

# Women advancing in science: an ongoing tale of inequalities

Why is it such a struggle for women to get to the top in healthcare science? There is no simple answer, of course, and the reasons are multifactorial. Here, Valerie Bevan considers the issues and outlines her experiences.

I first began to be academically interested in the issue of gender inequality in science when I started my PhD at Lancaster University in 2005. When I first contemplated doing a PhD, I thought I was going to research the commitment of scientists and what makes scientists work such long hours in their all-encompassing careers. However, as I studied and learned more, I was able to interpret the science world about me differently, and began to analyse the inequalities.

Science is not unique in being the only profession where women are marginalised – women in academia, law, accountancy, medicine and the church all experience similar issues. And it is not just women who find it difficult to reach the top grades; ethnic minorities also find progression in science arduous. But it was the position of women that I became interested in and at some point I realised that I was part of the group I was researching.

## Background

But first a bit about my background to set the scene. I grew up in NHS pathology specialising in microbiology in the late 1960s. The bosses were all men and male medics. There were a few senior medical laboratory scientific officers (MLSOs) who were women, but that's where they stayed, as seniors. I started to notice this imbalance of power, wondering where my 'place' was to be and inwardly seething. However, I mostly towed the line, knowing my place as a lowly technician. However,

even at that level, more menial jobs were expected of female technicians compared with the men; for instance, I was asked to polish the director's oak desk and there were audible gasps of surprise and horror when I objected. I passed examinations and progressed up the biomedical science ladder, mainly in management, but it was studying critical management and leadership at York and Lancaster Universities that changed my perspectives.



One of few women identified as a creative genius: Marie Curie, a double Nobel Laureate, in Physics (1903) and Chemistry (1911).

## Research

To convince my sceptical scientist colleagues and bosses, I used quantitative data to show that even though women were in the majority in terms of numbers (roughly two-thirds of the scientist staff in the Health Protection Agency were women), there was a huge attrition rate (unpublished data, but available in my PhD thesis at Lancaster University). At the middle pay grades numbers were approximately equal but the proportions of women decreased as the grade increased. There were diversity policies but these were largely rhetorical in action – turning the rhetoric into reality did not happen. One example of this was when the nursery at the Health Protection Agency in Colindale, a resource which helped fathers as well as mothers, was closed because it was not profitable.

My qualitative research at Lancaster University consisted of interviews with 47 mainly healthcare scientists of different grades and sexes, and mainly working in areas of research in public sector organisations. The story I present here is based on my PhD thesis and book.<sup>1</sup> My co-author and I developed a framework (Fig 1) where four interconnecting factors act separately or together to affect women's chances of advancing in science.

## Subtle masculinities

First, science is a masculine world. Science is positivist and there is an expectation that there is a right answer to a science question. This attitude pervades not only science itself but the whole working environment where subtle masculinities are ubiquitous – by subtle masculinities I mean those taken for granted, usually invisible, subtle sexist behaviours which marginalise women.<sup>2-4</sup> These subtle masculinities also influence the other three factors discussed below.

Men tended to exclude women, an example of which was described by one woman: "My boss is absolutely fantastic but he's very close to the chap who was working on this project before and things tend to get decided between the two of them". Men also supported other men more than they supported women, as another woman told me: "I think it was an easy option to make me redundant. The only other person made redundant was the other female scientist, but both male scientists were kept on".

Men favoured other men for promotion – women were recognised as being good at following directions and were praised for this. In the interviews, I noticed that men readily said that they were supported during their early careers by a benefactor who was nearly always a man. A few women also had paternalistic benefactors and this helped them progress. However, on a number of occasions, the support was unreliable and the women described how the support was withdrawn as it was strictly under the benefactor's patriarchal control. One biomedical scientist, for instance, reported that her senior scientist boss had encouraged her to start a PhD, but she found that she could not do the laboratory work required because she had taken over so much laboratory management from him. After a year of trying to find the time, he told her "Oh well, you'll just have to drop the PhD then". She gave up the PhD and never completed it.

As indicated by this woman's boss, men also avoided the day-to-day management, administrative or support work required in laboratories: this was largely the domain of the women (senior biomedical and clinical scientists). Another woman, a post-doc, complained that she had taken on running the department in contrast to a male colleague who was single-minded in his approach to his research and continued to write scientific papers, ignoring the management and support work required. So it was the male colleague who was identified as being the better scientist and progressed faster than she did. She was appreciated but only for keeping the laboratory running and helping more junior colleagues.

Women generally coped with these issues by keeping quiet about the inequalities they noticed, and the power base remained with men. To keep the peace, women tended not to be overtly ambitious and kept quiet about their plans for the future. One young woman wanted to study for a PhD, which her boss supported initially. However, he changed his mind and suggested she did

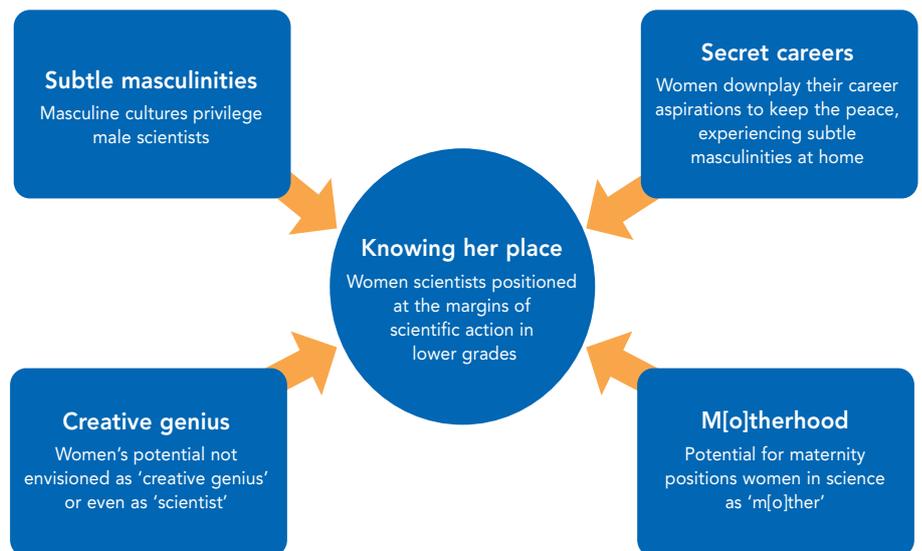


Fig 1. Framework showing four interconnecting factors that affect women's chances of advancing in science.

a Masters degree in quality management first. Once she'd achieve this, he still did not support her studying for a PhD so she moved laboratories where eventually her ambitions were realised. Over many years and after my research was completed, she became internationally recognised for her work.

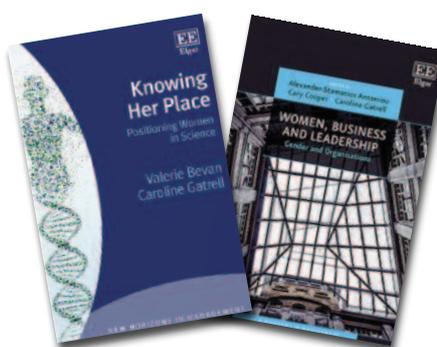
#### Secret careers

A surprise to me was how women carried over their anxieties at work into the home, which was the second area covered, and I have written more about 'Secret careers' in a recently published book chapter.<sup>4</sup> Even among women who were highly committed to their careers, some were constrained by a perceived need at home to remain invisible as a career woman in an effort to avoid conflict. Thus, the way male bosses at work exerted their subtle masculinities at work was subtly reproduced at home for those in heterosexual relationships with their husbands/partners. Women praised their husbands/partners for their important jobs and their high wages, and never were the men in these relationships

expected to share equally with childcare and running the home. 'He does help me' was a common phrase used. Women healthcare scientists seemed to accept their subordinate place in the home, just as they did at work, to avoid conflict. Men felt no pressure to change the status quo, which gave them an advantage, and were rarely challenged to do so by their wives. Two women did challenge their husbands, who could not cope with their career ambitions, and they divorced.

#### Creative genius

The third factor is the notion of creative genius. The most prestigious positions or places within science globally are held by individuals who may be described as creative geniuses, and this title is invariably applied to men. Historically, women were not regarded as being capable of being a genius and for a woman to be seen as such was against the laws of nature. Did you know that quotas for 11-plus pass rates limited the pass rates for girls, and hence grammar school places, but was 'concealed from public debate'?<sup>5</sup> Although I would much like to think that times have changed, just look at the proportions of women elected to become Fellows of the Royal Society (16 of 60 in 2018; 13 of 61 in 2019) or gain Nobel Prizes (three of 12 overall; two of 10 in science-related subjects in 2018). It seems that women are allocated a place within science which is different from that of men, who sit within the place of scientific action (Miller 1975, p75); women's place is away from the leading positions in science. What's more women are denied access to opportunities whereby they might be identified as a potential creative genius by the subtle masculinities in action that identify men rather than women as having this potential.



Left: The story of four interconnecting factors that act separately or together to affect women's chances of advancing in science. Right: Experiencing a secret career in healthcare science: a chapter by Valerie Bevan in this recently published book.

## Valerie Bevan: a brief biography

Dr Valerie Bevan worked in several NHS laboratories before moving to the Public Health Laboratory Service as Head of Technical Services. On the creation of the Health Protection Agency (now Public Health England), she became director of a laboratory with units working on the periphery of science associated with quality and training. Her main contribution throughout her long career was introducing and leading the development of standardised microbiology investigations (SMIs),<sup>6</sup> the development of which is now accredited by the National Institute for Health and Care Excellence (NICE) and used by all laboratories in the UK and available worldwide.

Her interest in gender and other equality and diversity issues led to her studies for an MA and PhD in Management Learning and Leadership, and has led to several publications and articles, some of which are listed below.

She sat on the IBMS Council for two years where she was diversity champion.

Having retired from paid work in 2012, Valerie's life remains very busy. She chairs the British Society for Microbiology Technology (BSMT), which convenes scientific conferences. She is an Honorary Teaching Fellow at Lancaster University Management School and sits on the Advisory Board to the Critical Studies Research Group at Durham University.

Valerie moved to Suffolk in 2015 with her husband, Byron. Their son, Henry, is a software developer working in London, who built the BSMT website many years ago. She has taken up painting and drawing, and resumed playing the piano. One afternoon a week, she listens to young children reading at the local school. She was a 'Sofa Guest' on Radio Suffolk where she was able to talk about her life as a biomedical scientist, and was invited to promote her book.



Valerie recently took on the role of editor of *The 289 Register News* – this quarterly publication is all about AC Cobras and other similar cars in the 289 series – they own an AC Ace, which Byron built, and a replica Cobra along with several other classic cars.

### Reproduction potential

The fourth factor controlling women progressing in healthcare science is motherhood. It has long been acknowledged within gender studies that motherhood has a detrimental influence on women's careers. Women in heterosexual relationships are more often than not responsible for the greater burden of child care and housework, but childcare responsibilities are not in themselves a cause of women's subordinate position. It is more to do with the masculine culture in science that marginalises not only mothers but also those with the potential to become mothers. Some women I interviewed said that they kept quiet about their pregnancies until they absolutely had to declare it, lest they were identified as being less reliable or less competent. Maternity leave meant that women's publication rates, a major way that scientists are assessed, reduced. Better return to work programmes and a more egalitarian way of assessing publication rates might help here.

When women had young children, some bosses were somewhat condescending, not understanding that the ambition to become recognised as a scientist remained even though they were mothers. One mother explained: "He said I should slow down a bit and stay at home and look after my babies, and I shouldn't be so career focused as I'm still young and have got plenty of time". Some women found their positions intolerable and were considering leaving,

and to my knowledge at least two women I interviewed left science not long afterwards for teaching.

### Conclusions

The women who progressed seemed to be those who faced their bosses with persistence but without antagonising them. The most beneficial factor for those keen to pursue a career in research science was to obtain the postgraduate qualification of a PhD before they started in paid employment. The women also became experts and developed a confidence in their subject. For the late developers, and those who wished to be acknowledged as a research healthcare scientist when they were already employed as a biomedical scientist in healthcare science, it was very difficult for women to study for a PhD: the opportunities which seemed open to men were not available to most of the women. Those who progressed needed the support of a medical or senior scientist advocate, and usually these benefactors were male. When this advocacy ceased (as it invariably did), the women needed to move on to find new positions to further their research aims. As training funds are diminishing under the pressure of reduced budgets, the opportunities to progress in research healthcare science will become even more difficult for women.

In summary, the four factors illustrated in the research framework above act together to hinder and delay women's progress in healthcare science: subtle

masculinities, secret careers, the notion of creative genius and women's potential for reproduction. Women's place remains firmly preserved at the lower end of the hierarchical professional structures in healthcare science. 

### References

- 1 Bevan V, Gatrell C. *Knowing her Place: Positioning Women in Science*. Cheltenham: Edward Elgar Publishing, 2017.
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- 3 Rhoton L. Distancing as a gendered barrier: understanding women scientists' gender practices. *Gender & Society* 2011; 25 (6): 696–716.
- 4 Bevan V. Experiencing a secret career in healthcare science. In: Alexander-Stamatios A, Cooper C, Gatrell C eds. *Women, Business and Leadership*. Cheltenham: Edward Elgar Publishing, 2019: 247–59.
- 5 Pennell H, West A. *Underachievement in Schools*. London: Routledge, 2003: 53 (citing Gallagher 1997).
- 6 UK Standards for Microbiology Investigations ([www.gov.uk/government/collections/standards-for-microbiology-investigations-smi](http://www.gov.uk/government/collections/standards-for-microbiology-investigations-smi)).

The next BSMT Annual Scientific Conference will be held on Thursday 14 May 2020 at the RAF Museum in Hendon, entitled *The genomic and molecular revolution in microbiology: in technology we trust (or do we?)*.