

Palaeoenvironments and Prehistory in the Middle Son Valley

[Madhya Pradesh, North-Central India]

Edited by

G. R. Sharma

Department of Ancient History, Culture & Archaeology
University of Allahabad, India

and

J. D. Clark

Department of Anthropology
University of California, Berkeley, U.S.A.



ABINASH

ABINASH PRAKASHAN, ALLAHABAD, INDIA

Report on the Excavation and Analysis of an Upper Acheulean Assemblage from Sihawal II

Jonathan Mark Kenoyer and J. N. Pal

INTRODUCTION

The site of Sihawal II (Sharma, G. R. et. al., 1975-76, pp. 25-27) is located just south of the village of Sihawal, Madhya Pradesh on the north bank of the Son River (24°33'54" N., 82°, 14', 18" E). The objectives of the excavation were to expose an horizontal area of the coarse Lower Member of the Sihawal Formation and to try to determine the context of Lower Palaeolithic artifacts which were eroding out from this formation. The site was chosen in an area where a relatively thin layer of the fine Upper Member of the Sihawal Formation still sealed the Lower Member, and also where it would be possible to expose a clear section up slope to the Patpara Formation which lies unconformably on the Sihawal Formation.

Excavations began on February 5, 1980 and concluded on February 12. The principal excavators, under the Co-Directorship of Professor G. R. Sharma of the University of

Allahabad and Dr. J. D. Clark of the University of California-Berkeley, were Mr. J. N. Pal, University of Allahabad; J. M. Kenoyer, Carole Sussman, and Jo Ann Gutin of the University of California, and P. Sinha, University of Allahabad, who was present during part of the excavation.

STRATIGRAPHY

The main excavation was in a 5×5m area (Pl. I) with a smaller 1×2m sondage about four meters upslope (Fig. 1). The stratigraphy of the site relates directly to the geological formations which have been defined by the geologists Williams and Royce (this volume), and spans two major formations.

The lowest level reached in the excavation of the main grid was bedrock, which is made up of weathered and unweathered shale. Above this is the Sihawal Formation which has a coarse Lower Member made up of rolled to angular clasts of quartzite, sand-

stone, chert, and shale in a clay matrix; and a fine Upper Member of mottled brown clay loam (Fig. 2; Pl. II).

The average sizes of clasts in the Lower Member, sampled from 4 one meter squares, are approximately 55% tiny pebbles and iron/manganese nodules; 25% angular to rounded rock, 3 to 7cm in diameter; and 20% angular to rounded boulders, 7 to 15cm in diameter and greater. The uppermost portion of the boulder clay is weathered (Level 3A) and the lower portion is somewhat more consolidated due to high concentration of calcium carbonate and there is more iron/manganese precipitation (Level 3B). Resting conformably on the boulder clay is the fine Upper Member which is made up of a mottled brown clay loam which has a high concentration of calcium carbonate nodules in the lower part of the deposit (Level 2).

The uppermost deposit at the site is the Patpara Formation (Level 1) which is characterized by very coarse sands which are stained red by iron oxides. Only the lowest part of this formation was exposed in the sondage but this was sufficient to relate this formation to the underlying Sihawal Formation.

EXCAVATION

In the main grid our first objective was to expose the uppermost surface of the boulder clay (Level 3A) and determine what type of context the Lower Palaeolithic tools were eroding from. After removing the overlying mottled brown clay (Level 2) we began finding flakes and retouched tools lying embedded in the top of the boulder clay, however, the distribution of these artifacts showed no patterning or evidence that they were in a primary context. As we excavated the first 10cm of Level 3A we found more artifacts

mixed in with the boulders and again we saw no pattern or clustering in their horizontal distribution (Fig. 3: N.B. Some additional flakes and chunks were found during the sorting of soil removed from the squares and these have not been included in this distribution; Fig. 4: includes *all* retouched tools). We have not been able to discern any significant vertical clustering of artifact types within Levels 3A and 3B (Fig. 5) and in terms of the distribution of the artifacts on the basis of condition, we see a mixture of fresh artifacts in the lower levels with abraded ones. This type of distribution is consistent with the nature of the deposit itself, which is colluvial and has no pattern of grading. The boulders which make up the gravel are rounded to angular and these are found mixed throughout all levels of the deposit. We can say then without any hesitation, that we are dealing with a secondary context site where artifacts of differing ages have been deposited along with the gravels. The fact that some of these are fresh indicates that some of them were discarded much later and probably much closer to their final resting place than those which are more abraded.

Levels 3A and 3B are the same geological deposit, but because of the fact that 3B is more consolidated and cemented we treated them separately for excavation purposes. In the main grid we excavated 3A down to the top of 3B in all 25 square meters and recovered a total of 114 artifacts. In grid squares A5 to E5 (5 square meters), we excavated Level 3B down to bedrock and found only 4 more artifacts, one of which was a handaxe (Fig. 10: 2). These four artifacts were found only in the first 20cm of Level 3B and in the lowest levels we found no artifacts at all. Since we were able to excavate only 5 square meters, this finding cannot be seen as conclusive, but it does suggest that when

the boulder clay deposit was first forming, the region from which these boulders were being transported by colluvial action, was not inhabited and remained so for quite some time.

In the sondage we were able to expose a section through the Patpara Formation (Level 1), to the top of the boulder clay (Level 3A). In the first 20 to 30cm of Level 1 we found fresh to moderately abraded late Upper Palaeolithic type tools, including backed blades (Fig. 9: 1, 2) and a blade core fragment. The entire depth of Level 1 was interlaced with roots and it is probable that many of these tools were mixed into the upper levels from the surface by root action. After the removal of Level 2, which does not contain any artifacts, we were able to expose the uppermost surface of Level 3A. Here we found a quartzite flake imbedded in with the boulders, coinciding with our findings in the main grid. Since our objective was to expose a section connecting the Patpara Formation with the Sihawal Formation, we decided not to excavate Level 3A in the sondage.

ARTIFACT DESCRIPTION AND ANALYSIS

The artifacts from Sihawal II, Levels 3A and 3B have been described and studied using classification systems developed in Africa and India for the study of Lower Palaeolithic assemblages. However, due to the small size of our sample we have not been able to determine any significant features which could be said to characterize the Lower Palaeolithic assemblages of this region. But, the sample is useful in the sense that it provides a base line from which to develop more detailed regional studies.

The total number of artifacts from 3A and 3B is 119, and 113 (95%) of these were

made from quartzite or a fine grained sandstone, while 6 (5%) were made from chert. We have grouped the artifacts into three categories, Shaped Tools (11.8%), Modified/Edge Damaged Artifacts (11.8%), and Unmodified Waste (76.4%) (Fig. 7).

Shaped Tools

We found one cleaver in the excavation which was made on an end flake, also of quartzite, which has a plain striking platform. There is some edge damage on the bit and the condition of the tool is fresh (Fig. 10: 3). Another cleaver in fresh condition was found on the surface down slope from the excavation and it too is of quartzite. This one is also made on an end flake and has a simple faceted striking platform; it is divergent sub-rectangular in form and there is retouch on the lateral edges on the dorsal face only (Fig. 10: 5).

We also have an example of a side-chopper or core-chopper. It is made of quartzite or fine grained sandstone and is slightly abraded, with some cortex still remaining (Fig. 10: 4).

We found one knife which had retouch on one end and one side; this was in fresh condition, had some cortex remaining, and was made of quartzite (Not illustrated, see Table 2 for measurements).

A variety of retouched flakes and chunks were found which can be grouped under the general heading of scrapers:

Convergent scraper on a flake; chert, slightly abraded. It has normal retouch and the bulb is at the distal end of the artifact. A possible Levallois flake has been removed from the proximal end (Fig. 9: 4).

Convex side-scrapers; quartzite slightly abraded; inverse retouch (Fig. 9: 5).

Convex side-scrapers on an end flake with plain striking platform; quartzite, fresh; normal retouch (Fig. 9: 8).

Scrapers, one side, with retouch partly on one end; chert, slightly abraded, brown patina; plain striking platform and normal retouch (Fig. 9: 9).

Scrapers, two sides, or *dejeté* scrapers; quartzite, fresh; heavy edge damage on right side and proximal end, plain striking platform (Fig. 9: 12).

Besides those scrapers which have been illustrated we have one example each of an end-scrapers and a core scraper (Not illustrated, see Table 2 for measurements).

One interesting piece is bifacially flaked to form what appears to be a small biface, but due to the fact that the point has been broken off it is difficult to classify it properly and we have called it simply a bifacially retouched chunk. It is made from chert which is now mottled brown and white and it is slightly abraded (Fig. 9: 3).

Modified/Edge Damaged Artifacts

Quite a number of the flakes and flake fragments show some slight modification or edge damage along one or more edges, but it is often difficult to determine whether this modification is man-made or if it is a natural result of the artifact being tumbled around with large boulders. Because of this ambiguity we have grouped these questionable artifacts in a separate category from shaped tools.

Radially prepared flake; chert, fresh; plain striking-platform, normal and inverse modification or edge damage (Fig. 9: 7).

End flake; quartzite, fresh; dihedral striking platform, inverse modification or edge damage (Fig. 9: 10).

Side flake; quartzite, fresh; plain striking platform, marginal edge damage or modification on three edges (Fig. 9: 11).

Flake fragment; quartzite, moderately abraded; modification or heavy edge damage on the dorsal face (Fig. 9: 13).

Unmodified Waste

The unmodified waste comprises 76.4% of the assemblage and is largely made up of unspecialized flakes, flakes fragments and amorphous chunks.

Flake, radially prepared; quartzite, fresh; plain inclined striking platform (Fig. 9: 6).

Flake, radially prepared; quartzite, slightly abraded; plain inclined striking platform (Fig. 10: 1).

We also found various types of cores, including biconical and proto-biconical forms, flat discoid, and single platform cores with normal and angle platforms (see Table 2 for measurements).

Blade core on a chunk; chert, slightly abraded, yellowish white patina; simple prepared striking platform (Fig. 9: 14).

Biconical core, radial flaking; quartzite, fresh (Fig. 9: 15).

The artifacts collected from Level I in the upper sondage appear to be Upper Palaeolithic types and are similar to the tools found at the site of Baghor I. Here again we have a very small sample, 20 artifacts and of these 25% were shaped tools and 75% unmodified waste. These artifacts were all made from either chert or chalcedony and range from fresh to moderately abraded in terms of condition. This variation in condition confirms the idea of mixing in the upper levels of Level I and suggests that some of these artifacts may have come from quite a distance while others may have been discarded much closer to the site.

The shaped tools include backed blades

(Fig. 9: 1, 2) and one modified flake (Not illustrated). The unmodified waste is comprised of blade and blade fragments, flakes, and one blade core fragment (see Tables 3, 4).

DATING AND CONCLUSION

The dating of the artifacts from the boulder clay, Levels 3A and 3B, is made on the basis of correlations with African Early Stone Age materials at 100,000 B.P. or older, (Late Middle to Upper Pleistocene). This age, however, must be taken only as a tentative date until further studies have been made of the geology and archaeology of the region.

DESCRIPTION OF ARTIFACTS ILLUSTRATED

Fig. 9.

Acheulian artifacts from the Lower Member of the Sihawal Formation, Level 3 (Nos. 3-15) and Upper Palaeolithic tools from the reworked top (Level 1) of the Patpara Formation (Nos. 1 and 2)

1. Backed blade fragment, normal backing. Squares J5-K5 : 22×8×5mm
2. Backed blade, normal backing. J5-K5 : 48×9×4mm
3. Bifacially retouched chunk. A1 : 46×32×13mm
4. Convergent scraper. B5 : 59×47×14mm
5. Convex side scraper. D5 : 84×77×16mm
6. Flake, radially prepared. E3 : 103×92×28mm
7. Modified flake. C2 : 27×18×6mm
8. Convex side scraper. D2 : 10×58×31mm
9. Side and end scraper. A4 : 55×30×14mm
10. End flake. D2 : 67×40×24mm
11. Side flake. E4 : 62×72×19mm
12. Scraper, two sides/*dejeté*. A2 : 67×50×19mm
13. Modified flake fragment. B2 : 73×62×28mm
14. Blade core on a chunk. B4 : 94×31×36mm
15. Biconical core. E5 : 90×55×53mm

Fig. 10.

Acheulian artifacts from the Lower Member of the Sihawal Formation, Level 3

1. Flake, radially prepared. C3 : 170×144×47mm
2. Elongate ovate handaxe. D5 : 160×102×69mm
3. Cleaver on an end flake. D2 : 99×58×31mm
4. Side chopper. B1 : 96×47×35mm
5. Divergent cleaver. Surface 133×10×32mm

REFERENCE

Sharma, G.R. et. al., (1975-76) In: *Indian Archaeology—A Review*, New Delhi, p. 25-27.

LIST OF TABLES, FIGURES AND PLATES

Tables

1. Sihawal II, Level 3 : Artifact Types and Groupings
2. Sihawal II, Level 3 : Artifact Measurements
3. Sihawal II, Level 1 : Artifact Types and Groupings
4. Sihawal II, Level 1 : Artifact Measurements

Figures

1. General Plan of Excavations : Sihawal II
2. Sihawal II : North-South Section
3. Sihawal II : Distribution of Unmodified Waste
4. Sihawal II : Distribution of Retouched Tools

5. Sihawal II : Type Distribution of Artifact in Level 3
6. Sihawal II : Distribution of Weathered Artifacts in Level 3
7. Sihawal II ; Level 3 : Histogram of Tools to Waste
8. Sihawal II ; Level 3 : Histogram of Shaped Tool Types
9. Sihawal II : Artifact Drawings
10. Sihawal II : Artifact Drawings

Plates

- I Sihawal II : Plan of the main grid, top of Level 2.
- II Sihawal II : Section facing west, main grid, showing Levels 2, 3A and 3B.

TABLE 1
Artifact Types and Groupings : Sihawal II, Level 3

	Chert	Quartzite/ Sandstone	Total	Percent
<i>Shaped Tools</i>				
Handaxe-elongate ovate		1	1	7.1
Chopper-side		1	1	7.1
Cleaver-on end flake		1	1	7.1
Knife		1	1	7.1
Bifacially flaked chunk	1		1	7.1
Scraper-one side	1	4	5	36.1
two sides		1	1	7.1
end		1	1	7.1
convergent	1		1	7.1
Core scraper		1	1	7.1
	3	11	14	100%
				(11.8% OF TOTAL)
<i>Modified Artifacts</i>				
Modified flakes	1	9	10	71.4
Modified flake fragments		4	4	28.6
	1	13	14	100%
				(11.8% OF TOTAL)
<i>Unmodified Waste</i>				
Flakes-unspecialized		52	52	57.1
Flake fragments	1	18	19	20.9
Chunks		10	10	11.0
Cores-single platform, normal		2	2	2.2
single platform, angle		1	1	1.1
biconical		3	3	3.3
discoid, flat		1	1	1.1
on a flake		1	1	1.1
formless		1	1	1.1
Blade core- on a chunk		1	1	1.1
	2	89	91	100%
				(76.4% OF TOTAL)

TABLE 2
Artifact Measurements (N = 119) : Sihawal II, Level 3

Artifact Type	No.	Measurements (in mm.)			
		Mean	s. d.	Minimum	Maximum
<i>Shaped Tools</i>					
Chopper-side	1	L = 96 B = 47 T = 35 B/L = .49 T/B = .74			
Handaxe-elongate, ovate	1	L = 160 B = 102 T = 69 B/L = .64 (L1 = 88 B1 = 43 B2 = 87 T1 = 39) T/B = .68			
Cleaver-on an end flake	1	L = 99 B = 58 T = 31 B/L = .59 (L1 = 20 B1 = 79 B2 = 48 T1 = 1) T/B = .53			
Knife	1	L = 52 B = 40 T = 26 B/L = .77 T/B = .65			
Scraper-one side	5	L = 73 B = 59 T = 19 B/L = .85 T/B = .4	24.4 19.2 9.8 .3 .1	45 30 14 .5 .3	98 78 40 1.2 .5

TABLE 2 (Contd.)

Artifact Type	No.	Measurements (in mm)			
		Mean	s. d.	Minimum	Maximum
<i>Shaped Tools (continued)</i>					
Scraper-two sides	1	L = 67 B = 50 T = 19 B/L = .75 T/B = .4			
Scraper-end	1	L = 44 B = 46 T = 19 B/L = 1.05 T/B = .4			
Scraper-convergent	1	L = 59 B = 47 T = 14 B/L = .8 T/B = .3			
Core scraper	1	L = 104 B = 84 T = 49 B/L = .8 T/B = .6			
Bifacially flaked chunk	1	L = 46 B = 32 T = 13 B/L = .7 T/B = .4			

TABLE 2 (Contd.)

Artifact Type	No.	Measurements (in mm)			
		Mean	s. d.	Minimum	Maximum
<i>Modified Edge Damaged Artifacts</i>					
Modified flakes	10	L = 58.3	25.4	23	112
		B = 56.5	24.9	21	91
		T = 24.4	14.4	6	56
		B/L = .9	.2	.7	1.4
		T/B = .4	.1	.2	.9
Modified flake fragments	4	L = 50.75	14.4	35	68
		B = 39.25	9.8	31	52
		T = 16.5	5.6	9	22
		B/L = .8	.8	.5	.9
		T/B = .4	.1	.3	.5
<i>Unmodified Waste</i>					
Flakes	52	L = 58.4	23.6	21	150
		B = 52.7	22.5	13	140
		T = 19.4	8.6	3	50
		B/L = 2.1	10.0	.2	1.8
		T/B = .5	.5	.1	3.8
Flake fragments	19	L = 44.4	14.5	23	79
		B = 43	13.6	17	73
		T = 16.6	7.3	6	40
		B/L = 1.0	.3	.5	1.7
		T/B = .4	.1	.3	.7
Chunks	10	L = 52.9	18.1	24	79
		B = 38.8	12.2	17	64
		T = 20.4	8.9	11	37
		B/L = .7	.2	.5	1.3
		T/B = .3	.14	.4	.7

TABLE 2 (Contd.)

Artifact Type	No.	Measurements (in mm)			
		Mean	s.d.	Minimum	Maximum
<i>Unmodified Waste</i> (continued)					
Cores-single platform normal	2	L = 22.5	6.3	18	27
		B = 18.	.0	18	18
		T = 6.5	.7	6	7
		B/L = .8	.2	.6	1.0
		T/B = .4	.04	.3	.4
single platform angle	1	L = 115			
		B = 85			
		T = 57			
		B/L = .7			
		T/B = .7			
biconical	3	L = 88.3	12.2	76	108
		B = 79.3	13.7	67	94
		T = 60.	7.9	54	69
		B/L = .9	.04	.9	.9
		T/B = .8	.04	.7	.8
flat discoid	1	L = 66			
		B = 44			
		T = 28			
		B/L = .6			
		T/B = .6			
formless	1	L = 76			
		B = 57			
		T = 47			
		B/L = .7			
		T/B = .8			
on a flake	1	L = 110			
		B = 92			
		T = 50			
		B/L = .8			
		T/B = .5			

TABLE 3
Artifact Types and Groupings: Sihawal II, Level 1

Artifact Types	Total	Percent
<i>Shaped Tools</i>		
Backed blades	3	60
Backed blade fragments	1	20
Modified flake	1	20
	5	100% (25% of TOTAL)
<i>Unmodified Waste</i>		
Flakes	3	20
Blades	5	33.3
Blade fragments	6	40
Blade core fragment	1	6.7
	15	100% (75% of TOTAL)
TOTAL	20	

TABLE 4
Artifact Measurements (N = 20) : Sihawal II, Level 1

Artifact Type	No.	Measurements (in mm)			
		Mean	s. d.	Minimum	Maximum
<i>Shaped Tools</i>					
Backed blades	3	L = 30.7	15	22	48
		B = 13.7	5	9	19
		T = 4.3	1.2	3	5
		B/L = .55	.3	.2	.9
		T/B = .33	.06	.3	.4
Backed blade fragments	1	L = 50			
		B = 13			
		T = 11			
		B/L = .3			
		T/B = .8			
Modified flake	1	L = 27			
		B = 27			
		T = 8			
		B/L = 1.0			
		T/B = .3			
<i>Unmodified Waste</i>					
Flakes	3	L = 25	15.1	9	39
		B = 28.3	7.6	20	35
		T = 8.3	2.5	6	11
		B/L = 1.4	.7	.7	2.2
		T/B = .3	.02	.2	.3
Blades	5	L = 33.4	2.7	30	37
		B = 15.8	3.9	9	19
		T = 6.8	5.8	5	17
		B/L = .5	.1	.3	.6
		T/B = .4	.3	.1	.9

TABLE 4 (Contd.)
Artifact Measurements (N=20) : Sihawal II, Level 1

Artifact Type	No.	Measurements (in mm)			
		Mean	s.d.	Minimum	Maximum
Blade fragments	6	L = 23.2	8.6	14	37
		B = 16.5	3.7	12	21
		T = 6.2	2.0	3	9
		B/L = .8	.4	.3	1.4
		T/B = .4	.2	.3	.8
Blade core fragment	1	L = 22			
		B = 21			
		T = 17			
		B/L = .95			
		T/B = .81			

Fig.1 SIHAWAL II:
General Plan of Excavations

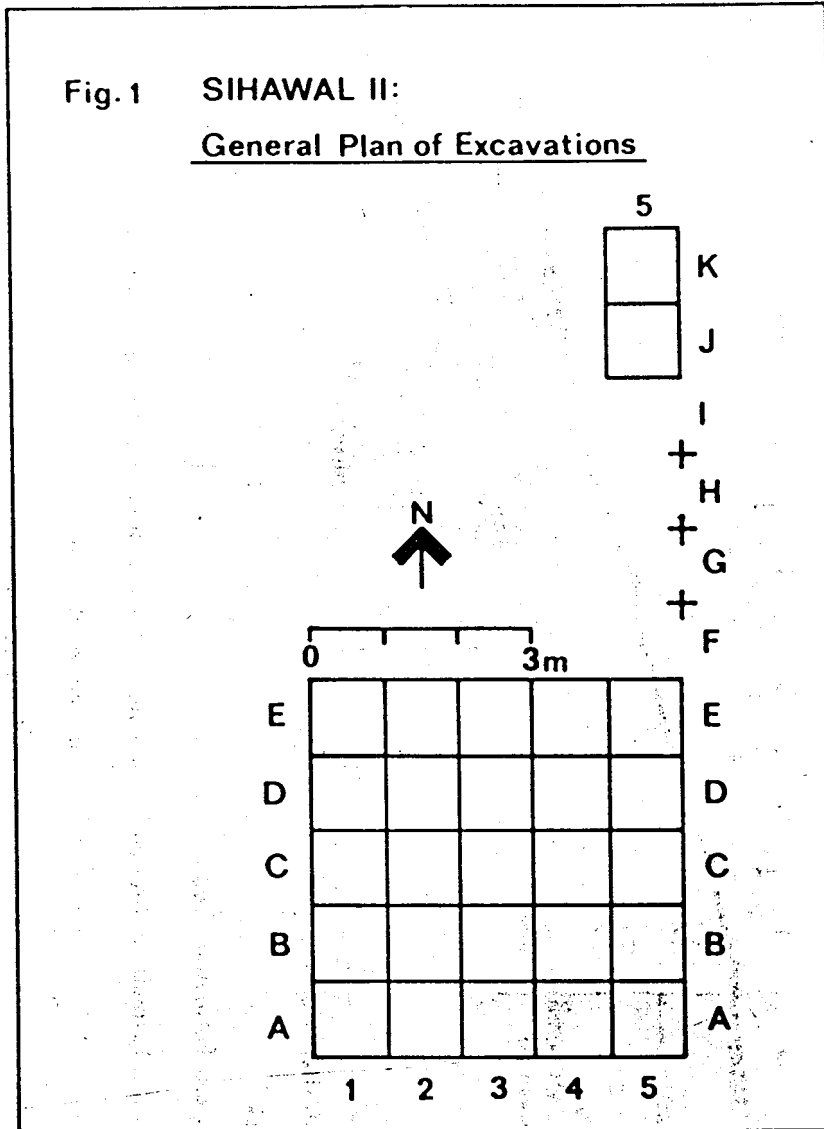


Fig. I

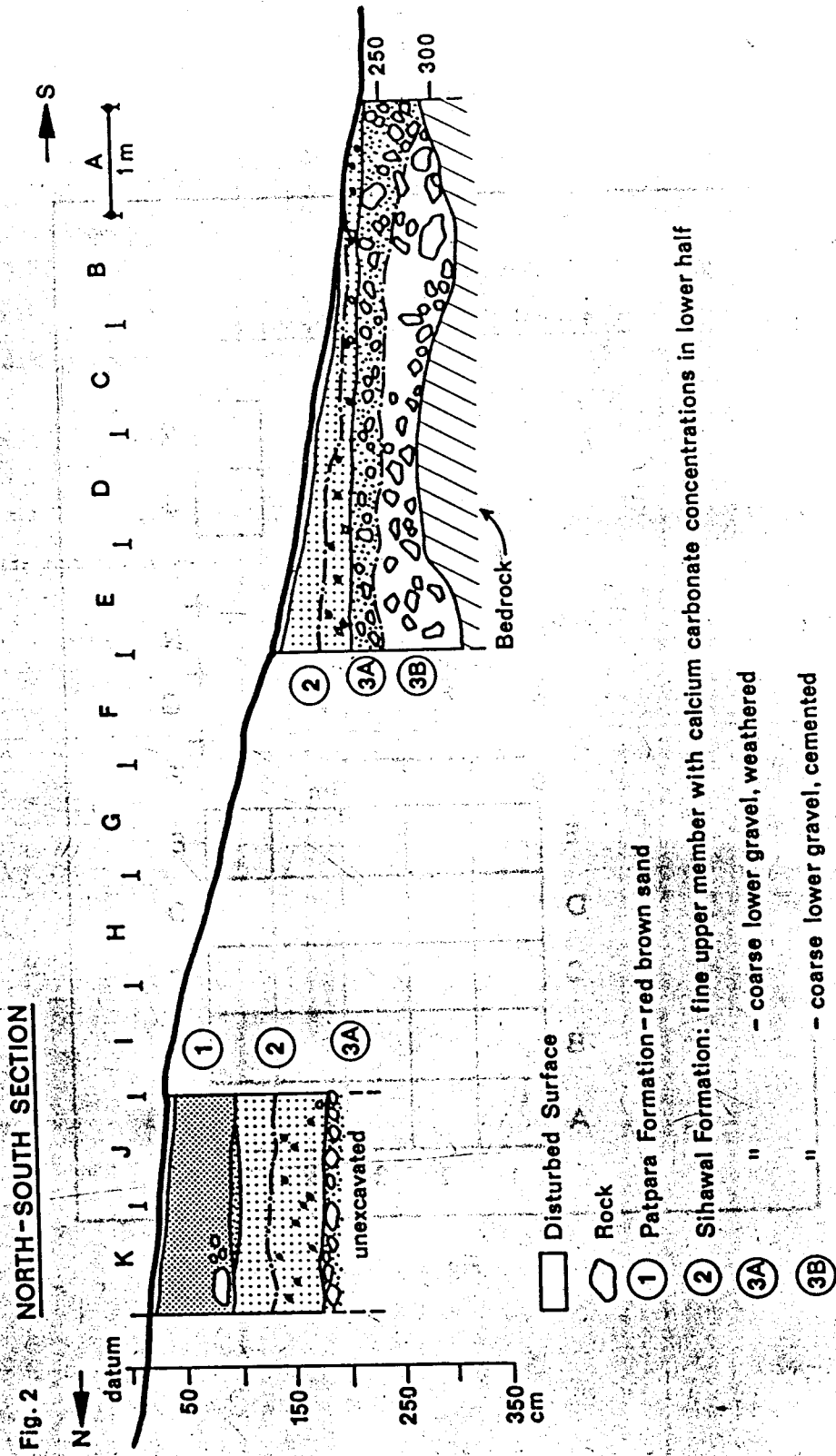


Fig. 2

Fig. 3 SIHAWAL II: DISTRIBUTION OF UNMODIFIED WASTE

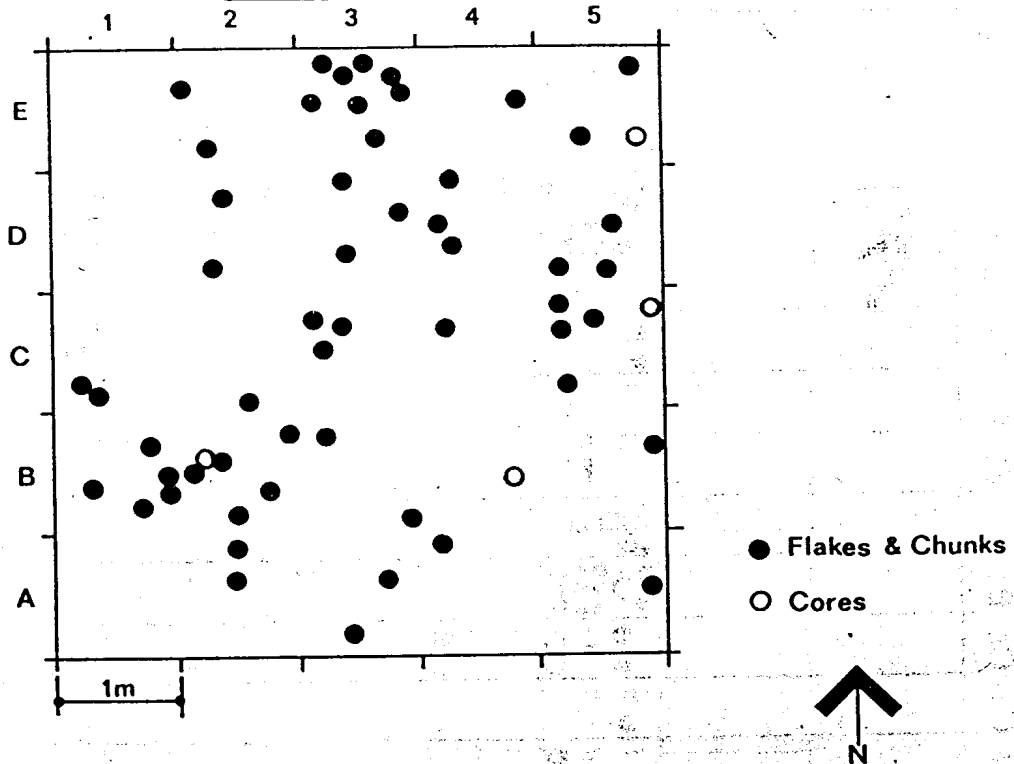
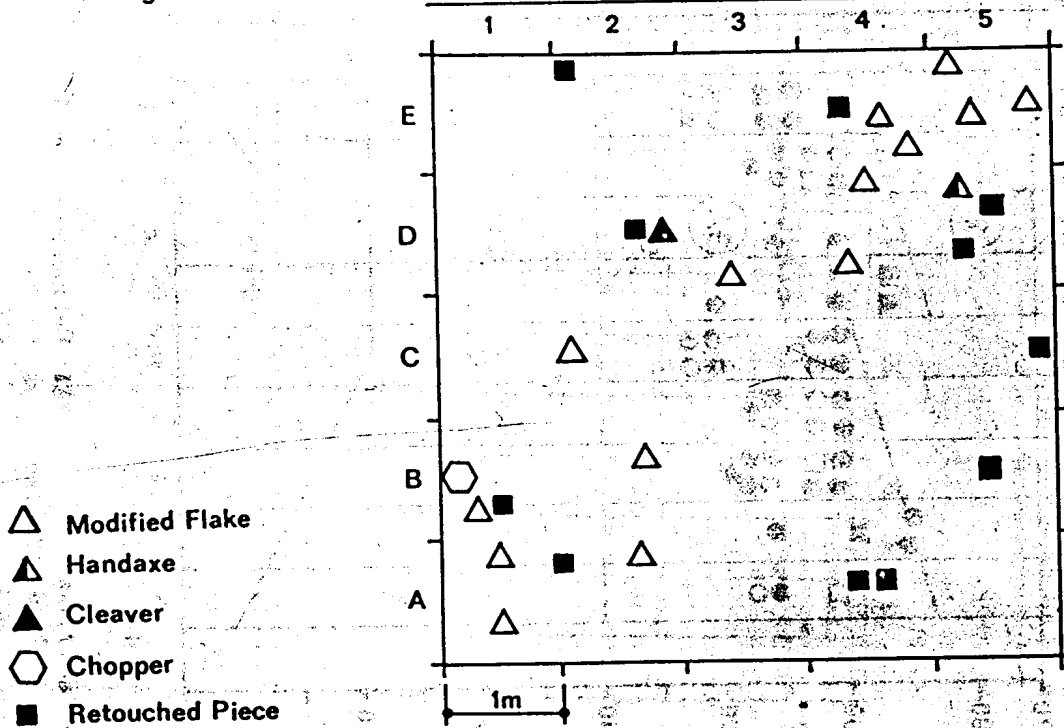


Fig. 4 SIHAWAL II: DISTRIBUTION OF RETOUCED TOOLS



Figs. 3 & 4

Fig.5 SIHAWAL II: TYPE DISTRIBUTION OF ARTIFACTS IN LEVEL 3

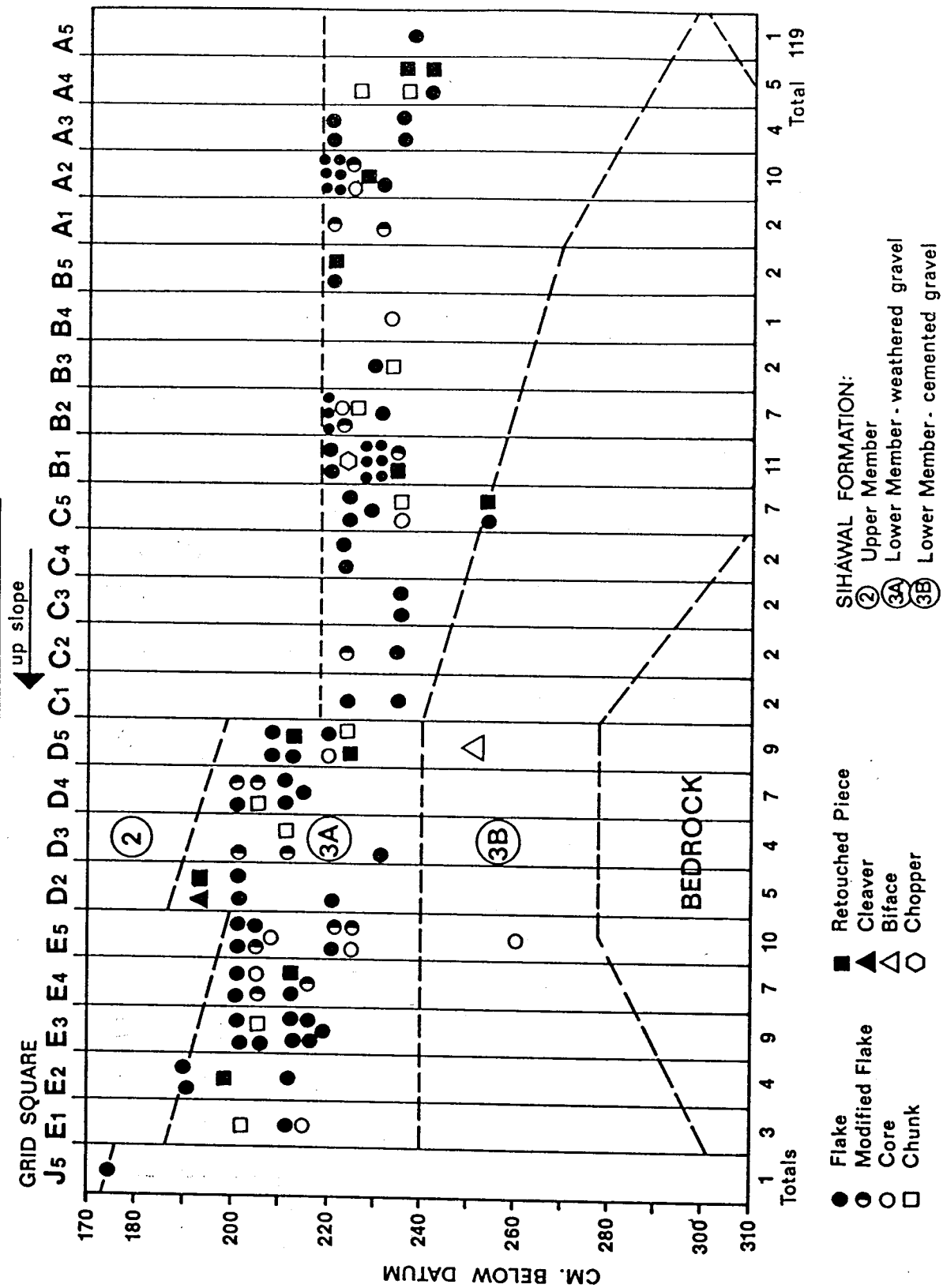


Fig.5

Fig. 6 SIHAWAL II: DISTRIBUTION OF WEATHERED ARTIFACTS IN LEVEL 3

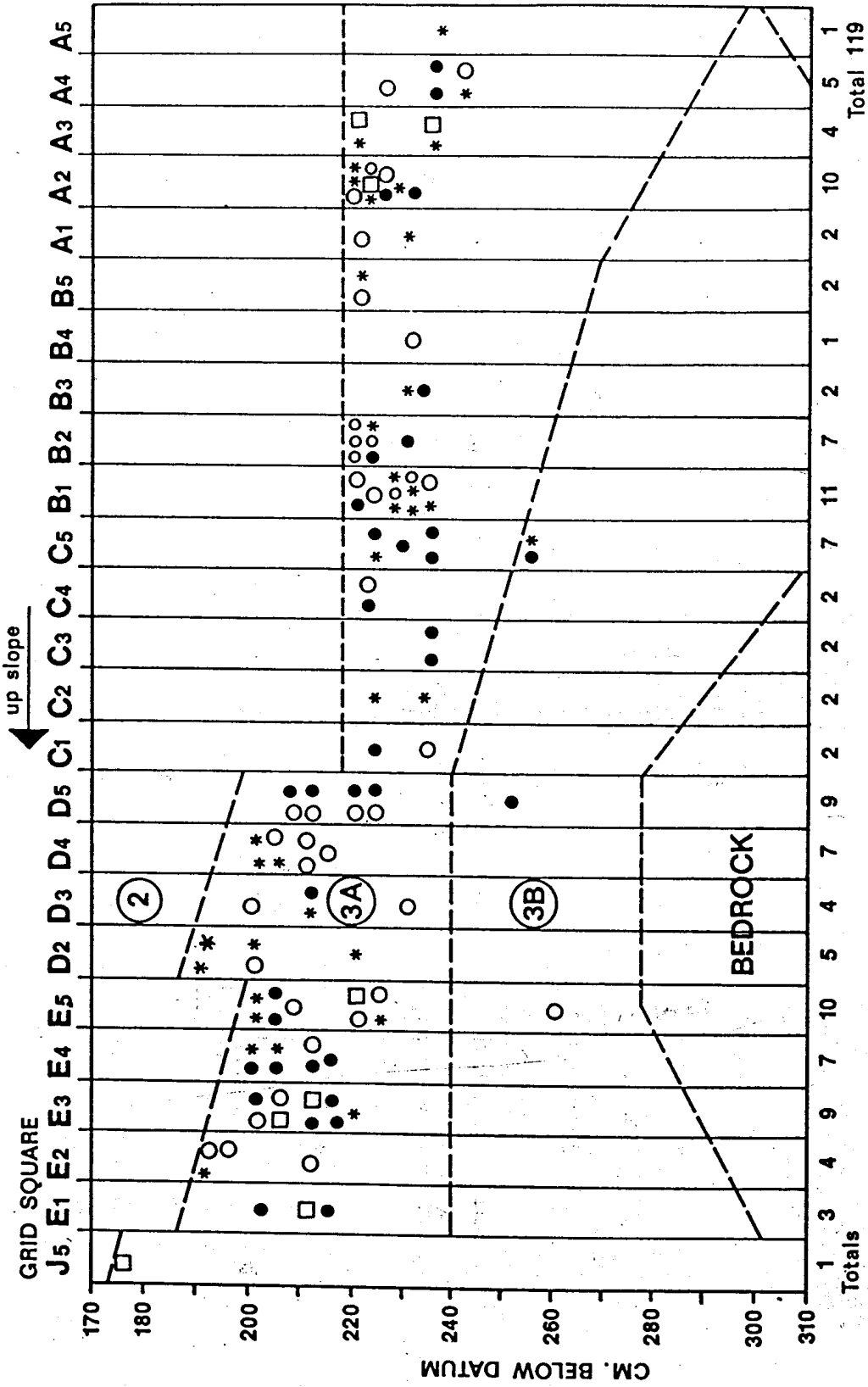


Fig. 6

Fig. 7 Histogram of Tools to Waste

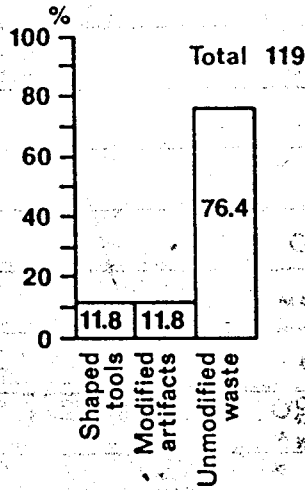
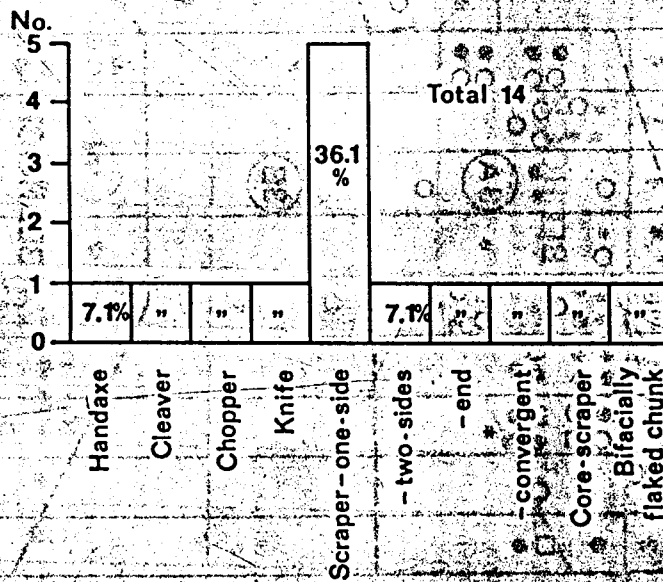


Fig. 8 Histogram of Shaped Tool Types - Level 3



Figs. 7 & 8

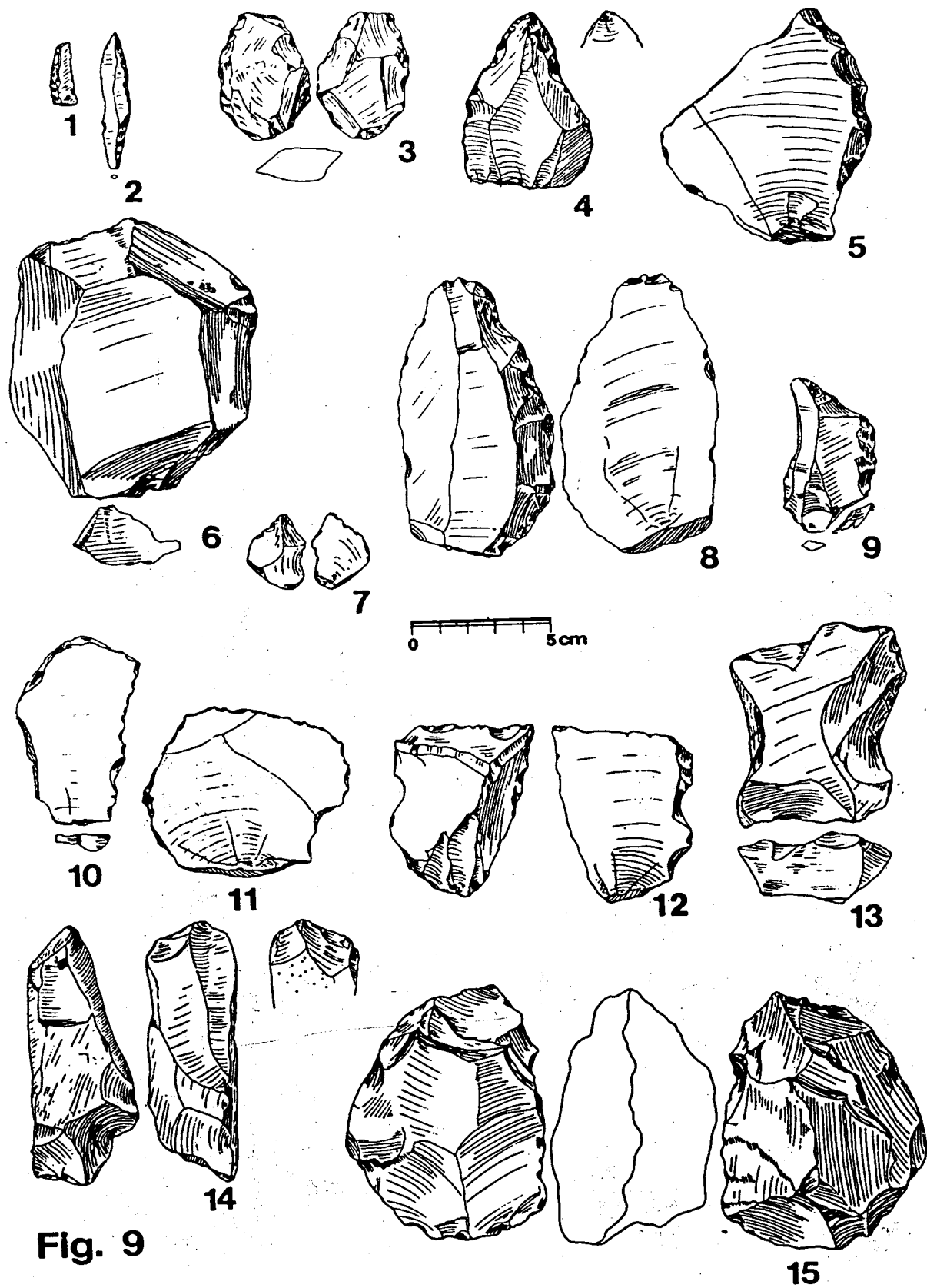


Fig. 9

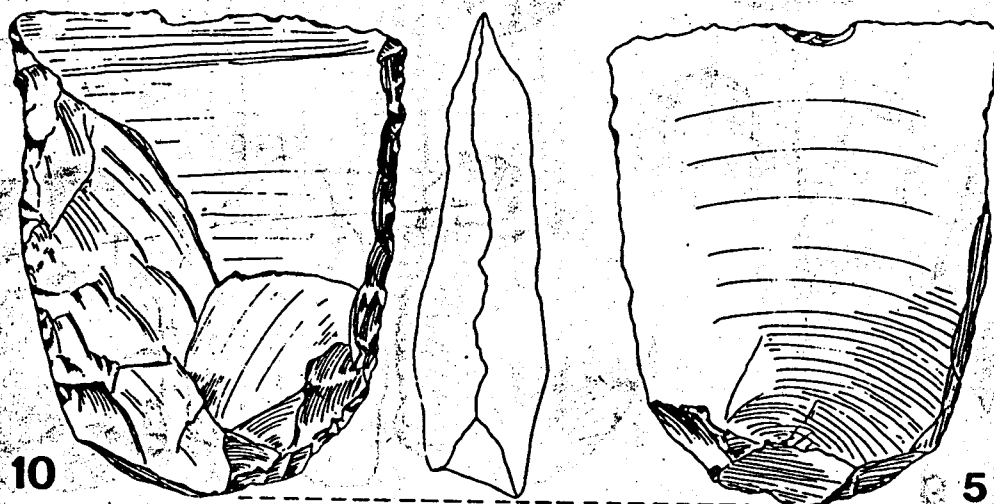
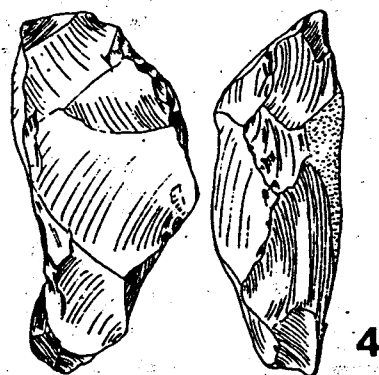
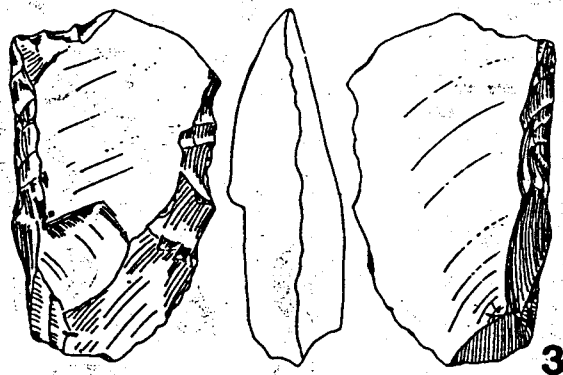
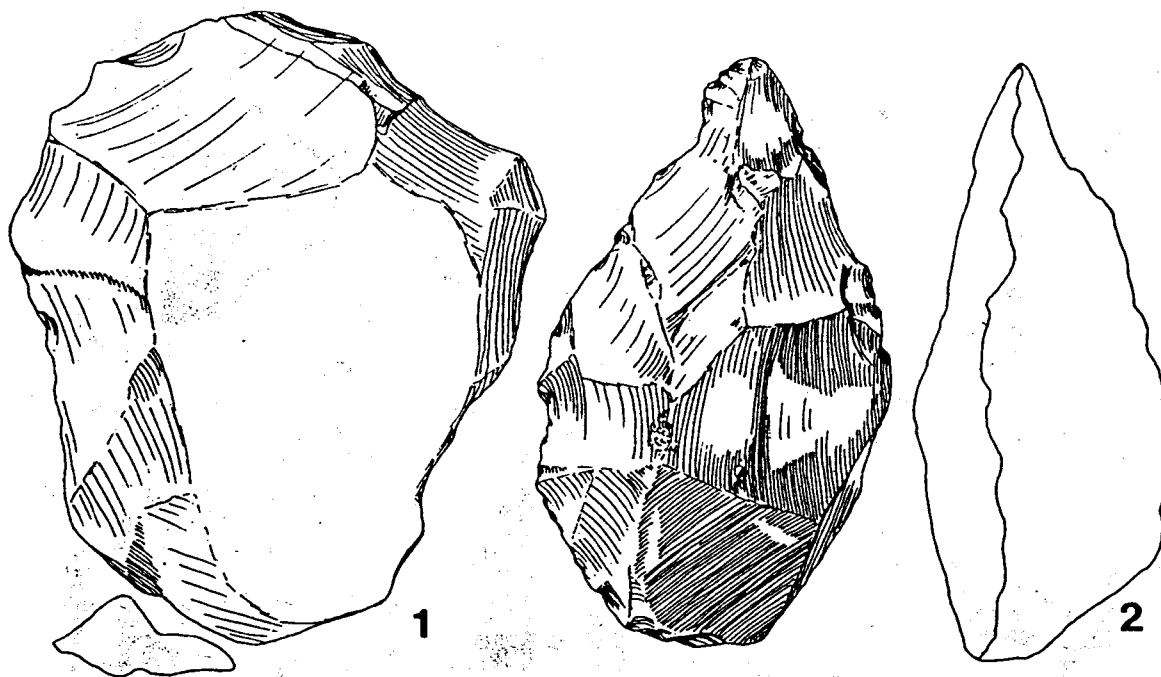


Fig. 10

Sihawal II : Artifact drawings



Pl. I Sihawal II : Plan of the main grid, top of level 2.



Pl. II Sihawal II : Section facing west, main grid showing levels 2, 3A and 3B.