

From Academic to Commercial Knowledge Production in Australian Higher Education

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Abstract

This paper examines the impact of national higher education policy on research and knowledge production in Australian universities. The policy trend in recent years has been towards market competition, budget diversification and commodification of knowledge. This has helped re-define the value of university research in commercial terms and devalued research in some traditional areas. The paper argues that while there have been positive aspects to the market coordination of higher education, government policy that is ideologically committed to the near total privatisation of a public higher education sector is not in the long-term interests of the nation.

Key words: research policy; commercialisation; knowledge economy; market steering; research management

Introduction

Over most of the last century, higher education has been shaped by the norms of science, democracy and the need for an educated citizenry, cultural preservation and a trained bureaucratic elite. But with the advent of the so-called knowledge economy/knowledge society, higher education has become regarded by politicians, industrialists and some academics as well, not only as a creator and transmitter of knowledge, but also as “a major agent of economic growth: the knowledge factory, as it were, at the centre of the knowledge economy” (*The Economist* 1997). According to Scott (1997), “higher education systems are no longer simply ‘knowledge’ institutions, reproducing the intellectual and human capital required by industrial society; they are becoming key instruments of the reflexivity which defines the post-industrial (and post-modern) condition”.

The increasing recognition of the importance of knowledge production and the training of a highly skilled workforce in positioning the nation in a global knowledge-based economy at once elevate the importance of higher education institutions and threaten many of their traditional values. As Oliveira (2002: 1) puts it, “there is an essential difference between ‘science as a search for truth’ and ‘science as a search for a response to economic and political interests.’” The changing character of knowledge production and the management of research in Australian universities is an apt example of how new perceptions of the utility of research are re-norming academe.

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This paper commences with a brief sketch of the background to the Australian higher education system and the role of research and development (R&D) within it. This is followed by a summary of key policy reviews and their recommendations that have helped shape the structure and character of higher education research over the past ten years or so. The paper concludes with a discussion and analysis of the outcomes of various policy implementations and the issues they raise.

Background to Australian higher education

Whereas in terms of landmass Australia is the 6th largest country in the world – approximately the same size as continental United States – it has a population only slightly larger than the Netherlands. Most of the nation’s population of some 20 million people (0.3% of world population) is highly urbanised. “The country’s economy is 1.9% of the Gross Domestic Product of the OECD, and accounts for about 1% of world trade” (DEST 2003: 3). Historically, the nation’s wealth was based on primary products – mineral and agricultural. But in recent decades there has been a deliberate attempt by government and industry to switch the basis of the Australian economy from primary products to knowledge – to create what one Prime Minister termed in the 1980s as the Clever Country. While in the early 1970s, about 21% of Australia’s GDP was based on manufacturing and 5.4% on Agriculture, presently those figures are 12% and 3.6% respectively. As the Chief Economist of one of the country’s largest banks put it: “Australia’s economic growth will increasingly be linked to the mortarboard not the sheep’s back ...” (*Sydney Morning Herald* 2004).

Up to the end of the 1980s, nearly all funds for Australian higher education came from the federal government. But towards the end of that decade, the then Labor government recognised the it could not by itself fund the substantial expansion of higher education that was required. While in the early 1980s, non-government sources of funding for higher education were negligible across the sector, presently, a number of universities (mostly the older, well established ones) receive over half (some nearly three-quarters) of their operating revenue from non-government sources. The proportion of total university revenue contributed by the Commonwealth fell from 57.2% in 1995 to 43.8% in 2001 (Phillips et al 2003: 33). On average, about a third of university revenue is from earned income. A Labor government towards the end of the 1980s put in train the trend towards greater funding diversification of Australian higher education. The current Liberal Coalition government which first came to power in 1995 has accelerated that trend by reducing in real terms the Commonwealth’s direct financial commitment to higher education and substantially increasing the financial burden borne by students (table 1).

Table 1. University revenue by source 1995–2001 (\$B) (adjusted by CPI to 2000 terms)

	1995	1996	1997	1998	1999	2000	2001	% change
C’Wealth	5.0	5.1	4.9	4.7	4.6	4.5	4.5	-9.9
HECS*	1.0	1.0	1.3	1.6	1.8	1.8	1.8	70.5
Fees	1.0	1.2	1.4	1.5	1.7	1.8	2.0	99.3
State	0.1	0.1	0.1	0.1	0.1	0.2	0.2	49.0
Other	1.5	1.5	1.4	1.4	1.4	1.7	1.8	14.1
Total	8.7	9.0	9.2	9.4	9.6	9.9	10.2	17.6

Source: Phillips et al 2003: 32

*Higher Education Contribution Scheme (paid by domestic students)

Since the late 1980s, there has been considerable growth in Australian higher education, from approximately 485,000 students in 1990 to double that in 2004. However, in recent years, most of the student growth has been fuelled by full-fee paying overseas students. In the period 1995 to 2001, the number of commencing domestic students increased by 8.6%, while the number of commencing overseas students rose by 146% (Phillips et al 2003: 11). The slow growth in domestic student numbers does not indicate a slacking in demand but lack of available places to meet demand.

The funding predicament facing Australian higher education has increasingly attracted public attention. Student centred funding based on a voucher system was the main recommendation of the *Review of Higher Education Financing and Policy* which reported in April 1998. In 2000 and 2001, the government introduced a

number of policies directly affecting research funding, committing an increase in research funding over a ten-year period (see *Backing Australia's Ability* 2001). Throughout 2002 the Federal government conducted a review of Australian universities under the banner 'Higher Education at the Crossroads'. Despite a number of position papers and numerous submissions from the sector and State governments, the Federal government policy was merely announced as a *fait accompli* as part of the 2003 budget statement. Though there is promise of some new money, basically the policy continues the trend towards greater privatisation of higher education funding through increasing tuition fees, allowing institutions to set their own fees (within a range) and allowing institutions to enrol a greater number of full-fee paying domestic undergraduate students. As will be explained in more detail below, these policies have placed even greater pressure on universities to become more entrepreneurial and to reap commercial benefit from their academic products.

Research

Australia has a well-developed but comparatively small science base, with the majority of its R&D effort concentrated in the public sector. Taking into account the size of the nation, Australia's contribution to world science is impressive, particularly with respect to medical and health disciplines and biological sciences and astronomy. Based on 2002 data, Australia:

- contributed 2.88% of the world's output of research publications (including in the sciences, social sciences and humanities), up from 2.3% in 1988
- was ranked 9th out of 21 countries behind the United States, Japan, United Kingdom, Germany, France, Canada, Italy and Spain in the total number of research publications and ahead of countries such as the Netherlands, Sweden, Switzerland and Korea
- was ranked 8th out of 21 countries in the number of research publications on a per capita basis, ahead of the United States, Canada, Germany, France and Japan and behind Switzerland, Sweden, Israel, Denmark, Finland, Netherlands and the United Kingdom (DEST 2003: 6).

For a number of historical and geographical reasons, the funding of Australian R&D is more highly dependent upon the public purse than is the case in most other developed countries. In contrast, business expenditure on R&D (BERD) is low compared to other OECD countries. This is largely due to the fact that most of the large multinational corporations in Australia have their headquarters elsewhere and conduct little of their R&D in this country. Unlike the USA and UK, there are very few private foundations for Australians to look to for research support, and there is nowhere the level of endowment support that some of the major US universities enjoy. Australia's BERD as a percentage of GDP in 2001 was less than half of the OECD average of 1.62% (DEST 2003: 25). Australia also lags behind many other OECD countries in terms of Gross Domestic Expenditure on R&D (GERD) as a proportion of Gross Domestic Product – Australia's total expenditure is 1.53% of GDP compared to an OECD average of 2.25%.

The relatively low level of investment in R&D from the private sector has meant that government has had to play a leading role in funding Australian science and innovation. The federal government channels its support for R&D through a variety of schemes and organisations, the two major being the Commonwealth Scientific and Industrial Research Organisation (CSIRO) and the nations universities, the former receiving about \$612 million direct from government and the latter \$6652 million. Of course, Commonwealth support for universities is for teaching as well as research. Also, a greater proportion of Australia's R&D workforce is located in higher education than is the case for most OECD countries.

Table 2 gives a rough idea of university expenditure on R&D by source of funds. One interesting aspect of this table is the small but steady increase in R&D expenditure from state and local government sources. As mentioned above, in 1974 almost total funding for higher education was assumed by the Commonwealth, and since then the funding and policy influence of state governments on higher education has been on the wane. But in recent years, some states have been targeting university funding particularly in the bio-technology fields in the belief that such investment will strengthen the local economy – a clear commitment to the notion of the knowledge economy. Several states have established science and innovation councils under such banners as: Queensland's Smart State, Victoria's Science,

Technology and Innovation Initiative, New South Wales BioFirst Strategy and Western Australia's Innovate WA policy.

Table 2: University Expenditure on Research and Experimental Development by Source of Funds, 1988 – 2000

Source of Funds	1988	1990	1992	1995	1996	1998	2000
Commonwealth Government							
General University Funds				66.1%	65.4%	63.7%	62.9%
Commonwealth Schemes				16.9%	16.3%	16.6%	17.4%
Other Commonwealth Gov.				6.6%	7.0%	7.4%	6.4%
Total Commonwealth	91.3%	88.4%	91.1%	89.6%	88.7%	87.7%	86.8%
State and Local Government	1.5%	2.5%	2.1%	2.2%	2.2%	2.7%	3.2%
Business Enterprise	2.6%	2.2%	2.5%	4.7%	5.2%	5.2%	4.9%
Other Australian	3.9%	6.2%	3.7%	2.5%	2.8%	2.9%	3.0%
Overseas	0.7%	0.7%	0.6%	1.1%	1.1%	1.6%	2.2%

Source: AVCC 2003a: 6

Higher education research policy

In Australia as elsewhere, traditionally university research was performed mainly within a discipline-based structure, and was purported if not actually to be very much at the pure-basic end of the research spectrum. But certainly over the last decade or so, the relevance of university research has been questioned and pressure brought to bear to make it more economically relevant. "Trends in the public funding of higher education, pressures for commercialisation of university generated intellectual property, new approaches to research management within corporations, a changing culture of learning, and growth in small companies in high technology industries led to the emergence of new forms of research that required close working relationships between people from different disciplines and professions ..." (DEST 2003: 118).

The Australian government's approach to knowledge production is largely a utilitarian one, with a concentration on commercialisation and economic return. University management by and large tends to translate government research policy directions and priorities into institutional practices. Research management as it is presently evolving has the potential to at once divide institutions and the sector as a whole into 'research haves', and 'teaching have-nots'. To fully understand the implications of present policy and research management practices, it is necessary to go into some detail about how they work.

For well over a decade, federal governments have encouraged competition amongst institutions, particularly with respect to research funding. The 1988 White Paper (*Higher Education: a policy statement*) that laid the foundation for the reform of Australian higher education stated that "concentration and selectivity in research are needed if funding is to be fully effective" (p. 90). With the intention of further enhancing competition over research funding, in June 1999 the federal government released a discussion paper on research and research training entitled *New Knowledge, New Opportunities*. The government's paper identified what it regarded as several deficiencies in the current framework which limit institutions' capacity to respond to the challenges of the emerging knowledge economy: funding incentives that do not sufficiently encourage diversity and excellence; poor connections between university research and the national innovation system; too little concentration by institutions on areas of relative strength; inadequate preparation of research graduates for employment; and unacceptable wastage of resources associated with low completion rates and long completion times of research graduates. A particular government concern was with research training and the funding of PhD and research masters students.

The Government released its policy statement on research and research training, *Knowledge and Innovation* in December 1999. Major changes to the policy and funding framework for higher education research in Australia were identified in the policy statement. The most important recommendation of the White Paper for research management within universities concerns increased competition over research funding, particularly with respect to funding for PhD and research masters students.

Knowledge and Innovation instituted two new performance-based block funding schemes. The approaches are intended to reward “those institutions that provide high quality research training environments and support excellent and diverse research activities”. Supposedly, the Institutional Grants Scheme (IGS) “will support the general fabric of institutions’ research and research training activities, and assist institutions in responding flexibly to their environment in accordance with their own strategic judgements” (Gallagher 2000).

Funding under the IGS is allocated on the basis of a formula that reflects success in attracting research income from a diversity of sources (60%), attracting research students (30%), and the quality and output of its research publications, through a revised publications measure (10%). The Government considers that institutions are likely to be more outwardly focused in their research when research income from all sources is equally weighted, unlike previous arrangements which gave lesser weight to income received from industry (Gallagher 2000).

Funding for research training (RTS) is also allocated through a performance-based formula. Institutions will attract a number of scholarship places based on their performance through a formula comprising three elements: numbers of all research students completing their degree (50%), research income (40%) and a publications measure (10%).

Commonwealth changes to research funding has required Australian universities to rethink much of their approach to the management of research and research training. High on the agenda has been the need to identify priorities, concentrate research effort, and develop a set of performance indicators and sophisticated research management information systems.

Coupled with the introduction of new research funding mechanisms has been government intervention in the setting of research priorities. At the beginning of 2002, the government announced, as a result of a ‘consultation’ process that was far from transparent, that a portion (33%) of the Australian Research Council’s (the largest non-medical research funding agency in Australia) funding would be targeted to research in the following four priority areas: nano- and bio-materials, genome/phenome research, complex/intelligent systems, and photon science and technology.

In May 2002, the government instituted a review process to further set national research priorities for government-funded research in the areas of science and engineering. According to government, the priorities “will highlight research areas of particular importance to Australia’s economy and society, where a whole-of-government focus has the potential to improve research, and broaden policy outcomes” (DEST 2002: 1). The priorities, announced at the end of 2002, are: an environmentally sustainable Australia; promoting and maintaining good health; frontier technologies for building and transforming Australian industries; safeguarding Australia.

When the priority review process was first initiated, the intention was to follow the research priority setting exercise in the sciences and engineering with one in the social sciences and humanities. But that did not happen. Rather, sub-goals for each priority area were written in such a way that the social sciences and humanities could be incorporated. Nonetheless, while broad in scope, the priorities are ‘hard-science’ oriented and mainly emphasise areas of immediate economic relevance. The research priorities are applicable across all Commonwealth’s research agencies and funding bodies.

Discussion and analysis

The most fundamental issue facing Australian higher education in general and research specifically remains, not surprisingly, funding. But more is at issue than just money. At the heart of the problem is the question of whether Australia is to have a publicly supported, publicly subsidised or fully private higher education system. While the government in the present round of reforms has committed some new money to the sector, most of it will be absorbed by the current round of salary increases as a result of enterprise bargaining. Moreover, as indicated above, the government’s main funding reform has been to shift even more of the burden to the student consumer. But student fees will not support an increased research effort. In fact, with an ever worsening staff/student ratio, in some universities money earned

through research effort is actually subsidising teaching through payment of staff salaries.

The government has yet to address fundamental structural and long-term funding issues. The longer research infrastructure is allowed to decline, the more difficult it becomes for the nation to recover its R&D standing relative to the rest of the world. A past President of the Australian Vice-Chancellor's Committee (AVCC) observes that "the pace of change in public investment in universities is such that if our universities get too far behind those in other countries we will not catch up" (Chubb 2000: 3). He also raised the concern that "Australia will become an importer of knowledge and an exporter of talent and that we will have too few educated personnel locally to add value to the efforts of others let alone enough to produce from our own". As mentioned above, the Australian research effort is more dependent on public support than most OECD nations. However, the ideological commitment of the government has been to the market and privatisation.

An important issue in Australian higher education research is the connection between teaching and research. No country can afford to fund all of its universities as if they were world-class research intensive institutions. On the other hand, there are those who argue that all university teaching must be informed by research. Moreover, each institution has its own special arguments why it should be recognised as a leading research university (whether or not the facts support such arguments). The collapse of the binary system of higher education in the early 1990s has exacerbated this problem. The introduction of new research performance based funding measures (RTS and IGS) mentioned above are designed to concentrate research funding on the research performers. It is too early to tell whether the policies will have the desired effect since up to 2005 a cap has been placed on how much funding individual universities can lose or gain through the application of the policies. But in the longer term, government may consider more radical policies to be necessary.

With research policy strongly based on principles of concentration and selectivity, it is hardly surprising that the government would wish to set national research priority areas. The danger here, however, is if funding becomes progressively concentrated in priority areas, innovation may be 'straight jacketed'. This is one of the dilemmas a small country with a limited science base faces. While the nation cannot adequately fund all kinds and aspects of modern research, it must maintain a broad enough science base to participate in advances in knowledge globally. According to the AVCC (2003b: 22), "The key issue is plurality: as a nation we need to support a range of research, and do so by a number of different means. Allowing any single approach to dominate would inevitably result in a diminished overall research capacity and a weaker national innovation system. The impact of research prioritisation should be restructured to recognise this fact".

Another aspect of priority setting is the prominence given to science and engineering at the expense of the social sciences and humanities. The present round of priorities gives little more than lip service to the social sciences. Much of the present thinking is based on the assumption that worthwhile research means commercialisation and commercialisation means science and technology. Again, a more balanced approach is necessary. The social sciences have much to add, particularly to the nation's social and cultural prosperity. They also have an important role to play as critic of the environmental and social consequences of scientific and technologically driven development. But with an increasing emphasis on commercialisation, the role of the university of 'speaking truth to power' may be lost sight of. There is some evidence to suggest that this is a significant problem in the United States higher education sector (Newman et al. 2004). Even the AVCC (2003b: 12) agrees that "Recent priority setting in research has underrated the contribution made by the social science and humanities".

Related to the issue of priority setting is the emphases placed on pure basic research relative to applied and developmental research. Both government and institutional management alike have been very interested in the commercialisation of research outcomes. This has resulted in a shift of funding over the years from pure-basic to applied research, as is depicted in table 3. The linear view of scientific innovation no longer has credibility. Nonetheless, if basic, 'blue-sky' research is progressively diminished, the fountain of ideas and advances in knowledge that feeds other forms of research and technological innovation may dry up as well.

Table 3: University Expenditure on Research and Experimental Development by Type of Research Activity, 1988-2000

Type of Research Activity	1988	1990	1992	1996	1998	2000
Pure Basic Research	38.0%	41.0%	40.0%	34.1%	33.5%	30.5%
Strategic Basic Research	24.0%	22.0%	24.0%	25.0%	25.4%	24.0%
Applied Research	31.0%	31.0%	30.0%	34.7%	35.0%	37.8%
Experimental Development	7.0%	6.0%	6.0%	6.2%	6.1%	7.7%
Total (\$m)	1,076.8	1,350.8	1,695.2	2,307.6	2,600.2	2,774.6

Source: AVCC 2003a: 7

Annual expenditure are in respective year price.

The emphasis on applied research reflects the concern by both government and institutional leaders that research outcomes are commercialised, which in turn leads to the funding of the type of research most likely to achieve this result. This appears to have resulted in a sharp decline in non-oriented/advancement of knowledge type of research, as is reflected in table 4.

Table 4: Socio-economic objective of research by type of funds

% of Total HERD for SEO	Economic Development			Society			Environment			Non-oriented Research		
	'96	'98	'00	96	'98	'00	'96	'96	'00	'96	'98	'00
All sources	21%	23%	29%	25%	27%	40%	7%	7%	6%	46%	42%	25%
Commonwealth National Competitive Grants	21%	24%	27%	25%	26%	39%	8%	7%	6%	46%	43%	28%
State and Local Government	21%	27%	31%	51%	47%	48%	10%	9%	12%	18%	17%	10%
Business	43%	42%	44%	21%	22%	32%	9%	10%	7%	26%	25%	16%
General University Funds	18%	22%	28%	24%	27%	40%	7%	7%	5%	50%	44%	27%
Overseas	23%	26%	27%	36%	32%	47%	6%	4%	5%	33%	38%	21%

Source: AVCC 2002: 3

Society remains the major research category with respect to socio-economic objective of research, partially due to the fact that health research is classified under society. The category of 'economic development' is steadily increasing, while the most alarming trend is the sharp decline in 'Non-oriented Research', or what used to be classified as 'Advancement of Knowledge'. Fields which fall into the non-oriented research category include: Mathematical sciences; Physical sciences; Chemical sciences; Earth sciences; Biological sciences; Political science and public policy; Studies in human society; and Behavioral and cognitive sciences (AVCC 2002: 2). Noting the decline in basic research, the AVCC (2003b: 19) warns that "without a strong footing in pure basic research the national innovation system will run out of ideas – or have to import them, at increasing expense, from elsewhere. Secure and substantial investment in basic research is decidedly in the national interest".

Concentration and selectivity remain the key issues in research. This means that universities have to identify strengths and make hard decisions about allocating resources to some areas and not to others. It is fairly obvious that those areas best able to commodify their intellectual wares are the ones to stand to gain the most from the new funding regime. It is also fairly obvious that these areas are not randomly distributed across the academy. And it is just not science and technology who are the winners, but those sub-fields that can lay claim to short- to medium-term economic return on their efforts. There is a danger that basic science will be further ignored, and in particular those disciplines traditionally associated with basic research, such as chemistry and physics, will go into further decline.

Under the new research funding formula for research students, universities earn income not only through student load but also through rates of completion. This presents particular difficulty for faculties in the

humanities and social sciences that often have a large number of research students who traditionally study part-time, take considerable time to complete their degrees and have low completion rates compared to other disciplines. While absorbing a large amount of initial RTS load allocation, such areas may lose their student load in the future if completion rates are outside the formula guidelines. In protecting its overall share of the national research student quota, a university may decide that some subjects in the arts, humanities and social sciences are ones that it can ill afford.

Either wittingly or unwittingly, management within universities is playing the research concentration and priority setting game with the potential result of segmenting academic staff into research haves and teaching staff have-nots. By directing research funds and infrastructure to priority areas, non-priority areas will have fewer resources to conduct research. This appears to be exactly what government intends:

It seems timely to challenge the assumptions of the academic model of much of the past century, and validate alternative academic career paths. Some academics may choose to specialise in teaching, and become ‘teaching-only’ academics. Some academics may choose to specialise in research (*Striving for Quality* 2002).

Even more recently, Australia’s chief scientist, Robin Batteram, has called for “greater separation of teaching and research funding”, and is reported as saying that “good teachers do not have to be leading researchers ...” (Illing 2003: 21). In a similar vein with respect to the UK situation, Willmott (1998: 1) argues that the “significance of the Research Assessment Exercises ... does not reside primarily in their rationalisation of resources for research or in securing improvements in accountability for their expenditure, but, rather, in their contribution to legitimising the restructuring of higher education which has included the withdrawal of research funding from an increasing proportion of academics and departments”. In both countries, the intention is not merely to decouple research from teaching, but to simultaneously tie research more closely to the needs of industry and the economy while reducing unit cost.

Conclusion

Bertelsen (2002: 1) observes that “the commodification of higher education to serve the market is revolutionising our entire practice, from institutional image through to management, jobs and curriculum”. In Australian universities, management in many institutions strongly promotes those areas of the enterprise that appear to turn a profit, while shedding investment in less lucrative activities, such as the humanities, ancient and some modern languages, etc. Given the decline of public funding and rising student numbers in a highly competitive and volatile market, institutional leaders may well indeed argue that they have no other choice.

It appears that the modern university has shifted its orientation from social knowledge to market knowledge and that the “development of a market oriented university supersedes academic decision making” (Buchbinder 1993: 335). According to Newson (1993: 298), “These new forms of decision making fundamentally undermine a conception of the university as an autonomous, self-directing, peer-review and professional-authority based institution, and thus changes the politics of how academic work is accomplished”.

In the past, academic loyalty was first and foremost to the discipline and to disciplinary norms concerning the definition and production of knowledge (Clark 1983). With the commodification of knowledge, that loyalty has come under challenge from powerful groups both within and without the academy demanding loyalty first and foremost to the institution – that is, to the corporation that pays the bills (Meek 2003). “Science policies, national and international have, in different degrees, been eroding academic autonomy since the early 1970s” (Henkel 2002: 58). Henkel goes on to state that the “landmark here is the Brooks Report for OECD (1971) which laid down the principles that governments rather than scientists must set over-riding research priorities and that the key driver of science policies must be the achievement of social and economic goals”. In a similar vein, Slaughter and Leslie (1997: 5) argue that:

Participation in the market began to undercut the tacit contract between professors and society because the market put as much emphasis on the bottom line as on client welfare. The *raison d’etre* for special treatment for universities, the training ground of professionals, as

well as for professional privilege, was undermined, increasing the likelihood that universities, in the future, will be treated more like other organisations and professionals more like other workers.

Clearly, the commodification of knowledge has led to new types of relationships within the academy based on what Slaughter and Leslie refer to as academic capitalism, and the replacement of the 'professor academic' by the 'professor entrepreneur'. According to Henkel (2002: 60). "Academic scientists and the institutions in which they work have become more or less willing actors in a range of markets and so in the commodification of scientific knowledge". She goes on to state that "capacity for profit making sits alongside intellectual reputation as high value currency in an increasingly competitive academic labour market".

One lesson to be drawn from the Australian case is that the full potential of a higher education system to contribute to both the social and economic welfare of the nation can not be achieved through the nation abrogating its 'duty' to adequately support it. As noted above, a common trend internationally is for sources other than from government to assume a greater proportion of overall higher education funding. In most countries, however, all financial sources of support have increased, including those from the public weal. While in the later half of the 1990s, there was a shift towards increasing private expenditure on higher education in several OECD countries, "only two countries, Australia and New Zealand, reduced direct *public* expenditure over this period" (Phillips et al. 2003: 3). It is as if the Australian government, particularly in recent years, has wanted its 'cake and eat it too' – wanted a higher education system to contribute to the growth and prosperity of a knowledge-based society and economy, while increasingly getting others to pay for it.

The Australian case also suggests that market coordination of higher education is not necessarily deleterious per se. The problem rests not so much with the introduction of such measures as competition, user-pays, budget diversification, and entrepreneurial incentive, as with how these policies are actually constructed and implemented. The introduction of student fees and policies that encouraged institutions to find alternative sources of income in the late 1980s and early 1990s probably allowed Australian higher education to modernise and achieve a level of growth that would not have been possible otherwise. But from the mid-1990s and under a different political regime and ideological imperatives, many of the same general policies were used, intentionally or otherwise, to substantially stunt the development of the sector. As Phillips et al (2002: 45) note, the government has yet to front the key issue of "the level of funding per student required for a high quality system, and the extent to which the trend toward increasing private contributions can and should continue". The problem in a public system of higher education like Australia is not the encouragement of private investment, but the abrogation of public responsibility for the health of the system, rather than equitably sharing the financial burden amongst all stakeholders. The Australian case also raises the question of when does decline in government funding responsibility research the point where government no longer has the 'moral' authority over national higher education policy. One hopes for a heightened awareness, particularly amongst governments, of both the importance of understanding the changing role of higher education in society and of the critical contribution higher education makes to shaping a nation's future, not only economically, but socially and culturally as well. A narrow, utilitarian conceptualisation of the value of higher education's knowledge production capacities is unlikely to serve the interests of the nation in the long-term.

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