Editorial

Dear Readers,

welcome to *Parabola*! This issue, published near year's end, reflects at the past and looks to the future.

In *Constructions of a Regular Pentagon*, Martina Štěpánová presents a fascinating survey of historical solutions, with old and new proofs of their validity, to the problem of constructing a regular pentagon. Before reading this survey, try, dear Reader, to solve this problem yourself, using only ruler and compass. This worthy and fun challenge has endured for thousands of years. Can you find a new construction?

Looking yet further back into antiquity, Benjamin and Eric Altschuler present *Proof of the Irrationality of the Square Root of 2 Contained in Babylonian Geometry Problem Tablets*. They argue that the ancient Babylonians discovered and proved, a thousand years before the Ancient Greeks, that not all "naturally" defined numbers are rational. That ancient discovery is one of the major milestones in our mathematical history. This article follows hot on the heals of an article, by my colleagues Daniel Mansfield and Norman Wildberger, that courted international attention by arguing that Babylonians had invented efficient fraction-based trigonometry more than a thousand years before the Greeks invented their trigonometry. It is exciting that even ancient maths can be re-found and re-interpreted; what next does the future hold for the past?

Michael Kielstra and Adam Wills also look into the past and renew what they there find, in *Making Collatz Cry* in which the authors provide a very interesting framework for the analysis of new variants to Collatz' old and revered Conjecture.

Of less ancient history but nevertheless going back more than half a century, the *Parabola* Problems now number more than 1500, and yet the problems presented in this and recent issues remain challenging and fresh: I am in grateful awe of the skills of our expert problem setter David Angell. Please enjoy, along with the guiltily hilarious comic strip series $2\mathbb{Z}$ *Or Not* $2\mathbb{Z}$ by Robert Schneider.

More problems also featured in the 56th UNSW School Mathematics Competition, the winners of which are also listed in this issue. Relatedly, it is exciting that Australia now has its first girls' maths olympiad team, to compete in the 2018 European Girls' Mathematical Olympiad. The Australian Mathematics Trust, who also supports *Parabola*, has appointed Michelle Chen as Deputy Team Leader and, as Team Leader, Thanom Shaw who was a recent and excellent Visiting Teaching Fellow here at our School. Congratulations to Thanom Shaw and Michelle Chen, and go Team!

To you, dear Reader, enjoy this issue and perhaps some reflection and forward-looking of your own as this year draws to a close. Have hopefully happy holidays, and I look forward to presenting you with the next issue of *Parabola* in the new year!

Thomas Britz
Editor