

9 THE OORAMINNA RANGES AND SIMPSON DUNEFIELD

Between Alice Springs and the Simpson desert lie the Ooraminna and Rodinga ranges. Detailed information on the location of clan estates in this region is not presently available though more details may come to light with the Simpson Desert Land Claim. The major focus of Aboriginal occupation appears to have been on a series of permanent springs along the Allambarinja range, in the eastern part of the Ooraminna ranges - such as Atnalke and Atarke (McGrady 1969; see also Stockton 1971; Strehlow 1971:map) - and on the large semi-permanent rockhole at Urweuweerne [Ooraminna rockhole] in the western part of the ranges. Other important places, such as Keringke [Kurringa rockhole], near Santa Teresa, and Iherreyererte [Athernita bore], in the Rodinga range, are places where large ceremonial gatherings took place.

The Ooraminna ranges consist of a series of sandstone and dolomite ranges which are separated from the main MacDonnell ranges by the broad floodplain of the Todd river. The course of the Todd follows the northern and then eastern margins of these ranges before petering out in the Simpson desert. The Rodinga range is a bold sandstone ridge rising abruptly from the dunefield in the northwestern part of the Simpson desert. It separates a small outer dunefield of about 1500 km² from the main body of linear dunes (see fig. 9.1).

Keringke, Urwenwerne and Therreyererte have been the subject of various archaeological investigations between 1969 and 1986.

KERINGKE

Keringke (cf. Stockton 1971:55 Kurringa; Strehlow 1971:xix Kringka) is an important Eastern Arrernte totemic site. Large groups of people are said to have gathered here periodically to perform the kangaroo ceremonies. Men would camp with their families on the sandy flat at the mouth of a gully. The non-public sections of the ceremonies centred on a small, ephemeral rockhole a short distance up the gully, and in the hills beyond.

The archaeological site consists of a dense scatter of chipped stone artefacts and more than 100 millstones on the sandy flat at the mouth of the gully. The rockhole is surrounded by panels of rock engravings. In this juxtaposition of rock engravings, rockhole and occupation deposits Keringke is similar to many other archaeological sites in Central Australia, including Therreyererte (see below) and Urre (see chapter 7).

E. D. Stockton pioneered archaeological excavation in Central Australia with his work at Keringke in 1969 (Stockton 1971; Smith 1983). With Aboriginal assistants he excavated two pits, designated K and R, totaling 3 m². The stratigraphy consisted of 35-70 cm of horizontally bedded, compact, pink, aeolian sand overlying a stony talus slope. A sample of charcoal pieces from a 30 x 30 cm area in Pit R, spit 6 (50-60 cm below surface) gave a radiocarbon date of 920+/-130 yrs BP (ANU 426). This implies a

Overleaf Figure 9.1 : Air photo showing the eastern part of the Rodinga range and the surrounding dunefield. Arrows indicate the position of Therreyererte. A palaeochannel of the Todd river, is visible across the top of the photograph.



rate of sediment accumulation of about 60mm/100yr, a rate which is comparable to other excavated sites in Central Australia.

Chipped stone artefacts, millstones, bone and ochre were present throughout the deposit. In his excavation report Stockton (1971:57-60) identified the following trends. Firstly, the bulk of the chipped stone, about 68% of the artefacts, was concentrated in the middle levels of the deposit between 20-50 cm below the surface. Secondly, that millstones, backed blades and tula adze slugs were concentrated in these levels. Thirdly, that this change was also accompanied by a reduction in the size of flakes from 4-5 g to 1-2 g.

Stockton interpreted the Keringke sequence as showing the tripartite industrial sequence familiar to him from eastern Australia. Therefore he had expected that ANU 426 would give a date of 3000-5000 yrs BP. On this basis the much younger age given by ANU 426 appeared anomalous and Stockton privately expressed the opinion that the sample might have been contaminated. However, the pattern of changes at Keringke can also be interpreted as registering more intensive use of the site - marked by more chipped stone debitage and a wider range of artefacts - between roughly 300-800 yrs BP. From this perspective both the nature and the timing of the changes at Keringke are consistent with the regional pattern outlined in this thesis.

Unfortunately the present whereabouts of the excavated material is unknown and so further details of the changes at Keringke are not available.

URWEMWERNE

Urweuwerne (cf. Gillen 1968:44 Ooraminna; Strehlow 1971:379, 673-74 Urumuna) was the reference site and main camp for an estate (see Spencer 1928:367-8). By 1901 the important rockhole here was a mandatory stop for European travellers after the waterless stretch from Ilwempe atnunte [Deep Well]. At the time of Spencer and Gillen's visit an Aboriginal family was still living near the waterhole and foraging for lizards and ngkwitjeke (Portulacca sp.) seeds (Gillen 1968:44-45; Spencer and Gillen 1912:223).

There are a variety of archaeological remains at Urweuwerne - ranging from paintings, stone arrangements, and extensive scatters of chipped stone artefacts, to rusty cans and sheets of iron and the remains of at least one bough shelter. The main concentration of archaeological debris is within a few hundred metres of the rockhole. Dense scatters of chipped stone artefacts, including backed blades, extend downstream from the rockhole to include a grassy flat 500 m to the east. The rockhole itself has been modified with the construction of a wall on one side - at first by Afghan camel-men and more recently by the Australia Army during the 1940's.

Despite the range of archaeological material at Urweuwerne, archaeological investigations have so far failed to yield any useful information on the chronology of the site. L. K. Napton excavated a 2 m² trench in a small rockshelter southeast of the rockhole in 1980 (unpublished field notes). The deposit consisted of 40 cm of fine aeolian sand lying on bedrock. No radiocarbon samples were submitted. The number of chipped stone artefacts recovered totalled 2040 and the artefact density ranged from

1060/m³ in the lowest spit, to 2525 and 2950/m³ in spits 3 and 2, and 4195/m³ in the uppermost spit. Two backed blades and one tula adze slug were recovered from spits 1 and 2. Apart from the observation that this deposit is probably relatively recent in age, it is doubtful whether any useful information about changes in site use can be extracted from these results.

My own investigations at Urweemwerne were on the open site on the grassy flat east of the rockhole. Trial augering here failed to establish signs of any major occupational horizon comparable to those in the James range (see chapter 7). Nor did a careful inspection of the creek cuttings. However, in one location a number of chipped stone artefacts - including two cores, one retouched flake and 25 other artefacts - were found to be eroding from the creek section. A small excavation at this location (see Smith 1983) established that the artefacts were present in a thin gravely band, 20-25 cm thick, buried beneath 1.1 m of compact, red clayey sand. No datable material was recovered from any level of the stratigraphic profile. Whilst the depth of these finds suggests some antiquity, the results are equivocal at best. The March 1983 flood removed this section of creek bank before any further investigation could be carried out.

THERREYERERTE

Therreyererte (cf. Spencer and Gillen 1896 Therierita ; Strehlow 1971 Therereta; Smith 1986b:129 Therrerrete) is a major Eastern Arrernte totemic centre associated with a group of wandering native cat (Dasyurus geoffroyi) (tjilpa) ancestors - totemic beings who have a special position in Central Australian mythology.

The tjilpa/urumbula traditions, like the Pintupi tingari tradition, deal with ancestral beings who travel thousands of kilometres, crossing many different language areas to enter Central Australia and who either bring or create new ceremonies. In the case of the tjilpa/urumbula their journey begins near the head of Spencer's Gulf in South Australia and continues for 2500 km across the centre of the continent before finally ending on the northern coast. Unlike many totemic beings the tjilpa ancestors are expressly said to have traversed areas already settled by totemic groups. At each site along their route they are said to have left behind some members of their party and new tjilpa ceremonies specific to each site. In Central Australia they introduce sub-incision rites (Spencer and Gillen 1896:402) and are also credited with the introduction of a syphilitic-like disease (Spencer and Gillen 1896:443-4 erkincha; see also Chewings 1936:7 irkin tjia - perhaps should be irrkentye).

Therreyererte is a strategic point on their route (see fig. 9.1) and it is only north of this locality that the urumbula youths, entering the ranges from the desert, become tjilpa ancestors able to change at will from human to animal form (Strehlow 1971:550).

The special features of the tjilpa/urumbula traditions led both Strehlow (1971:705) and Spencer and Gillen (1896:169ff.) to conclude that these traditions had their beginnings in some historical event. Myths can undoubtedly acquire some of the attributes of history but it is fascinating to speculate that the tjilpa/urumbula traditions record the arrival of new ceremonies brought by travelling groups of initiates if not an actual

migration of people into Central Australia. The correlation with the archaeological sequence at Therreyererte, outlined below, is intriguing.

Due to its totemic importance Therreyererte was the site of large ceremonial gatherings involving several hundred people - see Kimber and Smith (1987) for an account of one of the last large ceremonies at this site. The ceremonies were held after summer rain when the plant foods, especially seeds, were judged to be ready. Water for the camp was available at these times from several rockholes in the gorge although none of these are permanent. Several hundred people were drawn in to the ceremonies including Wongkonguru, Southern Arrernte, Alyawara, Eastern Arrernte, and Central Arrernte. The use of waters and plant foods at Therreyererte and in the surrounding area was carefully restricted before one of these occasions. But even with this husbanding of resources it is said to have been necessary for the majority of women and children to camp some distance away from the site, as far as 15 km, and to supply food daily to the men camped at Therreyererte.

Despite its importance it seems unlikely that Therreyererte was the focal point for an estate. The rockholes are not reliable and according to Walter Smith (Kimber pers comm.) the site was not used between the large ceremonies.

Today the Aboriginal people with rights in this site have more extensive interests in land elsewhere. If the contemporary pattern can be taken as reflecting something of the pre-contact situation it suggests that sites in the northwestern part of the Simpson desert lay in the outlying parts of estates that were

otherwise centred on better-watered areas in the Doraminna ranges and the floodplain of the Todd river.

THE ARCHAEOLOGICAL SITE

At Therreyererte a creek has cut deeply into the high escarpment on the northern edge of the Rodinga range forming a large alluvial fan at the mouth of a gorge. The main archaeological deposits are present near the head of this fan in the form of an extensive open site (see figs. 9.1, 9.2 and 9.3).

Chipped stone artefacts, large grindstones and finely fragmented bone reach their highest densities in an area about 40 by 100 m at the head of the fan. A count of the artefacts scattered over 12.6 m² here gave a density of over 100 artefacts per m². In addition to chipped stone artefacts, the surface of the site is strewn with several hundred large grindstones, made of the numerous boulders that are distributed across the fan. In his survey of the site L. K. Napton (unpublished fieldnotes) mapped the distribution of 557 grindstones on the main part of the site with a further 63 other specimens scattered in lower densities for 200 m down the fan. My preliminary classification of this material, based on Napton's specimen photographs, shows that at least 102 millstones and 152 mortars are present.

Rock engravings are also a prominent feature of the site. These are present on small loose boulders across the surface of the fan, on outcropping rock on the margins of the campsite, and on rock faces along the gorge. Some are worn and heavily patinated. Others appear fresh. Some engravings, protected on the underside of grindstones, are completely unpatinated. From these observations it seems likely that the engravings vary greatly in

their ages with some of significant antiquity and others dating to the ethnohistoric period.

EXCAVATION OF PIT Z90

My objective in digging at Therrevererte in 1986 was to extend the sample of excavated sites to include a major open site. In view of the theory (Lourandos 1983a) that changes in the occurrence of large ceremonies preceded other changes in economy and landuse, I felt it important to establish whether or not the archaeological sequence observed at other Central Australian sites was repeated here.

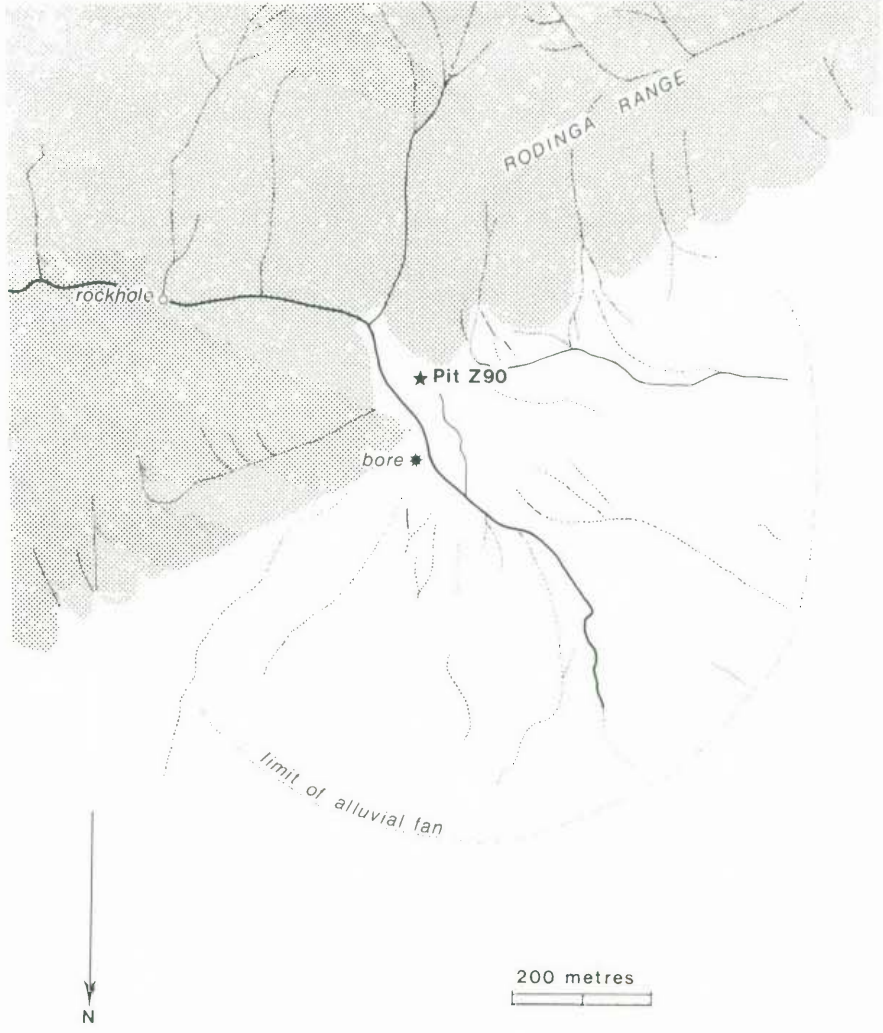
From my initial field observations it was apparent that dense occupation debris was concentrated within the top 50 cm of sandy deposit. I expected therefore that a small carefully placed excavation would be sufficient to date the main period of occupation at the site. Accordingly I dug three auger holes across the site to establish where a pit could best be located so as to achieve this. A 1 m² pit, designated Z90 on a nominal site grid, was subsequently excavated near the head of the fan within the area that contained the highest density of occupation debris (see fig. 9.3).

The 90 m peg on Napton's N40°W grid line was used as zero datum point for the excavation in lieu of a more suitable point being located within 300 m. Pit Z90 was located 16 m southwest of this datum.

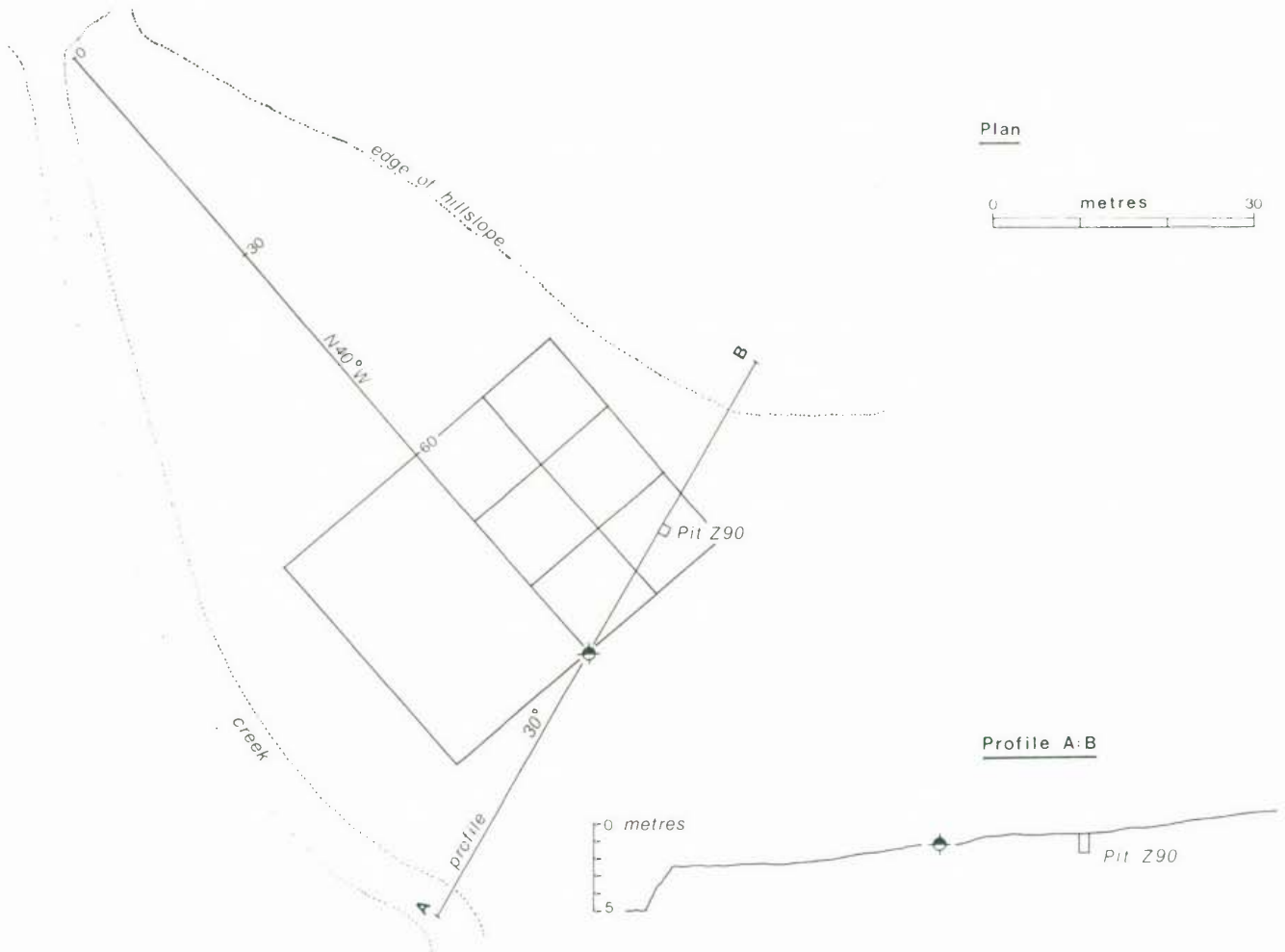
Overleaf Figure 9.2 : Therrevererte. View looking north, down the alluvial fan. April 1986. The main archaeological deposits are in the lower right quarter of the photograph. Arrows indicate the location of Pit Z90. Figure 9.3 : Plan of the site : (a) showing the main topographic features and (b) showing the location of the 1986 excavation with respect to Napton's grid.



A.



B.



Stratigraphy and chronology.

The deposits in Z90 mainly consist of two layers (fig. 9.4). Layer I is a brown silty sand, 60 cm thick, containing the bulk of the occupation debris. The auger holes show that this layer is 30-60 cm thick across the main part of the site. It is thinner elsewhere and entirely absent from the flood scoured area about 100 m downstream from the excavation (see fig. 9.2). This layer has a sharp texture boundary with layer II which consists of sandstone rubble and large rocks in a matrix of brown silty sand. In both layers however the sandy matrix is identical in colour (Munsell 5YR 3/4), pH (pH 3.5-4.0) and texture (composed of 65-70% fine to very fine sand and 8% silt/clay). Pit Z90 reached bedrock at a maximum depth of 136 cm.

Table 9.1 illustrates the marked differences in the composition of layers I and II.

Several minor stratigraphic features warrant mention. The first is a thin layer of fine red (5YR 5/6 bright reddish brown) aeolian sand, up to 10 mm thick, which covers the surface of the site. This layer, which is present on nearly all the sites that I have excavated in this project, probably represents sediment accumulated after major Aboriginal occupation of the site ceased 50-100 years ago. The archaeological material it contains is more properly included in unit 2 as the bulk of the artefacts in fact rest directly on the surface of this unit.

From the top of unit 2 an oven pit has been dug into units 3 and 4. The material from this feature was kept separate during excavation but only subsequently numbered as unit 13. The size and shape of the feature suggests an oven rather than a hearth. It

contained lenses of pale ash and large lumps of charcoal. Presumably the artefacts and bone found in the oven are a mixture of material from the 3 units. No European debris was found either in the oven pit or in units 1 and 2.

At the base of layer II the matrix around the rubble grades into a fine red sand (5YR 5/8), present in the interstices between large rocks. Chipped stone artefacts are still present though in small numbers. In texture this sediment is ~~predominately~~ ^{predominantly} fine to very fine sand but has slightly more clay than the brown sand. It appears that at this depth the excavation has reached the rocky substrate - the piedmont of the nearby foothills - and that the red sand is the natural soil.

Two radiocarbon samples were submitted from Z90 both of dispersed charcoal (table 9.2). SUA 2520 implies a rate of accumulation of deposit of about 90 mm/100yr for layer I. If one extrapolates to the base of the layer it must have began accumulating about 570 yrs BP. For layer II it is more difficult to estimate the age of critical points although SUA 2519 implies a lower rate of accumulation. If 570 BP is taken as the age for the top of layer II SUA 2519 suggests a rate of accumulation of 23 mm/100yr. On these estimates the base of the deposit would date to 3040 yr BP. If there were a significant chronological gap between the accumulation of the layers these figures would understate the rate of accumulation of layer II and inflate the estimate of basal age. However I can find no evidence of a major break in sedimentation between layer I and II, despite the obvious change in proportion of rubble.

Overleaf Figure 9.4 : Section drawing showing the stratigraphy in Pit Z90, Therreyererte.

Z90

SE FACE

SW FACE

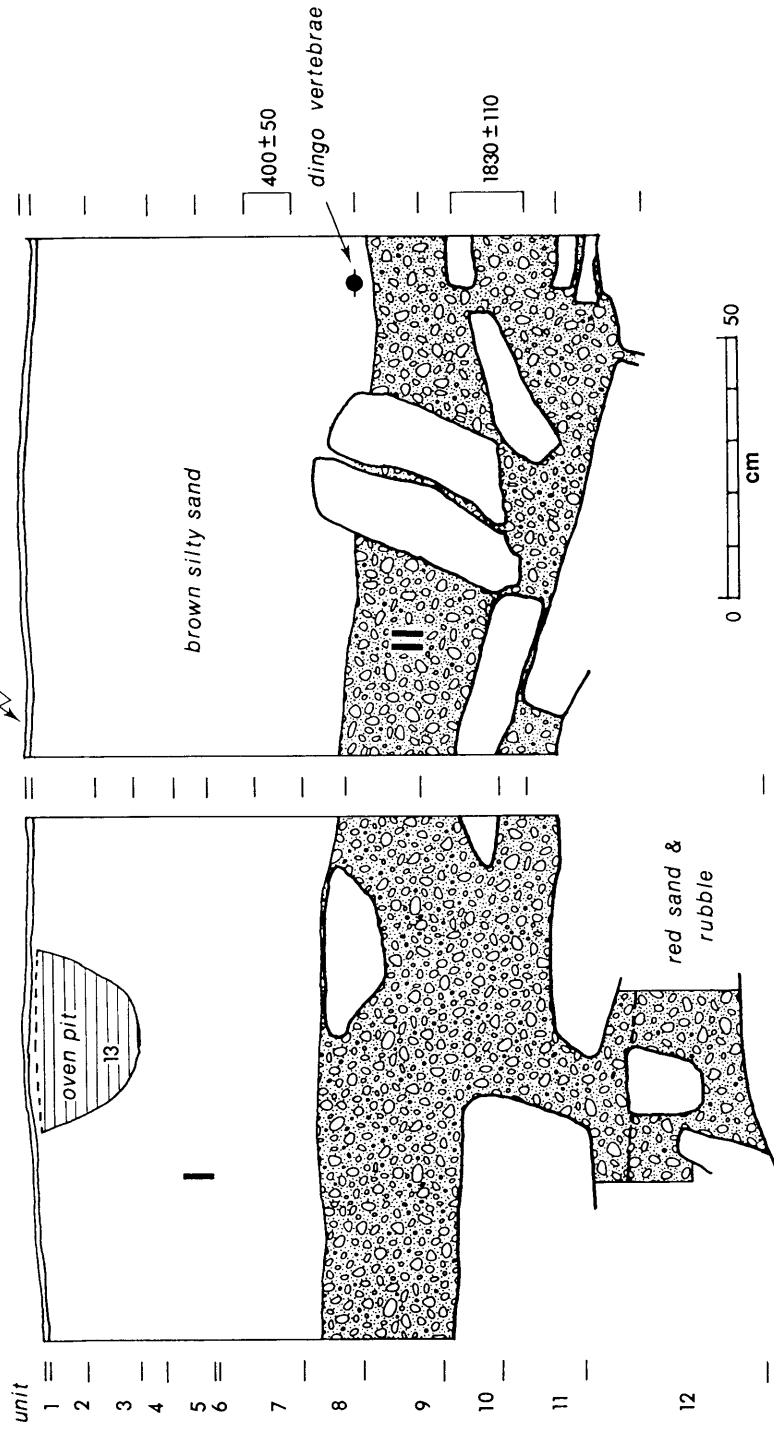


Table 9.1 : Composition of the deposits. Unit 1 is a thin layer of aeolian sand present on the surface of the deposit. Unit 13 is a discrete oven dug from unit 2 into units 3 and 4. The terms rocks and rubble are defined in chapter 3. Depths are in cm below surface.

unit	mean depth cm	sediment ----- gross wt kg	rocks		charcoal		rubble	
			no.	wt. kg	wt. g	wt g/10kg sediment	wt. kg	%
1	1	12.6	4	0.5	0.4	0.3	0.46	3.7
2	6	117.0	11	1.8	110.6	9.4	4.00	3.4
3	15	135.6			28.7	2.1	2.70	2.0
4	23	81.7			19.8	2.4	1.30	1.6
5	30	95.8			22.5	2.3	2.18	2.3
6	36	99.4	5	0.9	28.6	2.9	2.46	2.5
7	45	95.3	34	12.1	21.0	2.2	4.70	4.9
8	57	101.0	135	50.6	8.4	0.8	11.39	11.3
9	68	106.0	247	47.5	2.6	0.2	13.40	12.6
10	80	137.9	119	93.0	1.5	0.1	8.62	6.3
11	92	141.9	182	65.7	0.6		17.08	12.0
12	109	111.7	151	33.4	0.1		23.00	20.6
13	15	13.2			130.6	98.9	0.30	2.3

Table 9.2 : Radiocarbon dates from Iherreyererte Pit Z90. Depths are in cm below surface

unit	depth cm.	lab. no.	yrs. BP.
6	33-39	SUA 2520	400+/-50
10	73-87	SUA 2519	1830+/-110

Charcoal.

The concentration of charcoal in layer I is about 10 times that of layer II (table 9.1). In addition, unit 2 shows a major peak associated with the oven at this level. The very high concentration of charcoal in the oven pit itself can be seen in the figures for unit 13.

The distribution of charcoal is strongly correlated with that of both stone artefacts and of bone (see fig. 9.5). Presumably the concentration in layer I is also the direct result of human occupation of the site. However the figures for unit 1, postdating major occupation, may give a rough estimate of the normal background fallout of charcoal from natural fires. If this is the case then it follows that the small amount of charcoal in layer II need not be directly derived from human activity.

Chipped stone artefacts.

density

The distribution of chipped stone artefacts is shown in tables 9.3 and 9.4 and in figure 9.5. Again layer I has significantly higher numbers and artefact density than layer II. If this is expressed in terms of the number of artefacts discarded per millennium (see table 9.4) layer I has 30-40 times the concentration of artefacts as the underlying layer.

In addition, the figures for artefact density understate the sharp change at the boundary of the two layers. This is because the surface of layer II is uneven and some mixing of layers inevitably occurred during the excavation of unit 8.

Unit 2 and 13 show peak densities associated with the oven.

raw material

Chalcedony and silcrete are the dominant raw materials in this assemblage with chert/jasper next in importance.

Silcrete is widely available locally. Chalcedony is present in undifferentiated Tertiary outcrops near the Allambarinja range to the northwest, and chert is available in the Chandler formation at the western end of the Rodinga range or in the Areyonga formation which outcrops 35-40 km northwest of Therreyererte.

Although a quantitative analysis has not been attempted the proportion of these raw materials appears to be fairly consistent throughout the deposit. The only change observed is the presence of several large flakes of coarse silcrete in units 8 and 9.

size

Table 9.3 shows the mean weight of chipped stone artefacts in each excavation unit. The average weight of artefacts in layer I is slightly smaller than in layer II reflecting the presence of large amounts of fine chipping debris. The presence of several larger flakes of coarse silcrete is clearly registered in the figures for units 8 and 9. Once these aspects are taken into account there is little significant difference between layers I and II in the size of artefacts.

Overleaf Figure 9.5 :Therreyererte, Pit Z90. Graph showing the distribution of chipped stone artefacts and bone, in g. per kg. of sediment; and of charcoal expressed in g. per 10kg. of sediment. Depths are in cm below surface.

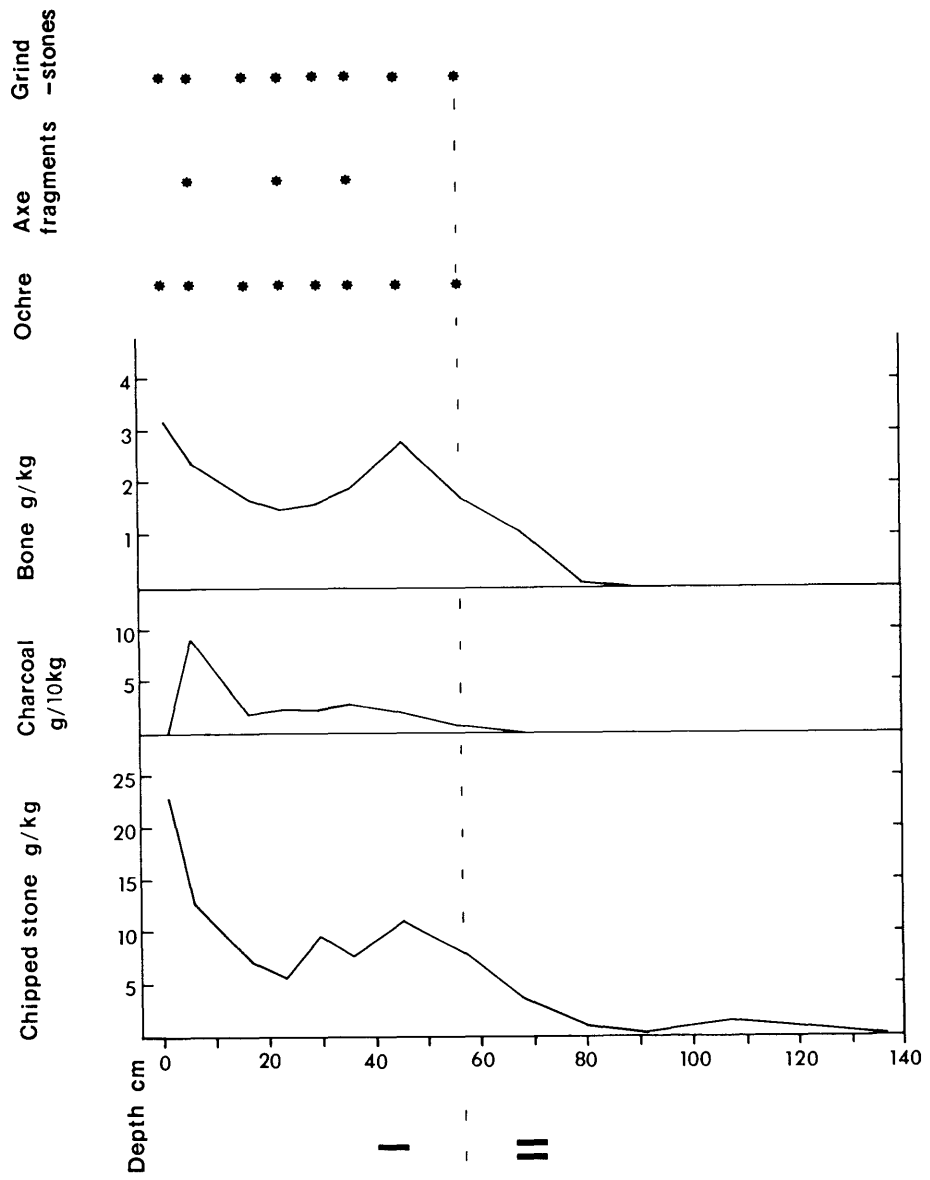


Table 9.3 : The distribution of chipped stone artefacts, grindstones, ground-edge axe fragments and ochre (6mm sieve fraction only). Depths are in cm below surface.

unit	mean depth cm	chipped stone artefacts				grindstones		axe fragments		ochre
		no.	wt. g	wt. g/kg sediment	mean wt g	no.	wt. g	no.	wt. g	wt. g
1	1	270	292.2	23.2	1.1	3	180.0			2.2
2	6	1498	1479.4	12.6	1.0	21	932.5	1	0.4	8.5
3	15	1180	969.8	7.2	0.8	4	34.2			2.9
4	23	591	477.7	5.8	1.2	7	148.4	1	0.2	1.9
5	30	833	918.5	9.6	1.1	8	1150.2			1.1
6	36	973	756.2	7.6	0.8	3	1.2	1	0.9	1.2
7	45	791	1061.5	11.1	1.3	7	203.8			1.6
8	57	405	776.2	7.7	1.9	1	67.9			0.8
9	68	147	403.5	3.8	2.7					
10	80	75	151.2	1.1	2.0					
11	92	35	49.7	0.4	1.4					
12	109	23	151.2	1.4	0.5					
13	15	141	143.2	10.8	1.0					

Table 9.4 : Comparative density of chipped stone artefacts in layer I (spits 1-7) and II (spits 8-12).

layer	volume m ³	no. artefacts.	estimates	
			no./m ³	no./1000yrs
I	0.44	6136	13,945	10,765
II	0.64	691	1,080	280

manufacture

Sixteen cores were recovered from Z90 ranging in weight from 4.4 g. to 161.2 g. These were reduced as either single platform or multiplatform cores with the exception of three specimens. The latter were flaked bifacially about a single plane ultimately producing a disc-shaped core. There do not appear to be any differences between the cores from layer I and II in size, raw material or reduction techniques.

Although no blade cores were recovered, arris-alteration or redirecting flakes were found in units 2 and 11 and several blades in units 1, 2, 6 and 8. In both layers the presence of well-formed symmetrical flakes, with narrow striking platforms and at least 2 prior-flake scars running the length of the dorsal face, provide evidence of careful core preparation and good control of knapping.

typology

Table 9.5 shows the distribution of cores, redirecting flakes and retouched artefacts. As one would expect in any Central Australian assemblage the main formal artefacts present are backed blades, tula adzes and endscrapers.

backed blades: Nine specimens were recovered from the excavation and five from the surface collection. Many appear either broken or unfinished and most are only partially backed. Only IRI/Z90/5-1 is completely backed (illustrated in fig. 3.7). The lowest of the backed blades, IRI/Z90/9-1, is an irregular flake with definite but coarse bi-directional backing along one margin (see fig. 3.7).

tula adze slugs: The tula adze is the most common formal artefact in Central Australian assemblages. The stone artefact formed the

blade of a composite adze used for working desert hardwoods. In the excavation 21 specimens were recovered. All were made of chalcedony or chert, showing the strong preference for high grade stone that is characteristic of these artefacts. All but one of the excavated adzes were worn down to slug form. The exception, IRT/Z90/2-1, is a small adze which was discarded or lost before it could register any wear.

endscrapers: Round-ended scrapers, with the retouch usually on the distal end of a long flake or blade, are a common artefact in the Intirtekwerle assemblage but are not well represented at this site. Only two specimens were recovered in the excavation.

Grindstones.

The excavation produced 54 fragments of grindstone of which 4 are identifiable as pieces of seedgrinding implements (see table 9.6). Many of the pieces that were too small to retain other diagnostic features did however exhibit use-polish. The best examples of seedgrinding implements are the two pieces of faceted muller from unit 2 and the millstone fragment from unit 5. The latter, IRT/Z90/5-2, preserves part of the milling groove and rim of a millstone. The rim has been flaked to shape the implement and the ground surface has been lightly pecked to rejuvenate it.

Table 9.3 shows that the distribution of grindstones in the deposit is largely restricted to layer I.

Ground-edge artefacts.

In Z90 there were three small flakes of basalt (see table 9.3). These are presumed to be flakes off edge-ground axes

Table 9.5 : The distribution of retouched artefacts, cores and redirecting flakes.

unit	backed blades	tula adzes	end-scrapers	cores	redirecting flakes	amorphous retouched artefacts	use-polished flakes

layer I							
1	1			1		2	
2	1	4		3	3	8	
13		1				4	
3	1	3	1			12	
4	1	4				5	
5	1	2		3		13	2
6	2	2		2		4	
7	1	4	1	3		9	1
layer II							
8		1		1		8	
9	1			2		1	
10				1		2	
11					1		
12							

Total	9	21	2	16	4	68	3

Table 9.6 : Typology of excavated grindstones.

unit	millstone	faceted muller	amorphous artefact	undiagnostic fragment	total

layer I					
1				3	3
2		2		19	21
13					
3				4	4
4				7	7
5	1	1	1	5	8
6				3	3
7				7	7
layer II					
8				1	1
9					
10					
11					
12					

Table 9.7 : Distribution of bone in Pit Z90.
Depth in cm below surface.

unit	mean depth cm.	wt. bone g./kg. sediment	wt. bone g.
1	1	3.2	40.8
2	6	2.4	279.0
3	15	1.7	224.8
4	23	1.5	120.4
5	30	1.6	153.2
6	36	1.9	192.4
7	45	2.8	264.6
8	57	0.9	90.6
9	68	0.3	31.8
10	80	0.1	20.5
11	92	-	5.6
12	109		
13	15	2.5	32.7

although only TRI/Z90/2-2 is ground. The nearest sources of igneous rocks are in the MacDonnell ranges to the north.

Ochre.

Small pieces of red ochre are present throughout layer I. Yellow ochre was present only in units 4-6.

Bone.

density

Layer I has substantial amounts of animal bone. Pieces larger than a few cm long are rare and most of the bone is very fragmented. Some fragments are partly charred or calcined. One piece, TRI/Z90/4-1, was observed with cut-marks. As table 9.7 shows the distribution of bone is most dense in layer I with peak densities in units 2 and 7. However these figures must be seen as minimum estimates of the amount of bone in layer I as the 3mm sieve fraction for this layer also contained a substantial proportion of tiny bone fragments.

species identification

Almost all the identifiable fragments are macropod teeth, of which there are 65 pieces. These are from large or middle size macropods, probably Macropus rufa or M. robustus. The few teeth from layer II are smaller than those in layer I though the significance of this is uncertain until species identifications are available.

At the base of unit 7 part of a semi-articulated dingo (Canis familiaris) skeleton was uncovered. This comprised parts of both mandibles and maxillae, cranial fragments and loose teeth. Other

skeletal elements such as ribs and vertebrae appeared to continue beyond the limits of the excavation. The position of this unexcavated material is shown on the stratigraphic drawing (fig. 9.4).

partly mineralised bone

Throughout the deposit small amounts of partly mineralised bone were found. This bone is denser than ordinary bone and has a black, presumably manganese, mottling. It is most common in layer II but is also present in units 3, 4, 6 and 7 of layer I. No teeth or other identifiable fragments were found.

This material presumably derives from the reworking of older fan deposits. Its presence serves to emphasise the fact that the geomorphic history of the large alluvial fan at Therreyererte is unknown. Given that the size of the fan seems disproportionate to its small catchment area and that the fan is now being lightly dissected, it is likely that it is a relict landform.

CHANGES IN SITE USE AT THERREYERERTE

The 1986 excavation at Therreyererte was too limited in extent to establish the depositional history of the alluvial fan. Nor was this the aim of the archaeological investigation. However, the relationship between the alluvial fan and the archaeological deposits requires some comment here. My interpretation is that the archaeological deposits, including both layer I and II, are stratified above the primary fan deposits. The artefacts in Pit Z90 show no sign of water-rolling or weathering and the stratigraphy does not show any cut and fill features. Thus there appears to have been little disturbance to the archaeological

remains during the accumulation of the deposit. This observation is supported by the lack of obvious disturbance to knapping floors and other activity areas on the surface of the site. Whilst the fine brown silty sand which forms the matrix of the deposit is likely to be alluvial in origin its accumulation at the head of the fan, where it appears to veil the bouldery fan surface, is likely to be the result of aeolian re-deposition and slope wash.

Layer I represents a dramatic change in the character of the deposit. Given the large quantities of occupation debris introduced into this layer - including flaking debitage, animal bone and charcoal - it can be considered as essentially an anthropogenic deposit.

The change from layer I to II represents a relatively sudden increase in the intensity of occupation at Therreyererte - a site that had been used for several thousand years before in a much less intensive fashion. In addition to the increased quantity of material in layer I there are also changes in the range of material with ochre, seedgrinding implements, ground-edge axes, endscrapers and use-polished flakes present for the first time. The timing of this change is bracketed by two radiocarbon dates to between 400 and 1830 yrs BP. By extrapolation I estimate that it took place about 570 yrs BP.

From the auger holes and creek sections the overall pattern observed in Pit Z90 appears to be representative of occupation at the site.

The similarity with the sequence and timing of changes at other Central Australian sites - including sites with a similar

function such as Keringke - suggests that the change at Therreyererte cannot be simply explained by postulating a lateral shift of the focus of occupation across the fan. This is also supported by the observation that the main area of occupation on the site is circumscribed by the mouth of the gorge and is presumably tied to the proximity of the rockholes.

The excavation at Therreyererte provides some historical corroboration for the tjilpa/urumbula traditions. The upper levels of layer I are certainly the product of the large ceremonial gatherings held at Therreyererte last century. The observation that identical archaeological deposits continue to the base of layer I suggests that the use of the site in this fashion began about 570 yrs BP. It is unlikely that ceremonies on the same scale were held before that date given the sparse archaeological remains in layer II. As the totemic importance of this site is tied to the tjilpa/urumbula traditions the date of 570 yrs BP may also be an acceptable estimate for the antiquity of these traditions. Certainly the tjilpa cycle of Therreyererte is unlikely to have been held elsewhere as these ceremonies are specific to particular locations. The form of these traditions also assumes a coherence which suggests that Therreyererte is an integral part of the dreaming track rather than a possible late addition to an existing myth.

The chronology of occupation at Therreyererte and Keringke - both of which are substantial open sites known to have been used during large ceremonial gatherings - shows that the change towards more intensive use of these sites took place respectively at about 570 yrs BP and 800 yrs BP. This is somewhat later than comparable changes in site use at other Central Australian sites and

indicates that in this case an intensification of ceremonial activity lagged behind rather than preceded widespread changes in population and landuse.