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Thinking around corners

It would be hard to find a less geeky mathematician than Vaughan Jones. The country's only Fields Medallist, the maths equivalent of the Nobel Prize, is famous for wearing a rugby jersey when he gave his plenary talk at the International Congress of Mathematicians that awarded the medal in Kyoto in 1990. And he kite boards the waves of San Francisco Bay in his spare time.

Jones is also famous for his informal and open style of working in an environment where competition can encourage mathematicians to keep ideas to themselves before they are published. Before winning the medal, Jones sent his new ideas to other mathematicians and encouraged their circulation. The medal citation says these letters became a rich source of ideas for many people.

Jones' discovery of the polynomial since named after him (an object that distinguishes between theoretical knots) was part of his development of an algebra that thinks around corners.

Anyone over 30 learnt algebra as a linear activity - A x B + C marching from left to right in a straight line to a conclusion. Jones thought laterally and imagined an algebra where A was upside down above B and C was off to the south-west. He has been working in the field of planar algebra ever since.

The field brings together ideas from operator theory, statistical mechanics and the more geometrical theory of knots and tangles. "It has created a structure for handling a lot of novel algebraic situations in a new way that is connected to physics and quantum field theory," he says.

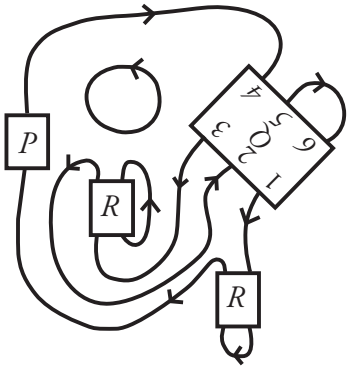
Physics is an old love for Jones, who started his PhD in the subject before switching to mathematics. "I've always done the kind of maths that's closely connected to physics." Planar algebra seems to be highly relevant to quantum computing, he says, although the role it will play is not yet clear.

Jones was born in Gisborne, went to school in Cambridge and Auckland and studied at the Universities of Auckland and Geneva. While he has been Professor of Mathematics at the University of California in Berkeley since 1985, he returns to New Zealand at least twice a year and has been a major stimulus for the growth of mathematics here.

He helped to found the New Zealand Mathematics Research Institute (NZMRI) in the early 1990s and is co-director of that as well as of the NZIMA. The NZMRI started an annual series of summer meetings in 1994, now sponsored by the NZIMA, bringing "the very best of world maths to mix with New Zealand mathematicians and students" at beautiful New Zealand beachside locations.

"They went from being rather primitive affairs to much more well-known and now we're turning people away," he says. "They've been a staggering success; you'd have real difficulty getting some of those people together anywhere else in the world." The Fields Medal was very useful to help get the meetings started, he says. He has been to every meeting, gaining a good overview of our mathematical expertise.

Maths in New Zealand "looks pretty healthy; we have some extremely good mathematicians here". New Zealand shines in fields such as numerical analysis, "providing numerical solutions for just about anything"; computer solutions; analysis; group theory; logic and computational complexity; mathematical biology and mathematical physics. "We have really world class leaders in those fields in New Zealand, constantly being invited to international conferences."



A labelled planar tangle