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**Who's Afraid of Marie Curie? The Challenges Facing
Women in Science and Technology
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REVIEW

This book is a useful introduction to the issues facing women in science and engineering careers. You won't find out anything about Marie Curie, but you will get an overview of the challenges and barriers that hold women back, from childhood and school, through university and into the workplace.

Each chapter has summaries of recent research and testimony from interviews with women scientists and engineers, which adds a more personal dimension. The first chapter explores girls in the science classroom, and is followed by a more general discussion of scientific ability and an exploration of the bias against women in science. Three chapters then look at women in academia: women in undergraduate science; women before and after completing a PhD; and, women pursuing a career as academics. There are also chapters that focus on women scientists in industry and government and on women doctors. An analysis of why women leave science ('Hanging up her lab coat') is followed by chapters that look at practical ways forward: how to encourage girls and welcome women in science, and what to do next.

I work at the UKRC, the British government's lead organisation advocating gender equality in science, engineering and technology, and I found all the



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above useful – either to confirm what I have read or heard about elsewhere, or to expand my understanding. The research reported on in the book was based in the US, but whilst I wished some of the data covered Europe, the issues seem substantially similar.

The book is particularly strong on the difficulties facing women who want an academic career. Hall comments that women academics are an easier group to research and document, and I would have liked to have seen the discussion of issues relating to the experience of women in industry extended. These issues are addressed, however, in the chapter 'Beyond the ivory tower' where, among other things, Hall takes a look at 'ghettoisation', the process whereby women end up clustered in low paid, low status areas of science.

She explains there are three theories as to why this occurs:

- the employer devalues the work because women do it
- the work is low paid in the first place, so men avoid it
- the work is low paid, and women do it because they have other priorities such as parenting

Hall does not state which theory is most applicable, but the theme is revisited in an interesting chapter on medicine, which explores the specialisms women medics have gravitated towards and their relative status. Roles with a 'controllable lifestyle' are favoured by female medics. Surgery is not one of these – it remains predominantly male and has the highest status. The field of medicine does, however, provide illuminating examples of how women can carve out careers in a traditionally male preserve and the impact this has. Hall points out that in medicine there is now part-time work that is both well-paid and fulfilling, and the more these opportunities are requested, the more they grow. In parallel with this, experimentation with methods of teaching and practice, brought about by the needs and interests of women practitioners, can benefit all. This augers well for the fields of science and engineering.

In science, the biosciences have the highest female intake. Yet some areas of bioscience are 'hot', such as genetics, and based on the theories listed above this would suggest that men would predominate. Hall does not provide a breakdown where men and women tend to work within the biosciences – presumably there is ghettoisation within the field as well as between different disciplines. It would be interesting to know if the newness of some areas of science means that women have a better chance of being in at the start and so have a more equal footing.

Throughout the book, I enjoyed expanding my gender-equality-in-SET vocabulary:

Stereotype threat – where you fear, either consciously or sub-consciously, being judged according to a negative stereotype based on a group you belong to, and this fear, in turn, affects your performance (p. 46).

Instrumental and communal – as replacement words for certain traits often labelled as masculine and feminine (p. 52).

Trailblazer or token – a distinction where the former is the only woman in a team or initiative but has the opportunity to succeed, while the latter is the only woman and is held back (p. 94)

And of course **unconscious bias**, illustrated by a wonderful anecdote about a liberal male professor who believed he was 'getting it right', only to suddenly see in two letters he wrote a male and a female graduate that he was applying differing criteria. 'He held [the letters] side by side and said, "Oh my God, I do it too".' (p. 90).

Hall tackles some big questions. Is scientific ability inherently and predominantly a male attribute? She points to the contradictory nature of much research in this area, where findings often depend on the data and methods used. She suggests that even where innate gender differences exist, they are 'so overwhelmed by environmental factors as to be insignificant' (p55), and she cites research that suggests that 'males and females are similar on most, but not all, psychological variables. That is men and women, as well as boys and girls, are more alike than they are different' (pp 39-40).

To back this up, Hall points out that we are hampered by the fact that we can only measure ability by measuring performance, but performance itself does not rest solely on ability and is therefore not a reliable indicator (pp37-38). An interesting example is the American Math SAT test. A SAT question which women tended to find easier than men was eliminated from the test. Revealingly, women's maths SAT scores under-predict their maths performance at college, where they tend to outperform men with similar SAT scores in maths. Hall's proposal is that where differences caused by nature or nurture exist, we stop seeing this as a bad thing and instead celebrate difference and put it to good use.

I could at times have done more detail and more depth of analysis. This is, however, an interesting and readable overview, and Hall is passionate about gender equality:

'... to truly improve the experiences of women in science and engineering, we need to focus not on what may or may not be different about a woman's brain, but on the barriers she faces outside her head' (p. 55).