Aboriginal Astronomy: Building Bridges across the Cultures

By Ray Norris, SL2000

At the old man's invitation, I sit down on the rug next to him and hold out my hand. His chest bears the proud scars of a fully initiated Yolngu man, and his bearing and charisma tell you that he is a leader of his people.

"G'day. Ray Norris. Glad to meet you."

Putting down his Ventolin puffer, he reaches over and shakes my hand.

"Mathulu."

My jaw drops in astonishment. Mathulu Munyarryun? Renowned ceremonial leader, custodian of ancient Yolngu stories of the sky?

In our quest over the last three years to understand the astronomy of the Yolngu people, one name repeatedly comes up in conversation – Mathulu. But wherever we go, he always seems to be somewhere else. At last, in this remote Arnhem Land community of Dhalinybuy, we get to meet him. Maybe now I'll find the answer to a question that's been bugging me.

Image: Yolngu elder Mathulu Munyarryun. Photo Ray Norris

The ancient cultures of Aboriginal Australians have a strong astronomical component, linking their stories and ceremonies intimately with the sky, often in beautiful and fascinating ways. There are "constellations" such as the "emu in the sky" formed from the dark places between the visible stars. Songs and stories about the Sun, Moon, planets and stars connect ceremony and law to celestial cycles, providing essential tools for navigation, calendars, and life. So were Aboriginal Australians the world's first astronomers?

This question haunts me. The question haunting you is probably "What has this got to do with Sydney Leadership"?

Please bear with me while I explain how my quest started. In 2000 my job was doing fundamental research in astrophysics, trying to understand the origins of galaxies, stars, and ultimately the world around us. Although I was passionate about this research, something was missing: it had no impact on the immediate problems facing our society. I was particularly appalled by the latent racism against Aboriginal people that permeates this country even now, and was then fuelled by a government refusing to acknowledge the wrongs of the past. So that's why I joined Sydney Leadership – to try to get involved with a project where I could do something useful NOW. Sydney

Leadership was fantastic. I was right out of my territory, finding wonderful experiences and people that I would never have encountered otherwise, and yet at the end of the year I had no “project”.

My first project, to provide internet access to Indigenous kids, failed because I couldn’t find the local support. My offer to help with relief work after the tsunami disaster in 2004 was turned down - for some reason the aid agencies thought there was no need for an astrophysicist in tsunami-ravaged Indonesia. The rejection came as a shock. I needed to be realistic: what could I do, using my own skill-set?

One thing I could do was research, and write, and so I started writing articles in Wikipedia that would hopefully increase understanding of Aboriginal cultures by white Australians, particularly the schoolkids who use Wikipedia on a daily basis as a resource. As a sideline I started researching something even closer to my home: Aboriginal Astronomy. Primarily driven by curiosity, my wife Cilla and I started poking around the Sydney Rock Engravings, and visiting Aboriginal sites and people all over Australia. In the winter of 2005 we set out for Yirrkala, in Arnhem Land, where the traditional Yolngu culture still thrives, and where the modern Aboriginal rights movement in Australia started.

Arnhem Land, in the Top End of Australia, is an Aboriginal reserve almost the size of England. The Yolngu people who live there have a fierce discipline, banning alcohol and drugs from their communities, thus avoiding the crippling social problems suffered by some other Aboriginal communities, triggering Howard’s ill-conceived “Intervention”. They tread a delicate balance between keeping their traditional culture vibrant and giving their kids the opportunity to take their place in the modern world.

[Image: crossing a creek on the Central Arnhem Highway. Photo Ray Norris]

Our thousand-kilometre drive from Darwin to Yirrkala was mostly on the 'Central Arnhem Highway' – a lonely red-dirt track traversing remote, wooded ridges. On

either side, graceful pandanus palms and tree-ferns were reflected in creeks of clear, still water. Beautiful - but inhabited by deadly crocs. A bit of a worry when you have to drive across the creek. What happens if the engine stalls?

On that first trip, we were little more than tourists, getting our bearings, finding out who to talk to, and failing to penetrate the culture beyond a superficial veneer. We've returned to Yirrkala for a few weeks each winter since, gradually learning Yolngu customs, a few words of the language, and have made some wonderful friends. We've learnt how the Moon is male and the Sun is female. The Yolngu people tell how Walu, the Sun-woman, carries her blazing torch across the sky from east to west, creating daylight. After descending to the western horizon, she travels back under the Earth to her morning camp in the east.

They also tell how Ngalindi, the Moon-man, was originally a fat and lazy man (the full Moon), who demanded that his wives and sons feed him. His wives attacked him with their axes, cutting chunks out of him (the waning Moon). Finally he died, and remained dead for three days (the new Moon). But then he came back to life, grew fat and round (the waxing Moon), and continues the cycle for ever.

Venus, or Banumbirr in Yolngu, the Morning Star, is extremely important to Yolngu people, who tell how she came from the east in the Dreaming, naming animals and landscape. When Venus rises before dawn, a rope is said to hang below her, connecting her to Baralku, the Island of the Dead, and it is this rope which prevents her moving too far from the Sun. Some Yolngu clans still hold a beautiful and important "Morning Star Ceremony" as part of the funeral process. This ceremony starts at dusk and continues to a climax as Banumbirr rises before dawn. During the ceremony, a "Morning Star Pole" is used to help the participants communicate with their ancestors, with Banumbirr's help. The messages are said to be carried along the rope which connects Banumbirr to Baralku, where the ancestors live.

[Image: a morning-star pole, created by Richard Garrawurra. Photo Ray Norris]

But Venus is both the Morning Star and the Evening Star. If Venus is so important as a Morning Star (just before sunrise), is there a corresponding story about Venus as an Evening Star (visible just after sunset)? This is the question which we were told would be answered by Mathulu.

While in Yirrkala last year, we heard that some teachers from the Yirrkala Homeland School were going out to a remote community off the beaten track – Dhalinybuy - the ancestral home of one of the Yolngu clans. Maybe we could tag along with them. A lunar eclipse was due to occur that evening, so it would be a good opportunity to teach the kids a bit of astronomy.

Driving into Dhalinybuy the next morning, we found a community of low buildings in a clearing carved out of the bush. The largest was the schoolroom, occupied by a class of perhaps twenty Yolngu kids, ranging from tiny tots to strapping teens, all fit and healthy, with a large part of their diet consisting of traditional foods. With no shops in the community, kids have very little access to lollies and soft drinks. I'm not that fat by Sydney standards, but the size of my stomach seemed to be a topic of curiosity for them.

Late in the afternoon, we were invited to join the older men to talk about their stories, and were led to a group of men sitting on a rug. Following Yolngu custom, we waited nearby until invited over. As we introduced ourselves we found we were talking to the legendary Mathulu. He spoke in Yolngu, so a younger man, Banul, translated for us. Mathulu started telling a story about the Evening Star, Djurrpun: "A lady went out to a waterhole, and she sat collecting raika nuts…"

[Image: Banul and the Morning Star Rope. Photo Ray Norris]

He finished the story: "When Djurrpun sets just after the Sun, we know that raika, the nuts from the rushes in the river, are ready to be harvested."

According to the text-books, Djurrpun is Venus. But this doesn't make any sense, as its setting time changes from year to year, and so Venus wouldn't be any good for telling you when to harvest raika. I asked them which star is Djurrpun, and Banul promised to show me after dark.

And then the conversation took an unexpected twist. From a bag, Banul produced a long rope.
"This is a Laka – an Evening Star Rope", explained Mathulu.
Frankly, I was flabbergasted. I'd spent the last couple of years reading the literature on Yolngu culture, and I'd never before heard of the Laka. I'm pretty certain it's new to Western academia.
"It's a line of stars in the sky", explained Mathulu, "and when the first star sets just after sunset, that's time for the women to collect the raika nuts."
He let me handle the rope, which is made of pandanus twine, twisted together with possum fur and lorikeet feathers. Woven in to the rope were the yellow-white marbles of the raika nuts.

“This Laka is a memorial to my grandmother,” continued Mathulu, “and we used it at her funeral to send her spirit off to the evening star. Like this.”
Together, he and Banul demonstrated how a line of mourners holds the rope on their heads, linking them to the grandmother as they send her spirit off.
“And then we take the rope again to other funerals, so that the all the ancestors come to the ceremony.”

That evening, at the appointed time, the Moon slowly moved into the shadow of the Earth, the kids staring wide-eyed at the first eclipse of their lives. The teacher, Gurumin, translated into Yolngu as I explained it to the kids, demonstrating with two dinner plates and a torch. As the last bright limb of the moon was eclipsed by the Earth, I called out almost my only Yolngu words: “Nhama yalala, Ngalindi (See you later, Moon)”. The kids burst out laughing at my terrible pronunciation, but joined me in waving goodbye to the Moon.

Walking back to the school, I asked Banul which was the Evening Star. “That one,” he pronounced confidently, pointing at the star Spica. So it isn’t Venus at all – the textbooks are wrong! This makes sense. Spica sets behind the Sun in October, just before the Raika harvest. Another puzzle solved.

The next morning, the kids were still excited about the eclipse, and were calling me “Ngalindi”, laughing. I thought they must have been really impressed by my story, until the penny dropped. Ngalindi was a very fat man.

[Image: The emu in the sky, seen as dark clouds in the Milky Way, above her engraving in Ku-Ring-Gai Chase National Park. Photo by Barnaby Norris.]

Closer to home, just North of Sydney, is Ku-ring-gai Chase National Park, where the Guringai people lived until the British occupation of Australia. The Guringai people were known for their beautiful rock engravings, showing people, animals, creator spirits, and strange symbols such as crescents whose meaning is unknown but may be astronomical. Many Aboriginal groups have stories about a great emu whose head is a dark cloud next to the Southern Cross, and whose neck, body, and legs are formed from dust lanes stretching across the Milky Way. This great emu, striding right across the sky, is the best-known Aboriginal constellation. Once you’ve seen it on a dark night in the Australian bush, the Milky Way will never look the same again. A finely engraved emu in Ku-ring-gai Chase National Park trails its legs in a position never

seen in a real-life emu, but is exactly that of the Emu in the Sky. The Aboriginal artists also oriented the engraving to line up with the Emu in the Sky at just the time of year when real-life emus are laying their eggs. This engraving is a probably a picture of the Emu in the Sky.

So what has all this got to do with Sydney Leadership? Why should we be interested?

I have to admit that I was initially attracted to this research area by personal curiosity. But it goes much deeper than that. First, if we succeed in understanding these engravings, perhaps we can give back to the Aboriginal people some of that culture which we destroyed when we invaded their land two hundred years ago.

Second, there still exists a gulf of misunderstanding between Indigenous and non-Indigenous Australians. Over a beer at a barbecue, one of my mates, Dave, sniggered some insensitive and plain stupid comments about "secret women's business", not understanding that this is something real, and sacred, and important to many of his fellow-Australians. Dave isn’t evil, but he doesn't have much understanding of the cultures of Aboriginal Australians, and the complex issues now facing them. His attitudes, frankly, aren't that much different from his grandfather who shot Indigenous Australians for sport.

How can we help poor Dave to understand Indigenous Australian people? Many of the esoteric Indigenous stories and tales, let alone complex kinship systems, are just too different, and therefore difficult, for Dave to understand. On the other hand, Dave loves the bark paintings that he sees in the tourist shops, or the Didgeridoo music he hears on Circular Quay, and is spellbound by the intricate traditional dances and songs. All these art forms have successfully forged a bridge of understanding, because they are understandable, and accessible, even by Dave.

I hope that, like music and art, astronomy can build an important bridge of understanding between Indigenous and non-indigenous Australians, because we all share the same sky, and even Dave is entranced by the sight of the majestic Milky Way stretching across the unknowable black heavens in outback Australia.

And it seems to be working. I’ve been overwhelmed by the level of interest shown in this work, and have been invited to give talks on it across the country, and overseas. My most daunting task was giving a talk at the Garma Indigenous festival. It seemed ludicrous for me to stand up in front of an audience of Indigenous people, telling them about their culture! Amazingly, the audience were fascinated by the way their own songs and ceremonies were mirrored in other Aboriginal cultures across the country. The most gratifying reaction I’ve had is that from Aboriginal kids who are amazed that other people, even whitefellas, are so interested in this stuff, and it seems to help them grow a sense of pride in their own culture.

We can’t help being intrigued by the beauty and mystery of the sky, whatever our ancestry, and we all love to swap stories about it. By doing so, this project aims to promote a greater appreciation of the depth and richness of Indigenous Australian cultures.