

BOOKS & ARTS

Wanted: an Australian Volvo

Why doesn't the Lucky Country's scientific and technological strength match its natural riches?

The Australian Miracle: An Innovative Nation Revisited

by Thomas Barlow

Picador Pan Macmillan: 2006. 288 pp.
A\$25

Barry Jones

Thomas Barlow is a congenital optimist. A scientist turned journalist, he served as an adviser to Brendan Nelson, Australia's former science minister. Barlow is now chief executive of a materials company based in Sydney. He explains that his book, *The Australian Miracle*, has been written to "provide an antidote to the doom and gloom perspectives that are perpetuated about Australia's capacity to innovate and to compete in the global knowledge economy". He sees Australia as mired in "systematic complaining", a "belligerently pessimistic attitude", with "endless hand-wringing", and says it is "misguided and needlessly gloom-ridden". He has a rare gift for understatement.

I find his diagnosis puzzling. The current mindset among Canberra's ruling élite is an overwhelming, even overweening, optimism, not all of it justified. Australia's growth rates are among the highest of any developed country, and while mineral prices remain high and China's demand for raw materials remains insatiable, the country's prospects are glowing. Public discourse rarely hints at the possibility of a downturn. The mood of "Aussie! Aussie! Aussie! Oi! Oi! Oi!" is not confined to sport.

The huge salaries currently paid to Australian executives (not mentioned in the book) are not signs of depression. However, of the 2006 'Rich 200' list, published by the *Business Review Weekly* this May, only six are involved in technological services and franchising, one in developing new products. Property remains the greatest source of wealth in Australia, followed by services, retail and investment, with manufacturing well down.

I have asked scores of magnates in recent years whether they were interested in investing in biotechnology, computing, pharmaceuticals, medical technologies or new materials. The answer is invariably: "Why would I bother?" The Rich 200 are role models for the next generation of investors and entrepreneurs.

"Australia remains a lucky country in a number of ways," Barlow writes, "but luck has never been the main determinant of its success." He returns to the Lucky Country concept



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Easy money: has Australia's ability to mine resources such as iron ore hindered its development?

several times but does not mention Donald Horne's book of the same name.

Horne argued presciently in *The Lucky Country* (Penguin, 1964) that the abundance of Australia's mineral base and 'lucky' elements in its history retarded some aspects of its social, economic and technological development. People in other nations had to live by their wits or starve, but Australia always had stuff to dig up and sell, and that determined its concept of value. When Australia faced a crisis, as it did in the 1850s, 1890s, 1940s and 1950s, the luck changed — thanks to discoveries of gold, coal, oil, iron ore and natural gas, and the arrival of General MacArthur. It did not have to reinvent itself or work out new strategies.

Barlow argues that "Australia has its own extraordinary story of technological growth." Up to a point, Lord Copper. Oddly, although Australia is a heavy user of communications, computing, satellite, remote sensing, mining and military technology, it produces very little of its own, and its trade imbalance in knowledge-based products is alarming.

Barlow fails to address what I refer to as Australia's inventory problem, the conspicuous lack of internationally successful high-value-added brand-name goods and services. The

Netherlands, Sweden, Switzerland and Finland, which all have smaller populations than Australia, make products that sell internationally on reputation, rather than price. Where are the Australian equivalents of Philips, Volvo, Scania, Hasselblad, Nestlé, Roche or Nokia?

In 1986, comparing Australia and Taiwan, it would have been reasonable to assume that by now Australia would have been well ahead in information technology, given its strong education system, research history, inventiveness and position as part of the English-speaking world. In fact, Taiwan streaked ahead. Australia suffered from a failure of nerve, short-sighted thinking by institutional investors, and a lack of dynamic and compelling leadership in the computing business.

The chapter entitled "The Australian Miracle" is deeply puzzling. It is a lively and skilful précis of *Technology in Australia 1788–1988*, published by the Academy of Technological Science and Engineering. Barlow is very strong on the stump-jump plough but mentions no technological innovation later than 1900. The word miracle, suggesting divine intervention, or beyond reason, is an odd choice not justified in the text.

Barlow could have put far more emphasis

on Australia's outstanding record in medical research. He rightly praises Barry Marshall and Robin Warren for their work on *Helicobacter pylori*, which won the 2005 Nobel Prize in Physiology or Medicine. But Macfarlane Burnet, Peter Doherty and Suzanne Cory are barely mentioned, and Jack Eccles, Frank Fenner, Don Metcalf, Gus Nossal and Jacques Miller are ignored.

The most thoughtful element in Barlow's book is a brief examination of the comparative value of individual versus collaborative research; he should have expanded this argument. He expresses concern that Commonwealth and state funding of research may involve too much fanfare about multidisciplinary at the expense of research by individuals. Darwin's research and Einstein's celebrated 1905 papers would have been too small to qualify for Australian Research Council (ARC) grants, and I suspect that Burnet, a notorious loner, might have looked in vain for funding from the National Health and Medical Research Council.

The proof-reading is careless. We are treated to a quotation from Arthur Koestler twice. And Barlow dismisses Australia as a "relatively small economy", even though *The Economist* ranks Australia as number 15 in the world. The book also suffers from the lack of an index.

Barlow is right to point out the Australian public's high level of interest in science, but is dismissive, even contemptuous, about complaining academics. He fails to examine the reasons for this paradox. He should have commented on the striking fall in enrolments in the enabling sciences, physics, chemistry and mathematics, parallel to the relentless march of the business students. Research disciplines are down proportionally (but not in absolute numbers) while the packaging and marketing subjects are well up. Was this worth a sentence or two?

Barlow is unduly modest and says little of his time advising Nelson. He mentions the case of Trofim Lysenko, the Soviet geneticist who suppressed darwinism, and asserts that nothing similar could happen in Australia. I am not so sure. Australia practises its own form of soft lysenkoism, with climate scientists in CSIRO silenced if they do not produce 'agreed science', supporting the Howard government's ideological rejection of global warming. 'Public good' Cooperative Research Centres were closed down unless they worked on commercial products. The ARC's recommendations were subject to ministerial veto, and a chair and chief executive appointed for expertise in research were replaced by people experienced in working with government and interpreting, or even second-guessing, shifts in policy. ■

Barry Jones is a vice-chancellor's fellow at Melbourne University. He was Australia's science minister from 1983 to 1990. His autobiography, *A Thinking Reed*, will be published in October.

Renaissance man

Thus Spoke Galileo: The Great Scientist's Ideas and their Relevance to the Present Day by Andrea Frova & Mariapiera Marenzana

transl. by Jim McManus
Oxford University Press: 2006. 512 pp.
\$34.50, £19.99

Giorgio Parisi

Galileo Galilei is known as one of the founders of modern science. But his works, as well as those of co-founders such as Isaac Newton, are seldom read. It is not that they are in some exotic language: Newton wrote in Latin, Galileo mainly in a limpid, straightforward Italian, in contrast to the baroque style of many of his contemporaries. As well as science, Galileo is a major figure in Italian history and literature. Italian high schools teach his dramatic life and prosecution by the Inquisition. But professional historians of science aside, few Italians have read many of his works.

The problem is that we must understand the scientific questions, knowledge and — most importantly — prejudices of the time. Changes in scientific notation make the scientific papers of even a century ago all but unintelligible to today's experts, so it is no surprise that scientists are seldom moved to read 400-year-old books of physics whose scientific context almost completely escapes them.

Thus Spoke Galileo by Andrea Frova and Mariapiera Marenzana, an attempt to bring Galileo's work to general readers, should solve this problem. The texts are introduced in their

correct and precise historical context, framed to stimulate the reader's curiosity.

The book opens with an imaginary autobiography, composed of a collage of letters and other documents written by Galileo, interpolated with writings from Frova and Marenzana in Galileo's style. Galileo tells his life story, discussing the clash with the Church that eventually led him to disown his writing. It is a portrait of a complex man, with light and shade. He was frank, but also able to adapt himself to difficult times: he knew that his forced abjuration was only a momentary defeat, and that in the long run, with the help of his students, his ideas would triumph.

Each of the other chapters deals with a specific topic. They begin with a summary of the knowledge at that time, followed by Galileo's writings on the subject. The most crucial points are put in his words; the rest of the argument is summarized. Often the chapter ends with a short historical excursus where, presenting the same ideas in modern scientific language, the authors show the impact of Galileo's ideas on subsequent science.

To understand the originality and ingenuity of a scientist we must compare his statements with those of his contemporaries. It turns out that Galileo leant on the work of other scientists more than is commonly believed: the famous example of the ship in motion is taken from Giordano Bruno, and an argument on the fall of a heavy body comes from Giovanni Battista Benedetti. Galileo's unique skill was to

Galileo in the gallery

Galileo's influence on science and culture is celebrated in art and on stage in Britain this summer.

Bertolt Brecht's play *The Life of Galileo* examines the conflict between reason and faith, a theme with current resonance. This month sees the revival of a version of this play by David Hare at the National Theatre in London. Directed by Howard Davies and starring Simon Russell Beale, it runs until the end of October.

Galileo's book *Sidereus Nuncius* (*The Starry Messenger*) lends its title to an exhibition at the Compton Verney gallery in rural Warwickshire. *The Starry Messenger: Visions of the Universe* explores how science and technology have changed the way we think about the Universe, and the role of artists in transmitting these ideas. Early scientific texts are on display alongside paintings, music and video installations by artists ranging from William Blake to Fred Tomaselli (shown here). The exhibition runs until 10 September.

► www.nationaltheatre.org.uk
► www.comptonverney.org.uk



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