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The Royal Society of New South Wales and Four Academies Forum

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Abstract

The Royal Society of NSW and Four Academies Forum was held at Government House, Sydney on Tuesday, 15 September 2015. It was the first occasion on which the Society and the four national Academies of Australia have collaborated to consider an important issue that faces the people of NSW and the nation. This paper gives some background on why the Forum was held and the types of issues where the Society and the Academies believe that they can provide thought leadership on major challenges that face the country. The subject, "The future of work", is typical of the highly-complex socio-techno-economic challenges that face modern society. It has become clear in the last 80 years or so that the most productive approach to deal with these multidimensional "problematiques" is a dialogic one in which as many stakeholders as possible are engaged in consideration of the problem and contribution to an acceptable solution.

Introduction

On 15 September 2015, the Royal Society of NSW and the NSW-chapters of the four Australian learned Academies jointly held a forum at Government House, Sydney, to consider the future of work. Unprecedented change to the way in which we work is predicted to take place over the next 20-30 years. The inherent complexity of the challenge that faces NSW and the nation is typical of the "problematique" or the "wicked problem" that characterises many of the challenges for modern society. This paper gives some background to the forum and why the Society believes that it can add substantial value in the public discourse through engagement with the people of NSW on this and other major challenges that we face.

Structuring Complex Problems

In 1970, Hasan Özbekhan (1970) noted that many of the major challenges of the time[1] were interrelated and not capable of being solved in their own terms. For example, endemic health problems often were the consequences of poverty, environmental deterioration was linked to unbridled economic growth and crime and social deterioration in industrial cities was related to poverty and crime. He observed that these interrelationships were characteristics of "meta-problems" and "meta-systems" – they were systemic in nature and could not be solved by the accepted problem-solving paradigms that were mechanistic approaches.

[1] Other examples are environmental deterioration, poverty, endemic health problems, crime, the social issues from urbanisation and many others – he proposed a list of nearly 50 major issues in a project proposal for the Club of Rome.

Özbekhan referred to this problem type as the "problematique". Problematiques have also been referred to as "wicked problems" (Rittel and Webber, 1973) or simply as "messes". Often, they are not able to be formulated definitively and the full set of solutions has to be conceived first in order to anticipate questions and ultimate problem resolution – the standard strategic planning process does not work. Rarely, is there a clear test for the soundness of solutions and the outcomes of actions may have repercussions that flow through the system like waves. Solutions often are evaluated according to how good or bad they are and judgement of this differs among participants, according to their different views, ideologies and value-systems. Although these problems appear similar to one another, often they are unique and solutions that have worked for a similar problem may be inappropriate to the current one.

Over the last 50 years or so, a great deal of thought has been given to the nature these sorts of highly-complex socio-techno-economic problematiques that present governments world-wide with seemingly insoluble challenges. (Important contributions in this area were made by Nobel Prize winner Herbert Simon (1962), C. West Churchman (1970), Russell Ackoff (1979a,b), Mason and Mitroff (1981), Gerard de Zeeuw (1997) and Werner Ulrich (2003).)

Philosophers of science and cultural theorists have also given this matter considerable thought. It is beyond the scope of this brief, introductory paper to go into this in depth but a useful perspective was offered by Bausch and Flanagan (2013) on the way in which science has been practised and, more particularly, how it has changed in the last 70 years. They note that science has progressed through three phases: the first, being an objectivist paradigm, largely empiricist in its approach; the second that emerged in the mid-20th century that is more systemic and constructivist, recognising the influence of human behaviour; and a third, is from the late 20th century and is influenced by post-modernist thought that accepts subjective, individual interpretations of the system under examination.

The first phase dates from the very beginnings of Western philosophy, from the time of Plato and further developed by subsequent Arab and Scholastic philosophers. It is built on the notion of there being an objective world that can be observed and analysed through our senses and their consequent perceptions. This was further reinforced by Descartes and his separation of physical things from the mind. This approach is built on the notion of an "independent observer".

The second phase emerged in the mid-20th century as science itself was just coming to terms with the notion of uncertainty (for example, Heisenberg's uncertainty principle in the physical sciences[2] and the difficulty in finding any means to true objectivity as the social sciences developed). The nascent management science profession noticed that the very presence of observers changed human behaviour in social systems. Psychology and sociology attempt to imitate first-phase science in trying to transfer objective understanding from one situation to another but recognising that such a transfer will fail in many situations. Put differently, it aims to transfer context with the object. This is achieved through constructing a narrative that attempts to link the object and its connection to ideas. The central concept can

[2] In quantum mechanics, the concept of an independent observer does not exist because the very act of observation disturbs the system.

be thought of as attempting to define objects in some sort of qualitative standard deviation from a definable mean.

Third-phase science does not accept the Cartesian notion of an independent observer embedded in the concept of first-phase science neither does it accept the second-phase science notion of some probabilistic essence that is distilled from context. Rather, it is based on the concept that the object can only be represented as an aggregation of all individual subjective interpretations of the object and its context.

The solutions to the highly-complex problems identified by Özbekhan cannot simply lie in scientific investigation in the absence of the domain of interests involved in the problem nor can successful policy be developed in the absence of rational, objective analysis. These problems can only be solved by recognising their "systems" nature and the non-linear responses of the system to disturbances. There can be no independent observer nor can there be satisfactory policy responses without the active engagement of stakeholders and interest groups. There must be a dialogue around the subject and this must include representatives from all fields of knowledge: the sciences, the technological sciences and engineering, the social sciences and the humanities.

The Role of the Society

Over the last several years, the Society has been examining ways in which it could increase its relevance to the intellectual life of NSW in the 21st century, returning to the position of influence that it enjoyed in its first 150 years. The Society was formed to advance knowledge in the fields of science, art, literature and philosophy, yet for most of its history it has focused its activities predominantly on the physical sciences. When the Council considered the challenges posed by the highly-complex issues outlined above, it realised that should the Society return to the breadth of its original charter, it would be uniquely placed to make a major contribution to the solution of these types of problems. Furthermore, the Council of the Society formed the view that to collaborate with the NSW-based chapters of the four national Academies could provide an exciting opportunity for Fellows and Members of the five organisations to exchange ideas on issues that are important to the people of NSW and, more importantly, to extend the discussion into the broader community. With that in mind, we approached the Academies and found them very enthusiastic about the concept. A steering committee was formed and planning the first The Royal Society of NSW and Four Academies Forum got underway. The committee gave considerable thought to a topic and eventually agreed upon "The future of work".

The Future of Work

In 1930, at the start of the Great Depression, John Maynard Keynes (Keynes (1930)) projected that within a hundred years, we would be working 15-hour weeks on much increased incomes – the biggest problem we would face would be how to spend our leisure time. He cautioned however that this was a long-term view and there were a great many challenges to overcome before this utopic future would be achieved. Eighty years later, former US Treasury Secretary, Lawrence Summers, revisited the topic noting that he did not have the prescience of Keynes and could only look forward not two but one generation (Summers, 2013). Summers pointed out that Keynes got some things right but others were quite wrong. In particular, was that as the distribution of income and wealth increased, the need for skilled labour

would be diminished. A lot has to happen for Keynes' prediction to come true within his 100-year time-frame. Summers is but one of many commentators expressing concern about the potential impact of data-processing technologies on employment.

Technological advances of the 20th century impacted manufacturing processes either directly or indirectly through automation. The biggest effect of this has been felt in the last three decades, with the displacement of unskilled labour, either by developed countries "off-shoring" manufacturing to low-labour-cost countries or by automating manufacturing processes in high-cost, developed countries. In most developed countries, unemployment caused by the displacement of blue-collar workers was compensated for by growth in employment in service industries. But in many countries, although unemployment rates have stayed largely steady (with relatively brief periods of high unemployment during periods of recession), "non-employment" has been increasing, particularly among 25-54-year-old workers – the participation rate has been falling. Fortunately, this has not been the case in Australia where both unemployment and non-employment have been relatively steady and relatively low. But is this about to change?

Two years ago, a study published by Carl Frey and Michael Osborne, two researchers at Oxford, attempted to estimate the probability of about 700 occupations in the US being susceptible to substantial disruption by data-processing technology (Frey and Osborne, 2013). They forecast that up to 40% of white-collar jobs may disappear in the next 20-30 years. The difference between this wave of technological advance and the last will be its broad front. In the last 50 years, it was unskilled labour whose lives were most disrupted. But this will not be the case this time – the full spectrum of work will be affected.

The Forum

The Royal Society of NSW and Four Academies Forum, "The Future of Work" considered the work environment over the next 20-30 years and identified challenges and opportunities that might present themselves as this unprecedented wave of technological, social and economic change approaches. The themes explored were:

- The digital divide,
- Emerging information technology and white-collar job replacement,
- The impact of technology on human creativity,
- The stratification of society and the emergence of new social classes,
- The rate of social and cultural change,
- The implications of big data,
- Teaching for the future.

The Forum was the first occasion on which the Society and the four Australian learned Academies have collaborated. The aim of this event was to provide an opportunity for Fellows of the four Academies and the Society to meet together to discuss an issue of importance to the people of NSW and the nation.

When the Vice Regal Patron of the Society, the Governor of NSW, His Excellency General Hurley, was briefed on the project, he gave his most enthusiastic support and generously offered to host the event at Government House, Sydney. The Society and the Academies appreciate greatly his interest and commitment to the on-going programme expected to emerge from this event.

Participants were requested to complete a survey after the Forum and feedback was extremely positive. It is anticipated that a further programme will be developed to extend discussion into the broader NSW community and that the Society and the four Academies will embark upon analysis of other problematiques in the future.

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