



COMMUNICATING SCIENCE ACROSS CULTURES, COMMENTARIES FROM SESSIONS  
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## Indigenous Australian artists and astrophysicists come together to communicate science and culture via art

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### Abstract

During the International Year of Astronomy in 2009, we initiated a collaboration between astrophysicists in Western Australia working toward building the largest telescope on Earth, the Square Kilometre Array (SKA), and Indigenous artists living in the region where the SKA is to be built. We came together to explore deep traditions in Indigenous culture, including perspectives of the night sky, and the modern astrophysical understanding of the Universe. Over the course of the year, we travelled as a group and camped at the SKA site, we sat under the stars and shared stories about the constellations, and we talked about the telescopes we wanted to build and how they could sit on the Indigenous traditional country. We found lots of interesting points of connection in our discussions and both artists and astronomers found inspiration. The artists then produced >150 original works of art, curated as an exhibition called “Ilgarijiri — Things belonging to the Sky” in the language of the Wadjarli Yamatji people. This was exhibited in Geraldton, Perth, Canberra, South Africa, Brussels, the U.S.A., and Germany over the course of the next few years. In 2015, the concept went further, connecting with Indigenous artists from South Africa, resulting in the “Shared Sky” exhibition, which now tours the ten SKA member countries. The exhibitions communicate astrophysics and traditional Indigenous stories, as well as carry to the world Indigenous culture and art forms. The process behind the collaboration is an example of the Reconciliation process in Australia, successful through thoughtful and respectful engagements, built around common human experiences and points of contact (the night sky). This Commentary briefly describes the collaboration, its outcomes, and future work.

### Keywords

Public engagement with science and technology; Representations of science and technology; Science and technology, art and literature

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In Western Australia, half of the largest radio telescope ever conceived, the billion Euro Square Kilometre Array (SKA<sup>1</sup>), will be built in coming years. The SKA

<sup>1</sup><http://www.skatelescope.org>.

project has evolved from a concept in the early 1990s, to an effort now entering the final design stages, ahead of construction and operations. The SKA will explore the limits of our Universe, in particular the early stages of the evolution of the Universe, when the first stars and galaxies formed after the Big Bang.

The site chosen for the SKA, in the Murchison region of Western Australia, is on the traditional lands of the Wajarri Yamatji people, one of the Indigenous peoples of the Australian continent and continuous occupants of that land for an estimated 60,000+ years. The status of the Wajarri Yamatji as the traditional owners of these lands was determined in the Federal Court of Australia on 23 April 2018.

The SKA project has progressed with the support of the Wajarri Yamatji and a number of initiatives have build a relationship between the Indigenous communities of the region (not just the Wajarri Yamatji) and the astrophysicists and engineers responsible for building and operating the SKA.

One of these initiatives is the Ilgarijiri project. Ilgarijiri means “things belonging to the sky” in the Wajarri Yamatji language. Ilgarijiri started in 2009, the International Year of Astronomy, in a partnership between my research group at Curtin University and Indigenous artists from the Yamaji Art in Geraldton [Tingay, 2011]. Geraldton is the largest nearby town to the SKA site, some 350 km distant. The project started as an informal discussion about Indigenous perspectives of the night sky, the stars, planets, Milky Way, and other objects that have been observed from the pristine and dark skies of Wajarri Yamatji land over tens of thousands of years. The idea of the SKA being built on Wajarri Yamatji land naturally led to a discussion about the scientific astrophysical view of the Universe, western stories of the night sky, and Indigenous perspectives of the night sky.

The Indigenous knowledge of the sky and its meaning is as rich as the Indigenous knowledge of country, but is possibly not as widely appreciated. What was immediately obvious in the initial discussions was that we had a lot to talk about. Some fascinating similarities between Indigenous and non-Indigenous views of the sky existed, as well as some very interesting and different ways of looking at the sky. We were faced with the question, how to proceed? How should we get two groups of people who would typically not interact closely, Indigenous artists and astrophysicists, to get together and share their knowledge and perspectives of the sky?

We decided to proceed, slowly, with no particular expectations, and with a high level of mutual respect. In May 2009, we took a group of astronomers and Indigenous artists out to the SKA site. At that point, very little construction work was taking place at the SKA site, with an early prototype of the Murchison Widefield Array (MWA<sup>2</sup>) telescope, and SKA precursor, the most advanced facility on site. Before we arrived at the site, we spent a night at Mullewa (250 km from the SKA site), where we set up telescopes and invited the community to come out and look at the stars. This set the scene for the next few days, with children and elders of the Indigenous community mixing with the astronomers to look at planets like Saturn through the telescopes.

The next day, we completed the trip to the SKA site. We were privileged to spend the day walking on country with the elders who are the traditional custodians of

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<sup>2</sup><http://www.mwatelescope.org>.

that land. Toward the end of the day, our group moved back to the homestead at Boolardy Station, 35 km from the SKA site, where we were staying the night. As the light of late afternoon caused the shadows around the homestead to lengthen, the artists sat to start sketching out some ideas for their new works of art. A quiet calm came over the homestead. As the Sun set, the erstwhile station manager, Mark Halleen, built a campfire for us with his tractor.

An amazing thing happened next. As the stars came out and the campfire crackled to life, the Indigenous artists and astronomers, who had interacted very nicely but a little warily throughout the day, became animated. Suddenly the talk began, fingers pointing to stars and constellations, tracing out the stories of millennia. We discovered that the Indigenous story of the Seven Sisters was virtually identical to the Western (Greek and Roman) story of the Seven Sisters (Pleiades). We talked about the Emu in the sky, important to Indigenous peoples as the temporal marker to collect Emu eggs when it appears on the eastern horizon after sunset (in around April/May). The Emu is made up of the dark clouds that run along the centre of the Milky Way, which passes overhead in Australia, not defined by a stellar dot-to-dot, but defined by the spaces between the stars — a fundamentally different way to look at the sky, compared to the western view. We talked about the astrophysics of the Emu, that the dark clouds are dense clouds of gas and dust that block out the light from the stars behind them.

In short, we all learned a lot and the next day headed back to Mullewa, Geraldton, and Perth rather invigorated. The artists set about producing 150+ new pieces of art that were then curated into an exhibition that launched to record crowds at the Geraldton Regional Art Gallery, travelled to Canberra, and then to South Africa by the end of 2009.<sup>3</sup> The exhibition continued on to the U.S.A. and Europe in 2010 and 2011. The art works completely sold out to interested people from around the world, and the artists refreshed the exhibition several times.

The outcomes of the exhibition are well documented elsewhere (Google Ilgarijiri for a multitude of links, press coverage, and articles), so I will not cover them here, other than to say that these activities have not stopped since 2009 and that we built a lasting and strong relationship around these activities. In 2014, we celebrated five years of Ilgarijiri with a return of the group to the MRO and a reflection on our success to that point. This renewal led to a new initiative, connecting Indigenous artists in Western Australia with Indigenous artists in South Africa (where the other half of the SKA is being built), for a joint project called Shared Sky<sup>4</sup> (now owned by the SKA project itself). Ilgarijiri has now extended over a decade, and is still taking new and surprising directions.

Together, Indigenous artists and astronomers have communicated across science and art, and across cultures, with great success. This intersection of Indigenous and non-Indigenous Australia is consistent with the goals of Reconciliation in Australia, which seeks to address the displacement, disadvantage, and discrimination that Indigenous peoples in Australia have experienced since British colonisation over the last 200+ years.

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<sup>3</sup><http://www.yamajiart.com/projects/ilgarijiri/>.

<sup>4</sup><https://www.skatelescope.org/shared-sky/>.

We have also communicated, via astrophysics and art, to international audiences of tens of thousands, attendees of the exhibitions and consumers of the positive media we have produced. This broad success is due to the unique intersection of art and science that we have explored.

But this broad success is just the symptom of the deep success of the group, members of which have bonded over the common goals of considering the Universe and celebrating their perspectives of the Universe, including the exploration of the different cultural perspectives side-by-side. Not one better than the other. Not comparative. But by talking, listening, and showing respect, and appreciating the communication. We found that we inspired and surprised each other. The night sky, a common touch-point of humans from all around the world, from every variety of human culture, is a rare element of our shared experience that brings people and their stories together. By definition, nobody can own the night sky. I believe our broad success communicating with our international audiences was partly because these concepts and our mutual respect shone through the physical expression of the exhibition.

The other significant element that binds the group is the concept of building the world's most powerful telescope for the exploration of the Universe on the ancient land of the Wajarri Yamatji, antennas sitting lightly in the ancient environment and listening patiently to the sky for the whispers of signals from the cosmos. These concepts resonate with the Indigenous community.

A big element of our success in this project and the communication between the people in our group was the way in which we initiated our work. We started slowly, without rush and without building in particular expectations regarding the outcomes. We let the project evolve organically and on its own terms, with its own timescales. Early in the project we had an emphasis on getting to know each other and on the personal interactions between the people involved. Encouraging those interactions on the country of the Wajarri Yamatji was also a key factor.

At the end of the day, communicating across cultures and across the disciplines of science and art, was an exercise as simple as bringing respect and not bringing assumptions to the effort. And the effort needs to be persistent. While this is perhaps not always possible in some areas of human endeavour, even with the best intentions, we were privileged that our group came together so strongly and has produced so much over more than a decade. And the efforts and returns are set to continue in the future.

## References

- Tingay, S. J. (2011). 'Ilgarijiri — Things belonging to the Sky: connecting Australian Indigenous artists and astrophysicists'. *The International Journal of the Arts in Society: Annual Review* 6 (1), pp. 203–212.  
<https://doi.org/10.18848/1833-1866/cgp/v06i01/35965>.

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Steven Tingay is the Executive Director of the Curtin Institute of Radio Astronomy (CIRA) at Curtin University in Perth and leads the Curtin University node of the International Centre for Radio Astronomy Research (a Joint Venture with The University of Western Australia). He is an expert in astronomy and astrophysics, in particular radio astronomy. His areas of expertise encompass building and using radio telescopes, as well as astrophysical interpretation. Tingay likes designing challenging and novel experiments to answer fundamental questions about the Universe. Prof. Tingay has been at Curtin University since 2007, when he founded CIRA (now with an ERA ranking of 5 in “Astronomy and Space Sciences” and “Electrical and Electronic Engineering”). Before 2007 Tingay was at Swinburne University of Technology, CSIRO, and the NASA Jet Propulsion Laboratory in Pasadena. He has a PhD in Astronomy and Astrophysics from the Australian National University and an Honours degree in Physics from The University of Melbourne. Recently Tingay was on secondment in Italy for 18 months, as Director of the INAF Istituto di Radioastronomia in Bologna and Head of section II of the INAF Science Directorate. Tingay was the Director of the Murchison Widefield Array (MWA) project, the only fully operational precursor telescope for the Square Kilometre Array. He has authored or co-authored over 200 papers in international refereed journals and has attracted over \$100m of research funding.  
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