Women in medical research and academia: what future?*

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Women as students

Women are now forming a considerable proportion of the undergraduate students in medicine and the medical sciences. Between 1979 and 1986 the percentage of women in medical courses in Australia rose from 37 per cent to 47 per cent[1] and, in the UK and USA, it has already reached the 50 per cent level[2]. The number and percentage of female students enrolling in first year medicine in Australia's ten medical schools in 1989 is shown in Table 1.[3] Although the proportion of women in science courses has not risen as dramatically, there has still been a significant movement, from 33 per cent to 37 per cent, over the same period as above. Moreover, women entering science are significantly more likely than men to nominate the medical sciences as their principal area of scientific enquiry. A recent survey concluded that nearly two-thirds of female scientists with a PhD obtained it in one of the life sciences disciplines[4].

This represents an enormous commitment in training women, and poses the question how this commitment is to be continued, not only in terms of ensuring personal career satisfaction for the women themselves, but also in making effective use of their skills. Of concern to female doctors and medical scientists is the continuing discrepancy between the number of female students in these areas and those who go on to obtain the status and leadership positions of their male colleagues. This article will address some of the problems faced by women graduates who wish to pursue a career in medical research or academia, and makes some suggestions as to how this path may be made a little easier.

Table 1: First year intake of women students into medical faculties in Australian universities in 1989

University	Medical students total	Percentage female in first year
Melbourne	1081	50
Sydney	1177	35
Adelaide	648	50
Queensland	1297	40
UWA	650	53
UNSW	938	36
Monash	852	39
Tasmania	270	66
Flinders	383	46
Newcastle	308	50

Source: *Australian Medicine*1989; Vol.1 No.19 Dec. 4/18 : 444-445. (3)

Women in academia and research

Women in all faculties are under-represented on the full-time academic staff in Australian universities[5]. While the proportion of women obtaining doctorate and masters degrees rose from 10 to 19 per cent, and from 9 to 26 per cent, respectively, from the 1960s to the 1980s, the proportional increase in full-time academic staff over this period was only 4 per cent, from 12 to 16 per cent.[6] More recent figures for the decade 1977 to 1987, continue to show only moderate increases in the percentage of female academic staff for fifteen Australian universities, with most of the movement at the tutor/senior tutor to lecturer level (Table 2)[7].

Women still have negligible representation in the upper echelons of tertiary teaching, research and administration. Only approx 3 per cent of all professors in Australian universities are women. Women comprise less than 20 per cent of full-time teaching and research positions and more than 45 per cent are below lecturer level[8]. This so called "pyramid effect" has been well documented[9]. Women continue to fare less well than men not only in terms of status and rank, but also in regard to tenure and job security, salary level and promotion, and their work activities are generally those afforded a lower status, eg teaching and service work, as opposed to research. Surveys indicate that only a small percentage of qualified women leave the workforce altogether. For example, in the UK, only 5 per cent of women doctors interviewed (qualifiers from 1966, 1976 and 1988) were not working at all[10]. In the USA, a survey found that only some 12 per cent of women scientists stop working after they get their PhD[11].

Table 2: Females as a percentage of the total number at each academic level

(15 Australian Universities)

	1977		1987		
University	No.	%	No.	%	Difference %
Prof/Assoc Prof	46	2.4	109	5.2	+2.8
Snr Lect/ Lecturer	529	11.1	903	17.8	+6.7
Snr Tutor/Tutor	492	34.7	760	44.4	+9.7
TOTAL	1067		1772		

Source:. *Australian Universities' Review* 1989; No. 2: 2-6. (5)

Overall the picture is one of women pursuing support careers rather than careers in which they are the principals[12].

The academic staffing profile for the Faculty of Medicine at the University of Melbourne is shown in Table 3. In October, 1988, women comprised 19 per cent of faculty. However, only 8 per cent had achieved senior lecturer level or above[13]. Similar profiles exist for the larger medical schools in NSW[14]. Women fare less well in all categories in the Faculty of Science. At my own University, the University of Tasmania, there are only 5 females in a total of 59 (8.47 per cent) full and fractional full-time academic staff in the Medical Faculty[15]. Note that two-thirds of the first year student intake at this university in 1989 was female (Table 1). (The University of Tasmania readily acknowledges its poor staff gender ratios in all faculties. Women comprise only 15.1 per cent of the total academic staff, and 82.5 per cent of women academic staff are at lecturer level or below. There are no academic staff above senior lecturer, and only approximately 6 to 7 per cent of senior lecturers are women[16].

In February, 1989, the first report of the opportunity for women to make a career in medical research at the prestigious Walter and Eliza Hall Institute was published (Table 4)[17]. Although women comprise 50 to 60 per cent of the overall staff at the Institute, the pyramid effect is again in evidence, with a decreasing proportion of women in the top academic levels, senior research officer and above. Only 23 per cent of staff at these combined levels are female, and this includes some short-term visitors. A high proportion of the technical and support staff (85 per cent) are female. The number of women holding tenured positions in the research schools at the Australian National University is described as "appalling low" by the University's EEO officer[18].

Table 3: The academic staffing profile for the Faculty of Medicine at the University of Melbourne (October 1988)

Position	Female	Male	% Female
Professor	1	27	4
Reader	3	47	6
Senior Lecturer	7	47	13
Lecturer	15	30	33
SenTutor/ Tutor	16	12	57
Research Staff	48	68	41
Research Assistant	86	42	67

Source: Women In Medical Science, Victoria. Submission to the Parliamentary Committee Enquiring into Equal Opportunity for Australian Women. Nov., 1989.(19)

Why so few?

Why are so few women reaching the higher levels in medical academia and research? The answer to this question is complex, involving many issues which will be broadly canvassed under three main headings - the career "structure" (academia in general, medical sciences in particular); broad social/cultural factors; the employing institute and specific sources of "discrimination".

Career Structure

Whether one enters medical research/academia via the medical or the science route, the period of training to enter at lecturer level, or the equivalent in the research scale, is approximately 10 years, with a minimum requirement being a higher degree or fellowship (Figure 1). The period after this training is a difficult one for all aspiring biomedical scientists, irrespective of gender[19]. There is inadequate and piecemeal funding of short term contract lectureship appointments and research grant positions. Competition for the more secure appointments (5 years) is intense. Continuing to progress up the career ladder may depend on one's ability to move as the jobs dictate. The whole structure and its competitive nature rests on the assumption that academics will not take time out[20]. From Figure 1, one can see that even if 100 per cent successful in obtaining continuity and progression in employment, a post-

Table 4: Scientific staff at the Walter and Eliza Hall Institute of Medical Research analysed by gender (January, 1989)

Classification	Female	Male	TOTAL	% Female
SPRF	1	7	8	13
PRF	-	4	4	0
SRF 1-6 (incl. RS)	4	15	19	21
SRO 1-8	6	11	17	35
RO 1-6	7	9	16	44
RA	7	1	8	88
TOTAL	25	47	72	35%

Source: The Walter and Eliza Hall Insitute of Medical Research, First Report on Equal Opportunity, Feb., 1989.(17)

Abbreviations: SPRF=Senior Principal Reseach Fellow; PRF=Prinicipal Research Fellow; SRF=Senior Research Fellow; SRO(RF)=Senior Research Officer(Research Fellow); RO=Research Officer; RA=Research Assistant.

doctoral fellow may take an additional 5 to 6 years before reaching senior lecturer level, or the equivalent level on the research scale. This period is more realistically of the order of 8 to 11 years, giving a minimum of 16 years (more likely 20 or more years) before a career grade position, still usually accompanied by tenure, is obtained. The restructuring of the academic labour market to accommodate the "productivity" driven ideals will further exacerbate the gap between tenured and untenured positions by increasing the proportion of untenured senior lectureships to up to 10 per cent of that category employed[21].

Figure 1: Outline of the career "structure" for medical research and academia in Australia

Training

Science	Years	Medicine	Years
B.Sc. Hons.	4	M.B.Bs.+B.Med.Sci.	6-7
		Internship	1
Ph.D.	3	Registrar/Fellowship	3
Post-doctoral Fellowship	2-3	Ph.D. / M.D.	2-3

i.e. ~ 10 years training to enter at lecturer level or equivalent in research scale

Post-Training

Research	Years	Academia	Years
Research Officer 1-6		Lecturer	
Senior Research Officer =Research Fellow 1-8	8-11		5-6

i.e. ~ 16 years minimum to reach career grade position (senior lecturer)

Senior Research Fellow	Senior Lecturer
Professorial Research Fellow	Reader
Senior Principal Research Fellow	Professor

It is not difficult to see how this career structure is detrimental to women. The most competitive and insecure period coincides with the time when a woman needs to consider having her children (the "biologic imperative"), often presenting her with agonising choices. Many holders of research grants are reluctant, because of the pressures of research, to employ female researchers for fear they will want time off for pregnancy. Likewise, in tightly staffed teaching departments male appointments are regarded all too frequently as a better risk. A married woman whose husband has a secure career may not have the necessary mobility to follow jobs.

Difficulties with the career structure were cited as the reason for the high level of dissatisfaction of doctors with their careers in a recent survey in the UK[22]. Nearly half the women and over 40 per cent of men qualifying in 1981 expressed a high level of regret at their decision to become doctors. Those in academic medicine particularly, expressed considerable dissatisfaction, mainly because they were concerned about job prospects in academic medicine. By contrast, a recent Australian survey of successful men and women in medical research careers, showed that 77.5 per cent of medical graduates, and 69.2 per cent of science graduates, were "Very satisfied/Satisfied" with their current career. However, in answer to the question "Are you satisfied with the career structure as it now stands for an individual involved in medical research?", 71.0 per cent of these same medical graduates, and 81.4 per cent of the science graduates, answered "No", while only 17.4 per cent and 4.9 per cent, respectively, answered in the affirmative. A significant proportion were reluctant to recommend their career to others[23]. Many successful women in science, too, are reportedly ambivalent about recommending such a career when the pathway for women who wish also to have a family is so demonstrably difficult[24].

The relatively long period of training, the long hours worked, the lack of flexibility in the workplace and the lack of job security for all but the few, are the reasons given by women for their movement out of research and into teaching, support, or research assistant level careers, which bring more immediate satisfaction and less stress. It is in this movement that their active research contributions may become invisible. This becomes significant as promotion and advancement in the critical post-doctoral period is based on performance, which is still largely evaluated by one's publication record.

The "productivity gap" between men and women is well recognized. Men scientists publish more papers than women scientists do and the disparity increases with time[25]. The widely accepted explanation for this goes as follows: "A scientific vocation, like a religious one, requires superhuman commitment and dedication. Married females with children by necessity have a divided commitment. Therefore they are less creative and publish less. Women that do achieve, the Madame Curies, are either superwomen or achieve at the expense of their personal lives"[26].

However, this has been dubbed the "myth" of science[27]. The studies of Jonathan Cole and Harriet Zuckerman in the USA, do not support the belief that marriage and children have a negative impact on women's research output. Their surveys revealed that married women with children published as much as their single female colleagues, and over the course of their careers, the publication patterns of older and middle aged eminent men and women, married or single, were not discernibly different. Cole and Zuckerman conclude that marriage and motherhood are independent of, rather than incompatible with, scientific research output[28]. The reasons for the overall productivity gap are unclear and require further research, but are most likely due to factors internal to science. Such factors may include individual attitudes to publication, the choice of research problem, the position held in the lab, the size of the lab, the number of collaborators and support staff available, heavier teaching loads and other duties etc.

This is not to say there is not a cost to motherhood. In the above survey, scientists who were mothers reported a complete loss of discretionary time, little time for social life, no time for small talk in the lab, fewer opportunities for informal contact with colleagues and the loss of personal friendships outside the workplace. Some of these restrictions would also have negative implications for their career. Women combining motherhood and academic medicine believe that motherhood slows the progress of their careers[29].

The productivity differential does not alone, however, account for the discrepancies between men and women in rank and tenure. Even when the quality and quantity of published research is controlled for, women lag in academic rank[30]. This is probably still largely due to the persistence of the "myth", which results in lower expectations of women and a gradual lowering of their self-esteem, resulting in lowered ambitions[31], and, as Cole and Zuckerman conclude, the "myth" becomes a self-fulfilling prophecy[32].

Societal factors

As well as being the child-bearers, women still carry in our society the greater burden of domestic and child-rearing activities. The "double load" carried by women doctors has been well documented by Ione Fett[33]. Her survey of women doctors in the 1970s, showed working female doctors carried the same domestic duties and childcare activities as the non-working spouses of their male counterparts. Despite all the talk, it is probable that not much has changed in this regard over the last decade[34].

How do academic women manage details of their personal and family lives? Levinson et al, 1989, published a survey of women with a career in academic medicine in the USA[35]. The majority (approximately 80 per cent) of the women surveyed were choosing to have children. The mean age of the women at the birth of their first child was 30.6 years, some 7.3 years higher than for the general population. For 46 per cent of these women, the birth of their children took place after they had completed all training. The mean age for the birth of a second child was 32.9 years. The 350 mothers had a mean of 1.9 children, and only three had 4 or more children. The majority had less than one half of a week of time off work before delivery, preferring to maximize their time with their babies. After delivery, 82.8 per cent had less than six weeks off, and the vast majority (more than 83 per cent) were back at work within 3 months of delivery. Reasons given for the speedy return to work were concern about academic productivity, and to avoid placing strain on colleagues and incurring their resentment. Over one third reported breast-feeding for less time than they would have liked. One has to wonder whether the cost of an academic career has to be so high?

The birth of the child is the beginning of the serious difficulty of finding appropriate childcare, especially for young babies. In community-based childcare facilities it may take months (or years) for places to become available, even when the "name" is placed on a waiting list when in utero. (The doctor is the first to know of a pregnancy, then the childcare centre, and then the husband!) Often the services of childcare centres are limited and infections are common in the early years. Limited hours and lack of facilities for sick children are often not compatible with the demands of the working life of many women scientists. Continuous and reliable private childcare is difficult to find and imposes a considerable financial burden.

Another societal factor influencing women's career paths has been discussed recently by Sheila Widnall[36]. She outlines the very real differences between the way women and men communicate and interact with one another. She reports that studies of women in group situations show that women are interrupted by men much more frequently. Women's contributions to a discussion are often ignored or attributed to men within the group. Women report discomfort at the combative style of communication within research groups and take longer to recover from such encounters than their male counterparts. Successful women academics have acquired the ability to speak out and be heard.

Institutional factors

Male dominated tertiary institutions are an alienating environment for many women. Studies in the USA indicate that the self-esteem of women students is lowered in college, while the self-esteem of male students is raised. This in spite of the fact that the women's grade point average is higher than for the men, their degree completion rates are greater than for men, and they carry on to graduate school at the same rate as men. Males and females in high schools have comparable ambitions and expectations of success, yet women arrive at graduate school with uncertainty about their abilities and a lowering of their career ambitions. To this is later added uncertainty about how to continue career and family responsibilities.[37]

Successful professional experiences, independent research, professional employment and the support and encouragement of a faculty mentor are required to counteract these uncertainties. However the signals picked up about one's relative potential are for the woman, more often than not, negative. Male students are able to self-identify with the predominantly male faculty and benefit from the self-reinforcing confidence that they belong. They are reassured that they are on the way to a productive career in medical science, and that many others with whom they can identify have done it before them. For females, there is not this reinforcing. There is a dearth of role models perceived as successful in balancing career and personal life. There are very few opportunities to formally or informally discuss with other women in medicine ways in which such a balance might be achieved[38]. A very high proportion of women are totally in ignorance of their institution's formal policies on maternity leave[39].

Selection and promotion committees, usually male-dominated, tend to appoint in their own image. Female resumes, proposals and papers evaluated by both males and females, consistently show that the potential and accomplishments of women are undervalued by both men and women relative to the same document with a male attribution[40]. Prejudices operate automatically, in men and women, often without awareness. It is hard for women to be taken as seriously as males when it comes to promotion[41].

In view of all the foregoing, women academics wonder not why are so few women reaching career grade positions, but how have we achieved so many[42]. As shown in Table 2, the movement, although slight, is in the right direction. What can be done to accelerate this movement and achieve equal opportunity for female graduates?

Activities and goals to achieve equal opportunity

Career structure

A greater flexibility in the career path would do much to ease the stresses felt by both men and women who also wish to have, and spend time with, young families. Could there not be more than one way to achieve academic success?

One proposal is that more effort is needed to explore and implement half-time Research Fellowships, job-sharing arrangements and the like[43]. More research is needed to understand the special needs of faculty members who choose to work part-time. Those on slower paths should also have shared access to all departmental facilities and research funding, so as not to render them "second class citizens". At the University of Tasmania, fractional lecturers are not considered members of the faculty, are not invited to faculty meetings, or circulated with the faculty minutes. Research awards and prizes should be structured so as to not discriminate against those on slower career tracks. The number of years in research, for example, would be the relevant factor, rather than the applicant's age. The ideal, of course, would be that the normal pattern of full-time work could become flexible enough to allow both men and women to have a domestic life. Widespread recognition and open discussion of the "biologic

imperative", accompanied by sound advice regarding the timing and impact on tenure of child-bearing would do much to minimize the effects on a woman's career, ease inconveniences in the workplace and remove much of the conflict experienced at this time. Maternity provisions should be detailed, and allowed for.

Societal

The increased provision of and guaranteed access to work-based childcare facilities, particularly for the 0 to 2 year age group, with well-trained and dedicated staff, is the single most positive step that could be taken to free qualified women to compete on a more equal footing with their male counterparts. Much of the pain and anxiety of early separation would be eased by the provision of ready access of a parent to the child.

Education of children to the concept of "parenting" vs "motherhood" is the hope for the future. It is to be hoped that the "new male", who also wants a part in his children's care and upbringing, and who is willing to share responsibility for household tasks, will increase in number. A more flexible career structure, as outlined above, will ensure that such a male will also not suffer harmful effects on his career as a result of time spent on family commitments.

Professional women have an obligation to become comfortable with the delegation of household duties. Having fought so hard for career opportunity, they cannot also carry all the burdens of domesticity[44]. This does not come easily after years of societal conditioning, and once again, may pose financial problems. This is why there are frequent calls to legitimise housekeeping and childcare expenses by some form of tax-incentive.

Females should be encouraged from an early age to participate in public speaking, debates and activities designed to enhance self-confidence and communication skills. There needs to be an increased emphasis on informing young women contemplating research careers, of educational opportunities, such as work experience programmes and vacation studentships, which will provide positive experiences and develop self-confidence.

Institutional

Improving the status of women in medical academia requires a willingness to abandon deeply ingrained sexual stereotypes, a real pursuit of equity in the tenure and promotion process and a commitment to include more women as role models. This will not come from a plethora of well meaning reports[45]. It must be a conscious decision on the part of senior staff and those in positions of power.

The problem is to gain recognition that a half-time or "slower-track" career path does not indicate lower intelligence, lack of worth or lesser commitment[46]. What, after all, is a half-time academic? One who keeps up with only half of the literature in one's field? The concept is ludicrous. Senior staff must learn to be mentors to those on slower career paths. The research environment should be such as to provide positive professional experiences, enhance self-esteem and encourage women in the workplace[47]. This may be especially effective at critical periods of a woman's career, for example at the birth of a child. Selection and promotion criteria and methods should be reviewed to incorporate the "slow-track" pathway. The innate potential of all applicants should be the overriding consideration of selection committees, not just the quantity of past publications. Review of a few selected (by the applicant) publications, rather than the overall number, is being increasingly adopted by selection committees in the USA. It is hoped that the widespread adoption of this procedure will decrease the pressure to rush into print and result in an improvement in the quality of published work, as well as assisting those on a slower career path. The value of other skills, such as teaching and service components, eg patient care of diagnostic work, which are often better combined with family commitments and carried out very effectively by women, should be recognized. Although there should be a minimum level of research productivity, the amount of research funding brought in and number of publications should not be the only factors considered worthy in academic appointments[48].

Effective change in the working environment will only come about when more women hold positions of power in academic institutions. Women need to be involved in decision making committees. Communication and other societal differences, discussed above, result in many women deliberately shying away from such extra duties when they feel their contributions will go unheeded[49]. Other women, impatient at the rate of change for women in medical academia, are now advocating that affirmative action be taken to increase the number of women in the higher ranks[50]. Such suggestions need further discussion and critical consideration.

We have witnessed marked changes in the roles of men and women since the 1970s, with increasing numbers of women in the paid workforce. The medical profession has reflected these trends with growing numbers of women enrolling in medical schools. Thus, their numbers are now such that in the 1990s, women will comprise one third to one half of all medical graduates. What of their future in medical research and academia? One suspects many of the changes necessary to facilitate a career path for women will come much too late for far too many of the graduates we are currently training in medicine and the medical sciences. We are still a very long way off from attaining balance among the sexes in the upper echelons of professional life. Full justice for women requires that they have an equal opportunity for professional success and changes must occur if the medical profession is to take full advantage of the skills of all its graduates.

Notes and References

• This paper evolved from a talk presented to the "Silver Jubilee Symposium" held at the Wrest Point Convention Centre, Hobart in September 1990, to celebrate 25 years of the Medical School of the University of Tasmania. Thanks are expressed to Professor H Konrad Muller, University of Tasmania, for choosing this topic for the medical symposium, and encouraging me to write up this paper. I am also indebted to Professor Nancy Millis, University of Melbourne, Associate Professor Diana Temple, University of Sydney, Drs Lesley Rogers and Margaret Brumby, Walter and Eliza Hall Institute of Medical Research, and Ms Caroline Gill, Australian National University, for their thoughts and help with obtaining relevant articles.

1 Blackmore J and Kenway J, 'Rationalisation, instrumentalism and corporate managerialism: the implications of the Green Paper in higher education', *Australian Universities' Review* 1988, No 1 pp 42-48.

2 Allen I (1988), *Any room at the top? A study of doctors and their careers*, Blackmore Press, Longmead, Shaftesbury, Dorset, UK; and Widnall SE (1988), AAAS Presidential Lecture: 'Voices in the pipeline', *Science*, Vol 241pp 1740-1745.

3 Orr S and Gordon J (1989) 'Medical students', *Australian Medicine*, Vol 1 December 4/18, pp 444-445.

4 Michael Cass Associates Research and Consultancy (1989), 'Men and women in science and technology: survey findings', for the office of the Status of Women and the Federation of Australian Scientific and Technological Societies.

5 Gale F and Lindemann S (1989), 'Women in the academic search for excellence' *Australian Universities' Review*, No 2, pp 2-6; Cass B, Dawson M, Temple D, Wills S and Winkler A (1983), *Why so few? Women academics in Australian universities*, Sydney University Press, Sydney; Jones J and Castle J (1989), 'Women in higher education - Changes in the '80s?' *Australian Universities' Review*, No 2, pp 6-8.

6 Tancred-Sheriff P (1988), "'Demi-nationalism' in higher education: Women in Canadian and Australian universities", *Australian Universities' Review*, No 2, pp 14-19.

7 Gale and Lindemann, op cit.

8 Blackmore and Kenway, op cit.

9 Michael Cass Associates, op cit; Cass et al, op cit.

10 Allen, op cit.

11 Cole J R and Zuckerman H (1987), 'Marriage, motherhood and research performance in science', *Scientific American*, Vol 256, pp 83-89.

12 Michael Cass Associates, op cit.

13 University of Melbourne (1988) *Equal Opportunity Report.*

14 Cass et al, op cit.

15 University of Tasmania (1989), *Facts in figures*, March.

16 University of Tasmania Equal Opportunity Plan, 1990-1992.

17 The Walter and Eliza Hall Institute of Medical Research (1989), *First Report on Equal Opportunity*, February.

18 Anon, 'The white male advantage', *Natuni*, 1988, No 7 pp 8-9.

19 'Women in Medical Science: Submission to Parliamentary Committee Enquiring Into Equal Opportunity for Australian Women', November, 1989.

20 ibid; Cole and Zuckerman, op cit; Levinson W, Tolle S W, and Lewis C (1989), 'Women in academic medicine: combining career and family'. *New England Journal of Medicine*, Vol 321, pp 1511-1517.

21 Blackmore and Kenway, op cit; Barlow K (1989), 'The White Paper and restructuring the academic labour market', *Australian Universities' Review*, No 1, pp 30-37.

22 Allen, op cit.

23 Australian Society for Medical Research (1986), *Research Careers Subcommittee Report.*

24 'Women in Medical Science', op cit.

25 Cass et al, op cit; Cole and Zuckerman, op cit.

26 Cole and Zuckerman, op cit.

27 Bruer J T (1984), 'Women in science: Toward equitable participation', *Science Technology and Human Values*, Vol 9, pp 3-7.

28 Cole and Zuckerman, op cit.

29 Levinson et al, op cit.

30 Bruer, op cit; Cole J R (1979), *Fair science: Women in the scientific community*, New York: The Free Press.

31 Widnall, op cit.

32 Cole and Zuckerman, op cit.

33 Fett I (1976), 'The future of women in Australian medicine', *Medical Journal of Australia*: Special Supplement, Vol 2, pp 33-39.

34 South Australian Health Commission (1990), 'Nothing or no-one could have told me what it was going to be like: the third and final report of the New Parenthood Project on the first year of parenting', March.

35 Levinson et al, op cit.

36 Widnall, op cit.

37 ibid.

38 ibid

39 'Women in Medical Science', op cit.

40 Widnall, op cit.

41 Gale and Lindemann, op cit.

42 Cass et al, op cit.

43 'Women in medical science', op cit.

44 Dimond E G (1983), 'Women in medicine: Two points of view I. The future of women physicians', *JAMA*, Vol 249, pp 207-208; Heins M (1983), 'Women in medicine: Two points of view II. Medicine and motherhood', *JAMA*,, Vol 249, pp 209-210.

45 Tancred and Sheriff, op cit.

46 Heins, op cit.

47 Widnall, op cit.

48 Eisenberg C (1989), 'Medicine is no longer a man's profession. Or, when the men's club goes coed it's time to change the regs', *New England Journal of Medicine*, Vol 321, p 1542-1544.

49 Cass et al, op cit.

50 Eisenberg, op cit.

Reviews

Defining the university staff shortage

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J Sloan and M Baker with R Blandy, F Robertson and W Brummitt (1990), *Study of the Labour Market for Academics*, Canberra: Australian Government Publishing Service, 295 pp, $25.00.

The national Institute of Labour Studies was asked to analyse and report on likely imbalances between the supply and demand of academic staff over the next ten years. Their findings confirmed earlier estimates of a significant shortfall and the likely negative impact on quality of programs as institutions adopt a variety of adjustment strategies to fill the gap.

The demand for academic staff will be due to a combination of growth and replacement, and will occur to a much greater extent in some disciplines than others.

Earlier assessments of the problem had been based on existing planning decisions and projections over the next two triennia. This NILS group used two different approaches - a forecasting model driven by demographic projections and scenarios with high and low estimates on key variables which were then related to projected numbers of higher degree graduates and data on rates at which such graduates have taken up employment in higher education; and case studies in a representative sample of institutions as a reality check on what is already happening on the ground.

The conclusions of all three approaches converged, and the case for a shortfall can be reasonably regarded as having been established.

On the basis of current ratios, growth projections, and employment ratios we are told we can expect an annual shortfall over the period of roughly 1,300 to 1,900 and the case studies indicate that in a number of disciplines acute recruitment difficulties are already occurring.

The forecasts are based on a number of key assumptions and the identification and assessment of these is one of the important contributions of the report. The analysis makes it possible as the very cloudy crystal ball clears over time, to monitor events and adjust projections.

As a member of the Steering Committee it would be churlish to question these assumptions so soon after completion of the report. However there are a couple that warrant comment, at least in part because events are moving rapidly and it is possible to speculate with a little greater confidence than could be done when the study was being planned last year.

The first assumption relates to continuation of the current level of academic staff qualifications. The amalgamation game is nearly complete, the binary system has all but disappeared and almost all higher education institutions are now called universities. The impact of this change on the qualifications sought in academic staff has not yet been assessed but the effect is likely to be significant.