CHASS

OCCASIONAL PAPERS

The arts and Australia's national innovation system 1994–2008

arguments, recommendations, challenges

Brad Haseman and Luke Jaaniste

Professor Brad Haseman is Assistant Dean (Research) for the Creative
Industries Faculty at the Queensland University of Technology.
He has worked as a teacher and researcher for over 30 years pursuing
his fascination with the aesthetics and forms of contemporary
performance and pedagogy. His current research investigates practice-
led methodologies for the arts and innovation. He edited *Innovation in
Australian Arts, Media and Design* (2004, Post Press) and co-convened the
Australian conference Speculation and Innovation: Applying Practice-
Led Research in the Creative Industries (2005). He served as guest editor
for a themed issue around Practice-led Research for Media International
Australia in 2006. In 2008, he was appointed to the Australia Council for
the Arts where he chairs the Community Partnerships Committee.

Dr Luke Jaaniste is a visual and sound artist and cultural researcher.
He has two main research interests: ambience, related to contemporary
practice and spatial theory; and the function of creative practice,
including the ways artists, designers and media-makers connect to
research, industry, innovation, policy and pedagogy. He recently
completed a practice-led PhD titled *Approaching the Ambient: Creative
Practice and the Ambient Mode of Being*, and is a part-time research
fellow at the Creative Industries Faculty, Queensland University
of Technology. His arts output includes reviews and interviews of
contemporary visual and sound artists, and residencies at festivals,
arts organisations and schools. His creative work has been performed,
broadcast and exhibited nationally and has represented Australia at the
Paris Rostrum 2006 and the Prix Maurlic 2008.

Table of contents

Executive summary

Based on 15 years of arts and innovation literature, this paper explores the central proposition that the arts sector—particularly the performing arts, visual arts and crafts, new media arts and creative writing—should be included in Australian Government innovation policy development and play a significant role in national innovation.

After a brief overview of innovation policy and the national innovation systems approach in Australia, we examine the marginal place of the arts in Australia's innovation agenda and various attempts to include them. We identify the principal voices that have argued for arts and innovation development: the humanities, arts and social sciences (HASS) sector, digital content industries, arts education and university research, and new media arts. After three main periods of arts and innovation policy activity from the mid-1990s (when the importance of innovation as a key driver of Australia's prosperity was recognised) to early 2008, a fourth period has opened up as part of the Australian Government's Review of the National Innovation System in 2008.

We have identified 31 documents that make up the core 'arts and innovation' literature in Australia, and from them we have extracted the central proposition advanced to include the arts in the innovation agenda. That proposition appears in two forms:

- one connects innovation to the cultural sector at large (the arts, design, cultural institutions, traditional and new media, linked to the broader humanities)—namely, that 'culture … makes an essential contribution to innovation' (*Creative nation* 1994, Introduction)

- another connects innovation to the arts in particular—namely, that 'Australian artists and creative practitioners … play a vital role in enhancing and growing Australia's innovation economy' (*Creative innovation strategy* 2006, 1).

We present six arguments exploring the place of the arts in Australia's national innovation system:

- the *cultural* argument: the arts create and promote an atmosphere of innovation

- the *skills* argument: a rich and immersive arts education builds the skills required of a future innovative workforce

- the *knowledge* argument: the arts create new knowledge for innovation through creative production and processes, including collaborations with other disciplines, such as science, within and beyond universities

- the *commercialisation* argument: the arts can convert new knowledge and research into profits through entrepreneurial activity

- the *economic* argument: the arts, as part of the creative industries, occupy a substantial, growing, enabling and innovative part of the economy

- the *systems* argument: the cultural sector is an innovation system within which various institutions and organisations behave as innovation hubs.

Finally, we consider how these arguments might be strengthened to meet the opportunities of the next period of innovation policy development and practice in Australia, especially the Review of the National Innovation System.

If the arts are to be valued as an integral part of Australia's national innovation system, we must:

- include the arts in the proposed National Innovation Council

- strengthen the evidence base for 'arts and innovation' arguments

- develop an understanding of arts-based knowledge that connects it to innovation

- broaden commercialisation of the arts and creative outputs

- develop the argument for the arts as social innovation

- educate an innovative workforce.

Meeting these challenges requires further research, sector-wide coordination and leadership.

In the final analysis, this paper is a history, a summary and an articulation of the arguments advanced by the arts and the broader HASS sector to fuse the national arts and innovation fabrics, and the challenges to be faced in achieving this important national goal.

Chapter 1

Introduction

This paper investigates how Australia's policies in arts and culture have been aligned with policies in research and innovation since the 1994 release of *Creative nation: Commonwealth cultural policy*. A further purpose is to explore what the arts can take from that history to help them meet future challenges and opportunities, especially now that Australia's innovation system has been put under the national spotlight through the Review of the National Innovation System and the September 2008 release of its report, *Venturous Australia: Building strength in innovation*. What innovation policies can be put in place to harness the creative capacities of the arts to generate new products, services and processes for the national benefit?

With these issues in mind, the Council for the Humanities, Arts and Social Sciences (CHASS), supported by the Australia Council for the Arts, conducted a workshop on 'The arts and the innovation agenda' in March 2008. In his introduction to the workshop, CHASS President Professor Stuart Cunningham wrote:

> While the innovation agenda has been the province of what Allan Fels and Fred Brenchley call 'white coat scientific research', it is now—in principle—open to a broader view and a more diverse range of inputs … Where do the arts fit into this agenda? CHASS is holding this workshop to assist the arts to answer this question. (Cunningham 2008, 4)

This paper develops Brad Haseman's (2008) presentation to that workshop, in which he attempted to stitch together Australia's arts and innovation fabric.

1.1 Scope, sources and structure

The policy documents surveyed in this paper were selected according to their date, their relevance to the arts and their relationship to Australian Government innovation policy. We reviewed documents from the time of *Creative nation* (1994) to the *Venturous Australia* report (2008). That period encompassed formal national innovation policy from early Howard government initiatives to the Rudd government's Review of the National Innovation System.

We have followed mainstream understandings of the term 'the arts' to include the performing arts, visual arts and crafts, new media arts and creative writing. However, the arts overlap with other domains in the cultural sector, such as design, media and digital content, cultural institutions such as libraries and museums, and much scholarship from the humanities. We did not systematically consult documents from those other domains, but turned to those referenced by the documents that make up the core 'arts and innovation' literature.

The surveyed literature was also selected according to its relevance to national innovation policy. Policy reports from state and local governments and from overseas were beyond the scope of this paper. We did not include election policy platforms from national parties or academic journal literature, as those would not necessarily represent sectoral or official government positions, and selected only those documents that addressed both the arts and innovation at a national level.

In all, we found 31 documents relevant to this topic, listed in Table 1. They include policy reports by government and sector-based organisations, as well as submissions to government-led policy inquiries and reviews.

Table 1   The key arts and innovation documents surveyed in this paper

First period—*Creative nation* and promising starts (1994–2000)

- *Commerce in content* (Cutler and Company 1994)
- *Creative nation* (Commonwealth of Australia 1994)
- *Arts education* (Senate Environment, Recreation, Communications and the Arts Committee 1995)
- *Knowing ourselves and others* (Australian Academy of the Humanities 1998)
- *Strand report [Research in the creative arts]* (Strand 1998)
- *Clash of cultures* (Australia Council 1999)
- *Nugent report [Securing the future]* (Nugent et al. 1999)

Second period—*Backing Australia's ability* and sector-led activities (2001–04)

- *Planning for the future* (Australia Council 2001)
- *Examination of the small to medium performing arts sector* (Cultural Ministers Council 2002)
- *Myer report [Report of the Contemporary Visual Arts and Craft Inquiry]* (Myer 2002)
- *CICS [Creative Industries Cluster Study] outline of findings* (DCITA and NOIE 2003)
- *Economic benefits from cultural assets* (Xamax Consultancy and Content Strategies 2003)
- *Research and innovation systems in the production of digital content and applications* (Cutler and Company and CIRAC QUT 2003)
- Introduction in *Innovation in Australian arts, media and design* (Wissler et al. 2004)

Third period—*Imagine Australia* and the rise of 'creativity' in the innovation agenda (2005–07)

- *Commercialisation of research activities in the humanities, arts and social sciences in Australia* (Gascoigne and Metcalfe 2005)
- Joint submission to Inquiry into Pathways to Technological Innovation (Australia Council et al. 2005)
- Submission to PMSEIC Working Group on the Role of Creativity in the Innovation Economy (CHASS 2005)
- Submission to PMSEIC Working Group on the Role of Creativity in the Innovation Economy (Australia Council 2005)
- *Imagine Australia: The role of creativity in the innovation economy* (PMSEIC 2005)
- *Creative innovation strategy* (Australia Council 2006a)
- Submission to Productivity Commission *Report on public support for science and innovation* (Australian Academy of Humanities 2006)
- Submission to Productivity Commission *Report on public support for science and innovation* (CHASS 2006a)
- *New media arts scoping study* (Australia Council 2006c)
- *The recommended RQF* (DEST 2006)
- *Collaborating across the sectors* (Metcalfe et al. 2006)
- Response to Productivity Commission's draft *Report on public support for science and innovation* (CHASS 2006b)
- *Public support for science and innovation* (Productivity Commission 2007)
- *Educating for the creative workforce* (CCI and Australia Council 2007)
- *National education and the arts statement* (Cultural Ministers Council and MCEETYA 2007)
- *Building a creative innovation economy* (Cultural Ministers Council 2008)

Fourth period—Prime Minister Rudd's 2020 vision, the Review of the National Innovation System and fresh possibilities (2001–04)

- *Venturous Australia* (Cutler and Company 2008)

Following this introductory chapter, Chapter 2 positions the arts within Australia's innovation agenda, introduces the principal voices that have been arguing for the arts in innovation, and details four periods of arts and innovation policy activity from 1994 to 2008.

From the literature, it is possible to extract the central proposition and rationales that have been advanced to insert the arts in the innovation agenda. Chapter 3 sets out that central proposition and then details the arguments and recommendations used to include the arts in innovation, using a framework of knowledge *production*, *application* and *innovation*.

Chapter 4 identifies the challenges and opportunities that lie ahead for the humanities, arts and social sciences (HASS) sector, as it tries to ensure that the potential contribution of the arts to the innovation agenda is realised.

1.2 A framework for understanding innovation

We use a framework for innovation to organise and understand the issues at play in the arts and innovation literature. The framework draws on the three facets of innovation proposed by the Review of the National Innovation System chaired by Terry Cutler (2008a, 4) and shown in Figure 1.
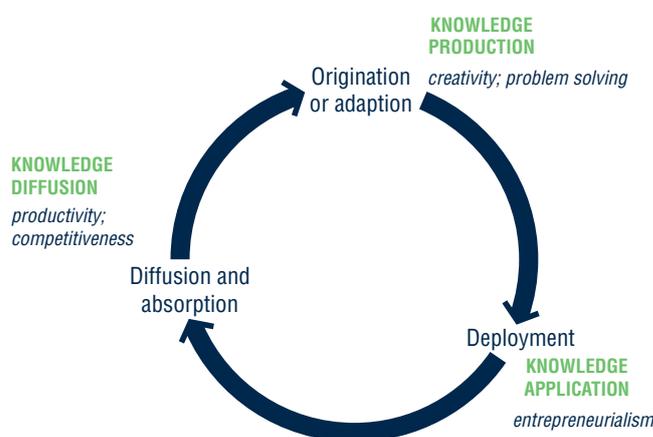

Figure 1   The three facets of innovation

The three facets of innovation can be understood as:

■ knowledge *production*—generating or adapting ideas through R&D

■ knowledge *application*—applying those ideas in practical, commercial and social settings

■ knowledge *diffusion*—the absorption of the ideas and innovations across the broader economy and society.

These three facets exist within a broader culture or 'atmosphere' of innovation and are enabled by an education system that builds skills and capacities for innovation. Building a culture of innovation is a key element of any national innovation system (called 'creating an ideas culture' in *Innovation: Unlocking the future* 2000). Because these aspects of innovation all exist within a complex network of stocks and flows of knowledge, personnel and organisations supported by policies and national infrastructure, it is important to include a whole-of-system approach when analysing innovation.

Besides informing our general approach, this framework for innovation is used to catalogue the arguments and recommendations of the arts and innovation literature in Chapter 4:

■ Building a culture of innovation—the *cultural* and *educational* arguments

■ Producing knowledge—the *knowledge* argument

■ Applying knowledge—the *commercialisation* argument

■ Diffusing knowledge—the *economic* argument

■ A whole-of-system approach—the *systems* argument.

Chapter 2

Positioning the arts within Australia's national innovation system

This chapter positions the arts within Australia's innovation agenda and introduces the principal voices that have argued for the arts in innovation: the HASS sector, digital content industries, arts education and university research sectors, and new media arts. We then examine four distinct periods of arts and innovation policy activity from 1994 to 2008.

2.1 The development of innovation policy in Australia

While some form of national innovation policy has existed in Australia for more than two decades (from as early as 1984), it was foregrounded soon after the Howard Coalition government came to power in 1996. Although it was a business policy statement, the government's 1997 *Investing for growth—Australia, a regional financial centre* influenced the future development of innovation-specific policy in Australia. The focus of *Investing for growth* was business investment in R&D, which was related to the rise of information and communication technologies (ICTs). The same year also saw the Prime Minister's Science and Engineering Council rebadged as the Prime Minister's Science, Engineering and *Innovation* Council (PMSEIC).

After its re-election in 1998, the Howard government announced that 'a detailed stock take and evaluation of Australia's national system of innovation is required if we are to set the agenda for the future and develop policies to promote higher living standards' (quoted in OECD 2005a, 317). The National Innovation Summit in early 2000, jointly facilitated by PMSEIC and the Business Council of Australia, brought together over 500 delegates from government, industry, business and universities to lay out a vision for an innovative Australia in the next millennium. Priorities and recommendations from the summit were outlined in *Innovation: Unlocking the future* (August 2000). Together with the Chief Scientist's report on innovation—*The chance to change* (November 2000)—this fed into the government's landmark innovation policy announced in 2001. Titled *Backing Australia's ability: An innovation action plan for the future*, the policy injected a further $3 billion into Australia's innovation system. Most of the programs associated with the policy were evaluated in 2003, leading to the second iteration of *Backing Australia's ability* in 2004, which committed funding and programs until 2010–11.[1]

Throughout this decade of innovation policy, the principal benefit government sought to deliver was economic prosperity, although social wellbeing and environmental benefits were also acknowledged. The Chief Scientist captured this focus at the time, stating that 'innovation is the driver of every modern economy—it is the key to competitiveness, employment growth and social well being' (Batterham 2000, 9).

Besides umbrella innovation policy development, much work was done on the research component of innovation. *Knowledge and innovation: A policy statement on research and research training* (1999, reviewed in 2003–04) paid direct attention to university research and research training. The two major Howard government reviews of higher education—the inquiries into Higher Education Financing and Policy (1998) and the Higher Education Review Process (2002–03)—also included analysis of university research. The government developed National Research Priorities in 2002 and promoted collaboration across research institutes in the Review of Closer Collaboration between Universities and Major Publicly Funded Research Agencies (2003–04) and the National Collaborative Research Infrastructure Strategy (announced 2004, reviewed 2008). In 2004, the

---

1   For further details of the history of innovation policy in Australia, see Bryant et al. (1996) and Timpson and Rudder (2005).

Research Quality Framework aimed to assess the quality and impact of all publicly funded research, resulting in *The recommended RQF* (a proposal only) in 2006. Attention was also given to knowledge transfer and the commercialisation of research within universities and public research institutes in such documents as *Best practice processes for university research commercialisation* (2003), *The emerging business of knowledge transfer* (2005) and the *National survey of research commercialisation* (2000–04).[2]

These innovation and research policy developments were bound up with a larger national project—the development of a national innovation system for Australia. This 'systems' approach to innovation emerged globally in the early 1990s (see Lundvall 1992, Nelson 1993, Freeman 1995) and gained impetus through the OECD's National Innovation Systems Project (from 1996) and the codification of international indicators and standards in the *Oslo manual* (1992, 1997b, 2005b).

The national innovation system approach augmented previous innovation analysis based solely on inputs such as research investment, and outputs such as publications and patents. To this it added a concern for the interactions and flows of information, people and technologies between agents within the broad innovation system. Agents include universities, research institutes, funding and investment bodies, commercial businesses and the technical and management personnel who work in and travel between those organisations. A systems approach seeks to understand the strengths and weaknesses of the overall system through mapping it, and then attempts to correct system failures and improve capability across the system.[3]

2.2 STEM in the mainstream, HASS in the margins

Throughout its history, innovation policy in Australia has generally followed the guidelines and assumptions about innovation used by the OECD, which focuses on innovation in business enterprise, concentrating on technological product and process innovation (see *Oslo manual* 1997). This has meant that the dominant view in Australia is that innovation is the domain of science, engineering, technology and medicine (STEM)—also referred to as 'science, engineering and technology' (SET) or simply 'science and technology'. While writing in 2000 that innovation was 'the only way forward', Australia's Chief Scientist stated that SET 'underpins our future as a thriving, cultured and responsible community' (Batterham 2000, 9).

The tight coupling of innovation policy with the STEM sector means that 'research and innovation' is often taken to be synonymous with 'science and technology'; that is, the most crucial research is scientific and the most crucial innovations are technological. Indeed, the mapping of Australia's innovation system was called *Mapping Australian science and innovation* (2003), and the second iteration of *Backing Australia's ability* was subtitled *Building our future through science and innovation* (2004).

The effect of STEM-centric innovation policy has been to exclude other disciplines, such as the HASS disciplines, from participating in the policy and funding support provided by government for national innovation. When HASS was mentioned during the Howard era, it was only as support to STEM, assisting in building a culture of ideas or marketing the innovations of STEM to the community:

> *Research in the humanities and social sciences, for example, can enhance the organisational, management, legal and marketing knowledge that is critical for successful innovation. Submissions to the Review from the Academies of Social Sciences and Humanities reaffirmed the importance of these research disciplines to facilitate better understanding of issues raised through research in SET and more generally. (Batterham 2000, 63)*

---

2   For further details, see DEST (2006b).
3   See the OECD's *National innovation systems* (1997) for a detailed overview.

2.3 Agitating voices: HASS, digital content industries, arts education and new media arts

Given the sidelining of the HASS sector, it is no surprise that the arts would not feature in policy development for Australia's national innovation system. From our literature review, it is evident that four overlapping sectors have been making arts and innovation arguments since the beginnings of explicit national innovation policy in the mid-1990s.

2.3.1 Humanities, arts and social sciences

Most broadly, the arts have come under the umbrella of innovation policy arguments relating to the HASS sector, which covers the academic disciplines that lie outside the traditional locus of innovation policy in the STEM sector. Arguments for the inclusion of HASS often revolve around scope and scale (for instance, HASS represents one quarter of current research investment by government, and so should receive similar attention in policy formulation) (CHASS 2006b, 1). The arguments also build the case for cross-sector collaboration and commercialisation ventures with the STEM sector.

The arts rate a general mention within the HASS sector, and occasionally turn up in case studies used to make innovation claims. While the arts do not figure in the social problem-solving arguments for HASS, they do figure in the 'new economy' or 'creative economy' arguments drawn from the discourse of creative industries.

These arguments have been led by CHASS, and by the Australian Academy of Humanities before and after the formation of CHASS in mid-2004.

2.3.2 The digital content industries

The arts have also been part of the discourse of innovation in the digital content industries (DCIs), although they have not been directly included within it. DCIs have come under the banner of the creative industries and at the national policy level in Australia, attention to the creative industries has been focused almost entirely on the DCIs—that is, on film, media and communications rather than the arts. This narrow focus contrasts with broader notions of creative industries that include the arts, design and media, which have been adopted by other Australian jurisdictions and other countries, including the United Kingdom. For example, the national Creative Industries Cluster Study conducted in 2002–03 sought to map 'the industries producing digital content and applications' (DCITA and NOIE 2002, 3), and included case studies in the interactive games, interactive multimedia, advertising and educational content industries (*CICS outline of findings* 2003, 1). Within this study, innovation in the DCIs is argued to be crucial because it adds content, service and user interaction to the ICT sector. The Department of Communications, Information Technology and the Arts then fed the work of the cluster study into the Digital Content Industry Action Agenda (DCITA 2005).

National policy activity for DCIs has been informed by two organisations involved with the Creative Industries Cluster Study and other government initiatives: Cutler and Company, an ICT consultancy directed by Terry Cutler, and the Centre of Excellence in Creative Industries and Innovation, directed by Stuart Cunningham, based at QUT and linked to several university and industry partners.

2.3.3 Arts education and university research

The arts have been also represented by the voices of arts education and professional arts practice. Arts education policy activity has been driven by peak organisations and national collaborations in the tertiary arts sector which sought to establish the credibility of arts-based higher education and research. This came in the wake of the absorption of specialist arts colleges into universities from 1989 through the 'unified national system' of universities as part of the Dawkins reforms. Due to those amalgamations, tertiary arts educators came under pressure to add research trajectories to their academic careers. Since then, significant ground has been made in including arts production as a form of legitimate research (which we will refer to as 'practice-led research', although similar terms are also used).

Arguments for the place of arts education in national innovation have broadened in recent years to include arguments about the benefits of school-based arts education in skilling up the 'innovation workforce'—the next generation of innovators across the economy. This discourse has been developed by the Australia Council for the Arts in collaboration with the Centre of Excellence in Creative Industries and Innovation and the National Education and the Arts Network.

2.3.4 The Australia Council and new media arts

Rather than consider the place of all the arts in innovation, the Australia Council has focused on new media arts, including arts–science collaborations, whether or not connected to university-based research. This new media discourse appears to draw on the notion of artist-as-researcher found in practice-led research, as well as ideas about high-tech digital applications and links to scientific developments found in DCIs' discourse. The council at one time even stated that 'the New Media Arts Fund is the research and development arm of the Australia Council' (*Clash of cultures* 1999, 4).

When the Australia Council uses the term 'innovation' in relation to other art forms, the term mostly refers to experimental and/or new artistic work, outside of any connection to an innovation policy discussion. Occasionally, there are statements to the effect that the arts require or should consider innovative ways of bringing traditional and experimental arts to the broad public (innovative marketing), or improving arts management (innovative management processes). Those suggestions allude to innovation in business processes and enterprise.

2.3.5 Other related voices

In all the documents from the period under review, 'arts and innovation' is sometimes connected to design (when mentioned in the context of art and design and the creative industries), traditional mass media (film, television, radio) and cultural and collecting institutions (galleries, libraries and museums).

2.4 Arts and innovation policy activity, 1994–2008

The intersecting policy voices can be followed through a number of distinct periods since the mid-1990s, but the story is neither coherent nor triumphant. Arts and innovation arguments were fragmentary and reactive. There were missed opportunities for building synergies, and it has been difficult to gain 'traction' with national innovation policymakers.

For clarity, the account in this section is segmented into four large chronological periods, each marked by a defining policy report or review. It is a story of promising starts with *Creative nation* (1994) and other wide-ranging policy documents, before a complete shift to STEM in *Backing Australia's ability* (2001–04). The latter initiative amounted to systemic exclusions of the arts, humanities and social sciences and produced a set of fragmented, sector-led policy responses. This was followed by the rise of creativity in the innovation agenda through *Imagine Australia* (2005), which suggested that innovation policy might shift to include the excluded players.

The story ends, more optimistically, as it enters the fourth period with the 2008 Review of the National Innovation System. The review promises to renovate the national innovation system and open up a place for the arts.

2.4.1 First period: *Creative nation* and promising starts (1994–2000)

The first period of policy activity that attempted to position the arts within national innovation began during the later stage of the Keating-led Labor government. It involved wide-ranging policy statements and reviews that predated the explicit innovation policy frameworks begun under the Howard government around 1998.

In October 1994, *Creative nation: Commonwealth cultural policy* was launched as Australia's first cultural policy, covering the traditional arts as well as film, television and radio, multimedia and cultural institutions. One of the policy's flagship propositions —that 'culture … makes an essential contribution to innovation' (*Creative*

nation 1994, Introduction)—was followed up by several statements about R&D and innovation. Thus, *Creative nation* sketched 'arts and innovation' possibilities for the arts, the DCIs and arts education, although it mainly addressed traditional cultural issues such as national identity and public accessibility.

The multimedia component of *Creative nation* was explored in much more detail in another document, released one month earlier. Cutler and Company's *Commerce in content: Building Australia's international future in interactive multi-media markets* (September 1994) presented the case for DCIs as potential innovators for Australia's emerging creative economy. The report treated the creative content and interactive multi-media sectors as major commercial industries, with accompanying economic data, regional and global analysis, R&D claims and market prospects.

In October 1995, a Senate committee produced *Arts education*, which contained recommendations for improving arts education from primary schools to universities. A considerable portion of the report was devoted to arts-based research in universities in the wake of the Dawkins reforms. While the report's recommendations were not taken up by the incoming Howard government, the tertiary arts sector thought the university research question too important to ignore. In 1997–98, the Australian Council of University Arts and Design Schools and the National Council of Heads of Tertiary Music Schools, with later input from the Australia Council, carried out the Research in the Creative Arts Project. The resulting report, *Research in the creative arts* (May 1998, also called the *Strand report*), made specific recommendations and developed guidelines concerning research grants, publication outputs and system-wide reforms. Similar recommendations were also presented as part of a strategic report, *Knowing ourselves and others: The humanities in Australia into the 21st century* (April 1998), commissioned by the Australian Research Council (ARC).

This brings us to the beginnings of the Howard government's innovation policy. The then recently established Prime Minister's Science, Engineering and Innovation Council (PMSEIC) was busy working towards the National Innovation Summit to be held in early 2000. Around that time, it appears that PMSEIC was interested in whether a national innovation policy might include those domains addressed by the *Creative nation* policy. In July 1999, on behalf of the Australia Council, John Rimmer presented the case for new media arts as innovation in the report, *Clash of cultures >> New partnerships >> Innovation.* The report described new media artists as innovators, alongside scientists and technologists, and floated the idea of arts–science and arts–technology partnerships. The film industry also had its chance to present an innovation argument to PMSEIC (Bishop et al. 2000).

However, no immediate follow-up to these presentations to PMSEIC appears on the record. By the time of the National Innovation Summit's follow-up report, *Innovation: Unlocking the future* (August 2000), the arts, film, television, media and design had been sidelined in public policy aimed at building an innovative nation.

2.4.2　Second period: *Backing Australia's ability* and sector-led activities (2001–04)

The next period of policy activity was between the first and second iterations of *Backing Australia's ability* (2001 and 2004). The centrepiece of the Howard government's innovation policy, *Backing Australia's ability* committed billions of dollars to science, engineering and technology from 2002 to 2011 (although HASS research also benefited from major increases in funding to the ARC). This was a time of sector-based mapping, reviews and planning, resulting in the immense *Mapping Australian science and innovation* (2003) and the review of research policy, *Knowledge and innovation* (2003–04). For the arts and DCIs it was also a time of mapping and review, although the outcomes had little immediate effect on national innovation policy.

Following the *Nugent report* into the major performing arts (1999), the Australia Council facilitated what has come to be known as an 'ad hoc' review cycle of art forms. After the council's *Planning for the future* (February 2001) came reviews of the 'small to medium' performing arts (March 2002), contemporary visual arts and crafts (*Myer report*, June 2002) and contemporary dance (February 2004). New media arts and community cultural development reviews would come later in 2006. In the final reports from these reviews, the idea of innovation is mentioned occasionally but not in connection with national innovation policy. The closest connection to national innovation policy is found in several passages in the *Myer report* on contemporary visual art and craft, in which visual artists are occasionally described alongside scientists as innovators and deserving of private-sector R&D investment.

A sector-led review and planning activity for tertiary arts education began in the early 2000s. In 2001, the ARC funded a special project called 'Towards a research strategy for the creative arts: Creative practice, publication and research training', which was facilitated by the Australian Academy of the Humanities and the Australian National Coalition for the Creative Arts. The project involved three national symposiums that aimed to 'debate the past, present, and future for innovation within the creative and design disciplines', and resulted in the edited publication *Innovation in Australian arts, media and design: Fresh challenges for the tertiary sector* (Wissler et al. 2004), in which several chapters directly address arts and innovation policy.

School-based arts educators also joined in strategic planning, with the help of the Australia Council. The 2002 National Seminar on Education and the Arts resulted in various research projects to 'measure the impact of creative arts education in schools' (Australia Council 2004, 1). Two years later, the National Arts and Education Network was established and a four-year *National education and the arts strategy* was published, followed by a national arts education summit in 2005 titled 'Backing our creativity'. However, school-based arts education did not engage in an innovation framework until 2006–07.

In contrast, the DCIs deliberately engaged with the national innovation framework through the three-stage Creative Industries Cluster Study conducted during 2002 and 2003. The study was funded by the then National Office of the Information Economy and the Department of Communications, Information Technology and the Arts, and reconnected with the issues raised some eight years earlier in *Commerce in content* (Cutler and Company 1994). The Stage 1 report argued for the place of DCIs in national innovation, and Stage 2 aimed to investigate, among other things, 'support for innovation in creative practice, distribution, marketing and audience development' (DCITA and NOIE 2002, 43). In Stage 3, a cluster of reports made recommendations about innovation and the DCIs. Stage 3 also saw the first and only significant application of a national innovation systems framework to a non-STEM sector in *Research and innovation systems in the production of digital content and applications* (September 2003), a report authored by Cutler and Company and the Creative Industries Research and Applications Centre at QUT.

The Howard government's four National Research Priorities, developed during this period and announced in 2002, largely ignored the HASS sector in favour of the STEM sector. While the Australian Academy of Humanities argued the case for the humanities' contribution to the priorities, the arts figured only incidentally and by association in an argument to include digital content development in the 'Frontier technologies for building and transforming Australian industries' research priority (AAH 2003, 24–29).

2.4.3 Third period: *Imagine Australia* and the rise of creativity in the innovation agenda (2005–07)

From around 2005, there appears to have been a growing sense that national innovation policy might shift to bridge STEM and HASS and engage the arts more fully. Policy efforts were building, and the pivotal arguments were advanced by CHASS (formed in mid-2004) and the ARC Centre of Excellence in Creative Industries and Innovation (formed in mid-2005 as the first ARC-funded centre of excellence outside the STEM sector).

PMSEIC established a working group in 2005 to investigate 'the role of creativity in the innovation economy'. In December 2005, the group produced a final report, *Imagine Australia: The role of creativity in the innovation economy*, recommending that:

- government shift innovation policy to 'recognise the central role of creativity and the creative industries within a rapidly changing environment'

- cross-disciplinary and cross-sector research be promoted by establishing a Creative Innovation Fund for collaboration and commercialisation between HASS and STEM.

However, it is difficult to identify a dedicated place for the arts in the report. Instead, the report paid strategic attention to issues related to HASS, the DCIs and design services.

The Australia Council's *Creative innovation strategy* (January 2006), released alongside *Imagine Australia*, dealt directly with the arts. The strategy proposed four key components:

- the 'creative schools' component, which argued that one of the benefits of school-based arts education lies in building the capacity of the future innovation workforce

- the 'synapse research' component, which was based on cross-disciplinary arts–science partnerships involving practice-led research and new media arts

- the 'creative leadership' and 'create + accelerate' components, which focused on training and support for enterprise and commercialisation.

The Australia Council had described the arguments for the new media and creative industries in the *Creative innovation strategy* even more strongly in 2005, in its joint submission with the Australian Film Commission and the Australian Film, Television and Radio School to a Senate inquiry into 'pathways to technological innovation' (Australia Council et al. May 2005).

After *Imagine Australia* and the *Creative innovation strategy* came various documents promulgating the arts and innovation agenda. The newly formed CHASS argued for strengthening connections between HASS and STEM in *Commercialisation of research activities in the humanities, arts and social sciences in Australia* (May 2005) and *Collaborating across the sectors* (November 2006), in which the arts appeared in case studies about new media and arts–science partnerships.

In 2006, the Australia Council undertook scoping studies for community cultural development (*Community partnerships scoping study*, June 2006) and new media arts (*New media arts scoping study*, September 2006). The studies recommended investigations into how these arts practices might connect to national innovation.

In March 2007, the Australia Council and the Centre of Excellence in Creative Industries and Innovation jointly produced *Educating for the creative workforce: Rethinking arts and education*, which framed arts education as an ideal training ground for building the creative capacity of our future workforce in general, and future innovators in particular. The *National education and the arts statement*, published in September 2007, echoed that rationale.

Finally, in February 2008, *Building a creative innovation economy: Opportunities for the Australian and New Zealand creative sectors in the digital environment* (Cultural Ministers Council 2008) summarised the innovation arguments for DCIs from the previous decade, and called for stronger connections between the profit and non-profit components of the creative sector.

Towards the end of this period, two research and innovation policy documents touched on non-STEM innovation. In the proposed guidelines for the Research Quality Framework, outlined in *The recommended RQF* (October 2006), the meaning of 'research publications' was extended from traditional text-based publications to include creative outputs in art, design and media. In all, 35 research outputs were identified. In the framework, they would be intensively peer reviewed and ranked on their quality and impact.

Similarly, the Productivity Commission's final report on *Public support for science and innovation* (March 2007) included a widening of its terms of reference to include HASS components as part of a survey of the national innovation system. However, most of the language, statistics and disciplines covered in the report were geared towards the STEM sector. Researchers are mostly referred to as 'scientists', and the specific recommendation for R&D tax concessions for HASS disciplines was rejected because it was thought too difficult to implement (Productivity Commission 2007, 5–6, 387).

2.4.4 Fourth period: 2020 Vision, the Review of the National Innovation System and fresh possibilities (2008)

Despite the efforts to link HASS with the nation's innovation agenda, innovation policy remained firmly STEM-based as the Howard era ended with the election of the Rudd Labor government in November 2007. In January 2008, the new government announced the Review of the National Innovation System, to be led by Terry Cutler. By mid-year, the review had received more than 700 public submissions. By our reckoning, some 50 submissions specifically addressed the arts in some way. All the main voices from the past are represented, but now some from the business community are also arguing that the HASS sector be included in our nation's vision for innovation.

The most promising signal for change came from Prime Minister Kevin Rudd's closing remarks at the Australia 2020 Summit in Canberra in 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. (Quoted in Venturous Australia 2008, 47)

The 'Towards a creative Australia' strand of the summit reaffirmed the need to include the arts in innovation policy. The strand was responsible for the arts, film and design input; its 'vision' was to 'position … the arts as a central plank of the government's innovation agenda' (*Australia 2020 Summit final report* 2008, 259).

The Review of the National Innovation System's report, *Venturous Australia: Building strength in innovation* (September 2008), took an important first step to follow through on this broader vision for national innovation. Rudd's expansive comments are quoted in Chapter 5, which lists the arts as a key part of educational curriculums to build the skills and meet the needs of tomorrow's innovation workforce, including 'future innovators in the visual and performing arts' (*Venturous Australia* 2008, 50). The report states that 'the visual and performing arts rely very heavily on innovation, with new television programs, plays, music, and films making up a relatively large share of annual creative arts output' (*Venturous Australia* 2008, 50). The report then argues for an increase in funding for the creative arts:

> In recent years the Australian Government has invested additional funding in fields such as engineering and mathematics, recognising their centrality to innovation. The same approach is required in an important area of Australian success—the creative arts—through more equitable distribution of opportunities, greater research opportunities, and an underlying funding model which reflects the real cost of high-quality training [in the arts]. (Venturous Australia 2008, 50)

Venturous Australia also lauded the Australian Broadcasting Corporation and other cultural institutions, such as museums, for their role in archiving, researching and disseminating cultural knowledge. While the report acknowledged that 'capitalising on the contribution of the creative and liberal arts to Australian innovation presents a challenge' (*Venturous Australia* 2008, 51), it did not advance many of the proposals offered in *Imagine Australia* and the wider arts and innovation literature, leaving services sector and STEM innovation as its central focus.

However, *Venturous Australia* opened up an opportunity to include the arts in national innovation. It proposed replacing PMSEIC with a National Innovation Council supported by a Research Coordination Council that would coordinate the efforts of public sector agencies around innovation research. The report did not stipulate the disciplinary breadth of the proposed national councils, so there is an opportunity for the arts to be included.

Chapter 3

Arguments for including the arts in innovation

In this chapter, we summarise the central proposition gleaned from the arts and innovation policy documents surveyed in Chapter 2. We then examine specific arguments about where, how and why the arts could and should be located within Australia's national innovation system.

3.1 The central proposition

In the documents surveyed for this paper, the central arts and innovation proposition is *that the arts should be a significant part of the national innovation system*. This proposition appears in two forms. One form refers to the cultural sector at large (the arts, cultural institutions, design, traditional and new media, linked to the broader humanities): the proposition that 'culture … makes an essential contribution to innovation' (*Creative nation* 1994, Introduction). The other refers to the arts in particular: the proposition that 'Australian artists and creative practitioners … play a vital role in enhancing and growing Australia's innovation economy' (*Creative innovation strategy* 2006, 1).

However, apart from some notable exceptions, the central proposition has remained largely implicit in the documents and has been explicitly stressed only since 2005. The explicit statements are listed below.

Regarding the cultural sector (which includes the arts):

Culture … makes an essential contribution to innovation. (Creative nation 1994, Introduction)

A robust national innovation system requires a cocktail of creative talent drawn both from traditional science and technology disciplines as well as from the humanities, arts and social sciences. (Imagine Australia 2005, 16)

The humanities and creative arts play a key role in Australia's research and innovation enterprise … are integral to the national innovation system … are inherently and deeply implicated in the innovation system. (AAH 2006, 1, 2)

The humanities, arts and social sciences (HASS) are highly relevant to innovation. The HASS sector contributes in a number of ways: not just as a supporting act to science; but also as an equal partner with science, technology, engineering and medicine (STEM) in collaborative projects; and in the new post smoke-stack era of industry, as innovators in their own right. (CHASS 2006a, 1)

Australia's innovation policy needs to acknowledge and incorporate the role of the creative and liberal arts. (Venturous Australia 2008, 48)

Regarding the arts specifically:

The arts can greatly contribute to the Government's goals of developing a 'knowledge' economy, of which innovation and ideas are key drivers. (Clash of cultures 1999, 18)

Artists throughout the ages have always had a role in using their practice to interpret and critique cultural innovation. Engagement and experimentation with the new communications media and new vocabularies (made possible by technical and cultural innovation) are critical elements in the development of a living culture. (Clash of cultures 1999, 3)

The intersection between [science and new media art] … can and will lead to innovation.
(Clash of cultures 1999, 3)

[The work of] new media artists … represents important R&D, generating new innovations.
(Australia Council et al. 2005, 10)

Australian artists and creative practitioners … play a vital role in enhancing and growing Australia's innovation
economy. (Creative innovation strategy 2006, 1)

Not surprisingly, the main recommendation to come from these propositions is that national innovation policy be restructured to embrace the arts, the DCIs and the HASS sector more broadly. Most of the arts and innovation documents surveyed assume this point as a basic necessity, while some, most notably *Imagine Australia* (2005) and the Australian Academy of the Humanities' submission to the Productivity Commission (2006), made clear statements to this effect:

Australia has invested significant resources into developing and implementing whole-of-government policies for
innovation. We believe the effectiveness of Australia's innovation record can now be enhanced by extending these
policies to include creativity and the creative industries. (Imagine Australia 2005, 33)

The systematic blindness to the contribution of the humanities and creative arts, with the accompanying
definitive or tacit exclusion of eligibility for funding under a vast array of schemes, is in the Academy's view the
single most significant impediment to the effective functioning of Australia's innovation system. (AAH 2006, 7)

The submission also identified access to and participation in decision making and policy development as essential:

The overwhelming exclusion of humanities and creative arts researchers from participation in the policy-
and decision-making processes and from programme design, exacerbate these impediments [to the effective
functioning of Australia's innovation system]. Opening up the many processes to include input from all those
able to make useful contributions regardless of disciplinary origin would greatly assist the Australian innovation
system to meet problems and take opportunities as they arise. (AAH 2006, 7–8)

3.2 The specific arguments

Within the policy literature surveyed, we identified clusters of arguments that can be catalogued according to the organising framework of innovation outlined at the end of Chapter 1—*producing*, *applying* and *diffusing* knowledge within a culture and system of innovation. Some arguments have been made by only one of the policy proponents described in Chapter 2, while others have been put forward by several coming from the arts, the DCIs and other HASS players. However, each includes the arts in some form and each places a different emphasis on the three general ways a sector can contribute to national innovation, as argued by CHASS (2006a, 1, 12): supporting STEM, collaborating with STEM, or being innovative in its own right.

3.2.1   Building a culture of innovation—the cultural argument

Cultural arguments position the arts as an important way to build and promote a national culture of ideas and an atmosphere of innovation. In this way, the arts *support* national innovation. These arguments arose from discussions about excellence (such as in major performing arts or national cultural institutions) or about experimentation (such as in smaller performing arts, contemporary visual arts and new media arts):

Australia should have a vibrant major performing arts sector that enriches Australian life and builds its image
as an innovative and sophisticated nation … The activities of the major performing arts sector help build
Australia's image abroad as a clever and innovative country. (Nugent report 1999, 5)

Work by Australian [new media] artists can enable and promote an international visibility of Australia's cultural
and scientific strengths. (Clash of cultures 1999, 3)

Increased exports and more tourists are some of the benefits of a flourishing arts sector, but in the innovation agenda what matters is the talent attracted to our shores. Thus, a thriving and internationally acclaimed arts culture can help support national innovation by attracting and retaining the innovation workforce of today, as well as the students who may become tomorrow's innovation workforce:

> *Groups of creative and innovative workers, including scientists and technologists, are now being attracted into dynamic clusters located in specially designed precincts, cities or regions. These in turn can become catalysts for generating the intellectual capital that feeds economic innovation more broadly … (Imagine Australia 2005, 15)*

The arts can also help build what the Australia Council has called 'a climate of creativity' (Australia Council 2005, 2) and what CHASS has called 'a creative culture' or 'the conditions which are conducive to creativity' (CHASS 2005, 3–4). When creativity is encountered via the arts and cultural sectors, the desire for innovation and change among a nation's citizens can grow:

> *The Commonwealth's responsibility to maintain and develop Australian culture means, among many other things, that on a national level … innovation and ideas are perpetually encouraged. (Creative nation 1994)*

The cultural argument does not claim that cultural innovation should become a 'fourth bottom line', along with the economic, social and environmental 'bottom lines' of current innovation policy. While the cultural case proposes that it is good for our national innovation to have a vibrant national arts culture, it does not argue that this arts culture is a form of national innovation. Other arguments, outlined below, make that case.

3.2.2 Building a culture of innovation — the educational argument

Arts education for the innovation workforce

While the cultural case is about building an atmosphere that supports innovation, the *educational* argument is about building the skills and aptitudes required if Australia's future workforce is to be innovative. Some have argued that an arts education can support national innovation in general because the skills and aptitudes strongly associated with a rich, arts-based schooling—creativity, flexibility and collaboration—are the qualities needed for the innovation workforce now and into the future. This is arts education *for* the innovation workforce:

> *[There is a] need to integrate creativity, cultural studies, the arts and design into curriculum to produce the best innovators. (Venturous Australia 2008, 50)*

> *The arts foster imagination, risk-taking and curiosity—important aspects of creativity. Governments, businesses and communities now widely regard creativity and innovation as fundamental to social, economic, cultural and technological growth … We now need to mobilise our arts and education systems to reap the full benefits of creativity in our lives as individuals and communities, making us a creative and innovative nation. (National education and the arts statement 2007, 4)*

> *Recent work on innovation across the economy suggests that it is precisely the habits associated with artistic creativity that are a vital, if neglected, element of current innovation policy. Lester and Piore's work on leading US firms, suggests that innovation depends on two processes; analysis and interpretation, and the skills associated with interpretation are highly developed in many forms of artistic practice … Overall competitiveness may be compromised if the coupling of analysis and interpretation is unbalanced. Creativity, in its form within artistic practice, may address this imbalance. The argument that studying the arts boosts academic achievements in other subjects has been the subject of extensive research and the consensus view could be summed up as 'not proven'. There is stronger evidence for the relationship between arts education and a variety of social or 'non cognitive' skills, from self-confidence to communication skills. (Educating for the creative workforce 2007, 5)*

> *Our future prosperity demands a well-informed and active citizenry, consisting of individuals able to communicate well, think originally and critically, adapt to change, work cooperatively, connect with both people and ideas, and find solutions to problems as they occur … Collaborative, cross-disciplinary practice and research—the hallmarks of much artistic practice today—is an important prerequisite for solving complex issues, and provides a foundation for new scientific discovery, and knowledge and wealth creation. (Creative innovation strategy 2006, 1, 3)*

Many people with arts training bring their much needed and valued skills into a range of other industry sectors. In this current climate it is the very skills of lateral thinking, innovation, adaptability, entrepreneurism, multi skilling and communication which are increasingly sought after and valued within the corporate and industrial world. (National Association of Visual Arts, quoted in Myer report 2002, 77)

Some recommendations have sought to secure the place of arts education in schools and increase the quality of its delivery. The broadest recommendation is that:

all children and young people should have a high quality arts education in every phase of learning. (National education and the arts statement 2007, 5)

More specific recommendations to achieve this include:

- ensure that a national curriculum framework is well rounded and takes into account the needs of all discipline areas, including the arts (*Arts education* 1995, recommendations 9 and 10)

- include a key arts-based competency—aesthetic competency—as one of the key federal educational competencies (*Arts education* 1995, recommendation 18)

- find new ways to link schools with artists and arts organisations (*Creative innovation strategy* 2006, 3; *National education and the arts statement* 2007, 5, 9; Australia Council 2005, 6)

- invest in more curriculum development for the arts and professional development for arts teachers, as well as artists and art organisations working with schools (*National education and the arts statement* 2007, 9; *Creative innovation strategy* 2006, 3)

- coordinate the efforts of the bureaucracies within the arts sector and the education sector (*Arts education* 1995, recommendation 4)

- collect nationally consistent data on education outcomes for all key learning areas, including the arts, rather than for only literacy and numeracy (*Arts education* 1995, recommendation 8).

Cross-sector education for the innovation workforce

Further educational arguments are concerned with the need for cross-sector education for an innovation workforce. New economic models of innovation assume that cross-disciplinary and cross-sector collaboration are crucial; thus, an education experience that spans both HASS and STEM sectors is crucial. Yet Australia's education system has been criticised for being too narrowly disciplinary and overspecialised:

On the whole, in the Australian educational system, imbedded structural processes foster overspecialisation and curriculum imbalance throughout all stages. Unlike the US and some European systems, which promote an early general education before specialisation, our British-based model begins this separation and specialisation very early … A mixed education, particularly early in students' careers, can better adapt them to cope with changing work conditions and can help to bring the innovation sectors into closer convergence. (Imagine Australia 2005, 26)

Cross-sector education, an idea largely driven by CHASS, would see HASS *collaborating with* STEM. Various recommendations seek to achieve a broad-based cross-sector education for those entering the workforce and research sectors:

- encourage undergraduates into cross-disciplinary courses without risk to their career development; develop new cross-disciplinary university courses that can also inform wider teaching and research practices; and amend the HECS scheme and university survey information to place a higher value on those courses (*Collaborating across the sectors* 2006, 9)

- develop an integrated arts, sciences and humanities program for undergraduates, to provide all students with a multidisciplinary grounding (*Imagine Australia* 2005, 33) that takes the form of a generalist foundational first year of university (CHASS 2005, 4)

- mandate a balance of disciplines for senior secondary students (*Collaborating across the sectors* 2006, 9)

- develop a national school strategy for HASS, parallel to work done in science, mathematics and technology, to include a 'creative curriculum' across all disciplines throughout all schooling from kindergarten to Year 12 (CHASS 2005, 4).

3.2.3   Producing knowledge—the knowledge argument

The arts and research

The *knowledge* arguments, which focus on research and R&D processes, move from understanding the arts as supporting STEM innovation to seeing the arts as collaborating with STEM and being innovative in their own right. Since the mid-1990s, tertiary arts education and the new media arts have been arguing that knowledge is created in and through art-making (research *in* and *through* the arts), rather than solely through the analysis and theorisation of the arts (research *about* the arts). Not surprisingly, the tertiary arts sector has focused on R&D in the context of university, while new media arts have been as much concerned with industry and professional contexts as with what occurs in the academy. On a similar front, the DCIs have been arguing that digital content production should be counted as a form of research. The creation of new knowledge and ideas is not just a matter of empirical (whether quantitative or qualitative), theoretical or textual research—it is also a matter of the development of expressive material forms (arts, design, media and content production). The literature surveyed for this paper supports this knowledge argument.

Traditional arts as research:

> *Partnerships between different levels of government have assisted the production of the arts and cultural products. In the case of the Australia Council's assistance for the development of new creative work, success has been spectacular. In effect, the Council has been the sole source of research and development funds or venture capital to the arts and has been essential to the development of the industry. (Creative nation 1994, Cultural industry development)*

Small to medium performing arts as research:

> *[The small to medium performing arts] sector plays a fundamental role in research and development, experimentation, innovation and risk-taking with a commitment to new Australian work and diversity of artistic form. The Sector is seen within the arts more broadly as the crucible for new ideas and approaches to creating and presenting work. (Examination of the small to medium performing arts sector 2002, 7)*

Visual arts as research:

> *The visual arts sector is exemplary in promoting and articulating the value of questioning, critical activity, alternative ideas, innovation, research and creativity. The importance of experimentation without foreseeable outcomes is an important area of artistic practice, akin to 'pure' research in an academic context. Artistic research is self-critical: when artists do what they do, they also comment and enquire as to the nature, value and function of what they do, forming, proving and disproving hypotheses … artists, and the forms and ideas they generate, impact upon other professions—design, architecture, publishing, advertising, IT etc. Artists are 'early adopters' as well as 'adaptors' of new technologies, new cultural discourses, new ways of seeing the world. (200 Gertrude Street Contemporary Art Space, quoted in Myer report 2002, 87)*

New media arts as research:

> *The New Media Arts Fund is the research and development arm of the Australia Council, the Federal government's principal arts funding and advisory body. Through this Fund, the Council makes substantial investments in research and development (R&D) between art, science and technology, and supports interdisciplinary arts practice which displays a critical and innovative approach to art and its context. (Clash of cultures 1999, 4)*

> *New media artists are actively involved in 'practice-based research', in which interactive technologies, interfaces and materials are investigated in terms of their creative applications. Artists work both as individual practitioners and in highly collaborative professional environments to pursue practice-based research across disciplines as diverse as nanotechnology; human computer interface; software engineering; robotics; mobile/ wireless computing and telephony; visual media; marine biology and acoustics. This work represents important R&D, generating new innovations, which are applied in areas as diverse as design practice, architecture, interactive media and communications, education and biology. Much of this work depends on critical independence and is highly experimental, which the Australia Council supports as an investment in risktaking and discovery. (Australia Council et al. 2005, 10)*

The vision for media arts in Australia in 2016: … The role of research and creative development in media arts practice is understood and clearly articulated as a rigorous mode of cultural innovation that relates to but contributes different insights to scientific and academic research and development. (New media arts scoping study 2006, 16)

Digital content creation as research:

The Australia Council for the Arts, [the Australian Film Commission and the Australian Film, Television and Radio School] … undertake and support groundbreaking applied research in digital content production that has major benefits for the adoption of new digital applications across industry. (Australia Council et al. 2005, 2–3)

The arts and research within universities

Many recommendations related to the knowledge argument refer to the university-based research system. The general aim has been to recognise arts, design and media-making as R&D with legitimate research methodologies (*Strand report* 1998, recommendation 3; *New media arts scoping study* 2006, 16; *Creative innovation strategy* 2006, 6; Australia Council et al. 2005, 16).

Because the production of art, design and media is relatively new to being thought of as university research, there is a need to ensure that there is no systemic bias against the arts and DCIs in university research funding, including national block funding to universities and funding distributed internally in individual universities (*Strand report* 1998, recommendation 11; *Research and innovation systems* 2003, 66, 72–73, strategy 11; *Arts education* 1995, recommendations 23, 24, 25).

A range of specific recommendations have sought to achieve a non-biased funding system that acknowledges research in the arts and other forms of creative production. These include recommendations to:

■ count creative works and non-traditional publication formats—the products of art-making, design and content production—in national and university audits of research outputs, rather than only text-based outputs (*Strand report* 1998, recommendations 10 and 15; *Commerce in content* 1994, ch. 8 recommendation 1(c); *The recommended RQF* 2006, 27)

■ count grant money earned by university researchers from competitive arts, cultural and other grants, rather than only grants from dedicated research funding agencies, even if won through private grant applications by academics rather than through university channels (*Strand report* 1998, recommendation 14), including Australia Council grants (*Knowing ourselves and others* 1998, recommendation 21; *Strand report* 1998, recommendation 9)

■ establish dedicated government funding programs for DCIs' innovation and digital content R&D (Australia Council et al. 2005, 15)

■ raise awareness of the value of practice-led research in the arts (*Creative innovation strategy* 2006, 6)

■ broaden the National Research Priorities (CHASS 2006a, 11, 14; *Research and innovation systems* 2003, 66, 72)

■ develop a national peer review framework to help universities and national agencies deal with practice-led research in arts, design and media (Wissler et al. 2004, xviii).

To increase the chance of winning ARC research grants, there are recommendations to:

■ have the ARC develop criteria that suitably accommodate the track record of applicants from the creative arts (*Strand report* 1998, recommendation 5)

■ have the ARC, peak bodies and universities develop strategies to increase the quality and quantity of ARC grants applications submitted by the arts sector (*Strand report* 1998, recommendations 6 and 7; *Creative innovation strategy* 2006, 6; *Planning for the future* 2001, 20; Wissler et al. 2004, xviii)

■ ensure membership of the arts sector on key ARC panels and committees (*Strand report* 1998, recommendation 8).

Cross-sector research and the arts

Knowledge arguments are also found in proposals for greater cross-sector collaboration between HASS and STEM. Just as CHASS has argued for the necessity of cross-sector education for national innovation, so has it argued for the necessity of HASS *collaborating with* STEM in university and industry research, development and innovation (see CHASS's *Collaborating across the sectors* 2006). This argument acknowledges that many of the challenges facing contemporary society are complex and need multidisciplinary teams to produce useful and world-leading innovation. This is part of the knowledge argument because, if the HASS sector can collaborate with the STEM sector on research and innovation projects, then it stands to reason that HASS and STEM must be equally involved in creating knowledge and R&D processes.

The Australia Council has made the case for greater cross-sector efforts in arts–science and arts–technology partnerships in new media arts, first in *Clash of cultures* (1999) and later in the 'Synapse research' component of the council's *Creative innovation strategy* (2006).

Several general recommendations to promote and facilitate cross-sector research have noted the need to:

> *Maximise and extend the use of cross disciplinary partnerships for economic and cultural benefit. (Clash of cultures 1999, 17)*

> *Facilitate greater cross-disciplinary and cross-sectoral research collaborations between SET and HASS sectors … Promote broader cross-disciplinary and cross-sectoral teaching and research. (Imagine Australia 2005, 5, 9)*

> *Recognise emergent, cross-disciplinary fields of knowledge, and provide funding incentives for cross-disciplinary research and projects. (CHASS 2005, 4)*

> *Encourag[e] collaborative and cross-disciplinary approaches (especially with science) by improving and promoting funding programs. (Commercialisation of research activities in HASS 2005, 34)*

In recent years, calls to promote cross-disciplinary research have included recommendations to:

- extend the National Collaborative Research Infrastructure Scheme … to include humanities, social sciences and creative arts (*Venturous Australia* 2008, recommendation 6.14)

- introduce a Creative Innovation fund to support collaboration between HASS and STEM sectors (*Imagine Australia* 2005, 5, 34)

- investigate how national R&D programs (such as cooperative research centre and ARC programs) could be adapted to better facilitate cross-disciplinary research (*Imagine Australia* 2005, 31)

- hold a national summit of cross-sector researchers and a series of associated events (attended by government agencies, universities, R&D organisations and business and industry groups) to stimulate a national approach (*Collaborating across the sectors* 2006, 9)

- establish an institute for cross-sector collaboration to showcase, advocate and train people in cross-sector collaboration (*Collaborating across the sectors* 2006, 9)

- understand and deal appropriately with the added costs of cross-sector collaboration (*Collaborating across the sectors* 2006, 8, 9)

- address barriers to entry and difficulties in publications and reward structures faced by cross-sector collaborators, compared to researchers within single disciplines (*Collaborating across the sectors* 2006, 8, 9)

- provide specific training for postgraduate researchers working between HASS and STEM sectors (*Collaborating across the sectors* 2006, 9).

R&D laboratories and centres

To strengthen art, design and media production as a form of R&D, there have been recommendations to establish dedicated R&D laboratories and centres for the DCIs and the arts. These include:

- a national innovation lab for HASS–STEM cross-sector collaboration (*Imagine Australia* 2005, 36)

- Collaborative Innovation Centres to embed cultural institutions within the innovation system (*Research and innovation systems* 2003, 65, 66–67, strategy 2)

- a Digital Content Industry R&D Corporation modelled on the rural R&D corporations (*Research and innovation systems* 2003, 66, 71–72, strategy 10)

- a national centre for creative research in new media arts, modelled on international examples such as the Banff Centre in Canada and ZKM in Germany, which might be located in single or multiple sites (*New media arts scoping study* 2006, 18, 25).

The idea for a research centre in new media arts is the only recommendation in the surveyed literature that directly addresses the arts, and is worth quoting at length:

> There was wide support across the country for some kind of leading-edge agency, such as a new national trans-disciplinary centre or institution that could fill the identified gap between high-end research and development, creative development, and experimentation—a place where artists could continue collaboration with other artists or practitioners from other fields after their formal arts education ends. It would also be a place where mid-career and senior people have the opportunity to undertake longer-term development processes in the creation of new work. Such a centre would sit outside of the university system, but would retain strong links to both industry and the tertiary sector, ensuring a more flexible research environment for artists. International models raised as useful examples were The Banff Centre and ZKM—although a distributed model that built on existing infrastructure was also suggested in preference to a single location. A national ideas competition was proposed to develop a vision and implementation path for such an initiative. (New media arts scoping study 2006, 18)

Incentives for investing in R&D in the arts

Many of the surveyed policy documents include statements about increasing the incentives for private sector investment in R&D activities in the arts and the HASS sector more broadly. To achieve this, there have been many recommendations to broaden the scope of the R&D tax incentive scheme to include HASS and arts-based research and innovation, rather than only STEM-based activities (*Commerce in content* 1994, ch. 8, recommendation 2(d); *Myer report* 2002, 330; *Research and innovation systems* 2003, 66, 71, strategy 9; Australia Council et al. 2005, 15; CHASS 2005, 4; Australia Council 2005, 7; *Commercialisation of research activities in HASS* 2005, 34; CHASS 2006a, 14; CHASS 2006b, 1–2; AAH 2006, 2; *Educating for the creative workforce* 2007, 42).

The recommendations for amending the R&D tax incentive scheme came first from the DCIs and most recently from CHASS and the Australia Council. The most arts-specific idea for such a scheme comes from the *Myer report* into contemporary visual arts and crafts (2002, 330–331). R&D tax incentives were viewed as a way of directly supporting the experimental end of visual arts and crafts. However, this was not part of a long-term innovation strategy but was suggested as a five-year program to be replaced by philanthropic support. To enact this proposal, the *Myer report* (2002, 330) specifically recommended that 'the Australia Council, or another appropriate institution … maintain a fund specifically designated for R&D activities'.

3.2.4 Applying knowledge—the commercialisation argument

The *commercialisation* argument claims that, just like the STEM sector, the Arts–DCI–HASS sectors can convert the knowledge created through R&D into commercial outcomes. CHASS has provided evidence of HASS-based commercialisation, but only a few cases involve the arts (*Commercialisation of research activities in HASS* 2005). More specifically in relation to the arts, the Australia Council made commercialisation a key feature in two of four components of its 2006 *Creative innovation strategy* ('Synapse research' and 'Create + accelerate'). Documents from the DCIs are much less concerned with commercialisation (one exception

being *From cottages to corporations* 2003), since they are primarily concerned with businesses and industry activities that are already commercial.

General recommendations concerned with improving commercialisation include:

■ 'make it easier for people in the HASS sector to commercialise their work' (CHASS 2005, 4)

■ find 'new pathways' and 'new mechanisms' for commercialisation in the arts (*Creative innovation strategy* 2006, 6; Australia Council 2005, 9; *Planning for the future* 2001, 20)

■ provide 'programs and funding models that increase the commercial potential of creative enterprises and organisations, according to geography, demography and the characteristics of the local creative sector' (*Building a creative innovation economy* 2008, 4).

Specific recommendations designed to reduce impediments and promote commercialisation include:

■ skills and leadership training in commercialisation and enterprise (Australia Council 2005, 7; *Creative innovation strategy* 2006, 8; *Imagine Australia* 2005, 35; *Building a creative innovation economy* 2008, 4; Australia Council et al. 2005, 16; *Commercialisation of research activities in HASS* 2005, 33–4), including such training for PhD candidates (CHASS 2005, 5; CHASS 2006a, 14)

■ mentorships and commercialisation advisers (*Imagine Australia* 2005, 35; *Commercialisation of research activities in HASS* 2005, 33)

■ international fellowships to observe best practice (*Imagine Australia* 2005, 35)

■ placements of postgraduate researchers into businesses (*Imagine Australia* 2005, 33; CHASS 2005, 5)

■ promotion to industry of the value of commercial partnerships with HASS (*Commercialisation of research activities in HASS* 2005, 33).

3.2.5 Diffusing knowledge—the economic argument

The defining *economic* argument is found in the introduction to *Creative nation* (1994), which stated that 'culture creates wealth' and 'is essential to our economic success', such that 'cultural policy is also an economic policy'. However, the creative industries, and DCIs in particular, have made the economic argument in detail, beginning with *Commerce in content* (1994) and followed by the Creative Industries Cluster Study (2002–03) and the work of the Centre of Excellence in Creative Industries and Innovation since 2005.

In a joint submission to the Inquiry into Pathways to Technological Innovation, the Australia Council, the Australian Film Commission and the Australian Film, Television and Radio School (Australia Council et al. 2005, 4) stated that the economic argument builds on four key economic facts that position creative industries as 'important areas of focus within a national innovation system' and as a foundation for the 'creative economy'. The first three facts—that the creative industries represent a significant industrial segment due to their current overall size; that they have higher growth rates than other industrial segments; and that they have relatively high economic multipliers—provide the case for including creative industries as a central part of industry policy. This is an important step, since innovation policy is considered a major plank of industry policy. The fourth fact is most directly connected to innovation policy—that DCIs drive innovations within ICT and other industries and thus enable the uptake and service provision of those other industries. In other words, the first three facts establish the broad *economic impact and activity* of the creative industries, while the fourth establishes that this impact and activity is *directly connected to processes and outcomes of innovation.*

The specific recommendation that seeks to build the economic argument is to further quantify the economic contribution of the creative industries:

> *Mapping the economic impact of creative talent and the creative sector is a key shared priority for all jurisdictions. Activities that assist in quantifying the contribution of the creative sector to the broader economy are vital for future policy and program implementation. (Building a creative innovation economy 2008, 23)*

3.2.6 A whole-of-system approach—the systems argument

The final set of arguments applies the framework of national innovation systems to cultural institutions and the cultural sector. These *systems* arguments have been explicitly pursued within the domain of DCIs, while the arts have also occasionally adopted them.

Describing cultural institutions as innovation hubs

Australia's cultural not-for-profit institutions, such as the ABC, libraries and museums, have been described as innovation hubs that cultivate innovation by connecting innovators with knowledge objects, commerce and the public:

> *The creative industries also overlap with a range of essentially non-profit-based public, community and heritage organisations, known in Australia as national cultural institutions. These institutions preserve, collect, exhibit or produce stockpiles of goods and services such as musical archives and historical materials that have an economic as well as social value. Potentially, they can provide much of the content that will drive the new digital interactive entertainment and service industries of the future. These organisations hold significant collections relevant to Australia's scientific and industrial history. (Imagine Australia 2005, 19)*

> *There [is] an important linkage between commercial and not-for-profit R&D activity for the sector. In this context, cultural institutions such as the Australian Centre for the Moving Image in Melbourne can play a role in initiating and nurturing cluster development and contribute to R&D for the industry. (CICS outline of findings 2003, 2)*

> *The ABC forges links with the artistic and cultural community by:*

> ■ *adapting the arts to television and radio, and encouraging arts funding bodies to contribute to this process*

> ■ *innovating and experimenting with radio and television programming, through commissioning and production*

> ■ *showing the work of Australian independent film producers*

> ■ *encouraging Australian composers and musicians through presentation in performance, competitions and orchestral workshops. (Creative nation 1994, Film, television and radio).*
> *National collections are essential resources for researchers in all fields, from basic scientific research to the social sciences, humanities and creative arts. They play a vital role for educators (from pre-school to postgraduate) and for the broader community in building scientific, historical and artistic knowledge and literacy and in fostering cultural knowledge, identity and cohesion. (Venturous Australia 2008, 96)*

Cultural agencies such as the Australia Council have similarly described themselves in terms of innovation hubs:

> *The [Australian Film Commission, the Australian Film, Television and Radio School and the Australia Council] are in the practice of developing expertise of content creators, facilitating partnerships with technological, scientific, and investment community … The Australian government's cultural agencies are well placed to facilitate research and development, skills and training, and professional development and partnerships, which are all precursors to technological innovation. (Australia Council et al. 2005, 15)*

> *The core functions of the Australia Council in maximising the value of creativity for Australia's innovation economy can be understood as:*

> ■ *Helping to nourish a climate of creativity, through direct and indirect support for arts and education, artists, creative practitioners and organisations*

> ■ *Acting as a broker between artists and creative practitioners and organisations, government, cultural agencies and industry, both nationally and internationally*

> ■ *Growing the creative industries nationally and internationally, through partnerships and industry development assistance that facilitate pathways to commercialisation and innovation and address barriers to market access. (Australia Council 2005, 2).*

Analysing whole sectors as innovation systems

The first and most comprehensive case for an innovation systems analysis beyond the STEM sector has been made through a report from the Creative Industries Cluster Study titled *Research and innovation systems in the production of digital content and applications* (2003). However, no analysis of national innovation systems for the arts has yet been undertaken. The closest such approach in the literature, although brief, is the list of strategic proposals for the future of new media arts in the Australia Council's *Planning for the future* (2001, 71). The list covered many of the components of an innovation system, including R&D and innovation, new product development and distribution, collaboration and cooperation, local success and international markets, and infrastructure development and support. There is also a brief mention by the Australia Council (in Australia Council 2005, 3) that its *Creative innovation strategy* (2006) follows an 'innovation value chain' seeking to link education (creating an ideas culture) to research (generating ideas) and then to enterprise (applying ideas).

Besides the general objective of including the arts–DCI–HASS sectors in the national innovation system, the most specific recommendations related to the systems argument are that efforts should be made to link cultural institutions into innovation flows and relationships with other components in the arts education and DCI sectors, including 'strengthening broadcasting's role in the innovation system and ensuring an active digital community broadcasting sector' (*Research and innovation systems* 2003, 66, 69–70, strategy 7) and reframing the goals of the Learning Foundation to drive innovation in the educational sector (*Economic benefits from cultural assets* 2003, 48).

3.3 Summary of the arguments

Through our literature review, we found six arguments for the inclusion of the arts within Australia's national innovation system.

The first two arguments, most commonly driven by the Australia Council for the Arts, position the arts as supporting innovation by contributing to an ideas culture. The *cultural argument*, which comes out of the traditional arts, claims the arts both build and promote a national culture of ideas and innovation by attracting talent to our shores and by cultivating a climate of creativity within our broader society. The *skills argument*, which comes out of school-based arts education, claims that a rich arts education throughout the school years helps build the skills and aptitudes (creativity, flexibility, collaboration) needed by our next generation of innovators. A complementary skills argument comes out of HASS, claiming that a multidisciplinary, cross-sector education for senior secondary and undergraduate university students likewise builds those skills and aptitudes in a century that requires multidisciplinary, complex, team-based problem-solving.

The next four arguments position the arts, to various degrees, as belonging whole-heartedly to the innovation system. The *knowledge argument*, which comes out of the university arts education sector, as well as from new media arts via the Australia Council and the DCIs, claims that creative production of new art, design and media is a form of research: knowledge is created in and through art-making, designing and creating media content, and is expressed in part through the outputs of artworks, designs and media content. The university arts sector has made the knowledge argument across all forms of art-making in the narrow context of 'practice-led' research within the academy; this is more or less an argument for arts as research in their own right. The new media arts and DCI discourses make the knowledge argument only for high-tech digital practices, but in the much broader academic, industry and professional contexts. The

new media arts argument specifically focuses on collaborating with STEM through arts–science and arts–technology partnerships. The DCIs' argument sees content creation as innovative in its own right, but their justification for inclusion in innovation policy comes from supporting the content requirements and service provision of the ICT industries.

The *commercialisation argument*, which comes primarily out of HASS and the DCIs, claims that the act of converting research into commercial applications (products and processes) occurs via HASS researchers and DCIs as much as it might in the STEM sector, and may occur in collaboration with the STEM sector through projects and enterprises in their own right. This argument goes beyond current assumptions in innovation policy that see HASS as supporting the commercialisation of STEM innovations through marketing and management.

The *economic argument*, which comes out of mapping the economic activities of the creative industries, claims that the creative industries have such significant size, growth rates and multiplying effects in Australia's economy that they demand a central place in industry policy. It follows that the creative industries, through digital content and applications, drive innovations in ICT and service industries that warrant their having a central place in innovation policies linked to industry and economic policy.

Finally, the *systems argument*, which comes predominantly out of DCIs and occasionally out of the arts, presents the cultural sector (the arts, cultural institutions, design, traditional and new media, linked to the broader humanities) as functioning as an innovation system, within which various institutions and organisations act as innovation hubs. This argument shows that the assumptions of the innovation systems approach can be applied to the creative sectors, just as STEM can be mapped.

These six arguments arose out of ad hoc responses to policy activity since the mid-1990s. However, when taken together, they begin to represent the sector's current and collective understanding of what a national innovation system might look like when the arts are engaged. Of course, many opportunities need to be created and taken, and challenges overcome, before our nascent arts and innovation system is recognised as such.

Chapter 4

The future for the arts in innovation

As shown in this paper, many arguments have been made justifying the inclusion the arts in the national innovation agenda. This concluding chapter considers how those arguments might be strengthened and strategically focused to meet the challenges of the next phase of innovation policy development and practice in Australia.

4.1 Underlying principles to consider

We believe that two important principles should inform future arts and innovation efforts.

First, a stronger focus must be on arguments at the core of our innovation framework—those that address knowledge production, knowledge application and knowledge diffusion in a systems approach. To date, the arts sector has been strongest in making cultural and educational arguments for inclusion, but those arguments tend to encircle rather than fall within the central concerns of national innovation policy and practice.

Second, shared cross-sectoral understandings of key terms need to be brokered. What the terms 'research', 'innovation', 'creativity' and 'knowledge' ordinarily mean in the arts is not necessarily the same as their meaning in innovation policy. Understandings of the term 'innovation' are obviously critical:

> *The challenge appears to be to develop measures of innovation that can capture these advances … without producing a definition of innovation that is so broad as to be meaningless. (Educating for the creative workforce 2007, 40)*

The term 'creativity' also requires special care. While creativity is widely acknowledged as something found in all forms of research and innovation (typically by generating and applying new ideas), an important terminological distinction still needs to be pressed: that the form of creativity associated with the arts (linked to aesthetic, expressive, content-specific and cultural concerns) is not the same form of creativity usually associated with science, engineering and technology-based enterprise. Nevertheless, *all* forms of creativity are needed to serve the innovation agenda. As recently stated:

> *Linking together the creativity of individuals from within the traditional cultural sector, the creative industries and non-cultural industries is the innovative leap that frames the creative innovation economy. (Building a creative innovation economy 2008, 6)*

These principles will inform the key future challenges that must be met if the arts are to become central players in Australia's national innovation system.

4.2 Challenges to address

The arts and the HASS sector more generally must address six main challenges.

Challenge 1: Specifically including the arts in a National Innovation Council

One of the key policy recommendations in the *Venturous Australia* report is to replace PMSEIC (the Prime Minister's Science, Engineering and Innovation Council) with a National Innovation Council supported by a Research Coordination Council that would coordinate the innovation research efforts of public sector agencies (recommendations 12.1 and 12.2). The report does not stipulate the disciplinary breadth

of the two councils, except to say that 'the Council should encompass a diversity of views' (*Venturous Australia* 2008, 153). It is essential that the arts sector position itself for inclusion in the proposed National Innovation Council and that the council is sympathetic to the distinctive contributions and practices of the arts in innovation.

One global model for including the arts in innovation is NESTA (the National Endowment for Science, Technology and the Arts), which was established in 1998 in the United Kingdom. Through this public vehicle, Britain has developed strong funding, support and policy development in the arts and creative sector, as well as between that sector and the STEM sectors.

One potentially significant development occurred with the announcement in May 2008 by Kim Carr, the Australian Minister for Innovation, Industry, Science and Research, of a plan to establish Industry Innovation Councils in late 2008, 'to act as key advisory bodies to Government and as innovation advocates' (Carr 2008). How the arts engage with these councils is likely to be vital for a healthy future for the arts in innovation.

Challenge 2: Strengthening the evidence base for arts and innovation arguments

It is clear that the collection of data and measurement of innovation in the HASS sector is underdeveloped and needs marked improvement if the sector is to appear on the balance sheets of national innovation surveys:

> *Current measures and benchmarking of the contributions of the humanities and creative arts to national innovation are inadequate and … better measures are critical for future models for public support of national innovation. (AAH 2006, 2)*

At least three strategies to strengthen the evidence base for the arts in innovation can be identified:

- *Sharpening methodologies of data collection and measurement.* While the literature has been strong on art-making as a form of R&D and a source of knowledge production for the economy and society, little evidence has been provided about how this idea plays out in practice. How can better evidence be gathered for the sorts of knowledge produced and applied in and through the arts? It is crucial to gain a clear idea of what we need to measure, and how to measure it, and to develop and implement methodologies for data collection and measurement.

- *Mapping innovation systems for the arts.* The literature provides no details about the ways the arts specifically connect to, and map across, the broader innovation system. There is no thorough sector-wide understanding about relationships between nodes and flows that are germane to innovation in and through the arts—links between innovators (as well as major institutions, organisations and groups), where they are located, what knowledge they produce, how it is distributed, transformed and archived, and how it might be commercialised. A dedicated long-term effort to map innovation systems for the arts can address these gaps in understanding. Perhaps ideas for investigating the arts in this way can be drawn from the Creative Industries Cluster Study, which was based on the DCIs. The time is right for a similar study for the arts—a national arts and innovation systems study.

- *Mining the repositories of practice-led research.* Rich and ready possibilities for mapping and measuring innovation lie in the repositories of practice-led research projects in Australian universities. There is now a strong tradition of practice-led research that reaches back two decades, with masters and doctoral submissions archived in university libraries and the Australian Digital Thesis Database. There is a rich potential to mine these archives to map the new knowledge, methodologies and publishing models developed by university researchers in the creative arts. Furthermore, by examining the careers and pathways of practice-led researchers, we could begin to understand how their creative/conceptual/embodied work can flow into further research and applications and innovations within and beyond the university to influence professional, industry and community domains.

Challenge 3: Developing an understanding of arts-based knowledge that connects it to innovation

While many argue that the arts fit throughout the innovation cycle and system, the arts are still not widely accepted as lying at the heart of innovation. Instead, what we still find in Australia and the OECD is the idea of science-driven innovation—that knowledge comes from scientific discovery and is applied in commercial

and social contexts, mostly through technological development. This is framed within a scientific–technical form of knowledge. If innovation continues to be understood in this way, then the arts (and potentially the whole HASS sector) will be seen as a plug-in to the current understanding of innovation and little more.

We need a better understanding of, and evidence for, the sorts of knowledge produced and applied in and through the arts. These will be differentiated but complementary epistemologies to the pervasive STEM-based knowledges. A mature innovation system can hardly ignore questions about how, for example, affect, aesthetics, story-telling, materiality, rich media, intersubjectivity and interaction contribute to innovation. Answering such questions will take us towards a sophisticated epistemology of the arts specifically oriented to innovation.

Challenge 4: Broadening commercialisation of the arts and creative outputs

We also need to work on the commercialisation argument for the arts. The arts may have a much greater economic footprint than we know for certain, and economic analysis should be done to determine if that is the case. In addition, we need to articulate the full range of commercialisation pathways that are currently pursued in or available to the arts. The arts sector, industry and government could then ask how the current commercialisation research and programs should be extended and supported, and whether new pathways need to be developed, promoted and tested. The types of activities and the range of disciplines to be included in the definition of 'the arts' would clearly have a large bearing on work in this area.

Challenge 5: Developing the argument for arts as social innovation

Largely absent in the literature we reviewed were arguments about arts as social innovation, which can be understood as the application of the arts to pressing cultural and social issues for the sake of national social benefits. This type of argument focuses on the way knowledge generated in and through the arts can be used to improve social circumstances, rather than be commercialised for economic and other advantage. This connects powerfully with one line of argument developed in the *Mapping Australian science and innovation* report (2003), which offered 'utilisation' as one form of knowledge application in which 'research and innovation [are] undertaken primarily for "public good" purposes' (2003, 25). That report concluded that 'in most cases utilisation of research results in economic, environmental or social benefits to a group of people or a community, but does not provide direct and exclusive economic returns to private individuals or firms' (2003, 161).

This utilisation argument is not developed in the arts and innovation literature, even though it has been pursued by many researchers from the creative arts, including the Australia Council, most notably through *Art and wellbeing* (2004) and the council's work on 'creative communities' since 2006.

The arts as social innovation are likely to be crucial in the future, for it is clear that many of Australia's research priorities cannot be addressed fully by scientific and technical innovation alone. Often, STEM-based innovation needs to be developed alongside inventive strategies and interventions that interrogate the resistant and deeply ingrained behaviours which accompany destructive and damaging human practices. Addressing cultural change is at the core of social innovation, and it is there that the creative arts, together with the humanities and social sciences, can play a fundamental role.

Challenge 6: Educating the innovation workforce for the arts

If artists and the arts industry are to be part of the innovation system—innovators in their own right—then arts education should not only be viewed as serving the innovation workforce in general, but as crucial for the recruitment and education of the next generation of innovators in the arts themselves. Much more can be made of this argument, which, until mentioned in *Venturous Australia* (2008, 50–51), was advocated for the DCIs (see *CICS outline of findings* 2003, 2 and *Building a creative innovation economy* 2008, 16–18). Both the arts sector and government policies need to ensure high-quality arts teaching at all levels of education, and in any national curriculum, in order to develop an innovative workforce for the economy generally and for the arts in particular.

4.3 Conclusion—the need for national leadership

In the past few years, we have seen a number of players emerge to coordinate various sector groupings and lobby for the cause of the arts, humanities and social sciences in innovation. These include peak bodies such as the Australian National Coalition for the Creative Arts; CHASS; learned academies, such as the Academy of the Humanities; the ARC; and the Australia Council for the Arts. There have also been calls for further peak bodies to be formed to help address the innovation agenda, such as the recent proposal for a National Council for Design and Creative Practice (Howard 2008, 36).

From this range of organisations, where and how will national leadership for the arts and innovation be asserted? Will it be achieved by one lead organisation that sets the agenda, or will the sector respond more positively to a coalition, a coordinated matrix or network of organisations? The *Venturous Australia* report calls for greater coordination between national bodies:

> *Capitalising on the contribution of the creative and liberal arts to Australian innovation presents a challenge. The Panel recognised the need to bring together the learned academies, the professional and representative bodies in the arts, humanities and social sciences and public agencies to navigate a way for the creative sectors to realise their potential as a platform for national innovation. (Venturous Australia 2008, 51)*

In whatever way a national agenda develops, it is critical that the Australia Council plays a central facilitating role. Its strategic priorities need to include an innovation policy agenda, which could be efficiently addressed through the council's priority to become a 'knowledge centre on the arts in Australia' (Australia Council 2008). Such a centre would no doubt be responsible for standard data gathering about the arts, but it could also examine the innovations produced by artists and arts organisations and track the impact of those innovations on the forms and conventions of the arts and across broader cross-sector, industry and community contexts. Thus, evidence could be gathered to demonstrate and model the ways in which the arts contribute to our national innovation system. Of course, no matter how valuable the Australia Council might be in advancing the arts in innovation, leadership must come from many quarters of the arts sector.

Without national leadership in the area of arts and innovation, based on the lessons of the past two decades, the challenges outlined in this chapter are likely to be addressed only in an ad hoc and uncoordinated manner. Providing such leadership is the greatest immediate challenge to ensure that the arts take a meaningful place in Australia's national system of innovation.

References

Reports and policy documents

Art and wellbeing—see Mills and Brown (2004)

Arts education—see Senate Environment, Recreation, Communications and the Arts Committee (1995)

Australia 2020 Summit final report—see Commonwealth of Australia (2008)

Backing Australia's ability—see Commonwealth of Australia (2001, 2004)

Building a creative innovation economy—see Cultural Ministers Council (2008)

CICS outline of findings—see DCITA and NOIE (2003)

Clash of cultures—see Australia Council (1999)

Collaborating across the sectors—see Metcalfe et al. (2006)

Commerce in content—see Cutler and Company (1994)

Commercialisation of research activities in HASS—see Gascoigne and Metcalfe (2005)

Community partnerships scoping study—see Australia Council (2006b)

Creative innovation strategy—see Australia Council (2006a)

Creative nation—see Commonwealth of Australia (1994)

Economic benefits from cultural assets—see Xamax Consultancy and Content Strategies (2003)

Educating for the creative workforce—CCI and Australia Council (2007)

Examination of the small to medium performing arts sector—see Cultural Ministers Council (2002)

From cottages to corporations—see Higgs and Kennedy (2003)

Imagine Australia—see PMSEIC (2005)

Innovation: Unlocking the future—see Innovation Summit Implementation Group (2000)

Investing for growth: Australia, a regional financial centre—see Commonwealth of Australia (1997)

Knowing ourselves and others—see AAH (1998)

Knowledge and innovation: A policy statement on research and research training—see Commonwealth of Australia (1999)

Mapping Australian science and innovation—see Commonwealth of Australia (2003)

Myer report—see Myer (2002)

National education and the arts statement—see Cultural Ministers Council and MCEETYA (2007)

New media arts scoping study—see Australia Council (2006c)

Nugent report—see Nugent et al. (1999)

Oslo manual—see OECD (1992, 1997b, 2005b)

Planning for the future—see Australia Council (2001)

Public support for science and innovation—see Productivity Commission (2007)

Research and innovation systems—see Cutler and Company and CIRAC QUT (2003)

Strand report—see Strand (1998)

The chance to change—see Batterham (2000)

The recommended RQF—see DEST (2006a)

Venturous Australia—see Cutler and Company (2008)

All references, by author

AAH (Australian Academy of the Humanities) (1998). *Knowing ourselves and others: The humanities in Australia into the 21st century*, volume 1 of 3 volumes. Prepared by a reference group for the AAH as part of the Australian Research Council Discipline Research Strategies. Commonwealth of Australia, Canberra.

—— (2003). *The humanities and Australia's National Research Priorities*. Report prepared for the Department of Education, Science and Training. Commonwealth of Australia, Canberra.

—— (2006). *Submission to the Productivity Commission Research Study on Public support for science and innovation*. Available at www.pc.gov.au/__data/assets/pdf_file/0008/37916/sub064.pdf (accessed 15 May 2008).

Australia Council (1999). *Clash of cultures >> New partnerships >> Innovation*. Presented by John Rimmer, chair of New Media Arts Fund, to the Prime Minister's Science, Engineering and Innovation Council on 25 June 1999. Australia Council for the Arts, Sydney.

—— (2001). *Planning for the future: Issues, trends and opportunities for the arts in Australia*. Discussion paper. Australia Council for the Arts, Sydney.

—— (2004). *Education and the arts: Research summary update*. Australia Council for the Arts, Sydney.

—— (2005). *Submission to the Prime Minister's Science, Engineering and Innovation Council inquiry into the role of creativity in the innovation economy*. Available at http://www.australiacouncil.gov.au/__data/assets/pdf_file/0011/32231/australia_council_PMSEIC_submission.pdf (accessed 1 February 2008).

—— (2006a). *Creative innovation strategy*. Australia Council for the Arts, Sydney.

—— (2006b). *Community partnerships scoping study: Creative communities*. Australia Council for the Arts, Sydney.

—— (2006c). *New media arts scoping study: Report to the Australia Council for the Arts*. Prepared by Andrew Donovan, Sarah Miller and Elaine Lally. Australia Council for the Arts, Sydney.

—— (2008). *Corporate Plan*. Available at http://www.australiacouncil.gov.au/about_us/organisation/corporate_plan (accessed 10 August 2008). Australia Council for the Arts, Sydney.

Australia Council, Australian Film, Television and Radio School and Australian Film Commission (2005). *Joint submission to the House of Representatives Standing Committee on Science and Innovation Committee's Inquiry into Pathways to Technological Innovation*. Available at www.innovation.gov.au/innovationreview/Documents/324-AFC_FAL_MEAA_AWG(R).pdf (accessed 7 May 2008).

Batterham R (2000). *The chance to change*. Final report by the Chief Scientist. Commonwealth of Australia, Canberra.

Bishop R, Case D, Axarlis S, Plante J and Allsop D (2000). *Innovation in the Australian film industry*. Presented by Rod Bishop and Chris Weir to the Prime Minister's Science, Engineering and Innovation Council on 2 June 2000.

Bryant K, Healy M and Lombardo L (1996). *Charting national innovation systems: An Australian approach*. Paper for the Informal Workshop on National Innovation Systems held by the OECD Working Group on Innovation and Technology Policy in Paris, 3 October 1996.

Carr Kim (2008). *Industry Innovation Councils—Consultations underway*. Media release from the Minister for Innovation, Industry, Science and Research. http://minister.innovation.gov.au/Carr/Pages/INDUSTRYIN NOVATIONCOUNCILS%E2%80%93CONSULTATIONSUNDERWAY.aspx (accessed 28 October 2008).

CCI (Centre of Excellence in Creative Industries and Innovation) and Australia Council (2007). *Educating for the creative workforce: Rethinking arts and education*. A report by Kate Oakley. CCI and Australia Council for the Arts.

CHASS (Council for the Humanities, Arts and Social Sciences) (2005). *The role of creativity in the creative economy*. A CHASS submission to the PMSEIC Working Group on the Role of Creativity in the Innovation Economy. Available at http://www.chass.org.au/submissions/SUB20050718TG.php (accessed 7 February 2008).

—— (2006a). *Innovation in a post-smokestack industry era*. CHASS policy submission prepared by Toss Gascoigne for the Productivity Commission *Report on public support for science and innovation*. Available at http://www.chass.org.au/submissions/SUB20060807TG.php (accessed 7 February 2008).

—— (2006b). *Public support for science and innovation.* A CHASS response to the Productivity Commission's draft *Report on public support for science and innovation.* Available at http://www.chass.org.au/submissions/SUB20061206TG.php (accessed 29 February 2008).

Commonwealth of Australia (1994). *Creative nation: Commonwealth cultural policy.* Commonwealth of Australia, Canberra.

—— (1997). *Investing for growth—Australia, a regional financial centre.* Commonwealth of Australia, Canberra. Available at http://www.treasury.gov.au/documents/185/PDF/Full.pdf (accessed 9 November 2008).

—— (1999). *Knowledge and innovation: A policy statement on research and research training.* White Paper, Commonwealth of Australia, Canberra. Available at http://www.dest.gov.au/archive/highered/whitepaper/default.asp (accessed 9 November 2008)

—— (2001). *Backing Australia's ability: An innovation action plan for the future.* Commonwealth of Australia, Canberra.

—— (2003). *Mapping Australian science and innovation: Main report.* Commonwealth of Australia, Canberra.

—— (2004). *Backing Australia's ability: Building our future through science and innovation.* Commonwealth of Australia, Canberra.

—— (2008). *Australia 2020 Summit: Final report.* Commonwealth of Australia, Canberra.

Cultural Ministers Council (2002). *Report to ministers on an examination of the small to medium performing arts sector.* Prepared by a working party of the Cultural Ministers Council Standing Committee. Cultural Ministers Council, Canberra.

—— (2008). *Building a creative innovation economy: Opportunities for the Australian and New Zealand creative sectors in the digital environment.* Prepared by the Creative Innovation Economy Roundtable, Cultural Ministers Council. Commonwealth of Australia, Canberra.

Cultural Ministers Council and MCEETYA (Ministerial Council on Education, Employment, Training and Youth Affairs) (2007). *National education and the arts statement.* Cultural Ministers Council and MCEETYA, Canberra and Carlton South.

Cunningham S (2008). 'The arts, and the innovation agenda'. In: *Workshop: The arts, and the innovation agenda, 31 March 2008.* Workshop booklet published by CHASS Available at http://www.chass.org.au/events/2008/art/pdf/Arts_and_Innovation_Agenda_Workshop_handbook.pdf (accessed 17 August 2008).

Cutler and Company (1994). *Commerce in content: Building Australia's international future in interactive multi-media markets.* Report for the Department of Industry, Science and Technology; CSIRO; and the Broadband Services Expert Group.

—— (2008). *Venturous Australia: Building strength in innovation.* The report of the Review of the National Innovation System. Commonwealth of Australia, Canberra.

Cutler and Company and CIRAC (Creative Industries Research and Application Centre) QUT (2003). *Research and innovation systems in the production of digital content and applications.* Report for the National Office for the Information Economy. Commonwealth of Australia, Canberra.

Cutler T (2008a). *Review of the national innovation system: A call for submissions.* Available at http://www.innovation.gov.au/innovationreview/Documents/ACallforSubmissions(28Feb2008).pdf. Commonwealth of Australia, Canberra.

—— (2008b). *Shaping Australia's future through innovation.* PowerPoint presentation to the Prime Minister's Science, Engineering and Innovation Council on 23 April 2008. Available at http://www.innovation.gov.au/innovationreview/Documents/PMSEICTC2.ppt (accessed 9 June 2008).

DCITA (Department of Communications, Information Technology and the Arts) (2005). *Unlocking the potential: Digital Content Industry Action Agenda.* Strategic industry leaders report to the Australia Government. DCITA, Canberra.

DCITA and NOIE (Department of Communications, Information Technology and the Arts and the National Office for the Information Economy) (2002). *Creative Industries Cluster Study: Stage 1 report.* DCITA and NOIE, Canberra.

—— (2003). *Outline of findings from Stage 1 and Stage 2 Creative Industries Cluster Study reports*. DCITA and NOIE, Canberra. Available at http://www.cultureandrecreation.gov.au/cics/summary1.doc (accessed 25 March 2008).

DEST (Department of Education, Science and Training) (2006a). *The recommended RQF. Research Quality Framework: assessing the quality and impact of research in Australia*. Endorsed by the Development Advisory Group for the RQF. Commonwealth of Australia, Canberra.

—— (2006b). Research commercialisation and knowledge transfer. Web summary of government activities. Available at http://www.dest.gov.au/sectors/research_sector/policies_issues_reviews/key_issues/commercialisation/ (accessed 10 February 2008).

Freeman C (1995). The national system of innovation in historical perspective. *Cambridge Journal of Economics*, 19:5–24.

Gascoigne T and Metcalfe J (2005). *Commercialisation of research activities in the humanities, arts and social sciences in Australia*. Occasional paper, Council for the Humanities, Arts and Social Sciences, Canberra.

Haseman B (2008). *A stitch in time: Issues in the arts and innovation sectors*. Presentation at the CHASS workshop on The Arts and Innovation Agenda, 31 March 2008. Available at http://www.chass.org.au/events/2008/art/presentations/pdf/EVE20080331BH.pdf (accessed 1 June 2008).

Higgs PL and Kennedy TA (2003). *From cottages to corporations: Building a global industry from Australian creativity*. Report on access to overseas markets for Australia's creative digital industries, as part of the third stage of the Creative Industries Cluster Study. Department of Communications, Information Technology and the Arts, Canberra.

Howard JH (2008). *Between a hard rock and a soft place: Design, creative practice and innovation*. Occasional paper, Council for the Humanities, Arts and Social Sciences, Canberra.

Innovation Summit Implementation Group (2000). *Innovation: Unlocking the future*. Commonwealth of Australia, Canberra.

Lundvall B-Å (ed.) (1992). *National innovation systems: Towards a theory of innovation and interactive learning*. Pinter, London.

Metcalfe J, Riedlinger M, Pisarski A and Gardner J (2006). *Collaborating across the sectors: The relationships between the humanities, arts and social sciences (HASS) and science, technology, engineering and medicine (STEM) sectors*. Occasional paper, Council for the Humanities, Arts and Social Sciences, Canberra.

Mills D and Brown P (2004). *Art and wellbeing: A guide to the connections between community cultural development and health, ecological sustainable development, public housing and place, rural revitalisation, community strengthening, active citizenship, social inclusion and cultural diversity*. Australia Council for the Arts, Sydney.

Myer R (2002). *Report of the Contemporary Visual Arts and Craft Inquiry*. Commonwealth of Australia, Canberra.

Nelson R (ed.) (1993), *National innovation systems: A comparative analysis*. Oxford University Press, New York.

Nugent H, Chaney M, Gonski D and Walter C (1999). *Securing the future: Final report*. Commonwealth of Australia, Canberra.

OECD (Organisation for Economic Co-operation and Development) (1992). *OECD proposed guidelines for collecting and interpreting technological innovation data: Oslo manual*. Prepared by College of Business Administration, University of Washington. OECD, Paris.

—— (1997a). *National innovation systems*. OECD, Paris.

—— (1997b). *Oslo manual: The measurement of scientific and technological activities: Proposed guidelines for collecting and interpreting technological innovation data*, 2nd edition. OECD, Paris.

—— (2005a). *Governance of innovation systems. Volume 2: Case studies in innovation policy*. OECD, Paris.

—— (2005b). *Oslo manual: Guidelines for collecting and interpreting innovation data*, 3rd edition. OECD, Paris.

PMSEIC (Prime Minister's Science, Engineering and Innovation Council) (2005). *Imagine Australia: The role of creativity in the innovation economy*. Prepared by an independent working group for PMSEIC. Commonwealth of Australia, Canberra.

Productivity Commission (2007). *Public support for science and innovation.* Research report, Productivity Commission, Canberra.

Senate Environment, Recreation, Communications and the Arts Committee (1995). *Arts education.* Senate report, Commonwealth of Australia, Canberra.

Strand D (1998). *Research in the creative arts.* Report funded under the Evaluation and Investigations Programme of the Department of Education, Employment, Training and Youth Affairs. Commonwealth of Australia, Canberra.

Timpson M and Rudder N (2005). Governing innovation policy: The Australian experience. In: *Governance of innovation systems. Volume 2: Case studies in innovation policy*, Organisation for Economic Co-operation and Development, Paris, 307–332.

Wissler R, Haseman B, Wallace S-A and Keane M (eds) (2004). *Innovation in Australian arts, media and design: Fresh challenges for the tertiary sector.* Post Pressed, Flaxton.

Xamax Consultancy and Content Strategies (2003). *Economic benefits from cultural assets: The digitisation programs and standards of collecting institutions and the scope for collaboration with the creative industries.* Final report, as part of the third stage of the Creative Industries Cluster Study. Commonwealth of Australia, Canberra.