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The Chair
Review of Higher Education Financing and Policy
Location 728
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Dear Mr West,

Please find enclosed copies of CAPA's final submission to the Review. This is a response to relevant parts of the discussion paper *Learning for life*. As the national peak body representing Australia's postgraduate students, CAPA is concerned with the lack of consideration given to postgraduate education in the discussion paper. We hope that more attention is paid to this area in the final report. CAPA would welcome any further discussion relating to the points below.

Yours sincerely,

Robert Hansen
President

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**Final Submission to the Review of
Higher Education Financing and Policy**

Prepared by Mark Frankland, Executive and Research Officer in
consultation with the CAPA executive and affiliates.

Scope of this Submission

This submission is CAPA's response to the Review of Higher Education Financing and Policy discussion document, *Learning for life*. It is intended to reflect the interests and perspective of postgraduate students and consequently concentrates on issues of concern to this group. The submission is divided into four main sections, these being a statement of general principle followed by sections addressing postgraduate coursework, postgraduate research and the application of information and communications technology to higher education.

1 Statement of general principle

1.1 Cost to students

CAPA strongly opposes any changes to the university funding system which increases the costs and the burden of debt which falls on students. Accordingly CAPA is implacably opposed to the preferred funding models in *Learning for life* which will ensure that students must pay a premium to access quality higher education at the undergraduate level and will ensure that most students have to pay full fees to access postgraduate coursework higher degrees. Furthermore, the elimination of the opportunity for those without substantial financial means to gain access to elite institutions at the undergraduate level will also ensure that access to research based courses will be limited to those who can afford to pay high undergraduate fees.

1.2 The nature of university education

The current strength of the Australian university system is that it provides broad (though unfortunately not universal) merit based access to high quality universities. These institutions are centres for innovation, critical reflection and the development of students' ability to produce new knowledge. These essential functions are underpinned by the relationship of research to teaching in universities and the strength of universities as independent institutions which are not overly influenced by narrowly motivated and sectional interests.

CAPA feels that *Warning for life* reveals a serious misunderstanding on the part of the Review about this fundamental aspect of the nature and purpose of the university system. The discussion document, in setting teaching in opposition to research assumes that university teaching is little more than the delivery of a narrowly vocational training. Once such an erroneous assumption is made it is easy to make other wrong assumptions, for example, to see individualised tuition as easily and cheaply replaced by off-the-shelf software. Changes to the current university system based upon such erroneous assumptions will gravely affect the future effectiveness of the Australian university systems.

1.3 Commitment to equity

CAPA remains firmly committed to equity of access to higher education and to equal participation in postgraduate education in particular. The funding models proposed in the discussion paper, along with the proposed deregulation and privatisation of higher education will lead, within a very short time, to a multi-tier system of higher education where only a wealthy elite have access to the sort of university education which is currently more broadly accessible. CAPA calls for the strengthening of measures to ensure that the Australian university system is of a uniformly high quality and is accessible to all on the basis of merit. CAPA further endorses the application of a national equity monitoring system for all postgraduate courses and the development of programs to ensure that members of the C's designated equity groups are represented in postgraduate education on a basis proportional to their presence in the general population.

2 Postgraduate Coursework

2.1 Why postgraduate coursework is important

CAPA is aghast at the lack of consideration given to postgraduate coursework in *Learning for life*.

Postgraduate coursework education was, at least until very recently, the fastest growing area of the higher education system. It caters for a diverse group of students in varying and often innovative ways. In particular it provides:

- flexibility in the system as a whole allows students to undertake general degrees for the first four years of university education and then to specialise in a range of vocational areas;
- high level continuing education to graduates with industry experience; and
- retraining opportunities for those who wish to return to higher education

Postgraduate coursework makes a significant contribution to the efficiency and effectiveness of the higher education system. Unfortunately the current funding and income support systems which arbitrarily discriminate against this area of higher education are inefficient, ineffective and inequitable and should be amended.

2.2 Fees and equity

Unfortunately, the introduction of fee-paying and deregulation in this area has proven to be a significant barrier to access for students from designated equity groups as noted in the Higher Education Council Report *The impact of fee-paying on designated equity groups*.

Since the data for this report was compiled the government has implemented cuts totalling 16,530 funded postgraduate coursework places of 1996 levels. If the balance of fee-paying and EPICS courses which applied in that year can be assumed as a constant then it is likely that only 22,617 HECS places will remain in the system by 1999. Furthermore, 5,325 will be compulsorily allocated to nursing and education initial vocational places and an unknown amount will be taken up by continuing students who enrolled on a HECS only basis.

Postgraduate Coursework EFTSU

Total 1996	52,580
less Total fee-paying 1996	13,433
Total non fee-paying places 1996	<u>39,147</u>
less Cut to PG funded load 1997-9	16,530
Estimated remaining HECS places	<u>22,617</u>

Dean Ashenden and Sandra Milligan estimate that, "within three years, HECS based coursework programs...will be close to extinction" (The Australian 20 September 1997 Postgraduate and career upgrade special report p.1). Fee-paying was a significant deterrent to members of designated equity groups at 18 per cent of the total. It will be an insurmountable obstacle at closer to 100%

Recommendation

That Government/HECS places be reallocated to the postgraduate coursework area to return funded places to 1996 levels.

2.3 Postgraduate coursework and professional development

The absence of ARCS places will also prevent those working in highly skilled but poorly paid professions such as teaching and social work from undertaking important continuing education.

Recommendation

That a joint industry Commonwealth pool of places be established at the postgraduate coursework level to fund postgraduate coursework education relevant to the professional development where it would not otherwise be supported by employers.

2.4 Balance of research and coursework

The current funding system and the proposals in the discussion document will continue to have a negative impact on the appropriate balance of the research and coursework components of all postgraduate courses. Consideration of how much research or coursework a student should complete in a postgraduate programme should ideally be determined by educational consideration. The current balance between research and coursework in all postgraduate courses is now determined to a considerable extent by considerations of an arbitrary funding system where research load is funded and coursework is not.

Recommendation

That the contribution of all postgraduate research be recognised such that the research component of all postgraduate courses be exempt from fees and HECS.

2.5 HECS now also a significant barrier

The current high rates and low repayment thresholds of HECS are also now a significant barrier to graduates seeking to continue a postgraduate course part-time. This is a critical factor when combined with the total absence of income support for postgraduate coursework students.

Recommendation

That HECS exemption scholarships be available to postgraduate coursework students on the basis of equity scholarships.

2.6 Need for income support

Under current arrangements students who complete a general undergraduate degree and qualify for student assistance lose this assistance if they continue studying in a postgraduate course even where this component of their study is necessary for a specific vocational outcome. Many students from low SES backgrounds are now finding this pathway to meaningful employment closed to them because of the combined effects of fees, low HECS repayment thresholds, higher HECS and loss of income support.

Recommendation

That means tested student income support be available to postgraduate coursework students continuing in an initial vocational qualification and to graduates unemployed for more than six months.

3 Postgraduate Research

3.1 The Value of Postgraduate Research

As pointed out in Appendix 8 of *Learning for life* (footnote 70), about two thirds of the academic research labour force consists of research students; a quarter of university research publications has a research student as one of the authors: and research students are often instrumental in establishing industry and international links.

Postgraduate research is also crucial to the nexus between teaching and research as postgraduates often work as part-time academics, contribute to course development and content and bring new ideas to other academics who write courses. Postgraduate students in courses classified as coursework also produce very large amount of original research strengthening the research culture of universities and increasing the total number of research publications produced in Australia.

CAPA is concerned that the Discussion paper, by drawing a sharp distinction between research and teaching and by then setting these two areas in competition with each other, has not recognised that postgraduate research is both a process of learning and a major contributor to the national research effort. The Review also fails to acknowledge the contribution of university research to the quality of all university teaching and learning.

It should also be remembered that the world of work continues to undergo radical change and that defining jobs neatly as research and non-research is no longer clear cut (if it ever was). A great error will be made if it is assumed that postgraduate research is not utilised in employment if a student does not enter a traditional research field.

Recommendation

That in assessing the value of postgraduate research full account should be taken of the role it plays in strengthening university teaching; contributing to new knowledge; disseminating new ideas into the wider community; establishing links between university and industry research, developing the critical capacities and research skills of students; and developing highly skilled, flexible and innovative workers.

3.2 The need to maintain diversity

CAPA rejects the emphasis on strategic or targeted research projects (ie the setting of National priorities) in the discussion document. Attempting to pick winners in the area of university research, which is primarily basic and strategic research and therefore long term, is almost certain to be counterproductive to the aim of enhancing the economic returns which flow from the national innovation system. CAPA supports a modified version of the proposal put forward in the ARC information paper which seeks to maintain the current diversity of the basic research carried out in universities and to establish an additional further mechanism to assist the development of new or strategic areas.

Recommendation

That an additional pool of university research funding be established from contributions from Commonwealth and State Departments of Education, Industry and Communications and individual industry contributors. This fund should be managed by the ARC and NHMRC in consultation with the fund partners and other interest groups including CAPA and representatives of early career researchers. To assist in the development of emergent areas and the regeneration of areas of

strategic priority this fund should also provide additional research training places in areas of high industry demand.

3.3 Role of research in regional universities

CAPA is concerned that funding proposals and the mechanisms for allocating student places put forward in the discussion document will inhibit research in regional universities. This will in turn inhibit the development of regionally appropriate curricula and adversely affect regional economies. Regional universities are also essential links to the international world of research and scholarship for the large number of Australians who live outside the major capitals.

Recommendation

That the role of research in regional universities in regional development be acknowledged by enhancing the information and communications technology infrastructure of regional institutions and remote campuses and encouraging cooperation between networks of universities.

3.4 Need to address the lack of scholarships

When compared with other OECD countries the Australian higher education system shows a low output of PhD graduates (Source *Learning for life* Appendix 14, page 9). Australian Research graduates consistently show a very low level of unemployment despite high levels of growth in research degree completions and an overall increase in unemployment. For the years 1985 to 1994, which included one of the worst recessions in the history of the country, research graduate unemployment averaged 5.8% (DEET Higher Education Series Report 25~ January 1996, Table 1.). Research graduates were about half as likely to be unemployed as bachelors degree graduates in 1995 (Baker et al 1996 p.131). The latest GCCA figures show a continuation of the trend to very low unemployment levels for graduates with research degrees.

In 1983 about one quarter (24.~%) of research students held the equivalent of an APA with stipend scholarships. In 1990 this proportion had fallen to 20% and by 1995 it was down to only 19%. Given that there has not been a corresponding increase in other types of scholarships to plug this gap the clear inference is that more very highly qualified students are not able to access scholarships.

This is further born out in figures on unsuccessful scholarship applicants produced by the AV-CC, which show that in 1995 only 2,452 Australian postgraduate students received a scholarship. However in that year there were 6,841 qualified applicants' a ratio of nearly three (2.79) to one. This situation was not much improved in 1996 when 6,932 qualified applicants sought 2,775 scholarships (2.49 to 1) and was equally poor in 1997 when 7,549 applicants were seeking only 9,743 scholarships (2.75 to 1) (Sources. Powers M. (1984) *The Role of Postgraduates in Australian Research*; Baker HI, Robertson, Toguchi. (1996)

The Australian Postgraduate Research Award Scheme: All evaluation of the 1990 Cohort; AV-CC

Rather than seeing funding for postgraduate research as a burden the Review should then acknowledge the low number of students undertaking research degrees and the lack of scholarships for postgraduates.

Recommendation

That the scholarship funding be expanded to cover 40% of eligible applicants. The current level of research degree places be consolidated with appropriate levels of infrastructure and support funding and thereafter gradually expanded.

3.5 Problems with resource allocation and the management of postgraduate research: Allocation of research degree places.

CAPA agrees with the propositions put forward in Appendix ~ of *Learning for life* that significant problems are associated with the current situation of under resourcing of postgraduate research projects. This issue is addressed at length in the paper attached as Appendix A to the submission. In summary, CAPA does not believe that the allocation mechanism proposed in *Learning for life* will address these problems. Rather it is likely that, if introduced the proposed new mechanisms would actually create additional problems.

The proposal to create a national ranking of all intending research students weighted by a rating of the institution from which the prospective student gained their undergraduate qualification is seriously flawed for the following reasons:

- It discriminates against good students who have studied at what are perceived to be lesser institutions, the very category of student the older research oriented universities are seeking to recruit;
- It would have to be moderated by discipline;
- It would lead to serious mismatches between funded places and available research infrastructure including supervisors;
- It does not make allowance for less popular but strategic research areas;
- It would unfairly favour graduates from older and richer universities
- It would undercut new and emerging disciplines which are more prevalent in the newer and most likely more lowly ranked universities; and
- It is biased toward younger honours graduates.

Any system for allocating research training places needs to take account of the new realities of research training. These are that:

- Research students are likely to commence study after some considerable experience other than study. In 1990 while the modal age group for commencing a bachelor degree was under 19, research students were likely to be considerably older with 22.9% of commencing students falling in the 25-29 years category and 35.6% falling in the 30-39 category (Baker et al 1996 p.14);
- A large percentage of research students are studying part-time while being employed full-time. In 1995 49.7%, of postgraduates were already employed on a full time basis before graduation (Baker et al 1996 p.32);
- Research students can no longer be routinely expected to follow a conventional career path into already existing research jobs. This does not mean research education is no longer being used in the world force, rather it is being used in new and innovative ways.

The current system needs to be improved in the following three areas

1. More equitable distribution of research resources. Allocation of research funds to institutions and even departments does not mean that students will have equitable access to university research infrastructure or to funds for travel and other resources consumed during the research process. This situation would apply even where a student has cashed in his or her voucher at an institution. The problem here is ~ matter of distribution and management of available resources at least as much as it is a question of total resource availability.
2. Quality control within universities. The main problem in variation in quality is not between universities but within them and this can not be resolved by changes to general allocation mechanisms such as block grants to universities.
3. Flexibility of service delivery. CAPA rejects the notion that students should be expected to move to suit the convenience of the university or to serve a perception that mobility improves educational outcomes. As noted above research students are more likely to be older and involved in full-time employment. It is not unusual for research students to be supported by their employers in the form of access to facilities. This does not mean that these facilities are located in the same city as the most appropriate supervisor. This also occurs within the university system where supervisors move institution and/or the student needs to access facilities located at another university. In other instances a student may be required to conduct fieldwork in a locality remote from the institution but be required to be domiciled near the institution. Issues relating to flexibility are extensively documented in the DEETYA, E&JP report *Open and flexible PhD supervised research and study*.

Recommendation

- A. That the actual research environment provided for research students be audited as a basis for rewarding good practice (punishing bad practice) in this area. (It should not be assumed the research environment is only or even wholly on-campus.)**
- B. That funding mechanisms which reward research groups rather than universities be given greater priority and universities be rewarded rather than financially penalised for cooperating on research projects and on the provision of research degrees. For example, research funds could be set aside for cross institution collaborative projects in the provision of research degrees. Furthermore, reciprocal agreements between all Australian universities on the use of resources and access to staff should be facilitated as a matter of urgency.**
- C. That universities be required to provide to the student prior to their enrolment a written statement of the access that will be provided to all facilities and infrastructure relevant to the research project and that a budget be allocated to each student in the form of a minimum dollar amount that will be made available for travel and for other items necessary to the student's research project which will be consumed in the conduct of that project.**

3.6 Allocation of research scholarships

The proposed elements of a research training index as proposed on page 167 of *Learning for Life* are substantially the *same* as the current elements of the formula for allocating APAs and APAs with stipend save for the possible inclusion of an index of supervision quality. While the current allocations system has flaws, as already noted, the major problems are caused by the overall lack of scholarships relative to the number of qualified applicants (see page 10 above). Furthermore, the proposal to provide stipends as block grants to universities is likely to limit the mobility of students who win APA

Recommendation

That universities and industry be encouraged to provide more scholarships. One mechanism for doing this would be by creating a pool of stipends which had to be matched on a one to one basis by the university or industry partner receiving them for distribution to students.

4 Information and Communications Technology

CAPA is concerned with the simplistic assumptions made in *Learning for life* about the use of information and communications technology. It sees ICT as a magical solution for providing universal access to higher education and also links electronic benediction of higher education to an agenda of globalization. The preferred funding model proposed in *Leaning for life* would take both public funding and the monopoly on the right to confer degrees away from universities and allow Australian students to spend it on courses provided by any accredited provider, including those from overseas (West p. 161).

Such a transformation will have major impacts on quality and access in higher education The Higher Education Council in its report *Quality in Resource Based Learning* notes that,

without specific funding programs and the collaboration of the various agencies responsible, it is likely that hardware, software, materials costs and telecommunications costs will be passed onto the students. further perpetuating pattern; of advantage and disadvantage in higher education; perhaps even to the extent of excluding some students from important educational experience (HEC p.27).

An even greater barrier to the effective mass electronic distribution of higher education is the cost of providing the support services. which in addition to the digital learning package, are necessary for effective reaming. Here the HEC report recommends shifting, "the balance from funding teaching and support to funding the design and development of educational packages" (HEC 1997 p.21) to minimise the need for individual tuition. However, there are in built factors working against this strategy. The less specific an "educational package" is to a particular cohort of students, as occurs when an educational package extends beyond the boundaries of the campus to a national and international catchment, the more that individual needs which can not be anticipated in a generalised educational package will have to be catered for by individual tuition.

Recommendation

That any measure of access to university education in Australia be benchmarked to the best quality on campus education provided in Australia. That public funds be provided only to Australian universities.

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Appendix A

**Improving the Productivity of Research Training by Improving the Quality
of the Postgraduate Experience**

**Paper delivered to the 1997 HERDSA Conference by
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Introduction

Both the importance of the contribution of postgraduate research students and the lack of systematic support for these students have long been concerns of the Council of Australian Postgraduate Associations (CAPA). More recently, the lack of research infrastructure relative to the number of students has also been a concern highlighted by the Australian Research Council (the ARC) which is the main advisory and funding distributing body for university research. The difficulty facing CAPA, the ARC, universities and the research community more generally is that funding for basic research is limited so ultimately increasing the number of research students leads to less resources available on a per student basis. The other side of this equation is that if demand by qualified students for research training places goes unmet the overall national research effort will be diminished and perhaps the next great discovery will be never be made.

This paper is an attempt to explore some of the issues involved in this policy dilemma a little further. It is also an attempt to search for some alternative theoretical frameworks with which to think about research policy. This latter goal has been set with the aim, not so much of finding the 'right' answer, but more of asking some different questions.

Explanatory Scenarios: the Mass System and the Post-Fordist System

Recent public debate about the Australian higher education system, particularly comments on the growth of university education in the post-Dawkins unified national system (UNS) is often couched in terms of a transition from the old binary system of higher education, dare I call it the elite system of university education, to a mass system of higher education. A useful short explanation of what is meant by mass higher education and how this concept applies to research training is provided by Simon Marginson in his address to the 1995 CAPA Annual Council Meeting.

For Marginson the primary evidence for the transition to a mass system is the "phenomenal growth" in numbers of students¹. Marginson argues that this change, "is not just quantitative, but qualitative" (Marginson 1995 p.2). A key element of this qualitative shift is an increased disparity between the quality of education provided by different universities which coincides with an increase in numbers and increased reliance on non-government sources of funding.

¹ This was 32.7% between 1989 and 1994 for undergraduates and 122% [or postgraduates] in the area of research training Marginson noted, after a long period of stagnation. numbers grew by 110% (Marginson 1995 pp 2,3).

While formerly under,

"the traditional Australian approach every institution was being developed along the growth path of a first rank institution and this was underwritten by Government support!" (Marginson 1995 p.6).

the new Australian mass system is becoming more like the system in the United States. Here, a mixed public/private system supports high rates of participation in undergraduate and post-graduate education but has created fundamental inequalities in student access, and a "massive and totally unacceptable degree of differentiation between high quality and low quality outcomes" (Marginson 1995 p 6)

In research training this tendency is reflected in differential access to research funding and ultimately in disparities between the quality of research training provided by different universities. Marginson notes an increasing reliance on commercial research activity to supplement research training and vastly differential access to this form of funding. Half of all commercial research funding accrues to just four institutions (Marginson 1995 p 5~)

For the purposes of today's discussion I want to extend the metaphor of a transition to a mass higher education system by comparing it with post-Fordism, an explanatory model associated with changes in the system of industrial production. Post-Fordism was a theoretical and pragmatic response to the rapid collapse of traditional manufacturing industries and more broadly of industrial employment in a number of developed countries during the 1980's. In crude summary, the essential characteristics of this model are that this collapse of the old manufacturing base is a symptom of the transition from a Fordist to a Post-Fordist model of production and social organisation where the Fordist "mass production of standard products for a large domestic market" (Dertouzos et al 1989 p.47) has been superseded by a more flexible post-Fordist manufacturing system. This shift has been marked by new employment and consumption patterns and a wider process of social restructuring.

Within the workplace Fordism is seen as being characterised by a hierarchical production process controlled by a few elite workers. For the majority of employees work is broken down into simplified and easily repeated tasks. In this stereo-type, each worker functions like a cog in a machine and has about as much knowledge of and responsibility over the process as a whole.

By contrast, under the regime of post-Fordism a smaller number of workers are called upon to perform a broader range of more complex tasks. This is possible because firstly, many of the repetitious tasks have been taken over by the new computer controlled production equipment and secondly, the equipment is itself more flexible as it can be easily and quickly reprogrammed to produce a variety of components. Formerly, under Fordist technology and practices a new set of production equipment was required for every alteration to the product.

In contrast to the hierarchical and bureaucratic Fordist system, workers in the flexibly-specialised, post-Fordist production scenario are required to work in teams, exercise some autonomy and master a wide range of skills. As a consequence, workers in post-Fordist industries no longer require the rigid job descriptions, work practices and bureaucratic unions that typified Fordist production methods (Graham 1992. p. 395). A further crucial aspect of the post-Fordist production regime is the disaggregation of the old centralised and bureaucratic enterprise into a number of smaller more flexible enterprises who produce components or producer services for a range of manufacturers and are geared to an international rather than a domestic market. These smaller enterprises are coordinated by market mechanisms and interpersonal relationships rather than central planning. Post Fordist ideas have also been applied to the analysis of more purely information based industries such as film and television and to public sector institutions.²

The mass system of higher education appears to combine attributes of both Fordist and post-Fordist production systems. Certainly the mass system is much more oriented to an international market than its predecessor however, taken as whole' the system has become more hierarchical with a few elite institutions and a long tail of lesser institutions, while individual universities have become larger and probably more bureaucratic. In summary, if the benefits of the Fordist system are predictability and uniformity of outcomes, and those of the post-Fordist system are flexibility, less wasteful management structures and a degree of cooperation between relatively autonomous sub-units within the overall production process, then the mass system of higher education seems to combine precisely the inverse to the benefits of both Fordist and post-Fordist systems.

What if anything do these provisional insights add to the discussion about resources for research students ? Before attempting to answering this question I will look in more detail at the current debate on research training.

Too many research students not enough resources?

In its Information Paper for the West Review the ARC provides a scenario of rapid growth and differential access to resources similar to that put by Marginson. They note that:

- Growth in research higher degree load for the UNS (Unified National System) averaged 13.5% per annum between 1989 and 1995. However the annual growth rate began to decline in 1994 with this trend continuing through 1996;
- Five institutions account for nearly half of research expenditure, and the top quartile for almost 70% of R&D funds;
- Eight institutions are responsible for 67% of research expenditure, and produce 51% of research publications;
- Growth in higher degree research load in post-1987 institutions averaged 31.6% off a low base. This rate of growth saw these institutions move from 8% of the total to 20% over that period;
- In 1995 the seventeen wholly post-1987 institutions had 19.5% of all HDR enrolments but reported only 9.8% of research income from all sources in the Composite Index. This 2:1 ratio also holds for the broad field of research except in the social sciences, where the ratio is 1:1 (ARC 1997 pp 17-92 paraphrase).

Despite this familiar scenario of under-achievement and discouragement for the poor and over achievement for the rich, the famous Matthew and 'hog cycle' effects³, some pre-1987 institutions have done exceptionally well when measured by research income per research student as have a number of smaller and less prestigious institutions. **See table 1** (ARC: p 24)

See Frankland PhD thesis forthcoming for an example of this type of analysis and for further references.

³ The Matthew effect is "To whom much shall be given" (Johnston et al 1993 p.75) The hog-cycle is where those who are successful continue to apply and those who fail initially give up (ARC 1997 p.19)

TABLE 1

Research income per EFTSU

University	1995 HDR (EFTSU)	\$ per HDR	\$ Quartile Average
Western Australia	1,026	44,136	
Adelaide	1,127	42,268	
Wollongong	269	40,973	
Melbourne	2,249	39,248	
Newcastle	510	38,826	
Flinders	470	37,336	
NSW	1,909	35,475	
Queensland	2,201	33,594	
Monash	1,909	28,033	1 st 37,765
South Australia	406	27,545	
Tasmania	567	27,396	
NTU	112	27,339	
Sydney	2,494	24,914	
Macquarie	743	24,085	
Griffith	509	22,882	
James Cook	513	21,661	
Curtin	570	21,627	
Charles Sturt	104	21,401	2 nd 24,317
Canberra	187	20,653	
Ballarat	33	20,120	
QUT	519	19,328	
New England	527	17,938	
Murdoch	455	17,907	
Southern Queensland	94	17,302	
Central Queensland	109	17,108	
RMIT	804	15,730	
UTS	433	14,833	3 rd 17,886
LaTrobe	948	13,805	
Swinburne	212	13,692	
VUT	367	10,168	
Western Sydney	493	8,580	
Aust Catholic University	25	7,298	
Deakin	415	6,642	
Southern Cross	118	6,472	
Edith Cowan	322	6,276	4 th 9,117
total:	23,749	average: 22,647	

Sources: DEETYA Selected Higher Education Statistics.
Higher Education Financial and Publications Research Data Collection
ARC Information Paper to the West Review p.23.

For example the relatively small regional universities at Wollongong and Newcastle beat several of the great eight into the 1st quartile. The post 1987 University of South Australia comes in at the top of the 2nd quartile and is ahead of Sydney and Tasmania. By contrast LaTrobe a pre-1987 university but the third university to be built in Melbourne, languishes in the 4th quartile while Flinders, a comparable institution is firmly in the 1st quartile and sixth overall.⁴

The ARC's Scenario

There is little doubt that the ARC sees a uneven spread of research funds between institutions as evidence of declining and substandard levels of support for research students. ARC Chair, Professor Max Brennan has recently stated that,

"The most dramatic evidence of the mismatch between resources and student numbers [within the INS] is in research training. For example, in one of the newer universities, Title a big growth in higher degree research enrolments in science the total research income per student was only \$5,900 (barely enough to buy a few bits and pieces of minor items of equipment). By contrast, in one of the older, medium sized universities, the same students would have been supported by an income of \$33,111 - a much more workable figure" (Brennan 1996 p3).

Furthermore, Brennan like Marginson see this problem as an outcome of the "massification" of the higher education system. He identifies three possible solutions: increasing the total amount of university research findings which he sees as unlikely; reducing the number of research students which he sees as undesirable; and thirdly charting,

"a middle course - a partnership between the university sector and the government which brings research resources and postgraduate enrolments more into balance institution by institution and research field by research field." (Brennan 1996 p4)

This middle course is likely to involve,

"concentrating research and research student numbers in a small number of key areas." (Brennan 1996 p3).

⁴ Some of this variation could be accounted for by a relatively small institutions containing a few areas of research strength. The ARC note that despite the overall concentration of research funds in few universities, more than half were among the leading six in at least one field of research (ARC p.17). However there is no evidence to hand to suggest that research resources are any more evenly distributed at large or small universities.

Setting Priorities

One proposal for achieving this concentration on a national scale was outlined in the February 1996 ARC News. Here the ARC contrasted research funding by Field of Research with Socio-Economic Objectives (SEO's) in what appeared to be an attempt to give direction both to the allocation of basic research funding and to the distribution of research training places. **Figure One** shows the overall direction such an exercise might take.

Projected growth in research and development expenditure in an SEO is prima facie evidence of the need to support this growth with an increase in basic research and research training in the FORs which support this SEQ. The inverse also applies. SEO's with declining projected research and development expenditure are candidates for a decline in corresponding universities FORs This is the Matthew principle writ large.

The SEO's project received some strong criticism. For example Bourns and Madden argued that the use of the SEOs to guide future basic research expenditure was an "acceptance of a broadly described statistical profile of the status quo as a proxy for considering priorities [which] abandons the main game before it has started" (The Australian Wednesday April 24 1996 p.25).

Indeed the ARC's own commissioned reports *Using Basic Research Parts One and Two* provided much evidence against the use of strategic objectives in research planning.⁵

Perhaps because of this level of criticism the SEO's exercise seemed to fade off the agenda. However, the idea of national priority setting and research concentration was recently reraised by the ARC in its West submission

The ARC has, "ask[ed] the government to establish a new program which would assist the strategic development of research and research training capacity in accordance with national needs" (ARC 1997 p.30).

⁵ A discussion on these lines is to be found in the CAPA submission to the ARC on the SEOs.

Figure 1. Balance of Funding by Field of Research for all ARC Programs (New and Continuing Funding in 1995)

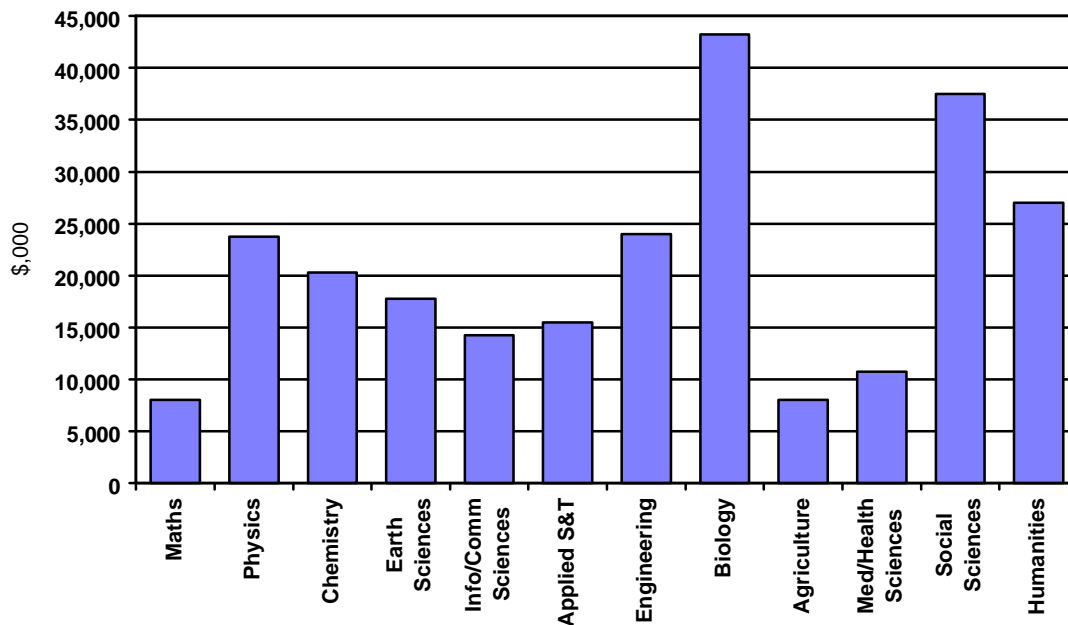


Figure One

The target areas for the fund are new areas without a history of research funding and older areas which have slipped off the pace. The fund is designed to allow these designated areas to come up to speed with the haves and the hogs and so join in the competition for research funding on a more equal footing. However, the fund, if established would be a significant carrot both to drag university research dollars in strategic directions as determined by the ARC or Government and to force the concentration of research funding within universities. The ARC proposal asks universities to provide, "25% of the funds ~ the second year, 50% in the third, and to guarantee salaries and on-costs for a further three years. Bids would be sought in the range of \$250,000 pa - to a maximum of \$1 million pa" (ARC 1997 p.30).

Old wine in new bottles

The need for research concentration and the concomitant need for priority setting within universities in response to the establishment of priorities by a national body has been justified by the ARC on the basis of a relative decline of research funding following the Dawkins revolution. However, this theme is not new to the national management of Australian university research. The former Chair of the Australian Research Grants Committee (a predecessor of the ARC), the late Professor Max Brennan noted in a 1989 paper that,

“The new ARGC policy which is designed to award fewer but larger grants has been developed in the expectation that universities will be able to support, from their recurrent funds, those applications who are of high quality but unsuccessful. In addition, the ARGC believes that universities should also supplement with recurrent monies, the grants of successful ARGs applicants” (as quoted in Powers 1984⁶).

This citation appears in a 1984 report on Australian research and research training written for CAPA by Dr Margaret Powers. Her comments on the then new policy of concentration were that,

“The danger inherent here is that an increasing number of applications may be made for 'safe' projects; that is, those perceived to be immediately applicable to national goals, and that project approvals, despite the ARGs funding policy may be subject to a bias towards more technologically oriented disciplines, thus creating an imbalance in university research programmes” (Powers 1984).

This concern about attempts to set national priorities for university research leading to an imbalance in university research programmes is still held by CAPA. Thus despite major changes both in the nature of universities and in the broader economic and social environment in which they are situated, arguments for and against phoney setting and a concomitant concentration of resources seem to be transcendent across the pre-mass and the mass eras of Australian university education. Crucially, this leads me to question the research concentration thesis in so far as it necessarily opposes quantity to quality.

Research Concentration

The 1993 ARC commissioned report *The Effects of Resource Concentration on Research Performance* (Johnston et al 1993) which was conducted by a team of researchers from Australian universities and from the Science Policy Research Unit, University of Sussex investigated this topic at some length. The researchers found that,

“The overwhelming evidence of this and other studies is that, in the natural sciences, the mode of research group size is 3-5 academic staff, possibly 2-3 postdoctoral researchers, some postgraduate students and technical professional staff. A unit of this size, totalling from about 5-12, apparently represents a natural maximum for effective communication. Indeed, the general picture emerging from the operation of larger units such as research centres, is that once size exceeds this norm by any substantial levels fission will occur to re-establish the desired interaction patterns...

In fields where researchers are not tightly integrated into subfield groups as in mathematics and the social sciences, there may be some very modest economies of scale.

Size alone therefore, is never a sufficient condition and sometimes not even a necessary condition, of effective research performance. The only exception is at the very bottom of the scale, where it is clearly impractical for a single researcher in a small physics department in a teaching-oriented university to engage in particle physics’ (Johnston et al P.71).

⁶ Powers cites, Brennan, M.H. "University Research and the Australian Research Grants Scheme". Paper presented to the Conference of University Governing Bodies University of Melbourne, August 1982.

The researchers did find some justification for the sort of concentration being proposed by the ARC.

"It is the ability to produce a substantial volume of sustained high quality publications in leading journals on which scientific recognition is based, not on a higher output per researcher" (Johnston et al 1993 p.74).

This and other findings,

"confirmed the operation of a 'Matthew effect' [in scientific research where]... researchers who can command the larger resources can produce the higher output which is the basis for commanding the resources While ample resources do not alone automatically produce high output, researchers who cannot command such resources generally cannot compete with those who do" (Johnston et al 1993 p.75).

The team then went on to argue that,

"Resource concentration is not an appropriate policy objective in itself It may in certain circumstances be an appropriate means to achieve a particular end, eg. to build a capability in identified priority areas" (Johnston et al 1993 p.75).

Thus research concentration can, in some instances improve the quality of research but only in so far as it allows more research of a certain type to be conducted. It does not increase absolute research productivity, thus releasing resources for distributed elsewhere. Furthermore, it does not guarantee an improved quality of research training" even for students in resource rich areas.

In a more recent report by researchers from the Science Policy Unit at the University of Sussex commissioned by the British Treasury, *The relationship between publicly funded basic research and economic performance* the unit found that research trainees are the vital link between university research and industrial development Their report states that,

"the skills developed by those involved in carrying out basic research, especially graduate students, ... lead to substantial [national] economic benefits as individuals move on from basic research, carrying with them both codified and tacit knowledge" (Martin et al 1996 p. 51).

This suggests an important role for a diffuse rather than a concentrated allocation of university research funding which will allow research training across a broad range of discipline areas and therefore allow research trainees to enter a broad range of employment, bringing with them the benefits of basic research training as described above In this context concentration may have a catastrophic effect on the quality of research training in already underfunded areas of the university - particularly in universities which are already relatively underfunded on a research income per research student basis - with no concomitant gains.

Given the Matthew effects conservatism in management and the motley hungry nature of the modern university, it is likely that universities will tend to concentrate their research and teaching efforts in existing areas of research strength and in areas of perceived demand This may achieve a large number of similar research concentrations rather than a national balance across disciplines.

Even if a balance of disciplines is achieved on a national basis. after concentration, a further barrier to successful, efficient and equitable outcomes in the area of research training is the propensity of Australian research students to be less than geographically mobile. A recent survey found only 49% of PhD and 31% of research masters students to be mobile between institutions Worse, only 30% PhD students receiving an Australian Postgraduate Research Award were mobile between institutions (Baker et al 1996 pp 118-9).

Having does not mean giving

A more fundamental reason why research concentration may not solve the problem of under-resourcing of research students is that, from the perspective of the research student, the total amount of money a university has per student is a secondary consideration to the actual amount of resources which are provided for their research project. The university has a crucial contribution to make to the conduct of postgraduate research in the broad areas of supervision, resources and infrastructure, income support, specific skills training (including orientation and 'technical' support), and overall career development such as supporting conference attendance, publications and involvement in departmental centre activities including teaching.

However, it is the departmental research centre and sometimes the faculty which is responsible for administering and providing these services. Furthermore, in many instances formal structures to support these activities and training for those expected to deliver them are non-existent. Additionally, what funding is nominally available for these activities is by no means evenly distributed between departments/research centres. Together, these two factors, differential access to resources and Revolution of responsibility for both managing resources and enrolling new research students, mean that there is no guarantee that a student's research project will be properly resourced. This applies both to well funded research universities and those in the lower quartile groups on the ARC league tables.

A chronic inability of universities to provide basic resources for postgraduate students was illustrated in a 1996 survey conducted by CAPA and the NTEU. Postgraduate respondents from three universities (one great eight one older regional and one former technical institute) reported the following level of access to basic resources

• access to office space.....	15.5%
• access to departmental photocopying.....	18.8%
• sole use of computer terminal.....	5.2%
• shared use of computer terminal.....	13.7%
• access to Formation Technology.....	13.5%
• typing/word processing support.....	5.9%
• conferences expenses.....	11.0%
• use of telephone.....	16.0%

Not an of the respondents severe full time research students, 13.9% registered ~s 100% coursework, and further 11 3% registered as lankly course work, while 2.4% weren't sure 55 4~c were full-time research, a further 5 6% were mainly research. and 5.5% were 50/50. Even it the figures are discounted for this factor, on a very conservative basis by doubling the responses for each category the access to basic resources for those conducting. research is still pathetic.

Demand for research trained graduates

Does this mean we are simply enrolling too many research students. One indicator might be the number of research students relative to the number of bachelor students. In 1986 the ratio of bachelor degree to research degree students was about 18.9 to one by 1996 this had fallen to 14.1 to one (DEETYA Selected Higher Education Statistics p. 17). This indicates some change but not on the face of it an excessive one More importantly there has not been a significant~ growth in research graduate unemployment.

Indeed the available figures show a very low level of unemployment for research trained graduates despite the high levels of growth in research degree completions and an overall increase in unemployment. For the years 1985 to 1994 which included one of the worst recessions in tile history of the country, research graduate unemployment averaged 5 8% (DEET Higher Education Series Report 25, January 1996, Table 1.). Research graduates were about half as likely to be unemployed as bachelors degree graduates in 1995 (Baker et al 1996 p. 131).

Research graduates are less likely to be unemployed for a number of reasons:

- Something like 20% leave the country after graduation (DEET Higher Education Series Report 95, January 1996 Figure D;
- A smaller number are continuing in study mainly research masters converting to PhD, (DEET Higher Education Series Report 25, January 1996 Figure 1);⁷ and
- A considerable number, 49 7% in 1995, of postgraduates are already employed on a All dine basis before graduation (Baker et al 1996 p.132).

It is also worth noting that research students are likely to commence study after some considerable experience antler than study. In 1990 while the modal age group for commencing a bachelor degree was under 19, research students veers likely to be considerably older with 22.9% of commencing students falling in the 25-29 years category and 35.6% falling in the 30-39 category (Baker et al 1996 p. 14).

On balance then it would seem that the number of students undertaking research training is probably not excessive and managing the resources with which to maintain this effort should be a priority consideration.

⁷ It is interesting to note that the percentage of students continuing in study seemed to increase with the commencement of the recession (DEET Higher Education Series Report 25. January 1996 Figure 1)

Conclusions

While it is clear that a serious disparity is developing between universities in the unified national system in terms of research funding relative to research student numbers it is much less clear what to do about this. For its part CAPA is particularly concerned about the differential access to research resources experienced by research students within universities as well as between universities, This sort of disparity is largely unmeasured by the aggregate statistics provided by the ARC. One indicator of such a disparity is indeed the dispersal of research strengths. For example the ARC note that despite the overall concentration of research funds in a few universities more than half were among the leading six in a' least one field of research (ARC 1997 p.17).

However, even this measure does not show what, if any, resources are being provided by departments to research students. The anecdotal evidence collected by CAPA and the evidence of the CAPA/NTEU survey point to a much larger problem in this respect. Fortunately, this problem is beginning to be recognised by those with responsibility for managing postgraduate research at the university wide level. It is to some extent ironic that Edith Cowan University which comes last in all the ARC's league tables on research performance is almost certainly the most advanced university in Australia in ensuring that each research student is provided with at least a workable minimum of funding for their research program.

This has been achieved by: the establishment of a university wide policy which guarantees minimum levels of funding for every research student; involving the student in setting a budget for their research project; and the employment of a Postgraduate Information Resource Officer who has been actively and systematically involved in ensuring that departments meet their responsibilities in resource provision. Yet such a uniform distribution of resources seems to conflict with the strategy of research concentration, the solution proposed by the ARC.

This returns us to my earlier question, what can the mass higher education and post-Fordist models tell us about finding a way around this problem? I have described the mass system of higher education as having the worst aspects of the Fordist and post-Fordist models in so far as it provides inconsistent outcomes in terms of quality, its management systems tend to excessive hierarchy and resources are wasted due to excessive competition. An inversion of this formula may provide the path out of the wilderness.

Thus at the department/research centre level resources must be available to allow research students to properly pursue their research projects without excessive hardship. This can only be achieved by close collaboration between the central university management and the departments. The Edith Cowan model provides one way of achieving this end as it sets both a uniform target which is agreed to by the university and it provides for feedback; and monitoring of outcomes through the Postgraduate Resource Officer and the postgraduate student association. Constant feedback and monitoring is needed at both the departmental and central levels if the university is to keep student numbers and research resources in balance. This type of system could be reinforced at the ARC level by providing incentives for universities to comply with the deliver of basic levels of resources to research students. Agreed per head levels could be set in university profiles and these could be spot audited by the ARC. Failure to comply with the agreed target could be punished by, for example holding back: part of the research quantum component of the university's operating grant.

This does not however provide a guarantee that at the system wide level some research groups will be sub-optimal in terms of size both from the perspective of providing adequate research outputs and being efficient providers of research training. As already discussed, both for reasons of efficiency in the national research training effort and to allow equity of access to qualified applicants, there are significant arguments for maintaining research training and indeed research capacity' in a large spread of fields, across a

geographically dispersed area at fairly low levels of research concentration. Accordingly, some sort of modifier to the ultra competitive nature of research funding, the Matthew effect, and the resultant disparity in the quality of research environments is required.

This could be in the form of recognition, encouragement and systematic support for research groups (which include postgraduate students) that transcend the boundaries of particular universities. This reflects to some extent what is already happening informally. Unfortunately, the reward structures of the research funding system, particularly in the area of postgraduate research, are geared toward universities and not multi-institutional research groups. Currently, universities receive rewards for research completions, published papers, research grants won and so on. No mechanism exists which ensures that the research group and not a single institution will receive funds won as a result of the efforts of the group.

In the case of the proposed new ARC fund, recognising multi-university research groups would require a recasting which could encourage consortia of researchers rather than bids sponsored by one institution. This may not provide a significant change for the ARC. However, to be effective, this change would have to be supported at the university level by an alteration to management systems which would allow the grafting together of, on-going support for and distribution of rewards to multi-institutional research teams. Setting up this multi-university team approach would require seed funding and additional organisational support. It would also require more advanced use of digital communications and where necessary, air-travel and short-term mobility of students and staff all which have costs which would need to be met by the universities involved and also by the ARC as a key funding body. However, once the costs of transition to this system were met it need be no more expensive to run than the current process. Indeed it should be a good deal cheaper due to economies flowing from the shared use of resources and flatter management structures.

Such an approach would allow; levels of concentration appropriate to particular research endeavours; greater uniformity of quality in research outcomes including research training; and guaranteed access to research inputs for research students. This sort of improvement in the quality of the research training environment need not come at the expense of the reduction of the quality of the research environment of others which is associated with conventional forms of resource concentration. More broadly it directs us to addressing the process of research training rather than measuring research inputs and outputs.

Such an examination of process could go hand in glove with the quality auditing process suggested above. Firstly, measuring the actual allocation of resources, including staff time within universities is a much better indicator of the quality of the research training environment provided by the university than total research funded per research student. Tying resource allocation to such a measure provides a way of rewarding those universities like Edith Cowan who do an efficient job of allocating limited resources. Secondly, this process of assessment of the quality of the research environment would concentrate the thoughts of research managers on improving the actual process of research training. An emphasis on process is perhaps the most outstanding feature of the literature on post-Fordism. Let us hope that it does not require a crisis such as that experienced in manufacturing and other industries to for us to learn this lesson in the areas of university research and research training.

References

- Australian Research Council. (1997)
"Information Paper for the Review of Higher Education Financing and Policy"
Canberra.
- _____ (1996)
"Funding Strategies for Basic Research", *Australian Research Council Newsletter*, Special Edition
February 1996
- Baker M, Robertson, Toguchi. (1996)
The Australian Postgraduate Research Award Scheme: An evaluation, of the 1990 Cohort,
DEETYA Higher Education Division/ARC, AGPS Canberra.
- Council of Australian Postgraduate Associations (1996)
Response to the ARC News February 1996, "Strategies for basic research".
- Bourke and Madden (1996)
The ARC should do its research" in *The Australian Wednesday April 24, 1996* p.25.
- Brennan M (1996)
"College, Institute or University - What's in a Name", Address to the ~2 April 1996 Graduation
Ceremony of the Queensland University of Technology, Brisbane
- Department of Employment Education and Trading. Higher Education Division (1996)
Higher Education Outcomes for Postgraduates: 19X5-1994" *Higher Education Series*, Report
No.25, January 1996.
- Department of Employment Education and Training and Youth Affairs (1996)
Selected Higher Education Student Statistics. AGPS Canberra.
- Dertouzos M, Lester. Solow. (1990)
Made in America: Regaining the Productive Edge, MIT Press Cambridge Massachusetts.
- Frankland M (Forthcoming) Doctoral Dissertation.
- Garret-Jones S, Turpin, Bellavista, Hill, (1995)
Using basic research Part 1., NBEET, ARC Commissioned Report No. 36, AGPS Canberra.
- Graham (1992)
Post-Fordism as Politics: The political consequences of narratives on the left.
Environment and Planning D: Society and Space 10:393~410.
- Johnston R. Currie, Grigg, Martin, Hicks, Ling, Skea (1993)
The Effects of Resource Concentration on Research Performance, NBEET Commissioned Report
No. 25, Canberra.
- Marginson, S. (1995)
"Keynote Address to the 1995 Annual Council Meeting of the Council of Australian Postgraduate
Associations".
- Martin B, Salter, Hicks, Pavitt, Senker, Sharp, von Tunzelman. (1996)
The Relationship Between Publicly Funded Basic Research and Economic Performance, Science
Policy Research Unit, University of Sussex, Report prepared for HM Treasury, London.
- Powles M (1984)
The Role of Postgraduates in Australian Research. Report prepared for the Council of Australian
Postgraduate Associations, Melbourne.
- Turpin T. Garrett-Jones, Ranking, Aylward. (1996)
Using basic research Part 2. NBEET, ARC, Commissioned Report No. 45, AGPS Canberra.

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