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28 May 2008

Mr R. Chafer  
Committee Secretary  
Standing Committee on Industry, Science and Innovation  
PO Box 6021  
Parliament House  
Canberra ACT 2600

Dear Mr Chafer,

***Inquiry into Research Training and Research  
Workforce Issues in Australian Universities***

Thank you for your letter of 24 April 2008 inviting a submission from the La Trobe University on research training and research workforce issues in Australian universities.

Following consultation within the University, we would like to make the following comments which, for convenience, have been grouped under the different headings of the inquiry's terms of reference.

1. **The contribution that Australian universities make to research training in Australia, including:**
  - a. **The contribution of research training programs to Australia's competitiveness in the areas of science, research and innovation.**

Commonwealth funded (via the Research Training Scheme) programs provide the core of Australia's research training; there is relatively little private or industry funding for research training. There can be little doubt that competitive research and innovation in science arises mainly within the University sector. Moreover, successful and efficient research *outside* the University sector, whether in research institutes or industry, is dependent on University research training, as the PhD is the usual entry qualification to employment in research. The contribution of University research training programs is therefore crucial to maintaining Australia's competitiveness.

Australia has long been recognised as an innovative, inventive nation, but there are well-known examples in the past in which this inventiveness has not been of direct benefit to the nation, but rather Australian inventions have been exploited overseas. Patent awareness has risen in recent years, but encouragement for local inventions, ideas and their development should be encouraged so as to benefit Australia first.

We hope that the heading of this particular term of reference does not imply that research and innovation are preferentially linked to science. Certainly the current debate over global warming shows that research into economic models of change, populations' attitudes and their willingness and ability to adapt is of equal importance. The assessment of innovation should include the role of education and the humanities for training minds for flexible responses and lateral thinking.

Through research training programs in universities, students gain theoretical underpinning and practical training, coupled with innovation in methods for problem solving, allowing them to make substantial contributions to knowledge in their particular fields. While this is obviously valuable in itself in building the intellectual capital of the nation, the contributions span many fields that are economically important in Australia, including (not exclusively):

- Drug design and development and molecular biology;
- Biomedical engineering, drug delivery, health care and sports medicine;
- Tourism and business;
- Minerals exploration and exploitation;
- Computer systems, engineering and application of statistical methods;
- Environmental monitoring and engineering;
- Cultural heritage and the arts.

It is to these areas we look for novel methods, innovations and solutions as populations increase, needs grow and efficient, non-hazardous systems are required or mandated.

It is also of particular importance to fully plan for the looming shortage of researchers as a consequence of the ageing workforce in universities and other publicly funded research institutions. Research training will play a vital role in ensuring that Australia continues to have a vibrant research community, making a contribution to world research and development above the size of the population. This has been an issue of concern in the UK for more than 10 years - particularly in relation to academic research careers, which tend to be blighted by short-term contracts and an absence of promotion and career development opportunities. In 1996 the major UK research funders and universities launched a research careers initiative to address this issue. You can find details, and final report, at:

<http://www.universitiesuk.ac.uk/activities/rci.asp>

**b. The effectiveness of current Commonwealth research training schemes.**

The current Research Training Scheme appears to be relatively effective as far as individual students are concerned. Indeed, such a scheme is essential. If full fees were charged for higher degree research, there would be a dramatic reduction of intake into higher degree programs. However the duration of funding via the RTS scheme (4 years maximum for a full-time PhD) is often problematic for the experimental research programs typical of the sciences, and in programs involving field work both within and outside Australia, in which there is often a large element of risk or chance. The result is that the type of project that is offered to PhD students may be downgraded to something relatively mundane but manageable within a 3-4 year timeframe. This may detract from the quality of the training experience and discourage the pursuit of a research career.

The provision of Australian Postgraduate Awards is to be commended. Recipients are recognised for their research achievements and potential. However, these awards are under-funded. A recent CAPA survey suggests that the best postgraduate scholarships are living below the poverty line. We do not believe the brightest should be placed in positions of compromise between their research commitment and their ability to support themselves. This view is supported by the Council for the Humanities, Arts and Social Sciences 2008 report on the PhD, which strongly suggests that PhD scholarships are inadequate. CHASS has found that 55% of scholarship holders work, indicating that they need supplementary income. Many scholarship holders report putting their own funds into their research projects.

We believe that there should be greater provision for more flexible awards, eg. part-time awards, as well as awards which positively encourage collaborative partnerships with industry and non-profit groups along the model of the APA (Industry) awards.

We **recommend** that the APA stipend be increased by a minimum of 30 per cent so that it is at least equivalent to the APA (Industry) award amount of \$26,140, and that the stipend be annually indexed to ensure that it keeps pace with inflation. Further, we **recommend** that the length of APA income support be increased to at 4 years to bring it into line with the funding period of the Research Training Scheme. Such a level of funding will be needed to ensure greater attraction of students and to make sure that our PhD graduates continue to be accepted as at the front rank internationally. The PhD programs in the United States tend to be of longer duration because of their incorporation of significant coursework. Widespread acceptance of the model of the Bologna model of three years undergraduate, two years postgraduate and three years coursework or the US alternative of at least three years undergraduate and at least five years of coursework and research leading to the PhD leaves the Australian system too short compared to leading international practice (four year Honours graduate followed by three years PhD). The consequences of this are most keenly felt in disciplines where extensive preparation is necessary to make it possible for students to compete internationally.

Prospective research students may be discouraged from continuing with further study and research and may choose paid employment as a response to their accumulated HECS debt. We **recommend** the introduction of a HECS debt remission scheme for Australian students completing research higher degrees.

**c. The adequacy of current research training schemes to support Australia's anticipated future requirements for tertiary-qualified professionals in a wide range of disciplines.**

Current schemes are inadequate simply because they are under-funded and are thus unable to attract domestic students away from highly paid positions in the workplace. Levels of support for commerce and law research students in high demand areas such as Accounting, Finance, Corporate and International Law, and Tourism, are inadequate. We cannot attract the brightest graduates into these discipline areas because of the relative attractions and inducements from their respective industry bodies. Consequently, the best of our graduates are leaving the country and/or moving out of research into more lucrative funding opportunities. To urge the best graduates to pursue research in these fields we must compete more effectively with in these growth areas of the economy. One way to achieve this may be to develop differential support

schemes across the postgraduate spectrum, as we are doing with undergraduate programs.

**2. The challenges Australian universities face in training, recruiting and retaining high quality research graduates and staff, including:**

**a. Adequacy of training and support (including income support) available to research graduate students in Australia.**

We are seriously concerned that the number of domestic students commencing higher degrees by research has been declining since 1995, and that commencing student load dropped by 14 per cent in the five years from 2001 to 2006. The future supply of qualified researchers in Australia is under threat due to the decline in research degree student commencements, as well as the impending retirement of the baby boomer generation of academics and researchers.

There are two sides to the quality of training and support: the quality and availability of research supervisors, and the adequacy of funding for research equipment and consumables. There is scope for considerable improvement in both. There has been a drop in staff to student ratios over the past few decades, which means that fewer supervisors are taking on greater numbers of research students in an environment in which they are expected to make an ever greater commitment to their concurrent teaching and administrative duties. Similarly, the success rate for research grant applications has been falling, and university departmental budgets are incapable of providing more than token support for research.

Despite these difficulties, the overwhelming majority of postgraduate research theses pass, often with very high praise from both Australian and overseas examiners. It is clear, therefore, that our research training continues to meet world standards. Nevertheless, we cannot deny that difficulties have arisen. While university departments are required to confirm that adequate facilities are available for any proposed projects before accepting higher degree students, the decreases in University staff over recent years means that much experience has been lost to those students, while those staff remaining face increased workloads on salaries that are simply not competitive with those in industry.

Universities attempt to ensure that good working conditions are maintained for postgraduate students: eg. adequate office/laboratory space, computer access, library access, and that occupational health and safety requirements are met. However, this has been compromised as funds for maintenance, refurbishment, student services and administrative staff have shrunk. Our old buildings and outdated equipment and infrastructure fall behind facilities available in Europe, North America and Asia. The additional funding announced in the recent budget is welcome in this regard.

**b. Factors for graduates that determine pursuit of a career in research.**

In many disciplines, career prospects are relatively limited and academic salaries provide little incentive. Doctoral students on a postgraduate award are expected to forgo a decent income for up to four years: it is debatable whether there is a reasonable return on this investment of time, in purely financial terms. One can only infer that the main motivation to pursuing a research career must be curiosity and interest in the discipline.

**c. Opportunities for career advancement for research graduates and staff.**

Opportunities exist in academia for highly motivated and talented staff, but these are limited by the heavy demands of teaching and the difficulty of obtaining research funds. The lower rungs of the research and teaching career structure have become increasingly casualised, so that junior academics may find themselves trapped in onerous short-term employment: 5-month or 10-month contracts or lectureships paid on casual and contact hours and teaching new units each semester. The nature of this workload is such that young university staff must generate 13-26 new lectures each semester, teach up to 20 hours per week and mark the work of perhaps 100 students generating perhaps the equivalent of 5000 words per semester each.

Under these circumstances, such junior academics seldom build up the record of quality refereed research publications needed on their resumes to elevate themselves to more secure and highly paid positions. Talented young researchers often grow weary of the financial and career uncertainty of the situation and move sideways into other non-research based career paths – a loss of talent and diversity to the research pool in many disciplines.

**d. Factors determining the pursuit of research opportunities overseas.**

It is a common perception in our universities that research funding is more easily obtained overseas, particularly in the United States. Certainly there is access to a larger and wider community of researchers than is possible in Australia: the intellectual stimulation this can provide is likely to be a significant factor for many young researchers.

**e. Australia's ability to compete internationally for high quality researchers.**

Researchers are attracted overseas not simply because of salaries, but because of better support and facilities. Those who are research active and who publish consistently are likely to have better access to funding than is the case in Australia. An approximately 20% success rate for relatively small Australian Research Council grants is not encouraging. 'Head-hunting' of talented individuals requires a significant pool of funds which most Australian universities do not possess. Fellowship schemes with prestigious titles and respectable salaries, but with no funding for projects, are essentially half-hearted.

Australia's ability to compete is declining. Negative salary relativities are increasing against Australia in many disciplines.

We believe that Australia must attract more international research postgraduate students. We strongly **recommend** the introduction of a strategic package to achieve this, including:

- Multiplying by five the funding for the number of International Postgraduate Research Scholarships (IPRS), whilst increasing flexibility in the program to allow for living allowance and fee scholarships for the very best as well as partial fee scholarships for a much broader group of students;
- simplifying the Endeavour Scholarship programs;
- introducing greater responsiveness and flexibility to international student visa policies and practices as they relate to research higher degree students
- Acknowledging the language and cultural difficulties faced by full fee

paying international students during their candidature. Specifically, sponsored candidates holding scholarships from their country of origin can have timelines and targets which conflict with the research needs of their course of study.

- Pathways need to be flexible to allow for sponsors prerequisites for doctoral level entry which protect our intellectual standards. Conditional entry via a course-work professional doctorate is one solution.
- The initial phase of meeting language compliance and minimum standards is often far from adequate. Language deficiencies for English as a second language student extend beyond the technical aspect to include intercultural understandings related to knowledge constructs and social beliefs and expectations.
- Where research is conducted in the home country ethical issues can cause delays in research data collection commencement. Conflicting compliance issues with the home institution can conflict with our Australian Conduct of Ethical Behaviour.

f. **Whether Australia's academic workforce is ageing, and the impact this may have on Australia's research capacity.**

There is little doubt that in most academic areas the workforce is ageing, given the general demographic patterns and the high intake levels of university employment in the sixties and seventies. The CHASS report suggests one way to dissipate the impact of an ageing research population is to encourage more team-like clusters, where the older experienced academics can mingle with and mentor early career researchers.

Please do not hesitate to contact me should you wish to discuss these points further.

Yours sincerely,



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