Australian Academy of the Humanities Submission to *Boosting the Commercial Returns from Research* Consultation Paper

November 2014

The Australian Academy of the Humanities welcomes the opportunity to comment on the *Boosting Commercial Returns from Research* consultation paper (the Paper). As one of Australia's four Learned Academies, 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 appreciates the opportunity to comment not only on the Paper's proposal to increase commercial returns from research, but also the wide ranging issues for research and education policy it canvasses, including competitive grant funding, research infrastructure, engagement metrics and research workforce training.

The Academy has a strong interest in the effective utilisation of Australia's research and innovation capacity. We agree that there is potential for significant mutual benefit to accrue from greater collaboration between researchers from across the disciplines with industry, but importantly also with other end users.

However, we are deeply concerned that the plan for the research sector as currently sketched in the Paper, and the narrow definitions of 'industry' and 'innovation' employed in it, will not only have a detrimental effect on the range of research conducted in Australia, it will limit the potential of the entire research sector to contribute to the aim of increasing the social, cultural and economic benefits and outcomes from publicly funded research. While the Paper focusses fruitfully on the tactical alignment of Australia's research institutions with industry it needs to take greater account of the larger strategic settings of research.

1. The Government's aim should be to maximise the social, cultural and economic benefits returns from publicly funded research

Not all research has a commercial aim, application or return. A narrow focus on increasing commercial returns, in isolation from a broader policy for research, risks

damaging the research system's ability to deliver economic, social and environmental benefits to the nation – this broader view of the translation of research should be the primary aim of a publicly funded system.

A key concern here is the Paper's silence on the importance of basic research. If pursued without regard to a broader vision for higher education and research, an emphasis on boosting the commercial returns from research will come at great cost to fundamental basic research, which gives the system its core capacity and ultimately underpins discovery and innovation.

The Productivity Commission's 2007 review acknowledged that "even though much basic research is not directed at developing new or improved products or services (in the short term), it often plays the most crucial role in supporting successful innovation over the medium to longer term".[1] The Business Council of Australia concurs: "Evidence demonstrates that investment and funding of basic research contributes positively to long-run innovation outcomes. We need to ensure that we continue to invest in growing our stock of knowledge, which takes time to develop".[2]

The commercial contribution of basic research should not be underestimated. Even without producing a direct commercial outcome, basic research contributes to the development of high quality human capital for the Australian economy and provides a foundation for Australia's research engagement internationally, from which commercial outcomes may be derived.

2. Narrow conceptions of 'industry' and 'innovation' will limit Australia's capacity to reap the full benefits of publicly funded research

The government must adopt broad definitions of innovation and of industry to drive policies around industry-researcher engagement.

Industry

Translating research into social and economic benefits will involve multiple partners and end users. Australian researchers should be encouraged to collaborate more effectively with a range of end-user groups: including private sector, not-for profit, community groups, and public sector organisations. A narrow focus on private business will limit Australia's capacity to reap the full benefits of publicly funded research.

Innovation

The Business Council of Australia has called for a "mindset change in how government conceives of innovation, and how it mobilises the system to create a more agile, creative and competitive economy".[3]

Australia must adopt a broad view of innovation which explicitly acknowledges the fundamental role of non-technological innovation. Pursuing technical solutions in isolation from the social and cultural perspectives will hamper the process of bringing products and new kinds of knowledge to markets and publics.

As the Academy's submission to the latest Senate Innovation Inquiry argued, the latest innovation literature concedes that even technologically impressive innovations often fail

to find traction in the life of communities.[4] 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.

3. Humanities, arts and social sciences (HASS) capabilities are integral to innovation and competitiveness

Industries and organisations that wish to innovate therefore need access to researchers who "understand systems, cultures and the way society uses and adopts new ideas".[5] This is HASS knowledge. 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.

The HASS sector constitutes half of Australia's research and teaching sector. It makes a major contribution to the national higher education, research and innovation system, and to preparing our citizens for participation in the workforce. The Government must therefore consider the expertise, capacity and contribution of the HASS sector to inform national policies for investment in science and research, including ways to improve collaborations with industry.

It is clear from the recent address of the Chinese President, Xi Jinping, to the Australian Parliament, that business and culture are inextricably linked for this key trade partner.[6] Australia is home to HASS scholars who are internationally recognised experts in the cultural, economic and political systems of the Asia region, and in the fields of digital societies and economies. Harnessing this expertise via research-industry collaborations is vital to growing Australia's economy.

HASS disciplines also show a strong record of collaboration across the private, non-profit and public sectors.[7] For example, the range of partner organisations involved in HASS ARC Linkage projects over the period 2005-13 included: State and Local Government 31.6%; Non-Profit Australian 21.8%, Private Company Australian 20.3%; and Commonwealth Government 9.2%.

Archaeology is one example where humanities researchers are working directly with industry partners, which is of fundamental importance to mining and the development of requisite heritage management studies as part of environmental impact assessments. The identification, development and use of both Indigenous and historical sites presented in the context of archaeological research are of great value also to the tourism industry.

The Government's Industry Innovation and Competitiveness Agenda singles out services as a growth sector for Australia.[8] Professional and financial services, health, education and tourism services are all areas of growth for Australia, with great potential for industry players to build research partnerships with universities to pilot and test

innovative partnerships to find cost-effective solutions for critical issues in ageing, disability, health, unemployment, and related services.

High quality services that deliver productivity benefits at home can in turn lead to export opportunities in the form of service industries increasingly required in the Asia Pacific region, for example in health and aged care.

Research also suggests that innovative companies foster HASS and STEM skills mixes to great effect. A recent report from the Australian Council of Learned Academies (ACOLA), *The Role of Science, Research and Technology in Lifting Productivity*, found that cross-sectoral collaboration leads to "innovative solutions to problems; development of commercial products; collaboration with community services; more diverse education opportunities; and a more engaged public and end-users".[9]

The project also conducted new research on high performance, technologically innovative companies and found that productivity gains based on innovation, including company growth through exports, rely on a mix of HASS and STEM skills.[10] 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 (p. 98).

4. 'Returns' from research should not be defined simply as income, but also as savings

In terms of boosting commercial returns from research, 'return' should not be defined simply as income, but also as savings. The value of the public good CRC programmes demonstrate this point: for example, the Young and Well CRC which is achieving improved mental health outcomes resulting in a reduction in medical, carer and welfare costs; decreased medical costs and lives lost from substance abuse and violence by young people; reduction in lost productivity due to days absent from education or work; and reduction in social isolation and improved quality of life for young people, their families and communities.

It is important to recognise that these savings come from a broad range of sources. Research on religion might seem to have little relevance to the issue of the commercial returns from research, but social tensions rooted in part in religious and cultural prejudice can become a major drain on society's resources. At one extreme are the costs incurred through acts of terrorism and the monitoring of persons of interest. Misunderstandings, tension and conflict in relation to religions with which people are unfamiliar cannot be measured in monetary terms alone, but indirectly or directly have significant financial consequences.

5. Proposed incentives to encourage researcher-industry engagement should aim to capitalise on the full range of research and end-user groups

Any government programmes that encourage industry-researcher engagement should therefore be open to researchers across the board, and to a wide range of private and public sector companies, if the nation is to benefit from the full range of expertise vested in Australia's research community. These should not be a one-way street. While the Paper puts the onus on researchers to drive engagement, incentives for industry will be equally important and require meaningful consultation with a full range of 'end users'.

The access of humanities disciplines to collaboration based funding schemes should be broadened to allow the full benefits of multidisciplinary and cross sector collaboration to flow to the broader Australian economy and community.

On this point we would single out one structural impediment in particular. The HASS disciplines are specifically excluded from the R&D Tax Incentive programme, which represents over a quarter of all public investment in R&D. 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 and effectively acting as a barrier to industry engaging with half the research sector.

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.

Engagement metrics

The Academy is aware of proposals to include impact metrics in future research assessment processes, and the Paper refers to the prospect of "reshap[ing] research grant incentives" to encourage research-industry collaboration. While the Academy recognises the need to incentivise both researchers and industry to encourage collaboration, there is a risk that such initiatives will tie research to short-term agendas.

Unless carefully thought through, and with extensive consultation with the sector, there is a risk that impact measures will force researchers to chase industry funds without regard to the quality of those engagements, and with few incentives to encourage researchers to form genuine partnerships with industry, or to collaborate with business and other partners relevant to the objective of achieving significant economic, environmental and social benefits.

Any mechanism to encourage research collaboration with industry needs to be attuned to discipline-specific practices. STEM and HASS disciplines differ significantly in research output and industry engagement practices. Recognition of these differences would be essential to the establishment of workable metrics on engagement and knowledge transfer.

The need for careful consideration of such metrics is borne out internationally. In the UK an independent review of the role of metrics in research assessment is currently being conducted by the Higher Education Funding Council of England (HEFCE).[11] The use of metrics is a "potential method of measuring research quality and impact in some fields, though how best to do this is still the subject of considerable debate" (p. 1).

The rigour of the exercise, and the sector's faith in any new system, will be highly contingent on the adequacy of the data collected and assessment processes in place.

Research Infrastructure

The Paper gestures towards a proposal that future research infrastructure development will be driven by the objective of increasing collaboration between researchers and industry. There will be times when it is appropriate that industry-research collaboration leads the development of specific research infrastructure, but a *national* infrastructure capability must ultimately address the broader national research agenda, which includes the public good objectives and outcomes. The Government must take a long-term view of the public good benefits of research. This includes the public responsibility of risks in national benefit research that private interests may find prohibitively speculative. The Academy agrees with the Chief Scientist's position that "Australia's record confirms that upfront costs and uncertain outcomes can too easily deter business support for basic research, ideas perceived to be risky and the large scale research infrastructure for growth. Government action is required to address such market failure and supply the 'patient' capital for fundamental, curiosity-led, research".[12]

6. Conclusion

The Government must take a whole-of-system approach to education, research and infrastructure planning and investment. There is a risk to the overall health of the system, and its potential to deliver the social, economic and environmental benefits to the nation, if higher education and research policy is segmented along discipline lines or by aims to improve outcomes in one area without keeping the broader system in view.

The Academy remains concerned that there is no long-term planning being undertaken for the research and science sector as a whole. We have publicly voiced our concerns that Government currently has no formal mechanism for gaining a whole-of-system view on areas of national research strength and current and future capability. The omission of humanities expertise – and the arts and social sciences more broadly – from the new Commonwealth Science Council (CSC) risks narrowing the scope of its advice. This is particularly pertinent given the CSC will be making determinations about Australia's national research priorities (p.11) – a task which must be informed by expertise from across the full spectrum of disciplines.

The Academy is aware that there will be other advisory mechanisms feeding into the CSC but we remain concerned that the decision-making at the highest level will lack authoritative input from an entire half of the research sector. This would seem counter-productive given the multi-disciplinary and multi-sector collaboration needed to tackle the sorts of long-term challenges Australia faces – such as future technological change, an ageing population, lifting productivity, or developing alternative energy sources.

Finally, in order to have the confidence of the research sector and to protect the overall health of the system, any changes to research assessment processes, grant incentives, research training, distribution of research block funding, or national research priorities, need to be outlined in detail, and be subject to extensive consultation.

The Academy would welcome the opportunity to be involved in further consultation, and would be pleased to elaborate on any of the observations contained in this submission.

Notes

[1] Productivity Commission (2007) *Public Support for Science and Innovation*, Australian Government, p. 7. Available from http://www.pc.gov.au/__data/assets/pdf_file/0016/37123/science.pdf
[2] Business Council of Australia (2014) *Building Australia's Innovation System*, p. 17. Available from http://www.bca.com.au/publications/building-australias-innovation-system
[3] Business Council of Australia (2014) *Building Australia's Innovation System*, p. 1.
[4] Australian Academy of the Humanities (2014) Submission to Submission to Senate Inquiry on Australia's Innovation System, p. 2. Available from http://www.humanities.org.au/Portals/0/documents/Policy/Submissions/text/POL2014_5.pdf
[5] 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* (June 2014), 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
[6] House of Representatives Hansard (2014) Monday 17 November 2014. Available from http://parlinfo.aph.gov.au/parlInfo/download/chamber/hansardr/35c9c2cf-9347-4a82-be89-20df5f76529b/toc_pdf/House%20of%20Representatives_2014_11_17_3032.pdf;fileType=application%2Fpdf
[7] *Mapping the Humanities, Arts and Social Sciences in Australia*, p. 69.
[8] Australian Government (2014) *Industry Innovation and Competitiveness Agenda*, p. 8. Available from http://www.dpmc.gov.au/publications/Industry_Innovation_and_Competitiveness_Agenda/docs/industry_innovation_competitiveness_agenda.pdf
[9] *The Role of Science, Research and Technology in Lifting Australia's Productivity*, p. 96.
[10] *The Role of Science, Research and Technology in Lifting Australia's Productivity*, p. 24.Companies included in the study were Resmed (medical devices), Cochlear (medical devices), Invetech (design for manufacturing), Halfbrick Studios (games, mobile applications), MBD Energy Limited (waste management), and Westpac.
[11] See HEFCE Independent Review of the Role of Metrics in Research Assessment, http://www.hefce.ac.uk/whatwedo/rsrch/howfundr/metrics/
[12] Chief Scientist (2014) Submission to Senate Inquiry on Australia's Innovation System, p. 3. Available from http://www.chiefscientist.gov.au/2014/07/senate-inquiry-submission-australias-innovation-system/