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Australia is in the southern hemisphere!

Australia's science and innovation policy has evolved with only a passing reference to a critical fact – we are the major science power in the southern hemisphere. For a long time we have been focused rather too heavily on a science and innovation "cultural cringe". We aspire to be a player in major global advances (like nanotechnology) in which the relatively small scale of our economy pretty much guarantees that we will be a bit player in the wider drama – albeit a good bit player. We talk about the "tyranny of distance" as a liability in our relationship with the ferment of R&D taking place in the northern hemisphere. In so doing we draw attention to our relative weaknesses as a player in the northern hemisphere science and innovation game.

Rarely do we play our trump card – as we are currently trying to do in relation to the Square Kilometre Array (SKA) radio telescope. Australia stands out in the southern hemisphere as possessing a long-standing and well-regarded critical mass in southern hemisphere-specific public science – in the environment, astronomy, oceanography, geology, biology, climate change, meteorology, atmospheric processes and, of course, Antarctic research.

The southern hemisphere plays a major role in global climate change – there is a lot of ocean, atmosphere and ice, and relatively little land. All this needs monitoring and analysing in order to understand the future of the planet as a whole. The northern hemisphere science powers spend significant sums of research money in this domain – but so do we in relative terms.

All this means that Australia is perfectly placed to articulate a more active and very high-profile 'stewardship' role in championing and coordinating research efforts in the southern hemisphere – and on behalf of all nations. This stewardship role has important implications for our strategies toward international engagement in science. It requires us to foster better international coordination of research in the southern hemisphere and to seek a leadership role in dealings with the north. To date, little emphasis has been placed on this aspect of scientific diplomacy.

Finally, we should not forget that the southern hemisphere factor has, and will always play, a key role in Australia's industrial innovation. For example, we have a strong lineage in microprocessor design capability (reflected in new ICT business formation) that has its roots in inter-disciplinary graduate training in 1960/70s radio-astronomy. The prescience demonstrated by CSIRO at that time was that graduate training in radio-astronomy, closely integrated with electronic engineering (astronomers needed to design their own custom signal processing chips at that time), would generate a generic capability of strong future relevance to industry. This is indeed what happened. There are a raft of (initially Australian) companies started and run by people trained in that inter-disciplinary environment within radio-astronomy. The impetus from radio-astronomy was there because we play this key role in southern hemisphere research.

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Thus, when we recognise our locational advantages, and set out to actually exploit these advantages, we really do get somewhere in both science and innovation. Current developments in location-finding satellite-using technologies (known as GNSS) are a major opportunity for Australia in this context – a more geographically aware policy framework will help to stimulate potentially lucrative technological applications developed to help us to manage natural and people-made processes in the vast emptiness of the southern hemisphere (on land, on the ocean, on the ice and in the air).

The incoming government would be wise to articulate a distinctively southern hemisphere "aware" science and innovation policy, particularly with regard to international engagement. Let's not ignore a key natural comparative advantage.