

A TRIPLE 70th — PROF IAN COLLINS AND PROF MICHAEL O’SULLIVAN



The photo was taken during the Department celebration of Mike and Ian’s 70th birthdays as they are cutting their cakes. Mike is on the left (cutting a cake with a picture of Statler and Waldorf on it [the two old men who sat in the balcony seats in the Muppet show]) and Ian is cutting a cake with a 3-sided pyramid on it signifying the triple 70th.

This year saw a very special celebration. Two of NZ’s distinguished applied mathematicians, both of the Department of Engineering Science Department at Auckland University, turned 70. Between them, they have a combined 70 years of service within the Department. Ian Collins also served as the Head of Department for 10 years (from 1981-1991) and Mike O’Sullivan performed the same job for 8 years (from 1992-1996 and 2002-2003). Both Ian and Mike are profiled here.

IAN COLLINS

In Ian’s own words, he is a “Kentish Man” not a man of Kent. Whilst studying at Cambridge University, he became fascinated with the application of mathematics to the understanding of physical and engineering processes. His first job was working with a submarine propulsion design team at the Admiralty Research laboratory in London, and he was initially horrified to find that he was the only mathematician in the team. However, this experience initiated his lifelong interest in providing mathematical expertise in an engineering research environment. Whilst at Manchester University in the mid-1970s he met both Cecil Segedin and Ian Medland, who were both on leave in the UK, and who told him about the Engineering Science Department (then called TAM — Theoretical and Applied Mechanics). Ian remembers telling his wife, that evening, that there would be a good job in NZ becoming available in a few years. He was fortunate to be appointed Cecil’s successor (and Head of Department), in 1981, and his family relished the change in hemisphere.

Ian Collins is a distinguished researcher in the areas of applied mathematics and continuum mechanics. His contributions include solutions to metal plasticity problems, developing the thermomechanical foundations of solid mechanics, constitutive theories for geomaterials, stability of rock slopes, mathematical modelling of testing procedures in geotechnical engineering, and mathematical modelling of manufacturing processes for thermoplastic composites. Ian’s sustained contributions to the mechanics

and deformation of granular materials, especially on the effective use of thermomechanics in the derivation of their constitutive models are exemplary. Ian pioneered the applications of a thermodynamic framework for the plasticity modelling of granular materials. He highlighted the superiority of this framework in a series of important papers. His contribution in this area was recognised by the Institute of Civil Engineers, UK, and they awarded him the 2003 James Watt medal. He was subsequently also awarded the Crampton Award (2004) and the Geotechnical Research Medal (2006).

In recent years, Ian has devoted much of his energies to teaching. Students have greatly valued Ian's lecturing style — so much so that they even started a Facebook page in his honour.

MIKE (MICHAEL) O'SULLIVAN

For many in the Department, Mike is synonymous with Engineering Science, and all of his children have, at one stage or another, worked for, or studied in, the Department. Mike can actually claim he was an Engineering Science student before the Department even existed, because he completed a BE (Civil) and a BSc (Mathematics) simultaneously (at Auckland) then went on to an ME in Applied Mechanics, supervised at Ardmore by Cecil Segedin (the founder of the Engineering Science/TAM department). After his ME, Mike went to Caltech and completed a PhD in Applied Mechanics. During his studies at Caltech, Mike started a rugby team, played cricket badly, went tramping and body-surfed at Malibu.

From Pasadena, Mike moved to NYU and took up a job as an assistant professor in Mathematics, teaching mathematical modelling to engineering students. After 18 months at NYU, he was offered a job by Cecil Segedin and returned home to NZ. Apart from a few sabbatical leaves, Mike has remained in the Engineering Science/TAM department since his return in 1969.

Mike's research interests are in environmental fluid mechanics, particularly in computer modelling of geothermal fields and pollution problems in harbours. He has worked with Contact Energy (and its predecessor) for many years on computer models of the Wairakei and Ohaaki geothermal fields. Mike is held in such high regard that Contact Energy have funded a research position continuously for more than 25 years, which has been filled by a variety of Engineering Science graduates over the years. Mike has also worked with PB Power on geothermal projects in Indonesia, Japan, Kenya, Mexico and USA, and with Metrowater on models of contaminant movement in the Waitemata and Manukau Harbours.

Mike has maintained his interest in sport and the outdoors. For many years he was a stalwart of the Department's lunchtime running group, leading to the completion of the Rotorua marathon, together with another staff member, David Ryan (although some distance behind him). This feat stimulated others in the department into similar efforts.

Mike continues to be very productive in teaching, research and engaging with industry. He leads a group consisting of several research fellows and postdocs, and just this year, three of his PhD students completed.

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