and dihedral (Fig. 16-7, 1) types.

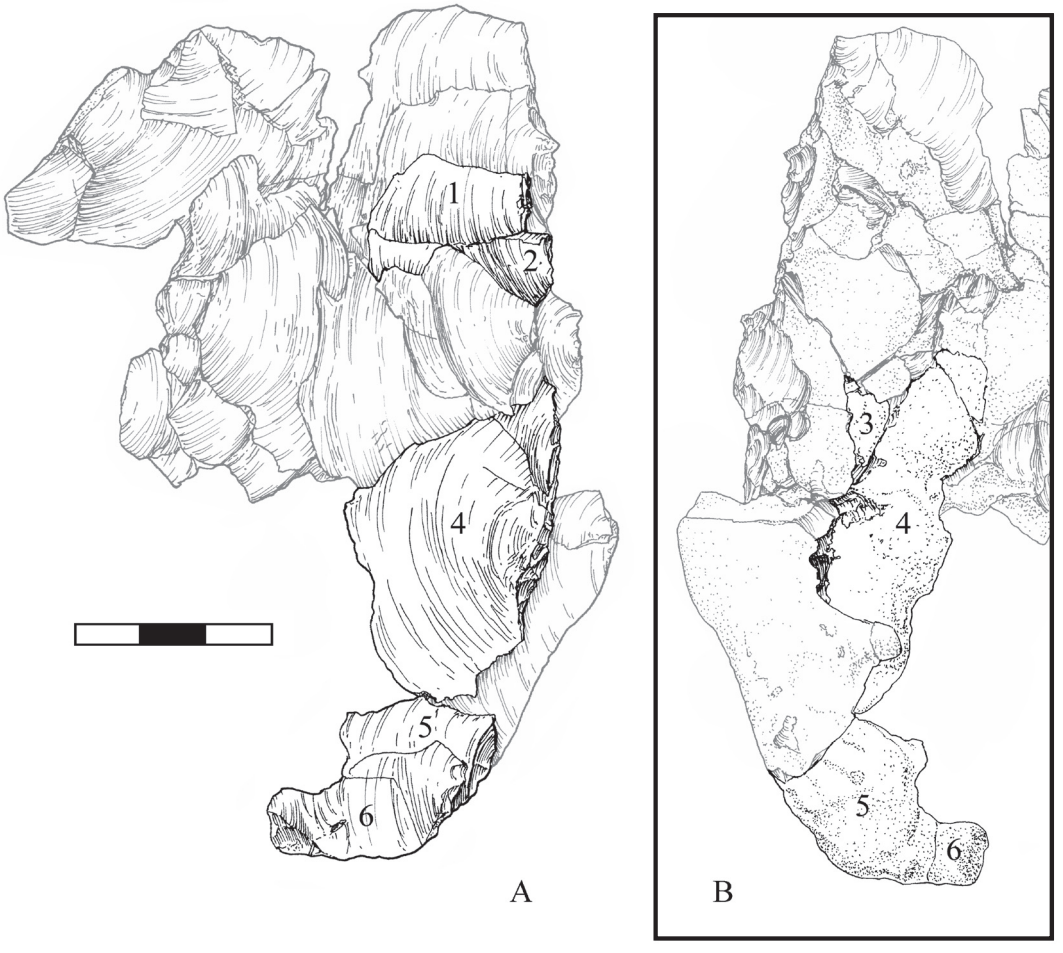

Fig. 16-8 Kabazi V, level III/4-2. Stage V of preform reduction: 1, 2, 3, 4, 5, 6 – refitted flakes; A – ventral surface; B – dorsal surface. Arabic numerals specify the sequence of removals.

Stage V, Surface A, Side 1

At this stage the craftsman again returned to flaking surface A. His efforts concentrated on three local areas of the same lateral side, which had been worked in the previous stages (Fig. 16-8). At first, the convexity on the middle part of lateral side was reduced by a series of removals (Fig. 16-8, 1, 2, 3, 4). Second, the straight profile of the edge was restored by two removals from the preform base (Fig. 16-8, 5, 6). The latter two flakes exhibit about 40 % cortex coverage of their dorsal surfaces and dihedral striking platforms (Fig. 16-8, 5, 6). Also, they show traces of light butt abrasion. The flake from the central part of the edge was especially prepared prior of detachment; it exhibits a dihedral platform and butt abrasion (Fig. 16-8, 4). The aim of these measures was to isolate the point of percussion (Bradley et al., 1995). Moreover, the traces of the most careful abrasive treatment concentrate on the dorsal surface directly in front of the point of percussion.

There is a total of six refitted flakes. Three flakes exhibit broken/crushed striking platforms (Fig. 16-8, 1, 2, 3), two have dihedral striking platforms (Fig. 16-8, 5, 6), and one has a polyhedral platform (Fig. 16-8, 4). There is one non-lipped and one semi-lipped platform, while all others are unidentifiable. Two flakes display < 25 % primary cortex coverage on their dorsal surfaces (Fig. 16-8, 3, 4), two flakes exhibit about 40 % cortex coverage on their flaking surfaces (Fig. 16-8, 5, 6), and two had dorsal surfaces free from cortex (Fig. 16-8, 1, 2).

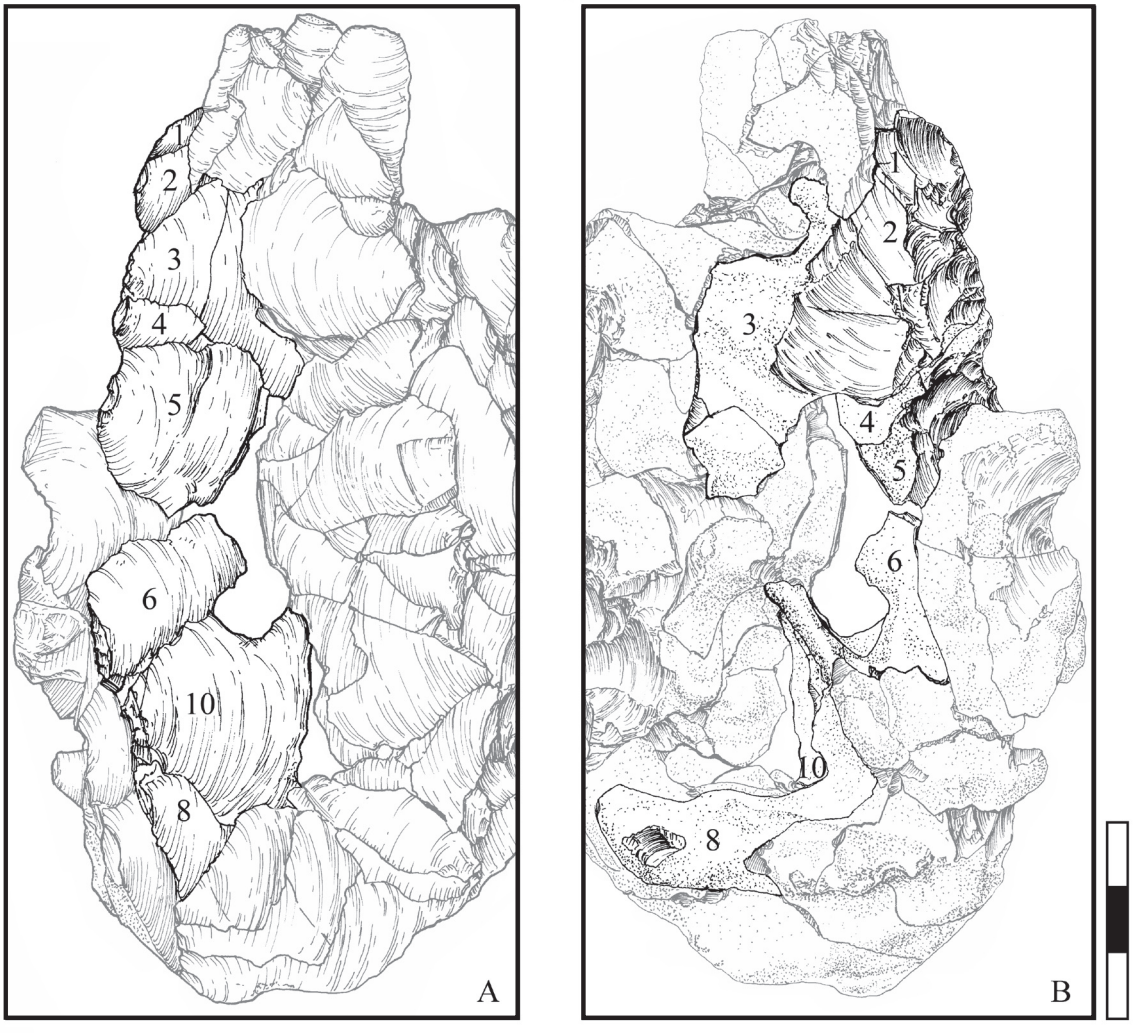

Fig. 16-9 Kabazi V, level III/4-2. Stage VI of preform reduction: 1, 2, 3, 4, 5, 6, 7, 8, 9, 10 – refitted artefacts; A – ventral surface; B – dorsal surface. Artefacts 8 and 9 are not visible. Arabic numerals specify the sequence of removals.

Stage VI, Surface B, Side 1

The working surface was changed again, while the lateral side remained the same. On flaking surface B eight removals were struck from the top to the base of the preform (Fig. 16-9, 1, 2, 3, 4, 5, 6, 7, 8). The removals followed one after another. Each new removal partially overlaps the previous removal. Between flakes 6 and 7 (latter is not visible on Fig. 16-9) the pronounced ridge on the flaking surface was removed. To strike this ridge two removals were needed: 9 and 10 (the former is not visible on Fig. 16-9). These efforts resulted in a significant flattening of the preform base. The most characteristic feature of this stage comprises the preparation of each removal by preliminary treatment, which included the isolation of the point of percussion (Fig. 16-9, 2, 3, 5, 6, 10) and butt abrasion (Fig. 16-9, 2, 3, 4, 5). Often, the reduction of the platform edge was undertaken by a series of small removals (Fig. 16-9, 1, 2, 3, 4, 5). This procedure preceded butt abrasion. The debitage of the sixth stage of reduction includes 1 blade, 5 flakes and 4 chips. The majority of removals retain primary cortex on their distal part or on one of the lateral sides (Fig. 16-9, 3, 4, 5, 6, 8, 10). As a rule, cortex does not cover more than 30 % of the total area of dorsal surfaces. Among the unbroken striking platforms, the dihedral (Fig. 16-9, 2, 4) and polyhedral (Fig. 16-9, 3, 5, 6, 8, 10) types were defined. There are two unlipped (Fig. 16-9, 5, 8), one semi-lipped (Fig. 16-9, 3), three lipped (Fig. 16-9, 2, 4, 6), and four unidentifiable platforms.

In fact, this stage completes the preliminary formation of the preform edge on side 1. A total of 9 chips, 18 flakes and 2 blades were struck from this edge in stages II through VI. During the further shaping of this edge (stages IX and XI) 4 flakes and 2 chips were removed from this side.

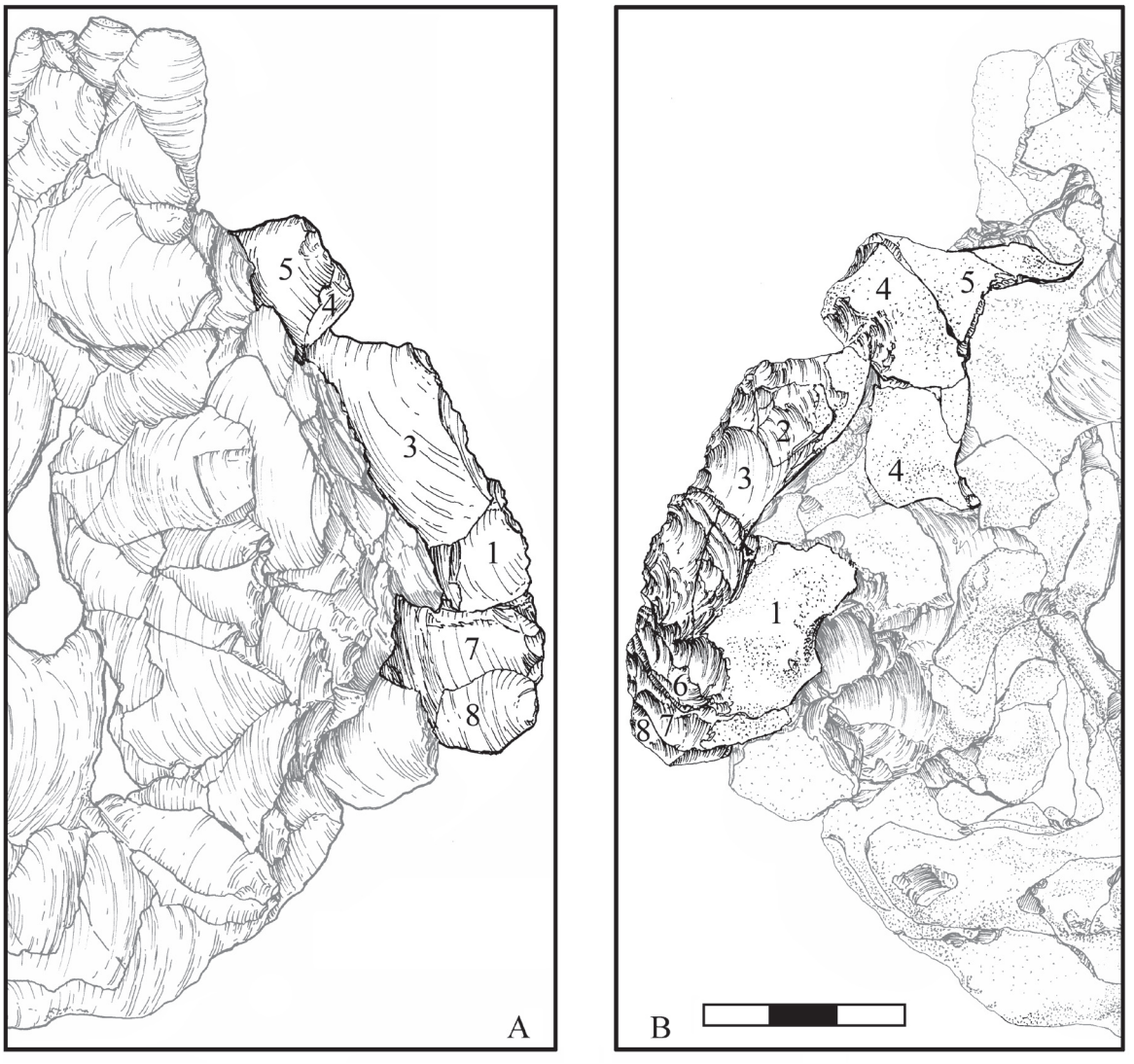

Fig. 16-10 Kabazi V, level III/4-2. Sub-stage VIIa of preform reduction: 1, 2, 3, 4, 5, 6, 7, 8 – refitted artefacts; A – ventral surface; B – dorsal surface. Arabic numerals specify the sequence of removals

Stage VII, Surface B, Side 2

At this stage attention was turned to the opposite side of the preform, this being the first attempt at the elaboration of this side since the initial stages 0 and I. This stage is subdivided into five sub-stages, based on the observed application of different flaking means to remove the excess volume of flint from preform side 2.

Sub-stage VIIa, surface B, side 2

On surface "B" there followed a series of 8 removals (Fig. 16-10). The first flake was removed from the most protruding part of the preform edge (Fig. 16-10, 1), while subsequent removals ran in different directions, i.e. toward the top (Fig. 16-10, 3, 4, 5) and toward the base (Fig. 16-10, 6, 7, 8) of the preform. Some removals show traces of striking platform edge reduction (Fig. 16-10, 1, 3, 6, 7, 8). A chip (Fig. 16-10, 2) which originated from this preparation was refitted to the dorsal part of one of the flakes (Fig. 16-10, 3). Also, the majority of removals display evidence of abrasive treatment of the ridge between dorsal surface and striking platform (Fig. 16-10, 1, 3, 5, 6, 7, 8). However, the points of percussion of the removals from this sub-stage were not isolated.

There is only one flake which is completely covered by cortex (Fig. 16-10, 4), and only one chip which has no cortex coverage whatsoever of its dorsal surface. The dorsal surfaces of all other refitted pieces retain between about 20 % and 50 % cortex coverage. The debitage from this stage comprise 5 flakes and

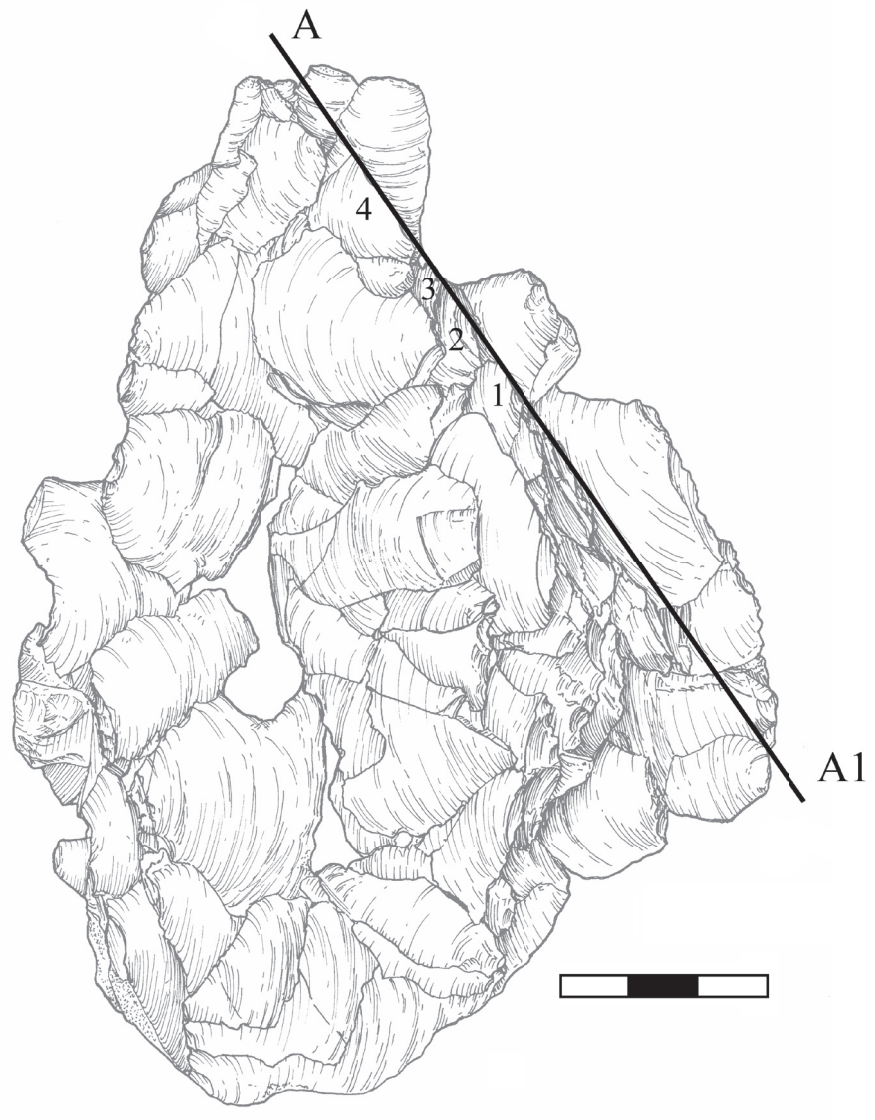

Fig. 16-11 Kabazi V, level III/4-2. Sub-stage VIIb of preform reduction, view of the ventral surface: A-A1 – the assumed position of the crested flake; platforms of flakes 3, 4, 5, 6, 7 retain the negative of the crested flake.

3 chips. The identifiable striking platforms are represented by dihedral (Fig. 16-10, 3) and polyhedral (Fig. 16-10, 1) types, both of which are semi-lipped. All remaining platforms are unidentifiable.

Sub-stage VIIb, surface B, side 2

Sub-stage VIIb was devoted to the processing of side 2 on flaking surface B. Although the debitage associated with this stage is absent, a reconstruction of the related flaking process can be realised on the basis of negatives that are now located on the striking platforms and proximal parts of dorsal surfaces of the subsequent removals (Fig. 16-11, 1, 2, 3, 4).

During this sub-stage it would appear that a large part of the preform edge was removed by a transversal flake (Fig. 16-11, A-A1). This flake may have displayed a crested dorsal pattern, which would have been formed by previous removals. Following the removal of this (assumed) flake, a pronounced back was formed on side 2 (Fig. 16-11, A-A1). The reason for this step, the result of which was deleted by further flaking, is not clear, but it may represent an attempt by the knapper to dispose of an excessive volume of flint, in order to form the more or less symmetrical shape of the preform. In any case, the back of side 2 posed a number of knapping problems which had to be resolved in subsequent stages of reduction.

Sub-stage VIIc, surface B, side 2

This sub-stage might be viewed as the beginning of the back deleting process. The first and second flakes were removed from the transition between back and edge. These flakes were located closer to the plaquette base (Fig. 16-12, 1, 2). These removals resulted in hinge fractures. This new problem was resolved by two subsequent removals, the platforms of which were carefully prepared by isolating their points of percussion (Fig. 16-12, 3, 4). Following their removal, and with them the hinge fractures (Fig. 16-12, 5), a large part of the width of the preform base was lost. Further, the convexity of surface B significantly increased.

The refitted items from this sub-stage comprise two chips, two flakes and one blade. Only one flake has no cortex coverage on its dorsal surface, with all remaining pieces characterised by 20-50 % dorsal surface cortex coverage. Identifiable platforms include two unlipped butts, one of which is straight faceted, and the other crushed.

Sub-stage VIId, surface B, side 2

In this sub-stage the removal of the previously formed back of the preform continued towards the top of the piece (Fig. 16-12, 6, 7, 8, 9, 10). Unlike in the previous stage, these removals were unmistakable. Four removals carry negatives from the pronounced back, either on their striking platforms or upon the proximal parts of their dorsal surfaces (Fig. 16-12, 7, 8, 9, 10). The removals detached in this sub-stage restored the lateral edge symmetry to the preform. Also, these removals resulted in the formation of a more or less symmetrical bi-convex cross-section. At the same time, it must to be noted that surface B, although sufficiently flattened, still showed a more convex outline than surface A.

Refitted pieces from this sub-stage comprise three flakes and two chips. Only one chip has a small amount of cortex on its distal part. Most removals are characterised by butt abrasion, though their points of percussion have not been isolated. Among the identifiable striking platforms are plain (Fig. 16-12, 6), dihedral (Fig. 16-12, 7, 9, 10) and polyhedral (Fig. 16-12, 8) types. The plain platform is semi-lipped, while all others are unlipped.

Sub-stage VIIe, surface B, side 2

Following the removal of the pronounced back, three removals were made from the middle part of the lateral side (Fig. 16-12, 11, 12, 13). These flakes were struck towards the top of the preform. This sub-stage resulted in the smoothly convex outline of the edge, the overall symmetric proportions of the preform, and the thinned terminal part of the future tool. Only one flake display a small corticated area on its dorsal surface. One flake has a plain, semi-lipped platform, and all other platforms are crushed.

Two more chips were removed from the tip of the preform (Fig. 16-12, 15, 14). These have been attributed to the distal thinning procedure.

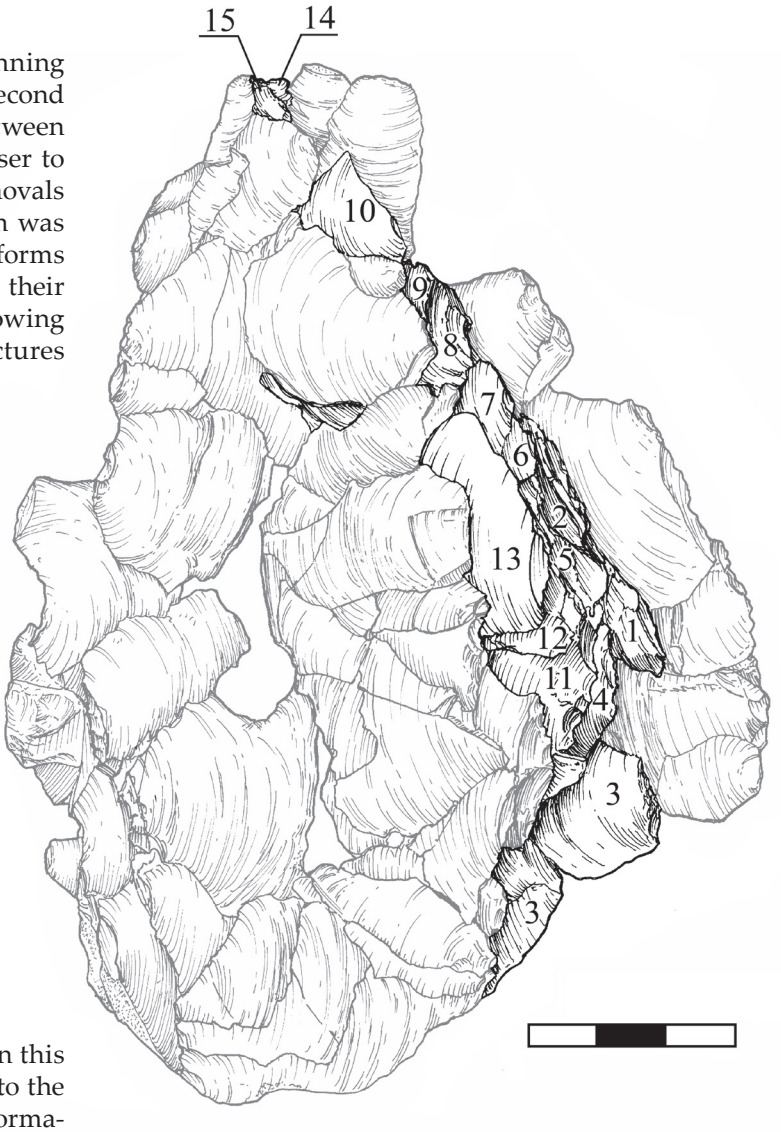

Fig. 16-12 Kabazi V, level III/4-2. Sub-stage VIIc of preform reduction: 1, 2, 3, 4, 5 – refitted artefacts. Sub stage VIId of preform reduction: 6, 7, 8, 9, 10 – refitted artefacts. Sub-stage VIIe of preform reduction: 11, 12, 13 – refitted artefacts. Tip thinning: 14, 15 – refitted chips. Arabic numerals specify the sequence of removals.

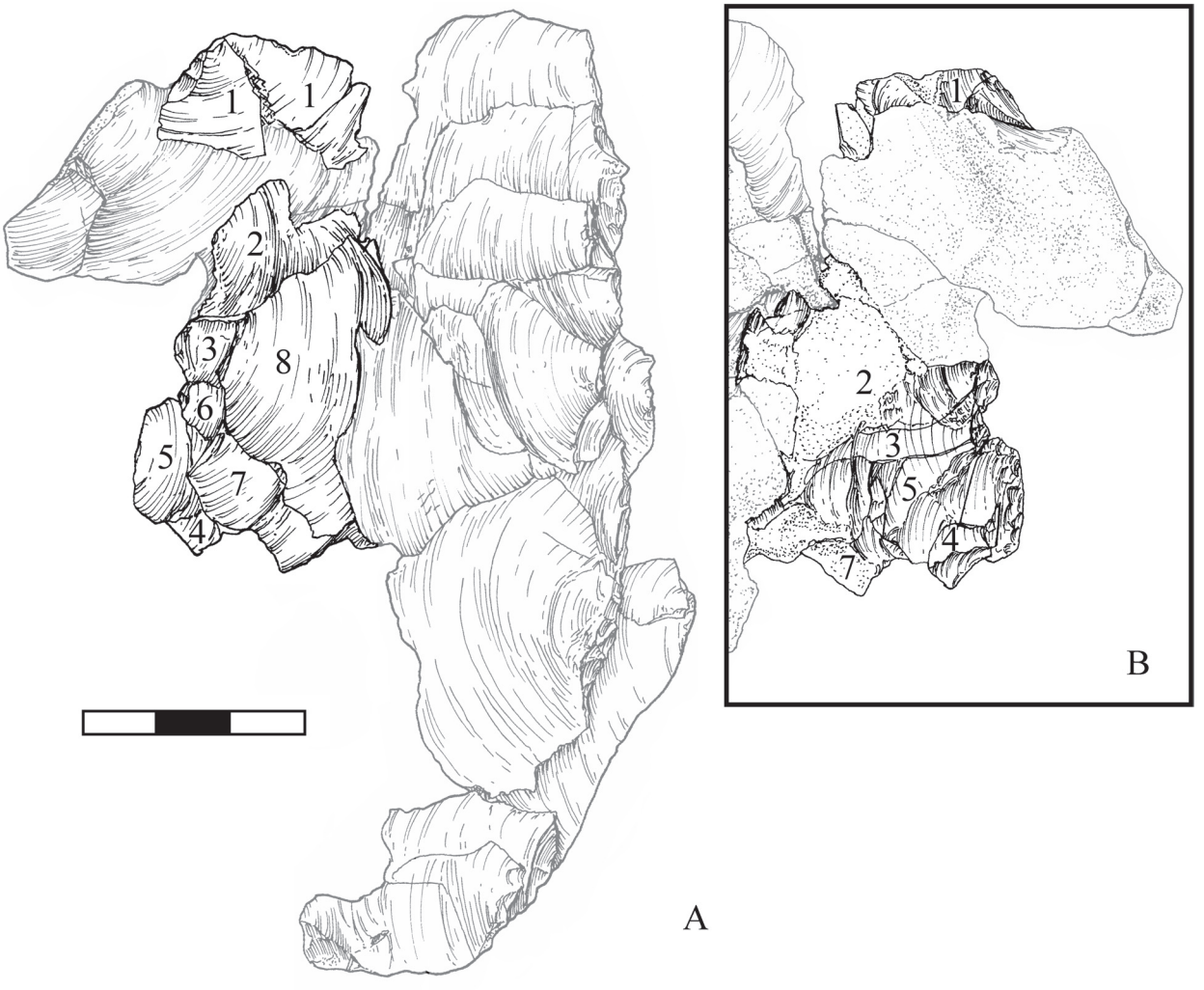

Fig. 16-13 Kabazi V, level III/4-2. Stage VIII of preform reduction: 1, 2, 3, 4, 5, 6, 7, 8 – refitted artefacts; A – ventral surface; B – dorsal surface. Arabic numerals specify the sequence of removals.

Stage VIII, Surface A, Side 2

The elaboration of the same lateral side continued, but this was now undertaken from the opposing surface. The middle / upper part of surface A was flattened by a series of eight removals (Fig. 16-13), comprising 3 flakes, 1 blade and 4 chips. Six of these had smashed or broken striking platforms. Two removals are characterised by the occurrence of butt abrasion and plain unlipped striking platforms (Fig. 16-13, 1, 5). Only one flake displayed more than 50 % cortex coverage of its dorsal surface (Fig. 16-13, 2). Four more items have only small (<25 %) corticated areas (Fig. 16-13, 1, 3, 6, 7), while all remaining pieces have no cortex on their dorsal surfaces (Fig. 16-13, 4, 5, 8).

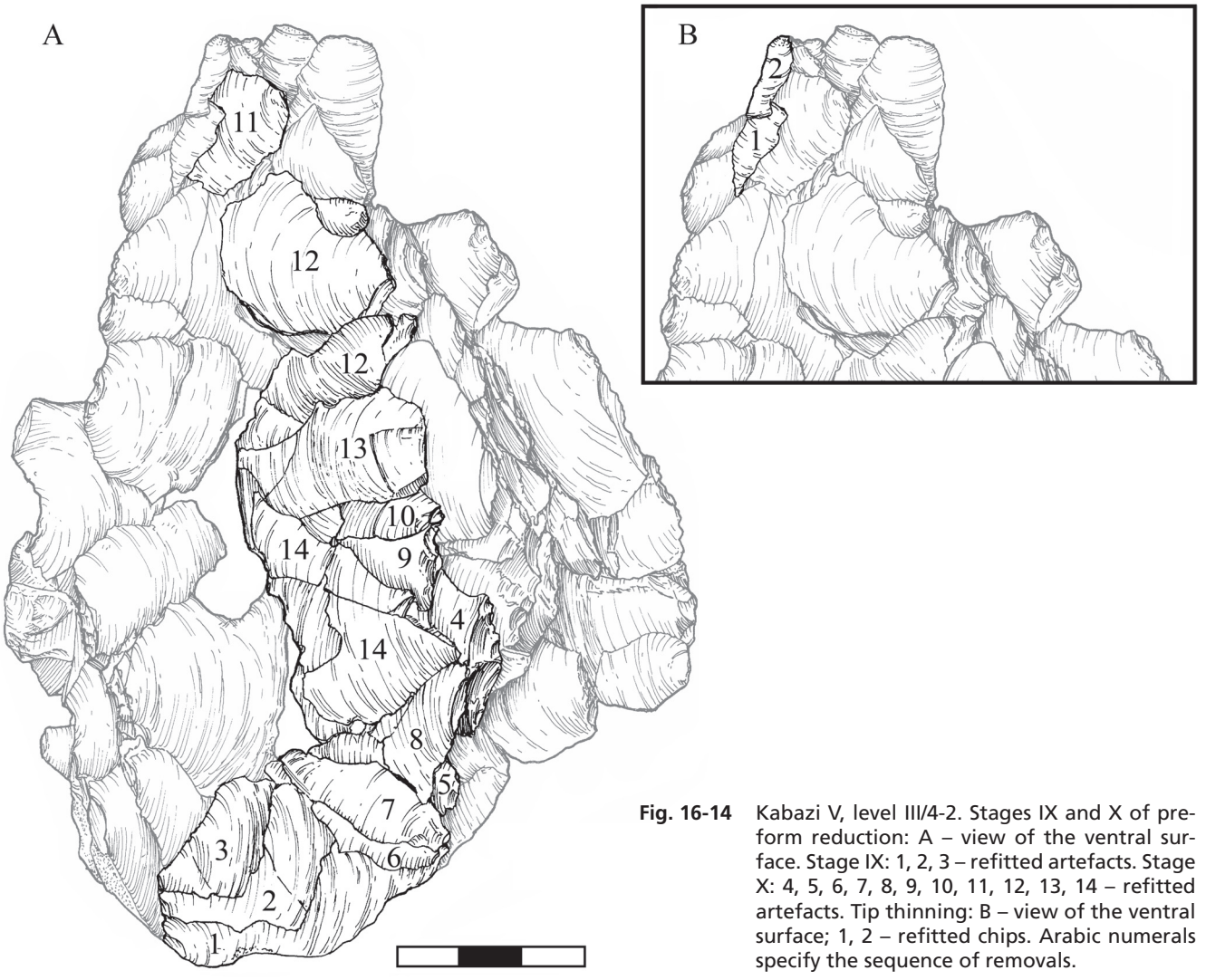

Fig. 16-14 Kabazi V, level III/4-2. Stages IX and X of preform reduction: A – view of the ventral surface. Stage IX: 1, 2, 3 – refitted artefacts. Stage X: 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14 – refitted artefacts. Tip thinning: B – view of the ventral surface; 1, 2 – refitted chips. Arabic numerals specify the sequence of removals.

Stage IX, Surface B, Side 1

In this stage the same surface was again treated from the opposite side. Three flakes were struck from side 1 (Fig. 16-14, A: 1, 2, 3). The removal of these flakes thinned the preform base. Whereas two of these flakes have lipped plain platforms (Fig. 16-14, A: 1, 2), one flake has an unlipped faceted convex platform (Fig. 16-14, A: 3). The dorsal surface of one flake is covered to about 50 % by cortex (Fig. 16-14, 1).

Stage X, Surface B, Side 2

The thinning of the preform base continues on the same flaking surface, but from the opposite side (Fig. 16-14, A: 4, 5). In fact, stage IX and part of stage X were devoted to the lateral thinning of the preform base.

Further treatment consisted of two separate episodes. First, part of the lateral side, from the base towards the middle part of preform, was elaborated by five removals (Fig. 16-14, A: 6, 7, 8, 9, 10). Second, a further series of removals was directed from the top of the preform towards the base. These two sets of removals meet and overlap at about halfway down the edge of the preform (Fig. 16-14, A: 11, 12, 13, 14). A few removals display distal cortex (< 25 % of dorsal surfaces) which stems from the middle part of the preform. Butt abrasion occurs quite often.

For this stage, a total of 4 chips, 4 flakes and 3 blades were refitted. Four pieces retained small corticated areas on their dorsal surfaces. Identified striking platforms include plain (Fig. 16-14, A: 1, 2) and polyhedral types (Fig. 16-14, A: 3, 4, 6, 8, 12). Two platforms are lipped, one is semi-lipped, three are unlipped, and all other could not be identified.

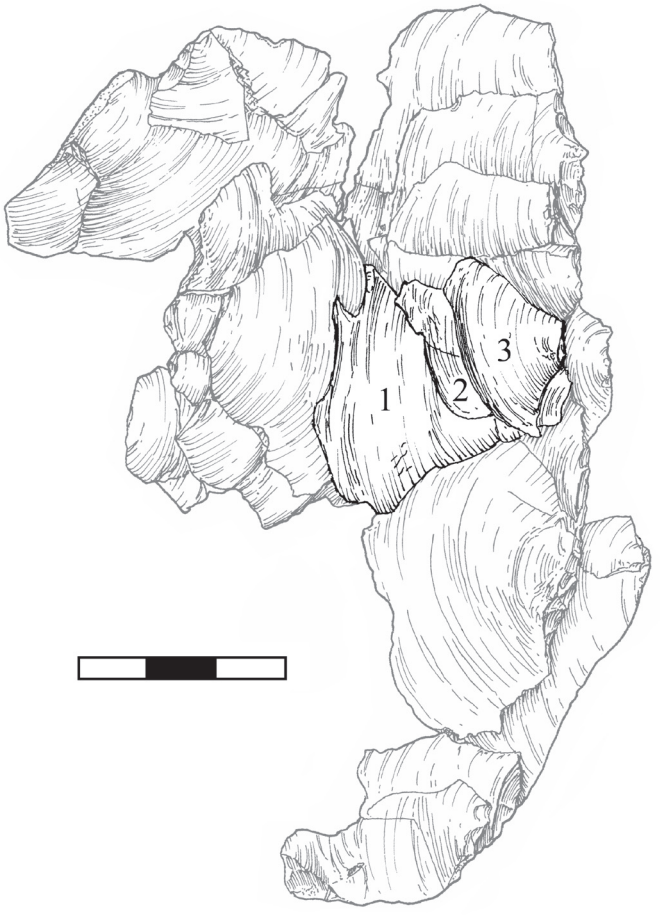

Fig. 16-15 Kabazi V, level III/4-2. Stage XI of preform reduction: 1, 2, 3 – refitted artefacts, view of the ventral surface. Arabic numerals specify the sequence of removals.

Stage XI, Surface A, Side 1

Stage XI is documented by three removals (two flakes and one chip) which thinned the mid part of the edge on side 1 (Fig. 16-15, 1, 2, 3). There is no cortex on the dorsal surfaces of these items. Two platforms are faceted-convex (lipped and semi-lipped); one further platform is broken.

Two more chips were struck from the tip so as to thin the distal part of the bifacial preform (Fig. 16-14, B: 1, 2).

This was the last stage of preform production. Further stages would have been associated with tool production – retouching. These last stage(s) are represented by 2,703 not refitted chips, the majority of which is smaller than 0.5 cm.

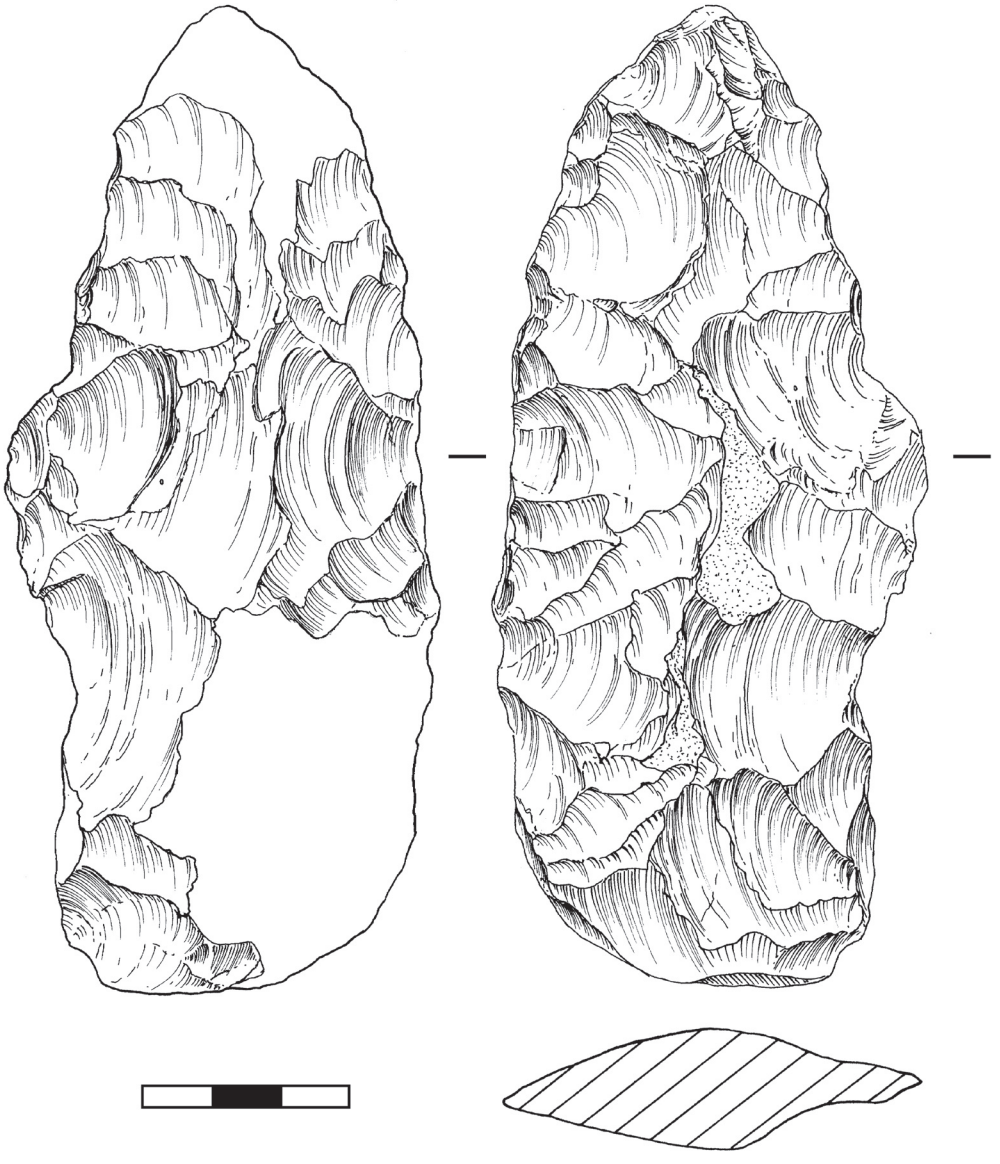

Fig. 16-16 Kabazi V, level III/4-2. Preform of the bifacial tool.

Discussion

The refitted "cover" of the bifacial tool was filled with an artificial wax (paraffin) so as to produce a cast of the missing bifacial tool. This cast resembles a sub-leaf bifacial scraper (Fig. 16-16); it is 14.23 cm long, 6.11 cm wide, and 1.78 cm thick. The orientation of the preform correlates perfectly with the primary form of the flint plaquette, i.e. both the long axis of the plaquette and the long axis of the preform share the same orientation. Thus, the terminal part of the preform is oriented towards the top of the sub-trapezoidal plaquette, and the preform base is oriented towards the basis of the plaquette.

A total of four different preform reduction phases have been identified. The first phase comprises stages 0 and I. During this phase, surface A was treated from both lateral sides (Table 16-1, Fig. 16-17). The second phase, comprising stages II through VI, was devoted to the formation of the edge on side 1. This was formed by alternating removals from surfaces A and B (Table 16-1, Fig. 16-17). In the third phase, stages VII and VIII, the edge on side 2 was formed, also by alternating removals from surfaces A and B (Table 16-1, Fig. 16-17). The last phase involved the formation of the preform edges by alternate removals from both preform surfaces.

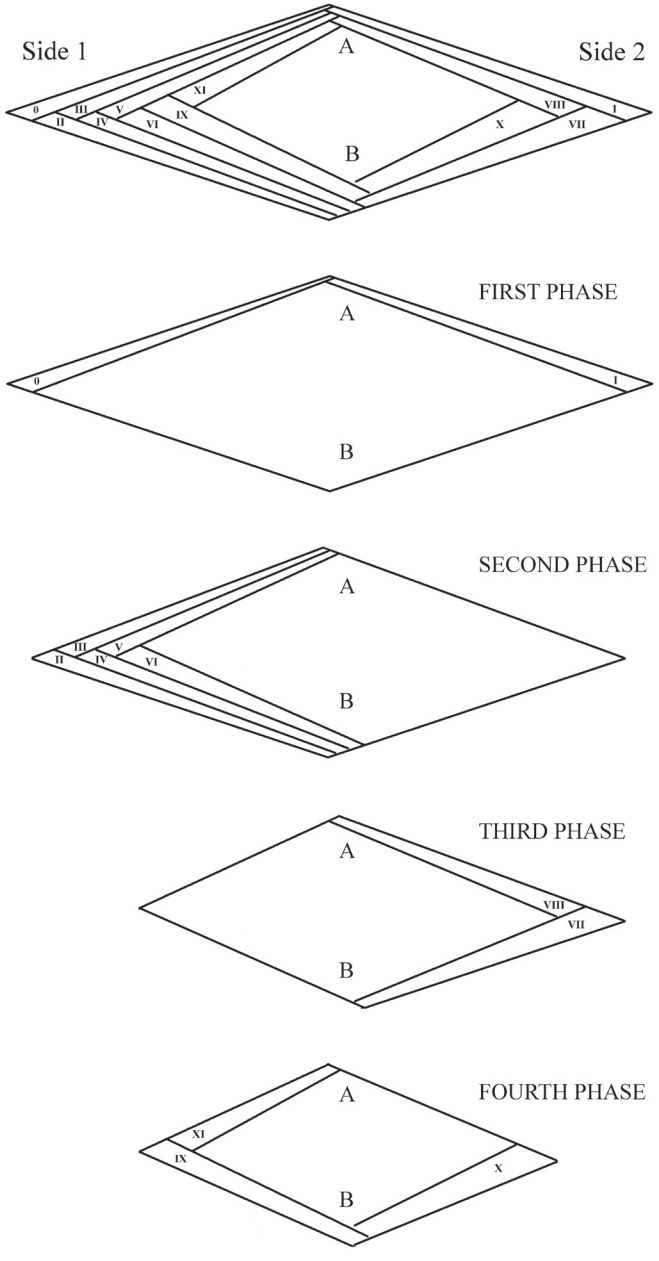

Fig. 16-17 Kabazi V, level III/4-2. Reduction sequence of the preform of the bifacial tool, by phases. Roman numerals indicate stages of the reduction sequence.

Both the second and third phases were connected with continuous treatment of one or another edge. That is, the edges were worked separately, first the edge on side 2, and then the edge on side 1. Altogether the second and third phase produced 58 of 83 refitted debitage pieces (29 pieces each). The alternate treatment of both edges from both surfaces during the fourth phase produced 17 refitted pieces. Even taking into account the probable incompleteness of refitted pieces, it is possible to conclude the importance of the separate continuous treatment of edges. The majority of the flint volume was removed during the second and third phases. These phases resulted in the formation of the bifacial leaf-shaped (in plan) and bi-convex (in cross-section) preform.

The fourth phase is characterised by an alternate treatment of surface and edges, which is usual for Micoquian bifacial tools: "wechselseitig-gleichgerichtete Kantenbearbeitung" (Bosinski 1967, s. 43) or "*plan convexe/plan convexe*" (Boëda 1995, s. 76). However, the bi-convex cross-section of the preform was not changed to plano-convex, although it should be noted that 2,703 chips are still not refitted. It is likely that all of these pieces stem from a phase of preform retouching. There are two main retouch methods observed on bifacial tools from the Crimean Micoquian: the plano-convex method (both edges retouched on one surface) and the plano-convex alternate method (each edge retouched on the opposite surface). To some extent, the retouch might change the cross-section of the tool. The most part of Micoquian bifacial point and scrapers show plano-convex cross-sections with plano-convex retouch. Usually, bi-convex cross-sections are common for tools with plano-convex alternate retouch.

The first phase of preform production is documented by one chip and one flake. Such weak evidence from this stage suggests that the decortication of the flint plaquette probably took place off-site. Evidence for distal thinnings were found on 2 flakes and 4 chips. No doubt, there are further chips, which have not been refitted, that are also connected with or stem from distal thinning.

The majority of stages are characterised by consecutive removals, whereby parts of the previous negative are overlapped by the negatives from subsequent removals. It is not obligatory that the preparation of the whole length of one edge need to have been undertaken in one single stage. As a rule, the processing of a certain area of a lateral edge depends on the way in which problems encountered during the knapping process are resolved, e.g. the flattening of the working surface, the control over the relatively straight lateral profile, the increase in length of the edge by retouching the base, etc.

No particularly dominant direction of treatment is observed, although more often than not, the processing of lateral edges is directed from the base or top of the preform towards its middle part (stage III, Fig. 16-6; stage VI, Fig. 16-9; sub-stage VIIc, Fig. 16-12; stage X, Fig. 16-14, A).

Flakes and chips that were struck in the initial reduction stages were not especially prepared prior to their detachment (stage I, Fig. 16-3; stage II, Fig. 16-5). Platform preparation only began to play a role in the later stages of bifacial tool production. There were three main methods of preparation of striking platforms, all of which served to gain better control over flaking surfaces and processed edges. These involved the reduction of the platform edge, butt abrasion, and the isolation of the point of percussion. The reduction of the platform edge was realised by a series of small removals from the striking platform (stage III, Fig. 16-6; sub-stage VIIa, Fig. 16-10, 2). Quite often, an additional abrasive treatment of the platform edge was used to strengthen it, and thus prevent striking platforms from smashing during percussion. In the final stages of preform shaping, points of percussion tended to be isolated prior to the detachment of the removal (stage V, Fig. 16-8, 4; stage VI, Fig. 16-9, 2, 3, 5, 6, 10; stages IX and X, Fig. 16-14, 3, 4, 6, 8, 12).

The most specialised method required in the production of this bifacial preform was applied in the preparation and subsequent removal of the back of the tool (sub-stage VIIb, Fig. 16-11, A-A1; sub-stages VIIc, VIId, Fig. 16-12). It was this process which then resulted in the symmetrical shape of the tool, and also led to the change in the shape of the preform cross-section; the latter become more plano-convex, i.e. surface B was now bestowed with a more pronounced convexity than surface A.

Upon comparison of the dimensions of the artificial wax (paraffin) cast of the bifacial scraper and the primary size of the flint nodule, it becomes evident that the most obvious changes are to be observed in width and thickness values, both of which decreased during reduction by more than 1.5 times; or in other terms, the coefficient of width reduction lies at 1.78, while the coefficient of thickness reduction is 1.58. On the other hand, the difference between the length of the bifacial tool cast and the original length of the flint plaquette is practically negligible; here the coefficient of length reduction is 1.04. The reduction in thickness, width and length is related to intensive bilateral shaping, i.e. the main method of tool production. The insignificant treatment of the distal part, as well as the absence of any traces of base thinning of the tool, means that the near maximum length of the plaquette was retained. Distal thinning was in evidence in stage II, sub-stage VIIe, and stage XI (Fig. 16-5, 6, 7; 16-12, 15, 14; 16-14, B: 1, 2). A total of four chips and two flakes were removed from the distal part of the preform. The base of the preform was processed exclusively by bilateral removals. It is likely that the bifacial tool would have had a small corticated area on its base. Bilateral shaping resulted in the formation of central ridges on both tool surfaces (Fig. 16-16). The surface ridges correlate with the tool axis.

The statistically incomplete assemblage of flakes and blades with identifiable striking platforms does not provide sufficient substance for detailed typological studies. However, some of the most pronounced characteristics should be underlined. The majority of refitted items display dorsal cortex, 29 pieces have 1-25 % cortex coverage; 12 pieces show 26-50 % cortex coverage; 11 pieces display 51-75 % cortex coverage; and two pieces are completely covered by cortex. Such a composition of corticated pieces is common for the most part of Micoquian debitage collections. Also, the relative deficit of pieces completely covered by cortex might suggest that the decortication process, or intensive testing of the raw material, took place at the flint outcrop itself.

Lipped platforms are common in all stages of the reduction sequence, the only exceptions being the platforms from stages I and II. Of 29 blanks with identifiable striking platforms 20 are characterised by lipped and semi-lipped platforms. The majority of platforms are polyhedral (13 items) and plain (11 items), followed by dihedral (7 items), covered by cortex (5 items) and faceted (4 items) platforms. Those platforms covered by cortex stem mainly from the initial stages of reduction, while dihedral, polyhedral, and especially faceted, platforms were produced during the final stages and are connected with a fine working of the edges. The sum of dihedral, polyhedral and faceted platforms constitutes more than half of all identifiable platforms. This correlate well with the relatively high IF values for Micoquian assemblages at Kabazi V (see Chapters 7, 8, 11, this volume).

To some extent, the characteristics of refitted artefacts might serve as key for a better understanding of the debitage attributes of Micoquian collections.

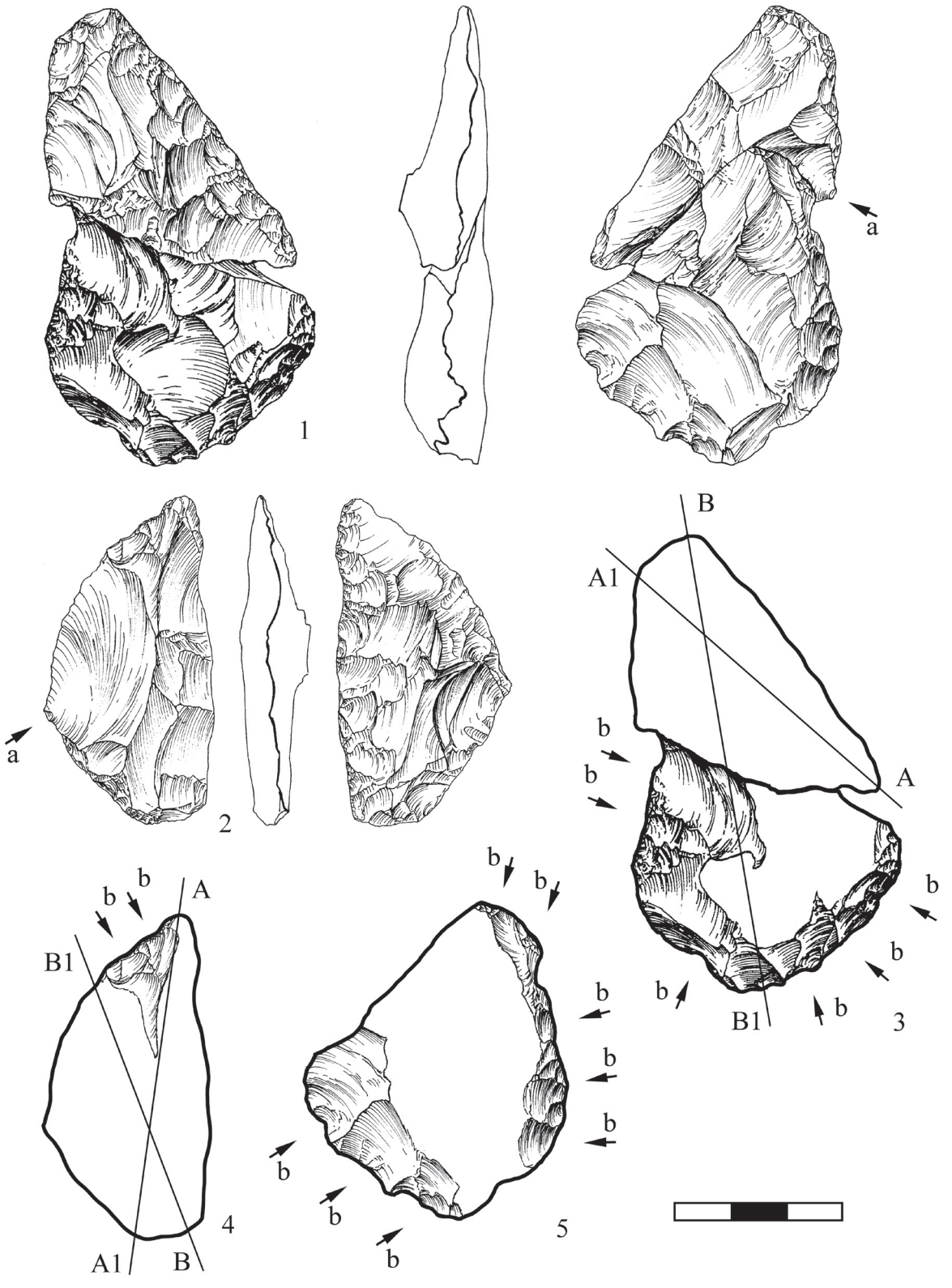

Fig. 16-18 Kabazi V, level III/1A. Bifacial scrapers: 1 –refitted sub-trapezoidal bifacial scraper; 2, 4 –distal part of the sub-trapezoidal bifacial scraper transformed into a sub-crescent bifacial scraper; 3, 5 –proximal part of the bifacial sub-trapezoidal scraper transformed into a straight-convex bifacial scraper; A-A1 –sub-crescent bifacial scraper, central ridge and axis; B-B1 –sub-trapezoidal bifacial scraper, central ridge and axis; a –point of percussion of the blow which led to the breakage; b – area of reutilization retouch.

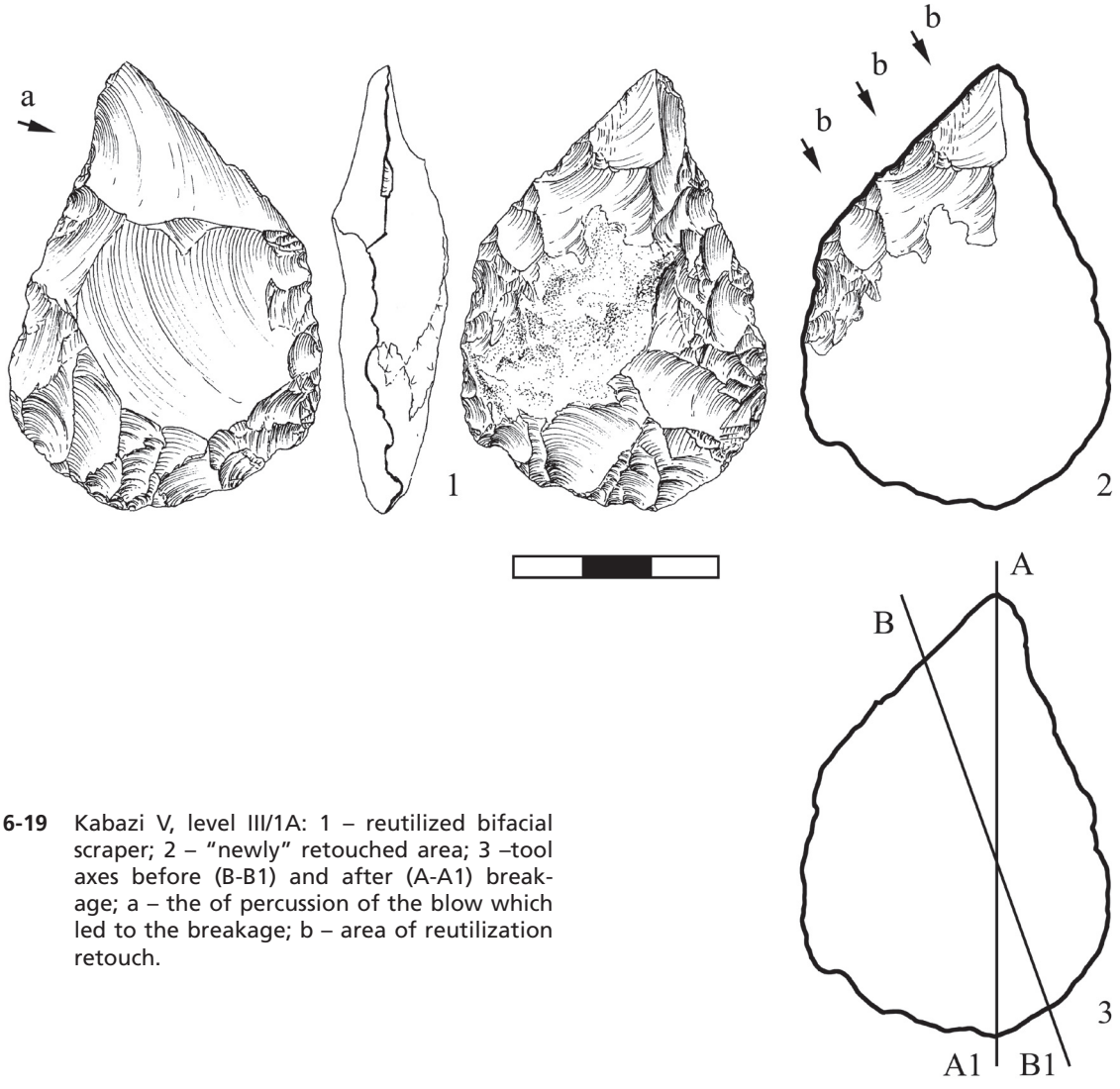

Fig. 16-19 Kabazi V, level III/1A: 1 – reutilized bifacial scraper; 2 – "newly" retouched area; 3 –tool axes before (B-B1) and after (A-A1) breakage; a – the of percussion of the blow which led to the breakage; b – area of reutilization retouch.

Refits from Level III/1A

Two broken bifacial tools collected from level III/1A provide very convincing evidence of their reutilisation (Fig. 16-18; 16-19). It is likely that one of the pieces broke in the course of its production or its reshaping (Fig. 16-18, 1), and prior to breakage was a sub-trapezoidal bifacial scraper. The breakage zone of the tip fragment was then slightly retouched (Fig. 16-18, 2, 4), thus transforming the piece into a sub-crescent bifacial scraper. The minimal retouching created new axes which coincided with the new central ridge of the tool (Fig. 16-18, 3: A-A1, 4: A-A1), although the opposite surface still retained the central ridge of the former sub-trapezoidal scraper. (Fig. 16-18, 3: B-B1, 4: B-B1). The lateral edges of the base fragment of the broken sub-trapezoidal bifacial scraper were also retouched (Fig. 16-18, 3). The newly formed tool might be referred to as a straight-convex bifacial scraper. Thus, the two fragments of the broken sub-trapezoidal bifacial scraper were transformed into two bifacial scrapers: a sub-crescent bifacial scraper and a straight-convex bifacial scraper.

Differing orientations of central ridges and tool axes on opposite surfaces are inherent to a small series of bifacial tools (Veselsky 2006). Further, these bifacials often retain the negative left over from breakage (Fig. 16-19, 1). In some cases, however, this negative has been partially or completely removed by later "reutilisation" retouching (Fig. 16-19, 2; 16-20, 2, 3). The lateral retouch along the breakage zone led to the formation of a new axis on one of its surfaces (Fig. 16-19, 3: A-A1; 16-20, 4: A-A1); thus, on its opposing surface the primary system of scar-pattern remains, as does the direction of the central ridge and the axis of the original tool (Fig. 16-19, 3: B-B1; 16-20, 4: B-B1). In most cases, reutilised bifacial tools are crescent-shaped (Fig. 16-18, 2; 16-20, 1) and are relatively small.

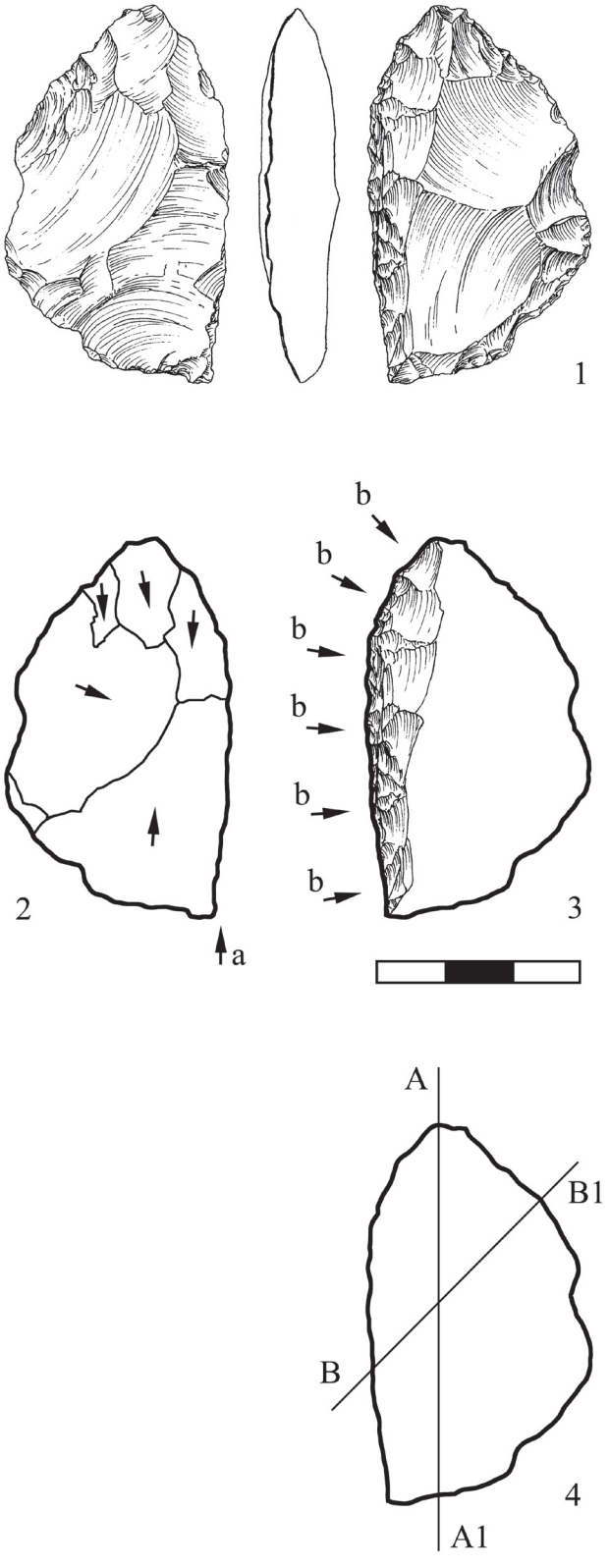

Fig. 16-20 Kabazi V, Sub-unit III/1, level III/1A: 1 – reutilized semi-crescent bifacial scraper; 2 – scar-pattern of "plano" surface of reutilized semi-crescent bifacial scraper; 3 – the "newly" retouched area of the semi-crescent bifacial scraper; 4 –tool axes before (B-B1) and after (A-A1) breakage; a –point of percussion of the blow which led to the breakage; b – area of reutilization retouch.

Summary

The refits and their interpretations presented in this chapter reflect some very important aspects of bifacial tool technology, production and reutilization in the Crimean Micoquian. It appears that in the frame of the Micoquian techno-complex the technological approaches to raw material reduction and tool transformation were very variable. Aside from the well-known and characteristic plano-convex bifacials, Micoquian knappers were able to produce bifacial preforms with a bi-convex cross-section, an ability which might also be suggested by the preform found in level III/2 (Chapter 8, Fig. 8-2, this volume). On the other hand, there is no evidence of bi-convex retouching in the Crimean Micoquian; in spite of bi-convex preform shaping, tool retouching was undertaken using the typical plano-convex manner.

The transformation of the shape of bifacial tools, and therefore their typological definitions, is another important aspect of Micoquian bifacial technology. Further, the reutilization of bifacial scrapers and points to have broken in the course of production and/or exploitation resulted in a change of the initial typological structure of tool-kits. The reutilization procedure also led to a decrease in average tool size in bifacial assemblages. All of these factors have been recognised as the basis of typological variability within the Crimean Middle Palaeolithic (Kolosov et al. 1993).

At the same time, it is clear that the refits presented above do not exhaust all technological aspects of the Micoquian tool kit. However, it is hoped that they represent the characteristic occurrences within bifacial tool production and reutilization.

Abstract

КАБАЗИ V: ИЗГОТОВЛЕНИЕ И РЕУТИЛИЗАЦИЯ ДВУСТОРОННИХ ОРУДИЙ

ВЕСЕЛЬСКИЙ А.П.

Процесс изготовления и реутилизации двусторонних орудий был изучен на основании двух склеек из горизонтов III/1A и III/4-2.

В горизонте III/4-2 в яме на квадрате 9AA было обнаружено 2786 сколов. Подробная характеристика ямы изложена в Главе 2. Все сколы происходят от одной кремневой конкреции. Сколы представлены 2735 чешуйками, 44 отщепами и 7 пластинами. В ремонтаже удалось задействовать 83 скола, которые подразделяются на 32 чешуйки, 44 отщепа и 7 пластин (Table 16-1). Склеенные сколы представляют кремневую плитку трапециевидной формы со следующими параметрами: длина, 147,63 мм; ширина, 108,83 мм; толщина, 28,27 мм. Для анализа последовательности расщепления плитка была подразделена на две рабочие поверхности (A и B) и две стороны (1 и 2) (Fig. 16-1; 16-2). Анализ последовательности расщепления плитки показал, что процесс раскалывания представлен 11 этапами (Table 16-1; Fig. 16-3 – Fig. 16-15). Результатом расщепления плитки стала преформа двустороннего орудия. Сама преформа не была найдена. Преформа была реконструирована посредством парафиновой отливки. Форма парафиновой отливки – листовидная, сечение – двояковыпуклое (линзовидное). Размеры: длина, 142,31 мм; ширина, 61,08 мм; толщина, 17,79 мм (Fig. 16-16). На начальных этапах (0 и I) расщепления был произведен ряд снятий (всего 2 скола) с двух сторон с рабочей поверхности A (Fig. 16-17). Затем в течение ряда этапов (II, III, IV, V, VI) обрабатывалась только сторона 1 (Fig. 16-17). Всего было снято 29 сколов. Следующие 29 сколов были сняты со стороны 2 на этапах VII и VIII (Fig. 16-17). После этого был применен метод альтернативной обработки двух поверхностей с использованием обеих сторон – этапы IX, X, XI (Fig. 16-17). В ходе альтернативной обработки было снято 17 сколов. Еще 6 сколов было получено в результате дистального утончения, которое производилось на разных этапах расщепления (Table 16-1). Таким образом, только последовательность снятий на завершающих трех этапах соответствует микокской технологии изготовления сегментовидных (плоско-выпуклых) в сечении двусторонних орудий (Bosinski 1967, Boëda 1995). В основном, на протяжении большинства этапов каждая сторона обрабатывалась отдельно, что в результате привело к получению линзовидной (двояковыпуклой) в сечении преформы. Вместе с тем, осталось еще 2703 чешуйки. Вероятно, большая часть данных чешуек связана с ретушированием преформы. В крымском микоке известны два варианта размещения ретуши на двусторонних орудиях: плоско-выпуклый и плоско-выпуклый альтернативный. Оба варианта являются характерными для микокских комплексов. Также в микокских коллекциях Крыма встречаются линзовидные в сечении орудия с плоско-выпуклым или плоско-выпуклым альтернативным размещением ретуши. Скорее всего, данная преформа была преобразована в двустороннее острие / скребло с плоско-выпуклым или плоско-выпуклым альтернативным размещением ретуши.

Вторая склейка отражает процесс реутилизации сломанного в процессе изготовления или использования орудия. Из фрагментов дистальной и базальной частей подтрапециевидного двустороннего скребла было изготовлено два орудия: подсегментовидное двустороннее скребло и прямо-выпуклое двустороннее скребло (Fig. 16-18). Подсегментовидное двустороннее скребло было изготовлено с использованием минимального ретуширования зоны слома. Изготовление прямо-выпуклого двустороннего скребла было достигнуто ретушированием имеющихся латеральных сторон. Таким образом, в результате реутилизации произошло изменение количества, типологии и размеров орудий. Характерные черты реутилизированных двусторонних орудий прослеживаются на ряде двусторонних скребел из коллекции горизонта III/1A (Fig. 16-19; 16-20).