# CENTREFOLD

## Shaun Cooper



In the car-park at Massey University's Albany campus is a vehicle with the number plate 314159, with "Pi  going on forever" on the plate surround. A present from his wife Hilary, who else could the plate belong to but the subject of this issue's Centrefold? It is a pleasure to write about Shaun Cooper, who delights in numbers and the mathematical theory that surrounds them, and is an international figure in "all things Ramanujan".

In an earlier life, Shaun went to school in Gisborne, and was Dux of Lytton High School there in 1983. He graduated from The University of Auckland in 1987 with a BSc(Hons) (First Class) in Mathematics; that year he completed an MSc and graduated with Distinction in 1988. The next few years were spent in the USA at the University of Wisconsin-Madison where he completed a PhD, graduating in 1995. He returned to NZ that year and took up a position as Lecturer in Mathematics at Massey's (then, new) Albany campus in North Shore City. He was promoted to Senior Lecturer in 2001, and to Associate Professor this year.

One of Shaun's passions is his teaching. He gained some experience as a Teaching Assistant at Auckland and Wisconsin while undertaking postgraduate study (and also winning two UW teaching awards), but really hit his straps in the Albany environment. He is renowned as one of the best Mathematics teachers around; he won an IIMS Teaching Award in 2004 and a College of Sciences Teaching Excellence Award in 2011. And now, he has just received the Albany Lecturer of the Year award for 2012, heading off the competition across all disciplines at the campus. His philosophy on teaching and learning is a great resource for his colleagues, and his success rates reflect his enthusiasm, and the care and attention he pays to his students at all levels.

A recipient of the NZMS Research Award in 2011, Shaun's research interests lie in number theory and special functions (elliptic and theta functions, and q-series). An active member of NZMS, AMS and the Society for Special Functions and their Applications, his current work includes trying to discover and classify theta function identities, to extend Ramanujan's theories of elliptic functions in various ways, and to classify corresponding Ramanujan-type series for (you guessed it!) $1/\pi$. Shaun has more than 60 refereed articles to his name. He also spent much time over a number of years revising and editing a monograph Development of Elliptic Functions According to Ramanujan, originally written in 1988 by K. Venkatachalienger; when in India, Shaun and Hilary visited the (now, late) author in his home. Shaun has made contributions to myriad conferences; that Shaun can give a great plenary talk has also been recognised by 10 invitations over the last 5 years to speak at international meetings in India (4), Singapore (2), Australia, China, France, and NZ.

He is also a successful postgraduate supervisor, with several PhD, MSc and project students having taken advantage of his knowledge, skill and wisdom. His international collaborators have sought him out for more than a dozen visits over the last few years, while he has reciprocated during periods of sabbatical leave. His repute keeps him in demand for refereeing papers, with such contributions so far to more than 30 different international journals, as well as about 140 invited reviews for the AMS's MathSciNet.

Shaun has a collection of Rubiks puzzles of all different shapes and sizes. His prized piece is an 11 by 11 by 11 Rubiks cube he spotted while window-shopping in Singapore. He often brings a selection of his puzzles to class to demonstrate mathematical principles. (He once made an urgent call home asking for a dodecahedron to be delivered to the campus, 10 minutes before a lecture.)

Shaun's vigour and stamina in another arena are also detected by those who are privileged to work in the same department and who have seen him coming and going in his running kit. As a former ultra-marathon competitor (in events that have him running through night and day), Shaun represented NZ at the World 100 km Challenge in 1997 and 2006, with a best 100 km time of 7:22:30. It makes us feel tired just to consider these things!

His current ground-level goal is to run at least one marathon per year. Apart from that he tends to build up for specific events, and in doing so, often cracks a few records, like the 8 year-old ones for 6 hours and 12 hours in the annual Auckland Sri Chinmoy races (Shaun's new records were 74.000 km in 6 hours and then 134.799 km in 12 hours). Shaun is motivated to take part in interesting events that he likes, to the best of his ability at the time. In recent years he has developed a particular interest for trail races (the harder they are the more he likes them!). His favourite event is the Tarawera Ultra Marathon 100k. He has also supported various races when not running and is a very proficient lap counter  it is quite a challenge to keep track of several people all running around a 400m track for hours on end  one way of putting number theory into practice!

All his colleagues and companions agree that Shaun seems able to cope with most things thrown at him. He is a great companion for long walks; he seems to dance dry-footed through the wettest of terrain, to the envy of his muddy-booted mates! Shaun is sure-footed, except for one memorable occasion. On his wedding day, Shaun and his best man decided to run to the wedding from Riverhead (the best mans home) to Bethells Beach. Inexplicably, on a smooth part of the road Shaun fell. He made it to the wedding venue to meet his wife-to-be covered in blood and had to have his arm and leg bandaged before the ceremony.

For those about him, Shaun is an intellectual powerhouse, but with a modesty that belies his national and international standing. His colleagues agree, without exception, that it is a privilege to be associated with him.

*Robert McKibbin*