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# Science and the Dreaming

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Can science be reconciled with the Dreamings of Australia's many Aboriginal communities? How could both science and the Dreaming inform knowing and managing Australia's landscapes?

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The women sat by a neat fire on the sandy riverbank. Waiting for the others, they had collected *ganguri* (long thin yams) from nearby patches of jungle. By the time the scientists found them, the fire was already beginning to die down to the hot ashes into which the yams would be placed. These tubers are best near the end of the dry season, and collecting them is an integral part of *worrk djama* (the Yolngu Aboriginal practice of burning the landscape as a form of land care).

The arriving scientists joined the elders on the sand, passing around bottles of iced water. Those most intimate with the old women and their husbands took up shady positions close by. Visitors who felt themselves strangers respectfully chose to sit behind, further up the bank.

This encounter on the banks of that little river had been carefully planned. The place described, Wathawuy, is just south of the airfield and the huge open-cut bauxite mine that dominates the landscape in the most north-easterly tip of north-eastern Arnhem Land in the Northern Territory. Quite close to Nhulunbuy, the largest centre of population in the region and a mining town, Wathawuy and its surrounding lands are owned by the Ngaymil Aboriginal clan. It was the site decided on for a workshop, a formal presentation by the Aborigines. They were setting out to show their protocols for firing a tract of land to environmental scientists, and to tell how they justify them. They hoped to show scientists the practice of Yolngu Aboriginal *worrk djama* and explain the theory.

My role at the workshop was to help with com-

munication. I was to help in translation, but not as a linguist – there were plenty of Yolngu people more accomplished as linguists than I. Since 1987 I have worked with many Yolngu Aboriginal individuals, groups and families in north-eastern Arnhem Land. My involvement with the community began as a teacher educator – many people in the community knew me as a philosopher – and it was in the guise of offering some sort of philosophical translation that I participated in this workshop.

We all sat, hot, in companionable silence, waiting for the fire to die and the yams to cook. The creek gurgled as it flowed around rocks. A senior Yolngu man stood and crossed to the opposite bank of the stream. Apparently at random, he broke twigs from some straggly, dry bushes. One of the women began stripping the stringy bark off sticks that had been gathered to make the cooking fire. Returning with the twigs, the man requested the kitchen knife from one of the women. He began whittling the sticks to produce one with a point and another with a flattened surface about half way down its length. He gouged out a hole in the centre of this surface. As his wife held the stick with the flat bed section, the fire-maker began twirling the pointed stick in the hole.

The women began to laugh as he twirled and twirled, apparently with little effect. Those sitting further up the bank overcame their shyness, edging closer and closer. Eventually their obvious eagerness to see provoked more hilarity than the would-be fire-maker's failure to produce much smoke, though his hands twirled the stick to a

whir. The instructors went on, changing places as twirlers of the stick and steadiers of the bed. The hole in the flat bed stick became deeper, the smell of smouldering sawdust became stronger.

Watching, it became obvious that the trick at this stage was to judge the moment when the collecting pellet of smouldering sawdust was large enough to sustain being shaken out into a nest of shredded stringy bark. Once the smouldering pellet was inside, the nest was blown on to ignite it. What was important now was to know when to stop blowing and let the nest, breaking into flames, fall onto the pile of kindling collected on the ground. Too late and your eyebrows would be singed. Too soon and the pellet's smoulder would fail to become a flame.

The oldest of the women took on the role of blowing the smoulder into flame amid much shouted advice, in Yolngu *matha* (language), "You'll lose your eyebrows! Careful of your nose!" Very satisfactorily for everyone, eventually she produced a flaming ball, letting it drop to the pile of sticks which merrily took up the flames. As the ignited kindling burned away, the scientists respectfully posed their questions.

"What is the name of this wood?" "Do you use the same wood for both parts?" "Can you show me the plant?" "We call this sand paper bush." "Does it have to be dead?" "I want to try. Is that alright?" "Is this sacred? I don't want to do it if I shouldn't."

The Yolngu instructors obliged with answers in a mixture of English and Yolngu language. Willingly showing the enthusiastic learners how to arrange the sticks, they guided their hands. "Yes, the wood should be dry." "You need to barely hold the twirling stick." "You'll get blisters. You'll injure your hands." "The trees are the same one. One is the grandchild of the other – *märi/gutharra*. That means they are the same one really."

A prolonged and awkward silence ensued. It was obvious that the scientist to whom this was addressed was extremely disconcerted by this claim of sameness about plants that to him were clearly different. The peculiar explanation that their sameness was that of the grandparent–grandchild relation no doubt added to his outrage. A vast chasm of incomprehension seemed to have opened up between the Aboriginal instructor and his formerly willing pupil, the scientist.

Recovering from his speechlessness, the sci-

entist set about proving to the old man that the plants were not the same. One was a *Litsea* and the other a *Tarenna*, he explained. He compared the smells of crushed leaves of each plant: *Litsea* leaves have a pungent smell while *Tarenna* does not have any smell, he pointed out. And *Litsea* has alternate leaves while *Tarenna* has opposite leaves. In the scientist's physicalist landscape, the plants belong in very different botanical families.

The old man understood the scientist's argument. Yes, he agreed, the plants look different, but according to the logic of the Yolngu sentient landscape, where everything is both its unique self generated and maintained by its Dreaming, and related in a particular way to everything else, the plants being related as *märi* and *gutharra* are the same. They hold equivalent places in the exhaustively related world created by the Spirit Ancestors in *Wangarr*, the Dreaming.

A scientist finds knowing justified by belief in a landscape animated by spirits unacceptable. An Aboriginal elder remains unconvinced by empirical evidence assembled to support knowing buttressed by belief in a landscape that is an admittedly complex, but thoroughly materialist, external reality. It's an old story – the so-called clash of civilisations despite, in this case, both sides using the metaphor of family in explaining the categories they use in knowing and managing the landscape.

As things turned out, by carefully and politely avoiding further confronting questions we did find a way to paper over the chasm of mutual incomprehension enough to allow the workshop to proceed. As this incident presaged, while the encounter was characterised by good cheer and evident mutual respect, at the cognitive level it was yet another exercise in frustration for both Yolngu instructors and scientists.

Does this mean we are forever condemned to mutual, uncomprehending rejection of the knowledge tradition of the Other, and polite avoidance of any confronting questions? Or is it possible to reason our way through this chasm? If we are to seriously consider the question of whether knowing and managing Australia's landscapes can be informed by both science and the Dreaming, we do need to find a way to work generatively in the cognitive domain. Surely this is a role for philosophy, and that of course is one of the reasons I was invited to the workshop.

On hearing this story of thwarted goodwill and

openness, the response of many people, including philosophers, is to take sides. They identify either with the scientist and argue for belief in a physicalist landscape, or with the old Aboriginal man and insist on the rightness of belief in a sentient landscape. And many see the role of philosophy as arguing the case for one or the other set of beliefs: belief in a landscape to be known through empirical observation, or alternatively known through contemplation of a landscape's eternal spiritual essence.

Of course that is a valid role for philosophy, and those forms of argument do have their place. But I urge also a different role for philosophy, not only as an activity that attempts to attend to ultimate metaphysical questions, but also as an activity that thinks about how, in the face of profound difference, to go on together in ways characterised by good faith. Philosophy needs to be able to offer suggestions for how to effect valid crossing over in knowing between science and the Dreaming.

In philosophical terms, such a project involves asking about moral issues as much as ontological and epistemological issues. Yet part of the problem here is that while most scientists might feel they have a vague idea of what *moral* means in that sentence, very few will ever have come across the terms *ontological* and *epistemological*.

I have deliberately used what some might see as arcane philosophical terms here because I think that scientists as a group need to become more philosophically literate. It is not only those environmental scientists who find themselves dealing with Aboriginal believers and practitioners of the Dreaming who need more insight into the nature of knowledge in general and the actual workings of science as a collective form of knowledge in particular. Knowing something about knowledge and its workings is crucial if we are to reconcile science and spirituality more generally.

The point of introducing the philosophical terms *ontology* and *epistemology* is that they are necessary for discussing the workings of knowledge traditions, including science. Using these is helpful in recognising the characteristics of alternative metaphysical systems with their distinct realities. The terms allow us to see how these realities might be connected and where they should be kept separate.

Here I offer definitions of both these terms, although I recognise that pondering the meaning

of a definition is only the beginning in becoming familiar with such working terms. Ontology is a branch of metaphysics. It can be understood as a science that studies "being" in general, involving such issues as the nature of existence and the categorical structure of reality. Clearly, as a science ontology produces rather odd theories and engages rather different rules of evidence compared to, say, environmental science. Ontology can be defined as the study of ontics, which involves systematic and justified beliefs about the nature of reality.

Epistemology carries on from that. *Epistemic* and *epistemological* are adjectives derived from the Greek word *episteme* (knowledge). Epistemology makes claims about knowledge and articulates theories about knowledge understood as what in particular circumstances is reasonable and worthy of belief.

It is fairly obvious then that having some sensitivity to questions of how we establish what there is (ontology) and how we know about it (epistemology) is important and relevant to questions of how knowing and managing Australia's landscapes might be informed by both science and the Dreaming.

But how exactly does morality come in here? Morality comes into it as questions of good and bad faith. These are also philosophical ideas, and are often invoked in the practice of law. This is what the writer Primo Levi, scientist and survivor of the Holocaust, had to say about good and bad faith in his book *The Drowned and The Saved*: "To keep good and bad faith distinct costs a lot; it requires a decent sincerity and truthfulness with oneself, it demands a continuous intellectual and moral effort".

Putting the notions of good faith and bad faith together with ontology and epistemology in addressing the issue of crossing over in knowing between science and the Dreaming, we see that such a project would need knowers, both scientists and Aboriginal elders, to be open and explicit both with themselves and with each other, about how their beliefs are expressed in their knowledge practices.

Ontology and epistemology are ultimately dependent on metaphysics, on matters of belief,

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say in an exhaustively related sentient landscape or in a materialist external reality. Staying true to our ontic and epistemic commitments is a matter of working our techniques of knowing in good faith and eschewing bad faith. We need to be able to distinguish between bad faith and good faith in engaging and working our knowledge practices. And that requires not only insight into how knowledge practices actually work, but also candour and sincerity. Scientists and practitioners of Aboriginal knowledge traditions alike need to avoid ill-informed, pompous and pious invocations, and equally eschew guile and deceit in ontological and epistemological matters.

My concern here is with science and scientists. Being unfamiliar with ontology and epistemology, and hence having no means of distinguishing good and bad faith in ontological and epistemological matters, scientists fail to keep them distinct and find themselves dealing with practitioners of other knowledge traditions in bad faith.

In fact the scientist who figured in my opening story, while showing good faith over his epistemic commitments in asserting and evidencing the truth of science's claim that the plants are different, resorted to bad faith over his ontological commitments in extricating himself from the socially difficult situation he found himself in on "proving" that the plants were different.

The scientist showed a naivety about the ontology of science's categories, in this case the nature of the category of "botanical family". Being more insightful about the nature of the sciences' reality, about where its categories come from and how they might connect with and remain distinct from the reality invoked in the old man's Yolngu Aboriginal knowledge traditions, would have him avoiding bad faith over his ontological commitments. What might it have involved in this case?

Instead the scientist's response should have been more informed by the taxonomic approach of Georges-Louis Leclerc Buffon, a serious rival to Linnaeus in 18th century Europe. Buffon had a long-running dispute over the validity of Linnaeus' multi-level classification practices configured as a branching family tree, a schema that in the next century Darwin would find crucial in his articulation of the theory of evolution.

Buffon argued that almost all of the categories of Linnaeus' system – kingdoms, orders, classes, genera and the like – were convenient and comfortable fictions. They were a means by which humans both connected with and separated

themselves from the non-human world. And today science goes along with this view, which does not prevent scientists supplementing Linnaeus' categories with an ever-growing list of categorical domains that mobilise and embroider the metaphor of biological family, cheerfully unconcerned with their paradoxical ontological status as simultaneously both real in a practical sense though contrived in an ultimate sense.

For Buffon, only species had any actual or working validity. Buffon claimed that species were defined not by given morphology but through the ability of individuals to reproduce with each other. This is the position that science accepts today.

Science fails to recognise that its configuration of family is just one of several possible ways of rendering this working metaphor. Botanical family depends on a vision that foregrounds a concern with connection in terms of sexual relations; a concern with sameness. Science's knowledge practices embed a working definition of family that assumes that separations will take care of themselves.

An alternative definition of family that emphasises the avoidance of relations between individuals that in some sense are brother and sister would generate knowledge practices that involve the metaphor of family as about foregrounding separations. Here a concern with connection and sameness would fall into the background.

It is arguable that this is the way the ordering metaphor of family works in Yolngu life. If so it would help explain why plants that look different are nevertheless the same in the Yolngu schema of things.

The knowledge practices of science and the Dreaming use the metaphor of family in opposite ways. Whether or not that is correct, a prerequisite for an informed approach to crossing over between knowledge domains involves acceptance of the paradox that hangs about the interpretive framework, the ontic and epistemic commitments, that all knowledge traditions embed.

Scientists and practitioners of Aboriginal knowledge traditions need to be able to distinguish between good faith and bad faith in maintaining the commitments that underlie the working of their knowing. Accepting this paradox would give us a chance for working the physicalist landscape of science together with the spiritually imbued landscape of Aboriginal Australia.