6

EXCAVATIONS AT YENGO 1 AND YENGO 2

The following three chapters detail the excavation results from the four art shelters excavated for this research. This chapter details the results of excavations at two sites in the north-west of the Sydney Region near Mount Yengo (Figure 6.1). The main shelter (Yengo 1; NPWS #37-5-1) has art (stencils, paintings and engravings), occupation deposit and grinding grooves. The engraved vertical panel at the front of the shelter has a complex of weathered pecked circles. Prior to the excavation it was apparent that these were truncated by the deposit. The second shelter (Yengo 2: NPWS #37-5-2) is located 10m north of the main site. This shelter has art (stencils, drawings and paintings) and occupation deposit.

Figure 6.1: Locality Map showing site context.

The excavation aims for Yengo 1 were threefold;

1) to determine whether the engravings continued beneath the deposit;

2) to obtain evidence which might establish the age of the engravings; and,

3) to investigate the contemporaneity of the archaeological components at the site.

The parietal art was recorded in October 1986 (McDonald 1987) and two field seasons were spent excavating the site. The first of these was in September-October 1987, the second in September 1988. During the first season approximately 1.6 cubic metres of deposit were excavated, yielding 10,100 artefacts. Towards the end of this first season extremely heavy rain caused flooding in the trenches, and made the drawing of sections impossible. The second season reopened the site to complete drawing the sections, and to investigate the nature of a large boulder buried in Square 1. Six charcoal samples were submitted between seasons for radiocarbon dating. Three more samples were subsequently submitted, to refine the sequence.

The excavation questions for Yengo 2 had a different orientation. These were based on the fact that the art assemblage in this shelter was different from that in the main shelter. Considering the proximity of the two sites, establishing the contemporaneity of occupation for the two sites was thus of some interest. The research questions for Yengo 2 were:

1) was there archaeological deposit at the site; and, if so,

2) to establish the nature and age of the deposit; and,

3) to establish the relationship between this site and Yengo 1.
This site was excavated in September 1988.

Environmental Context

The two sites are located on the east facing slope 250m from Big Yengo Creek[16] and 20m in elevation above it. At this point the creek is 8km south of its headwaters in the Hunter Range, and 30km north of its junction with the McDonald River. Mt Yengo (elevation 668m) is located approximately 4km west-south-west of the sites. The Hunter Range forms the divide between the Hunter and Hawkesbury Rivers catchments.

Big Yengo Creek is reputed to contain water for almost all of the year. While currently the creek has a sandy bottom, prior to the 1950 floods, the creek bottom was pebbly (Ken May, ex-property manager, pers. comm.). The gently sloping flats along both sides of the creek have been cleared for grazing. Many of the side gullies have also been cleared, and many have had dams constructed within them. Only a few very large trees remain within these grassy flats. The steeper slopes contain undisturbed dry sclerophyll with a medium understorey. *Angophora floribunda* (Rough-barked apple) dominates the upper storey, with *Casuarina* spp. and *Acacia* spp in abundance. Native Cherry (*Exocarpus cipressiformis*) was observed in front of Yengo 1, and seeds from this species were found throughout the deposit.

In this part of the Sydney Basin the Hawkesbury Sandstone formation overlies the Narrabeen Sandstone and the Hunter Range is towards the most northerly extent of this bedrock. The hillslopes at *Big Yango* contain many sandstone overhangs and boulders. Seven other shelters with art have been identified in the vicinity, and systematic survey would undoubtedly locate more.

[16]The property on which these sites are located is '*Big Yango*' while on maps the orthography for the creek is Big Yengo and the mountain is spelt Mount Yengo. The sites have been named after the mountain and are therefore spelt 'Yengo'. Yengo is reputedly an Aboriginal word meaning mountain (Sim 1966a: 38). The sites are thus called Yengo 1 and Yengo 2. This was also done to avoid confusion with Moore's (1981) Yango Creek site (YC/1).

Mount Yengo is the highest peak in this hinterland country. It has a Tertiary basalt (Alancime Dolerite) cap: the remains of a large sill (AGSHV 1981). Mount Wareng (elevation 594m) is a similarly shaped geological feature to the north.

The Sites

Yengo 1 (AHIMS #37-5-1)

This site is a medium-sized shelter measuring 14m x 6m x 1.9m at the dripline. It has an easterly perspective and is a very pleasant morning habitation (Figure 6.2 and Figure 6.3). The deposit is dry and the shelter is fairly well protected from the prevailing winds. There is an extensive pigment assemblage on the ceiling and back wall of the shelter, the interior vertical panel of the roof fall boulder is engraved and the sloping back shelf of the shelter is replete with grinding grooves (Figure 6.2, Figure 6.5).

When the site was first visited in 1986, no artefactual material was observed on the surface of the deposit, although some fragmented faunal material was observed near the entrance to a wombat burrow at the northern end of the shelter. From the interior size of the burrows it was clear that the deposit was >50cm deep and that the potential for occupation material was high. While some deposit derives from slopewash at the northern end of the shelter (and over the dripline), the deposit is mostly fine-grained grey ashy material of primarily cultural derivation. A large roof-fall boulder at the northern end of the shelter acts as a successful barrier for the deposit. This large boulder contains the engraved circles, bird and macropod tracks (Figure 6.4). There is a slight lip in the sandstone outcrop at the southern end of the sandstone which further acts to foil gravity and the downslope movement of deposit.

The Art

Of the 36 engravings on the vertical boulder (Figure 6.4, Figure 6.7), all are pecked and most are circles (90%). Two of these circles have a pecked central dot. The macropod and bird tracks are intaglio (i.e. pecked solid) while the circles consist of thick pecked forms. They have not been subsequently abraded, as with most circles on open engraving sites in the region. These motifs are classified as a regional variant of the Panaramitee (following Maynard 1979, Rosenfeld *et al.* 1981). Most of the art in the Sydney Basin is of the Simple Figurative style. It was thus assumed (based on Maynard's classification) that this art should be older than the majority of the sites found in the Sydney Basin.

The pigment art at Yengo 1 consists of stencils, paintings and drawings in white, red, yellow, pink and black pigment (Figure 6.8 to Figure 6.11). The assemblage is large (just over 500 motifs) the second largest recorded in the Sydney Basin (McDonald 1987, 1990a). The predominant motif is the hand stencil and there are numerous hand stencil variations (hand and arm, hand and wrist, finger manipulations). The art was recorded in detail with the assistance of Laurajane Smith and Warren Bluff (see Table 6.1).

The predominant colour used in the pigment art at the site is white (73%), followed by yellow (10.1%) and black and red (4.9% each). Stencilling is the predominant technique at the site (82.9%) followed by engraving (7.1%), drawing (5.8%) and painting (3.6%). Motifs with a mixture of wet and dry pigment are present but rare (0.6%).

Of the 50 depictive pigment motifs, most (58%) are infilled only; 34% are outlined and 8% are outlined and infilled. All of the identifiable motifs are either black or white. Most of the depictive motifs (78%) are either no longer identifiable or are generally unclassifiable. No depictive motifs were executed in yellow pigment: this colour is restricted to stencilling.

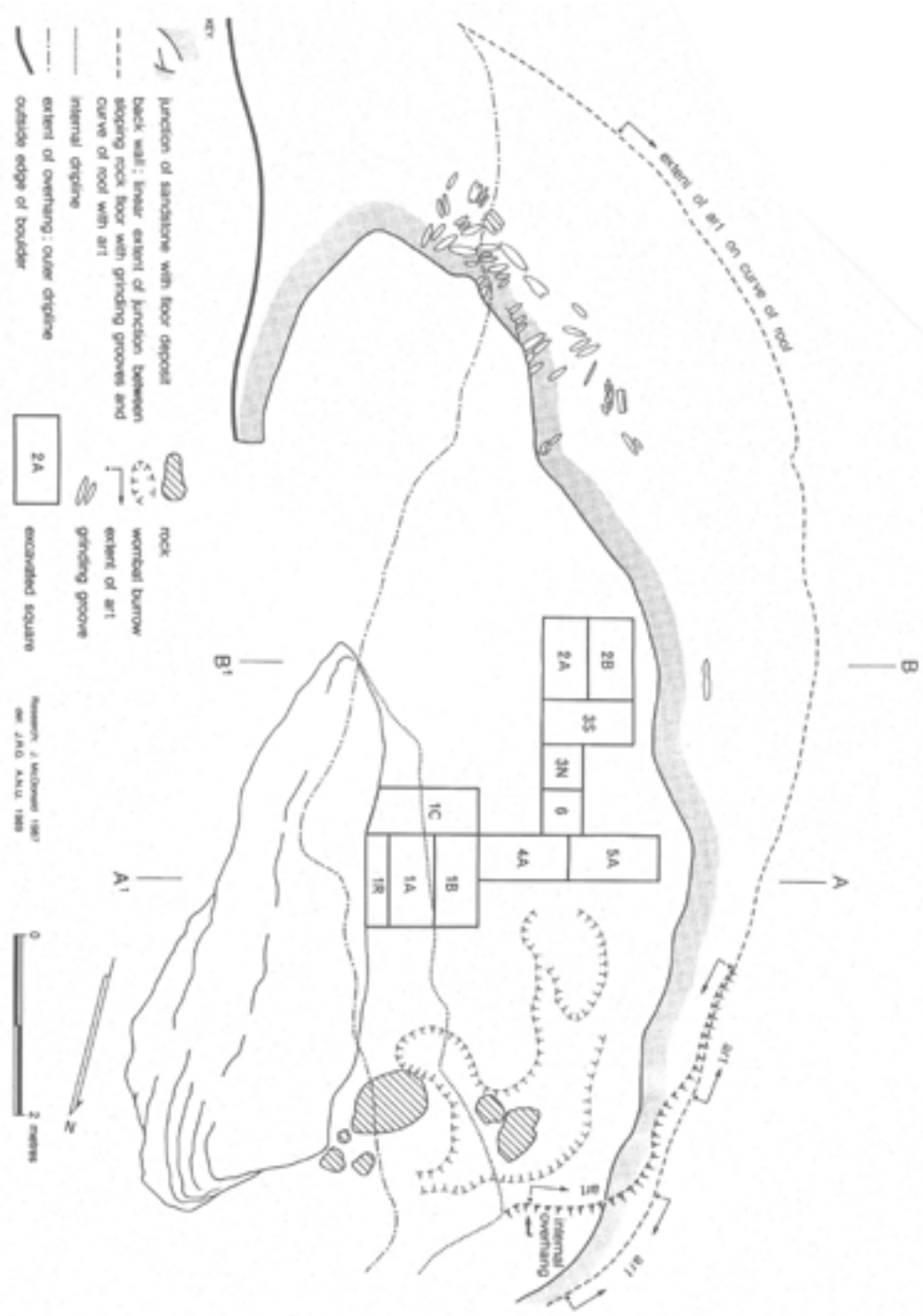


Figure 6.2: Site Plan, Yengo 1.

Figurative motifs include two anthropomorphs, an emu and an eel. Complex non-figurative motifs (CXNF) are slightly more common, as are bird tracks. The CXNFs are in white paint or drawn charcoal, and are predominantly geometric (i.e. zigzags, parallel lines with an emu track on the end of one: Figure 6.11). Several hand stencils also contain the black outline drawings of hands - either the result of tracing around the hand after the stencil had been completed, or by tracing around the inside edge of the stencilled hand's outline. This same technique has also been applied to two axe stencils and an unidentified stencilled implement. These motifs have the potential to be dated by AMS techniques (McDonald *et al*. 1990; McDonald 2000c).

Hands are the predominant stencilled subject but axes, boomerangs and other material objects (clubs, straight sticks and several unidentified objects) also feature. Yellow is the second most common colour used in stencilling, followed by red and black. There are eight black stencilled hands. It is not clear whether this is charcoal or manganese.

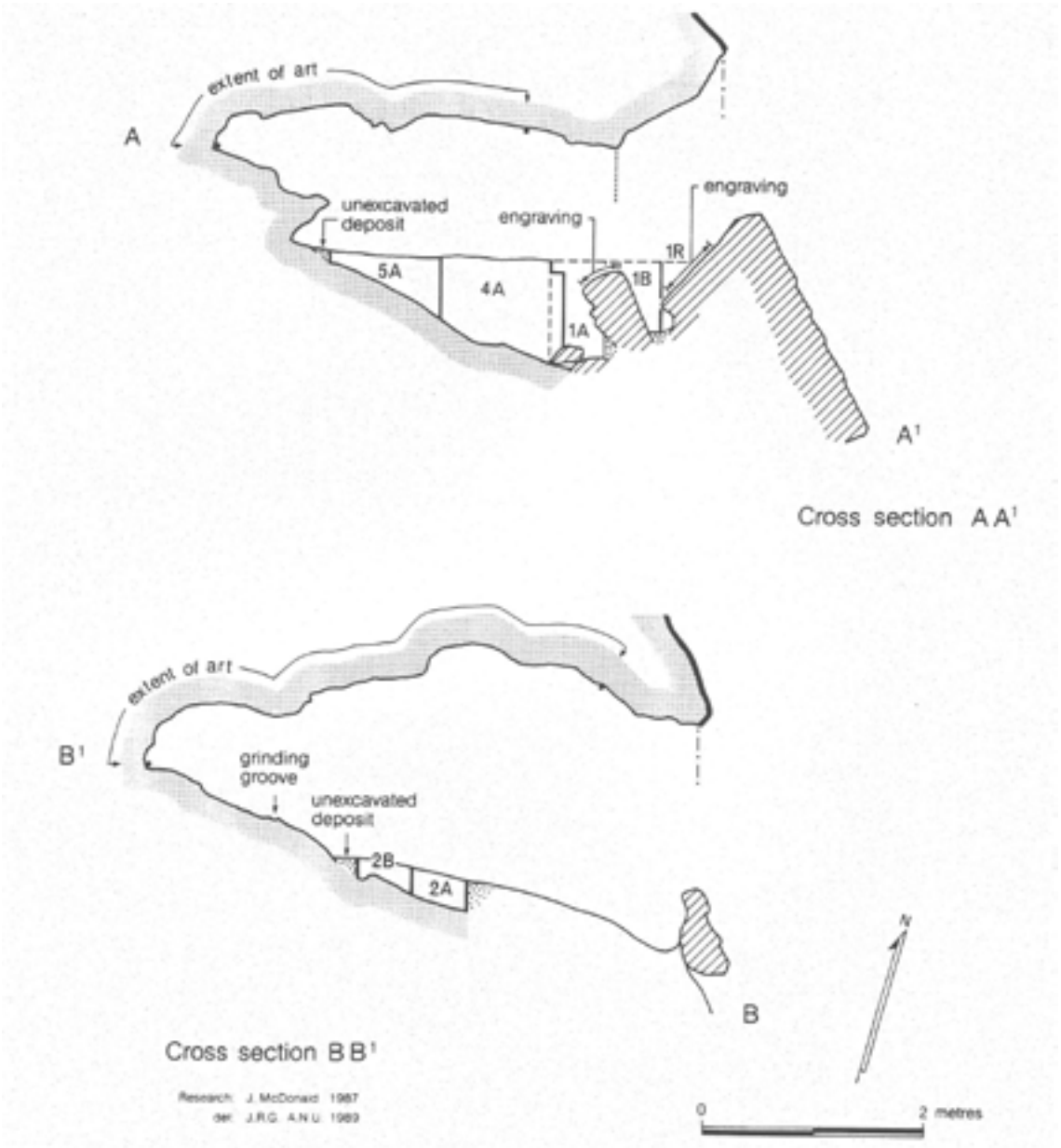


Figure 6.3: Cross-sections, Yengo 1.

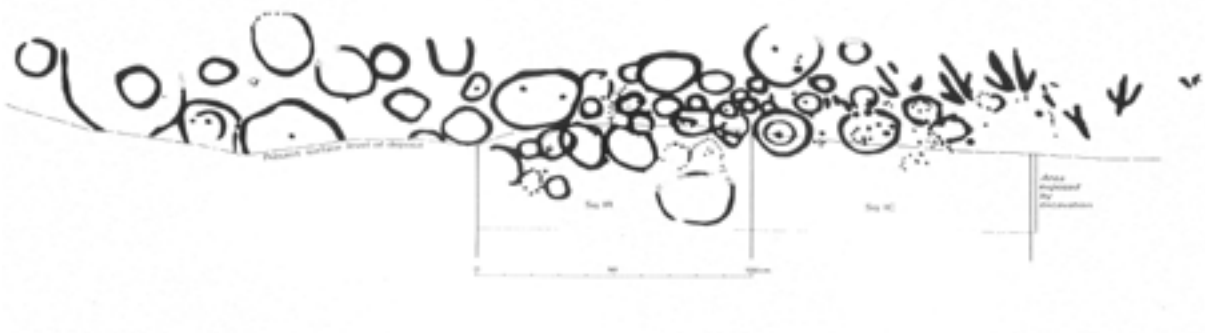


Figure 6.4: Engraved panel at the front of Yengo 1, showing the engravings and their (excavated) depth below the surface level.

Table 6.1: Yengo 1. Art Assemblage. Motif and technique information.

Motif	Colour				Technique							
	Red	White	Black	Yellow	Dry	Wet/*	Stencil	Eng'v	Out.	Infill	O/l	Total
Anthrop.		1	1		2				1	1		2
Emu			1		1					1		1
Eel		1			1				1			1
Boomerang		2					2					2
Axe		8	2		2		8		1	1		10
O. mat obj.		8	1		1		8				1	9
Hand	14	277	9	49	2		347		2			349
Hand var.	2	49		2			53					53
Bird track		2				2		1		3		3
Roo track								5		5		5
Circle								30	28		2	30
CXNF		2	2		2	2			1	3		4
Unid lines	1	4			2	3			5			5
Unid solid+	8	17	9		16	11/3*			6	21	3	30
Total	25	371	25	51	29	18/3*	418	36	45	35	6	504

+ Four of these are bichrome (i.e. black and white) * wet and dry

Several features of the site's parietal art are interesting or unique. This is the only known site in the region where a paint wash has been used either to cover existing art or to prepare the surface for subsequent art. Pink, tan and white paint have been used in four locations covering areas ranging between 1.5m x 0.4m to 0.8m x 0.8m. At the northern end of the site, hand stencils are superimposed over the wash. Several stencils (hands and axes) were also observed to be partially covered by wash.

Black hand stencils are rare. A few have been recorded in the south of the region (Caryll Sefton, pers. comm. 1988). The use of two colours in a single stencil (bichrome technique) is also rare: otherwise recorded only at Swinton's, near Mangrove Creek (personal observation).

Prints (positive stencils) are also rare in the region: four hand prints (one yellow and three tan) occur in Yengo 1. The use of non-primary colours, or at least of mixed pigments, in this case pink (presumably red + white mixed) and orange (yellow + red mixed), is also uncommon. A tan colour is used quite commonly at this site. This may be a mixture of yellow and red, or could be a very fine clay mud.

The Hand Stencils

The size range of the hand stencils at the site was recorded to indicate the likely age range and gender of the population participating in the art's production. It was hoped that this would give some insight as to what sort of site this may represent. Two measurements were consistently made for all hands: width and height. Width was measured between the tips of the thumb and the little finger; height was measured between the tip of the middle finger and the heel of the hand. The latter measurement is considered the most reliable indicator of the size of the hand being stencilled, since the former can vary depending on the amount of finger splay.

Figure 6.5: Yengo 1: grinding grooves - pecked and pounded areas.

Figure 6.6: View upslope towards sites Yengo 1 and Yengo 2 (#'s 37-5-1 and 37-5-2). Sites are arrowed - Yengo 1 is on the left.

Figure 6.7: Yengo 1. The engraved panel at front of shelter prior to excavation. View from the south-west.

Figure 6.8: Yengo 1. Interior view of shelter showing relationship between engraved boulders stencilled art on ceiling and deposit and set up of the initial square (1A) adjacent to engraved boulder. Planks were used because of friable deposit.

Figure 6.9: Yengo 1. Detail of stencils and white painted motifs on rear wall.

Figure 6.10: Yengo 1. White and red hand stencils on rear wall of shelter.

Figure 6.11: Yengo 1. White stencils and painted complex-non-figurative design on back wall of shelter.

Most of the hand stencils have the fingers splayed normally (i.e. not stretched). However a number of stencil variations are also present. Most of the stencil variations involve the stencilling of wrist and/or arm, but there are numerous examples of finger manipulations ('mutilations') and other variations of finger position.

Left or right?

Left and right handedness of stencils was also recorded: assuming that hands are placed palm-down on the rock surface for stencilling (Table 6.2). Most of the hand stencils are left hands. With the white stencils and stencil variations, left hands occur at a ratio of approximately 2:1 over right hands. With all other colours the ratio is closer to equal.

Size

Of the 392 stencils recorded at the site, 237 could be measured. Size, colour and side (left or right) were measured to assess whether particular colours might have been used by certain age groups. If so, then certain colours or sides may have been restricted to certain size ranges (i.e. age groups).

Table 6.2: Yengo 1. Left and right handedness of the coloured stencils.

	Hands			**Hand variations**			
Colour	Left	Right	?	Left	Right	?	Total
White*	105 (29)	55 (31)	49	25 (1)	15 (1)	5	316
Yellow≈	8 (15)	10 (9)	11	1	1		55
Red¥	3 (1)	3 (2)	4				13
Black	3 (1)	3	1				8
Total	119 (46)	71 (42)	65	26 (1)	16 (1)	5	392

* includes cream ≈ includes tan and orange ¥ includes pink

(x) = stencils for which side can be determined but full measurements not possible.

Measurements from living Aboriginal populations from central and northern Australia[17] were compared (Abbey 1975). The relevant measurements are hand length – the distance from end of radius to tip of middle finger - comparable to the length measurement here on the hand stencils. Abbey's results show:

Men	range = 14.0 - 21.8 cm	mean = 18.2cm
Women	range = 14.7 - 20.2 cm	mean = 17.2cm

There is considerable overlap between the two gender groups and the lower end for the range for males is lower than that recorded for females. Differentiating gender in stencils therefore, on the basis of size alone, is not possible. No doubt there is also considerable overlap between the hand sizes of adolescents (particularly boys) and women, as well as the fact that some men are small and some women large. Also to be considered is the fact that the contemporary sample derives from central Australia. While this was the only data available, it is possible that the Sydney (coastal) Aborigines were more robust than this sample[18] and that their hand sizes may have been marginally larger. The stencil analysis however, demonstrates a similar set of size ranges to those recorded by Abbey.

The presence of babies' hands amongst the stencils is a better indicator of the presence of women at a site than the presence of medium-sized hand stencils. Similarly, it is probably only the very large stencils (>21cm) which could be definitely identified as being male - except perhaps

[17]Abbey's population sample included men and women (aged 21-60+) from Yuendumu, Haast's Bluff, Maningrida, Yatala, Beswick and Kalumbaru.

[18]Analysis of long bones has indicated a greater robusticity among coastal and Murray River skeletal remains than those from the arid zone (Dr Denise Donlon, pers. comm., 1992).

where there was direct association between the hand stencils and male hunting equipment (e.g. an axe). While men's and women's hand sizes, and most likely adolescent's hand sizes also involve considerable overlap, the size of children's and babies' hands are more reliably identified. On the basis of a study of the hands of 35 children under four[19], the following measurements are used as the basis for identifying the stencils of infants and children at the site (children <12 years grouped in a size range between infants and small adults):

Babies/infants under 4 <11 cm

Children 4-12 years 11 - 14 cm

An analysis of size indicated the following (Table 6.3 and Figure 6.12: based on the 267 stencils which were fully measurable).

The largest hand stencils at the site are 22cm long. There are five only of these largest stencils; four are white left, one is a white right. The descriptive statistics for the different stencils (Figure 6.12) indicate considerable overlap between the bulk of the stencils in terms of median size and 50% of the range.

Table 6.3: Yengo 1. Size ranges of hand stencils (group n≥3).

Hand	Minimum	Mean	Maximum	St. Dev.
White Left	13.5	18.8	22	1.8
White Right	9.5	18.8	21	2.9
White Var. Left	15	17.5	21	1.8
White Var. Right	15	17.7	21	2.1
Yellow Left	13	16.9	20.5	2.6
Yellow Right	11	16.7	19	3.0
Red Left	17	18	19	2.1
Red Right	16	17	21	2.7
Black Left	14	17.3	21	3.5
Black Right	15.5	16.8	18	1.3

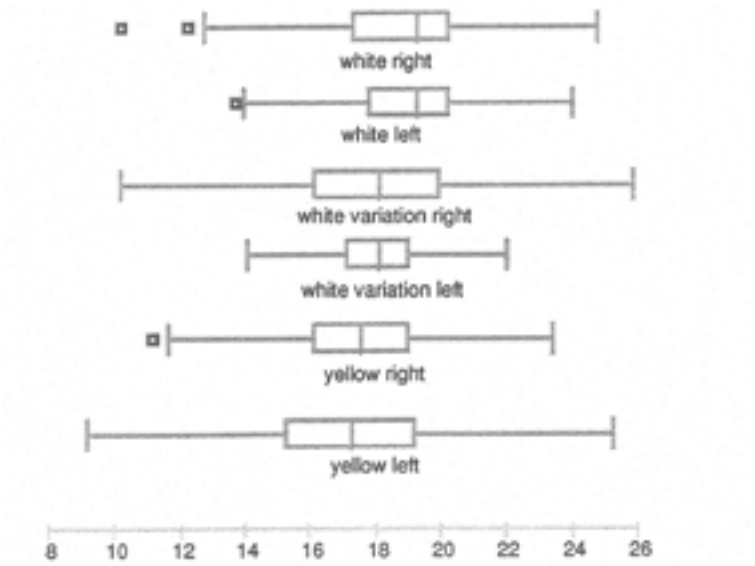


Figure 6.12: Yengo 1. Stencils. The range, median and variance (measurements in cm). [Box indicates the 25th and 75th percentile. Whiskers extend to values which represent 1.5 times the median to the corresponding edge of the box. Values outside this are outliers].

Several stencil types, however, show a tighter clustering in terms of their overall size range, particularly white left hands (plain and variations). These both have the smallest standard deviations (Table 6.3: with the exception of black right stencils where n=3) as well as the largest mean size. This may indicate that the subject hand sizes for these were perhaps restricted to men (this mean size is similar to that found by Abbey), or at least to adults.

Only the two white left hand stencil groups have a mean size larger than Abbey's mean male hand

[19]Research undertaken by the author at the Laurel Tree House Child Care Facility, University of Sydney, 1992. The subjects made hand prints which were labelled and thence measured.

Table 6.4: Yengo 1. The grinding grooves (measurements in centimetres).

No.	Length	Breadth	Depth	*No.*	Length	Breadth	Depth
1	25	8	1.8	*2*	33	5	0.4
3	25.5	3.7	0.5	*4*	23	4	0.3
5	17	3	0.2	*6*	27	5.5	0.3
7	26	7	0.4	*8*	30	7	1.0
9	33	6.5	1.0	*10*	32	9	1.8
11	18	5	0.5	*12*	18	3	0.2
13	30	7	2.5	*14*	33	7	2.5
15	30	10	2.1	*16*	28	5.5	0.3
17	26	7	1.0	*18*	20	4	0.2
19	20	6	0.2	*20*	40	7	2.0
21	34	8	1.3	*22*	18	3	0.2
23	30	6	1.4	*24*	40	10	2.1
25	35	8.5	1.2	*26*	15	7	1.5
27	15	7	1.1	*28*	10	8	1.0
29	30	6	0.3	*30*	30	5.5	0.3
31	35	7	1.2	*32*	33	4.5	0.3
33	30	5.5	0.5	*34*	12	7	0.3
35	22	8	0.4	*36*	37	9	1.6
37	33	7	0.9	*38*	20	8	1.1
39	26	7	0.4	*40*	27	4	0.2
41	23	3.5	0.2	*42*	28	5.5	1.0
43	30	7	1.0	*44*	31	7.5	0.6
44a	(abraded area within #44)				20	4.5	0.1
45	27	5	0.4	*46*	33	3.5	0.2
47	33	4	0.3	*48*	25	10	0.2
49	16	5	0.4	*50*	24	2	0.3
51	12	2	0.3	*52*	16	7	0.3
53	20	3	0.1	*54*	33	5	0.5
55	18	4.5	0.5	*56*	19	4	0.5

size. Two children's sized stencils [13.5cm and 14cm long] were also recorded amongst the white left hands. The yellow stencils and the right handed black and red stencils all have a mean smaller than Abbey's mean women's hand sizes. Children's and babies' sized hands were found stencilled in white and yellow, but not in black and red. No hand stencil variations were made using children's hands. A total of 10 very small stencils were recorded at the site. Three only were identified as babies'; the remaining seven were identified as children-sized.

While the occurrence is relatively rare (4.2%), children and babies obviously took part in the production of stencil art at the site. While it cannot be demonstrated conclusively, it is argued that women also likely to have taken part in the production of this art form; the yellow stencils and the right handed black and red stencils have a mean size well below the mean male hand size. Given the overlap found by Abbey in men's and women's hand sizes, distinguishing between men's and women's hand stencils based on size alone is a fruitless endeavour. From the presence of children's and babies' stencils amongst the art it would seem likely that women were not only present at the site but also participated in the production of this art form (McDonald 1992b).

The Grinding Grooves

The grinding grooves and areas of pecking and abrasion were traced on polythene and measured in the field. A total of 55 grinding grooves, two areas of abrasion and one abraded groove were recorded, as were five discrete areas of battering/pounding and numerous pecked marks (Table 6.4, Figure 6.5, Figure 6.13).

The average length of the 55 grinding grooves was 26cm (s.d. = 7.5). The maximum length was 40cm and the minimum length was 10cm. The average width of the grooves was 6.1cm (s.d.

= 1.9). The narrowest groove was 2cm wide and the widest was 10cm. The longest groove was not the widest groove. The grooves were on the whole fairly shallow, with the average being 0.8cm deep (s.d. = 0.7). The deepest groove was 2.5cm deep, and the shallowest was 0.1 cm deep.

As well as sharpening axes, there is evidence that other activities were undertaken on the gently sloping back wall of the shelter. Three areas of abrasion (#s 44a, 45 and 48: Figure 6.5) include one discrete incised groove and two areas where these incisions occur more as collections of grooves. These indicate the sharpening of either wooden spears or perhaps women's digging sticks (McDonald 1992b).

Also present were five discrete areas of pounding, i.e. bruising or battering of the surface. Most of these occur on the relatively flat shelf, not the sloping surfaces. Where these occur in superimposition with grinding grooves, the areas of pounding predate the grinding grooves. Several of these areas have been affected by exfoliation of the case hardened surface in this area - as have several grinding grooves (i.e. groove #s 35, 52: Figure 6.5). There is also evidence that some surface exfoliation predates both the grinding and pounding activity.

There are also numerous discrete pecked dots as well as clusters of dots (as opposed to the pounded areas) scattered across the back wall area. On the bedrock surface beneath Squares 2 and 3, five more pecked dots were also discovered (Figure 6.5). This suggests that this type of activity may predate the site's most intensive occupation period, and could be related to the production of the pecked art on the shelter's boulder. Pecked dots are a common component of the Panaramitee (Clegg 1987, Edwards 1971, McDonald 1983).

Figure 6.13: Yengo 1. Grinding grooves on sloping back wall at southern end of shelter. Shot taken after rain.

Figure 6.14: Yengo 1. Detail of axe found in undergrowth outside the shelter. Scale in cm intervals.

One ground edged axe head was found in the undergrowth at the front of the shelter. This measured 8.0cm x 7.5cm x 3.8cm, and was made of fine grained basic material (Figure 6.14). One ground edge was 5cm long while the length of opposite edge would have been in the order of 6.5cm. There are a few remnant stains/adhesions suggestive of hafting resin and the head is waisted. Both ground edges show evidence of usewear (chopping and battering), and there is a sheen near the shorter cutting edge in addition to the grinding striations. Fragments of ground edged material were also excavated from the deposit.

Yengo 2 (AHIMS #37-5-2)

This site is located in a medium sized shelter measuring 7.0m x 4.0m x 1.35m (Figure 6.15 and Figure 6.16). It faces east and is 10m north of Yengo 1 (Figure 6.6) at the same contour. The art assemblage in this site is very different to that found in the main shelter (Table 6.5). Here drawings and stencils (40.4% each) are co-dominant while paintings represent 17% of the assemblage (Figure 6.17, Figure 6.18). Mixed dry and wet pigment motifs occur but are rare (2%). White pigment dominates (58.6%), but not to the same extent as found in Yengo 1. Black is the next most commonly used colour (31.1%) followed by red (13.1%) and yellow (5%).

Table 6.5: Yengo 2. Art Assemblage. Motif and technique information.

Motif	Colour				Technique							
	Red	White	Black	Yellow	Dry	Wet/*	Stencil	Eng'v	Out.	Infill	O/I	Total
Anthropomorph	3	1	11		9	6			2	11	2	15
Macropod+	3	7	4		9	1/1			7		4	11
Snake			1	1	1	1			1	1		2
Mammals^+		4	2		4				2		2	4
Reptiles≈+		3	2		2	-/1			1		2	3
Eel		2			2				2			2
Axe		1					1					1
Club		1			1					1		1
Hands		26		3			29					29
Hand variation		8					8					8
Bird tracks+		1	1		1						1	1
CXNF		1	2		2	1			1		2	3
Unid. lines	2	1	1		2	2			4			4
Unid. solid	5	2	7	1	7	6	2		8	4	1	15
Total	13	58	31	5	40	17/2	40	-	28	17	14	99

+ Seven of these are bichrome (i.e. black and white)
* wet and dry
^ 2 possums, 1 koala, 1 flying fox
≈ 3 goannas

The 40 stencilled motifs comprise mostly hands (72.5%) or hand variations (20%). There is one stencilled axe. All but three of the stencils are white: the others are yellow. Two areas of blown red pigment were identified, although these are not identifiable stencils.

Depictive motifs account for c.60% of the assemblage, and most are identifiable (72%) and figurative. The subject range includes mainly anthropomorphs and macropods (25% and 19% respectively) with a variety of other land animals also depicted (goannas, snakes, possums, a koala and a flying fox). Bird tracks and complex-non-figurative motifs are also present amongst the assemblage. Outlined depictive motifs were the most common (48%) followed by infilled (29%) and then outlined and infilled (24%). Colour usage in the depictive assemblage is quite different (cf. the stencils): black predominates (47%) followed by white (35%), red (15%) and yellow (3%).

The following superimpositions were observed:

	Over >
white stencils	dry red outline
dry red solid	dry black solid
dry pink outline	dry black solid
wet white outline	dry black solid
dry white outline /infill	dry black solid
dry and/or wet red outline	dry black solid
dry black outline /infill	dry black solid
wet white outline	dry black outline /infill
black and white o/i	dry red solid

The proposed sequence based on these superimposition relationships is as follows:

Earliest	dry black solid
	dry red or pink solid and/or outline
	dry white outline and infill
	dry black outline and infill
	wet white outline
	black and white bichrome (some wet/dry combination)
Most recent	white hand stencils

There is a suggestion of motif preference changes with these changes in technique. Most of the earliest art (dry black solid) consists of small anthropomorphs (<25cm in size) while the middle phase consists of the widest range of subjects. These are (mainly) kangaroos, anthropomorphs (all >30cm; most >50cm in size) and the full range of figurative motifs present at the site. Black and white bichromes are restricted to macropods, goannas, possums and bird tracks.

Stencils

Side and size for the hand stencils were recorded, although the sample size here is considerably smaller. There are similarities and differences between this and the Yengo 1 assemblage. Left hand stencils again dominate, representing 65% of stencils for which side was identifiable and 87.5% of the stencil variations (Table 6.6). A relatively small proportion (30%) of the stencils could not be identified for size and/or side. This reflects less superimpositionning rather than the condition of the art.

Table 6.6: Yengo 2. Handedness (left or right) of the coloured stencils.

	Stencils			Hand variations			
	Left	Right	?	Left	Right	?	Total
White	8 (4)	8	6	7	1		34
Yellow	2 (1)						3
Total	10 (5)	8	6	7	1		37

(#) = stencils for which side can be determined but full measurements not possible.

Half of the hand variations here consist of the 'hand + arm' variety. The remaining four consist of two pairs of stencils positioned wrist-to-wrist (Figure 6.19). One of these pairs also has the fourth and fifth fingers positioned close together.

All of the stencils at this site are adult sized. The mean sizes for the two of the three main varieties are all larger than their counterparts in Yengo 1, and the standard deviations are generally

smaller (Table 6.7). The smallest hand was 15cm in length. The largest stencils (n=3) in this site are 21cm.

Stencilling in this site is a more restricted phenomenon both in terms of the overall site assemblage and compared with the extensive usage of this technique in the shelter next door. From the stencils' measurements it would appear that the population producing these stencils was also more restricted. All are adult sized, most of these from the middle range. One stencilled axe amongst the assemblage is the only possible gender association. Superimposition analysis indicates that stencil production occurred late in this art sequence. Black + white bichromes and white paint also appear late in this shelter's art sequence.

Table 6.7: Yengo 2. Size ranges of hand stencils (where n >3).

Colour/side	Minimum	Mean	Maximum	St. Dev.
White left	16	17.8	21	1.6
White right	15	18.25	21	2.1
White var. left	16	18	21	1.8

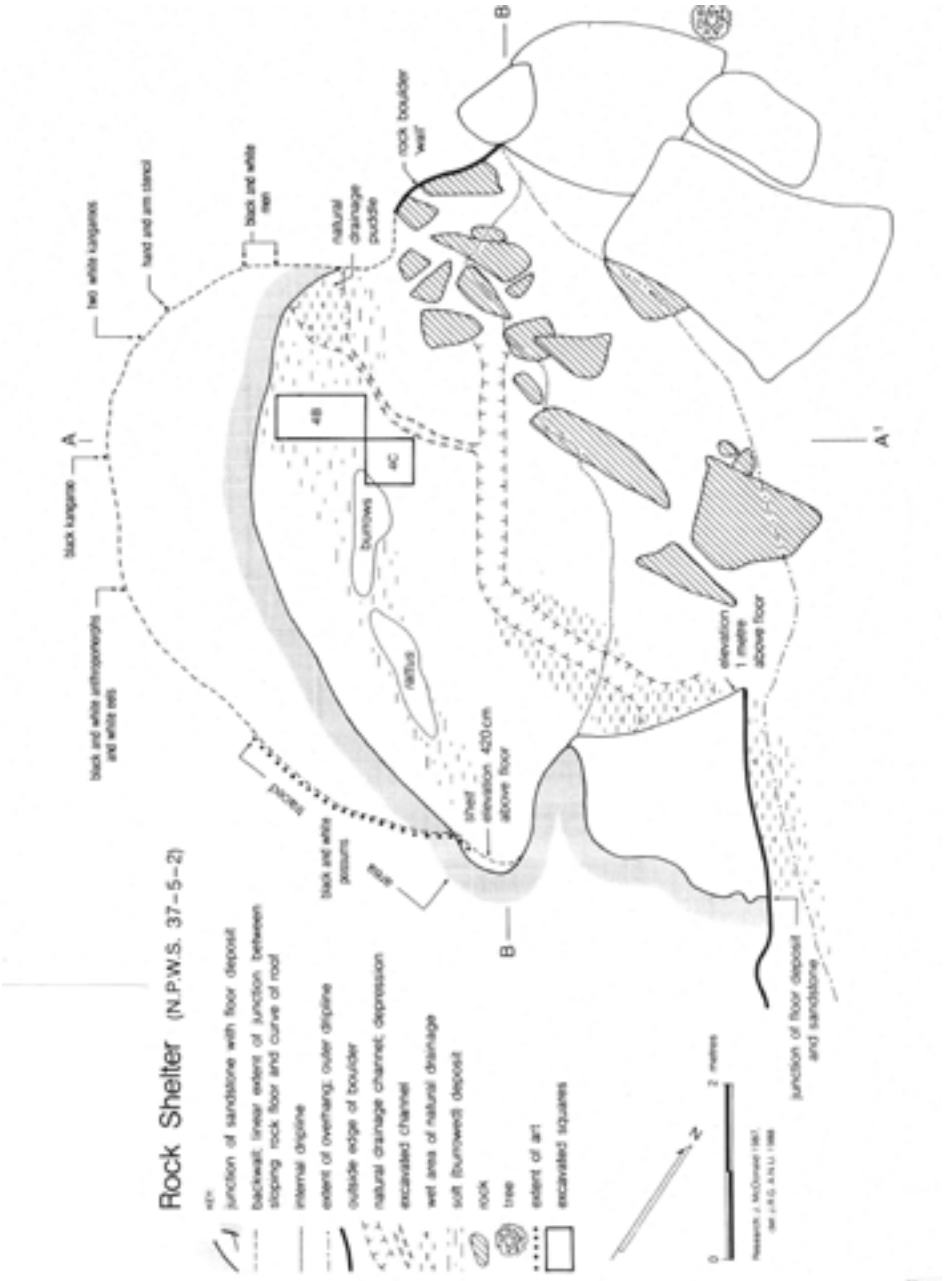


Figure 6.15: Yengo 2. Site Plan.

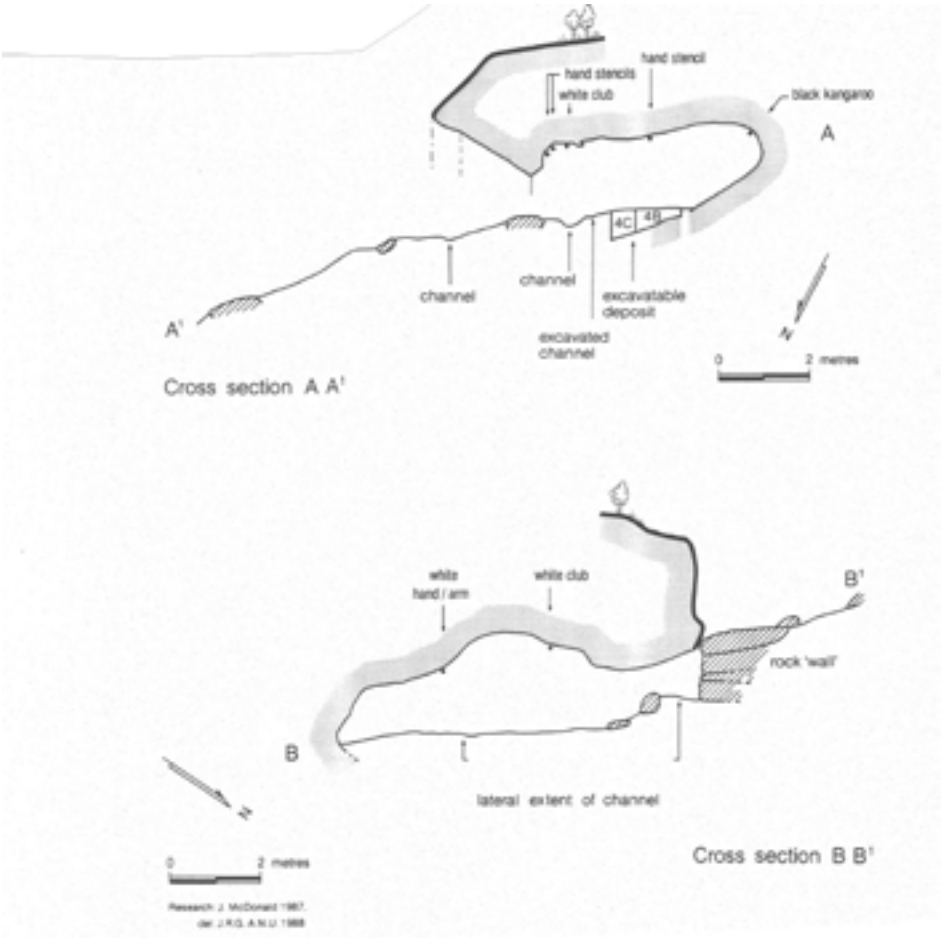


Figure 6.16: Yengo 2. Cross-sections.

Figure 6.17: Yengo 2. Black and white possums and goannas. There are superimposed over red solid motifs.

Figure 6.18: Yengo 2. Black and white goanna, black drawn and white painted non-figurative motifs and red solid figure on southern side of shelter.

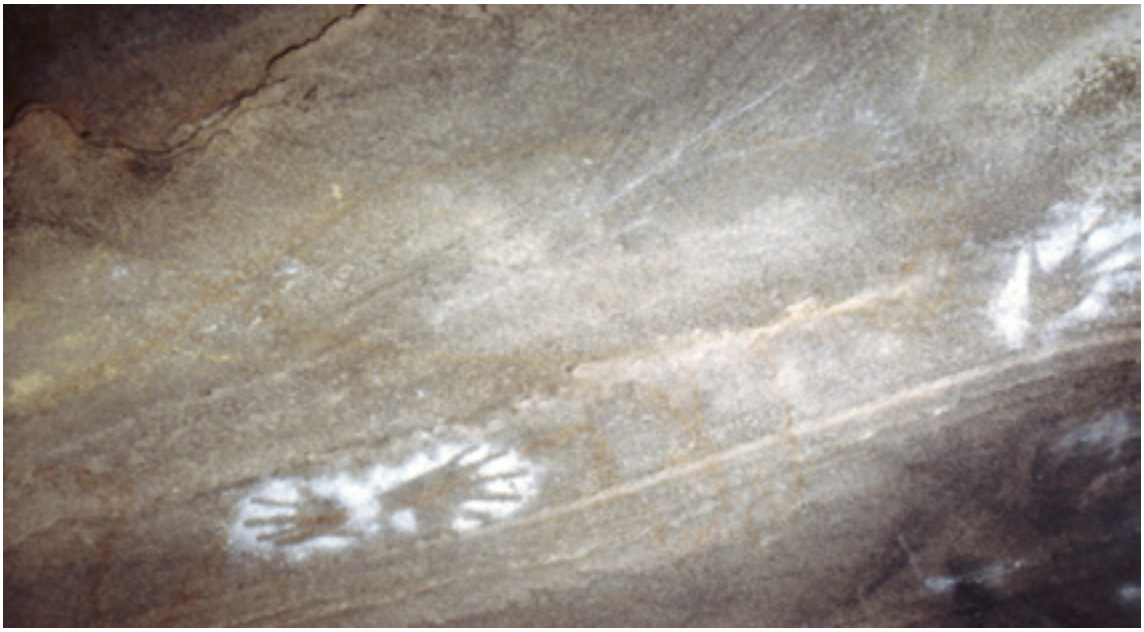


Figure 6.19: Yengo 2. White hand stencil variations - wrist-wrist combination on ceiling of shelter, superimposed over red outline macropod.

Table 6.8: Yengo 1. Excavated Pit Dimensions.

Square	Length (m)	Breadth (m)
1A	1.0	0.5
1B	1.0	0.5
1C	1.2	0.5
1R	1.0	0.26
2A	1.0	0.5
2B	1.0	0.5
3S	1.0	0.5
3N	0.5	0.5
4A	1.0	0.5
5A	1.0	0.5
6	0.58	0.5

Excavation Procedures

Yengo 1

In 1987 a total of 11 pits were excavated (Figure 6.2), removing a total of 2.2 tonnes of deposit. In 1988, square 1 was reopened as was part of trench 4A/5A. The base of the fallen boulder in square 1 was not exposed during the first season's excavation and it was not clear whether it post-dated the engraved boulder (or whether this was a large manuport or part of the original roof-fall episode). A total of 483kg of deposit were excavated from square 1C (1.2m x 0.5m) in 1988.

The majority of the pits measured 1.0m x 0.5m (Table 6.8). The unorthodox placement (and occasionally size) of the pits resulted from the morphology of the shelter and from the need to avoid several areas of obvious and severe disturbance caused by extensive wombat burrowing. Initially the pits were positioned to investigate two separate areas of deposit: adjacent to the engraved panel (square 1) and in the flat central floor area (Squares 2 and 3). Once excavation commenced, however, it became apparent that site formation processes were complex. Because of this and the very friable nature of the deposit, the two main investigation areas were joined by two trenches. One of these (Squares 4A and 5A) connected the engraved panel (square 1) with the back wall. The other trench (Squares 3 and 6) connected the central area of the deposit (square 2) with the first trench. All squares (except 1A) were excavated to bedrock. A total of 123 spits were excavated (Figure 6.20 to Figure 6.23).

Once excavation commenced it became apparent that burrowing activity was not restricted to wombats and that surface disturbance was not a clear indicator of subsurface burrowing activity. Almost all squares contained bush rat (*Rattus fuscipes*) burrows - prehistoric, recently collapsed and extant varieties. During our excavation a trap set with peanut butter was used (by Jon Saunders, Zoologist) to catch a current resident that kept re-excavating its burrow into our trenches every night. Thankfully none of the wombat burrows were currently in use!

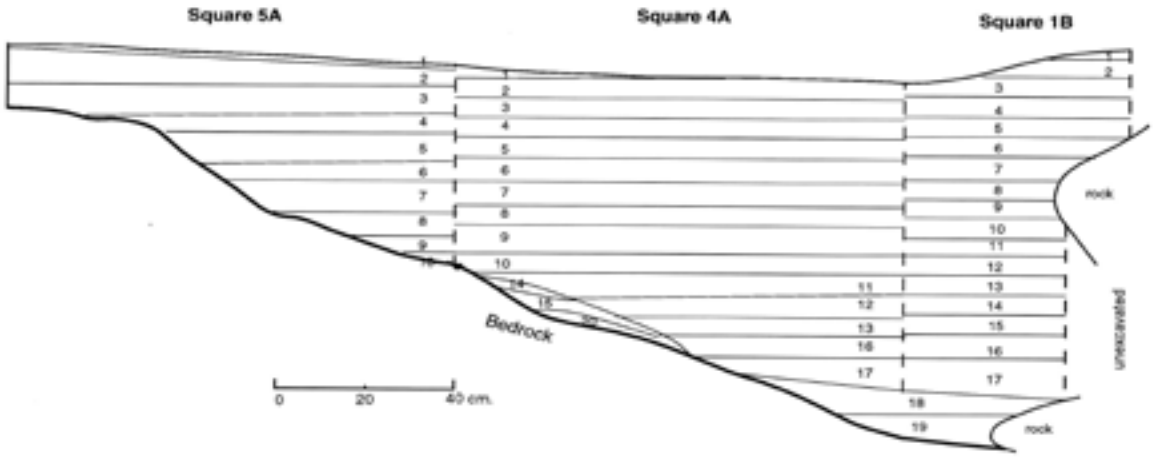


Figure 6.20: Yengo 1. Squares 1B, 4A and 5A, northern baulk showing excavated units.

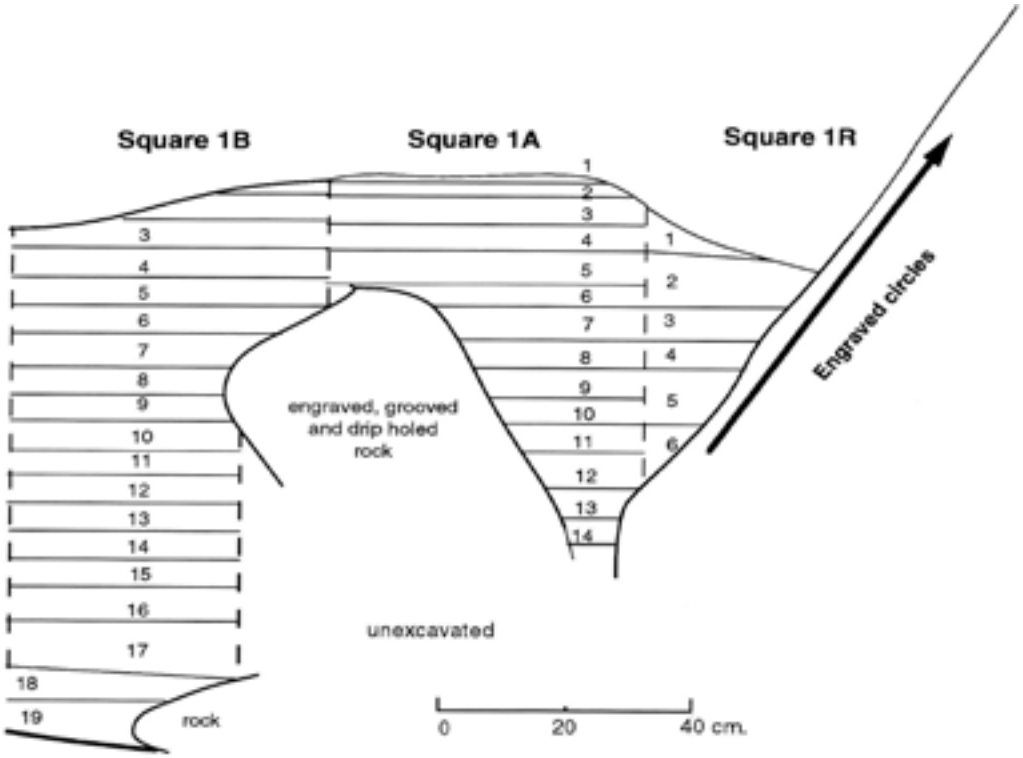


Figure 6.21: Yengo 1. Squares 1A, 1B and 1R, northern baulk showing excavated units.

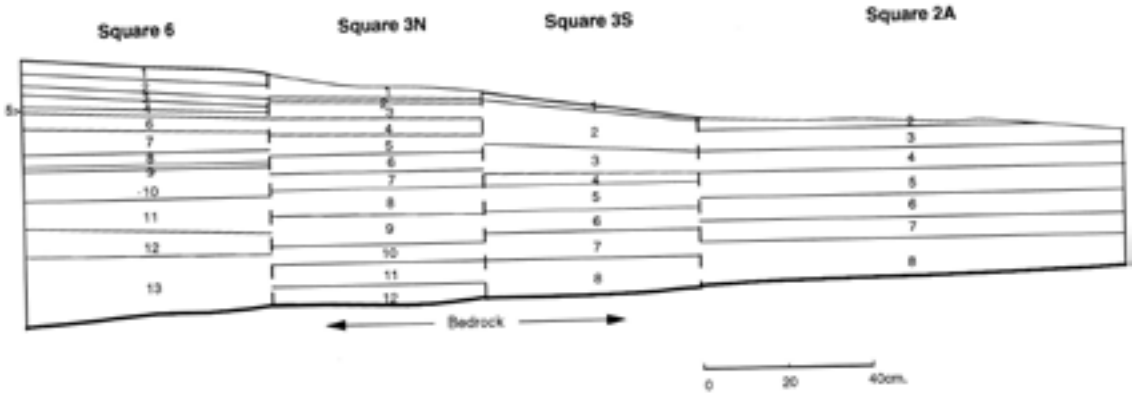


Figure 6.22: Yengo 1. Squares 2A, 3S, 3N and 6, eastern baulk showing excavated units.

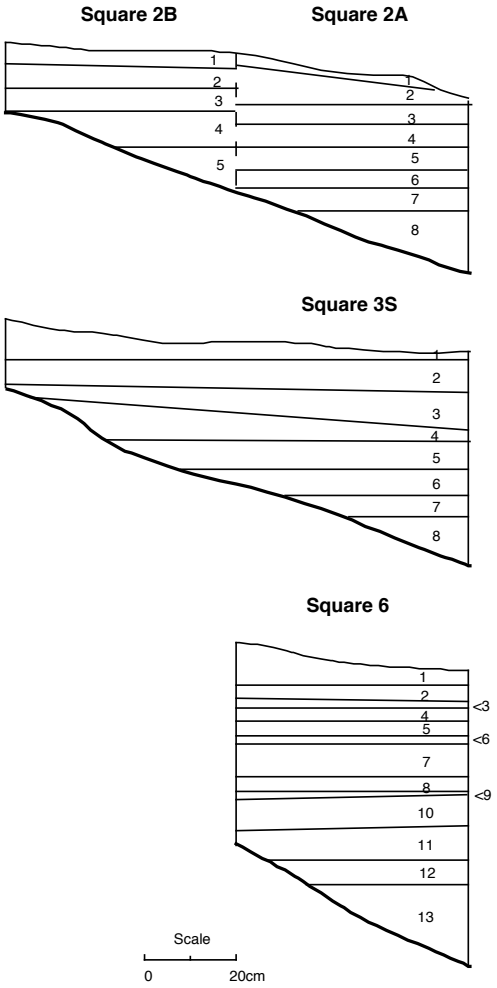


Figure 6.23: Yengo 1. Squares 2A, 2B, 3S and 6E, northern baulks showing excavated units.

Yengo 2

A total of nine person days were spent on this excavation in September 1988. Two test pits were excavated (Figure 6.15) removing a total of 494kg of deposit. Sixteen spits were excavated in these two test squares (Figure 6.25).

Bush rats had also burrowed in this site and heavy rain throughout the excavation period demonstrated that the floor can be inundated by water from the northern end of the shelter. Two pits were excavated to provide a good sample of artefactual material. While the deposit contained archaeological material, the density of this was extremely low. Saturation of the deposits meant no stratigraphic divisions were observable here. Decomposing sandstone was encountered immediately above bedrock (Figure 6.24).

Results - Yengo 1

Stratigraphy

The stratigraphy at the site is complex, as a result of the shelter's morphology and different depositional processes. Bedrock in the shelter consists of a sloping rock floor. The large engraved boulder at the front of the shelter retains deposit only at the northern end, and in this area there

Figure 6.24: Yengo 2. Completed excavation. Square 4C in the foreground; 4B in background. Note the lack of obvious stratigraphy.

is also a considerable influx of deposit through dripline activity. Several of the layers of deposit identified are only present in excavated squares at the front of the site. The steeply sloping bedrock means that at the back of the shelter, the most recent layers are adjacent to bedrock. Deposition has been accelerated in the front squares, because of incoming sediment. The sand fraction in the front squares is considerably higher than those in the central area of the site, where the deposit is fine grained and ashy. Through time, the area of flat, deposit covered floor increased laterally, bringing the ceiling to within reach.

The squares at the site are viewed as two groups:

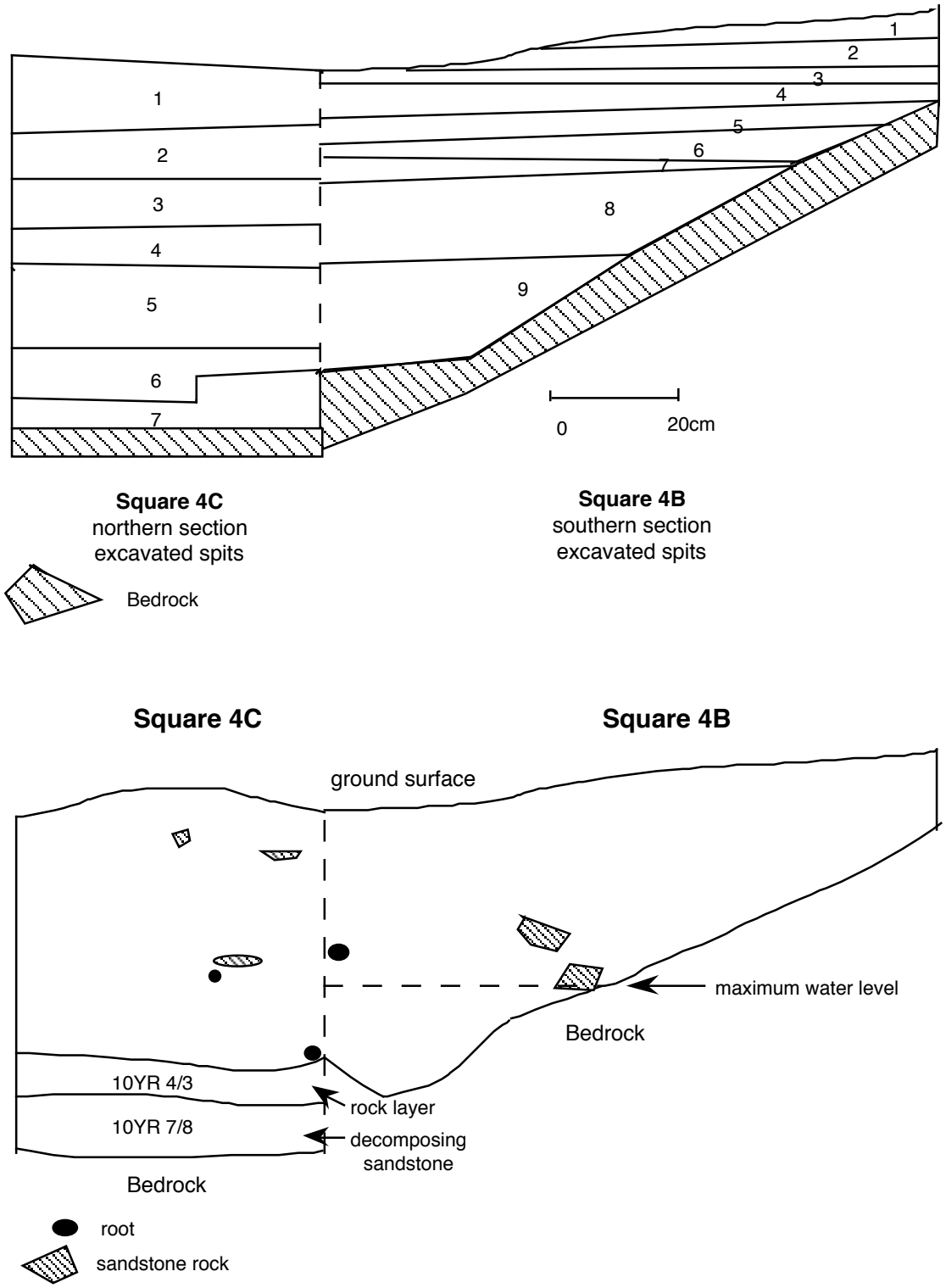
1. Square 1A, 1B, 1R and 1C which contain the deepest and earliest deposit and have been affected by soil deposition from outside the dripline; and,

2. Squares 2, 3, and 5A which are relatively shallow and mostly recent for which sedimentation is primarily cultural.

Squares 4A and 6 show combinations of these formation processes.

Stratigraphic Layers

Section drawings were done for all excavated squares except Pits 1A, 1R and 1B. Torrential rain (10cm in 24 hours) fell towards the end of the first season before the sections in this area of the site had been drawn. This rain severely affected the surfaces of the balks at the front of the site. The main reason for the return season was to reopen this trench to interpret its stratigraphy. Unfortunately torrential rain again fell and this problem was not perfectly resolved. It would



No colour gradations observable within main sections. Colour all 5YR 3/1 (very dark grey brown)

Figure 6.25: Yengo 2. Squares 4B and 4C. Excavated spits & stratigraphic section.

appear that this type inundation has probably continuously affected the soil matrix at the front of the site: the complex stratigraphic detail observable inside the shelter is non-existent outside the protection of the shelter.

Seven stratigraphic layers (as distinguishable from analytical units) were identified at the site (Figure 6.26- Figure 6.28);

Layer I — Loose fine deposit, high leaf litter content. Disturbed. [2.5YR 5/2; pH = 7]

Layer II — Fine, ashy compact grey deposit, rich in charcoal, artefacts and faunal remains. [2.5YR 5/1; pH = 8.5]

In Squares 2A, 2B, 3S, 3N, 6 between Units II and III is a red/grey ashy lens, with high charcoal content [5YR4/4; pH 8.5 – 9]

Layer III — Fine ashy compact dark grey deposit, rich in charcoal, artefacts and faunal remains [5YR 5/2; pH = 8.5]

Layer IV — Orange mixed sandy deposit with high ash and charcoal content

Layer V — Red/brown/buff, compact sandy deposit, low charcoal [pH = 8.5]

Layer VI — Yellow/buff fine, compact deposit, low charcoal [10YR 6/3; pH = 8.5–9]

Layer VII — Very compact buff, with high roof-fall component [10YR 6/3]

NB. Individual hearths, extant and prehistoric burrows and ash lenses have been identified on the section drawings and are described in the detailed discussion for each square.

The deposit in the central area of the shelter was extremely fine, dry and alkaline. The densest layers were rich in artefactual material and contained large quantities of highly fragmented faunal remains (over 600g of bone were recovered from eight of the squares).

Given the stratigraphic complexities of the site, the high degree of disturbance in some squares and the large size of the excavated stone tool assemblage, a sample of the excavated material was analysed in detail (see below). Stratigraphic components in all excavated squares are given (Table 6.9 and Table 6.10). Detailed stratigraphic notes are presented for the four analysis squares (1B, 4A, 3S and 6). The correlation of excavated spits with analysis units/stratigraphic layers for the analysis squares is given (Table 6.10).

Square 1B

Unit I — Loose fine deposit, high leaf litter content, large pieces of charcoal observed. Many small ferns: well established root system. Very uneven surface.

Unit II — Fine, compact brown deposit, rich in charcoal and with increasing artefacts. Top of boulder exposed[20]: many small rocks (<3cm diameter) concentrated at northern end.

Unit III — Increasingly compact dark grey deposit, rich in charcoal and artefacts. Many pieces of red coloured roof fall observed. A rat burrow intrudes into the north-western face (a 10cm baulk was employed along 50cm of wall to prevent collapse).

[20]This boulder, the top of which was uncovered in Unit II, was excavated beneath only in square 1C (see Figure 6.28). This appears to be contemporaneous roof fall with the large engraved boulder at the front of the shelter.

Unit IV — More red/brown with decreased charcoal throughout this layer. Artefacts present in relatively large numbers, deposit more compact than above, and moisture content increasing. High proportion of sandstone rubble/ roof-fall.

Unit V — Lighter brown, damp compact sandy deposit, low charcoal and artefacts.

Unit VI — Lighter coloured compact deposit, low charcoal.

Unit VII — Combined square 1B/4A see square 4A notes.

Square 4A (Figure 6.26)

Unit I — Loose light grey mottled deposit with leaf litter, twigs, ferns. Very disturbed.

Unit II — More compact grey/brown deposit, rich in charcoal and artefacts; some bone. The burrow identified in sq 1B, also affects this square. Boundary of burrow easily defined; this surrounded by looser, mottled orange deposit: otherwise deposit quite firm.

Unit III — Fine ashy compact dark grey deposit, rich in charcoal and artefacts but no faunal remains. Base of burrow above protrudes 4cm into this layer.

Unit IV — Orange mixed sandy deposit with high ash and charcoal content. Many artefacts observed while digging.

Unit V — Red/brown yellow/buff, compact sandy deposit, areas of charcoal staining; floor area diminishes dramatically due to sloping bedrock.

Unit VI — Hardened yellow compact deposit, low charcoal. A few large artefacts encountered, but density much lower.

Unit VII — Very compact buff, with high roof-fall component: initially mistaken as bedrock. Dug with Geo-pick.

Square 3S (Figure 6.29)

Unit I — Loose fine deposit, high leaf litter content. Disturbed. Two prehistoric burrows enter square from north, one transects square. Animal scats insect cases and other evidence of recent deposition.

Unit II — Fine, ashy compact grey deposit, rich in charcoal, artefacts and faunal remains. Deposit compact until scraped with trowel, then becomes fine powder.

Red/grey ashy lens, with high charcoal content: thicker at eastern end. Deposit more friable than layer immediately below.

Unit III — Fine ashy compact dark grey deposit, rich in charcoal, artefacts and faunal remains. Artefacts decline towards base of layer. Another prehistoric burrow runs along eastern baulk, and extends down through this and the layer below (all material from identified burrows was excavated and bagged separately to the remaining, undisturbed portions of the square).

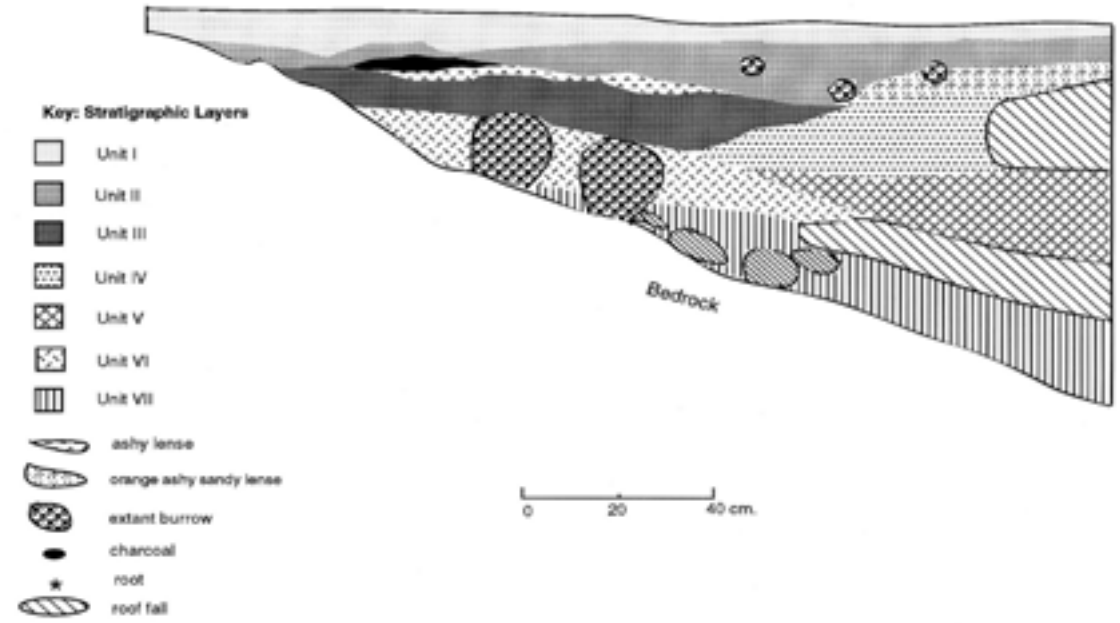


Figure 6.26: Stratigraphic section. Northern baulk of Squares 4A and 5A.

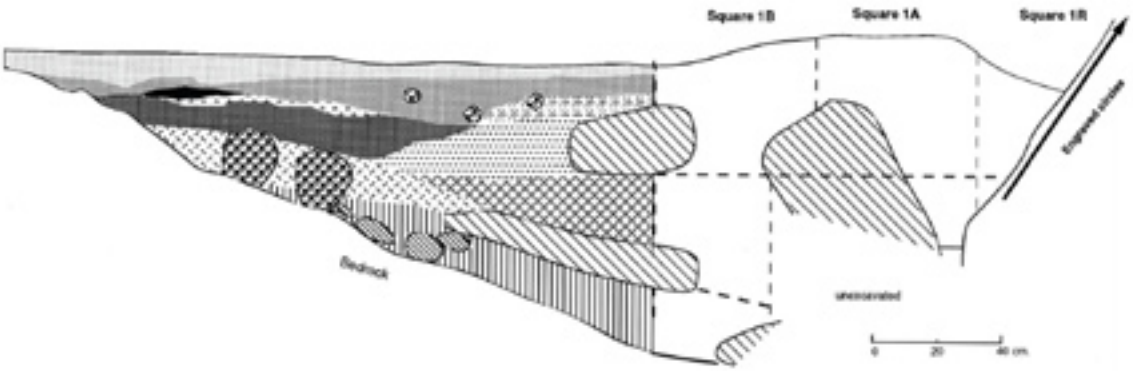


Figure 6.27: Trench aligned with Square 1, showing relationship of engravings to site's internal stratigraphy (Figure 6.26).

Unit IV	None
Unit V	None
Unit VI	Hard yellow deposit, low charcoal.
Unit VII	Extremely hard compact yellow buff, with base of prehistoric burrow adjacent to junction of this and unit VI.

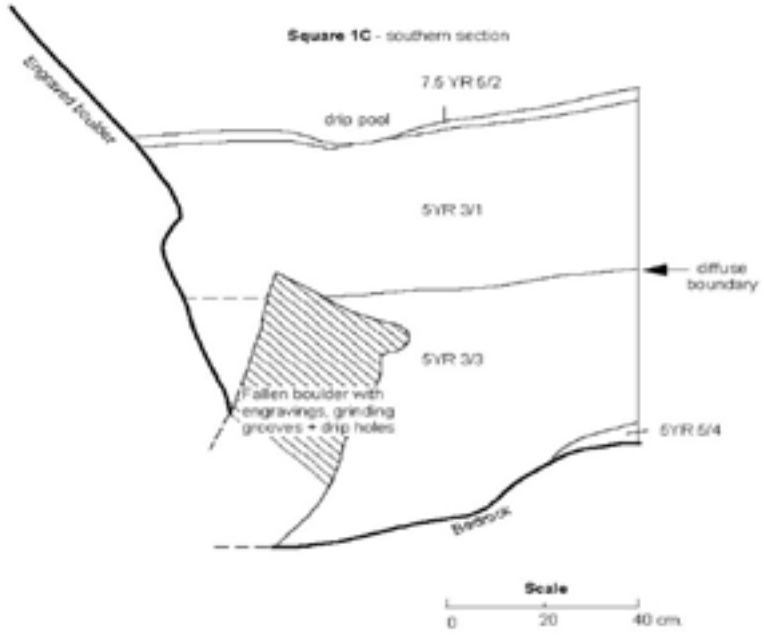


Figure 6.28: Yengo 1. Southern baulk, square 1C, showing location of buried boulder relative to engraved boulder (schematic boundaries).

Square 6 (Figure 6.29)

Unit I Loose fine deposit, high leaf litter content. Disturbed.

Unit II Fine, ashy compact grey deposit, rich in charcoal, artefacts and faunal remains. Red/grey ashy lens with high charcoal content. Located across northern side of the square. Yellow lens identified beneath this in centre and northern baulk of the square. Across most of the square it is a pinker and less ashy than identified elsewhere.

Unit III Fine ashy compact dark grey deposit, rich in charcoal, artefacts and faunal remains. Collapsed burrow (prehistoric) towards base of this layer (10cm diameter) from centre north to south east corner.

Unit IV Orange mixed deposit with less ash and charcoal content than found in layer above.

Unit V None

Unit VI Buff fine, compact deposit, low charcoal. Appeared sterile while digging.

Unit VII Very compact buff, for approx 12cm immediately above bedrock. Two roots (1cm diameter) traversed square adjacent to bedrock.

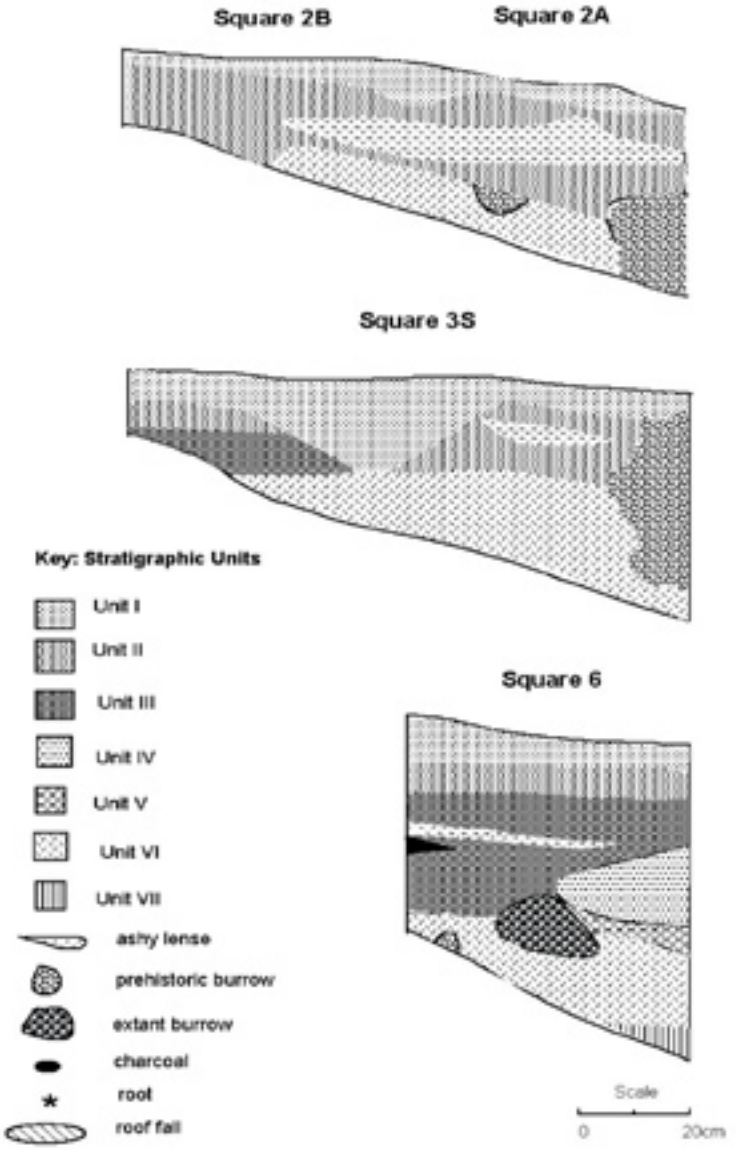


Figure 6.29: Yengo 1 Squares 2A, 2B, 3S and 6. Stratigraphic sections northern baulks.

Table 6.9: Yengo 1. Excavated Depth, Spits and Stratigraphic Layers. All excavated squares.

Square	Depth below surface (cm)	No. of Spits	Stratigraphic Layers
1A	66	14	I, II ,V
1B	97	18	I, II, III, IV, V, VI, VII
1C	65	10	I, II, V, VI
1R	51.5	6	I, II
2A	32	10	I, II, VI
2B	31	6	I, II, VI
3S	46	8	I, II, III, VI, VII
3N	49	12	I, II, III, VI, VII
4A	93.5	20	I, II, III, IV, V, VI, VII
5A	58	10	I, II, III, VI, VII
6	53	13	I, II, III, IV, VI, VII

Table 6.10: Yengo 1. Correlation of spits with analytical units and stratigraphic layers: Analysis squares (1B, 4A, 3S and 6) only.

Analytical Units	Excavated Spits				Stratigraphic Layer
	Square				
	1B	4A	3S	6	
1	1,2,3	1,2	1	1,2	I
2	4	3	2	3,4	II
3	5	4	3	5,6	III
4	6	5	4	7	III
5	7	6	5	8,9	III
6	8	7	-	10	IV
7	9	8			IV
8	10,11	9			IV
9	12	10			V
0	13	11			V
1	14	12			V
2	15	13			V
3	16,17	16	6	11	VI
4	18	17	7	12	VI
5		14,15,20	8	13	VII
6	(4A/1B)18,19				VII

Dates

Nine charcoal samples were submitted to the ANU Radiocarbon Lab for age determinations (Figure 6.30; Table 6.11 and Table 6.12). These established that initial occupation of the shelter dates to the pre-Bondaian period, commencing around 6,000 years ago. It would appear that occupation of the shelter at this time was sporadic and continued for c.1,000 years. There may have been a hiatus between this and subsequent occupation of the site, although artefact accumulation rates suggest this not to be the case. The next phase of occupation ended around 3,000 years ago.

Table 6.11: Yengo 1. Radiocarbon determinations.

Square/spit/ sample number	Lab-ID	Depth below surface (cm)	Stratigraphic Layer	Age
2B/4/2	ANU-6058	16.5	II	540 ±180 BP
1R/3/2	ANU-6057	17	II	260 ± 120 BP
3S/4/4	ANU-6217	10	III	101 ± 1.1%M
4A/6/1	ANU-6216	30.5	III	1,530 ± 110 BP
4A/10/X	ANU-6054	52	IV	1,950 ± 400 BP
1A/10/2	ANU-6215	55	V	2,750 ± 220BP
4A/10/2	ANU-6056	52.5	V	2,840 ± 240 BP
4A/10/1	ANU-6055	54.5	VI	4,590 ± 300 BP
4A/1B/19/1	ANU-6059	93.5	VII	5,980 ± 290 BP

The most intensive occupation of the shelter commenced sometime after 2,000 years ago. Occupation continued from this time well into the last millennium. There is no evidence of post contact use, either in the dates, the art or the excavated artefacts.

Two of the dates received (ANU-6057, ANU-6217) are considered to be unreliable indicators of age. The former, being located as it was beneath the dripline may well have been contaminated by more recent charcoal percolating down through the deposit. The latter sample may have been affected by bush rat burrowing in the spit below (3S/5): the sample when collected was noted to be underneath an *in situ* piece of sandstone associated with a hearth. Contamination of this sample with younger material therefore must be attributed to below, rather than from above.

Table 6.12: Yengo 1. Features dated by the charcoal samples. Identification number is that used on stratigraphic sections (Figure 6.30).

Id. No.	Sample Id.	Feature
1.	ANU-6054	Charcoal rich hearth, associated with artefact concentration.
2.	ANU-6055	Interface between units IV and VI, western end of square, base spit.
3.	ANU-6056	Charcoal from eastern end of square, colour dichotomy, later identified as unit V.
4.	ANU-6057	Adjacent to engravings, associated with large *in situ* artefacts.
5.	ANU-6058	Directly above hardened layer; artefact bone and ash rich spit.
6.	ANU-6059	Basal occupation, above small piece roof fall, adjacent to bedrock.
7.	ANU-6215	Artefact rich layer adjacent to engraved /grooved boulder.
8.	ANU-6216	Artefact rich layer in burnt orange area, western end square.
9.	ANU-6217	Artefact rich layer beneath sandstone fragment above hardened layer: affected by bush rat burrowing?

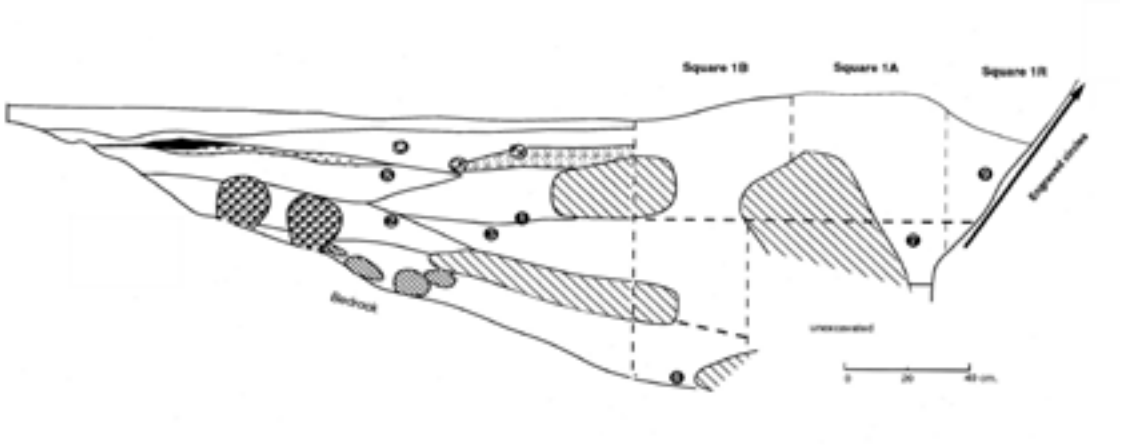


Figure 6.30: Schematic northern section (Trench 1) showing engraved boulder and locations of charcoal samples (for ID number see Figure 6.12).

The Excavated Lithic Assemblage

A total of 10,060 stone artefacts were excavated from the 10 counted excavation pits[21]. Artefacts were found in all but seven of the 117 counted spits. The assemblages from all counted squares were classified and quantified. General patterns in horizontal and vertical distribution were analysed for all squares, but because of the large assemblage retrieved, the complexity of the stratigraphy and since many of the squares were severely affected by burrowing, it was decided to analyse only a sample of the excavated squares in detail. Squares 1B, 3S, 4A and 6 were selected for analysis for the following reasons:

- the stratigraphy in these squares was well controlled and clear;
- these squares contain high numbers of artefacts, and provide a good sized samples for analysis;
- both the central living floor area and the deeper deposit are well represented by these squares.

Square 4A was severely affected by extant burrowing. Excavation in this square proceeded extremely careful to isolate the material from the burrows. This square provided the most complete sequence of the site's strata as well as five of the radiocarbon samples.

The four analysis squares represent 56% of the volume of deposit excavated (0.9 cubic metres), and c.52% of the artefact assemblage retrieved (Table 6.13). It was considered that the

[21]The material from Square 1C has been neither sorted nor counted.

aims of the excavation would be achieved by analysing this sample and that many complications arising from stratigraphic anomalies and disturbance from burrowing would be avoided. Data from the sample squares was amalgamated into two pairs of analysis squares (called Squares 1B-4 and 3S-6) for the analysis of vertical (diachronic) patterning.

Artefact Density

Artefact densities were calculated using excavated bucket (deposit) weights. The weights of sandstone fragments and gravel (weighed in the field) were subtracted from these totals. This ensured comparability between squares with varying amounts of roof-fall. A separate calculation was made to enable comparison of roof-fall components throughout the deposit (see McDonald 1994: Appendix 1: Table A1.A:1). Cubic metre calculations were based on spit volume (length x breadth x depth) and weighed excavated volume. The calculated ratio was 0.00073 cubic metres of deposit/kilogram. Density calculations were based on this ratio. Densities are also expressed as artefacts/kg. The two methods of describing artefact density were calculated to enable comparison with other excavation data from this northern part of the Sydney Basin (Attenbrow 1987, Moore 1981).

Assemblage Characteristics

The majority (98.4%) of the lithic material at the site is unmodified debitage. Almost 70% of the assemblage is also <1cm in size, and is classified as microdebitage. Only 161 artefacts with macroscopic evidence of usewear and/or retouch were present amongst the assemblage (1.6%). Most of these (47.2%) were modified amorphous flakes and flake pieces. A total of 87 cores (0.8%) were present amongst the assemblage.

Table 6.13: Yengo 1. Average artefact densities (density$_1$ = artefacts/m^3; density$_2$ = artefacts/kg).

Square	Artefacts	Kilograms of deposit	Cubic Metres	Density [1]	Density [2]
1R	21	87.75	0.06	350	0.2
1A	127	287.75	0.21	605	0.4
1B	423	397.75	0.29	1,459	1.1
2A	2,161	161.75	0.12	18,008	13.4
2B	1,113	123.5	0.09	12,367	9.0
3S	2,289	210.75	0.15	15,260	10.9
3N	982	123.75	0.09	10,911	7.9
4A	1,028	424.25	0.31	3316	2.4
5A	822	184.5	0.13	6,323	4.5
6	1,094	201.3	0.15	7,293	5.4
TOTAL	10,060	2,203.05	1.6	6,287	4.6

Artefacts with Retouch/Usewear

The majority of the artefacts with macroscopic evidence of use or retouch are flakes (22.4%) or flaked pieces (24.8%). No detailed analyses (e.g. residue or functional) have been undertaken of these artefacts. A range of edge damage characteristics was identified during the artefact analysis. This included fine, scalar flaking; chunky stepped flaking; notching; crushing; and bifacial flaking. Concave and straight edges, and 'noses' and notches were also identified; as were the presence of edge angles (particularly, steep and fine). A range of activities are suggested by this range of assemblage characteristics (e.g. butchering, wood working, knapping and so on). It would appear that the site's lithic assemblage represents that of a generalised site and not a specialised site. This is discussed further below.

Cores

Of 87 cores retrieved, 37 were in the analysed squares (Table 6.14). These represent only 0.8% of the assemblage. Most of the cores (69%) are quartz. All other raw material found at the site are represented by this artefact type, albeit in small numbers: Silicified tuff[20] and chert (8: 9.3%), FGS (6: 7%), quartzite (4: 4.6%), FGB (5: 5.7%), volcanic (2: 2.2%) and silcrete and other (1: 1.1% each).

As would be expected (given the dominance of quartz) most (53%) of the cores are bipolar. However, not all the quartz cores were made with this technique. Other raw materials were used with this technique, including one silicified tuff core. Multiplatformed cores were next most common (35%) while single platformed cores were less common (13%).

Table 6.14: Yengo 1. Cores.

Square	Bipolar	M - platform	S - platform	Total cores	*%f*
1R	1	2		3	*3.4*
1A	6	1	1	8	*9.3*
1B-4	7	8	4	19	*21.8*
2A	6	5		11	*12.7*
2B	6	1	1	8	*9.3*
3S-6	9	7	2	18	*20.1*
3N	5	4	2	11	*12.7*
5A	6	2	1	9	*10.3*
TOTAL	46	30	11	87	*99.6*

Backed Artefacts

Fifty-eight backed artefacts were counted in the assemblage, representing 36% of the modified assemblage. Asymmetrical (Bondi) points were in the majority (91%); the remainder were symmetrical (geometric) backed artefacts.

A large proportion (21: 36%) of the backed artefacts was broken, and many (19: 33%) had evidence of chord usewear. Four had both evidence of use and breakage. One of the backed artefacts with R/U on the chord also had macroscopic evidence of residual hafting material. Utilised and/or broken backed artefacts occurred in all squares with backed artefacts. Broken and used backed artefacts appear to be concentrated in the central area of the site, and most were found in Squares 2A and 3N (Table 6.15).

Different causes are likely for these different states of modification to this implement type; i.e. breakage often happens during manufacture and/or use, depending on the nature of the break (Baker 1992); and usewear on the chord indicates that the blade has been used, i.e. for cutting, prior to discard (McDonald *et al*. 1994; Robertson 2005). Broken and/or used points may also have been replaced from a haft in a composite weapon, e.g. as barbs in a spear (McDonald *et al*. 2007). Differential distributions for these breakage characteristics may indicate either a manufacturing or a gearing up area.

Table 6.15: Yengo 1. Distribution of retouched and broken backed blades across the site.

	1B	1R	2A	2B	3S	3N	4A	5A	6	Total
R/U on chord			4		2	5	2	2		15
broken	1		2	3	5	1	2	1	2	17
broken and R/U			2	1				1		4
Tot. broken R/U	1	-	8	4	7	6	4	4	2	36
Total BB	1	0	11	7	13	8	6	7	5	58
% BB Broken /R/U	*100*	*-*	*73*	*57*	*54*	*75*	*67*	*54*	*40*	*69*

[22]This material was known as indurated mudstone at the time of this analysis; lithological analysis has demonstrated that it is indeed tuff (Kamminga 1997).

In square 3N, all but one (83%) of the broken backed blades has R/U on the chord, while the remaining piece is the medial-distal piece of the backed artefact. This assemblage may indicate gearing up activity. In square 3S, however, the majority of the backed artefacts are fragments with little evidence for use. This area of the site may represent primary manufacture.

Ground Fragments

Some (17%) of the modified material in the assemblage provides evidence that ground edged implements, were used at the site. This supplements the considerable evidence provided by the 55 grinding grooves on the sloping back shelf of the shelter and the eight stencilled axes on the ceiling. These fragments with grinding evidence indicate the re-forming or breaking up of ground edged implements. Almost all of these were made on fine grained basic (FGB) material; with one exception was a coarser grained basic (in spit 6/8). All grinding is located on the dorsal surface of the flakes. None of these artefacts has subsequent retouch or usewear. Several have evidence of hafting material adhering to the old surface. One complete and very battered axe was located at the front of the site in the undergrowth (see section 3 above and Figure 6.14).

Other Implement Types

The other formal implement types identified was the scraper. A total of eight of these were located, one of which (from 3S/2) has evidence of residual hafting and is very worn down on its distal end. Three of these tools are thumbnail scrapers (all quartz; one from spit 4A/6; two from spit 6/8).

Hafting Residue

Six artefacts in the assemblage have macroscopic evidence of residue suggestive of gum or resin hafting. This residue was identified on a range of artefact types: the surface ground edged axe, two backed artefacts, one scraper and two amorphous retouched artefacts. This material has not been analysed in detail but is certainly worthy of further investigation. Residue which may be blood was also identified on three artefacts. Macroscopic plant residue was identified on one fragment of ground edged material.

The Analysis Squares

The two analysis Squares (1B-4 and 3S-6) contained 1,451 and 3,383 artefacts respectively (Table 6.16). Of these 547 and 1,017 were >1cm (Table 6.17).

Assemblage Characteristics

As with the total assemblage, the majority of the material in these analysed squares consists of unmodified debitage. Most of the 4,834 artefacts are unmodified debitage and most are <1cm in size.

Raw Material

The dominant raw material in each sample was quartz (56% and 55%) followed by silicified tuff (17% and 15%) and quartzite (9% and 11%). The other raw materials classified amongst the assemblage - silcrete, fine grained basic (FGB), fine grained siliceous (FGS), volcanic and 'other' made up the remainder of the assemblage (18% and 19% in the two squares). The proportions of raw materials in the two squares are relatively equal and they remain consistent regardless of size (Table 6.18 ; Figure 6.31 and Figure 6.32).

Size

The majority (67.5%) of the non-modified artefactual material found at the site is <1cm long. The next largest category (1-3cm) contains the next most artefacts (29.3%), and very few artefacts were found that were more than 3cm long (see Table 6.19).

Table 6.16: Yengo 1. Artefact Totals per Spit both Analysis Squares.

Spit	1B	%	4A	%	3S	%	6	%
1	-	*0*	13	*1.3*	166	*7.2*	55	*5.0*
2	1	*0.2*	35	*3.4*	188	*8.2*	57	*5.2*
3	6	*1.4*	23	*2.2*	833	*36.4*	113	*10.3*
4	5	*1.2*	74	*7.2*	836	*36.5*	341	*31.2*
5	20	*4.7*	202	*19.6*	212	*9.3*	348	*31.8*
6	20	*4.7*	209	*20.3*	49	*2.1*	87	*8.0*
7	44	*10.4*	194	*18.9*	5	*0.2*	70	*6.4*
8	52	*12.2*	89	*8.7*	0	*0*	17	*1.6*
9	126	*29.6*	56	*5.4*			6	*0.5*
10	46	*10.8*	22	*2.1*	-	-	-	-
11	9	*2.1*	34	*3.3*				
12	27	*6.4*	18	*1.8*				
13	7	*1.6*	16	*1.6*				
14	6	*1.4*	0	*0*				
15	15	*3.5*	4	*0.4*				
16	13	*3.1*	9	*0.9*				
17	10	*2.4*	15	*1.5*				
18	16	*3.8*	9	*0.9*				
19	-	-	1	*0.1*				
20	-	-	5	*0.5*				
	423	*99.9*	1028	*100.1*	2289	*100.0*	1094	*100.0*

Table 6.17: Artefact Totals per Spit; Squares 1B, 4A, 3S, 6. Artefacts >1cm.

Spit	1B	%	4A	%	3S	%	6	%
1	-	-	8	*2.4*	67	*9.7*	27	*8.2*
2	1	*0.5*	8	*2.4*	40	*5.8*	16	*4.9*
3	6	*2.9*	12	*3.6*	210	*30.5*	29	*8.8*
4	3	*1.4*	35	*10.4*	299	*43.4*	99	*30.2*
5	15	*7.1*	65	*19.3*	63	*9.1*	112	*34.1*
6	14	*6.7*	74	*22.0*	10	*1.4*	26	*7.9*
7	24	*11.4*	50	*14.8*	0	*0*	17	*5.2*
8	30	*14.3*	23	*6.9*	0	*0*	0	*0*
9	42	*20.0*	12	*3.6*	-	-	-	-
10	22	*10.5*	10	*3.0*	-	-	-	-
11	5	*2.4*	9	*2.7*	-	-	-	-
12	9	*4.2*	12	*3.6*	-	-	-	-
13	5	*2.4*	5	*1.5*	-	-	-	-
14	6	*2.9*	0	*0*	-	-	-	-
15	2	*0.9*	4	*1.2*	-	-	-	-
16	11	*5.2*	4	*1.2*	-	-	-	-
17	5	*2.4*	5	*1.5*	-	-	-	-
18	10	*4.8*	0	*0*	-	-	-	-
19	-	-	0	*0*	-	-	-	-
20	-	-	1	*0.3*	-	-	-	-
	210	*100*	337	*100.4*	689	*99.9*	328	*99.9*

Table 6.18: Yengo 1. Raw Material Percentages in Squares 1B-4 and 3S-6.

SQ	Qz	%	Silc	%	FGS	%	ST	%	FGB	%	Q'zte	%	Volc	%	Other	%
1B	269	*63.6*	19	*4.5*	13	*3.1*	60	*14.2*	11	*2.6*	35	*8.3*	6	*1.4*	10	*2.4*
4A	543	*52.8*	64	*6.2*	43	*4.2*	185	*18.0*	53	*5.2*	99	*9.6*	27	*2.6*	14	*1.4*
3S	1242	*54.3*	69	*3.0*	200	*8.7*	338	*14.8*	149	*6.5*	279	*12.2*	11	*0.5*	1	*0.0*
6	623	*56.9*	50	*4.6*	60	*5.5*	157	*14.4*	71	*6.5*	92	*8.4*	38	*3.5*	3	*0.2*
Tot	2677	*55.4*	202	*4.2*	316	*6.5*	740	*15.3*	284	*5.9*	505	*10.4*	82	*1.7*	28	*0.6*

Qz = Quartz Silc.= Silcrete FGS = Fine Grained Siliceous ST = Silicified tuff
Q'zt = Quartzite Volc = Volcanic FGB=Fine Grained Basic

Table 6.19: Yengo 1. Size ranges, non-modified artefacts, Squares 1B-4 and 3S-6.

Raw material	<1cm	1-3cm	3-5cm	>5cm	Cores	BP	R/U	Total
Quartz	1,922	710	11	0	25	3	6	2,677
Silcrete	109	83	2	0	0	5	3	202
S. Tuff	534	180	6	0	1	7	12	740
FGB	138	125	6	0	2	0	13	284
Quartzite	315	164	6	1	2	8	9	505
FGS	195	107	6	0	5	2	2	317
Volcanic	43	36	1	0	1	0	1	82
Other	9	13	4	0	1	0	0	27
Debitage Total	3,265	1,418	42	1	37	25	46	4,834
%f	*67.5*	*29.3*	*0.9*	*0.0*	*0.7*	*0.5*	*1.0*	*100.0*
Total incl r/u	3,274	1,493	64	3				4,834
%f	*67.7*	*30.9*	*1.3*	*0.1*				*100.0*

Very different size ranges are found amongst the cores and modified material (cf. Table 6.19 and Table 6.20). Most modified artefacts and cores (69%) are in the 1-3cm category and the next most common size range is 3-5cm (20.4%). Only nine of these artefacts (8%) are in the <1cm size range and two artefacts are larger than 5cm. Three of the modified artefacts in the <1cm range are distal tip fragments of backed artefacts. The largest artefact at the site is a large quartzite pebble chopper (9.5cm maximum dimension) found in spit 1B4/11.

The fact that such a large proportion of the assemblage is <1cm indicates that knapping was common at the site. The shattering properties of quartz and predominance of the bipolar knapping techniques are also contributing factors. Much of the increase in artefact deposition rates over time is likely to be due to the higher proportions of bipolar quartz in the upper levels (Hiscock 1986). This possibility, and distance to raw material resources (another potential cause for decreased artefact size) is investigated further below.

Table 6.20: Size ranges: modified artefact and core assemblages; Squares 1B-4 and 3S-6.

	<1cm	1-3cm	3-5cm	>5cm	Total
Cores					
Bipolar		14	2		16
Multi-Platform		7	7	1	15
Single Platform		3	3		6
Backed artefacts	4	19	2		25
R/U Flakes		16	2		18
R/U FP	4	10	2	1	17
Ground fragments	1	6	4		11
Total	9	75	22	2	108
%f	*8.3*	*69.4*	*20.4*	*1.9*	*100.0*

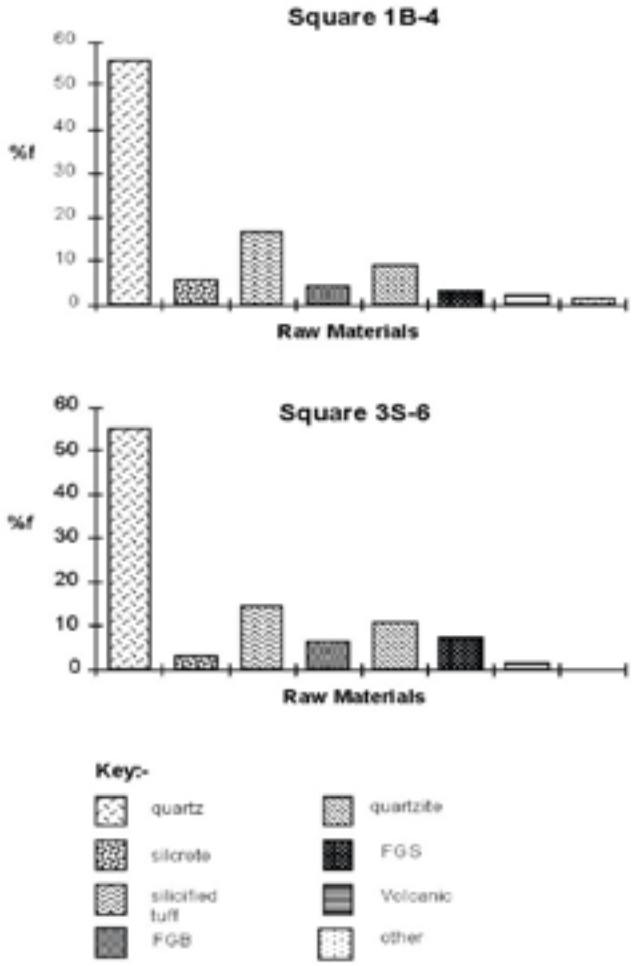


Figure 6.31: Yengo 1. Proportions of raw materials in the two analysis squares. All artefacts.

Artefact Types

The two analysis squares contain 25 backed artefacts, 46 artefacts with retouch/usewear (including ground fragments) and 35 cores. These artefacts indicate different raw material preference. Some of these differences were marked in contrast to the general assemblage raw material proportions (see above).

The raw materials used for cores show the greatest similarity to the general raw material proportions: quartz dominates (cf. Figure 6.31 and Figure 6.33). The dominance of quartz in the assemblage generally, and in the cores, reflects the dominance of bipolar knapping during the later occupation of the site. In contrast, no silcrete cores were found in the assemblage and the proportions of the less common materials do not match those demonstrated by the general assemblage. This indicates that the import and knapping of some materials (such as silcrete) at the site must have occurred only rarely. Given the high numbers of silcrete backed artefacts in the assemblage, this finding is significant.

Most (43%) of the cores in the two analysis squares are bipolar, followed by multiplatformed (40.5%) and single platformed cores (16%). Half of the single platformed cores are blade cores. Some of the multiplatformed cores were identified as being multi directional - and are possibly the type identified by Baker (1992) in the Hunter River central lowlands as representing an alternating knapping technique - one of a number of strategies used for blade production (and see also Hiscock 1986, 1993).

Backed artefacts reveal a significantly different and more restricted range of raw material preference than any other artefact class (cf. Figure 6.31 and Figure 6.33). Quartzite, silicified tuff and silcrete predominate, followed by quartz and then FGS. Volcanic materials, FGB and 'other' raw materials have not been used for this artefact type.

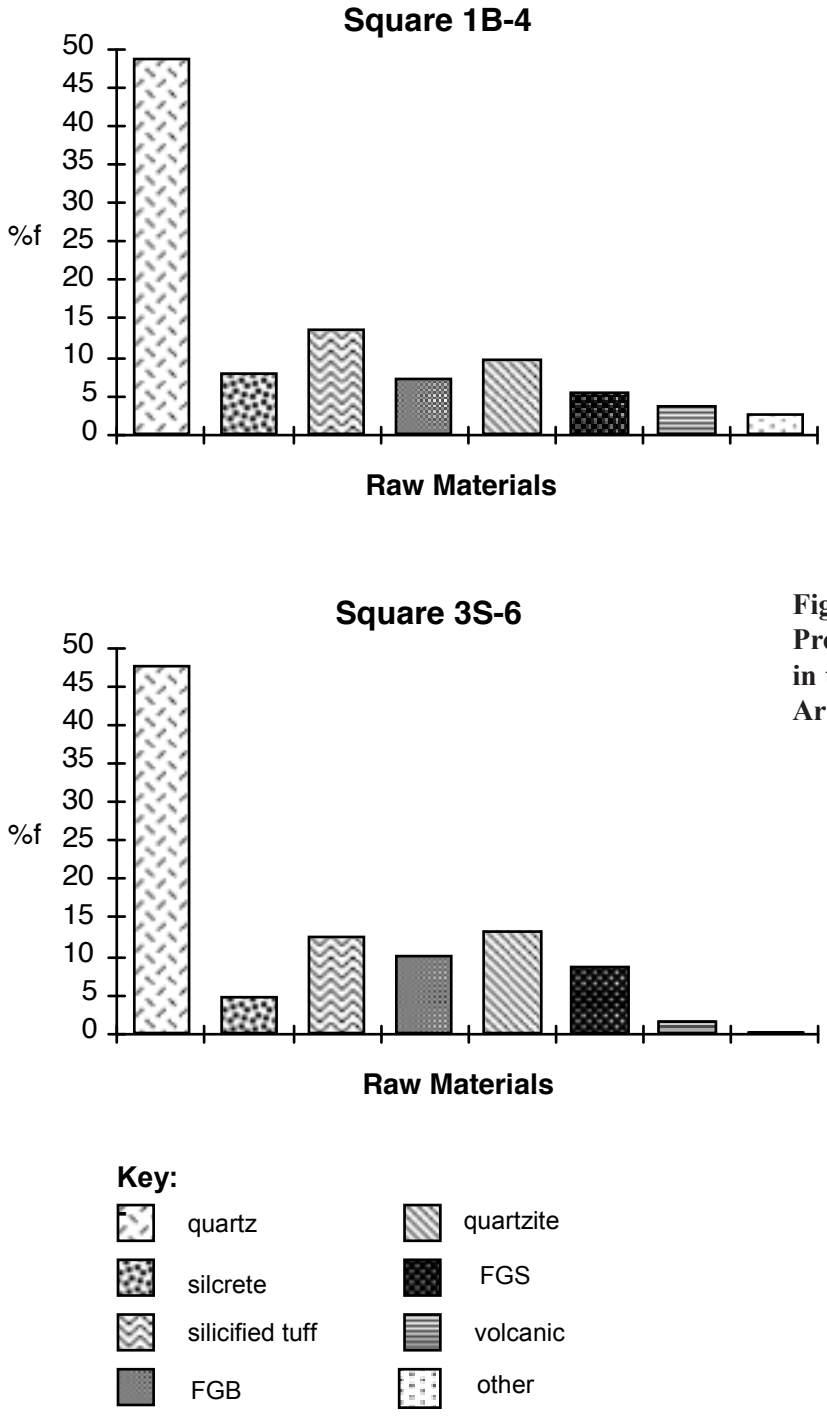


Figure 6.32: Yengo 1. Proportions of raw materials in the two analysis squares. Artefacts >1cm.

Three only of the backed blades were symmetrical, the remainder were asymmetrical. No eloueras were present. Two of the silicified tuff backed artefacts were very long (3S/4: 3.5cm x 1.0cm x 0.4cm; 6/8: 4.7cm x 0.7cm x 0.6cm: a similar size to those found in a silicified tuff knapping floor in the Rouse Hill area: JMcD CHM 2005a), most the whole backed pieces fall within the 1-3cm size range. The one whole backed artefact smaller than this was a triangular symmetrical piece (measuring 0.9cm x 0.8cm x 0.3cm) from 3S/5. This too was made of silicified tuff.

Artefacts with R/U also show a significant difference in raw material usage (cf. Figure 6.31 and Figure 6.33). FGB predominates (thanks to the 10 fragments with ground facets), followed closely by silicified tuff and quartzite. Quartz, silcrete, FGS and volcanic materials follow. 'Other' raw materials have not been utilised. These findings suggest several things. That:

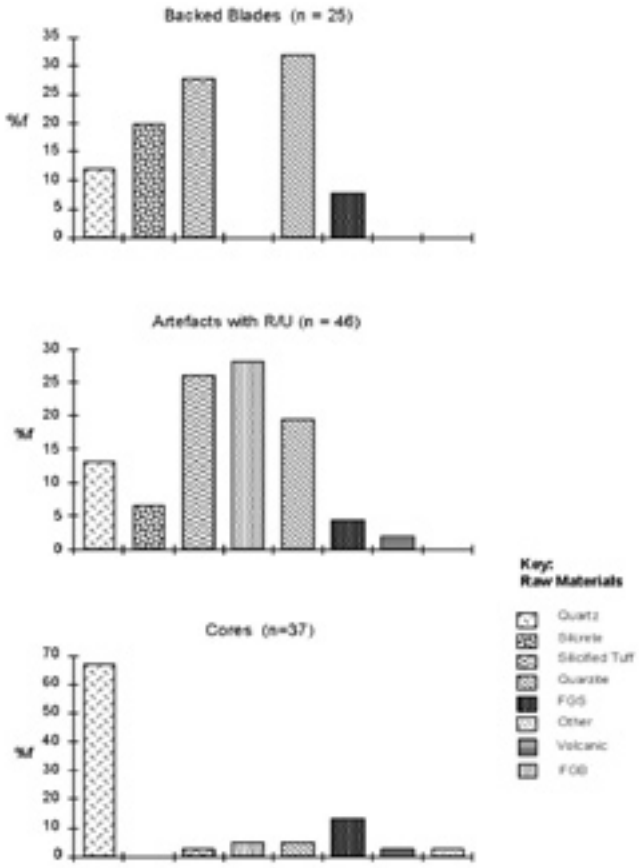


Figure 6.33: Yengo 1. Raw material proportions for backed blades, artefacts with R/U and cores.

- different raw materials were used for different types of tools;
- while quartz dominated the lithic assemblage, only a relatively small proportion of artefacts made of this material were used for subsequent tasks (at least on site). This suggests that the general assemblage proportions then do not necessarily reflect the intent of lithic manufacture and use at the site, but perhaps the flaking characteristics of certain raw materials (Hiscock 1986). Another possible interpretation is that local raw materials were used for certain, non-specific tasks while exotic raw materials were used for selected tasks (as represented by formalised tool types);
- some backed blades (particularly the silcrete and quartzite ones) were not made on the site, but were brought there, perhaps for replacement in a 'gearing up' situation, or perhaps as trade items;
- if cores of silcrete were brought to the site for knapping of that material, these were removed subsequently, perhaps for use elsewhere; and,
- silicified tuff was a preferred raw material for generalised tools: more than 25% of the artefacts with r/u were made of silicified tuff while this raw material only represents 15% of the assemblage >1cm.

Vertical Distribution of Material

The discussion of vertical patterning at the site is restricted to the data from the two paired analysis squares. The artefactual material at the site was found to be unevenly distributed throughout the vertical sequence.

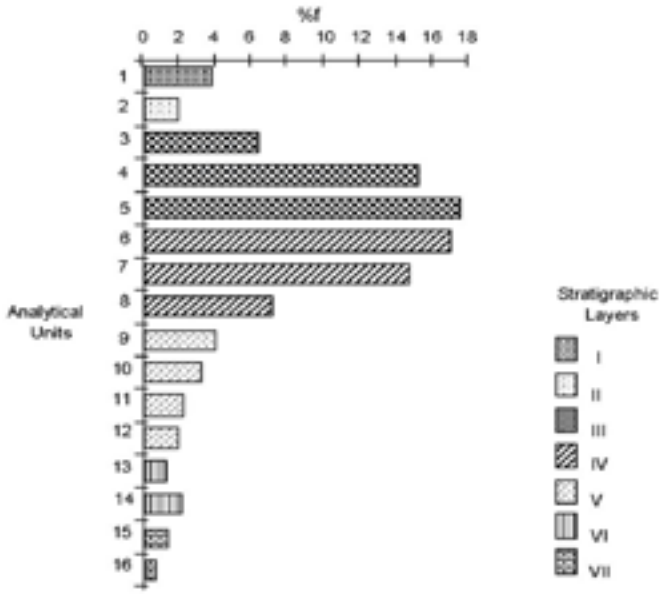


Figure 6.34: Yengo 1 Square 1B-4. Artefact Distribution (%f) by analytical unit.

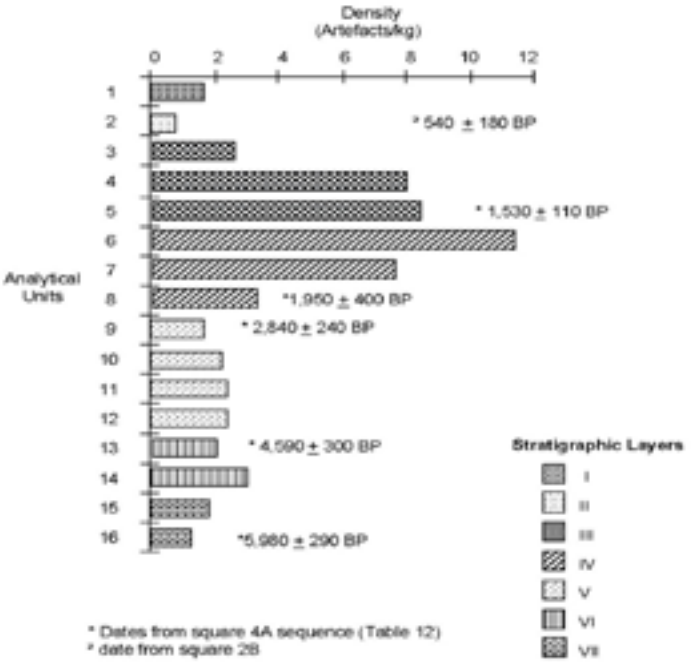


Figure 6.35: Yengo 1. Square 1B/4. Artefact density (per kg) through time.

Artefact Density and Percentage frequency

Units 4-7 (square 1B-4) and units 3 and 4 (square 3S-6) contain both the largest number and greatest density of artefactual material. Layers III and IV represent the most intensive occupation period in square 1B-4 (Figure 6.34 and Figure 6.35). In the shallower square, Layer III alone contains the bulk of the artefactual material. Layer IV is very shallow and only partially present of square 3S/6. Over 92% of the artefact assemblage occurs in the top four Layers.

The distribution plots for artefact density and percentage frequency suggest that Layers III and IV may be one cultural period: the increase and decrease throughout the units demonstrate a classic battleship curve.

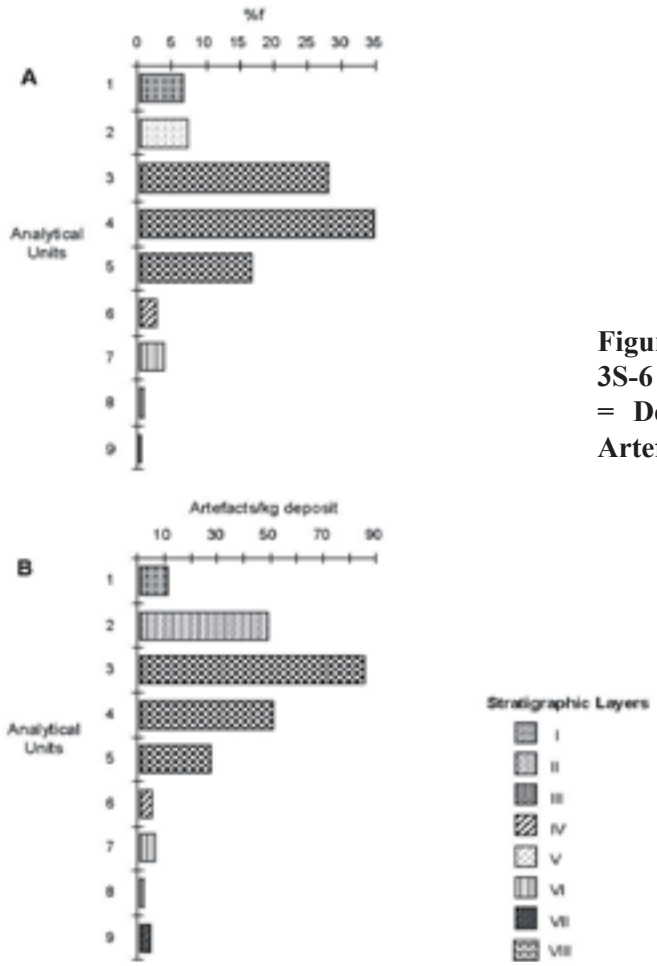


Figure 6.36: Yengo 1. Square 3S-6 Artefact Distribution. A = Density (artefacts/kg); B = Artefact %f.

Artefact deposition rates

An age-depth curve was calculated (Figure 6.37), although there were some concerns about the utility of this due the complexity of the deposit, the sloping bedrock of the shelter and variable deposition factors (cultural, natural). It cannot be assumed that the rate of deposition throughout the sequence or across the site was constant, since the area being deposited over laterally increased with time. As most of the dates were submitted from square 4A, the analytical units from this square were used to make this calculation. The reliable upper date from square 2B was used to provide perspective on this more recent deposit. Artefact totals are from the combined 1B/4A analysis square (Table 6.21).

The artefact accumulation rate demonstrated (Figure 6.38) is similar to that achieved using density and percentage frequency measures (cf. Figure 6.34 and Figure 6.35). The most intensive periods of artefact accumulation occurs in Layers III and IV. Rates are extremely low in the upper and lower layers. Artefact accumulation rates suggest a hiatus in site usage between the earliest and the main occupation. It is tempting to accept the age-depth interpretation, as it relates to this hiatus, given the similarity in the patterning between the age/depth results and the density measures throughout the sequence. Given concerns about the validity of this method at this particular site, this potential hiatus is explored further using other components of the assemblage. The dates for the sequence support a hiatus between the early and middle Bondaian phases of occupation.

Table 6.21: Yengo 1. Age-depth calculations. Artefact totals and bone weights per 100 years (refer Figure 6.37, Table 6.9).

Analytical Unit	No. of Artefacts	No. of Years	Artefacts/100 yrs	Bone (g)/100 yrs
1	55	300	18	10.8
2	28	150	19	56.1
3	93	200	47	59.35
4	221	220	100	20.8
5	254	190	134	6.3
6	246	230	107	1
7	213	210	101	
8	105	250	42	
9	58	2,100	3	
10	47	1,150	4	
11	33	210	16	
12	29	210	14	
13	19	200	10	0.83
14	31	350	9	
16	10	400	2.5	

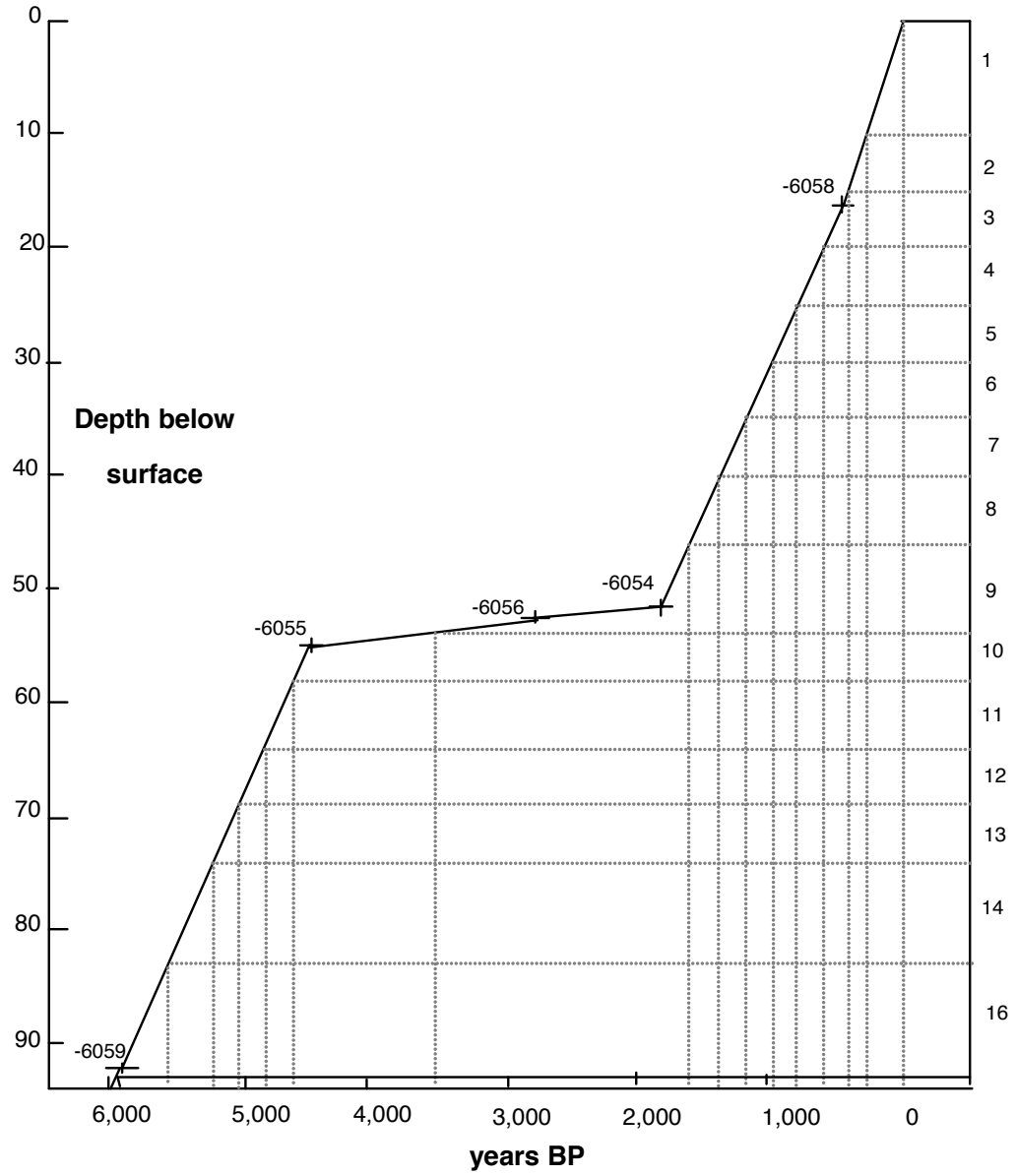


Figure 6.37: Yengo 1. Age depth curve for square 4A. Upper date from square 2B. Analytical units shown on vertical axis.

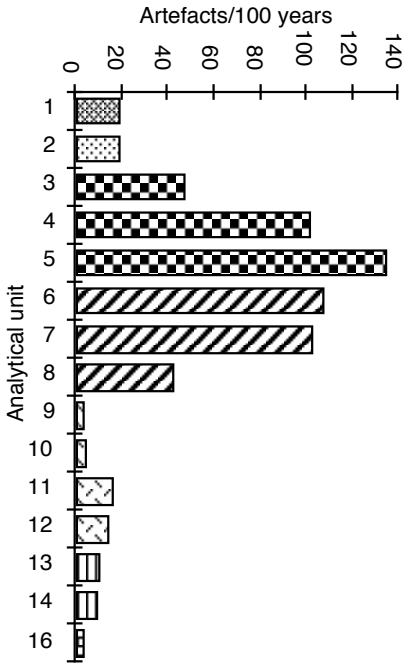
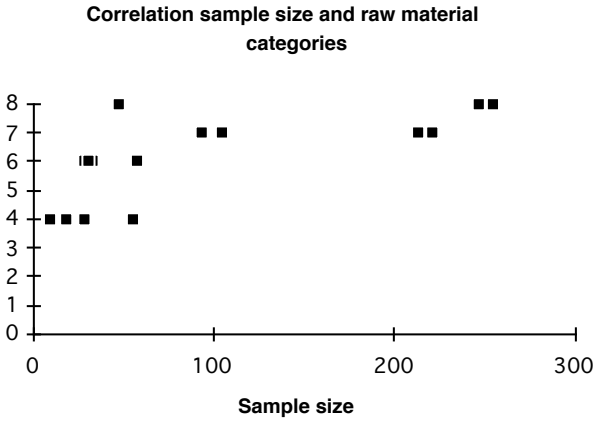
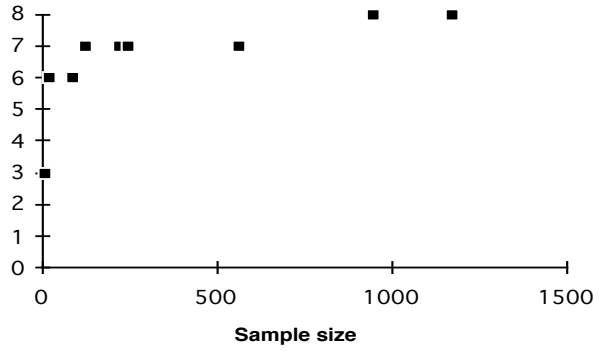


Figure 6.38: Yengo 1. Artefacts accumulation per 100 years: square 1B-4.



a. Square 1B-4.



b. Square 3S-6

Figure 6.39: Correlation between sample size and raw materials per analytical unit. All artefacts.

Raw Materials

There is a trend over time in preferences for particular raw materials. In order to test whether varying sample sizes were responsible for patterning, a simple correlation matrix for raw material and sample size was produced (Figure 6.39). This demonstrates no positive correlation between sample size and raw material variety per analytical unit. Thus the general trends are interpreted as having validity, i.e. they are not induced by variable sample sizes (James 1993).

In square 1B-4 the diachronic trend is characterised by an initial focus on silicified tuff, quartzite and 'other' raw materials, followed by a marked increase in the use of fine-grained siliceous materials (Figure 6.40 and Figure 6.41). In the upper layers (analytical units 1-9; stratigraphic layers I-IV) there is a proliferation in the range of raw materials being used, with quartz predominant. In square 3S-6 a similar, if compacted, version of this same pattern is seen. FGS is the dominant earlier material, replaced by quartz in the middle and uppermost spits.

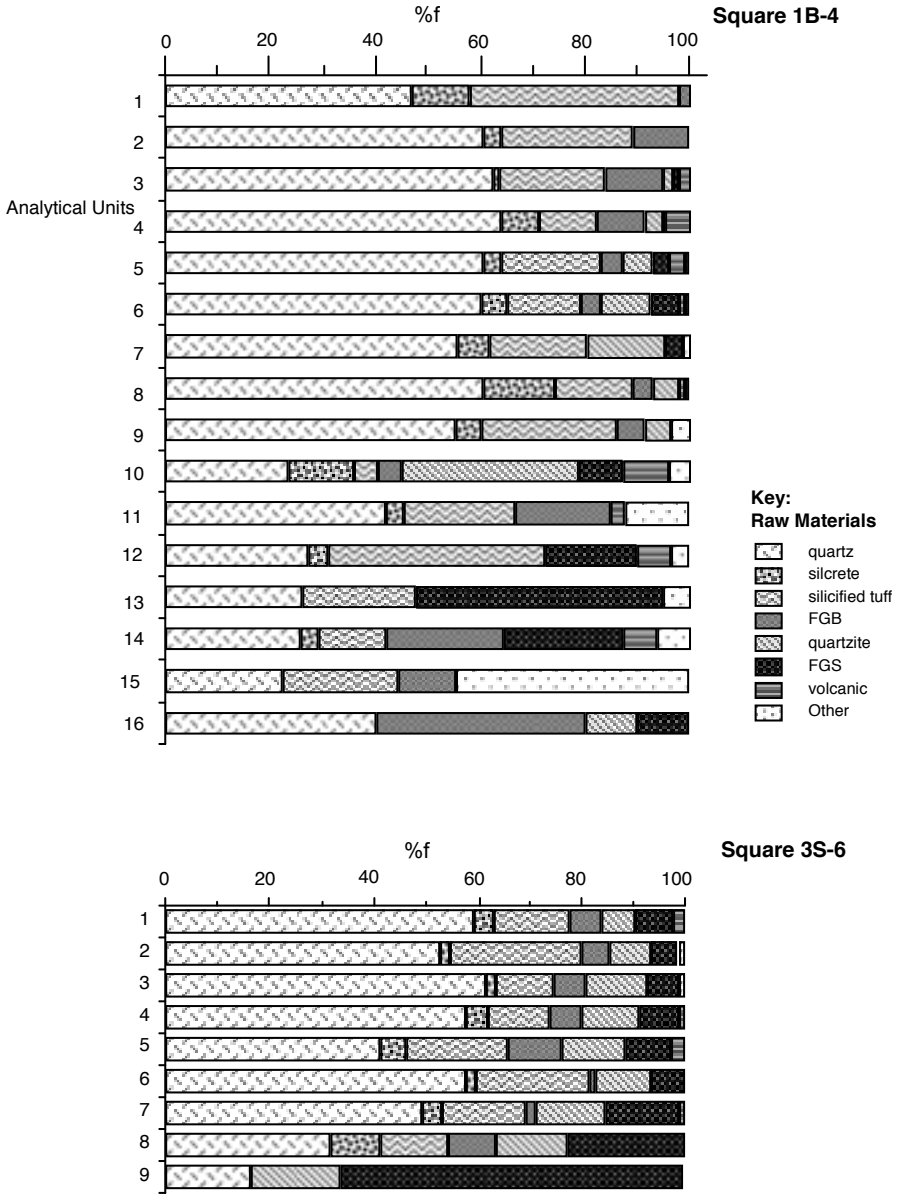


Figure 6.40: Yengo 1. Vertical trends in raw material proportions. Both analysis squares. All artefacts.

Changing raw material preferences over time (Figure 6.42) confirms that in the upper four Layers, quartz predominates while in Layers V-VII the stone artefact assemblage is primarily non-quartz.

Size

The possibility of change over time in the general size of the assemblage was investigated. The proportion of debitage >1cm for the four main raw materials (quartz: 28%; silicified tuff: 28%; quartzite: 38%; and FGS: 38.5%) was analysed.

No clear pattern of decreasing size with time was demonstrated. This was unexpected given the trend demonstrated in other sites of similar age [e.g. Upside-Down Man, Cherrybrook (CB1) - McDonald 1985b], the generally recognised trend from Capertian to Bondaian assemblages, and the increased proportion of bipolar quartz in the middle and upper units. Small sample sizes in many of the lower units could be implicated in this lack of patterning although the simple correlation test (Figure 6.39) tends to discount this. The fluctuating pattern in the upper units in particular cannot be thus explained (i.e. given the consistently large samples in these units).

The sizes of cores and artefacts with R/U were thus analysed to further explore assemblage size characteristic through time (Table 6.22, Table 6.23; Figure 6.44). All size categories for these artefact classes were included in this analysis.

The sample sizes in most layers (except III) are extremely small. Sampling is thus likely to affect this analysis. While tools <1cm only occur in the top layers, and the only tool >5cm occurs in the lower layers, there is no substantive trend of decreasing size with time. Similarly while the largest cores are at the bottom of the sequence, proportionally, cores in the 1-3cm range predominate throughout.

Tools and cores are predominantly and consistently in the 1-3cm size range throughout the Yengo 1 sequence.

Table 6.22: Yengo 1. Size ranges of cores in the analysis squares (per stratigraphic layer).

Layer	<1cm	1-3cm	3-5cm	>5cm
I	-	1	-	-
II	-	1	5	-
III	-	18	7	1
IV	-	2	1	-
V	-	2	1	-
VI	-	-	2	1

Artefact types

The combined analysis squares had 73 implements or artefacts with R/U. This sample represents more than 44% of the modified assemblage from the site.

Table 6.23: Yengo 1. Size ranges of artefacts with R/U in each stratigraphic layer. Includes ground fragments and backed blades.

Layer	<1cm	1-3cm	3-5cm	>5cm
I	1	2	1	-
II	-	5	1	-
III	5	34	5	-
IV	-	9	3	-
V	-	-	1	1
VI	-	2	-	-
VII	-	1	-	-

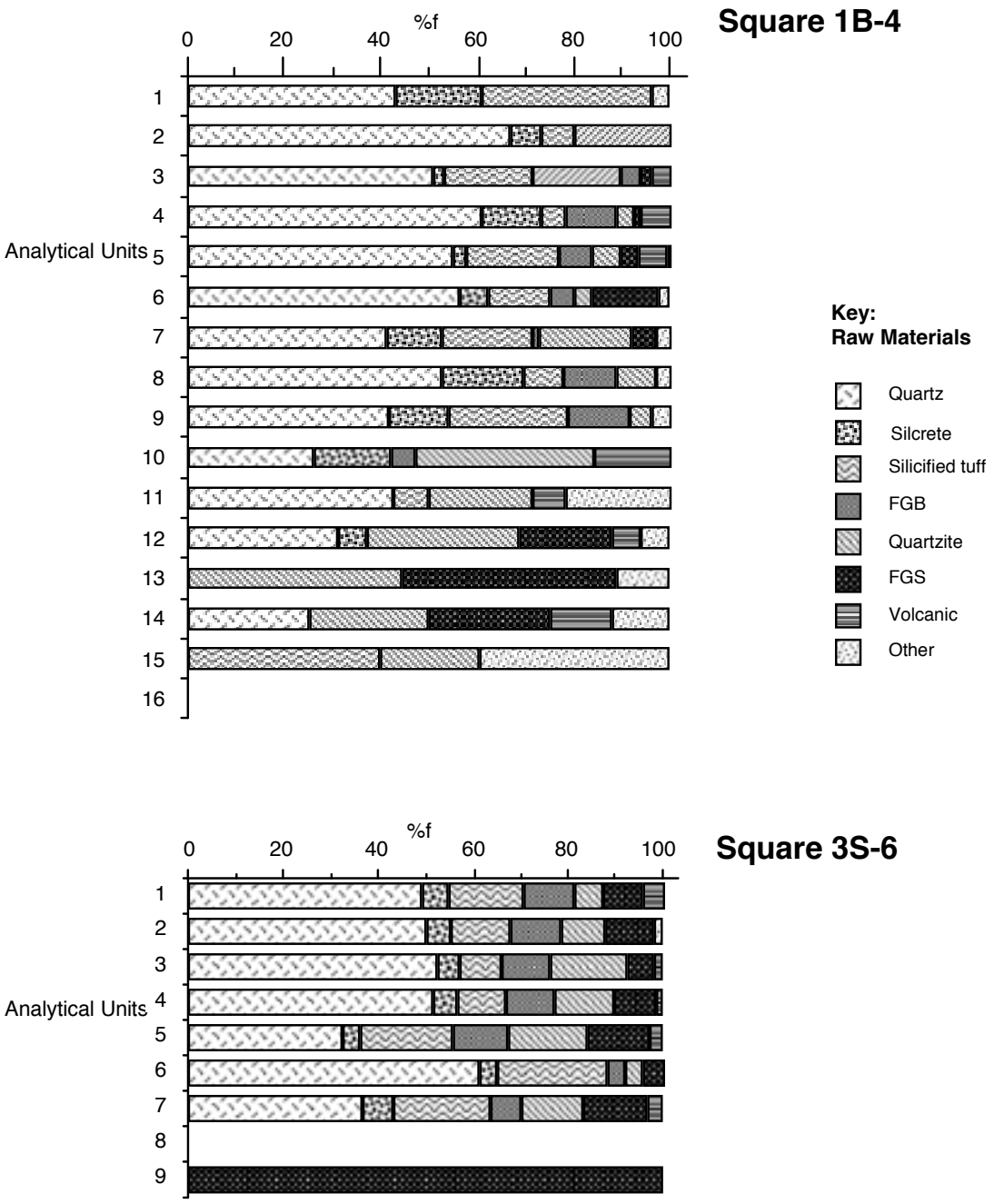


Figure 6.41: Vertical distribution of raw materials. Artefacts >1cm.

Amorphously retouched flakes and flaked pieces

Most of the artefacts with retouch/usewear are located in Layers III (square 3S-6) and/or IV (Square 1b-4: Figure 42). This distribution matches that of overall artefact density (cf. Figure 6.34). Tools are found in varying frequencies in all Layers.

Changing raw material preferences for implements were analysed, removing artefacts with ground facets (but including otherwise modified FGB tools). This indicated that during the earliest phases at the site (specifically Layers VI and VII), silicified tuff only was used for tools (Figure 6.46). This changed in Layer V to exclusive use of quartzite, while in the most recent layers there was a proliferation in the range of raw materials used (Figure 6.45). The absence of R/U material above Unit 5 in square 1B/4 suggests that during the most recent phase of occupation stone tool use may have occurred in a more restricted area and that the central area may have been the focus for stone tool production (i.e. in square 3S-6). The spatial distribution of flaking debitage indicates a similar spatial distribution to artefacts with R/U (cf. Figure 6.53 and Figure 6.54).

A more spatially restricted focus for stone tool use and manufacture generally could be explained by the decreasing head room in the northern area of the site with the build up of the more recent deposits. Currently, the central area of the site is more amenable to general living than further north, where it is necessary to bend over to move around. Head room, however, would not have been restricted to persons sitting, which presumably includes people knapping.

Backed Artefacts

Backed artefacts were found throughout the central part of the sequence in Layers V - III (Figure 6.47). This distribution is consistent with the age determinations received for the site (Table 6.11). Layer V is Early Bondaian while Layer III is (a late) Middle Bondaian (Attenbrow 1987). The absence of backed implements and dates in the two top units are consistent with this being a Late Bondaian assemblage (cf. Hiscock 1986).

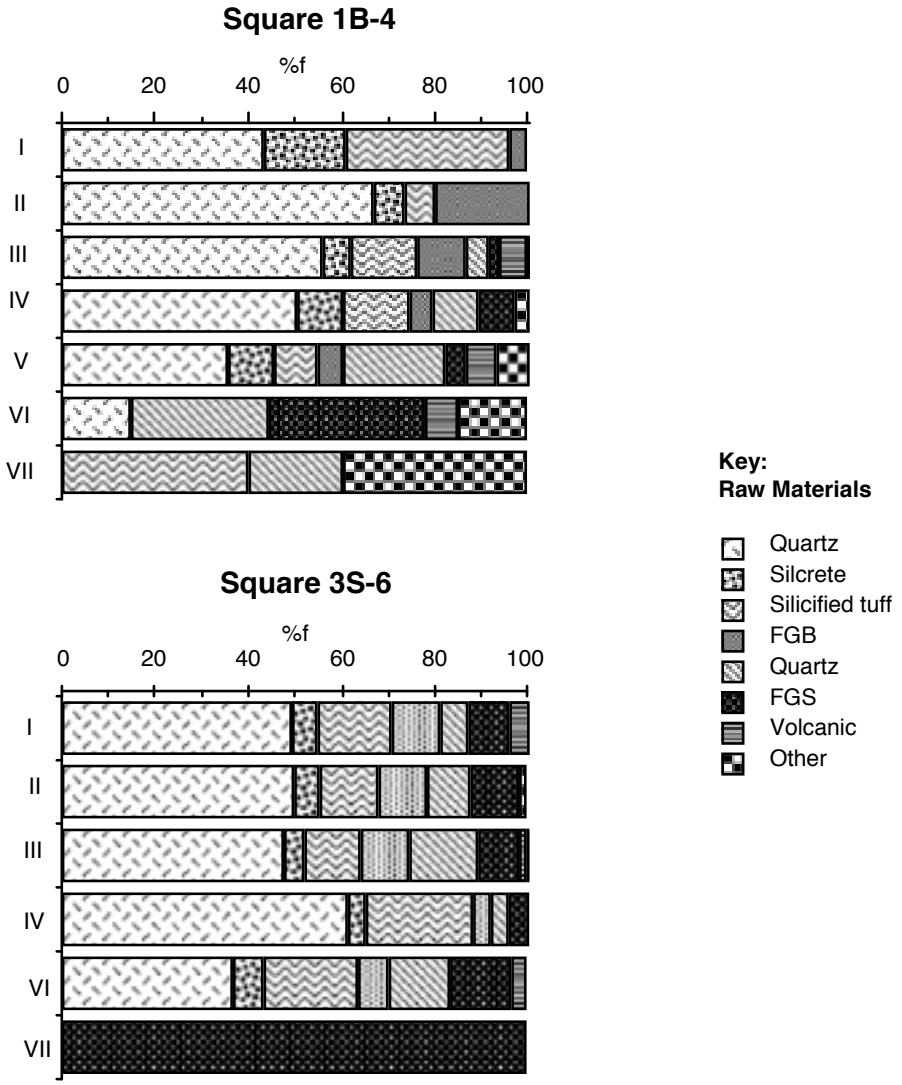


Figure 6.42: Yengo 1. Vertical distribution of raw material per stratigraphic layer. Both squares. Artefacts >1cm.

There are indications of changing preferences in raw material use with this artefact type over time (Figure 6.47), although the small sample sizes make definite statements impossible. Silcrete and indurated mudstone, on the other hand, are used for backed blade production throughout the sequence. Quartzite appears later in the sequence (in Layer III). Quartz and FGS appear only in the middle of the sequence for this artefact type, during the period of most intensive artefact deposition and predominance of quartz usage.

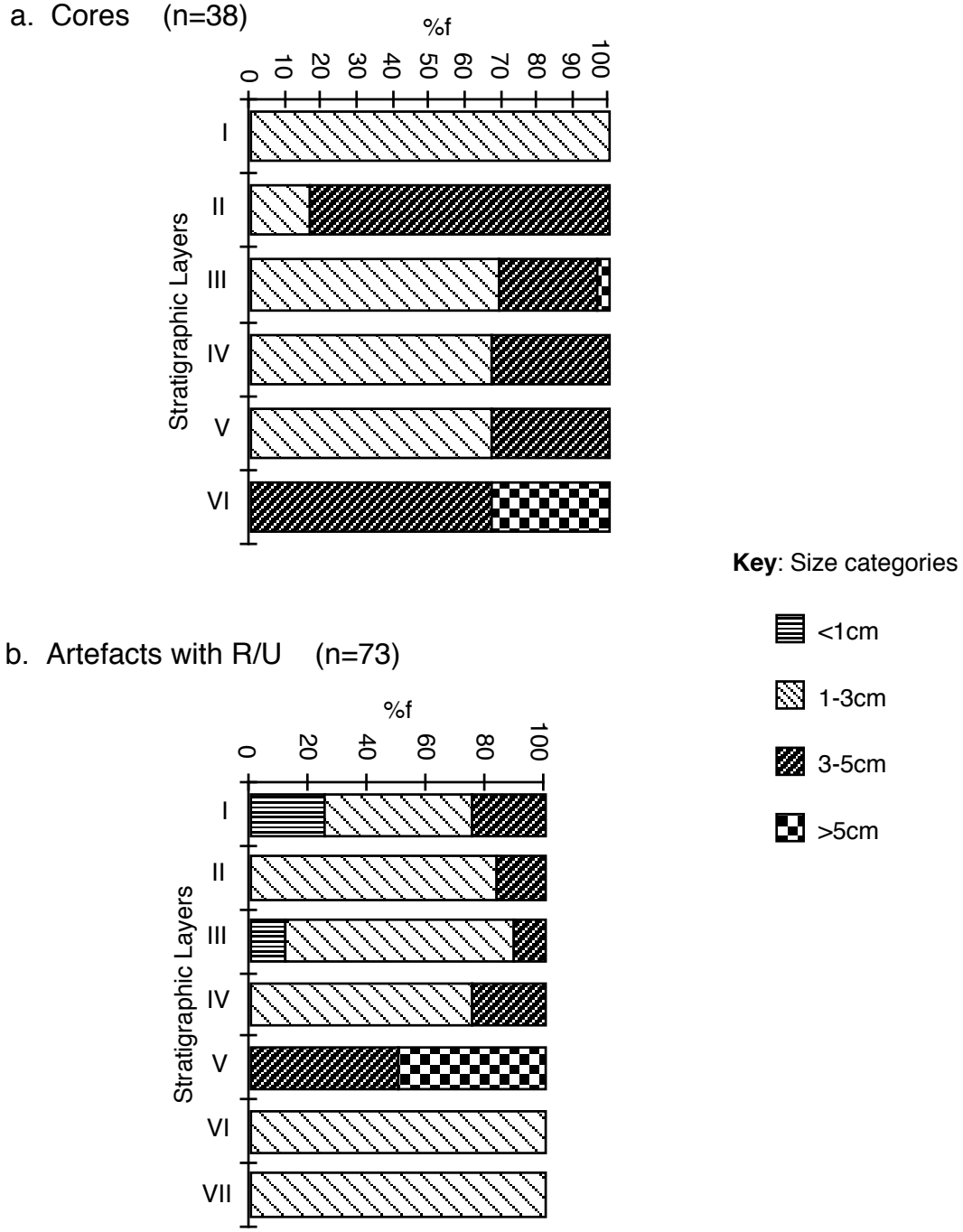


Figure 6.43: Yengo 1. Proportions of size categories over time per stratigraphic layer. Cores and artefacts with R/U.

Ground Fragments

Ground fragments are found only in the top three Layers (Figure 6.47). The use of ground edged implements at the site is dated to within the last 1,500 years. These data support Attenbrow's (1987) suggestion that there is an increase in the deposition of ground material in the late Bondaian (as represented here by Layers I and II).

Cores

Cores are found throughout the sequence, but most occur in the upper four Layers. This patterning generally matches the assemblage distribution, although there are proportionally more

cores in Layers V and VI than would have been expected on the basis of overall assemblage proportions (Figure 6.49; cf. Figure 6.34). This could suggest an earlier knapping focus in the more northerly part of the site, prior to diminishing headroom. The presence of cores throughout the sequence demonstrates that artefact knapping took place at this site throughout the period of its occupation.

An analysis of core type was undertaken to investigate possible changes in reduction strategies with time (Table 6.24). Three types of cores were distinguished between in this analysis: Bipolar, Multi-platformed and Single platformed. This analysis demonstrated a clear trend from an early use of multi-platformed cores to a later focus on bipolar cores (Figure 6.48). The single platformed cores were occasionally found to be blade cores. Approximately half the multi-platformed cores were multi directional ones, a type identified by Baker (1992) as one of a series of microblade reduction strategies in the Hunter central lowlands. These core types accord well with other evidence for technological trends. There are no bipolar cores in the earliest levels (i.e. pre Layer V). The very small samples sizes in most units/layers are acknowledged.

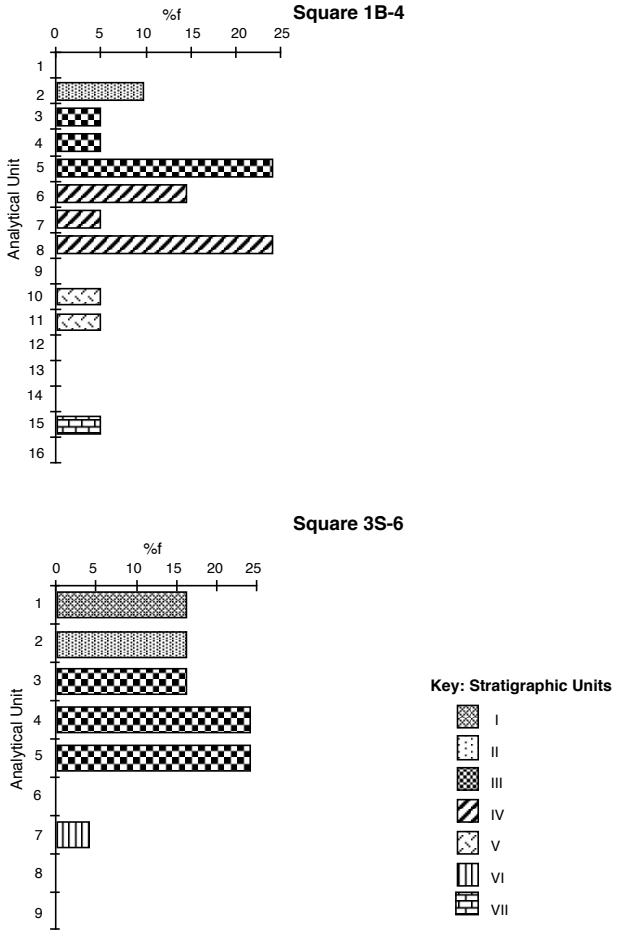


Figure 6.44: Yengo 1. Vertical distribution of artefacts with R/U.

Table 6.24: Yengo 1. Core platform characteristics per stratigraphic layer.

Layer	Bipolar	*%f*	Multi	*%f*	Single	*%f*	Total
I	2	*100*					2
II	1	*100*					1
III	13	*50*	10	*38.5*	3	*11.5*	26
IV	1	*25*	3	*75*			4
V			2	*66.7*	1	*33.1*	3
VI			1	*100*			1
VII							0

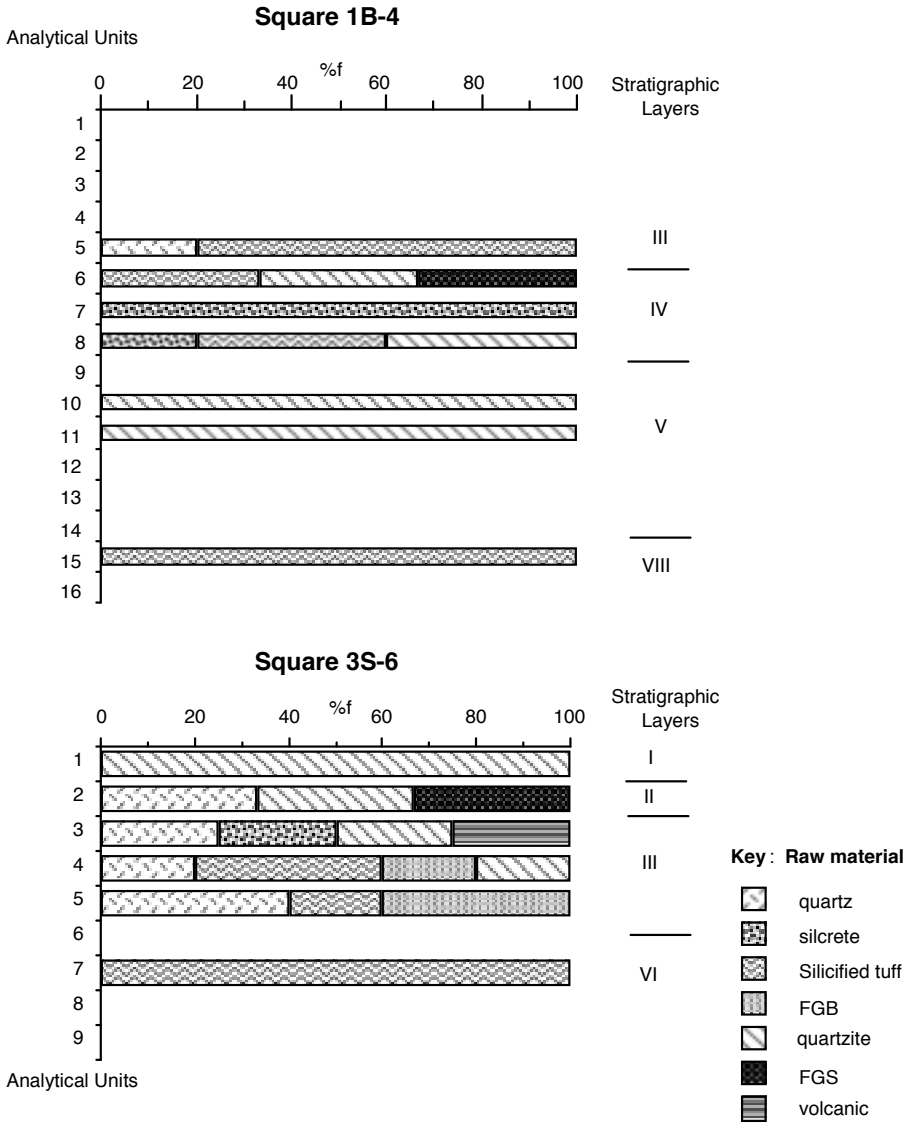


Figure 6.45: Yengo 1. Changing raw material preferences over time. Artefacts with retouch/ usewear. Both squares. Ground fragments excluded.

Summary

Changes over time in artefact densities, artefact accumulation rates, the types of artefacts and raw materials used indicate that the site was occupied over several different culture periods. The artefacts and the dates received are consistent with the site's early sporadic use during the (late) pre Bondaian period with an increased site usage through the Early Bondaian. The most intensive period of site usage was during the middle Bondaian, but occupation continued into the late Bondaian. There is no evidence of contact occupation either in the deposit or in the art assemblage.

This site usage pattern accords well with the catchment patterns identified in Upper Mangrove Creek (Attenbrow 2004). It is not matched, however, by any other individual site in the local area (Attenbrow 2004, Hiscock 1986, MacIntosh 1965, Moore 1970). The significance of this, in terms of the mosaic of site and/or localised patterns of usage and general site function will be discussed further.

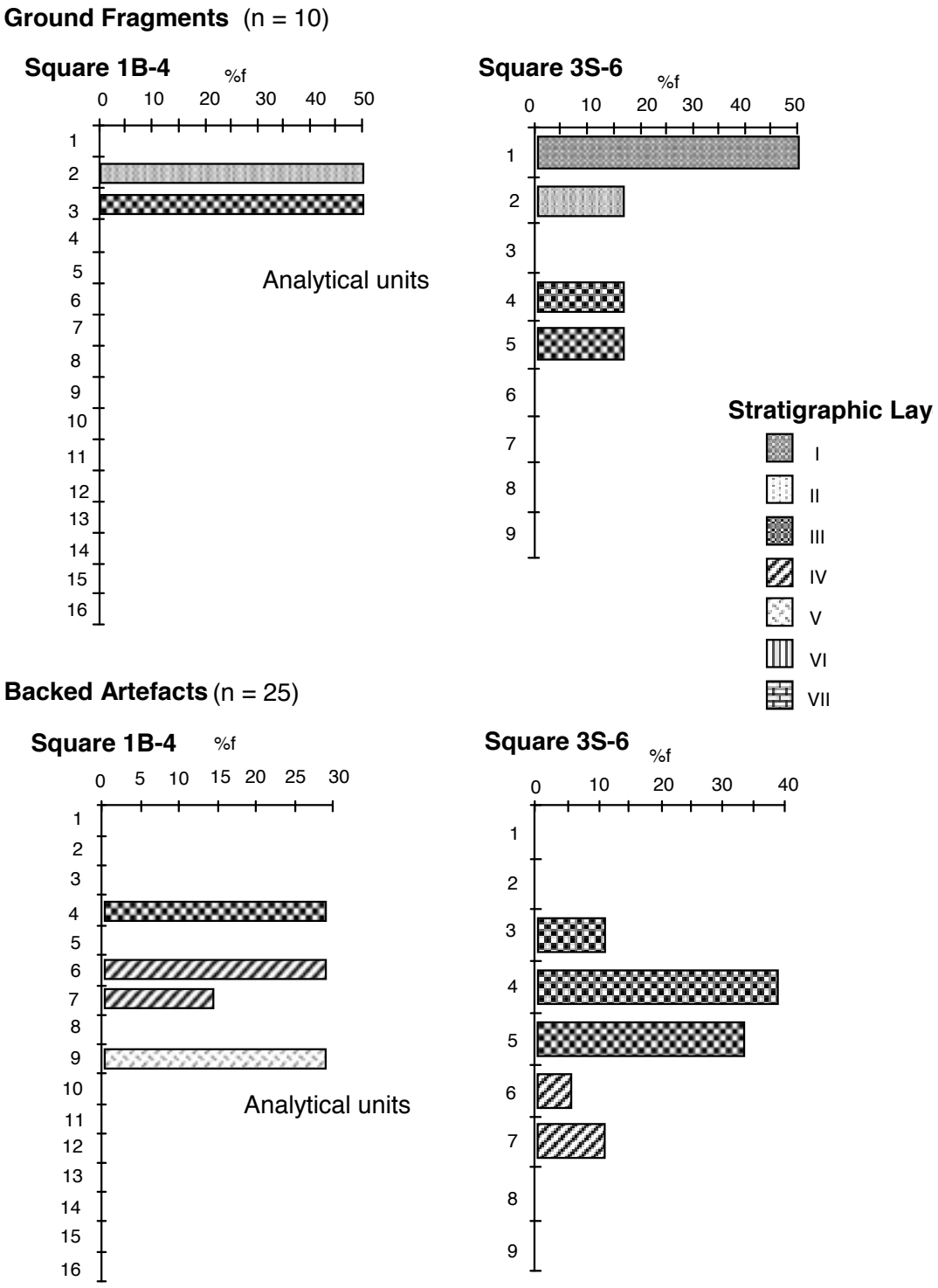


Figure 6.46: Yengo 1. Vertical distribution of backed blades and ground fragments in both analysis squares. Stratigraphic layers indicated.

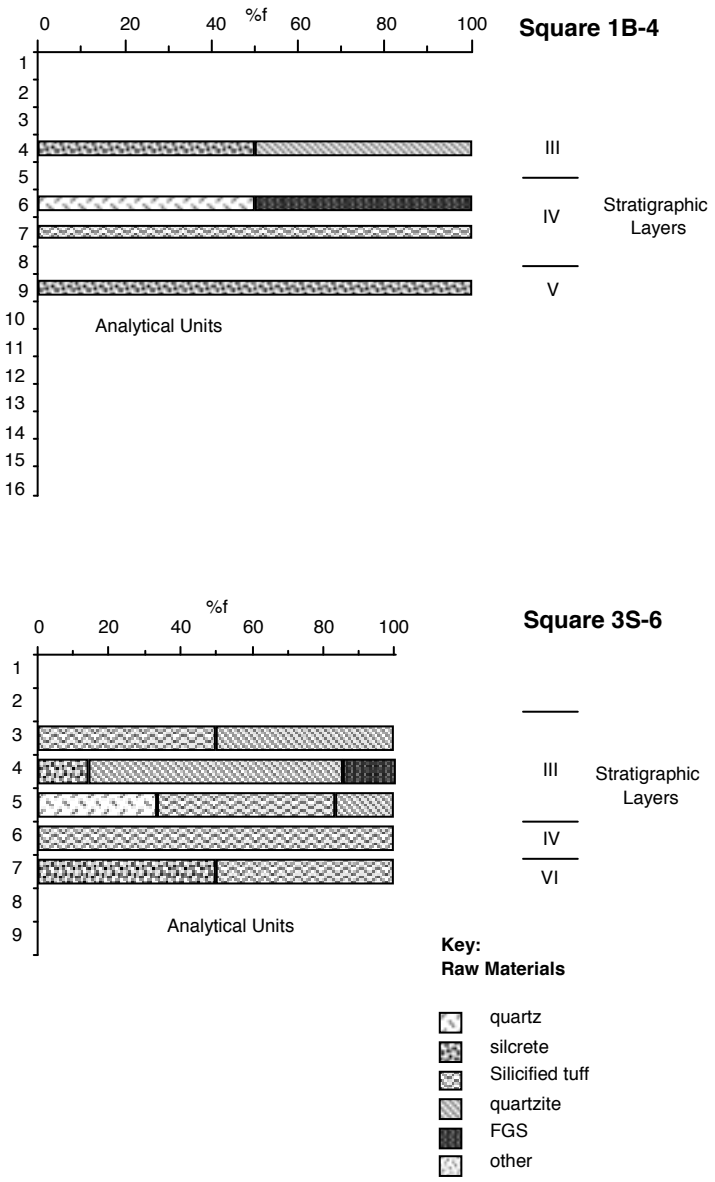


Figure 6.47: Yengo 1. Raw Materials use in backed artefacts throughout the vertical sequence.

Faunal Remains

Culturally deposited faunal remains were found only in the upper three stratigraphic layers (Figure 6.50). Very small amounts of bone were found in the lower levels, but without exception these were found in burrow affected deposit. The vertical distribution of the faunal remains is not matched by the lithic material (cf. Figure 6.34, Figure 6.35). The faunal material peaks slightly later in the sequence, at a time when there is a slight decline in artefact densities. Bone accumulation rates (grams per 100 years; cf. Table 6.21, Figure 6.38) demonstrate this patterning clearly. Preservation conditions (i.e. pH, moisture content) throughout the levels in question are equal. The faunal assemblage was analysed by Dominic Steele (1994).

The bones displayed relatively good preservation characteristics: although it was uniformly and highly fragmented. Less than 1% of the bone fragments by number were identifiable to species level (Table 6.25).

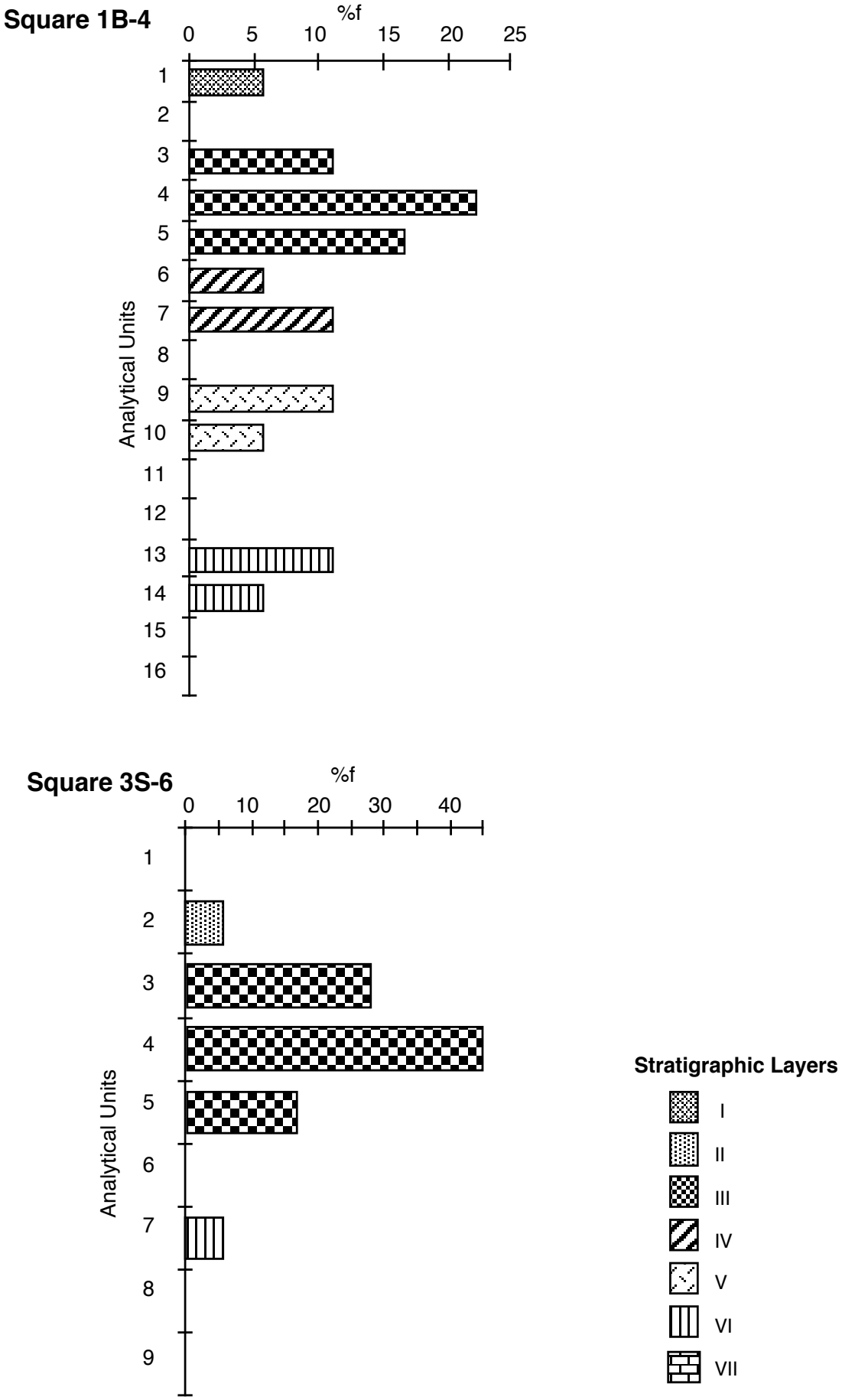


Figure 6.48: Yengo 1. Vertical distribution of cores per analytical unit. Both analysis squares.

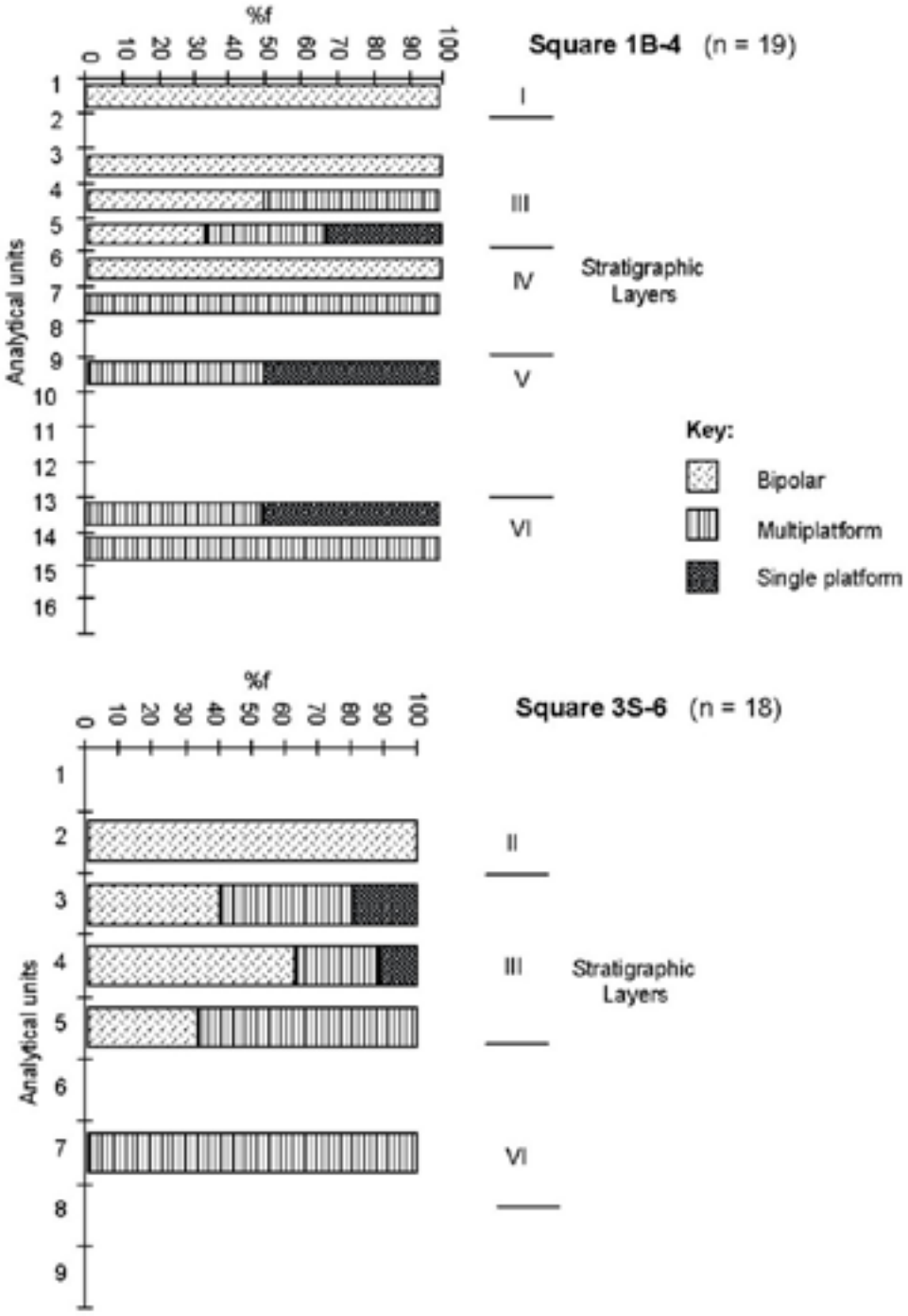


Figure 6.49: Yengo 1. Changing platform characteristics of cores through time. Both analysis squares.

This pattern, similar to that found at Gatton by Morwood (1986), indicates that declining lithic artefact deposition doesn't necessarily indicate decline in site usage so much as a change in site usage (see below). Steele (1994) demonstrated a similar pattern in overall bone distribution with the bone occurring only in the five uppermost analytical units.

The identified component of the Yengo 1 collection was 1,051 bone fragments. This represents c.15.7% of the total assemblage. Bones which are likely to derive from animals of

comparable size to wallabies and pademelons dominate the sample (63.2%). Elements of large animals (i.e. mostly kangaroo) represent 16.2% of the collection. Bones of small mammals represent 20.6% of the collection.

Exploring temporal change in the faunal composition at Yengo 1 is difficult, largely because a high degree of fragmentation has resulted in a small proportion of identifiable material. Despite the limited depth of deposit from which faunal remains derive, the relatively limited proportion of the assemblage for which identification was possible, and the rapid decline in sample size with depth, changes can be seen in taxonomic composition through time (Steele 1994).

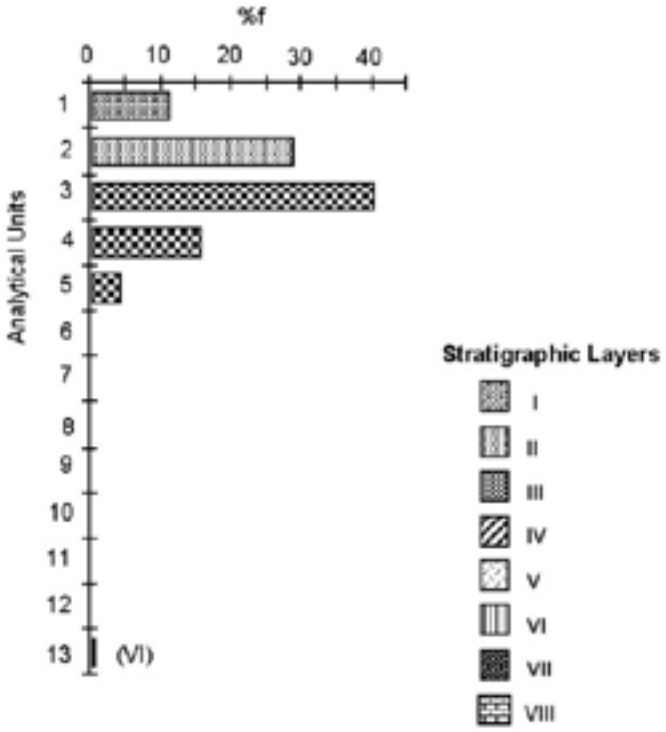


Figure 6.50: Yengo 1. Vertical distribution of bone. Based on bone weights %f. Squares 3S, 3N, 4A and 6 (data from Steele 1994: Table A1.4).

Table 6.25: Taxonomic composition of the Yengo1 faunal assemblage.

Taxa	Weight (grams)	*%f*	No.	*%f*
Mammals	287.5	*55.5*	1,127	*16.8*
Reptiles	4.98	*0.9*	100	*1.5*
Birds	0.52	*<0.1*	4	*<0.1*
Fish	0.02	*<0.1*	2	*<0.1*
Unidentified	233.9	*44.3*	5,466	*81.6*

Stratigraphic Layers I and II in Squares 3N, 3S, 4A and 6 produced 237 bone fragments for which various levels of taxonomic assignment have been made. This represents almost 41% of the identified sample (Table 6.26). Around a third of these elements derive from small animals. Varieties identified include possum, potoroo and bettong, bandicoot, glider, wallaby, dingo and grey kangaroo. Small numbers of bird and fish bone also derive from these levels. A little over 57% of the bones derive from medium sized wallabies and other unidentified similarly sized mammals. The remaining bones (8.9%) from these layers reflect large animals such as the eastern grey kangaroo. Reptile bones in this layer included two types of lizard and three snake varieties.

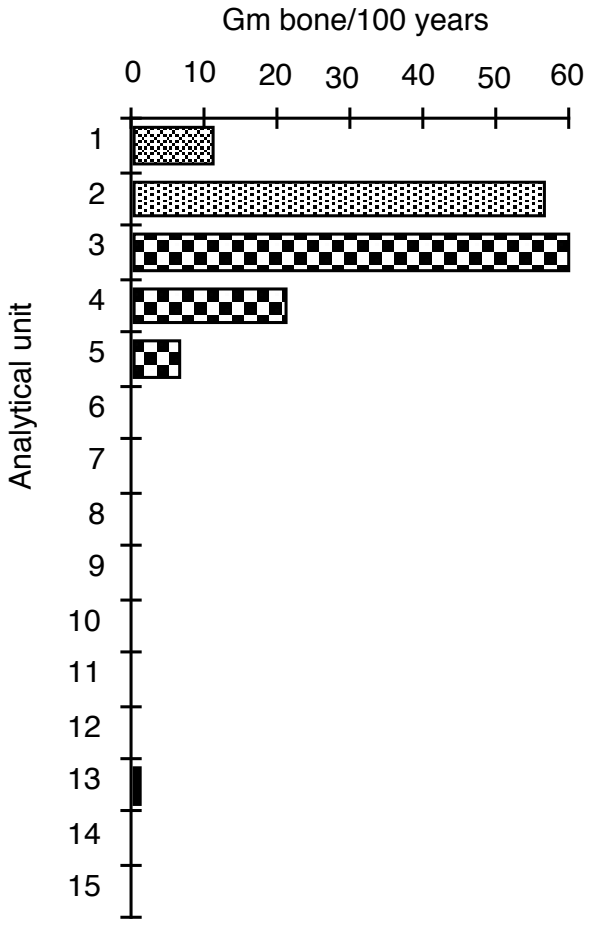


Figure 6.51: Yengo 1. Bone accumulation rates. Based on bone weights %f. Squares 3S, 3N, 4A and 6 (data from Steele 1994: Table A1.4; see Table A1.22).

Table 6.26: Breakdown of animal varieties identified at Yengo 1. Categories of Small, Medium and Large by NISP.

SMALL ANIMALS	
Eastern bettong	2
Rufous bettong	1
Long-nosed potoroo	3
Brush-tail possum	7
Long-nosed bandicoot	1
Short-nosed bandicoot	1
Lesser gliding possum	1
Southern Bush rat	1
Native Bush rat	2
Unidentified Mammals	198
Total	**217**
MEDIUM ANIMALS	
Swamp Wallaby	6
Red-necked wallaby	1
Parma wallaby	1
Brush-tailed rock wallaby	1
Dingo	1
Unidentified small macropod	20
Unidentified medium macropod	39
Unidentified mammal	595
Total	**664**
LARGE ANIMALS	
Eastern grey kangaroo	4
Unidentified large macropod	6
Unidentified mammal	160
Total	**170**

A different taxonomic composition is suggested by the faunal remains in stratigraphic layer III. This sample comprises 385 bone fragments. Of these, only 18.4% derive from small animals (a single bandicoot element and a number of unidentified mammals). A range of animals represented in the later deposits (i.e. possum, potoroo and bettong) are entirely absent from these earlier deposits. Also poorly represented in this mid-phase are reptile bones.

The earlier deposits are dominated by the presence of bones of medium-sized animals (swamp and rock wallaby, and a number of other unidentified macropods). This component of the assemblage comprises almost 73% of the identified bones. The proportion of large mammal and macropod bones for this period of occupation is equivalent to that for the later phase. The faunal sample relating to the shelter's earliest period of usage from these squares is too small for comparison with the subsequent site occupancy.

There is a clear contrast in the composition of the assemblage from the upper and lower deposits. The bones of medium to large macropods and unidentified mammals are a proportionally more dominant taxonomic component in the lower and earlier excavation contexts compared with the upper layer.

Pigment

Pigment was found throughout the sequence in seven squares but predominantly in the upper three layers. Red fragment were found in the basal layers (Table 6.27). Most of the pigment and pipeclay recovered consisted of very small fragments or nodules. None of the material recovered showed use striations, and the very small size of all pieces recovered would account for this. Layers II and III contained the majority of the pigment. As well as a greater quantity, the greatest variety of colours is also present at this level.

Table 6.27: Yengo 1. Distribution of pipeclay and pigment across the site and throughout the sequence.

Layer	1B	2A	2B	3S	3N	4A	6
I		1R		1B			
II	1R	2R/2W	1R				
III	1R/1 Y/10			5R/5 W/10	3R/3W	2W	2R/1W
IV						1R	
V						1R	
VI	1R	4R					1R

R=red W=white Y=yellow C=cream B=black

Activity areas: spatial patterning

The squares in the central, driest part of the site contained the highest number of lithic artefacts. Squares 2 (A and B) and 3 (S and N) covered <40% of the area and <28% of the volume excavated, but contained more than 60% of the artefactual material retrieved. Most artefacts (2,329: 21.3%) were found in square 3S: the lowest number (21: 0.2%) were found in square 1R (Table 6.13; Figure 6.52 and Figure 6.53).

As well as the majority of artefact discard occurring in the central area of the site, the more recent periods of deposition were the most prolific in terms of artefact discard. Over 92% of the assemblage is in Layers I-IV. The squares in the central area are predominantly made up of these layers.

Artefact Density

Square 2A had the highest density of all excavated squares at the site, while square 1R had the lowest density (Table 6.13; Figure 6.53 and Figure 6.54). The maximum artefact density recorded

was in spit 2A/7 with a projected density of 64,640 artefact/m3 (50.5 artefacts/kg). The central area of the site generally had much higher densities of artefactual material, while the squares closer to the dripline had the lowest densities. This pattern is the converse of that found in many excavated sites - where artefact density is highest in the dripline area (e.g. Mill Creek 11 (Koettig 1985), Cherrybrook (McDonald 1985b), Sandy Hollow, Yango Creek and Macdonald River 1 (Moore 1970, 1981), Ken's Cave, Native Wells 1 and 2 (Morwood 1984), and etc.).

The pattern at Yengo 1 may be due largely to the shelter's sloping bedrock morphology and natural deposition processes: there is considerable influx of (non-cultural) deposit over the dripline area. However, the generally higher frequencies of artefacts and the nature of the material being deposited in the central area of the site also suggests that artefact discard occurred here at a higher rate. The most intensive period of shelter usage, is represented mainly by the deposit which built up progressively at the rear of the shelter.

As over 92% of the artefactual assemblage occurred in the top four Layers, the spatial patterning described here pertains mainly to the more recent phases of occupation at the site.

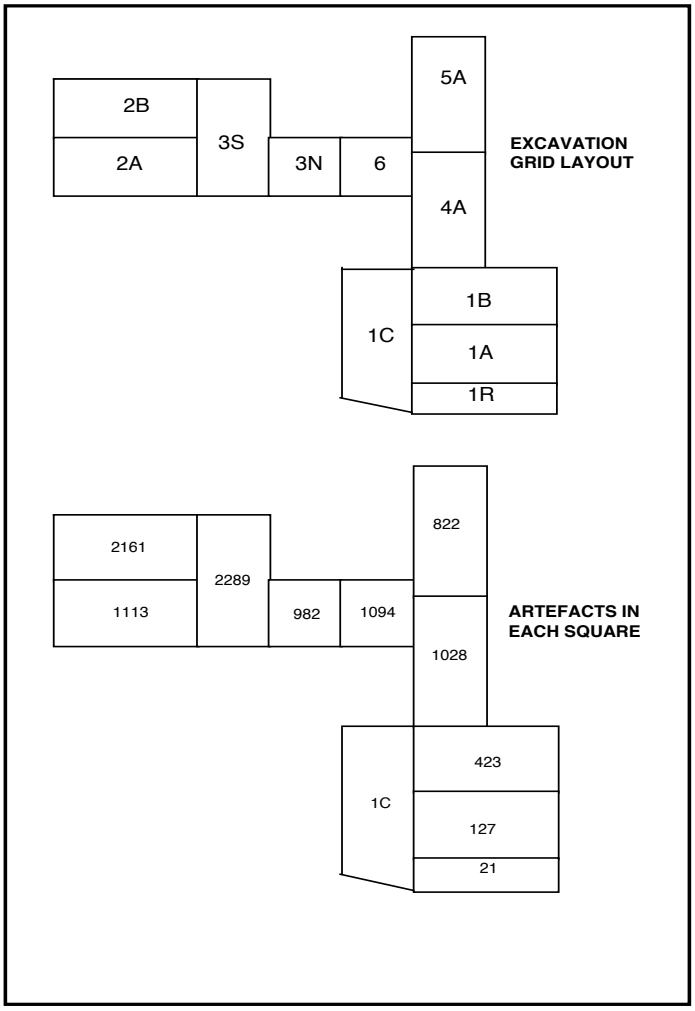


Figure 6.52: Yengo 1. The excavation grid layout and number of artefacts retrieved from each pit.

Implements and other artefact types

The distribution of implements (particularly backed pieces and fragments with evidence of grinding), artefacts with retouch/usewear and micro-debitage all indicate that a variety of knapping, artefact manufacture and/or retooling took place in specific locations across the site (Table 6.28; Figure 6.54 and Figure 6.55). Combined with the economic remains this provides insight into the complex living floors, which were intercepted by these excavations.

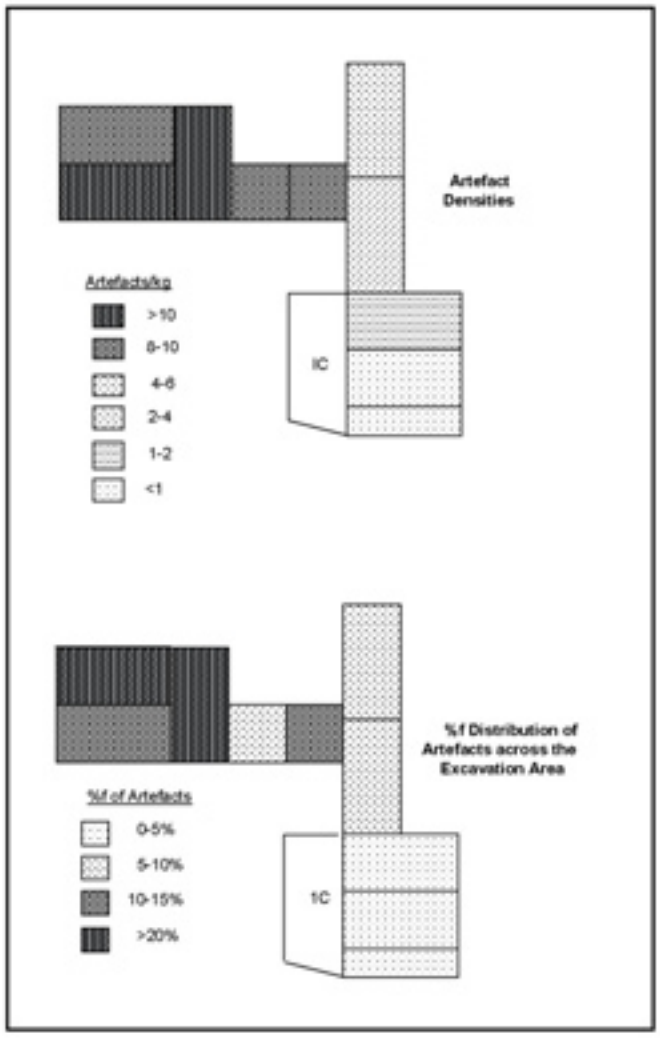


Figure 6.53: Yengo 1. Artefact densities and percentage frequency distributions of lithic material across the site.

The distribution of micro-debitage suggests that knapping occurred in most areas of the site (except perhaps beneath and outside the dripline: Squares 1A, 1B, 1R). The type of debitage suggests that knapping activity was concentrated in the central area of the site (particularly Squares 2 and 3).

The spatial distribution of backed artefacts suggests that the manufacture and/or discard/ retooling of these also took place in the central area of the site, and that there was a secondary such activity area, slightly further north (Squares 4A and 5A).

Fragments of ground artefacts (i.e. flakes or flaked pieces with evidence of previous grinding, from breaking up ground edged implements) were discard occurs across most of the back of the site but concentrated in square 2A. Similarly, the distribution of artefacts with evidence of (mostly) usewear and (some) retouch was again concentrated around square 2: material in 4A again suggests another activity area located slightly further north (perhaps beyond the excavation?).

Other Economic Remains

Shell

Fragments of freshwater mussel shell (*Hyridella* sp.) were recovered from four of the excavated squares (Squares 2A, 3N, 3S and 6). This was found in the top two Layers.

Pigment

This was found throughout the sequence in seven excavated squares. None was found in the squares beneath or outside the dripline and this is likely to be due to preservation factors (particularly increased moisture). Pigment was predominantly found in the uppermost three layers. Most of the pigment consisted of very small fragments or nodules, and none of the recovered materials had striations or facets indicating use. Most of the ochre was dark red, although several orange pieces were also discovered. Pipeclay varied in colour between white and cream. The spatial and vertical distribution of the material was discussed (Table 6.27).

Seeds

Seeds were found through the upper part of the sequence. Most of these were Native cherry (*Exocarpus cipressiformis*), although the seeds of Geebung (*Persoonia spp.* - 1) and Sarsaparilla (*Hardenbergia* - 1) were also identified. Four other types are still unidentified. At the northern end of the shelter there is an extant Native cherry, which may well be the source of this seed type. Most of the seeds were found in the central area of the site (square 2A spits 1, 2, 4 and 8; 2B/3). Several seeds were also found in spit 4A/2.

Faunal material

Six squares (2A, 2B, 3N, 3S, 4A and 6) out of the eleven excavated at Yengo 1 produced approximately 6,698 fragments of bones with a combined weight of 526.9g (Steele 1994). Most of this material was located in the central driest part of the site (Figure 6.56). Square 2A had both the highest density and largest number of fragments.

Despite the fact that only a small proportion of skeletal elements were identifiable to species or family level, a relatively wide variety of mammal species are represented within the identified sample. A variety of macropods are present: bones of wallabies (e.g. swamp, parma, red necked and brush tailed) are dominant. A range of smaller mammals such as dingo, bandicoots, possums, potoroos and bettongs were identified. Assessment of the size, thickness and general morphology of the unidentified mammal bones suggests the majority of fragments derive from animals of wallaby size through to bandicoots and bettongs. Approximately 58% of the fragments are likely to derive from 'medium sized' animals, whilst a little over 15% are of a size suggestive of large macropods.

Reptile bones identified include at least two varieties of snake and three kinds of lizards. Only four bird elements were identified. The collection also included two small fish vertebrae. Considering the highly fragmented state of the Yengo assemblage (including bones of more robust mammals), it is possible that the unidentified bone included highly fragmented bird and reptile bone.

The vast majority of the mammal bones identified consisted of fragmented long bones. The highly fragmented nature of the assemblage is exemplified by the fact that few of these exceed 2-3cm in maximum dimension.

Just over 20% of the Yengo 1 bone fragments (16.5% by weight) had evidence for burning. Charred and calcined bones were found in equal proportions horizontally and with depth for all squares. Most of the bones in the assemblage were a brown colour: likely to be the product of staining from minerals in the deposit.

Steele found no strong trends in the frequency or proportional occurrence of burnt and calcined bone with deposit depth. He argues that the preservation factors in Layers I - IV appear both constant and equivalent. The Yengo 1 assemblage also displays a high and uniform degree of fragmentation. Few bones are complete, and most consist of small incomplete fragments. Steele concluded that (1994: 21):

Table 6.28: Yengo 1. Distribution of implements, R/U and micro-debitage (artefacts <1cm) across the site.

	SQ1B	SQ1R	SQ2A	SQ2B	SQ3S	SQ3N	SQ4A	SQ5A	SQ6	TOTAL
R/U F	2		8	5	9	3	4	1	4	36
R/U FP	4	2	10	11	5	1	6		1	40
BB	1		11	7	13	8	6	7	5	58
Ground	1		6	4	3	2	4	4	3	27
TOT R/U	8	2	35	27	30	14	20	12	13	161
%R/U F	*5.6*	*0*	*22.2*	*13.9*	*25*	*8.3*	*11.1*	*2.8*	*11.1*	*(22.4)*
R/U FP	10	5	25	27.5	12.5	2.5	15	0	2.5	(24.8)
BB.	1.7	0	18.9	12.1	22.4	13.8	10.4	12.1	8.6	(36.0)
Ground	3.7	0	22.2	14.8	11.1	7.4	14.8	14.8	11.1	(16.8)
% Tot R/U	*5.0*	*1.2*	*21.7*	*16.8*	*18.6*	*8.7*	*12.4*	*7.5*	*8.1*	-
Artefacts<1	213	9	1597	827	1600	701	691	563	766	6967*
Total	423	21	2161	1113	2289	982	1028	822	1094	9933*
%<1cm	*50.4*	*42.9*	*73.9*	*74.3*	*69.9*	*71.4*	*67.2*	*68.5*	*70.0*	*69.8*
%R/U	*1.9*	*9.5*	*1.6*	*2.4*	*1.3*	*1.4*	*1.9*	*1.5*	*1.2*	*1.6*

*Totals do not include figures for square 1A - in which no R/U was located.

1. The Yengo 1 assemblage is largely cultural in origin. Scavengers appear to have contributed little to the accumulation, fragmentation and spatial configuration of the assemblage. A very small proportion of the bones may reflect natural deaths (e.g. small reptiles and mammals);

2. The bones appear to have been quickly incorporated into the occupation matrix (a low frequency of bones had evidence for weathering);

3. The bulk of the fragmentation appears to have occurred while the bones were dry and/or old and following their incorporation into the sediments. The uniform and extensive fragmentation is likely to be the result of chemical deterioration accelerated by trampling;

4. The high fragmentation rate has reduced the level and detail to which the assemblage may be taxonomically characterised. Less than 0.1% of the bones were identifiable to species level;

5. Differential preservation is likely to have reduced the quantity of bone originally deposited at the front of the shelter. Cultural practices (e.g. site maintenance), combined with a variety of non-cultural processes, are likely to have removed and/or reduced a proportion of larger bones from the assemblage;

6. The majority of the bones display relatively good preservation characteristics. The decrease in the quantity of bone in the lower stratigraphic layers may be a product of decay, but would also appear to be the result of a low discard frequency of faunal remains during the earlier occupation of the shelter.

Results - Yengo 2

Analysis of this site's material was not attempted until 1992. When it came to undertaking this analysis, it was found that in my four year's absence from the ANU, the material from the Mt Yengo sites had been moved several times (due to ongoing renovations around the Department) and that the artefacts and charcoal from Yengo 2 were missing. It has therefore not been possible to make a detailed study of the artefacts, nor to submit any charcoal from this site for analysis. A subsequent search may find this lost material. In the meantime, the nature of the deposit is described on the basis of field notes.

Stratigraphy

The only stratigraphy observed during excavation of pits 4B and 4C was the change at the base of the deposit from dark grey brown to yellow (i.e. decomposing sandstone). This was only observed in the deeper (and wetter) of the two pits (Figure 6.25).

The field notes indicate that a charcoal rich layer, 'possibly a lens?' was encountered in spit 4C/4. This layer also contained two 'nice cores'. This was immediately above an increase in the quantity of gravel.

Heavy rain during the field season meant that the pits sustained considerable water inundation. This indicated that primary sedimentation here is due to a natural influx of deposit. During excavation, channels were made at surface (Figure 6.15) in an attempt to divert water around the test pits (Figure 6.24). This was only partially successful due to a natural sink effect in the vicinity of the pits. The area identified prior to excavation as being somewhat softer than the remainder of the floor, and which had evidence of rat burrowing, is obviously affected by the periodic inundation.

The excavators noted (with increasing vigour!) that the site was not a good habitation, being very dark and (increasingly) wet: the deposit was described as - being 'dark, rooty, wet and ... altogether quite unpleasant to excavate' (*field notes*). It was so dark in this shelter during most of the day (early morning being the exception) that caving lamps were used to aid excavation. Sieve notes indicate a low density of artefactual material was retrieved. This is an apposite reflection of the poor habitation conditions provided by the site.

Cultural Material

Field notes indicate the presence of charcoal and nature of artefacts found during the dry sieving undertaken on site (Table 6.29). This list is not exhaustive as microdebitage was recovered during wet sieving of small sieve residues back at the Lab. It is also only an indication of charcoal presence as this was not always mentioned. It is, however, a fairly good indication of the distribution (and paucity) of artefactual material larger than 1cm. No faunal remains or seeds were recovered.

Table 6.29: Yengo 2. Location of artefacts and charcoal throughout the two test pits.

	Square 4B		Square 4C	
Spit	**Artefacts**	**Charcoal**	**Artefacts**	**Charcoal**
1	-	XX		
2	-	XX		
3	-	XX		
4	-	XX	2 cores	XX
5	-	X		X
6	2Q	X	1 blue	X
7	1Q	X	-	-
8	-	-	-	-
9	-	-	-	-

Q = quartz blue = porcellenite

Discussion and Interpretation

The excavation programme and subsequent analyses of Yengo1 and Yengo 2 achieved most of the designated aims.

Yengo 1

The major findings of this research were, that:

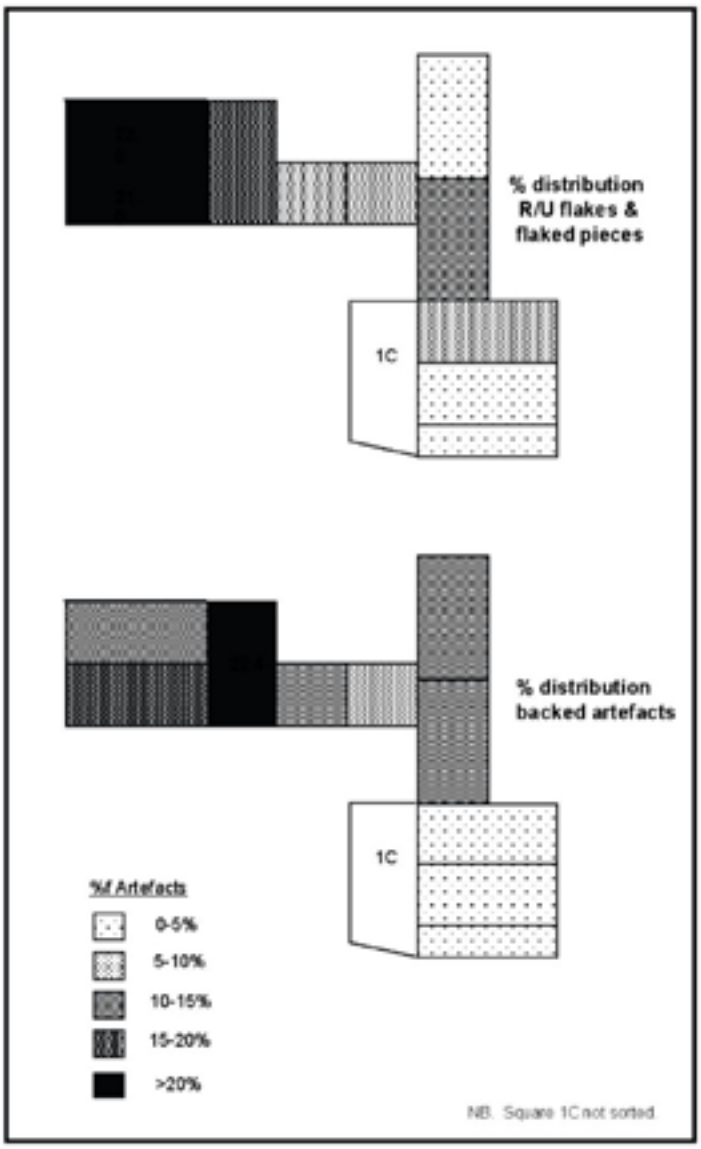


Figure 6.54: Yengo 1. Spatial distribution of backed artefacts and flakes and flaked pieces with retouch/usewear.

- the engravings continue beneath the deposit;
- the occupation deposit varies (in nature and intensity) over time;
- based on stratigraphic evidence the relative age of both the engraved panel and the pigment art can be argued; and,
- based on the excavated assemblage, the relative age of the grinding grooves and some of the pigment art can be inferred.

The engravings were found to continue some 35cm below the current floor level. The most intensive period of usage at the site resulted in the initial covering of the engravings. Based on stratigraphic evidence, this indicates that the engravings predate the main occupation of the site.

The initial occupation of the shelter is dated to 5,980 ± 290 BP (ANU-6059). A second phase of occupation ended around 2,840 ± 240 BP (ANU-6056) after which the most intensive occupation of the shelter commenced at c.1,950 ± 400 BP (ANU-6054). Occupation of the site continued until after 540 ± 180 BP (ANU-6058).

As the deposit at the site built up, the ceiling came within reach of the artists using pigment at the site. The stencil art appears to correlate with the main or latter occupation of the site. The

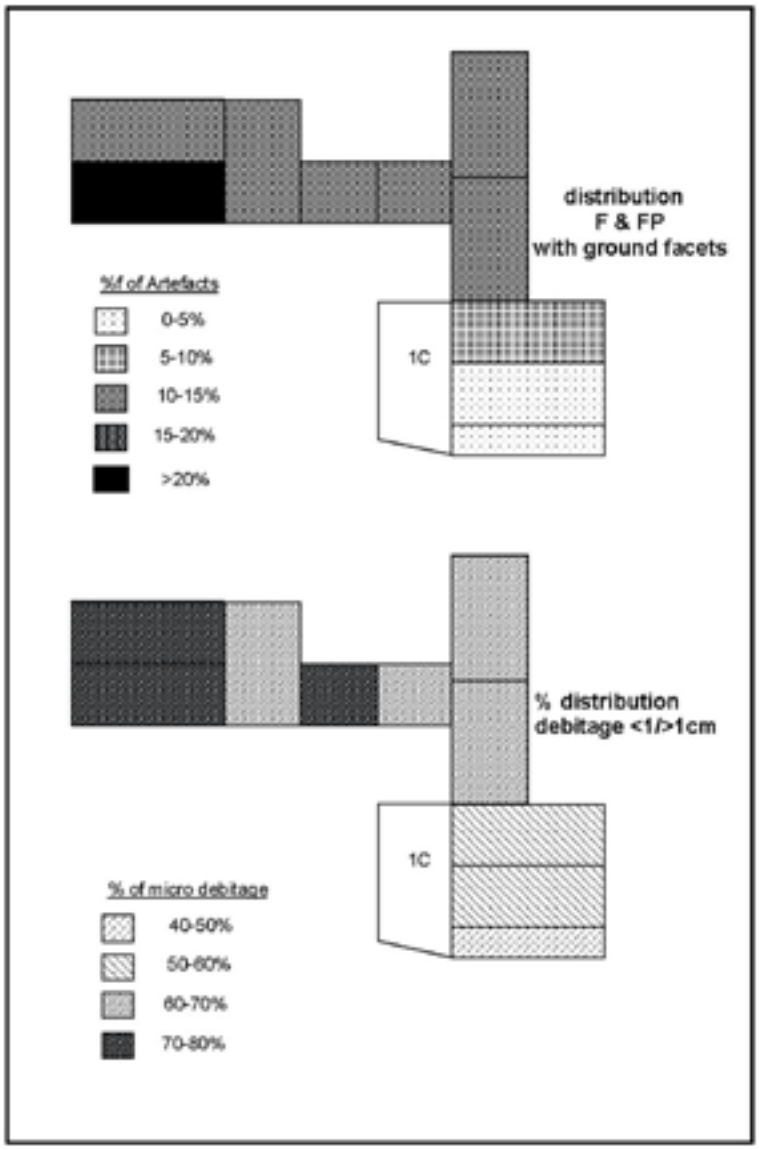


Figure 6.55: Yengo 1. Spatial distribution of ground pieces and micro-debitage (<1cm).

grinding grooves at the site are located around the sloping rock ledge, particularly at its southern end. Ground edged artefacts were found amongst the excavated assemblage in the top three units of the deposit, making the dated use of ground edged material at the site younger than 1,500 years. It is assumed that the use of the grinding grooves at the site is similarly placed within this time frame.

Artefact accumulation rates

An age-depth curve was calculated. There were some concerns about the utility of this due to the complexity of the deposit generally, the sloping bedrock base of the shelter and the variable cultural and natural deposition factors. As most of the dates were submitted from the sequence in square 4A, this square was used to make this calculation. The artefact accumulation rates correlated well with the patterns demonstrated by fluctuating artefact density over time.

The Lithic Assemblage

The excavated artefact assemblage provides information on the changing nature of occupation evidence at the site.

During the earliest period of occupation (Layers VI-VII), the artefact discard rate was low. There were no backed implements, no ground edged material, and quartz was used only as a minor

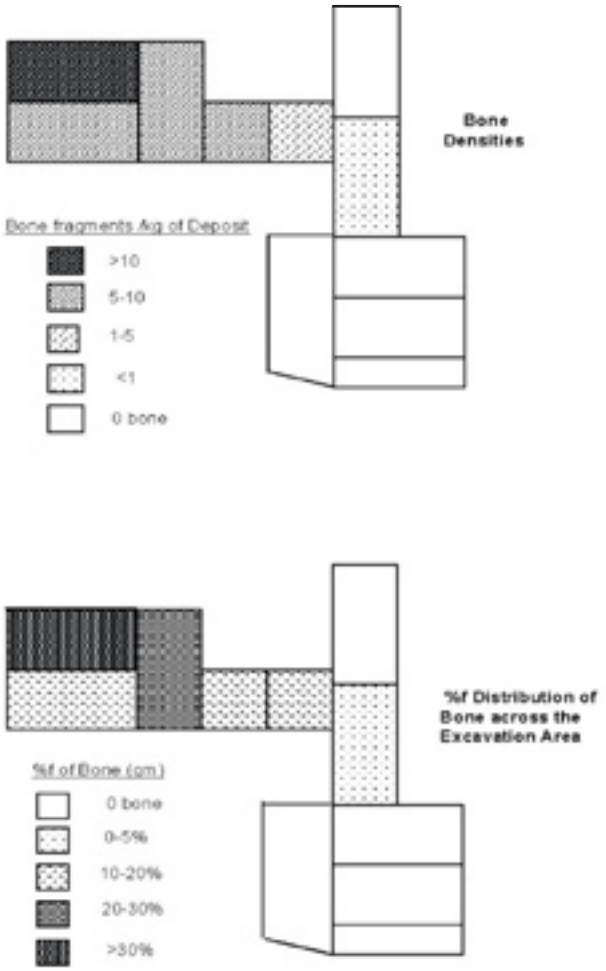


Figure 6.56: Yengo 1. Spatial distribution of bone fragments and %f distribution of bone densities (based on weights; Table A1.14).

raw material. Fine grained basic, silicified tuff and fine grained siliceous material dominated. No core tools or scrapers were found in the lowest layers, but sample sizes from these levels were very small and retouched artefacts extremely rare. Where modified artefacts were found, these were exclusively made of silicified tuff. One chopper tool was located low in unit V (spit 4A/12). The assemblage characteristics and dates support the interpretation of this occupation as pre Bondaian (JMcD CHM 2005a, b) or Mangrove Creek Phase 1 (following Attenbrow's 1987 definitions).

In the next phase of occupation (Layer V), artefact discard rates were again fairly low. Silicified tuff dominated the raw materials being used, although quartz became increasingly important. Backed artefacts were present only in the top of this unit. During this phase, all modified artefacts were made of quartzite. No ground edged material was present. The very low accumulation rates at the end of this phase suggest a hiatus in occupation between this phase and the next. This is supported by the dates received.

At the beginning of the second millennium BP there was a marked increase in artefact discard rates. The peak period of site usage appears to have started after 2,000 BP and to have peaked by 1,500 years ago. This continued for some time thereafter (Units III-IV). During this phase, backed artefacts were made and ground edged implements were introduced. Quartz was the dominant raw material, but there was a wide range of other raw materials being used. Modified artefacts, particularly backed artefacts, were found on a wide range of raw material types.

The terminal phase of site usage (Units I-II) saw a decline in artefact accumulation rates. There was also a decrease in the range of raw materials being used, and backed artefacts dropped out of the assemblage. Ground edged implement fragments increased. This phase is dated to around 500 years ago.

These four occupation phases correspond with the four typological phases identified for Mangrove Creek (Attenbrow 1987: Table 4:7). The Yengo 1 dates are in general accord with

Attenbrow's (1987:189) dates with the exception that the Middle Bondaian phase continues after 1,600 years BP at Yengo 1. The Yengo 1 dates suggest the following time frame for Attenbrow's phases (rounded to 50 years: cf. Table 6.11):

Phase 1	c. 6,000 - 4,600 years BP
Phase 2	c. 4,600 years to c. 2,850 years BP
Phase 3	c. <1,950 years to >540 years BP
Phase 4	c. <540 years BP

The Faunal Remains

More than 20 mammal species were identified from amongst the 527gm of bone at Yengo 1. Preservation conditions for faunal material were good but fragmentations rates high. A variety of macropods are present, with large kangaroos (Eastern grey), wallabies (e.g. swamp, parma, red necked and brush tailed), dingo and a range of smaller mammals such as bandicoots, possums, potoroos and bettongs. Several varieties of snake and three kinds of lizards were also identified. There was meagre evidence for bird and fish remains.

Despite a relatively good weight of bone being retrieved a relatively small proportion of the assemblage comprised identifiable fragments (cf. other shelters in the region with faunal remains: Loggers and Mussel; Aplin 1981, Angophora Reserve; McDonald 1990, Wood 1989).

Very little bone was deposited prior to c.1,500 years ago and peak deposition appears to have been between this time and c.500 years ago. This vertical patterning does not match that of the lithic material: the faunal material peak post-dating the most intensive period of artefact accumulation. A similar pattern has been identified elsewhere (e.g. Morwood 1986, Attenbrow 1987).

Over the period of deposition, there has been a change in the species represented. The bone from Layer III is dominated by elements of medium and large animals: c. 90% of the bone from these lower units is from animals of kangaroo and wallaby size. The paucity of small macropod and mammal bones in these lower levels is not a product of differential survival: there is a clear contrast in the composition of the upper and lower assemblages.

In stratigraphic layers I and II, 33% of the taxa are small animals. Varieties identified include possum, potoroo and bettong. Almost 60% of the bones here are from medium sized wallabies and an unidentified range of similarly sized mammals. Almost all of the reptile bones derive from these Late Bondaian layers. Less than 9% of the bones from these layers are from large animals.

This change over time in focus from larger animals to a proliferation of smaller species and a range of habitats - is similar to that observed by McBryde (1976) in the New England region of New South Wales and by Morwood in south-east Queensland (1986). Aplin's (1981) analysis of Logger's shelter (in Mangrove Creek) produced a similar pattern (although not at Mussel shelter). The postulated correlations of faunal change with technological change (namely the loss of backed blades) and shifts in procurement strategies has been argued as evidence that 'patterns of change in ... resource structure, technology, economy and symbolic behaviour were functionally related' (Morwood 1986:118). The Yengo 1 data supports this argument (see below).

The Engravings

The engravings located on a vertical interior surface of the boulder outside the dripline of the shelter were found to extend some 35cm below the current ground surface. The deposit adjacent to the engraved boulder is affected by water percolation, and the depositional processes at the

front of the shelter are different to those operating in the shelter's interior.

On the basis of stratigraphy in the trench perpendicular to the boulder and from an age determination received from close to the boulder (ANU-6215) the following conclusions are drawn.

1. The engravings were produced prior the main occupation of the shelter. Deposit dating to >2,800 years ago covered the base of the engravings;

2. On the basis of artefact accumulation rates, there is a possible hiatus in site usage between the second and third phases of site usage. This would appear to be the only break in usage, representing slightly <1,000 years. There appears to have been continual low density occupation between the earliest (basal) occupation and subsequent occupation. The only date for Layer V is some 2,000 years younger than for Layer VI, but this date is from the top of unit V. Artefact accumulation rates reinforce no hiatus at this point;

3. The engraved boulder and the smaller buried boulder (in Squares 1A, 1B and 1C) are contemporaneous in age and part of the same roof fall episode. The smaller boulder would have been in place throughout the occupation of the site, and thus have been in this position when the engravings were being produced;

4. It is unlikely that the engraved circles were produced after the time when there was any accumulation of deposit between the engraved boulder and the smaller boulder. The distance between the base of the lowest circle on the larger boulder and the junction of the two boulders is <40cm. Other researchers (Flood and Horsfall 1986, Morwood 1992, Rosenfeld *et al*. 1981) have defined 35cm as the requisite height for a contemporaneous floor level and vertical engravings;

5. The deposit which resulted in the initial covering of the engravings predates the hiatus in site usage (between the Early and Middle Bondaian). While there is no evidence directly linking the engravings to the Pre-Bondaian occupation of the site, the engravings definitely predate the Middle Bondaian occupation of the site;

6. It seems likely that the engravings also predate the Early Bondaian phase of site occupation, since it is the layer of deposit associated with this assemblage which also diminished the floor height below the circles such that their production would have been difficult. On this basis, and the assumption that some occupation evidence would be contemporaneous with the production of the engraved circles, it is argued that the engravings are Pre-Bondaian in age;

7. Pecked dots were discovered on the sloping bedrock floor beneath square 2A. These are covered by deposit from Layer VI, and therefore predate some of the earliest occupation of the site.

It is concluded that the engraved circles, dots and kangaroo tracks were probably produced during the earliest occupation of the shelter, between 5-6,000 years ago. They may have been produced prior to occupation of the rockshelter although it seems likely that the act of producing this art is likely to have been part of a suite of behaviours and that the people producing the art had to live somewhere. The minimum age for their production is greater than c.3,000 years - and this estimate is conservative - given that this date is associated with deposit which resulted in the engravings being covered.

Stylistically, the engraved panel and pecked dots have more in common with the Panaramitee style, than they do with the Sydney Basin engraving style. The Panaramitee has a more restricted figurative range and concentration on pecked geometric designs (such as circles) and kangaroo and bird tracks (Clegg 1987; Maynard 1979; Franklin 1991, 2004; McDonald 1983, 1993a). Most Sydney region engravings are figurative (animals, birds, human figures etc.). Although tracks are not uncommon, human tracks predominate in this style, and circles are rare. Further, the main technique employed in the Sydney Basin style is pecked and abraded outline: the Panaramitee technique consists of pecked intaglio (solid) motifs.

The Panaramitee was initially perceived as being of great antiquity (although see McCarthy 1979, 1988) based on the identification of extinct megafaunal tracks and animals (Basedow 1914, Mountford and Edwards 1963). Edwards (1971) identified that this art tradition appeared to be remarkably consistent over enormous distances in the arid zone and that most of these art sites were deeply patinated. Maynard (1979) suggested an age bracket of between 7-10,000 years on this art form.

There have been numerous more recent attempts to date the Panaramitee and its regional variants. Much of this effort has been directed at sites where these engravings are found in rock shelters with associated occupation deposits (e.g. Flood and Horsfall 1986, Morwood 1992, 2002; Rosenfeld *et al*. 1981). These sites have provided dates ranging between 1,570 ± 60 BP (Beta-3777) at Green Ant; 13,200 ± 170 BP (ANU-1441) at Early Man and >14,000 BP in Sandy Creek 1 (all in north Queensland). Efforts in the arid zone with open sites and a range of dating techniques have provided similarly wide ranging results (indicating problems of sampling as much as the likely age bracket for this style). Dates of between 1,400 and 35,000 years were obtained using cation-ratio dating (Nobbs and Dorn 1988) this indicating problems with the sampling technique (see Watchman 1992). A date of c.10,000 years at Sturt's Meadows was obtained using AMS on charcoal from carbonate crusting (Dragovich 1986).

There are obvious dissimilarities between sites in the coastal or montane regions of Australia where Panaramitee-like engravings occur and the arid zone Panaramitee tradition proper (Rosenfeld *et al*. 1981:88-9; Rosenfeld 1991; cf. Morwood 1984). Many of the regional variants contain relatively variable motif assemblages, and are not classic Panaramitee. A recent analysis by Franklin (2004) has indicated that there is:

> variation within the Panaramitee style both in the arid zone and outside it. The Panaramitee style cuts across environments ... there are similarities between engraving sites across the continent, but ... individual regional manifestations also occur… the Panaramitee is marked by regional variation (Franklin 2004: 135).

The Yengo 1 engraved panel is a regional variant of the Panaramitee. It is clearly of a different style to the majority of the engraved art found in the Sydney Basin. The pre-Bondaian age for this engraved panel supports the general contention that this art style predates the proliferation of Simple Figurative styles around Australia during the Holocene. A small number of shelter sites scattered around the Sydney Region contain residual Panaramitee engravings, indicating an earlier, lower density artistic tradition predating the main late Holocene occupation and artistic period of the region. This earlier lower density art phase matches other forms of occupation evidence - also lower density - confirming a continuing tradition over time for the decorating of shelter occupation sites of the region.

The Pigment Art

It is argued that the pigment art, primarily white stencils, was produced during the most intensive period of the site's occupation. This conclusion is based of the following:

1. The ceiling is beyond easy reach of anybody standing on the sloping floor of the shelter, prior to the accumulation of 30cm (min) of deposit. While the art on the rear wall and

back ledge of the shelter could be reached easily at any time, this part of the assemblage is contemporaneous with the remainder of the pigment art;

2. Most of the excavated pipeclay and ochre is found in Layer III;

3. White pipeclay is found only in the top three Layers of the deposit. Constant acidity with depth argues for constant survival rates throughout the deposit.

Small quantities of red pigment were found in the lowest units of the deposit. Ochre may have been used here for purposes other than the production of parietal art (e.g. body painting) from the earliest times of the site's usage. The Yengo 2 art sequence has an early use of red pigment. Elsewhere in the Sydney Basin the early use of red pigment in shelter art sites has been identified - as it has elsewhere across the continent (Cook *et al.* 1990; Loy *et al.* 1990; Roberts *et al.* 1997). Given the absence of excavated pigments in the Yengo 2 deposits, the presence of a mainly red and black depictive assemblage and the presence of red pigments in the earlier layers at Yengo 1, it is possible that the depictive assemblage in Yengo 2 is older than the stencilled assemblage in Yengo 1. All white stencils in the Yengo 2 site post-date the remainder of the assemblage. The fact that the contemporaneity (or otherwise) of these two sites has not been demonstrated, means, for the time being, that this remains speculation.

Stencils

The stencilled assemblage can be used to infer a number of things about the population which took part in its production. The range of hand sizes, for instance, indicates a mixed population - i.e. men, women and children. The stencilled material objects are primarily identified as men's tools (e.g. axes, clubs and boomerangs). Four straight sticks, however, were also stencilled and, while these lack any diagnostic features, these may have been women's digging sticks.

The range of stencil variations may also have provided other information about the art's audience. Mostly hand and arm, and hand and wrist stencils were recorded, with relatively few (14) finger 'mutilation' stencils. Two of these consisted of all fingers bent into a fist (one with no thumb) while two comprised hands wrapped around the natural fluting on the ceiling. One pair consisted of two hands, wrist-to-wrist with three fingers only showing. Two had no thumb and four had two or more fingers bent over to the first joint. One had the little finger dislocated while the last had the third and fourth fingers positioned together. None of these variants actually record finger mutilation. Rather, all were produced by manipulating the position of the fingers.

Several of these finger positions were identified by Wright (1985) as illustrating sign language hand positions [following Morwood (1979), Walsh (1979)]. For instance, the fist is used to denote 'the men coming up are friendly' (Wright 1985: Table A1.2; citing Spencer 1928). Other alternative interpretations include the depiction of clan totems or levels of initiation. The fist, again (in central Queensland), is recorded as representing the large eagle-hawk; all fingers together, is recorded as representing a fish (Wright 1985: Table A1.2; citing Roth 1897). Most of the stencil examples examined by Wright were associated with mortuary sites. More than 17%, however, were not. While central Queensland hand signals are possibly of little relevance to Sydney it is possible that certain hand positions did represent totems. Mathews (1897c) provides a list of the animal and bird species which were of totemic import to the Darkingung people. Unfortunately no ethnographic work was undertaken in this region on the localised use of sign language.

Forge proposed that stencils are not art - since they are mechanically executed.

> they are the equivalent to signing the visitor's book, or names and signs scrawled all over any permanent surface ... They mark the presence at some time of an individual, they are not

> mediated through any symbolic symbol, they are not part of a culture. ... It may be part of a culture to make such marks, either at times of ritual or on first reaching a certain point, etc. ... However, any such cultural requirement refers only to the fact of stencilling not to the form (Forge 1991: 40).

While this argument requires consideration in broad scaled stylistic analyses – when trying to 'reconstruct an art system' (Forge 1991: 44), it begs the question when addressing general questions about parietal art production. A stencil, in itself, may not be an art form (aesthetically speaking) - but this form often contributes significantly to pigment art assemblages in this and other regions in Australia (e.g. Ross 2003). In other parts of the world, the technique is also used to create highly aesthetic figurative motifs (e.g. the Upper Palaeolithic black dotted horse in Trois Frére: Bahn and Vertut 1988).

The stencilling of hands and other objects certainly records a different range of information to depictive paintings and drawings. But this surely is also an example of a cultural group's choice in the use of pigment, media and technique to record images on a rock surface. The proportions, the colour usage, and subjects used in this art form vary synchronically across the region, indicating that different groups used stencils in varying ways. In some parts of Sydney (e.g. around Campbelltown), there are very few hand stencils in most shelter art sites; in other areas (e.g. this northern portion) they predominate in most assemblages and are a highly developed art form (McDonald 1987). Surely this indicates stylistic information when viewing an art system as a whole?

The Grinding Grooves

The grinding grooves, like the pigment art, are thought to coincide with the most intensive, later usage of the shelter. This conclusion is based of the distribution of ground edged fragments throughout the excavated sequence.

The pigment art also contains eight stencils and/or drawings of hafted axes. This further indicates that these implements were in use during the period of the shelter's pigment art production. Two of the white stencils have been 'coloured in' with charcoal lines. These motifs have the potential to be dated using the AMS technique (McDonald 2002c; McDonald *et al.* 1990; Rowe 2001).

What Type of Site?

Before excavation commenced it was obvious that the site was a major focus for art production and that the shelter had also been used extensively in the sharpening of (presumably) axes. The back ledge and sloping shelf also contains evidence of battering and rubbing, suggesting that this surface could have been used for knapping (i.e. as an anvil), seed preparation (i.e. in mortar and pestle fashion). As well as axes or hatchets, the sharpening of thinner, pointier objects has also occurred along the back ledge. These thinner objects may well have been (men's) wooden spears, or they could have been women's digging sticks (McDonald 1991b).

Extensive stencilling of hands and other objects and, in a more limited fashion, painting and drawing has occurred here. This site has the second largest assemblage that has so far been counted in the region: only Swinton's shelter (in the Mangrove Creek catchment, with 847 motifs) is larger. Yengo 1 represents a major artistic focus. Swinton's has a relatively smaller proportion of stencils than Yengo 1: 65% as opposed to 83%. The fact that Yengo 1 has such a strong focus on stencilling and so few depictive motifs is felt to indicate something about the nature of the site.

While no effort can be made to interpret the art, possible functions can be suggested on the basis of what stencils may represent. Moore (1977) suggested seven possible functions for stencils on the basis of ethnohistoric research and 'a number of published Aboriginal explanations' (1977:318). These were (as):

i) individual signatures of artists or to record a visit;

ii) a memorial to be mourned over after death at a mortuary site;

iii) messages to the spirit ancestors;

iv) a secular message to other Aborigines;

v) a record of an historical event (telling a story);

vi) a story telling device to record the myths at a sacred site;

vii) a means of using the power of a sorcery site (Moore 1977: 322).

This list indicates that both secular and ritual explanations for hand stencils, and no doubt many examples could evoke several explanations, depending on context (the level(s) of initiation of the producer, the informant and the observer). Some of the potential explanations for the Yengo assemblage can be eliminated on the basis of association.

There are, for instance, no associations between stencils and depictive motifs. Moore's explanations 5-7 all involve the placement of stencils over or around major figurative components in an assemblage. Explanation 2 can also be removed from consideration given the absence of human skeletal remains at the site; stencils as memorial or mortuary devices other areas in Australia have all involved burials occurring in the same site (e.g. central and northern Queensland highlands: Morwood 1979, 1992).

Analysis of the stencilled hands indicates that most of the stencils here were of left hands, and that there was a range of hand sizes, from babies and children up to large adults. Given the overlap in the hand sizes of gendered groups in living populations (see above) detailed gender information about the Mt Yengo participants cannot be discerned. However, the presence of babies' hands among the assemblage is argued as being a good indication of the presence of women at the site: while the mixed size ranges also suggest that women also participated in the stencil production. It would seem likely that the use of stencils at this site is secular, and it would seem reasonable to assume that one possible explanation of the stencils was to record the number (and identity) of people who camped there - presumably on a number of occasions.

Forge's (1991) argument supports stencils as signatures, or statements of presence and/or involvement. Based on this, and the extensive domestic occupation evidence obtained from the deposit, the art in the Yengo 1 site is interpreted as being secular.

The stone tool assemblage and faunal remains indicate that the site, during its period of most intensive occupation, was probably a base camp. There is evidence for a range of activities being carried out at the site (e.g. backed blade production and gearing up [replacement] strategies, the consumption of food), the production and/or resharpening of ground edged implements, as well as a range of general purpose stone tool use and production. While no detailed usewear analysis was undertaken, a macroscopic inspection of utilised tools indicates a range of edge angles - suggesting a variety of activities: wood working, butchering and activities involving 'softer' processes (cf. Gorman 1992). Intact hearths across the site indicate that there were probably several camping foci within the shelter: discrete areas of higher density knapping and patchy areas of higher density faunal material lend support.

Meehan defines base camps as representing a long term focus for occupation for the territorial group - 'men of several land owning units whose territories formed a contiguous area, together with their wives and unmarried children' (Meehan 1982:13). Such sites are generally located a variety of distances from primary resources and may be occupied over many months and (in tropical Australia) sometimes years. Food debris disposal at base camps is patterned in a complicated yet predictable way on the periphery of each hearth complex (Meehan 1982:114).

Such sites include evidence for more intensive occupation, including site structure (hearths, living areas, disposal areas, etc.) as well as evidence for all members of the group.

The Yengo 1 archaeological remains, during the period of most intensive occupation, certainly demonstrate such requisite types of evidence. This and the range and density of hand stencils at the site, are interpreted as indicating that this site presented a focus in the landscape for the people living in the northern reaches of the Darkingung territory during the last two millennia BP.

Interpretation of the earlier uses of the site is based on less tangible evidence. Occupation remains are sparse and relatively low density. The engraving of circles and bird and roo tracks has been interpreted in other regions as indicating an art system which is more ambiguous and generally for 'restricted' rather than 'public' contexts (Morwood 1988: 33). Such art is thought to indicate more open social networks and lower population densities (Gamble 1982, Morwood 1988, Smith 1989; although see McDonald 2005a).

It would appear likely that the site had a very different function during its earliest use as an art shelter. Whether this function was ritual or secular cannot be said. However,

> corporate territorial expression through the indelible marking of place with a stylistic graphic system may have been a powerful means of asserting corporate rights and relationships. (Rosenfeld 1993: 77)

There is every reason to assume that this site was a focus for groups living around Mount Yengo throughout prehistory, for as long as this area has been populated. It is also possible to argue that this focus became less ritualised over time - at the peak of its usage the site was used and decorated by the entire group as a base camp. The decline in usage over the last millennium (indicated by declining artefact densities) may indicate a continuing change in focus. The faunal evidence indicates a continuing intensive use of the shelter in its terminal phases for the consumption of food, if not the production of stone tools. This would tend to suggest a change in the nature of habitation in the site rather than a decrease in population density (i.e. Morwood 1986) and perhaps a move by an increasingly large population into open locations for camping (as suggested by the ethnohistoric literature at contact). Obviously an excavation programme targeting the broad open lower hillslopes below the site could further explore this latter possibility.

Yengo 2

The excavation aims for Yengo 2 had a different orientation because of the fact that the art assemblage in this shelter was so different from that in the main shelter. Given the proximity of the two sites, establishing the contemporaneity of their occupation and the likely age of their art assemblages was of interest. An analysis of the art in this shelter indicates at least three artistic episodes, the last of which seems to coincide with the prolific art production in Yengo 1.

The small amount of material retrieved from this second excavated site is lost. It is possible to state, however, that there was sparse occupation deposit in the shelter, but that the majority of the sedimentation here is through natural processes.

There was an absence of pigment/ochres in the deposits in Yengo 2 and correlating the art with the deposit in the shelter may well have been inconclusive. The sparseness of occupation deposit can be explained by the unpleasantness of the shelter for camping at any time other than on the hottest day. It is dark, dank and the deposit and sloping walls are extremely damp.

The tantalising question is - why was art produced in this shelter? The sandstone surfaces in this site are smooth textured and provide an excellent medium for drawing. This, however, is a minor consideration given that the art is just about invisible at all times of the day - bar early morning on a sunny day - or perhaps by firelight. The evidence for domestic usage here was sparse and this pigment art may represent a different function to that found in the larger shelter –

with its abundant evidence for domestic use. There is evidence in Yengo 2 for several episodes of art production, perhaps spanning a considerable time period.

When this research was undertaken, AMS dating techniques were in a nascent stage of development (cf. Chaffee *et al*. 1993, 1994; Geib and Fairley 1992; McDonald *et al*. 1990; Watchman and Lessard 1993). The Yengo 2 art assemblage was inspected in 1988 with a view to collecting samples for dating. This inspection indicated that there were very few black motifs with visible charcoal fragments on them. The lack of visible charcoal is a possible indication of age (i.e. the charcoal may have chemically bonded with the rock or had longer to be worn away) but is more likely to be due to the water percolating through the wall (flushing away adhering fragments). The surface conditions in this site indicated other potential difficulties: there is macroscopic lichen growth on several parts of the wall (again, due to the damp conditions) which would be potential sources of modern carbon contamination. Salts and other accretions were also identified over several of the motifs. These accretions may be silica or oxalates - which would perhaps present an alternative dating opportunity (Watchman 1993b; Watchman and Lessard 1993).

Given the identified potential contamination problems as well as (the then) lengthy delays being experienced in AMS technology (the success of the method created extensive waiting periods for sample counting: John Head, pers. comm., 1994), it was decided not to pursue this line of inquiry for this research. Future work may well be able to elucidate the age of the Yengo 2 art assemblage and assist in interpreting the variability observed between this and the main shelter site.

The Yengo Sites in a Regional Context

Moore (1981) investigated contact between the Hunter and Hawkesbury River valleys. Based on excavations at site YC/1 on Yango Creek, a tributary of Wollombi Brook (flowing north to the Hunter), and site MR/1 on the lower Macdonald River, a tributary of the Hawkesbury, Moore made the following conclusions:

> Contacts between the Wanaruah [in the Hunter] and the Darkingung in the south, along the Boree Track, seems to have been mainly for joint ceremonials and for trade; this is reflected in the rock art between the Hunter and the Hawkesbury and also in the presence of Hunter valley cherts and quartzites in the tools and wastes excavated in MR/1 ... The apparent intensification of occupation in sites at both ends of the Boree Track about 2,000 BP has already been mentioned. … contact between the Wonaruah and the Darkingung may only have been established towards the end of the third millennium. (Moore 1981:423)

Moore also concluded that the presence of Hunter chert (now called silicified tuff) from around 5,000 BP, was an indication of the Darkingung travelling north for this raw material, rather than evidence for earlier trade between the two groups. This is now discounted by more recent work on the Cumberland Plain which indicates that the early use of this material occurred across the Sydney region and that the likely source of this is the Nepean-Hawkesbury gravels (JMcD CHM 2005a and b).

Moore also draws a distinction between the art of the Darkingung and that of the Wanaruah.

> [Darkingung art is characterised by] comparatively realistic representations of people and animals, ... in charcoal or ochre, groups or lines of small human figures dancing and carrying out other activities, and various types of stencils. ... immediately to the north ... there is an extensive use of stencils of hands, sometimes including the whole arm, of weapons and tools such as boomerangs, spear throwers, axes, etc. ... Also common are series of straight white lines (‘tally marks’) and radiate figures in white (‘sun symbols’). Representations of animals are extremely rare. (Moore 1981:396).

Work on the Rock Art Project established that the distribution of Wanaruah elements (viz. the white painted radiate figures) and the concentration on white hand stencils is more widespread than suggested by Moore. White painted 'sun' motifs have been recorded as far south as the north bank of the Hawkesbury river and as far east as Mangrove Creek (e.g. Swinton's shelter). There is considerable evidence for a clinal sharing of stylistic characteristics from the two adjoining groups (as defined by Moore), with a strong Wanaruan artistic influence extending down the Macdonald River and surrounding ridgelines to the east and west.

By Moore's definition, the art in Yengo 1 is Wanaruan style, while the Yengo 2 shelter contains distinctive Darkingung characteristics. Moore's model would suggest the Yengo 2 art predates the main (pigment) art activity of the Yengo 1 site: perhaps being a relic of the days when the Darkingung foraged northwards in search of raw materials from the Hunter. The discovery of a porcellenite artefact in the Yengo 2 deposits (Table 6.29) certainly demonstrates raw materials being obtained from further north; e.g. Rich 1992).

The Yengo 1 shelter was used prior to 3,000 BP, predating either of Moore's Hunter Valley shelter sites (e.g. Sandy Hollow, YC/1) and the majority of the dated sites from the Hunter region generally. More recent work has discovered shelter deposits as old as 4,740± 70 BP (Wk-1191) on the Goulburn River (Haglund 1995) as well as a late Pleistocene open site in the Hunter uplands (Koettig 1987). Given the late Pleistocene site at Glennies Creek, site settlement patterns identified in the Mangrove Creek area, and Pleistocene occupation of the Cumberland Plain, we now know that there was widespread, if sporadic, use of both the Hunter and the Hawkesbury regions prior to the Holocene. Yengo 1 provides the most comprehensive evidence for the range of activities (e.g. art and lithics) which are likely to have occurred in the pre-Bondaian phase in this intermediate position between to two major biogeographic regions.

The lithic material at the Yengo 1 site fits well into Attenbrow's four typological phases (these are discussed in more detail in the Upside Down Man excavation report). Given the predominance of quartz in the deposits, the Mount Yengo archaeology appears to be more closely aligned with site occupation patterns identified in the Sydney region than those identified in the Hunter (Moore 1970, 1981; Hiscock 1986). Elements of the archaeology indicate a sharing of raw materials with the Hunter Valley (the single porcellenite artefact is the best evidence for this: silicified tuff and silcrete derive from both the Hunter and Cumberland Plain).

The art evidence with its predominance of white pigment and hand stencils indicates close cultural contacts with groups further north. This apparent contradiction in terms of artistic influence and the stone tool phases and emphases may well indicate that there was equal mobility from the north and the south.

This site complex fits well the definition of an aggregation locale (viz. Conkey 1980), whereby neighbouring language groups unite with the incumbent territorial group for a variety of reason. Ethnohistoric reports put Mount Yengo on a branch of the traditional access route along the Boree Track, between the Hunter and Macdonald Rivers. The site may represent an important meeting place between the two groups, the art being a record of large scale meetings: the combined evidence of art and stone suggests the presence of 'regional personnel' (Conkey 1980). The Yengo shelters in tandem also demonstrate considerable stylistic diversity, both relative to each other and compared with the sites in the immediate and broader scale (McDonald 1987, 1993b). This diversity fits another of Conkey's defined requirement for an aggregation locale (and see McDonald and Veth 2006)

The Yengo sites (particularly the main shelter) were a focus for groups living around Mount Yengo, for as long as this area has been populated. The early use of the shelter included the production of an iconic art system and relatively sparse occupation deposit. This focus might have become less ritualised over time. Subsequent use of the shelter changed to a proliferation of occupation activity - domestic, technological and artistic. This is consistent with a model of tightening social and territorial organisation (e.g. Rosenfeld 1993). The changes evident within the Holocene support a model of ongoing social change throughout this period and particularly a model whereby art assists in the facilitation of increased social contact.