

Parabola Volume 50, Issue 3 (2014)

Dear Readers

With this issue we celebrate 50 years of continuous publication of *Parabola*. The essential aim of *Parabola* at the time it was launched was to inspire students, through articles and problems, about the timeless beauty, power and relevance of mathematics. At the time it was also acknowledged that, "There is a world-wide shortage of both (scientists and mathematicians), particularly of mathematicians, which, if it is not met by the present generation of students, will continue to retard the rate of technological advance for many years to come."¹ These aims and circumstance apply equally, or even more, so today.

Imagine a world just like our own except that its inhabitants have not discovered, or created, mathematics. Let's call it β -Earth. About five thousand years ago there was little to distinguish Earth from β -Earth, but now, in many ways, they are worlds apart. On β -Earth there are no measurements of space, or time, or currency; no large structures like bridges, skyscrapers, ocean liners; no technologies like jet aircraft, computers, mobile phones; no reliable forecasts, space missions, or financial systems. There are some wonderful artists and philosophers but nobody more than a few villages away knows about them; there are large scale disasters but no global response. Maybe there are similarities too: all of the resources that could be detected with the naked eye have been exhausted, famine, disease and conflict are commonplace, there is a massive build up of CO_2 in the atmosphere from the burning of fossil fuels. Without intervention, it is possible the inhabitants of both Earths are on their way to extinction. But on β -Earth nobody really knows this. There is no mathematics to inform the β -Earthlings of the magnitude of the problems and the need for global behavioural change.

In recent years there has been a trend with fewer and fewer students studying advanced mathematics throughout their schooling and with more and more students not learning any mathematics at all in their senior years. We are not β -Earth. Why do our political leaders sanction an education system that permits β -Earthlings. Why do we sanction β -Earthlings becoming political leaders?

I hope you enjoy the articles and problems in this anniversary issue. Peter Donovan's article shows how a simple mathematical analysis of the hottest years on record provides compelling evidence for climate change. Thomas Britz and colleagues present some really nice mathematical proofs using pictures. These proofs reveal another aspect on the elegance of mathematics. Sadly, we have the final article from Michael Deakin. Here Michael shows justification for the application of the basic rules of arithmetic to irrational real numbers. Over the past ten years, Michael provided many very interesting articles on the History of Mathematics for readers of *Parabola Incorporating Function*.

In this issue we celebrate the meritorious achievements of students in the UNSW Annual School Mathematics Competition. Three hundred and eighty-five students from twenty-five schools competed in the Junior Division and two hundred students

¹Professor JP Baxter, Vice Chancellor, the University of New South Wales, *Parabola* Vol 1, No 1, (1964)

from twenty-five schools competed in the Senior Division. A special congratulations to Damon Zhong from Shore School and Praveen Wijerathna from James Ruse Agricultural High School who both obtained perfect scores in the Senior Division.

Finally, from next issue, *Parabola Incorporating Function*, will be available as an on-line publication with all issues available at

<https://www.parabola.unsw.edu.au>

The editors are extremely grateful to all of the staff at the Australian Mathematics Trust who have helped to create a professional print copy of the journal for the past ten years.

Editor

Bruce Henry