

The law is not enough

The publication of the Helsinki report on the situation of women in European academia shows that more than legal hurdles have to be overcome on the way to equal representation

Trust is a good thing. But control is better. Lenin is supposed to have uttered these words and it has since become a truism. It certainly is valid for all the promises and good-will declarations that have been made about giving women equal rights. Clearly, the subject of gender equality has not been top of the agenda in many countries over the last decade. The general attitude has been that the legal framework, drafted in response to the women's movement in the 1960s, was sufficient to ensure that all women have equal opportunities in the industrialised countries. But recent statistics concerning the role of women, particularly in the academic realm, show quite a different picture.

The first wake-up call was the publication of the ETAN (European Technology Assessment Network) report in 2000, showing that only a small number of women have risen to the highest ranks in the academic world. The report found that, on average, only 10% of full professorships or equivalent positions in Europe are held by women, despite the fact that men and women start out in equal numbers as undergraduates in the life sciences. Consequently, the ETAN report triggered a buzz of meetings and debates investigating why women disappear along the career path in academia and how to increase their presence in the higher echelons. One of the more factual outcomes was a Europe-wide survey by the Helsinki group on the situation of women in science in the 15 EU member states and 15 associated states. This group, established in 1999 by the European Commission during the Finnish presidency—hence the name—was created to promote discussion and exchange experiences on the measures taken to promote women in research and to provide statistics for each country monitoring the results. The group is headed by Theresa

Rees, Professor of Social Sciences at Cardiff University, UK, and consists of civil servants from the EU and associated states. Each representative wrote a short



report summarising the actions taken in their particular country and provided, for the first time, statistical data on female participation in science in these 30 countries. The final report, 'National Policies on Women and Science in Europe', became publicly available this June (<http://www.cordis.lu/improving/women/policies.htm>).

them came into effect only recently. Furthermore, the measures do not contain any sanctions for non-compliance with the stated targets. As Mary Osborn, the author of the ETAN report, puts it, 'many of these measures are good will declarations without teeth.' However, all of the EU member states have some form of equal opportunity legislation, accompanied by a statutory sex equality agency to supervise compliance, which, in most cases, has been in place for at least 20–25 years. Only three associated countries, namely Bulgaria, Cyprus and Estonia, have not yet subscribed to this principle, but they are allegedly in the process of doing so.

'I hope that the report will have an impact on different levels. First it allows the different countries surveyed to benchmark themselves against other countries and sharpen the interest in this issue; secondly, if widely distributed among scientists it can be used to put pressure on universities and institutes to be more transparent and to subscribe to equal opportunity policies; and thirdly, it already has had a clear impact on EC policies, in both the 5th and 6th Framework Programmes,' said Rees. The existence of the Helsinki group has already prompted a number of actions, such as the creation of a Women and Science unit and the 'Mission for parity in science and technology between men and women' in France, the 'Observatory for Equal Opportunities

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The good news is that some measures to promote gender equality are now being taken in all EU and associated countries (Table 1); the bad news is that many of

between Women and Men' in Spain and a 'National Council for the Promotion of Women in Science and Technology' in Israel.

Table 1. Overview of equal opportunity measures and legislation in European countries

		equality measures														
		equal treatment legislation	statutory sex equality agency	ministry for women	women and science unit in the science ministry	national steering committee on women and science	commitment to gender mainstreaming	sex-disaggregated statistics	gender balance statistics	gender balance quotas on public committees	gender balance quotas on university/research institute ctees	development of gender equality indicators	women's studies taught at universities	gender studies taught at universities	universities/research institutes produce equality plans	
EU member states	Belgium (Fr)	✓	✓	✓	–	✓	✓	✓	–	–	–	✓	✓	✓	–	
	Belgium (Fl)	✓	✓	–	–	✓	✓	–	✓	–	–	–	✓	✓	–	
	Denmark	✓	✓	✓	–	–	?	✓	–	–	✓	✓	✓	✓	✓	
	Germany	✓	✓	✓	✓	–	✓	✓	✓	✓	–	✓	✓	✓	✓	
	Greece	✓	✓	–	–	✓	✓	✓	–	–	–	✓	✓	✓	–	
	Spain	✓	✓	–	–	✓	–	✓	–	–	–	–	✓	–	–	
	France	✓	✓	✓	✓	✓	?	✓	?	–	–	✓	✓	–	–	
	Ireland	✓	✓	–	–	✓	?	–	–	–	✓	✓	✓	✓	✓	
	Italy	✓	✓	✓	✓	✓	–	–	–	✓	✓	✓	✓	✓	–	
	Luxembourg	✓	?	✓	–	✓	–	–	na	na	–	na	na	na	na	
	The Netherlands	✓	✓	✓	✓	–	✓	✓	✓	–	✓	–	✓	✓	✓	
	Austria	✓	✓	✓	✓	✓	✓	–	–	–	–	✓	✓	✓	✓	
	Portugal	✓	✓	–	–	✓	✓	–	–	–	✓	✓	✓	✓	–	
	Finland	✓	✓	–	–	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
	Sweden	✓	✓	–	–	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
	United Kingdom	✓	✓	✓	✓	–	✓	–	–	–	✓	✓	✓	✓	✓	
	associated countries	Bulgaria	–	–	–	–	✓	✓	–	–	–	–	✓	✓	✓	–
Cyprus		–	–	✓	–	✓	✓	–	–	✓	–	✓	✓	✓	–	
Czech Republic		✓	–	–	–	✓	✓	–	–	–	–	✓	✓	✓	–	
Estonia		–	–	–	–	✓	–	–	–	–	–	✓	✓	✓	–	
Hungary		✓	✓	–	–	✓	–	–	–	–	–	✓	✓	✓	–	
Iceland		✓	✓	–	✓	✓	✓	✓	–	–	–	✓	✓	✓	–	
Israel		✓	✓	–	✓	✓	–	✓	–	–	–	–	✓	✓	–	
Latvia		✓	–	–	–	–	–	–	–	–	✓	–	✓	✓	–	
Lithuania		✓	✓	–	–	✓	✓	–	–	–	–	–	✓	✓	–	
Malta		✓	✓	–	–	–	✓	✓	–	–	–	✓	✓	✓	–	
Norway		✓	✓	–	✓	–	✓	✓	✓	✓	✓	✓	✓	✓	✓	
Poland		✓	✓	–	–	✓	✓	–	–	–	–	–	–	–	–	
Romania	✓	–	–	–	–	–	✓	–	–	–	–	–	–	–		
Slovakia	✓	–	–	✓	✓	✓	✓	–	–	–	–	–	✓	–		
Slovenia	✓	✓	–	✓	✓	✓	–	–	–	–	–	–	✓	–		

Note: Belgium keeps two sets of statistics, one for the French (Fr) and one for the Flemish (Fl) part.

Source Data from: The Helsinki Group on Women and Science
National Policies on Women and Science in Europe
EC, 2002

✓ = yes
– = no
? = no answer
na = not applicable

It also provides new arguments and data for those pushing for more measures to support women in science. 'The keeping of gender disaggregated statistics on a national level throughout Europe is one of the major achievements of the group,' said Osborn. 'The report provides a valuable reference source and a collection of examples of good practice. It is not necessary to reinvent the wheel, and if the report is updated on a regular basis, members of the group can spread the knowledge of what works and what does

not.' Osborn is now calling for a harmonisation of the way statistics are being collected, in particular with respect to the definition of positions, such that meaningful comparisons can be made. Rees agrees that the Helsinki report provides the basic data and that 'there certainly is the desire in the group to update the report. Perhaps this can be done every 2 years.'

But what makes the Helsinki report even more interesting is that it highlights the vast differences in legislation for gender equality between countries as well as

their society's acceptance and support for working women and mothers. The Scandinavian countries, for example, have always been the role model, having the best legal and social framework for the support of women in the workplace, including excellent day-care facilities and full-time schools. Nevertheless, with the exception of Finland, the representation of women in the higher ranks is not significantly above the European average (Table 2). Even in Finland itself, less than 20% of the highest ranks in academia are

filled by women. This is particularly critical, considering that the Scandinavian societies have been proactive in gender equality for more than 20 years.

As a consequence, Finland, Sweden and Norway have recently resolved to include a quota for women in certain positions. These have been applied in Finland in all government and municipal bodies and committees since 1995, such that all public decisions are taken with almost equal input from members of both sexes. Marja Makarow, a Professor of Cellular Biotechnology at Helsinki University, confirms that 'this has worked very nicely for society. Women have to participate and must take responsibility and make decisions. Having a female president and a female speaker of the parliament has certainly helped a lot,' she added. She feels that it is now impossible to revert to the old ways when political decisions were mainly made by men. The Academy of Finland—the Finnish research council—has decreed in its Equality Plan for 2001–2003 that at least 40% of all expert positions and working groups must be occupied by women. The academy also applies a corrective scheme on research posts and grants. After a strictly quality-based scientific rating, the percentage of successful females is compared to the percentage of female applicants. If these numbers are at odds, the academy will then favour a candidate from the underrepresented sex if a man and a woman have obtained equal scores in the scientific evaluation.

But despite all these efforts, there have been setbacks. A few years ago, Finland established 5-year professorships that can be filled either by invitation or by an open call for applications. These positions have been predominantly filled by men. 'Men invite men,' Makarow explains. Nevertheless, the percentage of female associate and full professors had reached 20% by 2001.

Equally, the Swedish government has set a 25% target for women in full professorships by the year 2008. This means that, each year, 20–25% of the newly hired professors must be female. The Karolinska Institute in Stockholm evaluated its recruitment base in a report published in April 2001 (<http://info.ki.se/news/report.html>), which revealed good prospects for reaching this goal.

Elsewhere, Portugal is one of the top performers, with 17% of full professors

Table 2. Representation of women in higher academic positions (data from the ETAN report)

Country	Year	A (Full)	B (Assoc)	C (Assist)
Turkey	1996/7	21.5	30.7	28.0
Finland	1998	18.4		
Portugal*	1997	17.0	36.0	44.0
France	1997/8	13.8	34.2	
Spain	1995/6	13.2	34.9	30.9
Norway	1997	11.7	27.7	37.6
Sweden	1997/8	11.0	22.0	45.0
Italy	1997	11.0	27.0	40.0
Greece	1997/8	9.5	20.3	30.6
UK	1996/7	8.5	18.4	33.3
Iceland	1996	8.0	22.0	45.0
Israel	1996	7.8	16.0	30.8
Belgium (Fr)	1997	7.0	7.0	18.0
Denmark	1997	7.0	19.0	32.0
Ireland	1997/8	6.8	7.5	16.3
Austria	1999	6.0	7.0	12.0
Germany	1998	5.9	11.3	23.8
Switzerland	1996	5.7	19.2	25.6
Belgium (Fl)	1998	5.1	10.0	13.1
Netherlands	1998	5.0	7.0	20.0
Australia	1997	14.0	23.0	40.7
USA	1998	13.8	30.0	43.1
Canada	1998	12.0		
New Zealand	1998	10.4	10.2/ 23.5	45.5

The countries are listed according to the percentage of full professors that are female.
 Note: Belgium keeps two sets of statistics, one for the French (Fr) and one for the Flemish (Fl) part.
 Portugal* Numbers include only academic staff performing R&D activities.

being female. This is quite surprising, given that Portuguese society is much more male-dominated than those of the Scandinavian countries. Indeed, the circumstances that have led to this success are very different. Until the 1990s, research in Portugal was performed under adverse conditions. Practically no national funds or grants were available,

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scientist's salaries were low and so many men chose better-paid careers. In addition, many male university graduates were forced to join the army to fight in Africa during the 1960s and 70s, consequently stripping Portuguese universities of their male recruitment base. As a result, many of the positions at universities became occupied by women. Since then, with the influx of funds from the EU and the Portuguese government to boost science, research has again become an

attractive career path. Even so, the Portuguese Helsinki group members Carla Santos and Maria Joao Valente Rosa caution against obscuring the existence of gender differences in the different disciplines and their positions.

If judged by the mere number of equality measures defined by the Helsinki group (Table 1), Germany has it all. Apart from equal treatment legislation and a women's ministry, the federal and state governments provide €30.7 million annually for the 'Equal Opportunities for Women in Science and Research' programme. Each university and research institute must have an equal opportunity commissioner who is involved in all personnel affairs. Every public institution must also establish a female personnel development plan for the participation of women at all levels. Some states have provided grants or appointments for women to obtain the qualification necessary for professorships and have established mentoring programmes to motivate schoolgirls to choose scientific and technical subjects. Two government-funded centres, 'Women in Information Society and Technology' and the 'Centre of Excellence Women and Science', were created in order to coordinate measures and supply information for women in science. Germany even makes a proportion of its governmental funding of institutes and universities conditional on the proportion of female students and female staff.

Despite all these measures, it has been very difficult in Germany—as well as in Austria, Switzerland and the Netherlands—to meet the goals of equal opportunity, mainly because of the lack of social support for working women. No full-time day-care and schools, a given in most other European countries, and a social environment that brands working mothers as *Rabenmütter* (raven mothers, i.e. bad mothers—if you were in any doubt) have led to a low number of full-time working women compared with Scandinavian countries, France and the USA. This dire situation has not escaped the politicians. In a recent discussion on television, the representatives of the two main German parties admitted that Germany is ~30 years behind most other European states regarding family friendliness and the integration of women into the workplace. Nevertheless, no radical improvement of the situation seems to be planned for the near future.

Studies performed in the Netherlands relate the causes for the low participation of women in science to family-related problems, such as part-time employment and its consequences, mainly fewer publications and less international mobility. More importantly, however, the Dutch investigators found that the culture of the work place—competition, lack of access to networks and subtle notions about quality ('quality is what men do')—still block the advance of many women in science. On the same note, Italian studies report that, throughout their career, the probability of a woman being promoted is half that of a man. Varda Rotter, a group leader at the Weizmann Institute in Israel, commented that, 'We do not have the problem that women with children do not stay in the workplace, they nearly all do. But they simply do not advance at the same rate as men.'

The Scandinavian example shows that quota can be an indispensable and invaluable tool if applied carefully and under the right conditions and thus can form part of the 'teeth' that Osborn found lacking. Quota are not well regarded, especially by women, but they may be necessary to kick-start the process and get a critical mass of women into higher positions. Referring to studies on group dynamics, Gábor Rossmann, co-owner of Mänz & Rossmann, a German personnel development company that performs mentoring programmes for working women, estimates that 'at a level of 30% representation, a minority starts having a real influence on the whole group.' Rees confirms that 'it isn't just the legal right for equality and the availability of child care.

These measures only take care of the most obvious obstacles towards equal opportunity. The intangible problem of culture, the fact that promotion works through networks which are dominated by men, can seemingly only be addressed by setting quota, as the Scandinavian example shows.'

But the catalogue of possible supportive measures extends far beyond quotas. Earmarked chairs, research funds and prizes can be very effective in convincing

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women to apply. The study 'Who applies for research funding' (www.wellcome.ac.uk/publications, or www.natcen.ac.uk for the full report) commissioned by The Wellcome Trust, the Medical Research Council (MRC) and other UK research councils has shown that women apply less frequently for scientific grants than men and that many women often hold termed positions that do not allow them to apply for additional grants. Encouragingly, if women do apply, they have an equal chance of funding in most countries, according to the statistics provided by the Helsinki group. Mary Phillips from The Wellcome Trust confirms that the Trust is looking for 'academic age' rather than 'chronological age' when judging applications and that time taken off for childcare is being taken into account when judging an application.

In the long term, gender mainstreaming may be the most effective tool. This

means that the effect of all proposed actions—legislative or otherwise—will be evaluated in terms of their effect on members of both sexes and adjusted such that no one will be disadvantaged. Clearly, these principles must be thoroughly applied to the recruitment process at universities and institutes. A man's usually uninterrupted career is taken as standard, which is clearly a disadvantage for women with children.

Additional measures include encouraging girls to study the sciences, as fostered in Israel and other countries through education and mentoring of female high-school students. Also important are measures to help women balance work with their private lives. Many women wish to resume a competitive career once their children are older, but few provisions are available for that. The Finnish government's 'Development Plan for Education and University Research' states the right to equal opportunity in education and training for everyone in accordance with the principles of life-long learning. These policies will benefit men and women as they make working life more flexible for both sexes.

It seems that it is not sufficient to make men and women equal by simply passing a law. The Helsinki study is demonstrating that countries must take more proactive measures to overcome male dominance in the higher ranks of science.

Gerlind Wallon

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Movies for teaching science

The first public database of scientific films and images for educational use went online this year

A college teacher in the USA needs to explain to his students how mitochondria produce energy by converting sugar into ATP. How ATPase uses the proton gradient across the mitochondrial membrane in order to do so is complex, so his task would be much easier if he could show a

short animation of the mechanism of this enzyme. The animation exists and is downloadable for free from a German website (<http://www.cells.de>), but the American lecturer is not aware of this.

A French physics professor is preparing a lecture on gravitational waves and how

they are distorted in space by black holes and supermassive stars—a difficult, theoretical topic that could be dramatically enlivened by images and movies. These images exist, as astronomers and physicists around the world have run computer simulations to visualise how