PROFESSOR KENNETH ROBERT PEARSON

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Date of Birth: 21 August 1943

Place of Birth: Nedlands, Western Australia

Marital Status: Married, four adult daughters

Academic Record:

- First Class Honours B.A. in Mathematics, University of Adelaide, 1960-1963

- Ph.D in Mathematics, University of Adelaide, 1966
  Thesis: "Topological Semirings". Supervisor: Professor J.H. Michael.

Honours and Awards:

- Fellow, Academy of the Social Sciences in Australia, October 2006.
  [Nomination citation said: “Ken Pearson is one of only a handful of Australian academics who have made a significant difference to world economics.”]

- GTAP Research Fellow, 1996-present. This was awarded by the Center for Global Trade Analysis, Purdue University. Citation was "Development of GTAP software; Teaching of GTAP short courses".

- Fulbright-Hays Travel Grant, 1967. I was a Fulbright Scholar from 1967-1969.

Present Position:

Professorial Fellow and Principal Researcher, GEMPACK Software,
Centre of Policy Studies and Impact Project, Monash University, Clayton Victoria 3800.
(Appointed Professorial Fellow in January 1999.)
(Principal Researcher, GEMPACK Software since April 2007.)

(I was Deputy Director of the Centre of Policy Studies from October 2000 to June 2004.)
(I was Director, GEMPACK Software from December 1991 to April 2007.)

Past Positions:

- Reader and Associate Professor in Mathematics, La Trobe University
  (January 1990 to December 1998)
- Senior Lecturer in Mathematics, La Trobe University
  (January 1970 to December 1989)
- Assistant Professor of Mathematics, Pennsylvania State University
  (July 1967 to December 1969)
- Lecturer in Mathematics, University of Adelaide
  (January 1966 to May 1967)
- Tutor in Mathematics, University of Adelaide
  (January 1964 to December 1965)

Secondments:

- Visiting Reader and Associate Director, Centre of Policy Studies and Impact Project, Monash University (full-time secondment, 1 December 1991 to 31 December 1998)
- Impact Research Centre, University of Melbourne (half-time secondment, 1 July 1990 to 30 June 1991)
- Visiting Senior Research Fellow in Economics, University of Melbourne
  (1 December 1985 to 13 February 1987)

Sabbatical Leave:
1. (September 1987 to August 1988)
Overseas from mid-March to mid-May 1988.
I visited 9 US and Canadian universities and organisations and delivered a paper to the Second International Economic Modelling Conference in London.
For rest of this year I was a Visiting Senior Research Fellow, Department of Economics, University of Melbourne.

2. School of Mathematics, University of Leeds, England (October 1980 to June 1981)

3. Mathematics Department, Bedford College, University of London, England
(December 1974 to December 1975).

Research:
General purpose software for economic modelling

Since early 1983, my research work has been concerned with the development of general-purpose, portable, user-friendly software for the solution of large economic models. The GEMPACK software system, which is currently in use at about 500 organisations in about 60 countries around the world, is the main result of this work. I have supervised the design of the system and have written much of the software which incorporates up-to-date mathematical techniques for the implementation and accurate solution of large economic models. The software, early versions of which have been in use since 1984, can be used to model a wide range of economic behaviour, including forward-looking behaviour. It can be ported to different computer systems with very few, if any, changes; it is currently operating on Windows PCs running Windows 2000 or XP and various Unix machines. GEMPACK is

distributed by the Centre of Policy Studies and Impact Project.

An overview of an earlier version (Release 5.1, April 1994) is given in a 1996 paper in *Computational Economics* (see Paper number 37 in the attached publications). The current version (Release 8.0, October 2002) includes several Windows programs. The software in this version contains over 20 main programs and several hundred subroutines. The software is fully documented for users in the GEMPACK documents, notably documents GPD-1, GPD-2, GPD-3, GPD-4 and GPD-8 totalling over 900 pages (see the attached references).

With this software, models can be implemented and solved without the need for any model-specific or one-off code. The implementation of new large models, even of the size and complexity of ORANI, can now be achieved in a matter of weeks (compared to the 48 or so person-months required for ORANI's original implementation). The achievement of this sort of reduction in the research investment required to implement new models or modify existing models was one of the major aims in the initial development of GEMPACK.

My research program involves continuing to develop and enhance the software and documentation. For example, the current release (Release 9.0) was made available in April 2005. This included a number of new features, including important new facilities for post-solution processing, and programs able to solve very large models with substantially less memory than is currently required.

Previous versions of GEMPACK were: Release 8.0 (October 2002), Release 7.0 (October 2000), Release 6.0 (October 1998), Release 5.2 (September 1996), Release 5.1 (April 1994), Release 5.0 (April 1993), Release 4.2.02 (April 1991) and Release 4.2 (February 1990). The substantial documentation (now over 1000 pages) was completely revised for most of these releases.

I am in frequent email and telephone contact with many tens of general equilibrium modellers in Australia and overseas, responding to queries about modelling and software issues and advising and assisting with model implementation, solution and verification.

The number of organisations using GEMPACK continues to increase. At the end of 1994, there were about 70 sites with a source-code licence (about 35 of which were outside Australia) and about 20 with an executable-image licence. At the end of 1997, there were about 120 sites with a source-code licence (about 80 of which are outside Australia) and about 90 sites with an exectuable-image licence (of which about 75 are outside Australia). By late 2003, there are about 200 sites with a source-code licence (about 70% of which are outside Australia) and about 300 sites with an executable-image licence (of which about 75% are outside Australia). There are many other organisations and individuals which use GEMPACK software without needing a GEMPACK licence (for example, to solve the GTAP model under the RunGTAP windows software distributed by the Center for Global Trade Analysis at Purdue University).

An independent evaluation of CoPS/Impact for the Commonwealth government in 1994 reported that almost all intensive users of GEMPACK surveyed ranked it as 5 out of 5.

An article "The Midas Touch" in *The Age* newspaper on 20 June, 2005 by Leigh Parry explored "the research realm of Victoria's universities - the place of remarkable discoveries, cutting-edge technology and blue-sky dreaming." This article listed 9 noteworthy research projects from Monash University. GEMPACK software and GE modelling at CoPS was one of the 9 mentioned – the only one outside the physical and medical science fields.

Major Research Grants:

ARGS grants for project, "Multi-country models", (with B. Parmenter, R. Rimmer and G.A. Meagher). 1984-1986: $80,493.

ARC grant for project "Automating an important step in constructing large computable economic models" (with A.A. Powell) for 1991-92. 1991: $52,100; 1992: $20,948; total $73,048.

Monash Development Fund grant for project "Further automation of software for solution of very large, dynamic economic models" (with A.A. Powell) for 1993-94.
1993: $40,000; 1994: $18,500; total $58,500.

Teaching Experience:
1. The full range of undergraduate algebra courses at Adelaide, Pennsylvania State and La Trobe Universities. Graduate algebra and ring theory at Pennsylvania State and La Trobe. Numerical analysis and discrete mathematics courses at La Trobe.

2. I have supervised mathematics masters and doctoral students at Pennsylvania State and La Trobe. I have been an associate supervisor for economics doctoral students at La Trobe University.

3. I have been active in teaching and organising intensive one-week and two-week general equilibrium modelling courses over the past 10 years. This includes teaching at all the GTAP Short and Advanced courses (13 since 1992, run by the Center for Global Trade Analysis, Purdue University) and organising and teaching the twice-yearly GE courses held at Monash University (approx 14 since 1994).

Conference Organisation:
I was chair of the organising committee for the Third Annual Conference on Global Economic Analysis held from June 27-30, 2000 at Monash University (Mt Eliza). This conference was held in conjunction with the Center for Global Trade Analysis, Purdue University. The conference attracted over 100 participants including over 75 from overseas. About 65 papers were presented. Details are available on the web at address
http://www.monash.edu.au/policy/conf2000.htm

Major Offices Held:

- Associate Editor, Computational Economics, 1994-
- Deputy Director, Centre of Policy Studies, Monash University, 2000-2004.
- Director, GEMPACK Software, Centre of Policy Studies, Monash University, 1992-2007.
- Chairman, Pure Mathematics Department, La Trobe University, 1982-1984.
- Deputy Editor, Bulletin of the Australian Mathematical Society, 1979-1984.

Professional Societies:

- Australian Mathematical Society
- Society for Computational Economics

K.R. Pearson
April 2007