

Aboriginal astronomy

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Abstract

The accuracy and purpose of astronomical observations by the Australian Aborigines are discussed. The predictive and moral functions inherent in the legends associated with particular celestial objects are outlined and compared with the purpose of western science. Examples of legends relating to the Sun, Moon, Milky Way, Southern Cross, Venus, Orion, the Pleiades, the Magellanic clouds, and meteors are included.

Keywords: Aborigines, astronomical legends

1 INTRODUCTION

Histories of astronomy customarily begin by contrasting the advance of modern (i.e. post-Renaissance) science with the astrology which preceded it and which relied on the initiation of the few into an essentially-secret knowledge. In Europe, this mode of information transfer was almost wholly discredited by the time of Enlightenment so that the earlier beliefs and legends which had formed the basis of Greek, Roman, and Babylonian astronomy became mere isolated stories, divorced from the culture of which they had been an integral part. It is impossible for us to know what our hunter-gatherer European ancestors thought when they looked up at the northern constellations some 15 000 years ago for we cannot recapture their world view.

However, in aboriginal culture we can still locate the star legends in the context of an holistic world view which both developed from, and accounted for, the brilliant nightly spectacle of the southern sky and the daily rebirth of the Sun. Astronomy was an integral component of aboriginal culture to a degree which it is difficult for those of us who live in a fragmented and specialist-oriented society to understand. Isolated from such a civilisation and from scientific explanations of the environment, the Aborigines evolved a close sense of relationship with the whole natural world. It is significant, in this regard, that they are the only culture which has no myth of alienation from Nature, such as the expulsion from Eden of the Judaeo-Christian tradition. On the contrary they believe that through their Great Ancestors they too are co-creators of the natural world.

For the Aborigines, the stars not only evoked wonder; they also predicted and explained natural occurrences and provided celestial parallels with tribal experiences and behavioural codes. These beliefs have been handed down through oral tradition for some 40 000 years and hence they show us, as no other existing culture can, how natural phenomena beyond human control can be assimilated and understood without recourse to measurement of time, distance, or quantity.

2 ACCURACY OF VISUAL OBSERVATIONS

The Aborigines' knowledge of the southern sky was probably the most precise possible for people dependent on the naked eye. Within the 'crowded' southern sky they made precise observations, not only of first and second order stars, but even of the more inconspicuous star groups and devised a complex seasonal calendar based on star pattern recognition in relation to

the position of the constellations in the sky, particularly at sunrise and sunset. Pattern was apparently more important than brightness for the Aborigines, who often identified a small cluster of relatively obscure stars while ignoring more conspicuous single stars. Thus the people of Groote Eylandt gave the name *Umwala* (the Crab) to the small cluster of relatively-insignificant stars (average magnitude 4.4) Sigma, Delta, Rho, Zeta, and Eta Hydrae, while disregarding the adjacent bright stars Procyon (α Canis Minoris) and Regulus (α Leonis) which have visual magnitudes of 0.36 and 1.35 respectively, but which are not part of an obvious group, see Figure 1.

● PROCYON

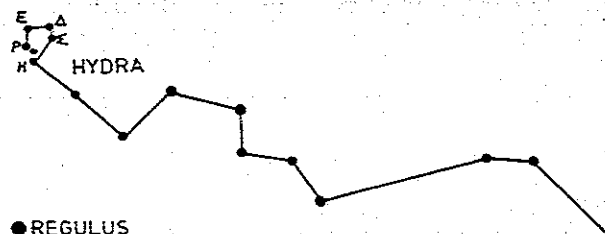


Fig. 1. The stars in the head of the constellation Hydra, with Procyon and Regulus

Colour was also an important factor in the designation of stars. The Aranda tribes of Central Australia distinguish red stars from white, blue, and yellow stars. They classify the bright star Antares (α Scorpii) as *tataka indora* (very red) and the stars of the V-shaped Hyades cluster, which represent for them two rows of girls, are divided into a *tataka* (red) group and a *gilkera* (white) group. The former are the daughters of the conspicuously red star Aldebaran, α Tauri (Maegraith, 1932).

The Aborigines also differentiated between the nightly movement of the stars from east to west and the more gradual annual shift of the constellations. From this latter displacement, they devised a complex seasonal calendar based on the location of constellations in the sky, particularly at sunrise or sunset. The Aranda and Luritja tribes around Hermannsburg in Central Australia predict the position of the constellation locally-named *Iritjinga* the Eagle-hawk (a quadrangular arrangement comprising Gamma and Delta Crucis and Gamma and Delta Centauri) with great accuracy throughout the whole year (Maegraith, 1932). These tribes also know that certain stars lying to the south, namely Iritjinga and the Pointers of the Cross are visible throughout the year, although their position in the sky varies. This amounts to a discovery that stars within a certain distance of the South Celestial Pole never fall below the horizon.

However, what the Aborigines did with their astronomical knowledge was fundamentally different from what modern astronomers do with experimental data from their observational data and provides an interesting comment on what western scientists think of as a self-evident methodology. In the first place, traditional aboriginal culture paid no attention to two of the most basic concepts of western science, numeracy and temporality. The Aborigines made no measurements of space or time, nor did they engage in even the most elementary mathematical calculations. Fundamentally their observations of the stars were conducted not out of scientific curiosity – out of an interest in the stars for their own sake – but for essentially pragmatic reasons. Either they were an attempt to discover predictive correlations between the

positions of the stars and other natural events important to the survival of the tribe – the availability of particular foods or the onset of particular weather conditions; or they provided a system of moral guidance and education in tribal lore – a function equally necessary to the continuation of the tribe's identity.

3 THE PREDICTIVE FUNCTION OF ASTRONOMY

As hunter-gatherers, dependent for their survival on a foreknowledge of environmental changes, the Aborigines noted, in particular, the correlation between the movements and patterns of stars and changes in the weather or other events related to the seasonal supply of food. As might be expected, the significance attributed to these sidereal occurrences varies with the diet and lifestyle of different tribes. Thus, on Groote Eylandt the appearance in the evening sky towards the end of April of two stars (Upsilon and Lambda Scorpii) in the 'sting' of the constellation of Scorpio indicated that the wet season had ended and that the dry south-easterly wind *marimariga* would begin to blow; whereas, at nearby Yirrkalla, the importance of Scorpio was linked to the observation that its appearance in the morning sky in early December heralded the arrival of the Malay fishermen who came in their canoes to collect trepang (Mountford, 1956). In winter, the most spectacular individual stars in the southern sky are Arcturus (α Bootis) and Vega (α Lyrae). When Arcturus could be seen in the eastern sky at sunrise, the Aborigines of Arnhem Land knew that it was time to harvest the spike-rush or *rakia*, a reed valuable for making fish traps and baskets for carrying food, and a local legend about Arcturus serves as a reminder of this. On the other hand, amongst the *Boorong* tribe of the Mallee country of western Victoria, Arcturus is personified as *Marpeankurrk* and celebrated as the one who showed them where to find pupa of the wood ant, a staple item of diet during August and September, while Vega represents the spirit of *Neilloan*, or the Mallee-hen, who taught the tribe how to find its eggs, an important source of food in October. Other notable events, like the ripening of tubers and bulbs and the appearance of migratory birds and animals, were correlated with specific positions of Orion, the Pleiades, and the Southern Cross at different seasons of the year. For the *Pitjantjara* tribe in the western desert, the appearance of the Pleiades in the dawn sky in autumn was particularly important, being the sign that the annual dingo-breeding season had begun. Fertility ceremonies were then performed for the dingoes and some weeks later the tribe raided the lairs of the dingoes, culling and feasting on the young pups (Tindale, 1974). Such stories clearly evolved to ensure that these nutritional associations were not forgotten and to stress their importance for the ongoing survival of the race.

4 THE MORAL FUNCTION OF MYTH

Aboriginal astronomy and its associated legends also had a purpose beyond the immediately pragmatic one of food collection. No less important to the preservation of the tribe as a cultural entity was the organic relationship believed to exist between natural phenomena and social behaviour, and since many of the legends formulated to emphasise this connection involved the constellations, the night sky served as a periodic reminder of the moral lessons enshrined in the myths. Like the stained glass windows of medieval cathedrals, they provided, in effect, an illustrated textbook of morality and culture during the thousands of years when the only means of relaying the accumulated wisdom of the tribe was oral tradition.

In common with most thought systems, including western science, the legends which were sung, danced and mimed by the Australian Aborigines represented attempts to understand, predict and hence to obtain some control over the natural world. However, unlike scientific method which is analytical, materialistic and particularizing, the underlying premise of all the aboriginal myths concerning the Sun, Moon, and constellations is a belief in the essential spiritual unity of Man, not only with other species, but also with inanimate objects. Astronomy

was only a part of their total philosophy about the natural world. Their legends of the Dreaming emphasized the parallels between the personified heavenly bodies and their earthly counterparts, humanizing and integrating natural phenomena with tribal institutions and customs.

Although observation of the stars is accessible to all, the meaning which the tribe attributed to these observations was strictly conceptual rather than perceptual. It could not be understood by personal experience or by the intellect, but only through initiation into tribal lore which stressed the intimate, causal association between physical events and the human dramas of good and evil. Lessons about compassion, brotherhood, and respect for the land as Mother, the prohibition of incest and adultery and taboos on killing or eating totem animals were nightly reinforced by being enacted in the sky world and thereby established the universal validity of the ethical laws governing the tribe's morality.

The many and diverse aboriginal myths associated with the heavenly bodies include stories about the Sun, the Moon, the Milky Way, the Magellanic Clouds, Mars, Venus, and the several constellations which form distinctive patterns in the southern sky – notably the Southern Cross and its pointers, the Pleiades, Orion's Belt, Scorpio, Gemini, and Aldebaran. A representative selection of these myths is given here to indicate the all-encompassing framework of which they are a part.

5 THE SUN AND MOON

There are many variants of the aboriginal creation story but in most versions the life-giving spirit is the Sun. Amongst the Murray River tribes, the origin of the Sun is linked to the tossing of a giant emu egg into the sky where it struck a heap of dry wood and burst into flame, bringing light to the hitherto dark world. Thereupon, the Great Spirit *Baiame*, seeing how much the world was improved by sunlight, decided to rekindle the woodpile each day (Elkin, 1964).

In contrast to the Greeks, the Amerind Indians and, the Quechua Indians of Peru, all of whom designated the Sun as male and the Moon as female, the Australian Aborigines invariably represent the Sun as female and the Moon as male. In most areas, the Sun is a woman who daily awakes in her camp in the east and lights a fire to prepare the bark torch she will carry across the sky. This fire provides the first light of dawn. Before beginning her journey she decorates herself with powder made from crushed red ochre, colouring the clouds red in the process. At evening, having travelled across the sky to the western edge of the world, she renews her powder, spilling red and yellow in the sky again before beginning her long passage underground back to her camp in the east. It was probably this underground journey which was instrumental in determining the gender of the Sun as female, for her torch is thought to bring warmth and fertility to the interior of the earth, causing the plants to grow. However, in Milingimbi, Arnhem Land, where the Sun sets in the sea, she becomes a great *Warrukay* fish and swims under the earth to return in the east next morning. Similarly, in Milingimbi legend, the Moon becomes a *Jukal* fish, passing beneath the earth during the day (Mountford, 1956).

The Moon, being male, is generally accorded greater status, and in many areas powers of death and fertility are accorded to him. An eclipse of the Sun is interpreted as indicating that the Moon man is uniting with the Sun woman. In addition, diverse legends have evolved to account for his waxing and waning. Aborigines in coastal areas noted the correlation between the phases of the Moon and the tides. At Yirkalla in Arnhem Land and on Groote Eylandt, when the Moon is new or full and sets at sunset or sunrise respectively, the tides are high; when the Moon is in the zenith at sunrise or sunset, the tides are low. The Aborigines believe that the high tides, running into the Moon as it sets into the sea, make it fat and round. (Although the new Moon may appear thin, they deduce from the faint outline of the full circle that it too is round and full of water.) Conversely, when the tides are low, the water pours from the full Moon into the sea below and the Moon consequently becomes thin, see Figure 2.

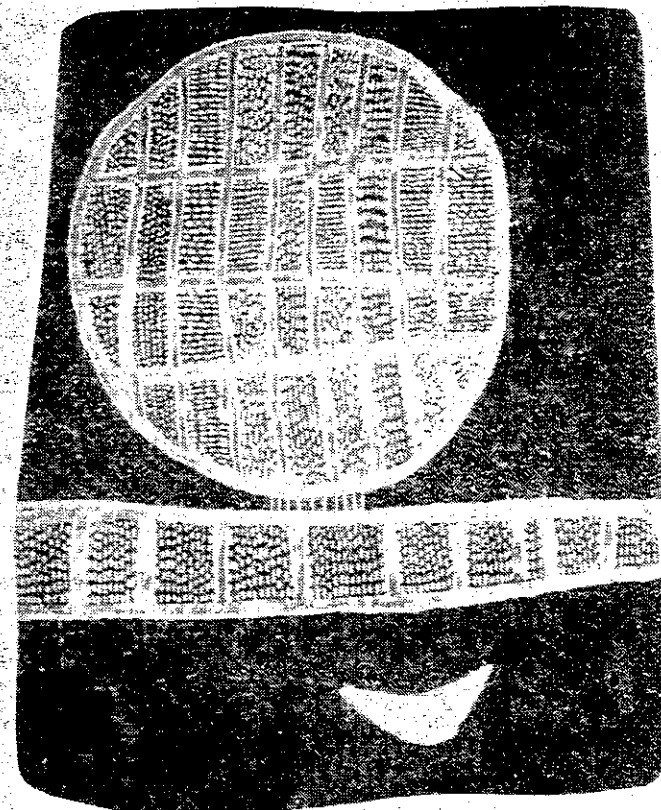


Fig. 2. Drawing of a bark painting from Groote Eylandt showing the full Moon with lines on the lower edge indicating the water running into the Moon from the sea (the horizontal band). The new Moon is shown at the bottom as a crescent. (After Mountford.)

In the legends of inland tribes, the Sun goddess fell in love with the Moon and pursued him across the sky. Although he was sometimes eclipsed, he always managed to escape from her, but never permanently, for she instructed the spirits who hold up the edges of the sky to turn him back whenever he tried to slide down to earth. In other versions, the Moon was despondent because, although he continually searched for a wife to accompany him on his nightly journeys, he was too fat and slow to win the affection of the beautiful girls he encountered.

The Moon is usually regarded as more mysterious, and hence more dangerous, than the Sun and thus functions as a warning against immoral activities. Because of the association of the lunar cycle with the menstrual cycle, the Moon was linked with fertility and young girls were warned against gazing at the Moon unless they wished to become pregnant.

6 THE MILKY WAY

The Milky Way, which spreads like a stream of diffused light across the southern sky, was commonly regarded by the Aborigines as a river in the Sky World (Mountford, 1958), the large bright stars being fish and the smaller stars water-lily bulbs, see Figure 3. Various legends,

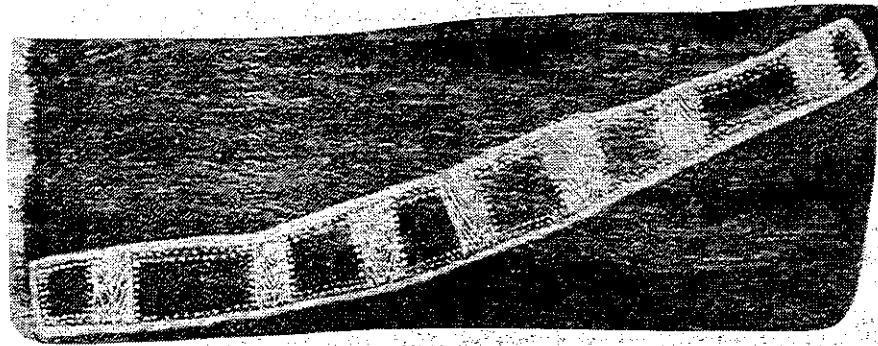


Fig. 3. Drawing of a bark painting of the Milky Way from Groote Eylandt. (After Mountford.)

many of them involving a moral lesson, have evolved in different areas to account for the formation of the Milky Way and the dark region, known to Europeans as the Coal Sack. A story originating in the area around Port Bradshaw associates the Milky Way with an act of adultery and subsequent vengeance, thereby conveniently employing a natural phenomenon as a recurrent warning against wrong-doing. When *Binyu*, a young hunter whose tribal totem was the crow, tried to seduce the wives of his tribal brother – two sisters of the catfish totem – a tribal war broke out, during which the girls and later *Binyu* himself were killed. Returning to his totemic form of a crow, *Binyu* sought vengeance by once more attacking the two girls (who had now reverted to the shape of catfish) and succeeded in eating them, leaving only the bare bones. When the outraged husband hurled the shining fish bones after the departing crow, they flew end over end up into the sky like throwing sticks to become the myriad of stars of the Milky Way. The dark patch (the Coal Sack) is the crow and two especially bright stars nearby are the two catfish women, still waiting for their lover.

A Queensland version of the origin of the Milky Way associates it with *Priepriggie*, an Orpheus-like hero, as famed for his songs and dances as for his hunting. When he sang, the people danced to the rhythm until they dropped with exhaustion and declared that if *Priepriggie* wished he could make even the stars dance. Rising early one morning to hunt, he found a tree full of flying foxes and speared the leader. Unfortunately, the rest of the flying foxes awoke and descended upon *Priepriggie* in vengeance, carrying him with them up to the sky. Unable to find him, his people decided to perform his dance in the hope that he would return, but without him they could not capture the rhythm. Then they heard the sound of someone singing in the sky. As the rhythm grew louder and more pronounced, the stars, hitherto randomly dispersed, began to dance and arrange themselves in time to *Priepriggie's* song. Thus the Milky Way serves as a reminder that the tribal hero should be celebrated with traditional songs and dancing.

Around Yirrkalla, the Milky Way is linked to a legend of two brothers who drowned while canoeing. Their bodies, floating in the water, are two dark patches in the Milky Way in the constellations of Serpens and Sagittarius, while the canoe is a line of four stars near Antares, see Figure 4 (Mountford, 1956).

7 THE SOUTHERN CROSS

Because of its diagrammatic shape, the Cross is linked with various characteristic objects in different areas. Thus around Caledon Bay on the east coast of Arnhem Land, it is taken to represent a stingray being pursued by a shark – the Pointers, see Figure 5. On Groote Eylandt, where fish is the staple diet, the four stars of the Cross represent two brothers, the

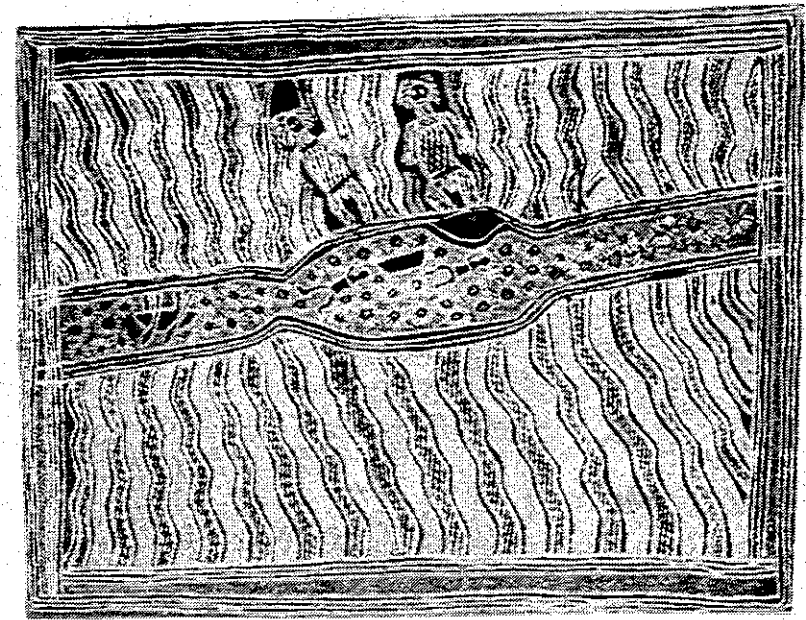


Fig. 4. From a Yirrkalla bark painting of the Milky Way. The two brothers' bodies are the dark shapes in the central panel, while their canoe has turned into stars, surrounded by the rest of the stars in the Milky Way. The outer panels, depicting the wake of the canoe, represent wavy lines of stars in the Milky Way near Scorpio. The two brothers can also be seen in the upper panel, the elder one standing on a black rock which represents a dark part of the Milky Way near Theta Serpentis.

Wanamounitja (Alpha and Beta Crucis), and their respective camp fires (Delta and Gamma Crucis) where they cook a great black fish *alakitja* (the Coal Sack) which they have caught in the Milky Way, Figure 6. The Pointers are their two friends the *Meirindilja* who have just returned from hunting, Figures 7 and 8. Desert tribes, on the other hand, see in the kite shape of the Cross the footprint of the wedge-tailed eagle *Waluwara*, while the Pointers represent his throwing stick and the Coal Sack his nest.

Another legend concerning the Southern Cross relates it to the advent of death in the world. It is said that the Great Spirit *Biaime* created two men and a woman and taught them what plants to eat and how to dig for roots. When a drought came and the plants withered, the woman urged the men to hunt an animal for food. One man agreed and killed a kangaroo, but the other man refused to eat another of *Biaime's* creatures. He went off alone into the desert and fell exhausted beneath a white gum tree. The *Yowi*, spirit of death, reached down from the tree and dragged him up, disturbing two white cockatoos which were nesting there. Thereupon the whole tree ascended into the heavens. The four bright stars of the Southern Cross, *Yaraan-do*, are the eyes of the man and the *Yowi* and the two Pointers of the Cross are two cockatoos trying to return to their nest in the gum tree.

8 VENUS

The Morning Star was also an important sign to the Aborigines who arose at early dawn to begin their hunting. It, too, was personified and frequently associated with death. Arnhem Land legends identify the home of the morning star, *Barnumbir*, as *Bralgu*, the Island of the Dead.

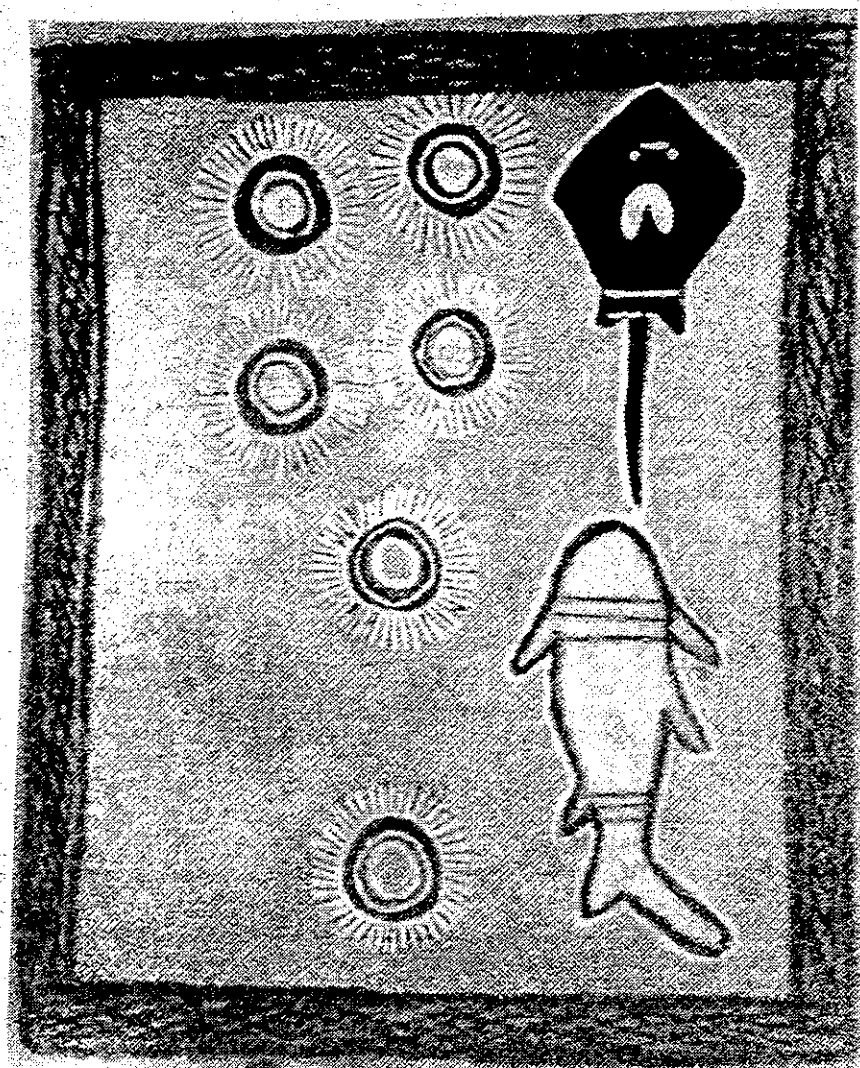


Fig. 5. Drawing of a bark painting from Yirkalla showing the stars of the Southern Cross (a stingray) being chased by the Pointers (a shark). (After Mountford.)

Barnumbir was so afraid of drowning that she could be persuaded to light her friends across the sea at night only if she were held on a long string by two old women, who at dawn would pull her back to shore and keep her during the day in a basket. In Arnhem Land, because of this connection, the morning star ceremony is an important part of the ritual for the dead. *Barnumbir* is represented by a totem stick to the top of which is bound a cluster of white feathers or down, denoting the star, and long strings ending in smaller bunches of feathers to suggest the rays. When a person dies, his/her spirit is believed to be conducted by the star to *Bralgu*, its last resting place (Mountford, 1956).

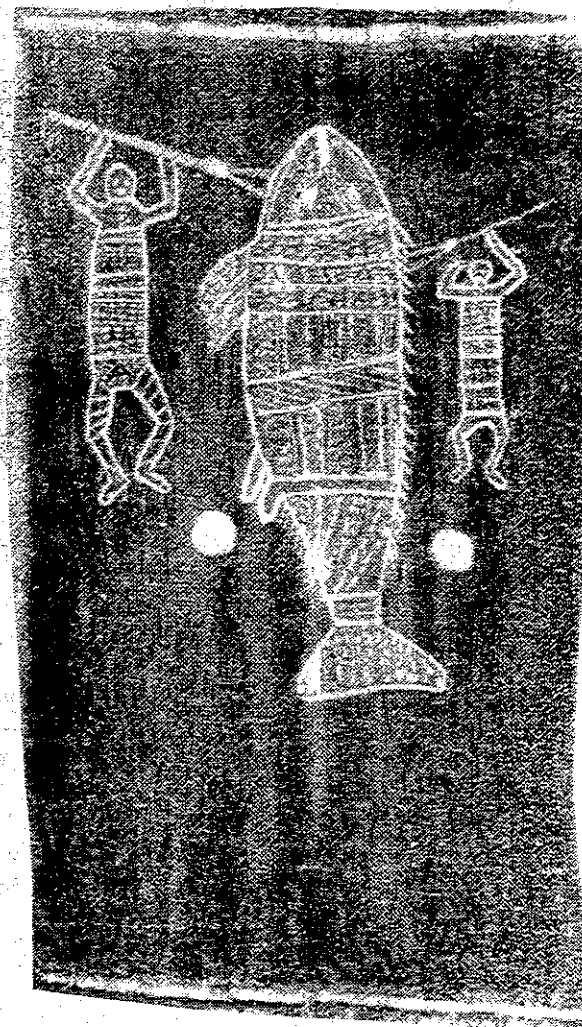


Fig. 6. Drawing of a bark painting of the Southern Cross from Groote Eylandt showing the two *Wanamoumitja* brothers spearing the fish (the Coal Sack). The two white circles are their cooking fires. (After Mountford.)

9 ORION AND THE PLEIADES

One of the most widespread myth cycles is that concerning the Pleiades. In Greek mythology, the Pleiades were said to be the seven daughters of Atlas who, when pursued by Orion, begged to be delivered. They were turned into doves and flew into the sky where they formed the asterism named after them in Taurus. The least brilliant of the seven is Merope who, having married a mortal, hides herself in shame. Although the keen-sighted can distinguish many more than the traditional seven stars in the asterism, aboriginal legends concerning them bear a striking similarity to the Greek story. All identify them with a group of young women and



Fig. 7. The two *Meirindija* brothers (the Pointers) returned from hunting with their boomerangs. (After Mountford.)

nearly all portray the girls as fleeing from the unwanted amorous advances of a hunter who, in some versions, is castrated as a punishment and warning to other potential wrongdoers. The whole cluster of Pleiades stories therefore forms part of a much larger group of myths of sexual conquest and submission.

Amongst the *Pitjanjatjara* of the western desert, the practical connection noted above between the dingo breeding season and the appearance of the Pleiades in the dawn sky in autumn, is preserved in a local legend. According to this, the *Kungkarungkara* or ancestral women (sometimes called the Seven Sisters) kept a pack of dingoes to protect them from a man *Njiru*. He succeeded in raping one of the girls who died (the obscure Pleiad), but he continued to pursue the others, armed with a spear which came to have ritual phallic significance. Eventually, the women assumed their totemic form of birds and flew into the sky to escape from him. Even then, he defied their dingoes and followed the women into the heavens where he can be seen in the stars of Orion's Belt. Like the Greek Orion, *Njiru* was also a hunter and pairs of smaller stars which arise near the constellation of Orion are said to represent his footsteps as he pursues the *Kungkarungkara* (Tindale, 1974).

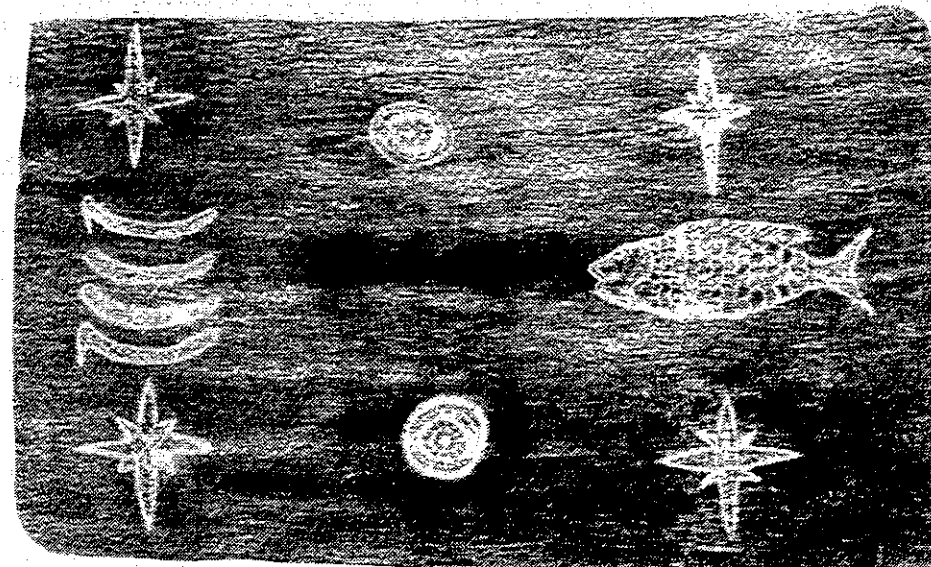


Fig. 8. Bark painting from Groote Eylandt representing the Southern Cross and Pointers in diagrammatic form. The two stars on the left are the *Meirindija* brothers with their boomerangs; the two disks in the centre are the cooking fires and the two stars on the right are the *Wanamoumitja* brothers with their fish. (After Mountford.)

In another version of the story, the girls are called the *Meamei* and, before leaving the earth, they travelled into the mountains causing springs to issue forth and feed the rivers so that there would be sufficient water for the people forever. A young hunter *Karambal* fell in love with one of the sisters and carried her off to be his wife. The other sisters sent cold wintry weather to force him to release her, but later, repenting of the hardship this caused the tribe, they made their way into the sky in search of the summer Sun to melt the snow and ice. Thus the Pleiades appear in the summer each year, bringing the hot weather. Afterwards they travel west and winter returns as a reminder to men that it is wrong to carry off women who belong to a totem forbidden them (Elkin, 1964). *Karambal* ascended with them into the sky and still pursues them as the star Aldebaran, which follows close to the Pleiades.

At Yirrkalla on the coast of Arnhem Land, the motif of pursuit and rape is replaced by domestic harmony. There the constellation of Orion is said to be a canoe full of fishermen and their wives, the Pleiades, are in another canoe, all having arrived from another land to the east. On their way the men caught a turtle and the women two large fish, but as they were nearing the shore a heavy storm capsized the canoes and drowned the people. The two canoes, the men and women, the turtle, and the two fish (adjacent clusters of stars in the Milky Way) are all visible in the sky for the whole of the wet season. In its basic form, this legend carries a warning against the dangers of fishing when storms are imminent, but the version current in north-eastern Arnhem Land carries the added moral message that the fishermen drowned as a punishment for catching catfish, forbidden to their particular tribe by totemic law (Mountford, 1958; Isaacs, 1980). On nearby Groote Eylandt, the three stars of Orion's Belt are three fishermen, the *Burumburum-runja*, and the Pleiades are their wives, the *Wutarinja*. The stars of Orion's sword are the fish which they have caught and their campfire, Figure 9.

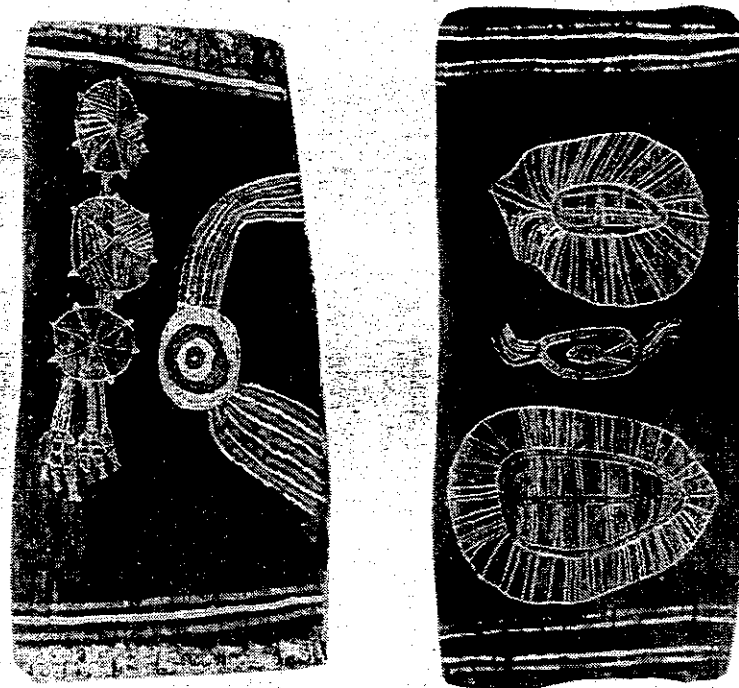


Fig. 9 (left). Drawing of a bark painting from Groote Eylandt representing Orion's belt (the three large stars) as the fishermen and Orion's sword (the smaller stars hanging from the third fisherman). To their right is their fire with flames and smoke. (After Mountford.)

Fig. 11 (right). Drawing of a bark painting from Groote Eylandt of the Magellanic Clouds. The large cloud at the bottom is the camp of the old *Jukara* man, and the one at the top, that of the old woman. Between them is their cooking fire, the star *Angnura*. (After Mountford.)

To the tribes around Milingimbi, the stars of Orion, the Hyades, the Pleiades, and many adjacent stars are all part of the aboriginal constellation of *Tjilpuna* (the Canoe Stars) which dominates the evening sky during the wet season (December to March). The three stars of Orion's Belt are three fishermen, the *Tjilpuna*, in one end of a canoe; their wives, the Pleiades, sit at the other end. The fish they have caught is the asterism of the Hyades, while the fish in the sea are other groups within the Milky Way, Figure 10.

10 THE MAGELLANIC CLOUDS

Although they are relatively insignificant, the Magellanic Clouds appear in many aboriginal legends as the camps of sky people. On Groote Eylandt they are believed to be the camps of an old couple the *Jukara*, grown too feeble to catch their own food. Other star people catch fish and lily bulbs for them in the Milky Way and bring them to the *Jukara* to cook on their fires. The Large Magellanic Cloud is the camp of the old man and the Small Cloud that of the woman. The space between them is their cooking fire, while a bright star called *Angnura* (probably Achernar = Alpha Eridani, magnitude 0.49) represents their meal, Figure 11. This story suggests a celestial model of compassion for the aged.

At Yirrkalla, the Magellanic Clouds are said to be the homes of two sisters, each of whom has a dog. The elder sister and her dog live in the Large Cloud and the younger sister and her dog in the Smaller Cloud. During the middle of the dry season, the elder sister leaves her younger sister, but, during the wet season, she is persuaded to return so that they can go out together collecting yams (Mountford, 1956). This story reflects the observed fact that at this latitude (12° S) only the Small Cloud is visible during most of the dry season (April to September), whereas both Magellanic Clouds can be seen during the wet season.

11 METEORS

Meteors are variously interpreted. In north-eastern Arnhem Land, because of their speed and unpredictability, they are believed to be spirit canoes carrying the souls of the dead to their spirit home in the sky. To the Tiwi tribe of Bathurst and Melville Islands, each is the single eye of the one-eyed spirit men, the *Papinjuwari*, who steal bodies and suck the blood of their victims, and their evil eyes are seen blazing as they streak across the sky looking for their prey. In other legends, meteors are associated with fire and linked to the waratah plant, *Telopea speciosissima*, a member of the Protea family, which is resistant to fire and whose brilliant red flowers seemed to the Aborigines like sparks from a fire. This was why, in the early years of white settlement, some Aborigines brought waratahs to the European blacksmiths: they identified the sparks from the anvil with the sparks from meteors and hence with the waratahs.

12 DISCUSSION

From the sample of star legends described here, it will be apparent that, with the possible exception of meteors (and even they can be regarded as recurrent events), the Aborigines' concern is not with extraordinary occurrences, but with the regular patterns of natural

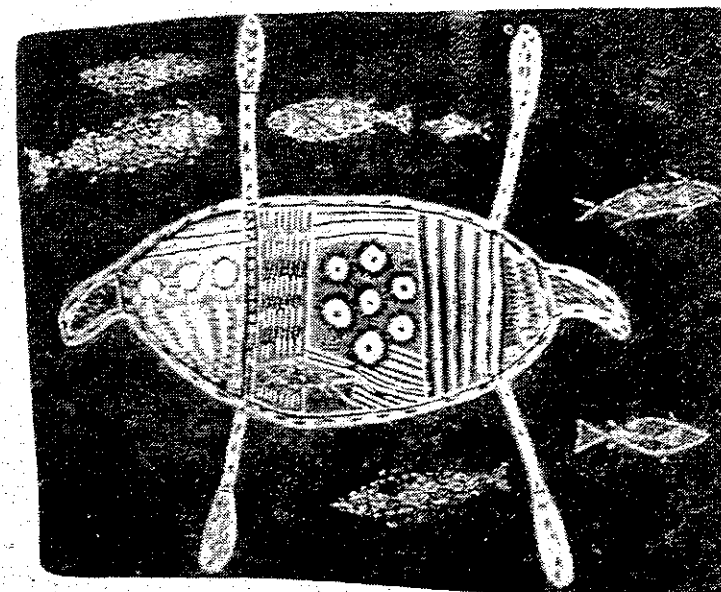


Fig. 10. Drawing of a bark painting representing the stars of Orion, the Pleiades and the Hyades. The three stars at the left end of the canoe are Orion's Belt, the group of seven in the middle are the Pleiades, their wives. The paddles of the canoe are long lines of stars stretching out to north and south and including some from the constellations of Gemini and Eridanus. The fish in the canoe is the asterism Hyades and the fish in the water are stars in the Milky Way. (After Mountford.)

phenomena. This is understandable since one of the main functions of the mythology was to overcome the sense of helplessness otherwise inevitable in a people so completely dependent for their very survival upon the natural world and without technological means of controlling their environment. The legends served this purpose by integrating a potentially-alien universe into the moral and social order of the tribe – by 'humanizing' species and natural objects and ascribing to them behaviour patterns and motivations which accord with those of the tribal unit.

Such a philosophy serves a number of important social functions. In the first place, it engenders a level of confidence about Man's place in the universe, not as a superior being but as an equal partner; in this it fulfils a role comparable to that of technology which also permits some control over the environment. Secondly, it cultivates respect for the inanimate as well as the animate, for all partake of the same spiritual identity as Man himself. Thirdly, the legends provide a sanction for the customs, rites, and morality of the tribe, since these are reflected and enacted in the Sky-world.

It is sometimes thought that the aboriginal legends of the stars, being unscientific, must, instead, be related to the tenets of astrology; but in fact they are fundamentally different. Astrology assumes that the lives of all individuals born during a particular configuration of the heavens will be predetermined along similar lines. The aboriginal myths, on the other hand, are not fatalistic in this sense; they may be prophetic in linking certain natural events with a seasonal configuration of the sky, but they make no deterministic predictions about individual lives; the moral values enshrined in the legends are held to be true for the *whole* tribe, not merely those of a certain zodiacal sign; moreover, anyone may choose to disobey them if he is prepared to suffer the punishment suggested in the story.

The most radical difference between the vitalistic beliefs which underlie these myths and the materialistic philosophy of western science, concerns the relationship of the observer to the observed. According to the principles of scientific method, the observer is distinct from the object observed, which, in turn, is uninfluenced by the observer; hence this relationship is best expressed in mathematical terms. It was this rationale that induced Europeans to cross the globe in order to measure the transit of Venus with the greatest possible accuracy. The Aborigines, on the other hand, did not conceive of themselves as observers separated from an objectified Nature, but rather as an integral part of that Nature. The meaning of the stars, as of everything else in the environment, was neither self-evident nor independent of the observer; rather it depended on the degree of initiation into tribal lore which elucidated the links between tribal customs and natural phenomena. Without this knowledge the individual was disoriented and powerless in an alien universe.

The arrival in Terra Australis of European astronomers, imbued with a Newtonian understanding of the world, was to have an effect on this mythical framework no less destructive than the impact of white society on the land and status of the Aborigines themselves. The result was the loss of that close sense of unity with the natural world and consequent sense of responsibility for it, which the aboriginal legends affirmed as a fundamental necessity for survival.

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