

# Academic Women Leaders in STEM and their Potentials as Change Agents of Segregation

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## Introduction

Background of this poster is a German research project about "Change potentials of leading women in environment and technique", lasting from April 2009 to March 2012, financed by the Ministry of Education and Research and the European Social Fund, combining the expertise of two institutions, the University of Wuppertal and the Wuppertal Institute for Climate, Environment and Energy. In this poster the change potential of women in management positions in organizations of higher education focusing on science and technology are investigated. Organizational cultures as well as networks are the focus.

The most comprehensive overview of the relevant comparative research on gender segregation, stereotypes and scholarly careers in all European countries has been undertaken in the European project Meta-Analysis of Gender and Science Research (EC, 2012). The report clearly reveals the gendered nature of academic careers in two broader aspects. "Many studies show that the family-or-science dilemma is not only gendered, but exacerbated by institutional constraints and implicit academic norms, values and expectations that take the traditional male life-course as the norm" (EC, 2012: 17). Some of them unmask "power relations, gate-keeping practices and informal networks as a source of tacit knowledge, support and recognition" (EC, 2012: 18). Women's slight disadvantages during the early stages of their scholarly careers might turn into wide differences in subsequent career outcomes due to cumulative (dis)advantages (see Faulkner, 2005). Four aspects of change potential of women in SET leadership positions were analyzed: leadership style; outcome orientation, commitment and availability; networks; and understanding of technology.

## Methods

Eight qualitative case studies have been done in companies, governmental research organizations, political institutions and universities. In each organization five guided interviews with women (3) and men (2) in leadership positions (besides two with key personal from human resources and equal opportunity office), two gender separated focus discussion groups were done, together with website analysis of the institutions.

Research questions have been besides others: Which role do structural changes in the research play, especially the observed increased importance of university-industry-government relations and the commercialization of science. What is the impact on leadership styles, power and change potentials of asked female professors in comparison to male professors? What are the differences in comparison to other types of organizations which have been investigated too? Are there any gendered styles? Which role do gender stereotypes still play for reproduction of gender segregation? How is gender sensibility connected with making decisions, do women focus more on gender mainstreaming?

## Results

Getting the right information in the right time at the right place is one of the main issues of being in a leadership position. For women professors in science and technology strategic handling of information is one of the most important prerequisites. So project ideas have to be communicated carefully taking into account cooperation and competition at the same time. On the other hand to change organizational culture transparency is a focus especially of women. Getting and giving of information is connected to networking and being engaged in relevant networks is a prerequisite of a leadership position. How do women leader in the academy use existing men's networks and create their own ones? Which strategies do they use to overcome barriers they are confronted with?

While the results show that women in leadership positions manage much like men, in one particular case study the woman had to devote more time and energy to achieve the same end (Powell et al., 2009; Wajcman, 1998).

As leading women, they exhibit a strong performance- and outcome-orientation, and in this way are similar to male professors. Flexibility and self-responsibility for organizing work and private life reveal themselves to be the prominent strategies for individuals in the natural sciences and engineering in academia. For this reason, it is unrealistic to expect women - in principle - to seek organizational changes to achieve a better reconciliation of work and family/private life.

The fact that women are poorly integrated in men's informal networks is a disadvantaging factor for output success. As a matter of practice, women are not integrated in the masculine 'beer culture' which is a place and where many research projects are developed. Some female professors experience an ambivalence in joining these informal drinking sessions in the evening, even though they know that this strategy might be a successful one. In such an informal situation, these leading women fear harassment, which would not take place at the workplace. Others definitively avoid these situations, arguing they do not feel comfortable because they would be outsiders and that the end result would be negative. These women also miss the feeling of belonging (Faulkner, 2005).

A female professor talks about the dilemma regarding men's network: "In these networks you really cannot be incorporated, especially not if you ask for it. Either you belong or you don't... The initiation is the doctoral thesis under the supervision of the right professor... in general, one is not good enough if one does not belong to this group from the outset... And if you ask to become a member, nobody will say no... but will you really belong? No, and this is because one also does not fit the unwritten code, and perhaps because one does not show the special worship for special people, a worship which one cannot comprehend... I know male colleagues, most of them male colleagues, who will tell you that they come from this special school."

## Conclusions

Men's networks still exist and integration in or working with them almost seems to be more important than performance in successfully modernizing academic institutions and research in the natural sciences and engineering.

Analyzing the 'discontinuity' examples of women professors in the study, the results can also be interpreted as 'cumulative processes of reduction of hindrances' against successful academic leadership. Working as a minority in a male field and looking to their own professional careers, women engineers in leading academic positions are sensitive to gender issues, most of them having experienced discrimination in different forms. However, these women did not dwell on these negative events, and instead emphasized their own aims and scientific questions.

A female professors model of change, which bypassed traditional structural elements and old networks, was exceptional. Adapting to an established agenda in a scientific field is much easier, whereas an innovative approach often promises little success, and traditional research suffers barely any discrimination compared to research with a gender approach. In addition to the additional effort required here at the outset for this scholar came new, additional challenges in changing the organizational culture after she was appointed a professor. She had stayed at the institute for a long time beforehand and now had to work with people who had been her former collaborators. Instead of using a hierarchical structure from the beginning to solve possible problems, and given her experience in private industry, she decided that an assessment center in the department institute should clarify the situation for team building and future cooperation. Such an approach had never been taken before in this institution. model of change, which bypassed traditional structural elements and old networks, was exceptional.

The 'continuity' example from a male professor could teach a gender lesson about networking. In one example, the man has been able to rely on pre-existing networks in the scientific field as well as in the research institute; that he tends to experience continuity in his career progression in getting his position, including the evidence of successfully networking in the selection committees. This male professor could start or continue his research without any time lag or hindrances, supported by formal and informal networks.

## Further information

Sagebiel, Felizitas (2014). Academic women leaders' career and their potentials as gendered organizational change agents. In: Katarina Prpić; Inge van der Weijden; Nadia Asheulova (Eds.): (Re)searching Scientific Careers. IHST/RAS - SSTNET/ESA.

## Literature

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