



Hinchinbrook Island. Aboriginal traditions record the period when this north Queensland island formed part of the mainland.

WELDON TRANNIES

CHAPTER 4

THE END OF THE BEGINNING:

6000 YEARS AGO TO 1788

D. J. MULVANEY

THE PHARAOHS began building the Egyptian pyramids about five thousand years ago and the people of western Europe, exhibiting a similar awareness of the great mysteries of life and death, began to bury their dead in huge stone tombs. Archaeological evidence indicates that the distinctive spiritual qualities of Aboriginal culture, which had developed long before 1788, underwent important changes at about the same time. The evidence points to growing regional distinctiveness, yet at the same time to continent-wide innovations in technology, increased group mobility and the spread of ceremonial gift exchange systems across immense distances. Only material evidence remains, but from it we can infer elements of the beliefs, values and rituals essential to a developing Aboriginal society. Archaeologists have termed these developments the phase of 'intensification', and have suggested they were linked to a rapid increase in population. Many factors, human and natural, must have contributed to the changes that began about 6000 years ago, among them the environment itself.



COASTAL ENVIRONMENTS

The course of pre-European Australian history was shaped by the coastline. During the previous 40 000 years, the shores fluctuated in outline. For much of this time the extensive plains formed by the emerged sea bed provided land bridges to every island now rooted on the continental shelf, including Tasmania and New Guinea.

Then, as climates warmed and ice sheets started to melt about 15 000 years ago, the ocean level steadily rose and flooded the plains. New Guinea achieved its physical independence 8000 years ago, when the breaching of Torres Strait sundered it from tropical Australia after a connection lasting over 100 000 years. (It was about this time that the great melting produced Europe's offshore islands, including Britain.) This relentless advance halted about 6000 years ago, when the sea stabilised around its present tidal range, having shrunk Australia's land area by about one-fifth. In some places it may have risen a metre or so above its present

level during the following millennium, leading to local adjustments between sea and land. Many stretches of the new permanent coastal fringe offered richer possibilities for human settlement than any previous coastline.

If inlets, estuaries and the shores of islands are included, the present coast extends for more than 20 000 kilometres, probably longer than that of the large ice age continent. While the sea level was low, most coasts were less indented, were flanked by few islands and often shelved more steeply to the ocean depths. Sandy beaches were rare. By 5000 years ago coastal waters were also warmer than ice age seas by anything from 1°C to 5°C mean average temperature. The shallow tropical seas and the warm sea current which now flowed through Torres Strait from the Pacific permitted increased evaporation by monsoonal winds. Rainfall increased across northern Australia.

Directly linked were the drowning of the Gulf of Carpentaria, the formation of Torres Strait and the rapid growth of tropical rainforest on Cape York. Dramatic increases in precipitation and humidity changed open woodland (sclerophyll) eucalypt vegetation to rainforest by 7000 years ago. Similar warming conditions also brought increased rainfall to areas under the influence of the Southern Ocean's cyclonic belt. In some areas such as the eastern seaboard, where cold currents now mingled with warmer waters, marine life probably increased in variety and abundance. As the sea level rose the Great Barrier Reef extended spectacularly, increasing its attendant teeming food chain.

The rise and stabilisation of the ocean level had other vital consequences for human settlement. Only when the sea stopped advancing were coastal habitats able to stabilise and develop as efficient sources of food, particularly through colonisation by diverse plant and animal species. The habitats that began to develop 6000 years ago contrasted with earlier environments for, during more than the previous 10 000 years the sea level had been rising, at times at the rate of 30 metres in 1000 years. This must have had drastic consequences for humans on the plains off the present northwest coast, where it constituted an annual advance of several hundred metres.

There is a complex and delicate balance between coastal sedimentary conditions and living organisms. Stable conditions increase deposition, whether of silts and muds accumulating from rivers or of storm-tossed sands and shell grit derived from the sea bed. Sand barrier systems and shallow lagoons, maintained by ocean currents and winds, or rock platforms spanning the intertidal zone, provide the best conditions for resources to expand. The accumulating sediments build out seaward, encouraging a high diversity of species within each habitat. Mangroves provide the crucial link in the food chain, gradually converting the intertidal zone into a larder. Other critical landforms for human settlement are lagoons such as the Coorong in South Australia. Such features are fringed by productive vegetated sand dunes, a habitat favoured by wildfowl; and the drinkable water impounded in back dune swamps offers attractive resources for humans. The yield of plant foods from swamp margins has been understated in archaeological research because, unlike shells and bones, plant remains seldom survive.

Shellfish were a critical source of food for coastal Aborigines. Bivalve species prolific on sandy shores, including cockles and pipis, were particularly important. Many molluscs are sensitive to fluctuations of sediment or water salinity, but a healthy shellfish community can be harvested extensively without risk of extinction under stable conditions. In the 1970s the women of an Arnhem Land community were observed to harvest shellfish on two days out of every three. They collected 31 species over the course of a year, but only a few species, chiefly bivalves, provided staple diets. Although shellfish yielded only about 10 per cent

of the food required by the community, they provided both variety and insurance against hunger during the leanest season or after the failure of hunting.

Unlike the resources abundant along today's stable coasts, the less stable and less developed littoral (beach front) environments on earlier dissolving or emerging ice age shores sustained fewer species. Such bleak ice age shores must often have lacked protective fringes of dunes or trees, while sandy beaches were fewer and mangrove stands less developed. Under conditions of lower temperatures and strong winds, many beaches must have been exposed and unproductive places. There might not have been many major campsites on now-submerged coasts, as colonists often avoided them in favour of more sheltered inland conditions.

Dated Aboriginal shell middens indicate that centuries elapsed along many coasts between the time of stable sea level and the establishment of mature and varied plant and animal communities. By 1788 much of Australia's coast was lined with middens, but they are recent. Although more than 2000 sites have been recorded along the New South Wales shore, few examples date from more than 3000 years ago. In coastal Queensland, of 48 dated sites, 42 occur within the last 2000 years. Although shell mounds in Arnhem Land are some metres deep and in Cape York over 200 000 tonnes of cockles occur in 500 mounds around Weipa, all are little more than 1000 years old.

Have older sites decayed, or did the coastal zone take a long time to establish levels of productivity that made exploitation of the beach worthwhile? There are a few older middens on rocky shorelines such as Tasmania and parts of New South Wales that do not conform to this chronology. They are in places where a steep gradient into deep water indicates that the ocean was never far away. The beach front stability allowed earlier colonisation by marine animals, which in turn encouraged Aborigines to camp close by. On the other hand, some beach fronts, such as Discovery Bay in Victoria, have eroded considerably in the last 4000 years. This may be explained by diminished offshore sand supplies, increased storminess, or even the destruction of vegetation due to Aboriginal firing and consequent destabilisation. Whatever the reasons, it is safe to conclude that along some coasts traces of human occupation have disappeared rather than accumulated. This was the case off southwestern Australia, where the rise of the sea level evidently drowned available sources of easily flaked Eocene chert that had been used widely for artefacts over thousands of years, but that ceased to be used 4500 years ago.



Two of the five hundred cockle shell mounds near Weipa, Cape York. Some stand up to 10 m high.

G. BAILEY, AUSTRALIAN INSTITUTE OF ABORIGINAL STUDIES

HUMAN ECOLOGY

Because people occupied the coastal hinterland while its littoral regenerated, their presence may have affected the pattern of regrowth near the coasts. If Aborigines had applied their local knowledge to manipulate plant growth, the coastal fringe that appeared virgin to European eyes might have been subject to human interference throughout its regeneration. On Cape York, for example, Aborigines were observed in the nineteenth century to replace the tops of yams in suitable habitats. While clearing other areas with fire, they protected from the flames certain favoured shade trees, fruit shrubs or places with ceremonial significance. In modern Aboriginal society, areas that are not tended or managed by burning are considered to be desolate and wild places. Such controls were used widely in the past, judging from the microscopic charcoal content found in swamp deposits in southeastern regions. Some botanists interpret the unusually high charcoal frequency as evidence of intentional firing. If the flora was managed from the time of the first appearance of economically important plants on the dunes, such practices over a few millennia, might control their genetic selection and favour the

spread of particular species. As burning promotes the growth of bracken fern (*Pteridium esculentum*), the rhizomes and fronds of which were important food sources, Aboriginal firing might have helped it dominate in sandy areas.

On swamps and lagoons, human harvesting had significant impact on bulbs and tubers. In particular, the habitats of species of *Typha* (rushes) and *Triglochin* (water ribbons) were enriched through firing, thinned out through collecting and aerated by digging. An improved yield resulted, and at the same time stretches of economically productive open water were kept from being overgrown.

Aborigines not only exploited coastal conditions but sometimes became seafarers. Once the first colonists reached these shores, there might have been little incentive for marine travel until after the sea stabilised. Ice age coastal waters were windy and exposed, while any portion of the landmass could be reached by walking across dry land. When the ocean's advance halted about 6000 years ago, maritime incentives and opportunities arose. Many offshore islands invited visits for birds and turtles; warm, shallow seas harboured dugong or schools of fish and the coast was segmented by deep but narrow drowned river valleys that needed to be crossed. Regional differences in the distribution and forms of water craft may represent late, independent attempts to meet local requirements.

Most offshore islands were not visited until well after the sea level had stabilised. Tasmanians reached Hunter Island off the northwest coast 2500 years ago and frequented the Maatsuyker Islands thirteen kilometres off the stormy southwest coast only during recent centuries. Off Wilson's Promontory, the southern tip of Victoria, the Glennies were visited during the last 2000 years. There is a similar pattern for New South Wales offshore islands, while the islands off Princess Charlotte Bay have been used for 2500 years, and all available evidence suggests that the islands in Torres Strait were relatively recently occupied. It may be no coincidence that along open, rough or rocky coasts, evidence of water craft is lacking. Such areas are the Great Australian Bight and northeastern Tasmania. No such environmental explanation is possible in some areas, however, and for these we must refer to cultural preferences and dislikes. An example is the failure of southwestern Aborigines to take to the sea in King George Sound or the Swan estuary. It is equally surprising that there appears to have been little or no contact with Rottneest Island or the Recherche Archipelago.

The stabilisation of the sea level had other far-reaching consequences. Landscapes familiar today have been formed in the last 6000 years, with significant implications for human settlement. The great monsoonal wetlands of Arnhem Land did not exist then. Seen from the air today, this region and western Cape York show immense patterns of successive lines of beach ridges, while rivers meander through mudflats to the silt-stained sea. Such plains are continually extending out to the sea, thereby providing some of the richest habitats in Aboriginal Australia. Their formation depends upon river sediments or storm-tossed sands, progressively adding exploitable territory for human activities. The parallel shelly ridges (*cheniers*) indicate the approximate position of past beaches and their associated mangrove fringes. The Arnhem Land *chenier* closest to the sea accumulated 1000 years ago, while the fifth ridge inland dates from 4500 years ago. The variety and richness of food resources available in these wetlands by 1788 directly resulted from continuous change since the sea level stabilised.

Similar linear ridges accumulated in the last 4700 years on Cape York's Princess Charlotte Bay, the earliest middens sitting where the beach was then. Over 1000 years passed before that habitat was frequented for food. Here, as in comparable situations at Weipa and in Arnhem Land, a single shellfish species, cockle (*Anadara granosa*), is piled metres deep on campsites. Only 1000 years in the making, such



A goose-egg gatherer in the Arafura Swamp, Arnhem Land: an emerging environment from 5000 years ago. Photograph by D.F. Thomson.

COURTESY MRS D.M. THOMSON

refuse heaps indicate the rich food resources available for human consumption in this recently consolidated environment.

In the temperate waters of the south coast, resource-rich zones also came into production during the past 5000 years. The lagoons and barrier sand systems of Gippsland and the Coorong, and the sandbars, lakes and sand islands along the eastern seaboard developed rapidly, largely because of offshore currents. The importance of such new landforms for human subsistence may be gauged from consideration of the Coorong and the Alligator Rivers on opposite sides of the continent. Both supported large Aboriginal populations. There were 273 bird species in Arnhem Land and over 150 in the Coorong, while some species of migratory birds numbered tens of thousands of individuals in both localities. In addition to their flesh, unlimited eggs provided a seasonal staple. The immense swamplands of Arnhem Land were also rich in fish, reptiles and edible plants, while the 3000 square kilometres of the shallow Coorong supported diverse and renewable fauna and flora.

PEOPLE AND LANDSCAPE



Excavations in 1963 at Fromm's Landing rock shelter on the Murray River, SA, uncovered successive layers of human occupation extending back for some forty centuries.

D.J. MULVANEY



Detail of flood deposited sand, about 2 m down the trench wall. The water has eroded the small bluff (left). Dated by charcoal collected above and below the clean yellow sand, this flood occurred about 3200 years ago and is the highest recorded Murray flood.

D.J. MULVANEY

This coastal transformation was matched by changes inland, but the few places for which climatic reconstructions have been made suggest that there were marked regional variations. Generally, precipitation decreased in the last 5000 years, so that lakes which had not already dried after the ice age shrank in area. Lake Frome in South Australia was very extensive more than 4000 years ago, but then a marked decline in summer rainfall led to its present arid condition. The levels of Lake Keilambete in Victoria's western district oscillated, but only when the lake was low. Yet when Keilambete was at its lowest 3000 years ago, there was a period of relatively high water levels in Lake George, New South Wales, and the highest recorded flood level on the lower Murray River. Whereas Victoria's mallee country was evidently uninhabited during the wetter period lasting from 12 000 to 7000 years ago, it attracted settlement in the last 5000 years despite increasing aridity. However, mallee conditions then improved for a time and the period from 2500 to 1000 years ago was somewhat wetter than the present. The high plains of the mountainous southeast were also occupied more widely, probably reflecting the warmer conditions. Regional variations and gaps in the evidence make environmental interpretation difficult, but clearly the general climatic trend during these 5000 years was towards present conditions. Life in the interior must therefore have demanded adaptive economic systems similar to those prevailing in 1788, so it is possible to use evidence from 1788 to reconstruct conditions of earlier times.

By 1788 Aborigines everywhere used fire to manage their environments. Fire promoted fresh growth for grazing animals in the tropical dry season, maintained open tracks through Tasmanian rain forests, and ensured fertile conditions for *Solanum* (bush tomato) to flourish on desert dunes after rains. Yet it is wrong to credit Aborigines with an idealistic policy of total conservation, for their actions almost certainly caused animal populations to decline, in some cases to the point of extinction, and must also have affected plant communities.

Across southern Australia the remains of the Tasmanian tiger (*Thylacinus cynocephalus*) occur on archaeological sites dating from around 3000 years ago, while there are many paintings of the animal in the Arnhem Land escarpment, as well as engravings on Pilbara rock surfaces. The animal was widely distributed, as was the Tasmanian devil (*Sarcophilus harrisii*), whose bones were excavated in layers dating from 3000 years ago in Cape York, Arnhem Land and the lower Murray River. Six thousand years ago a man was buried at Lake Nitchie, north of Broken Hill, with a necklace of Devil teeth taken from at least 47 animals. Was their extinction the work of Aboriginal hunters?

A superior competitor, the dingo, probably had more to do with the disappearance of these carnivorous species. This dog was introduced from Asia between 4000 and 3000 years ago. Scholars have thought that its closest affiliations were with dogs in the Indus civilisation of bronze age India, but a recent study has suggested that it was related to the Thai dog, which may have been distributed earlier throughout southeast Asia. It is not known how it reached Australia, but its bones occur on southern archaeological sites dating back 3000 years. As native carnivores disappeared on the mainland around that time, yet survived in Tasmania—an island dingoes never reached—some causal relationship seems likely.

Despite the impact of people and their dogs, Aboriginal Australia was never the harsh land of European perception. The ecological havoc following the introduction by Europeans of domesticated animal species and rabbits was far more dramatic than anything done by the dingo. In Aboriginal economic terms, the productivity of Cooper Creek and the Birdsville Track was high until cattle



Left.
One of the many paintings of Tasmanian tigers (thylacines) in Arnhem Land. This one is on rugged Mt Brockman.

G. CHALOUPIKA

Right.
There are many engravings of thylacines on boulders in the Pilbara region. This animal is near Dampier.

R. EDWARDS



An Arnhem Land escarpment painting identified as a Tasmanian devil; a 3000-year-old devil jaw also has been excavated there.

D. LEWIS

produced a desert. The most drastic change resulted from the ravages of Timorese buffalo released on the Cobourg Peninsula, northeast of Darwin, in the 1820s.

INVENTIONS AND INNOVATIONS

The last 4000 years or so witnessed many technological innovations. It remains a matter for debate whether new concepts were introduced into Australia from Asia (the diffusionist model), or whether the inventions were local in origin (independent invention). The first explanation has been the traditional one, but present opinion favours Aboriginal initiative. It must not be assumed, however, that Australia was completely isolated from exterior influences. Outside contacts did occur, at least over some centuries before 1788. People from Papua influenced ceremonial life, art forms and water craft in Queensland; fleets of fishing vessels from Macassar coasted around Arnhem Land, while others fished the Kimberley coast from elsewhere in eastern Indonesia. Earlier contacts are also probable, although only the arrival of the dingo firmly documents them.

From whatever source, innovations introduced between 5000 and 4000 years ago had profound effects on Aboriginal society. Archaeologists explore social changes in such societies through changes in the artefacts people need. Stone tools usually provide the first clues. After 5000 years ago, Aboriginal craftsmen



One of 178 pierced Tasmanian devil teeth forming a necklace buried with a man at Lake Nitchie, NSW, over 6000 years ago. The tooth is 3 cm long.

AUSTRALIAN MUSEUM

A Bondi point, 4 cm long, excavated at Graman shelter, New England, showing traces of resin across the backing. This is possibly a spear barb. Photographed by R. Dowhy.



A taap saw knife from the Albany region, WA, 28.4 cm long. These may be stone chips hafted in the manner of geometric microliths. Photographed by R. Dowhy.

MUSEUM OF AUSTRALIA

improved on earlier methods of flaking stone. They carefully prepared stone cores and used them to strike blade tools thinner and narrower than those used previously. Unlike the producers of earlier stone tools, who relied primarily on any available local stone sources, the makers now selected more fine-grained rocks that fractured evenly and produced sharp cutting edges. Good raw materials such as chert, chalcedony, silcrete and quartzite were carried considerable distances from quarries. Some raw material was treated by heating before flaking, in order to achieve better control and ease of fracture. This technique had been known previously, but its application to finer grained rocks may have been more systematic during the last few millennia.

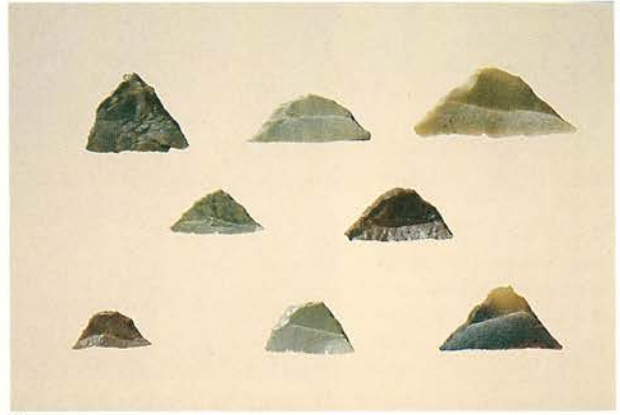
While there was considerable regional variety in tool form, two basic principles of design gained acceptance. Tools became smaller, more standardised and specialised, and they were hafted (or bound) to handles or shafts with resin used as cement. One version of these small blades was blunted (or backed) by chipping across one edge. The most common forms are asymmetrical penknife-shaped backed blades, exemplified by the Bondi point, named after the locality where it was first recognised. Another form consists of tiny backed blades, distinctly geometric in shape, including triangles, crescents and trapezes. These tools are all termed 'geometric microliths' (small stones). Both asymmetrical points and microliths occur abundantly and in many forms in sites across southern Australia, although they are rare in tropical regions. They are very similar to tools found in Africa, India, Sri Lanka and Sulawesi in eastern Indonesia. No connection has been demonstrated, although the African and Indian specimens are the oldest, while the Sulawesi and Australian examples are both less than 5000 years old.

Another major tool type consists of symmetrical points, presumably spear tips. Most commonly these are delicately trimmed on one face (unifacial flaking), and the best known unifacial point, the *pirri*, is common in South Australia. In the Kimberleys, small flakes were removed from both faces (bifacial) while the edges were serrated. These attractive Kimberley points were manufactured by a technique called pressure flaking. No dated unifacial points are older than about 5000 years, while bifacial points are more recent. Point technology continued in the north until the present, although *pirri* production had ceased in the south and centre by 3000 years ago.

There is some evidence that resin was used to bind, or haft, stone components to handles or grips during the last glacial period, at sites as widely separated as Devil's Lair (Western Australia), Seton on Kangaroo Island (South Australia), Puntutjarpa (Western Australia) and Oenpelli (Northern Territory). Its comprehensive application began less than 5000 years ago, when tools were developed to exploit its advantages. The use of resin reflects a knowledge of the practical chemistry and treatment of plant resources and the growth of a system for exchanging it as a commodity of economic value. A few Bondi points and geometric microliths have been excavated, with traces of resin adhering. The cement covers the blunted back, indicating that the backed edge was intentionally embedded in the hafting matrix, presumably to assist the grip. These components may have been barbs or tips in spears, or teeth in saw knives. Their production evidently ceased a few centuries before 1788, and no authenticated hafted specimens are known. But the 'death spear' of the southeast and the same spear type and the *taap* saw knife of the southwest, provide helpful design comparisons (see chapter 6). The difference lies in their stone components. Unlike the systematically backed tools, these recent implements are made simply of untrimmed pieces, neither blunted nor shaped. Even so, they may have proven as efficient as the earlier and more attractive specimens.



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Stone headed spears were also less widespread in 1788 than they had been more than 2000 years earlier. Fashion may possibly have outrun utility, because many excavated uniface points are broken (whether from use or in manufacture is uncertain), while the attractive Kimberley bifacial points might have snapped on the shock of first impact if they missed their target. It is questionable, therefore, whether such specialised stone components were sufficiently superior to wooden spears or spears with carved barbs to justify the labour of making them. Perhaps they were imported as cultural symbols with different forms reflecting regional individuality. Points are distributed over a wide north-south swathe of the continent from Adelaide to Arnhem Land and the Kimberleys, with definite regional variations of form and finish. Similarly, asymmetrical backed blade forms occur particularly in the southeastern and southwestern coastal areas, while geometric variants are more common inland.

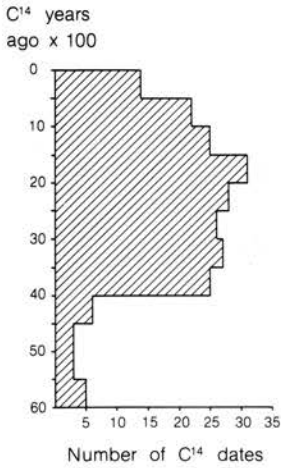
The enormous number of points or backed blades on sites dating between 4000–1000 years ago is evidence of a popularity that declined during recent centuries. Of 255 backed blades collected from 89 sites and dated by radiocarbon analysis, only 11 are older than 4000 years, and 35 are less than 1000 years old. The great bulk of the specimens came from the phase stretching from 4000 to 1000 years ago, and some of the apparently earlier specimens may actually have worked their way down to misleading depths in loose sandy deposits. Because all these carefully trimmed small artefacts contrast markedly with the larger, coarser-grained and heavier tools normally characteristic of the core tool and scraper tradition, this phase has been termed the small tool tradition. Perhaps the tools represented useful gifts for meeting ceremonial obligations, just as their hafting

1. Backed blades of Bondi point form, from Murramarang, NSW. The longest is 4.3 cm. Photographed by R. Dowhy. MUSEUM OF AUSTRALIA

2. Geometric microliths (small stones) from Roxby Downs, SA. The top left specimen measures 3.4 cm x 1.5 cm; bottom right 1.6 cm x 0.8 cm. Photographed by R. Dowhy. MUSEUM OF AUSTRALIA

3. Unifacial pirri points from Roxby Downs, SA. Size range 3 cm x 1.1 cm to 4.6 cm x 1.5 cm. Photographed by R. Dowhy. MUSEUM OF AUSTRALIA

4. Kimberley points, trimmed on both faces with the edges serrated. Length of longest points 6 cm. Photographed by R. Dowhy. MUSEUM OF AUSTRALIA



Histogram of 225 radiocarbon dates for the occurrence of backed blades. There are four dates from Walkunder Arch Cave, North Queensland, for backed tools from 11 000–13 000 years ago, not included in this figure.
J. GOODRUM



Tula adze (chisel) flakes with stepped working edge resulting from resharpening after chiselling dense wood, Mulka, SA. Top left 4.5 cm wide. Photographed by R. Dowhy. MUSEUM OF AUSTRALIA

provided a means of using another valuable exchange commodity, plant resin. Despite the vogue for such small components, people continued to make and use larger core and flake tools similar to those employed during the earlier tradition.

While backed blades evidently went out of production a few centuries ago, some other composite ‘small stone’ tools persisted even beyond 1788. This suggests that they had some technological advantage. The most important such tool is the *tula*, a stout woodworking chisel, commonly and misleadingly termed an adze. It gouged, planed and incised wood efficiently, including the tough, dense hardwoods of the arid country. The stone working tip is easily recognisable on archaeological sites, because the flake has an unusually convex, obtuse-angled bulbar face and the stone is fractured (step flaked) by frequent resharpening of the working edge. This artefact is normally worn down to a distinctive shape through use and resharpening. It must be credited as an Aboriginal invention because it lacks overseas parallels. While a few excavated *tulas* may be older than 5000 years, archaeological evidence for their common use and wide distribution occurs less than 4000 years ago.

The efficiency of a *tula* as a chisel, even when the stone tip is resharpened to a tiny remnant edge, depends upon the quality of the spinifex resin used to haft it to its slightly curved handle. Certain species of *Triodia*, an evergreen perennial grass popularly termed spinifex or more appropriately porcupine grass, are resinous or gummy on the surface of the leaf blades. *Triodia pungens* is the most important of these resinous species. Although its collection and preparation is an arduous task—eight cubic metres of spinifex produces only about six hundred grams of resin—its quality surpasses alternative resins. When the resin is mixed with plant or fur fibres for hafting it gains strength and holds the stone firmly to the handle, allowing vigorous strokes with the *tula*.

Resinous species of *Triodia* are plants of arid regions. They occur in an area where annual rainfall measures only 25 to 50 centimetres and so coincide with the useful timbers of arid lands, many of which are dense woods such as mulga (*Acacia aneura*), gidgee (*Acacia homalophylla*) and desert oak (*Casuarina decasneana*). Not surprisingly, *tula* distribution is largely confined to this area. But because *Triodia* resin has such excellent properties and can be easily carried in the form of cakes, it has penetrated beyond the boundaries of spinifex distribution as a valued product in ceremonial exchange.

People beyond the range of *Triodia* exchange used other cements, none as efficient as *Triodia*. These ranged from beeswax and a sticky substance in the roots of the small arid region shrub *Lechenaultia divaricata* through gum exuded from the trunks of *Grevillea striata* (beefwood), *Acacia latifolia* and *A. pycnantha* (golden wattle) to *Xanthorrhoea* (grass tree). *Xanthorrhoea* resin is easy to collect and is widespread, especially in southern heath regions. But its adhesive qualities cannot match those of *Triodia pungens*, which may explain why a chisel tool in the south worked softer woods. This woodworking tool is called *elouera*; its stone component is shaped like an orange segment, with blunting retouch on the back opposite the working edge. This edge frequently became glossy with use, polished by smoothing fibrous light wood or bark; other uses produced small fractures. Archaeological specimens of *elouera* have been found in many parts of Australia, dating from the past 3000 years. To judge from sketches by the first diarists, a variant seems to have been used at Port Jackson in 1788.

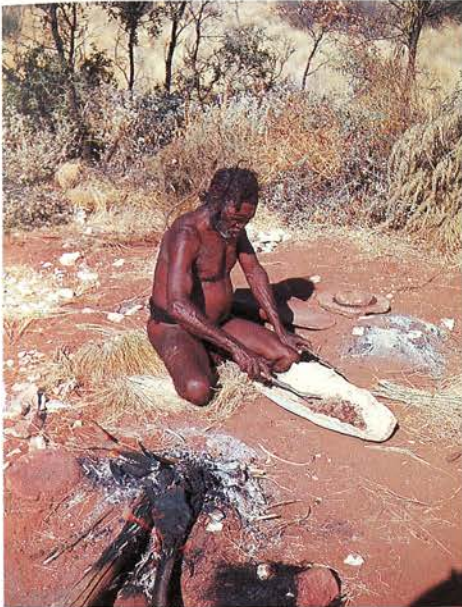
Another important resin-hafted stone tool was the hatchet or tomahawk. Although these edge-ground stone blades are now commonly termed axes, Aborigines used them with the one-handed grasp of a hatchet. Excavated specimens in Arnhem Land are more than 20 000 years old, some bearing a pecked encircling groove, presumably to add strength to the handle with binding. Some



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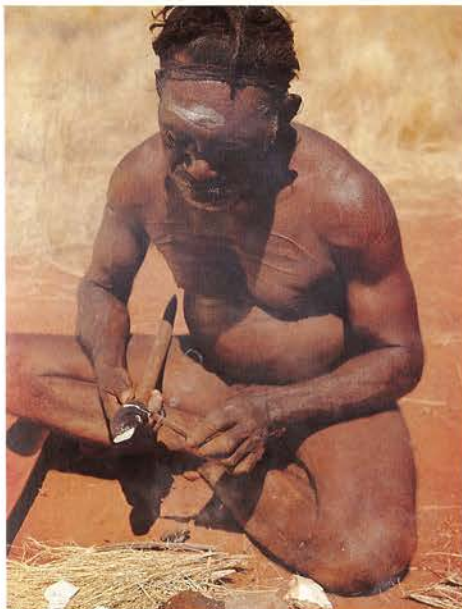
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Stages in the production and use of *Triodia pungens*, *spinifex* cement, Yuendumu, NT.

R. EDWARDS

1. *Triodia* grass has been collected into a pile on cleared ground and beaten to remove the globules of gum that exude from the joints of the spiny grass.

2. The material is collected in a wooden dish after the crushed grass has been moved aside.

3. The yield is heated and stirred with a hot stick on a stone slab. The substance is thermoplastic, softening when heated and becoming hard when cold.

4. The melted resin is ready for use by the man's right hand, as are some stone flakes. He has fashioned a stout, curved chisel handle and is warming it.

5. Firm pressure on the cooler plastic cement adjusts the stone to the correct angle.

6. Applying viscous resin to the handle and stone tip.

A tula adze found near Lake Eyre, SA, length 39.4 cm. Photographed by R. Dowhy. MUSEUM OF AUSTRALIA



The distribution of resinous species of *Triodia* (*T. pungens* and *T. mitchelli*) (hatched) and the archaeological occurrence of tula adze flakes (coloured) beyond that area, indicating exchange of parcels of resin.

J. GOODRUM



A series of elouera, the stone working edge of a tool for trimming fibrous plants or light wood from Murramarang, NSW. Length of top right piece is 4.2 cm. Photographed by R. Dowhy. MUSEUM OF AUSTRALIA

examples also occur in the Kimberleys and there are specimens in Victoria, frequently deeply weathered and with one or more grooves. The presumption of great age for hammer-dressed grooving is supported by the fact that no grooved specimens are recorded as being manufactured around 1788. Despite these hints of greater antiquity, there is no evidence that hatchet grinding technology occurred more than 5000 years ago south of Arnhem Land, although hatchet use was ubiquitous in 1788 and numerous basalt, diabase and diorite quarries were exploited. An exception was the southwest, where the *kodj* hatchet/hammer substituted. This tool, carried by all males, consisted of two sizeable underground stones set in a mass of *Xanthorrhoea* resin.

Although the hatchet and the *kodj* cannot be described as 'small stone tools' they are found in association with the specialised small tool types described above. The first excavated and dated site providing conclusive evidence of this association was Kenniff Cave in southern Queensland. In layers laid down during the last 5000 years archaeologists recovered ground hatchet fragments, *pirri* and other unifacial points, geometric microliths and asymmetrical backed points, *eloueras*, tula adze flakes and massive backed blades, known regionally as Juan knives, of which hafted specimens with handles of resin and animal skin have been collected in Queensland since 1788. Possibly, therefore, the hallmark of the small tool tradition was not the actual size or type of stone shape or trimming, but rather the hafting technology.

Other raw materials may have been hafted in remote antiquity, but the evidence from recent centuries is clearer. By 1788, for example, there were many adaptations of pronged spears, tipped or barbed with bone points on the eastern and Arnhem Land coasts or with stingray spines on Cape York. Turtles and dugong were taken with harpoons in Torres Strait. Fish hooks made of shell were used along the eastern seaboard during the last millennium, usually with a notch for the line attachment.

Another common hafted implement type was the possum or wallaby tooth engraver. This implement took two forms. The first had a single incisor set in resin on a handle. The second, more common, used the complete lower jaw. Leverage for the almost horizontal protruding incisor was provided by the marsupial jaw, frequently with a grip fashioned from a mass of resin. Such tools were common to many regions in 1788, although only an Arnhem Land deposit and Devil's Lair in Western Australia have actually produced earlier specimens, identifiable from the use-damage on the incisor. Early European observers probably expected Aborigines to use stone or wooden artefacts. They seldom commented upon or described the common adaptations of animals' jaws, teeth and shells for cutting, engraving or planing.

MANIPULATING FOOD RESOURCES

In assessing Aboriginal society, Europeans tend to assume that hunting and collecting are less 'progressive' than agricultural activities, that farming and grazing always represent better adaptations to conditions. Such preconceptions overlook the failure of many farming enterprises in tropical regions, even with the use of modern technology, and the fact that over most of the arid central regions Aborigines in the past outnumbered Europeans supported today by pastoral industry. They also omit the debit balance, the environmental ravages of farming caused by cultivation of marginal soils that later eroded, or overgrazing and soil compression by introduced animal herds. It is a short step from asking why Aborigines had not become farmers to the answer that they lacked both the mental ability and the commitment to work. The most influential anthropologist of the

last generation, A.P. Elkin, believed that Aboriginal economy was 'parasitical': 'the Aborigines are absolutely dependent on what nature produces without any practical assistance on their part'.

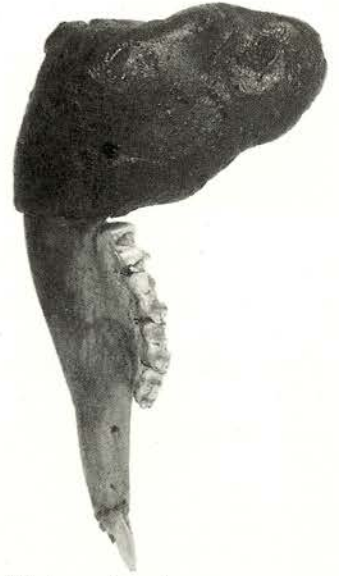
Yet evidence to refute such notions has always been available to those who watched traditional Aboriginal food-producing activities or read explorers' journals with critical understanding. The blinkers of prejudice and preconception are so effective that Aboriginal society has been condemned for being unproductive and aimlessly nomadic. Only recently have scholarly evaluations redressed the balance. Aboriginal people in 1788 actually exploited the resources available with great efficiency and ate a better-balanced diet than most European town- or Asian country-dwellers of the time. Their way of living also demanded less labour, allowing them more time for creative activities. Aboriginal society at the time when Europeans disrupted and denigrated it was based on a different understanding of management and production. In European societies, individuals tend to specialise in some economic, political or cultural activity. In Aboriginal society managers of ceremonies, initiates, musicians and dancers were the same people who carried out routine daily tasks or participated in political decision-making.

If we discard traditional prejudices about the superiority of European societies, we can see that technological and economic changes in Aboriginal society over the past two or three thousand years went far beyond innovations in artefact production. We know this from careful reassessment of the historical records, from field studies of traditionally orientated communities and from archaeological research. Just when these developments began and in what sequence is uncertain. They varied regionally and probably also occurred in Tasmania, despite common assumptions that the Tasmanians were backward.

Regional patterns are described in later chapters, but a general perspective is sufficient to confirm the far-reaching effect of technological and economic changes in Aboriginal social life. Many more field surveys, excavations and dates are required before the place and date of any innovation or commodity is fixed in its continental context, but enough is known for scholars to speak of an 'intensification' of economic activity and technical skill that effectively increased the productivity of Aboriginal society. Present evidence suggests that major changes took place in the last one or two thousand years.

Archaeologists must be careful to look hard for signs of ancient occupation that can easily be erased by decay, dispersal or burial, and they cannot expect to find coastal sites older than the time when the sea level stopped rising. But it does appear significant that the recorded occupation sites dating from recent millennia outnumber older sites, and that many contain evidence that appears to register increased intensity of use. In southeastern regions the number of occupied sites evidently increased. In inland southern New South Wales, for example, only one site out of seven is more than 4000 years old; on the Hawkesbury River, only three of sixteen sites investigated around Mangrove Creek were occupied more than 4500 years ago; of a further sixteen New South Wales southern coastal sites, ten were first occupied 5000 years ago, while earlier occupation left only meagre traces; nineteen dated places in southwestern Victoria indicate that sixteen of them were first inhabited after 3500 years ago. This evidence suggests that there were more people after about 5000 years ago than there had been previously.

Archaeologists also believe that there are extensive regions where little evidence exists for human settlement during the previous 30 000 years, but they were exploited systematically during the last 5000 years. These include parts of the semi-arid zone, including the Victorian mallee, the northern tablelands and the southeastern highlands of New South Wales. Such occupation has also been



The lower jaw of a wallaby, with a resin grip. The incisor is the working edge. Collected in central Australia around 1900.

MUSEUM OF AUSTRALIA

Green grass in the middle of the tropical dry season in Arnhem Land. The grass was fired early in the dry, burning a patch of the long, rank grass and so promoting fresh growth that attracts and localises marsupials.

DJ. MULVANEY



Detail of the pineapple-sized fruit that was a staple carbohydrate source, despite its toxic and carcinogenic properties.

DJ. MULVANEY



Macrozamia communis, the cycad that grows along the eastern coast of Australia.

J.P. WHITE

detected in Tasmania's northwestern and upper Mersey areas. Clearly, strategies had developed for exploiting a very wide range of habitats, with swamplands prominent, but whether these improved management practices were simply adaptations to conditions as familiarity with a region increased rather than a systematic 'intensification' of technical competence is a matter for debate.

Whatever the extent of previous settlement, there is evidence that the later pattern involved the control of particular resources in a complex and premeditated manner, frequently involving communal labour for a delayed economic return, possibly a year or more later. Varied but universal application of fire as a traditional land management technique involved such a labour investment. Firing was not only immediately useful in food gathering but also manipulated longer-term environmental changes in ways that enabled people to predict the availability of specific resources (see chapter 11). Burning of dry and rank tropical grasses promoted the later growth of green herbage, attracting marsupials; firing a cycad grove ensured a bountiful harvest months later; edible bracken fern rhizomes and fronds became more plentiful after fire. The analysis of pollen cores taken from sites across southern Australia indicates that Aboriginal firing practices had a long history before Europeans described them. Aboriginal activities also stimulated other changes, which may have been unintentional but which helped promote higher yields of food. For example, a staple food in Victoria was the *murmong* or yam daisy (*Microseris scapigera*) which grew widely until extinguished by the introduction of sheep. Its radish-like roots were nutritious and easily gathered. The effect of digging the soil and separating the clumped tubers, some of which remained to grow again, promoted their growth and spread.

The use of cycads as a carbohydrate source represented a remarkable combination of deliberate firing months before and then leaching the toxic content from the nuts before they were edible. In the tropics, *Cycas media* was harvested, while in eastern Australia *Macrozamia* species provided the food source. Cycad kernels are rich in starch, but they must first be leached, pounded and baked to remove the highly toxic poisons. As this starch can be stored for several weeks, it is an ideal





Woman in northeast Arnhem Land pulverising cycads. Note the flour produced, the string bags and bark sheet. Except for the pounding stones, little would survive for archaeologists to excavate. Photographed by D.F. Thomson.

COURTESY MRS D.M. THOMSON

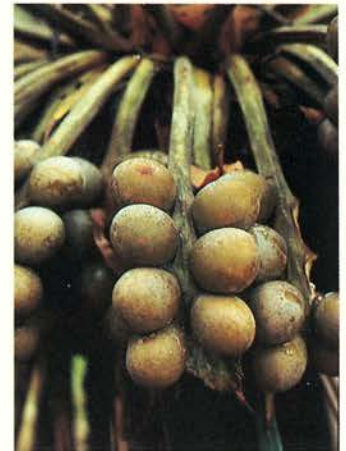
Cycas media, a comparable food staple in the tropics.

NATIONAL BOTANIC GARDENS AND M. FAGG



staple food for advance preparation before assemblies. Fire may assist cropping of cycads, because burning considerably increases productivity and ensures that fruiting occurs simultaneously on all plants. Because it was so reliably productive, this staple has been termed a 'communion food'. The discovery of husks on many prehistoric sites testifies to its importance. In a Western Australian excavation, nuts were found in a small pit in sand some 13 000 years old. Such burial is a known method of detoxification, but when the recipe was perfected is unknown. Cycad kernels are also detoxified by natural weathering and their early use may have relied on such a process.

Many monuments survive to the complex management of such predictable sources. The extensive drainage channels dug in western Victorian swamps to help catch eels are an example neglected by earlier observers (see chapter 15). In the same region, the stone fish traps at Lake Condah were so constructed that four different series operated, depending upon the level of the lake. There are comparable systems of stone fish traps along tidal shores. An intricate series on Hinchinbrook Island (Queensland) enclosed over 21 000 square metres and has been termed an 'automatic seafood retrieval system'. In 1688 William Dampier saw a major trap operating in the Kimberleys, and surviving examples near his landing place consist of curved walls made from thousands of small stones. While such traps functioned at every tidal change, those in the Darling River at Brewarrina provided rich fish yields when the river level fell after periodic flooding. On the





Some intricate fish traps would leave little archaeological trace. These photographs taken near Cape Stewart, Arnhem Land, by Donald Thomson in 1936, show Aborigines using weirs and woven baskets. The communal fish drive using hinged nets took place on the Liverpool River.

COURTESY MRS D.M. THOMSON

same river system, bird netting was a communal enterprise. Nets over ninety metres long and several metres deep were stretched across the river, and group drives netted up to one hundred ducks. A significant investment of group labour was essential for building and maintaining traps, making and mending nets from plant fibres or digging eel channels.

In these and many other cases, the application of technology assured profitable returns at predictable times, and enabled large assemblies of people to gather in confidence. On such occasions Aborigines adapted detailed ecological wisdom to the task of feeding an assembled multitude. The tools were simple, but the location of these gatherings and the composition of the participants were determined by social controls and the rule both of lore and kinship law. The simplest systems depended upon an assured annual seasonal surplus, such as swan eggs at Victorian lakes and magpie geese in the Arnhem Land wetlands. Possibly the most specialised harvest festival was the summer move to the mountains for Bogong moths (see chapter 14), but more people met to eat the nutritious bunya pine (*Araucaria bidwillii*) in southern Queensland, where several hundred participants gathered for summer ceremonies from an area covering 85 000 square kilometres.

Even arid regions produced occasional bounty, enabling hundreds to assemble when conditions assured food supplies (see chapter 11). Such productivity occurred intermittently, after rain had promoted plant growth and grass seeds had ripened. European explorers noted the extensive areas of native millet (*Panicum*), harvested, stacked for drying or winnowed. Along Cooper Creek one of them estimated 'fields of 1000 acres'. Expectation of an assured crop therefore enabled controlled movement into areas judged inhospitable by Europeans. In 1788 Australia pulsated with these alternating dispersals and concentrations of people, the rhythm attuned to the economic potential of the areas concerned as well as the spiritual significance of mythologically sanctioned ceremonial sites.

Opposite bottom. Seasonal plant foods in Cape York. This Wik-Munkan woman, in the Archer River area, displays characteristic wet season utensils and foods. Dry season artefacts and food sources differed considerably. Photographed by D.F. Thomson, 1933.

COURTESY MRS D.M. THOMSON



EXCHANGING PRODUCTS, TRADITIONS AND PEOPLE

Ceremonial exchange networks were universal across Australia by 1788. To establish the date of their origin is one of the most challenging problems facing archaeologists. They provided links between the regionally adaptive economic and social systems that were inevitable in an environmentally diverse, huge continent inhabited by pedestrians, where distance was measured by the time between waterholes. Regionalism was reflected by the spoken word: in 1788 there were over two hundred distinct languages spoken, and four times this number if dialects are counted.

The material goods of a people necessarily reflect an interaction between the resources available and their requirements for food, shelter, defence and leisure. Most Aboriginal possessions were perishable, so it is difficult to estimate when the specialised regional adaptations existing in 1788 actually developed. The boomerangs and barbed wooden spears found at Wyrie Swamp, South Australia, are at most 9000 years old, much later than the isolation of Tasmania by sea. Some argue that because Tasmanian culture in 1788 functioned without boomerangs, shields, barbed spears or spearthrowers, hafted tools and many other mainland items, these tools and weapons all originated after Bass Strait was formed. An alternative explanation is that the original Tasmanians abandoned these items because local conditions or different raw materials made them less useful. The small tool tradition of backed blades, geometric microliths and points is an indication that some specialisation certainly developed in recent millennia.

Whether improvements in the means of food production were a result of population increase or a response to it is a matter for debate. Either way, these dynamic changes facilitated contact between widely separated people, and exchanges of both ideas and objects. One aspect of such contact was the ceremonial exchange of gifts on a large scale. The obligation to give was balanced by the right ultimately to be repaid. Were such reciprocal activities the simple or spontaneous generosity of kith or kin? By reducing the isolation of individual groups, did they combine social insurance with resource conservation in a land where drought or other environmental hazards could destroy the resources of a territory? Were they adaptive reactions to ensure an equitable distribution of valued commodities across a landscape where basic supplies such as stone, suitable wood and pigment were often rare or localised? Whatever the cause, ceremonial gatherings were the social cement, the spiritual focus and the mass entertainment of life in 1788.

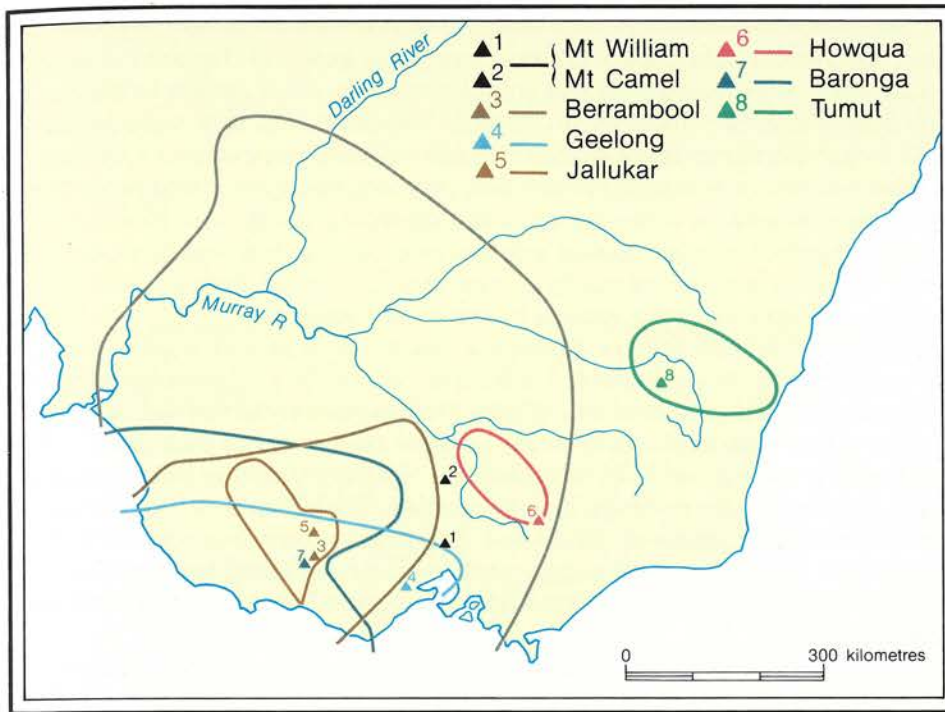
Neither gifts of ideas nor exchanged organic goods endure in the archaeological record, so it is difficult to determine the origins of most material culture and social values. A solution is to concentrate on materials that can survive. For example, pigments were commonly exchanged and most excavations produce ochre whose source can be identified by chemical analysis; but this task remains to be done. An ambitious project to trace the distribution of stone hatchets from greenstone quarries in southeastern Australia has achieved striking results. A sample of over two thousand hatchet blades has been traced back to quarries stretching from New England in New South Wales to the western district of Victoria.

Patterns of circulation from some quarries indicate that stone was exchanged in some directions for 500 kilometres, while in other directions it was restricted to short distances. Other quarries evidently served only local 'markets'. Social factors may have determined these different patterns. Certainly there was a close correlation between language groups and greenstone distribution in Victoria. Words were 'borrowed' by different language speakers through and across these affiliated networks, while those groups used the ceremonial gatherings to arrange marriages. There was mutual hostility between the Gunai people of Gippsland and



The quarry source on Mt William, northwest of Kilmore, Vic, whose celebrated greenstone (diabase) circulated great distances.

I. McBRIDE



The area of distribution of hatchet blades from greenstone quarries in the southeast.

J. GOODRUM, AFTER I. McBRIDE

the Kulin speakers who lived north of Port Phillip Bay and controlled the greenstone quarries in that area. Was the stone from a particular quarry more valued as a gift than stone from another? This was apparently so in 1788, while mythological associations added status to an ochre quarry in the Flinders Range (see chapter 13).

If webs of verbal communication and kinship affected the distribution of hatchets in 1788, it is logical to assume that these social links were as old as the earliest greenstone hatchet dated within that region. This appears to have been confined to a period within the past 5000 years. The prospect of proving this by finding hatchets through excavation is challenging, for until such artefacts have been excavated the idea will remain hypothetical. At the source of much of the most travelled stone, Mount William (Victoria), the mass of shattered stone and numerous mining pits are proof that the industry must be centuries old, but it is guesswork to say more.

In Aboriginal Australia the land was crossed by the numerous invisible tracks of creator beings and marked by places where ceremonial activities occurred. For the people involved, the Dreaming incidents signified group solidarity. At meetings, before participants departed along traditional routes, rituals were performed, initiates were given community status and gifts were exchanged. The distance travelled in wooded country normally ranged between 25 and 200 kilometres, but across the dry inland plains people might have covered 200 to 450 kilometres. Their gifts travelled much further. Moving from ceremony to ceremony along these routes, pearl shell from the Kimberley coast was passed from custodian to custodian, while baler shell (*Melo diadema*) came from the Pilbara or Cape York. As these objects travelled, their ritual importance increased, their functions changing from utilitarian, everyday use as pubic covers or decorative pendants to secret purposes. In this manner, products from the Indian and Pacific oceans moved gradually across central Australia, their paths intermingling along distances up to 2000 kilometres.



Generalised distribution of the areas reached by pearl shell objects.

J. GOODRUM



The circulation of baler shell objects.

J. GOODRUM



These stencils, probably showing baler shell ornaments, occur at Cathedral Cave in the Carnarvon Gorge, Qld, over 800 km from their source. The length of the right-hand stencil is 10.7 cm.

DJ. MULVANEY

Until archaeologists can excavate and date such shells the time when this traffic began will remain unknown. Shells may have been kept and cherished over long periods. Some decorated pearl shells are still valued by ritual owners in the desert, with incised lines not made by metal tools, indicating that they were probably made in pre-European times. Painted stencils on rocks in southern Queensland have been identified as stencils of baler shell pendants, hundreds of kilometres from their habitat. Hooked boomerangs are a characteristic product of an area in central Australia involved in a ceremonial gift exchange system. It is significant that the stencil of such a boomerang survives on a rock face in southern Arnhem Land, further north than any other known record of its distribution.

Some of the puzzles of later Aboriginal history, such as why fragile points or tiny microlithic tools were adopted and persisted, may be explained by reference to the exceptional prestige and aura of gifts. Objects were preserved and exchanged for their secret ritual applications or the spiritual associations of their stone rather than for their routine use. Like shell pendants, Kimberley bifacial points possessed inestimable ritual value to distant desert custodians. Their Kimberley makers much preferred the more utilitarian hardwood spears they received in return for their fragile stone points. Similarly, as boomerangs circulated along an Arnhem Land exchange network, they were gradually transformed in meaning to become musical clapsticks.

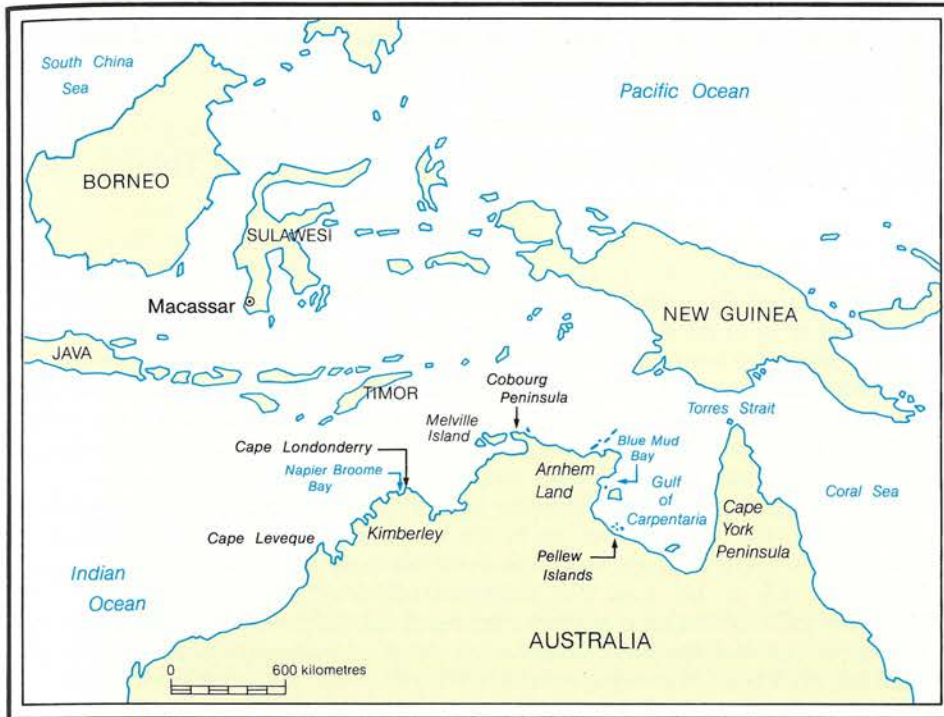
The longest recorded individual ceremonial journeys involved the Dieri people east of Lake Eyre (see chapter 13). Travelling along paths sanctioned by the Dreaming, which linked traditionally aligned groups, they transported Flinders Range ochre and also made periodic visits to the Simpson Desert, where they obtained gifts of the narcotic plant, *pituri*. If the same people undertook both expeditions, they visited places over 800 kilometres apart. Such mobility explains how the Mudlunga ceremonial songs and dances crossed the continent along this route in 25 years. That was around the turn of this century, but it provides a model for understanding how words and rituals were transmitted before 1788. Genes also travelled. As these journeys were ceremonial and reciprocal in nature, they often involved marriage arrangements. Social customs and ceremonial acts also frequently involved ritual sexual exchanges.

These were the invisible commodities of exchange—genes, language and innovations. As ceremonial ties increased, so did the mix of genes and ideas, sometimes spreading over areas larger than many European states. Why the boundaries were drawn between such regions is hard to say. Controls exerted by divisions between natural drainage basins or other environmental barriers evidently played a part; so, presumably, did cultural conditions as yet undiscovered.

INTERACTION WITH THE OUTSIDE WORLD

Not all learning processes or cultural exchanges were indigenous. Prevailing tropical monsoons and trade winds, the presence of numerous adjacent islands as close as 600 kilometres to northern beaches and the proximity of seafaring islanders to the north inevitably produced landings from the islands of New Guinea and Indonesia. Perhaps the stimulus to small stone-tool technology originated in this manner and the arrival of the dingo 4000 years ago suggests some outside contact.

Some white Australian writers have associated the origins of Aboriginal art or institutions with many civilisations, including Egypt, Phoenicia, Rome, Japan, China, India and even Israel's lost tribes. The Wandjina figures painted in the Kimberleys have also been interpreted as spacemen. Of course, it is possible that some foreigners touched accidentally upon Australian shores: Chinese explorers



The area of Macassan contact.

J. GOODRUM

were in Timor early in the fifteenth century, while the Portuguese were there a century later. But theories that explain Aboriginal achievements by looking to such outside contacts await evidence.

According to early European descriptions, there were frequent and complex contacts between Cape York and Papua by way of the Torres Strait islands. No radiocarbon dates exist to establish when these relationships began. Some evidence points to a common genetic background for populations along both coastlines, as far west as Arnhem Land and Irian Jaya. Such a background may reflect the common genetic stock inhabiting the region before rising seas separated people, although later voyages on both sides of Torres Strait probably also encouraged genetic mixing. This region is an amalgam of Aboriginal and Papuan stock. The eastern Torres Strait Islanders speak Miriam, a Papuan language, while people on the high western islands speak a distinct Aboriginal language, extending to within three kilometres of the Papuan coast. Their physical characteristics, however, are Papuan, while hair of Melanesian type is typical of northern Cape York Aborigines.

The cultural and trading links across Torres Strait generated a demand from as far away as Papua for Aboriginal shell ornaments, spears and spearthrowers. Cape York people adopted introduced dugout canoes with outriggers, and ceremonial activities were pervaded by Papuan ideas and customs for over 300 kilometres down the coast. The structure of the myths and related ceremonies was Aboriginal, but onto this base were grafted elements of Papuan hero cults. These creation-time cult heroes moved from Cape York to Torres Strait and sometimes beyond. In Torres Strait the dominant figure was Kwoiam. Perhaps he was the same hero as Siveri, the seagull of western Cape York myths who created the dugout canoe. He was associated with Nyungu, the Torres Strait pigeon, and their flight northward was equated with voyages of these heroes. The paraphernalia that features in ceremonies was Papuan, including elaborate masked figures, grass skirts, drums and initiation grounds screened by woven mats. Their resulting art, myth and



Cannon from Napier Broome Bay, found on Carronade Island in 1916. Despite uncritical claims for its ancient Portuguese origin, it was probably a recent southeast Asian copy of a European gun, left there by Macassan fishermen.

P. BARKER AND THE WESTERN AUSTRALIAN MARITIME MUSEUM.

ceremony represented a complex interweaving of the geographic knowledge, technology and aspirations of people on both sides of Torres Strait. The story of Siveri and Nyunggu explained and justified their interaction.

SIVERI THE SEAGULL AND NYUNGGU THE TORRES STRAIT PIGEON

Once Siveri and Nyunggu lived at Langanama (Janie Creek). Siveri's home was on the north side of the creek and was called Mbran' yap' wāna (sand beach). Nyunggu lived on the south side of the creek at Kuringa.

To Siveri's clan belong all the seagulls (*yara*) that camp on the sand beach; also the cockatoos, black and white, that camp by the swamps on the north side of the creek; also *kambara*, the crocodile, *ugundyi*, the crab, *atimu* the white fish, *prandyi*, the butter fish, and *trata*, the knight fish—all fish that swim in the deep channel of the creek that runs near Siveri's side. These are all 'children' of Siveri.

To Nyunggu's clan belong the white pigeons, *mbwaraka*: that camp in the scrub on the south side. The 'children' of Nyunggu are *ndru'ila*, the native companion, *ligu'u nyagga*, the black duck, the crane, birds that camp on the high sand beach on Nyunggu's side of the creek. The 'daughters' of Nyunggu are the shells that are found on the reef that runs out from the south side of the creek—*ye'a*, the small mussel shell, *arama'*, the bailer shell, *amaga*, the pearl shell, and *pundi'ra*, the conch shell.

Siveri was always making dances. He did nothing but dance, morning, noon and night. When the sun grew hot he would rest, then begin again and dance all evening till midnight. He made an *mbaga*: (big dance house) for all the dancers to stop in. They sang outside the house and camped inside. The *mbaga*: was oblong and had no roof. There were four forked sticks, one at each corner. The walls were made of bulrushes with battens placed horizontally along the sides to keep the bulrushes in place. Only men came inside the *mbaga*:. There were two rooms. The Tyong' andyi slept in the outside room in the *mbaga*: and the Yup'ngati being strangers, slept in the inside room.

Siveri made a drum out of pandanus tree wood with a hollow stem and another out of messmate wood, so as to make both soft and loud sounds. He put a goanna skin over the ends of the drums and beat them. He himself beat the drum with his hands and sang. He made many songs. The dance was called *kwara*:. When Siveri went to Mabuiag Island he took his dance with him and showed it to the Mabuiag people. The Mabuiag people now have a dance, Kwoiam's dance, which resembles that of Siveri in that both are seagull dances.

Siveri had a bow and arrow. He was the only man who had one. He made it out of the wood of a shrub called *nam buyuma yu:mai* and the string was made from the fibre of the bean tree root. The point of the arrow he made of red wattle, which is used also for spears. The handle was made of *kwam'bran'na*:. Siveri made canoes. One of these capsized and may be seen now by the edge of the water on Siveri's side.

Below the rise on which Nyunggu used to camp with all his children, under the shade of the big fig tree, a long stretch of flat ground runs parallel to the sand beach. On this flat ground Nyunggu built his dance house and held his dances.

Nyunggu used to send his 'daughters' to get conch shells, bailer shells and small mussel shells. (These shells are now found on the reef that runs out from Nyunggu's side of the river.) *Araina'*, the bailer shell, *amaga*, the pearl shell, and *pundi'ra*, the conch shell, are the 'daughters' of Nyunggu.

Nyunggu made a song about his daughters, the shells:

<i>Mbini nara mai</i>	[Where] the fig tree stands
<i>pundi'ra woti woti ai . . .</i>	Conch shells carry up to me . . .

The daughters of Nyunggu wanted Siveri, so they made signs to him across the river. He replied with signs that he would come over, so one day he went across in his canoe. There was a creek running down through the scrub into the river near Nyunggu's camp. When the tide is high, the water runs back up this creek.

Through the mangroves up this creek came Siveri in his canoe. He climbed into a big tea-tree (*nama*). When the girls came down that way to get water from the well, they saw his shadow from the tree.

They said to Siveri, 'Oh! Is that you? What have you come for?'

'For you!' said Siveri.

He climbed down from the tree and put them in his canoe, then he pushed off with his paddle. The creek was full of water when Siveri pushed off. He just gave one push with his paddle and the canoe went straight down the creek and out of the mouth and up the coast. It went by itself. The hole this paddle made as he pushed off is the well (*kaga*) that is there now in the scrub by Nyunggu's old camping ground. One girl had a sore breast. Siveri left her at Red Point (opposite Crab Island). He left the other one behind at Red Island because his canoe was smashed there. Then Siveri just took one step out over the sea and an island came up, then another step, and another island came up, and so on. Wherever he put his foot, a sandbank or an island came up. Thus he made the islands of the Torres Strait. He went to Mabuig Island and taught them his dance there.

When Siveri went to Mabuig, his seagull children (*yara*) cried, 'What shall we do now our father has gone away? It would be better to be seagulls and go after him!'

His other children said, 'We can't go! We'd better become fish and birds and stay here!'

Siveri made a song about all his children that he had left behind him on the mainland. This is the song of 'the children left behind':

<i>Mapu tanu wurimi: inggei</i>	My children cry for me
<i>sira kangga tenya</i>	One son cries for me
<i>wara wa gu nyi:</i>	And yet another cries
<i>tas inala 'ani miya:'</i>	[Cry of the seagull]
<i>tyr! tyr! tyr!</i>	

These are some of the other songs that were made:

<i>Twina,</i>	[the seagull's song]
<i>Yara ta: tywi:na: nrang awei</i>	We'd better be seagulls and
<i>yara ta: ni:mi naitana:</i>	follow our father.
<i>'ati:unu:</i>	

<i>Frandyira,</i>	[the butter fish's song]
<i>Nranga frandyira: ni:mi</i>	We'd better be butter fish and
<i>ndru:'a: nggei</i>	stay here!

When Nyunggu found that his daughters had been stolen by Siveri, he made this song:

<i>Sivri Sivri nung aiya: sasi</i>	Siveri! Go take them and marry
<i>imung aiya:</i>	them!

When Nyunggu told his sons that their sisters had eloped with Siveri, they were angry and told Nyunggu he must go after them:

<i>Ndru rama yangi!</i>	<i>You go and bring them back!</i>
<i>Nyunggu said:</i>	
<i>Iyanga! pipan iganga!</i>	Very well! I'll go! I'll go!
<i>Iyanga nungu nungu eya ata:!</i>	I'll go! but I shall go further on to stay in
<i>ninga myungu</i>	another country! I shan't come back!

His children followed him down to the shore as he went. He told them to stay where they were. The ducks and the native companions stayed on the sandbank. The shells followed him into the sea a little way where the reef is now. He told them to stay there and be shells. The reef is the road Nyunggu took and the shells are his children.

You can see some of them there now where they followed him down all the way from the camp to the beach and others on the reef. Nyunggu went after Siveri and his daughters. But instead of going to Mabuig Island he went right on to Papua and never came back. As he left, he sang to his children in turn:

<i>Raga pundirang ga ni: ma:' a</i>	You folk, conch shells shall be.
<i>araina:' ni: ma:' a</i>	Bailer shells you become.
<i>nggamagara ni: ma;' a</i>	Pearl shell you shall be.
<i>lyu:'unyara ni: ma:' a</i>	Ducks you shall become.
<i>ndru:'ila: ni: ma:' a</i>	Native companions be.
<i>eyang a! iyang a!</i>	I go; better that I should go.
<i>mbwa:rakang ga tanu igang a</i>	The white pigeons will come with
<i>pfra:!</i>	me.

It is said that Nyunggu, the white pigeon, is somewhere there in Papua now. His spirit walks about there still. Now every year the pigeons leave their home and go to Papua to nest and their children come back every year to Kuri' a.

Nyunggu gave his dances to the Papuan people. His songs were all about his children, the birds and shells, whom he had left behind, and about the things he used to do when he lived at Janie Creek. There he used sometimes to lose his canoe and this is the song he made about it.

<i>Ngaiyu: ku: mba:m yu:</i>	Where did I leave my canoe?
<i>Sa:ni mba:m yu:'u ngaiyu:</i>	At which of my landing places
	did I leave it?

Then he would find it and sing with delight:

<i>Lokapo: mariyya: lokapo:!</i>	Ah! here now I find it! [slaps
<i>ngaiyu ku: mba:m yu:!</i>	himself with delight] It was
	here that I left it!

The remarkable combination of northern Cape York, Torres Strait and Papuan cultures, expressed in body painting, huge masks and costumes, decorated drums and many woven items, was highly developed by 1788. When did it begin? For those who believe that Aboriginal society was conservative and resistant to new ideas, the geographic extent of this culture and its penetration of religious belief and ceremony may imply considerable depth in time. If, on the other hand, Aboriginal society was receptive to new influences, changes might have occurred rapidly. An influential anthropologist of the Aranda claimed that 'tradition and the tyranny of the old men in the religious and cultural sphere have effectually stifled all creative impulse ... It is almost certain that native myths had ceased to be invented many centuries ago.' This opinion is itself a European myth. In the Torres Strait area change is evident, though its rate is unknown.

Another case of outside contact is better documented and shows that Aboriginal societies could change rapidly. About a month before Governor Phillip's fleet anchored in Botany Bay, another fleet carrying more men than all those Phillip commanded left Macassar in Sulawesi (Celebes) for Arnhem Land. These *praus* were engaged in Australia's first export industry and spent the wet season collecting *trepang* (sea slug) and tortoiseshell in the shallow bays around Arnhem Land, destined for Canton. From twenty to sixty *praus* sailed annually, each carrying a crew of thirty to forty, exploiting the northwest monsoon to reach the Cobourg Peninsula within ten days. Several *praus* worked as a squadron, based on islands or peninsulas because they offered relative security from Aboriginal attack. *Trepang* were collected using dugout canoes transported for the purpose, boiled in iron cauldrons and smoke-dried in demountable bamboo and rattan sheds. By May they had coasted to Carpentaria, sometimes as far as the Pellew Islands. They turned for



home when the southeast trade winds blew. Following the same seasonal routine, other possibly smaller fleets visited the Kimberley coast from Cape Londonderry to beyond Cape Leveque, though perhaps less often. They also sailed from Macassar, although vessels from closer eastern Indonesian islands probably also fished those shores.

There are dozens of sites along tropical shores where *trepan* were processed, identifiable by rows of stone hearths, each designed to hold five or six pans, and scatters of undecorated earthenware potsherds, common Chinese porcelain and glass from spirits bottles. The industry reached its peak early last century, but its origins are uncertain. Excavations of some hearths have produced radiocarbon dates several centuries old. A site in Blue Mud Bay contained J-shaped pearl shellfish hooks, possibly one thousand years old, resembling bronze Macassan hooks. This antiquity conflicts with all other evidence. The Chinese demand for *trepan* began only in the sixteenth century, and as the southeast Asian import trade only began a century later, it is unlikely that such an extended trade developed previously. (The first Chinese junk arrived in Macassar in 1615.) Archaeological finds of Dutch East India Company coins, arrack bottles and porcelain, evidence from explorers and Dutch official records all point to a date later than 1670.

This sizeable and constant contact influenced Arnhem Land society as much as Papuan contact influenced the Cape York people. Many Aborigines voyaged to Macassar on *praus*, while Macassan visitors consorted with Aboriginal women. Many place names and other words are Macassan adaptations; dugout canoes with

Macassan praus watering at Sims Island, 1818. This watercolour by P.P. King was painted near Anuru Bay, one of the most extensive surviving *trepan* sites.

MITCHELL LIBRARY

Macassan stone hearths at Kurrawa, Little Vanderlin Island, in the Pellew group, Gulf of Carpentaria, arranged to boil six cauldrons of *trepan* simultaneously.

R. BAKER



A fleet on northern Australian shores in the year that Captain Cook sailed up the eastern coast. The official Dutch record of ships leaving and entering the port of Macassar 1770–71 shows that the fleet departed in December 1770 with empty holds, for Bonerate en route to Australia. Praus returned in April–May 1771 laden with trepang. Note the entry for the cargo prau (paduakang) under Poea Basso (Pua' Baso'), who left Macassar on 12 December for Bonerate the ditto [the Dutch East India Company's subject] Poea Basso, by ditto [paduakang] burthen 3 lasts [6 tonnes], crew of 13 armed with 2 swivel-guns, 2 muskets, carries no cargo'. Upon return (top line), 'the 29 April (1771) arrives from Bonerate the Honourable Company's subject Poea Basso, by ditto [paduakang], burthen 3 lasts, crew of 13, brings in 15 piculs [907.5 kg] white trepang'. Note that the prau was armed.

ALGEMEEN RIJKSARCHIEF, THE HAGUE

April arriveert van Bonerate den 29 April onderaan Poea Basso, per 3, groot 8 lasten, bemant met 13 koppen, brengt aan 15 piculs witte Trepang.

1^o Den 3, Sakoralapere groot 2 lasten, bemant met 10 koppen, brengt aan 20 piculs witte Trepang.

Afgaande Vaaklijgen, Trepanten

April Vertreck na Sangoa den 12 December Sangoa, per paduakang groot 3 lasten, bemant met 14 koppen, was gemont heerd met 2 swivel-guns, en 2 donderbusken, en 2 snaphaansen, voortmude 100 id, fontantent.

1^o den 3, Saleonang, per 3, groot 4 lasten, bemant met 8 koppen, was gemont heerd met 2 enige kriften, en 2 afgegijsen voortmude 100 id, fontantent.

Bonerate den 12 December onderaan Nara, per 3, groot 3 lasten, bemant met 9 koppen, was gemont heerd met 2 rantack, 2 donderbusken, en 2 snaphaansen, voortmude 80 id, met 2 gulle boot, 2 pareingel, en 2 enige grabat.

Tumbora den 2, Tobalappere, groot 2 lasten, bemant met 7 koppen, was gemont heerd met 1 picul wit, en 2 enige afgegijsen, voortmude 60 id, fontantent.

1^o den 3, Dappa Pare, per 3, groot als boven bemant met 9 koppen, was gemont heerd met 2 enige kriften, en 2 afgegijsen voortmude 70 id, fontantent.

Onder den Onderaan Nio meere, per 3, groot 3 lasten, bemant met 9 koppen, was gemont heerd met 2 rantack, 2 snaphaansen, en 2 afgegijsen, voortmude 100 id, 2 pareingel, en 200 id, kommen.

Bonerate den 12 December onderaan Sado, per 3, groot 2 lasten, bemant met 11 koppen, was gemont heerd met 2 rantack, en 2 snaphaansen.

rectangular sails became part of the Aboriginal maritime economy; other borrowed technological and cultural items included the harpoon and the characteristic Macassan tobacco pipe, while glass and metal also had significant economic and social implications. So, probably, did the introduction of smallpox, a disease the demographic impact of which is discussed in chapter 5.

Macassan voyages were punctuated by violence caused by disputes over women or thefts of coveted canoes and metal objects. Yet anticipation of or nostalgia for these regular visits became deeply embedded in Aboriginal ritual life. Influences ranged from the portrayal of incidents on bark or rock paintings to ceremonial songs and enactments that perpetuated their memory. At one ritual place in northeast Arnhem Land, stones were arranged to portray *praus* and houses seen by Aborigines in Macassar; mortuary ceremonies incorporated many alien elements, while other ceremonies involved the erection of a ship's mast; a square-faced bottle, carved in wood, became a clan totem in another area. There were also influences on Kimberley society. These fusions between two cultures evidently occurred within a couple of centuries, and suggest that Papuan influences did not necessarily require millennia to permeate Aboriginal culture from across Torres Strait.

THE CLIMAX OF ABORIGINAL SOCIETY

When did the distinctive Aboriginal culture of 1788 emerge? 'Aboriginality' is difficult to define from scattered material traces separated widely in time. All reconstruction of past events must be cautious. Because radiocarbon dates contain significant margins of error, it is impossible to attempt close correlations across the continent. For a site 30 000 years old the sample error may be plus or minus 1000 years, equal to English history since the Norman conquest; even a 3000-year-old sample will be correct only to within a century or so. Another problem is the uneven archaeological coverage of the continent and the distortion of surviving evidence. No human remains of any antiquity are known from anywhere in the tropical north; wooden artefacts of comparable age have been recovered only at Wylie Swamp (South Australia). Aboriginal ceremonial life employed varied artforms, including body decoration and ground designs, which could not survive.

Present glimpses of ice age Australia hint at a generally similar culture across the continent, just as the wide variations in human physical features suggest that the modern Aboriginal race had not yet developed from its diverse ancestral stock. We can discern a similarity in stone tool technology, a concern for the dead and, for the living, an inclination for beautification, whether by binding the heads of infants on the Murray River or wearing bone beads at Devil's Lair. Excavations demonstrate a plentiful use of pigments, though for unknown purposes. Surviving rock engravings suggest that artistic expression across the continent usually involved abstract or geometric pecked designs. Are these hints of humanity and symbolism sufficient to flesh out the nature of ancestral Aboriginal society or to indicate anything beyond a generalised continuity?

The evidence suggests that the last 5000 years have been crucial in the emergence of the complex Aboriginal culture. In 1788 functioning societies across the continent were well adapted: regional economic systems were associated with creative individuality. Archaeologists are increasingly confident about the later centuries of these regional societies, although they still depend on vital clues in early European observations of Aborigines. The small tool tradition, and the many other technological and social strategies that had developed to harvest local energy efficiently and with the maximum conservation of effort, probably developed much earlier. Some of the evidence explored in this chapter suggests as much, with important hints provided by seed grindstones and cycad use in the last glacial period, or by the use of boomerangs on the bird haven that was Wylie Swamp.

Some scholars have argued that the natural divisions caused by major drainage basins underlie the development of regionalism. Although such a general correlation between watersheds and major ceremonial exchange systems and



Bark painting of two praus and trepang boilers under a tamarind tree. This plant grows at most Macassan sites, seeded from the fruit that Macassans brought. A site in Melville Bay is depicted by the artist Madaman. The black figures are Aborigines, the others Macassans.

MUSEUM OF AUSTRALIA



The distribution of the initiation rites of circumcision (coloured) and subincision (hatched).

J. GOODRUM

languages is probable, we must await closer analysis of smaller geographic and human units. Earlier fieldwork material is presently being re-evaluated to discover the factors that influenced the choice of sites and their patterning across particular landscapes. By comparing archaeological data with many observed features of Aboriginal society after 1788, we can tentatively infer that these geographical factors did operate long ago. Apart from the evidence of gift exchange networks, these include the phasing of activities according to season or available resources, the probable sexual division of labour, alternating dispersal into small groups (or bands) and group concentration at certain places, and the continuity and complexity of many mortuary, ritual and artistic practices.

INITIATION

Three facets of Aboriginal life—initiation, burial and artistic expression—provide some of the most important and intriguing clues about the nature and complexity of Aboriginal society. Although elaborate initiation rituals leave few archaeological traces, some aspects point backwards in time. The knocking out of one or two front teeth—tooth evulsion—was a widely practised rite in 1788, although its purpose varied. In the southeast it constituted an initiation ordeal. To judge from the examination of skulls dating between 7500 and 3500 years ago, the practice already existed then. Excavated burials along the Murray–Darling system include eighteen persons of both sexes who had one or two incisors removed during life.

The better known male rite of circumcision was not so widespread as tooth evulsion, while that of the painful male operation of subincision was even more restricted in its distribution. Can we therefore assume that these customs developed later? There is some evidence that circumcision and subincision were both spreading at the time of European contact. The area where subincision was practised bisected the Lake Eyre drainage basin. As this was the region of most intense group ceremonial interchange, it seems unlikely that the practice would have remained restricted to those Aborigines occupying the western area. Had Europeans not arrived, subincision must have spread to those circumcising groups whose relations were so closely connected. The circumcision rite itself probably would also have been adopted by neighbouring people to the east. These rites are so deeply embedded in Aboriginal lore that it is challenging to think that their adoption may have been fairly recent. The explorer Matthew Flinders wondered whether circumcision originated from Macassan Islamic influence. Given the area of the ritual's distribution, his suggestion is difficult to support, because Arnhem Land, which the Macassans visited, lies outside that ritual system. However, parts of Kimberley conformed to the practice. From the continental distribution of both circumcision and subincision, the more likely hypothesis is that they developed in the desert heart and were still in the process of influencing groups elsewhere in 1788. In the context of our discussion of the southwest (see chapter 6), it is relevant that neither was adopted there. Possibly they had not time to spread so far, but the absence of these rites in the southwest may represent rejection by a closely knit ceremonial interchange group who remained aloof from external influences.

DEATH

Ice age people disposed of the dead in diverse ways. Excavations at Roonka on the lower Murray River establish that, during recent millennia, mortuary practices also varied considerably within the one group. It has been suggested that these different burial modes at Roonka, associated with the presence of ornaments or other possessions in only some graves, show differentiation according to the status of the



individual. Solicitude, sentimentality or other human values must be reflected in the grave goods both at Roonka and earlier at Lake Nitchie, where the male was buried with a necklace made from the teeth of a Tasmanian devil. Bone, shell and animal tooth ornaments dating from 4000 years ago at Roonka are similar to those sketched on the Murray River by the colonist G.F. Angas a few years after contact. At Graman, northern New South Wales, two small stone pendants almost 5000 years old had been perforated for suspension, as had a more recent turban shell pendant from Seelands near Grafton.

Cremation, as old as the Lake Mungo people, persisted throughout the continent in conjunction with alternative mortuary practices. At West Point, Tasmania, excavations show that cremation occurred there more than 1500 years ago and it was a common practice on the island in 1788. So was tooth evulsion. It is relevant that at West Point a skull recovered lacked an upper incisor. The antiquity of cremation and of tooth evulsion in Tasmania poses the question whether these practices developed independently or whether they formed part of an ancient cultural package taken there by the original colonists before the sea separated them from the continent.

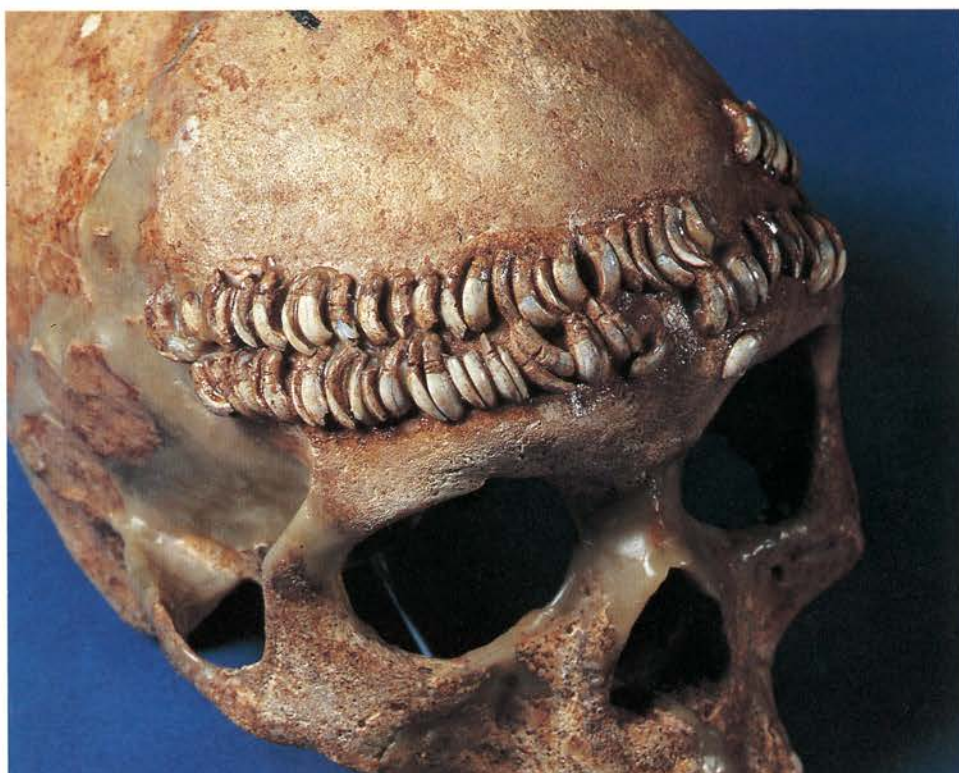
The variation and care taken in disposal of corpses by cremation, by burial immediately upon death or by secondary burial after the corpse had been exposed for months in a tree or on a platform, expressed dignity and respect for the dead. Despite current Aboriginal beliefs that human remains were always revered and remain sacred, evidence from many parts of Australia suggests that once the correct rituals were performed and the body had decayed, bones held no particular sacred meaning. This was the case in Arnhem Land once hollow log coffins had disintegrated. In many other areas, a casual and easy attitude to disposal seems implied by the frequency with which interments were made in occupation mounds, rock shelters or middens. These could not be described as cemeteries, and such public locations were likely to be reoccupied in later years. The most striking evidence comes from the Murray and Coorong areas. Early Europeans often saw

Left.
Fossil oyster shell, pierced for suspension, Roonka, S.A.
SOUTH AUSTRALIAN MUSEUM AND G. PRETTY

Right.
Tiger cat lower jaw, pierced for suspension, Roonka, S.A. Both these ornaments are about 3000 years old.
SOUTH AUSTRALIAN MUSEUM AND G. PRETTY

A burial at Roonka, SA, 4000 years ago; the man wore this double-strand fillet of notched marsupial incisors.

SOUTH AUSTRALIAN MUSEUM AND G. PRETTY



Two broken pendants of chalcedonised opal with suspension holes pecked through. About 5000 years old, from Graman, New England. Right: 3.3 cm x 3.5 cm, perforation 0.8 cm across.

I. MCBRYDE



Aborigines carrying skulls as water containers. Edward John Eyre, a sympathetic observer of graveside rituals and grief, remarked of subsequent attitudes:

The natives have not much dread of going near to graves, and care little for keeping them in order, or preventing the bones of their friends from being scattered on the surface of the earth. I have frequently seen them handling them, or kicking them with ... great indifference.

ART AND IMAGINATION

Prehistoric art is known essentially because of rock paintings and engravings, which represent only the durable remnants of an artistic creativity embracing many art forms, all of which flourished in 1788 and may have remote prehistoric origins. They included secret designs and artefacts deliberately destroyed once their immediate ritual purpose had been achieved and others formed from a perishable medium that ensured rapid though unplanned decay. Such distinctions are more apparent than real, however, when the classification shifts from artefacts to the human body itself. Bodies might be painted or befeathered for a single ceremonial act, or marked with ritual scars for life. No archaeologist can hope to carry back beyond 1788 the story of such personal but vibrant artforms.

Major artworks that suffered immediate destruction because of the rules of society included objects used in secret ceremonies and elaborate ground designs using feathers, plants and pigments. Objects with a fragile existence, not deliberately destroyed after use, included decorated skin cloaks, weapons and utensils, baskets, paintings inside bark shelters, decorated grave posts and log coffins, and designs carved upon tree trunks. Although Aboriginal art today is known, especially in southern cities, for its bark paintings, those cities occupy territories where artforms and styles were basically different but no less individual or striking.



Two examples of these fleeting artforms in temperate Australia are possum or wallaby skin rugs or cloaks, and carved trees. A skin rug was made from as many as eighty possum pelts, neatly stitched together with sinews and using bone awls. The skins were scratched with shell tools into geometric and curvilinear designs and rubbed with ochre. As everybody across southern Australia wore a cloak, thousands of them existed in 1788, but only three are known to have survived. The designs probably carried totemic or clan markings. Weapons, ritual scars and carved trees probably bore similar signatures. Carved trees were associated both with ceremonial and burial places, especially on the Bogan and Macquarie Rivers. Healthy survivors are already few.

The art on rock surfaces remains the artform offering the most comprehensive and enduring testimony to Aboriginal aspirations before 1788. Like all the other artforms, rock art was characterised by regional diversity. It also changed through time. Aboriginal art required vast quantities of pigment, as the size of some ochre quarries testifies. Future research involving the chemical analysis of pigments on cave walls or buried in their floors should trace them to their source. By dating the layer from which a pigment is excavated, both the age of the quarry and the age of the paintings might be estimated.

Rock art takes two main forms: engravings (abraded or pounded markings) and paintings. The possibility that many engravings are thousands of years old has been discussed in chapters 1 and 3. Because of destruction by water, frost, sand blast, plant growth, termite and wasp nests, however, it must be presumed that most surviving art, especially painting, is centuries rather than millennia old. Chronology is a problem. Little art has been dated, although some engraved rocks have been recovered during excavations and dated by charcoal in layers associated. One method of approaching the problem is to analyse the extent to which weapons or other items of material culture depicted in art were the materials of the local people

The impermanence of some forms of Aboriginal art: Walbiri men dressed and painted for an open ceremony.
R. KIMBER



The permanence of the medium: central Australian rock engraving of a scene similar to the Walbiri ceremony, with men wearing ceremonial headdress.
R. KIMBER



Painted and sculptured Tiwi wooden grave posts on Melville Island are soon destined for natural destruction.

R. EDWARDS

Body scars on these Warumungu men combine aesthetic elements with information about status and social affiliations.

*Photographed by F.J. Gillen.
SOUTH AUSTRALIAN MUSEUM*



An ochre quarry in central Australia.

DJ. MULVANEY



Southeastern rock art: lively yet simple drawings in the Cobar region, NSW.

NSW NATIONAL PARKS AND WILDLIFE SERVICE

at contact. Southeastern Australian art is rather schematic or simplified, yet the lively figures in the Cobar district that dance or hunt across rock faces do so bearing artefacts familiar around 1788. The activities depicted also recall the sense of enjoyment and rhythm that flows from early paintings or photographs of what Europeans termed 'corroborees' (see chapter 17). Whatever their age, therefore, these paintings depict the society as it was in 1788.

The situation is similar in southern Queensland, where the dominant painted form is the stencil. The predominantly red stencilled artefacts typify the known traditional culture of that area, although the latest, overlying motifs are white, sometimes outlining European objects. This recent shift to using white pipeclay has occurred in other areas, including parts of the Northern Territory. To judge from many European objects pictured, it may be a post-contact fashion. Possibly the traditional supplies of red pigment that passed along ceremonial exchange routes were disrupted, or perhaps ochres resist weathering better than pipeclay, so that white figures painted in pre-European times might have eroded sooner than ochre drawings.

The most extensive surviving evidence for successive styles of painting, and presumably lasting over long periods, is in the Arnhem Land escarpment area. That region has been surveyed more intensively than others, so the equally numerous and vivid paintings of Kimberley and Cape York may well provide comparable sequences through presently undated time. The spectacular Wandjina figures of Kimberley have aroused speculation since the explorer George Grey first reported them in 1838. They are not helmeted spacemen, but indigenous imaginative depictions of Dreaming creators, intimately connected with ceremonies and mythology associated with the monsoonal climatic cycle. Beneath these ancestor figures are drawings of small, active people, known to Europeans as Bradshaw

Red stencil designs overlaid by white geometric motifs, Black's Palace, Qld.

D.J. MULVANEY

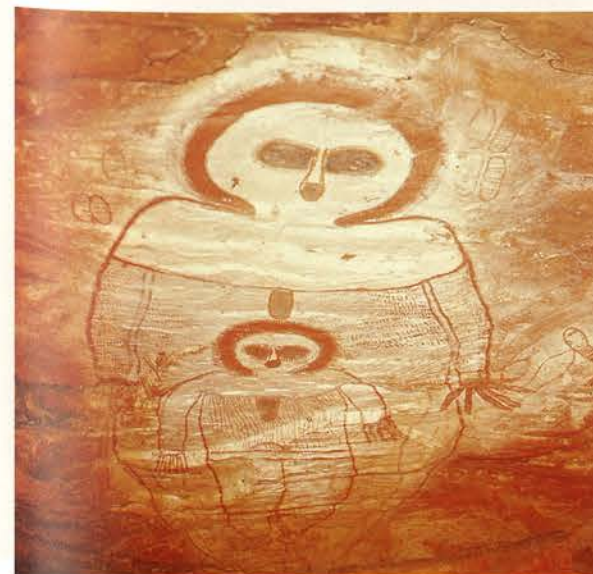
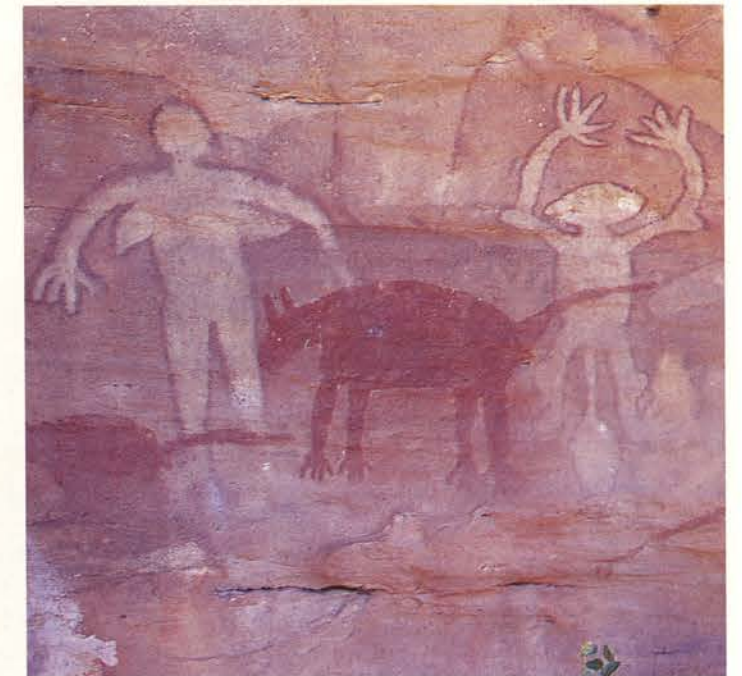


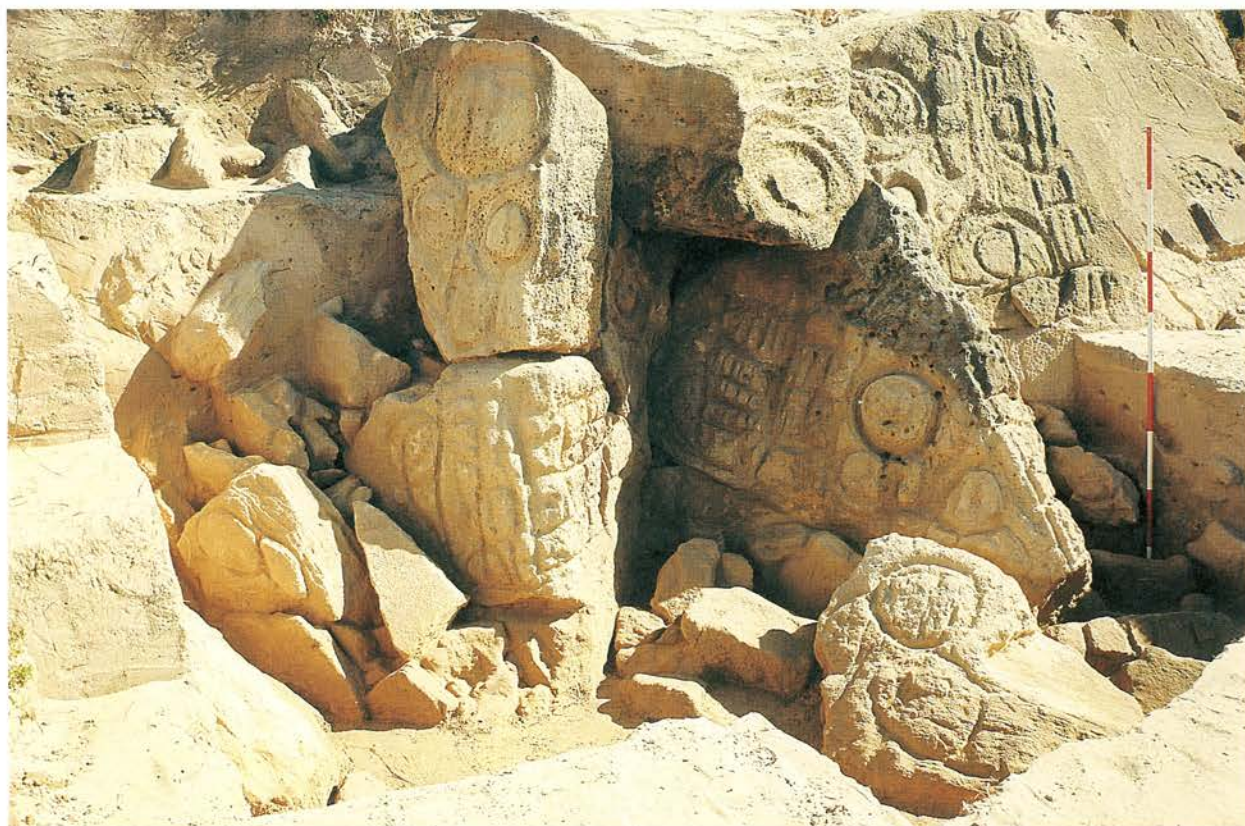


*Above and right.
Wandjina figures,
exemplifying the recent art in
the Kimberleys.*
WESTERN AUSTRALIAN
MUSEUM AND I.M. CRAWFORD



*The so called Quinkan art of
the Laura area, Cape York.*
J.P. WHITE





Tasmanian art. The Mt Cameron West site, excavated in 1968 within a few metres of the stormy northwestern coast.

R. EDWARDS



A 40-centimetre section of the 'climbing men' site, Burrup Peninsula, WA. This remarkable gallery of Pilbara engravings is of unknown age.

DJ. MULVANEY

figures after the first European settler who saw them. Aborigines believe that they were not the work of people but of a small bird that painted the rock with blood from its beak. Although they are of little interest to Aborigines now, these delicate paintings contain significant clues to prehistoric dress, dance and equipment. The best known Cape York art, near Laura, is the figurative Quinkan style. It is static but stark, with the figures carefully placed to achieve dramatic effect and the illusion of size.

The art styles of central Australia, the Pilbara, northwest Queensland and Tasmania are also thoroughly distinctive. But 'Aboriginal art' in Australia in 1788 was far from being monolithic in style, form and symbolism. The reality was more complex. The art on some rock faces represented immense depth in time. Sequences of overpainting (or overlapping series of engravings) may cover periods almost as long as the history of human artistic creation.

ARNHEM LAND ART

Sandstone walls of spectacular beauty in western Arnhem Land display one of the world's great art collections. Unlike exhibitions in some art galleries, this art is not secondary to the immensity and beauty of the towering gallery. Over one thousand sites are known but there will be more, ranging from a few motifs to hundreds, along enormous panels and superimposed upon each other. Scholars have begun to analyse these riches, to determine their chronological sequence, to identify and interpret their motifs. Conclusions are premature, but some of the art appears to be very old. Fortunately, red iron oxide pigments have penetrated and bonded onto some quartzitic sandstone surfaces and later climatic conditions, apparently drier than those in the region today, have encouraged the formation of a protective silica skin over the painted surface.

A remarkable prehistoric scene. The hunter, concealed behind brush, hurls his spear, without a spearthrower. From the emu's beak gushes life essence, sound, or perhaps another symbol. This dynamic-style drawing may possibly depict the escarpment region before the floodplains formed 5000 years ago.

D. LEWIS





The abrupt cliff of Mt Brockman towers above superb art galleries in the sandstone below.
D.J. MULVANEY



Dynamic-style figure with elaborate headdress and skirt, running with boomerangs and a barbed spear. The dress has no parallels with recent styles, and boomerangs were not used in 1788.
D. LEWIS

Close analysis of particular galleries enables studies of sequences of overpainting in different styles and motifs, particularly the identification of animal species or artefact types. Factors recorded include whether depiction is schematic or naturalistic, its relative size, associations of particular types of artefacts, whether motifs are grouped or single. Some of the paintings, assumed to be among the oldest, portray different environmental conditions, dress and artefacts from those known at contact. The wetlands habitat and the types of artefacts adapted to exploit its resources appear late in the overlapping sequences of drawings. Presumably the older art portrays a society that predates sea level stability and the formation of the wetlands plains. If this inference is correct, the 'wetlands' style may have lasted some five thousand years. Underlying painting styles must refer to times before the plains developed but this interpretation requires further research. There are 260 sites, for example, at which the so-called Dynamic (or Mimi) style has been recorded. This is a phase of dramatic narrative painting that possibly depicts the pre-wetlands environment and culture. Its small, athletic figures may be compared with the lively Bradshaw figures of Kimberley.

Subjects in the widely illustrated X-ray style are thought to reflect the wetlands environment. The frequency of certain superimposed drawings of fish and bird species seems to change over time, which may reflect the gradual move from estuarine conditions to the present freshwater swamps in the Oenpelli region. The scale of this art style is larger than the Dynamic style, but its form is static and the internal (X-ray) organs are stylised. Other elements of this style, however, were deftly executed 'stick' figures whose simplicity conveys a sense of activity and gives marvellous insight into the everyday life of men and women.

Rock art offers a rich resource for reconstructing past environments and material culture. More importantly, sequences of artistic variation may reflect changing perceptions of the world and record the introduction of mythologies to explain them; with changing environmental conditions artistic sequences may have recorded the introduction of new technology. Some Aborigines believe that in the Kimberleys the Wandjina 'introduced' circumcision and subincision during their Dreaming wanderings. The association of the Wandjina with these ceremonies implies that both are more recent in origin than the Bradshaw style of paintings that underlies the Wandjina figures. A snake in Arnhem Land paintings is interpreted as the Rainbow Snake, a creation being who travelled enormous distances across much of Australia and whose Dreaming paths are celebrated. If the Arnhem Land analysis is confirmed, this mythology was being represented there artistically just before the development of the wetlands. The serpent symbolises the storms of the wet season, when northern rivers run and his waterholes are replenished. The Dreaming tracks of this serpent provided the paths for numerous groups to travel to distant ceremonial gatherings. Is there a clue concealed here? Did long-distance contacts between groups begin around or before 5000 years ago?

To study this heritage of artistic achievement is to see that art, mythology and symbolism are at the root of Aboriginal culture. Thousands of art galleries survive across the continent, with individual designs totalling perhaps a million or more. They hold a key to understanding the origins of the regional variations that characterised Aboriginal society in 1788. Australia was peopled by artists, singers and storytellers of both sexes. Europeans in 1788 judged this society to be lacking in cultural merit or material achievement. They did not know that the Aboriginal worldview was a spiritual one and that many values were expressed by the scars on their bodies, the total array of their decorative art, even their perception of topographic features identifying the land that Europeans so hastily and ruthlessly occupied.



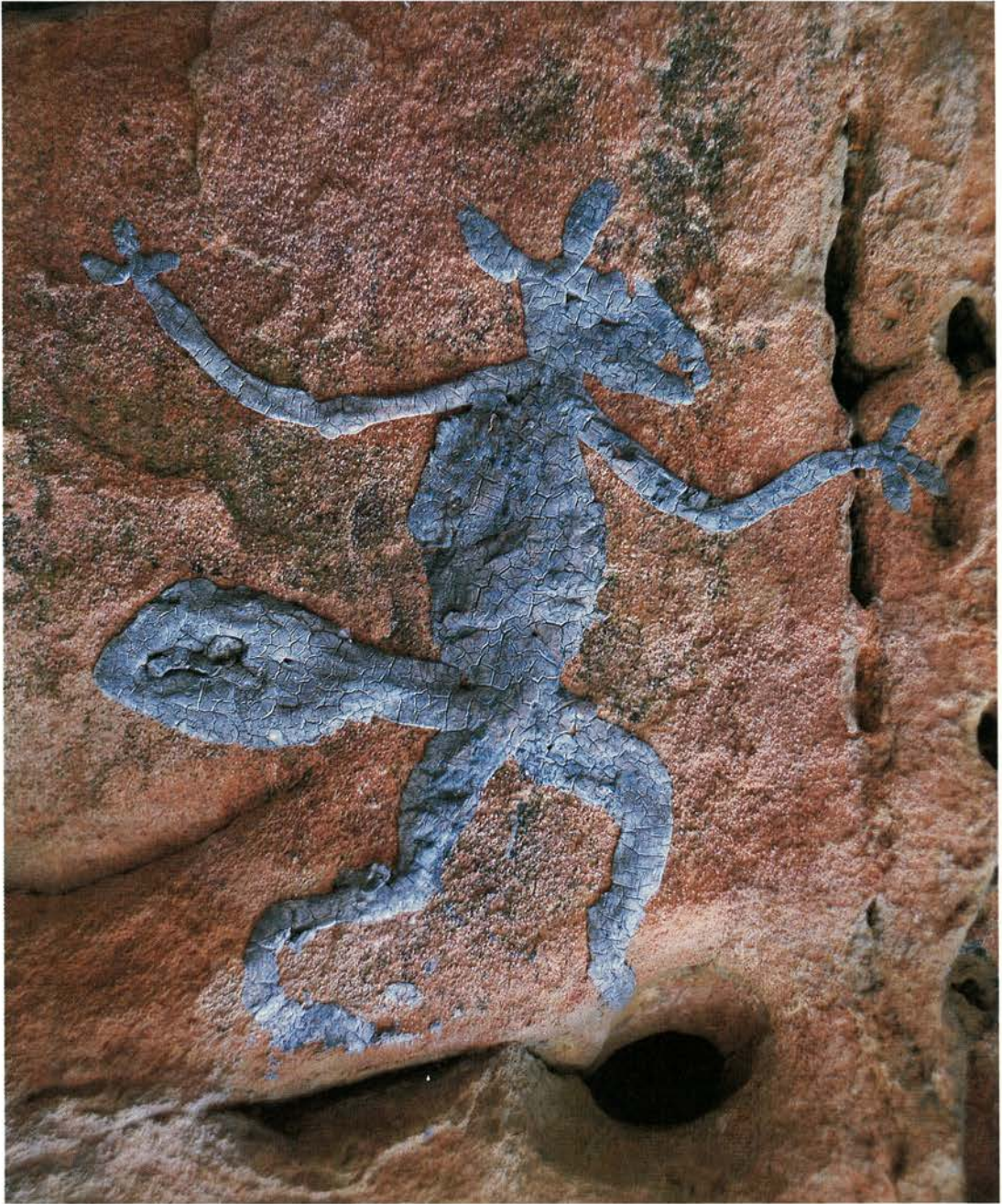
The 'X-ray' style drawn over earlier paintings. The art of the wetlands phase.

R. EDWARDS



The litheness of this dancing or jumping figure is expressed with extreme economy of line and intense colour.

D. LEWIS



Mythological figure made with beeswax, Kakadu National Park. Reproduced by permission of the traditional custodians.

IP. HASKOVEC