

particular medical technology. Brief summaries of the main arguments at the end of each section also help readers who are not interested in the entire field to single out the aspects that are relevant to their work and interests. This organizational strategy results in more advantages than disadvantages and provides benefits to both people with knowledge of the field as well as readers less familiar with this material.

## Notes

- 1 Franklin, S., & Roberts, C. (2002): Listening to uncertainties: preliminary findings from an ethnography of PGD. Department of Sociology, Lancaster University, <http://www.comp.lancs.ac.uk/sociology/IHT/>.

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**Yu Xie and Kimberlee A. Shauman:  
Women in Science. Career Processes and Outcomes.  
Harvard University Press, Cambridge, MA, 2003. 318 pages.**

### *Life Course Approach Towards Women in Science*

Why are women underrepresented in science and engineering, both in educational trajectories and in labour markets? This is the main question, for which Yu Xie and Kimberlee Shauman are looking for answers in their book. In this review, we firstly summarize the major findings of the study and secondly, present our comments and evaluation of the book.

The book consists of two thematic parts. Firstly, Xie and Shauman concentrate on education in science and engineering. By science and engineering, they refer to four broad categories: biological science, engineering, mathemat-

ics and computer science, and physical science. In the second part, the focus shifts to the career outcomes of practicing scientists.

The research of Xie and Schauman explores both the early life course processes of selection into and out of the science educational track and the stratifying influences that operate after entry into the labour market. Consequently, Xie and Shauman adopt a life course perspective which suggests, that the significant events and transitions in an individual's life are age-dependent, interrelated, and contingent on earlier experiences and societal forces. Therefore, the authors aim to report and interpret gender disparities during different periods of the individual's life course.

Methodologically, Xie & Shauman analyze seventeen U.S. based, large, nationally representative datasets and perform statistical analysis of longitudinal data, cross-sectional data and synthetic cohorts, focusing on gender comparisons. By analyzing a significant amount of datasets, the authors aim to produce research results that are generalizable to the reference population of women scientists.

### *Women's Educational Processes*

The foundations of planning and/or having a career in science and engineering are built already in early stages of the life course. Therefore, Xie and Shauman begin by examining gender differences in math and science achievement tests. The results suggest that gender differences are very small and therefore, cannot explain the underrepresentation of women in postsecondary science and engineering education.

However, a greater gender gap is to be found in girls' and boys' attitudes towards pursuing a science and engineering college major. The authors show that young women are far less likely than young men to aspire for a science or engineering educational trajectory. Neither the achievement in math, nor the individual and familial factors explain these differences. However, this gender disparity early in the life course sets the stage for the underrepresentation of women in science and engineering at later stages of life.

Next, Xie and Shauman examine the gender differences in the career outcomes of graduates who have attained a bachelor's and/or master's degree in science and engineering. In U.S., the gen-

der gap in science and engineering labour force participation is greater than the gender gap in the science and engineering educational trajectory. Therefore, women must be facing significant barriers in utilizing their science and engineering education in labour market. Xie and Shauman conclude, that there are two important ways in which women are disadvantaged relative to men. Firstly, women are more likely to be found in biological science than in other fields, and the graduates in biological science are less likely to pursue science and engineering careers in other fields. Secondly, married women, particularly those with children, are much more likely to exit from both school and work than are men or women in other family statuses.

### *Women Scientist in Labour Market and Academia*

In the second part of the book, Xie and Shauman provide an overview of the demographic and labour force profiles of women and men in science and engineering. They conclude that female scientists and engineers are much more likely to be single or divorced than their male counterparts. Additionally, among married scientists and engineers, women are less likely to have children. Consequently, marriage and parenthood increase gender differences: when the careers of men seem to benefit from marriage and parenthood, women face the opposite situation.

Xie and Shauman show that women immigrants are even more disadvantaged than their non-immigrant counterparts when it comes to earnings and especially to employment and promo-

tion. The authors suggest that this pattern may be due to a common immigration path taken by many female immigrants: that as spouse of immigrant men. As 'secondary immigrants' women often migrate to benefit their husbands' career rather than their own.

What about those women who have pursued a career in academia? Xie and Shauman emphasize the importance of structural sources of gender inequality in science: women and men scientists are located in different academic structures, with different access to valuable resources. However, if gender differences in such positions and resources are taken into account, net differences between men and women in research productivity are negligible. Accordingly, as the distribution of these resources has become more equitable over the time, the overall gender differences in research productivity among academic scientists have essentially declined.

#### *Statistical Information on Gender Disparities*

The book by Xie and Shauman is a good handbook of statistical information of women scientists in U.S. context. The key strength of the book is the life course perspective covering the women scientists' life course from high school to labour markets and academic professions. To explain the various gender disparities in the life courses of men and women scientists, Xie and Shauman introduce three different social determinants: firstly, individual influences, secondly, familial influences and thirdly, broader social influences, such as school system or work settings. In our opinion, the individual and the familial influences are

discussed thoroughly but the social and institutional influences are covered rather vaguely. Furthermore, the design of the study uncritically suggests that a complex phenomenon, such as underrepresentation of women in science and engineering can be categorised, classified, and put into pieces in a rather mechanical manner.

#### *The Problematic Yardsticks of Success*

In their book, Xie and Shauman use men as a reference group with whom to compare women. The focus on gender comparison is maintained throughout the study. Consequently, the categories of men and women are taken for granted and the authors adopt a style of writing in which men and their success in science and engineering fields constitute the norm, against which women are measured. In other words, women and their underrepresentation are treated as the problem, instead of problematizing the (masculine) yardsticks of success. Moreover, the lack of discussion on empirical research conducted, for example, on gender and education, or on combining work and family, was rather surprising in a book that analyses women's underrepresentation in science and engineering.

#### *Limits of Generalizing*

The authors use several, U.S. wide data sources aiming for results that are generalizable to the reference population of women scientists. On the one hand, the extensive statistical data is a huge resource of this particular study, containing valuable information of women scientists and engineers. On the

other hand, we could ask if generalization is the only goal of research and what do we miss by producing generalizable data. Does the population-level data help us to understand those conditions and situations that individual women and men face in their school environment or everyday work? By way of illustration, we argue that also questions dealing with the socialization of students into science and engineering educational and working cultures and construction of ideal workers in these fields would help us to understand the situation of women in science and, furthermore, develop institutional practices to support them.

*From U.S. to Nordic Context*

Another interesting question is how the U.S. based results of Xie and Shauman are applicable to European and, in particular, Nordic context. Are the results valid also, for example, in Finnish society, schooling and work life? It seems that despite considerable improvements in women's status in education and the labour force during past decades, women are still underrepresented in science and engineering in Finland also. Following that, the combining of work and family is rather difficult even in our welfare society, and that this problem faces not only women, but men and fathers as well, we warmly welcome any discussion about the policies and actions to improve the work experiences of women and men scientists in labour market and academia.

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