The Women in Engineering Movement in Australia

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The initial attempts in Australia to raise the issue of the low numbers of women entering Engineering occurred in the early 1980s. At that time the Australian Bureau of Labour Market Research [1982] produced a report on the engineering profession in Australia, which highlighted that there were very few women engineers and only 3% at undergraduate level. The report stated that the profession was one of the most sex-segregated occupations in Australia and was markedly inferior in this respect to the engineering profession in most other industrialised countries. The report also highlighted the great concern for Australia about its failure to educate enough engineers for its needs and that Australia was relying on migration to fill the gap.

Since that time the Women in Engineering movement has moved forward substantially and although the numbers of women entering engineering degrees has only hit the mid teens, Australia has been a world leader in the research into issues facing Women in Engineering during the 1990’s when programs were active in academic institutions around the country. It is disheartening however to see the hard earned gains in numbers now going backwards as is shown in Figure 1. This data is obtained from DEST (Department of Education Science and Technology) and represent the number of women commencing undergraduate engineering degrees in Australia. With this decline in female students entering engineering and the current skills shortage the focus has moved back onto women in the profession which is interesting as it reflects back to the concerns raised by the Australian Bureau of Labour Market Research report in 1982. There is much that we can learn from this short history and from those involved in its development.

![Figure 1: National Trends in Female Commencing in Engineering 1980 – 2004](DEST, 2004)
The 1980’s were a time when women’s rights were been debated in the political arena. The Federal Sex Discrimination Act 1984 and the Affirmative Action (Equal Employment Opportunity for Women) Act 1986 (now known as the Equal Opportunity for Women in the Workplace Act 1999) provided the first phase for major social change for women in Australia. The Australian Federal Government during this decade commissioned the first of only three major reports to investigate issues facing women in engineering: *Women and Engineering: A Comparative Overview of New Initiatives* by Byrne in 1985.

Byrne’s report stated firstly that there was a need for a comprehensive and systematic approach to be taken in Australia if it was to be serious about increasing the number of women in engineering. It also clearly restated Lloyds’ [1979] and later Williams’ [1988], the second of these reports, claims that the engineering profession needed to recognize that an engineering graduate would require a greater awareness of economic, social, psychological and environmental issues than were currently being instilled. The implication was that if the profession was to carry responsibility for the social influences of technological change, these broader skills were essential and that to help improve in this area, engineering needed more women and more exposure to the “female perspective”.

The third of these reports followed a study, which began in May 1993 when the Federal Minister for Science and Small Business established the Women in Science, Engineering and Technology Advisory Group (WISET). The Advisory Group was set up to advise on strategies to improve women's participation in Science, Engineering and Technology (SET) careers and education. A discussion paper was published in May 1995, which presented 14 recommendations [WISET, 1995]. Of these 14 recommendations, two principles were adopted by the Group: the need for a paradigm shift away from asking what is wrong with women, to questioning what it is about the environment of SET (and society's perception of it) that fails to attract and retain the interest of girls and women; and the need to adopt a holistic policy approach (as advocated by Byrne [1985]) to the various clusters of issues associated with girl’s and women’s participation in SET.

Despite these studies and their recommendations, the majority of federal funding has been directed via Universities and their equity programs which have focused predominately at the recruitment and retention stage at university.

By the early 1990’s, Engineers Australia also began to play a vital role in the discourse and applied some focus towards women engineers in industry. A National Committee under the Special Interest Group category was formed to support groups that had already established themselves in some Divisions. The National Committee was structured around these Divisional representatives and these representatives were the conduits through which the organization was delivering a structured approach to the issue. The Division committees focused on delivering networking and support events. The focus for the National Committee has been on policy, strategic initiatives and direction. This has lead to several very important and useful reference documents on this issues including: the National Position paper for Women in Engineering [Roberts and Lewis, 1996] as a supplement to the Review of Engineering Education 1996; ‘Promoting Equity and Diversity – A guide to inclusive language and practice in engineering’ [Roberts] in 1999, ‘Engineering a Better Workplace – a diversity guide for the engineering profession’ [Lewis, Harris, Cox, 2000] and ‘Counting the losses: Careers Review of Engineering Women (CREW)’ in 2005 [Roberts and Ayre, 2005].
The CREW report was released in 2005 and paints a grim picture for women engineers in the workforce. It shows that women engineers in comparison with other professional women in business are facing additional barriers in their workplaces that relate to the culture of the engineering environment. The major findings include that female engineers over 30 are leaving the profession and that women in general report lower levels of satisfaction with the workplace conditions than men. The reports of discrimination and harassment in their workplace are chilling with 50% of women experiencing this unlawful and degrading behaviour.

The statistics for engineers in the workplace, including women, are difficult to determine accurately as engineers have always moved into different areas of the workforce (including management) and may not refer to themselves as engineers. What can be obtained is data from Engineers Australia’s membership database which provides some guidance to the comparative data between different categories over time. Figures 2 and 3 present membership data from 1980 to 2005 in 5-year increments and show the percentages in different engineering categories and the total numbers by gender. It can be seen that there is no area in decline however the flow on effect of the decline at University of female undergraduates will not hit the profession until the next few years. It is true that there cannot be a simple 4-year lag due to the number of male engineers already in industry, however the catch-up does not appear to be happening, which reflects the results found in the CREW research.

![Figure 2: Percentage of Women Engineering Members by Categories 1980 – 2005](image-url)
The National Committee has recently rejuvenated and has recognized the need to move to a more holistic approach to this issue as recommended in many past reports with the focus required on the whole profession and the need for all members to engage in the debate. History has shown that it is time to move away from just focusing on women to focusing on the profession itself; what its goals and values are and how it wants to look in the future. Is engineering really so unique that women will not play a more equal part in its future? Medicine and Law were up until quite recently considered male dominated professions but each of these professions look very different today. By Engineers Australia Council declaring 2007 as the Year of Women in Engineering it has declared this year for all its members and that it is time that the profession faces the challenge, not just the women within it.


