

Let's all be good!

William Tobin*

6 rue Saint Louis, 56000 Vannes, France

Over the years the idea has been gaining ground that science and technology are the essential foundation on which to build a more prosperous and ecological New Zealand. A usual concomitant view is that in a time of tight money, only the most excellent science should receive government support. A panoply of administrative measures have been devised to this end, such as highly-competitive Marsden Fund research contracts and the Quality Evaluation of the Performance Based Research Fund (PBRF).

It's this 'tyranny of excellence' that I would like to challenge. Of course, we all want New Zealand to produce excellent science and scholarship. We all hope that future Rutherfords, Wilkins and MacDiarmids will be decorated with Nobel Prizes for work done within New Zealand instead of overseas. But the problem with excellence is that it's very difficult to identify in advance. On 7 June I was honoured to open Te Papa's booked-out Transit of Venus Lecture Series with a talk outlining the story of these rare celestial alignments, particularly the historical ones. The major players – Edmund Halley and Joseph-Nicolas Delisle in the 18th century, George Biddell Airy, Hippolyte Fizeau, William Harkness and Arthur Auwers in the 20th – were all excellent scientists at the top of their profession. The heroic expeditions that spread around the globe under their inspiration or direction with the goal of high-accuracy triangulations of the distance to the Sun were at the time perceived as excellent, forefront science. Yet with hindsight, they were wasted effort. The desired high accuracy finally came from novel techniques, such as gravitational analyses of lunar and planetary perturbations, triangulations of the near Earth asteroid Eros, radar ranging of planets, and the tracking of interplanetary spacecraft equipped with transponders. Nor is it easy to determine what scientific ideas will be game changing, or turn out to have utilitarian value, or turn into commercial winners. As the late Sir Paul Callaghan pointed out (2011), it may seem reasonable to policy makers

that New Zealand ought to excel in biotechnology given our large agricultural base, but 'of our top 100 companies in 2010, only two are in biotech.'

In addition, excellence-only is a miserable philosophy. It concentrates esteem and resources on only a select few who have been deemed excellent, leaving the majority deprived and despised. The merely good – let alone the less-gifted – find themselves demotivated in a facilities wasteland. This is not an outcome that should be promoted by a government acting for the welfare of all and keen to develop human potential as an individual and societal good as well as for mere economic benefit.

Rather, I would argue that public policy should widely promote the good in science, and indeed in every domain. Good is achievable; good can be for everyone. With training, support, facilities, encouragement and organisation, everyone who is willing can have the satisfaction of being good at their job, and every scientist can feel the pride of doing good research. In an age of metrics and accountability, good is also much easier to assess, and far less likely to produce perverse incentives.

It's from the good that the excellent occasionally arises. In a recent *Scientific American*, Bruce Walker from the Harvard Medical School describes a patient with a long-standing HIV infection that had not developed into AIDS, and his discovery that many clinicians had encountered similar rare individuals. A chance encounter led to the realisation that gene-sequencing might give clues to an explanation. Years later, the key protein and mechanism of immune control have been identified, sparking hopes for improved treatments for HIV. But none of this was foreseen. My own best work – certainly the work that has garnered the most praise – turns out to have been in scientific biography, rather than in science itself. It was unplanned and arose from my having the appropriate skills to recognise a physicist who had fallen into undeserved oblivion, despite being a household name, and retell his life. If KiwiStar Optics in

*Correspondence: william.tobin@wanadoo.fr



William Tobin studied Natural Sciences at the University of Cambridge and obtained his PhD in astrophysics at the University of Wisconsin in Madison. For almost twenty years he lectured in physics and astronomy at the University of Canterbury where he was for some time Director of the Mount John University Observatory near Tekapo. He was the Royal Society Canterbury Branch's Chalklin Lecturer in 1989, shared the New Zealand Institute of Physics Journalism Award in 1993, and was awarded the University of Otago's Mechaelis Memorial Prize in 1996. His part-Marsden-funded historical work on the 19th-century French physicist Léon Foucault won several prizes. He is now retired in Brittany.

Lower Hutt is developing a niche market in turnkey optics for professional telescopes, it is not as a result of an *ab initio* grand plan, but as a spin-off from collaboration with astronomers and instrument scientists at Mt John University Observatory and elsewhere, and by leveraging the complementary measurement and mechanical capabilities of its parent institution, Industrial Research Limited.

The step beyond good is thus a rare, unpredictable event. It is delusional to think that excellence can arise with any frequency unless there is a solid, stable and extensive base of researchers doing good work. Given the difficulties under which we laboured, I think my former colleagues and I at the Mount John University Observatory did extraordinarily well and gave taxpayers value for money. But it was structurally impossible for us to reach that level of activity from which the truly innovative and excellent had much chance of arising.

So let us abandon the micro-administration of science along with the concomitant diversion and depletion of researchers' energy and enthusiasm. Let us have a PBRF that encourages stable, supportive environments for scientific endeavour. Let us return to first-round Marsden grant applications that total no more than a couple of pages. Let scientific and technological endeavour become widespread, as surely is appropriate in a democratic society where so many political decisions must take account of technical factors. Let government look to the good. The excellent will then look after itself.

References

- Callaghan, P. 2011. Sustainable economic growth for New Zealand: An optimistic myth-busting perspective. *New Zealand Science Review* 68(3): 103–104.
- Walker, B.D. 2012. Secrets of the HIV Controllers. *Scientific American* 307: July issue.