Female Empowerment in Science and Technology Academia

EXCELLENCE AND GENDER IN THE WORKING ENVIRONMENT

Results of mapping of the present situation in Germany, Bulgaria and Sweden

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INTRODUCTION: EXCELLENCE AND GENDER IN THE WORKING ENVIRONMENT – AN ISSUE?

THE FESTA TASK ABOUT GENDER AND EXCELLENCE

The research landscape of the 2000s has seen an increased importance of the concept of 'excellence'. This quest for excellence has in Western Europe coincided with the increasing influence of New Public Management in the governance of research institutions, meaning that researchers increasingly are not guaranteed funds to do any research they find interesting and useful, but have to prove their excellence in competition with others. Thus, the quest for excellence is both a powerful steering instrument for research and something that affects all single researchers who want to follow their quest for more knowledge about different aspects of our reality.

One of the FESTA tasks is to discuss the concept of excellence in the daily working environment with the aim to improve the working environment of, in particular, female researchers. The basic assumption, supported by research, has been that the quest for excellence influences the gender relations in research in different ways. Earlier research has investigated the processes where excellence is directly assessed, such as funding and recruitment decisions. The FESTA excellence task has the mission to see the repercussions of these decisions in the daily working environment of researchers, and to increase the awareness of these in order to mitigate the adverse effects to general working environment and gender equality.

From a critical point of view, excellence is a set of practices that are functional to the governance of the scientific community, i.e. to the allocation within the scientific community of resources and decision power. It does not exist per se, independently from the practices that create it. Following Lewis & Ross (2011), excellence can be described as a core in the policy instruments which are used to manage and control the societal research expenditure that increasingly is harnessed in the competetion for economic expansion among nations. According to Sretenova (2010), what we need is 'a crucial reflection on procedures and criteria leading to recognized excellence' (p. 16). The background of the FESTA task on excellence is the consideration that not only the procedures and criteria need to be examined, but that we also need to examine in a gender equality perspective how the procedures and criteria influence the women and men on whom they are applied.

CHANGING CONDITIONS FOR EXCELLENCE

Researchers have always strived to be excellent, both because doing research has, for many, been a passion and because the research communities to some extent always have been competitive. However, the prize for the competition has primarily been the esteem of fellow scientists and general

public and civil authorities. Only lately has the "prize" increasingly consisted of financial rewards, and even basic financial resources for doing research at all.

Excellence cannot be achieved without basic support structures inside and outside the academia. Inside the academy the support structures have changed both because the needs of the researchers are different, and because those who supply in response to these needs act differently. In historical comparison, many of the researchers of today have a greater need for different research infrastructures. The supply side previously often consisted of stable public funding – being a renowned professor meant having a lifetime research funding - or, to some extent, of private benefactors who supported research for the future good of mankind, their nation or their area of industry. Now the supply side increasingly consists of public funding, which recurrently has to be secured in competition, or, to some extent, relationships with industry where research and research results often are quite closely monitored.

The support structures on the private side have also changed. While petty details of the daily life of the researchers of yester-yesterday were often taken care of by servants and wife, the researchers of today seldom have the possibility of detaching themselves from such concerns. European researchers today do not employ servants to run the household, their wives are likely to be fully occupied outside home, they may be wives themselves, and whether they are mothers or fathers, they normally are supposed to engage in the upbringing of their children on a daily basis. While the supply side here has changed, too, with new technology for the households and societal provisions for care, these do not compensate for the change in obligations in the private lives of the researchers. Rusconi's (2012) research shows that, in particular for female researchers, the combination of missing or malfunctioning support structures both in academic and in private life creates complex problems which cannot be reduced to a question of childcare, as is often done.

Thus, the conditions of reaching excellence in research have changed, at the same time as excellence has become a catchphrase for research funders.

There is no unanimous definition of excellence. What is meant by "excellence" is continuously created and recreated in the peer review practice of assessing the excellence of research and researchers. Rees (2011) points out that those who are in the position of defining excellence are mostly senior, mostly male researchers, who have done their research and made their careers in a context where gender issues were not seen as particularly relevant. A common expression in academia is "you recognise excellence when you see it" (van den Brink & Benschop, p. 512). In different contexts the representatives of the scientific community act as if the meaning of scientific excellence were obvious and commonly agreed on. *The Topic report on Gender and Scientific Excellence* (Addis & Pagnini, 2010)

points out this problem of the variety of definitions of scientific excellence and formulates a working definition, by referring to a number of different sources:

> Scientific excellence is the ability of a scientist or an institution to impact on a field of study producing a major change, leading other scientists towards asking new questions and producing new, important and useful contributions to knowledge, using new methodologies. The quality of excellence must be proven by a number of means, (such as publications, citations, funding, and students) and recognized by the peers by the bestowing of various honours, prizes and other awards (Addis & Pagnini, p. 9).

In the definition above, excellence is not set in relation to research funding, but in the daily life of researchers, the power of the excellence concept in distributing funds is crucial. It risks diverting the considerations from excellent research ideas to excellent researchers – that is, they often can realise their research ideas only if they first have been sanctioned as excellent researchers. However, researchers labelled as excellent do not always do more excellent research than others. As mainstream researchers are more easily sanctioned as excellent – the reviewers often find a disciplinary closeness to themselves worth supporting - those researchers who want to follow untrodden paths or to work in interdisciplinary ways are easily marginalized (Brouns & Addis, 2004; Sandström & Wold & Jordansson, 2010).

IMPLICATIONS OF EXCELLENCE POLICIES FOR WOMEN RESEARCHERS

Parallel to the rise of the concept of excellence there has also been increasing awareness about the importance of engaging more women in all levels of research in the EU countries, to make full advantage of the potential for research – or for excellence. The *ETAN report* (Science policies in the European Union, 2000) opened the 2000's with an analysis and recommendations for helping women to climb up the academic hierarchy to renowned scientific excellence. However, the two ambitions, more excellent research and more women in research, have existed side by side but separated in European research policy, and the implications of the one to the other have not been taken into account in policymaking. European reports on gender in science have pointed out the problematic relationship between these two aspirations, finding that research policy based on the concept of excellence serves men better than women.

This far both the European policies and most European research on the area has conceived gender equality in science as the differences between women and men, as fixed and ultimately biologically defined categories. For the practical gender equality work in projects like FESTA this is a reasonable starting point, particularly in national and disciplinary contexts where gender equality itself is a contested concept. However, both policies and research need to move forward to the understanding

that the categories women and men in themselves are diverse and that advantages and disadvantages manifest themselves in various ways in the academic lives of different individuals.

For example, Hearn (2012) points out that, as the concept of excellence implies competition, the policies recommended by European reports of giving women equal opportunities to succeed, also mean that fewer men will win in the competition. As the number of excellent researchers who are rewarded with excellence funds is limited, increasing the number of excellent women means decreasing the number of excellent men. According to Hearn a number of changes should take place if the gender equality ambitions of European research policy would actually be implemented, for example directing more funds to fields where women are more represented and engaging more women as key evaluators of excellence. This would mean less funding for male dominated fields and fewer men who had the power and influence that comes with being able to decide on other researchers' excellence and funding. While the ambitions in regard to women are expressed by the policymakers, the effects in regard to men are overlooked in the discourse, and their influence in the tardiness for achieving change - on all levels from international funding committees to the daily working environment of researchers - is not analysed.

The gender and excellence reports have investigated and discussed the fact that relatively few women get defined as excellent. The same mechanisms which restrict women's academic careers in general are at work here, but they are accentuated by the concept of excellence.

To start with, the concept of excellence itself can be defined as masculine (Benschop & Brouns, 2003). Excellence very strongly implies competition – not everybody but only the very best can be excellent. In Addis & Pagnini (2010) the historical academic competition for excellence is related to the concept of honour, and, consequently, to the way honour is gendered to be masculine and an important concept in relations between men. The concept implies competition and weeding out the weak, rather than co-operation and taking advantage of different competencies. Both in general and in the academy competitiveness is perceived as a more masculine than feminine trait (Fletcher et al, 2007; Gneezy & Niederle & Rustichini, 2003; Ors et al, 2013).

The concept of excellence also serves to promote streamlined careers. The potential for excellence can be detected in young researchers and achieved excellence can be recognised in established researchers. Showing potential is tied to age – young people show potential while senior people have proved their potential. When potential is important, starting a research career somewhat later in life, as more women than men do, is not a good starting point for becoming regarded as excellent. To be characterised as an established excellent researcher, you need to have a solid production over a number of years, thus, a late start and career breaks are not to be recommended. Addis & Pagnini (2010) point out that in laboratory sciences the only path to excellence is to secure funding and

become a principal investigator at a fairly early stage, and then constantly keep up both scientific work and relationship building. The latter is often more complicated for women, because of male homo-sociality and gender stereotypes. According to them, there are disciplinary differences, even if they have not been sufficiently researched. For example, in non-laboratory sciences the age span during which a researcher can be regarded as excellent may be more permissible. The large excellence funding, however, more often goes to disciplines organized in a laboratory manner, with an excellent principal investigator and a number of collaborators in different stages of their careers. *Mapping the Maze* (2008) refers to the concept 'meteor-like careers' as highly evaluated in promotion to high research positions.

In *Gender and excellence in the making* Blagojevic (2004) points out that it is not only age requirements which streamline excellence. She argues that the concept of excellence is also used to marginalise scientists from the 'new' post-communist EU member countries. They need to learn and adapt to West European research and evaluation ideologies and practices, and their West European peers do not always except and recognise excellence among their colleagues from post-communist countries. According to Blagojevic, the geographical discrimination is even more problematic for women than for men. She describes the additional burden for women researchers caused by a paradox where they are suppressed by a patriarchal culture both in the private sphere and in the academy, but where expectations for women's academic achievements still are high.

The concept of excellence also often includes a number of characteristics which can be performed in different, gendered ways. Skills in leadership is one of them. The evaluation of leadership skills often disfavours women (Eagly & Karau, 2002; Hellman & Okimoto, 2007; Ridgeway, 2001), partly because they tend to be defined narrowly to suit the stereotype of male leader, partly because the male leader stereotype makes men by default to be seen as leaders more often than women and partly because men actually more often have possibilities to get experience of leadership roles.

Those peers who evaluate excellence tend to see it in persons and projects which resemble their own work (Brouns & Addis, 2004; Sandström & Wold & Jordansson, 2010). Van den Brink & Benschop (2011) found that likeability was a criterion in judging excellence, and that men found other men more 'likeable' when considering cooperation.

Brouns & Addis (2004) also point out that excellence is a positive spiral – the achievements of those who are recognised as excellent are often evaluated more favourably than the achievements of those who have not gained that label. The work of less renowned collaborators may be attributed to those excellent researchers whose names are well-known. The tendency of attributing women's work to men rather than the other way round also plays in here.

GENDER AND EXCELLENCE IN THE DAILY WORKING ENVIRONMENT

The UNICAFE report (2008) investigated what scientists in six European countries regarded as most important for success in science. Even if the answers varied somewhat between countries, persistence, diligence and a supporting academic environment were seen as the most important. Next, good academic environment, networks and excellent supervision were listed, and only after that talent was mentioned. Thus, working environment was seen as crucial for achieving excellence.

The findings of Brouns & Addis (2004) and van den Brink & Benschop (2011) above also pull down the issue of excellence to the daily working environment level. "Who gets credit for which work" and "who finds whom likeable" are processes that do not only happen in formal research evaluation situations, but are an aspect of everyday interactions in a working environment. To continue, van den Brink & Benschop (2011) also found that cooperation with other scientists both nationally and abroad was one of the semi-formal criteria in judging excellence. Even this has direct implications in the daily working environment. Keeping up collaborations is a particular set of work tasks, scientific, social and administrative. These are differently distributed among researchers, and may also be differently distributed among men and women. For example, in the homosocial culture (Hearn, 2012, Peterson, 2010) the socialising part can be more easily done among men only, and women traditionally do more administrative tasks related to teaching and the day-to-day running of research projects than men (Peterson, 2010; Sagebiel, 2010). It is the socialising that results in what is perceived as relations with tight and successful scientific cooperation.

The EU report *Structural change in Research Institutions* (2011) gives more observations as to how the competitive idea of excellence influences the daily working environment of researchers. It brings up the gendered organization of work which makes it difficult to combine work and family. Another problem is harassment, which takes much of engagement and psychological energy from its victims. Women are also disadvantaged by the concentration of power, in particular what is called the 'guru/acolytes model of power' (p. 7) – power concentrated in the hands (and funds) of a few men, whom other researchers have to rely on, to be able to work. The report also remarks how standard processes for different kinds of decision making may advantage some groups and disadvantage others. Women are marginalized in formal decision making, but the fact that they are marginalized in informal decision making (which is another FESTA task), such as in bodies advising and preparing decisions, is even more difficult to assess. On the daily working environment level decisions are made about which research ideas or projects to invest in, which people get support psychologically, organizationally or financially and which people are encouraged. All the unconscious biases evidenced in studies of funding – using closeness of research ideas and approaches, as well as likability as criteria, interpreting achievements differently depending on previous impressions of a person, devaluing women's work and attributing it to men etc. – are often at work also at the research group and departmental levels. It

is on those levels that those women and men who have the potential of becoming excellent take the first steps of their academic careers, and support in the daily environment is as important for them now as the big funding decisions will be in the future.

RESEARCH ABOUT GENDER AND EXCELLENCE IN BULGARIA, GERMANY AND SWEDEN

GERMANY

In Germany, there have been two relevant research projects that were concerned with construction of performance and gender in the context of excellence, also related to how performance emerges in the scientific everyday life with its informal hierarchies, interaction patterns, and self-understanding of the scientists. Some of the findings have been put into the context of the German Excellence Initiative that was launched in 2007 by the Ministry of Education and Research and the Science Council.

The goal of the Excellence Initiative was to foster international top-level research by identifying the leading universities and make them internationally visible. Such an initiative is based on the belief that there are objective criteria for judging performance in science. However, the Excellence initiative also lifted the question of female excellence. The question of women's involvement in the scientific field is now seen as a serious question of quality on the political level, and a prerequisite for an excellent scientific work force. However, daily practices at single universities do not always reflect this view.

Beaufaÿs (2007) discusses the social dimension, which is important in the evaluation and attribution of performance. To perform is not enough for excellence - the performance also has to be packaged in a way that makes it visible and outstanding. The importance of networking is one part of this, but meeting the right people is not enough, it is also about how the research performance is presented to them to gain their appreciation. The conditions for packaging and presenting the research performance are different for men and women. Women are not expected to be creative and passionate or enduring in their research, and, thus, the requirements to prove this are higher for them than for men. Women have also been socialized to market themselves differently. The practices within the scientific field to get recognized involve beliefs and mechanisms which obstruct women's participation. A significant belief in this respect is the image of science as a way of life that does not allow other engagements. Practices involved are, for example, connected to the judgment of performance, potential and promise of excellence in young researchers, which is to a large extent based on emotional relations where the established professor can see a continuation of himself in the work and person of his younger follower, and the young scientist has the professor as his role model.

In her 2012 study, Beaufaÿs investigates another gender issue related to excellence: the involvement of female scientists on the highest level of excellence institutions, and the social mechanisms which facilitate the maintenance of the male gender homogeneity in these institutions. The female scientists

recognize that they are “first of all not part of the game and secondly they don’t accept the rules of the game” (p. 104) and, thus, tend to take the position of an observer. Consequently, in spite of the presence of women, management level positions in excellence institutions remain ‘men’s business’ and as long as the implied rules of the social game are not further questioned and reflected upon.

The discrimination in the daily routines of scientific practice, obstructing female researchers’ paths to excellence, has been investigated by Beaufaÿs and Krais (2005). They point out that young women scientists’ experience is regularly that their word has not the same weight as that of their colleagues. This undermines both women’s possibilities of influencing the environment where they strive to be excellent and building up a self-identity as an excellent researcher.

Summing up all three studies by Beaufaÿs (2005, 2007, 2012), it can be said that the practice of science, whether it be on daily working environment level or in the boards of excellent institutions, is not only tainted by stereotypes. The issue is more profound than that: it is the genuine functionality of scientific practice that keeps gender stereotypes alive. This practice and the cooperation of the stakeholders in the scientific field create a social system, which is universally accepted, but is ultimately based on games among men. Thus, the basic functionality of the scientific field, rather than only the number of men in science, is the core of the problem – and enhancing the concept of excellence is one of the basic functions in the field today.

In Germany, work life balance in scientific careers has been an important issue. The norm of full time uninterrupted career has made it difficult to combine work and family. However, Rusconi (2012) found that for dual career couples where both are scientists, having children does not particularly add to women’s disadvantage. More important issues seem to be the fact that female scientists are more often affected by non-permanent and part time employment in comparison to their male colleagues, which implies both organizational discrimination and that one of the couple has to take on a support role because of the extreme requirements of a successful scientific career. That person is more often the woman. Thus, breeding an excellent male scientist in this system risks losing an excellent female scientist.

BULGARIA

In our different national contexts the gender and excellence issues have previously been dealt with in different ways and to different extents. In Bulgaria, both the discourse on excellence and the discourse on gender equality in research are much less visible than in Germany and Sweden, and, thus, there are scarce sources to any of these areas and hardly any which combine the two. The pipeline is as leaky as anywhere else: 50% female students, 5% female full professors in science, engineering and technology, the percentage of women in the top positions of academia rarely exceeds 10% and men are six to eight times more likely to obtain professorships or equivalent positions. However, it has not caused similar

concern as corresponding figures in the West and the idea that this can be connected with gender-dependent measures of excellence is not often expressed (Proykova, 2009). The idea of scientific careers towards excellence is historically very foreign in a post-communist country, because, formerly, due to egalitarian and collectivist ideology it was not even accepted to speak openly on the issue of "career building". Thus the 'glass ceiling' limiting women's possibilities to reach the level described as excellent has not been reflected on or criticized (Sretenova, 2009). Funding decisions related to gender, which are an important aspect for reaching excellence and increasingly have been reported and to some extent monitored in many European countries, are also little researched in post-communist countries, while there are some studies relating gender to scientific productivity (Sretenova, 2011). The need to create gender objective evaluation processes are still expressed only by few (Proykova, 2009).

Gender stereotypes have a very strong influence on professional careers and vertical segregation in science (Sretenova, 2009; Proykova, 2009) and the female stereotype does not include excellence. There is still a lot of research to be done on how gender stereotypes influence the daily working environment of researchers.

The EU reports and initiatives regarding women in science have not resonated in the Bulgarian context. Thus, the young women scientists who start being aware of the gender and science issues find their environment quite insensitive (Sretenova, 2009). However, Bulgarian research on the issues has been initiated (Sretenova, 20112) and the FESTA project will be part of a movement that is gaining momentum. Even in Bulgaria, losing the potential of female researchers is starting to be a cause for concern (Proykova, 2009).

SWEDEN

In Sweden, the Delegation for Gender Equality in Higher Education, a government initiative, made two studies directly concerned with the large Swedish excellence grants. In particular one of them by Sandström & Wold & Göransson (2010) has become very well-known. Firstly, after finding that already the female percentage of applicants for excellence funds was lower than that for ordinary research funding, it tracked the way women had fallen out in the process using, among other means, initiated bibliometric analyses. These analyses showed that scientific closeness to the reviewers, rather than other bibliometric measures were influential in the funding decisions. Secondly, it calculated how much more money had been secured to men, ending in a sum up to 100 million Euros, which would have gone to women if their success rate had been the same as in ordinary funding processes. Thirdly, by comparing the successful candidates with the unsuccessful ones some years after, again with bibliometrics, the report showed that the excellence funds had not resulted in any more or better research. The authors point out that the system of peer review tends to reward the already

established researchers and research traditions. It neither benefits the innovative research called for, or women, young researchers or others who differ from the mainstream within each research discipline.

The second study, (Lindgren et al, 2010) found that networks are important in excellence environments, and that these environments easily develop practices which not only disadvantage women, but also tend to conserve and restrict rather than encourage and develop scientific creativity. However, the environments can do this in different ways. The researchers in the three environments studied developed different self-identities: nerds driven by curiosity, international research nomads and good and productive girls. The gender relations were also different. The good girls, who worked in an exceptionally female-dominated centre, produced a certain kind of homosocial femininity, very different from the masculine homosociality produced by the nomads, whose practices disadvantaged the women in the environment. Both identities were restrictive for scientific creativity. When competition between male and female researchers was actualized, gender became relevant and homosociality was tightened. However, even if gender relations had great impact in the everyday life in the environments, the researchers themselves did not attribute any importance to them.

The researchers in the excellent research groups did not talk about excellence as such. The concept was relevant in relation to funding, with the implication that to get funding one should pool with – and be subordinate to - a research leader whom the funders would consider as excellent. Once the excellent research leader had received a grant, money was distributed to his allies. Thus, the researchers themselves did not see themselves as the experts who could define excellence. That task was left to the funders.

While excellence was not a concept in the everyday life of the researchers in the excellence centres, production was very important. In addition, the importance of being part of the right networks – for example with peer reviewers for journals and funding - was recognised. These networks are predominantly male.

In addition to the initiative of large grants for excellence centres, universities and national funding bodies have different programs to find and promote young researchers who are seen as having excellence potential. Angervall (2013) has studied how these programs shape junior researchers' views on academic careers. The researchers who seem to be favoured by the programs are those who correspond to measurable criteria for excellence (publications and citations), are loyal to the system and have access to the right people, in the right places, for the right reasons at the right time. This group consists of both men and women, but stands for an ideal of research as a 'vocation'. The ideals of excellence are perceived as more accessible to men. Angervall found that many women act in accordance with prevailing ideas of femininity, i.e. they stand for basic service and job satisfaction at the

department and a large part of the teaching, and this is not advantageous in the competition. Furthermore, slightly more women than men could be found among those who professed themselves to be unwilling to accept the expectations of the strategic choices and a certain kind of performance.

DIFFERENT NATIONAL CONTEXTS FOR FESTA WORK

The FESTA work with excellence in the daily environment is performed in three very different national contexts. In Bulgaria, FESTA interviews were often the first time the interviewee was asked to reflect on the possibility that gender may have some importance for the evaluation of excellence. In Germany, many interviewees are informed of the fact that women do not reach top positions at the same rate as men, and that on the research policy level this is regarded as a problem – even if the insights about partiality in evaluations and the practices of science in themselves favouring men are not that widespread. Rather, the problem of women having children is regarded as an important obstacle for their scientific excellence. In Sweden there is some suspicion for the concept of excellence. It is seen as a concept funders use for making not always very well grounded decisions. While discussions about gender equality in relation to women's scientific careers are kept alive by state and university authorities, in the daily working environment most researchers do not see how ideals of excellence influence women and men differently.

METHODOLOGY

In all three countries a selection of both men and women were interviewed about their conceptions of excellence. The sampling was purposive, keeping the practical aim of the mapping in mind. The number of interviewees varied, but all career levels, from PhD students to full professors were covered at every institution. The samples are specified in appendix 1.

The interview guide which was common to all three partners included some thematic areas:

- What is an excellent researcher and what does it take to become one?
- Reflections on the concept of excellence and how it influences the research environment.
- Does excellent research require it all or is it possible to
  - also have a life outside research?
  - perform other academic duties, in particular teaching?
- Any experiences where gender influenced the evaluation of excellence?

The interviews were conducted either in the national language or in English. Already in formulating and translating the interview questions, our national differences regarding research environments and the concept of excellence became obvious. Having this interview guide as a starting point, the inter-

views then developed in different ways in the different national contexts but also in different disciplines.

The FESTA task is not about mapping perceptions of excellence, but about counteracting the negative effects of the excellence discourse in the daily working environment, especially for female researchers. In Appendix 2 we discuss some considerations when raising awareness about these issues in an institutional context, among researchers.

RWTH – GERMANY

BACKGROUND

EXCELLENCE DISCOURSE

With the launch of the German Excellence Initiative in 2007 by the Ministry of Education and Research and the Science Council and a second round in 2012 of this highly important national competition for funding and reputation among the German universities the excellence discourse became more lively in German universities. The Excellence Initiative comprised three funding lines: Graduate Schools, Clusters of Excellence (big collaborative research projects at the university), and Institutional Strategies. (cf. http://www.dfg.de/en/research_funding/programmes/excellence_initiative/ [13.11.2013]) and it triggered off a strong competition among universities for receiving funds from and reputation through being successful in this competition. Universities which were successful in all funding lines were labelled as Excellence University. This label was confined to twelve universities. The label had to be defended in the second round of the Initiative. RWTH Aachen University is one of twelve universities in Germany which carries that label and one of nine universities which has carried that label since 2007.

The goal of the Excellence Initiative was to foster international cutting edge research by identifying the "pikes" among the German universities and make them internationally visible. Behind this concept lies a pyramid model of selecting and promoting the "best" basing on the idea of meritocratic élite: performance is to be the sole selective factor. Quality is to be proved in competition. Equal opportunities were seen as formal criteria of the performance principle when the reviewer had to evaluate the proposals, especially in the third funding line "Institutional Strategies". Universities which missed convincing concepts for enhancing the representation of women especially in leading position failed in this funding line with the consequence that they did not received the label "Excellence University".

FRAMEWORK CONDITIONS FOR YOUNG RESEARCHER (CONTRACTS, (IN-)DEPENDENCE, SUPERVISION)

Conditions for qualifying in the context of a scientific career at German Universities are framed by the law "*Wissenschaftszeitvertragsgesetz" (WissZeitVG)* which was launched in 2007. The law regulates fixed term contracts in the sciences and research at German higher education institutions. It contains rules for temporary employment of scientific and artistic staff at universities and non-university research institutions and includes rules for the qualification phase and for the case that the job is financed by third-party funds. The WissZeitVG does not allow employment at universities and non-university research institutions for more than twelve years for young researchers in dependent positions. This period is divided into a PhD-qualification phase consisting of six years and further six years of a post-doc phase, whereas in case of parental leave this time is considered. Within this time, a

dissertation should be written and further qualifications, such as gaining a professorship, should be achieved. The law was originally supposed to simplify scientists' work on research projects at universities and non-university research institutions by means of third-party funds and thus to create more legal certainty. It does, however, lead to the problem that post-docs might have to leave the academic institution if they could not manage to gain a professorship or any equivalent qualification together with a permanent position. Due to the fact that there are in the meantime only a few permanent positions (see below) it means for the scientists a high risk of dropping out of the university or staying with an insecure perspective respectively. Because a possibility is only given on a temporary employment position in a third-party funded project in order to stay in the university beyond the qualification phase. (cf. http://www.kisswin.de/en/career-paths/legal-information_/wisszeitvg.html) One consequence is that scientists who do not want to leave science work in third-party funded projects with temporary employments after the twelve years and try to reach one of the rare permanent positions that are mainly professorship positions. Either they have applied for an announced position in a research project that most often a professor has started or they have submitted a proposal themselves successfully. They can have applied for a research project or a research position, or for being part of a collaborative research group and submitted their proposals at national funding organisations or within the funding possibilities of scientists of the European Union. Next to the high prestigious funding possibilities such as the ERC starting grants or comparable national models which give the funding holder independence at the university most of the post with own funding are located at a department under the responsibility of a professor. Those researchers thus remain dependent ones.

Accordingly, the personnel structure at German universities in 2009 shows that 68% of the scientific personnel have fixed term contracts. Below the level of independent university lecturers (professors) who comprise only 15% of the whole scientific personnel, only 17% of the dependent scientific personnel have permanent positions. Within the group of dependent scientific personnel an increase of fixed term contracts can be observed (from 79% in 2000 to 90% in 2010) and also an increase of part time employment (from 38% to 45%) as well as an increase of third-party funded financing of the employments (from 36 to 43%). (cf. Konsortium Bundesbericht Wissenschaftlicher Nachwuchs 2013: 15). Thus, most of the young researchers aim to reach a PhD-qualification on a position that is not full time salaried employment. Furthermore, almost half of them have contracts with less than one year duration. (cf. http://www.zeit.de/2011/50/C-Hochschule-Wissenschaftler [13.11.2013]) Accordingly, an academic career is connected with high risks and oftentimes with precarious contract conditions. Finally, at universities there are only few structured PhD-programmes (graduate Schools and further education learning programmes with courses on scientific writing, career planning, self-management) so that it depends on the leading skills and personnel development skills of the professors or their deputies how good the supervisions of the PhD-candidates are.

TEACHING LOAD

Most of the teaching load has to be provided by the professors (normally 4 lectures per week in a term at universities) and also by the senior scientists who hold a permanent position. However, also the young researchers who are employed on non third-party funded fixed term positions most often have a small teaching load of one lecture per week and term that is fixed in their contracts. Most of them support the professors also in the management tasks around teaching and research. And finally, there seems to be also a practice that some of the third-party funded young researchers are involved in teaching, too.

DESCRIPTION OF WORKING CONDITIONS (INCLUDING RESEARCH FINANCING)

The German state governments (Länder) have to ensure basic funding of the universities. All in all, almost 90% of the funding of the universities comes from the public authorities, however most of these means (80%) are from the states governments and the remaining 20% from the federal government. The federal government has a share in the financing of research projects, specific programmes (such as the Excellence Initiative) as well as in financing research-sector structures at universities, including large research apparatus. The remaining 10% of the overall funding of the universities comes from private resources, which is mainly contract research. (cf. http://www.hrk.de/themen/hochschulsystem/ arbeitsfelder/hochschulfinanzierung/). However, also most of the public funding is distributed through performance-related resource allocation or on the base of project and program applications at the *Deutsche Forschungsgemeinschaft* and the *Bundesministerium für Bildung und Forschung* as well as at some other federal ministries. Finally, public research financing enters in national research organisations such as *Max-Planck-Gesellschaft (MPG), Helmholtz-Gesellschaft deutscher Forschungszentren (HGF), Fraunhofer Gesellschaft*. These research organisations have the purpose to promote activities in applied research. They conduct research projects, carry out projects conferred by the German federal and State governments, and perform contract research.

All in all there has been a development in the recent decade where the basic finance of the universities has decreased and the funding has increased that is distributed through competition. Over the last years, this increasing tendency of the economization of universities in Germany with its advancing competitive constraints between the universities and researchers were one consequence. However, also methods of “Public New Management” were implied, which has the aspect of controlling as one of its basics and lead to an enhancement of administrative tasks in the departments. However, despite the above sketched contract conditions and the development of more competition among research money, motivation and working atmosphere is often seen as very good and above average among the academics at German universities. (Schmidt 2010)

Finally, at RWTH working conditions in terms of research facilities are comparatively good in most of the departments due to many co-operations with industry (which is especially characteristic for RWTH) and successes in the acquisition of research funding. RWTH counts to the universities in Germany with the highest amounts of third-party means. The orientation towards industry also shapes the framework conditions in those the engineering department which have strong co-operations with the industry. Research is then more application oriented, confidential issues are relevant and have effects on the publications and presenting of research findings in the scientific community. Most of the PhD candidates aim at a career in industry. Their theses are oftentimes financed by the industry and prepare the entrance in the financing enterprise.

LIFE OUTSIDE WORK

Parenthood among academics in Germany is much rarer compared to the total society and especially the childless level among academic women is significantly higher than averaged. According to the micro-census in 2012, 28% of the 45 to 49-year-old academics are childless in Germany. Among the so-called non-academics who have a share of 83% of all women in this age group, have a childless-level at 20%. However, this significant difference is visible in all age groups (Federal Statistical Office 2012, p. 36f.). Studies have proved that the conditions for a good reconciliation of scientific work and family cannot be considered as given. As a consequence, even the existing wishes for children are not realized by academics. (cf. Inken Lind 2008)

When university employees (nevertheless) decide to have children, the work-life reconciliation issues are particularly characterized by a lack of offers for childcare for children less than three years. The child care ratio for 2013/14 in North-Rhine Westphalia lies in the kindergarten at 36.4% for all children with that age. This current status has risen in the last year at almost 20% due to strong expansion efforts and can be seen as a significant improvement. Nevertheless, every support request still cannot be granted.

But even so the frequently non-existent flexibility for young researchers in the universities and the unchanged traditional working culture shape the everyday working life of the caregivers, the family monitor[1] shows that support by the employers for short-term care requests has a positive impact on employment satisfaction and also a clear influence on the volume of employment of men and women. Or in other words, most of those parents, who work much, can rely on the support of their employers (Monitor of Family Life 2013, p. 13). Moreover, there is still a working culture of presence and long working days predominant at German universities and in enterprises. Accordingly, the European

[1] The family monitor is published by the Federal Ministry for Families. It is a representative survey that is carried out annually to explore developments in family policy issues.

Working Condition Survey shows that in particular the presence of children in Germany affects the work-life balance negatively (Federal Statistical Office 2012, p. 55 ff).

Family-friendly universities have become a socially approved mission statement. Also the RWTH has carried out a reorganisation process in the context of the initiative "audit family-friendly university" since five years. Care services have been available to improve the reconciliation of family and science at the university since about 10 years, like for example family counselling and holiday child care. However, all these efforts cannot be caught up the lack of child care offers by public services.

GENDER AND THE EVALUATION OF EXCELLENCE

In all States (Länder) of Germany States Equality Acts (LGG) are applied. These laws oblige all public facilities, including universities, to the equalisation of men and women as well as to an active advancement of women. The implementation of these laws takes place in women promotion plans, equal opportunity officers and in case of an underrepresentation also in the commitment to privilege a female applicant towards a male applicant if the qualifications are equivalent.

Beyond that, the General Equal Treatment Act (AGG) is meant to prevent any discrimination or disadvantage out of reasons of race, ethnicity, gender, religion, worldview, age or sexual identity. Therefore, persons concerned are also protected of disadvantages in non-governmental facilities and can take legal actions if necessary.

The standards of „Gender and Diversity Mainstreaming“ has been a constant component of competitive university strategies in Germany that was fostered through diverse national competitions of the federal as well as the state governments and the *Deutsche Forschungsgemeinschaft*. And especially by inserting these standards into the Excellence Initiative Gender and Diversity Mainstreaming was connected with the “Excellence” of the university as organisation. The RWTH Aachen University implemented this topic already in 2007 in context of the first Excellence Initiative by launching the rectorate executive department „Integration Team – Human Resources, Gender and Diversity Management”. (IGaD). Meanwhile, many other universities in Germany have established similar facilities.

Gender and Diversity Management / Mainstreaming at RWTH Aachen includes several facilities and many gender equality activities that can be classified in the areas of mentoring, coaching, continuing learning programmes, scholarships for women and networks for the target groups of female students, PhD-students, postdocs and professors. The executive department IGaD works closely with the Equal Opportunity Officer, three professorships with gender-denomination and a Vice-Rector for Human Resources Management and Development. Together, they define the parameters for the realization of the so called “People Policy” which is orientated on gender equality and is the future concept of the university. The IGaD coordinates all the strategic processes and connects the different actors and fields

of action. On the whole, there is agreement on the necessity of reaching more gender equality in the university – be it due to own conviction or be it due to the increasing connections of gender equality with the distribution of financial resources.

EMPIRICAL FINDINGS

WHAT IS EXCELLENCE?

The question "what is excellence in science" was oftentimes responded to in relation to the German Excellence Initiative and the status of RWTH Aachen University as *Excellence University*. In this context the university as an organisation plays an important role and is connected with the term excellence and not only with the single researcher. From the perspective of applicants a university that was successful in this national competition is highly attractive because these universities promise good research condition. A female professor who has decided to follow a job offer of the RWTH because she wanted to be at a "First League University" is an example:

> *"They also tried to keep me there but the reason I left now, was that I didn´t believe that the university would be able to work itself to the forefront within the university competition. On the contrary, I believe that a bigger gap is going to develop. Universities like Aachen and Munich are simply going to pass by. It is similar to a new game of monopoly where a hotel stands on the Castle Street right away. That makes it just tough for the others. [...]. And considering that, I believe that I´d rather be at a university that plays in the first league." (female professor, engineering)*

This stance is also addressed – but from the opposite point of view – by the persons who had to hire researchers for professorships. These people stress the fact that universities that are associated with excellence have better chances to gain the good scientists who are first place listed scientists in an appointment procedure and who accept the job offer of the university. The following quotations mirror this perspective very well. It is a generally accepted view at RWTH with relation to the organisational aspect of excellence. Moreover, the citation shows how the university stakeholders evaluate their own organisation:

> *"Well, first of all excellence is a buzzword, one that supposedly should distinguish very good universities from others. Excellence can't be conjured up, it has to grow, and when I speak on Aachen´s behalf, then it grew because of the technology over the last century. And that is something you can´t kill that fast. […] You notice that it radiates over the years, because the staff manager and the decision makers in the firms themselves came from here and know about and are also convinced about their own previous university and that's comfortable. It is very difficult to gain for excellence. […] And it is just as difficult to lose excellence. The criteria for excellence*

are actually the same everywhere, but some universities have better chances really to gain candidates who are good, female and male candidates. And others, with them…they have to cope with less top class male and female applicants, because the others won´t go there. […]. In our case, here in Aachen, we managed to get every applicant on the list within the last 20 years." (recently retired professor, informatics)

There are only few voices among the interviewees who criticise the Excellence Initiative in terms of what it means for the evaluation of scientific achievements. Most of them think that there was no change with regard to the evaluation criteria of scientific achievements and the judgement of the peers if an achievement is outstanding or not. However, some of the interviewees point out that they think that the word *excellence* has lost its meaning because they observe that suddenly everything seems to be excellent which was previously normal (scientific achievements, researchers, the university).

DESCRIPTIONS OF AN EXCELLENT RESEARCHER

Most of the interviewees describe an excellent researcher as somebody who has a high reputation and is well known in the international scientific community. That means that s/he publishes in journals with high impact factors, her/his work is cited by others, and s/he has invited talks on important conferences with many participants. Other universities try to gain these researchers for an employment. Moreover, these scientists really contribute to the research in their subjects. There is agreement that a researcher needs time to generate excellent results in his/her subject. Against that, the amount of third-party funds is most often not seen as a criterion for an excellent researcher. Moreover, excellent researchers are characterised through high engagement, they are passionate about their work and put their heart and soul into the research. Furthermore, one PhD candidate points out that excellent scientists have a sense for doing science and that they work very conscientiously. However, only few interviewees describe excellent researchers as "true exceptions" which signals that not everybody has got what it takes.

Moreover, there are also criteria for the characterisation of excellent researchers which are not connected with the scientific output of the researchers but with their behaviour: they have a certain appearance, they have good presenting skills, and there is a certain star cult around them.

Beyond that there are some more specific descriptions. One is connected with the competition in the scientific field for resources and reputation. Here the idea is that scientists are excellent when they face up to the competition honestly which means for example to foster outstanding young scientists in the same research area and to accept that s/he becomes a serious competitor in the scientific field.

"I would say that the really excellent male and female professors, at least the ones that are excellent in my eyes, stand above such things [if their protégé become full-fledged professors and competitor, authors note]. They face the competition. They see that and they are also aware that it´s going to be a little bit harder soon as their former protégé has arrived on the same field and wants his own piece of cake in the future." (department manager, male senior scientist, engineering)

Another description of an excellent researcher, which is shared by many interviewees, refers to young scientists /PhD students. In relation to this level of experience in science excellence is given when the people follow own ideas, interpret existing knowledge in new ways and follow her/his own way.

"And real good is the one who surprises you. The one who has new ideas or who interprets something new and therefore makes something new out of it; because nobody expects him to stay on the given path. This is probably something you realize on a researcher during the postdoctoral phase, that he has something more to give because he can develop new ideas. And maybe that's the certain thing that is going to be important during one´s career, being able to not just fulfill the ideas presented by your boss. Sometimes you can see people being assigned to a post that had a good record before, but when it comes out of the sudden to make everything by themselves, then there is not that much that comes out of it. So basically they have been pushed in the past because of their networks, but when it comes to being creative on their own and developing a whole new topic, than they are not really distinct." (male senior scientist, engineering)

The citation also illustrates that a scientist who is successful in science in the sense that s/he gets one of the scarce and high level posts of a professor in the German sciences system does not mean that s/he is regarded as an excellent scientist at the same time. It points to social mechanisms that are present in science and illustrates that there are weaknesses in the science system that undermine the principle of a meritocratic elite in science.

CONDITIONS FOR BECOMING AN EXCELLENT RESEARCHER

"Becoming an excellent researcher" and "becoming a successful researcher" are closely connected in the views of the interviewees but they also perceive possible frictions. Accordingly, these two aspects can be clearly differentiated. However, there is the predominant opinion that one cannot become an excellent researcher without being a successful researcher. A successful researcher is a person who has become a professor or an independent researcher. In order to become an excellent researcher properties are needed such as engagement, devotion, passion, willingness to make sacrifices, scientific exchange with other (international) scientists. Surprisingly, talent was no property that was listed very often. But, in order to become a successful researcher, the researchers agree that next to the perfor-

mance capacity strong motivation and dedication to achieve, the acceptance of high work load and international mobility, mentors and networks are necessary preconditions.

> *Interviewer: "So what does it take, taking the whole scientific career from a young male or female doctorate into account, to become an excellent male or female scientist? Female professor: Well, first of all the performance. One has to differentiate between the scientific performances, which can be provided by oneself and then eventually the position that can be reached. As a start, these are two different things. The one thing is more from within yourself. Of course, you can write publications, everyone can try that. That´s necessary. Then, when it´s about a professorship or something of the kind, the person still needs to be successful during the application procedure and that´s the point where other skills are being questioned that more or less might or might not be present. There are of course some cases of excellent male or female scientists that weren´t successful in the application procedure or simply had it harder to get to certain positions." (female professor, engineering)*

Moreover, due to these preconditions that are seen as axiomatic, all interviewed scientists see contradictions in the reconciliation of scientific careers and having children. One scientist pointed out that the willingness to make sacrifices with regard to children and family is another precondition for a scientific career.

> *"But I also think that this is not a question of being male or female. This is rather a question of achievement potential and also the dedication for performance, and also the readiness to make sacrifices when it comes to family planning. My boss has devoted his heart and soul to research. And when he sees that in somebody else, the ability and also the will to do so, then he´s going to help this person in any way he can." (department manager, male, engineering)*

Thus there is the broadly shared opinion among the scientists that only those scientists can be successful who do not eschew the strenuous effort. Other scientists can by all means be excellent in their subject, but not successful in the same way. The citation also illustrates the social mechanism of homosociality. It is still a prevalent opinion among the interviewed professors that young researchers who do not show the same willingness to spend all their time for research are not seen as persons who are really dedicated to research.

Moreover, importance was also given to support structures, like having a mentor who "speaks the international language of excellence" and networks that a scientist needs in order to have a successful science career. Especially the mentors, but also the networks impart the right strategies and knowledge to the young scientists on what is necessary in order to plan a successful career in science and

support realizing it. A department manager describes his professor as an exemplary mentor and scientific executive officer.

> "*My boss tells people that, even when it´s unpleasant sometimes and individuals might have a different perception of themselves compared to external persons ..., he says honestly I don´t see you as a professorship candidate. But I also think you have the best chances if you are going to orientate towards XY and if you do so then I will also try to…. My boss really campaigns for people. There are letters of recommendations that pass by my table, where I could become jealous. These are real chorus of praises. In the Anglo-Saxon region, as a German, you find it written rather bloomy and exaggerated. But my boss says that this is the way it is over there in America, everything is just fantastic. And this forces you to not just write that he´s good, because this means Oops away with him. And I think a lot of other professors wouldn´t take the trouble as a rule, but here that's what´s being done. There is also advisory service." (department manager, male senior scientist, engineering)*

Mentoring and networking was seen as very important because formal support structures at German universities are very weakly developed. Thus there is the feeling among young researcher that they have to struggle through themselves. It depends on chance if a young researcher meets the right person or finds a PhD-position in a department with a professor who supports her or him and does lobby-work for her/him as mentor. Only few young researchers select their supervisor very deliberatedly and strategically.

> *"Well, by that time, because I also didn´t get any fostering from home, I had made several contacts within the German community in my subject and exchanged experiences with professsors: young ones, old ones and somehow I hit the mark. It somehow led to having a real powerful colleague who in fact at that time …. I landed on 1st place - that was very surprising. I was still very young." (female professor, engineering)*

In contrast to the experience of the female professor, again, the department manager describes his professor as an exemplary supervisor who acts in the very supportive and fair manner which is oftentimes missed in the supervision relationship by the interviewed young researchers. Two crucial aspects, where conflicts in supervision relationship oftentimes inflame, are the order of name on publications and the independence that is accorded from to the young researcher. And furthermore, in the following citation it becomes clear what can be described as a "natural" mentoring relationship in opposite to official mentoring programs that are oftentimes offered to female researchers. This "natural" mentoring supports the young researchers in their careers very effectively and is part of a good supervision.

"In most of the publications, his name is mentioned last. In these cases he did the scientific assistance but nothing besides, that, no experiments were made by him, or the ones where he did all the main work, but then his name is mentioned in the front. And this is something that you not only have to allow as a professor you have to support it. So if you have somebody from your staff who you think might be a proper fit you need to talk to them and ask them if they want that and if you want to create this path together. Then you got to help that person actively. He has to help sending him to the right meetings, try to introduce him to the right people, he has to do lobbying or for example organize a stay abroad. My boss was in Sweden and therefore has good connection to X (city in Sweden). It´s not a coincidence that our guy is now in X. And my boss really throws himself into it and says go to him and there he recommends him and says he wants this or that type of career and I think he´s adequate for that, he´s a good postdoc and when he´s with you he´s going to achieve something for you and comes back to us after that. That´s something you need. Of course one can say that you have to fight through yourself and that this shapes [a person] too. I also agree with that but for a career in science, and I think that has nothing to do with connections, one needs to help. ... And when you have a boss that does so, you have quite the chance. That's gender independent. At least in our field there are no reservations towards women." (department manager, male, engineering)

Thus a further precondition is also the challenge for young researchers to find departments with a "performance oriented working environment" where they can do outstanding scientific work. Such a working environment is characterised from the perspective of postdocs by a group of young researchers who aim at a scientific career and who act at the same time as role models for the less experienced researcher. Moreover, again the professor as supervisor is decisive. It is important that the professor allows that the postdoc can do independent research.

Especially the postdocs also pointed out that it is important for a successful career in science to establish a network of one's own. It is particularly important when there is only little support from the professor who helps to become invited to important talks on conferences and to get to know the people who are engaged in journal boards in order to get the publication located in the journals. Finally, the network helps to depict the scientist as somebody who has reached the appointability to a professorship and communicate this in the scientific community.

Furthermore, from the perspective of the young researchers, also reliable working conditions are important. This means in particular that contracts last over several years because such contract conditions are seen as necessary to dedicate oneself to the own scientific work. Otherwise, there are

constraints of looking for connecting jobs that most often do not give the possibility to continue with the work started at the former job, or just have feelings of insecurity[2].

Finally, having experience abroad seems to be inevitable for a successful career in science. Especially for the engineering faculty, at the latest with the entry into the German Excellence Initiative with its stronger orientation on standardized scientific indices, international mobility together with the other typical indices such as publications in high ranked journals became more importance for scientific careers.

EXCELLENCE IN RELATION TO THE DIVERSITY OF ACADEMIC TASKS

In the narrations on excellent universities and its scientists teaching has had no relevance yet, although RWTH was successful in some national competitions with its institutional strategy for fostering excellent teaching. Only in some cases the young researchers have told that in their working environment are discussions if the teaching load is fairly distributed because teaching is more seen like something that cost time which then is not available for own research and progress.

Other academic tasks, however, which are closer related to research such as managing the application and implementation of big national or international collaborative research projects and also having in mind a responsible and comprehensive supervision of young researchers careers were by all means aspects of excellence of a scientist. The former aspect was more addressed by senior scientists who also have had the institutional strategy of the university in mind. For them it is important that there are professors in the faculty that have the format and willingness to coordinate an application process for a big project, especially collaborative research centres or graduates schools from the national funding organisation DFG which have high reputation. However, this stance is not shared by all researchers at the university although third party funding is an indicator of the performance-based funding allocation of the university. But this depends also on the respective subject of a researcher and if there is a tradition to work rather alone or in cooperation.

From a subject-related point of view an important difference between the natural sciences and engineering can be stated which is related to its orientations to the scientific community and the industry respectively. These orientations have also important effects on the working culture and priorities. Whereas the natural sciences have a strong culture of scientific publishing, the engineering subjects are more application oriented which mean that they have not the same priority with regard to publishing. One of the postdocs has expressed it that way that one could contrast excellent science with excellent practice.

[2] At time there is an intensive debate in scientific policy on improving contract conditions of young researchers.

However, the entrance in the Excellence Initiative in 2007 and its defence in the second Excellence Initiative competition in 2012 was connected with a new strategic orientation of the university that meant a stronger valuation of publication outputs and a certain devaluation of third party funds within the performance evaluation of the departments. This has meant an appreciation and strengthening of the natural sciences compared with the still strong position of the engineering subjects at the university. From the perspective of the young researchers in engineering subjects it has become now more important to plan the career at an early stage and strategically. They have to decide if they want to go to industry or to stay in science and accordingly they have orientated their research and publication practice.

With regard to the responsible and comprehensive supervision of young researchers, this aspect was addressed accordingly mainly by PhD students and postdocs. Many of them criticise that the evaluation of candidates on professorships is oriented only on the professional qualification but not on their competence to lead a department and to contribute to the advancement of young researchers. And accordingly many of the young researchers miss a structured fostering of their careers and have the feeling that they have to struggle themselves through. Thus, competences such as motivational communication, personnel management, producing a valuing working culture are also elements of excellence.

HOW DOES EXCELLENCE INFLUENCE THE DAILY WORKING ENVIRONMENT?

RWTH Aachen University is described by some of the senior researchers as a "business model" because of its close connection to the national industry. They allude to a RWTH specific characteristic: the strengths of the engineering faculties to have many collaborations and research contracts with the industry which means at the same time a high amount of third party funds from industry.

> *"For me it is obvious that the worldwide standards and indicators of excellent universities doing excellent research were not so pronounced in Aachen, I believe, as they have been in other excellence universities and with which Aachen competes right now. From what I noticed, Aachen was very successful; it has a very successful business model. It was THE technical university in Germany. Close cooperation, very close cooperation and successful cooperation with the industry; even before the excellence initiative one could recognize that on the numbers on external funding. This has been a unique criterion and still is in Germany and the world. I don´t know any case where a university is so devoted towards the industry and above all towards the national industry" (department manager, male, engineering)*

This close connection, however, has effects with regard to the publication and conference culture that is oriented to the capacity to make use of the research in industry and is also oftentimes connected with confidentiality agreements. The performance of departments was evaluated primarily on their

success of applying for third party funds. With the entry into the competition on being successful in the Excellence Initiative, the common agreed scientific indices (especially publications) became a more important indicator for the evaluation of the performance of departments and their researchers. The two different logics of evaluating performance in terms of publications or external funds also characterize the excellence discourse at the university.

Some of the senior researchers take up this organisational point of view and point out that universities nowadays have to act more and more as "entrepreneurial universities" which use publications and third party funds parameters as strategic steering instruments. However, there is disagreement with regard to the prioritisation of the parameters and its ambivalence. External funding has lost some of its importance in comparison to publications and the university board communicated the risen importance of publications when the university participated in the Excellence Initiative competition. With this new orientation it depended on the former orientation of a department in engineering how strong they were dedicated to the industry or to the scientific community. Against this, in the natural sciences that is not so strong at RWTH there always has been an orientation at the standard criteria in science. However, this discourse also has influenced the science careers of the young researchers in engineering as the department heads communicate these strategic requirements also to them and expect that they act correspondingly. As external funding is valued in the performance oriented distribution of means, also the young researchers are demanded to contribute in writing proposals instead of writing publications which, however, would be better for their own career. A female professor has said that in her subject, which is oriented to basic research, researchers are actually evaluated through their research that is published in journals. However, money in her faculty is mainly distributed on the base of their raised funds. So, she feels that the main criterion for distributing money does not fit with the scientific reality in her subject, which has also negative effects on the careers of the young researchers in her department.

> *"Well I think the criteria of performance should be adequate with regard to the respective subject. I mean that is what senior engineers and the young researchers are depending on: how is the department … how is it rated? And when the assessment criteria for the departments are wrong, it becomes quite hard to adjust these criteria for the young researchers, because they are depending on it. […] I can only create a good working environment, where I myself have the opportunity and that is within my own department. And when the criteria are in our favor, if for example publication would be more important I could tell my staff to write more publications. This way I have to say write more proposals." (female professor, engineering)*

Thus, the citation also demonstrates the ambivalence with regard to the performance parameters and that there is no flexibility in considering the subject culture within the faculties or even in the departments.

Another aspect where the excellence process has effects on the working conditions is seen especially among the senior researchers in an increase of management tasks with the consequence of a decrease of research output and therefore a weaker position in the international competition. In the course of the developments of universities toward "entrepreneurial" universities management tools such as monitoring, controlling, agreements on objectives and performances were introduced. This has had the effect that in the faculties more data have to be gathered, reports have to be written that are collected and evaluated by the central university administration. The responsible ministry again makes agreements on objectives and performances with the universities. And also the Excellence Initiative has brought about many report obligations as actually it is a big third party funding project. Moreover, in the third funding line, "Institutional strategies", money is partly distributed again in a competitive way within the university for that committees for the evaluation of the respective proposals are needed.

> *"Meanwhile it is this way, that even the management of the chair demands much more administration and is marked by numerous processes. [...] And evaluation committees - that's all I can really say - are just a waste of time. And for all possible things there has to be reports and a collection of data. And those universities one likes to compare oneself are different when it comes to this point. I have colleagues who do research at the ETH Zurich, at Stanford and when they tell how they are working and how they concentrate on research, [...] So they work on the product research or on the product teaching, but not on some numbers that have to be put together for the rectorate, sitting in commissions, commissions reports […] (male postdoc with management tasks in the department, engineering)*

Moreover, there is a trend in academia that importance is given to research that is conducted in the structural frame of big collaborative research projects and also in the context of prestigious competitions such as ERC calls as well as other starting grants, that are fostered through the European Union as well as in the national context. There are some researchers who criticise this development because they think it needs much time that should be better spent for the actual research.

Another aspect is addressed by many researchers, namely that there is the suspicion that grants are not awarded on the basis of the pure scientific quality of a proposal, but that there is also oftentimes pure coincidence with regard to who is awarded for example with an ERC grant. However, these grants are valued as indicators of the potential of the researchers who are on the level to apply for professorships.

> *"The thing that is playing a bigger role are the ERC Starting Grants. This I notice very often, that appointment committees pay attention to it, which is absurd, because based on my personal feelings, they are almost randomly awarded." (male professor, informatics)*

LIFE OUTSIDE WORK

The guiding ideology of a scientist who lives for his/her science and has no life outside is still very present in the attitudes of the interviewed scientists. Most of them do not question the 24/7-working culture in science. And there seems to be no difference between the young and the senior researchers.

A PhD candidate has told us that his parents are worrying about his engagement to work nearly each weekend on his thesis; his opinion is: "If you live for and love science, then it is difficult with the work life balance, of course." (male young researcher, engineering) A professor has pointed out that he has left industry as there was the attempt to stop him from working overtime. He thinks that the debates on family friendly universities and work life balance are too one-sided. He loves his work and do not want to get restricted. He said with regard to the question if doing science is possible within normal working hours of for example 40 hours per week:

> *"I think that's a very difficult question and also a very false one. My co-workers use to say that I need to work less….I don´t want to work less. I´m happy working 70 hours. It´s not a penalty. The difference is if I do that out of my own motivation, if it enriches me, or if it burdens me. This stigma that we are a hostile….If we want achievement, we have to accept the fact that some people work 70 hours out of their own conviction." (male professor, engineering)*

A department manager told about the professor who leads the department, that he actually has no work life balance either.

> *"He said [the boss]: before I met my wife I had no time at all. I spend all week from morning to evening in the laboratory, doing experiments and writing on publications during night time and worked the whole weekend through. During this time I just worked. And I immediately believe my boss because that is just who he is. He doesn´t have any hobbies beside research." (male department manager, engineering)*

However, it seems more common that (especially the young) women than the (young) men want to have a life outside work and also realise it. But contradictions emerge also for the young male researchers when they have children. Those young researchers often have said that it is difficult for them to spend enough time with their wife and their children. However, they accept the working culture in science and, surprisingly, there are hardly any discussions if there are possibilities to create a working environment that considers the constraints and demands of colleagues with caring responsibilities.

The prevalence of the attitude of having no choice between having a career or having children, however, is resolving, especially by female professors who have children. But there are also more and more professors who support talented female young researchers to find a way for having both, a

career as scientist and children, by advising them and providing role models. But having a career in science *in part-time* – also only for a certain time – is something that is not imaginable for most of the interviews if one want to aspire to a professorship. A female postdoc with three children has decided to interrupt working for several years for parental leave. Now she works officially part time but often spends more time in her work which is seen as a matter of course. She said that this decision to interrupt career for parental leave for longer than half a year is actually a "No-Go" and that she can be happy when she will get a permanent contract someday. Accordingly, all interviewees consider good childcare opportunities as absolutely necessary in order to pursue a career in science.

Moreover, it seems that the female researchers have a more differentiated view on the working culture in science. They stress its flexibility, but also the need for a careful dealing with work and wellbeing demands.

> *"That´s difficult and that´s where I think, if you don´t want to lose yourself and be asking yourself every day what am I doing and where am I; of course, you really need to work daily on that and there can… be certain phases. It can happen that… you are in a phase of stress because of some upcoming deadlines or so. But you need to know when to put the brakes on." (female professor, mathematics)*

Also the increasing demand for (international) mobility in a science career is not questioned. But many of the interviewees have stressed the difficulties if one has to change cities - especially with young children. At least after the PhD qualification scientists have to change the universities if they aspire to a professorship. And in most subjects a stay of two years abroad seems to be almost mandatory. The situation gets even worse if dual careers have to be reconciled.

GENDER AND THE EVALUATION OF EXCELLENCE

Gender equality has become part of the university's institutional strategy after 2007 when RWTH has participated in the Excellence Initiative. The broadly communicated target is to increase the portion of female professors up to 20% till 2020. Since then, this has been communicated by the university board on university wide events and found its expression also in the gender equality plans and the target agreements with the faculties. Also other universities have integrated gender equality in their institutional strategies. These developments have contributed to a favourable situation. Now there is a "competition" among universities to attract female researchers who are on the level that they can be appointed to a professorship - especially in science and technology subjects. Against this background a reference to quota was made in the interviews in same cases. The interviews have had the feeling that women have better chances than men to become appointed to professorships at time. But this was evaluated in different ways with regard to performance and excellence. Suspicions were expressed that this quota policy has the effects that women are appointed because they are women and not

because they are the best. Female professors have seen the danger that they also are under the cloud of being a quota-woman and that their achievements get devaluated. And finally, a department manager has pointed out on behalf of many others who share this opinion that this policy causes contradictions. They think that young female researchers who just started their career are appointed to boards while men have to possess more scientific achievements.

> *"I don't believe that there is always an obstacle or a discrimination of women compared to men or that there are differences. I think it´s quite the contrary. At the moment I´m under the impression that women are benefiting from quotas. Even if they´re not official, there are a lot of positions where they are looking for quotas. One only has to look at the appointment mechanisms or the rules which are given to us now, how we have to do it, it is obvious that the RWTH is looking for more women. And when I see how young women are climbing up the career ladder in our research field, making it into the DFG or other committees in such a short time, into committees whereof people used to say that you have to be a professor for over 10 or 15 years to get in and they achieve it within half a year; sometimes it´s frustrating to people who have been working towards that position for many years. So I think the chances for women are pretty good at this moment. I can just recommend every woman who is ready to do it, to do it. Because at the moment I think it is a favourable situation because people are looking for that exactly." (male department manager, engineering)*

Gender inequality most often is only seen with regard to the question of having children or having a career in science which is rather something that is mutually exclusive – for women but also for men. The reconciliation of family/children and a career in science is seen especially difficult when there are children right in the phase of the career where a stay abroad with a certain length is obligatory.

> *"At the moment we have a postgraduate, who has just received his doctor's degree and is in X [city in Sweden] right now because of that exact reason [to have a stay abroad in your CV, author's note]. Because this is a candidate, who doesn´t have it easy, he recently became a father, and as the man, this temporary employment abroad is hard for the family as well. In terms of a scientific career, he´s probably going to be gone for let´s say a year and if you are strict that´s not really enough. Actually, if you want to play safe and plan everything right you need more time than that. And you have to put more effort in it. But that's hard for him, because his wife is from here and works, so there are some points of friction." (male department manager, engineering)*

However, gender differences in the evaluation of scientific achievements are most often not received. Just in one case, a female professor has pointed out that it is harder for a female researchers to make a career in science because women have a poorer position in society on the average which has its

beginning already in the childhood. She stressed that women have to work harder in order to get the acceptance in science as elsewhere in science.

> *"In my opinion most women were brought up this way until their Abitur [A Level], that a big career was nothing that was suggested to them. That means they didn´t get this kind of self confidence by breast feeding. Maybe self-confidence is the wrong word I mean a certain standing. It ´s simply the case that in our society and I would say that this continues on until today women are less accepted than men. Women have a worse position on average in society. And that has an absolute effect. […] And when you somehow hear it your whole life, being brought up this way and going through life knowing that as a woman you have to do more and that it is harder and you´ll not be accepted as much…I mean somewhere it has an effect on you, you can't ignore it completely. And the accomplishment is…you see that with a lot of women, that woman who are very good, that judged by their accomplishments are much better than their colleagues, still have less self-confidence." (female professor, engineering)*

The same female professor also has broached the issue of competition in science. She thinks that the strong competition with its practice of distinguishing oneself and demonstrating power put women off. It is not enough just to make good work but a young researcher has to learn to communicate own achievements in an offensive way. Again, she is of the opinion that women do not learn to compete with others in their childhood and youth, and she stressed that it is decisive in science to assert oneself. But also the procedures for evaluating achievements in kind of measuring everything in a quantitative way seems to her an unusual practice for women: "You are quasi made glassy in your performances" She concluded that one has to ask if science is actually attractive for women and that one cannot recommend women a career in science readily. She refers indirectly to gender equality measures that try to attract young women for a career in science without indicating also the negative aspects of a science career. These beliefs refer to research findings as depicted in the introduction whereupon also an increase of competition oriented practices was observed that is connected to the implementation of the concept of excellence and the increase of completion for funding.

Furthermore, a department manager has pointed out that women are told that they have very good career prospects in science at time but in his opinion the prize for a career in science – sacrifices with regard to children and family – is not communicated in a serious way. Especially because a streamline career in connection with age is still an indicator for defining an excellent researcher and is valued in appointment procedure. And finally, there are different opinions if female researchers with children should be evaluated in these procedures in that way that a temporary less scientific productivity during parental leave is considered in comparison to candidates without caring duties.

CONCLUSIONS AND IMPLICATIONS FOR GENDER EQUALITY

The Excellence Initiative with its model of excellence has influenced the self-understanding and culture at RWTH Aachen University and has also an influence on the daily routines of doing science. How the imperative of excellence unfolds its effects at RWTH can be depicted with the term "personally felt excellence" (Schmidt 2010). Schmidt points out that in times of the German Excellence Initiative universities are confronted more than ever with the omnipresent demand that everything has to be outstanding, unique, above-average. We recovered this demand in the narrations of our interviewees. This demand is present in the mission statement of the RWTH, in the lectures that now are evaluated in the context of the institutional strategy for excellent education, in announcements and in everyday conversations in the university and finally in the minds of many scientists who feel the "spirit of excellence" at RWTH. It seems that women and men alike are "infected" by this spirit of excellence.

However, with the excellence initiative also a new sight on gender equality comes into many universities. In the national policy based research discourse and its strategic papers gender equality was formulated as equality standard in research. And at least to a small extent gender equality performance became part of the evaluation criteria of universities as well as of the proposals of researchers. With this increase of the demand to implement more gender equality in the universities, much more attention was paid to gender structures and gender equality activities that aim at the increase of the proportion of women in the departments and in leading positions. In the recent years a lively and predominant discourse has emerged at RWTH on this issue. The university board put pressure on faculties to recruit more women as professors. Appointment committees now have to depict what they have done in order to find qualified women when they do not invited female scientists in adequate numbers. However, this top-down approach also prompted resistance against this pressure. As we have seen in task 5.1, hidden resistance strategies were applied in the appointment procedures. The strategies try to avoid that for example only such female researchers were invited whose research CV were obviously not as good as the favoured candidates. But also female professors feel threatened by that specific kind of visibility that is now given to female researchers. They have the feeling that they have to defend themselves against the accusation that they got their professorship not due to their achievements but only due to the fact that they are women.

PhD students and junior researchers feel less influence of the excellence initiative on their daily working environment. Their contract conditions remained worse (short durations, often part time contracts with the expectation to work full time). Only few graduate schools were launched which gave PhD students more structure, independence, and embedding into a research network during their PhD phase. Moreover, there are hints that the excellence initiative put more time pressure on the researchers. Although there is a an intensive discourse on reconciliation possibilities of science and

family on the university level with initiatives to implement more family friendly working conditions, in most of the departments there are practices alive such as presence culture, 24/7 working load. This practice pressurises those researchers with caring responsibilities who cannot conform to this practice. And there are also opinions that women are not fully passionate to their research any longer when they got a child. This refers to the occurrence of homosociality practices that support young researchers who are committed to 24/7 and the presence culture.

Thus, it can be concluded that the excellence initiative has brought about both progress and stagnation with regard to gender equality. On the one side, more attention was paid to gender equality at the universities to the advantage of women who mainly are committed to the traditional way of doing science with regard to the time and presence issue. On the other side it seems that oftentimes the “spirit of excellence” is only lively on the rhetorical level and leaves the main contractions in creating real gender equality in the university not tackled.

SWU, BULGARIA

BACKGROUND

Bulgaria is an Eastern European country in transition. During the last 25 years it has been experiencing diverse historic changes with crucial effects on all domains of work and every aspect of life. This period has also been marked by radical shifts and critical challenges in higher education and science. Since 1989 lots of excellent Bulgarian scientists have dispersed around the world and those who stayed in the country have been struggling to destruct, preserve or change norms, practices, values, etc. and modernize their institutions. All this created rather difficult environment and quite tense atmosphere in academia especially in times of the global crisis and financial shortages.

Science and higher education have always been going together in Bulgaria. Thus any member of the academic staff of the higher education institutions (currently around 50) is officially defined by the Law as "research and teaching staff". Those who work at the Academy of Sciences are defined as "scientific and research staff" though the Academy has been offering its own Master and PhD programmes for years. There is no a legal distinction between "research-based" and "teaching" higher education establishments albeit some of the universities stress on research in their missions and aspirations. Furthermore, there is no legal differentiation between "applied" and "fundamental" universities, although some faculties, departments as well as whole institutions have been focusing their activities mostly on applied fields.

All universities in Bulgaria offer Bachelor, Master and PhD programmes. Permanent academic staff consists of non-habilitated ("chief assistant professor") and habilitated ("docent" and "professor") personnel. "Docent" is usually translated as "Associate Professor" in English although this academic position entails the same rights and obligations as "Professor". The length of the PhD studies is 3 (full-time) or 4 (part-time) years and the PhD holders are not guaranteed any academic positions. They should apply for an officially announced (in the State Gazette and at the institutional website) permanent position either for "Chief Assistant Professor" or for "Associate Professor". If one has succeeded in an open competition procedure s/he obtains a permanent contract with the institution and can start climbing the academic ladder up to the Professorship. Thus, the term "competition" has a very specific meaning within the institutional culture of Bulgarian universities and does not cause serious feelings of uncertainty and insecurity about the job. And this also refers to the "mobility" issue. The majority of the academic staff in Bulgaria spends their whole life at one institution although lecturing at other higher education institutions on part-time basis. This is legally allowed as well as quite common and widespread practice. "Post doc" position is not explicitly settled (it is not even mentioned) either by the law or by the internal institutional regulations. More than that, the meaning of

this term is quite unfamiliar around the academic community although it has already been "imported" and appears in some contexts in rather loose interpretations. Positions like "Researcher", "Senior researcher", etc. exist only at the Academy of Sciences, but there they also have started using the title "Professor".

The first post-communist Higher Education Act (1995) initiated crucial reforms of the academia and enforced the three cycle system – Bachelor, Master and PhD. The Act for the Promotion of the Academic Staff in the Republic of Bulgaria was enacted in the end of 2010 to substitute the Academic Degrees and Titles Act which used to regulate the system since 1972. It remoulded the old centralized and hierarchical system into a completely decentralized, much simpler and quite liberal one. It transferred the authority from the Government to the governing bodies of the higher education and research institutions which actually gave in most cases absolute power to their heads. This recent system produced in just 2 years an excessive number of Professors, Associate professors and Chief assistant professors. The new Act, respectively the established system, procedures and practices, have raised a huge dispute around the academic community so that the new Government (since May 2013) started working on revising it. The government has declared that it intends to impose national threshold indicators in measuring researchers' output for each scientific field which should be used in application and promotion procedures.

The great majority of higher education institutions and the Academy of Sciences in Bulgaria are public establishments subsidized by the Government but they can also raise their own funds through a variety of means. Usually research funding is an insignificant portion of the institutional budget. The members of the academic staff can apply on annual basis for small amounts in an internal competition procedure to support their research. They are also constantly and strongly encouraged to apply for external funds from the National Research Fund and many other national and international donor programmes and organizations or enter into collaboration with business.

Equal rights and principles of non-discrimination are proclaimed in the new Bulgarian Constitution (1991), however, it does not explicitly provide specific regulations on gender equality. It only states that family duties and parenthood are based on equal rights and obligations. The Family Code (1985, amended 1992) is also based on the principle of "equality of men and women". Some other legal guarantees for gender equality can be found in Labour Code, Law on Employment Promotion, Law on Social Assistance, Law on Civil Service, Social Security Code, Law on Public Education, Higher Education Act, Law on Safety and Health at Work, etc. One of the most important laws in terms of gender equality is the Law on Protection against Discrimination (in force since January 2004). In spite all these, Bulgaria has not adopted any specific gender equality legislation. The Bill on Equal Opportunities for Women and Men was elaborated in 2001 - however, the Parliament rejected it a few times.

Since 2000 the policy of equal treatment of women and men has been under the responsibility and competence of the Ministry of Labour and Social Policy. In 2003 the Consultative Commission for Equal Opportunities for Men and Women was established to the Minister, with the purpose and obligations to develop annual National Plans for Employment Promotion. In 2004 within the Ministry a separate unit (Equal Opportunities for Women and Men) was opened in order to coordinate, implement and monitor the gender policy. In November 2004 the National Council on Equality between Women and Men was settled to the Council of Ministers. In 2005 the first National Action Plan for Gender Equality Promotion was designed and adopted by the Council of Ministers. The first Action Plan supported Bulgaria's accession process to the EU and included measures for gender mainstreaming. It has introduced various specific measures for encouraging participation of women in the labour market, and the reconciliation of work and family. Since then the annual National Action Plans have imposed various measures for promotion of gender equality. The newest Plan of 2013 prioritizes the higher participation of women in decision-making processes. Also in 2013 an inter-institutional Working Group was set up by the Ministry of Labour and Social Policy.

According to She Figures (2013), the proportion of scientists and engineers in the total labour force by sex in 2010 was 1.63% (equal for both men and women). The share of female researchers in 2009 was 48% (3rd place in EU). The proportion of women in grade A (Professor) academic position in 2010 was 25.9% (17.8% in 2002). The proportion of female heads of institutions in the higher education sector in 2010 was 14.4%.

The length of parental leave in Bulgaria is 410 days. Maternity leave benefit is 90% of wages paid. Fathers can take 15 days parental leave after a child's birth and the benefit is also 90% of wages paid. Father or one of the parents of the couple can take parental leave when the child completes sixth months and upon the mother's approval. Additional leave (benefit for raising a small child) is provided until the child turns two (for the first, second and third child) and six months for each additional one. There are also some other small benefits in support of child care.

DESCRIPTION OF WORKING CONDITIONS

Bulgarian universities have common structures and government bodies settled by the Higher Education Act. They consist of faculties (and eventually colleges) as their major divisions which comprise a few or several chairs. There can also exist different kinds of institutes, centres, laboratories and other auxiliary units on university or faculty levels established for specific purposes.

The major governing bodies are the Academic and the Faculties' Councils which make decisions on the most important issues concerning the operation of the whole university or a faculty. Some other permanent or temporary bodies also play a significant role in the life of the academia – (e.g. University Selection and Promotion Committee, University Research Committee, Ethics Committee, Councils of

the Chairs, Attestation Committees, etc.). The major management positions are Rector and Vice-rectors, Deans and their deputies, and Chair holders. All the governing bodies and management positions at the university have 4 years mandate and are occupied by covert voting in different kinds of elections. All the important decisions (inclusive those effecting all aspects of the individual work of any researcher) are also made by overt or covert voting. So, the university structures are quite centralized and hierarchical with strong and powerful decision making bodies and the election culture is dominant with all its positive and negative phenomena.

There are three types of obligations for the members of the permanent academic staff at Bulgarian universities – teaching, research and administrative work. The teaching load at the South-West University is 180 hours lectures (for habilitated academic staff) or 360 hours seminars (for non-habilitated staff) per year and this sets up the norm for the wages. A certain amount of extra classes are paid above the contracted salary. It is the same with the PhD supervision and some other services. The members of the academic staff have to be available 4 hours a week during the semester in order to provide support to students and should reserve some other amount of time for participating in meetings, sessions, working groups, etc. of different bodies. Research is the second major obligation of any academic position but there are no specific regulations or quantitative norms about the research "load". It is expected to amount to a half of the total working time.

Gender aspect does not exist in regulations and there is no institutional body, office or even an officer dealing with such kind of issues. In addition, gender matters have rarely (as far as we know) been discussed on university or faculty level.

EMPIRICAL FINDINGS

WHAT IS EXCELLENCE?

The noun "excellence" does not have an exact equivalent in Bulgarian language although the adjective form of the word ("excellent") still exists. For that reason it was translated in the context of the WP 5 (questionnaires, interview guides, etc.) by various descriptive terms like: "excellent achievements", "excellent research output", "excellent research", "superior scientific results", "contribution to science", etc., depending on the overall meaning of the English source. These often implied diverse connotations and created quite broad interpretations of the concept during the interviews. Due to political and sociocultural reasons a great majority of Bulgarian scholars do not have good or any English language proficiency. Thus the translation ambiguity caused certain difficulties also in analysing the interviews and conveying the main findings back into English.

While discussing "research excellence" the interviewees most often mention "international visibility", "publications in highly ranked journals", "impact factor and impact rank", "number and quality of

citations", "patents", "participation in international research projects", "acknowledgement by the scientific community or industry", "speeches in international conferences", "real value, concrete applicability and utilization of research outcomes". Thus, these key terms constitute the overall understanding of "excellence" in the two departments under investigation which corresponds to the current institutional and national discourse.

The various aspects of "research excellence" discussed during the interviews could be presented systematically starting from the most general and delving into more or less concrete ones. So, it is often mentioned that the excellence in research is subject dependent. There are specific criteria in each field and even sub-field of science against which quality of research outcomes are regarded, measured and recognized. For example, they are quite different in Mathematics and Chemistry, Geography and Engineering, theoretical and applied sciences, etc. Therefore, overall comparisons and general conclusions do not sound quite reasonable and are even highly doubtful. What is also disputable is: Who sets these criteria? How and by whom are the researchers' outcomes evaluated and accredited? How are excellence criteria weighted and interpreted? etc. Some interviewees provided examples of a subjective attitude and unjust treatment from the practice of their own chair or faculty. Several of them explain that such mal-practices are "politically" motivated in the sense of institutional government policies and practices (including chair holders, deans of faculties, rectorship). A few mention the influence of "lobbies" of people with real or symbolic power (established professors, members of national or international bodies of various kinds, friends of "key" or "important" persons, etc.). None agree that these had anything with gender and many of them suggested that it depended mainly on concrete individual and specific circumstances.

For most of the respondents "international" dimension is an essential and indisputable feature of excellence in research. It is either implicitly or explicitly expressed. "International publications", "international conferences and lectures", "memberships in international editorial boards or bodies", "participations in international research projects", "international networks or collaboration", "international visibility and recognition", etc. is repeatedly used in the responses. Some of the interviewees, who grew up during the communist past, use the word "Western" instead of "international" which is one other curious detail of the language issue. The international aspect of excellence is a kind of a guarantee for the true quality of the research outcomes as well as an extent or degree of its value, and "Western" in this context means "the best excellence model". International prizes and research grants are not mentioned with only one exception – the Nobel Prize. It is used to denote an exceptional and indisputable mark of excellence while any other could be questionable.

An important but controversial aspect of excellence is its acknowledgement. Some of the respondents think that there should be a certain official committee or a body along with formally recognized criteria. Others oppose harshly and criticize comprehensibly such an institutionalized understanding. In

their opinion the official procedures could only recognize certain level of capabilities for scientific work but not research excellence. Some of them believe that research excellence could be only acknowledged by independent anonymous peers while others suggest that it should be the whole community of a particular scientific field or the sector of industry where the research results are usually applied and justified. A concrete profile of a scientific community is not explicitly presented in the interviews. For some researchers it implies collegiate body of their department, faculty or the university as a whole but for others it consists only of scholars working in the same particular field or scope of problems from the country and abroad. A female professor regretfully states that her work was much more acknowledged abroad than at her own department and faculty.

The majority of respondents conceive "excellence" as a quality mark of the whole performance of a researcher and not of a sole achievement (with certain exceptions). According to many of them the notion of excellence does not consist of only universally acknowledged characteristics but also has local (departmental, institutional, regional or national) dimensions. It depends on the real value of the research output and those who benefit from it but not the number of publications or citations. Moreover, excellence should also reflect the capabilities of a researcher to teach, instruct, inspire, guide and prepare students (especially PhD ones) and eventually establish a school of followers.

Some of the interviewees express strong criticism against quantitative aspects of excellence as well as the standardized or quite bureaucratic approaches as the only reliable ones in measuring excellence. Measuring the quantity of publications, citations, participations, memberships, etc. without justifying their proper qualities, significance and value were said to have rather negative than positive effects on achieving research excellence. Suggestions for more thorough and all-inclusive approaches together with a stronger emphasis on quality of research achievements have been voiced.

DESCRIPTIONS OF AN EXCELLENT RESEARCHER

Respondents used a great variety of characteristics to describe the profile of an excellent researcher. In most of the responses they overlap thus making the notion dense and more or less established. What appears to be the most essential among all of them is "visibility" in its various forms but preferably international. For some "visibility" means a kind of proven recognition (e.g. "significant number of publications in prestigious journals with high impact factor"), while for others it is regarded as a wide scope of contacts especially with the "right" or "key" people. Between these two extremes a large range of features unfolds. Some of them are pretty concrete and quantifiable ("volume of citations", "number of research projects", "amount of memberships in editorial boards and professional bodies", "lectures in prestigious conferences"; "sum of patents", etc.) but others are quite abstract and vague ("good research results with great applied value", "established own school of talented disciples", "authority in a particular community of researchers or an industry sector", etc.). An

excellent scientist should have “considerable knowledge of his subject as well as solid methodological competences”. Moreover, s/he should be “in pace with the current trends in her/his research field” and “to be familiar with the newest technologies and methods of investigation” even when s/he lacks institutional or financial support and should do this by her/his own means and on own account. An outstanding researcher should be capable to convey her/his knowledge and experience to others, be they students, fellows, community members or society as a whole. S/he should also be able to inspire others, be very efficient as a team leader and highly skilful in organizing research work. So, for some of the respondents being an excellent researcher means also excellent teaching capacities understood in broadest sense and resulted in creating own school. Thus, to establish school of disciples and leave a circle of followers is an outstanding feature of the excellent researcher. But an example of excellent researcher could be also the one who have plenty of successful PhD students.

For a few of the interviewees, to be an excellent researcher does not necessarily require possession of all those politically imposed and quite pretentious characteristics corresponding most often to officially settled criteria. For them this is merely a scientist devoted to her/his own subject who systematically works on it, one who holds and manifests high moral principles and behaviour, possesses a strong sense of responsibility and could serve as an exemplar for all those who work or collaborate with her/him.

CONDITIONS FOR BECOMING AN EXCELLENT RESEARCHER

Becoming an excellent researcher is reported to be quite a challenging endeavour in Bulgaria today. One of the respondents points out that ”you just should be a genius and should not have any other obligations than research” and suggests talking about “a good researcher” instead. It is much more realistic and achievable.

Practically, in order to approach the ideal of the excellent researcher a lot of factors are necessary. First of all these are personal qualities of a scientist – natural as well as acquired. Among the most important of them is “an Godsend gift” or “a natural talent”, “an unique ability or endowment”, “inherited aptitude and skills”, “strong desire to know and learn”, “natural inclination to investigate cause and effect chains”, “inborn curiosity towards uncertain, obscure and unknown”, etc. Essential characteristics are also industrious ones like “perseverance”, “systematic attitude”, “studious manner of work”, “drive to improve and advance”, “willingness to achieve”, “spirit to inspire”, „will to sustain hard and prolonged work”, “teamwork abilities”, etc. Some specific features are: “analytical but also creative thinking”, “self-criticism, flexibility and adaptability”, “open-mindedness”, “strong motivation”, “good communication skills”, etc.

All these base qualities need to be properly developed. That is why good education and training are the second major factor for becoming an excellent researcher. The third one is “an appropriate and

good school", collegial body (i.e. chair, department, etc.) or a research group where a young researcher could grow up as a real scientist. This also includes strong institutional support by various means, friendly and warm professional encouragement by appropriate and skilful mentors, careful guidance by an established professor, a good "master" or a leading researcher. The scope of research topics is also very important in terms of its overall significance, current state, future potential and perspectives.

Financial factors are mentioned by all respondents as crucial for reaching excellence in research. There are various forms of financial support listed – research or travel grants, money for books, laboratory or other equipment, software, advanced training courses, sabbatical periods as well as various others including certain allowance for caring. Sufficient amount of time as an essential resource for achieving outstanding research output is spelled out as well.

What has also turned out to be very important for becoming an excellent researcher is communication and marketing competencies and skills. The most frequently used word in this respect is "networking". In order to be able to become a part of a professional network and to establish further her/his own one, a researcher should have very good command of English and even of a second foreign language in addition to her/his personal communication capabilities. "Marketability" needs something more. First, it is "ambition", second "flexibility", then "self-confidence" and "proactive approach", after that "very good presentation and self-presentation skills", etc. But the most important of all is "good ties with the right people". It is pointed out in a few interviews that if one has "strong ties" with the "right people" s/he doesn't need much of the rest. No one provides examples, or describes the profile of such "key persons" with only one exception put in a more general context – "heads of respective structures".

To become an excellent, or at least a good researcher one should love his/her subject and work hard on it, be totally devoted and should sacrifice a lot. It needs concentration, very good self-organizational skills and huge time resources.

EXCELLENCE IN RELATION TO THE DIVERSITY OF ACADEMIC TASKS

There are only three (out of 18) completely negative responses to the question: Is it possible to be an excellent researcher and an excellent teacher? The answer is "No" because "teaching consumes lots of time and energy" and "it causes dispersion of the researcher's efforts". For all the other interviewees it is possible although "very difficult" and depends on "the individual", "the scientific discipline", "the academic level", "the didactical mastery", "possession of proper communication and presentation skills", etc. For one respondent it's even very important if not compulsory because of two reasons. First,

> *"Teaching creates opportunities to discover a plenty of new ideas, which in turn could further boost her/his research inspiration. During the process of teaching a researcher could confront*

with lots of new perspectives, as well as critique against his current understandings. If there is a good audience, ready to question, oppose and criticize researcher's ideas and findings, an excellent scientist could re-examine them." (female PhD student, Mathematics)

And second, research is prevailingly team work, so a true scientist should constantly support her/his co-workers by sharing the best of her/his knowledge and experience thus teaching them.

But for the majority of the interviewees, teaching is still quite a burden because it takes considerable time to prepare for lectures, supporting materials, necessary equipment, assignments for students, guidelines, etc. An interviewee describes how she prepares for laboratory work with students and explains how many things she should do beforehand. During the classes she should support every student because they work individually and at the same time take care of the apparatuses and consumables. Afterwards, she should arrange the stuff and make it ready for the next group. In addition there is a lot of paperwork demanded. With all these duties it is quite hard to concentrate on research and attain excellent outcomes.

Teaching requires quite different skills and competencies than doing research. There are not any particular teaching qualifications necessary when someone applies for an academic position, either special training is provided by the university. It is the responsibility of the individual to build up such capacities and s/he could occasionally receive support from elder colleagues. This also needs attention, consumes efforts and takes time which otherwise could be committed to research. But the academic staff is obliged to do this because of various primary and secondary reasons.

The academic positions at the universities in Bulgaria are based on teaching and there is no research only staff (such staff exist at the Academy of Sciences though some of them have also started teaching in their PhD and Master programmes). And here is the contradiction which most of the interviewees intensely and critically comment. To open an academic position there should be a certain amount of annual teaching load (180 hours lectures or 360 hours seminars at the South-West University). Remuneration and many other aspects of the academic life (if not the existence of the institution itself) depend mainly on teaching and education maintenance activities – design and accreditation of educational programmes, development and provision of textbooks and other learning materials, support to students as well as other administrative duties, internal quality assurance measures, etc. At the same time, the quality of research output is the most valued in the application, promotion and attestation procedures, brings off higher prestige and ensures numerous benefits. Teaching cannot produce any such recognized values or prestige although the students could "love their professor or assistant professor". There are not any "official" (properly established and institutionalized) awards, prizes, etc. for "teaching excellence", so this term is understood and interpreted exclusively in subjective perceptions

and notions, depending on the individual experience. This ambivalent situation puts many people into a permanent (sometimes desperate) struggle to keep the balance or find a way out.

Most of the interviewed individuals agree that the quality of research or teaching performance is usually affected negatively because of either academic duty – "the one is at the expense of the other". Exceptions are possible and some provide examples of outstanding academics who efficiently combine or unite them, thus attaining even better results. There are also rare cases when an extraordinary scientist, without any teaching abilities but possessing the gift to inspire or having achieved outstanding outcomes, could still be entitled "excellent teacher" and could serve as an ideal for her/his students. As an example, some interviewees have remembered about a "favourite professor", during their studies, who was actually "awful in teaching" but still respected as a real scientist.

How does excellence influence the daily working environment?

The excellence ideal creates certain or huge amount of stress for different respondents in their daily work at the university. There are many reasons causing such uneasy state. Personal demands, contracted obligations, academic standards and moral values are among the most powerful driving forces in professional development of every scientist. Researchers could have their own understandings of excellence in research and pursue their own scientific inspirations but when it comes to career advancement in academia they should respect and follow the officially settled standards and criteria. In general, most of these criteria correspond to the individual conceptions of excellence of the interviewees but the crucial issues are: who decides and how are these criteria interpreted and applied? For the last three years a few thousand researchers have been promoted around the country some of which with questionable scientific qualities. This fact, together with news and rumours about a suspicious cases or unprincipled practices, raised intense national debates at all levels of society and created sarcastic and even harsh criticism. So, the dilemma, whether to become an excellent researcher or to be a "successful" professor, bothers the members of the academia in Bulgaria. Another question of even higher concern is: how to find a reasonable balance between the two? All these have been expressed in quite emotional tone in the interviewees' comments while talking about their daily professional concerns and dealings.

There are several crucial problems in the excellence discourse at institutional and departmental levels which have been quite well articulated in the interviews. They speak of a different focus than that of the national and formal debates but with the same strength of criticism. In nation-wide talks what prevails are general, theoretical and quantitative aspects of excellence while at institutional and especially at individual level much more concrete, practical and qualitative ones have been discussed.

First of all, there is the formalistic approach in measuring researchers' output. In assessment procedures for various purposes (promotion, attestation, allocation of research funds, project

participation, PhD supervision, etc.) the evaluators usually refer to quantitative criteria like “number” of publications, “amount” of citations, “sum” of projects, “size” of international performance, etc. Excellence refers primarily to quality but rarely someone cares about the qualitative side of the researcher’s work. Only infrequently does a member of an evaluation body ask about (or induce a discussion on) the “kind” of publications, “nature” of citations, “character” of project participation, scientific “value” of the international activities, concrete “characteristics” of the impact of a particular research result, the “essence” of a scientific contribution, etc.

Second, it is the issue of “success” in the context of the academic career. “Success” usually means attaining a higher (preferably the highest) academic position or post. It does not always (if not ever) depend on the true quality of the research outcomes but on different factors outside science which exist still within the relations between scientists. Every researcher belonging to an academic community is inevitably involved in horizontal and hierarchical interrelations which constitute a certain dynamic environment within which s/he operates. It creates a state of strong interdependence between the members of the academic community (horizontal) and relative dependence on persons or bodies with power of various kinds. This is due to the “elective” nature of the Bulgarian academia where the most important decisions affecting the life of the institutions as well as the individuals working at them are being taken collectively by voting – overt or covert. Moreover, it is also because of the centralized and hierarchical structure of higher education and research establishments in the country. Thus, within the rather small academic communities (where almost everybody knows everyone), in some sense, career development depends on the opinions and attitudes of others. Among the final consequences of all these are: climate of conformity, feelings of fear (especially “of being revenged” in return for criticism, disparagement, etc.), subjectivity (behaviour dependent on “who is exactly the person” and/or “what is the concrete situation”) and voluntarism (being object of the will of persons with any kind of power and their lobbies). All these are regarded as “political” issues in the interviews which trouble researchers’ life and work on the level of their everyday activities and professional perspectives. Thus they have strong effects over long term plans, motivation, inspirations, strengths, etc. and result in different prioritizing. Those who believe that some kind of excellence is achievable focus on research and take the consequences. But for the majority of the interviewees one should always try to find compromises and thus would attain lower quality results than s/he has desired.

What makes the situation even tougher is the financial aspect of science which is mentioned by all of the interviewees. In addition the financial crisis and the austerity measures make it even worse. Excellence, quality, high achievements, etc. cost a lot. At the same time research funding is always insufficient. The university provides annually very small amount of funds distributed by competitive procedure. There are also some basic material resources and support services available to researchers.

Thus, the main sources for funding own research are external funds obtained through projects, agreements, services, donations, etc. The members of the academic staff are encouraged to search for additional funds but if they don't do that it doesn't affect their remuneration or any other kind of benefits provided by the university. According to the opinions of some respondents this situation is quite discouraging (on individual level) and disintegrating (on institutional level). As a result many people opt for part-time lecturing at other universities, engaging with consultancy for private companies, etc. and even moving abroad. Consequently the ideal of excellence is somehow fading away and the quality of research work declines.

LIFE OUTSIDE WORK

In reference to this issue, the respondents could be divided into three groups: a) some who believe that "it's absolutely impossible" and that "each one is at the expense of the other"; b) the majority who think that "it it's possible but very difficult"; and c) a few for whom "it's certainly possible". There is a great variety of arguments for either opinion ranging from very general to rather specific: "to keep balance between work obligations, professional aspirations and real life is possible but only to some mediocre level of both"; "science calls for all of your life", "one should sacrifice his/her own life and that of his/her family in order to be a true scientist", etc. More realistic researchers contemplate on concrete preconditions which could make it possible. Among the most frequently repeated ones are: "sufficient financial resources", "strong support by the family", "favourable environment consisting of encouraging colleagues, sufficient material resources, spirit of friendship and shared scientific values", "individual characteristics of the researcher and especially his/her moral virtues and values", etc. Besides, some interviewees suggest different ways of how to handle the circumstances in order to get out the most of them and recount real life examples. Others are quite sceptical having in mind various unfavourable conditions of socio-political and economic character. The country has been struggling with lots of challenges for more than 2 decades and this has had strong influence over all aspects of individual life. In such a national environment with so many shortages and problems most of the people try to make a decent leaving (for themselves and their families) and so do the majority of scientists. Research is a continual endeavour which requires focus, dedication and perseverance. According to a female researcher:

> *"It's a specific occupation connected mainly with thinking and when you concentrate on an issue there are no such things like 'business hours'. You can't stop when you get home after work or during the weekend."*

A male mathematician explains even more concretely:

> "*Our daughter learned to read by herself. I was working on my PhD thesis and my wife was working on her habilitation. We were always busy – during the days, evenings, weekends and*

holidays, so our kid grew up somehow alone. And even now she sometimes shouts: 'No dissertations at our home anymore!'"

Unlike the previous sections of the survey, gender issues appear here in implicit form. Men are talking more about "the need of sufficient material and financial resources" while women are prevailingly speaking about "family support", "insufficiency of time", "commitment to kids". Thus dimensions of life, as perceived by both, vary from obligations for others to personal interests and it is the individual (with her/his moral values) who decides on the balance between science and life. Of course, personal values and attitudes are socially influenced, however this is not specifically discussed by the interviewees but only mentioned once or twice.

GENDER AND THE EVALUATION OF EXCELLENCE

First of all, the respondents discuss gender issues with a friendly and polite attitude, demonstrating respect to female or male colleagues with no exceptions. No one reports about a case of gender discrimination in his/her academic experience or career to date. Lots of male and female interviewees affirm that "conceptions of excellence have no gender", that "the excellence criteria in evaluating research are gender neutral", "becoming an excellent scientist does not depend on either sex", and "evaluation should address research output only, but not the person", etc. – "You should do your research and experiments, you should write your articles and no one cares whether you are man or woman". Despite all this, gendered perceptions are more or less recognizable in the interviews and various proofs could be found easily – in the different manner the interviewees respond to the questions, the language they use, the examples they choose, and in the proper content of their answers. Here are some examples.

When discussing specific problems like maternity, child care, household, etc., male respondents are quite disinterested and give short and abstract (sometimes rather trivial), although still polite answers. When talking about the same issues, most of the female interviewees regard them as being their natural duties deserving no specific attention or care. The use of some specific words and their implications is also gender influenced and quite interesting, as well. The words "scientist", "researcher", "investigator", "professor", "docent", "evaluator", "reviewer", "supervisor", "rector", "dean", "head", "member", etc. are used in their masculine forms in Bulgarian language (their feminine versions, which have never been used in the interviews, have usually negative and offensive connotations). So, when discussing "research excellence" all respondents mostly used "he" instead of "she" (or both) and then provided male examples of excellent researchers or described a predominantly male profile of an excellent scientist.

Many of the interviewed researchers agree that it is rather difficult for both genders to achieve excellence in the current global situation due to many common and specific factors.

Our dynamic times require all of our life. You should strive for achievements 24 hours a day, 7 days a week... If you want to have some kind of private life, family, children ... it is really tough even for men. The present work model disregards family! And this is frightening for both – men and women, because the ideal "to be the best" entails no private life ... which in itself is cruel. (male associate professor, Mathematics)

Both male and female respondents talk a lot about gender differences – natural or social, field or subject related, community dependant or of individual upbringing, etc. Men and women have "divergent mentalities – women are more emotional and creative, while men are more rational and dispassionate" and that has strong influence on how they choose their profession. Moreover, they possess "dissimilar affinity or inspirations towards humanities, social and natural sciences and engineering which have resulted in the total feminization of certain occupations – preschool and primary school, nursing, etc." And also:

There are some domains which are not so appropriate merely physiologically for women – for example, such 'heavy fields' like machinery building, foundry, metallurgy, mining, construction, etc.

According to the same opinion of a male mathematician, "there is no any discrimination here but just .... just the nature created us differently and this is a part of life itself."

While some of the respondents remark that generalizations are implausible all of them agree that time factor is crucial for all in striving to achieve research excellence. In this concern, it is very often mentioned that women, due to giving birth and bringing up children, which consumes enormous amount of time and effort (regardless of the extent of support they receive), are in quite an unfavourable position. An associate professor of Informatics, whose wife is an assistant professor of Psychology, tries to calculate how much it takes – "in my opinion, a woman loses usually around 6 years for child care and this is exactly the major drawback in her career". For another male researcher, "the time which women spend for bringing their children up is never recognized in their career advancement, and it counts nothing for their professional development".

There are many suggestions offered about how women could succeed in their research careers. They should work "very hard", "five times as much as male colleagues do", "with difficulties and compromises in personal life", and "deserted family and kids". A female associate professor in Engineering remembers:

It happened to me long ago when I had to decide – career or family. And I preferred to make career instead of devoting a hundred percent to my family. But I have had to make so many compromises ever since.

Another female respondent thinks that a certain amount of financial support, provided by the university, could help young mothers pay someone to help them with caring and housework. According to a male researcher's opinion, women scientists should be given more time to complete their research projects.

"Family support" turned to be the most frequently mentioned factor and indeed an essential prerequisite for female researchers in terms of striving for excellence: "A woman could overcome the difficulties in her career development if she enjoys the support of her family, husband, friends and colleagues" and "if her work is credited the same value as her husband's". But it often happens that "a husband ignores a part of or all the household duties, so his wife should do them, instead ... in order to compensate ... and at work, she should perform equally as men do ... it is not fair". Thus, "if there is appropriate balance within the family and if everybody fulfils their own duties, then I think, a woman scientist could have excellent performance".

Asked to comment on the need of some kind of gender training with respect to evaluation of research achievements most of the interviewees (male as well as female) replied that: "it's not necessary", "it is meaningless", "completely unnecessary", "it is a matter of upbringing and values, especially in academia", "it's too late for such training because researchers have already established characters", "this question is amazing", "this is a sexist idea which could disfavour one of the genders and has nothing to do with the objectivity of science", etc. Here is the most expressive opinion of a female PhD student in Mathematics summarizing it all:

> *Certainly, this question is incorrect! There is no way to evaluate any research output on the basis of the researcher's gender. Such discrimination is absurd! Every researcher, regardless his/her gender, has certain inspirations and goals. Thus, the question is whether he or she is sufficiently enthusiastic and persevering in order to achieve these goals. Evaluation refers to the scientific side of an investigation, which makes gender irrelevant.*

CONCLUSIONS AND IMPLICATIONS FOR GENDER EQUALITY

Several essential implications could be drawn from the survey as regards to research excellence and gender.

First, the talks about research excellence at the university resemble the current national discussions (either informal or initiated by the government) on the shift of the national system for promotion of the academic staff and the accompanying changes in the research evaluation criteria and procedures. This shift suffers from the most of the deficiencies and contradictions of the transition process not only in academia but of the society as a whole. Therefore, the excellence discourse like many other dialogues, running at the country, is still quite immature. It is obvious in the chosen phraseology and the

way of (rather general) thinking about research excellence which is much more rhetoric than substantial reasoning of concrete views with reference to one's own experience and practice. Moreover, many interviewees tend to give sometimes "politically" correct answers because of various reasons – their acquaintance or relationship with the interviewer, the institutional stance on research excellence, the nature of the interview itself associated with a gender project, etc.

Second, gender equality is not an issue which attracts the interest of both, male and female, interviewees and it does not exist in either university regulations or academic debates. It is said to be irrelevant to research excellence, scientific achievements, and scholars' work. Gender differences are regarded as natural and inevitable. So, it is a matter of inherent values and inspirations, ingrained attitudes, individual upbringing, etc. when talking about problematic (mostly individual) relationships between men and women. Otherwise, male and female scientists have always been treated equally and their research output has been evaluated according to common gender neutral criteria. In fact, no one of the respondents reports to be familiar with cases of discrimination because of either sex. This "natural gender equality" attitude, which makes the both sexes accept and respect each other's natural differences, could be a remnant from the "emancipation policy" of the communist past. During those times (1944-1989) the only and ruling party used to promote gender equality and encouraged women to be present in every and any aspect of life through variety of means (e.g. pictures and posters of a woman as a "builder", "driver of a heavy vehicle", "iron founder", etc. became symbols which signified "emancipation of women").

Third, despite this "natural agreement", gender inequality dimension exists on a subconscious level and is present, although implicitly, in the interviews. It is in the different ways of responding to questions, dissimilar choices of words and examples, divergent emotions or reservation while talking about gender aspect, etc. Proofs could be easily found in the content of the answers (e.g. in personal stories, concrete illustrations, role models, private arguments, etc.). Statistics about "male-female" proportions, prepared prior to the interviews, demonstrate explicitly this particular implication.

Fourth, quite surprisingly all respondents oppose (in one or another way) the idea of a gender training for academic staff with regard to evaluation of research output. Some of them cannot see any sense or use of such kind of training while others (including women) strongly disagree because it might disadvantage men. Many responses and reactions demonstrate insufficient understanding of the complexity of gender aspect (no answer contains sound arguments supporting this common opposing reaction). The Bulgarian language itself makes no difference between "sex" and "gender" with only one existing word denoting both meanings, but still implying much more biological than social differences. The use of the transliterated term "gender", written in Cyrillic, is not so common even in academia (especially in the STEM fields), and its proper meaning is not entirely absorbed yet.

Fifth, feelings of inequity in the present situation have been voiced by a few female respondents although still quite unassertive. The sense that “some things are not fair enough” and disadvantage women in their research careers has been well perceived in some answers and the peculiar tone in which they have been spelled out. Therefore, certain awareness of gender inequalities and their consequences exist but still at a rudimentary level.

UU – SWEDEN

BACKGROUND

The Swedish excellence discourse aligns with the global one, in that excellence is sought after in the international research competition. Nationally, the discourse has been influenced by the big excellence grants given out by a number of Swedish research funders. These grants were large and long term. They were sought in competition by excellent researchers – which, as it was shown, were mainly senior male researchers. The shortcomings of this approach – for example the fact that these groups did not produce more or better than groups without excellence funds – have featured in the discourse among researchers in recent years.

The start of an academic career, being a PhD student, is relatively advantageous in Sweden. PhD studies are designed to be four years and include one year additional of teaching and/or administrative duties interspersed in the PhD period, resulting in a total of five years full time salaried employment.

This positive picture changes after the PhD. Of all teachers and researchers at Swedish universities, one third is on temporary contracts. The reason is, to a large extent, that most of university research is done on 'external funds', which finance temporary projects and are applied to in competition. Universities in general employ people working on these projects only for the duration of the project, which is normally 3-4 years. In addition to providing insecure employment, which is unattractive to many, this means that a research career to a great extent is dependent on managing to get funds in competitive situations which are susceptible to chance (who happen to be the competitors and evaluators at every single instance), and also that a great deal of the time that could be used to achieve research results is used to write applications.

A permanent position means basically full time teaching, with very little or no time for research. Thus, for making a research career, a permanent position from the very beginning might not even be desirable, because the teaching load often makes it impossible to keep up a publication record. It is only if you have access to external research funds, either your own or somebody else's, that you can 'buy time' from your teaching to do research. Traditionally, the yearly teaching load of a full-time lecturer has been around 400 hours, but today it varies and can be both lower and, more commonly, higher depending on institutional and departmental policies. Teaching is increasingly described as exhausting, not only because the number of hours, but because all the more diverse student groups, and because universities increasingly require upgrading of teaching skills. In addition there is very little administrative staff to unburden teachers and researchers from everyday small tasks. The amount of administrative work varies between researchers, but administration has increased notably during the last decade,

and is reported by teachers and administrators alike to notably contribute to a heavy workload (Åström, 2008).

Research financing in Swedish universities (most publicly funded research in Sweden is done in universities, research institutions play a very marginal role) comes mostly from the state, but the composition of financing varies according to the size, age and profile of the institution. Overall, 72% of research financing comes from the state, 9% from private funding organizations, 4% from industry and 4% from the EU. The remaining is a mixture of different public bodies, other foreign financiers etc. (Universitetskanslerämbetet, 2013) 46% of the research financing goes directly from the state to the universities, and is distributed there, while the rest of the state financing are funds to be secured in competition by proposals to funding councils. However, the 46% also finances PhD education, the required co-financing that is sometimes demanded for externally funded projects, local research infrastructure etc., and it is a common practice for some of these local funds to be distributed according to excellence criteria such as publications and received external funds. This means that for a single researcher, applying for and receiving external funds are crucial. Even fairly junior researchers can apply for national research financing.

The success rates for applications to the Swedish Science Council, the largest of the state councils, was in 2013 between 9% and 15%, depending on the disciplinary area. Men had slightly better success rates on all areas, and ended with a total success rate of 14% while women had 13% (Swedish Science Council, 2013).

Disciplinary differences partly structure research financing. One aspect where disciplinary differences play in is individual work vs teamwork – even if very few researchers today work alone in a project, the need for expensive equipment and large constellations in some disciplines also forms the financing patterns. Some disciplines also have a larger share of industrial financing than others. Such aspects also structure interactions between researchers and, ultimately, their choices and paths in regard to excellence.

Career planning, mentoring, tenure track positions etc. have not been common, but are increasing. More universities are engaging in these kinds of activities for their academic staff, at least for the few who are seen as potentially excellent. Many universities also have initiatives, for example leadership courses and mentoring programs, to increase the percentage of women on higher levels. Ministry of Education has since 1997 set up target percentages for professors at each university. There are no sanctions for not reaching the target, but they have set the question on the agenda, and the number of female professors has increased on somewhat higher rate than the European average, being now 20%. However, in the glass ceiling index of SHE figures, Sweden is on the lower half. In addition, in contrast to other EU countries reported in SHE figures 2013 (European Commission 2013, p. 97) the

percentage of women professors is highest in the oldest age group. This implies, for example, that women have shorter careers as professors than men. It seems that in Sweden women either start their careers late or that it takes longer for them to reach the top than in other European countries. Because Sweden is a small country, personal knowledge of people is possible, and thus becomes more important than in large international arenas when it comes to applying for positions, promotions and funds.

When it comes to support outside the academy, the public day care system is satisfactory in coverage. It is common and generally accepted practice for both female and male researchers to take several months of parental leave, even if women take more. In addition to the altogether 16 months of parental leave, parents have the right to take paid leave to take care of sick children. While the ordinary parental leave can be planned ahead of time, the occasional but frequent days for care for sick children are often a question of negotiation between the needs of the parents.

Practically all couples where one of the partners is a researcher are dual career. This has been a problem for female researchers' mobility, in particular for doing a post doc abroad, but is increasingly becoming an issue even for young male researchers.

EMPIRICAL FINDINGS

WHAT IS EXCELLENCE?

Uppsala University has made two major evaluations that can be connected to the quest for excellence, the "Quality and Renewal" evaluations of 2007 and 2011. They were initiated by the Vice-Chancellor and involved international expert panels visiting the departments "to identify strong research activities and activities with potential to develop into new strong areas of research" (Nordgren, 2007, p. 9), as well as an extensive bibliometric study. The evaluations have influenced the distribution of internal funding at the university.

However, when asked about the concept of excellence and how it affects the department the interviewees often related to the recent reform of certification of 'excellent teachers'. The reason given was that excellent teacher is a new career step and a new title for additionally skilled teachers at Uppsala University. Excellent researcher, on the other hand, has been around for quite some time and only is actualized as everyday conversation at the department in connection with research applications and evaluation periods. Even if the debate on research excellence at department level is not as clear as it is on faculty and other levels, it is always somewhere in the back of the minds of the researchers.

The interviewees are very aware about ranking, that they are measured in different ways. Generally everyone wants to be good at their job and cares about excellence and the quality of work. However, the interviewees do not use the word excellent as a measure of research performance. It is clear that

the policies of the funding bodies affect them, but the word itself has no significance. It is seen as an artificial, undefinable and political word. They rather characterize scientists as great, original, sharp, talented, leading etc. Many say politicians have come up with the concept of excellence, because they must have some way to assess research.

According to some of the interviewees the link between elitism and excellence explains why there is some suspicion for the concept of excellence in Sweden. In Italy and France, for example, elitism and excellence are said to go hand in hand and the competition is also perceived to be much harder. However, it is seen as characteristic of Sweden to build a wide excellence with many good, but not maybe the most excellent researchers. A senior researcher thinks that Swedes are trained in breadth of research in a social democratic spirit and that elitism does not fit with the image of how to build a good society, how to build good hierarchies and structures. This also seems to be something that some international researchers have captured. One told us that he does not know which ones are the best at the department because it is inconvenient to speak of this. You do not hear about it and it feels uncomfortable to ask about it. In his home country people at the department discuss and agree who are the best ones and everybody basically knows which these persons are, even if they do not work closely together. When interviewing we too noted that many were reluctant to answer the question about who are considered the most excellent researchers at their department. One of them actually said that if you answer the question you are not only singling out which ones are the best, but you are also implying that the others are inferior.

When talking about excellence the interviewees never really define exactly what excellence is. They speak more about ways to examine scientific skills and about the inequities and flaws of the system. How much money you bring in is not perceived as a good measure of excellence, because the excellence initiatives have been received as quite doubtful, how they have been managed and what have come out of them. Publications and citations are looked upon as quite blunt criteria of excellence, because of diverse cultures in publishing and citation (even in the same department it is said to be differences between different research areas). Many prefer a system in which the content of the publications is given priority over the number of publications. When distributing money according to excellence it is perceived as troublesome to look at indicators, to measure what is measurable, because that excludes other factors that are seen as excellent. Junior researchers have often heard excellence being discussed with contempt because that which is really important does not get rewarded.

> *"We talk about excellence in the sense that everything will be measurable and it boils down to the number of publications because there is no other way to measure it. It is a bad way to measure it, especially in certain fields and the research that is rewarded is absolutely not the one*

the researchers think is excellent, but that which is productive and that does not necessarily need to be the same thing."(Female PhD student)

A senior lecturer also criticizes the view that scientific skills are seen as objectively measurable, while pedagogical skills are regarded as subjective and not measureable. There are no differences according to her. The difference is rather a social construction of the concepts. Another cause for grievance is that the research area as such can be more or less suited to be excellent. Excellent performance is claimed to be linked to exciting results, which are scary and dangerous and trigger your fantasy, to things on the mysterious level, which the whole world wants to know about. For example, you are said to get more attention and money if you are doing research in genetics, astrophysics with the big bang, or solve energy problems with awesome new technology.

DESCRIPTIONS OF AN EXCELLENT RESEARCHER

Many interviewees are setting the standard for an excellent researcher very high and are thinking about someone who is exceptionally outstanding and on parity with a Nobel Prize winner. They make a clear class distinction between good researchers and excellent researchers. For others excellence only means that someone is very good and it is seen as a title, a kind of promotion. They believe you can be a good researcher without caring about formalities on becoming an excellent researcher.

When asked to describe an excellent researcher many interviewees start from the official notion of excellence, which are measureable criteria for excellence that addresses the "impact" of research. The researchers who are excellent according to this notion get a lot of citations, have many publications in high-ranking journals, attract funding and employ large numbers of people. They are internationally recognized and have received prestigious prizes and awards. When giving their own point of view on excellence these indicators return in varying degrees, but the interviewees also emphasize characteristics which are harder to measure. Although there are several ideal images of an excellent researcher, there are certain qualities which recur all the time in the interviews. An individual does not have to possess all these qualities to be considered as an excellent researcher and the main features are prioritized differently and do not always have the same meaning.

An excellent researcher is characterized as having a combination of several personal traits, skills and abilities, such as problem-solving analytical capacity, leadership and communicative skills, interaction and networking capabilities, ability to build a team, creative ability and fantasy. Updating knowledge is described as essential and is said to be achieved in several ways, attending conferences or sharing ideas with colleagues working in a relevant area. In addition, an excellent researcher must be full of brilliant and original ideas and be quick witted and visionary, curious and talented, open-minded and persevering, innovative and cooperative. Besides s/he should be keen and independent, hard-working, focused and committed to his/her specific field of interest. An excellent researcher also has to be liked

by other people and researchers, both in a professional and human way, a really nice person you want to collaborate with, and s/he must be visible in research everywhere. When interpreting and presenting results, s/he must be accurate and honest about what is being produced.

The interviewees often have a senior researcher in mind when describing an excellent researcher, but being excellent can be at any level. Junior researchers can have analytical and problem solving skills as well as being hardworking, talented and independent. It is just that they still have not demonstrated it by publishing in really good journals and getting citations. Some speak of geniuses or tremendously talented people and that you can see early on that they, if they go on like this, will become really excellent. When you are one of the senior excellent people you need to have some additional things, like leadership and political skills to deal with all the grant applications and things. Some say you can be an excellent doctoral student or postdoc, but not necessarily an excellent research group leader and the other way around.

When describing excellence the interviewees are talking about three kinds of people, the geniuses, those working to become excellent researchers and people who just want to do research as usual (and they can be geniuses as well). People who choose to be and really work to become excellent researchers are quite a disrespected group. This group also consists of people who already have very high reputation, but are not fully accepted as excellent researchers by their colleagues. They are called different things to signal that they are not real scientists, like career researchers, high profile persons, politicians, entrepreneurs and business leaders.

The reported reasons for the disrespected status of those who work to become excellent are that they are not independent and passionate about what they do, two characteristics deemed crucial for an excellent researcher. They are perceived as completely adapting themselves to the economic reality set by funding bodies and as being too focused on becoming visible, on marketing themselves as excellent and climbing the hierarchy. Several interviewees think that you should both do good research and be visible, because if your research is not visible others cannot construct you as excellent and you get no money to do your research, but it is regarded as important to keep a balance between the two.

True excellent researchers come with new pioneering ideas and results, not because they want to make a big career and become famous or make a profit, but because they are really dedicated to and love science. According to this view being an excellent researcher means a passion first of all, rather than having a lot of high impact publications and getting ahead and being successful.

> *"I think it all depends what is your, basically what is your measure, what does it mean to be an excellent researcher, because for me it is mostly someone who is passionate about the job, about*

> *what they do. Perhaps that's not what people mean. Nowadays it is more about how you publish, how successful you are, how many grants you have, it is not necessarily the same thing. Again, maybe it often goes together but I also find the atmosphere here a lot more business oriented. You have to function in a business reality."* (Female PhD student)

"Business reality" here means publishing for getting money. The doctoral student quoted above is saying that hers might be a skewed, uncommon point of view, but in fact, it is quite common. People who are obsessed with earning money and publishing papers are not seen as excellent scientists, but rather as being successful in having a lot of money.

In mathematics a senior researcher describes how the old ideal of the individualistic bohemian who sits in a room and solves difficult problems coexists with new ideals of successful business leaders, who have external grants and run large research groups.

Another way to describe an excellent researcher is to differentiate between researchers who put their heart into what they are doing and those research group leaders who are very good politicians and do not really care so much about what they are doing. The politicians are frequently putting their names on publications without really producing them. They are getting publications just because they are very popular, well financed and skilled as negotiators, not because they participate in science. At the bottom of this dislike for politicians, business leaders etc. lies a major criticism of the academic system, which is called a business reality or the extreme capitalism of science and is seen as a threat to the ideal type of a good researcher as someone who has good ideas about research and is independent of reputation and this pressure of publishing.

CONDITIONS FOR BECOMING AN EXCELLENT RESEARCHER

Money is, however, an important condition for becoming an independent researcher and in order to get money you must adjust to the requirements of formal excellence and work in the very competitive system. You want to become excellent to get research funding, not to get a title, because that means you can do more and more as you want. How do you play that game if you do not want to become an excellent researcher in the negative sense?

According to a doctoral candidate you have to think about how you are going to function in that reality after the PhD and post doc years. You have to make sure to have money and to start getting your own money you have to focus on your papers without losing track of other things that you value on the way, which she thinks you can spend more of your time on later in your career. You have to value what you do, what you want to participate in and not only what kind of papers you get all the way through. If you follow what you love there might not be so many people that want to pay for that and then you have to really make sure that you are going to be strong enough yourself. The doctoral candidate

seems to suggest that junior researchers can play the game without setting aside their own values altogether, which can be guiding later in their careers. In that way, they can lay their time and energy where it is needed for them to get their own money and thus eventually be able to do whatever they want.

A few others do not want to play the game at all, even if winning could enable them to change the system from the inside. A senior researcher claims that becoming a high profile person is built into the system. The culture and organization at especially the faculty level promotes this behavior, a researcher will benefit by becoming such a person. She cannot compromise and be strategic to make a career. She has tried to become one of them, but found that she did not fit in. Nowadays she knows what kind of characteristics and behavior are promoted and cannot stand the game. According to her, becoming independent and getting your own money is the only way to get power if you do not follow the paths you are expected to follow.

What does it then take to become an excellent researcher? It is different depending on how competitive the academic system is and if you want to have a very big career or just want to do the research you like. People who really work to become excellent researchers are said to be choosing hot subjects to get funds and therefore need to keep track of what is currently hot and to become that high profile person you need career planning and contacts, political savvy. One of the interviewees put it as you need to know how to talk big, because if you talk great, people believe you are great and give you more money, and you get more credit and if you do all that political stuff, you depend on post docs and other people to do your research and keep things running.

There are a number of very good researchers who never will be regarded as excellent, because they chose their favorite subject. For others it is just by chance. They just choose the subjects they want to work with and if it is hot, it is good, if it is not they go on in this way, because they do not want to compromise. A senior researcher who stands out as an idealist in this report says he can never be excellent, because then he has to take care of his negotiations and career, publish without being really satisfied, meet people which he does not think have so much to contribute and compromise.

Another senior researcher who is not opposed to the traditional notion of excellence does not think she is going to be an excellent researcher, because she will not pull in big money. She states that she has not begun at the end of writing major publications and getting citations. Instead she has been driven to find interesting collaborations and to do things she thinks is fun. For personal reasons, she has not gone the right career path to become an excellent researcher, i.e. to change institutions and to do a post doc abroad.

How an excellent researcher is described also depends on the subject. In mathematics excellence is more individual, while biologists need excellent research teams (although mathematicians also talk about groups and biologists of geniuses). Mathematicians in particular emphasize that you cannot reach that high level excellence in research if you do not have a tremendous talent. However, this talent must be maintained with hard work.

In cell and molecular biology an excellent researcher is both very strong scientifically and part of or leads groups (large groups can produce larger volumes and small groups do cutting edge research) in which all researchers do not have to be excellent, but where everyone contributes with their work and ideas. Part of being an excellent researcher in this sense is to have an ability to build a research team and ultimately pass it on. For PhD students and post docs it is very important to get to a good lab and be around the best researchers that can help them doing things required by the system and it is also important how the working environment is. If you end up in the wrong group from the beginning, then it is hard to become excellent.

Information technology is somewhere between mathematics and biology. The genius idea also exists there, but interviewees at the IT department put much emphasis on being a part of or building a positive and permissive research environment and of getting the right preconditions and resources. Here leadership and communicative skills are highly valued and researchers are also called excellent for doing things for the organization. Typically many different individuals at the department are said to fulfill excellence criteria. Some are good at publishing, while others have leadership ability or are good at supervising PhD students. Senior researchers speak of organization building and research organizing and their responsibility as leaders to be responsive and ensure that young people who show excellent characteristics receive opportunities to develop as well as possible. Concrete cooperation and better decision-making processes are also believed to give more creative working and excellence.

An excellent researcher in mathematics (both in the department of information technology and mathematics) is someone who solves a difficult problem, otherwise it is not considered as excellent research. For pure mathematicians it has to be something very hard and something that not many can come up with, but if it is of any use does not matter. Interviewees in mathematics say that a discovery can be useful in 300 years, but it absolutely does not need to be so in the next five years, while in information technology someone who is good at doing mathematical stuff preferably has an idea on how to use it in reality.

When talking about becoming a truly excellent researcher there seem to be two varieties: those who are geniuses and those who work hard. The idea of geniuses is seen as a myth by some of the female scientists, who rather bring out that you can reach this level of courtesy if you end up in a good environment and get preconditions and resources. The two most important things for becoming an ex-

cellent researcher that have been raised by the interviewed, besides independence and brilliant ideas, is to have a passion for what you do and hard work.

> *"To become a good researcher you have to work hard. And you have to have good ideas, some interesting questions in an area which is fashionable at the moment. And something that gives me bad confidence is this idea that you really have to be a genius…and really have this super-human intelligence. So you have to work hard, but I'm not sure it is enough. Even if you are a genius you have to work hard. Or rather you have to have a passion, and having that passion makes you work hard."* (Female PhD student)

As can be seen in the quote, passion and hard work are intertwined and the genius idea challenged. The interviewees are also saying that you can stop being an excellent researcher, if you lose your passion and are not constantly working hard.

EXCELLENCE IN RELATION TO THE DIVERSITY OF ACADEMIC TASKS

Most of the interviewees think that it is possible to be both an excellent researcher and an excellent teacher, but there are many ifs and buts. It depends on time and priorities, on what level you are teaching at, what you teach about and how much, and also what you put into the concept excellent teacher.

The Swedish ideal is that you should do both, but in practice it is seen as a conflict of time and interests. You have to spend a lot of time to get better on both. If your teaching takes too much time and - you work on some competitive field, where people produce much, this time is lost in terms of keeping the pace with the others. It is hard to come up with the same number of publications. There is really no contradiction in doing both research and teaching, but it is necessary to allocate and prioritize your time in a reasonable way. Many interviewees stress that it is important to have a balance of time management.

You have enough time to do your research if you do not teach so much and if your teaching is related to your research. It is also perceived as a lot easier to teach master students or PhD students than undergraduate students. In such cases, research and teaching are even said to be feeding each other to a certain degree. However, if you have to teach large groups of students and about something that is not really your thing, it is not believed to benefit your research, but rather to take time from your research.

On the whole, many interviewees believe that it is possible to do both things if your research and teaching go in cycles. It depends also on how teaching is organized. If you are introduced by some

teacher who has been teaching the course already and is good, then you learn much more easily and can take over. If you are experienced you already know how to prepare and make it work.

The interviewees do not think that if you are an excellent researcher then by default you are an excellent teacher, or vice versa. However, most of them rather think it is a positive correlation than a negative one in that the same kind of qualities are required to be an excellent teacher as to be an excellent researcher. The knowledge ground is said to be part of both and also being visible and able to communicate your results and the passion about the subject.

Those who answer that there is not enough time and energy to be good at both teaching and research are using the term "excellent teacher" with respect to teachers who have attained a higher level of teaching expertise. In order to get admitted as excellent teacher your teaching must be of high quality and consciously grounded in research on how people learn. You must have been doing pedagogical development, working consciously and strategically so that you can describe your pedagogical philosophy and then tell how you have concretized it in teaching and PhD supervision. Those who have certified excellent teachers in mind argue that excellent researchers can have good lectures and participate in teaching, but find no example of someone who is officially recognized as excellent at both research and teaching.

In some interviews the division in teachers and researchers is described as a mechanism that makes you slip into one or the other track, where it is considered finer to be an excellent researcher than an excellent teacher. For example, a PhD student thinks that it is more difficult to become an excellent researcher if you have chosen to do a teaching career (excellent teacher as official title). It is seen as giving priority to teaching. In this context, two very gender aware researchers raise the structural perspective on gender. They say that it is easier for a woman to become an excellent teacher, because the teaching profession is still female coded, than to become an excellent researcher and be seen as excellent by the research community. However, it is not worth as much to be an excellent teacher.

> *"It is okay for women at this faculty to be good teachers and one is eager to tell that women are good teachers, but it is because education has one per cent's value while research life has 99 per cent's value, if you shall value merits. There is almost something unpleasant with the thesis to be either one or the other, because then it becomes clear that education is a woman's issue, because it is the way it is. If you are to put together a decision-making body at this faculty, then you have a lot of men doing research, but women are needed, too. Then they ask a woman if she can be responsible for education. It is very hard what women can do or not. It is a little scary, that eleven excellent teachers has been appointed at our faculty, I think it is more women than men amongst them, and you can think it is good, but it is unpleasant that it is in education, it is there women have found opportunities to develop because it is not a provoking area, it is not*

because women are good at teaching and not so good at research rather it is an expression of where there has been space."(Female senior researcher)

How does excellence influence the daily working environment?

Two reasons why excellence policies are so criticized are that they are not believed to create the conditions for the best ideas and work environment. Ten years ago it was networks and large complex, collaborative structures, which were trendy in the research funding world and that you have to invest in. Now you should identify excellence and the ones who are excellent shall have the resources. A senior researcher thinks both profiles are ditches. The older one because you might miss those who could do a great job on their own very well, if you are forcing everyone to work together in constellations to get resources. The new one because a few scientists tend to get a lot more money than they can use in a meaningful way, while the rest who are good but not quite the topmost becomes starved and it gets a lot harder to develop their ideas and skills. He thinks it is important and makes an incredible big difference how good you are in terms of international competitiveness in research, because it is the best ideas that have a long term impact in the world and in the research. However, he does not think that you create the conditions for the best ideas by giving all resources to a person who once demonstrated they had a bright idea. Another senior researcher says she is allergic to the concept.

> *"You are looking for excellence all the time and everyone is supposed to be excellent. You think you can pan for the gold nuggets amongst researchers and then throw money over them and everything is going to be good. If someone gets the etiquette excellence everyone throws their money on this person and this is no good at all. It is a bit uncomfortable to raise a few to the skies."* (Female professor)

A number of the interviewees think that the current search for excellence and for individuals who will bathe in money is not good for the work environment. Departments should work for using everybody's strong sides, because people who feel that they are not trusted are not very stimulated in their work.

A third senior researcher says that Uppsala University does and should not only build on excellence. He believes it is like sports, "without breadth no excellence", meaning excellence is based on the idea that others do the basic work and are responsible for the breadth. According to him those with very specialized excellence can run away and become world leading and last that long, but there will be no university and no environment for PhD students and students in the long run if you do not have a university that can ensure context and breadth, and know how you can harness this excellence in other areas. On a long term, he thinks the university loses by being unilateral and having a large focus on excellence, which has arisen because of breadth. Therefore he resists the university's, but especially the government's, quest for one Nobel Prize winner rather than ten thousand competent researchers as well as

all excellence initiatives from the ministries, the Swedish Research Council, Swedish Governmental Agency for Innovation Systems and other research funding authorities.

Excellence is said to create problems because some groups and people are made visible, while others become more invisible and find it harder to compete. Negative thoughts that a particular group or lab is not that good and does not deserve the money that they are getting also create discomfort in the workplace. Another thought is that diversity disappears, when excellent researchers create large research groups where everybody is alike, because smaller research areas and people representing them get marginalised.

Junior researchers think that there is a lot of envy or what they call a clash of egos between research group leaders at their department. They say that when getting a prestigious grant those that collaborate with you are also going to benefit from that, but those who consider themselves your rivals are going to take the opposite stance and it is showing when someone takes a negative position towards your research and results, just to prove that it is not scientifically important.

In a highly competitive system where you have to perform the key question is whether you have your own money or not. A senior researcher with external funding has been able to say no to senior excellent researchers when they asked her to contribute to their projects. She thinks that it is important for young and new researchers to be able to decide which projects they really want to put their heart in, to say no to invitations from senior excellent researchers, because otherwise they will never become excellent.

If you do not have money when you are new, you may have to do other things and cannot perform, publish and develop, and then you will get no money. The environments seem to vary a lot. Sometimes they are described as very hierarchical, where the people doing the work do not get credit. There were hierarchies in the 1990s too, but they did not depend on the money in the same way. It is perceived as a kind of vicious circle – if you do not have your own money you cannot do independent work in such an environment and if you cannot do any independent work, you do not get any money.

Another senior researcher says that researchers can forget about excellence if they are overshadowed by so called chair professors or dominating strong personalities, because then there is little chance even to come out as independent researchers. She tells that sometimes the age difference between new people and leaders plays a big role. If the senior person is someone who is close to retirement, s/he will normally be eager for renewal and to find a person who can run the show, but if the age gap is small the senior person does not want to hand over to any younger person as it makes the competition harder. She knows many researchers who did not get any external grants in several years and

continued working as researchers in other people's projects. It then becomes difficult to ever cross the boundary to becoming independent and count on excellence along the way.

The hierarchy where some are excellent can spill over into a social hierarchy and then it depends entirely on how these excellent people are. An excellent person who is high in the hierarchy can influence the working environment a lot: it is devastating for a PhD student if s/he is arrogant and criticises colleagues in a mean way, while the opposite is true: to have an encouraging word and a positive remark from an excellent researcher can mean a lot for a PhD student.

The excellent people can overshadow the juniors so that new creative ideas cannot be realized and junior researchers may feel bad. There is an example of a group where all women except one have left, and the excellent research results are achieved only by the professor and his nearly all-male group. This professor is speculating about favouring women for getting a more gender balanced research group. He has noticed that quite often female research group leaders have a lot of female team members, which suggests to him that women candidates take the gender of the research group leader into consideration. He understands that some women might feel like they are entering a very male dominated field, working under a male research group leader in a male dominated team. In other words, he sees sex as the determining factor in how the work environment looks like, it is not about how the research group works and how he leads the group.

A senior researcher says that if you are excellent you can allow yourself lots of freedom to behave in ways that are not really acceptable. Another speaks about the risk that excellent people get big egos and starts pushing others around and demand special treatment. However, both think that it is important to have excellent researchers in the environment, because it raises the level of research of the whole environment and attracts young researchers. It also inspires many new people to come and take it as their base.

Junior researchers are looking for an excellent research environment, but find it even more important how people treat each other. One junior researcher puts it like she is looking for the best place where there is a good atmosphere. She would not go to a bad place just on the hope of getting some very good papers out, if she knew that somebody is expecting her to work day and night or mistreat her.

Many researchers actually favour an excellent researcher who is both a good person and a good leader. One says it is good for a junior researcher to have an excellent researcher to ask questions, if that person is accessible and helpful and not intimidating. Another that an excellent researcher can create a good working environment by having visions and being passionate, generous and collaborative, by keeping the quality of the research very high and being a role model. An excellent researcher under-

stands that everybody needs help and makes sure to be surrounded by clever and passionate colleagues, and lets them work independently towards the common aim.

LIFE OUTSIDE WORK

Judging by the interviews it seems like the image of an excellent researcher that is totally committed to research and has no life outside the laboratory or the office has lost some ground and that a shift in professional ideals on what is a good life is underway.

Today it is normally accepted that also researchers go on parental leave. PhD students of both sexes are claimed to be on parental leave almost equally during their studies. Young researchers designated as excellent researchers have children and have been on parental leave. Senior researchers think the researchers of today see science more like an ordinary job than during their generation. At the IT department senior researchers in leading positions are also careful to point out that it is not required to work around the clock (no more than 40 hours/week) and refrain from family and social life.

A signature for excellent researchers is considered to have a balanced life, to also have a life outside research (in reality this means working a lot more than eight hours/day, but still balanced). No one can expect you to live for your work and a view put forward is that it is very important not to forget other things, like family and friends, because if you put everything you have into one thing this one thing can always fail. Some even say that you need to be a complete human being to become an excellent researcher, meaning that you have to be engaged in something more than your research, be it family or other interests.

Many believe that it is possible to also have a life outside research in Sweden (although it can differ within different groups and between leaders), but that in many other countries, for example France and Germany, just doing research and nothing else is still claimed to be the ideal. They who are excellent either have a partner who takes care of the family or are alone. At the same time the interviewees add that you may lose competitiveness against other countries, when scientists there do not go on parental leave. Then they have more time to research and better opportunities to conduct research.

If it is possible to have a life outside research depends on the discipline as well, and some research fields are much more competitive because there are fewer resources. Some research also involves waiting for something or doing many practical things that take a lot of time, for example.

Many bring out that it is an individual responsibility to find a good work life balance, but that it is very much possible. On the one hand it is not easy, because you are working with your hobby and therefore research and leisure time merge. It is not like the typical nine-to-five job where you go home and switch off your work or start thinking about something really separate from work, because as many

interviewees express themselves, you love to do what you are doing. It is also very competitive in the sense that if someone is as bright as you are and puts in more hours they are more likely to have more output and therefore more impact. For these reasons, several interviewees do not think you can make it work in an ordinary work scheme, but that does not mean you cannot have a life outside, you just have to prioritize quite hard, must think about what is important for you and being effective with organizing your time. On the other hand research is very flexible and very free and it is freely up to you how much you want to work.

Those who find examples of both successes and failures in balancing excellent research with a life outside research, think it depends on your personality. Some manage to do both, because they are focused and effective, very smart or have a delegating leadership style. You are seen as truly excellent if you both do excellent research and are the parent of young children, because then you can compensate quantity of time with brilliance or quality. With this in mind it is not possible to become an excellent researcher and have a life outside work if you are fairly smart, because then you will need to spend all of your time working. What this actually implies is that mediocre researchers without family responsibilities can become excellent by working around the clock, and this is considered to have gender implications in heterosexual relations. According to a doctoral student women still have to draw most of the family load and this is difficult to reconcile with the result focus that exists at the university, where you are not valued for the time you spend on research but only for the results.

> *"It is on an individual level of responsibility at the university. In a company you work your hours and it is the overall result which count, not an individual's performance. At the university you can compensate your shortcomings by putting more time in it. I like the result focus, but it has side effects. You have to fight and compete and sit up at night, which requires an understanding from your family and it is probably easier to get this understanding as a man".* (Male PhD student)

Many mention moving abroad as something that is problematic if you have a family. An excellent researcher not only has to work hard, but also has to work in several different places to make it in the sciences and that can be stressful for the family. If you are moving around you are really dependent on having a partner who has a flexible job or who can follow you. Kids and spouses might not want to move and if you are a scientific couple you need to find jobs for both and it is not easy.

A senior researcher says that it is possible to become an excellent productive researcher and also have a life outside research, but that it has a cost on marriage. He thinks that it works much better if you have a spouse who understands and it is not just hard for women, but also for men. For him it proved very difficult to maintain his family through all the moving here and there, and to maintain his career. The moving and the financial pressures, not the number of hours he had to put into his work, was a major factor that his wife eventually had enough. You have to prioritize, either you go in for the re-

search and become excellent or you consider your family and are not getting the very best position that would get you to the excellence level.

Several of the interviewees are talking about a sacrifice, that you have to really prioritize what you want to do and what you do not. In this context, they are pointing to implicit assumptions that women are more interested in taking care of their children and to some extent it is more accepted then to choose not to work overtime or do as much. They think it is shifting and becoming more and more applied to both men and women who have family responsibilities, but that it still is a little more skewed towards women. When we talk to younger, male researchers they have the same dilemma to balance work and family. They say that they will never be excellent, because they prioritize their family and are not prepared to constantly move around.

GENDER AND THE EVALUATION OF EXCELLENCE

Many interviewees just answered "no" when asked if there were any occasions where gender biases affected the acknowledgement of research excellence, saying that it is only research results or merits that count. Others could not recall that they had experienced explicit biases, but said that it is implicit in unconscious choices. For example, choices of research questions are very much governed by male preferences and self-proclaimed excellent people are usually men who are looking for someone like themselves.

It is worth notice that some research on gender equality in academia has influenced the numerous interviewees who spoke of hidden and implicit structures which they are unaware of. Many know about the Swedish study His Excellency, which shows that if you want to apply for excellence research funding, you should be male and scientifically close to the reviewers. Also the article of Christine Wennerås and Agnes Wold (1997) "Nepotism and sexism in peer review" in the journal Nature is very well-known. Their article demonstrates that women have to do much more than men to be viewed as equally meritorious by reviewers, evaluators, and peers.

Some female researchers have firsthand experience of being discriminated against in evaluation of excellence. One replied that she applied for a position when she was pregnant and did not get it, even though she was the most qualified. She thinks the reason for this is assumptions about women. In her generation men did not go on parental leave as they do today and they did not talk about their families and how it affected their jobs either, because that would result in them not receiving the same positions of trust. She also said that maybe, when put under pressure a woman may choose her family more often than her work, because of prevailing gender notions. The fact that women are on parental leave more often than men also suggests that they make this priority.

Although it is now commonly accepted that both male and female researchers go on parental leave, one interviewee pointed out that there are different expectations regarding when a mother and father should take their parental leave. Women are expected to go on parental leave immediately after the baby is born, while men are expected to do so later, and preferably when it suits the work at the department. For example, a female researcher who chose to share parental leave with her husband from the first day the child was born, because she had received a major research grant, felt that she constantly was questioned and had to defend her choice in front of others.

A senior researcher gave an example of how gender affected evaluation of excellence some time ago when she was applying for jobs at the same time as her ex-husband and was treated differently in the interviews. At one place they did not interview her at all, but offered her an assistant professorship, because they wanted her husband so much. At another occasion her interview had been about her research. The interview of her husband had been about practical issues with moving to the place. He was seen as the serious researcher and offered a position, even though she had been more productive than him.

At the Department of Mathematics there is a large difference between numbers of women and numbers of men and no female professors. The mathematicians also consistently say 'he' when describing an excellent researcher. This is why a female researcher does not like the concept of excellence. She does not fit the picture of a good mathematician because of her sex. According to her, you directly create a picture of a small skinny guy, a negative masculine image which is very excluding, when you describe an elite mathematician.

A senior researcher talks clearly and critically about mathematics as a male discipline. His former experience of recruiting PhD students is that if a man had written an excellent master's thesis, he was given a PhD position, because he was seen as competent, for example in handling equipment. However, if a woman had written an excellent master's thesis, the position was announced, because it might be possible to find somebody even better. In other words, the female applicants had to compete, but not the male applicants.

One interviewee says that gender influences the evaluation of excellent teachers in that other characteristics are required from a woman. She claims that women meet quite different demands on social and communicative skills, on being able to express themselves, collaborate, listen and have empathy. However, she points to an exceptional example of an excellent and socially incompetent female researcher. This researcher is mentioned by several of the interviewed and they are all trying to explain how she managed to become an excellent researcher despite her social and communicative shortcomings. She is active in a very gender-aware research group and according to the female researcher this has widened the space for her to be excellent without being socially competent.

Several interviewees say it is more about personal traits than gender biases on higher excellence levels, but think many women who could have been competitive fall off long before.

> *"Of course, if women have been sorted out earlier because of male structures and lost the desire for research, we have lost excellence without seeing it. It cannot be that there are not some really talented female mathematicians/information technologists. Somewhere an unfortunate weeding out occurs."* (Male professor)

This is a conclusion that several interviewees arrive at, especially at the IT department where several people talk about retaining the female doctoral students and to get them up the academic ladder by creating a good work environment.

Many researchers think that age is an even stronger bias than gender in the evaluation of excellence or that it is a combination of gender and age. One senior researcher says that she is not regarded as excellent, not even as a real researcher when she meets new people. They constantly ask her if she is a PhD student or a postdoc. Another female researcher says that some male researchers at international conferences assume that she belongs to the support staff rather than the researchers. At one time she had her child with her at a conference abroad and told about her project to another researcher. After a while he asked who he should get in contact with to find out more and what her role in the project was. He was quite surprised when she replied that she was the project leader. According to her she was treated in this way both because she was female and younger and more junior than he.

A junior researcher feels that gender comes before her professional role when she meets researchers from other cultures, that she is treated primarily as a woman and not as a researcher. Female researchers are given compliments because they are women. When you come to a certain level it is not like this any longer, she says, then you passed that, but especially when it comes to younger researchers, when you establish yourself, you can become insecure about how you are judged, if you are seen as an equal or not.

Some senior researchers speak of harassment based on sex, offensive behavior that is associated with sex, which can be considered as an effective tool to maintain masculine gender-coded contexts. In the stories aggressive behaviours are described, such as scolding and getting ridiculed in front of students and visitors. These violations are almost never sexual, even if there are a few examples of this also. In the few cases we encountered the female scientists have handled it tactfully, either by 'voluntarily' quitting or accepting it because the violator is insulting many other people too and is highly respected as a researcher.

Some male researchers mention what they call a kind of 'inverted' discrimination. One that for a long time has evaluated excellent research claims to know several cases, where a person got an interna-

tional award because she was a woman. He says it might be that women applicants are less valued in medicine, where he thinks they have strange structures, but defends himself violently against this being the case in the disciplines he knows about. He says evaluators there really try to find something that makes it possible to give a person grants if it is a female applicant.

Two male senior researchers also bring up an example of a female researcher who gets a lot of attention in media and research councils not only because she is excellent but also because she is young and attractive.

One senior researcher's basic concern throughout the interview is that men should not get discriminated against, that unqualified women should not get uplifted instead of qualified men. He generally thinks that men are more qualified than women and provocatively says that the stars at the department are male, even if one female professor has got an excellence grant. According to him adjusting everything to 50/50 is probably not going to reflect the excellence.

Why do some male (and female) scientists then believe there are less well qualified females than males? Biologically stained beliefs that men are more intelligent than women are extremely rare. A senior researcher says he does not know how it is with regard to gender equality aspects of excellence. He has no evidence that mathematical talent should be equally distributed among men and women, but no evidence for the opposite either. Some interviewees think that at least as many women as men would be considered as excellent researchers if there were no discrimination. One of them suggests that women's careers lose momentum when they go on parental leave. He can see equalization among younger generations, but there is still a gap in the career path for women. He says that they are all very aware of it, work against it, but it is a slow process and it happens very much unconsciously. It has very much to do with not being visible in the organization. Those who are on parental leave are not visible.

Two junior researchers explain that the top 20 mathematicians are all men, because of societal biases outside academy that do not let women produce as much as men. Socialized sex differences are also said to have made women less skilled than men to "play the game" and become excellent researchers. Women in general have been described as having less self-confidence than men and being more careful with advancing their excellence. Men in turn are described as having more self-esteem and magnified self-images, more desire to become excellent for reasons of prestige. A senior researcher thinks that men are more entrepreneurial than women, and that they are better at presenting their research and also at making it known outside their own field.

The junior researchers at one department had a very lively discussion on the subject of socialized sex differences. One argued that this cannot explain the gender imbalance at the department. Instead, the

explanations must be sought within the department. According to him the department leaders are working seriously with the question, but it varies down in the organization and for PhD students it falls back on individual professors.

A few interviewees enter into gender notions when describing evaluations of what is excellent and choice of topic. A junior researcher in IT says that evaluation of what is excellent is related to being nerdy in the area, having a unique little thing, an arbitrary selected criterion which can be based on the male gender. A senior researcher has a somewhat different perspective on this issue. She claims that few women want to identify with the term "IT nerd". It is a few that do, but the opportunities to be really nerdy or to be really interested in something and leave out everything else and just focus on research is smaller for women.

A senior researcher thinks differences in choice of topic reflect gender (and also differences in personality). He says that pure mathematics, what he terms mathematical snobbism and describes as abstract and hard, may be more male, while women perhaps are thinking wider and therefore have chosen other areas. For example, women prefer what he calls the softer and more world-oriented statistics, which is an applied science and also exists at the Faculty of Social Science.

At one department male PhD students express the beliefs that females are more organized than males and work cleaner in the lab. They describe females as elegant in that respect and very good at experimental procedures. These kinds of perceptions reinforce stereotypes even if they are meant to recognize and value the work and ideas of female researchers.

CONCLUSIONS AND IMPLICATIONS FOR GENDER EQUALITY

The quest for excellence, which results in some groups and individuals receiving large amounts of funds, both nationally and internationally, has gendered effects on the daily working environment. Many of these effects have always existed in the academic environment, but they have been accentuated by the competitive large scale funding for research excellence.

The receivers of these funds are mostly senior men. The concentration of resources on these individuals and their groups influences the power balance at institutions and departments. Parallel to conducting interviews on excellence, the FESTA task 4.2 has mapped informal decision making processes on department level. Interviews in these two tasks have cross-references – when talking about informal decision making, resourceful researchers were referred to, and when talking about excellence funding, the informal power of some people with lots of resources was mentioned. In Sweden, the gender composition is normally attended to when composing committees and electing people with formal power. However, when some senior male researchers gain relatively more power, the gender power balance shifts more heavily to women's disadvantage.

One part of the informal power of the excellent researchers is to choose their collaborators – sometimes even stretching the formal procedures. This means that the ideal of academic meritocracy has been bypassed to some extent. Especially for a junior researcher, fitting in and being liked by an excellent senior researcher may be quite as important as the academic record. From the studies of homosociality in the academy we know that senior men often unreflectingly tend to be more comfortable with other men than with women.

For junior researchers there is also the question of independence. According to the interviewees, to be the excellent researcher in the end, you need to get independent quite early in your career. This means that you need your own funds, or a research leader who lets you work independently. As female researchers often are perceived as less independent than male researchers, there is a risk that they also are allowed less independency by their leaders.

Some of the men were critical of the rules of the game and preferred to concentrate on doing good research instead of taking part in the excellence race. This was even more common among the women. In addition, there were women, but no men, who simply said that they just did not fit in the image of an excellent researcher and, thus, had no possibility of becoming one. This is no wonder, as quite a few of the words that the interviewees used to describe an excellent researcher are coded as masculine. Of the three categories of excellent researchers, geniuses, passionate researchers and career researchers, both geniuses and career researchers were mainly referred to as male.

In particular some of the PhD students and junior researchers talked about the effects on the social climate. They spoke about sparring, about 'magnified egos' and about envy, caused by the competitive atmosphere. Some of the junior women, when talking about their own careers, explained that they wanted to find a scientifically excellent environment, but that it was equally important that the social climate was good. Thus, environments which attract excellence funds, but let the social climate deteriorate might find it more difficult to attract talent and female talent in particular.

It was also pointed out that the concentration of resources contributes to marginalizing those researchers who are not working with the 'hot' topics, but are more in the margins of the current mainstream. The assumption that women belong to this category, taking up other research questions is one of the reasons why, in the discourse on gender in research, it is seen as important to have them in research. The excellence initiatives may not only marginalize them when excellence funds are distributed, but they also risk becoming invisible in the daily working environment.

Generally, there are obstacles for keeping up the passion and getting all those publications needed for being evaluated as excellent. In the interviews, both women and men told about problems of combining work and family and having a balanced life, for example. However, women were still expected

to be less committed to research by many interviewees. Having a reasonable balance between research and life outside work was regarded by many as important, even for excellent researchers, but achieving this balance was seen as an individual responsibility – in spite of the fact that institutional norms and practices to a high degree influence the possibilities to maintain this balance in different stages of life and career. Those norms and practices were even more important for women than for men. Another issue about keeping up the passion for research came up in interviews with those female researchers who told us how they had been held back or downright harassed in their working environment, and how managing that kind of situations had taken a lot of energy which they rather had put in their research.

Thus, working with gender excellence in research environments means keeping up the work that has been going on to make the working conditions reasonable, to abolish the power differences between men and women and to make it possible for all researchers to foster and use their talent and be evaluated according to their achievements. However, the mapping of the situation at Uppsala University makes it obvious that the quest for excellence adds to the problems and brings up new challenges for gender equality work even at the departmental level.

CROSS-NATIONAL COMPARISONS AND CONCLUSIONS

The research community is international. However, researchers' work is regulated in a number of national contexts, with different steering instruments. This is mirrored in the interviews, in that the discussions about research excellence show both similarities and differences in Bulgaria, Germany and Sweden.

There is a common understanding of what constitutes good research and of what kinds of people are respected among their peers. In all countries good researchers are described as passionate about research, conscientious, creative, visionary, persevering, independent, hardworking, and good leaders. They publish in high-ranking journals and are visible. They benefit their research area with something new and durable. Some of the adjectives are gendered, constituting the image of an excellent researcher as male.

However, the opinions were slightly different between the countries regarding to the extent that these qualities characterised those researchers who were seen as excellent by the funding agencies and research authorities. In particular in Sweden and Bulgaria, there was an open criticism of the way by which excellence was used as a quality measure in funding and career promotion. Those interviewees, in particular in Sweden, talked about research funders fostering a certain kind of individual who actually was not passionate about research, but managed to secure large funds because of his (a generic "he" was referred to) political abilities. Similarly, interviewees in Bulgaria mentioned politically motivated evaluation practices when candidates for higher scientific positions or degrees were treated subjectively and unjustly and also that people with real or symbolic power have quite strong influence over decision making processes in academia. The similarity between Sweden and Bulgaria may also partly be explained by the egalitarian ideologies of these societies, even if those ideologies have developed in very different societal and political contexts.

This criticism was not at all as prevalent in Germany. In Germany the concept of excellence was by the interviewees attached rather to organizations than to individuals. Partly this may depend on the set-ting: The interviews in Germany were made at a university which enjoys the benefits of having been awarded an 'excellence' status as an organization, and, thus, most interviewees benefited from the national excellence policy. In Germany, when discussing the effects of excellence on the working environment, the approach also was more organizational and the opinions were mostly positive. In Sweden and Bulgaria, the interviewees discussed interpersonal relationships to a greater extent and the opinions were a mixture of positive and negative. The impact of the excellence discourse has been different in Germany, Sweden and Bulgaria. The German, as well as Bulgarian academic sphere is traditionally more hierarchical than the Swedish one, and the excellence discourse has not changed the relationships between researchers to the same extent as in Sweden, where the structure has been

flatter, and where the excellence discourse has caused new individual economic and power differences. Thus, working with gender and excellence in Germany is very much related to ordinary hierarchical structures which have always disadvantaged women, while working with gender and excellence in Sweden means trying to make sure that the new wealth and power differences do not disadvantage one gender more than the other. The starting point in Bulgaria is similar to that in Germany, in that excellence discourse itself has less impact on traditional academic relationships, but the difference to Sweden and Germany lies in the fact that gender equality is almost totally absent in any academic discourse and the first step is to introduce it there.

The conditions for reaching excellence are different in the different countries. In Sweden, large numbers of young researchers work on temporary contracts of a few years' duration. After the PhD the right path is to get to an excellent environment for a couple of years and as soon as possible start applying for own funds. Teaching is a pitfall. It is a way to stay in the academy, but because of the heavy teaching load it is difficult to get time for research, particularly independent research, and thus easy to get stuck in the teaching track. In Germany the conditions are even harsher, with even shorter contracts and sometimes drifting in and out of the academy. Also, it takes comparably longer before young researchers have a real possibility to get funds of their own, and, thus, they are dependent on a senior person longer. In contrast, nearly all academic staff in Bulgaria work on permanent contracts which guarantee considerable extent of security and insignificant mobility. Thus, competition is quite limited and refers prevailingly to the admittance in the system and subsequently to promotion. Teaching and research, as major academic duties, are almost equally weighted, although remuneration is based mainly on teaching load, thus creating a complex working environment. The different conditions may give different obstacles for men and women on their paths to excellence: The Swedish way can push women into teaching, as women are often attributed with better pedagogical than research skills. The German way is problematic in research communities where women generally are seen as less independent than men – because of this, in the senior-junior relationship women's independence can be curtailed more than men's. The Bulgarian way disfavours both men and women, by providing rewards for teaching and thus leaving research insufficiently supported.

In the three countries it was seen to be of foremost importance for young researchers to find the right environment, headed by excellent researchers, who would support their scientific improvement – including seniors who were willing to act as mentors, helping the junior researchers along the way, but giving them enough independence. German, Swedish and Bulgarian interviewees stressed the scientific level of the research environment, however, Swedish interviewees also sometimes mentioned the importance of a comfortable working climate. In all countries the importance of the seniors' personal characteristics and leadership abilities was stressed as decisive for fostering the next generation of excellent researchers. Most of the excellent researchers in these environments were

men, thus, it is natural that when mentioning problems in these respects, the interviewees talked about male leaders. However, in Germany women were more critical than men to the practices and ideals of some of the male leaders**.** In Sweden, there were female researchers consciously disassociating with some of the characteristics they saw as connected to a certain kind of excellent researchers, and refusing to play the game to gain that kind of status. Maybe the fact that Swedish interviewees attributed an excellence status to luck – in happening to stumble on a 'hot' research topic – shows a more relaxed attitude to the concept of excellence. In Bulgaria, when describing the profile of an excellent scientist or providing examples of excellent researchers who they would like to follow, both interviewees unconsciously referred to men. No critique or comments were voiced against the male nature of such a model.

The support structures that the excellent-researchers-to-be need outside the institution also vary between countries. The possibilities of combining research and family are particularly important for gender equality. Here Sweden stands out, not only because of the public childcare, but, above all, the norms which were expressed by the Swedish interviewees. It was common not only to say that combining family and research was possible, but also that it was important to have a family or some other interests outside research. Parental leave was regarded as normal for both mothers and fathers - even if the interviewees also pointed out that expectations in regard to family obligations were still different between women and men. This attitude was not described as unproblematic: There was a risk that it would disadvantage one's career, and some interviewees reflected on the risk that Sweden would lag behind in the international competition due to the researchers being less hard-working. However, working 24/7 was not seen as a realistic alternative by most interviewees.

In Germany some interviewees, in particular the younger ones, and in particular women, also asked for a possibility for life outside research. However, a majority did not really question the 24/7 norm. The opinions were more gendered than in Sweden, in that women to a greater extent than men questioned the prevailing norms, and it was female senior researchers who supported and advised the junior women in their efforts to combine research and family.

In Bulgaria, the majority of interviewees also thought that keeping balance between work and life outside work is important and possible but very difficult for both genders. Life situation in a country undergoing rapid economic, social and political transformation makes demands in the life outside work even for academics and the norm 24/7 was seen as equally devastating for men and women. Parental leave (possible for both mothers and fathers) is not sufficient, neither is the government support. Institutional support measures are totally absent. That is why the comfort and the encouragement in the family are crucial especially for the success of the female researchers.

Most interviewees agree that life outside work makes it more difficult to reach excellence. In Sweden, both men and women appreciate life outside work and are prepared to take care of children, and to the extent they are similar in this aspect, they can be said to be equally disadvantaged.. In Germany, women less readily fit in the work culture kept up by the common ideals, and, thus, are more disadvantaged than men. In Bulgaria women still are expected to spend long periods of time outside academy while taking care of children, which admittedly disadvantages them.

Attitudes to the requirements of mobility, however, were quite similar in Germany and Sweden: They were problematic for both men and women, but mobility was also seen as necessary by the interviewees. Because of permanent contracts and the fact that most of the researchers in Bulgaria work at the same institution during all their productive life, mobility does not appear to be a problem and has not been discussed by the interviewees.

There were some institutional features which influenced the interviews. At RWTH, excellence was connected to a move from engineering sciences and valuing collaborations with industry to natural sciences and valuing publications, which affected internal power relations and required some re-orientation from the researchers. At Uppsala, the interviewees discussed the "excellent teacher" certification, an institutional policy for putting more weight to teaching qualifications. This qualification was discussed as something separate, different from and less valued than being an excellent researcher. While it may make those academics on the "teaching track" more visible, striving for excellence in research rather than in teaching is still the (somewhat gendered) norm. At SWU, interviewees talked a lot about the shift from the old centralized (national) system for promotion of the academic staff to a new decentralized (institutional) one which was imposed a few years ago. Among the most disputed issues were the evaluation criteria and procedures, which, although gender neutral, could enable unequal treatment of men and women researchers. Since it depends mainly on decisions of superiors and voting of peers with some kind of power, there are potential risks for inequities which could harm many more women than men.

A common feature in Sweden and Germany was some interviewees', almost exclusively men's, opinion that women are favoured in the current research landscape. In contrast, in Bulgaria science was seen as gender neutral by both women and men. This difference is obviously related to Sweden and Germany having had gender equality as part of the discourse and having made gender equality initiatives, while such issues have been absent in Bulgaria.

That women are favoured was not a common opinion in Sweden and Germany, either, but it came up often enough to indicate that there is substantial discontent about gender equality initiatives. This discontent can be related to the fact that in case of limited resources and harsh competition, new, qualified competitors may gain the share of those who previously would have been entitled to

resources. In gender equality work this discontent needs to be counted on and dealt with – particularly when it is also expressed by gatekeepers, and its existence can be expected to obstruct and put off new initiatives.

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APPENDIX 1: INTERVIEW SAMPLES

RWTH Aachen University		
Gender and academic level	No of interviewees	Units
A level male	9	Physics, Chemistry, Informatics, Mathematics Architecture Construction Engineering Mechanical Engineering Geo-Engineering Neuroscience Economics
A level female	4	
B level male	-	
B level female	4	
C level male	6	
C level female	4	
D level male	1	
D level female	4	
Sum male	16	
Sum female	16	
Sum total	32	

South-West University "Neofit Rilski"		
Gender and academic level	No of interviewees	Units Mathematics Informatics Computer Systems and Technologies Chemistry Geography, Ecology and Environment Protection Electronics and Communication Engineering and Technologies Manufacturing and Textile Engineering and Technologies Theory and Methods of Physical Education
A level male	1	
A level female	1	
B level male	7	
B level female	4	
C level male	0	
C level female	4	
D level male	0	
D level female	1	
Sum male	8	
Sum female	10	
Sum total	18	

Uppsala University		
Gender and academic level	No of interviewees	Units
A level male	10	Mathematics Information Technology Cell and Molecular Biology
A level female	4	
B level male B level female		
C level male	14	
C level female	13	
D level male	12	
D level female	10	
Sum male	36	
Sum female	27	
Sum total	63	

APPENDIX 2: WORKSHOP CONCEPTS

The mapping of how discourses of excellence influence the daily working environment of researchers, and gender equality in particular, is not an aim in itself. The results of the mapping, in particular any problems that have emerged, need to be fed back to the organization and to the people concerned, to induce measures for minimizing the possible harm. In FESTA this is expected to happen by organizing workshops for the different groups concerned.

Below, there are some general considerations for this kind of workshops, and three examples of how these considerations will be manifested in three different contexts.

GENERAL CONSIDERATIONS

1) **Goal**

The most important part of the planning process is to select the goals for the workshop. What are you trying to achieve? What of it is most important? What do you want the target group to gain from participating in the workshop? For example, do you want to introduce the subject of gender equality or to give a new perspective on gender equality? Do you want them to take action on a particular aspect of gender equality and arrive at decisions about what can be done? The goals of your workshop will affect everything, from how long it will be to how it will be structured.

2) **Target group**

Your audience, the people who are going to participate is also one of the crucial issues when preparing a workshop on gender equality. To consider their goals is also important for the success of the workshop. What do they already know about gender equality and what are their needs? What do they want from the workshop? If you are planning a workshop for a particular group, you may be able to find this out from your contact person or from the participants themselves.

The size of the group is important. It depends on your topic and goals but if it is large it should be split up for different activities during the session to get all participants involved. The gender balance and the different profiles of the participants are also an important aspect. All female group or all male group may not be good for different reasons. Often it is beneficial to have some (preferably key) people who are sympathetic. Finally, understanding your participants, their different attitudes and needs will help you decide what to do and how to do it. If people are not there voluntarily, you need to be prepared to handle resistance. In case you are introducing a new topic, it may make sense to prepare a range of appropriate materials.

It is important to decide how you are going to attract your participants to come to the workshop. Presenting a hot topic which reflects current developments influencing their work will certainly raise interest. It might be a good idea if your invitations are sent on behalf of a person in high position, or if you can mention such person, with real or symbolic power, in the invitation. The gender equality aspect is something to consider when inviting people. Mentioning gender in the invitation can decrease interest, but if not mentioned and subsequently significant in the workshop, people may feel cheated. If the topics address gender in a very obvious way, you presumably will reach especially gender experts and people who are interested in gender topics, but not the researchers who normally are not concerned with gender issues.

Sometimes people can be ordered to attend a workshop by their superiors. The benefit is that you have a guaranteed group of participants. The drawback is that you are more likely to meet indifference and hostility. The attitude of the participants toward the workshop needs consideration, especially when you are introducing a new concept and are going to challenge their beliefs and biases. Engaging a good moderator for the workshop or being one is crucial in those occasions.

3) **Location**

The workshop should take place in a flexible location where people can both work in groups and have a plenary discussion. The location has to be spacious enough for people to work in groups without disturbing each other. If people are to move between groups, that should also be easy to do, without having to move great distances or having difficulties in finding the right group. It is good if the results of the different groups can be presented in the plenary not only orally, but also with writing on a blackboard, flip board etc.

The location sets the atmosphere of the meeting. Different locations attract different people. Different locations signal different things. The choice of location is subject to availability, but can be worth an extra consideration. For example:

What kind of location would best attract the people you want to reach? Should it be close to them, so it does not take an effort to get there? Or should it be farther away (maybe even outside the university), so that this occasion becomes something special?

Should the location signal something special? What activities or people should the occasion be associated with?

4) **Topics**

The selection of the topics is one of the most crucial aspects when preparing workshops. They should be carefully thought through, if you want to attract people to participate. For instance you could choose ”hot topics” that can be meaningfully linked to current discussions at the research organisation. You definitely need to consider how the topics refer to gender issues, and how to keep the participants from straying away from gender and only discussing excellence in general

You will find suggestions for topics in our report and our planned workshops. Maybe some of them are already discussed at your university and you can link our findings with your current discourses. Moreover, you can use our findings in order to compare them with your situation. Are the effects of the connection between excellence and gender better or worse with regard to gender equality in your country?

Think also about the way you want to present topics. You have to decide if a presentation is enough or if you want to circulate material. It may depend on how familiar the participants are with gender equality issues but also on the workshop format.

5) **Method**

Which method you like to choose for your workshop depends on your goals, resources and time. If you have only few resources and little time available, you presumably will decide for a presentation with subsequent discussion. But if you have more time and resources available and you would like people to have a more active part in the workshop (which actually is the idea of workshops) you might consider methods such as Open Space (example from UU), World Café (example from RWTH) or similar where

- people can discuss in groups the topics they have chosen themselves and each group focuses on one topic
- people have a possibility to take part in different groups and thus can discuss more than one topic
- group discussions are moderated and documented (e.g. on flip charts)
- group discussions are presented and discussed in a following plenum, where the overall discussion is also recorded (e.g. on flip charts, board, directly writing on a projected PowerPoint page)
- where the results of the work are recorded in a protocol (e.g. photo protocol of the flip charts) and the participants get information about what will be the next steps, or which effect the

workshop can be expected to have on the gender equality situation at their university/research organisation.

6) **Moderator**

Whether you moderate the workshop yourself or engage somebody else depends on how competent and confident you are, on your resources and on your workshop format. If you have decided to carry out a world café or an open space method you need people who moderate the different topics and present them afterwards in the plenum. Your role in this case is to be the host of the event and you can choose how you like to participate yourself in the workshop.

There are good reasons for integrating moderators from outside:

- You can choose prominent moderators to attract people
- You can choose moderators who are competent in gender equality and who act as role models
- You can choose a professional moderator who can handle groups that work with touchy issues

5) **Impact**

The workshop should not end after the plenum. You can offer to send the participants further information about excellence and gender as well as keep them informed about novelties in this subject. It is important to help them discover for themselves the value of the workshop. It is also important to ask for and be attentive to their feedback and pay attention to participants' concerns about discussed topics. They may be new to them and need time to be absorbed. The workshop may be successful even if the participants do not accept or agree with everything that has been presented, or if there have been disagreements in the groups.

There should also be a plan of what will happen to the results of the workshop, who will be responsible for acting on them and what changes are expected to happen. The participants need to be informed about this plan. Preferably there should also be an evaluation of how the results of the workshop have been applied and what has been achieved in regard to any gender equality aspects in the working environment after a reasonable period of time.

RWTH WORKSHOP CONCEPT

Theme: University as a place of work

1) Goal

The goal of the workshop is foster awareness on the gender effects of structures, procedures, culture at RWTH that are connected with topics of the conditions under which scientific achievements are obtained. The findings of the report, both the national findings at RWTH and the international findings from the partners are to inform the workshop participants when discussing different dimension of working condition and its gendered effects on successful scientific careers. The results of the workshop are to feed current expert groups who are concerned with improvements of the working conditions at RWTH.

2) Target Group:

We want to reach approx. 50 researchers from all faculties and from all levels of a scientific career. Gender balance among the participants is strived for; therefore we decided to formulate the title and the topics of the workshop in a gender neutral way. In order to attract the researcher for participating in the workshop we want to gain moderators (professors from the university with different national backgrounds and from different SET subjects) who can act as role models and are known at RWTH.

3) Location

The World Café will be part of a lecture series on "Changing Universities: Gender and Diversity at RWTH Aachen University" that has been carried out by IGaD since 2013 and aims to awareness raising for gender equality in the university and address all university members.

As physical location for the workshop a space with atmosphere is seen a good basis for the workshop. Therefore we will carry out the workshop in the RWTH Guesthouse that is an old Villa from the beginning of the 20th century and is often used for small conferences.

4) Topics

The Word Café will be consisting of five thematic tables:

- Junior Researcher between dependence and self-unfolding
- Working atmosphere and culture of presence: contradictions between working time due to contract and real working time in science (Why is "addiction to science" connected to a culture of presence that is applied especially to young researcher?)

- Mobility abroad in science (Does knowledge exchange means that we have to be mobile as persons in times of ICT?)

- Science as way of life - life models in science (How do we want to life our life as scientists?)

5) Method

- World Café

- A “World Café” aims at hosting large group dialogs and bringing people together for discussing problems and finding solutions. Our World Café will consist of four tables with maximal twelve chairs – one for the moderator (“table host”) and eleven for participants. The process begins with the first of three of thirty minute rounds of conversation for the small group seated around a table. At the end of the thirty minutes, each member of the group moves to a different new table. The table hosts welcome the next group and briefly fills them in on what happened in the previous round. After three rounds each of the four table hosts will present the discussion results in a structured way in the plenum with a following short discussion. The host of the workshop moderates the plenum and document additional results of the plenum discussion.

6) Duration

- The work shall last 3 hours in order to generate good results. We decided that the workshop should be no longer than the 3 hours because otherwise we believe that people get deterred by the length.

7) Moderator

The thematic tables will be moderated by well-known key people from the university (Professor from different SET subjects). Some of them bring in an intercultural perspective as persons who come from abroad (Scandinavia, Eastern Europe, USA) and are working now at RWTH.

8) Impact

The workshop shall end with concrete recommendations for actions. The host of the workshop will communicate the results of the workshop with its recommendation to current expert groups at RWTH which are concerned with some of the table topics as well as in the Gender Commission of the Senate which advices the Rectorate with regard to gender issues.

SWU WORKSHOP CONCEPT

Theme: Perceptions of research excellence in comparison

Goals: The workshop aims at introducing and discussing the gender equality aspect into the current institutional discourse about research excellence. It intends to initiate a series of talks on different levels at the university in order to create an environment where the challenges which female researchers face are much more visible, counted and respected. Generated discussions are expected to provide participants with insights and ideas which they consequently might fit into the context of their own everyday work and live. A long term goal is to induce gender equality initiatives which could entail changes of university policies and practices.

Target Group: Male and female: PhD students, junior and senior researchers, chair holders, researchers on administrative positions from the Faculty of Natural Sciences and Mathematics and the Technical College, members of university committees and governance.

Number of Participants: approx. 30

Location: Main boardroom used for the university Academic Council meetings, as well as for different representative events and official ceremonies. This specific place will create an appropriate atmosphere and credit the workshop topic with additional value and importance.

Topic: In order to facilitate comparisons, the discussion topics will follow the empirical findings, sorted out in similar themes:

- Research excellence as a "hot" topic in current academic discourse;

- Influence of recent science policies over the daily environment at the university;

- Research and education duties – clash or unity;

- Work and family, and other values in life. Is the balance possible?

- Research excellence and gender equality.

Method: Moderated discussion. A knowledgeable and skillful presenter, who has particular expertise in fostering women in science and technology will be invited to generate lively discussion. She will be supported by members of the project team. Participants will be involved in different kinds of activities. Printed materials with important information about project findings as well as summary of the main points of the workshop will be distributed beforehand. The major workshop topics – excellence and gender – will be approached from comparative perspective. Differences and similarities between

Bulgaria, from one side, and Germany and Sweden, from the other, as well as different challenges for men and women researchers will be discussed with reference to project findings.

Duration: 3 hours with a short break. In order to attract participants' attention different techniques will be employed – changing activities, topics, methods of presentation, forms of discussion, etc.

Moderator: A prominent female professor in Physics, who is an international expert in gender issues, will be invited to moderate the workshop. She is among the founders of the Bulgarian Center of Women in Technology (BCWT) which is the National Contact Point for the European Centre for Women and Technology. The center aims at supporting women in science and enhancing women's leadership and professional participation in the ICT sector, as well as increasing the female share in the development of technological and engineering products.

Workshop results/Impact: An anonymous evaluation form will be distributed at the end of the workshop in order to get feedback about participants' impressions. After the workshop is over, further information (conclusions, evaluations, feedback, etc.) will be send to those who have expressed interest.

UU WORKSHOP CONCEPT

Theme: Excellence in the daily working environment.

Goal: The goal of the workshop is to raise awareness of negative effects of excellence financing and recruitment decisions on daily working environment and gender equality, and to arrive at decisions about what can be done about that. We are going to base the discussions on the empirical findings of our report and focus on practical, achievable goals, that is, what can be changed within the existing funding system, which cannot be transformed without a political process.

Target Group: Researchers from all departments and from all academic levels. There are about 245 teachers/researchers in five units at one department, 150 in six units at one and circa 100 teachers/researchers at one department. We want to have approximately twelve workshops. We think it is a good idea to hold a workshop at each of the units. In the third department we want to have one workshop at their staff meeting. Number of participants depends on the size of each unit/department as well as on how many people will attend.

The gender balance differs between the departments and also the units. One department has a much more balanced gender mix than the others with few women. In all departments, the percentage of women decreases on higher academic levels, and we may need to consider if the workshop should be planned in different ways depending on the gender composition of the workplace.

How we will invite and get people involved is something that needs to be discussed with and approved by the department heads. We think the invitation ideally should come from the department/unit heads and emphasize that it is primarily about excellence in the daily working environment, but with a particular focus on gender equality.

Location: at each department/unit. The workshop will take place in a flexible and spacious location where people work and feel at home and where they can have both sub-group and plenary discussions. The place shall be comfortable and quite informal and close to them so it is easy to get there and to signal that the occasion is part of the ordinary work to implement changes in the working environment of academic researchers.

Topics: The workshop will consist of a number of proposed discussion topics that centers around the question what can be done about this.

- Excellent researchers set the agenda – men (depends on how the excellent person is).
- Importance of fitting in and being sponsored (homosociality/less diversity, balance between dependency and independency).

- Less trendy research areas get marginalized (choice of research questions).
- The work environment is affected by the competitive atmosphere (influence ideals, some individuals have a very large influence, envy and informal decision-making).
- Balance of time management and passion/hard work and the risk to lag behind in the international competition (due to life outside work and the diversity of academic tasks).

Method: We will use a more structured Open Space Technology (OST). OST is a method aiming at bringing large group of people together to understand a problem and seek a shared solution. We think OST can be adapted to our theme as the work do be done is often controversial and complex, the people and ideas involved are diverse, the potential for conflict are high and the need for decisions to be made quickly.

The workshop starts by the moderator who welcomes the participants invited to the meeting and provides an overview of the process and explains how it works. The main results of the report will be presented by us and the report itself distributed prior to the workshop. After the presentation the moderator will highlight some specific discussion topics related to the main theme of the discussion/report. In this way the agenda items of the workshop are mainly created by us (in pure OST it is created by the participants themselves at the workshop). Then participants are expected to move freely between different sub-group discussions or stations of flip boards in the location. Recorders determined by each group picks up and write down concrete recommendations for actions on the flip charts. Finally, all the results of the sub-discussions will be included in one document in plenum with a following short discussion.

Duration: The workshop will ideally last for three hours to get positive results/impact. To attract more people we decided that it should not be more than three hours.

Moderator: The workshop will be moderated by a competent moderator from the university who are not part of the university administration as these issues are sensitive and the potential for conflict high. We will only attend the workshop to present the main results of the report.

Impact: The workshop shall end with practical proposals on what can be done about the problems. We will discuss the workshop results and its suggestions with leaders at departments/units because they have the mandate to decide.