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## Preface

Women, who represent a valuable share of Europe's pool of trained scientists, need to see science as a rewarding career choice. It is therefore essential to ensure equal opportunities for women and men in access to promotion, research funding and decision-making positions in science.

In this context this edition of the Newsletter of the Platform Research and Technology Policy Evaluation presents the results of a workshop on "Excellence – a Question of Gender" held at the Technology Symposium of the Forum Alpbach 2005, jointly organised by the Federal Ministry for Education, Science and Culture, the Federal Ministry for Economy and Labour, the Federal Ministry for Transport, Innovation and Technology, and the General Secretariat of the Austrian Council for Research and Technology Development.

It is the first time that the Platform devotes a Newsletter to an evaluation topic related to the

issue of gender. This seems important as there is evidence that some kind of evaluation procedures particularly related to the assessment of scientific excellence are not gender-neutral and tend to underestimate women's achievements against those of men. By bringing this issue closer to a wider audience, the Platform seeks to stimulate the discussion on the problems of defining and measuring scientific excellence, considering in particular whether the achievements of women and men scientists are assessed on the same basis.

This is a rather complex issue and further research may contribute to a better understanding of the mechanisms involved. The newsletter shall help to launch the debate among research bodies and funding institutions and to encourage the scientific community to think, in a more general and systematic way, about promoting research environment free of gender bias.

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## Introduction

International statistics such as the “She-Figures” published by the European Commission in 2003 clearly prove that women are still underrepresented in research, even though the situation may differ according to subjects, institutions and levels of hierarchy. The most common explanations for this situations are the career preferences of women, often opting for “typically female” professions, the lack of support women receive during education and professional career as well as discriminating structures still existing in many research institutions. One important aspect has not been sufficiently considered so far: there is evidence, that some kinds of selection processes and evaluation methods make a difference between men and women (unintentionally) and tend to underrate women’s achievements. This was the starting point for the inter-ministerial working group FFORTE - Frauen in Forschung und Technologie (Women in Research and Technology) to organize a workshop at the Technology Symposium of the Forum Alpbach 2005 ([www.alpbach.org](http://www.alpbach.org)). The organizers were Ilse König (Ministry for Education, Science and Culture), Sabine Pohoryles-Drexel (Ministry for Economy and Labour), Gertraud Oberzaucher (Ministry for Transport, Innovation and Technology) and Brigitte Tiefenthaler (General Secretariat of the Austrian Council for Research and Technology Development). The moderator was Elke Ziegler (ORF).

The main topics of the workshop were the concepts of scientific quality and excellence as well as selection procedures, scientific careers and stereotypes about research and researchers. A number of questions were discussed during the workshop: What are the criteria and procedures applied in order to measure and evaluate scientific excellence? Are these criteria and procedures gender-neutral? Which circumstances offer equal opportunities for women and men to achieve scientific excellence and to reach top positions?

The speakers and the members of the panel had been selected to form a heterogeneous group: the speakers were an expert in Gender Studies, a senior researcher, and an expert each from evaluation and programme management. The panel members represented mainly decision makers from funding agencies and research institutions.

The workshop started with a lecture by Margo Brouns (University of Groningen) analysing the commonly applied procedures, methods and criteria for the measurement and evaluation of scientific excellence. There is evidence to suggest that these systems of evaluation are “gendered”, i.e. have a negative gender bias for women, and that also inter- and trans-disciplinary research suffer a bias. “Not the best will win, but those best established”, as Margo Brouns put it in a nutshell. Talent and effort are not sufficient for a successful scientific career, networks; visibility, contacts and encouragement are just as important, and normally women have less access to these resources than men.

The second speaker was Eva Schernhammer (Harvard Medical School). She described the

current situation of women in research in the US. Among others she pointed out that mentoring as an effective tool in the training of scientists is a professional obligation for all members of the faculty at US universities. Successful mentoring will enhance the reputation not only of the mentee but also of the Mentor and his / her chances in an application. Moreover, Eva Schernhammer outlined the pros and cons of monetary incentives for hiring female researchers.

The following presentations focused on the Austrian situation. Sonja Sheikh (KMU FORSCHUNG AUSTRIA, Platform for Research and Technology Evaluation) presented data about the participation of female researchers in Austrian research promotion programmes, which in most cases is very low. A closer look reveals those programmes that had applied Gender Mainstreaming during the design and implementation of programme significantly increased the participation of women on all levels from junior researcher to project leader.

Herbert Greisberger (ÖGUT) outlined the results of a recent feasibility study. Post-doc and senior female scientists in Austria had been interviewed about career obstacles, especially in those research programmes that aim at long-term RTD-co-operation between academia and economy. The current way of measuring scientific excellence still supports the traditional linear non-interrupted career and so far alternatives have not been established.

→ Read more by the 4 speakers in the “papers section” of this newsletter.

The second part of the workshop was a panel discussion involving decision makers and experts from research institutions and funding

agencies. The participants were Marianne Baumgart (Austrian Academy of Sciences), Michael Binder (Research Promotion Agency FFG), Gerhard Kratky (Austrian Science Fund FWF), Harald Isemann (Research Institute of Molecular Pathology), Iris Klein (Austrian Research Centres), Brigitte Ratzer (Vienna University of Technology), Ulrike Unterer (Christian-Doppler-Society).

The panel members explained their institutions` approaches to gender issues and commented on the presentations given in the morning session. Evidently all the institutions represented on the panel are aware of the importance of the subject and have started tackling the problems. However, many have only started recently. Therefore it is still necessary to create awareness and in most cases, effective measures have yet to be developed and implemented.

The workshop intended to kick of a discussion about these issues which have hardly been subject to a broader debate in Austria so far – and according to active participation of the audience and the lively and partly also controversial discussion during and also after the workshop this goal was reached.

→ Read statements by some of the panel members and by the moderator in the “statements section” of this newsletter.

### “Question Mark” versus “Full Stop”

“Excellence – A Question of Gender?” or “Excellence – No Question of Gender” or “Excellence – A Question of Gender.”

During the workshop and beyond the title we had chosen gave subject to objections. “Is excellence really a question of gender?” some

participants of the workshop asked. “Excellence is no question of gender!”, others claimed. Who is right?

Of course, women are as clever and creative as men and girls and boys are born equally gifted with the personal traits that are necessary to become an excellent researcher – intelligence, curiosity, ambitions, endurance etc. But if this is true, why are there so many male than female professors, heads of research, and Nobel laureates? Because women and men still do not meet the same framework conditions to develop their personal gifts and become acknowledged as excellent researchers. Obviously our research and innovation system is gendered, offering different opportunities to men and women.

So: Excellence is no question of sex, but clearly it is a question of gender. And that is why the title of the workshop and of this newsletter is “Excellence – a Question of Gender (*Full stop*)”

**About This Newsletter**

This issue of newsletter is closely linked to the Alpbach workshop: it deals with the same topic and the articles and statements in this newsletter are written by speakers, panel members and the moderator. However, it is not a “paper version” of the presentations and statements given in the workshop; all the contributions have been written afterwards. Some are analytical, some reflective, some descriptive – highlighting different aspects of the subject “gender and excellence” and providing food for thought with no ambition to fully cover the subject.

The structure of the newsletter is similar to the structure of the workshop: the first part contains the speakers` articles; the second part contains the statements by the panel members and the moderator.

The intention of this newsletter is to make it more widely known that excellence in fact **is** a question of gender, which is the basis for the development and implementation of solutions toward a non-gendered concept of scientific excellence.

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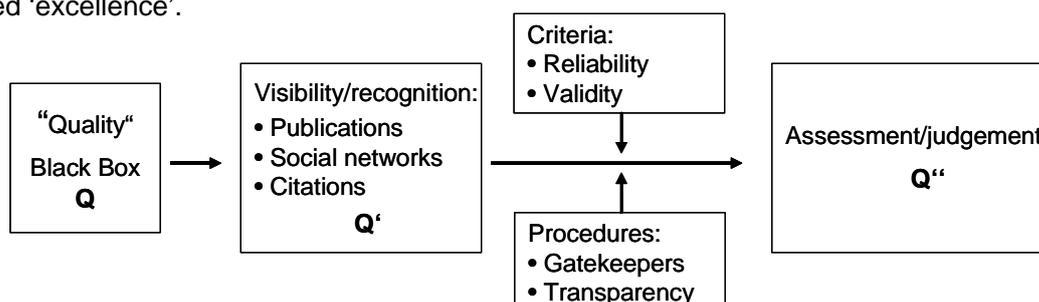
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Margo Brouns

## Excellence – A Case of Gender?

The general under-representation of women in the sciences changes only very slowly, much slower than we might expect on the basis of on women’s achievements in the educational system. The female potential is not fully realized. From this point of view, the title of this working group is rather puzzling: scientific excellence a case of gender, without a ‘?’. Is scientific excellence a case of gender? We can not make general statements on the question whether men are ‘really’ better scientists than women – much of it is perception and interpretation. Scientific excellence is a composite of many skills – originality, clarity, complexity, and so forth – that are achieved through a process of training, networking, accumulation, and resources. The judgment of excellence depends on the importance attributed to each of these characteristics. It is a social, highly contextualized construction, and therefore it is open to many kinds of bias. According to gender specialists, this is precisely where the influence of gender enters the picture.

The scheme below gives an idea of the complex relationship between ‘quality’ of an individual – the black box - and the outcome in measured ‘excellence’.



Gender can be active in every one of these aspects and in the transitions from one stage to the next one. What is the relationship between Q – Q’ and Q’’? What is the gender dimension that influences the visibility of personal qualifications, the measurement of the qualifications and finally the judgment of the scientific quality of male and female scholars and scientists?

### Criteria

Quality is almost never measured directly. It is measured by indicators – representations of quality that are believed to reflect scientific quality optimally. Bibliometrics are used as a proxy for excellence, quality, and ability. Assessing the reliability of judgments requires first understanding the relationship between the actual quality of individual researchers (Q) and the representations of scientific quality in publication lists Q’. This relationship could be weaker for women than for men, for several reasons:

#### *Gender differences in productivity*

One important common-sense explanation for the under-representation of women at the senior levels is their relatively low publication scores. According to Schiebinger (1999) and Valian (1998), there is evidence that women tend to publish fewer papers, with each paper being more substantive. On average, papers published by female scholars are cited more frequently than are papers written by male scientists who are more “productive”.

Recent publications clearly show that productivity is related to academic rank. The lower average productivity of women can be explained by the fact that their professional ranks tend to be lower than are those of men. In addition, the stereotypical idea that this is generally related to women's family responsibilities has not been confirmed (Fox, 2005).

#### *More is better?*

A scientific career presupposes long working hours, which creates a rather lopsided work-life balance that is difficult for both men and women. The ideal type is essentially a male model of practice, full-time devotion, emphasis on early achievement, and exclusive identification with science, without any other social obligations. The way scientific excellence is measured creates a specific atmosphere in which competition leads to high numbers of publications – but not necessarily to good science.

#### *Social capital*

The relationship between quality and bibliometric measurements could be weaker for women because of the differences in social capital. Publication alone is not enough to distinguish oneself as a scientist; publications must be read, discussed, and cited. Publications need personal representation within the scientific community. Participation in academic networks is therefore important, and having the right (formal and informal) connections seems to be a crucial factor in successful careers. Due to a lack of social capital women scientists run the risk of under-citation. Scientists pay most attention to well-known or already established researchers. From this point of view, citations

are by-products of participation in larger networks as well as measures of intrinsic scientific quality. They do not mirror 'quality' in an unambiguous way but rather represent a mixture of 'quality' and 'social embeddedness'. A low citation score is not synonymous with a 'low quality of scientific work'. Reputation creates conditions for future success. Some of the indicators for 'excellence' can be an obstacle for women, such as an affiliation to established scientists who have access to many resources, a position within a social network, or a competitive style.

#### **Procedures**

##### *Gate keeping*

According to the ETAN report (European Commission, 2001), gatekeepers are generally middle-aged male academics. Women are clearly under-represented as gatekeepers, due their under-representation in the power structures of academia. There is some evidence that there is a gender difference in views on interesting research (Allmendinger & Hinz, 2002; Addis, 2004). Women seem to be more sensitive to socially relevant issues and more focused on gender issues. From this point of view, we can expect an unintended influence on the success rate of female scientists.

Conducting good research is in itself not enough to become a good researcher. It depends also on the research topic you are investigating. Some research issues are more likely to lead to 'excellent' positions than others. Some fields and issues are marginalized and therefore work in them is difficult to publish and/or get subsidized.

### *Stereotyping, transparency, and accountability*

One central question is whether similar achievements are assessed differently for men and for women. Social psychological research shows that gender is clearly a factor in assessment procedures, largely because of unintended stereotyping (Banaji et al., 1995). Several experiments on gender-based double standards conducted by Foschi clearly indicated a double standard in assessment processes (Foschi, 2005). Different requirements were applied to men and women in assessing each other's competence. In experimental settings, similar achievements led to different assessments of the task competence of men and women. These gender-biased judgments appeared to be pervasive: both men and women applied double standards when working as evaluators of themselves and of others.

Further – and more importantly from a strategic point of view – Foschi's research showed that the effects of double standards decreased when the assessors were held accountable for the results by making the assessment public and known to the assessed. These experiments also showed that providing explicit standards rather than allowing assessors to generate and use their own criteria reduce the gender bias. Double standards flourish when assessments, assessors, and criteria are not made public, thus leaving much room for subjective and uncontrolled judgments.

### **Outlook**

What needs to be done? First, we really need a better understanding of the dynamics that take place during assessment and selection – psychological and sociological research on gender specific career orientations and on com

petition in academia. Also we need to design a multifaceted action plan for 5 to 7 years, on mentoring, assessor's training, role models, transparency and accountability. Most effective would be, perhaps, to give very concrete rewards for those departments and organizations that are successful in attracting more women in senior positions. Change has to happen at the individual and at the institutional level. If we want to realize meritocracy – and I am convinced we want to – we need to abolish all these unintended biases and realize women's potential as much as possible. And we need to do it quickly.

### **Literature**

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## **How to Increase the Number of Women in Science – Money or Mindset?**

Excellence, particularly in science, could become a question of gender primarily if accepted methods and criteria for assessing excellence were applied differentially. Numerous empirical findings, both from Europe and the US, support that such assessments are not gender-neutral. As possible explanations for the paucity of women in science, with Austria at the bottom of Europe's women quota of full professors, gender bias in assessment systems, scientific culture and organization, and issues like women's aspirations and ambitions, were addressed. It was further asserted that excellence is not only a personal trait nor merely a reflection of merit. Rather, social networks and encouragement are also important contributing factors.

In highlighting differences between the US and Europe, several reports of successful strategies for reducing gender bias support these contentions and merit mention. For example, clearly defined criteria appear to reduce gender bias in hiring and promotion in the US to some degree, although not entirely. One strategy that appeared to have proven particularly successful was implemented at the University of Wisconsin, where search committee members received a folder with scientific studies of gender bias, along with a list of female graduates from schools of engineering and technology. "What really wins over academics is science" appeared to be an effective approach and helped to significantly increase the number of women faculty at that university. Another important dif-

ference between Austria and the United States is the use of mentoring. Women typically lack involvement and support from the traditional networks, which were largely instituted by men. In America, mentoring is an integral part of an academic c.v. as well as a requirement for promotion. Thus, there is no shortage of highly-motivated mentors. Similar approaches were considered for possible future use in the context of the Austrian university system, with a focus on mentoring women.

Dealing with the concept of scientific quality and excellence another central question has been part of the workshop's debate: What are the practical conditions that would enable women, in the same way as men, to develop scientific excellence and rise to top positions in Austria? These spanned a wide range: From monetary incentives for hiring a woman professor to role models from other countries, e.g. the United States, where the rigorous application of scientific information has already proven successful in reducing gender bias. Further to possible concrete actions for Austria's innovative system related to networks for women and an increased visibility of female scientists, including a heavier focus on mentoring and eliminating double standards.

The ambivalence created by suggesting financial incentives for hiring women deserves a closer examination. More generally, women tend to be less favorable of the idea of monetary incentives for hiring women, whereas men, particularly powerful ones in established positions, tend to favor that idea. But is money really effective, and what long-term consequences might one have to expect? One line of argumentation compares monetary incentives to additional funds, occasionally provided by funding agencies to highlight their interest in

specific research areas. It would probably be easy to agree that research areas, which were singled out for extra funding, are of no lesser quality than others. Rather, scientists might perceive them as areas of special importance. Similarly, programmes that are specifically designed to support women (e.g., the Hertha-Firnberg programme in Austria) tend to be very competitive, so that women with funding through these programmes generally tend to be perceived as high quality scientists.

Why could one suggest then, that women who get hired through monetary incentive programmes offered to their employer might be perceived of *less* quality, potentially leading to difficulties for women at their workplace? Here is another line of argumentation, highlighting the complexity of such seemingly straight forward support-actions. Rather than likening monetary incentives for hiring women with special programmes that independently support women (like the Hertha-Firnberg programme), they could also be compared to "affirmative action programmes" in the U.S. In the U.S., affirmative action programmes seem to not have worked well for African-Americans (a minority I would like to compare to women in academia in Austria). When listening to the opinion of white Americans on affirmative action programmes, there is a general sentiment that African-Americans in academia are oftentimes "low achievers" who entered the system based on affirmative action, but are not well qualified otherwise. It is a tough working environment for African-Americans, who, for these and other reasons, oftentimes feel very alienated. The programme has not been able to ease their feeling of disintegration; yes, they have a job, and yes, the proportion of African-American faculty may have modestly been increased

under affirmative action programmes (although not even close to their proportional representation in the general population). But can they really do well and excel under such circumstances? I would argue "no". What was really needed was a change in mindset, and not primarily in number of faculty, but affirmative action did not achieve such a change.

It is possible, however, that programmes similar to affirmative action programmes (i.e., providing monetary incentives to the employer), are more likely to be successful if the proportion of women (on each career level) rises beyond a critical mass. A high enough proportion of women would likely minimize the potential effects of prejudice against them. That critical mass of women needed to create such a favourable climate would still need to be determined. In the meantime, I submit that anything below that proportion is likely to create a situation similar to the one encountered by African-Americans in U.S. academia. A situation, which is by and large determined by alienation and subtle disrespect, - as a sign of the failure in changing the mindset of those, with who the group benefiting from support-programmes ultimately has to work with.

In sum, the question how to raise the proportion of women in academia raises another, maybe even more relevant question and of great societal importance; how to achieve a change in mindset - that is, how to establish that gender is not a factor in scientific excellence?

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## Gender Aspects in Research and Technology Promotion Programmes

The issue of women being underrepresented in science and research has increasingly been addressed in recent years. The European Commission has also given particular attention to the topic. Although to different extents, women are underrepresented in university, non-university, and industrial research. Most striking is the low percentage of women in science, engineering and technology. Although more than 50% of the students in all studies are women, a stunningly low number of women can be found in responsible positions in science and research. In recent years, various types of obstacles and barriers in the career of women scientists and researchers have been observed and pointed out, such as, for instance, inequalities that result from the evaluation procedures for measuring scientific excellence. Empirical findings on the application of common methods and criteria for measuring and evaluating excellence indicate that these are not gender-neutral. Scientific excellence, however, plays a major role in the allocation of grants. Against the background of a relatively low percentage of women in science and research in Austria, we are particularly interested in pointing out their participation in Austrian research and technology programmes and to draw attention to any discriminating elements that may exist. Based on this, we shall develop solution proposals aiming at increasing the participation of women in Austrian research and technology promotion programmes.

## Women in Science and Research

### The situation in Austria

#### *Methodical approach*

In order to obtain a quantitative view of the situation of women researchers in Austria in all three research sectors (university, non-university, and Industrial research), we had to rely on data material from different sources, which were not always very revealing.

Universities are obliged by law to collect gender-related information on their staff: each year, the Federal Ministry for Education, Science and Culture (BMBWK) publishes relevant data in its statistical handbook, such as, for instance, the number of women professors and assistant professors. The heterogeneous nature of the non-university sector, however, renders the collection of relevant data more difficult. Papouschek/Pastner (2002), who studied the careers of women scientists in non-university research, described the data situation as unsatisfactory: "Eventually, the search for gender-specific data becomes an almost impossible task" (*Papouschek/Pastner*, 2002, p.31). Since 2004, quite comprehensive gender-specific data material on non-university research institutes in the science, engineering and technology sector have been available ("Gender Booklet", also see below). Unfortunately, research institutes in the humanities and social science sectors still lack such a systematic classification. In the industrial research sector, the survey on "Research and Experimental Development in the Business Enterprise Sector 2002" by Statistics Austria delivers gender-specific data on the use of women human resources in the surveyed companies.

### *University research*

In the study year 2002/ 2003, 51.3 % of those who graduated from Austrian universities were women. The highest percentage of women graduates (71.4 %) was registered at the University of Veterinary Medicine in Vienna. The percentage of women graduates at the Technical Universities of Vienna and Graz and at the University of Leoben, however, is below 20 %<sup>1</sup>. In the same year, the percentage of women among assistant professors was 28.4%. Among professors, the percentage of women is a mere 9%, and at five major universities (Medical University of Graz, University of Linz, Technical University of Vienna, Technical University of Graz, University of Leoben), it is even below 5% (see *BMBWK*, 2004).

### *Non-university research*

As opposed to the university sector, non-university research bodies are not obliged by law to provide a gender-related headcount of their staff. Since 2004, however, the FEMtech initiative has been publishing a "Gender Booklet". This booklet contains data on the number of women and men working in non-university research in science, engineering and technology, on their types of employment (full-time, part-time, fixed-term, etc.), and on gender distribution according to leading positions and income level.

According to the booklet, the percentage of women employed in non-university research in science, engineering and technology in 2004 was 17.3 % of the scientific staff. In leading positions, the percentage is a mere 2.7 %. In contrast, 64.4 % of the staff in administrative positions are women. The gender-related division of labour is obvious: "Women administer and men do research" (see *FEMtech*, 2005).

### *Industrial research*

According to Statistics Austria, the percentage of women among research staff in Austrian enterprises in 2002 was 14.4 %. In general, the percentage of women in research staff is higher in the service sector (19.8 %) than in manufacturing companies (12.3 %). The pharmaceutical industry is the only manufacturing sector with a relatively high percentage of women. In this sector, 48 % of the staff in R&D are women. The percentage of women in R&D significantly depends on the respective staff category: While the percentage of women in "other support staff" and "higher qualified non-scientific staff" is 31.7 % and 18.3 % respectively, the share of women among "scientists and engineers" is only 9.7 %. This figure has increased only insignificantly since 1998 (see *Statistics Austria*, 2005).

### **The situation in the EU**

In 2003 the European Commission, published a report called "She Figures 2003 – Women and science statistics and indicators", containing gender data on the percentage of women in science and research in all Member States of the European Union.

Apart from major discrepancies between countries, differences also exist within individual countries, universities, companies, and the public sector as to the number of women working in science and technology<sup>2</sup>. EU data material from 1998, however, shows that Austria ranks second from last in a comparison of university sectors of different countries. In the business enterprise sector too, Austria (9 %) is well below the EU average of 15 %. Only the public sector shows a more positive picture. At 32 %, Austria is slightly above the EU average of 31 %. Apart from the differences

between women and men in the three sectors, a horizontal (qualification) and a vertical (hierarchy) segregation was also observed. Across Europe, women are less represented in engineering: In 2002, the average percentage of female university graduates in these studies in the 25 Member States was 25 %. The higher the hierarchy level, the lower the "feminisation ratio": in 2002, the average number of women among senior academic staff (Grade A) in the EU-25 was 14 % (see *European Commission*, 2005).

### Gender and Excellence

The situation of women in the science world is frequently explained as the "leaky pipeline". This term is used to describe the fact that the percentage of women decreases with every level of career in science: "The system is losing women scientists and researchers". The situation in Austria illustrates this phenomenon. Although 50 % of the graduates are women, less than 10 % of professors or scientists and engineers in industrial research in Austria are women.<sup>3</sup>

What are the main reasons behind this? What prevents women from entering and remaining in the science and research system? A possible approach identifies the reasons in the assessment of scientific excellence, which entails a series of disadvantages for women. This assessment in particular, however, is vital in connection with the recruiting process in the science world, since it is considered a prerequisite for professional recognition by colleagues, for appointments, and for the awarding of grants. For a long time, sociological studies of the recruitment processes have been holding the

view that assessment and rewarding of scientific achievements was only possible based on performance rules and using peer review procedures. According to this opinion, the "ideal" researcher exclusively pursues the institutional objective of creating "true" knowledge. Recent studies, however, have pointed out that the rules within performance-related recruitment processes in the science community contain exclusion and discrimination processes that can have a negative impact on the careers of women. These systemic processes render access to the system more difficult for women and members of disadvantaged groups. According to Bourdieu, these processes are part of the "power struggle" for the limited number of vacancies in the scientific community (see *Leemann*, 2002).

Studies by Birbaumer/Wagner (2001) dealing with the situation of women in well-funded Austrian research and technology development programmes, and by Allmendinger (2000), who examines the low number of women scientists at the Max-Planck Society, reveal such systemic processes by describing the professional careers of women scientists and researchers. Women, for instance, are very often assigned administrative and organisational tasks. As a result, however, they lack the time for their own scientific work and career. Over 50 % of the women interviewed at the Max Planck Society reported having experienced discrimination such as, for instance, sexist language (even from people in high positions), a lack of invitations to scientific congresses, or prejudice in recruitment linked to possible pregnancies. The resignation rate at the Max Planck Society is 21 % higher among women than men. This

"cooling out" already sets in during doctoral studies, and is accompanied by a "feeling of not being wanted".

Apart from such direct disadvantages within their own research institution, however, women can also be discriminated against by indirect processes – especially by those relating to the assessment of scientific excellence. A renowned study by Wennerås/Wold (1993) examined the evaluation procedure of the Swedish Medical Research Council. The authors found out that the chance that a post-doctorate position will be given to a male applicant is twice as high as with a female candidate, which may be attributable to nepotism and sexism in the assessment of female applicants. Project applications received a more positive assessment when the application was filed by a man, and when the applicant had a personal relation to a member of the peer review committee. The authors concluded that the bodies assessing scientific excellence not always fulfil their obligation to act objectively and without prejudice.

The publication of this study led to similar studies in the Netherlands. The Dutch analysis focused on the success rate of male and female applicants in the most important bodies responsible for awarding research grants. This analysis also revealed that women and men with an equal background receive different ratings. Men are given excellent ratings far more often than women.

Further studies pointed out mechanisms and factors that have a negative impact on the assessment of scientific excellence of women within the scientific establishment and may prevent the equal treatment of women and men in science and research. In short, further decisive factors may include the following.

- *Limited access to informal networks* that consolidate power positions and serve as important information channels. Such networks also exist within organisations. According to Lind (2004), the high significance of informal networks in appeal procedures and the dependence of their career on the support of persons at higher positions were shown to be a structural obstacle for women scientists. In particular the lack of integration in reputation-building networks and of the willingness of potential mentors to invest in the scientific careers of women seem particularly significant.
- *Women are underrepresented in the editorial boards* of renowned scientific journals and in other relevant decision bodies (research councils, assessment bodies, etc.). According to the ETAN report (Osborn et al., 2000) women are clearly underrepresented in such "gatekeeper" positions throughout Europe.
- *The atypical careers of women* caused by, e.g. part-time employment, short-term contracts, limited mobility due to family obligations, or child care. Compared to male scientists, women have a delayed career that may cause difficulties in connection with the formal criteria of promotion programmes, although some programmes have increased the age limit for women scientists and researchers with children.
- *Fewer publications than men:* Studies have shown that women publish fewer scientific papers per year. According to most recent studies, however, this cannot be clearly attributed to child care obligations - on the contrary: A study in the United States showed that women with children are equally or even

**Table 1** Summary of selected promotion programmes

responsible ministry	promotion programme	duration	short description
BMBWK	> node <„new orientations for democracy in Europe“	2002-2006	Promotes research projects in connection with the European integration process and the future of democracy in Europe.
	GEN-AU	2001-2010	GEN-AU is the programme for the promotion of genome research in Austria.
	Austrian Landscape Research	1995 - 2003	This landscape research programme aims at developing scientific principles for the sustainable development of Austrian landscapes and regions.
BMVIT	Austrian Science Fund (FWF)	ongoing	The Austrian Science Fund is Austria's central body for the support of basic research. It is equally committed to all branches of science.
	Impulsprogramm AplusB	2002- 2013	The aim of this structural action programme by FFG (Austrian Research Promotion Agency) is to sustainably increase the number of innovative, technology-oriented start-ups in the academic sector by creating "incubator" centres.
	Kplus	1998 - 2009	Competence centre programme for the improvement of collaboration between science and business. Kplus centres are research facilities created for a limited period of time (7 years), consisting of at least five enterprises and universities or non-university research institutes.
	Thematic Programmes	variable	These include 16 programme series on the topics of environment and energy mobility and transport, information and communication technology, aviation and aerospace, and life science.
BMWA	Protec 2002+	2002 - 2006	"Support of technology transfer" aiming to trigger innovation in small and medium-sized enterprises, consolidate their R&D activities and increase their R&D capacities.
	FFG Basic Programmes	ongoing	"Classic" promotion by the former Austrian Industrial Research Promotion Fund (FFF). Promotion of innovative, economically viable research and development projects mainly performed by enterprises.
	CD - Laboratories	since 1989	Bridge between basic research and industrial application through the creation of laboratories established by scientists in collaboration with the business world.
	Kind and Knet	1998 - 2004	"Industrial Competence Centres and Networks" are research and transfer facilities managed by industrial enterprises or consortia. Their aim is to improve collaboration between science and business.

Source: BMBWK, BMVIT, BMWA, FFG, FWF

more productive than women without children. Instead, the fact that women publish less can be attributed to less financial and practical support by their mentors, department directors, etc., and to the higher burden of administrative activities. Studies in the United States have also shown that, although women publish less than men, their work is cited more frequently than that of men.

### **Participation of Women in Research and Technology Promotion programmes in Austria**

The previous chapters established that the overall percentage of women in science and research is very low. Moreover, a horizontal (qualification) and a vertical (the higher the hierarchy level, the smaller the number of women) segregation was identified. Since the measurement and assessment of scientific excellence is decisive for the allocation of grants, we shall now examine the participation of women in research and technology programmes in Austria. For this purpose, we have selected various support programmes by the Federal Ministry for Education, Science and Culture (BMBWK), the Federal Ministry for Economic Affairs and Labour (BMWA), and the Federal Ministry for Transport, Innovation, and Technology (BMVIT). Table 1 on the following page contains a short description of these programmes.

Table 2 shows the percentage of women in the projects funded by each support programme. We also examined whether these support programmes have already been evaluated and, strictly speaking, whether this evaluation took consideration of the gender aspect.

It is conspicuous that the percentage of women in >node< and Austrian Landscape Research is

far higher than in all other support programmes. One of the reasons could be that gender mainstreaming is an explicit promotion objective in the support programmes set up by the Federal Ministry for Education, Science and Culture.

In the programme GEN-AU, the promotion of women in high-level research is a secondary objective. The percentage of women in leading positions, however, does not exceed 11.2 %. As to the scientific staff, reliable data will only be available after conclusion of the projects. The Austrian Research Fund (FWF) currently collects data on the percentage of women only in some of the projects it supports. It should be noted, however, that there are two women support programmes within the FWF<sup>5</sup>. Only one out of the 9 impulse centres currently operated by the Impulsprogramme AplusB is headed by a woman. The percentage of women among project leaders and scientific staff is 14 % in all the Thematic Programmes organised by the BMVIT. In view of the distribution according to the project category of the Thematic Programmes, the majority of women (45 %) are employed in basic research (see *Schrattenecker et al*, 2004). Approximately 15 % of those occupying executive level positions in the competence centres run by Kplus are women. This percentage is slightly higher (21 %) among the scientific staff. In contrast, the percentage of women in leading positions in Kind/net centres is nearly 4 %, and 13.3 % of the scientific staff. The share of women in leading positions is also very low in the CD laboratories: Only one laboratory out of 37 is headed by a woman. No data was available for protec 2002+ and the FFG Basic Programmes at the time of the survey. Nevertheless, the issue of gender is part of the ongoing evaluations in both programmes.

**Table 2** Current data on Austrian support programmes<sup>4</sup>

responsible ministry	promotion programme	project staff (percentage of women)		consideration of gender aspects in programme evaluation
		leading positions	scientific staff	
BMBWK	> node <	35.0 %	52.0 %	intended
	GEN-AU	11.2 %	-	yes
	Austrian Landscape Research	-	47 %	yes <sup>4</sup>
BMVIT	Austrian Science Fund (FWF)	-	-	intended
	Impulsprogramme AplusB	11.1 %	-	yes <sup>4</sup>
	Kplus	14.8 %	20.7 %	yes <sup>4</sup>
	Thematic programmes <sup>1</sup>	14.0 %	14.0 %	yes <sup>4</sup>
BMWA	Protec 2002+	-	-	yes
	FFG Basic programmes	-	-	intended
	CD - Labor	2.7 % <sup>2</sup>	21.3 % <sup>3</sup>	yes <sup>4</sup>
	Kind/net	3.9 % <sup>2</sup>	13.3 % <sup>3</sup>	intended

Source: BMBWK, FEMtech, Gender Booklet.

<sup>1</sup> Data was collected on 15 out of 19 programme series.

<sup>2</sup> 1<sup>st</sup> and 2<sup>nd</sup> executive level and principal scientists.

<sup>3</sup> Junior and senior scientists, or, in the case of CDG laboratories, post-doctoral, doctoral, and undergraduate students.

<sup>4</sup> Within the framework of the programme evaluation the proportion of women in the projects funded has been assessed, an analysis of gender-aspects, however, was not an explicit component of the programme evaluation.

As opposed to the support programmes of the BMBWK, the majority of BMVIT programmes focus on research in science, engineering and technology. The structurally low percentage of women in this area is reflected in the number of women working in the programmes. As mentioned above, however, the low percentage of women cannot be explained by this fact alone, but on the basis of several factors pointing at structural disadvantages for women. In some of these selected programmes, support focuses on collaboration with the business world (e.g. Kind/net and CD laboratories). In such collaboration schemes, networks are regarded as important placement channels.

Besides, the necessary financial means must be provided for this purpose – where men enjoy a "confidence advantage". These results in an even greater disadvantage for women, which is reflected in the very low participation of women in leading positions of the projects funded there.

So far, an explicit consideration of gender aspects in programme evaluation extending beyond the mere collection of gender data on project applicants or project leaders and staff, was only observed with the Interim Evaluation of the GEN-AU programme (BMBWK) and the current Interim Evaluation of the protect 2002+

programme (BMWA). As far as >node< is concerned, an explicit consideration of gender aspects is foreseen in the ex post evaluation to take place at the end of programme duration. The Austrian Science Fund and the FFG Basic Programmes have now started with the assessment of the share of women among their project takers, which shall serve as a basis for their regularly conducted programme evaluations. With the Kind/net programme the gender aspect shall be considered after the new constitution and the respective evaluation of the programme.

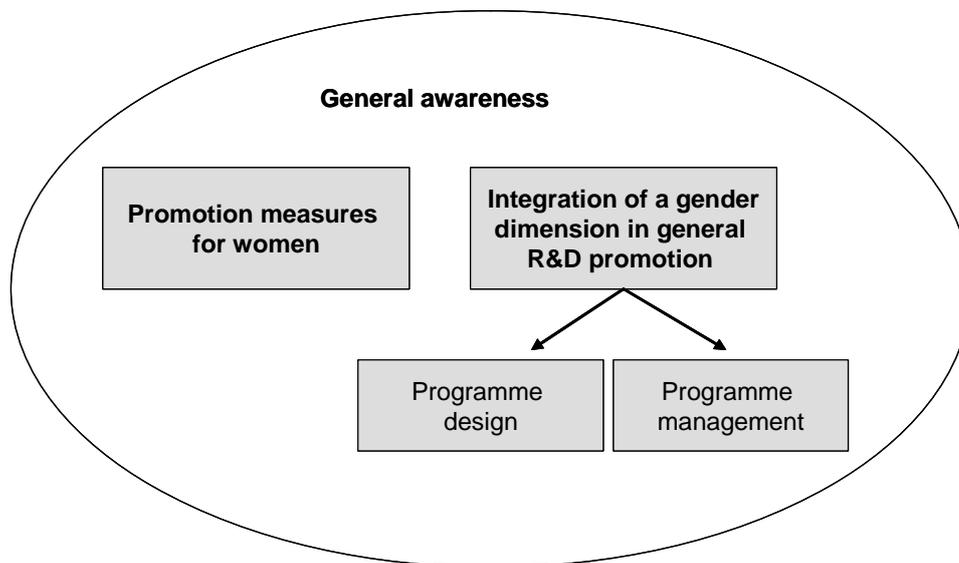
Generally, in Austria a quite well elaborated evaluation culture has developed in the past years and evaluations have become a fixed component of support policy, particularly in the field of research and technology. An explicit consideration of gender aspects in these evaluations seems important in so far, as evaluations can make an important contribution to the analysis of the effectiveness of gender-specific measures. This seems important especially during the initial phase of integration of such measures in existing or new programmes (see next chapter), as partly new fields are concerned - at least in Austria. This requires an intensive examination of the subject at the part of the evaluators as well as possible adjustments or additions to the evaluation instruments.

### **Solution Approaches**

The factors that constitute a disadvantage for women researchers often create more difficult starting conditions for the scientific career of women than for men. The analysis of the percentage of women in selected Austrian research and technology promotion programmes shows a low participation of women (with the exception of social sciences and humanities) in funded research projects. The rate of awarded grants for projects submitted by women is not significantly lower.<sup>6</sup> Nonetheless, the above figures point out the necessity to implement measures to increase the participation of women in Austrian research and technology promotion programmes, not only within individual programmes, but across the board. On the one hand, in order to reach the objective of a society with equal opportunities for both genders and, on the other hand, in view of the urgent need to exploit all the human potential towards the development and maintenance of an innovative and competitive scientific community. The following will describe solution approaches that can contribute to a higher participation of women in Austrian research and technology promotion programmes. Two types of solution approaches will be examined:

- (1) The introduction of promotion measures for women
- (2) Increased implementation of gender mainstreaming in existing and future programmes.

**Figure 1** Overview solution approaches



**General awareness promotion**

The solution approaches are linked to the promotion of a general awareness on the situation of women in science and research. An important step in this direction is to make people more sensitive towards the need to abandon stereotypes that girls and technology are incompatible. Existing initiatives such as, for instance, "FIT – Frauen in die Technik"<sup>7</sup> (more women in engineering) or MUT – Mädchen und Technik<sup>8</sup>, (girls and engineering), which aim at facilitating access to technical studies for girls and young women in school, constitute appropriated projects. This general awareness promotion should also be supported on university level. Since the adoption of the University Act in 2002, all universities must set up coordination agencies for gender studies, women research, and women promotion. This will allow the introduction of qualification programmes for young women scientists and researchers at a relatively early stage. The curricula in technology and natural science stu-

dies can also introduce gender approaches such as the best-practice model currently applied at the University of Applied Sciences in Kiel, Germany, called "Gender in Teaching: Developing and testing gender modules for the curricula of the University of Applied Sciences in Kiel"<sup>9</sup>. In view of the continuing low participation of women in engineering studies, measures for this sector are currently being tested. Moreover, networking platforms are an important instrument for lobbying on a national and international level. An example for this is the creation of "European Platform of Women Scientists" based in Brussels, which supports several networks for women scientists and researchers, and acts as a lobbyist in the respective European policy debates.

**Promotion focusing on women**

Promotion measures focusing on women include, for instance, programmes that are exclusively targeted on the group of "women in science and research". Such programmes can

be implemented either by the promotion management agencies, directly by a ministry, or by other institutions.

An example for women promotion programmes is the interministerial fForte<sup>10</sup> initiative for the promotion of women in research and technology, in which specific activities are carried out by each participating ministry (BMBWK, BMVIT und BMWA), which address different target groups according to their respective tasks. For example, whereas the measures introduced by the BMBWK primarily focus on the school and university systems and scientific research, FEMtech-fFORTE addresses Industrial and non-university research and advanced technical colleges and technology programmes run by the BMVIT. w-FORTE (BMW A measures) focuses on target groups such as women who want to start up companies, women inventors, or women who want to resume their scientific career. A new programme in fFORTE academic is, for instance "Exellencia" that aims at increasing the percentage of women professors. Universities receive a financial contribution for each professor chair they occupy with a woman, thus increasing both the existing number of professor chairs held by women and the percentage of women among professors.

Other examples for women promotion programmes include the Laura Bassi centres currently under discussion, the Hertha Firnberg Programme or the Elise Richter Programme by FWF, and the Gabriele Possanner National Prize by the BMBWK. The aim of Laura Bassi centres is to enable women to head cooperative research facilities at the interface between science and business. The Hertha Firnberg Programme addresses highly qualified university graduates and aims at increasing the

scientific career opportunities for women at universities, while the Elise Richter Programme focuses on women scientists pursuing a habilitation, and aims at promoting future women professors in Austria. The Gabriele Possanner State Prize will be awarded by the BMBWK to persons in the research and teaching community whose scientific achievements promote gender equality. A very interesting initiative from Germany for the promotion of women in science and research is, for example, the Christiane Nüsslein-Volhard Foundation, which provides financial support and household help for talented women with children<sup>11</sup>.

### **Integration of the gender dimension in general R&D promotion**

When *implementing gender mainstreaming* in existing (and future) promotion programmes, it is necessary to integrate the equal treatment aspect in all measures. In this context, the BMBWK has issued a guideline called "How does Gender gain a Footing in Research?"<sup>12</sup> Implementing gender mainstreaming should focus in particular on two aspects: programme design and programme management.

The following measures could be introduced in **programme design**:

- *Review of the gender relevance of programme content:*

Does the topic have anything to do with gender? This is the first crucial question to be considered in planning a research programme or in awarding a project. The answer determines whether or not a gender-related dimension will have to be added to the content of a programme or project. It is of prime importance to judge carefully the potential "gen-

der relevance” of a programme or project, so that the research topic is not rashly dismissed as “neutral” and of no significance to the situation of women. The gender relevant objectives should be reflected in the content of the programme as well as in the supported projects.

- *Introduction of target quotas/minimum quotas for women scientists:*

An example of a good practice for increasing the percentage of women in a promotion programme is the programme for Austrian Landscape Research at BMBWK (1999-2002). In its landscape research programme, the BMBWK explicitly pursues the promotion of women as a social objective. During the second phase of the programme (KLF2), applicants had to state how many man months (in %) were performed by women, the latter's qualifications, and the work they were assigned. The minimum quota for women scientists was 30% of the man months, while the target quota was 50 %. If the target quota had been reached, the applicants were allowed to define an additional application for a modular basic research part that was to be assigned to women scientists. These quotas were to serve the qualification of women scientists and thus concerned only scientific activities. Compliance with the quota was verified and had to be documented in the intermediate reports. This promotion focus helped increase the percentage of women scientists in the KLF2 modules from 30 % to 45 %<sup>14</sup>.

- *Implementation of specific calls*

A relevant example is the FEMPower 2004 call by ZIT (Centre for Innovation and Technology), which is the technology agency of the Vienna Business Agency (WWFF). The objective of the FEMPower 2004 call was to increase the per-

centage of women in research carried out by Viennese enterprises. The call specifically promoted innovative technology research projects in which women made substantial contribution.

- *Special coaching for women scientists*

This service can be used specifically to encourage women to increase their participation in tenders or to support the careers of women researchers and scientists. Such a coaching service is already available at various universities (such as the Universities of Graz and Salzburg) in connection with a qualification programme for women scientists. In the context of the promotion programme fFORTE, the BMBWK offers „fFORTE-Coachings“, which should motivate women and qualify to participate in national and international research networks and to submit projects to the technical-scientific program lines of the 6<sup>th</sup> European Framework Programme.

- *Networking and mentoring*

The FEMtech programme organises networking meetings for the establishment of contacts and the exchange of information that are relevant for the topic of "women in research and technology". Exchanging experiences and learning from the experiences of others helps promote the transfer of know-how and raise awareness within the network. Mentoring can serve as an active networking instrument: successful women in science, research, and business support young graduate women scientists as mentors or in establishing contacts with the business world.

What can be done in **programme management** in order to take consideration of the gender dimension, regardless of whether or not the promotion of women is a secondary/auxiliary objective of the respective programme?

- *Gender-neutral language in application documents:*

This is already a good practice at the BMBWK, and has been implemented in several programmes by the BMBWK, including the two programmes mentioned above, > node < and GEN-AU. The FEMtech-Initiative has developed a "Guide on gender-mainstreamed language in BMVIT technology programmes"<sup>13</sup>.

- *Women in evaluation bodies:*

This is important in order to avoid a gender bias in the decision making process for future research topics and fields. This will give women a saying in political decision-making and make qualified women more "visible". The last aspect is important, because these women can act as role models for others. Some programmes already make sure that women are also represented in the jury. Various women scientist databases like, for instance, the FEMTech women expert database, can be of use in the process.

- *Examination of peer review procedures and of the corresponding criteria:*

As already mentioned, studies have shown that peer review procedures are not always as objective and fair as they are believed to be. Apart from nepotism and sexism, e.g. age limits for promotion or a strict focus on the number of scientific publications may also contain implicit disadvantages for women. Therefore, the peer review procedures in all promotion programmes need to be examined in this respect.

- *Introducing the gender aspect in the evaluation of programmes:*

Introducing the gender aspect in the evaluation of programmes is absolutely relevant for examining the effectiveness of various measures

or the participation of women in various promotion instruments. Of course, this requires that the corresponding gender-specific monitoring data are available and that the respective programme organisers have an interest in collecting them.

## Conclusion

Women are underrepresented in science and research throughout Europe. Austria is not an exception to this rule, showing even worse figures than the EU average. Moreover, the participation of women in research and technology promotion programmes is very low. Where promotion programmes do not explicitly integrate the gender aspect in their programme definition and management, the maximum percentage of women in the scientific staff is slightly above 20 %. Women are hardly represented in the leading positions of these promotion programmes. The majority of research and technology funds in the sector of sciences, engineering and technology have only a marginal effect on women.

The availability of a relevant data pool constitutes an important prerequisite for the qualitative and quantitative improvement of the situation of women in science and research. Most Austrian research and technology promotion programmes are only just beginning to implement a gender-specific monitoring system. A thorough systematic collection of gender data on project applicants, project staff on various levels (planning, project collaboration) and, where necessary, on the members of the respective decision bodies would not only contribute towards greater transparency in the science community as regards the participation of women in science and research, but would

also create the necessary basis for the corresponding (programme) evaluations, which can (or should) in turn provide an important input as to the effectiveness of gender-specific measures. Of course, this requires that the evaluation culture on a programme (and institution) level develops a certain sensitivity towards the gender issue and adjusts or enlarges its scope of methods and instruments accordingly.

After all, a science and research system that offers equal opportunities to both genders helps increase the attractiveness of a research location: OECD and European Commission studies show that more scientists are required in order to reach the Barcelona target of a 3 % research quota. It will not be possible to reach the Barcelona target if more highly qualified women than men continue to abandon their scientific careers or to have more limited access to science and research, especially against the background of stagnating growth in the number of university graduates. Hence, the future of European science will depend both on excellent research and on an increased participation of women in the scientific community.

**Notes:**

<sup>1</sup> This corresponds to the percentage of women taking technical studies (architecture, regional planning, civil engineering, mechanical engineering, electrical engineering, technical-natural sciences) during the winter semester 2003, without any distinction based on university (see BMBWK 2004).

<sup>2</sup> Data quality, however, varies significantly between sectors, since surveys are carried out less

often and with a smaller set of questions in the business environment and in non-university research than in the state or university sector

<sup>3</sup> Yet increasing focus is being placed on cumulative explanation models in an effort to explain the problems encountered in the careers of women scientists and researchers: obstacles that are relatively small and seemingly manageable eventually cumulate and become an almost insurmountable barrier (see Allmendiger et al., 2000 in Lind, 2004, p.128).

<sup>4</sup> Access to the data was given through the "Gender Booklet 2004", which has been publishing important surveys on gender distribution in non-university research in science, engineering and technology for the last two years. The FEMtech study (2004) showed the percentage of women in the thematic programmes run by the BMVIT. In some institutions (BMBWK, FWF, FFG) data was obtained through direct requests.

<sup>5</sup> Hertha Firnberg Programme and Elise Richter Programme

<sup>6</sup> The data material available does not suffice to make any clear statements on this issue. It would certainly be useful to carry out such studies both horizontally and vertically for all or certain parts of the promotion range so as to obtain detailed and differentiated data for further work.

<sup>7</sup> see [www.fit.sid.at](http://www.fit.sid.at)

<sup>8</sup> see [www.mut.co.at](http://www.mut.co.at)

<sup>9</sup> see [www.frauenforschung.fh-kiel.de/Ingelore/Index.htm](http://www.frauenforschung.fh-kiel.de/Ingelore/Index.htm)

<sup>10</sup> see [www.fforte.at](http://www.fforte.at)

<sup>11</sup> see [www.cnv-stiftung.de](http://www.cnv-stiftung.de)

<sup>12</sup> see [www.bmbwk.gv.at/medienpool/12370/gmforschung.pdf](http://www.bmbwk.gv.at/medienpool/12370/gmforschung.pdf)

<sup>13</sup> see [www.femtech.at/fileadmin/femtech/be\\_images/Publikationen/Leitfaden\\_sprachliche\\_Gleichstellung.pdf](http://www.femtech.at/fileadmin/femtech/be_images/Publikationen/Leitfaden_sprachliche_Gleichstellung.pdf)

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## **Laura Bassi Centres as a New Research Policy Approach**

Supporting co-operative research is a topic of great currency and continues to be a key concern of Austrian research and technology policy. Accordingly, the Austrian federal government is granting massive financial aid to this end. Yet, there are few co-operative research units in Austria where women hold an executive position. The Ministry of Economics and Labour has therefore commissioned the Österreichische Gesellschaft für Umwelt und Technik (ÖGUT) to investigate why this situation persists and which measures need to be taken to change it.<sup>1</sup>

### **Female scientists in R&D**

Recent data on the research policy in Austria provide the following overall view: Within Europe, Austria is experiencing an extremely strong growth dynamics, as evidenced by a rise in the R&D rate from 1.77 % in 1998 to 2.35 % in 2005. In total, the number of persons employed in R&D increased from 20,400 in 1998 to 26,728 in 2002 (each as full-time equivalents), which constitutes a rise of 31 %. In terms of overall research staff, women make up 14.4 %, or 3,837 in absolute figures. Within the scientific staff, the highest-qualified category, however, the female share is only 9.7 % (1,551 women, 2002). In terms of gender equality, Austria statistically ranks among the tailight countries in Europe, which is particularly striking in view of the general research policy

discussion in Europe and the positive dynamic growth of the R&D sector.

### **Disappointing situation in the managerial ranks**

According to the Gender Booklet 2004, only 5.9 % of the manager positions in co-operative research programmes (CD labs, K-ind / K-net and K-plus) are held by women. No woman can be found in the highest salary range. In the supervisory boards, management boards and scientific councils, the female share is between 0 % and 9.8 %. In order to achieve the Lisbon target, the co-operative research institutions are of crucial importance, placed as they are at the interface between science and business. In view of the unsatisfactory balance of female employment in top positions, the question is how women can participate in achieving this target.

### **Top female researchers agree on the reasons**

The low number of female executives in co-operative research is the more amazing, as the study has proved wrong the frequently alleged shortage of women who are both qualified and interested in a manager position. More than 50 highly qualified female scientists in the fields of life sciences and technology have submitted their written interest in managing a co-operative research institute and have actively committed themselves to the discussion. These top female scientists agree that the low number of women trusted with manager positions is not just an "accident".

In the course of several discussion rounds<sup>2</sup> the women pointed chiefly at structural grounds, such as the low transparency of awarding procedures, the current evaluation criteria and

inadequate contacts to industry, all factors contributing to women being at a disadvantage.

- *Awarding procedures*

For the women scientists, a transparent and reproducible awarding procedure is deemed to be a critical step towards ensuring equal opportunities for women and men. A number of scientific studies show<sup>3</sup> that informal procedures using evaluation criteria of low transparency will typically disadvantage female candidates. In addition, evaluations are often swayed by a gender bias that results in women and men being assessed by different performance and qualification criteria.<sup>4</sup>

- *Evaluation criteria*

With the focus on male career patterns, female scientists are subject to structural disadvantages within the selection process. Their career often shows breaks due to interrupted and atypical employment, which also reflects in the lower number of publications in high-quality journals, in a vaguer focus on a research subject and on lower (self- and third-party) attribution of scientific results.

- *Fewer contacts to industry and networking*

A particularly sore point is the insufficient contacts of female scientists to industry. Women do not have the same level of personal contacts to companies and are much more tentatively included in scientific networks. As a result, women are much less represented in selection bodies, have an adequate confidence base with business representatives and are hardly visible in the research and technology scene. The female experts consider that a promotion programme organised by the Laura Bassi Centres of Expertise, with women at the head and combined with an adjustment of evaluation and

awarding procedures to quality criteria, would, in the short to medium term, contribute to improving gender equality.

### **Laura Bassi Centres of Expertise as an element of gender equality**

The discussion rounds very much agreed in their call for a specific programme to tap the potential of women to manage co-operative research facilities. Key cornerstones of the Laura Bassi promotion programme<sup>5</sup> are to safeguard high scientific standards based on international evaluations, a change in the selection criteria and greater administrative support granted to each research centre by the programme management body.

- *Extended quality criteria*

The scientific quality of the research plan remains the key selection criterion. It also includes criteria of excellence from corporate point of view. In addition, an active contribution to increasing the number of female human resources is required. In order to strengthen Austria as a research location in the medium run, career plans must be drawn up for all scientific and technical staff, both male and female, and their implementation secured.

- *Evaluation criteria as the key approach*

A crucial need for change was identified in the field of evaluation criteria. The focus here is on the requirement to evaluate the *future potential of the female managers*, with due regard to atypical career patterns and a wider research spectrum (e.g. more openness towards socio-economic and transdisciplinary research) when this can be exploited in utilising the results in technology development. In addition to evaluating managerial staff, it is also necessary to

consider the competence of the entire research team: flexibility in organisational arrangements, proof of scientific and communicative team qualities guarantee an internationally recognised research performance. As a prerequisite, it is necessary to improve and apply innovative evaluation methods that recognise social competence as an element of a candidate's research potential.

- *Promotion programme with services*

A general desire has been voiced for more support provided through an accompanying programme management in establishing and running research centres (e.g. labour law, patent law), in PR work and in fostering of contacts to industry.

Also supported is a two-step evaluation process by an international jury, with the first step consisting of a short application to be used as a base for the selection process, and a high share of women in the selection body. Transparent evaluation criteria and awarding procedures are perceived as key tools to raise the share of women in executive positions.

Altogether, more than 50 highly qualified female experts have announced their interest in a Laura Bassi Centres of Expertise promotion programme. For top female researchers, such a programme is a key element to accelerate gender equality in research in the life sciences and technology. The experience thus obtained should then be passed on to other programmes. This would also be in line with those targets already envisaged by the federal government in its positioning on the 7<sup>th</sup> EU research programme: *“Europe cannot afford to ignore some of its most innovative ideas only because they sprang from the heads of women*

*researchers who are still systematically and structurally marginalised from European research.”*<sup>6</sup>

**Notes:**

<sup>1</sup> Greisberger, H.; Schrattecker, I.: Konzeptionelle Vorbereitung Laura Bassi Zentrum. Commissioned by the Federal Ministry of Economics and Labour. Vienna 2005, unpublished interim report

<sup>2</sup> The events were organised within the scope of the study "Konzeptionelle Vorbereitung Laura Bassi Zentrum" with gender experts and 40 top female Austrian researchers in life sciences and technology

<sup>3</sup> Wennerås, C., A. Wold: Nepotism and sexism in peer-review. (1997) Nature 387: 341-343.

<sup>4</sup> European Commission: Gender and Excellence in the Making. Brussels. European Commission 2004

<sup>5</sup> Laura Maria Catarina Bassi (1711–1778) was a physicist from Italy and the first female university professor in Europe. The concept of co-operative research centres run by women presented here is thus named after her.

<sup>6</sup> Federal Ministry for Education, Science and Culture: Österreichisches Positionspapier für die Verhandlungen über das 7. EU-Forschungsrahmenprogramm. Vienna 2004, p. 25.

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**Table: EMPLOYEES IN R&D (in full-time equivalents) in 1998 and 2002, broken down by implementation sectors, study sectors, employment categories and gender**

Sectors	Full-time equivalents for R&D, 1998						Full-time equivalents for R&D, 2002					
	Total 1998			Scientific staff			Total 2002			Scientific staff		
	Total	Women	Women in %	Total	Women	Women in %	Total	Women	Women in %	Total	Women	Women in %
1. University sector	8.670	3.104	35,8	5.955	1.346	23	9.879	3.781	38,3%	6.977	1.887	27,0%
2. State sector	2.104	848	40,3	954	289	30,3	2.060	835	40,5%	999	319	31,9%
3. Private non-profit sector	148	74	50,1	90	32	35,5	227	109	47,8%	148	54	36,3%
4. Business sector	20.385	2.915	14,3	11.716	961	8,2	26.728	3.837	14,4%	16.001	1.552	9,7%
• corporate sector	18.527	2.501	13,5	10.931	864	7,9	24.299	3.304	13,6%	14.578	1.355	9,3%
• co-operative sector	1.858	403	21,7%	785	94	11,97%	2.429	533	21,9%	1.423	197	13,8%
<b>TOTAL</b>	<b>31.308</b>	<b>6.941</b>	<b>22,2%</b>	<b>18.715</b>	<b>2.627</b>	<b>14,04%</b>	<b>38.894</b>	<b>8.561</b>	<b>22,0%</b>	<b>24.124</b>	<b>3.811</b>	<b>15,8%</b>

Source: F&E Erhebung 1998, 2004, Statistik Austria, Vienna

The business sector comprises the large corporate sector and the co-operative sector. The latter combines mainly co-operative research institutes (sectoral research institutes) plus Forschungsgesellschaft Joanneum, AVL List GmbH, ARC Seibersdorf research GmbH and the centres of competence. The corporate sector combines private and public companies active in manufacturing and services, including energy utilities and civil engineers

**Michael Binder**

*Head of the Strategy Department  
Austrian Research Promotion Agency (FFG)*

First of all: Excellence is neither male nor female. Despite this, top positions in science particularly in the cooperation between science and industry, are primarily held by men. This could lead to the conclusion that there is a “gender bias” caused by the framework, evaluation processes and areas of focus within this field.

What can a research promotion agency such as the FFG do to address this issue? We aim to contribute to the equality of opportunity in the field of research and technology and this takes place on two levels:

At one level programmes specifically directed at promoting women in education and research address this issue. In Austria, the inter-ministerial initiative “FFORTE – Frauen in Forschung und Technologie” supports women researchers through a variety of measures such as creating career opportunities and facilitating equality of opportunity in scientific and technological fields of work.

This issue is addressed on another level by the fact that gender mainstreaming applies across the board of the FFG’s programme-portfolio. These two levels interact well with each other: i. e. modules developed or lessons learned

within FFORTE-measures may be applied in gender mainstreaming the general RTD-funding programmes.

Within the framework of managing research and technology programmes there are a number of ways in which creating equal opportunities for women can be improved upon. These include: programme design, criteria for the evaluation of projects, accompanying measures as well as means of communication. Here, creating and improving awareness is just as important as the development of measures to support the establishment of relevant networks in field of cooperation science and industry.

We strive to achieve a marked increase in the number of women in positions of responsibility in the funded research projects and in centres of research. Since at present a mere 14 % of project leaders and managers are female, this shows that there is considerable room for improvement.

We are conscious of the fact that we are still in the relatively early stages of developing our activities but we will continue to make improvements to our portfolio with regard to achieving equality of opportunity within the field of research and technology.

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Knowledge as the driver of innovation – the most important single factor in the success of developed economies – makes extremely high demands on human resources. The ARC Group is specifically promoting diversity management under its new 2004+ research and development strategy. By doing so, the group aims to enhance its innovativeness, its operational success, and its international positioning. Diversity@ARC is the name of a package of measures designed to achieve equality of opportunity for both, men and women, the international exchange of research staff, and the optimal integration of older members of staff in the innovation process. Although equal importance is attached to each package of measures, the main focus of this article is on the group's gender mainstreaming initiatives.

The ARC Group's "All-round Excellence" grants programme encourages top ARC research staff to spend time abroad, and also makes it possible for highly qualified researchers from other countries to work for the group. A total of 350,000 euros – split into several tranches – have been earmarked for this purpose in the years 2005 / 2006. Four ARC experts were selected in the first two rounds of this scheme. Four research staff (one woman and three men) members were chosen for Australia's CAST research center, the University of Wisconsin, the UCLA's Harbor Medical Center in California and the Scuola Superiore Sant'Anna in Italy, whilst

two American professors from GeorgiaTech University and the Massachusetts Institute of Technology (MIT) were able to spend time at ARC. A total of 150 international scientists currently work for ARC, 71 of them on service contracts.

In support of its "All-round Excellence" program, ARC is also participating in the Austrian Science Talks organized within the framework of the Austrian Ministry of Transport, Innovation and Technology's brainpower austria programme, which matches up top researchers currently living and working abroad with attractive research jobs in industry, non-university research and science in Austria. Following the first round in 2004, the Austrian Science Talks were continued in the fall this year with events in San Diego and New York. Some 120 Austrian researchers from top research establishments like MIT, Berkeley, Harvard, Stanford and Yale took part in the Science Talks. ARC used these events as an opportunity to position itself as a leading employer and innovation driver in the North American scientific community. Joint ventures with the Los Alamos National Laboratory and the Scripps Institute for Oceanography are one of the outcomes which ARC hopes to achieve. A customized one-week programme for ARC high potentials on the subject of "innovation and technology transfer in the light of the San Diego Region" is also being planned together with the University of California San Diego in summer 2006.

The aging programme – the latest initiative in ARC's diversity management scheme – is aimed at using the knowledge and experience of older members of the scientific staff with increasingly dynamic research processes and a rapidly changing environment. A study is currently being carried out into "aging: identification of best practices in managing older specialists in knowledge-based organizations with changing

strategies and technologies." This study is being carried out by ARC in collaboration with Vienna University of Economics and Business Administration. The preventive, curative and awareness measures to be implemented at the beginning of 2006 will be derived from an analysis of the results.

Numerous surveys by the European Commission have revealed that women are still underrepresented in the field of research throughout Europe. The same picture is also reflected in Austrian non-university research establishments, as illustrated by the Gender Booklet 2004 – an initiative by Research Austria and the Austrian Ministry of Transport, Innovation and Technology. Thanks to the "WiR – Women in Research" project introduced in 2004, ARC has been successful in focusing attention on this imbalance and implementing appropriate activities.

The FEMtech projects "WiR - Women in Research" are designed to anchor equality of opportunity in ARC's management culture. Ever since the year 2004, their objectives have been defined in four programme lines. ARC borrowed from best practice models from industry, science and non-university research so as to integrate gender mainstreaming in its processes and procedures. A new network of female research staff based on a peer mentoring system has brought women together at ARC and enabled them to establish links with external groups.

The workshops organized by the network on themes proposed by the participants probe the needs of women with a view to implementing the measures elaborate in the process. The third programme line consists of gender workshops with management executives. A common understanding of the concept of equality of opportunity is being elaborated with the assistance of external consultants. The film "Women in Technology" produced in collaboration with Telekom Austria is designed to help overcome the traditional understanding of women's roles by publicizing the achievements of successful women researchers. The programme of measures is rounded out by process optimization, including gender-correct data acquisition, reporting and staff selection. In 2006, the group has plans for a customized course for female high potentials in cooperation with the Krems Danube University, measures to improve the work-life balance, and a cross-mentoring programme. These measures aim not only to increase the proportion of women in research, but above all to enable female research staff to contribute their know-how and their abilities even more effectively to the research process.

The overall proportion of women on the payroll of the ARC research companies has been increased from 21 to 24 % since 2003, the proportion in management positions from 11 to 14 %. In the year 2004, women accounted for around 16 per cent of scientific research staff.

The objective of all these measures is to make gender mainstreaming an integral part of ARC corporate culture and the relevant administrative processes in the long term, and to increase awareness so as to create an innovative and creative environment for both men and women. This is entirely in line with the motto: "the equality of the different".

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**Gerhard Kratky**

Secretary General  
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The following comments can be made from the point of view of the Austrian Science Fund FWF:

1. Excellence is not a question of gender! Equal performance of female researchers is clearly demonstrated by the ex-post evaluation of FWF-funded research projects: the share of projects rated as excellent after completion, which are led by women, is as high as for projects led by men.
2. The evaluation system applied by the FWF does not reveal any gender bias. The approval rate of the projects submitted by women is nearly identical as for projects proposed by men, in some programmes even higher. This situation, which is traceable over several years, is in strong contrast to the results published by Christine Wennerås and Agnes Wold, in "Nepotism and Sexism in peer-review". One reason for this diverging and highly welcomed situation might lie in the fact that the FWF – differently to the Swedish example – requests peer reviews exclusively from foreign scientists. Thus, men-dominated insider deals within the country are avoided
3. Nevertheless, the gender situation is dissatisfying. Depending on the funding programme, the share of projects submitted by women ranges from 17 % to 35 %. This low share is exclusively due to the low number of applications by women. Here, analysing and reforming measures should be taken. However, it should be noted that even the lowest rate of

women participating in FWF-programmes is still twice as high as the share of female professors at the universities, which is 9 %.

4. Moreover, the FWF has developed a concept to overcome one of the most urgent problems of many female scientists: the financing not only of the direct costs of a research project, but also of the childcare for female applicants and collaborators of FWF-projects. This will contribute to making the re-entry for women into the scientific career after the birth of their children as attractive and easy as possible, since in many scientific disciplines an interruption of several years could mean the final end of a successful scientific career and thus the loss of scientific human potential. Unfortunately, until now it has not been possible to raise the money needed for realising this idea. The FWF stays tuned!

5. From my point of view the general political course should also be corrected. The low limit (14.600 € per year) of money, which can be earned whilst consuming the relatively high child allowance money has caused many women to refrain from a steady professional career.

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In 1990 the Ministry of Science and Art enacted a law (regulation) to launch the principle of affirmative action within the department. As a result in 1991 all Austrian Universities installed so called „Working Groups for Equal Treatment“ („Arbeitskreise für Gleichbehandlungsfragen“, Abb. AKG). Their scope was „to counteract on discrimination by virtue of sex/gender and to advise and support the members and decision-makers of the Universities in questions of equalization as well as promotion of women.“ Since then, the AKGs have contributed to all engagement procedures.

The engagement practices at the Universities differ from common personal recruitment procedures at companies and in industry. While the admission of new staff is usually handled by human resources offices, the Universities at the highest level of positions (the tenure track professorship) still follow the principle of “self-recruitment.” Tenure professors are chosen by “Appointment Boards” (“Berufungskommissionen”) that consist of professors (half of the board members), mid-level faculty (a quarter of the board members) and students (also a quarter of the board members). There is no continuity in the work of these boards as for each vacant professorship a new board is established. In order to meet this difficult situation, the AKG was given a seat in each board.

*The regulation in detail*

The regulation for affirmative action included the right for AKG representatives to receive all application documents, to take part in all meetings of the appointment-board, to speak there and to file applications but *not* a right to vote in the final election. The most important right was the right for remonstrance. When the representative of the AKG saw clear evidence for discrimination of a woman, then she could block the procedure with a veto and appeal to the next instance (until 2004 the Ministry of Science and Education, since then the newly installed Arbitration Boards at each University). Other important regulations for the work of the AKG- representative were:

- the obligation to invite *all* women, who met the advertisement for the professorship in principle – regardless whether they were in the first evaluation procedures considered to be promising candidates or not.
- the principle of “positive discrimination”, i.e. the regulation that in case of equal qualification a woman had to be chosen prior.
- the introduction of a proportion – which was interestingly set at 40 % instead of 50 % - that figured as the level to reach. Until women are not represented at 40 % of the university professorships the affirmative action will go on.

*Looking back: fourteen years of affirmative action*

The intention of the regulation by the Ministry of Science was to create transparent, traceable and substantiated staffing decisions. In the beginning all parties involved in the Appointment Boards were highly uncertain how to deal with

the new norm of equalization. While the representatives of the AKG started for this pioneers work other groups within the universities focused their efforts on how to abolish or undermine these efforts. Very quickly it turned out that some loop-holes could be found by those who had vital interest in other than female candidates. Various boards used tricky argumentations and procedures to undermine the intention of the legislator. In the period described here, the regulation was reformed twice in order to close the loop-holes and optimize the regulation.

From the perspective of the Ministry of Science and Education the whole process went on slowly and seemingly ineffective. Many complaints were filed and the Ministry was involved in rising numbers of conflicts. At the same time the number of female professors did not rise significantly.<sup>1</sup>

#### *Quantitative results*

In 1991 there were two (2!) female professors amongst 170 male colleagues at the Vienna University of Technology (TUW), this equals 1.17 %. None of them held a chair (“Ordinariat”) but they were both associate professors. In summer 2004 the TUW had 10 female professors among 168 male professors, this is a percentage of 5.95 %. Taking the absolute numbers we have nowadays five times more female professors than before the affirmative action started. This could be seen as a great achievement. At the same time this means that it will take another 130 years until we have 50 % female professors – provided that the rate of the change stays the same.

#### *Qualitative assessment*

While the results of this action give reason for several discussions pro and contra the regulation a qualitative perspective is able to reveal some sustainable changes. The work of the representatives of the AKG has significantly changed when compared with the first years of regulation. All represented groups have learned that it is no longer a “gentleman’s delict” to make “funny” jokes on female applicants. Substantially unfair comments on the family situation or age and occupational career of female applicants at least occur very rarely today. While there is still a proportion (maybe the majority) of University members that see female professors with reservation there is a (growing) number of people (including male professors) that are interested in the promotion of women and support the work of the AKG representatives actively.

#### *Future prospects*

Taking the latest numbers of female professors at TUW a dramatic development becomes apparent. At the end of the year 2005 only 6 out of 10 female professors will remain. While only one of them retires due to her age the remaining three leave for better positions in various international organizations and institutes. This reveals a systematic problem with the equality campaign: it has only been able to bring exceptionally excellent women to the TUW – and these are in an increasingly competitive market for scientists the first to come away. So the programme turns out to work - under the circumstances that were broadly discussed in the Alpbach-Workshop “Excellence -

a question of gender” As long as evaluation criteria are as Margo Brouns described them comprehensively in her talk, we will hardly be able to employ average female scientists. They are simply not selected by our boards – while all members (often including AKG representatives) share the feeling of fairness when preferring not even average male applicants to average female scientists.

### *Summary*

The highly standardized procedures for the recruitment of professors at Austrian Universities have to a certain degree been successful. They resulted in a higher (but still much too low) number of female professors and a risen awareness amongst the University members. The optimized regulation has been able to move the numbers, but within strong limits. In order to achieve better results other – additional – possibilities for a better personal recruitment performance shall be considered. First we might think about training the Appointment Board members – even if this is a difficult task, given the constantly changing persons attending those Boards. Secondly the active and systematic recruitment of female scientists

could be another step – at least for a limited number of chairs. And thirdly a fundamental change in the evaluation criteria (esp. the counting of high level publications as the primary criteria for quality and productivity) should provide a basis for a substantial change within the Academia. This is definitely the crucial point in the whole story: to move away from the picture of - as Margo Brouns put it - a scientific Olymp were excellent science is created by lonesome heroes. What we need to understand is that academic (and also industrial) knowledge production is a social practice made up of different elements like the production, translation, transfer and exchange of knowledge.

### **Notes**

<sup>1</sup> comp. BM:BWK – Frauenbericht 2002, [www.bmbwk.gv.at/meldienpool/9934/frauenbericht\\_2002.pdf](http://www.bmbwk.gv.at/meldienpool/9934/frauenbericht_2002.pdf)

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The Christian Doppler Research Association (CDRA), a non-profit organisation supports application oriented fundamental research and enables actually 69 member companies to have direct access to new knowledge. Since 1989, the CDRA plays a key role as an institution for science and technology transfer in the Austrian research and technology landscape.

A bridging of fundamental research and Industrial application takes place in 37 CDRA laboratories (CD-LABs). These research institutes are set up by highly qualified scientists at universities and non-university research institutions in collaboration with companies for a maximum of seven years. Therewith, the CDRA is one of the instruments that promote excellent research in the cooperative sector in Austria.

The close cooperation between science and industry in a CD-LAB is profitable for both sides. The companies can make use of the new scientific results and thereby enhance their innovative edge and competitiveness. Fundamental research receives valuable impulses from the practical experiences of industry and can work on a topic with long-term financial security.

The funds for a CD-LAB provided by member companies are doubled by the Federal Ministry of Economics and Labour in the scope of its "matching funds". CD-LABs are headed by talented - and in most cases young - scientists, a research team of approximately 3 - 5 PhDs or MSCs-works in the area of application oriented fundamental research with a view to finding solutions for industrial problems. The CD-LABs cover the following research areas: mathematic modelling and simulation of processing, nanotechnology, material and surface technology, chemistry and biotechnology, information and communications technology and mechatronics.

The last 15 years have witnessed unprecedented interest in the presence of women in science and technology. However, the number of women working in this field remains limited due to many reasons e.g. lack of incentives and motivation as well as sociological factors. In terms of the CDRA overall women's share was 26.5 % in 2004:

	women	men
Board of directors	0	14
Senate	2	28
Head of laboratory	1	36
Scientific personnel	40%	60%
Reviewers	1	201
full time employees of the CD-LABs	25%	75%

The CDRA has only little influence on the human resources policy of the laboratories, because of their independent and decentralized status.

Although the industry is willing to recruit more female heads of laboratories, it is confronted with some obstacles in applying this policy, among others a necessary definition of new procedures and criteria of recruitment and the lack of applications from women with adequate expertise.

As a result of the common wish to increase the number of qualified women working for CDRA, the Board of Directors has adopted the following measures on October 7<sup>th</sup>, 2005:

- (1) Implementation of a specific political commitment in the strategic document of the CDRA
- (2) Gender-fair formulation of every CDRA related activity.
- (3) All bodies of the CDRA - Board of directors, Senate and the international Board - are due to make visible efforts to increase their number of qualified female members.
- (4) The w-fORTE programme intends to evaluate the lack of industrial cooperation of 50 female scientists.
- (5) A CDRA-"Stiftungsdozentur für Wissenschaftlerinnen" as an infrastructural setting at universities will be proposed to the Austrian Council for Research and Technology Development for financing.

In particular, this last instrument mentioned should effectively increase the number of wo-

men as heads of laboratories. One of the criteria needed to become head of a laboratory is the proof of a permanent employment at a university for at least seven years (based on a seven years contract). It was recognized that this obligation could not be fulfilled in some cases because of social (discontinuity of contract) or financial considerations (lack of funds at universities). In order to promote the recruitment of female heads of laboratories and to establish some kind of equilibrium between female and male heads of laboratories, the Federal Ministry of Economics and Labour intends to finance these "seven years contracts" (a form of positive discrimination) in form of a "Dozentur". This term has been chosen as a legal term to avoid a tendering process. Only female scientists are called to apply for this "Dozentur" but they have to fulfil the general high scientific qualification standard like every applicant.

I'm looking forward to informing all of you about the successful minimising of gender bias in the CDRA in the coming months.

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**Elke Ziegler**

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Nearly all media in Austria report at least from time to time about science. The way how they select science news is not substantially different from the way they work in other departments like politics or economy. The criteria are: actuality, relevance for the country or region, where the medium is based, and exclusiveness. But in the case of science news, a fourth criterion has to be added (at least for the serious media): scientific excellence.

How does a journalist assess whether a paper is excellent? The main orientation point is whether the paper was published by a renowned, peer reviewed journal - "Nature" and "Science" are leading the charts, followed by some other journals like "The Lancet", "British Medical Journal", "Neuron", or the magazines of the "Public Library of Science".

These journals often offer studies in advance for journalists who look for publications by researchers from their home country. I can tell from my experience in this field: If a paper by an Austrian scientist is published in a renowned journal, it is a MUST to write about it. And on the other side: If a scientist sends a paper which was not published in a peer-reviewed journal, the chance of motivating a journalist to write about it is much smaller and depends in many cases on personal interests and relations.

What does this practice mean for the discussion about excellence and gender? It means that all the biases which lead to a weaker representation of women in peer reviewed journals are reproduced by the media. The problem is: This effect is not reflected by journalists, they got used to it that women publish less. How strong this bias is, became clear to me in one case where a team of exclusively female scientists published a paper in "Nature" and German speaking media constantly used the German word for male scientists ("die Wissenschaftler"), as if the authors were male.

What can be done to change this situation? According to my experience, the following steps would make sense:

1. The discussion about the gender bias of science journals must not be an insider talk, journalists should be integrated. There is still much ignorance of the discriminating nature of current review processes and publication methods, the methods of "Nature" and "Science" to assess the quality of studies are not seen critically. The majority of journalists is unfamiliar even with standard works like the analysis of Christine Wenneras and Agnes Wold about "Nepotism and sexism in peer-review". Knowledge could pave the way to more sensitivity.
2. Scientific achievements by women have to be communicated offensively by their research institutions. If there is a publication in a journal, it must be the research organisation to communicate it to the media and not vice versa as

it happens in many cases in Austria. Professional PR for all researchers should be the standard.

3. Female researchers have to give up their reservation against the promotion of themselves as single persons. Science journalism today is personalized to a certain degree and in many cases there is simply not enough space to write about the whole team. I observed many times that women don't want to stand alone for the work a team has done, they even abstain from public attention because of the fear that too much personal promotion would make their colleagues jealous. But that's the way media work: They offer public attention in exchange, but the scientist has to make a self-confident step in the spotlight.

And last, but not least: More women in editorial staffs don't guarantee more sensitivity for gender issues, but I personally can say: I would be happy if more female scientists would contact

me directly when they have interesting work to present – no matter if they work in physics, sociology or history. I think that the networks especially between female science journalists and female scientists have to be strengthened. This could call more attention to the work of women and would also empower the often weak position female science writers have in their predominantly male journalistic environment.

Elke Ziegler works as a science writer for <http://science.ORF.at>, the science-website of the Austrian Broadcasting Corporation. In 2004, she received the award "Spitze Feder" for her feminist engagement in science journalism.

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Der Newsletter der Plattform Forschungs- und Technologieevaluierung GesbR ist ein unregelmäßig erscheinendes offenes Forum zur Diskussion methodischer und inhaltlicher Evaluierungsfragen in der Forschungs- und Technologiepolitik.  
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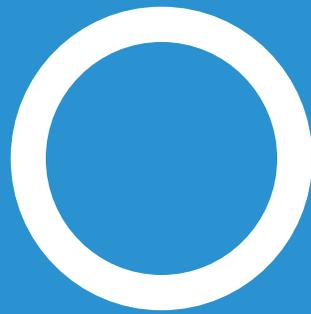


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