

Gendered organisational cultures and networks in engineering research. Results from European project PROMETEA

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Abstract

Aim of this paper is to give an overview about state of the art, hypotheses, methodology and selected results of the European Commission Project PROMETEA (www.prometea.info), work package four¹, dealing with effects of gendered organisational cultures on careers of female engineers working in research. The question was if social structures and cultures of engineering research organisations are still male oriented dominated by traditional hegemonic masculinity (Connell 1995) or, if new masculinities (Collinson/Hearn 2000) are developing in Europe. State of the art refers to the fields of gender studies, critical men's studies, gender in academia, feminist technology studies, studies on gender, profession and career and studies on gendered organisation (see Sagebiel 2006). The research investigated these assumptions by a qualitative methodological design analysing websites of the research organisations investigated, interviewing women engineers there and doing focus discussion groups with men and women engineers separately. Results focus on gendered organisational cultures (Acker 1990), analysed by gendered division of labour, gender stereotypes and gender awareness. Networks as part of the organisational cultures will be described from the perception of women and men engineers in research as they are influenced by still gendered national societies. Gendered networks are analysed by definition, functions, processes, activities and evaluation and women's integration or

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exclusion in different engineering research organisations (industrial, academic and governmental).

Key words: gender, women's career, engineering, organisational culture, men's networks

1 State of the art, methodology², hypotheses and definition of concepts

Based on empirical and theoretical research six social science research fields can be differentiated which are relevant for gendered organisational cultures and networks of engineering, and which the author has combined for interpretation of empirical results of the former European project Womeng (www.womeng.net).³

Qualitative data on gendered organisational cultures and networks in academic and industrial settings of engineering and technological research have been gathered through semi-structured interviews with women and focus groups with men and women separately. Focus group discussion was the privileged method to get known the more tacit elements and was taken from Womeng project (Godfroy-Genin and Sagebiel 2007; Sagebiel 2005a).

Hypotheses from the former European project Womeng (European Commission 2006) about gendered organisational cultures and networks in professional sphere of engineering (Sagebiel 2005b; 2006a; 2006c) were transferred to the field of engineering research. Further hypotheses were taken from research literature about investigations of genderedness of science and career (Sagebiel 2006b). Three main factors namely access to resources, successful research steps and cooperation possibilities determine career in science. The question is if and how these are gendered in the field of engineering research and what role gendered organisational culture and networks play. For issue of this paper the following hypotheses⁴ were taken:

1. Organisational culture in engineering research is traditional masculine with gendered networks as central element.
2. Women engineers in research are excluded from men's networks and cannot rely on a powerful women's network to compensate the exclusion from men's networks.

The concept of gendered organisations (Acker 1990; Wilz 2004, 446) describes organisational characteristics as not gender neutral at all. *"To say that an organization, or any other analytic unit, is gendered means that advantage and disadvantage, exploitation and control, action and emotion, meaning and identity, are patterned through and in terms of a distinction between male and female, masculine and feminine. Gender is not an addition to ongoing processes, conceived as gender neutral. Rather, it is an integral part of those processes, which cannot be understood without an analysis of gender."* (Acker 1990, 164, qtd. in Wimbauer 1999, 44)

Gendered networks refer to exchange of information, feedback and help, formal and informal, inside and outside the organisation as they are influenced by gender. Networks have

² Methodology in more detail is described by Anne-Sophie Godfroy-Genin 2008.

³ First concentrated on four research fields (Sagebiel 2005c), later on, based on critical discussions, fields were extended to six relevant theoretical areas (see Sagebiel 2007, 2006a).

⁴ For more hypotheses used in this work package see PROMETEA final report (www.prometea.info).

manifest and latent functions. A prerequisite is knowledge and awareness of networks, especially the informal ones. For inclusion and exclusion most of all informal networks with so called *tacit knowledge* are important, because of less transparency. Exclusionary processes are central especially in networks of a male domain, and even more so in a male bonding (Doppler 2005). Being a kind of informal men's network it serves for construction and reproduction of male identity, power and privileges which are a traditional characteristic of management networks.

Men and women were asked in focus groups separately. Questions had been, what role networking played for job and career, especially for getting relevant information, what benefits and barriers informants experience (lack of time, restricted access), and if gender differences exist. Women were asked too individually about their experiences with networking and networks (importance, time, access, benefits and gender differences) regarding their career progression and career hindering factors (work culture, mobility, lack of information, networks access, gender differences).

For analysis of data for this paper, national reports on basis of the national findings in each partner country were taken together with summaries of interviews and focus groups.

2 Gendered organisational cultures in society and in engineering research⁵

2.1 Gendered division of labour in society

Gendered division of labour in society could be found in all countries, but extreme traditional gender role embedded thinking exists especially within Eastern European countries, but, it is also existent in other partner countries, even though it is not talked about so frankly.

In the opinion of female focus group members in the business sector in Slovakia (B_NT_FGW_K)⁶ the man is regarded as “head” of the family by the traditional opinion in the Slovak Republic and that is why women are predominantly taking care of children. Men know about their career advantages by gender division of labour. Slovak men in a group discussion agreed that their female counterparts lose approximately 5 years devoting time to children.

A good example for gendered labour division is how women engineers in Spain describe their situation in the BUS sector. They call themselves “ants” because they “*do the work of ants*” e.g. they make sure that a meeting organized by their boss is acceptable to all the participants and they do not consider this as a normal part of their job. “*Men give orders but never worry about them being carried out; we are the ones who run around doing that*”. They work as ‘ants’ “*because it is not visible but it is indispensable for everything to work smoothly*” (B_FGW).

Also in Austrian women focus groups women engineers complain that they have more organisational (administrative) tasks (like booking flights, writing minutes) in comparison to men.

In France gendered role expectations in society showed more indirectly. One male discussant from higher education thinks “*We have to promote the women models that did succeed to*

⁵ For this section not all partner countries provided data because the upcoming points were partly not directly asked in interviews and focus group discussion. But while looking at the gathered material of colleagues in all PROMETEA countries and reading their national reports some specific differences became visible.

⁶ The abbreviation is the code for characterizing the country, instrument and anonymized interviewee.

manage both of it”, the women who “brightly managed both their scientific career, and their family life” (ENS-H_FGM_N).

2.2 Gender stereotypes in engineering research organisations

Gender stereotypes in society and their reflection in engineering research organisations were found nearly everywhere, but the most extreme positions and traditional attitudes had shown in the same countries where a very traditional role and labour division existed. All stereotypes define men as predominant and more apt for leadership roles.

Strong traditional stereotypes exist in Lithuania, where men’s thinking is determined by traditional gender dichotomies. Men engineers believe they are more self-confident and therefore naturally occupy highest positions. One informant thinks: *“Attitudes towards women differ from the ones towards me; woman’s nature is different; ... in technological sciences, there is a stereotype stating that “the strong” sex must predominate”* (H_FGM_I1). Even Lithuanian women in a focus group agreed that men are more qualified as leader: *“Men are rough, have more features characteristic to leaders”* (H_FGW_I1) or another statement: *“Their competence is higher, that is why they take the lead”* (H_FGW_I1).

Russian women in engineering face complex and really discriminating stereotypes such as *“Engineering is men’s business”* and *“Men are smarter than women”* or *“A man is a generator of ideas, a creator and a woman is a good executor”*.

2.3 Gender awareness and gender denial in engineering research

In a male domain like engineering research men’s gender awareness is an important indicator for organisational culture. Gender awareness was measured by the focus group answers to the question if interviewees ever discuss issues related to gender in their work environment.

The results showed that men engineers in research overall did not have any gender awareness. What they have in common, they never discussed gender as their genuine own problem. And even women hesitate often times to discuss gender issues at work as seen in the focus groups. They partly are not aware of gender differences like in Russia or Serbia, feeling equal in numbers or referring to friendship feelings towards male colleagues. Being in minority they joke about gender issues *“as a fun-factor”* (like in Austria, Germany). Some women asked in UK and France were sensitive to their worse situation; partly they talked about sexist beliefs and prejudices, but, at the same time they fear to be over sensitive to gender issues. In Sweden and Finland with better equal opportunity programs in society they talked about differences in division of labour at work and salaries (Finland) as well as reasons for the low number of women managers (Sweden). In both countries gender is a regular issue in yearly talks about personal development.

3 Gendered networks and networking in engineering research organisations

Even though women were asked individually and in focus groups men talked much more about networks, so they produced as much material.

3.1 Understanding of networks and networking

Understanding of networks differs depending on awareness and perception of networks and networking. Some interviewees have only a vague impression and can’t really tell their

definitions, others refuse to talk about informal networks and only refer to professional formal ones. Overall men could describe different kinds of networks with different functions.

Male discussion members in Sweden talked about three kinds of networks: networks with former fellow students, networks with people one has worked together with (in different projects) and external networks with people with the same (technical) area of interest. Respondents of other countries also referred to this kind of differentiation. Swedish academic informants also talked about the researcher networks which are built up in conferences and, increasingly, by international research projects.

There was a general opinion of women engineers and of men engineers that becoming a network member is gender independent.

3.2 Manifest and latent functions of networks and networking

Getting to know people generally or relevant people, fresh information exchange, sharing material, acting collectively and getting job perspectives, these are manifest functions of networking in summary. External networks have manifest functions as initiating projects, especially international ones. Publication is another manifest function, but at the same time the information channels for publication are most of all not very transparent. In higher education networks are seen as necessary for career at a certain point of qualification with the aim to selling oneself and enforcing one's visibility. Internal networks build the unofficial organigram of the organisation which allows information exchange. In some countries networks are depending on hierarchical structure and decision of superior about the amount of restriction of information. From men focus group participants some take advantage from tacit knowledge they get by networking, others think it is not always career relevant.

A male Austrian engineer at university explained in detail how he networks and how it supports his work: *"If you take a look, you need networking to initiate projects. You need external partners, you have international partners and without networks this doesn't work. And yes, if you do your PhD you can also use the network of a colleague. If you know someone who works at the institute who works with specific equipment some things work out much easier. Getting any analyses, getting any chemicals, borrowing equipment, all that works much easier if you walk over and say hello"* (H_NT_FGM_Y1).

Even if the Finnish saying goes that *"good work always sells itself"*, it's just not enough, because actually the knowledge and information *"between the book covers"* is silent. One of the men said that the network helps you to *"'peel the cream of the top' before anyone else gets the chance to do it. That is not necessarily always fair but it helps you to know that if you had not done it, somebody else would have"* (H_FGM_J1).

3.3 Process of networking—from initiation to patronisation

Networks work with sympathy, personality, good performance, same professional and private interests, fraternisation after getting drunk together and luck. Several interviewees told that networking would start with common education in school or later during study time or even later during in service training in companies for example. Commitment often would go back to these roots.

In a German discussion round at a governmental institute men explained that first personal links would be already made during study time and can sometimes last a long period in someone's professional life. *"Networking starts already during study time and continues on conferences or while preparing together a project proposal."* Additionally this institute was a good example for prolonged commitment within a specific community. When the institute was founded by some professors (mostly coming from a certain university nearby), they supported their close research assistants and offered jobs at the institute to them. The connections to this university would be still strong nowadays, and the new personnel were likely to be recruited out of the university department of the current institute's leader. *"You always can see where the institute leader has his connections; there is a commitment which obliges him to some kind of patronisation of his roots!"* (G_GP_NT_FGM1_M1).

3.4 Evaluation and devaluation of network and networking

Male interviewees are aware of the importance networks have for daily work life and particularly career advancement. Difficulties for becoming a member of networks were not reported. Some respondents stated that network's impact might be overvalued, because at least professional performance counts for climbing up the career ladder and not connections. But some male discussants see this totally different, for them network contacts are highly influencing organisational cultures and decision makers; for career progress knowing the right people in decisive positions is essentially.

Women engineers perceived that they were not part of powerful networks, even though many of them felt or knew the importance of networks. Some of them under evaluated the importance of networks and networking for their careers. They spent too less time for informal opportunities to contact these networks outside the narrow defined work environment. Men in contrast, even though they told that becoming a member was seen as something not being reflected, what just happened by meeting and knowing the right people at the right time and place, they realised that these opportunities to take advantage of were worthwhile.

British men engineers in a focus group discussion in business sector (B_FGM_O) saw networking as vital: *"I think it's the hardest part of the scientists job"* and his colleague adds: *"I think you ignore it at your peril, I would say!"* A woman engineer in Germany consciously stated: *"Networks are the nuts and bolts - privately and professionally. Without (private) networks I could not have worked in that way."* (G_NT_WR2_M2).

On the contrary male researchers in France and Slovakia show a distant approach towards informal networks, *"I prefer the term: "scientific community", that is very different from those influence networks, very insane, chaotic and perverse"* (male engineer France - H_FGM_N1c). And one Austrian engineer from university personally feels *"that scientists are more defined by their performance than, like a strategic lawyer who can tell you anything and you can tell a lot, but here we have numbers, data and facts. Here you can't sugar-coat anything"* (H_NT_FGM_Y1).

3.5 Rituals and activities of networking

Many rituals and activities especially of informal networking take place without women. Networks are knitted and tightened after work. In most of the partner countries women engineers

feeling more responsible for family duties and life will not join these activities as much. Besides for joining special sports (extreme) and sauna meetings the sex difference counts and, even if women are not excluded in these activities and rituals, men don't seem to look for alternatives not so excluding for women.

In a German men focus group discussion in governmental research it was clear for all that important contacts to other people are mostly made after work, while going out for dinner or some drinks. *"My first superior told me, if you want to be successful in raising funds or getting project partners, you have to get once drunken with your future cooperation partner!"* More experienced participants agreed on this story. *"Inhibitions get weak and you can talk more frank and free about cooperation structures."* (G_GP_NT_FGM1_M1)

3.6 Women's exclusion from or integration in men's networks

For answering hypotheses about women's lower integration in men's networks, two questions were analysed on basis of interviews with women engineers and of men and women focus groups. Women were asked about access to men's network (extent, areas). Men and women were asked about barriers against networking (lack of time, restricted access) and gender differences.

Men asked about exclusion of women generally answer that they see no access barriers for women in joining networks. On the other hand in some situations having women included could damage reputation of men's network, men and women realised. One interviewed German female engineer, working in industry, had a very clear opinion about how male networks work, but this was outstanding: *"Networks function due to the fact that they exchange information and informally a "non-aggression pact" exist and also supports itself maybe. The men are maybe afraid to damage their reputation with a woman as a network partner. And men probably see there more common characteristics among themselves. Are women defined as the "others"?"* (B_T_WR4_M4). Another male German engineer in industry argued *"Fostering networks with women is more inhibited"*, because it easily gets a kind of sexual touch ... (B_FGM_M2).

A special phenomenon found in PROMETEA results was that partly women did not perceive being excluded from men's networks. For women engineers in research non perception of gender differences and discrimination seems to be a general problem because Matthies found a parallel result for women scientists (Matthies et al. 2001, 19).

Family responsibilities are often used arguments or prejudices of women themselves and moreover of men against women joining men's networks. But, partly women didn't realise the usefulness of networking for their careers and this might have influenced their time argument. Less time resources (except in Sweden, where only one woman saw problems in timing) and less mobility are factors, besides special activities and rituals by men, in which women engineers are not interested in.

One of the Chilean respondents said: *"Networks are hard to get in since it often implies going for drinks someplace you don't particularly care about..."* (H_FGM_2). When asking Swedish informants in academic research about networking with men, one informant said in a humorous manner: *"No, you can't network with them" [everybody laughed]. And she continued explaining what it takes to network with men: "Then you have to play football with them and I have no desire to do that".* (H_GP_FGW_W2). One other female discussant from Sweden said: *"I was never invited to the sauna evenings. One of the other women with a management position*

higher up in the hierarchy was invited but I think she turned down the invitation because it did not feel right for her” (H_GP_FGW_W2).

The hypothesis focussed too on women’s networks, but about these PROMETEA results showed hardly any engagement of women engineers in research. Moreover these *women’s networks* overall were not estimated as helpful⁷.

4 Summary and conclusion

The results referring to the importance of gender, organisational culture and networking differ from country to country and in a country from case to case and from individual woman to another. So, even though for example in a country like Sweden there is more gender equality existing in society that influences organisational culture in engineering research, nevertheless there are gendered differences in networking. On the other hand, if a country has a very traditional culture according to gender stereotypes and gendered division of labour this is defining the organisational culture of engineering research too. Discrimination and excluding processes are more open (manifest). That does not mean that evoking gendered career barriers in the more equal national societies does not exist.

The concepts of gendered organisational culture and of gendered networks offer a variety of possibilities for investigation of research in engineering organisations as can be seen in this analysis. Nevertheless both concepts have to be further developed in the future. Typologies to differentiate kinds of gendered organisational cultures and networks in engineering in combination with multiple professional masculinities (Collinson and Hearn 2000) could be developed by using empirical studies in the field. Moreover men’s networks as instrument for social regulation in societies and engineering professional organisations today should be focussed in theoretical research. Interrelationship between particular men’s networks combined with different gender awareness and power should be more investigated.

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⁷ Only some Swedish female focus group discussants referred to networks with other women, when asked about networks. "They are starting up a women's network at the technical faculty here at our university. However, I think that you have to be an Associate Professor to be a member of this network, but I was invited to it anyway. We'll have to see what will come out of it" (H_GP_FGW_W2). Networking between female engineers in Slovakia is not highly recognized as an important factor and male discussants think women’s networks are less influential and almost not existing in their field of research (H_FGM_K2).

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