

PROFILE

Sarah Wakes



Professor Sarah Wakes, HOD of Mathematics and Statistics at Otago, does not appear to be the kind of person who might be guarding critical state secrets. Yet, when I asked her about her first professional job, she remarked that she could answer my question but she'd have to kill me afterwards.

Sarah studied mathematics and physics at Nottingham University, graduating with joint first class honours. She was recruited by the Ministry of Defence, after a quite surreal vetting process. At the MoD, Sarah [REDACTED] beer [REDACTED]

modelling. Returning to graduate study at Nottingham she joined the exodus of applied mathematicians to engineering, completing a Ph.D. on models for the growth of a sand wave, a research area she would return to many years later.

After a stint as a research fellow at Loughborough University of Technology, and a bit of a gap year, Sarah took up what was to become an eight year postdoctoral position at the University of Herfordshire. There she closely involved in early development and application of computational fluid mechanics (CFD), including collaboration with CFD guru Brian Spalding. In those days, recounts Sarah, they were carrying out computations by hand or on desktop PCs with 128K RAM. Things are now quite different.

Sarah's work on CFD took her in all sorts of directions. She was a part of the expert witness team in the investigation into the Piper Alpha oil platform disaster. Sarah and her team worked to model spread of fires and toxic gases, not just to understand what had happened, but to improve safety in future. She worked extensively on early computational models of turbulent flow near walls, and even taught a paper on automobile design.

In 2002, Sarah took up an academic position in the Department of Design Studies at the University of Otago. Her involvement in the fledgling Applied Science programme led to collaborations on a diverse range of CFD application areas, from sand dune modelling to oven design. The work on sand dunes has been particularly rewarding. Sarah in conjunction with colleagues in Geography and her student invented a system of 'dune notches' which has now been implemented in St Kilda beach, and her modelling techniques have changed dune preservation strategies used both here and overseas.

Sarah moved over to the Department of Mathematics and Statistics in 2019 and became HOD in 2021, the first woman to hold that position. The previous five years had been a difficult time for the department, and morale was rock bottom. Her role in turning around the department cannot be over-estimated, and the current strong position of Mathematics and Statistics at Otago owes much to her skilled but personable leadership. Sarah says that taking on the HOD role has been a real privilege, one that comes full circle and connects back to her early undergraduate study in mathematics and physics.

David Bryant