



# Editorial

We all value a good mathematics education, and appreciate the benefits it brings to the wider community. Despite good intentions, measures taken by policymakers have not always had the desired effect, and indeed may have contributed to a declining education system. A recent damning report<sup>1</sup> on mathematics education in the UK, “*Where will the next generation of UK mathematicians come from?*”,<sup>2</sup> finds that from primary to tertiary level there is

*The failure to recruit and to retain sufficiently many good mathematics teachers, the neglect of long-term professional development, bureaucratic pressures on teaching and an overemphasis on low-grade assessment.*

One of the consequences of a poor mathematics education is the lack of properly trained home-grown teachers, industry professionals and researchers:

*British mathematics postgraduates with a PhD from a British university are now largely unemployable in British universities. The level of research output, which British universities are required to demonstrate in order to obtain adequate levels of funding [as a result of the research assessment exercise], can now only be achieved by sucking in increasing numbers of older and more experienced researchers from overseas.*

The above seems to be a global problem, at least for the developed world, including Australia where the sciences face a research assessment exercise similar to that in the UK. Instead of only taking funding related measures, the report concludes that it is time to address the needs and aspirations of more able students. Stimulating mathematics from an early age ensures an adequate supply of home-grown high-quality researchers in key areas (not just for academic research but for the economy as a whole).

Where a good mathematics education can lead you is illustrated by Gordon Thompson in **My brilliant career**. He writes “*Mathematics fosters clear thinking and mental discipline... With those skills, one can judge when a mathematical model is an honest attempt to represent reality, and when it is a device to manipulate opinion.*” This is especially important in emotional policy issues such as the debate surrounding nuclear power.

In **Math matters** Iain Raeburn offers some insight in the current mentality of mathematics researchers and how we compare to other science professionals in obtaining funding. He urges all of us to apply for grants. Every year.

Patrick Bangert and Ian Roberts are trying to find an answer to the ever recurring question “What is mathematics?”. Clearly, most of us would feel it is more than mere

<sup>1</sup>Available at <http://image.guardian.co.uk/sys-files/Education/documents/2005/06/28/maths.pdf>

<sup>2</sup>From Russia and Hungary according to the Guardian.

computation and that it has strong aesthetic elements. Bangert has collected definitions from colleagues around the world, culminating in his own definitive(?) definition. Roberts asks for your opinion, challenging the *Gazette's* readers to provide their own one-line definition of mathematics.

This Gazette contains some elusive and exotic animals related to open mathematical problems. In **The 11th Problem** Catherine Greenhill takes us out Snark hunting in her account of the Seymour/Szekeres Cycle Double Cover conjecture. Norman Do explains in **Mathellaneous** that Tic-Tac-Toe is not as simple as it seems when played with animals, asking the question if Snaky will be a winner or a loser.

Winning or losing is also the subject of Bob Clarke's article dispelling the myths surrounding the number of wins needed to reach the AFL finals.