

Hi this is Steve Nerlich from Cheap Astronomy www.cheapastro.com and this is *More Australian Archaeoastronomy*.

365 Days of Astronomy podcast listeners might remember I interviewed Duane Hamacher, a PhD candidate at Macquarie University, Australia in a podcast for 29 January 2010 - where he told about his discovery of a meteor crater by following an Indigenous Australian dreamtime story. This podcast is a further discussion with Duane about archaeoastronomy in Australia.

Steve: Duane how are you and how's your PhD coming along?

Duane: I'm doing very well – the PhD's coming along fairly well. I'm about to start the field work component.

Steve: Something you'd mentioned was a story about Eta Carinae – can you talk us through that?

Duane: Yes, this is really interesting. Eta Carinae is a hypergiant star – it's actually a binary system, it's over a hundred times more massive than the Sun and about 4 million times more luminous. It's a variable star so its brightness changes over time – but it doesn't constantly change at the same rate. Back in the early 1800s it went through these periods of extended brightness where it would get really, really bright for a while and then fade away again. Well, there was a period called the great eruption – which is commonly referred to as a supernova impostor event that occurred back in the 1840s and over a period of about 20 years Eta Carinae went from being a fairly inconspicuous moderately faint star – to the second brightest star in the night sky after Sirius and then eventually faded off again rather quickly below human eye visibility.

Well I was working with a guy here at Macquarie named David Frew, an astrophysicist, and he did a lot of work on the history of Eta Carinae – mainly looking at the light curve, it's brightness over time – over the centuries – and we found this Aboriginal account from the Boorong people – an aboriginal clan from north-west Victoria, up in Mallee country near Lake Tyrell. And there was a gentleman back in the 1850s named William Stanbridge who did a sort of ethnography on the Boorong – they prided themselves on knowing more astronomy than any other Aboriginal group.

So he posted a couple of papers going through the Aboriginal names of the beings and the individuals in the stories and one of them was rather interesting. There's a male figure called War denoted by the star Canopus – his wife was denoted by a bright red star in the constellation Robur Carol, designated as 966. Well, we tried to figure out what that is. Back at that time there weren't many major star catalogues available. There was one major star catalogue that had been published in the 1760s I believe – and 966 refers to the nebula surrounding Eta Carinae – not the star itself – the star is actually 968.

So, given it's brightness at the time and given it's colour and description we were able to determine that the Aboriginal people, the Boorong had actually noted the brightness of Eta Carinae and incorporated that into their oral traditions during the period of its great outburst.

Steve: So do you think the story originated around the 1840s when the impostor event happened?

Duane: Yes just about a year before William Stanbridge went and talked to the Boorong people Eta started to fade away again and a few years later it was completely invisible - you couldn't even see it. So it was only that twenty year period just prior to him going out and talking to the people that it had brightened so it seemed pretty significant in the sky at that time – there's no reason why they would have picked Eta Carinae before that outburst.

Steve: So the story was - there was a character called Wah?

Duane: Yes, it's spelt War but pronounced Wah.

Steve: And he was represented by Canopus. So what character was the Eta Carinae Outburst?

Duane: His wife - Collowgullouric War was the name of his wife. He was a crow and of course his wife was a female crow. They didn't give much detail on the story, but we were able to determine they were almost certainly talking about Eta Carinae.

The star catalogue that was made about a hundred years before – when you look at that, Robur Carol is a now defunct constellation that incorporated Argo Navis and some other constellations between the region of the false cross and the Southern Cross

Steve: Which is where Eta Carinae is.

Duane: Right – right smack in the middle of that. There were some interesting lines of evidence. For example, the star characters the husbands and wives were always stars nearby in the sky and they were always of a similar magnitude. Now Canopus of course is a very, very bright star – but why would they pick Eta Carinae – which prior to the outburst wasn't very bright, lots of different stars in the region even brighter than Eta. So, there were a few different interesting lines of evidence that suggested they almost certainly picked up this star and incorporated it into their oral traditions – which isn't uncommon a lot of transient celestial events are incorporated into oral traditions. So yeah, it's the only indigenous account of Eta Carinae that we currently know of.

Steve: Yeah, that's interesting. You made the comment that lots of stories arise from transient events. Well, I can't think of other stories - are there others stories of that nature - that are transient?

Duane: Oh yes. So if you think of comets for example? I'm actually putting a paper out in a journal soon in November - there are a lot of accounts of specific historic comets. For example, a guy named Roth who was working in the early 1900s in Cape York Peninsula published in one of his books in 1902 that the Aboriginal people near Mapoon saw a comet as a fire lit by two old women - and that's kind of an interesting description.

So, I did some research on it and found that in 1901 a great comet, a really bright comet was visible from that region - and when it was visible, the head of the comet was just below the

horizon and the tail extended upward above the horizon directly up into the sky and there were two distinct tails. So it looked like a fire that had two different smoke trails. So, we thought from that maybe that was the comet they were talking about. And I found lots of other examples of historic bright comets that you find Indigenous accounts of.

As well as that are meteors, cosmic impacts and fireballs, eclipses – you know, you get all these different type of phenomena that are transient, that there are different Aboriginal accounts of. For example, there was a meteorite fall near Jupiter Well in Western Australia and the Indigenous people incorporated that fall into their pre-existing oral traditions.

I've been looking at a lot of transient celestial phenomena and finding a lot of interesting stuff coming from that – like these things being incorporated into oral traditions – and people having a fairly good grasp on understanding the mechanics of the motion of celestial bodies – especially eclipses. There are a lot of Indigenous groups that look at eclipses – and obviously with a solar eclipse the Moon is moving in front of the Sun. Nowadays, we think that's not that hard to figure out.

But a proper new Moon when it's near the Sun in the sky – you can't really see it. So you'd have to note the position of the Moon each night and you can tell from that when a solar eclipse happens that the Moon's moving in front of the Sun. So a lot of Indigenous groups understood that – they understood the movement of the Moon through its monthly cycle – the correlation of the lunar cycle to things that happened on the Earth. Things that it was directly related to like the tides of course – and things not directly related, but that it roughly correlates with – like the menstrual cycle – which is why the Moon is always connected to fertility and childbirth in a lot of Aboriginal cultures.

Steve: OK thanks Duane, that's interesting. And I hear you're getting married.

Duane: Yes. Marrying an astronomer. It's a cliché I know. She's a Kiwi, but I won't hold that against her. Looking to do that in March – so that'll be fun.

Steve: So did you meet on a field trip - or doing something astronomical?

Duane: We were both graduate students at the University of New South Wales – we both did Masters degrees in astrophysics there. So that's where we had met and it took off from there.

Steve: So I get the impression your fiancée has a Maori background – and does she have an interest in New Zealand archaeoastronomy?

Duane: Yep – she does have a Maori background – all the women in her family, all the down are all Maori. She does have some interest in it of course – she grew up learning Maori views of the night sky, just like we tend to learn Greek or Roman – or wherever you happen to live. In the States we learnt some native American views of the night sky. So she knew some of those – but we're actually doing a very small joint paper on comets and meteors in Maori culture – so that will be a neat little project the two of us are going to work on.

And she gave me a neat little book on Maori astronomy not too long ago – so it's something she has a bit of interest in, but she mainly works in radio astronomy. Massive star formation

– those kind of areas, not really cultural astronomy and archaeoastronomy. But she certainly loves coming out with me and helping me do some of this archaeological field work.

Steve: Well, that's great – congratulations. Look Duane, thank you for your time.

Duane: No worries – thanks for having me on.

Thanks for listening. This is Steve Nerlich from Cheap Astronomy, www.cheapastro.com. Cheap Astronomy offers an educational website where it's not all about telescopes – and none of it is about expensive ones. No ads, no profit, just good science. Bye.

References

[More on William Stanbridge and his interactions with the Boorong people.](#)
[Stanbridge's 1857 paper.](#)