

Acknowledgements

The idea for this book goes back many years but the opportunity to write it was provided by Richard Isnor when he invited me to take a Visiting Fellowship at Canada's International Development Research Centre (IDRC) in 2008. The book was one of the expected outcomes, and was strongly supported by the then President, Maureen O'Neil. Some months before, Susanne Huttner had been appointed as Director of the Directorate of Science, Technology and Industry (DSTI) of the Organisation for Economic Co-operation and Development (OECD). She invited me to join the management team responsible for the OECD Innovation Strategy to be delivered in 2010. Work on the Innovation Strategy and on the book were mutually reinforcing.

Much of the content of the book derives from working with delegates to the OECD Working Party of National Experts on Science and Technology Indicators (NESTI). These colleagues are too numerous to name but I will thank Giorgio Sirilli for his years as Chair and Alison Young for her support of the working party. I will also thank Erika Rost who unfailingly offered helpful comments on my contributions to the work of NESTI and who has read, and commented on, every word of this book. The work done with NESTI, which started in 1988 could not have happened had Statistics Canada not been supportive. That support was led by the Chief Statistician of Canada, Ivan Fellegi, until he left Statistics Canada in 2008.

Another benefit of NESTI was the opportunity to work with many good people from Eurostat (Statistical office of the European Communities) and with colleagues from observer countries. Leonid Gokhberg and his colleagues from Moscow have provided stimulating exchanges over the years and organized influential conferences.

When I became Chair of NESTI in 2002 I made a point of accepting invitations to talk about the importance of science, technology and innovation indicators and their potential role in policy. These talks reinforced my thoughts about the need for this book and the first invitation was from Liu Shumei of the Ministry of Science and Technology (MOST) in Beijing in 2004. It was followed by an invitation from Mario Albornoz to Sao Paulo to address a Network on Science and Technology Indicators – Ibero-American and Inter-American (RICYT) conference. However

the concept of the book came together at a seminar given in Warsaw at the Institute of Economics of the Policy Academy of Sciences in May 2006. This was organized by Tadeusz Baczko and promoted by Grazyna Niedbalska of Central Statistical Office. It was the discussion following the seminar that convinced me that the book should be written, and the reader can find it in *The Future of Science and Technology and Innovation Indicators and the Challenges Implied*, published by the Polish Institute of Economics in 2009 and edited by Tadeusz Baczko. That set the stage for a meeting with Matt Pitman at a conference who suggested that Edward Elgar publishing would be interested in the book. Matt has been most supportive during the period of gestation.

Many of the findings in the text come from years of work at Statistics Canada which would not have been possible without my former colleagues Frances Anderson, Daniel April, Michael Bordt, Louis Marc Ducharme, Louise Earl, Charlene Lonmo, Antoine Rose, Susan Schaan and George Sciadas. Martin Wilk, as Chief Statistician, hired me and then cancelled the project I was hired to run, ensuring a career involving science, technology and innovation indicators, an alternative path that was then available. Bert McInnis and Rob Hoffman brought me into the organization, arguing that the statistical office was the CERN (European Organisation for Nuclear Research) of the social sciences, an interesting metaphor that I continue to ponder.

In the course of developing indicators at Statistics Canada, there were several activities involving international collaboration. One was a series of five workshops to explore the link between indicators and policy. They each involved international colleagues and gave rise to five books edited by John de la Mothe and his co-editors Gilles Paquet, Jorge Niosi, Dominique Foray and Al Link. The topics covered were local and regional innovation, information and communication technology when the definition of electronic commerce was being debated; biotechnology when a statistical programme was being established at the OECD; knowledge management as part of an OECD project; and networks, alliances and partnerships, supported by the National Science Foundation which had a common interest in the subject. A 2003 workshop on innovation was a precursor to the OECD Blue Sky II Forum and produced a book edited by Louise Earl and myself. There were also OECD forums, the OECD High-Level Forum on Knowledge Management in 2000 and the OECD Blue Sky II Forum in 2006, both supported by the OECD and organized by Louise Earl. The Blue Sky II Forum was also supported by the National Science Foundation and Industry Canada.

The work at Statistics Canada benefited greatly from the Advisory Committee on Science and Technology Statistics and its three Chairs,

Stephen Feinberg, Susan McDaniel and Tom Brzustowski. The committee created working parties in the 1990s that helped to define the programme and to secure its financial support. While all of the members of the committee made significant contributions, I would single out Martin Walmsley for his ability to manage complex and profound concepts and to build a consensus around them in demanding circumstances.

The link with the Division of Science Resources Statistics (SRS) of the US National Science Foundation has been mentioned, but I should mention Lynda Carlson as a valuable colleague at the OECD and strong supporter of collaboration between the SRS and Statistics Canada. John Jankowski has always been willing to share knowledge and to offer comments on research projects and on this book. In the area of the Science of Science and Innovation Policy (SciSIP) programme of the NSF, Julia Lane has provided useful input.

The reader will notice that user innovation is a theme throughout the book. This goes back to a survey done by the author in 1987, a survey managed by Robert Tinari at the US Census Bureau in 1988 and the publication in that year of a book by Eric von Hippel on the role of the user in innovation. This eventually led to a collaboration with Eric von Hippel and a paper on user innovation based on a survey run by Susan Schaan and Mark Uhrbach at Statistics Canada. As far as this book is concerned, Eric has read every word on user innovation and has provided comments.

Another recurring theme in the book is innovation in developing countries. This reflects the author's collaboration with the New Partnership for Africa's Development (NEPAD) initiated by John Mugabe in 2005, many discussions with Michael Kahn when he was the South African observer at NESTI, and earlier work in South Africa. Aggrey Ambali and Philippe Mawoko have continued the collaboration with the NEPAD Office of Science and Technology and Philippe Mawoko provided comments upon Chapter 9. It has also been a pleasure to be associated with the Research Policy Institute in Lund, with Claes Brundenius, and the Swedish International Development Cooperation Agency (SIDA)-supported project on innovation and R&D surveys.

As part of the work on the Innovation Strategy, a workshop was organized in Paris in January 2009 on converting knowledge to value in developing countries. This was a joint OECD–UNESCO project with support from IDRC and SIDA. Tony Marjoram from UNESCO (the United Nations Educational, Scientific and Cultural Organization), Gang Zang from the OECD and Jean Woo from the IDRC helped make the workshop happen. Jean Woo also contributed substantively to Chapter 9.

The book has benefitted from discussions with Howard Alper, the Chair

of the Canadian Science, Technology and Innovation Council (STIC), and with Patricia Malikail and her team in the STIC Secretariat. There have also been discussions with Peter Nicholson over the years, and more recently in his role as President of the Council of Canadian Academies (CCA). The subject was the work of a CCA panel looking at innovation and productivity in Canada.

At the end of my IDRC Fellowship I was fortunate to be able to join UNU-MERIT (United Nations University Maastricht Economic and Social Research and Training Centre on Innovation and Technology) as a Professional Fellow and have the opportunity to manage IDRC-supported case study projects in African countries. I am also Professor Extraordinaire of the Tshwane University of Technology (TUT) associated with the Institute for Economic Research on Innovation (IERI) at TUT. I am grateful to Luc Soete for the former appointment and to the Tshwane University of Technology for the latter. Rasigan Maharajh and Mario Scerri, of IERI, commented on Chapter 9. In the UNU-MERIT context I should acknowledge the work and contribution of Anthony Arundel.

The debt owed to colleagues at the OECD over the years is large. During my work on the Innovation Strategy I have had helpful discussions with Pier Carlo Padoan, Richard Carey, John Dryden, Enrico Giovannini, Susanne Huttner, Daniel Malkin, Michael Osborne, Nabuo Tanaka and Andy Wyckoff. Various colleagues are acknowledged in the text where they have made specific contributions. In the indicators domain, I have had a long and fruitful working relationship with Alessandra Colecchia. As the Innovation Strategy moves forward, I am working with Miraim Koreen.

A final acknowledgement goes to Paris, where the book was given structure and partly written. In the early twentieth century the existentialist debate took place in the 6th arrondissement at Les Deux Maggots and the Café de Flore. OECD delegates tend to stay in the 16th arrondissement and the early debates, in the late twentieth century, some heated and long, took place in Le Marty on rue de Passy. As part of creative destruction, Le Marty closed, and the debate moved to Le Passy where it continues. Outside of the OECD, it is the only place where I have been able to hold a discussion of the four components of the Oslo Manual definition of innovation.

While there have been many inputs and useful comments, the final text and any errors are the responsibility of the author.