Australian Aboriginal Astronomy and Cosmology

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Abstract

Australian Aboriginal ethnoastronomical traditions were recorded from a wide variety of sources in different periods. While the corpus of mythology concerning the heavens is diverse, it is unified by beliefs of a Skyworld as land with its own topography, containing plants and animals familiar to those living below. Spirits of the dead reside alongside the Creation Ancestors as celestial bodies in the Skyworld. Aboriginal hunter-gatherers used the regular movement of constellations and planets to measure time and to indicate the season, while unexpected change in the sky was seen as an omen.

Introduction

The corpus of religious beliefs and mythological traditions in Aboriginal Australia refers to a Creation period, often referred to as the “Dreaming” (Clarke 2003;
It was a time in the past when Ancestors performed fabulous deeds, shaped and gave spiritual power to the land, and laid down customs for their descendants to follow. At the conclusion of the Creation period, some Ancestors remained as people, while others were transformed into organisms such as mammals, reptiles, birds, invertebrates, and plants, as well as into inanimate things such as human diseases, atmospheric phenomena, and celestial bodies.

The records of Aboriginal traditions concerning the heavens are incomplete for most regions, with the most significant gap being in temperate Australia where British colonization began and has been most intense (Clarke 2009a). Few among the first European colonists to arrive in the late eighteenth and early nineteenth centuries were sufficiently trained in astronomy to record Indigenous star lore. The anecdotal records available are predominantly derived from observations of explorers, settlers, and colonial officials, who were generally ignorant of local Aboriginal languages. While missionaries were often more systematic in their recordings of Indigenous cultures, they mostly operated prior to the establishment of academic anthropology in Australia. The study of Aboriginal celestial traditions improved in the late nineteenth century with the emergence of a generation of Australian-born scholars who had grown up with close relationships to Aboriginal communities. In the twentieth century, scholars from several academic disciplines, such as anthropology, linguistics, and astronomy, have recorded data relevant to the field of Aboriginal astronomy and cosmology.

The Heavens as a Skyworld

European interpretations of Aboriginal relationships to country have emphasized territoriality over two-dimensional space, rendered as “tribes” on maps (Sutton 1998). An analysis of available records indicates that in addition to their own terrestrial regions, Aboriginal people perceived other realms within their cultural landscape to which they could travel to in spirit form (Clarke 1997, 2007, 2009a; Haynes 1992; Howitt 1904; Johnson 1998; MacPherson 1881; Norris 2008). Such regions are the Skyworld, seen as the heavens, and the Underworld, being the place below ground where the Sun Ancestor spends the night. Coastal people in some regions thought that when the Sun left the Skyworld at the end of each day, it entered the Underworld via the western seas. Many inland groups believed that to the west, the Sun entered a cave or a hole in the ground like that left behind by a large tree burned in a bush fire, and the next morning came out of a similar hole somewhere in the east (Fig. 214.1).

In Aboriginal cosmology, the Skyworld was a reflection of the terrestrial landscape, with many shared plants and animals living in both places. For instance, the Adelaide people in South Australia considered the Milky Way to be a large river, along the banks of which reeds were growing (Clarke 1997). For Nukunu people who lived north of the Adelaide Plains, the Milky Way was a large ceremonial pole which became a large box gum tree (Clarke 2009a). In the Gamilaraay group of languages in northern central New South Wales, the Yarraan
constellation, which Europeans call the Southern Cross, was a large river red gum tree, typical of those that grow along the inland creek systems (Ash et al. 2003). In the Anmatyerr language of Central Australia, the Southern Cross is called Irrety Ingka, literally “eaglehawk’s foot” (Green 2010). Aboriginal explanations of the night sky vary considerably across the country.

Aboriginal people believed that actions of Ancestors were intended to produce particular celestial phenomena. It is possible that the observation of lunar eclipses, such as the total eclipse that occurred in 1793, influenced the tradition among the Ngadjuri people in the Middle North of South Australia that the first setting of the Sun was due to the killing an elderly woman and her two dogs (Tindale 1937). In their mythology, the Sun was brought back to the sky by Kudnu, the Jew Lizard Ancestor. Kudnu first threw a returning boomerang to the north, but it circled back to him without striking the Sun. He then unsuccessfully tried throwing the boomerang to the west and south. Finally, Kudnu was able to bring back the Sun by aiming his boomerang toward the east.

In Aboriginal tradition, the Ancestors who became celestial bodies at the end of the Creation moved freely across the whole landscape, often possessing a camp in the Skyworld and another on earth or in the Underworld. For instance, in northern central New South Wales, Mirriwuula, the Spirit Dog Ancestor, was seen as living in both the dark area of the Milky Way in the night sky and in a deep hole in the Namoi River (Ash et al. 2003). In the tropics of the Northern Territory, the Rainbow
Serpent that brought in the monsoonal rains lived both in the *Skyworld* and in particular pools beneath waterfalls on earth (Clarke 2009b). Particular birds, such as eagles and owls, were considered to have access to the *Skyworld* from earth as carriers of deceased human spirits (Clarke 1997, 2007, 2009a).

Aboriginal people perceived the influence of the *Skyworld* upon earth as continuing into the present. Healers reportedly learnt new songs and gained special knowledge of ritual through their crossing into the *Skyworld*, which was achieved by climbing a tree or walking to the top of certain high hills (Clarke 1997; Howitt 1904). The distance separating the earth from the *Skyworld* was generally believed to be equivalent of a long spear throw. The acknowledged relationship between the celestial bodies and people on earth can be seen in more mundane aspects of Aboriginal life. For instance, in the Adnyamathanha language of the Flinders Ranges in northern South Australia, puffballs (*Podaxon* species) are known as *vudlivuta*, literally “star-dust”. When a young man deliberately kicks one of these fungi, the yellow spores fill the air and people say that he is “pulling down stars” (McEntee et al. 1986). To “break the *vudli*” means that he is “falling in love”.

The Aboriginal *Skyworld* was not a wilderness but humanized. Many of the planets and constellations were considered to be the Ancestors of living people, and as such were linked together through kinship and Creation events. For instance, Potaruwutj people in the Southeast of South Australia considered Mitjan, the Moon, to have been the male Ancestor of the Quoll (Native Cat) totemic clan (Clarke 1997). In myth, he attempted to steal the wife of another being, but was driven away to wander about, sometimes well fed, at other times starving. This observation explained the phases of the Moon. Many of the Ancestors were assigned a kinship category, of the type that determines marriages and ceremonial obligations for people. For instance, in Central Australia, the Seven Sisters (Pleiades) belong to the Pelttharr “skin” or subsection (Green 2010). In this region, parts of the night sky were “owned” by clans of living people on earth (Maegraith 1932).

**Aboriginal Calendars**

Australian hunter-gatherers possessed holistic views of their environment, and were keen observers of changes that included shifts in weather, the flowering or fruiting of plants, altered behavior of animals, and the movements of celestial bodies (Clarke 2009a, 2003; Davis 1997; Haynes 1992). Change in the *Skyworld* was seen as having an impact upon events on earth. For example, coastal Aboriginal peoples recognized a link between the Moon’s position in the sky and the relative height of tides. In southeastern Australia, the Supreme Male Ancestor Baiame was considered to have created the Sun. The warmth of the day and the season was equated with the strength of his fire and how much firewood he had remaining to burn. Daytime was marked by the relative position of the Sun in the sky, while the numbers of days and Moons accounted for longer periods.

Across many regions in Australia, the arrival in the *Skyworld* of the Seven Sisters (Pleiades) was taken as a cue for the commencement of initiation ceremonies.
Lunar phases were also important when holding ceremonies, which are generally made to fit within both lunar and seasonal cycles. Ideally, the ceremony is held over many days during a season when there is plenty of food, and it ends with a full moon (Morphy 1999). Representations of what appear to be celestial bodies, such as the Sun, Moon, and stars, are found in many ancient rock engraving traditions (Clarke 2009a, Fig. 214.2).

During the year, Aboriginal hunter-gatherers made correlations between weather events of the earthly landscape and the perceived activities of Ancestors in the Skyworld (Clarke 2003, 2009a, b). When the Seven Sisters are only in the sky for a few hours before dawn, it is a cold season, with warmer weather coming when the girls are finally chased away by various male Ancestors such as the Moon man or the Young Men seen as the saucepan part of Orion. In the inland deserts, it was tradition that women in the camp not be permitted to look at the Seven Sisters at all during winter nights, because it was believed that this would increase the severity of frosts. In parts of central Arnhem Land, it is believed that the spirit Modj, in the form of a Rainbow Serpent, creates the damaging storms that cause coastal inundation.

Asterisms in the constellation that western Europeans know as Orion, the Hunter, feature in much Aboriginal mythology. In the tropics, the Yolngu people...
of northeastern Arnhem Land recognize the three stars of Orion’s belt as the men Birrupirru, Djandurngala, and Ngurruwilpil, who are observed seated in a bark canoe and paddling across the sky (Davis 1989, 1997). Together these hunters are known as the star arrangement Djulpun, which is visible on the western horizon during the early night sky of Dharratharramirri – the beginning of the early dry season (from about May to July). This is the time of the year for hunting goannas, wallabies, and bandicoots, and is noted for its storms originating from the southeast that flatten the tall grass.

Across Australia, less frequent celestial phenomena were generally treated as bad omens (Clarke 2009a; Howitt 1904). For instance, in southeast Queensland, a falling star was seen as a sorcerer flying through the night sky to drop a fire brand on top of his victim to kill them. In northern Victoria, the Aurora Australis was seen as a sign that the blood from a massacre was rising into the Skyworld. In March 1843, Aboriginal people living along the Murray River in South Australia believed that a comet (Comet C/1843 D1 [Great March Comet; O.S. 1843 I]) was created by northern sorcerers to kill European settlers who had imprisoned an Aboriginal shepherd (Clarke 1997).

Post-European Cosmological Traditions

Since British settlement, Aboriginal peoples have, through the syncretism of their traditions, continued to derive meaning from the sky as their knowledge and involvement in the wider world grew. Soon after European settlement commenced at Sydney on the east coast of Australia in the late eighteenth century, it became a widespread belief among Aboriginal groups beyond the frontier that the decayed props made from saplings that held up the Skyworld were about to collapse (Clarke 2003; Howitt 1904). If this occurred, they believed that it would cause calamitous floods and the spread of Europeans, as spirits of the deceased, across the land. To remedy this, stone hatchets were sent eastward along trade routes to assist the old man believed to be in charge of the posts to cut new ones. Later, the involvement of missionaries with Aboriginal people led to the modification of cosmological traditions (Clarke 2009a). In the early twentieth century, it was a Central Australian Aboriginal view of the Milky Way that it represented dust kicked up from Jesus galloping on his horse. Today, Aboriginal artists, particular in remote communities in northern Australia, often paint astronomical themes on their artwork that is made for sale.

Aboriginal astronomical traditions have interested a broad range of people outside of the Aboriginal community (Clarke 2007, 2009a). European-Australians have published popular accounts of the heavens as folklore, often as books for children. In the late twentieth century, interpretations of Aboriginal folklore concerning the Rainbow Serpent and Seven Sisters played major roles in the course of heritage disputes arising from threats by developers to destroy purported cultural sites. The wide geographical relevance of these particular traditions has primed them for use to rebuild and reinforce cultural identities in “settled” Australia.
In Australia, Western Desert women visiting capital cities to participate in public events perform the Seven Sisters *inma* (dance). The associated celestial lore is extensive and layered. In northwest South Australia, Anangu Pitjantjatjara people take tourists to visit sacred rock painting sites connected with the Seven Sisters, where they tell open versions of the myth. Certain aspects of the mythology remain culturally sensitive to Aboriginal people, with deep knowledge held only by senior community members who are authorities in cultural matters. The Anangu Pitjantjatjara community is keenly aware of the resonance of their version of the Seven Sisters mythology with that from other parts of Australia, which has helped them to create links to the country of other Indigenous peoples. In this way, explanations of the night sky remain as a vehicle for explaining their cosmos and exploring cultural identity.

**Summary**

Australian Aboriginal astronomy and cosmology is best explored in relation to the corpus of tradition that accounts for the entire cultural landscape. Available sources of information concerning Aboriginal beliefs of the *Skyworld* before the cultural impact of European colonization are limiting. In spite of the sparse record, there is sufficient data to demonstrate that in Aboriginal Australia, the identification of Ancestors as celestial bodies was seen as tangible evidence of the Creation and its continuing influence over the affairs of the living. Particular large trees and lofty hills were treated as portals for moving between Earth and the *Skyworld*, while passages existed to connect with the *Underworld*. Wooden posts were believed to hold up the vault of the Heavens. While living people were considered to be generally restricted to Earth, Ancestors and spirits were believed to travel freely across the entire landscape. The traditions concerning the *Skyworld* were a reflection of Aboriginal life on Earth.

**Cross-References**

▶ Astronomy and Rock Art Studies
▶ Australian Aboriginal Astronomy - An Overview
▶ Calendars and Astronomy
▶ Interactions Between “Indigenous” and “Colonial” Astronomies: Adaptation of Indigenous Astronomies in the Modern World

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