6

Research Careers

6.1 This chapter examines the factors that influence the decision to embark on research training and, subsequently, a research career. These factors include the perceived value of research careers, research career pathways in universities and industry, barriers for women, and Australia's international research competitiveness. Finally, the chapter will discuss the issue of Australia's ageing academic workforce.

6.2 NTEU-UQ described the various entry points into a research career:

> Most researchers begin a research career path from the end of their undergraduate degree, by choosing to do postgraduate study. Some first obtain research experience in Government or private research agencies before taking on a higher degree. Others are motivated to focus on research in mid-career, in an effort to advance an area with which they have become involved in their working life.[1]

The value of research careers in Australia

6.3 The Committee is concerned that Australian society does not place appropriate value on the role of research or researchers, and that this discourages students from considering a research career. Griffith University agreed that 'there is a concern that Australia as a whole does not necessarily value people with a doctorate'.[2]

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1 NTEU-UQ, *submission 59*, p. 10.

2 Griffith, *transcript of evidence 18 August 2008*, p. 43.

6.4 University of Western Australia concurred:

> There is a significant cultural difference in the approach that we take to the value of education and the value of an intellectual life and the approach taken in many other countries. … We had a Nobel prizewinner a couple of years ago. He travels with the vice-chancellor to China on a number of occasions [where] he is a pop star. There are thousands of screaming schoolchildren and university students who want his autograph and want to talk to him. It is completely different in Australia. In Australia, the word 'academic' means 'useless'. Academics and scientists are portrayed in the press as boffins.[3]

6.5 Queensland University of Technology stated that:

> … the traditional isolation of the whole academic endeavour … from the broad stream of society has contributed to that deeply held perception in the industry and in the community that the PhD is a bit of a pointy-headed person who cannot really connect.[4]

6.6 The negative image of researchers and academics is not going to encourage future generations, given that 'peer and public esteem are major drivers for research career choices'.[5] SORTI argued that:

> … university students look at university academics and they see that their rewards are not particularly great, and their working hours are particularly high, and you have to be particularly committed to research from the first instance to actually be interested to stay on under those conditions.[6]

6.7 The Committee supports the promotion of a better understanding of the value of research and acknowledges that researchers gain significant value from research training and contribute greatly to Australian research, science and innovation. A 2006 study of almost 2 000 research graduates conducted by University of Queensland Social Science Research Centre reported that 79 per cent found their training 'very useful or useful' for their current job.[7]

3 UWA, *transcript of evidence 12 August 2008*, p. 46.
4 QUT, *transcript of evidence 18 August 2008*, p. 19.
5 CSU, *submission 65*, p. 11.
6 SORTI, *transcript of evidence 5 August 2008*, p. 4.
7 UQ, *submission 100*, p. 3.

6.8 DIISR submitted that:

> Economic spillover benefits from university research are particularly high, as academics are strongly encouraged to publicly disseminate the results of their research, and research has a broad range of applications.
>
> …
>
> … using conservative estimates [it has been] calculated that each student would contribute up to $700,000 (1997 value) to GDP growth over a lifetime through their contribution to research.[8]

6.9 Australian Academy of Humanities argued that:

> Humanities-educated professionals with HDR qualifications are increasingly valued in industry, government, the professions and management for the particular skills that are acquired through advanced project-based learning in history, criticism, philosophy and other humanities disciplines. The importance of these attributes is being recognised in private and public arena that require expertise in complex problem-solving, behaviour modification and cultural analysis.[9]

6.10 DIISR stated that:

> Qualitative analysis identifies some of the major benefits of public research as: new products and services, faster adoption of new technologies, beneficial social and environmental outcomes (such as improved public health outcomes) and other intangibles such as national prestige and contributions to the global pool of knowledge. What is more is that research contributes to productivity through innovation, particularly through universities engaging with industry.[10]

6.11 Australian National University submitted that there is a 'need for many other sectors apart from the higher education sector to recognise the value of a PhD' and cited the example of Germany where 'half of the senior management in the top 200 companies have PhDs'.[11]

6.12 Australian National University further proposed that should PhD qualifications be included in relevant non-academic job advertisements as

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8 DIISR, *submission 50*, p. 17.

9 AAH, *submission 61*, p. 14.

10 DIISR, *submission 50*, pp. 17-18.

11 ANU, *transcript of evidence 27 August 2008*, p. 14.

a preferred criterion, Australians 'would start to see that it was not simply about training the next generation of academics'.[12]

6.13 Employers are currently discouraged to support their employees' research training by a Fringe Benefits Tax (FBT).[13] Monash University suggested that the FBT be waived for businesses and institutions whose employees undertake higher degrees by research.[14]

Recommendation 32

The Committee recommends that the Australian Government waive Fringe Benefits Tax incurred by businesses or institutions that employ staff undertaking higher degrees by research.

6.14 The Committee supports the suggestion of a 'campaign to raise the awareness and standing of research as a career in the community'.[15]

6.15 University of South Australia recommended:

> A representative body of research professionals with specialist chapters for specific disciplinary areas such as science, health or social science [that] could monitor workforce capacity in areas of strategic importance for Australia's innovation agenda, have oversight of career progression milestones, and ensure research training systems deliver the appropriate skills required. Importantly the establishment of such a professional body would provide recognition of the status and importance of research as a career path for bright and ambitious young Australians.[16]

6.16 Griffith University suggested that Australia follow the United States' lead in marketing higher degrees by research to communities and to industry:

> [The US has] been doing a lot of advocacy work in terms of: what is the benefit of the RHD to a country? What is the public good from an RHD? I think we need more of those generic campaigns, if

12 ANU, *transcript of evidence 27 August 2008*, p. 15.
13 ACDE, *submission 88*, p. 2.
14 Monash, *submission 76*, p. 4.
15 CSU, *submission 65*, p. 11.
16 UniSA, *submission 32*, p. 8.

> you like, to promote why you would do an RHD. We need to bring industry on board on what is a benefit to them.[17]

Recommendation 33

The Committee recommends that the Australian Government, in conjunction with universities and research institutes, follow the example of successful advocacy programs overseas and implement a national research career campaign to market the value of research training to schools, communities and industry, and raise the profile of research careers in Australia.

6.17 Another disincentive to pursuing a research career is the unclear nature of its path. Charles Sturt University submitted that:

> The lack of supported career progression opportunities after completion of a research doctorate creates unnecessary uncertainty for potential applicants about the value of commencing postgraduate research study. Charles Sturt University is of the view that a better career path for research workers across the nation should be developed to reduce the loss of good researchers because they can't see the path ahead.[18]

Career pathways in academia

6.18 The three major impediments to attracting researchers to academic careers are the scarcity of opportunities, lack of job security, and uncompetitive salaries.

Limited entry-level research positions

6.19 Potential academic career researchers are discouraged by the dearth of postdoctoral and entry-level positions in some disciplines and the extremely competitive nature of research grants programs.

17 Griffith, *transcript of evidence 18 August 2008*, p. 43.

18 CSU, *submission 65*, p. 11.

6.20 Universities Australia noted that:

> Over the period 1996 to 2006, the number of [entry-level academic] positions increased from 18,988 to 21,356, a very small increase compared to the increase in undergraduate, research training, research and administrative workloads of universities. This in turn means that the opportunities for research in many junior academic positions are reduced, and the appeal of these positions to prospective high-calibre researchers is commensurately reduced.[19]

6.21 Victoria University noted that the limited number of postdoctoral opportunities has a negative affect on early career researchers' ability to enter academia.[20]

6.22 CAPA agreed, claiming that:

> PhD completion is one point where many talented individuals who may consider an academic career are lost to industry (or even to low paid menial jobs) through lack of opportunity at the early career level.[21]

6.23 In addition to tough competition for postdoctoral fellowships:

> There are at least 7 different Fellowship Schemes within the ARC and 26 Fellowship Schemes within the NHMRC. These need to be reviewed and simplified to ensure that there are good career paths for researchers at ALL stages of their careers [Levels A to E+].[22]

6.24 Several submissions welcomed the Australian Government's recent introduction of four-year Future Fellowships for mid-career researchers but expressed concern with their number (1 000 over a five-year period) or duration (four years, non-renewable).[23]

6.25 IRUA highlighted a Canadian scheme that offers superior stability:

> In 2000, the Government of Canada created a new permanent program to establish 2000 … Canada Research Chairs in universities across the country by 2008. Tier 1 Chairs, tenable for seven years and renewable, are for outstanding researchers acknowledged by their peers as world leaders in their fields … Tier 2 Chairs, tenable for five years and renewable once, are for

19 Universities Australia, *submission 82*, p. 4.

20 VU, *submission 15*, p. 3.

21 CAPA, *submission 90.1*, p. 8.

22 UNSW, *submission 31*, p. 10.

23 AAS, *submission 45*, p. 2; IRUA, *submission 51*, p. 18; AAH, *submission 61*, p. 17; RMIT, *submission 63*, p. 4.

> exceptional emerging researchers, acknowledged by their peers as having the potential to lead in their field.[24]

6.26 It was also noted that schemes similar to Future Fellowships are imperative for early-career researchers as well:

> It would be useful to have a similar measure to encourage early career research academics, as existing post-doctoral places are quite limited in terms of availability and discipline area.[25]

Recommendation 34

The Committee recommends that the Australian Government implement a postdoctoral fellowship scheme targeted at early-career researchers who are up to five years out from PhD completion.

6.27 IPRA-TICHR explained that early-career researchers did not face as much competition when NHMRC used to administer grants directly to institutions:

> An organisation was given a pot of money and it was up to them how they actually allocated it. In that case, rather than the early career researcher having to compete nationwide against the number of people who could do the work or come up with a project … all they have to do then is compete at that local level for a position in the institute.[26]

6.28 In addition, successful applicants were employed for a longer period:

> … they are given five years to actually develop … a research project. It is a little bit different going the other way around, where you have to demonstrate that you have got a viable project up and running at the beginning and you only get three years in the current project funding.[27]

6.29 In the current national competitive grant system, however, early-career researchers must compete nationally against all discipline areas as well as against more established researchers:

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24 IRUA, *submission 51*, p. 18.

25 NTEU, *submission 53*, p. 25.

26 IPRA-TICHR, *transcript of evidence 12 August 2008*, pp. 61-62.

27 IPRA-TICHR, *transcript of evidence 12 August 2008*, p. 61.

> I have just spoken to someone [about the career development award] … and there are again 300 to 350 applicants and there are only 70 awards. Of those, there are maybe seven again in my area of population health. That is across Australia … For someone at my level, only three years postdoc, I am only considered an early career researcher and so me competing [for an NHMRC grant] with very well established people is more difficult … People say it takes two to three goes before you can even get a project grant, so these early career fellowships are the only way to really get us that leg-up to get our track record established so that we can then apply for the grants … I think there is going to be this missing generation of postdocs because it is so competitive and there are so few opportunities out there.[28]

Recommendation 35

The Committee recommends that the Australian Government implement a quota of 10 per cent of ARC and NHMRC successful grants to be allocated to early-career researchers who are first-time awardees.

Declining job security and stability

6.30 As discussed in Chapter Three, universities have experienced chronic under-funding. This has led to universities offering more and more casual and fixed-term contracts which entail less overhead costs than permanent positions. Universities can potentially save money on superannuation costs and salary-step promotions by limiting the number of permanent employees.[29]

6.31 Dr Steve Madden described the piece-meal career path that entry-level academic researchers have to look forward to:

> An uncertain life of fixed term contract based employment then lies ahead where the next contract relies on the success of another person's ARC Discovery grant application … At some undefined period likely 10-15 years ahead, a tenured position may arise when someone dies, leaves, or retires then offering some career stability. … The pre-tenure low level academic employment environment is

28 IPRA-TICHR, *transcript of evidence 12 August 2008*, p. 57.

29 IPRA-TICHR, *transcript of evidence 12 August 2008*, p. 61.

> just not a sensible way to treat some of the most educated and skilled people in our society and desperately needs fixing if we are to retain and grow the best people here in Australia and have some prospect of extracting an economic benefit.[30]

6.32 James Cook University submitted that the current situation in which 'early career research positions are typically funded by project funds ("soft money")' is a disincentive to choosing a research career. [31]

6.33 NTEU noted that:

> … the increase in casual and fixed term employment has corresponded with a decrease in permanent employment. As such, many HDR graduates are dissuaded from entering academia.[32]

6.34 IRUA cited data indicating that 57 per cent of full-time equivalent university staff across the country are tenured and 43 per cent are employed on casual or fixed-term contracts.[33]

6.35 A recent study of 697 research-only staff at Queensland University of Technology found that:

> … 54.6% were general scale casual contracts, 30.3% were fixed-term full-time contracts, and 12.9% were fixed-term part-time contracts. Only 2.2% of the contracts, accounting for 17 staff at the university, were ongoing full-time contracts.[34]

6.36 AUQA noted that 'the increasing "casualisation" of the academic workforce will affect overall research capacity within institutions'.[35] The submission from NTEU-UQ included a comment from an employee that:

> It is common for casual staff to be course coordinators. Far from being supported in developing or improving courses, they even have their email and internet access cut off at the end of each semester.[36]

30 Dr Steve Madden, *submission 60*, p. 3.
31 JCU, *submission 22*, p. 10.
32 NTEU, *submission 53*, p. 24.
33 IRUA, *submission 51*, p. 18.
34 Dr Ruth Bridgstock, *submission 2*, p. 2.
35 AUQA, *submission 14*, p. 6.
36 NTEU-UQ, *submission 59*, p. 7.

6.37 University of South Australia submitted that the lack of a formal postdoctoral career path means that:

> … graduates with some 10 years of training are routinely employed on successive short term contracts resulting in high wastage to a range of other career roles in times of high employment.[37]

6.38 NTEU blamed the insecure employment patterns on:

> … the grant structure, which generally incorporates grants for short-term research projects, typically three years in the case of ARC grants, three to four years for NHMRC grants, and even shorter grants for industry funded and contract research.[38]

6.39 Australia could also lose much-needed researchers to overseas universities where working conditions are more amenable. Despite a shortage of qualified veterinary science academics in Australia, veterinarian scientist Dr Lee Skerratt indicated that he may leave Australia for a more secure position:

> I was able to return [from the US] in 2003 to Australia to take up an academic position which involved a large amount of teaching. Despite this my research career continued to prosper and I needed to resign in 2007 and take up a fixed term research position to meet my research commitments. Despite my research success, my future is uncertain as the funding cycle is generally three years. It is possible that I will return overseas to pursue my research career once my children are older given the current lack of permanent positions in Australia.[39]

6.40 Southern Cross University advocated 'proper funding of universities to enable an increase in tenured academic staff'.[40]

Academic salary structures

6.41 The academic salary structure has also been affected by insufficient funding of universities. Queensland University of Technology quoted a Department of Education, Science and Training report which found that:

37 UniSA, *submission 32*, p. 8.

38 NTEU, *submission 53*, pp. 24-25.

39 Dr Lee Skerratt, *submission 4*, pp. 3-4.

40 SCU, *submission 12*, p. 6.

> … academic salaries relative to average weekly earnings over the period from 1977 to 2002 … had declined across all levels, but with the greatest decline for the most senior academics.[41]

6.42 The same report was quoted by the Australian Academy of Science:

> The salary of a professor and a senior lecturer declined around 25 per cent between 1977 and 2002 relative to average weekly earnings, and the salary of a lecturer and an associate lecturer declined around 15 per cent in the same time.[42]

6.43 Current salaries are also uncompetitive with entry-level positions in industry:

> In 2007, academic salaries for Academic Level A (Associate Lecturer) appointments ranged from $46,000 at the entry step to $62,900 at the top step. For Academic Level B (Lecturer) the range was from $66,200 to $78,500. Equivalent skills command much higher rates of remuneration in Government departments, publicly-funded agencies and professional service firms.[43]

6.44 The disparity between salaries is more pronounced in some sectors than others: 'the greatest contrast in salaries is seen with medical specialists where an academic salary can often be half that of a staff specialist'.[44]

6.45 University of Western Australia argued for:

> Better indexation of Commonwealth block grants [that] would allow universities to keep salaries closer to those available in the private sector, and thus retain quality staff.[45]

6.46 The Committee hopes that increased funding for universities, as recommended in Chapter Three, will mitigate the relatively low academic salary scale and the over-reliance on casual or fixed-term contracts.

41 QUT, *submission 36*, p. 7.
42 AAS, *submission 45*, pp. 6-7.
43 NTEU, *submission 53*, p. 24.
44 Professor Judy Searle et al., *submission 16*, p. 3.
45 UWA, *submission 96*, p. 4.

Research career pathways in industry

6.47 The Committee notes that the disparity in salary scales contributes to the lack of compatibility between academic and industry research career structures. The Australian Academy of Science suggested that 'there is much greater freedom in movement between industry and universities' in the US than in Australia.[46]

6.48 Australian Association of Research in Education recommended 'encouraging movement of professionals among universities, and between industry and the university'.[47]

6.49 The Committee acknowledges the importance of formal links between research training and industry in promoting research career pathways in non-academic sectors. The Committee further recognises that such links enhance much-needed skills and broaden Australia's research capacity.

6.50 Queensland University of Technology asserted that 'the postdoctoral experience needs to provide bridges into longterm career development'.[48] CSIRO provided an example of such a bridging program:

> Post-doctoral fellowships, in particular, could be offered as joint appointments in business and CSIRO, in the same way that CSIRO and universities can, and do, share appointments. Such appointments may be particularly valuable to [small to medium enterprises] and start-ups who cannot otherwise afford to invest in R&D.[49]

6.51 The Group of Eight indicated its support for a similar, wider-reaching scheme:

> … the UK introduced recently which is to provide industry with some funding for the first year of a postdoctoral fellowship, or at least the first year of work in industry, where the government would pay 50 per cent of their salary. It would encourage industry to take on PhD graduates and at the same time after a year they would see the benefits, hopefully, of having such a person in their midst.[50]

46 AAS, *transcript of evidence 18 June 2008*, p. 7.

47 AARE, *submission 64*, p. 5.

48 QUT, *submission 36*, p. 4.

49 CSIRO, *submission 83*, pp. 8-9.

50 Group of Eight, *transcript of evidence 25 June 2008*, p. 8.

6.52 CSIRO also recommended:

> … an expanded post doctoral program that would encourage early career scientists to spend some time in publicly funded research organisation (PFRAs), providing incentives where critical skill shortages exist, and a greater integration with industry.[51]

6.53 These suggestions are in line with findings from the Australian Academy of Science's workshop on the opportunities that postdoctoral and early-career researchers need, including 'greater awareness, exposure and access to other fields of research, for example in industry'.[52]

Recommendation 36

The Committee recommends that the Australian Government implement a scheme that funds 25 per cent of the first two years of salary of postdoctoral researchers in industry areas of national skills priorities in order to promote the value of research graduates to industry.

6.54 The Committee is of the opinion that industry has a significant role to play in building Australia's research capacity. As such, the Committee encourages industry to recognise the contribution that researchers make to industry, and encourages industry to make greater investment in research.

Centres of Excellence and research networks

6.55 The Committee acknowledges the role of research Centres of Excellence and research networks in supporting research and industry links across Australia.

6.56 Australian National University stated that:

> Centres of Excellence allow for more risk-taking because they have a continuity of funding for five to seven years … In areas of strategic importance you can build critical mass in a very, very high-quality research environment.[53]

51 CSIRO, *submission 83*, p. 4.

52 AAS, *submission 45*, p. 6.

53 ANU, *transcript of evidence 27 August 2008*, p. 24.

6.57 Australian Research Council described the way the Research Network works with Centres of Excellence:

> The scheme has a flexible architecture which is highly productive in bridging both physical distance and disciplinary contradictions between researchers to produce new collaborative work. Networks complement Centres by connecting people who cannot be in the same place at the same time, and incubate prospective Centres, by mapping and sustaining emerging areas of research.[54]

6.58 Australian Research Council suggested that 'consideration should be given to expanding the support available for the [Centres of Excellence] scheme'.[55]

Recommendation 37

The Committee recommends that research Centres of Excellence schemes, such as the ARC Centres of Excellence, and other research networks be expanded to continue stimulating research and industry links in areas of national importance across Australia.

Women and research careers

6.59 The Committee is concerned that despite high female participation rates in higher degrees by research, the proportion of those women progressing to, and remaining in, a research career is low, especially in academia and science, technology, engineering and mathematics (STEM) areas.[56]

6.60 CHASS described the disparity between women's participation in research training and in academic research careers:

> What we see is that over 50 per cent of our undergraduates are women. More than half our honours students are women. Now about 47 or 48 per cent of our PhD completions are women, but after the PhD we see a very distinct dropping off of those women. They do not actually continue and enter into the academic

54 ARC, *submission 24*, p. 8.
55 ARC, *submission 24*, p. 8.
56 WEHIMR, *submission 34*, p. 5.

> workforce in particular and we do not know a lot about those decision-making processes nor indeed the incentives or disincentives for those women to remain in the productive academic workforce, although we can all speculate about issues such as child care, work-friendly workplaces et cetera.[57]

6.61 Once women do enter academia, the attrition rate of female academics in their late 20s and 30s rivals that of academics at retirement age.[58]

6.62 The disparity is also evident outside academia:

> … approximately 50 per cent of our PhD students are women and yet 20 per cent to 25 per cent of career scientists are women. It is a complex issue, but in a sense it is a waste of intellectual power that they are not continuing on in this enterprise.[59]

6.63 Australian Academy of Science attributed this trend to women's additional family responsibilities:

> Young women in research face particular problems, with a huge drop-out rate during child-bearing years testament to the insufficient support available to women. Female scientists are receiving inadequate quality of childcare and insufficiently flexible employment after return from maternity leave. Additionally, women often face greater challenges in gaining independence in research.[60]

6.64 Family responsibilities may also prevent women from participating in international endeavours:

> It is generally acknowledged that postdoctoral experience overseas is an advantage for later professional advancement. It signals a broader outlook on scholarship and wider personal linkages internationally. Young women may be less likely or less able to undertake their first postdoctoral role overseas. This would in turn limit their career opportunities.[61]

6.65 The Committee recognises that Australia's knowledge economy suffers from qualified women leaving their research careers. WEHIMR argued that:

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57 CHASS, *transcript of evidence 18 June 2008*, p. 14.
58 CHASS, *transcript of evidence 18 June 2008*, p. 20.
59 AAS, *transcript of evidence 18 June 2008*, p. 5.
60 AAS, *submission 45*, p. 8.
61 AAS, *submission 45*, p. 8.

> Retaining women in the scientific workforce is essential if Australia wishes to hang on to, let alone increase, its innovation performance in the face of increasing competition from large science and technology-focussed countries such as India and China – we simply cannot afford to lose 50% of our talent.[62]

6.66 Australia faces the same challenges in recruiting and retaining women in STEM careers as other OECD countries:

> These issues have moved from being ones of individual equity to ones of relevance to the national skills shortages in key industry areas. It is time for a national co-ordinated effort to increase the participation, retention and advancement of women in careers in all STEM related fields.[63]

6.67 The Committee recognises that existing equal opportunity policies at universities and research institutes have been insufficient to retain women in research careers:

> The single most important factor that would improve retention of women in a research career is to increase the availability of high quality, readily accessible and affordable childcare facilities.[64]

Attracting international and expatriate researchers to Australia

6.68 The Committee is concerned that Australia is not sufficiently competitive in the international market for high-quality researchers. The Committee believes that unless Australia improves its competitiveness in the areas of academic salaries, research funding and working conditions, international and Australian researchers will not be attracted to research careers in Australia.

6.69 University of New South Wales indicated that research by Professor Graeme Hugo has found:

> … employment-related reasons dominate the reasons provided by Australian expatriates living in foreign countries, including academics, for moving elsewhere. Non-competitive salaries, teaching conditions, paucity of research funding, job security and

62 WEHIMR, *submission 34*, p. 5.

63 UniSA, *submission 32*, p. 8.

64 WEHIMR, *submission 34*, p. 5.

> opportunities for career advancement are all cited as contributory factors.[65]

6.70 The Australian Academy of Science also submitted that:

> … the absence of secure positions with remuneration, research funding and the expectation of employment of a par with that overseas, is attracting and keeping Australia's best talent overseas.[66]

6.71 The Committee recognises that international research graduates can continue to enhance Australia's research and innovation output by remaining in Australia upon completion of their studies. Anecdotal evidence suggested that many do in fact stay in Australia and acquire permanent residency and citizenship.[67]

6.72 University of New South Wales suggested that Australia should more seriously consider retaining international research graduates:

> While we invest very heavily in the three or four years of training that we actually put into these students, it is a pity that we do not capitalise on the investment by actually having more of them encouraged to stay in Australia beyond their term.[68]

6.73 Flinders University recommended that:

> A specific scheme to retain the best international higher degree graduates in Australia as postdoctoral fellows would also help to build Australia's research capacity and performance.[69]

6.74 The Committee recognises the importance of overseas research training and postdoctoral experience for Australians; however, many researchers subsequently choose to remain overseas where salaries and funding are more competitive.[70]

6.75 The Australian Academy of Science recommended:

> … a 'boomerang scheme' to tempt Australians back to the country before they become too settled overseas. The scheme would

65 UNSW, *submission 31*, p. 11.
66 AAS, *submission 45*, p. 7.
67 RSPSE-ANU, *submission 49*, p. 2; Dr Adam Cawley, *submission 92*, p. 7.
68 UNSW, *transcript of evidence 5 August 2008*, p. 51.
69 Flinders, *submission 78*, p. 2.
70 UNSW, *submission 31*, p. 11.

> involve substantial start-up funds, a salary equivalent to Australian peers and job security.[71]

6.76 The Committee commends the Australian Government's Federation Fellowships scheme which aims to encourage early- to mid-career researchers currently working overseas who have an interest in contributing to Australia's research capacity.[72] The Fellowships are tenured for five years, well-salaried, and include a possible $500 000 in start-up funds.[73]

6.77 However, over the scheme's seven-year lifetime, the proportion of expatriate Australian and international Federation Fellows has decreased significantly in favour of resident Australians.[74]

Recommendation 38

The Committee recommends an expansion of fellowship schemes targeted specifically at expatriate and international researchers that offer competitive salaries and sufficient start-up support to establish research projects prior to competing for national competitive grants.

Ageing academic workforce

6.78 A considerable number of submissions discussed the impact of an ageing academic workforce on Australia's research capacity, with essentially all submissions admitting that a significant problem is looming.

6.79 Universities Australia stated:

> Australia's research performance is … increasingly living off the past … with a 'baby boomer'-led research workforce now approaching retirement in unprecedented numbers.[75]

71 AAS, *submission 45*, p. 7.

72 <www.arc.gov.au/ncgp/fedfellows/ff_default.htm>, viewed 19 November 2008.

73 ARC, *submission 24*, pp. 15-16.

74 ARC, *submission 24*, Table 9, p. 16.

75 Universities Australia, *submission 82*, p. 4.

6.80 IRUA, quoting research from Professor Graeme Hugo from University of Adelaide, stated:

> The Australian academic workforce is ageing, with projections suggesting that the supply of new graduates will not go close to matching attrition from the system through retirement.[76]

6.81 Professor Nigel Laing discussed the attrition of academic positions:

> … one thing that seems to be frequently happening now with the constraints on university budgets is that when someone finally leaves, that position is not filled, and so there is little opportunity for young people to come into the system.[77]

6.82 Professor Graeme Hugo from University of Adelaide presented a paper entitled *The Demographic Outlook for Australian Universities' Academic Staff* to the Council of the Humanities and Social Sciences (CHASS) *Workshop on the Future of the PhD in the Humanities, Arts and Social Sciences*, at the University of NSW in March 2008. CHASS included this paper as an attachment to its submission to this inquiry.[78]

6.83 Professor Hugo's paper outlines the age structure of Australia's university academic employees, which is significantly older than that of the total population. Professor Hugo explained:

> The rapid influx of young academics into the Australian university system in the 1960s and 1970s followed by a period of slow growth in the number of academic jobs due to demographic and management shifts has produced a high degree of 'age heaping' [producing problems of workforce succession and continuity] in the Australian university teacher workforce … The Australian university teaching workforce is concentrated in the older age groups more than not only the total workforce but also the total professional workforce.[79]

6.84 Professor Hugo suggested that universities are likely to lose between a fifth and a third of their staff in the next decade or so.[80]

6.85 Further exacerbating the impending wholesale retirement of academics, Professor Hugo's age pyramid data indicated that there has been a 'lost generation' of potential university academics, being:

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76 IRUA, *submission 51*, p. 2.

77 Professor Nigel Laing, *transcript of evidence 12 August 2008*, p. 17.

78 CHASS, *submission 47*.

79 CHASS (Professor Graeme Hugo), *submission 47, attachment A*, p. 8.

80 CHASS (Professor Graeme Hugo), *submission 47, attachment A*, p. 12.

> … those currently aged in their 20s and 30s. A comparison of the age pyramids shows that Australian academics aged in their 40s and 50s outnumber those in their 20s and 30s by 31.1 percent.[81]

6.86 Professor Hugo further explained:

> There is no extant research as to why this younger generation of academics have been lost and the extent to which it has been due to factors such as a decline of attractiveness of academic positions, salary, conditions, etc. and the extent to which alternative sectors have been more attractive.[82]

6.87 Professor Hugo discussed university human resources policies and the need for change:

> In the last decade redundancy programs have been a major element in the human resource policies of several Australian universities. However, it could be argued that the policies of the next two decades will need to concentrate on three other 'Rs' - Retention, Recruitment and Return.[83]

6.88 Professor Hugo explained that, over the next decade, Australian universities will be faced by their largest recruitment task for three decades, adding:

> This task will have to be addressed in a context of the most competitive international labour market for the skilled academics, scientists, technologists and researchers that has ever existed. If Australian universities are to maintain their current levels of excellence, let alone enhance them, a range of innovative human resource strategies will need to be initiated.[84]

6.89 Despite the majority of submissions to the inquiry acknowledging the serious problem, very few submissions proposed any innovative solutions to address the issue.

6.90 Some submissions did indicate that they had begun to address the problem in their own way. Flinders University discussed its approach to the problem of the ageing academic population:

> The way we address it internally is that we tend to take more risks with younger academics, and often that is to retain them, so we will give them promotion earlier or we will perhaps invest in them

81 CHASS (Professor Graeme Hugo), *submission 47, attachment A*, p. 12.
82 CHASS (Professor Graeme Hugo), *submission 47, attachment A*, p. 12.
83 CHASS (Professor Graeme Hugo), *submission 47, attachment A*, p. 13.
84 CHASS (Professor Graeme Hugo), *submission 47, attachment A*, p. 16.

> more than we might otherwise, given their age and the stage of their career. When we hire someone, we more frequently now take a risk, in a sense, on someone who seems to be on an upward trajectory but has not quite got the track record yet, and we try to encourage people internally and develop them. Right across the university I can name lots of areas where we are very dependent on relatively young academics who have a good 20, 25 years ahead of them in their career and who are already in leadership positions. We try to do more of that. It is conscious. The 'succession planning' phrase gets discussed a lot within senior management here and among the executive deans. It is something we are aware of and that we try to build on where we can.[85]

6.91 ADBED suggested that the question of workforce ageing is one of succession planning and resources that allow for a timely process of training and mentoring junior researchers in preparation for more senior roles.[86]

6.92 Associate Professor Ellen McIntyre suggested that a form of succession planning takes place through mentoring:

> Flinders University has a good mentoring program, particularly for women, and, from people that have been involved, I have heard that it has been really successful. It is actually really nice when someone is interested in what you are doing. You tend to then listen to them—and do what they say! But it is also really important to grow the research area, to grow the profession, by having mentoring, so that people can build others up to become leaders and continue on from there … My concern is that we do not give much credit to mentoring in terms of what we do to go for promotion, to go for further grants, funding and so on. We need to somehow build mentoring in as part of your track record, part of what is important in doing research.[87]

6.93 RMIT suggested that workforce planning in Australian universities may be facilitated through an initiative such as tenure-track Post-Doctoral Fellowships:

> … through which new research graduates can be introduced into a university academic career path as part of the host-university's workforce planning. The university will thus get a head start on

85 Flinders, *transcript of evidence 6 August 2008*, p. 27.

86 ADBED, *submission 39*, p. 10.

87 Associate Professor Ellen McIntyre, *transcript of evidence 6 August 2008*, p. 5.

> succession planning in anticipation of the departure of older staff. Promising young researchers are eased into the full spectrum of academic staff requirements in ways that ensure they are well prepared for the demands of such positions.[88]

6.94 Professor Hugo recommended a mix of strategies and programs that may assist in relation to innovative human resources objectives:

- introduction and support of 'New blood' programmes;
- early recognition of new talent;
- family friendly policies;
- 'bringing them back' programmes to repatriate former staff and students of the university;
- developing joint international exchanges in teaching and research;
- incentives to keep 'high flyers' in the university;
- gradual retirement programs for selected staff; and
- accelerated promotion for key staff.

6.95 The Committee encourages universities, if they have not already done so, to develop and implement key succession planning and mentoring schemes that will enable the development of early and middle career researchers.

6.96 The Committee is of the opinion that the seriousness of the ageing academic workforce issue will be lessened considerably if research training and research careers once again become attractive prospects for students.

6.97 The Committee envisages research training becoming more attractive to students through increases in fully-funded university places, adequate scholarships and fully-funded postdoctoral competitive grants.

6.98 The Committee is confident that more people will consider research training if there are established career pathways and the increased prospect of job security.

6.99 The Committee is confident that the implementation of this report's recommendations will encourage an increase in the number of people pursuing a research career in Australia, thus increasing the national research and innovation capacity.

88 RMIT, *submission 63*, p. 4.

Maria Vamvakinou MP

Committee Chair

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