Sustaining innovation: Perspectives from policy and the arts

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Abstract

Innovation is a hot issue in contemporary society. Governments around the world are racing to develop a knowledge-based economy propelled by innovation and supported by a lifelong learning society. The Victorian Government's policy statement - *Knowledge and Skills for the Innovation Economy* (Department of Education and Training, 2003) indicates that there is a specific role for public Technical and Further Education (TAFE) Institutes in supporting innovation in industry in terms of delivering skills training that helps develop innovation in existing and emerging businesses (pp. 1-2). Yet as a TAFE teacher in the fields of visual arts, jewellery and object design, I find myself challenged by the government's sense of innovation and the way innovation can be facilitated through TAFE teaching. It seems that the way 'innovation' is conceptualised and supported in Commonwealth government policy tends to shift attention away from developing skills that enhance innovation in industry.

This paper explores the apparent contradiction between what counts as 'innovation' in government policy and in arts practice, and the implications for VET. It aims to make a case for the way vocational education in the arts contributes to the national innovation agenda. The paper is organised into four main sections. First the research on which the paper is based is outlined. I then document the character of Commonwealth government policies aimed at building Australia's capacity in innovation. In the next section, this policy discourse is set against a range of commentaries on Arts practice and the nature of innovation within the arts articulated by artists, scientists and business. Finally, these insights are drawn together to suggest how VET, and arts education in particular, could support the national innovation agenda.

About this research

This paper is based on a study of innovation in government policy and arts practice which was completed in 2006 as part of a Masters of Education degree. This small-scale project entailed a detailed review of Commonwealth and Victorian government policies on innovation through the 1990s and 2000s. The review focused on the way governments conceptualised innovation and how they saw innovation being enhanced in order to optimise Australia's development as a knowledge-based economy. These policy understandings of innovation and how it might be implemented to advance the national innovation agenda were set against diverse accounts of innovation in arts practice, particularly jewellery and goldsmithing. These accounts included: reviews of artists work; papers presented at the recent Jewellers and Metalsmiths Group of Australia (JMGA) conference (2004) and published in the *JMGA Conference – Inherited Futures: Technologies to Trap Ideas* (Baines, 2005); and *Business Review Weekly's* (BRW) *Innovation issue* (2005, June 16-July 13) that provides business perspectives.

These documentary sources were supplemented with an interview with a practicing artist, acknowledged for her innovative concepts and arts practice. The interview was semi-structured with open-ended questions to allow the interviewee some latitude for elaboration and divergence. In accordance with ethical practice in social research, voluntary participation in the study was sought. Independent expert advice was sought in order to distance the researcher from the identification and selection of relevant innovators, and to provide balance and lend weight to the validity of the research. While the interview was not a major data collection strategy, it permitted triangulation with the case studies of artists and the commentaries on arts practice.

The research is informed by the professional knowledge base of White-Hancock, an artist and designer whose interest in crossing boundaries between science, technology and art led to a collaborative project in the field of laser holography with an expert in optics, Dr. Phil Wilksch, at the RMIT University Physics Department. This experience provided an understanding of how artists and scientists can work effectively in partnership to develop innovations. This experience of the innovative potential of technological, scientific and artistic collaboration impacts on the framing of this research in that this examination of the national innovation agenda arises, in part, from the perspective of an arts practitioner respectful of the situated knowledges embedded in other fields of endeavour.

My understanding of science as a particular situated knowledge is informed by the work of Donna Haraway's essay *Situated Knowledges: The Science Question in Feminism and the Privilege of Partial Perspective* (1991). Haraway's (1985, 1991, 1992) post-colonial social-feminist theories focus on issues of gender, difference and practices of domination in the contemporary world of politics and science. She outlines and deconstructs dualistic categories such as self/ other, mind/body, culture/nature, male/female, maker/made that she argues have pervaded Western traditions of science and politics, which have established systemic relations and practices of domination and positioned women, 'people of colour', nature, workers and animals as 'others' (1985, p. 177).

Haraway is known particularly for her concept of 'cyborg', a metaphor that captures an alternative form of political and social identity premised on the recognition that we are all hybrids of machines and organism. Using the idea of the cyborg allows Haraway to critique the way modern science attempts to displace the subjective human observer with 'objective' observational technologies that claim to produce a more truthful and valid account of the world (Holloway, 2004, p. 169). Haraway questions the distinctions drawn between the 'natural' and the 'cultural', arguing for a conceptualization of things as 'hybrid' or 'cyborg' because what counts as official, objective knowledge in science has always been mediated by different social and cultural conditions. Knowledge is always situated. What is known and how it is known is affected by the conditions in which the knowledge is produced. While science deals with the 'facts' of a situation, it is necessary to recognise that these facts might appear quite differently to other observers.

In summary, Haraway challenges the notion of scientific objectivity (Haraway, 1991, p. 190) and highlights, instead, the way knowledge is socially mediated. Her theory of cyborgs (Haraway, 1985) provides a way of thinking about innovation that is not premised upon dualistic understandings of science and technology. Rather than seeing science as

factual true knowledge, with finite boundaries and objective ways of knowing, she argues that knowledge is always shaped by its conditions of production and who produces it. She offers an epistemological orientation that sees knowledge rooted in blurred boundaries and the ambiguities between maker-made and human-machine. This orientation approaches science *as* culture, rather than in opposition to culture (1992, pp. 134-5). Haraway's perspective on knowledge offers ways of understanding innovation that can support the national innovation agenda.

Policy for an innovative knowledge economy

Government policies in support of innovation are evident from Labor's *Creative Nation* (1994) through to the Coalition's *Backing Australia's Ability: An Innovation Action Plan for the Future* (2001) and *Backing Australia's Ability – Building Our Future Through Science and Innovation* (2004). Yet where Labor emphasised the importance of culture and creativity as 'essential' to the development of innovation, these themes have disappeared from the Coalition's innovations policy agenda. Instead, the policy discourse and the practices of implementation have focused narrowly and exclusively on science, technology and business.

The *National Innovation Summit* (2000) was convened jointly by the government and the Business Council of Australia. Yet the 500 participants were all drawn from science, technology and business. Despite the implication of broad representation, the arts and other fields were not invited or given an opportunity to inform the debate. The steps leading to and developing from the *National Innovation Summit* (2000) confirm a narrow focus on innovation in science and with a particular emphasis on R&D and commercialisation through emerging industries and businesses.

The *Backing Australia's Ability* policy, arising from recommendations of the *National Innovation Summit,* extended funding for innovation by $4.5 billion (2001-2004). It was earmarked for Information and Communication Technologies (ICT), biotechnology, medical research and development (R&D), business, science and other technologies. It is generally to be used for infrastructure, Australian Research Council (ARC) competitive grants, establishing centres of excellence, tax concessions and rebates for R&D activity by businesses (p. 5). Reference to funding for arts and education is absent in this policy.
Continuing support for this policy agenda, through *Backing Australia's Ability: Building Our Future Through Science and Innovation* (2004), provided a further $5.5 billion (over three years) to encourage public and private sector R&D; a 175% tax concession rate for business related R&D expenditure "to help the growth of small companies in tax loss" (p. 1) and $535 million over five years for START grants to support businesses in R&D.
These funding differentials reveal the policy priority accorded to science and arts. Now linked with communications and information technology, the only reference to supporting innovation in the visual arts and crafts was in the form of a $2.1 million allocation to individual young and emerging artists for 2005-6 (National Association of Visual Artists). Yet even these levels of science and technology funding are modest compared to other nation's expenditure. For example, the $100 million expenditure allocated to one specific field of science, nanotechnology, in Australia is approximately one fortieth of Japan's $4 billion, (Lawrence, 2005, p. 31). If Australia's capacity to innovate depends just upon

investment in science and technology, the nation may have already 'lost the race' to innovate with nanotechnology. But if international competitiveness also depends upon being very quick and clever to capitalise on R&D, there is perhaps value in considering the role that education can play in the national innovation strategy.

The assumption in Coalition policy is that innovation will occur if funding is provided for research and development, and commercialisation. Yet this narrow view of the enabling factors for innovation is contested.

Research suggests that there are other methods for encouraging innovation that should be developed and that are currently underemphasised. These methods include encouraging risk-taking, creative management and reconsidering predominant top-down management styles, collaboration, recognising and rewarding innovation and developing a culture that supports innovation. Developing innovative thinking in individuals and organisations and developing methods for recording and measuring innovation are not focused on at present and require further investigation (Callan, 2004; Moore 2004; Featherstone, 2005).
Business Review Weekly editor, Tony Featherstone, argues, for example, that innovation and entrepreneurship "go hand in hand" (2005, p. 6). He says that too many companies talk about innovation but don't have the right culture to support it. "Some waste money on trendy office fit outs, but would be better off developing programs to encourage, measure and reward entrepreneurship, and identify corporate 'intrapreneurs', those working innovatively within an organisation (2005, p. 6). Featherstone encourages managers to identify how they record and measure innovation (2005, p. 6). These processes need to be implemented before recognition and reward programs can be adopted.

Business executives differ markedly on the practical measures needed for establishing a culture that supports innovation. Some nominate recruiting creative people as crucial while others argue that providing the right environment and offering training in innovative thinking is more important (Mc Coll, p. 55). For example, Pricewaterhouse Coopers recruit graduates who are able to 'think outside the square' then conduct an in house training program called 'i-challenge' where graduates work in a team to create ideas, research their implementation, establish business cases and present them to an executive group for judging which will proceed. To encourage idea development, the company runs a scheme called 'whole of brain thinking'. This uses play and encourages staff to think about how others might approach an issue to try to free them from their conventional way of thinking (Mc Coll, 2005, p. 55).

In the current industrial landscape, entrepreneurialism is heartily encouraged by the Federal government (Howard, 2004, p. 6). Yet the link between entrepreneurialism and innovation becomes problematic in the current context, in which the top-down managerial style favoured by the Commonwealth government favours predictable orthodoxy and social conservatism that is hostile to transgression and inhibits risk-taking.

Moore argues that the impact of this cultural context on artists reveals the difficulties of sustaining innovation alongside contemporary practices of entrepreneurialism. He suggests "the fear of risk has its roots in the managerial revolution of the early nineties but is fuelled by growing authoritarianism in government and business on the one end, and

dependence of artists on shrinking state patronage on the other" (p. 2). The managerial culture that controls our institutions demands accountability to accountants, value for investment measured by 'indicators' and 'outcomes' and top-down control of cultural assets (Moore, 2004, p. 2).

In this context, it is difficult to sustain innovation. The rich bohemian tradition that has played an important role in the development of creative artistic sub-cultures and avant-garde groups in Australia and elsewhere has been damaged by the managerial culture of Howard's government:

> Being a bohemian is a licence to take risks … (but) … I don't think HECS debts and high rents that compel students to work a number of part-time jobs and live with their parents has encouraged bohemia on campus. Late twentieth century managerial models that seek to account for and control all assets actually destroy cultural assets (p. 5)
> .

His point is that creativity doesn't just happen, but is nurtured by cultural and institutional settings (Moore, 2004, p. 2). In this regard, innovation can be developed through education that supports democratic creative culture in Australian TAFEs and other public schools (Moore, 2004, p.5).

In summary, the Commonwealth says that innovation is the key to economic prosperity and wellbeing, but the policy approach focuses narrowly on innovation in science and technology, and seeks to build an innovative Australia largely by privileging investment in R&D and commercialisation. Given funding comparisons between the arts, and science and technology, it is clear that the arts are not valued in the 'innovation stakes' despite the arts' historic contribution to creativity and cultures of innovation. As Haraway (1991, p. 190) suggests, the concept of 'innovation' is understood differently according to its context of use. In government policy, innovation is generally perceived as an economic instrument that focuses on product development to generate value or profit whereas, in the arts, the focus is more on the human impact and involves new, creative and lateral patterns of thinking and acting. This is the focus of the next section.

Arts and Innovation

Cases of arts practice
To clarify the character of innovation in the arts, I begin with two profiles of innovative artists, Stelarc and Duprat, who each generate new perceptions and paradigms of the world raising important questions of human identity that challenge the hierarchies of science and art embedded in current policy.

Stelarc is an Australian performance artist who has been extending and enhancing his body through technology since the '80's. Stelarc initially explored the psychological and physical limitations of the body with his suspension events (where his body was suspended by hooks), drawing on Hindu rituals. The artist argues, "In the past we've considered the skin as surface, as interface. The skin has been a boundary for the soul, for the self, and simultaneously, a beginning to the world. Once technology stretches and pierces the skin, the skin as a barrier is erased" (Atzori & Woolford, 2005, p. 2). More

recently he has worked to grow a third ear on his arm. While shocking in some senses, this art is consistent with the way the body has been augmented by technological and medical interventions such as pacemakers, artificial hips, eyes and ears, dialysis, silicon and chip parts (SymbioticA, 2005).

Stelarc envisions the application of nano-technologies as the next logical step in the evolutionary development of the human body. He argues that now is the time to recolonise the body with microminiaturized robots that are able to work autonomously, at the cellular level on the body and to enhance it from within. In this way, it is likely that (a) new 'alien' life-form(s) will be developed, created within the human body rather than being discovered somewhere 'out there' in interstellar space (Atzori and Woolford, 2005, p. 6). For Stelarc, the body is "an impersonal, evolutionary, objective structure" (Atzori & Woolford, 2005, p. 3). The artist states,

> Technology is what defines being human. It is not an antagonistic, alien sort of object; it is part of our human nature … We shouldn't have a Frankensteinian fear of incorporating technology into the body, and we shouldn't consider our relationship to technology in a Faustian way - that we're somehow selling our soul because we're using these forbidden energies (Atzori &Woolford, 2005, p. 5).

Stelarc's concepts and performances problematise the human body and challenge accepted understanding of the body as a bounded entity, a unity, which is natural and therefore distinct from technology. Instead, Stelarc performs as cyborg and challenges the dualisms of nature and culture, science and art, objective and subjective knowledge. As Haraway suggests, the idea that we inhabit a cyborg world opposes the idea of science, building knowledge through fixed categories and the "final imposition of a grid of control on the planet" (Haraway, 1985, p. 154). Instead it begins to reveal science as culture, as a way of living where "people are not afraid of their joint kinship with animals and machines, not afraid of permanently partial identities and contradictory standpoints" (1985, p. 154).

Hubert Duprat's art also problematises the dualisms that underpin science and that currently inform Commonwealth policies on innovation. He utilizes insects (trichoptera – the caddis worm) to construct 'sculptures' (Besson, 2002). Duprat discusses his scientific/artistic experiments and the epistemological issues that they raise in terms of creativity, originality and the metaphor of the craftsman. By removing the larvae from their natural habitat and providing them with precious materials, he prompts them to manufacture cocoons or cases that resemble jewellers' creations. Duprat refers to Information Theory (1948) as a useful lens for examining the insect's seemingly aesthetic behaviour; the activities of the caddis worm are prompted by the 'noise' – beads, pearls and gold - that is introduced into the insect's environment (Duprat & Besson, 2002, p. 1). The acquisition of new knowledge by experiment is a specific case of information growth under the effect of noise, that is, external interference (Duprat & Besson, 2002, p. 7). The sculptures that result show the concept of the production of works of art by entities other than a human artist. Besson says of Duprat's work, "As art pieces they are a kind of assisted 'ready-mades', found objects altered and promoted to the ranks of art, hybrid formations … As scientific experiments they are evidence of an unexpected interdisciplinarity; they also raise real epistemological issues" (Duprat & Besson, 2002, p. 3).

The metaphor of the insect as craftsperson that Besson speaks of in his interview with Duprat (2002, p. 5) challenges established concepts of innovation, creativity and convergence which are anchored in human beings. Who is the creator? The insect physically makes the piece that is mediated by Duprat and the 'noise' that he selects. The insect chooses from Duprat's selection of materials and organizes the 'noise' into the ultimate cocoon form. In terms of Haraway's theories, the boundaries between 'maker' and 'made', creator and created, are deliciously blurred (1985, p. 154). The artistic collaboration between human and insect deconstructs the dualistic categorisation of trichoptera as 'other' (1985, p. 177). Duprat's work demonstrates that 'creation' requires a broader definition than that attributed to humans and God in our patriarchal traditions. The interdisciplinarity of the artist's practice challenges the dualistic hierarchy embedded in current policy related to innovation that maintains division between arts and sciences.

These profiles pose important questions about the nature of innovation in ways that are quite confronting. As art they challenge accepted understandings of the body, and the distinctions between 'maker' and 'made'. Like Haraway, this art transgresses in ways that question dualistic hierarchies, break down barriers in our thinking and reveal an alternative way of looking at, seeing and knowing the world that we have made for ourselves, but not in an antagonistic manner. Refusing a 'demonology of technology' Stelarc argues that, "new technologies tend to generate new perceptions of the world and in turn allow us to take further steps" (Atzori & Woolford, 2005, p. 5). These themes are not just evident in arts practice, but are also articulated as a professional practice within the arts by practising artists and jewellers.

Innovation in arts professional practice
An interview with a practising artist underlines the challenges that Stelarc and Duprat's art presents to conventional ways of knowing. Talking from her own experience as an artist, she said that a fundamental role of innovative art is to challenge perceptions, beliefs and assumptions. The artist explained that in her practice, she tries to expand definitions and perceptions of what constitutes a jewellery object. "My primary motive for doing that is to try and challenge people with what they are letting into their own intimate space".

The artist explained that she saw a relationship between thinking processes, creativity and innovation when she said that innovation comes "from independent thought, and is a product of lateral thinking. Innovation is anything that makes people think in a different way to what they normally would". The artist aligned innovation with thinking processes and the resultant social impact. She adopted a product-oriented definition of innovation, saying "I always associate innovation in terms of … product, whereas creativity I think more as pure thought … Innovation improves peoples living or adds value to their lives".

When asked about whom she saw as innovative, the artist identified the Dutch jewellers of the 70s as particularly innovative in terms of their creative lateral thinking. These practitioners used 'found' or ready-made objects like photographs and non-traditional industrial materials, such as aluminium, plastics and rubber, rather than traditional jewellery materials of gold and gemstones. In this way, the Dutch jewellers questioned notions of preciousness and economic value of jewellery and subverted the aesthetic dogma, the traditions and hierarchies of jewellery practice. This response indicates the

significance that the artist attributes to questioning traditions. Innovation is identified as a consequence of working across boundaries and recognising and respecting other situated knowledges, as a way of generating creative thinking which questions or challenges established ways of knowing and acting within the world. This artistic practice is valued because it impacts on the artist's own ways of thinking and enhances her own capacity to create and to produce work that is innovative.

The interview pinpoints some of the characteristics of arts thinking and practice that facilitate innovation. The artist identified lateral and critical thinking, problem solving, research, idea development, experimentation, knowledge of history and questioning of traditions as crucial to the development of innovative arts practice. These themes are confirmed by other arts commentators.

Commentaries on arts practice and innovation
The proceedings of the recent Jewellers and Metalsmiths Group of Australia (JMGA) Conference (2004) were published under the title *Inherited Futures: Technologies to Trap Ideas* (Baines, 2005). The conference theme itself emphasises the relationships between technology, arts practice and innovation. It was also evident in the recent Conference of British craft practitioners, *Challenging Craft*, held in Aberdeen, Scotland (Gray's School of Art, Robert Gordon University, 2004). These conference themes highlight the preoccupation of western contemporary gold and silversmiths and their industry with technology and its relationship to innovation.

As Errey pointed out at the JMGA conference, "engagements between maker and technology" are not new for jewellers or metalsmiths (2005, p. 158). Human development has been measured in terms of the use of technology particularly related to metals, for example, the 'iron age', the 'bronze age' (Errey, 2005, p.158). Robert Baines (2005), chairman of the conference, also spoke of the ways that contemporary jewellers generate a plethora of thinking, experimentation and testing of boundaries as their aesthetic response is mediated by matter (materials) and technologies (p. 7). All of these speakers acknowledge their kinship with, and respect for, science and technology in current and past innovative jewellery and metalsmithing practice.

Yet this relationship between arts and science is not hierarchical, privileging science over art. Rather it is characterised by convergence, the recognition and respect for different situated knowledges and efforts to work creatively at their interface to generate innovation. As Bic Tieu argues, "Contemporary craftsmanship is about building bridges between technologies … integrating various disciplines and industries, production and thought processes" (Tieu, 2006, p. 52).

Elaborating the way innovations sometimes result from a convergence of knowledge from disparate fields over considerable periods of time, Dominic Lowe traces the historical development of hydraulic pressing technology from the ancient Greeks and post-revolution France to its use with synthetic polyurethane materials in contemporary aerospace and jewellery industries (Lowe, 2005, p. 97). Lowe retells a story, *The Parable of the Thermostat* from *The Buddha in the Robot* (1981), written by the Buddhist robot scientist, Masahiro Mori (2005, p. 95):

Imagine the thermostat in a heated or cooled room. We set a desired temperature. When the temperature goes beyond a certain point, it is cut off. The thermostat, if it had a brain, would doubtless consider itself to be masterminding climate in the room. On the other hand, if the room could talk, it might claim that it controlled the thermostat, which after all responds to room temperature. Of course, Mori points out that all three systems – human, room and thermostat – are working as one (Lowe, 2005, pp. 95-6).

The story highlights the co-operation and interdependence needed by a range of 'players' for the effective implementation of an idea or innovation. Lowe advocates respect for knowledge gained from other fields of endeavour but also speaks of the need to be "critical of the entity that supplies our particular form of technology", and to take "personal responsibility" for its purchase and use (Baines, 2005, p. 96). In the context of jewellery, he says that "we might encourage the use of gems that we are certain do not come from the toil of the brutalised poor, dug out under the point of a gun" (p. 96). Lowe's viewpoint is that we need to take ethical and moral responsibility for the science and technology that we have developed and the innovations that result, rather than blindly accepting or rejecting them (Lowe, 2005, p. 96).

This idea of convergence is not just valued within artistic practice. Commenting on the program of collaborative research projects undertaken with artists, Phil Wilksch of the Applied Physics Department at RMIT University explains his viewpoint of the value of artists' contribution to science. He observes that artists can be very inventive and innovative because "artists are forced to work with limited facilities and resources, they come up with simple solutions to problems. Also, artists stay in touch with the state-of-the-art techniques and technologies because they're all the time trying to stretch the possibilities of the medium" (Coyle and Hayward, 1995, p. 99). And the challenges presented by artwork also feedback into scientific work, motivating further scientific exploration and providing a concrete application for the inquiry. Geoffrey Stone at Telecom Research concurs with Wilksch and suggests that artists' ideas can "be well ahead of technology. It extends us to think about new problems" (Coyle and Hayward, 1995, p. 99).

Innovation and VET

This research reveals that Commonwealth policy relating to innovation is narrowly conceived, and exclusive to science, technology and business. These policy priorities affirm the scientist as innovator, and business as the enabler of innovation. The effect is to privilege the sciences relative to the arts, and to institutionalise an hierarchical and dualistic conception of knowledge and innovation, in which science and technology are seen to be the means to build Australia as a knowledge economy, and to provide the solution to the problem of Australia's international competitiveness.

Yet the study also shows that the pursuit of innovation is fundamental to arts practice, and the embedded commitments within artist's professional practice. Artist's practises pose important questions about the nature of innovation and knowledge. Stelarc undercuts the idea of a discrete and bounded human body. Duprat challenges the dualisms and

distinctions between 'maker' and 'made', and the idea that art, knowledge and culture are products of human agency alone. These themes are taken up within the arts professional community, where innovation is understood as an outcome of transgressing established boundaries and practices, challenging thinking processes, and generating new ways of seeing and acting in the world. This sort of creative artistic work is seen to be facilitated by convergence, which brings differently situated knowledges together in ways that encourage creative engagement and innovative outcomes – a view shared by practicing scientists.

Where Commonwealth policy sees the innovators as scientists engaged in R&D and business engaged in commercialisation, arts conceptions of innovation draw attention to the human, rather than economic, aspect. The innovators are people who make us all think differently; they are not confined to a specific field, but are spread across fields. Their capacity to innovate is not simply a consequence of economic investment but also human development.

The question is how to enhance creativity and innovation? The director of Swinburne University's Centre for Neuropsychology, Professor Con Stough believes that both genetic and environmental factors probably determine creativity and innovative potential. However he says that he isn't aware of any studies that reveal an increase in innovation as a result of training (McColl, p. 54). McColl suggests that if innovation is genetic, businesses need to focus their time and energy on recruiting 'the right people'. However, if innovation can be learnt, then businesses need to focus on training their employees (McColl, 2005, p. 54).

The Commonwealth's priorities for DEST for 2004-2005 affirm human capital development, and the development of 'a strong science, research and innovation capacity and economic growth'. However a review of the DEST *Portfolio Budget Statement* (2004-5) revealed that while $1.86 billion was allocated to universities for research and research training there is no mention of funding for research in VET despite the rhetoric of developing research and innovation capacity in education.

The rhetorical priority is echoed in the *Innovation Competency Standards* of the recently developed national VACDTP (2004). The foreword to the training package indicates that capacities for innovation are going to be pursued, perhaps somewhat contradictorily, through outcomes-based standards that specify creative processes:

> The *Visual Arts, Craft and Design Training Package* comes at a time when creativity and innovation have been identified as integral skills not only for cultural practitioners but importantly for all other employees as well. The inclusion of specific standards on the articulation of the creative process plus the inclusion of the *Innovation at work* standards enables creativity and innovation to be identified, taught and assessed by workplace enterprises and industry bodies.

Meanwhile, vocational education in the arts is in decline. During the Keating years of active support of the arts, there were around one thousand applicants annually to the visual arts course that offered 100 places at Box Hill TAFE. After a decade of Coalition innovation policy, the Diploma course is being discontinued. The rationale for this closure

is firstly, lack of applicants, suggesting that people don't want to be involved in the visual arts at this point in time, and that, public and political perception of the value of the visual arts and arts education has diminished. Secondly, people enrolling are asked to indicate why they want to take the training they have applied for. Those enrolling in visual arts generally indicate 'personal enrichment' reasons, rather than employment, and links to employment outcomes have become the prime indicator for the worthiness of courses supported by VET.

Yet this study argues that the visual arts can facilitate innovation. Rather than accepting that arts courses are 'low priority' in the innovation economy, the findings of research suggests that the arts are an untapped resource. Artists and arts educators are committed to innovation and have specialist expertise in encouraging creativity through learning. Challenging assumptions, beliefs and perceptions are important characteristics of artwork. Risk-taking, transgression, and crossing boundaries are key elements in the acquisition of new knowledge and innovation. Collaboration between artists and scientists extends the boundaries of both fields, and reveals the limits of the dualistic, hierarchically differentiated distinctions between art and science assumed in policy. From such challenges, comes a new kind of praxis that is rooted in interdisciplinarity, hybridity and informed by the 'noise' of situated knowledges. Such developments offer a basis for encouraging a culture of questioning across fields, a way of developing creativity and capacities for innovation, and supporting a knowledge-base which is anchored in the practice of science as culture.

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