

Astronomy in Aboriginal culture

To some indigenous Australians, the Southern Cross is a stingray being chased by a shark. To others it is an eagle's footprint. Ragbir Bhathal describes how the Aboriginal peoples' views of the skies not only differ from, but probably pre-date, those of other civilizations.

The Aboriginal people of Australia have lived for well over 40 000 years on the Australian continent and their descendants still enjoy the wonderful spectacle of the Milky Way galaxy directly overhead. In that long period they built an astronomical knowledge system that they absorbed into their social, cultural and religious life. They passed this down in oral form from one generation to another as a living system of knowledge which they still cherish and enjoy. The astronomical knowledge system they constructed is different from that of modern-day physicists and astronomers. It is not based on the hypothetico-deductive system that physicists and astronomers use and validate by observation and experiment; rather it is a knowledge system based on other knowledge traditions – traditions that do not require or are not amenable to falsification of its tenets because it is socio-cultural astronomy.

Southern Cross

The Aboriginal people were in all probability some of the first human beings to name the celestial objects in the night sky. According to Daisy Bates, a Commonwealth Aboriginal Protector who lived with them for more than 40 years of her life in the late 19th and early 20th centuries: "Many of the star groups which we call constellations were divided and named by the Aborigines thousands of centuries before ancient Egyptians or early Greek astronomers observed and named them," (Bates 1923). Thus, the most conspicuous and well known constellation in the southern hemisphere, the Southern Cross, was known as the "Eagle's foot" while "the Pointers of the Cross being the Eagle's Club and long before Canopus was named by some early Egyptian astronomer it was known to the central Australian Aborigines as *joorr-joorr*".

The well known and late Aboriginal poet Kath Walker (Oodgeroo Noonuccal) expresses the same sentiment when she talks about the origin of the Southern Cross. When she was growing up on Stradbroke Island off the coast of Queensland she was told stories of how the Southern Cross came into being. According to her, Biami,

ABSTRACT

In all probability, long before other civilizations had named the celestial objects in the night sky, the indigenous people of Australia had not only given them names but had also built an astronomical knowledge system which they incorporated into their social, cultural and religious life. Their socio-cultural astronomical knowledge system both assists and clashes with Australia's legal system, which is based on English law.

the Good Spirit in the sky, was extremely busy keeping an eye on the Aboriginal people but found he could not watch them all the time. He decided that he needed the assistance of someone to help him in the guardianship of his people. He chose a man named Mirrabooka, who was not only loved by everyone but also looked after the welfare of his tribe. So, "Biami gave him a spirit form and placed him in the sky among the stars, and promised him eternal life. Biami gave Mirrabooka lights for his hands and feet and stretched him across the sky, so that he could watch for ever over the tribes he loved. And the tribes could look up to him from the Earth and see the stars which were Mirrabooka's eyes gazing down on them," (Walker 1972). However, she says, when the "white invaders came across the seas and stole the tribal lands, they did not know that this group of stars across the southern sky was Mirrabooka, and they renamed them. They named Mirrabooka the Southern Cross." In fact, the Southern Cross was first observed by Europeans only in the 16th century. Andrea Corsali, a Florentine traveller who sailed with a Portuguese expedition to Goa in India in 1515, described a distinctive constellation of stars as a cross. It was variously named on star maps as "cross", "crosiers", "crucero" or "cruix" (Bhathal and Bhathal 2006).

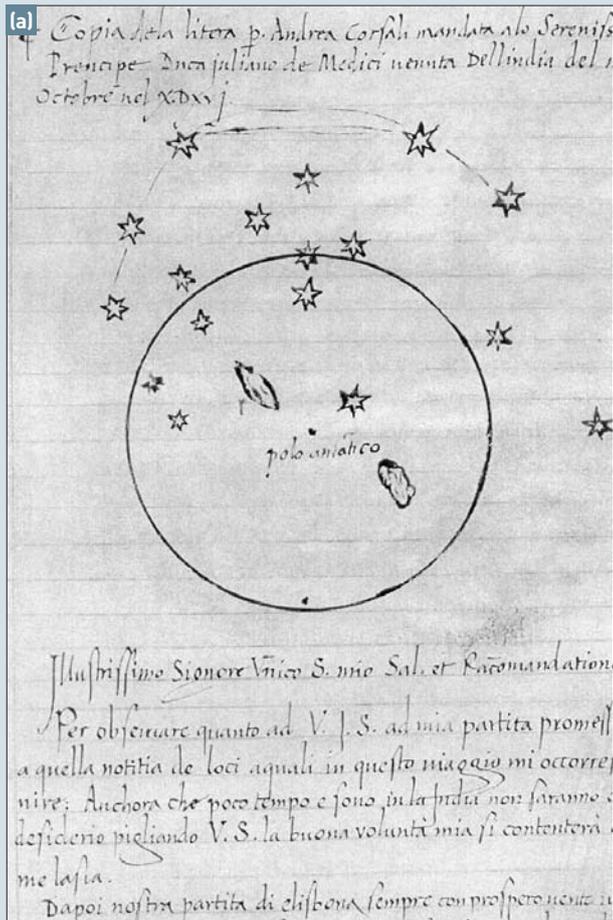
The Southern Cross is known by many different Aboriginal names. Like the American

Indians, the Australian Aborigines are made up of many nations or language groups. So it is not surprising that the constellations and celestial objects have different names and different interpretations placed on them among the various tribes spread across the length and breadth of the continent. Thus, to the fishing communities around Arnhem Land in northern Australia the Southern Cross and the Pointers (Alpha Centauri and Beta Centauri) are represented as a stingray – the Southern Cross – being chased by a shark – the Pointers (Mountford 1956). The association with fish arises from their daily fishing activities and culinary tastes. In the desert regions of central Australia the Southern Cross represents the footprints of an eagle, while the Pointers are his throwing stick and the Coal Sack his nest (Mountford 1976). The present tense is used in describing the celestial objects and their interpretations because among the Aboriginal people (unlike the ancient peoples of other lands) the stories are still part of their lives and culture.

Aboriginal universe

Long before European explorers made contact with the Aborigines, the Aborigines of northern Australia had contacts with the Indonesian, Malay and Macassan fishermen who came in search of trade, of trepang (*bêche-de-mer*, a large edible sea cucumber) and tortoise-shell. However, when Europeans made first contact they labelled the Aborigines as primitive. Later in the 19th and early 20th centuries, ethnologists, anthropologists and scholars found that the Aborigines in fact had a complex socio-cultural religious system which was used to conduct their daily lives and the life cycle of birth, growth and death. Within this system astronomy had a role to play that was not only utilitarian but also associated with their cosmological view of the universe, their mythology and the morals and customs of their society. According to Dawson (1881): "Of such importance is a knowledge of the stars to the Aborigines in their night journeys and of their positions denoting particular seasons of the year, that astronomy is considered

THREE VIEWS OF THE SOUTHERN CROSS



one of the principal branches of education.” Mountford, in his classic study of the Aborigines of the central desert of Australia, echoes the same sentiment: “The Aborigines of the desert are aware of every star in their firmament, down to the fourth magnitude, and most, if not all, of these stars would have myths associated with them.” (Mountford 1976).

Modern physicists and astronomers would probably have difficulty in empathizing with the Aboriginal conception and origin of the universe. Their universe is not the universe of the Big Bang, inanimate matter, dark energy, dark matter or accelerating expansion. In Aboriginal astronomy the origin of the universe goes back to a time called the Dreaming. It is a remarkable concept which Spencer and Gillen immortalized as the “dreamtime” or “alcheringa” of the Arunta or Aranda tribe of central Australia (Spencer and Gillen 1889). According to Stanner: “A central meaning of the Dreaming is that of a sacred, heroic time long ago when man and nature came to be as they are; but neither ‘time’ nor ‘history’ as we understand them is involved in this meaning.” (Stanner 1979). The Dreaming is not only an ancient era of creation but continues even today in the spiritual lives of the

Aboriginal people. All life – human, animal, bird or fish – is part of an ever-transforming system that can be traced back to the Spirit Ancestors who go about the Earth in an eternal time called the Dreaming. As these spirit people roamed the Earth they made the mountains, rivers, the sky with its celestial objects and all the other features we see in the natural environment around us. The Aborigines are in fact co-creators of the universe they live in. The observer and the observed are the same entity.

Keen observers

The Aborigines were curious about the natural world. They were not only keen observers of the night sky but also took much delight in classifying the physical characteristics of the stars above them. For example, the Aborigines of central Australia divided the sky into two groups: the winter sky including Scorpius, Argo, Centaurus and the adjacent stars belonged to the *namanduraka* group; while the summer sky, of Orion, the Pleiades and Eridanus, belonged to the *tanamildjan* group (Mountford 1976). The Aranda of central Australia made a distinction between red, white, blue and yellow stars. The star Antares is classified as *tataka indora*, a very red star, while the

stars of the V-shaped Hyades cluster, which are taken to be two groups of girls, are divided into a red group (*tataka*) and a white group (*tjilkera*). The *tataka* stars are said to be the daughters of the red star Aldebaran (Maegraith 1932).

By watching the movement of the stars the Aborigines of central Australia discerned for themselves that certain stars neither rise nor set, i.e. they are circumpolar. Thus, they knew that the Iritjinga (Eagle) constellation which was made up of some of the stars of the Southern Cross (Gamma and Delta Crucis) and the Pointers (Gamma and Delta Centauri) was circumpolar.

It is interesting to note that in Aboriginal astronomy it is not necessarily the case that only the brightest most conspicuous stars are grouped together when forming a constellation. This is illustrated in the case of the Aboriginal constellation Iritjinga (Eagle). In this group the stars of the Southern Cross, Alpha Crucis (magnitude 0.75) and Beta Crucis (magnitude 1.25), are connected by their marriage classes with the Pointer Alpha Centauri (magnitude -0.04), whereas the stars Gamma and Delta Crucis (magnitudes 1.56 and 2.78 respectively) are grouped with the less luminous stars Gamma and Delta Centauri (with magnitudes 2.18 and 2.56 respectively), in disregard



1 (a): The Southern Cross, a European view, by Adrea Corsali, in a letter to Giuliano de Midici (1516) from the Lettera de Andrea Corsali, Mitchell Library. (Courtesy State Library of New South Wales)

(b): The Southern Cross photographed above the Anglo-Australian Telescope. (Darren Baskill)

(c): An Australian Aboriginal view, in which a stingray is chased by a shark. (Courtesy State Library of South Australia and Will Stubbs, Buku-Larrnggay Mulka Centre)

of their close proximity to the brilliant stars Alpha and Beta Crucis (Maegraith 1932). This different perspective arises as a result of grouping the stars in Aboriginal astronomy according to family and social relationships in Aboriginal society.

Commandments in the sky

The Aboriginal people use the celestial objects in the sky as a moral book to inform their people of how to conduct themselves. The rules they enact on land are transposed into the sky for all to read. For example, the star Aldebaran referred to above also serves to illustrate a story about what happens to people who are adulterers. According to the Aborigines of the Clarence River region in New South Wales, Karambal (Aldebaran) stole the wife of another man and hid her in a tree. The husband set fire to the tree and the flames carried Karambal into the sky where he is easily seen and pointed out as the red star which is still burning (Mathews 1905). It serves as a constant reminder to anyone who is contemplating committing adultery.

Seasons and seasonal supply of food

Just like the ancient Egyptians and other ancient peoples, the Aborigines associate the appearance

of certain stars at different times of the year with the seasons and seasonal food cycles. When the Aborigines in Arnhem Land see Arcturus in the sky they know that it is time to harvest the spike rush or rakia which is used to make fish traps and baskets to carry food (Mountford 1956). However, to the Boorong tribe who inhabit the Mallee country in the neighbourhood of Lake Tyrril in Victoria, Arcturus represents the spirit of Marpeankurrk, who showed them where to find the pupa of the wood ant, while Vega – which represents the spirit of the Mallee hen – showed them where to find her eggs (Stanbridge 1861).

In northern Australia the appearance of Scorpius represents different things. On Groote Eylandt, for example, the appearance of Scorpius informs the Aborigines that the wet season has come to an end and that the south-easterlies will begin to blow. According to the Aborigines at Yirrkala, however, the appearance of Scorpius heralds the arrival of Malay fishermen in search of trepang (Mountford 1956). The appearance in the dawn sky in late autumn of the stars that form the cluster called the Pleiades informs the Pitjantjatjara tribe in the Western Desert region that the annual dingo breeding season has begun. It provides a signal to the Aborigines to raid the

lair and have a feast of the young pups (Tindale and George 1971).

Pleiades

The Pleiades also have another interpretation among the Aboriginal people. The Pleiades are considered to be a group of girls or young women by a number of tribes. In Greek mythology the Pleiades are the daughters of Atlas who are running away from Orion and in order to escape from him they fly into the sky. In the central Australian Aboriginal stories of the Pleiades, this cluster of stars also represent young women who are fleeing from the unwelcome attention of Orion (Mountford 1976). There is also a violent and unpleasant side to their stories. But not all stories are about violence and harassment of young women. For example, in Melville and Bathurst islands in northern Australia the Pleiades are seen as a group of kangaroos that are eternally chased by a pack of dingoes, represented by the stars of Orion (Mountford 1976).

Unlike the stories about the Pleiades in other cultures, in Aboriginal society the stories regarding the Pleiades have some restrictions imposed on them. Some of the stories are common knowledge, while others are only known to men and

still others are only known to women or told to only those who need to know. In the case of the stories only known to women they fall under the umbrella of “secret women’s business”. The stories about the Pleiades and other stories of the night sky have been handed down orally for thousands of years from one generation to another in Aboriginal society.

This oral tradition and secret women’s business about the Pleiades clashed with Australia’s legal system in the 1990s in the well known case of the construction of the Hindmarsh Island Bridge near Adelaide in South Australia (Simons 2003). The affair embroiled the Minister for Aboriginal Affairs, prompted a Royal Commission, scholarly reputations were questioned, careers were destroyed and the Aboriginal women were labelled as liars because it was said that they had fabricated their secret women’s business stories to stop the bridge from being built.

According to Dreamtime astronomy, before the Pleiades (the seven sisters) left the Earth and flew into the sky, they went into the mountains and made springs of water to feed the rivers. Hindmarsh Island sits at the mouth of the Murray River where the fresh waters mingle with the salt waters before finally draining into the sea. The Aboriginal women claimed that the waters around Hindmarsh Island were secret women’s business and that the bridge should not be built there as it would constitute desecration of a sacred place. Building the bridge would impede the free movement of the Pleiades from the water to the sky and vice-versa. The waters had to do with creation and procreation in their culture. They lost their battle and the bridge was built. A subsequent Royal Commission found in favour of the Aboriginal secret women’s business – but it was too late. Nevertheless, it was seen as a moral victory for the Aboriginal women and their Pleiades. The women burnt the earlier report of the Royal Commission and marched through the streets holding up banners with a seven sisters design and bearing the words “Elders tell no lies”.

Stars of the Tagai

The conflict between the oral history tradition of the Torres Strait Islander people and Australia’s legal system had many ramifications for Australian society in the much celebrated case of Mabo vs the State of Queensland and the Commonwealth of Australia in the High Court of Australia. The stars of the Tagai had a particular role to play in the outcome of this case. The stars of the Tagai were first studied and recorded by scholars of the Cambridge anthropological expedition to the islands in 1898. Tagai is a sea hero in the culture of the islander people. The stars of the Tagai are represented by a large constellation which consists of Scorpius, Lupus, Centaurus, Crux, Corvus, with part of Hydra and one star of Ara. According to the Meriam

people in the eastern Torres Strait, Tagai is a fisherman who is composed of Centaurus and Lupus standing in a canoe with a fishing spear (Crux) in his left hand and a fruit (Eugenia) in his other hand (Corvus). His canoe is made up of the body and tail of Scorpius. The story of the Tagai is about Tagai and his crew, who are made up of six Usiam (Pleiades) and six Seg (Orion) stars. His crew ate the food and drink which had been prepared for the journey. As punishment Tagai strung together Usiam and Seg and threw them into the sea. Their images are reflected in the sky as the Pleiades and Orion constellations (Haddon 1908).

The stars of the Tagai foretold the seasons and gave the islanders a seasonal calendar that allowed them to regulate their cycle of fishing, agricultural, social, ritual and cultural activities. They also provided them with a cultural identity and laws to regulate their lives and codes of conduct. For example, when the Pleiades (Usiam) appeared in the sky it informed them that it was a sign of fair weather and time for sailing. It was also the turtle-mating season and a time to prepare the land for planting before the rains came. The stars thus were evidence of the fact that the islanders had been tilling their lands for generations.

Ancestral spirit

In their evidence to the High Court the Torres Strait Islander people of Mer (Murray Island) spoke with one voice of following Malo’s law – an ancestral spirit who gave them the law about their land, its ownership, its succession and trespass (Sharp 1993). It was their land and they had for generations past and present occupied and used the land according to Malo’s law. To them the law was akin to the law of the stars of the Tagai which was integrated into their culture and society. The stars they said followed their own path across the sky and everything has a place and a path to follow. They had to follow the footprints of their ancestors. Their law had been passed down from one generation to another in their oral tradition. However, within the Australian legal system of common law, oral testimony may be classified as hearsay and it is therefore inadmissible as evidence. To the credit of the Australian legal system the majority of the judges accepted the oral tradition of the Islanders as a valid way of conducting their affairs and Malo’s law was placed on par with British common law. Thus, on 3 June 1992, the Full Bench of the High Court recognized Meriam rights to the Murray Islands. In handing down their judgment the judges noted “the Meriam people are entitled as against the whole world to possession, occupation, use and enjoyment of the lands of the Murray islands” (Brennan 1992). Judge Brennan condemned the way common law “made the indigenous inhabitants intruders in their own homes and mendicants for a place to

live”. The case of the Meriam people ended the fiction of *terra nullius* (no man’s land) which was first propagated by Captain Cook and continued by Australian governments and historians of Australian history. The case also showed how the stars continue to play a role in the social and cultural matrix of the Islander people. ●

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