Senate Standing Committees on Economics
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31 July 2014

Dear Secretariat,

Submission to the Inquiry into Australia's Innovation System

The Australian Academy of the Humanities welcomes the opportunity to provide a submission to the Inquiry into Australia's Innovation System.

The Academy is one of Australia's four Learned Academies, established to advance knowledge and the pursuit of excellence in the humanities for the benefit of the nation. A key role of the Academy is to provide independent expert advice to government and policy makers, promoting the social significance of humanities scholarship and its vital importance in shaping effective public policy.

The Academy is currently involved in a number of projects with a focus on Australia's research and innovation system, and has made previous submissions to government inquiries and reviews of note to the present Inquiry. Relevant references are attached. In this brief submission, we draw out four key messages:

1. Adopt a broad view of innovation

Australia's innovation system involves many component parts and relationships – as reflected in the Inquiry's Terms of Reference – including infrastructure, resources, sectors (public, private, not-for-profit), personnel, working conditions and environments, and research, education and training systems.

Australia needs to adopt a broad view of innovation that explicitly acknowledges the fundamental role of non-technological innovation. "Innovation involves more than technical skills. It also needs people who understand systems, cultures and the way society uses and adopts new ideas".[1] That is a key finding of a recent report on the role of science, research and technology in lifting Australia's productivity published for the Office of the Chief Scientist by the Australian Council of Learned Academies (ACOLA), and involving all four Learned Academies.

[1] Bell, J, Frater, B, Butterfield, L, Cunningham, S, Dodgson, M, Fox, K, Spurling, T and Webster, E (2014). *The Role of Science, Research and Technology in Lifting Australia's Productivity*, Australian Council of Learned Academies. Available from http://www.acola.org.au/PDF/SAF04Reports/SAF04%20Role%20of%20SRT%20in%20lifting%20Aus%20Productivity%20FINAL%20REPORT.pdf

Australia cannot pursue technical solutions in isolation from the social and cultural perspectives needed to bring products and new kinds of knowledge to markets and publics. If the science, technology, engineering and mathematics (STEM) disciplines contribute numeracy and technological proficiency, it is the humanities disciplines – together with arts and social sciences – that deliver Australia's literacy skills and knowledge of social systems, governance structures, community habits, beliefs and behaviours.

Calls for moving beyond a narrow technologically conceived notion of innovation have been very strongly heard in Europe through the social innovation literature. This work shows that even technologically impressive innovations often fail to find traction in the life of communities. Innovations which take into account the social context of change, and which are designed from their inception with humanistic and sociological considerations in mind, tend to be adopted more quickly, to impact more deeply on society and to more efficiently interact with existing ways of doing things. Human values, practices, and arts and artefacts are not merely the support context for the adoption of technology but are the grounding in which the possibility of innovation itself arises.

2. Foster the skills sets and mixes that lead to innovation

Opportunities and challenges for Australia's 'economy in transition', in the context of rapid and deep globalisation, require research, education and public policy practices that are themselves more innovative than past models allow. The Academy encourages the Inquiry to recognise the humanities, arts and social sciences (HASS) fields as drivers of innovation.

In global corporations such as Intel, the work of cultural researchers is fundamentally changing the way the company conceptualises, plans and develops its platforms so they "are centred on people's needs rather than simply silicon capabilities"(Genevieve Bell, an Australian-born Anthropologist, Director of User Experience Research at Intel Corporation). In countries such as South Korea, the government is explicitly investing in reforming STEM curricula to include arts-based training for science and engineering students with very promising results. Indications are that that the fusion of Science, Technology, Engineering, Arts and Mathematics (STEAM) education "benefits students' motivational development: interest, self-efficacy, scientific attitudes, achievement, divergent thinking, and even enrolment".[2]

In Australia, research conducted as part of the ACOLA productivity report is the first of its kind to undertake mapping of the "on-the-ground, actual mix of knowledge (and discipline) input into Australia's most productive enterprises, companies and sectors". Led by Professor Stuart Cunningham FAHA, this research sought to redress data deficits and provide better analytics on innovation itself: "we don't know empirically about how disciplinary knowledges interact in complex contemporary industry situations".[3] Companies included in the study were Resmed (medical devices), Cochlear (medical

[2] Jae-Eun Jon and Hae-In Chung (2013) 'STEM Report – Republic of Korea', p.25. Available from http://www.acola.org.au/PDF/SAF02Consultants/Consultant%20Report%20-%20Korea.pdf

[3] Stuart Cunningham (2013) 'An Innovative Workforce to Meet Australia's Future Needs', paper prepared for workshops in August 2013 (Perth, Brisbane and Adelaide), for Securing Australia's Future, ACOLA Project 4: *The Role of Science, Research and Technology in Lifting Australia's Productivity*.

devices), Invetech (design for manufacturing), Halfbrick Studios (games, mobile applications), MBD Energy Limited (waste management), and Westpac.

Westpac's Chief Experience Officer, Ian Muir, states that humanities expertise "may help bridge the divide that seems to exist between business thinking and design thinking" (p166). In the case of Cochlear, the report concludes that while technological innovation is central to its operations, a "diverse range of disciplines and collaborations is vital to Cochlear's success", including design thinking, studies on social isolation, communication and community engagement, and cultural diversity (p98). Cunningham's work shows that high tech, high skill industries in Australia foster HASS and STEM skills mixes to great effect, to address complex problems in the context of enhancing productivity and enabling companies to grow through exports.

The current industry tax concessions for R&D expenditure explicitly exclude research in the humanities and social sciences from core R&D activities, thereby restricting opportunities to engage in collaborative and industry-based research. Government policy in this area should be reviewed with a view to examining the efficacy of these provisions to ensure that cultural industries, digital R&D, design for social innovation, and future service-oriented industries embracing social enterprises are not disadvantaged by these tax arrangements.

3. Social and cultural innovation will be as important to Australia as technical and technological innovation in the years ahead

If Australia is to continue to be, and be recognised globally as, a progressive, innovative and dynamic society, its community-based comparative advantages in services such as education, research, tourism and cultural industries, need to be cultivated. Multidisciplinary inputs into the whole range of social and economic fields will ensure a more robust and effective policy framework. This is true across a range of areas such as economic productivity, ageing demographics, international diplomacy, education effectiveness, and the application and take-up of technology.

In the context of Australia's trade/economic engagement in Asia Pacific region, the Business Council of Australia recognises that skills deficits in languages and cross-cultural skills training are holding us back: "Despite our growing presence in the region, our experience and understanding of the cultures, languages, behaviours and customs of emerging economies in Asia requires continual deepening".[4] It is not only a skills deficit, however; what is needed as well, and what the humanities provide, is the broader understanding required to deal confidently and appropriately with a wide range of different cultural and social values.

In the population health arena, one of the key areas of growth is understanding the cultural and social determinants of health. The talk of 'bench to bedside' is currently framed too narrowly: it is bench to bedside to policy to legislation to implementation to resistance and back to bench again. This is where humanities expertise will be required to play a much bigger part.

[4] Business Council of Australia (2013) *Action Plan for Enduring Prosperity Australia*, p.30. Available from http://www.bca.com.au/Content/102254.aspx

4. Facilitating innovation in university research and education serves communities

Basic discovery-led research across the disciplines gives our system its core capacity; it underpins discovery and innovation, provides the platform for multidisciplinary approaches to problem-based research, and ultimately enables Australia to prepare for and respond to unforeseen societal challenges, emerging opportunities, and evolving community expectations.

Universities play a vital role in knowledge production, and deliver education and research training for the future workforce. In the United States, a report produced by the US National Academy of Science emphasises the need to support "the comprehensive nature of the research university" across the full gamut of disciplines, including the humanities "that enable it to provide the broad research and education programmes required by a knowledge- and innovation-driven global economy'.

The system needs to invest in infrastructure to support humanities research, including digital networks, and in support of growing community expectations. While there has been substantial government investment in research infrastructure through the National Collaborative Research Infrastructure Strategy (NCRIS) and Super Science schemes over the past decade, the humanities' share of this budget has been negligible. In the US and Europe, however, major infrastructure investments in the social and cultural research sector have been made in the past five years. The failure to invest here has kept the Australian humanities community out of collaborative international engagements, and their leveraging opportunities.

Investment in humanities infrastructures is critical to support research, but it also has direct application for the broader public. Australian communities have developed a thirst for literary, legal, historical, genealogical and social databases readily accessible from kitchens to classrooms. Meeting community demand in this area requires innovative and cost-effective solutions through research and development of appropriate information infrastructure.

The Academy would be very pleased to elaborate on any of the observations contained in this brief submission. Please direct your initial queries to the Academy's Executive Director, Dr Christina Parolin via email to christina.parolin@humanities.org.au or phone on (02) 6125 9860.

Yours sincerely,

Professor Lesley Johnson AM FAHA
President

ATTACHMENT

For the Committee's reference we attach a list of research of note to the Inquiry that the Academy is involved with, which points to the need to develop a better understanding of how Australia's innovation system works and ways to maximise the participation of humanities fields of education and research.

Securing Australia's Future programme

The Australian Academy of the Humanities is currently collaborating on a series of multi-disciplinary research projects with the other three Learned Academies, in consultation with the Office of the Chief Scientist, to advise the Prime Minister's Science, Engineering and Innovation Council on long-term challenges facing the nation.

The projects are:

- Project One: Australia's Comparative Advantage
- Project Two: STEM: Country Comparisons (completed)
- Project Three: Asia Literacy: Language and Beyond
- Project Four: The Role of Science, Research and Technology in Lifting Australia's Productivity (completed)
- Project Five: New Technologies and their Role in our Security, Cultural, Democratic, Social and Economic System
- Project Six: Engineering Energy: Unconventional Gas Production (completed)

Mapping the Humanities in the Asia Region

In June 2014, the Australian Academy of the Humanities was awarded funding under the Australian Research Council's Learned Academies Special Projects (LASP) Scheme to undertake a study entitled 'The Humanities in the Asia Region: research capacities and opportunities for international collaboration'. The project will examine research capacity, priorities and trends, and policy developments in the humanities in a select number of Asian countries. It will also examine Australia's capability in Asia subject expertise, and the level and nature of research collaboration between researchers in Australia and Asia.

Mapping the Humanities and Social Sciences in Australia

The Mapping the Humanities and Social Sciences in Australia report has been jointly funded by the Australian Academy of the Humanities, the Academy of the Social Sciences in Australia, the Commonwealth Department of Industry, and the Office of the Chief Scientist. Due for public release in October 2014, the report provides comprehensive information about the current condition of the humanities, arts and social sciences disciplines in the higher education system, which will assist in determining what they are currently able to deliver and how well they are able to respond to the changing needs of the nation.

Policy submissions

The Academy has made a number of submissions to previous government inquiries and reviews of note to the current Inquiry:

On skills development, workforce innovation and research training:

- Future Focus: Australia's Skills and Workforce Development Needs Discussion Paper, see http://www.humanities.org.au/Portals/0/documents/Policy/Submissions/text/POL2012_3.pdf
- Defining Quality for Research Training in Australia Consultation Paper, see http://www.humanities.org.au/Portals/0/documents/Policy/Submissions/text/POL2011_7pdf.pdf
- Department of Industry, Innovation, Science and Research (DIISR) Consultation Paper: Meeting Australia's Research Workforce Needs, see http://www.humanities.org.au/Portals/0/documents/Policy/Submissions/text/POL2010_3.pdf

On research infrastructure development:

- 2011 Strategic Roadmap for Australian Research Infrastructure Exposure Draft, see http://www.humanities.org.au/Portals/0/documents/Policy/Submissions/text/POL2011_5.pdf
- 2011 Strategic Roadmap for Australian Research Infrastructure Discussion Paper http://www.humanities.org.au/Portals/0/documents/Policy/Submissions/text/POL2011_4.pdf
- National Research Infrastructure Council (NRIC) Discussion Paper: A Process to Identify and Prioritise Australia's Landmark Research Infrastructure Needs, see http://www.humanities.org.au/Portals/0/documents/Policy/Submissions/text/POL2011_1.pdf

On research and innovation, including mechanisms to improve the contribution of humanities fields:

- House of Representatives Standing Committee on Industry, Science and Innovation Inquiry into Australia's International Research Collaboration, see http://www.humanities.org.au/Portals/0/documents/Policy/Submissions/text/POL2010_1.pdf
- Treasury's Consultation Paper: The New Research and Development Tax Incentive, see http://www.humanities.org.au/Portals/0/documents/Policy/Submissions/text/POL2009_6.pdf
- Review of the National Innovation System, see http://www.humanities.org.au/Portals/0/documents/Policy/Submissions/text/POL2008_2.pdf