



# Obituaries

## Kenneth Robert Pearson

1943–2015



Ken Pearson was born on August 21, 1943. He graduated in mathematics with first class honours at the University of Adelaide in 1963 and was awarded a Ph.D. in pure mathematics at the same university in 1966 for his thesis on Topological Semirings.

Forty years later in 2006 Ken was elected as a Fellow of the Academy of Social Sciences in Australia. The nomination citation stated:

Ken Pearson is one of only a handful of Australian academics who have made a significant difference to the world of economics.

The difference he made and how he transitioned mid-career from theoretical mathematics to practical economics is a story of intellectual curiosity, insight, courage and perseverance.

Ken's career in mathematics started along conventional lines with initial appointments as lecturer at Adelaide and assistant professor at Penn State. In 1970 he joined the newly established La Trobe University as senior lecturer. In mathematics Ken made major contributions in teaching, administration and research.

In teaching, Ken together with Arthur Jones developed the La Trobe teaching strategy. A distinctive aspect was the introduction of tutorial rooms where every wall is a blackboard on which students work in small groups. This tutorial style spread from La Trobe and is the forerunner of the modern notion of a flipped classroom.<sup>1</sup> Ken also played a key role in the development of La Trobe's pure mathematics subjects, leading to the publication of *Abstract Algebra and Famous Impossibilities* (Springer, New York, 1991), jointly with Arthur Jones and Sid

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<sup>1</sup>See Katherine A. Seaton *et al.* <http://www.austms.org.au/Gazette+Volume+41+Number+2+May+2014>.

Morris. The book was well-loved by students and favourably received professionally (*Gazette* review by George Willis<sup>2</sup>).

In administration Ken made a fundamental contribution to the ongoing health of mathematics at La Trobe. In the early '80s, as Chairman of the Department of Pure Mathematics, he initiated and guided through Academic Board the merger of the Departments of Pure Mathematics and Applied Mathematics. The amalgamation proved a resounding success. As a leader, Ken was universally respected for his integrity, his approachability, his ability to get things done and his thoughtful, fair and balanced decisions.

In research Ken had published six papers in topological semirings prior to his arrival at La Trobe where his attention shifted to the group of units in a ring. Ken continued to work in ring theory throughout the '70s with a particular interest in skew polynomials and polynomial matrix identities. His work on polynomial matrix identities over non-commutative rings involved the computer-aided solution of large systems of sparse linear equations. And this provided the link to economics.

Ken learnt from Russell Rimmer, a former student, that large sparse systems were of central importance to a group in the La Trobe Economics Department working in the field of Computable General Equilibrium (CGE) modelling. The La Trobe group, led by Peter Dixon, was contributing to the Federal Government's IMPACT Project, headed by Alan Powell at the University of Melbourne. Ken invited Peter to give a seminar in the maths department, and the encounter changed the course of his career.

The seminar sparked Ken's intellectual curiosity. He delved into the IMPACT Project and found that CGE modelling is all about links between different parts of the economy. IMPACT was particularly concerned with links between tariff-protected, import-competing industries (e.g. textiles, clothing & footwear and motor vehicles) and export-oriented industries (e.g. agriculture and mining). IMPACT's CGE model, ORANI, quantified the path from cuts in tariffs, to increased imports, to a lower exchange rate, to increased exports. This was important for reassuring politicians that tariff cuts would not have a disastrous effect on aggregate employment: it demonstrated that jobs lost in import-competing industries would be replaced by jobs in export-oriented industries.

Ken sensed that what was going on at IMPACT was important. ORANI was gaining political traction and was used effectively in-house and at the Industries Assistance Commission. Ken knew that IMPACT was keen to facilitate wider use but this was inhibited by computational complexity. His insight was to see that dissemination could be achieved via computationally efficient, easily transportable, user-friendly software.

Enthusiastically backed by Alan Powell, Ken set himself the assignment of creating the right software platform. Large-scale, policy-relevant CGE models contain many thousands of variables and non-linear equations. Making them computationally efficient and widely accessible must have seemed a monumental task. Embarking

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<sup>2</sup>Australian Mathematical Society Gazette Volume 21 Number 1 March 1994.

on it was an intellectually courageous decision. For Ken, it required a break from his familiar world of mathematics at considerable risk to his burgeoning career. But he succeeded. The outcome was the GEMPACK software.

The first version of GEMPACK was unveiled at a training course on the ORANI model for public servants and academics held in 1984. Over the next 30 years, Ken continuously developed and improved GEMPACK, working with several collaborators, most notably Mark Horridge.

GEMPACK is now used in 600 sites including the World Bank, the International Monetary Fund, the Asian Development Bank, the Global Trade Analysis Project (GTAP), the Australian Treasury, and numerous government departments and universities in more than 90 countries. In a recent computational comparison with the other major CGE software platform (GAMS, developed at the World Bank), GEMPACK was the overwhelming winner.

Through GEMPACK, Ken democratized CGE modelling. Using GEMPACK, economists without specialist computational expertise can build and apply sophisticated models. GEMPACK-generated results can be readily analysed and constructively challenged in policy debates ranging across trade, public finances, industry assistance, microeconomic reforms, greenhouse and other environmental policies, immigration, labour markets, macro stimulus, natural disasters and security. GEMPACK has linked the world-wide CGE community by facilitating easy transfer of models and results.

What were the factors behind GEMPACK's spectacular international success? First, there was Ken's superb technical prowess and his ability to draw on his mathematical knowledge (e.g. understanding of sparse-matrix techniques) in solving practical computing problems. Second, there was Ken's perseverance, focus and hard work over more than three decades.

Just as important as these factors was Ken's personality: gregarious; intellectually honest; inquiring; always up for a challenge; and completely free of pretension. These characteristics enabled Ken to work productively alongside economic modellers at the IMPACT Project and its successor, the Centre of Policy Studies (CoPS, now located at Victoria University in Melbourne). Starting in the 1990s, Ken also became a key member of a huge economic modelling network centred on GTAP. Because of his ability to communicate with economists and operate outside his comfort zone, Ken was able to develop GEMPACK in parallel with the evolving needs of economic modellers.

In recognition of his contributions, Ken was appointed Professor in CoPS in 1999 (then located at Monash University). From 2000 to 2004 he was the much respected Deputy Director of CoPS. In addition to his fellowship in the Academy of the Social Sciences in Australia, Ken received a major international recognition in economics: in 2007 he was in the first group of inductees to the GTAP Hall of Fame.

Ken had many friends and admirers in every part of the world. He was a great participant in life. He was an adventurous tourist. He loved playing golf, tennis and bridge. He was a chorister with the Royal Melbourne Philharmonic. He had

a close-knit family and is survived by Helen, his wife of 50 years, four daughters and nine grandchildren.

Ken retired in 2014 due to illness, leaving GEMPACK in the safe hands of Mark Horridge and Michael Jerie.

He died of cancer on May 12, 2015. Throughout his illness he was stoic, always cheerful and grateful for a good life. Typical of his lifetime attitude, his main concern towards the end was to make things as easy as possible for his family, friends and colleagues.

Peter Dixon and Maureen Rimmer, 5 June 2015

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