Chapter 8
Revisioning the Engineering Profession: How to Make It Happen!

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ABSTRACT

Beginning with a brief account of the value of diversity and inclusivity in a globalizing world, this chapter presents an overview of the current situation of the engineering profession in some English-speaking countries. The starting point addresses the enduring difficulty encountered by attempts to increase and diversify professional engineering. Drawing on a series of studies of engineering education, engineering workplaces and people, both in Australia and beyond, this chapter outlines barriers to entering engineering for anybody other than white mainstream males. Access and retention have long been recognized as serious impediments to increasing numbers of women in engineering. The particular breakthrough in this chapter describes the ways in which some Australian women engineers are working to sustain and enrich their professional status within the workplace by developing strategies that enable them to continue as professionals without diminishing other important features of their life worlds. The implications for all sectors of education, and employers, to emerge from this study offer a basis for redesigning engineering as a more diverse and inclusive profession.

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INTRODUCTION

By the early 21st century people have become more or less acclimatized to the processes of globalization, which have increased population movements around the world, leading to unheralded heterogeneity in many Western cities and societies. In fact, multiculturalism has transformed many monocultural social settlements into centers of thriving diversity. Concurrently, education has become increasingly important in the new knowledge economy and heightened competition for jobs. Many of the established professions have been affected by these developments. For example, in the English-speaking world, the professions of medicine and law, once the reserve of privileged groups of white men, have attracted increasing numbers of women and people from backgrounds other than English. Such developments reflect not only the richer mix of peoples in the student population entering university, but also the breakdown of the traditional gender division of labor and the increasing likelihood of girls and women entering paid work in proportions commensurate with boys and men. Furthermore, many people have gradually come to accept the idea of women as equally able as men in many areas, leading to the logical argument that professionals work more effectively when their composition reflects the society they serve. A similar line of thought derives from research showing that corporate organizations work more productively when they include a diversity of staff at all levels, with a particular focus on gender (Concannon & Barrow, 2009). Such changes have led to the increasing acceptance of principles of inclusivity and gender equality as key features of diversity in professional development (Sharp, Franzway, Mills, & Gill, 2012).

BACKGROUND

In the general move towards greater professional diversity, engineering stands out in terms of its continuance as a male-dominated profession. Firstly, engineering has been markedly slower than other professions to respond to the calls for greater diversity and inclusivity. Across the English speaking world, the tertiary enrolment statistics consistently show that women comprise less than 20% of students entering engineering (Mills, Ayre, & Gill, 2010). A recent summary of the situation in the U.S. reports:

As a society, we are barely getting started. Women earn less than 20 percent of engineering bachelor's degrees in the U.S. In 2014, that added up to around 19,500 out of just over 99,000 bachelor's degrees nationwide (Crow, 2016).