INTRODUCTION

The ethical and social imperatives of dialogue for public engagement in technoscience: trends in Asia–Pacific governance

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ABSTRACT: The Asia–Pacific region is an emergent and important arena in the development of technology and science. However, until recently there has been little critical analysis of the emerging technoscientific governance that is embedded in the region's socio-political, cultural and economic contexts. This Theme Section addresses concepts such as 'scientific citizenship', 'expert–lay interaction', 'participatory risk governance' and 'public engagement' in order to stimulate discussions on the social and ethical issues which need to be tackled when introducing new technologies in this region.

KEY WORDS: Asia–Pacific · Science, technology and society · Public engagement dialogue

The Asia–Pacific region is an emergent and important arena in the development of technology and science. Given the burgeoning interest within the region in science and society issues, it is surprising that little effort has been made to date to bring together studies from and about this region in the Science, Technology and Society (STS) literature. With a few notable exceptions, such as *Eubios Journal of Asian and International Bioethics* and *East Asian Science, Technology and Society* (including Du Plessis et al. 2010), the literature coming out of this region has often been treated as simply part of the larger body of scholarship developed in the USA and Europe, and has not been recognized as representing Asia–Pacific perspectives specifically. Especially lacking is critical analysis of the emerging technoscientific governance that is embedded in the region's sociopolitical, cultural and economic contexts. Critical reflection is important at this juncture

because after more than a decade of Asia–Pacific STS there is now sufficient experience and knowledge to warrant an appraisal of regional trends. Technoscientific governance in the Asia–Pacific region — including institutional arrangements, new networks and forms of public participation, and novel management of risk and innovative communication — may not necessarily be the same as in the USA or Europe, and yet many previous studies appear to have proceeded from the assumption of a single universal notion of technoscientific governance.

This Theme Section (TS) addresses several important and well established concepts such as 'scientific citizenship', 'expert–lay interaction', 'participatory risk governance' and 'public engagement' (see for example Irwin 1995 and Hagendijk & Irwin 2006), in the hope of opening an avenue for further discussions on technoscientific governance in the Asia–Pacific region and wider reflections on international

practice. These analyses sensitize us to the social and ethical issues which need to be addressed when introducing technologies into society. Social and ethical issues frequently surface through processes of public engagement or the lack thereof, often demanding at least as much attention as the technical dimensions which are usually the main focus of risk assessment or technology assessment. In particular, this TS considers the use of dialogue engagement methods to address social and ethical issues, thereby raising a challenge to conventional engagement practices which have tended to replicate asymmetrical relationships between stakeholders in the governance sphere, and in which science and society relations are dominated by the scientific world view (Cronin 2010).

The TS is based on themes developed at 2 events held in Tokyo in August 2010: first, a meeting of Japanese and New Zealand STS scholars focused on nano-foods and dialogue engagement (see www.esr. cri.nz/competencies/socialscienceandsystemsthink ing/Pages/Japan-NZSTSResearchWksp.aspx); second, a session on engaging the public in technoscience in the Asia–Pacific region held at the international STS conference run by the Asia–Pacific STS Network (see http://4sonline.org/files/print_program 0903.pdf, Item 145, p. 186). We are pleased to have a number of papers in this TS that will collectively advance our knowledge of technoscientific governance in the region. The papers selected describe a variety of engagement interventions in the real world, involving citizens, interest groups, scientists, experts, industry, and government. The case studies are from Australia, Taiwan, Japan and New Zealand, with analyses that cover the gamut of modern technologies: nanotechnologies, electromagnetic field emitting technologies, life sciences technologies, and pollution control. All of the studies include analysis of the social and ethical dimensions of technoscientific governance and assess the unique issues appertaining to each country.

During the last decade, there has been increasing recognition within the region of the notion of 'scientific citizenship': the idea that citizens should not only be informed about science but should be actively engaged in some way with the process of scientific and technological change. Petersen & Bowman (2012, this TS) critically examine this notion within the Australian context. They suggest that loosely defined notions such as 'scientific citizenship' and 'public engagement' are susceptible to appropriation by interested stakeholders with differing agendas or needs. Interviews with Australian policymakers, sci-

entists and members of non-government organisations, all of whom have a stake in the development and/or introduction of nanotechnology, confirm their observation that it is unlikely that the apparent promise of 'public engagement' will be fufilled because of an absence of opportunities for dialogue between the sponsors of technologies and publics, a lack of commitment to all facets of engagement and a lack of receptivity to the concerns raised by citizens during the engagement process. These observed shortcomings make it more difficult for citizens to shape and/or influence the trajectories of technoscientific development.

In a case study concerning the siting of meteorological radar, Kao (2012, this TS) describes experiences in Taiwan where local residents subjected to health risks were excluded not only from the decision-making processes that determined the site but also from critical information that might have been important in figuring out the causes of health problems. When the information was disclosed to the residents by a third party, the mode of communication that the Taiwanese government adopted was a 'deficit model' in which the public was framed as unqualified to formulate or evaluate substantive concerns about the safety of the installation. It was made clear that the government did not intend to engage in discussion and, further, that the government did not wish to publicly acknowledge that there were areas of scientific uncertainty around safety. Instead, the government issued statements that greatly oversimplified the current state of scientific knowledge. Kao (2012) points out lessons that may be drawn from this case with respect to government policies on communication with the public, and the impact of those policies on public trust.

In contrast, Kaji (2012, this TS) explores a situation in which the public was able to lay claim to expertise in an effort to address a pollution problem that had led to serious health consequences. Kaji (2012) focuses on the roles that experts, including 'outside experts' who were sympathetic to the concerns of the public, played in what he characterizes as a rare example of successful pollution control in Japan. Central to this, in his analysis, was the participation of a wide range of experts and local residents who were able to take part in decision-making processes pertaining to the pollution control efforts. While the case study suggests that efforts by local residents (along with support from experts who sympathized with them) paid off in the end, the process was painfully protracted. Had there been a mechanism through which the public could have been brought to

the table earlier for effective consideration of the appropriate course of action, the number of victims could have been much smaller and damages less extensive.

While Kaji (2012) reflects on events spanning decades of history, Tachikawa (2012, this TS) takes a look into possible future developments, exploring issues that may arise in the undertaking of public engagement programs concerning nanotechnology. Public engagement programs that deal with technoscience in the early stages of development are usually fraught with multilayered uncertainties — scientific, regulatory and social — and face numerous challenges, including great variability in how issues are perceived and treated by experts and a similarly high degree of variability of perceptions among the lay public. Tachikawa (2012) examines how uncertainties are interpreted and stakes are perceived with respect to nanotechnology-derived food. This author's paper forces us to consider the important ethical question of which segment of the public we engage when designing public engagement programs intended to facilitate participatory risk governance, and it compels us to consider which stage(s) of development represent an appropriate juncture at which to engage the public.

The general theme of community engagement is picked up by Macer (2012, this TS), drawing on examples from his experience of working in Japan for 2 decades. First, he recalls experiences of the community engagement surrounding the collection and maintenance of the Japanese samples for the Haplotype Mapping Project, deposited in the Corriell Repository in the USA. Despite the efforts made for engagement in that international science project, there is still little public interest in decisions involving other (even larger) human genetic sampling projects. Even with high public acceptance of science and technology, and mixed perceptions of benefit and risk, he suggests there is little community engagement in science and technology decisions in Asia. Environmental risk assessment is the second area discussed, with general reflections on public governance of technologies in Asian countries. Macer (2012) then considers the lessons for the future from more recent events, such as how governments can include community opinion in responses to the Fukushima nuclear accident, and in decisions relating to energy technologies, including involvement of indigenous communities whose land is sometimes used.

Finally, Cronin & Winstanley (2012, this TS) draw attention to another future trend, i.e. 'public engagement' as enacted by scientists rather than as traditionally enacted by policymakers or regulators. Adding to an emerging international literature on scientists' communication practices, they document recent initiatives by 'life scientists' in New Zealand, including individual scientists and science organizations, to seek engagement with external stakeholders. Their paper highlights a disparate range of beliefs, motivations and methods for engagement, including conventional approaches that problematize the citizen's responsibility to 'engage' and newer approaches which reflect greater responsiveness to the social context of science. The authors suggest that the 'life skills' that contribute to greater scientific reflexivity are conducive to both personal and organizational learning.

Collectively, these papers highlight the practices required for ethical public engagement, and the ethical dimensions implicit in new technologies as they impact the public and other stakeholders.

Public engagement interventions are in themselves a form of ethical practice in technoscience governance, but the techniques and outcomes of engagement do not always meet the standards and principles implied by the idealized notion of ethical governance.

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