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The Astronomy of the Boorong

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The night sky of the Boorong people of northwest Victoria, Australia is like a giant mural filled with potent images representing a range of ecological knowledge, family life, proper marriage and the law, and moral suasion. In the absence of any known descendants, interpreting their sky explains something of their belief system, their origins and their daily life. Totemic creatures represented in the constellations are joined by songman, dancers and rhythm section, in an aeons-old depiction from which we can infer successful transmission of culture through the oral tradition. While western astronomy helps find the creatures and the people for the researcher, to understand this indigenous astronomy we need to add information and insights from ethnography, anthropology, geography, linguistics and zoology. This holistic and non-mathematical approach provides a contribution to archaeoastronomy beyond any single discipline.

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One hundred and forty years ago, a Boorong family at Lake Tyrell in northwestern Victoria (Australia) told William Stanbridge something of their stories relating to the night sky. Some forty stars, constellations and other celestial phenomena were named and located. He wrote them down and related this information to the Philosophical Institute in Melbourne in 1857. In his paper he wrote down the Aboriginal term and gave its European equivalent. What I have done is look closely at these celestial phenomena, attempt to satisfactorily identify them and to imitate the way the Boorong people may have seen them (See box for complete list).

I believe the way they saw them relates directly to the way they lived in the low rainfall environment of northwest Victoria. Becoming familiar with this country then helps me find out what is in the sky. The basis for understanding the connection between earth and sky is derived from an expression by a famous Aboriginal elder, David Mowaljarlai, who said that

“Everything under creation is represented in the soil and in the stars. Everything has two witnesses, one on earth and one in the sky... Everything is represented in the ground and in the sky.”

Therefore my basic method in unravelling the names of the celestial beings of the Boorong is to focus on the details of their terrestrial environment that are paralleled in the sky. The clues come from both sources, and it has been a fascinating exercise trying to make sense out of the four Stanbridge pages, which have remained unanalysed for nearly a century and a half.

A special feature of northwest Victoria is the sky; blue, and often cloudless during the day, and a spectacular star-filled vista at night. The Boorong were very much acquainted with the night sky, and William Stanbridge wrote that they;

“pride themselves upon knowing more of Astronomy than any other tribe.”

It is likely they lived in that region for a long time. A carbon date taken from charcoal found at the north end of the lake is dated at twenty-three thousand years. The charcoal was found alongside burnt clay, emu eggshell and chert artefacts thus indicating human occupation.

Stanbridge’s address to the learned society was the account heard from “the Boorong Tribe, who claim and inhabit the Mallee country in the neighbourhood of Lake Tyrell...” Stanbridge held the pastoral licence for Tyrell

Downs from September 1847 till January 1873. He is the first person of English descent to become resident in their country.

Stanbridge seems to have been a decent, generous, sensitive man who later used his position in society more for the public good than for personal aggrandisement or personal profit. We can infer from his writings that his attitude to Aboriginal people was relatively positive and somewhat respectful, as he hoped others would feel;

“The astonishment that I felt, as I sat by a little campfire with a few boughs for shelter, on a large plain, listening for the first time to aboriginals, speaking of Yuree, Wanjel, Larnan-kurk, Kulkun-bulla, as they pointed to these beautiful stars.”

From a deductive point of view, the critical piece of information is his use of the European term in identifying each Aboriginal constellation. It has been a straightforward operation then to find that part of the sky, locate the star(s) mentioned, and then imagine the creature concerned. It has to be said that this imagining method is highly idiosyncratic. Each person viewing an object has his or her own perception of the object, even more so when the object itself has to be created in one's own imagination. None the less it is interesting to note how easy it is to “see” the creatures and the people in the arrangement of stars.

The Stanbridge account is important in other ways as well. His succinct description of what the constellation means in Aboriginal terms often provides the clue as to why the particular creature features in the first place; for example, the coincidence between the appearance of the ancestral mallee fowl creator being Neilloan (Lyra) in the sky and the activities of the mallee fowl on the ground. His other attribute, it seems, was to have a keen ear and to write down the word in English letters and sounds as he heard the word. Sometimes this gives rise to alternate spellings, as in “tot” or “tourt” for “star”, or to ambiguity such as whether to indicate the plosive sound as “p” or “b” but overall it has been easy to place the Boorong language firmly within the Wergaia language as reported by Hercus and others. Only four of the forty Boorong sky phenomena cannot be precisely accounted for linguistically, and of the rest, thirty-four have substantive Wergaia associations and two are from Wemba Wemba who are neighbours to the south east.

As the land was taken over by the invading English so the Wergaia-speaking people did what they could to survive and for a time sought refuge at Ebenezer Mission, north of Dimboola in Wergaia country, and at Lake Boga near Swan Hill in Wemba Wemba country.

Within a generation these missions were closed down and the survivors were sent far away to government settlements where they lived with remnant

peoples from other language groups. English language became the language of survival and as their own languages were abandoned, so too their ancient knowledge. Consequently, there is no one alive today who speaks the Boorong language, nor has it been possible to trace any descendants of the Boorong.

Lake Tyrell is the second biggest freshwater lake in Victoria, but is seldom filled. In between times, the lake is encrusted with salt, which absorbs moisture from the atmosphere. When filled with water the lake is a haven and breeding ground for all sorts of water birds and aquatic life and would have been an excellent food source for the Boorong people. The name Tyrell comes from the local word for “sky” and it is not hard to imagine why. On an occasion when the lake has been replenished, to be there on a cloudless night when the water is still, every star in the firmament can be seen reflected. Standing on a point of land jutting out into the lake, it is easy to form the impression that one is in space, with the stars all around, above and below. “Tyrille” had both meanings in Wergaia; “sky” and “space”.

Creating a meaningful understanding of these sky-earth connections is the main purpose of my research and consequently the recognition of ecological knowledge, styles of learning, family life and the law.

Seasons

One of the ecological clues relates to the seasons. Stanbridge quite specifically gave seasonal clues to the appearance and disappearance of Marpeankurrk (Boötes) and the disappearance of Neilloan. “When she [Marpeankurrk] is in the north in the evening” is the appearance clue and “when she sets with the sun”, is the clue to her disappearance. Similarly the mallee fowl eggs are said to be coming into season, as Neilloan sets with the sun. That is, as the Spring moves onward to Summer and the days get longer, and Neilloan is no longer seen in the evening sky, so coincidentally, it is the time when the mallee fowl hen, on average, begins to lay the first of her eggs. With Marpeankurrk, the connection is with the development of termite larvae and pupae. When she is dominant in the sky it is the time to look for the Bittur (termite larvae). When she is gone from the sky, the Bittur has gone. Both mallee fowl eggs and the developing termites are regarded as good food. Both were harvested at set times of the year. The appearance and disappearance of stars are an annual event, and certain stars or constellations therefore coincide with certain seasons. I have subsequently noted connections between most of the Boorong celestial beings and seasonal phenomena on the ground, and have developed this notion into a seasonal calendar.

The Boorong information reveals some more interesting correlations. For instance, at the March equinox the Southern Cross is moving towards an upright position and becoming fully visible in the southern sky. This is the tree up which Bunya climbs to escape the clutches of Tchingal, the giant person-eating emu.

For both Tchingal and Bunya this time of the year has special significance, (Autumn [Fall] in the Southern Hemisphere) because it is now when they begin to breed. The ringtail possum has young beginning in April and its breeding season goes through to November. The emu lays eggs from April-May through to September. It would be understandable then if the Boorong made the correlation between the sky creatures and the accompanying season. Both creatures were important functional items to the Boorong, the possums supplying their skins to make the warm waterproof cloaks, while the emu provided eggs for food. The meat of both creatures was used for food as well, but I believe it is the birthing aspect of these creatures that was the reason why the Boorong referred to this time being the “first season of the year”.

Cosmology

It may be argued that the star groupings known to the Boorong are conceived of as a series of celestial gestalts, created from earthly experience. Each gestalt is a coherent conceptual structure involving several experiences of the human senses; colour, shape, depth, size and movement, all of which relate to aesthetic experience as well. Each gestalt is an observable location where certain dimensions of human experience are conceptualised. Morality, ecology and family are such examples. Thus the constellation or dark space becomes a metaphor for what lies below. Each is a matter of imaginative rationality and the series forms a coherent whole. It requires a combination of intellect and imagination and is an art form of reality.

Our conceptual system is inherently metaphorical; the way we understand the world, think about things and the way we function in metaphorical terms makes sense of the world, as we know it. It is as meaningful to see Warepil represented in the night sky, as it is to proclaim the black dot a mile high in the sky in the middle of the day to be an eagle. The difference in the two sightings is a difference in metaphor, the daytime sighting being a biological metaphor, the night time sighting being totemic. But metaphor aside, a problem still exists; Why is it so difficult for those of us so immersed in a chirographic (writing) culture to understand and accept the successful longevity of oral cultures?

As distinct from every day educational practice in mainstream culture today, people in primary oral cultures, those untouched by writing in any form, learn a great deal and possess and practice great wisdom according to W. J. Ong, but they do not “study” to acquire this wisdom. They learn by apprenticeship, discipleship, by listening, by repeating what is heard, by mastering colloquial sayings, by using the imagination and developing evocative language to tell stories.

It strikes me that this method of perceiving the universe is both highly entertaining and instructive. It is highly regulated and repetitive and if it is used

as the basis for story-telling and imparting information it can be a very efficient and appropriate way to pass on knowledge in an oral culture.

Oral cultures use concepts in situational, operational frames of reference that remain close to the living human life world. Thus roundness is the shape of the moon or of a saucer, whilst someone from a written Western –derived culture will identify the same shape as a circle. The latter response demonstrates training in schoolroom answers, which are not real-life responses.

Stories related by the ethnographer Matthews that I have attributed to the Boorong are creation stories which provide functional explanations of the landscape, attribute heroic characteristics to the main players, and provide through the narrative a value basis for living out one's life. These are formulaic expressions, in standard thematic settings that provide the mnemonic patterns easily memorised. Oral cultures verbalise and conceptualise all their knowledge with close reference to the human life world and in so doing, knowledge is situated within the context of struggle. Enthusiastic description of physical violence often marks the oral narrative, and oral memory works most effectively with "heavy" characters, persons whose deeds are monumental, memorable and commonly public. Such is the depiction of the courageous Bram brothers with Tchingal, Totyarguil's pursuit of the great cod and of his mother-in-law Yerredetkurrk's revenge for Totyarguil's bad behaviour. Colourless personalities cannot survive oral memory. Learning or knowing in an oral culture means achieving close, empathetic, communal identification with the known, the kind of identification that is alluded to in the following section on Family.

Family

It is interesting to look closely at the species involved in Boorong country to see what we can glean from knowing more about the species themselves, and see if they provide role models wholly or partially. The species under scrutiny include the owlet nightjar, the mallee fowl, the emu, the wedge tailed eagle, the crow and the native cat. All but one clearly demonstrates one or more favourable traits relating to parenting and family life, the last-mentioned exhibiting quite objectionable traits.

The first example is the owlet nightjar, known as Yerredetkurrk who is the mother of Totyarguil's wives. Totyarguil is the male ancestor hero who was instrumental in forming a key feature of the Australian landscape, namely the Murray River. This is Creation Time and it seems distinctly possible that since she is mentioned as the mother of this man's wives, that she may also be the creator of all women. It is Yerredetkurrk who has the avoidance relationship with Totyarguil, which all people must know about and strictly observe. But why is it that the owlet nightjar is invested with this most precious prestige?

Also known as the fairy or moth owl, it is the smallest of the Australian night birds, and it appears in a variety of forms across the continent, wherever there is open timber or forest. A skilled feeder, an examination of stomach contents reveals skill at gathering of insects on the ground as well as insects taken on the wing. It flies silently and erratically, rather like a butterfly but because this takes place mostly at night, it has been described as a “very smart flitting phantom”. Its voice is heard soon after night fall, a variety of shrill ‘churring’ notes, most common as a harsh ‘yeer yeer yeer’, and it is not difficult therefore to work out how it got its Boorong name. Its nest is made of green leaves in a tree hollow, and when the clutch of three or four eggs is laid, maintenance of fresh green leaves under the eggs is a feature of incubation. When nesting it will sit tight rather than leave its eggs or young, however much it’s disturbed. As to its appearance, most of its bulk is made up of soft, grey plumage and its “beautiful, big brown eyes and black, striped crown give it an engaging mammal-like appearance reminiscent of the sugar glider, one of the smaller possums.”

It is easy for me to see the qualities of the owlet nightjar as being both feminine and mothering. Skill at food gathering, determined protection of the young, attractive appearance and maintenance of a clean home are behavioural characteristics that might give this bird a special place in the eyes of women.

An earlier reference was made to Neilloan, the Mallee fowl Creator Being. Mallee fowl behaviour which parallels human behaviour includes; pairing, marital loyalty, home building, mutual support in nurturing the unborn, successful reproduction as a major goal, togetherness, respect for individual feelings, defence of the family home, mutuality in copulation, and consistency and tenacity in maintaining the seasonal cycle. While this model is satisfactory for pairing behaviour, it has to be supplemented from elsewhere when the question of child development is raised, for Mallee fowl chicks are fully fledged when born and the parents have no further contact with them. For this aspect in Boorong country, I would turn to the emu.

In contrast to the Mallee fowl, emus nurture their young for two years after the eggs have hatched. Like the Mallee fowl there is a good deal of cooperation between the parents, even though there is a clear distinction between the gender specific roles that each plays. It is possible that the Boorong had respect for this species because of the unusually long and careful nurturing period bestowed upon its young. That it is the male emu that carries out the nurturing role, rather than the female, means that it has special relevance for Aboriginal men. Nonetheless, this special care by parent or parents is the principal point at issue.

Law

The sky provides a mechanism for establishing a connection between new concepts and previous experience. Thus the knowledge built up from life experiences in Boorong country is acted out in stories by the ancestral beings whose representations are to be seen in the night sky. The sky is the metaphor for life on the ground. As children are introduced to the ancestral beings and the stories in the sky, so they are prepared for life on earth. And vice-versa. As they observe things on the ground, so they might expect to find them in the sky. Thus the sky becomes the metaphorical text book of the known world from which items of detail or broad general principles can be applied to everyday life, whether freely available to children and strangers and spoken about publicly, as to William Stanbridge, or that which is gender specific, private and which lies in the secret-sacred domain.

A graphic example is that of Yerredetkurrk who is the mother of Totyarguil's wives and as such, she is his mother-in-law or "nalwinkurrk". As mother-in-law to Totyarguil she has a special relationship, which must be observed in a certain specified way. Totyarguil's behaviour towards his mother-in-law is also prescribed and their reciprocal relationship can be described as an avoidance relationship. She should avoid seeing him or talking to him, and he should do likewise with her. Because she is or is to be the mother of his wives Yerredetkurrk is always a potential danger and must be avoided at all costs. As with him, so it is with her.

This social difference is reflected in a way in which the respective constellations appear, gain prominence in the sky, and then fade from view. Yerredetkurrk reaches her highest point in the sky at the time of the breeding season of the owlet nightjar, September to December. This is when Totyarguil leaves the sky. When Totyarguil re-enters the sky at dawn in late summer, so Yerredetkurrk is hidden in the treetops on the far southern horizon. When Totyarguil is most prominent at the highest point directly north at the end of August, Yerredetkurrk is starting to make herself seen but in comparison is maintaining a low profile.

This movement of opposites reflects the symbolic and actual relationship between Yerredetkurrk and Totyarguil, between mother-in-law and son-in-law. To Totyarguil, Yerredetkurrk as the potential mother of his promised wives is the most dangerous of his relatives and is to be avoided to prevent any suggestion of incest. She reciprocates and avoids any contact with him. They are in geographically different parts of the sky; she in the south making her annual circumpolar progression, he in the north, rising and descending in opposition to her. There are times when they are in sight of each other but this also reflects real life, because custom can allow for a mother-in-law to carry on a limited conversation in the presence of her son-in-law in regard to some aspects of daily life.

How the whole celestial panoply came to evolve is unknown but it's interesting to note some of the physical parallels between the celestial and terrestrial counterparts. The figure of **Neilloan**, the Mallee fowl Creator Being includes an egg-like shape, known to other astronomers as the Ring Nebula. Also in April, June and July a regular meteor shower is evident from this constellation, mimicking the sticks and gritty bits flying through the air as the Mallee fowl kicks up material on to or off the mound. Coincidence relating to the appearance and disappearance of the celestial phenomena has been alluded to in the section on Seasons. Other coincidences include the shape of the constellation mimicking the shape of the creature, and the colour of the stars within the constellation reflecting the colours of the creature. Celestial beings whose colours coincide with their earthly connections include Berm Berm Gle, Gnowee, Gellarlec, Marpeankurrk, Mindi, Totyarguil, Wanjel, Yerredetkurrk, Yurree and Otchocut.

Yerredetkurrk, the mother of Totyarguil's wives and the totem for all women in the part of Australia, is based on the star Achernar and the owl-nightjar bird. The star is blue white; the bird has soft grey plumage. The constellation is tiny; the bird is tiny.

Yurree, the fan-tailed cuckoo is Wanjel's partner in the hunt for the red kangaroo and is based around Castor. The bird's breast is dull rufous in colour. Castor is a multiple star that includes a ninth magnitude red dwarf companion. Pictorially, Yurree the constellation looks like a bird in flight.

Wanjel, the hunter in the Pollux grouping, means long-necked tortoise. The Pollux grouping resembles the long-necked tortoise diving in the water.

Otchocut, the great fish is probably the Murray Cod, the largest fresh-water fish in Australia. The yellow and white colours in Delphinus (Beta and Gamma) correlate with the colours of the cod. The outline of the constellation resembles a fish leaping out of the water.

Berm Berm Gle, the name of this warrior-protector, is derived from the name for the red-kneed dotterel or sandpiper, an extremely active bird that runs with quick strides, frequently spearing its bill into the soft mud at the edge of swamps. Near to Alpha Centauri, the head of one of the brothers is a red dwarf flare star, Proxima Centauri, eleventh magnitude, which suddenly increases its brightness by as much as one magnitude for several minutes.

Gnowee, the sun, is the emu egg whose yellow yolk is the same colour as the sun.

Gellarlec. The songman's name derives from the pink cockatoo, a colour consistent with Aldebaran, which is a red giant of magnitude 0.9. Aldebaran is the songman's left elbow.

Marpeankurrk is based on Arcturus in Boötis whose orange red colour is similar in colour to species of termites that live in rotting logs. Another coincidence is the meteor shower, the Quadrantids, observed in the southern hemisphere in early July which could represent the release of alates (winged termites) that fly from the parent colony to colonise another site.

Totyarguil in Aquila, the ancestral male hero, is totemically the purple-crowned lorikeet whose colours include: purple, yellow-orange, and pale blue-green. Stars in Aquila include yellow, blue and purple hues.

Mindi is a huge hairy snake that brings disaster to people and is represented by a long serpentine dark patch within the Milky Way.

Applying some rigour to the analysis of the Boorong celestial panoply provides a very imaginative and intellectually stimulating insight into a people and the manner in which they lived. The examination moves from a passing interest in the quaint and exotic, to an intrinsically fascinating immersion in a culture able to be revived in the imagination just as the creatures may be perceived in the sky. I am therefore grateful to David Mowaljarlai, for in saying that whatever is on the ground is also in the sky (or vice versa), I have a guiding principle that assists enormously in the process of reconstruction. We know from other well-described parts of Aboriginal Australia that life on earth made holistic, ecological sense. If what is on earth is reflected in the sky, then the celestial panoply should also make sense. This investigation is based on that dynamic, the movement from the sky to the ground and the ground to the sky, to build on successive clues until a reasonable picture has been constructed.

Sometimes I've had to make a calculated guess when there is limited linguistic information available, especially with compound words like Marpeankurrk, Collenbitchick (Totyarguil's uncle, a species of ant) and Tortchinboiongerra (a flock of small birds drinking rain water that has collected in a hollow in the fork of a tree). What I did was to reduce each word to its constituent parts and reassemble them as combinations of words using language and cultural resources, and attempted to obtain congruence with the Stanbridge explanation. In these cases I've used a combination of indicators and clues in making a final determination; astronomical, ecological, linguistic and cultural.

The other essential ingredient in the dissection and deduction is the need to move fluidly between knowledge disciplines. It requires a return to the age of the generalist, the time that was beginning to disappear when William Stanbridge wrote his notes. The Darwinian age heralded the age of the specialist; an approach that dominates our scholarship today and which incidentally creates

grave difficulties in finding an academic home for this study. To successfully develop the story of the Boorong means delving into linguistics, anthropology, astronomy, biology and geography, and weaving the connections into a holistic life tapestry. Trying to tell the story within any one discipline would limit its effectiveness.

To sum up, the method used in this investigation required me to personally view the stars, imagine outlines, note their seasonality, confirm their linguistic origins, understand the biological connotations and surmise their place in the Boorong culture. However, in doing so I recognise that I'm working in a very sensitive area. I couldn't have done this without strong and enthusiastic support from my colleagues in the Aboriginal community. They are at the forefront of a grassroots determination to hold on to heritage and to enhance their cultural stock by encouraging historians, archaeologists and others to find out what they can and get it back to the communities. One elderly woman spoke about the stars before she died, and what she said might have been the last vestige of an ancient oral tradition that we've set out to try to rediscover. Some of this tradition is what William Stanbridge wrote down mid nineteenth century. If any descendants of the Boorong are still alive, I hope they recognise the respect and admiration I have for their ancestors. I am writing this at a time when Aboriginal concern over appropriation by non-Aborigines of Aboriginal culture and history is at a critical stage. I subscribe to this concern and recognise the sensitivity of this kind of research.

I call it "restitution history" or "restitution archaeology" where the primary intent is to satisfy the local community need, a secondary intent is to generate interest for the general community or the mainstream, and the third priority is the satisfaction of the scientific community. Restitution is used in the sense of giving back what is able to be given back, using language that is acceptable to the local community and not using abstruse scientific terminology. Because there are many people in the mainstream who value Aboriginal traditions, who want to know more about them, and who also actively support positive race relations, this audience should be satisfied along with the first. The reason science is placed last in the hierarchy of priorities is because science has often been used as an excuse for cultural theft of artefacts, human remains or Aboriginal knowledge. Collecting material "in the interests of science" is an oft-used rationalisation for many despicable acts against Aboriginal people since the invasion. Many people have gained financially from publishing, from trading in artefacts and from tourism. The first responsibilities in a study like this is to the people from whom the information was derived, and if those people no longer exist, then to their inheritors.

There is no doubt that the Boorong people were able to pass on their cultural well being down countless generations through a coherent network of gestalts which emerged directly from interaction with their environment and which were projected on to the night sky. How much the culture changed over

time is not known, but what we can know is how the cultural transmission occurred. For the analyst freed from the biases of the written culture, the successful transmission of information, beliefs and values through the generations appears to be a sound and masterful achievement, an alternative and attractive learning methodology, albeit a relatively unrecognised one in mainstream Australian society.

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