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The art of managing uncertainty & risk

We require Governments to manage the uncertainties and risks that markets can't cope with and, on face value, this means that Governments should be particularly good at it. In responding to these challenges, Governments often need to be innovative – both in a crisis context and, at the opposite end of the spectrum, in dealing with very slow moving and often hard to perceive threats. In short, innovation is not just something of importance to the private sector.

It was therefore useful to see public sector innovation put on the agenda in the 2008 Review of the National Innovation System (the Cutler Review) and, as a result of this, to see the Australian National Audit Office (ANAO) pick up on the importance of public sector innovation and produce one of their Better Practice Guides[1] on this issue. The ANAO actively sought the involvement of those with expertise on both the Australian Public Service and 'how to do' innovation (including myself). They were keen to provide a decision-support framework that would support the risk-taking required in order to innovate effectively.

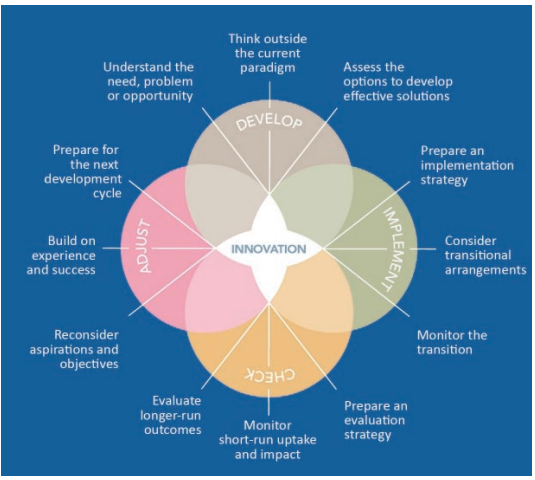

Diagram: courtesy Australian National Audit Office (ANAO); the figure, published in 'Innovation in the Public Sector: Enabling Better Performance, Driving New Directions' by the ANAO was adapted for the purpose of reproduction in the ARDR.

Consequently, the ANAO's Better Practice Guide on Innovation in the Public Sector focuses attention on governments' appetite for risk – and in particular on ways of reducing risk aversion in order to innovate.

Whilst the ANAO's work helps to put the appetite for risk more firmly onto the public service agenda it still leaves room for emphasising the importance of managing uncertainty – the immeasurable risks that can cloud our lives and the work-days of policy-makers.

The significance of the distinction between uncertainty and risk, as a challenge for governments, business and the general community, was addressed in a science policy context in a paper of mine commissioned by the Federation of Australian Scientific and Technological Societies (FASTS) and released in November 2009.[2]

The argument runs as follows. Over the last few decades public policy and public management methods have been very much concerned with the management of risk. Risk by definition is quantifiable, or if not quantifiable, something that can be 'managed'. In contrast, the preparedness perspective advocated by FASTS places far more emphasis on the need to deal with uncertainty – challenges that cannot be easily quantified, accurately forecasted or managed. Although the distinction between risk and uncertainty is not clear-cut (and is often the troubled area where policy-makers find themselves working), a strong bias towards framing the challenge as 'manageable' risk can, in practice, be distinguished from the more important challenge of handling substantive uncertainty.

Consequently, the preparedness perspective stresses the key role of governments in managing the economic, social, environmental and national security consequences of this substantive uncertainty. Preparedness also clarifies why government funding for basic research is so important: basic research, in essence, translates ignorance into risk. We explore the unknown because we want to find out more about it – human beings prefer to face risks than uncertainties because we can (attempt at least) to act rationally in response to measurable risks.

Giving preparedness a central role in science policy would counter-balance and address shortcomings in current science and innovation policy frameworks. Such a shift in emphasis would also make it easier to defend spending on capacity building in public science. In an uncertain world, the ability to respond quickly and effectively to the unforeseen is critical. Indeed, preparedness capacity is critical to setting the innovation objectives that allow us to respond to unforeseen threats.

The paper for FASTS recommends five complementary principles for giving preparedness a more central role in science and innovation policy.

1. Being more realistic and honest about limitations to forecasts and predictions, particularly in complex systems environments where simple Newtonian dynamics of linear cause and effect do not apply.
2. Making a more explicit distinction between risk and uncertainty, and doing more to understand the 'fuzzy' grey area between the two, again giving due recognition to the inherent unpredictability of complex systems.
3. Putting more effort into demonstrating how science translates uncertainty into risk and in so doing increases our levels of preparedness.
4. (Adopting 'preparedness friendly' guidelines for research funding and performance evaluation that utilise 'risk-facilitating' portfolio-based investment methods.
5. Doing more to specify how preparedness outcomes are reflected (in the short term) in greater accuracy in the estimated Net Present Value of economic assets and also (in the very long term) the challenge of being fairer to future generations.

It would be useful to build stronger inter-governmental mechanisms for sharing experiences in connecting public sector innovation to the management of uncertainty and risk.

**Dr Matthews is also a member of the new Centre for Policy Innovation at the Australian National University.*

[1] www.anao.gov.au/director/publications/betterpracguides/currentguides.cfm
[2] www.fasts.org/images/news2009/preparedness%20nov%2009.pdf