

**Submission to the Review of the National Innovation System**

**Authors**

**Professor Stuart Cunningham  
Mr Toss Gascoigne**

**Organisation**

**Council for Humanities, Arts and Social Sciences (CHASS)**

**Type of organisation**

**Not-for-profit advocacy group**

**Address**

**LPO Box 5086, University of Canberra, Bruce, ACT AUSTRALIA 2617**

**State or Territory:**

**ACT-based, with member organisations in all states and territories**

**Email and phone contact**

**Toss Gascoigne [director@chass.org.au]**

**Declaration of Interest and Affiliations**

The authors of this submission are the President and the Executive Director of the Council for Humanities, Arts and Social Sciences (CHASS). Board Members have contributed ideas and commented on drafts.

CHASS is an advocacy body established in 2004 to represent the interests of people working in research, education and practise in the humanities, arts and social sciences. Many of our 122 Members are drawn from the tertiary sector, and include the Academies of the Humanities, and of the Social Sciences in Australia; leading universities; and Deans' groups including the Australasian Council of Deans of Arts, Social Sciences and Humanities.

Stuart Cunningham, CHASS President, is also Director of the ARC Centre of Excellence for Creative Industries and Innovation (CCI) which has independently submitted to this Review.

## Introduction

As innovation policy evolves, the integration of the natural sciences with the human and social sciences as key inputs becomes more critical. Australia is by no means alone in seeking to review and reform its innovation policy framework, and the new government has made a dramatic start. As the Prime Minister said in his closing address to the 2020 Summit in Canberra on 20 April 2008:

*“This false divide between the arts and science, between the arts and industry, between the arts and the economy: we’ve actually got to put that to bed. As if creativity is somehow this thing which only applies to the arts, and innovation is this thing over here which applies uniquely to the sciences, or technology, or to design. This is actually again a false dichotomy: it’s just not like that. Our ambition should be to create and to foster a creative imaginative Australia because so much of the economy of the twenty-first century is going to require that central faculty.”*

Innovation policy is evolving in response to the limitations of the original linear model; the opportunities offered by the emphasis in business on incremental and process innovation in services; and to belated recognition of the significance of public sector innovation and social innovation arising from the consumption or household sectors (such as user-led innovation).

Contemporary innovation policy now recognises the contributions of *all* disciplines to innovation and looks to construct systems that encourage them to work together.

### **1. Identify a set of principles to underpin the role of the public sector in innovation.**

We suggest two fundamental principles to underpin this role.

#### **1.1 Non-discriminatory knowledge inputs**

Modern policy has to transcend the artificial division separating the natural from the human and social sciences. Historically, the role and contribution of the humanities, arts and social sciences have been minimised. The divide has damaging consequences: it erects funding and administrative barriers to cross-disciplinary collaborations; nurtures policy settings that place too much emphasis on the natural sciences to generate solutions and new industries; and skews research investment in a national economy where 80 per cent of employment lies in the services industries.

The new thinking necessary for the development of a modern policy has already begun, at the top. Innovation Minister Carr has announced he intends to use the word ‘sciences’ in the European sense, or as he defined it, ‘knowledge of the world’. In the same interview he identified a strong role for the humanities, arts and social sciences in delivering ‘great solutions’ for industry, society and the environment.

If the principle of non-discrimination in knowledge inputs was to be accepted, it would follow that there would be changes in the governance structures and memberships of advisory boards and committees that shape national policy, such as the Prime Minister’s Science, Engineering and Innovation Council (discussed below in 6.2) or the National Health and Medical Research Council.

It would also follow that major funding programs like the National Collaborative Research Infrastructure Strategy, the Cooperative Research Centre program, or the R&D Tax Concession would be accessible on merit by any potential configuration of

discipline or knowledge base. It would mean a revision of Australia's national research priorities.

A non-discriminatory approach would mean new programs to unlock the potential of our sector to deliver Minister Carr's 'great solutions'. Governments want to base their policies on evidence, but funding, administrative settings and reward mechanisms actively discourage the multi-disciplinary research that informs policy. (Discussed below in 2.2, with the full argument set out in the attached paper *Rigour and relevance*<sup>1</sup> in Appendix A).

It may mean new organisational entities. Design is a driver of better living and successful industry, but Australia lacks leadership in this area. The mechanism we suggest is the creation of a National Council for Design and Creative Practice, a new body to enable government, industry and research organisations to focus on a range of industrial and social issues revolving around design. (The full argument is set out in attached paper *Between a hard rock and a soft space*<sup>2</sup> in Appendix B.)

It would mean a new recognition for the value of innovations in social practice and education. For instance, the health of diabetics in Australia is more likely to improve through education than medication.

## **1.2 System failure not market failure**

The new macro-focus on the knowledge-based economy and innovation policies has been around in some form for a long time, certainly since the information society discussions of the 1950s, with notional sub-divisions of the service or tertiary industry sector into quaternary and quinary sectors based on information management (4th sector) and knowledge generation (5th sector). But the shorter term influence is traceable to new growth theory in economics which has pointed to the limitations for wealth creation of only micro-economic efficiency gains and liberalisation strategies.

Governments are now attempting to advance knowledge-based economy models, which imply a renewed interventionary role for the state after decades of neo-liberal small government. This has meant a focus on emerging industries that exhibit innovation and R&D intensity, skilling and education of the population, and a focus on universalising the benefits of connectivity through mass ICT literacy upgrades.

We acknowledge that governments are often challenged to justify this new interventionary role, with orthodox economists and supporters of small government criticising innovation policy as merely a discredited industry policy ('picking winners', propping up failing manufacturing sectors, slowing tariff reform, etc) by another name.

The second principle, system failure not market failure, is the basis on which governments can with some confidence proceed to develop policies and invest in innovation on a sound rationale.

The role of government in a 'national innovation system' (NIS) is essentially to bring it as a policy construct into existence, promote it, monitor its performance, and contribute directly to it where the role for the public sector is most needed. By definition, a national innovation system needs national governmental oversight, most

---

<sup>1</sup> *Rigour and relevance. Extending the role of the social sciences and humanities in public policy research.* J.H. Howard. CHASS Occasional Paper 4. April 2008

<sup>2</sup> *Between a hard rock and a soft space: design, creative practice and innovation.* J. H. Howard. CHASS Occasional Paper 5. April 2008.

particularly when it is evident that sub-national, regional, and global innovation processes are impacting the national system more and more.

System failure not market failure is a recognition that many aspects of the innovation process lie outside the market economy, not only in terms of breakthrough science but also public and household sector innovation, and unplanned innovation at the final consumption end. It also implies a central role for government not only in providing key elements in the NIS (agencies, departments, schooling systems, etc), but also in identifying that the linkages between elements which make the system work are robust and optimal. Where links are missing, suboptimal, or not even thought of, government has a role in identifying such systems failure and bringing to bear resources to address the problem.

## **2. Develop a set of national innovation priorities, complementing the national research priorities.**

### **2.1 Collaboration**

In terms of the country's research needs, CHASS has placed strong emphasis on collaborations between the humanities, arts and social sciences (HASS) and science, technology, engineering and medicine (STEM). If this were a National Innovation Priority (NIP), it would sit appropriately above the National Research Priorities (NRPs) and shape the prioritisation of cross-sectoral and cross-disciplinary research.

Collaboration is, crucially, not a subject matter or thematic area of priority, the dominance of which in the NRPs attracts criticism for 'picking winners'. If collaboration were to be identified as a priority, it would also focus the NIPs on the dynamic boundaries of disciplines where change and innovation are most evidently driven by national and problem-oriented (rather than disciplinary) priorities. Finally, such an NIP would allow government to act as a dynamic participant in the NIS rather than a passive superintendent, by specifying what type of collaboration might be prioritised from time to time.

As CHASS' report *Collaborating across the Sectors*<sup>3</sup> argues:

*Some of the most exciting research and education today has little regard for traditional disciplinary boundaries. For example, research to help Australia's ageing population profile brings together medical science, basic biology, engineering, social science and arts and humanities.*

*The world is turning to multi-disciplinary collaborations to deal with the big issues we face, critical problems such as water shortages, global climate change and threats to national security, human health and economic sustainability. No single discipline has all the answers: we need to provide the flexibility to ensure that the research and education community can pursue investigations across the whole landscape, regardless of discipline or approach.*

But the way researchers are organised in disciplinary silos hampers efforts to bring them together to work on these pressing national issues. Funding systems often mirror these administrative silos, and act together as a powerful but unintended force

---

<sup>3</sup> *Collaborating across the sectors: the relationships between the humanities, arts and social sciences (HASS) and science, technology engineering and medicine (STEM)*. Jenni Metcalfe, Michelle Reidlinger, Anne Pisarski, John Gardner. CHASS Occasional paper 3, November 2006. p 7

to limit collaboration. Reward mechanisms in our research institutions favour work which focuses on a single discipline (for instance, the most prestigious journals are based on a single-discipline, and a primary means of gaining appointments and promotions is through publishing in these journals).

The paper concluded that barriers to collaboration were well embedded in the system and that a change of culture was required:

*“The process should begin with changing a mindset, and institutional and policy settings which have yet to appreciate fully the possibilities of cross-sectoral collaboration. To help address the mindset issue, it is recommended that government and institutional funding be allocated for a national summit to explore cross-sectoral opportunities, with a view to implementing a series of initial programs. The summit would involve all relevant national and state departments, universities, other R&D organisations, and business and industry groups.”*

Four other detailed recommendations followed:

1. ‘Change research behaviour’ suggested making cross-sectoral research a priority for funding bodies and in national research programs.
2. ‘Educate for greater collaboration’ put forward proposals to broaden educational experience at senior school and undergraduate levels.
3. ‘Train boundary-spanners’ suggested semester programs for post-graduate students in communication, team management, and the different approaches of different disciplines.
4. ‘Coordinate and advocate cross-sectoral collaboration’ recommended the establishment of a new body to develop best practice in collaboration.

The attached paper (Appendix C) spells out these recommendations in detail.

## **2.2 Research integration**

Australia needs to encourage a new form of research that contributes directly to the formulation of policy in government. Such research would be initiated by the end user rather than the researcher. It would be characterised by being strategically-driven, problem-oriented and cross-disciplinary.

It would require each government portfolio to develop a research plan, to establish those areas where they need specialised research to identify policy solutions.

*The solution proposed in this paper is a greater commitment to interdisciplinary research that works at the boundaries of disciplines through a scholarship of integration. Such an approach seeks to integrate research into a larger body of concepts and ideas, to interpret and draw it together in a way that addresses problems—and opportunities. The scholarship of integration is the ability to synthesise knowledge from disparate disciplines to resolve pressing problems. Policy issues in the natural environment, health and society, energy, transport, communication, emerging industries and innovation are likely to respond best to this approach.*

*This paper proposes a series of changes to enable integrative research in the public policy arena:*

- *establish a research plan in each government portfolio to address critical policy problems and issues, funded as a required element of overall portfolio budgets*

- *reorient of the Cooperative Research Centres Program to enable CRCs to address fundamental questions that affect public policy and industry performance*
- *extend the rural research and development corporation model to other industry sectors*
- *reconfigure the research and teaching agenda in universities, so that administrative units, reward structures and funding systems encourage rather than inhibit interdisciplinary work.*

*Integrative research will not replace discovery research, but complement it. By encouraging the research community to apply its skills to pressing problems facing Australia in the most direct and immediate way, it will open a new career path for researchers and maximise the return on Australia's investment in research.*

(The full argument is set out in Appendix A.)

### **2.3 Recognise the process of implementation as an innovation in its own right**

The approach to finding solutions to social problems often depends on overseas experience. It can, though, be difficult to transplant programs from overseas and just implement them in communities here without a major process of adaptation and contextualisation.

A contemporary case study is the Government's recent announcement that it will be introducing the David Olds home visiting program by trained nurses to pregnant teenage women in aboriginal communities next year. This is a classic 'evidence based' program that has been shown to reduce child abuse in the short term and juvenile crime, substance abuse and related problems in the longer term. But there are crucial issues about how this US-developed program might work in remote or urban indigenous communities. The process of implementation will be as innovative and as evidence-based as the original program developed by Olds.

Innovation is no use at all unless it contributes to better outcomes for individuals, organisations, communities etc. Therefore:

- (a) desired outcomes have to be counted or measured.
- (b) experimentation with innovative services is required, combined with measurement and preferably at least a rudimentary experimental design that allows one to decide whether the innovation was worthwhile (ie did outcomes improve more than they would have otherwise?)

In other words, we need experimentation combined with evidence. The overall goal is to build a body of knowledge about core areas of social policy. Innovation that does not build that body of knowledge is wasted effort.

### **2.4 Talent: Investing in human capital**

The number of Australians enrolling for a PhD in the humanities, arts and social sciences is declining, at a time when demand for highly-qualified graduates is on the rise. Graduates are needed in the Commonwealth Public Service and other employers – both in Australia and overseas - in the knowledge-intensive innovation economy. They are also needed to replace an aging academic staff, with the average age of university staff higher than any other trade or profession except farmers; and with between one fifth and one third of academic staff expected to retire in the next decade.

A CHASS workshop last month developed a list of eleven issues<sup>4</sup> to be addressed if Australia is to gain full advantage of its investment in training postgraduate students. They include: a careful analysis of industry needs for new graduates; increasing the stipend; and encouraging international links. Five of these issues are matters for government, with others initially to be addressed by the tertiary sector.

One issue is the decline in the value of the scholarship in relation to other standard measures on income in Australia. Analysis of the PhD scholarship shows that it has dropped over the last 15 years when measured against Average Weekly Earnings. In 1992 the scholarship was \$14,260, about 47% of average earnings of \$30,534; **but in 2007 the scholarship was \$19,616, just 35% of average earnings of \$55,790.**<sup>5</sup>

**The value of scholarship is now below the Henderson poverty line.**

(See Appendix D for the graph showing the value of the PhD scholarship over time. The full list of 11 issues is at Appendix E.)

### **2.5 Revise the National Research Priorities**

The NRPs need to be revised, partly in light of the development of new National Innovation Priorities; and partly because they were developed by natural scientists, for natural scientists. The promised development of priorities for the humanities, arts and social sciences was never implemented.

New or revised priorities need to expand to encompass creative practice (as proposed in the 2020 summary document) and cultural imperatives.

## **3. Identify regulatory and other barriers to innovation**

### **3.1 Barriers to collaboration**

The CHASS paper *Collaborating across the Sectors* sets out five major recommendations to overcome barriers which inhibit HASS researchers wishing to work with colleagues in science, technology, engineering, and medicine.

These barriers are largely accidents of history and culture, rather than deliberate attempts to limit collaborative work. They have been referred to above, and are set out in detail in the full paper at Appendix C.

### **3.2 Excellence in Research for Australia a driver of behaviour**

ERA as a system for evaluating research quality will drive the behaviour of researchers in Australian universities. It is important that the reward system established by the ERA process is not inconsistent with the need for researchers to contribute to an innovative society. It is also important that ERA captures the best research in *all* its forms (basic, problem-driven, strategic, etc), otherwise it could be an active impediment to innovation.

---

<sup>4</sup> *Eleven issues for the PhD*. Summary document from CHASS Workshop at the University of NSW, 7 March 2008.

<sup>5</sup> Sources: Poverty Lines: Australia – December Quarter 2007, available at [www.melbourneinstitute.com/labour/inequality/poverty/default.html](http://www.melbourneinstitute.com/labour/inequality/poverty/default.html). Data on Commonwealth funded postgraduate stipend rates compiled by the Council of Australian Postgraduate Associations (CAPA) based on information from Graduate Careers Australia and the Department of Education, Employment and Workplace Relations (DEEWR). Data on Average Weekly Earnings compiled by The Council for Humanities, Arts and Social Sciences (CHASS) based on ABS Average Weekly Earnings series (seasonally adjusted) available at <http://www.abs.gov.au/ausstats/abs@.nsf/mf/6302.0>.

### **3.3 Fragmentation of design**

Innovation policy is increasingly concerned with innovations in design and creative practice, and there is growing recognition of the contribution of the 'creative' industries to economic prosperity. Competitive challenges are forcing traditional engineering-centred companies to transform themselves into experience-centred companies; and design and creative practice have a critical role in that transformation. The innovation process would be stimulated if the artistic and creative sectors were encouraged to cooperate and collaborate.

Policy responsibilities are distributed across several Australian Government agencies, and funding responsibilities are distributed between the Australian Research Council, the Australia Council for the Arts and other funding bodies. Relocating the creative functions into the innovation portfolio would help to resolve this policy fragmentation.

Leadership is needed. It should come from the creative sector, supported by government as appropriate. To this end, government, industry and research organisations should support the formation of a National Council for Design and Creative Practice. The council would have a specific role to formulate and advise on national design policy, direct and fund programs of support for Australian business, and provide Australia with authoritative design knowledge by funding research programs in design and creative practice research and teaching.

The proposal for a National Council is set out in *Between a hard rock and a soft space*, Appendix B.

### **3.4 Change digital focus from technology to product**

Government programs to encourage the uptake of digital technology need to switch from a focus on technology, to a focus on product. Through the 1990s the Federal Government tried to encourage the uptake of digital technology through strategies based on the technological side. These attempts had little impact, but what did work was direct investment in arts-based products (cinema based on digital special effects, on-line and cable and satellite TV revenue streams for film and TV programming).

This direct investment was led by arts producers and marketers with a clear view of audience and consumer interest, rather than by groups of people with an engineering and technology based approach. The development of the product drove demand, rather than the development of the technology.

Both this barrier and the one that follows could be addressed by the formation of an Australian version of NESTA (the National Endowment for Science, Technology and the Arts), the UK agency dedicated to embedding innovation at the grassroots of British society and to overcoming the gaps between the arts, science and technology.

### **3.5 Lack of support inhibiting small creative businesses**

Creative entrepreneurs make a vital contribution to the economic and global competitiveness of Australian industry, but are mostly operating as micro businesses that currently do not benefit from the support offered larger companies. Creative entrepreneurs need greater access to non traditional arts funding agencies to seek support for product design research and development; for export support to access international markets; and for easier access to patent laws to secure their designs in national and international markets.



An example of a program which tackles this issue is the Australia Council's Maker to Manufacture to Market (MMM) program. Begun in 2005 as a strategic initiative, it encourages Australian designers to commercialise a prototype product, take it to market and earn income.

To date, six Australian craft-design makers have received \$30,000 each to develop their design prototype and take it to market. Recipients include designers of wallpaper, objects for interiors, tableware, street furniture and ceramic tiles. The MMM initiative aims to increase the engagement of Australian designers with the manufacturing sector, resulting in the production of more innovative products and their release into the local and global markets.

#### **4. Examine the scope for simplifying the set of innovation programs**

We do not wish to comment on this section.

#### **5. Review the R&D Tax Concession Scheme and CRC Program and recommend ways to improve their innovation outcomes**

##### **5.1 Broaden the charter for the CRC Program**

The Government website sets out the objective of the CRC program as:

*“to enhance Australia's industrial, commercial and economic growth through the development of sustained, user-driven, cooperative public-private research centres that achieve high levels of outcomes in adoption and commercialisation.”*

[https://www.crc.gov.au/Information/ShowInformation.aspx?Doc=about\\_programme&key=bulletin-board-programme&Heading=The%20Program](https://www.crc.gov.au/Information/ShowInformation.aspx?Doc=about_programme&key=bulletin-board-programme&Heading=The%20Program) (Downloaded 28 April 2008)

CRCs have worked well in the creation of knowledge relating to 'national benefit' and 'broad industry' (collective) benefit. But there has been a tendency for the CRC Program to focus on knowledge creation and transfer in the natural and life sciences and ICT; there have been very few CRCs in the social sciences and none covering the humanities.

With the growing relevance of interdisciplinary research to address major public policy issues, and the contribution of the social sciences and humanities to that work, the charter for the CRC Program should be broadened to cover applicable research emanating from what the EU refers to as the 'socio-economic sciences and humanities'. To the extent that the research users are government departments and agencies, a condition of funding would be that those organisations be full joint-venture partners in the CRC.

##### **5.2 Amend the R&D Tax Concession**

Amend the Act to enable participation by the humanities, arts and social sciences. The Guide to the R&D Tax Concession 2004 compiled by the Australian Tax Office contains a specific exclusion of research in social sciences, arts or humanities as they are not considered to be “systematic, investigative and experimental activities” (p31).

This exclusion means the following investments would not qualify as R&D activities:

- In the context of a program developed by the University of Queensland (the Triple P Positive Parenting Program) an investment by Triple P International in determining the potential for applying the Triple P approach to a new field. For example, developing a new resource for working with parents who have children with physical disabilities. This is despite the fact that the resource may be unique and may require extensive research to develop and test.
- In the context of human factors and cognitive psychology, companies seek advice on the design of human-centred systems that will enable them to improve efficiency, reduce accident rates, etc. These investments can result in novel solutions and new systems designs that have a specific “pay-off” to the client and possible industry-wide benefits. The experimentation undertaken to develop these systems is highly technical and outside the expertise of physical, biological, chemical, medical, engineering or computer sciences.
- In many areas of human services practice, there are opportunities for companies to develop new ways of providing services. For example, in aged care it may be possible to develop a radically new approach to fostering independent living within retirement homes drawing on knowledge from psychology, sociology and nursing. This new model would have to be developed and then tested to establish whether it worked. Despite the potential commercial value to the retirement service provider and the benefit to the wider community, the provider will not be able to access the R&D Tax Concession for this innovation. However, the same company may be able to claim the R&D Tax Concession for developing a simple device that provided retirement home residents with a marginal improvement in physical mobility.

The exclusion of social sciences on the basis that R&D activities are not ‘systematic, investigative or experimental’ shows a lack of understanding of what the broad disciplinary group comprising the social sciences actually does. Exclusions should be limited to particular activities, but not applied indiscriminately to the social sciences, arts and humanities. If the purpose of the tax concession is to promote innovation, it should not be presumed that the social sciences, arts and humanities are incapable of contributing to innovation and classed with “efficiency surveys, making of cosmetic modifications or stylistic changes” (p29).

## ***6. Consider ways to improve the governance of the national innovation system.***

### **6.1 Review the role of the Chief Scientist.**

The DEST website sets out the role and responsibilities of the Chief Scientist as follows:

*The Office of the Chief Scientist provides information and advice on policy issues, research and administrative support for Australia’s Chief Scientist and the Prime Minister’s Science, Engineering and Innovation Council.*

*The Office supports Australia’s Chief Scientist in his engagement with the research and industry communities, learned societies, and other portfolios and governments, which enables his comprehensive and timely advice to Government on a wide range of scientific and technological issues of importance to Australia.*

[http://www.dest.gov.au/sectors/science\\_innovation/office\\_of\\_the\\_chief\\_scientist/](http://www.dest.gov.au/sectors/science_innovation/office_of_the_chief_scientist/).

(Downloaded 28 April 2008)

There is some confusion about the extent of the responsibilities of the Office. Does the Chief Scientist have any responsibility for matters emerging from the humanities, arts and social sciences? If not, it will be challenging to provide “comprehensive and timely advice” as many of the most significant issues in Australia need contributions from all disciplines.

CHASS believes the role of the Chief Scientist should be redefined so the brief and the title reflect the breadth of that office in providing “comprehensive and timely advice” to Government. The newly refined position might incorporate:

- a new Office of Innovation in the Department of the Prime Minister & Cabinet
- a head of this Office to replace the Chief Scientist (possibly called the CEO, Office of Innovation)
- a new disciplinary-neutral CEO position

The CEO’s position could be supported by deputy CEOs with disciplinary-specific expertise in the humanities, arts and social sciences (HASS) and science, technology, engineering and medicine (STEM).

## **6.2 Focus PMSEIC more closely on innovation**

PMSEIC was created in 1989 and (with minor modifications) has served as a principal source of advice on innovation to Government.

*The Prime Minister's Science, Engineering and Innovation Council (PMSEIC) is the Government's principal source of independent advice on issues in science, engineering and innovation and related aspects of education and training ...*

*The Council meets in full session, twice a year, to discuss major national issues in science, engineering and technology and their contribution to the economic and social development of Australia.*

[http://www.dest.gov.au/sectors/science\\_innovation/science\\_agencies\\_committees/pri\\_me\\_ministers\\_science\\_engineering\\_innovation\\_council/default.htm](http://www.dest.gov.au/sectors/science_innovation/science_agencies_committees/pri_me_ministers_science_engineering_innovation_council/default.htm) (Downloaded April 28 2008.)

It is time to focus PMSEIC more closely on innovation, signaling the change with a change of name to something like “the Innovation Council” to link it with the proposed Office of Innovation mentioned above.

The humanities, arts and social sciences are under-represented on a Council with the middle name “Innovation”. HASS is central to innovation in modern economies, playing both independent and supportive roles, and central to “economic and social development”. The humanities, arts and social sciences should be strongly represented on a national council about Innovation. A more even balance in disciplinary terms in non-Ministerial appointees would achieve this, a move away from the predominance of appointees from science, technology, engineering and medical disciplines.

The proposed Council would have two primary roles: the effective harnessing of research outcomes to national needs, and the alerting of Government to over-the-horizon technologies and emerging threats that research might address.

## Appendices

### Appendix A

*Rigour and relevance. Extending the role of the social sciences and humanities in public policy research.* J.H. Howard. CHASS Occasional Paper 4. April 2008

### Appendix B

*Between a hard rock and a soft space: design, creative practice and innovation.* J. H. Howard. CHASS Occasional Paper 5. April 2008.

### Appendix C

*Collaborating across the sectors: the relationships between the humanities, arts and social sciences (HASS) and science, technology engineering and medicine (STEM).* Jenni Metcalfe, Michelle Reidlinger, Anne Pisarski, John Gardner. CHASS Occasional paper 3, November 2006. p 7

### Appendix D

Graph charting the \$ value of the PhD scholarship against Average Weekly Earnings and the Henderson Poverty Line, 1992-2007

Sources:

Poverty Lines: Australia – December Quarter 2007, available at [www.melbourneinstitute.com/labour/inequality/poverty/default.html](http://www.melbourneinstitute.com/labour/inequality/poverty/default.html).

Data on Commonwealth funded postgraduate stipend rates compiled by the Council of Australian Postgraduate Associations (CAPA) based on information from Graduate Careers Australia and the Department of Education, Employment and Workplace Relations (DEEWR).

Data on Average Weekly Earnings compiled by The Council for Humanities, Arts and Social Sciences (CHASS) based on ABS Average Weekly Earnings series (seasonally adjusted) available at <http://www.abs.gov.au/ausstats/abs@.nsf/mf/6302.0>.

### Appendix E

*Eleven issues for the PhD.* Summary document from CHASS Workshop at the University of NSW, 7 March 2008.