

EQUALITY in INNOVATION,

INNOVATION for **EQUALITY**

Challenges surrounding the issues of gender and innovation in relation to science and technology policies

Teresa Rees

Introduction

Despite the very best endeavours of some universities, employers and governments, the employment of scientists and the construction, funding, ownership and exploitation of knowledge remains remarkably segregated by gender. Why do so many policies and practices designed to break down this pattern fail? What is the price paid by this under use of women for the development of innovation and creativity? What policies would work? This paper draws on recent research on women in science, engineering and technology in the public and the private sector to explore these questions. It also draws upon my own experiences, as a senior university manager, to seek to address these issues in my own institution. Mainstreaming gender equality in a university has the potential to make some significant long term cultural changes which should promote more gender equality in science and technology but it needs to be complemented by similar policies on behalf of governments, employers, the wider education sector, funding bodies and the academic establishment.

Understanding the problem

The first challenge faced is getting to grips with the issues. The persistence of gender as such a significant organising principle in the allocation of resources,

positions and acknowledgement of innovation is both an enduring phenomenon and a bit of a mystery. Fortunately it has attracted attention from social scientists, governments and some enlightened leaders and employers in both the public and private sectors who have sought to understand the complex social processes that have contributed to these patterns.

The European Commission itself has commissioned a number of expert reports and set up the European Platform of Women Scientists. Individual Member States have set up Women and Science Committees or Women and Science Units to investigate the issue. The 'Helsinki Group' of national representatives on women and science and their statistical group have enabled benchmarking of policies and statistics to try to understand better what the common patterns are and which policies work and which do not. Not all good policies are transferable of course. But such benchmarking has enabled the growth of good practice and a better understanding of the issues.

Employers, particularly those facing recruitment or retention issues or suffering from especially robust competition have experimented with policies to seek provide a fertile ground for women in innovation. One of the findings is that creating a critical mass of women will lead to more women being attracted to work there and will make life culturally more comfortable, with better retention rates, but it does not address the issue of women moving into board positions. Different policies are required to address that challenge.

Social scientists and in particular gender experts have focused on this issue around the world, producing a mass of evidence on how complex interactions can exclude women from innovative circles. The European Commission has resourced much of this research and enabled it to be widely disseminated. Other countries too, such as the US, have examined and reported on the challenges and solutions. The research is not just about the progress of women in the academy or the innovative Research and Development companies; it is about the gendering of the 'knowledge economy'. This has shown how the gendering of networks of finance houses, academics and development

agencies can exclude women and their ideas. Equally, research has been reported on the 'gendering of scientific excellence' itself. This suggests that what is regarded as excellent and innovative is not gender neutral but a social construction developed by those in a position of power. Much of the innovative ideas of women may not be recognised as such.

All this research, policy and practice have been designed to understand the challenges and to develop ideas on overcoming them. In this paper I shall just focus on two: the lack of women in decision-making and transparency in the allocation of resources and positions. I then discuss some of the policies I have developed in my own university informed by this understanding.

Lack of women in decision-making

The second challenge is the paucity of women in key decision-making positions in the field of developing innovation. This includes women in senior positions in universities, on the boards of companies, and in positions to influence or fund innovation such as finance houses, funding bodies, editorial boards of science journals and scientific societies. This absence influences the *construction* of what is good innovation or science. It may be suggesting biological essentialism and testing causality, but it is noticeable that the early days of European funding of innovation concentrated on nuclear fuels and 'going faster' whereas when measures to ensure gender balance on these committees was introduced, the focus shifted to sustainability and green technologies. Perhaps it is just changing fashions, but the absence of women and their insights from determining what innovations should be supported is certainly a key challenge for women wanting to access resource of all kinds.

Now not only the European Commission but many member states insist, through legislation, upon a gender balance for key public committees. Norway insists upon it for the boards of public companies. Three European Union

Member States have legislation on gender balance, two insisting on 30% of both genders on all relevant committees and one 40%. Inevitably, there were problems at first in finding suitable women! But the European Commission found that as women are frequently under-promoted, there were plenty of able candidates in the tier below the one usually recruited from for senior scientific advisory committees.

This is not just a social justice or access issue however. Research from the US has demonstrated that there is a link between the diversity of scientific teams and their innovative capacity. As Astra Zeneca say, cloned people produce cloned ideas. Bringing a wider range of life experiences and perspectives to the table can enhance the robustness of decision-making and provide new insights.

In government decision-making on what to fund, there are relatively few women in Cabinets or as Science Ministers. Research funding bodies and prize giving committees tend to be male dominated. The ETAN report found very few women on science making committees – or among prize recipients. This is not to suggest conspiracy, but to underline the power of networks.

The first challenge then is to have a better gender balance among key decision-making bodies that provide funding, support, publishing space, promotions and prizes for innovation. How can this be achieved? One important hurdle to overcome is my second challenge: lack of transparency.

Lack of transparency

For an organisation to know itself, gender disaggregated statistics are an essential management tool. However, all too often, when human resource committees or senior managers are confronted with them, they do not know what to make of them. Regarding such data as seriously as finance or health and safety data and using experts to analyse, benchmark and construct equality indicators would be a solution to this challenge. As it is, there is a lack of

understanding of the data and what they mean, and therefore what if anything, needs to be done. Recognising the need for expertise is crucial.

Research demonstrates that women are more likely to succeed in appointments where the recruitment processes are transparent. Women can operate a 'credentials lever' to access positions where it is clear that this is required for entry. Where women do not succeed as well is when there is a lack of transparency in recruitment or promotion processes. Even where the system is transparent, as Wenneras and Wold's article in *Nature* on the operation of the Swedish Medical Research Council demonstrated, sometimes male networks and patronage can over-ride or engender the operation of transparent criteria. My own research illustrates that women are more likely to apply for posts that have been re-advertised. Finland found fewer women were appointed as Professors when external head hunters were used. Their networks did not include as many potential female candidates.

US research shows that women operate better and are more likely to be valued and promoted in small biotech companies than in big pharmas. In the latter, the more traditional way of working involves a 'guru' (normally a chemist) operating as a chief with a team of assistants beneath him. In the multi-disciplinary teams that characterise small bio-tech companies, all the members are likely to be valued for the contribution that they make to the whole. Dignity policies are important in underpinning this mutual respect.

Transparency of data on equal pay is a crucial tool to ensure that men and women are equally valued for their work rather than their gender. The persistence of the gender pay gap, despite the Treaty of Rome, various European Directives, and national legislation in the Member States, is a clear indication of the complexity of reward processes.

Gender budgeting has been used in North America to make the allocation of resource transparent and to ensure that University departments are motivated to address equality issues. In Sweden, transparent processes revealed that

largely female disciplines had been allocated fewer senior positions: attempts were made to rectify this.

How are research elites constructed? Memberships of professional associations often self-select new members. They tend to be fellow members of the same networks, which tend to be gendered. The UK Royal Society is a case in point, in 1960, when women were first admitted, some 3% of new fellows were women. Twenty years later, the number had risen to 3.5%. It remains around ten percent today. Existing fellows, who are overwhelmingly male, determine the criteria and choose new fellows.

Gender mainstreaming at Cardiff University

At Cardiff University, promoting equality is part of our vision and mission. This is because we are an ambitious University and recognise that we need to build a culture which celebrates difference and offers a culture that enables people to thrive. Hence, we have built the promotion of equality into our university strategic plan and our 29 academic Schools, are asked to address how they are going to promote equality. The issue is taken seriously because of leadership from the top and a number of senior champions.

To embed our mission, we have added an additional criterion for promotion: "What are you doing to help the university in its mission to promote equality?" This has, I hope, created a more universal interest in promoting equality!

Learning from the research outlined above, we sought to understand the issues through a staff survey, to ensure that communications were improved, and that routes to promotion and membership of committees were more transparent. We engaged in a project on analysing gender disaggregated statistics on students, staff and committee membership. Like most Universities, we have relatively few women professors but we do have a growing number of female heads of School. We set up a women professors' network which enabled the exchange

of experience and better communication across the University. The members offered to mentor junior women staff. A gender audit of senior university committees revealed that women were under represented on some crucial committees: the women's professors' network included many women who volunteered to put themselves forward for selection for those positions where elections were held.

An Equal Pay Task and Finish Group have enabled us to understand better what the challenges are in our mechanisms. This is a highly complex area demanding technical skills for the analysis, provided by the Director of our Business School who is an expert on equal pay. This has revealed that negotiated entry salaries, informed by the external market, can prove a crucial element in any pay disparities.

Some innovative projects have developed such gender auditing of the curriculum, mentoring disadvantaged young people in schools and creating opportunities for developing enterprise among the students. New networks have been set up for lesbian, gay, bisexual and transgender staff, members of the Black, Minority Ethnic staff and disabled staff. A carers' network is being set up. The University's Dignity at Work and Study policy is designed to remove harassment and bullying to ensure a better working environment, and better valuing of colleagues, for all.

All this has led I believe to a better climate for equality which should benefit both our staff but also our research and teaching quality. We have a long way to go but staff morale surveys and a staff counselling service, together with more communication and transparency should enable us to judge – along with our position in the league tables!

Conclusion

The research and experience we have available to us demonstrates that a number of factors can inhibit opportunities for women to develop their potential as innovators, whether it is as individual start –ups, in universities or in Research and Development companies. Lack of women in senior decision-making positions and lack of transparency in the allocation of resources and positions are just two of the challenges that cut across women’s ability to compete effectively. They also limit the effectiveness of the organisation. There are of course many other factors too. But with more criteria based transparency in recruitment and resourcing, there would be more women in senior positions. And more transparency and evidence based recruitment is not something that talented men should fear....