technology enhances the power available to individuals in using horizontal communication to self-organise. Fact checking by millions of bloggers is rendering big media and government susceptible to condemnation for the slightest oversight. And blogging isn't the only example of this—home music producers likewise present a challenge to big record companies. Reynolds' enthusiasm for this trend may not be shared by all, particularly those who doubt the wisdom of the citizenry to use those technologies well. Traditional centres of control and authority are feeling threatened to the extent of needing to resist the rise of individualism. But there is significant persuasive force in the argument that large bureaucracies cannot compete in efficiency terms with a 'pack' of incentive-driven individuals in responding to breaches of authority and crime.

Reynolds spends much of the second half of the book in a rather self-indulgent analysis of video gaming, nanotechnology, anti-ageing technology and outer space. A well-presented argument as to the advantages of arming citizens with an understanding of military operations through violent video games, while interesting and persuasive, seemed a little tangential to the main theme of the book. It was enlightening to read about the potential benefits of nanotechnology versus its risks, but it was a discussion that felt glaringly out of context. Reynolds also calls for the deregulation and commercialisation of the space industry in order to lower the cost and thus enhance the feasibility of the colonisation of the rest of the solar system. While somewhat fanciful in its degree of enthusiasm, the argument on this point at least linked clearly with the central theme of the book. Commercial participants in the space industry—the 'individuals' in this context—have the potential to achieve more in space more efficiently than government organisations, as they respond to competitive pressures. Reynolds argues for the effectiveness of prize-based programs that encourage commercial outfits to compete for a prize upon the achievement of a specified goal, as such an approach encourages far higher investment in aggregate than the outlay of prize money.

An Army of Davids is an engaging and entertaining discussion of the empowerment of individuals by technology, and the impact this is having on our society. It is chatty in tone and targeted at the layperson, but it tends to be self-indulgent and overly anecdotal at times. Nevertheless it represents a strong contribution to the promotion of market forces as a mechanism for achieving social goals that is preferable to centralised intervention. As technology gives individuals the means to influence their community, many of the perceived ills of industrialisation and globalisation are being counteracted. The market once again shows its fundamental flexibility in responding to the forces acting upon it to adapt to the preferences of its participants. Blogging, as Reynolds realises, is just another avenue through which individuals can mould society on their own terms.

Reviewed by Nikki Macor

The Australian Miracle: An Innovative Nation Revisited
by Thomas Barlow
Picador, Sydney, 2006
288pp $24.95
ISBN 03304222324

The Australian Miracle is a book about science and innovation policy written by someone who actually knows something about science. Its author, Thomas Barlow, is a former scientist and ministerial adviser who now runs a materials company in Sydney. You might think that a former scientist would favour strong subsidies and incentives for science and innovation, but you would be dead wrong. He actually thinks a lot of the doom and gloom about Australia's innovation performance is misplaced.

Barlow busts some long-held myths about our innovation performance. One of the myths is that Australians are peculiarly inventive, but lousy at commercialising their inventions. For example, we take great pride in having invented the black box flight recorder, but its invention was probably not the greatest thing in aviation since the Wright brothers' flight at Kitty Hawk. As Barlow argues, we are probably no more inventive than say the Americans, British, Italians, or Germans, but neither are we necessarily bad at commercialisation. A country with economic growth among the highest in the OECD cannot be too bad at commercialisation.

The other great myth is that we are experiencing a 'brain drain'. As has been amply demonstrated by Bob Birrell, Director of the Centre for Population and Urban Research at Monash University, and his co-workers, Australia experiences a 'brain gain' in net terms. We are a very attractive destination to skilled workers from other countries. Also, we should remember that over three-in-four Australians leaving long-term come

back within two years. Barlow suggests that we should embrace the global circulation of Australian talent, which will return to Australia with new skills and potential business innovations. Although evidence is sketchy, there may be important benefits from having a 'diaspora' of Australian talent including the forging of trade and investment links overseas.

As you might expect from a nation founded by convicts, Australians are good at pinching ideas from elsewhere. In fact, as Barlow convincingly argues, absorbing knowledge from overseas has played a large role in Australia's economic development. This is very understandable given that we only make up around 1% of the global economy and most of the ideas and innovations we need will be generated overseas. It is well known that Australia was able to exploit information and communications technology (ICT) despite not being a significant manufacturer of ICT. This reinforces the need to have an open and flexible economy. By importing technology from overseas, Australians have developed important skills in adopting and synthesising various pieces of technology.

Barlow makes a substantial contribution to the debate about Australia's industry structure and whether we rely too much on agriculture and mining, which some may regard as backward, non-innovative sectors. Australia's primary industries actually engage in an extraordinary amount of innovation and it is possible that in these areas we are pushing out the global knowledge frontier, rather than just absorbing new knowledge created elsewhere. Barlow gives some eye-opening examples from the agricultural industry. For example, I was surprised to learn that Australian piggeries retain consultant nutritionists and have computerised feeding systems.

Barlow's greatest plea is for a recognition of the importance of funding basic research while allowing researchers to have a bit more latitude than they currently do. In Barlow's view, most scientists are driven by an intrinsic desire to understand the world. Also, many of our most significant recent discoveries, particularly those in biotechnology, arose in research areas that were once judged as unproductive. Given that none of us is adept at reading crystal balls, Barlow's views deserve some consideration.

Barlow is a good writer. I greatly enjoyed his critique of targets for R&D expenditure: 'my feeling is that if people want to live in an obsessive, technocratic, indicator-driven environment, then maybe they should apply for a job with the Central People's Committee of the Democratic People's Republic of Korea.' R&D targets do not make much sense when Australia's lower than OECD-average R&D spending can be explained, to a significant extent, by our industry structure and relatively large number of small and medium-size firms. Barlow is spot on in identifying the importance of Australia's context as a large country with a small population and a proportionately large small business sector. Given that we are a country unlike most others in the OECD, we should be sceptical about any international comparisons of our innovation or R&D performance.

My favourite part of the book is where Barlow demonstrates how Australians are participating in innovations internationally. Modern products are so complex—take the iPod for example—that all the product development cannot take place in the one spot, but must draw on experts from all parts of the globe. With improvements in ICT, Australian designers and researchers can collaborate on projects across the world. To use Thomas Friedman's catchy phrase, 'the world is flat.' The forces that are flattening the world are making barriers due to scale or distance less significant than before.

At the risk of sounding pedantic, I have one minor reservation about the book. There are a lot of facts presented in the book, but no footnotes or endnotes, which can be useful for academics and policy people. Of course, just as J.K. Galbraith identified a rule about how much an algebraic equation affects book sales, footnotes or endnotes might reduce the readability of the book for a general audience.

More substantively, I have to echo Andrew Leigh's criticism, in his review of Barlow's book (*Sydney Morning Herald*, 17 May 2006), that in describing Australians Barlow relies too much on generalisations or, in Robert Solow's words, 'amateur sociology'. Barlow suggests that we can succeed only if we can 'understand ourselves', that we are 'a resourceful and entrepreneurial people'. But current economic data suggest that we are succeeding. Over the last decade or so we have had among the highest rates of economic growth in the OECD, have substantially moved up the GDP per capita league table, and reduced unemployment to levels not seen in a generation. Barlow himself is perhaps being a little alarmist here.

Overall, this is a very good book. It would be nice to have well-written and cogently-argued books like this in a few more policy areas. The book deserves a wide readership among people interested in public policy. It offers a fine example of how the technocratic mindset can be lobotomised.

Reviewed by Gene Tunny

The reviewer is an economist in the Australian Treasury. The review contains the personal views of the author, which are not necessarily those of the Treasury.