

**THE EXCAVATION OF GUA GUNUNG RUNTUH AND
THE DISCOVERY OF THE PERAK MANIN MALAYSIA**

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CHAPTER 11
ARTIFACTS FROM THE GUA GUNUNG RUNTUH
EXCAVATION

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INTRODUCTION

This article analyses all the artifacts excavated from Gua Gunung Runtu in order to discover spatial and temporal patterns and associations, from the late Pleistocene to the Holocene. These findings could contribute to discussions on various issues, such as cultural continuities in prehistoric Lenggong, technological links with Kota Tampan, and the position of the so-called "Hoabinhian".

The burial area (A1, A2) and its artifacts are excluded from the analyses here, as our focus is on the habitation areas i.e. the other trenches (see Figure 1-1). Among these habitation squares are some disturbed trenches. The disturbed and undisturbed trenches were differentiated based on evidence of disturbances, such as (1) large holes in the cave floor probably dug by treasure hunters, (2) excavation observations of sudden

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Biodata of the other authors appear elsewhere in this volume.

changes in compactness of soil, (3) original floor surface markings on walls in areas where the surface is now lower, and (4) inverted dates. The undisturbed trenches are W6, X5, X6, Y6, Z5 and Z6, but they are undisturbed only from 50 cm downwards.

The levels above 50 cm are disturbed due to rockfalls, loose soil, and inverted dates. D1 is undisturbed throughout. Further evidence that these are the undisturbed parts of the cave include the presence of conjoined flakes, and concentrations of flakes from the same core.

Thus, our analyses will focus on artifacts from trenches X, Y, Z series in the corridor chamber area of the cave. However, to give an idea of the total occupancy of the cave, and to observe any association between lithic raw material and tool types, and other cultural features such as food preparation (in particular shellfish), and animals hunted, we shall also provide data on the lithic and faunal artifacts excavated from the disturbed parts of the cave.

Based on radiocarbon dates, this article covers a period from about $13,600 \pm 120$ BP until about 6,000 BP (time-depth approximation due to a lack of radiocarbon date at 50-60 cm).^{*} For these levels, the excavations revealed stone, shell, charred and uncharred foodbone. Perhaps it should be noted that there were 8 pieces of potsherds found in the disturbed upper levels of a few excavation squares (A3, Z6, X5, X6).

Since this will undoubtedly involve quantitative data, perhaps an estimate of the floor space of the disturbed and undisturbed areas should be provided. The disturbed and undisturbed areas are of equal size in terms of the number of trenches. However, each trench has a different volume of earth due to the presence of boulders and varying depth of base rock. Based on a rough approximation of the time taken to excavate the disturbed and undisturbed areas, it might not be wrong to estimate that the volume of the disturbed area is about twice the undisturbed area.

* All the radiocarbon dates for this site are given in chapters 2 and 3 above.

LITHIC ANALYSIS

The total lithic assemblage from the whole cave was examined for recurrent attributes so that they could be grouped into types. A distinct feature was the strong resemblance to the Kota Tampan** tool types (Zuraina 1989a, 1991), for instance, core, anvil, hammerstone, oval pebble tools, palaeoadze, and large flake tools. The artifacts were distinguished into types based on the morphological and functional criteria developed for Kota Tampan. Figure 11-1 shows the broad categories of tool types found in this cave. The presence of cores, anvils, hammerstones and debitage indicate that tools were made in the cave. Among the tools made, pebble tools dominated the assemblage (93.8%), clearly outnumbering flake tools.

The total assemblage was then separated into those that were found in the disturbed and undisturbed areas, in order to find out if the different lithic artifact types were found in the same proportion in both areas (Figure 11-2). For most artifact types, the disturbed area had approximately twice the amount of those found in the undisturbed area. This corresponds to the relative volume of the floor space of the disturbed and undisturbed areas. Among the tools made, pebble tools dominated the assemblage in the disturbed and undisturbed areas. Also, in both areas, the frequency of anvils, cores, hammerstones and debitage are in proportion to their function i.e. few anvils and cores compared to hammerstones and debitage. The ratio of tools to debitage is the same in the disturbed and undisturbed areas (Tables 11-1, 11-2).

There is therefore not just a proportionate distribution of artifact types between the two areas but also a proportionate distribution between artifacts and debitage in the two areas. This is perhaps reflective of a similar method of toolmaking over the whole period of cave occupation, where they made mostly pebble tools.

Excavations of the undisturbed areas revealed clusters of hammerstone, debitage, most often with core and anvil, flakes and pebble

**Kota Tampan is a late Palaeolithic workshop site, an open site, more than 20,000 years earlier than this site and about 8 km away.

Figure 11-1: Total stone artifacts (excluding burial)

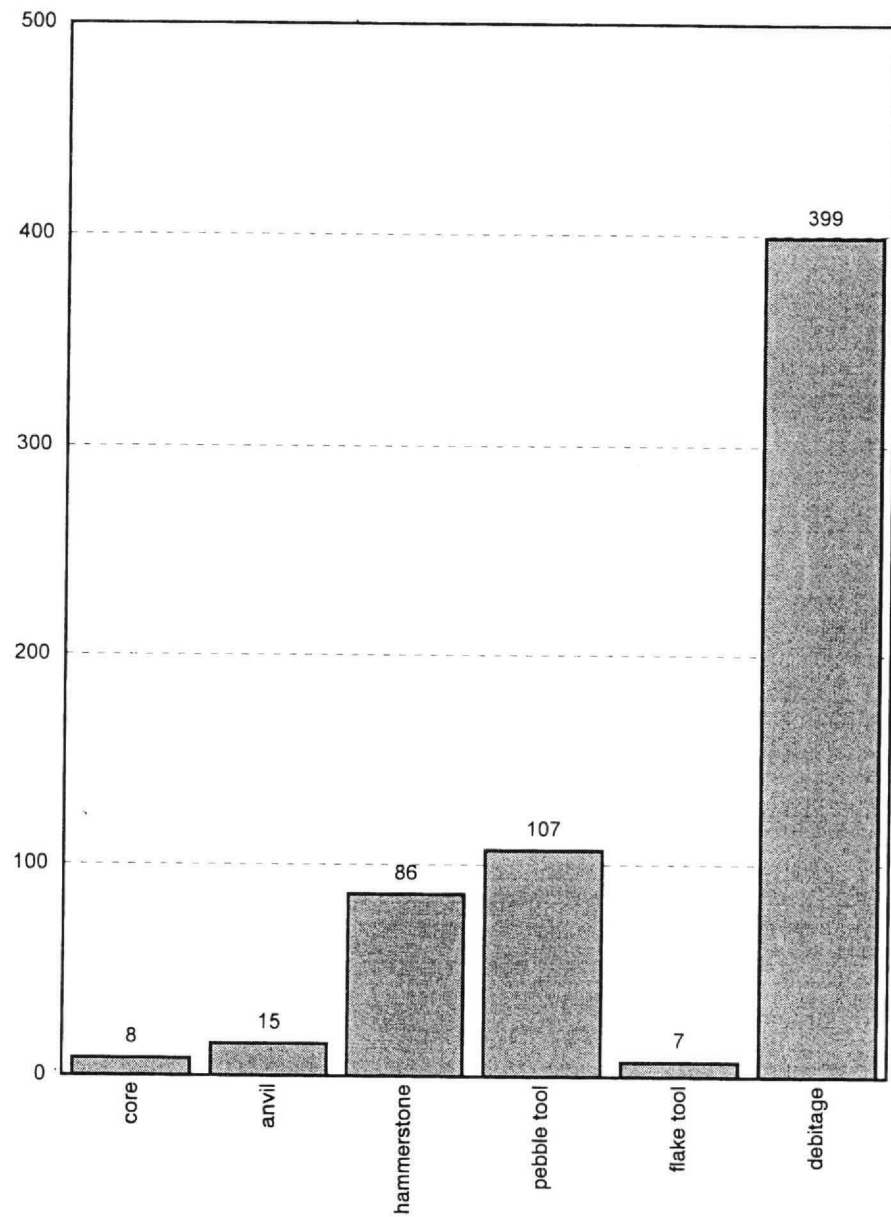


Figure 11-2: Stone artifacts from disturbed and undisturbed area (excluding burial)

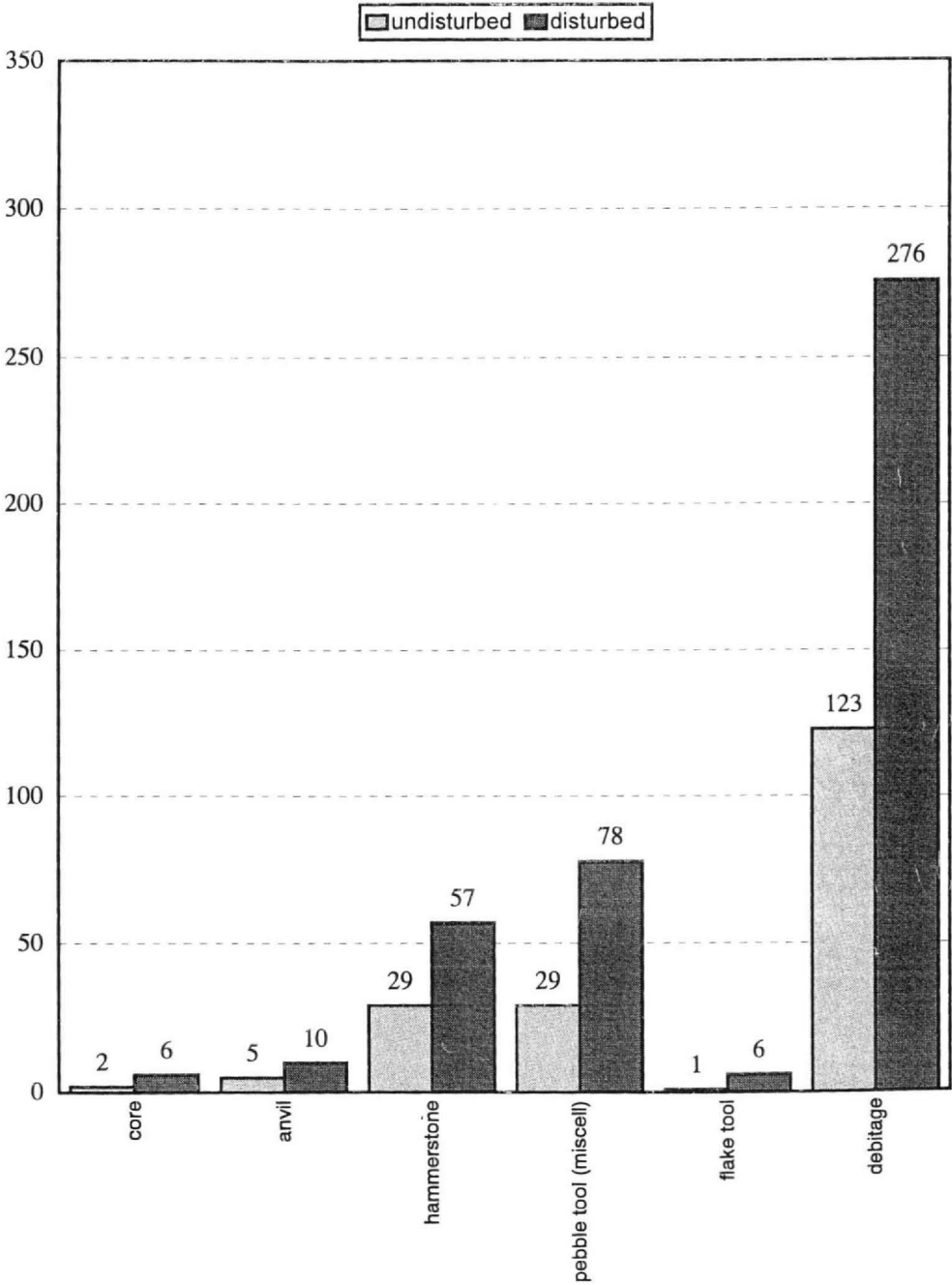


Table 11-1: Distribution of lithic artifact types in disturbed and undisturbed areas

	Undisturbed	%	Disturbed	%	Total	%
Core	2	3	6	4	8	4
Anvil	5	7	10	7	15	7
Hammerstone	29	39	57	39	86	39
Pebble Tools:						
Oval Unifacial	18	24	34	23	52	23
Oval Bifacial	6	8	19	13	25	11
Paleoadze	1	1	2	1	3	1
Chopper	1	1	3	2	4	2
Perimeter Flaked	0	0	2	1	2	1
Miscellaneous	11	15	9	6	20	9
Flake Tools	1	1	6	4	7	3
Total	74	100	148	100	222	100

Table 11-2: Distribution of lithic artifacts and debitage in disturbed and undisturbed areas

	Undisturbed	%	Disturbed	%
Artifacts (excluding debitage)	74	37.5	148	34.9
Debitage	123	63.5	276	65.1

tools. In several clusters, the debitage raw material matched core or completed/unfinished flakes or pebble tools, suggesting that these were the tool-making areas. The quartzite cores, quartz hammerstones and anvils with a flaked base all reflected the Kota Tampan tradition (Zuraina 1989b). The clusters were located in Z5 (spits 8/9,12), Z6 (spits 7/8,12), and D1 (spit 2). The debitage, core and some of the tools made were mostly of quartzite, the raw material that dominated the assemblage.

The pebble tools could be further distinguished into several types, dominated by oval unifacial/bifacial pebble tools, and a small number of palaeoadze, chopper and perimeter-flaked tools. Tables 11-1 and 11-2 show the distribution of tool types in the disturbed and undisturbed areas. As seen earlier (Figure 11-2), the distribution of the major artifacts in the two areas are in the same proportion. In Tables 11-1 and 11-2 this proportional distribution is further reflected in the variety of pebble tool types -- oval unifacial dominate both assemblages, followed by oval bifacial, while the other pebble types occupy insignificant positions in the assemblages.

The oval unifacial pebble tool type was the major tool manufactured throughout the period of cave occupation. It was found throughout the undisturbed spits, until the last spit (spit 17). The other types of tools made were significantly fewer (Table 11-1). The palaeoadze, chopper and perimeter-flaked pebble tools are all in the Kota Tampan tradition. The flake tools are also similar to those found in Kota Tampan.

Also of interest is the one chopper found in spit 7 of the undisturbed area. Perhaps, one would expect this late Pleistocene tool rarely found in this cave (2 pieces only) to be located in the lower levels and not in the early Holocene levels.

The major artifact types in the whole cave, (excluding of debitage), namely, hammerstones (38.6%), oval unifactals (23.3%) and oval bifacials (11.2%), anvil (6.7%) and core (3.5%) will be examined for morphological characteristics. A comparative examination of these artifacts in the disturbed and undisturbed areas suggest no differences in morphology. Also, within the undisturbed area, no significant morphological variation in the vertical distribution of each type could be seen through the undisturbed spits. Even the pattern of raw material use for each of these artifact types showed no significant difference between the disturbed and undisturbed areas, and among the various spits in the undisturbed area (Tables 11-3a, b, c). Therefore, each of the artifact types may be discussed as a whole, without reference to its spatial or vertical location.

Hammerstone: (Total: 86, 38.6%) Elongated or round pebbles, sometimes flat, most often (81.4%) of quartz were selected. These were

Table 11-2a : Raw Material for Tool Types in Disturbed Area (No Sandstone and Iron Oxide)

	Quartzite	%	Quartz	%	Slate	%	Phyllite	%	Schist	%	Limestone	%	Granite	%	Chert	%	Total	%
Core	6	100.00%	0	0.00%	0	0.00%	0	0.00%	0	0.00%	0	0.00%	0	0.00%	0	0.00%	6	100.00%
Anvil	2	20.00%	2	20.00%	0	0.00%	0	0.00%	0	0.00%	5	50.00%	1	10.00%	0	0.00%	10	100.00%
Hammerstone	3	5.26%	51	89.47%	0	0.00%	0	0.00%	0	0.00%	1	1.75%	2	3.51%	0	0.00%	57	100.00%
Oval Unifacial	18	52.94%	3	8.82%	3	8.82%	0	0.00%	0	0.00%	1	2.94%	0	0.00%	9	26.47%	34	100.00%
Oval Bifacial	2	10.53%	2	10.53%	7	36.84%	2	10.53%	1	5.26%	1	5.26%	0	0.00%	4	21.05%	19	100.00%
Paleo Adze	0	0.00%	0	0.00%	2	100.00%	0	0.00%	0	0.00%	0	0.00%	0	0.00%	0	0.00%	2	100.00%
Chopper	2	66.67%	0	0.00%	0	0.00%	0	0.00%	0	0.00%	1	33.33%	0	0.00%	0	0.00%	3	100.00%
Peri. Flake	1	50.00%	1	50.00%	0	0.00%	0	0.00%	0	0.00%	0	0.00%	0	0.00%	0	0.00%	2	100.00%
Miscell (PT)	9	50.00%	1	5.56%	1	5.56%	0	0.00%	0	0.00%	6	33.33%	1	5.56%	0	0.00%	18	100.00%
Flake Tool	4	66.67%	2	33.33%	0	0.00%	0	0.00%	0	0.00%	0	0.00%	0	0.00%	0	0.00%	6	100.00%
Total	47	29.94%	62	39.49%	13	8.28%	2	1.27%	1	0.64%	15	9.55%	4	2.55%	13	8.28%	157	100.00%

Table 11-3b : Raw Material for Tool Types in Undisturbed Area (No Phyllite and Schist)

	Quartzite	%	Quartz	%	Slate	%	Limestone	%	Granite	%	Sandstone	%	Iron Oxide	%	Chert	%	Total	%
Core	2	100.00%	0	0.00%	0	0.00%	0	0.00%	0	0.00%	0	0.00%	0	0.00%	0	0.00%	2	100.00%
Anvil	1	20.00%	0	0.00%	0	0.00%	3	60.00%	1	20.00%	0	0.00%	0	0.00%	0	0.00%	5	100.00%
Hammerstone	2	6.90%	19	65.52%	1	3.45%	1	3.45%	0	0.00%	5	17.24%	1	3.45%	0	0.00%	29	100.00%
Oval Unifacial	6	33.33%	6	33.33%	1	5.56%	1	5.56%	1	5.56%	1	5.56%	0	0.00%	2	11.11%	18	100.00%
Oval Bifacial	3	50.00%	1	16.67%	2	33.33%	0	0.00%	0	0.00%	0	0.00%	0	0.00%	0	0.00%	6	100.00%
Paleo Adze	1	100.00%	0	0.00%	0	0.00%	0	0.00%	0	0.00%	0	0.00%	0	0.00%	0	0.00%	1	100.00%
Chopper	1	100.00%	0	0.00%	0	0.00%	0	0.00%	0	0.00%	0	0.00%	0	0.00%	0	0.00%	1	100.00%
Peri. Flake	0	0.00%	0	0.00%	1	100.00%	0	0.00%	0	0.00%	0	0.00%	0	0.00%	0	0.00%	1	100.00%
Miscell (PT)	3	100.00%	0	0.00%	0	0.00%	0	0.00%	0	0.00%	0	0.00%	0	0.00%	0	0.00%	3	100.00%
Total	19	28.79%	26	39.39%	5	7.58%	5	7.58%	2	3.03%	6	9.09%	1	1.52%	2	3.03%	66	100.00%

Table 11-3c : Raw Material for Tool Types in Whole Cave

	Quartzite	%	Quartz	%	Slate	%	Phyllite	%	Schist	%	Limestone	%	Granite	%	Sandstone	%	Iron Oxide	%	Chert	%	Total	%
Core	8	100.00%	0	0.00%	0	0.00%	0	0.00%	0	0.00%	0	0.00%	0	0.00%	0	0.00%	0	0.00%	0	0.00%	8	100.00%
Anvil	3	20.00%	2	13.33%	0	0.00%	0	0.00%	0	0.00%	8	53.33%	2	13.33%	0	0.00%	0	0.00%	0	0.00%	15	100.00%
Hammerstone	5	5.81%	70	81.40%	1	1.16%	0	0.00%	0	0.00%	2	2.33%	2	2.33%	5	5.81%	1	1.16%	0	0.00%	86	100.00%
Oval Unifacial	24	46.15%	9	17.31%	4	7.69%	0	0.00%	0	0.00%	2	3.85%	1	1.92%	1	1.92%	0	0.00%	11	21.15%	52	100.00%
Oval Bifacial	5	20.00%	3	12.00%	9	36.00%	2	8.00%	1	4.00%	1	4.00%	0	0.00%	0	0.00%	0	0.00%	4	16.00%	25	100.00%
Paleo Adze	1	33.33%	0	0.00%	2	66.67%	0	0.00%	0	0.00%	0	0.00%	0	0.00%	0	0.00%	0	0.00%	0	0.00%	3	100.00%
Chopper	3	75.00%	0	0.00%	0	0.00%	0	0.00%	0	0.00%	1	25.00%	0	0.00%	0	0.00%	0	0.00%	0	0.00%	4	100.00%
Peri. Flake	1	33.33%	1	33.33%	1	33.33%	0	0.00%	0	0.00%	0	0.00%	0	0.00%	0	0.00%	0	0.00%	0	0.00%	3	100.00%
Miscell (PT)	12	57.14%	1	4.76%	1	4.76%	0	0.00%	0	0.00%	6	28.57%	1	4.76%	0	0.00%	0	0.00%	0	0.00%	21	100.00%
Flake Tool	4	66.67%	2	33.33%	0	0.00%	0	0.00%	0	0.00%	0	0.00%	0	0.00%	0	0.00%	0	0.00%	0	0.00%	6	100.00%
Total Tool	66	29.60%	88	39.46%	18	8.07%	2	0.90%	1	0.45%	20	8.97%	6	2.69%	6	2.69%	1	0.45%	15	6.73%	223	100.00%
Debitage	225	56.39%	90	22.56%	39	9.77%	22	5.51%	6	1.50%	10	2.51%	7	1.75%	0	0.00%	0	0.00%	0	0.00%	399	100.00%
Total	291	46.78%	178	28.62%	57	9.16%	24	3.86%	7	1.13%	30	4.82%	13	2.09%	6	0.96%	1	0.16%	15	2.41%	622	100.00%

* PT = Pebble Tool

usually below 500 gms, and can be gripped in one hand. Marks of use could be seen all over/part of the perimeter, at opposite ends, or in the middle. Some were found broken. They were associated with toolmaking areas and also with flat anvils and a large amount of shells. Hence, they could have been used in toolmaking and shell preparation where the tips of the shells were chopped off so that the meat could be sucked out. This method of shell preparation is still being practised today by all who eat *Brotia costula*, a local favourite known as "siput sedut" (sucking snail).

Oval unifacial: (Total: 52, 23.3%) These are oval pebble tools unifacially flaked (similar to the "sumatralith"), average length 7.25 cm (max. 10.4, min. 3.2 cm), average width 5.55 cm (max. 8.5, min. 3.0 cm), and with an average thickness of 2.45 cm (max. 4.1, min. 0.5 cm) (Plate 11-1). The average weight is 200.9 gms. (max. 400, min. 50 gms.). There were 31 pieces (59.6%) with one surface completely flaked with no cortex remaining. The rest were also unifacially flaked but with various amounts of the cortex remaining. Eight were broken, 2 were probably trial pieces. Almost half (46.15%) were of quartzite, and 21.15% were of chert. They were occasionally made from slate, limestone, granite and sandstone (Table 11-3). These raw materials are all locally available.

Oval bifacial: (Total: 25, 11.2%) These pebble tools are similar to the oval unifacials except that the flakes have been removed on both surfaces, often intentionally (16, 64%) at other times perhaps through use (5, 20%). There were a few unfinished or trial pieces. Seven pieces (28%) were completely flaked on both surfaces, leaving no cortex, and 4 of these were of quartzite while the remaining 3 were of slate. The rest had between 10%-50% cortex. They are approximately of the same size range as the oval unifacials with an average length of 8.34 cm (max. 12.8, min. 6 cm), average width of 5.88 cm (max. 8.2, min. 4.0 cm), and average thickness of 2.52 cm (max. 5.5, min. 0.6 cm).

Anvils: (Total: 15, 6.7%) There were two types of anvil, a thick and heavy anvil (average thickness 8.4 cm, average weight 2,278 gms.), and a smaller slab anvil (average thickness 3.8 cm, average weight 1,208 gms.). The slab anvils are all of limestone and this explains its weight being heavy relative to its size. The thick and large anvils are mostly of quartz and quartzite, reminiscent of the Kota Tampan anvils where the base is flat

either naturally or through flaking, in order to make it stable (Zuraina 1989a). These are associated with the toolmaking areas, while the slab anvils are often found associated with hammerstone and shells. The slab anvils are not flaked and 3 of them have haematite marks. Thus, anvils could have been used in tool making and as grinding stone or chopping board for removing the apex of shells.

Core: (Total: 8, 3.5%) These were all quartzite cores, very similar to the Kota Tampan cores. They had a minimum of 3 flake removal surfaces. They were all suitable core material as none had undesirable lines of weakness. The average weight was 2,693.7 gms. (max. 5,500, min 1,200 gms.), average length 23.75 cm (max. 26.5, min 10.3 cm), average width 12.65 cm (max. 20.3, min. 10.2), average thickness 7.06 cm (max. 11.5, min. 4.5 cm). There were 2 cores that could have also been used as an anvil as they had pounding marks as well as flat base. Similar multifunctional tools were also observed in the Kota Tampan assemblage.

Miscellaneous Pebble Tools: (Total: 21, 9.4%) These were shale, quartz and quartzite that were flaked, but with no clear recurrent attributes that could be used to type them. Often the flaking was not distinct because of the raw material having either weak or crowded lines. They look like chunks, thick, sometimes oval and sometimes with a truncated end. These may have been the incomplete pieces or pieces that were found unsuitable and then discarded.

Debitage: The debitage were in the form of chunks, flakes and chips. The most dominant debitage raw material is quartzite (56.39%) and this correlates with the most dominant raw material for artifacts, i.e. quartzite (Tables 11-3a, b, c). Although quartz debitage were the next most dominant, these did not come from tool flaking but were the flakes and chips that broke away from hammerstone through use. Limestone debitage was relatively very small compared to the number of limestone artifacts (20 artifacts and 10 pieces of flake debitage). This is because a large number of the artifacts (e.g. the 8 slab anvils) were not flaked or shaped. An interesting observation is the absence of chert debitage although there are flaked artifacts in this material -- 11 chert oval unifacial, and 4 chert bifacial (Tables 11-3a, b, c). This could indicate that the tools were made elsewhere and used in the cave. There were 6 pieces of sandstone artifacts

but no debitage -- but in this case, 5 of them were hammerstones, unmodified, and hence the absence of debitage.

FAUNAL ANALYSES

Shells and bones were excavated from the disturbed and undisturbed parts of the cave. Altogether 20,722 foodshells (*Brotia costula/spinosa*) and 4,924 gms. of bones (23.7% charred) were recovered (Table 11-4). However, shell and bone counts in the undisturbed trenches would provide a better basis for identifying habitation areas, and examining the association of stone tools with faunal remains. Thus, the following discussion on shell and bone will focus on the undisturbed areas.

Table 11-4: Shell and bone according to trench (whole cave)

Trench	Shell	%	Bone	%
A3	1182	6	446	9
A4	1104	5	0	0
B2	2060	19	780	16
B3	3820	18	437	9
C3	1414	7	265	5
C4	630	3	240	5
D1	411	2	36	1
W6	656	3	286	6
X5	510	2	836	17
X6	731	4	429	9
Y6	1381	7	166	3
Z4	3967	19	371	8
Z5	2443	12	330	7
Z6	413	2	302	6
Total	20722	100	4924	100

Shells

A total of 4,064 shells were excavated from the undisturbed area of the cave. These shells could be distinguished into three sizes, based on weight

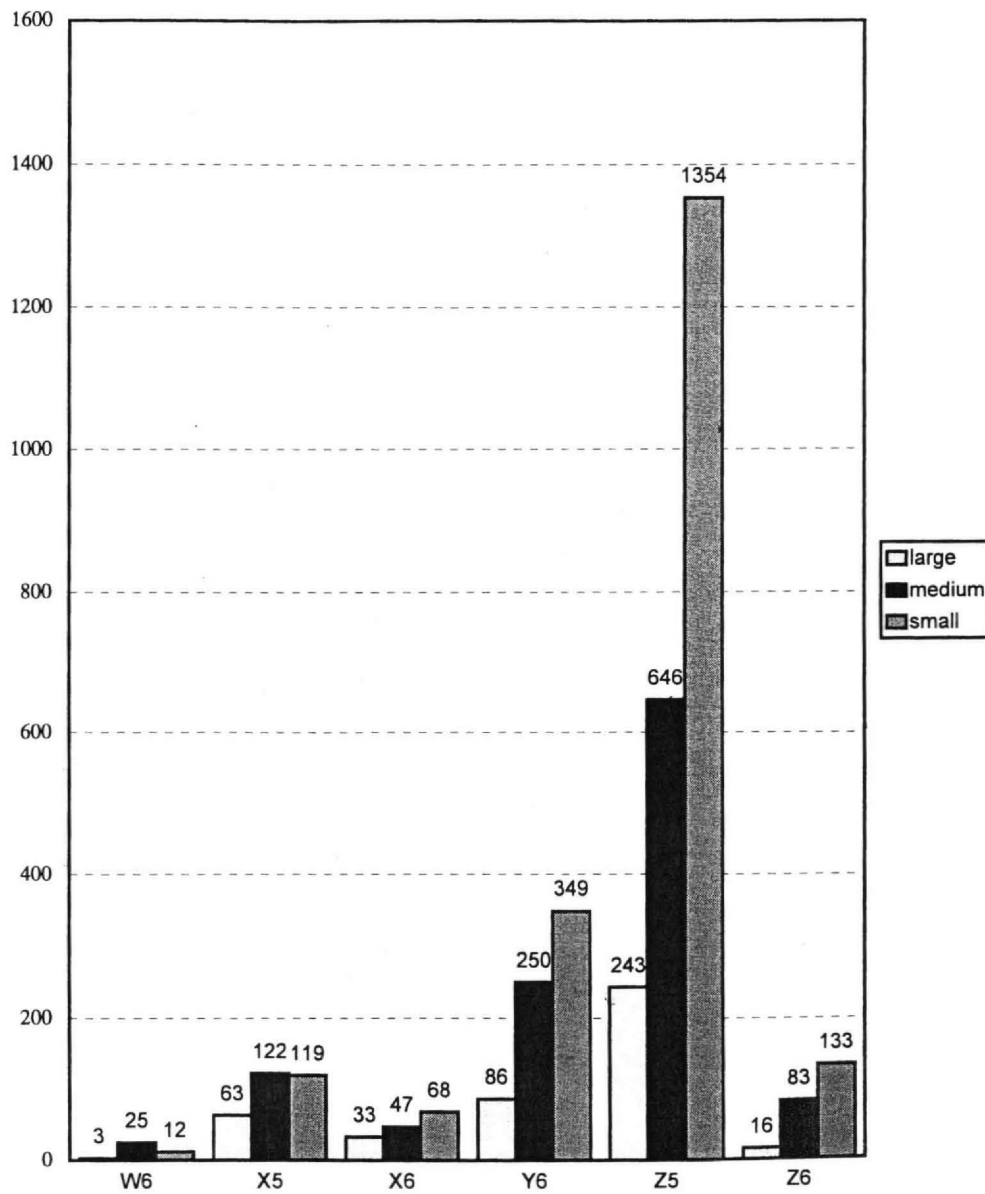
for an approximation of its original size -- large (more than 6 gms.), medium (2-6 gms.) and small (less than 2 gms.). Most of the shells (55.7%) were small, followed by medium (32.1%), while large shells (12.2%) were not common (Figure 11-3). But this size ratio was not consistently found in every spit. There are spits (Z5 spit 17, Z6 spit 12, Y6 spit 6) where the medium shells were in the majority. Generally, the small shells had the highest frequency in every spit. D1 is an exception as the majority of shells were medium and large (Table 11-5).

Table 11-5: Shell distribution according to size and segment remaining (whole cave)

Trench	Size			Segment								Total	%
	Large	Medium	Small	1	2	3	4	5	6	7	8		
A3	151	470	561	19	99	810	235	10	6	3	0	1182	6
A4	146	662	296	2	76	585	434	4	3	0	0	1104	5
B2	236	845	979	62	303	1121	519	36	17	2	0	2060	19
B3	657	1539	1624	42	397	1932	1330	84	28	6	1	3820	18
C3	167	476	771	23	200	760	386	35	5	5	0	1414	7
C4	44	372	214	5	87	403	124	1	4	1	5	630	3
D1	158	193	60	4	63	214	116	13	1	0	0	411	2
W6	169	288	199	9	166	370	104	6	1	0	0	656	3
X5	89	195	226	4	188	259	56	3	0	0	0	510	2
X6	106	229	396	7	269	362	93	0	0	0	0	731	4
Y6	162	563	656	23	349	656	345	8	0	0	0	1381	7
Z4	417	1346	2204	33	562	2263	1033	52	21	3	0	3967	19
Z5	262	713	1468	30	739	1325	338	10	0	1	0	2443	12
Z6	33	162	218	18	87	216	90	0	1	1	0	413	2
Total	2797	8053	9872	281	3585	11276	5203	262	87	22	6	20722	100
%	13	39	48	1	17	54	25	1	0	0	0	100	

These shells were all prepared with its apex chopped (Plate 11-2). What remained were the lower segments, between 1-5 segments. In an unprepared shell there can be as many as 8 segments, depending on the shell size. There appears to be a pattern in shell preparation or chopping behaviour. In the undisturbed trenches, the majority (52.1%) showed 3 seg-

Figure 11-3: Shell distribution in undisturbed trenches
(east-west direction)



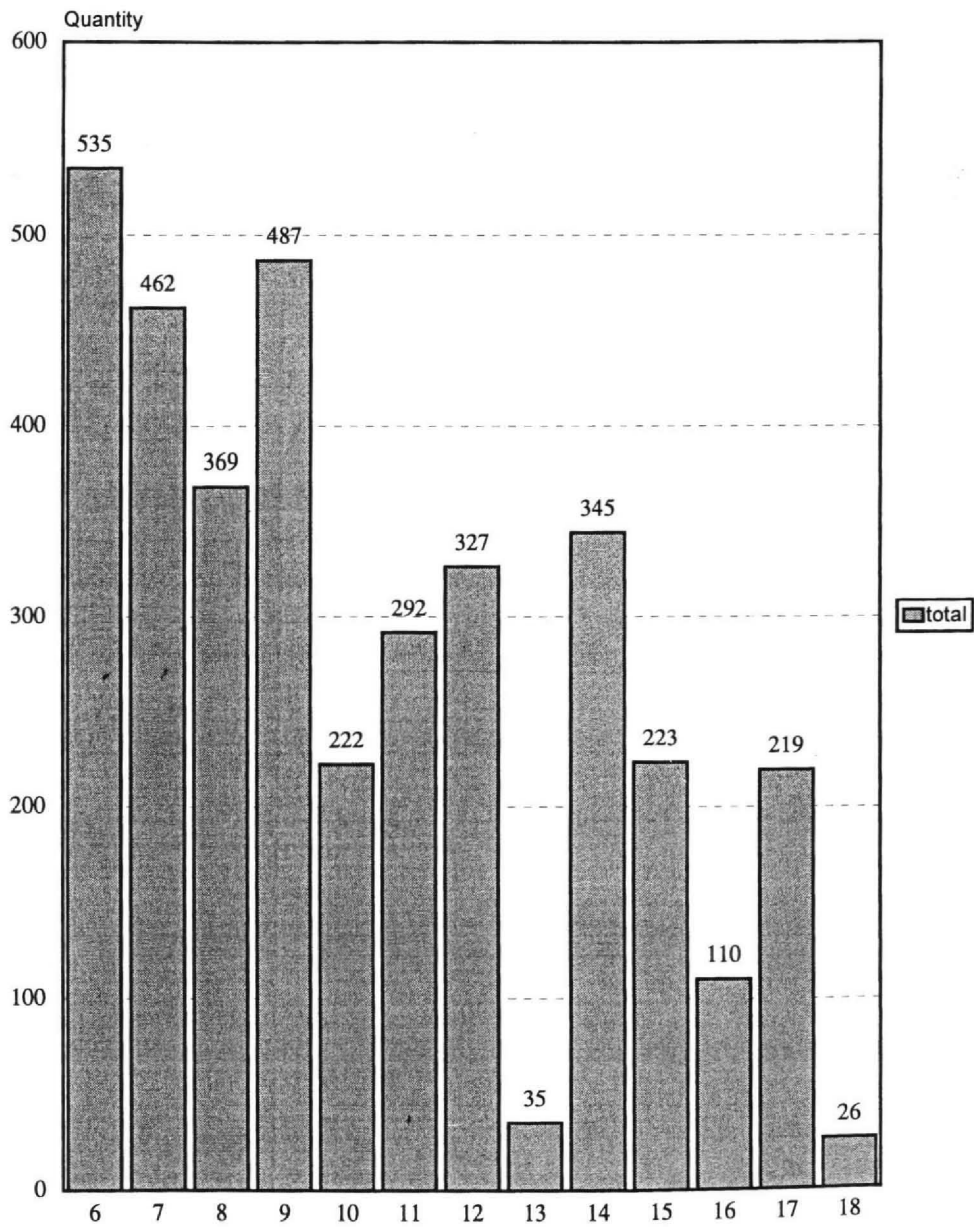
ments remaining after the apex is chopped, and sometimes (29.7%) 2 segments, and (16.3%) 4 segments (Table 11-6). The shell preparation for the whole cave (Table 11-5) also indicates that the majority (54.4%) of shells were chopped until they had 3 segments remaining. However, the next largest group was the 4 segmented shells (25.1%), followed by the 2 segmented shells (17.3%). Therefore, the desired number of segments remaining appeared to be 3.

Table 11-6: Shell distribution according to segment remaining (undisturbed trenches)

trench	Segment Left								Total	%
	1	2	3	4	5	6	7	8		
W6	0	8	29	3	0	0	0	0	40	1
X5	4	115	141	41	3	0	0	0	304	7
X6	0	53	69	26	0	0	0	0	148	4
Y6	0	214	338	131	2	0	0	0	685	17
Z5	30	703	1215	285	10	0	0	0	2243	55
Z6	7	52	110	62	0	1	0	0	232	6
D1	4	63	214	116	14	1	0	0	412	10
Total	45	1208	2116	664	29	2	0	0	4064	100
%	1	30	52	16	1	0	0	0	100	

In the undisturbed parts of the cave, areas of shell concentration were in 'Z5, Y6 and X5 (Figure 11-3). High volumes (above 300 shells/spit for the whole area) were observed in spits 6,7,8,9,12 and 14 (Figure 11-4). An examination of the vertical distribution of shells in the undisturbed trenches would provide a more exact location of the areas of shell concentration. If more than 200 shells/spit of a 2 X 2 metre trench is regarded as an area of concentration, then the busy areas were X5 (spit 6), Y6 (spits 7,8), and Z5 (spits 9,11,12,14,15,17). In the next few pages we will also identify the bone concentration areas and correlate these (bone and shell) with the associated lithics.'

Figure 11-4: Shell distribution in undisturbed trenches
(according to spit)



Bones

Bones weighing 1,074 gms. (21.3% of the total bone assemblage) were recovered from the undisturbed areas of the cave (Plate 11-3). Charred bones (a definite indication of human deposition) weighed 506 gms (47.1%). A large portion of the bones consists of broken shafts of limb bones, whereas skull bones are virtually absent, suggesting that the carcasses were dismembered elsewhere and only selected portions were brought to the cave.

The highest concentration of food bones (498 gms. or 46.4%) were found within spits 6 and 7 of trench X5 (Table 11-7). Other areas of high bone concentration (more than 50 gms.) were located at spit 6 of trench Y6 and spits 10 and 17 of trench Z5. No bones were recovered from spits 6 and 7 in Y6, spits 6 to 8 and spits 11 to 12 in trench Z5, and spit 10 in trench Z6 (Table 11-7).

However, a majority of the bones are in a poor state of preservation, with only a very small proportion identifiable as to their species (see Davison chapter 10). The species of animals identifiable from the bones consists of mainly monkey, pigs, kijang, rusa and monitor lizard. These are among the common species of animals found at all the different levels in the excavated trenches.

CONCLUSION

The excavations of Gua Gunung Runtu showed that there were large areas of the cave with disturbed stratigraphy. Hence, our analyses of the artifacts separated the excavated material into those that were from the disturbed and undisturbed parts of the cave. Shells, stone and bone were recovered from all the excavation trenches. There were no typological differences in the artifacts within each of the material categories throughout the deposit.

The stone artifacts included those of a toolmaking kit -- hammerstone, anvil, core -- together with the finished tools and debitage. Throughout the deposit, the frequency of hammerstone, anvil, core and debitage showed

that these artifacts were in relative proportion to their function, for instance, few anvils and cores compared to hammerstones and debitage, and also, the ratio of tools to debitage is the same throughout the levels. Thus, it may be concluded that there was no change in stone tool making technique throughout the whole period of cave occupation.

The toolmaking kit together with debitage and pebble tools were found in clusters. In several of these clusters the debitage raw material matched the lithology of the core and finished/unfinished products. Thus, it may be concluded that tools were made in this cave. But there were also tools such as those made from chert (15 pieces) that were not made in the cave as there were no chert debitage in the whole deposit.

Pebble artifacts dominated the assemblage. The stone tools made were mostly oval unifacial/bifacial pebble tools, together with a small number of palaeoadze, chopper and perimeter-flaked pebble tools. The proportion of these tool types were the same throughout the deposit in both the disturbed and undisturbed parts of the cave, suggesting a continuity in spatial function.

Thus, the lithic remains in this cave suggest that tools were made following the Kota Tampan technological tradition (Zuraina 1989b, 1991). The range of tools made were, however, narrower and with a distinct emphasis on one particular tool type i.e. the flaked oval pebble tools. There appeared to be no change in tool morphology and tool type throughout the period of occupation, i.e. from the end of late Pleistocene until the Holocene, for a total period of about 13,000 years. There appeared to be preferences for certain raw materials for certain tools, as was observed in the Kota Tampan assemblage. Hammerstones were often of quartz, cores for flake tools were all of quartzite, anvils mostly of limestone, pebble tools mostly of quartzite. Chert pebbles were also flaked into tools. Other materials such as sandstone, phyllite, schist and granite were also used, but relatively rarely.

These tools were probably used in food preparation, as they were found associated with food remains, shells and bones. Areas of shell concentration coincided with areas of bone concentration e.g. X5 (spit 6), Y6 (spit 6) and Z5 (spits 10, 17). Stone tools, mostly slabs and hammer-

stone were also found associated with these food remains. However, the tool making areas, e.g. Z6 (spits 7, 8, 12) did not coincide with the accumulations of bones and shells.

In conclusion, the lithic assemblage of this cave shows that the Kota Tampan tradition continued for more than 20,000 years afterwards. The similarities in lithic technology and tools produced in the two sites suggest that there was little cultural change from the late Pleistocene into the Holocene. The similarity in faunal remains throughout the cave deposit suggests that food gathering and small game hunting subsistence economy (mainly monkey, pigs, kijang, deer, monitor lizard and riverine shells) continued from the late Pleistocene into the Holocene. Thus, there were no distinct cultural breaks to suggest a new cultural stage or the presence of the so-called Hoabinhian culture, tradition or technocomplex (Matthews 1966, Dunn 1970, Gorman 1970). At present, with its prevalent palaeolithic character and a very late Pleistocene-Holocene date, Gua Gunung Runtuh would be better described as an epi-Palaeolithic site.

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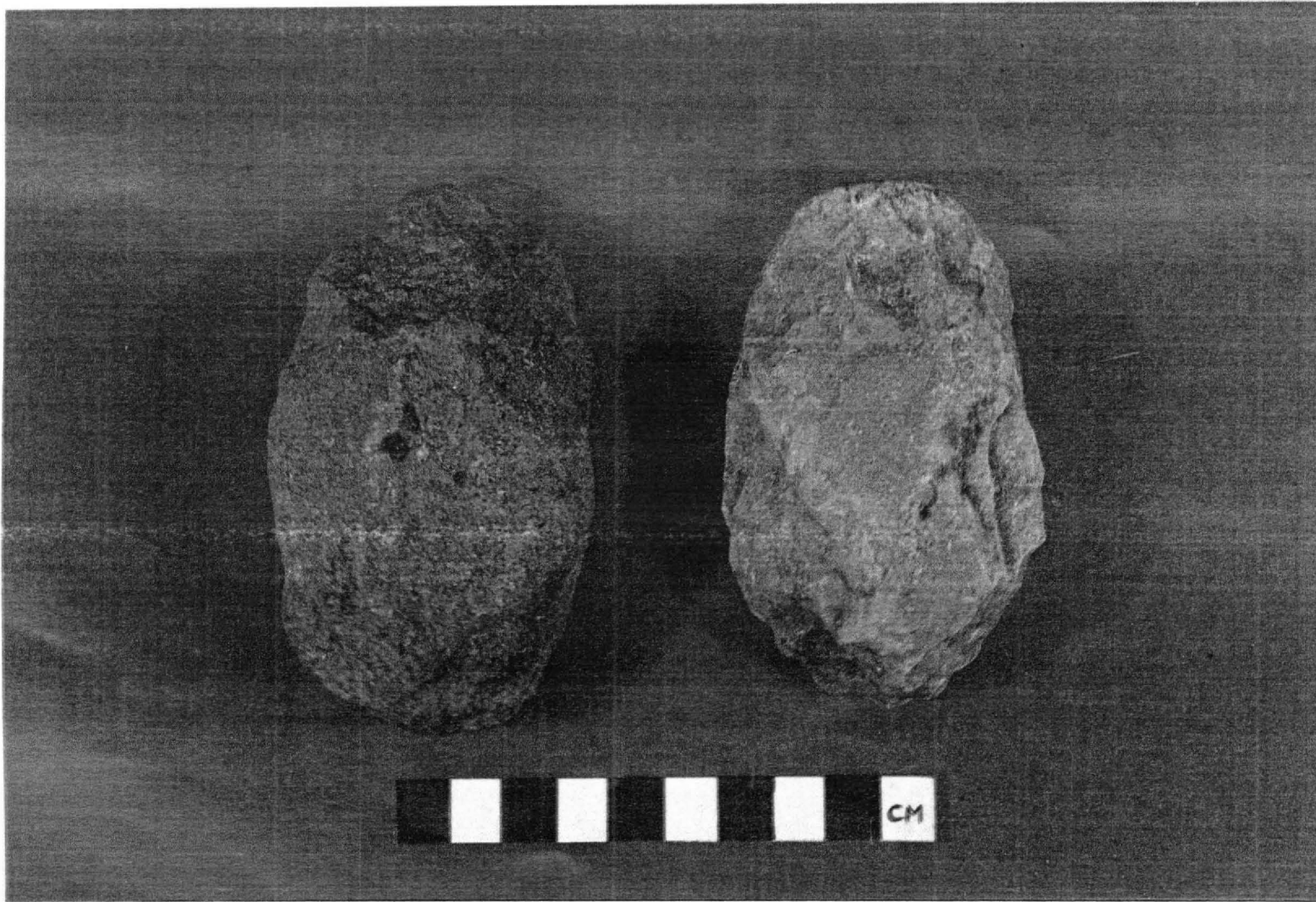


Plate 11-1: Oval unifacial pebble tools.

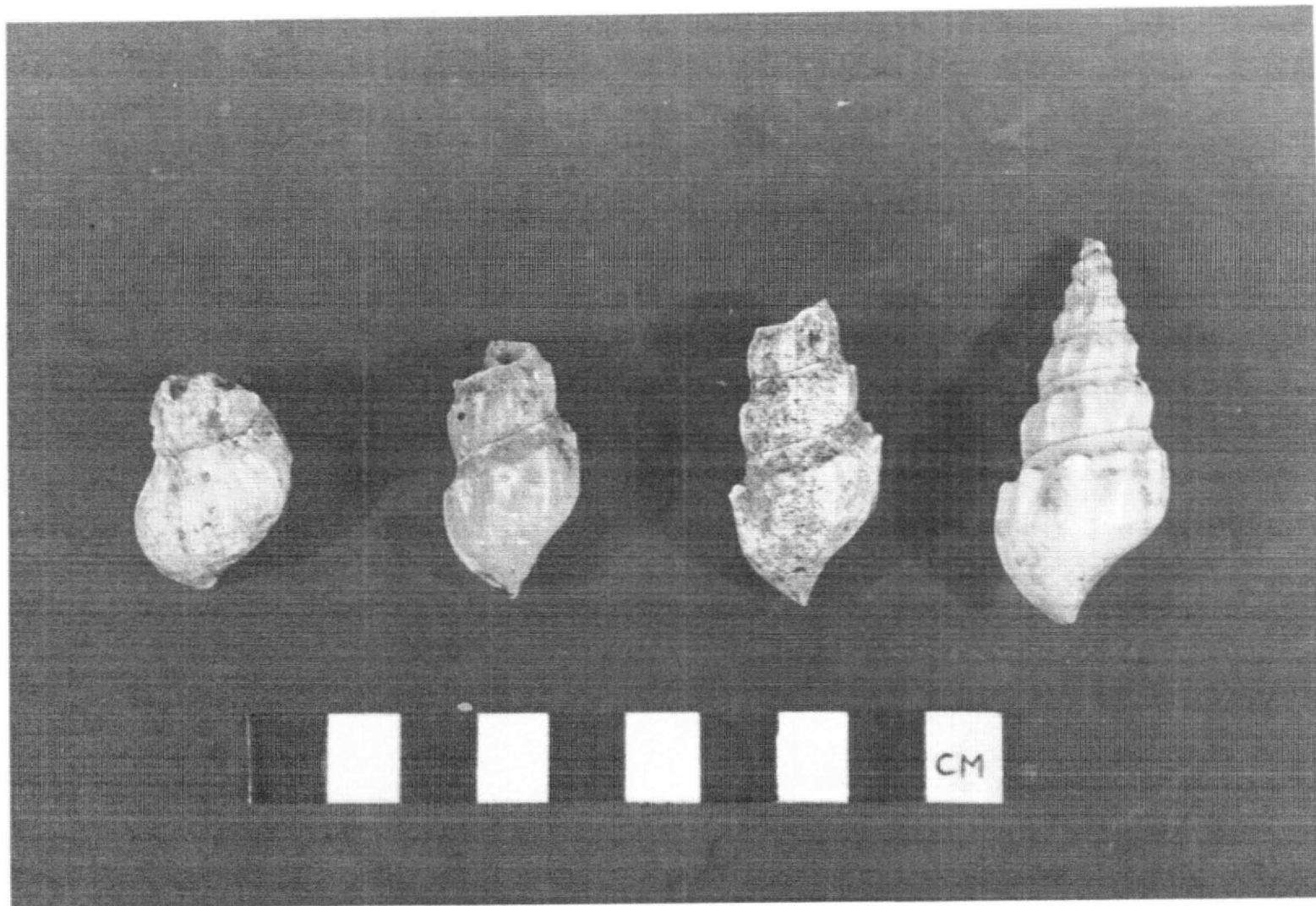


Plate 11-2: *Brotia costula* with its apex unchopped (extreme right) and chopped (3 pieces).



Plate 11-3: Charred and uncharred bones.