Australian Public Sector Reform: Research and Doctoral Education in the Context of the Management of Knowledge

Ruth Neumann and James Guthrie
Macquarie Graduate School of Management
Sydney

MGSM WP 2003-11
May 2003
Disclaimer

Working Papers are produced as a means of disseminating work in progress to the scholarly community, in Australia and aboard. They can not be considered as the end products of research, but a step towards publication in scholarly outlets.

© Ruth Neumann and James Guthrie

Research Office
Macquarie Graduate School of Management
Macquarie University
Sydney NSW 2109
Australia

Tel +612 9850 9016
Fax +612 9859 9942

Email gsm-research@mq.edu.au
URL http://www.gsm.mq.edu.au/research

Director of Research Professor John A. Mathews
Manager, Research Office Ms Kelly Callaghan

ISSN 1445-3029 Printed copy
1445-3037 Online copy

MGSM WP 2003-13

Australian Public Sector Reform: Research and Doctoral Education in the Context of the Management of Knowledge

Correspondence to:

Associate Professor Ruth Neumann
Vice Chancellor's Office
Macquarie University
Sydney NSW 2109
Email: ruth.neumann@mq.edu.au

Phone: 61 2 9850 7766
Fax: 61 2 9850 7565

Abstract

This paper presents the findings of a current project investigating the management of knowledge in the public education sector and focuses on the management of research and doctoral education in an increasingly corporatised climate. It is argued that diversity in knowledge creation and production is central to the successful Knowledge Economy. Diversity in doctoral education encompasses: diversity of student; diversity of research approach and type; and diversity of discipline and institution. In a country like Australia where universities are the major producers of both research and researchers, government has a key role in maintaining diversity against the background of an increasing tendency in public sector policy towards corporatisation and outcomes-based funding.

Four key areas of concern are identified which may be understood as a consequence of government policies: funding allocation for research and doctoral places; resource allocation and competition; selectivity and concentration; and relevance. It is argued that, taken together, these four policy directions are changing the nature of Australian doctoral research and, in many instances, diminishing diversity.

Keywords: Knowledge management; Knowledge Economy; public policy; doctoral education; research.
1. Introduction: The Centrality of Knowledge in Modern Society

The Western world has entered what is commonly referred to as the 'Knowledge Age', where information and ideas have overtaken agricultural produce and manufactured goods as the key commodities (Dunford, Steane and Guthrie, 2001). National wealth and economic strength are now being increasingly measured in terms of knowledge, its usefulness, and the speed with which it can be applied. Nations are being forced to compete in a global information economy where ideas, information and knowledge have no boundaries, but are instead multiplying and growing at a hectic pace (Petty and Guthrie, 2000). In this knowledge-based world, the maintenance of the competitive edge of a national economy increasingly depends on the management of ideas and innovation. As governments and their agencies embrace the ‘Knowledge Age’, the value of, and demand for, government information and services will increase significantly (OECD, 1999a).

Essentially the demands of globalisation and rapid advances in technology have led to national leaders calling on their nations to become ‘Knowledge Economies’. The very words ‘Knowledge Economy’ bring universities, as the prime producers and transmitters of knowledge, to the forefront of the political and public arena. At the same time, universities are experiencing cutbacks in government funding, forcing them to find alternative sources to meet demand while attempting to maintain their integrity.

Alongside this development, the university sector internationally has also come under pressure to become more ‘relevant’, to establish commercial partnerships, and to collaborate in research endeavors (OECD, 1998). These collaborations are undertaken with other universities, third sector non-profit organisations and private sector profit making organisations.
The OECD (1999b) report on university research indicated that universities are recognised as essential to the Knowledge Economy, and that no nation will willingly permit a serious, permanent decline in the research, research education or knowledge-transfer capabilities of their national higher education systems. In the early part of the 21st century, however, university research and its relationship to society are likely to be different from what they were at the end of the 1990s. The OECD (1999b) notes that countries need to ensure that universities can continue to perform their functions to the benefit of society at the local, national, and global levels.

Guthrie, Vagnoni and Steane (2003) argue that university education needs to encompass greater flexibility. It is the so-called ‘knowledge nomads’ who are the likely inheritors of the new Knowledge Economy emerging within innovative universities. These universities will see their role as brokers of knowledge-workers who are free to generate knowledge-wealth. In contrast, the older defensive pattern of university education mimics the enclosed monasteries from which many Western universities arose and does not deal with the challenges of knowledge creation in today’s economies.

Recent Australian government policy on research funding has been concerned with rectifying the problems identified with Australia’s performance in the Knowledge Economy. For example, Australia has a historically low level of private sector research, ranked 11th out of 17 OECD countries (OECD, 2000a). Partnerships between universities and the business sector are being strongly encouraged in order to capture the commercial benefits of university based research and to increase industry support of research and doctoral1 scholarships. The main themes of former Minister Kemp’s (1999a) policy statement on research and research training were for universities to become more commercial, the provision of further incentives for collaboration with the private sector, and the need to align university research more closely with national goals and priorities.

1 In this paper, the word ‘doctoral’ is used to refer to postgraduate students undertaking research degrees. These are predominantly the PhD but also include professional doctorates such as the EdD and DBA and masters students undertaking research degrees. General policy usage in Australia refers to these students as higher degree research (HDR) students. These research students differ from other students undertaking coursework postgraduate degrees.
In a turbulent international context it is important that national governments and respective organisations position themselves to be able to successfully manage, develop and use available intellectual assets to meet the new demands of the Knowledge Economy. The education and development of future researchers as well as informed users of research through postgraduate research study are vital components of a modern ‘Knowledge Economy’.

This paper reports on aspects of a current research project investigating the management of knowledge in public sector organizations. A significant component of this project focuses specifically on the management of doctoral education in the corporatised Australian university. A key premise is that diversity is central to a Knowledge Economy and that this primacy must be reflected in a nation’s education of future researchers.

The paper is structured as follows. Section 2 outlines the central role played by universities in both higher education teaching and research. It places the role of universities in the context of the emergence of the ‘Knowledge Economy’ and evaluates the importance of diversity within this economy. Further, it comments on the importance of doctoral research in higher education and on the increasingly peripheral treatment of doctoral research by public policy makers. The paper then goes on, in Section 3, to examine the context and content of recent Australian public sector and higher education policy changes, focusing on those changes that affect doctoral education. Section 4 critically evaluates the implications of recent higher education policy changes on diversity in doctoral education, framing the discussion of these implications according to the following categories: costs; completions and competition; concentration; and relevance. Overall conclusions are presented in the last section.

The central argument of the paper is twofold. First, diversity must be maintained against the powerful counteracting trend in public policy towards corporatisation and outcomes-based funding. Higher education policy models must take into account the central importance of diversity in the Knowledge Economy. This diversity is multifaceted, encompassing
diversity of student, diversity of research approach and type, and diversity of discipline and institution. Second, there is an apparent contradiction between the government’s policy drive towards building a Knowledge Economy on the one hand, and a policy that is restricting the growth of (government funded) research education on the other.

2. The Place of Universities in The Knowledge Nation

Universities are Western society’s longest standing knowledge institutions. Dating back to the early Middle Ages, they have evolved over a long period, continually shaped by economic conditions and social contexts. They have played a central role in educating and licensing society’s public servants and professional groups and in undertaking basic research. The education of researchers through a PhD has its origins in reforms in the German university system at the turn of the 19th century (Simpson, 1983, Turner, 1974).

While the extent to which universities currently contribute to a nation’s knowledge production varies across countries, in some, such as Australia and the UK, their contribution is significant. In all Western countries, they are prime institutions for developing the next generation of researchers through doctoral study and research. The massification of universities in Western countries since the 1960s has resulted in a veritable ‘explosion’ in graduates undertaking doctoral degrees. This expansion in numbers participating in higher education has moved universities from being peripheral social institutions to ones occupying a more central role in society and the economy.

2.1 The Emergence of the ‘Knowledge Economy’

The growing perception of the value of knowledge within society, in particular for the economic welfare of a country and its industry, has been at the source of the emergence of a ‘Knowledge Economy’. The ability by governments to understand, manage and maximise the benefits of this ‘knowledge economy’ (also known as the ‘New Economy’), in which information and knowledge are the key economic and social drivers, is seen as vital for
international competitiveness. Innovation and creativity are the principal determinants of competitiveness and, in turn, give rise to a focus on intangible assets such as intellectual capital (IC). This IC needs to be ‘managed’ and measured in order for a company or industry to be able to fully account for its value and economic performance (Guthrie, 2001; Petty and Guthrie, 2000). The identification, measurement and reporting of these intangible assets is attracting increased attention (Guthrie, Petty and Johanson, 2001; Department of Industry, Science and Resources, 2001). Increasingly there is a need for people who can understand and interpret information and undertake research, both inside and outside the university context. The knowledge and skills of such people are recognized as forming a vital, even if intangible, economic asset.

Reflecting this awareness, several recent Australian government policy documents (Kemp, 1999a, 1999b; Senate Inquiry, 2001) have emphasized the need to foster the ‘Knowledge Economy’, ‘innovation, and ‘research’, stressing the critical role that universities play in the national research and innovation system:

“They are major contributors to the generation and transmission of knowledge in Australia…. Our universities are the key providers of training and professional development for our future researchers.” (Kemp, 1999a: para. 13)

Traditionally, government support for university research has been justified on the basis that it produces a ‘public good’ where specific benefits are widely dispersed and payoffs are not immediate. More recently, in line with international trends, Australian economic performance has been linked to ‘successful outcomes’ emanating from knowledge intensive industries, with an increasing focus on innovation and research. This change in language has impacted on publicly funded research and universities as government statements emphasise ‘rate of return’, ‘return on investment’, ‘time to market’ and other terms identifying higher education as a private good (Guthrie, Vagnoni and Steane, 2003).
Government policy on research in the Australian Higher Education Sector (HES) has become increasingly dominated by these considerations (Senate Inquiry, 2001, p.182). In part, the Senate Inquiry found that (para. 2.50):

“Australia’s response to the challenge of the global Knowledge Economy has, to date, been focused on the exploration of knowledge for its commercial value, with an emphasis on productivity, efficiency and investment. While exploitation of the commercial potential of knowledge is an important aspect of innovation and modern economics need graduates with specific vocational and technical skills, these need to be balanced by an investment in knowledge generation and the development of a broad skills base.”

The emergence of the Knowledge Economy, coinciding as it has with the adoption of ‘market models’ in public policy in most Western countries (Jones, Guthrie and Steane, 2001; Guthrie et al, 2003), has presented a challenge to government policy makers. The drive to ‘justify’ the investment of public money in higher education by providing measurable returns, is in conflict with the traditional nature of higher education where outputs are relatively intangible and the benefits for society are not always immediately apparent. The result is the ‘commodification’ of higher education (Neumann and Guthrie, 2002), leading to the devaluing of academic work.

2.2 The Importance of Diversity within the Knowledge Economy

The tendency of governments within a commodified higher education system has been to concentrate resources and try to ‘pick winners’ in research. It is our argument that, within a Knowledge Economy, this approach is fraught with danger since there is not one form of knowledge, nor one method for producing innovation and creativity. What is needed is a broad knowledge base from which to generate opportunity. It is helpful to make the analogy with biological systems where biological diversity is a response of living matter to the diversity of environments and of opportunities for different modes of life on our planet (Dobzhansky, 1970).
Within a Knowledge Economy, such diversity exists with regard to investment in the capacities of people and in organizations and structures. In research, the latter comprises the broad range of disciplines and approaches to research. That there are strong and well-defined differences both across and within disciplines has been well documented and validated (Biglan 1973a, 1973b; Braxton and Hargens, 1996; Creswell and Roskens, 1981). In particular, there is strong evidence pointing to the existence of different styles of intellectual inquiry between disciplines (Kolb, 1981). The role of disciplinary variation in understanding social and cognitive variation in research and higher learning has been demonstrated (Becher, 1989; Becher and Trowler, 2001; Neumann, 2003). The maintenance and development of a broad spectrum of knowledge domains with their respective research approaches is therefore important in the generation of knowledge. So too is the recognition of the role of characteristics such as gender, age, social background and life experiences in shaping the research style, interest and outcome of those engaged in the pursuit of knowledge.

A lack of diversity will reduce a country’s capacity to deal with economic, social, political and cultural change over the longer term. Further, within a Knowledge Society and Economy, research diversity and flexibility which involves, among other things, a balance of different fields and forms of research and funding sources, enables governments to spread the risk and enhance the potential for return. In this way, the important role of government policy in shaping and maintaining research diversity is clear. The following sections of the paper consider key developments in Australian research and doctoral education policy and the implications for diversity in the education of the next generation of researchers.

3. Australian Public Sector Reforms and Doctoral Education

3.1 Australian Public Sector Reforms
Parallel with the growing awareness of the need for a ‘Knowledge Economy’, the last two decades have seen considerable change in the management and control of public sector organisations (Jones et al 2001). In the context of the ‘new’, ‘competitive’, ‘international’ and ‘economic’ global regime, many Western governments have perceived a ‘fiscal crisis’ in the nation-state and have responded by downsizing, re-engineering and restructuring the public sector (Guthrie, Olson and Humphrey 1999). The result has been, *inter alia*, the pursuit of policies of restraint on public spending, the selling of public assets, and the adoption of market models and business accounting practices in the delivery of public sector goods and services (Olson, Guthrie, Humphrey, 1998; Olson, Humphrey, Guthrie 2001).

The Australian HES has not been immune to these wider changes to the public sector. The Senate Inquiry (2001) documented the significant cost cutting, under-expenditure, productivity gains and other system-wide changes in the HES over the past two decades. In contrast, many other nations are in fact increasing the resources allocated to higher education for research and research training (OECD, 2000b), in order to keep pace with the international Knowledge Economy.

These two macro policy drivers, one towards the marketisation of public financial management and the reduction of government expenditure, and the other towards developing a ‘Knowledge Economy’, have converged in the Australian HES. As noted, the authors’ previous research (Guthrie, Vagnoni and Steane, 2003; Neumann, 2002; Neumann and Guthrie, 2002; Neumann and Lindsay, 1988; 1987) has sought to highlight the way that new public sector reforms implemented in the HES have resulted in policy strategies which favour certain styles of research – in particular large group experimental science - over others. The emphasis on research that produces short-term economic benefits has been partly based on the demonstrated success of the disciplines of science, engineering and technology (SET), and medicine and related sciences, in achieving quantifiable outputs and immediate commercial financial returns.
However, an over-emphasis on some fields at a time of fiscal restraint inevitably leads to the neglect of others. Within Australia, for example, there is talk of a ‘crisis’ in the humanities and social sciences. The report of the National Innovation Summit Group (ISIG, 2000, p.15) highlighted the role the social sciences and humanities could play in supporting SET in achieving economic goals and innovation. The report states (p.15) that there is a:

“need for Australia to nurture its research capabilities in the social sciences and humanities because they can enhance the organisational, management, legal and marketing knowledge that is critical to successful innovation”.

The consequences of the neglect of the social sciences and humanities since the 1980s are becoming evident through, for example, the reduction in staff numbers and the scaling back of research areas offered. There is now an urgent need to redress the lack of focus on the value and contribution of the humanities and social sciences in current funding arrangements for university based research (Gillies, 2001, quoted in the Senate Inquiry Report 2001: 216):

“(In Australia)… there are not scientific and technological questions that exist in isolation; the people of Australia matter and the knowledge of those people, which is reflected in the humanities and social sciences, is vital if we are going to have proper uptake of an innovative Australia.”

This recognition of the importance of the social sciences, though presented from a purely ‘commodity’ point of view, is a significant acknowledgment of the importance of knowledge diversity.

3.2 Key Doctoral Education Policy Documents, 1989-2001

Remarkable among the recent Australian government policy documents has been the lack of explicit attention paid to doctoral education, an area long acknowledged as providing an important contribution to national research output (Powles, 1984). For example, the report
Innovation: Unlocking the Future (ISIG, 2000) deals at some length with the need for Australia to expand its ability to develop new ideas and technology. Recommendations include 2000 extra undergraduate university places in areas of skill shortage; training in commercialisation (particularly for final year and postgraduate students); doubling the funding of the ARC grants scheme; and $500 million to be spent on research infrastructure. While some of these measures will have a positive impact on doctoral study, the impact is indirect, with no direct mention of doctoral study in the recommendations.

Similar comments can be made regarding the Chief Scientist’s Report (Batterham, 2000). While the report recognizes the critical role of innovation in the Knowledge Economy and seeks to enhance innovation in Australian society accordingly, the concrete recommendations of the report once again only deal incidentally with doctoral education, which is one of the richest sources of research innovation. The Innovation Report (ISIG, 2000) recommends both a doubling of the ARC’s funding over a five-year period and an increase in infrastructure funding (RIBG). While this will doubtless have a ‘flow through’ effect on doctoral education, doctoral education itself is not directly addressed.

Thus, doctoral education is being treated implicitly and peripherally in government policy. This may be because it ‘falls in the crack’ between research policy on the one hand and higher education policy on the other. Importantly however, three earlier documents, produced a decade apart, did specifically address doctoral education. The first two of these were the former Higher Education Council’s (HEC) discussion paper, Review of Australian Graduate Studies and Higher Degrees (NBEET, 1989), and the subsequent report Higher Education Courses and Graduate Studies (NBEET, 1990). The aim of these documents was to review the “scope, structure, quality and spread of postgraduate education in Australia” (NBEET, 1989: 1), as flagged in former Minister Dawkin’s White Paper (1988) on reforms in higher education.

The context of these reports was the abolition of the binary system of higher education of universities and colleges of advanced education, which had existed for some two decades, and the formation of the Unified National System (UNS) of Higher Education. The
amalgamation of the previous two-tiered system had major implications. Firstly, it altered the mission of the former college sector institutions and introduced research into the work roles of their academic staff. Secondly, it greatly increased the number of students attending university and introduced a period of expansion in student numbers without an attendant expansion in academic staff numbers and institutional funding. Finally and importantly, the creation of the UNS opened the door to doctoral level study in the former college sector. However, the expansion of doctoral students was limited by the control of funding to institutions, in that its recipients needed to meet the government’s broad economic and social agenda for higher education.

Of particular importance in the HEC review of graduate studies was the introduction of professional doctorates in order to extend the scope of doctoral programs and make them more relevant to the professions (NBEET, 1989). Such study would, it was hoped, attract a broader and more varied range of students to postgraduate study and research, develop closer links with professional bodies and enable diversified career paths. The review proposed the introduction of professional doctorates as ‘an alternative doctoral degree’, but one that was “complementary to the PhD”. It would cater for the more applied nature of professional fields, while the PhD was to be seen as a “basic research degree” (NBEET, 1989, 28).

In the years following this report, the number of doctoral students grew rapidly. In response, a key theme of the higher education triennial reports in this period was the need to increase the number of scholarships for doctoral (PhD) study to meet demand. Professional doctorates also increased, growing from 48 programs on offer in 1996 to more than 105 different professional doctorates in 2000 (Maxwell and Shanahan, 2000; Shanahan, 1996). The introduction of professional doctorates encouraged a diversification in doctoral education through the increase in the range of disciplines offering doctoral programs, and also a diversification in students with more female, mature age and part time students undertaking doctorates.
The third major policy document, the White Paper on research and research training, *Knowledge and Innovation* (Kemp, 1999a), also directly addressed doctoral education, but effectively reversed the gains of the previous decade. The White Paper considered doctoral study within the specific context of higher education research policy, highlighting the change in government focus towards outcome-based education. It introduced performance-based funding of doctoral students through a Research Training Scheme (RTS), in line with the emphasis on the efficiency and quality of the institutional doctoral environment effective from 2002. The RTS objectives (DETYA, 2001) were to:

- enhance the quality of research training provision in Australia;
- improve the responsiveness of institutions to the needs of their students;
- encourage institutions to develop their own research training profiles;
- ensure the relevance of research degree programmes to labour market requirements; and
- improve the efficiency and effectiveness of research training.

As a result of the White Paper, and for the first time in more than a decade, there was to be a reduction in doctoral places by 13 per cent, that is, from 25,000 to 21,500. Such a reduction prompted the question as to which fields of study, forms of research and types of study would most likely be affected. This reduction was criticised by stakeholders such as the National Postgraduate Association, Australian Vice Chancellors Committee and academic unions (see e.g. Lee, 2001; Smith, 2000), prompting questions as to why the government would reduce doctoral places in the context of a Knowledge Economy.

4. Implications of Policy Changes for Diversity in Doctoral Education

The cumulative effect of the doctoral education policies discussed above, together with the trends in research and public policy identified earlier, hold consequences for diversity in doctoral education. Four key areas of concern regarding government HES policy have been identified. The first relates to the level of funding for research and doctoral places and, the second, the method of research allocation and the encouragement of competition. The third
relates to selectivity and concentration of research and doctoral places and, the fourth, to the current focus on ‘relevance’. These latter concerns have serious implications for the type of student, discipline mix and balance between pure and applied research. It is argued that, taken together, these four policy directions have the ability to radically transform the current Australian doctoral research environment and, in many instances, diminish diversity.

4.1 Costs and Diversity

The first point of concern regarding current HES policy relates to the way such policy addresses the cost of research and research training. Broadly speaking, government focus on funding has moved from ‘money no object’ in the brief ‘golden era’ of higher education in the 1960s, to efficiency and effectiveness and economies of scale in the 1980s. Most recently, from around the mid 1990s, the focus has moved to performance-based funding and competition for resources, accompanied by a shift in funding from government to private sources through the creation of partnerships. Core issues underlying this shift centre on the number of places to be allocated, who should fund these places and how government funding for places should be distributed.

The strong expansion of doctoral study with the creation of the UNS in 1990 proceeded in an atmosphere of fiscal restraint. The period 1989-1991 saw a 53 per cent increase in overall enrolments (NBEET, 1993), and in the decade from 1991 the number of doctoral students enrolled increased by 94 per cent (DETYA, 2001). During this period, doctoral places have been almost exclusively funded by the Commonwealth government in two forms: HECS-exempt places; and scholarships to full time students with excellent academic achievement. HECS (Higher Education Contribution Scheme) exemption enables all Australian full and part time doctoral students to undertake their research free of any fees and government charges, but does not provide a living allowance. Government scholarships offering a living allowance include the Australian Postgraduate Awards (APA) and the Australian Postgraduate Awards (Industry) (APA) schemes. International Postgraduate Research Scholarships in their turn cover tuition costs and health insurance (DETYA,
In 2000 these various scholarships were funded at $144 million (DETYA, 2000). It is estimated that more than $616 million is currently invested by the Commonwealth government in research training (DETYA, 2000).

Much of the initial push for doctoral study in the early 1990s can be seen as a consequence of the creation of the UNS. With the increased number of universities, and the target to expand student numbers to meet growing demand over the next decade, it was clear that there would need to be an increase in qualified academic staff. At the time there was a projected shortfall of staff, particularly in the professional fields (NBEET, 1990). Solutions offered for the expected shortage included the reduction of doctoral completion times by introducing coursework components into PhDs, and the development of new forms of doctoral study through professional doctorates (NBEET, 1989). There was at the time, and again more recently (Gallagher, 2000), some hope that professional doctorates would attract external funding in the way of fees. Yet a decade after their introduction there is little evidence of success in attracting fee-paying students to professional doctorate programs (see, Neumann and Goldstein, 2002).

However, from the mid 1990s there was a slowing of growth, with suggestions that the expansion of doctoral places was at the expense of undergraduate enrolments (Beazley, 1993; DEET, 1995). Concerns about the number of doctoral students were also raised in the Senate Inquiry into higher education and funding, which noted the tendency (Karmel, quoted in Senate Inquiry, 2001, para: 6.86):

“…to enrol excessive numbers of research students in some institutions for reasons of funding or prestige. Evidence of this tendency is that over the years 1989 to 1999 research student numbers have risen form 14,500 to 37,000; of the latter 8,500 are at institutions which were not universities 10 years ago.”

However, the Senate Inquiry’s Report (2001, Para: 6.88) also noted that a major criticism of the Resource Training Scheme (RTS) is that the reduction in the number of research student places runs counter to the need to bolster our research capacity. Further, this
reduction comes at a time when several European nations embracing the Knowledge Economy are experiencing an emerging shortage of researchers.

Debates about responsibility for funding places underpinned the introduction of industry-focused APA scholarships (Committee to Review Higher Education Research Policy, 1989), and also the call for the privatization of doctoral study. The argument that students should contribute in some way to the costs of their doctoral study are bolstered by evidence linking higher educational attainment with lower unemployment (ACER, 2001), and a steady increase in job choice and salaries of doctoral graduates over those with Bachelors degrees (GCCA, 1999). The introduction in 2002 of a Postgraduate Education Loans Scheme (PELS) for coursework masters students (Howard, 2001) has opened the door to the possible removal or reduction of the HECS exemption and the extension of PELS to doctoral students. Such a move, if coupled with a reduction in HECS-exempt places, has the potential to restrict the pool of potential doctoral enrolments on financial grounds. Students in less resourced disciplines, primarily those in non-experimental fields, part-time students and women, are most likely to be affected.

4.2 Completions, Competition and Diversity

The second area of policy concern is the method of research funding allocation and the fostering of competition. The decision to include research student completions as a key measure in calculating the institutional research block grant and Research Training Scheme (RTS) is the most recent government attempt to cap the costs of doctoral education (Kemp, 1999a). This policy decision, implemented in 2002, drastically extended the performance incentives of the past decade. Doctoral completions have been assigned a 50 per cent weighting in this calculation, averaged on institutional performance for the preceding two years. As students complete or discontinue, their places become available for reallocation among institutions, using a performance-based formula which builds in some protection for regional and smaller universities. The RTS reinforces the Commonwealth government’s concern over costs associated with high attrition and slow completion rates (DETYA, 2001; Gallagher, 2000; Kemp, 1999a, 1999b) and begins to implement the economic competition
policies introduced in Australia in the mid 1990s (Hilmer Report, 1993), with the expectation of greater institutional responsiveness to students’ needs.

DETYA (2001) argues that the formula being used is sensitive to the size and composition of the research student body of each university and is weighted to reflect cost differentials associated with different fields of study. Thus, the weighting for ‘low’ to ‘high’ cost course completions has been set at 1: 2.35 (doctorates are weighted at twice the value of research masters). While funding is for domestic students, completions are calculated to include international students. Important also in this new policy development is the reduced time that is allowed for the completion of a higher degree. Funding for PhD students is based on a maximum finishing time (EFT) of four years full time study (compared with five years previously), and two years rather than three years EFT for a research masters student. For students failing to complete in this time, costs must then be borne by the institution or the individual. To minimise disruption, during the first three years of implementation (2002-4), a 5% cap is to be applied to funding growth, with excess redistributed to those institutions suffering the greatest loss under the new scheme. Similarly, certain measures have been put in place to protect some regional institutions.

These current policies, strongly reinforced through the restructuring of financial support, attempt to strengthen contestability, mobility and responsiveness in the HES. Understandably, this strong focus on research student output, that is, on the actual completion of a higher degree compared with enrolment in a higher degree, has caused considerable debate within the higher education community. Concern arises partly from the fact that similar attempts in the past have met with limited success. The introduction of a national competition policy (Hilmer Report, 1993) brought about much debate in the HES regarding competition among students, including doctoral students. The West Review (West, 1998) addressed issues of student mobility, and recommended that doctoral places be made contestable and that funding for doctoral study be driven by student choice. This recommendation was later taken up by the Green Paper (Kemp, 1999b), but was not welcomed by a number of higher education stakeholders (see, for example, Allport, 1998; CAPA, 1998).
In spite of all these reforms, the government has claimed the continued existence of a ‘crisis of wastage’ in the HES, demonstrated in high attrition rates, student dissatisfaction with supervision, long completion times, and a perception by students that their knowledge and skills will be outdated by the time they (re)enter employment (Gallagher, 2000). It is further argued that recent policy changes have failed to address student dissatisfaction with the ‘research experience’, and that the only consistent explanation for these concerns is poor quality supervision using a conservative training model, perpetuated by the existing funding framework (Gallagher, 2000). A performance-based funding approach throughout the RTS is perceived as a driver to encourage greater institutional responsiveness to students and employers. Hence, the student output approach is designed to bring about a cultural shift in universities by focusing on completion rates within tightly specified times.

There are advantages to both universities and students in greater student mobility at the doctoral level. These include diversification of the research experience, cultural renewal and access to resource-rich environments. Indeed, the importance of mobility for diversity in research is a persistent theme in research policy and among some disciplines. A review of the field of mathematics raised the concern that most mathematics PhDs undertake doctorates in the same institution as their undergraduate study, a tendency quite different from overseas practice and seen as stifling breadth of experience (NBEET / ARC, 1996). Much of the argument against the recommendations concerning student mobility and choice concerns the potential for instability to institutional funding and planning arrangements. However, Rhoades (1991) observes that where the European apprenticeship model of research student supervision operates, as in Australia, financial support is generally centred in the institution and the supervisor, leading to a diminishing of mobility. Thus, changes in models of doctoral education entailing moves away from current practices would seem to hold funding implications.

However, in relation to the assumptions of the RTS, strong arguments have been advanced (Chubb, 2000; Neumann and Guthrie, 2002; Smith, 2000) that universities will be encouraged to select low risk students who are seen to be able to complete within the time
funded. The Council of Australian Postgraduate Associations (CAPA) has released (CAPA, 2002) its analysis of all institutions Research and Research Training Management Places (RRTMP) where institutional strategy responses to the RTS are reported. The CAPA has identified a reallocation of doctoral places within institutions, in favour of faculties that give preference to the admission of full time on-campus students. It follows that such developments could also favour enrolment in disciplines or sub fields in which completion times are perceived to be shorter; encourage the selection of ‘safe’ research questions with a narrow focus and no expected complications; and influence the styles and types of research. In such an environment, intellectual ambition, and more speculative, ‘high risk’ questions which have more unknowns and uncertainties, will be discouraged. Early signs of “bricks in the wall” research have already been reported (Neumann and Tansley, in press). Such tendencies will truncate diversity of research and, ultimately, go against the policy intention of the White Paper and the Prime Minister’s Innovation Statement (Howard, 2001), which explicitly focus on responsiveness to student needs and the development of a culture of innovation.

4.3 Concentration and Diversity

The third area of policy concern relates to selectivity and concentration. The arguments in this regard can be traced to the research and science policies of the 1980s (ASTEC, 1987; CTEC, 1987). The argument used by policy makers is that research funds are too thinly dispersed and that substantial benefits would be obtained by re-directing this effort and expense into a smaller number of universities and selected fields of research. The move towards concentration would direct higher levels of funding to specific areas and arguably increase their potential to respond rapidly to change. In their turn, increased scholarship stipends by the government could help produce greater doctoral student mobility and serve to support research concentration.

It could be argued that the former Australian binary system of higher education concentrated research activity and doctoral students in the 19 universities, since the college sector was not funded for research. With the creation of the UNS the door was opened to
the former colleges to engage in research. The resultant expansion of doctoral students, diversity of doctoral programs and concern to increase doctoral places and scholarships were noted in the previous sections. Despite the initial rapid expansion in doctoral study, however, recommendations for the concentration of research strength and for doctoral enrolments to reflect institutional research capacities continued (see e.g. HEC, 1992; NBEET, 1992a; NBEET, 1992b), working against the existing range of diversity.

Although all 36 universities in the UNS now enrol doctoral students, it is already the case that more than half of all PhD completions are concentrated in six of the Group of Eight universities, and 65 per cent in nine universities (DETYA, 1999). The most recent policy emphasis on cost and quality is intended to reinforce this concentration by compelling even closer alignment of doctoral study with institutional research strengths and performance. Newly introduced Research and Research Training Management Plans (RRTMP) are designed to encourage universities to use business oriented strategic plans to determine their research direction. The plans require the calculation of a ‘new’ figure of what constitutes both an ‘active researcher’ and areas of ‘research excellence’, to be included within a performance and directions statement. These new measures and activities will be used internally and externally for the allocation of scarce research resources, and hold implications for the selection of doctoral students, supervisors and topics.

Concentration holds some benefits for students, such as stronger peer groups, access to more and better equipment (particularly in the case of experimental fields of study), and greater professionalism. The latter would include specialist non-supervisory support in areas such as intellectual property, ethics, research writing and research methods. However there are also potentially deleterious effects on diversity. The key question of concentration is really whether the undertaking of research and doctoral education should be further restricted to a small number of universities – say 8 or so – or whether in a country the size of Australia, in comparative terms, the concentration of research, and hence doctoral study, is already sufficient within its existing universities. In any event, the current developments

---

2 The Group of Eight refers to the group comprising the eight largest and oldest universities in Australia. Together they undertake 70 per cent of all research in Australian universities. http://www.go8.edu.au/about.html
are likely to lead to a multi-tier university sector with only a handful of universities undertaking research and doctoral education across a somewhat limited range of disciplines (Neumann and Guthrie, 2002). Unlike other Western countries, Australia does not have a strong tradition of research outside the university sector with which to supplement university research (Guthrie, Vagnoni and Steane, 2003).

4.4 Relevance and Diversity

The final area of policy concern is the emphasis increasingly being placed on ‘relevance’. The issue of relevance relates to both the type of research undertaken as well as the appropriate discipline mix created. The move towards the external funding of research, with agendas largely determined by socio-economic needs, can be argued to threaten diversity. Under such a system, a particular research activity is determined ‘relevant’ by its ability to attract an external grant, while research which does not attract grants is unlikely to be undertaken, valued or ‘counted’.

The question of the type of research undertaken refers most obviously to the relative balance and weighting given to pure research compared with applied research. The perception within the government is that academia is dominated by discipline-driven research (determined by peer reviewed merit) as opposed to research seen to arise from matters of economic importance and of the wider national interest. In other words, the ‘relevance’ of research has become a policy concern. As a result, the current policy environment not only favours applied research over more fundamental theoretical research; it also favours research processes that are low risk and do not involve time-consuming data collection and analysis. One recent report noted that there had been a reduction in basic and long-term research and that private research funders were less interested in longer-term research issues (The Parliament of the Commonwealth of Australia, 1999). Similarly, the research modes and publication styles of “big” science and experimental science dominate those of “little” science, theoretical science, the humanities and the social sciences.

With regard to the issue of discipline mix, reference has already been made to criticisms of the lack of funding being allocated for research in the social science and humanities. An
empirical study of doctoral education in Australian universities has highlighted the resource-poor environment for doctoral students in the humanities and social sciences, in particular where supervisors do not hold external research grants (Neumann and Tansley, in press). Further, doctoral study within the engineering and IT areas report difficulty in attracting doctoral students. In mathematics, doctorates are considered too esoteric by industry, a problem which could be addressed through the APAI program, a program, however, seldom used by mathematics students (NBEET/ARC, 1996). Under a policy driven by a concern for relevance, such courses come under threat, with negative implications for diversity. Consequently the humanities and social science fields, as well as the more theoretical science fields, are least likely to gain funding support.

5. Conclusions

The production of knowledge and the development of universities as knowledge institutions have moved to occupy a more central position in modern ‘Knowledge Societies’. If a successful Knowledge Economy is to be developed, the fostering of knowledge implementation and innovation alongside knowledge creation are crucial. This paper has argued for the centrality of diversity in knowledge creation and production in order to maintain flexibility and to enhance opportunities in a Knowledge Economy. Research, and the education of the next generation of researchers through doctoral education, is fundamental to this process. Within doctoral education it is important to foster three types of diversity: diversity of student; diversity of research approach and type; and diversity of discipline and institution.

Government policies intended to link academic research and research training more directly to other sectors of the economy, and to require that at least some of the research supported by public funds be performance and output based, are consistent with the importance of academic research to the knowledge-based economy. However, if carried to extremes in terms of competitiveness and funding for completions in shorter time frames (RTS), these policies can distort and undermine research training by obliging universities to focus excessively on short-term outputs. The central argument of this paper has been the need to
ensure the maintenance of diversity against the strong counteracting forces of corporatisation and outcomes-based funding.

This paper is premised on the importance of diversity for a strong, vibrant and flexible Australian Knowledge Society that is able to innovate and change. Current emphases on costs, completions, concentration and relevance, coupled with a demand for quality enhancement, all impinge on diversity and reduce it, contradicting the stated intentions of government policy in other areas. Current innovation policies (Howard, 2001; Innovation Summit Implementation Group, 2000) and plans for a ‘Knowledge Nation’ (Knowledge Nation Taskforce, 2001) do not include a specific focus on doctoral education and its importance in achieving these aims. Where they do mention doctoral education, it is generally in ways that restrict growth in this vital area (e.g. the White Paper). There is an urgent need for policy to encourage and direct the development of doctoral education and diversity within doctoral education.
References


Australian Science and Technology Council (ASTEC) (1987) Improving the research performance of Australia’s Universities and other Higher Education Institutions. A Report to the Prime Minister. Canberra: ASTEC.


Committee to Review Higher Education Research Policy (CRHRP) (1989) *Committee to review higher education research policy report.* Canberra: AGPS.


National Board of Employment, Education and Training (NBEET) (1993) Competency based approaches to university selection and credit transfer. Canberra: NBEET.

National Board of Employment, Education and Training (NBEET) (1992a) Advice on funds allocated to higher education institutions. Canberra: Commonwealth of Australia.

National Board of Employment, Education and Training (NBEET) (1992b) Research and research training in a quality higher education system. Canberra: AGPS.

National Board of Employment, Education and Training (NBEET) (1990) Higher Education courses and graduate studies. Canberra: NBEET.


Senate Inquiry (Senate Employment, Workplace Relations, Small Business and Education References Inquiry Committee) (2001) Universities in Crisis: Report into the capacity of public universities to meet Australia’s higher education needs. Canberra: Commonwealth Senate Committee.


