Science And The West: Then And Now

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There is a movement, here and abroad, to see the scientific method in culturally relativist terms, as simply the ‘Western’ approach to gathering knowledge. ‘Indigenous knowledge’ is being touted as a different and complementary approach to science. Developments at a number of universities in Australia suggest that this movement is intruding on basic science. It needs to be exposed and resisted, because it is leading in dubious and potentially destructive directions. To be clear, it isn’t that the ‘knowledge’ in question is Indigenous that is the issue. It is the idea that we should see claims to knowledge in culturally relativist terms that is problematic.

A Canadian academic, writing for *The Conversation* in January last year, said:

> Science is the pursuit of knowledge. Approaches to gathering that knowledge are culturally relative. Indigenous science incorporates traditional knowledge and

> Indigenous perspectives, while non- Indigenous scientific approaches are commonly recognized as Western science. Together, they contribute substantially to modern science. Although the value of integrating Indigenous science with Western science has been recognized, we have only begun to scratch the surface of its benefits.

It seems eminently appropriate to have research programs in countries such as Canada and Australia reconstruct what indigenous peoples did and thought regarding the natural environment and human social norms, and then to reflect on the relationship between such practices or norms and those of the modern world. But talk of cultural relativism raises basic questions about how we determine what is knowledge and what is error. To suggest an equivalence between the beliefs of indigenous cultures and the findings of the modern sciences is as strange as suggesting such an equivalence between Palaeolithic or Medieval notions and the findings of the sciences. It implicitly undermines what is actually meant, in common parlance, by the term ‘science’.

Consider, for example, that at the University of Melbourne there is now an Institute for Aboriginal Knowledge. As a research program that seems interesting, though what constitutes ‘knowledge’ and what constitutes folk traditions or myths requires careful parsing. If the definition of knowledge is irreducibly culturally relativist, who is to determine what actually constitutes knowledge and by what criteria? For that matter, how are we to determine who speaks for a ‘culture’? What is customarily and internationally regarded as science has transformed the world across cultural boundaries and in defiance of cultural traditions, including Western ones. That is what it does. So, what are we to make of the special status now being claimed for ‘Indigenous knowledge’ on culturally relativist grounds?

Well, here is what is actually happening this year at some of our universities. At the University of NSW, for example, science lecturers have been instructed not to state in class that the Aboriginals have been in Australia for 40,000 years, since this is at odds with ‘the beliefs of many Indigenous Australians that they have always been in Australia, from the beginning of time and came from the land’. By that strange criterion, there never could have been scientific progress. One might as well have said that Copernican heliocentrism should not be taught because it was at odds with the beliefs of many Christian Europeans that the Sun revolved around the Earth. Oh, well, yes, that’s pretty much the objection put to Galileo by the Vatican. What is now accepted as scientific?

At another of our universities, a lecturer in Chemistry—to whom I shall tactfully refer as Professor X—was instructed to make an introduction to ‘indigenous chemistry’ an integral part of his basic course on Chemistry. The bewildered Professor X, when he objected that other than a nod to the difference between such folk traditions and scientific Chemistry there was no scientific basis for such an integral role, was given to understand that if he did not comply then his continued employment would be at risk.

One is reminded of the famous case of disgraced agronomist and biologist Trofim Lysenko in the Soviet Union, and the Stalin regime’s bizarre support for his bogus science on ideological grounds. What, exactly, is indigenous chemistry? If the university has an innocent explanation for placing this requirement on X, it needs to be brought out into the open. As it is, X is reported to feel that he will lose his job if he so much as goes public with the strange story.

Now, pushing back against cultural relativism of these kinds might be denounced by the politically correct and the culture relativism warriors as ‘racism’ or ‘white supremacism’ or some other such bogey. So let’s clear the air of possible misunderstandings here. Before white settlement, British colonisation, European invasion or whatever your preferred term is for the continent of Australia being taken over by Europeans from its indigenous inhabitants, there was a way of life here that had been sustained for tens of thousands of years. That sustainment manifestly depended upon quite extensive understanding of the flora and fauna, landscapes and climate of the landmass. This is true in all parts of the human world. It was true of Palaeolithic peoples in Europe, Asia, Africa and the Americas for tens of thousands of years before the Neolithic, Bronze and Iron Ages initiated massive changes. None of this is what is at stake here.

What is at stake is the coherence and future of scientific civilisation. There is a masterful book, published some years ago now, by the Italian classicist and historian of science Lucio Russo, which attempted to bring to our collective attention that we have been here before and should be very much aware of the dangers of sliding backwards again. His book is called *The Forgotten Revolution: How Science Was Born in 300 BCE and Why It Had to Be Reborn* (Springer, 2004). It analyses how the scientists of the first scientific revolution, during the Hellenistic era (roughly 330 to 140 BCE) made real breakthroughs in methods and findings; but then ground to a halt because of the pragmatic but non-scientific character of Roman culture, the superstitions and shibboleths of popular culture and the suppression of centres of thinking by arbitrary political authorities.

Russo wrote, initially, in the mid-1990s and with a sense of some urgency. Three things struck him as needing to be realised across the intellectual culture of the 21st century:

1. That in the period from Aristotle to the mid-2nd century BCE, building on some of the seminal insights of the Pre-Socratic natural philosophers, there was “an explosion of objective knowledge about the external world” due to the appearance, for the first time anywhere on Earth of “science as we understand it now”.
2. That “not long after this golden period, much of this extraordinary development had been reversed”. Rome borrowed what it was capable of from the Greeks and kept it for a little while yet but created very little science of its own. Europe was soon smothered in the obscurantism and stasis that blocked most avenues of intellectual development for a thousand years, until, as is well known, the rediscovery of ancient cultures paved the way to the modern age.
3. The history and achievements of this first scientific revolution have been almost entirely erased from our collective memory, which has generated “the naïve idea that progress is a one-way flow”. In fact, he comments, “this is a battle that was lost once, with consequences that affected every aspect of civilisation for a thousand years and more”. We need to wake up to the possibility this could occur again, for there are warning signs around us in our own time—after a few hundred years of extraordinary scientific advances.

However much we might believe insights and inventions from a wider range of places than the Greek world played their part in the emergence of either the first or the second scientific revolution, the key idea here is that these things did happen, that they made a demonstrable

difference and that cultural relativism and political correctness are inimical to science understood in this sense.

If we go down the path that these cultural relativists are apparently insisting we should, we put at risk research methods and bodies of knowledge that are central to our understanding of the workings of the natural world and throw all manner of things into confusion. If the gathering of knowledge is a ‘culturally relativist’ process, how do any of us determine when we have something wrong? How do we share knowledge across cultures?

We know science has spread all around the world because of the astounding practical benefits and universally understood methods it brings with it. The key to it is precisely that it transcends cultural boundaries and transforms cultures from within. It has enabled us, for example, to probe the past in this continent and to establish as a matter of fact that the Aborigines did not emerge out of the land and have not been here since the beginning of time. They did migrate here roughly 40,000 years ago and their ancestors, like ours, originated in Africa.

As Russo reminds us, the Hellenistic scientists produced findings that have stood the test of time across cultures and which were original within their own culture, because they depended not on cultural prejudices but on breakthrough thinking. Euclid’s elements of geometry, for instance, were a brilliant set of deductions which were compelling to anyone with the patience and intelligence to interrogate them—until non-Euclidean geometry was conceived in the 19th century by a further bold venture in rigorous thinking which built upon Euclid’s foundational insights. Archimedes made discoveries in physics which were not a matter of ‘culture’ but original to him and demonstrably correct.

Eratosthenes, chief curator of the famous Library of Alexandria, in the mid- 3rd century BCE, believing correctly that the Earth is a sphere, conducted first as a thought experiment and then a mathematical calculation which enabled him to deduce the circumference of the Earth to within 200km of the correct measurement. This, again, was not a matter of cultural orthodoxy, but of bold, seminal thinking and of individual genius.

It is a testimony to the cultural and political anxiety that has been allowed to take hold in Western liberal democracies in recent decades that authorities or activists in any of our universities would be getting so muddled about such matters as to think there is an equivalence between folk traditions and tacit knowledge in any given culture and the methods and findings of the sciences.

The instruction about the Dreamtime is a *reductio ad absurdum* in this regard—if I may be pardoned the use of Latin in such a hyper-sensitive context. But a reflection on the history of Chemistry as a science will serve just as well to underscore the point at issue here. For Chemistry is not ‘Western’ in the sense it has always been some kind of commonly held prejudice among people with white skins who speak Indo-European languages.

There was, in fact, no systematically scientific chemistry until Dmitry Mendeleev put together the schema of the Periodic Table in 1869. Even then he had only half the elements now known to us. The antecedents to that and the way it has been developed since are central to what is at stake

for poor Professor X—and the rest of us.

As Professor X well understands, but his overlords in academic administration seem not to, Chemistry as a scientific discipline—like Physics and Biology—is of very recent origin. It had to overcome all manner of popular and ideological prejudices in the West in order to develop at all. It has, however, produced a body of demonstrable and practical knowledge not remotely paralleled by any prior or indigenous body of folklore or pragmatic awareness. It has, among many other things, enabled us to replace extraordinarily poor medical practices that prevailed in 'the West' for millennia, and to invent cures for diseases and other ailments that were the bane of humanity until then. Should we insist, on culturally relativist grounds, that these can only be represented as achievements from a 'Western cultural' point of view? How, then, would we approach malaria or influenza as medical challenges?

In 1863, when Mendeleev was 29 and published his first book, *Organic Chemistry*, there were 56 known elements with a new element being discovered at a rate of about one per year. After becoming a teacher in 1867, Mendeleev wrote the definitive textbook of his time: *Principles of Chemistry* (two volumes, 1868–1870). He wrote it (Professor X might like to take note here) while preparing a textbook for his students. He made his most important discovery in the process. As he attempted to classify the elements, he noticed patterns that led him to postulate what was to become the Periodic Table—at least in its first form.

Having seen the logic of the matter, he developed an extended version of the table and, on 6 March 1869, made a formal presentation about it to the Russian Chemical Society. He did not argue his theory had emerged from Russian culture. He argued it was a testable picture of physical reality: the elements, if arranged according to their atomic weight, exhibit a pattern which enables us to predict where and why other elements yet to be discovered would belong. Based on that logic he predicted the existence of eight more elements, which have since been discovered. What, precisely, is the equivalent of the Periodic Table in 'Aboriginal chemistry' and how are predictions made or verified by it?

In the century before and after Mendeleev's work, the various specialist branches of Chemistry developed systematically and began to yield more and more stunning findings of a rigorous and useful nature: organic, inorganic, analytical, physical, and bio- chemistry. Among the yields was the 20th and 21st century capacity to date archaeological and palaeobiological finds. This has made it possible to establish with considerable confidence that Aboriginal Australians first arrived here between 40 and 60 thousand years ago, deep in the most recent Pleistocene Ice Age; and also to date their human remains, the bones of extinct fauna from that era; and the rock art of the Kimberley. These findings dispel Aboriginal Dreamtime mythologies in the same way such findings dispelled the Christian myth of Creation as set out in the Bible. To insist the Dreamtime be taught instead of the archaeological record is to do what President Erdogan has done in Turkey: replace teaching evolutionary biology with Creationism. From the point of view of knowledge, this is deeply regressive and infantilising stuff.

Biology, like Chemistry, got a bit of a start in the Hellenistic era, when Aristotle and his protégé Theophrastus began to attempt basic taxonomies of plants and animals. Then almost no progress

was made until the 17th and 18th century taxonomists began making renewed advances. There were many contributors, but the name of Charles Darwin stands out in Biology like that of Newton and Einstein in Physics, as breaking new ground and laying the foundation for stupendous scientific advances. He, too, ran into cultural resistance and his ideas continue to run into it from those whose old prejudices and folk traditions are threatened by what it shows us. In a secular society, we try to be polite to those who insist their religious beliefs merit recognition alongside of Biology as an explanation for how life on Earth began and what it's all about. But they are simply not even in the ballpark.

What has begun to happen, for ideological reasons, urgently needs to be pushed back and, to put it diplomatically, *recalibrated*. A short course in the philosophy of science would be a useful common resource. In 2007 Italian
quantum physicist Carlo Rovelli published *The First Scientist: Anaximander and His Legacy*. It is similar to Karl Popper's last book *The World of Parmenides*, but easier to follow and much more recent. Its key words, arguably, are:

> But what does it truly mean, Anaximander's bold proposal to conceive the world without recourse to the gods? What is the essential difference between naturalistic and mythic-religious thinking?

Anaximander (610-546 BCE) lived in Miletus, Ionia, on the Greek coast of what is now Turkey, 200 years before Aristotle. He was one of the founders of what Gerald Holton dubbed 'the Ionian Enlightenment': the idea explaining the cosmos in terms of natural 'laws'—while dispensing with myths and legends, gods and demons—might actually be possible.

Anaximander and his pre-Socratic and Hellenistic successors gave us the scientific worldview that cultural relativists appear to see as merely a Western narrative that should not be privileged at the expense of the beliefs of indigenous peoples, or anyone else whose feelings might be hurt by scientific findings. We should all be 'Anaximandrians'. Far from excluding empathy or understanding of different cultures, such methods are our only genuine way to understand such traditions. We might justifiably make aspects of this integral to our courses in the sciences. What serves no one well is to undermine the natural sciences in the name of cultural relativism.

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