

THE ABORIGINAL AUSTRALIAN COSMIC LANDSCAPE. PART 1: THE ETHNOBOTANY OF THE SKYWORLD.

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Abstract: In Aboriginal Australia, the corpus of cosmological beliefs was united by the centrality of the Skyworld, which was considered to be the upper part of a total landscape that possessed topography linked with that of Earth and the Underworld. Early historical accounts of classical Australian hunter-gatherer beliefs described the heavens as inhabited by human and spiritual ancestors who interacted with the same species of plants and animals as they had below. This paper is the first of two that describes Indigenous perceptions of the Skyworld flora and draws out major ethnobotanical themes from the corpus of ethnoastronomical records garnered from a diverse range of Australian Aboriginal cultures. It investigates how Indigenous perceptions of the flora are interwoven with Aboriginal traditions concerning the heavens, and provides examples of how the study of ethnoastronomy can provide insights into the Indigenous use and perception of plants.

Keywords: ethnoastronomy, cultural astronomy, ethnobotany, aesthetics, Aboriginal Australians

1 INTRODUCTION

How people conceive and experience physical space and time is culturally determined. Iwaniszewski (2014: 3–4) remarked

While modern societies tend to depict these categories as type [*sic*] of independent entities, real things, or universal and objective categories, for most premodern and non-Western societies time and space remained embedded in their activities and events.

In the Australian ethnographic literature, reference to the 'Skyworld' refers to an Aboriginal concept of the heavens as having an existence as a country, upon which exist ancestors who are seen as celestial bodies. Existing overviews of the astronomical traditions of Aboriginal Australia have highlighted the main elements of the Skyworld, such as its physical structure, the influence of its occupants over earthly events and the existence of genealogical relationships between celestial bodies. While there is considerable variation within the associated mythologies, the Skyworld was experienced through a shared aesthetic system. Australian hunter-gatherers experienced time as the passage of cycles (Clarke, 2009b; Davis, 1989; 1997; Morphy, 1999). They were keen observers of change within their environment, with the onset of seasons signaled by such things as the movement of celestial bodies, weather shifts and the flowering of calendar plants.

1.1 Data Sources

In Australia there is a wealth of recorded ethnobotanical information concerning Indigenous relationships with plants, although there are major biases (Clarke, 2003b; 2007a; 2008a; 2012; 2014a). The ethnobotanical work has largely been focused on physical plant uses, and in particular with documenting species used as

raw materials for food, medicine and artefact-making. Ethnobotanists have generally ignored the cultural roles of plants, such as those involved in the psychic realm. There has also been an imperative to record the plant uses from the classical hunter-gatherer period, to the detriment of studying aspects of the changing relationships that Indigenous people have had with the flora since British colonisation. The spatial coverage of Aboriginal plant use records across Australia is such that there are detailed records available for much of the tropical and arid zones, but major gaps for most of the temperate zone. European colonists arriving in Australia from the late eighteenth century were unfamiliar with most Australian plant species, which has led to a shortage of data for regions, such as south-eastern Australia, where settlement first began.

In comparison to ethnobotany, the field of ethnoastronomy is much smaller in Australia, although similar in the diversity of its data recorders and research practitioners. For the purposes of the current work, the focus on the heavens requires a deeper explanation of the data sources.

The published summaries of the ethnographic records for Aboriginal Australia that are relevant to ethnoastronomy have highlighted deficiencies, particularly in southern temperate regions where British colonization commenced and has been most intense (Clarke, 1997; 2008b; 2009a; 2014b; Fredrick, 2008; Hamacher, 2012; Haynes, 1992; 2009; Isaacs, 1980; Johnson, 1998; 2005; Norris, 2007; Norris and Hamacher, 2009; 2014; Tindale, 2005). For the Indigenous star lore of many areas we must chiefly rely upon anecdotal accounts from those settlers and colonial officials who had ethnological interests, such as Peter Beveridge (1829–1885), James

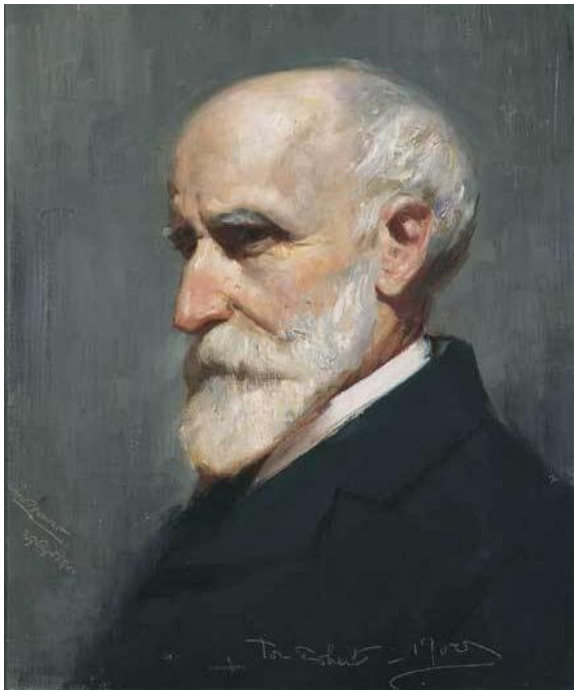


Figure 1: An oil painting of A.W. Howitt by Tom Roberts in 1900 (courtesy: Monash University Collection).

Dawson (1806–1900), John Philip Gell (1816–1898), the Reverend Peter MacPherson (1826–1886), George Augustus Robinson (1791–1866), William Edward Stanbridge (1816–1894), Watkin Tench (1758–1833) and Charles White (1845–1922). As eighteenth and nineteenth century scholars, they were able to compile information from Aboriginal people who were the survivors of the first wave of European settlement. In this period, missionaries, such as William Ridley (1819–1878) and Christian Gottlieb Teichelmann (1807–1888), were more thorough with their recordings of Indigenous culture, although they were working before academic anthropology had begun in Australia.

Information collected by colonists on Indigenous astronomical lore was often distorted and truncated. In the absence of anthropological training, early scholars often tried to package the information received from Aboriginal sources as scientific observation. When this could not adequately be done, they blamed the reliability of their informants. For example, a late nineteenth century newspaper correspondent stated “When retailing this [astronomical] lore to a whitefellow, these astrosophists are frequently guilty of gross exaggeration.” (E.K.V., 1884). Some corruption of the base data has been more deliberate, with many examples of the willingness of European authors to use the idiom of Aboriginal myth for their popular writing, which has added different elements and altered the emphasis of the original narrative (Clarke, 1999a: 60–63).

A generation of scholars who had developed close relationships to Aboriginal communities

emerged from the late nineteenth century. Such a person significant to the study of ethnoastronomy was Alfred William Howitt (1830–1908; Figure 1; Stanner, 1972), who was born in Nottingham, England, and in 1852 emigrated to Australia, settling in Melbourne (for Australian localities mentioned in this paper see Figure 2). He was briefly the manager of a sheep station and a prospector, prior to becoming an explorer. In later life, Howitt became a natural scientist and an authority on the Aboriginal people of south-eastern Australia. Another significant recorder of Aboriginal cosmology was Robert Hamilton Mathews (1841–1918; McBryde, 1974), who was born at Narellan, near Sydney, in New South Wales. During his working life as a surveyor he travelled widely. Without the contributions of Mathews and Howitt, the total ethnographic record of south-eastern Australia would be much poorer.

During the twentieth century, researchers from backgrounds spread across several disciplines recorded Aboriginal ethnoastronomical data. Anthropologists with records pertaining to Australian ethnoastronomy included Daisy May Bates (1859–1951), Ronald Murray Berndt (1916–1990), Catherine Helen Berndt (1918–1994), Daniel Sutherland Davidson (1900–1952), Adolphus Peter Elkin (1891–1979), Ethel Hassell (1857–1933), Helmut Petri (1907–1986), Father Ernest Alfred Worms (1891–1963) and the present author (b. 1961). Missionaries of this period based in the Northern Territory, such as Wilbur Selwyn Chaseling (1910–1989) and Carl Friedrich Theodor Strehlow (1871–1922), were able to work alongside anthropologists. Examples of modern linguists who recorded Aboriginal Skyworld beliefs are Ameer Glass, Dorothy Hackett, John Henderson (b. 1957), Luise A. Hercus (b. 1926), John C. McEntee, Michael Sims and Dorothy Tunbridge. Scholars with interests in museum collections, such as Robert W. Ellis, Charles Percy Mountford (1890–1976), Walter Edmund Roth (1861–1933), Theodor George Henry Strehlow (1908–1978), Peter Sutton (b. 1946) and Norman Barnett Tindale (1900–1993), have used Aboriginal astronomical data as a means of interpreting Aboriginal material culture and art. An astronomer’s perspective of Indigenous Australian beliefs concerning the Skyworld has been provided by Duane W. Hamacher, Roslynn D. Haynes, Trevor M. Leaman, Brian Gilmore Mearns (1907–1989) and Ray P. Norris, while Keith C. McKeon (1892–1952) was a naturalist with an interest in Aboriginal relationships to the environment.

Even with researchers who are properly trained in astronomy, recording problems occur when using a Western European model of the heavens to elicit an Aboriginal version of the night sky. Bates, in her account of the astronomy of

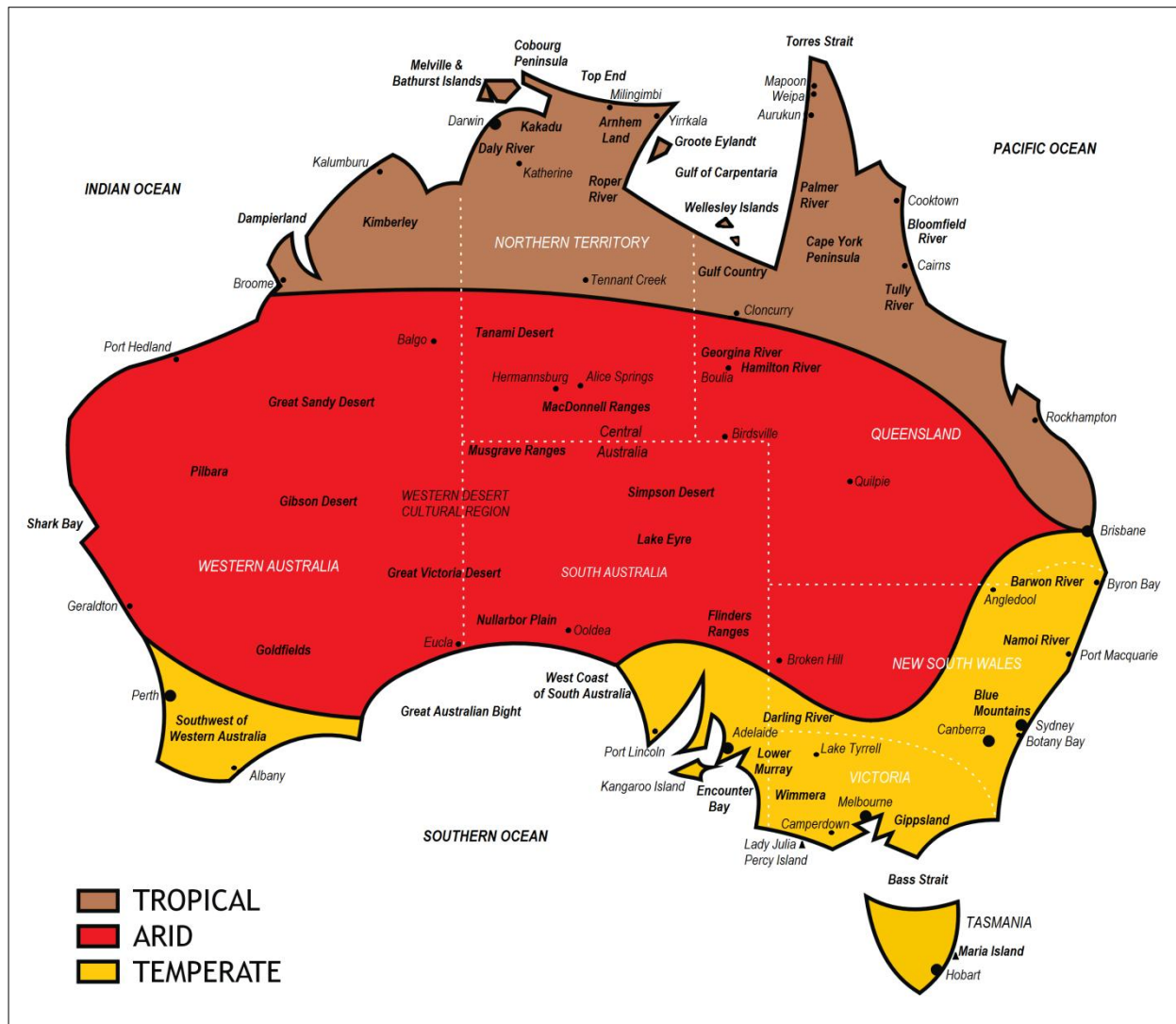


Figure 2: Australian localities or regions mentioned in the text.

the Bibbulmun people in the south-west of Western Australia, warned that:

There is no aboriginal generic term for “Zodiac,” other than the dialectic equivalents for “road” or “track,” and as all native and animal tracks are winding ones throughout Australia, the aboriginal zodiac winds here and there amongst the myriads of heavenly bodies. (Bates, 1924: 170).

Maegraith (1932: 19) summarized the methodological issues for the study of Indigenous astronomy:

To mark out the configuration of the constellations is by no means easy even to an educated observer ... the aborigine has complicated his star groupings by the introduction of marriage classification and relationship, and by tribal divisions.

Apart from translation difficulties, the way Aboriginal people perceived space in the classical period of their culture was fundamentally different from that of modern Western Europeans (Sutton, 1988; 1998).

2 THE CULTURAL LANDSCAPE

For contemporary geographers, the cultural landscape is a concept that encompasses both the physical and cultural aspects of the human construction and perception of space (Baker, 1999: 20–23; Clarke, 1994: 50). The heavens are part of the space that people experience. In Aboriginal Australia, interpretations of the sky must be understood in terms of the cosmological traditions that explain the making of the world. Fundamental to Aboriginal religious beliefs is the concept that there was a Creation period when totemic spiritual ancestors performed heroic deeds, moulded and imparted spiritual power to the land, and formulated customs for their descendants to follow (Berndt and Berndt, 1999: 137–138, 229–230; Clarke, 2003a: Chapter 2; Hiatt, 1975; Sutton, 1988). These ancestors often took the form of animals and birds, but many also were plants, atmospheric and cosmological phenomenon or even human diseases. The paths the ancestors made across the land during the Creation became ancestral tracks, or song lines, which connect mythological sites where accord-

ing to Aboriginal tradition certain events had taken place. When the Creation period drew to a close, it was Aboriginal belief that many of these spiritual ancestors travelled up into the heavens, and for this reason anthropologists have referred to them as 'Sky-heroes' (e.g. Elkin, 1964: 252–254).

Aboriginal people in the classical period believed that they lived in the centre of a finite world. This is described by Ethel Clifton, who in 1871 at the age of 21 married Albert Hassell and moved to a sheep station named Jarramungup, a four-day ride from Albany. For the next few years of her life Ethel Hassell (Figure 3) sympathetically recorded details of the culture of the local Wiilman people. In 1910 she brought this study together in a manuscript titled *My Dusky Friends* which she deposited in the Mitchell Lib-



Figure 3: A photograph of Ethel Hassell (booknet-books4all.blogspot.com/2010_03_01_archive.html).

rary, Sydney, but it was only in 1975 that this was published as a book (Hassell, 1975). In 1930 and 1931, shortly before her death in 1933, Ethel Hassell wrote to the American anthropologist D.S. Davidson about her studies, and in a paper that he subsequently published (Hassell and Davidson, 1936) they remarked on beliefs concerning the "... rotundity of the Earth ..." that were held by the Wiilman people of the south-west of Western Australia. They also noted:

The earth was considered round like a ball. The natives argued that everything was round. Wherever one stood and looked things seemed to be thus. If a baby was put down he would not run straight like a fence but around in circles. If sheep got lost they ran around and around. Kangaroos did not run straight but around and around like sheep. When a white man got lost he walked around in circles. Where the sky touches the earth it is round.

Trees are round, and bushes are round. It was just natural for everything to be round, hence why not the earth? (Hassell and Davidson, 1936: 687).¹

The world they lived within was comprised of a curved but relatively level Earth, with a Skyworld above and an Underworld below.

In many parts of Australia, the sky was perceived as a solid vault that sat on top of what was termed "... a flat limited surface." (Howitt, 1904: 433). For instance, Howitt recorded in the Wimmera district of western Victoria that:

A Wotjobaluk legend runs that at first the sky rested on the earth and prevented the sun from moving, until the magpie (*goruk*) propped it up with a long stick, so that the sun could move, and since then "she" moves round the earth. (Howitt, 1904: 427).

The theme of the sky being held up by wooden poles or living trees is present in other south-eastern Australian accounts (e.g. Clarke, 2003a: 194; Howitt, 1904: 427; Massola, 1968: 105–106; Morgan, 1852 [1980: 64–65, 191]; Worms and Petri, 1998: 129). In Central Australia the German-born Lutheran missionary-anthropologist Carl F.T. Strehlow (Figure 4; Veit, 1990), who was based at the Hermannsburg Mission from 1894 until 1922, found it was Arrernte tradition that the heavens rested on top of 'stone legs' (Strehlow, 1907; cited Goldenweiser, 1922: 212]). Aboriginal logic held that the sky region began at the height of a tall tree or at most a hill (see Clarke, 2015).

In Aboriginal Australia, the levels within the total cultural landscape were named entities. For instance, Sims made a detailed cosmological study of the Tiwi people of Melville and Bathurst Islands in the Northern Territory and he described how they divide their Universe into four levels: the Underworld (*Yilaru*), the Earth (*Kaluwartu*) upon which the living reside, the Upperworld (*Tuniruna*), and above that the Skyworld (*Juwuku*) (Sims, 1978: 165–167). The Tiwi Underworld was seen as a valley where nothing grows, so there is no food, only water from a stream. There are two high stony ridges here, and in the valley between them the Sun, as the carrier of fire, travels with a bark torch during the night. For the Tiwi, the Creation ancestors originally emerged from the ground on Earth to give their country meaning and form. The Upperworld is similar to Earth with respect to land and the seasons, and for part of each year was the home of spiritual ancestors who controlled the weather. At certain times, these ancestors would move into the Skyworld, which is the abode of other ancestors who are seen as the stars, Moon and Sun.

The Diyari people of eastern Central Australia viewed their cosmos as having two zones above Earth. It was recorded that:

Beyond the sky is another country, which may be called sky-land. This belief is indicated in one of the Dieri [Diyari] legends, which tells how Arawotya, "who lives in the sky," let down a long hair cord, and by it pulled up to himself the Mura-mura [Creation ancestor] Ankuritcha and all those who were with him. (Howitt, 1904: 432–433).

The Diyari and neighbouring groups also conceived the existence of an Underworld, where the Sun ancestor had first emerged (Hercus, 1987; Howitt, 1904: 427–428). Other accounts in Aboriginal Australia do not distinguish between the layers of the sky. For instance, Howitt recorded that the Wurunjerri (Woiworung) people around the northern side of Melbourne in Victoria believed that they:

... had a sky country, which they called *Tharangalk-bek*, the gum-tree country. It was described to me as a land where there were trees. The tribal legends also tell of it as the place to which Bunjil [supreme male ancestor] ascended with all his people in a whirlwind. (Howitt, 1904: 433).

Here, the land was named after *tharangalk* trees, which are manna gums (*Eucalyptus viminalis*) that were a source of edible manna and sugar lerp (extract produced by leaf insects).²

The gulf between terrestrial space and the sky was more easily crossed at the time of events taking place in the Creation period. For instance, in Diyari tradition from the north-east of South Australia:

The legend of the Yuri-ulu [two Mura-mura youths] tells how, after the holding of the *Wil-yaru* ceremony they went on their wanderings, and finally beyond the mountains passed through what may be briefly termed a "hard darkness" into another country, whence looking back, they recognised what they had passed through as the edge of the sky. (Howitt, 1904: 426).

Through magical means, shorter routes from Earth to the Skyworld were also available. Aboriginal groups along the Darling River in western New South Wales believed that the

... Pleiades were a lot of young women who went out on a plain searching for yams and a whirlwind came along and carried them up into the sky, depositing them where they are now seen. (Mathews, 1904: 283).

The historical accounts of Aboriginal traditions sometimes blur the distinction between the Skyworld and the Underworld. Aboriginal groups living along the coast of southern South Australia believed that in order for the spirits of the deceased to reach the Skyworld, they had to follow the path of their Creation ancestors by first entering the Underworld or 'Land to the West' by diving into the sea (Clarke, 1997: 127). For instance, Berndt et al. (1993: 226) record at the close of the Creation period in the Lower Mur-

ray of South Australia, the supreme male ancestor *Ngurunderi* travelled to the western end of Kangaroo Island, where he said to his kinfolk:

Here you must dive when death occurs, when the spirits leaves your body. When you die, all of you will dive into the sea, following my example; then you will go up walking as I did, cleansed; you will follow me into the sky! (see also Clarke, 1995).

This pathway follows the same course perceived for the Sun: going to the western horizon to enter the Underworld, then travelling below to exit on the eastern horizon of Earth, where the vault of the heavens was close enough to step into the Skyworld.



Figure 4: Carl Strehlow, Pastor of Hermannsburg Mission, circa 1895 (courtesy: State Library of South Australia, B 42410).

It was considered a serious matter if for any reason the separateness of the Earth, Skyworld and Underworld regions was compromised. For the Wilman of the south-west of Western Australia, the University of Pennsylvania anthropologist D.S. Davidson (McCarthy, 1981) drew on previously-unpublished material from the 1880s recorded by Ethel Hassell regarding the sighting of *jannock* spirits as water spouts, which were:

... viewed with the greatest terror, for the meeting of the sea and the sky, except on the edge of the world, was regarded as a most unholy union which could bring nothing but misfortune to the unlucky witnesses. If a native saw the sea rising and the clouds lowering to meet it, he at once informed the tribe and they broke camp immediately to move as far inland as their boundaries would permit. They allowed a long time to elapse before they returned to that spot. (Hassell and Davidson, 1936: 702).



Figure 5: A portrait of Watkin Tench circa 1800 (courtesy: Mitchell Library, State Library of New South Wales).

In 1788, the British marine officer Captain Watkin Tench (Figure 5), who arrived in Sydney with the First Fleet in 1788 and returned to England in 1792, wrote of the Aborigines at Botany Bay:

The native of New South Wales believes that particular aspects and appearances of the heavenly bodies predict good or evil consequences to himself and his friends ... Should he see the



Figure 6: C.P. Mountford in 1947 (courtesy: National Archives of Australia, A1200/1).

leading fixed stars (many of which he can call by name) obscured by vapours, he sometimes disregards the omen, and sometimes draws from it the most dreary conclusions. (Tench, 1788–1792: 249).

Aboriginal people routinely looked for omens in the heavens (Clarke, 1997: 138–139; 2009a: 52–53; Hamacher and Norris, 2010a; 2010b; 2011; Johnson, 1998: 86–89).

In the eyes of Aboriginal observers, the first Europeans to arrive in their country were their own deceased kin in spirit form, having returned from the Skyworld (Clarke, 1999b: 154–155; 2007b: 143–144). At the time of British colonisation, it was widely believed by south-eastern Australian Aboriginal people that the eastern prop that held up the vault of the Skyworld had decayed, perhaps due to British expansion occurring in the region (Clarke, 2009a: 52; Willey, 1985: 55). They reasoned that unless formal gifts of possum skins and stone hatchet heads were sent to the old man who ritually looked after it, then people on the terrestrial plain would be crushed by the falling vault of the heavens. It was also believed that spirits of the deceased (i.e. Europeans) would cause havoc for the living, having returned from the Skyworld.

2.1 The Skyworld

According to Aboriginal tradition, the Skyworld was similarly organised to that of Earth, to the extent that the celestial bodies as ancestors were subject to the same laws as people and animals. For example, on the Adelaide Plains of South Australia, the *Mankamankarranna* stars (Pleiades cluster) were seen as girls who gathered roots and other vegetables around them in the sky (Clarke, 1990: 6; 1997: 136).³ The connection between spirit ancestors and the sky is indicated in Western Desert culture with the word *pirtirripiriny*, which is an adjective for 'immortal' and literally means 'like the stars' in the Ngaanyatjarra and Ngaatjatjarra languages (Glass and Hackett, 2003: 324). In north-east Arnhem Land, Yolngu people believed that the *Jungkowa* ancestors made a man and two women as founders of a 'horde' (clan) to live in the heavens. The Reverend W.S. Chaseling from the Methodist Overseas Mission, who was the founding missionary at Yirrkala Mission in Arnhem Land in 1935, recorded that:

This horde-family of the heavens lives as naturally as do the Yulengor [Yolngu]. By day the women forage for swamp rush-corms [spike rush or water chestnut, *Eleocharis dulcis*], water-lilies [*Nymphaea* species], and cycad [*Cycas* species] nuts, and at night sing and dance by the fire. (Chaseling, 1957: 149).

In a recorded Yolngu song concerning the *Mandjigai* (Sandfly clan) of the Wonguri language group, the deceased spirits in the Skyworld sat

'like mist' in the shade of paperbark (*Melaleuca* species) trees, living on bread prepared from cycad (*Cycas media*) nuts (Berndt and Berndt, 1999: 374). Similarly, the South Australian mechanic turned anthropologist/filmmaker C.P. Mountford (Figure 6; Jones, 2000), who made a succession of expeditions to Northern Australia during the 1940s and 1950s, has reported that according to a western Arnhem Land Aboriginal tradition there is a family of Skyworld inhabitants called *Garakma* who roam across the heavens foraging for water-lily (*Nymphaea* species) bulbs in the Milky Way and gathering fruit from a tree in the Coal Sack (Mountford, 1956: 487).

The cultural construction of space in classical Aboriginal Australia drew upon the body of knowledge concerning the perceived existence of spirits, both of the creative ancestors and deceased humans. It was an Aboriginal belief that the human soul fragments after death, leaving a 'ghost' spirit that may linger on Earth, while the ancestral component merges with the spirit ancestor, often via a sacred place, and then ascends to an existence within the Skyworld (Clarke, 1999b: 160–161; 2007b: 148–149). White (1904) claimed that:

In parts of Queensland and South Australia the natives believed the "Milky Way" to be a sort of celestial place for disembodied spirits. They said it was the smoke proceeding from celestial grass which had been set on fire by their departed women, the signal being intended to guide the ghosts of the deceased to the eternal camp fires of the tribe.

A similar tradition existed in western Victoria. British-born W.E. Stanbridge (Figure 7; Hamacher and Frew, 2010) arrived in Australia in 1841, and in the early 1850s he purchased land near Daylesford north-west of Melbourne and further north-west at Lake Tyrrell, where he studied the culture of the local Indigenous people. In 1857 he reported that *Warring* ('Galaxy') was "The smoke of the fires of the Nurrum-bunguttias [old spirits] ..." (Stanbridge, 1857: 138). Spirit ancestors could be simultaneously seen as a feature of the landscape, such as a tree or a hill, and a celestial body like a star. For example, the Perth anthropologists, Professor Ronald Berndt and his wife Dr Catherine Berndt (Figure 8) from the University of Western Australia stated that for the southern desert peoples living in the vicinity of Ooldea in western South Australia:

Most of the totemic ancestral beings are represented in the sky by stars and planets. Although they leave their material bodies on earth metamorphosed into stone, their spirits are the stars, etc. There seems to be some division of their spirits between their earthly metamorphosed bodies and the stars. In the sky they are said to be alive, and the movements of the stars, planets, constellations and the Milky Way are said to be part of their eter-



Figure 7: W.E. Stanbridge ca. 1880 (courtesy of Keva Lloyd).

nal wanderings. The women have some knowledge of the stars, but it properly belongs to the secret life of the men. (Berndt and Berndt, 1943: 62).

Ancestors could also be seen in different forms, depending on whether it was day or night. For instance, Worms and Petri (1998: 158) remarked that it was tradition held by the Karadjari people of south-west Kimberley, that "*Bulanj* ['creative rain-serpent'] is the rainbow of the daytime sky and the river of the Milky Way in the night sky."⁴



Figure 8: Ronald and Catherine Berndt (es-es.facebook.com/R.M. Berndt).

Connections between human spirits and the Skyworld were broad, and involved both ends of a person's life. In Aboriginal Australia, it was widely believed that the ancestors produced the spirit children (Tonkinson, 1978). For instance, on the Adelaide Plains it was tradition that the souls of the unborn, newly arrived from the 'Land to the West', would hover among grass-trees (*Xanthorrhoea* species), and there wait for the hour of their conception (J.P. Gell, 1842 [cited Clarke, 2014a: 52]). Similarly, Yaraldi-speaking woman, Pinki Mack, stated that in the Lower Murray prior to birth "... children are said to be little, flying about in the air, dropped out of a bag and they could be caught." (A. Harvey, 1939 [cited Clarke 1999: 127]). The Berndts recorded that among the Yaraldi, the "Spirits of unborn babies inhabited a region located behind the

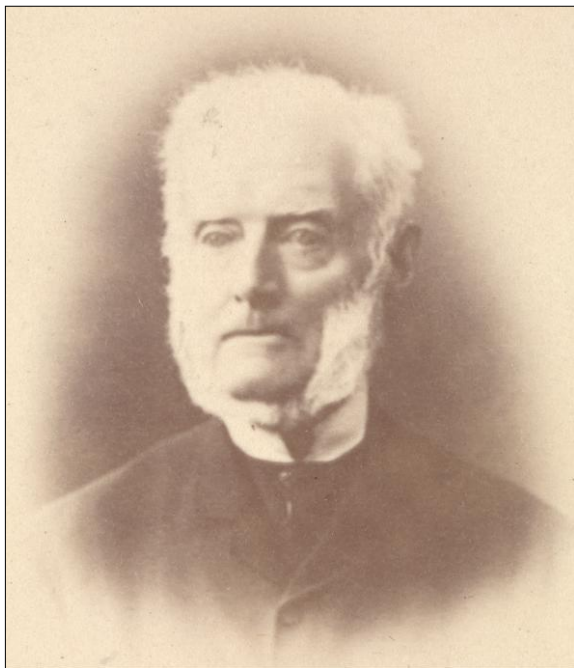


Figure 9: A photograph of James Dawson in 1892 by Johnstone, O'Shannessy & Co. (courtesy: State Library of Victoria, H2998/84).

vault of the sky (Waiyuruwar)." (Berndt et al., 1993: 133). During the early 1990s, an elderly Lower Murray Aboriginal man told the present author that the Ngarrindjeri term for 'stars' and 'semen' was "... all the same, *pel'i*."

In Aboriginal Australia, the Skyworld was a destination for the spirits of deceased people. For instance, Tench at Botany Bay in New South Wales claimed in 1788 that among the Aboriginal people here "When asked where their deceased friends are they always point to the skies." (Tench, 1788–1792 [1996: 252]). It was an Aboriginal belief that the spirits of the recently deceased followed the same or similar routes their spirit ancestors had taken through the Aboriginal landscape. In south-west Victoria, Scottish-born James Dawson (Figure 9; Corris, 1972), who from 1844 spent most the remainder of his

life farming in the Camperdown area of Victoria studying the local Indigenous people and championing their cause, recorded:

On the sea coast, opposite Deen Maar [Lady Julia Percy Island] ... there is a haunted cave called Tarn wurring, 'road of the spirits', which, the natives say, forms a passage between the mainland and the island. When anyone dies in the neighbourhood, the body is wrapped in grass and buried; and if, afterwards, grass is found at the mouth of the cave, it is proof that a good spirit, called Puit puit chepetch, has removed the body and everything belonging to it through the cave to the island, and has conveyed its spirit to the clouds; and if a meteor is seen about the same time, it is believed to be fire taken up with it. Should fresh grass be found near the cave, when no recent burial has taken place, it indicates that some one has been murdered, and no person will venture near it till the grass decays or is removed. (Dawson, 1881: 51–52).

Spirits of deceased people were perceived as passing through the Underworld before making their ascent into the Skyworld.

The Skyworld country was humanised, as the ancestors had partitioned it into distinct areas by assigning celestial 'countries' to specific cultural groups. Adelaide-born Brian G. Maegraith (Figure 10; Radford, 2012) carried out anthropological research during university vacations while studying to be a doctor, before leaving Australia in 1931 and pursuing post-graduate studies at Oxford. He described Aboriginal astronomical traditions in an area of Central Australia where Western Arrernte people interacted with the Luritja of the Western Desert, and stated that:

... the division into Aranda [Arrernte] and Luritja, depending upon the relation of the stars to the east or the west of the Milky Way, has been adhered to strictly; e.g., the stars Alpha and Beta Crucis, lying to the west of the galaxy, are classed as Luritja, whereas the stars Alpha and Beta Trianguli, which lie to the east, are classified as Aranda. (Maegraith, 1932: 21).⁵

Maegraith noted that there were many Aboriginal 'camps' seen in the night sky, with their identity dependent upon whether they were in the east or the west. In Mountford's account of the Pitjantjatjara culture of the Western Desert, the Skyworld was split up into two groups—the summer sky (Orion, Pleiades and Eridanus) and the winter sky (Scorpio, Argo and Centaurus) (Mountford, 1976: 450). In Western Desert kinship terms, the summer sky was considered to be *nganatarrka* (*nananduraka*), meaning the generation of one's self, grandparents and grandchildren.⁶ The winter sky was *tjanamiltjan* (*tanamildjan*) and therefore of the parents' and children's generation level. Due to difficulties in translation, it is likely that the Indigenous words for 'heaven' that were recorded in the diction-

aries of the colonial period variously concern several parts of the landscape rather than just one.

Some recorded accounts of the total landscape as it was during the Creation period are Utopian, depicting a golden age when food and water was easily procurable everywhere (e.g., Strehlow, 1947: 35–38). It was believed that afterwards this idyllic existence was generally restricted to the Skyworld, where deceased spirits who had left Earth continued their foraging activities in a land of plenty (e.g. Howitt, 1904: 434; cf. Strehlow, 1907 [cited in Goldenweiser, 1922: 211–212]). In central New South Wales, it was Aboriginal tradition that for the deceased there was plenty of fruit and grass seed in ‘women’s heaven’, while activities such as hunting kangaroos in the celestial grasslands and fire-making were reserved for ‘men’s heaven’ (McKeown, 1938: 8; Parker, 1905). In the historic period, such Indigenous beliefs would have resonated with the missionaries teachings of the Christian afterlife and possibly have appropriated from them.

Living people were generally barred from the sky, although there were some exceptions to the rule. Howitt recorded that the *kunki* or ‘medicine-men’ of the Diyari people of Lake Eyre in Central Australia:

... can fly up to the sky by means of a hair cord, and see a beautiful country full of trees and birds. It is said that they drink the water of the sky-land, from which they obtain the power to take the life of those they doom. (Howitt, 1904: 359).

According to University of Sydney’s Professor of Anthropology A.P. Elkin (Figure 11; Wise, 1996) healers (‘medicine-men’) reportedly learnt new songs and gained special knowledge of ritual from spirits in the heavens (Elkin, 1977: 22, 33, 53, 75–77, 79, 81, 87, 90, 124, 127). Their crossing into the Skyworld was achieved by various means, such as by climbing to the top of a large spirit tree or walking to the peak of a certain high hill (Clarke, 1997: 127–128; 2015; Howitt, 1904: 432–438). In many cases, such travel was part of the initiation for ‘healers’.

The identities of celestial bodies varied across Australia, although the corpus of cosmological traditions was united by some common elements (Clarke, 2009a: 53–54). In general, the Moon and Sun ancestors were of primary importance, due to their dominating influence over the night and day skies respectively. Often the Moon was male and subordinate to the Sun, which had a female gender. While there are many structural similarities in Aboriginal beliefs concerning the Milky Way, Orion, Pleiades and Magellanic Clouds, there is considerable variation in accounts of the Southern Cross. In Aboriginal Australia it was believed that after the



Figure 10: Queen Elizabeth II meeting Professor Brian Maegraith in 1954 (www.lstm.liverpool.ac.uk/about-lstm/history-of-lstm/lstm-archives/maegraith-archive/).

Creation period, ancestors in the Skyworld retained some influence over life on Earth, particularly in relation to the seasons and weather production (Clarke, 2009b: 82–88; 2015).

2.2 The Underworld

The Underworld was an essential structural component of the Aboriginal cultural landscape. After



Figure 11: A.P. Elkin (courtesy: State Library of New South Wales, Government Printing Office 2-06647).

the ancestral Sun being had travelled through the Skyworld to the western horizon, it was generally believed to return by distant routes to the east (Clarke 2009a: 45). Some Aboriginal peoples considered the path back as being along the southern or northern edges of their country, while others thought it was underneath, via an underground passage through the Underworld. According to Howitt (1904: 428), the Wotjobaluk people of the Wimmera in western Victoria:

... say that the sun was a woman who, when she went to dig for yams, left her little son in the west. Wandering round the edge of the earth, she came back over the other side.

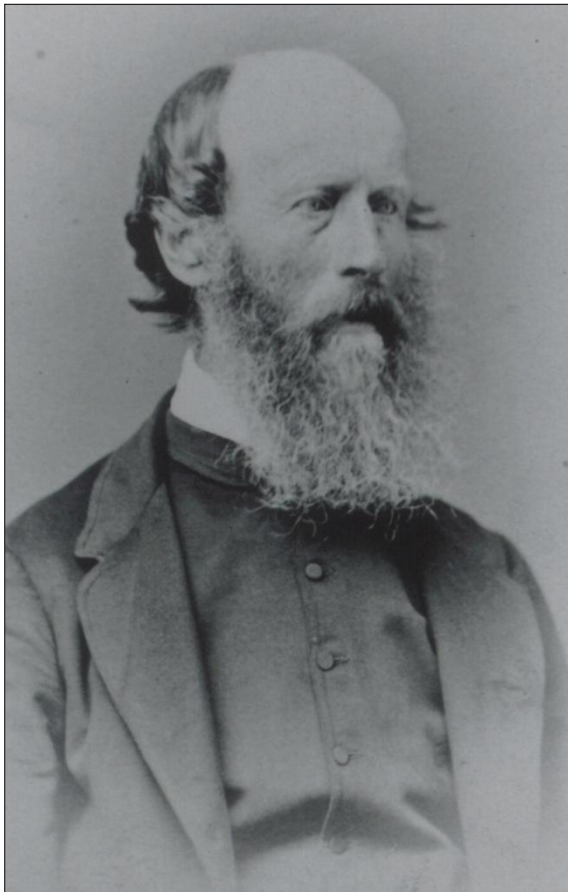


Figure 12: C.G. Teichelmann (courtesy: Leipzig Mission).

The neighbouring Kulin people, however, believed that when the Sun disappeared in the west, she entered a cave at a place called *Ngamat*, which had the appearance of a hole in the ground like that left behind by a large tree burned in a bush fire (Howitt, 1904: 432). Caves feature in many Aboriginal traditions that concern the Sun and other ancestral beings (i.e. Clark, 2007; Howitt, 1904: 427–428; Smyth, 1878 (1): 456).

The existence of the Underworld is also important in traditions concerning the Moon ancestor. Mountford (1958: 174) recorded a belief among the Tiwi people at Melville and Bathurst Islands that:

At one time the moon-man used to return to the east by a road just under the southern horizon. But a nest of hornets [wasps], which lived along that road, stung him so badly that he changed his path and now returns to his home by a northern route ... Most informants, however, said that the moon returned to the east through the same underground world as the sun-woman.

With an Aboriginal model of 'curved' space, it is possible that all of the lower geographic spaces outside the periphery of Earth were treated as the same. The Underworld was sometimes recorded as the 'Land to the West' (Clarke, 1991: 64–66; 1997: 127).

3 FLORA AND THE AESTHETICS OF THE SKYWORLD

The flora was ever present in the Aboriginal accounts of where their spirits resided, with plants being perceived as part of the visible structure of the Skyworld. For instance, in south-west Victoria the crepuscular rays in the west after sunset were called "... rushes of the sun ..." (Dawson, 1881: 101). According to the German-born Lutheran missionary/anthropologist C.G. Teichelmann (Figure 12), who arrived in Adelaide in 1838 and established the first school for Indigenous people in South Australia on the banks of the River Torrens, the local Adelaide people in southern South Australia considered the Milky Way to be a large river, along the banks of which common reeds (*Phragmites australis*) were growing (Teichelmann, 1841: 8; cf. Clarke, 1990: 5; 1997: 134). A similar recording came from the Barwon River, near its junction with the Namoi River in central New South Wales, where the Weilwan people believed

The Milky Way they call Warrambool, that is a strip of land abounding in fine trees and shrubs, with a stream of water running through it – home or promenade of the blessed dead ...

while the Southern Cross was called *Nguu* and represented a 'tea-tree' (W. Ridley, in Smyth, 1878(2): 286).⁷ In the Gamilaraay group of languages in northern central New South Wales, the Southern Cross was called *Yarraan* and was seen as a large river red gum tree (*Eucalyptus camaldulensis*) like those that grow along the inland creek systems (Ash et al., 2003: 152; McKeown, 1938: 18).⁸

In Aboriginal Australia, terrestrial and celestial spaces possessed similar geographies. In some cases particular topographic features were seen as continuous. For instance, London-born G.A. Robinson (Figure 13; Robinson ..., 1967) who arrived in Hobart, Tasmania, in 1824 and spent the next 15 years studying the Island's Indigenous people, reported that in Tasmania it was perceived that established foot tracks through the woodland continued beyond the

clan boundaries into the Skyworld, where they could be seen as a 'white streak' in the Milky Way going "... all along down to the sea." (Robinson, 1829–1834, cited by Plomley, 1966: 368). The floras of the Skyworld and Earth were also perceived as closely linked. In the Gulf Country of south-west Queensland, White (1904) observed that

The natives of the Hamilton and Georgina Rivers called the star Venus *mumungooma*, or big-eye, and believed that it was a fertile country covered with bappa, or grass, the seeds of which were converted into flour, and that it was inhabited by blacks. There was no water in the star, however, but there were ropes hanging from its surface by means of which the earth could be visited from time to time and thirst assuaged.

The south-west of Queensland was part of a larger region where the grinding of grass seeds was a major subsistence strategy, particularly during droughts (Clarke, 2003a: 146–148). Aesthetically, the 'ropes' hanging from Venus in this account are equivalent to the 'strings' of the Morning Star (Venus) in the mythology of north-east Arnhem Land, both of which symbolically represent rays of light along which spirits can travel.⁹

Aboriginal orientation in terrestrial space was based upon the observed movements above of celestial bodies, particularly the Sun and the Moon, and the prevailing directions of the seasonal weather (Clarke, 2009a: 47–48). It is common in Aboriginal languages for the terms for 'west' to refer to the "... direction to which the Sun travels ...", while the 'east' is often associated with 'dawn' or 'Moon', and in some instances the word for 'south' is linked to 'cold' (Nash, 1992: 293–295; Tindale, 1974: 44–49). In Central Australia, desert dwellers used a variety of techniques to orientate themselves, including wind temperature and star position (Lewis, 1976: 274–276). Terrestrial places were also associated in myth with heavenly bodies. For instance, a place near Tanunda, which is north-east of Adelaide, was called *Kabminy*, which was said to mean 'Morning star' (Venus) (Cockburn, 1908 [1984: 111]).

The material culture of Aboriginal Australia has been shaped by a commonly-held sense of aesthetics, which can also be seen to influence what was perceived in the sky.¹⁰ The orientation of stars was more relevant than the brightness of the individual elements (Clarke, 2009a: 46–47; Haynes, 1992: 128; MacPherson, 1881: 74). In Aboriginal Australia, colour is of fundamental importance when determining the significance of specific celestial bodies. For example, the traditions of the Arrernte people in Central Australia gave prominence to stars that are reddish or whitish, while largely ignoring those that are predominately yellow or blue (Haynes, 1992:

128; Haynes et al., 1996: 8; Maegraith, 1932: 25). In an Aboriginal perspective, celestial bodies that are not bright red or shiny white objects in the night sky are more likely to be seen as part of the background than as elements with individual identities. Aboriginal people in south-west Victoria perceived the 'smaller stars' as 'star earth' (Dawson, 1881: 99).

Celestial features other than stars and planets were important too. Wiradjuri people in central New South Wales perceived the dusky haze of the Great Nebula as the smoke from the ancestors' fires upon which mussels from the great Skyworld river (the Milky Way) were being cooked (McKeown, 1938: 18).¹¹ Irregular phenomena in the skies were mostly attributed to the



Figure 13: G.A. Robinson (courtesy: en.wikipedia.org).

unpredictable actions of ancestors present in the Skyworld. London-born and Oxford-educated Walter E. Roth (Figure 14; Reynolds, 1988), a doctor who practised in north-west Queensland from 1894 and then became the first 'Northern Protector of Aborigines' in 1898 based in Cooktown, reported that the Aboriginal residents of Mapoon in northern Queensland considered that a comet observed during May 1901 had been caused by two elderly women ancestors lighting a fire (Roth, 1903: 8).

Aboriginal observers did not generally recog-



Figure 14: Walter E. Roth (courtesy: en.wikipedia.org).

nise shapes formed by connecting individual stars, although strings of stars representing clusters of ancestors were perceived as making tracks across the night sky. For instance, a nineteenth century newspaper correspondent outlining Aboriginal celestial lore remarked that

Stars that are in a line either horizontally or perpendicularly are generally honoured with a legend, in some cases extending over two or three of our constellations ... For the most part groups forming curves or angles are apparently ignored. (E.K.V., 1884).

Meanwhile, Maegraith (1932: 19) stated that in



Figure 15: Daisy Bates (en.wikipedia.org).

Central Australia,

... the aborigine has not generally adopted the idea of tracing out a figure amongst the stars, a single star usually representing a whole animal or its track.

By way of example, he explained how he had obtained an account of the arrangement of stars (Gamma Crucis, Delta Crucis, Gamma Centauri and Delta Centauri) that comprised *Iritjinga*, the Eaglehawk ancestor, and:

On being asked which stars represented the wings, head, legs, etc., of the bird, the aborigine's response was always to the effect that the group of stars as a whole represented the hawk, no star separately indicating any particular part of the bird's anatomy. (Maegraith, 1932: 20).

In the adjacent southern regions of South Australia and Western Australia, Irish-born self-taught anthropologist Daisy M. Bates (Figure 15; De Vries, 2008; Reece, 2007) who lived in small settlements in Western Australia and South Australia from 1899 and tirelessly studied Indigenous culture for the next 40 years, noted that the planets Jupiter and Venus were seen by desert Aboriginal people as 'heads', not bodies, who were "... always following one another along the 'dream road' which they themselves had made." (Bates, 1936). In summary, Maegraith (1932: 26) claimed that "In general, the figured constellation is rare in aboriginal astronomy, a single star representing a whole animal or its tracks." These observations are at odds with some more recent Aboriginal sky maps, which are not part of the classical tradition (e.g. Cairns and Yidumduma Harney, 2004).

The flora is prominently mentioned in myth narratives that concern the colours of the Skyworld. In the Darling River area, it was believed that

... the planet Jupiter was a great Kilpun-gurra [a moiety] man of the olden days, called Wurnda-wurnda-yarroa, who lived on roasted yams, and got his reddish colour by being so much about the fire cooking his food. (Mathews, 1904: 283).

Given the colour description it is possible that surveyor and self-taught anthropologist R.H. Mathews (Figure 16) had confused Jupiter with a bright red star. In Central Australia, the Anmatyerre-speaking people considered a bright star or planet (such as Mars) as *Ihermpenh*, meaning "... something that had been burnt in the flames." (Green, 2010: 395). In an account of the mythology of Logan River in Brisbane it was said that little girls were taken to the Skyworld "... where they for ever shine in colours like the flowers they were wearing." (Hanlon, 1934).

The notion of red being a powerful colour for Aboriginal people is supported by a late eighteen-

th century account from the central eastern Australian coast, where Haynes (2009: 11) noted that:

... 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, as each petal is shaped like a miniature meteor. 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 meteors and hence with the waratahs.

According to Peck, it was an Aboriginal belief in the Blue Mountains area of eastern New South Wales that waratah foliage had the power to repel heat (see Figure 17). Concerning the local Aboriginal people, it was stated:

In the earliest days of white occupancy of Australia they brought these [waratah] stems to blacksmiths and told them that they could never be injured by fire from the anvils, which they took to be supernatural fire such as that seen in the heavens when there is a meteor travelling there, if they used them, and to please the natives the blacksmiths did use them and paid in those showy trifles that the natives valued, for them. (Peck, 1933 [2014: 129]).

The waratah had cultural significance for hunter-gatherers, shown on one occasion when Sydney Aboriginal people placed a waratah flower alongside the body of an Aboriginal man being buried (Collins, 1798–1802(2): 66). Foragers also obtained nectar by sucking its tubular flowers (Maiden, 1889: 62). It was perceived that the power from the heavens could be lodged in other plants. An anonymous writer in a newspaper claimed that an Aboriginal myth, probably from the Australian east coast, "... states that the gum in the hearts of wattle trees [*Acacia* species] is made by shooting stars lodging there and breaking into bits." (Anonymous, 1904a). The pale honey-like gum of certain wattles was a major food source, as well as a wider variety being used medicinally and as hafting cement for artefacts (Clarke, 2007a: 18, 22, 101, 120; 2012:134–135; see Figure 18).

In the Underworld the presence of wood, and therefore trees, is inferred in many descriptions concerning the illumination of the Sun, which has this ancestor gathering fuel during the night for burning the next day during its journey across the sky (Macdougall, 1912). Aboriginal groups living across the inland river systems of south-eastern Australia credited their supreme male ancestor, *Baiame*, with creating a fire which was seen as the Sun (Beveridge, 1883: 60–61; Haynes, 1992: 130). Here, the warmth of the day linked to the strength of his fire and how much fuel was left to burn.

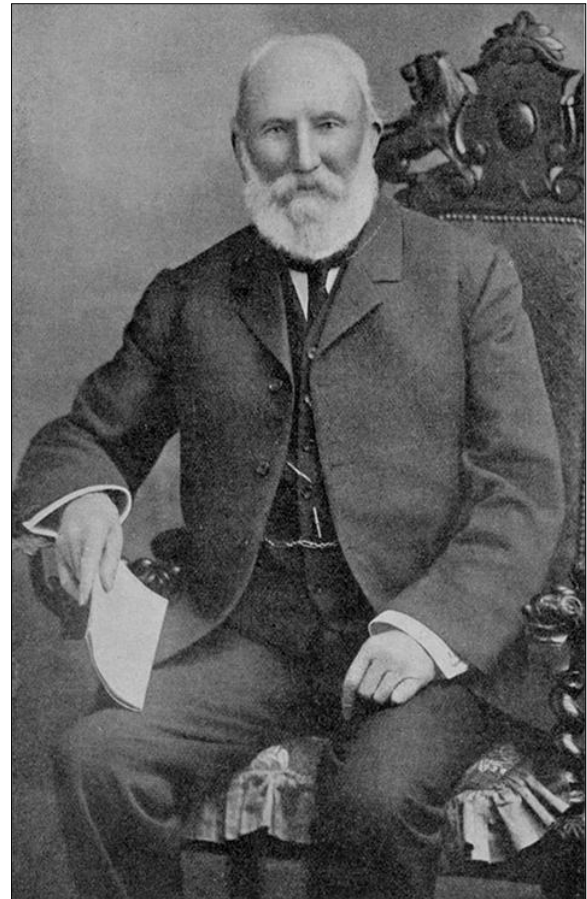


Figure 16: R.H. Mathews (after Mathews, 1909).



Figure 17: Waratah (*Telopea speciosissima*) in eucalypt woodland, the flowers of which were symbolically 'meteors' and the foliage thought to repel heat (courtesy: M.R. Clarke private collection, McPherson State Forest, New South Wales, 2014).



Figure 18: Golden wattle gum (*Acacia pycnantha*), possibly seen by some Aboriginal groups as the remains of 'shooting stars' (P.A. Clarke private collection, Mount Bold, South Australia, 1985).

Mrs Catherine (Katie) Langloh Parker (1856–1940; Muir, 1990) was born at Encounter Bay, South Australia, and after marrying at age 18 she moved to her husband's property near Angledool, New South Wales, where for the next two decades she studied the culture of the local Indigenous people. For a popular readership Parker (1896 [1953]) presented stylised accounts of the mythology possessed by the Ualarai people of central northern New South Wales.¹² A myth involving the male ancestor *Baiame* concluded

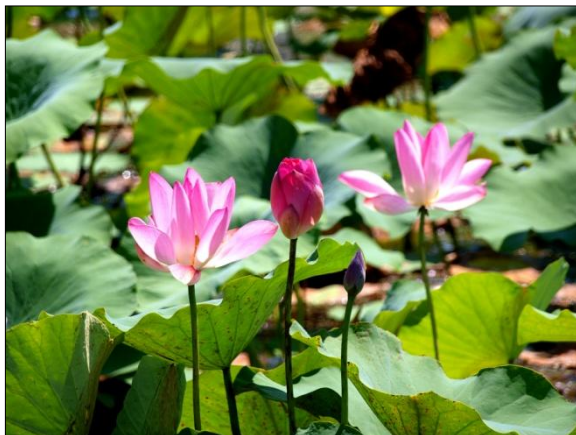


Figure 19: Lotus ('red lily', *Nelumbo nucifera*) flower, which in Arnhem Land represents the 'evening star' sitting on top of a stem that is symbolic of its path. P.A. Clarke private collection, Kakadu, Northern Territory, 2010

with the formation near *Warrambool* (Milky Way) of *Yaraan-doo*, the "... place of the white gum-tree ..." (river red gum) which Europeans see as the Southern Cross (McKeown, 1938: 18; Parker, 1896 [1953: 9–10]; 1905 [2013: 123]).¹³ Parker explained:

The Southern Cross was the first Minggah, or spirit tree a huge *Yaraan*, which was the medium for the translation of the first man who died on earth to the sky. The white cockatoos which used to roost in this tree when they saw it moving skywards followed it, and are following it still as *Mouyi*, the pointers. The other *Yaraan* trees [river red gums] waited for the sadness that death brought into the world, weeping tears of blood. The red gum [kino] which crystallises down their trunks is the tears. (Parker, 1905 [2013: 123]).¹⁴

A man had been extracted from Earth with the tree and placed in the night sky, along with two *Mouyi* (*Mooyi*, Sulphur-crested Cockatoo ancestors) who, as the Pointers, had unsuccessfully tried regaining their roosting place.

The theme of rebirth is expressed with plants. At Tully River in northern Queensland, it was tradition that *Carcurrah* the Moon ancestor was pushed back into the sky by the growing grass, after he had become dizzy and fallen to Earth (Henry, 1967: 34, 38). In north-east Arnhem Land, Venus as the 'evening star' is perceived as a spirit in the form of a lotus (*Nelumbo nucifera*) flower sitting on top of a stem that represents its path (Berndt and Berndt, 1999: 374–375; see Figure 19). Here, in a song, this ancestor was said to be

Shining on to the fore-heads of all those head-men. On to the heads of all those Sandfly [clan] people. It sinks into the place of the white gum trees, at Milingimbi.

The lotus is important in many cultures across south-east Asia and beyond, as a powerful symbol of rebirth and purity (Clarke, 2014a: 146–149). In Top End varieties of Aboriginal English, the lotus is called 'red lily', and grows widely in billabongs (Clarke, 2014a: 148–149). Here, it was an important seasonal food source, as much of the plant is edible.

The cosmological traditions of Aboriginal Australia contain many references to objects made from plants. For instance, the Ngulugwongga people at Daly River in the Top End of the Northern Territory believed that the Milky Way was comprised of a grass plaited rope made by a woman who was trying to escape from her husband with her two daughters. According to the Berndts:

The mother tossed the rope up into the sky. The elder sister climbed first, the younger sister was in the middle, and the mother came last. They climbed up the rope into the sky. There they sat down under their banyan [*Ficus*

virens] tree, with their food, and they coiled the rope to form the extent of the Milky Way. (Berndt and Berndt, 1989: 345).

Other Aboriginal artefacts incorporating plant materials are also seen in the night sky. In north east Arnhem Land, a Crow ancestor placed a basket made from paperbark (*Melaleuca* species) into the celestial river (Milky Way), in which it is seen as a dark patch (Warner, 1937: 533). Arrernte-speaking people in Central Australia see a collection of stars (near the Pleiades, possibly the Hyades) as a 'yam stick', both of which are called *atneme* (Henderson and Dobson, 1994: 310). The neighbouring Anmatyerr-speaking people further north-east, had a similar belief, calling the constellation and the digging tool *anem* (Green, 2010: 88). In the Anmatyerr language the word, *uralep*, means both 'firestick' and 'a group of stars' (Green, 2010: 533). Inland from the Great Australian Bight, the Milky Way was perceived as a large sacred board, a symbolically-decorated sheet of bark (Ker Wilson, 1977: 1–28). Aboriginal people in western Victoria had a tradition that the Pointers were hunters that killed the Emu in the sky, seen as the Coal Sack, with their spears stuck in a tree, represented by the Southern Cross (MacPherson, 1881: 72; Massola, 1968: 106–108; Stanbridge, 1857: 139).

4 CONCLUDING REMARKS

In Aboriginal cosmology, the perceived Skyworld was a distorted reflection of the terrestrial landscape, with many shared species of plants living in both places. While human visitors to the Skyworld were able to bring back to Earth 'new' rituals and songs they had learnt above, there is no evidence suggesting that different types of plants existed in the sky. Aboriginal people perceived the Skyworld flora to be essentially the same as that found in their own country on Earth, although perhaps with favoured and useful species existing in greater abundance for the benefit of the spirits of deceased hunter-gatherers. In contrast, in most Aboriginal traditions the Underworld through which the Sun and Moon passed appears to have been a country without plants, apart from piles of dry wood used by the Sun to maintain a fire. The ethnobotanical investigation of Skyworld floras can be insightful when determining which plant species have special cultural significance, with species of seasonal importance to hunter-gatherers on Earth being seen as prominent in the heavens.

5 NOTES

1. Hassell and Davidson (1936) use the term 'Wiilman', while the form favoured by Tindale (1974: 260) is 'Wheelman'.
2. Clarke (1986: 6–7; 2007a: 22, 35, 56) described the Aboriginal use of lerp.

3. Spelling variations of *Mankamankarranna* include *Mankankarrana* and *Mangkamangkaranna*.
4. Worms and Petri (1998) use the term 'Karadjari', while the form favoured by Tindale (1974: 244) is 'Garadjeri'.
5. Maegraith (1932) uses the term 'Arunta' when referring to the Arrernte people (Sutton, 1995: 149–153).
6. Generational kinship terms are described by Glass and Hackett (2003: 216, 420).
7. Ridley (1875) uses the term 'Weilwan', while the form favoured by Tindale (1974: 200) is 'Wailwun'.
8. In the literature, spelling variations of *yarraan* include *yaaran* and *yaraan-doo*.
9. Refer to Morphy (1998: 226–230) for a description of the Barnumirr (Morning Star) ceremony.
10. For descriptions of Australian Aboriginal decorative traditions refer to Morphy (1998) and Sutton (1988).
11. McKeown (1938) uses the term 'Wiradjurie', while the form favoured by Tindale (1974: 201) is 'Wiradjuri'.
12. Parker uses the term 'Ualarai', while the form favoured by Tindale (1974: 199) is 'Euahlayi'.
13. Refer to Ash et al. (2003: 152) for word derivations of *yaraan*, *yarraan*. McKeown (1938) refers to *Baiame* as *Byamee*.
14. See Elkin (1977: 91) for an explanation of *minggah*.

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