



Department of Sociology  
Umeå University

**Mapping Gender in Academic  
Workplaces:  
Ways of Reproducing Gender Inequality within  
The Discourse of Equality**

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Doctoral theses at the Department of Sociology  
Umeå University  
No 33 2003

Department of Sociology  
Umeå University  
Thesis 2003

Printed by Umeå universitets tryckeri  
Mars 2003

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ISSN 1104-2508  
ISBN 91-7305-402-X

*"When you once and for all have seen what is going on,  
keeping quiet becomes as much a political act as speaking out"*  
(my transl). Arundathi Roy DN 2001-08-25

To my sister



Mähle, Paula. Mapping Gender in Academic Workplaces: Ways of Reproducing Gender Inequality Within the Discourse of Equality, Umeå University, 2003.

ISBN 91-7305-402-X

ISSN 1104-2508

## **Abstract**

Sweden is often described as one of the best countries in the world for women to live in. Despite this and despite a number of equal opportunity interventions within the area of higher education from the mid 1990s and on Sweden follows the international pattern of the “leaking pipeline” when it comes to gender distribution in academia. The higher up in the academic hierarchy the more men and the fewer women. The topic of this thesis is mapping gender in academic workplaces. The aim is to explore ways in which the social relations of researchers’ everyday working lives are gendered. This involves studying ways in which gender inequality is produced, maintained or ignored within the discourse of gender equality in Swedish academic workplaces and in Swedish society at large.

The study is based on bibliometric and sociological studies of four academic departments in three different scientific disciplines at two Swedish universities. The departments were chosen because they provided good possibilities for realising gender equality and extreme situations have been avoided. The departments have been studied in terms of their intradepartmental co-authorship networks and their citation behaviour. The study has evolved hand in hand with a bibliometric toolbox and the “socio-bibliometric mapping technique” is part of the results. In-depth interviews have been conducted with different categories of academic staff focusing mainly on *new* researchers. All in all 20 researchers have been interviewed. Special attention has been given to different academic workplace cultures and ways of making sense of gender inequality within these settings. The results indicate that gender inequality is produced within seemingly gender-neutral everyday working situations. The feminine Other is constructed in relation to various forms of masculinities in everyday working situations and provide an obstacle for collegial relations on equal terms. The lack of available subject positions and the additional workload of creating such provide an obstacle for women academics to supporting each other. Both women and

men use the discourse of gender equality to reproduce gender inequality; this is done by excluding women in subtle ways or by internalising superiority or inferiority. The researchers in this study also showed a reluctance to talk about problems as “problems” and many stated that they did not think that gender had had any influence on their career possibilities. It was not until they began to reflect on their every working lives that they began to reflect on how gender relations had affected them and their colleagues. The reluctance to consider gender as relevant for academic career opportunities focuses attention to two social constructions: firstly academia as an objective and gender neutral institution where meritocracy rules, and secondly the “norm of gender equality”. Gender inequality in academia becomes something that is outside the norm of equality and according to the discourse of meritocracy any problem must be caused by the individual i.e. personal trouble, and the available subject position is “the subject as a problem”.

**Key words:** Gender, equality, inequality, academia, career, socio-bibliometric mapping, meritocracy, discourse

## Acknowledgement

During my work on this thesis I have received kindness and support from a number of people. Unfortunately it is impossible to mention but a few here. The thanks and gratitude to all those who have offered help, support and advise during this work is so great that it would not fit on one page.

Two persons deserve special thanks - my supervisors Nora Räthzel and Olle Persson. Nora, thank you for guiding me and for your insightful comments on various versions of the manuscript, our interesting discussions and good laughs have been invaluable to me! Olle, thank you for taking me on in the first place and for introducing me into the world of bibliomtericians. Thank you also for your enthusiasm and openness for new ideas!

Several people have over the years read what I have written and offered helpful comments and support. I would especially like to thank Mona Eliasson for her final comments on the manuscript. My feminist friends and colleagues in Sweden and aboard, especially Elin Kvist, AnnaMaria Nygren and Maria Carbin - thank you for joyful gatherings and supportive discussions! I thank my colleagues at the Department of Sociology, members of the Inforsk group and particularly Peder Karlsson, for inspiring and fruitful collaboration.

During my work with the thesis I had the opportunity to spend some time at the Hawke Institute at the University of South Australia, Adelaide, Australia. This meant a lot to me and I'm grateful to Professor Alison Mackinnon and to all of those who made this stay a rewarding experience.

This thesis was made possible by economic support from The Swedish Research Council of the Humanities and Social Sciences (HSFR), The Swedish Foundation for International Cooperation in Research and Higher Education (STINT), JC Kempes minnesfonder as well as Länsförsäkringar Västerbotten and Sparbankerna Sverige Aktiebolagsfond för ekonomisk och social forskning. I thank Stefan Olofsson for designing the front page, Charlott Nyman for making the language corrections and Lotta Jarl for editing the manuscript.

My deepest gratitude goes to my family for providing me with love and support during this journey. Måns, and our baby who will come into this world by the end of the semester, thank you for reminding me of the good in

life and for sharing. Finally, my dear sister, sole mate and best friend- this is for you!

Last but not least, I want to thank the interviewed researchers who shared their experiences with me and made this study possible.

Stockholm, 25 February 2003



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The Attached Articles:

- Socio-bibliometric mapping of intra-departmental networks, *Scientometrics* Vol.49, No.1 (2000) 81-91
- Mapping gender differences in scientific careers in social and bibliometric space, *Science Technology & Human Values*, Vol. 26 No 2, spring 2001 167-190
- The symbolic order of gender in academic workplaces: ways of reproducing gender inequality within the discourse of equality (Submitted, *Women's Studies International Forum*)
- Subject positions: From maps to discourses in academic workplaces (Submitted, *Feminist Review*)

## Introduction

*"- What we make here an object of investigation is what we ourselves are immersed in. The ideological practices explicated here are our own. Explicating such practices enables us to become aware of how, in deploying them, we participate in the relations of ruling. Feminism, a commitment to women, does not alone protect us from being implicated in the relations of ruling [...]."* (D.E. Smith 1990,4). These lines can be read in the introduction to Dorothy Smith's book *"The conceptual practices of Power. A feminist sociology of Knowledge"*. During the process of writing this thesis I have been confronted with different reactions from friends and colleagues, both positive and negative. One of the more frequent reactions has been; "studying such a topic must be difficult?". Well, it has been a lot of things - rewarding, stimulating, scary and difficult. One of the more difficult parts has been to follow and accept the tradition expressed in the quote above. To be reflexive and consider how myself and my everyday academic working experiences are part and product of the "relations of ruling". The following offers an exposé over how I discovered my research topic as well as an explanation of how this is not a process that can be excluded from dominant discourses in society and academia and my experiences of them.

### The discovery of a research topic

I began to study at the university at undergraduate almost level 10 years ago. At that time I was, like many other young female students, totally convinced that higher education was open to me to the same extent as for my male student colleagues. As a matter of fact I did not even reflect on gender and gendered structures in academia. It simply did not cross my mind. Instead I was occupied with discovering interesting and (for me) new subjects of inquiry. Consequently I passed through my undergraduate courses in sociology without even reflecting on the absence of female lecturers or feminist perspectives, with the exception of one female guest lecturer once. She talked about her dissertation project as an example of feminist research. But since her perspective and research was so distant from the rest of the course I soon forgot about her. It was not until I reached the masters level and began to be interested in the sociology of science that I began to reflect on academia as a social institution. This was in 1995/1996. At that time an event that brought

my attention to gender in higher education occurred. The minister of education Carl Tham launched an affirmative action proposition, in which special positions and grants would be earmarked for women in academia in order to diminish gender stratification. The reactions towards this proposition were tremendous and the newspapers were filled with debate articles. What caught my attention was the spiteful tone in the articles that were against the proposition. The number and tone of the articles revealed that the propositions were perceived as highly provocative and threatening. The proposition was described as "direct discrimination", "sex discrimination", "sex qualification" and "equality fascism"<sup>1</sup>. These statements are quite harsh and rather unusual in academic settings. This made me wonder why the reactions were so strong and what they represented? What became clear was that the proposition challenged two fundamentals of the academic system; male-dominance and the meritocratic functioning of scientific evaluation systems. This was hardly news but what surprised me was the adamant defense of these two fundamentals. Gender equality issues have been on the political agenda for many years in Sweden. Political intervention for ameliorating gender inequality in the Swedish society have been relatively common. However, when it came to reforming academia the defense of the status quo was stronger than ever<sup>2</sup>. This was very contradictory to the picture of Sweden as a progressive country regarding gender equality issues. It was also very contradictory to my previous experiences of higher education as stimulating and liberating in many senses. I began to wonder how these two conflicting worlds could meet and co-exist within academia? How did women and men researchers handle this conflict in their everyday working lives? Did it effect their career paths and if so, how? With these questions fresh in my mind I started my PhD studies and began to formulate the research questions that have occupied me since.

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<sup>1</sup> These comments are cited from an unpublished Master's essay. The essay treats the media discourse concerning the proposition in the main Swedish journals. F. Bondestam: *Positiv Särbehandling i Akademin. 25 år av ideologi, retorik och praktik*. 1999, 59, Uppsala University, Department of Sociology.

<sup>2</sup> A majority of those who wrote articles criticizing the proposition were males with an academic degree (Bondestam 1999,54)

## The argument

Borttaget: !¶

“Sweden is one of the best countries in the world for women to live in” is an often repeated statement. This statement is supported by a UN report (1995) that ranked Sweden as the best country in the world for women to live in according to a Gender and Development Index (GDI). The index lists 130 countries according to how equitably basic human capabilities are distributed between women and men. Sweden held the top position followed by, Finland, Norway and Denmark. Interesting to note is that in no society offers women the same opportunities as men. With its top ranking, Sweden received a score of 0.92 – compared with a possible maximum score of 1.00 (perfect equality) (UNDP 1995). Sweden’s reputation as being particularly favorable for women to live in is hailed in academic settings as well as in society in general. It is also a statement that has gained acceptance on the intentional stage as well as within Sweden<sup>3</sup>. There are numerous examples showing that this in fact the case in several respects. Women in Sweden can be said to occupy a quite favorable position in several areas of society in a comparative perspective. Equal representation in the parliament is one frequently cited example. There are also a number of equality laws that aim to prevent gender discrimination within workplaces and in other areas of society. The statement “Sweden is one of the best countries in the world for women to live in” can thus not be dismissed as merely a nice slogan without any truth. However, it should also be seen as a dominant *discourse*. A dominant discourse means viscous ways of taking about, understanding and making sense of something, that is not easily changed and is widely accepted in society. Dominant discourses often go without saying, are seen as self-evident and therefore seldom questioned. Following this argument, the statement “Sweden is one of the best countries in the world for women to live in” represents

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<sup>3</sup> The Nordic Council and Council of Ministers have launched a new research programme on Welfare Research. Based on the Nordic model’s success in enhancing gender equality one of the research questions concerns the Nordic gender equality model’s export value. That is, to what extent can a specific Nordic model fit a broader European context? The programme was imitated in 2001 and is supposed to last to 2005. ([http://program.forskningsradet.no/nmr/programplan\\_eng.html](http://program.forskningsradet.no/nmr/programplan_eng.html) 2002-06-28 at 14.05 h)

<sup>4</sup> Here I follow the tradition of Searles and others who defined speaking as speech acts. In short, this theory argues that “the minimum of human communication is not a sentence or expression but rather the performance of certain kinds of acts such as making statements, asking questions, giving orders, describing, explaining, apologizing, thanking, congratulating, etc.” A speaker often performs speech acts by uttering sentences but the speech act is not to be confused with a sentence or expression in its performance (Searle et al. 1980, vii- xii).

a way of talking about, understanding and making sense of gender relations in Swedish society as equal or at least very favorable for women and that this way of perceiving gender relations in Sweden is perceived as *true*.

We also know that gender stratification within science is a worldwide phenomenon. Despite the overall favorable positions that women in Sweden have obtained, similar observations about gender stratification in academia can be observed in the Swedish system of higher education.

Readers that believe in the meritocratic system of science will now argue that this is the result of women having less merits than men. There is a tendency to place the responsibility for this on women themselves or on processes that take place outside the academic system. Observations indicating that discriminating processes are operating within academia are often understood as temporary dysfunctions. This position implies that if only the universalistic norms are followed properly, the dysfunctions are bound to disappear. Behind this argument lies also an underlying notion of gender inequality as an *individual* problem since the meritocratic system is built on individuals and their merits. Consequently the solutions should be individually oriented. One example of an individually oriented solution would be to adjust the working conditions (working schedule and economic conditions) for an individual PhD student so that he/she can combine being a solo parent and PhD studies, rather than scrutinizing the system within which PhD- students are trained. Such an exercise would include asking questions like; what kind of PhD students do we want? What are the economic and social conditions for combining PhD studies with solo parenting? Interventions that focus on collective groups or require structural changes are seen as a threat to the autonomy of researchers.

Believing in universalism and meritocracy is something that most researchers are trained in; it is and has been an integral part of the system. Universalism and meritocracy are rooted in the history and culture of academic research as well as in western society and the principles of the enlightenment in general, and can in this respect be seen be as corner stones of the scientific norm system (Merton 1973). Thus, we can conclude that meritocracy and universalism are two dominant discourses that coexist alongside the previously described discourse of gender equality.

Since the 1960s social studies of science have questioned the role of universalism in science. One strong viewpoint is that aspects other than universalistic norms govern science, for instance social relations, social practices, competition and interests that are, among other things, gendered. Research-

chers are not free and independent minds, but members of scientific contexts with specific gendered cultures. To understand gender inequality it is therefore necessary to study these specific gendered cultures. One way of doing this is by looking at how and to what degree the way in which men and women talk about their academic work is gendered, that is, reproduces or produces a view of academic work as being more or less appropriate for men or women. I call this way of talking about a topic discourse. Yet, discourses are not arbitrary ways of saying something; they represent the ways in which men and women understand their work and their social relations within work. The ways in which we understand our social relations in turn influence the ways in which we act within those relations. Looking at the ways in which people talk, that is at discourses, is then looking these as social practices<sup>4</sup> which also produce and/or shape other social practices (for instance the selection of a person for an academic position, the tasks given to people within a department, the selection of partners for collective research and publication etc)

Studying how everyday academic working lives are gendered involves involves analyzing what can be said and what can't be said about gender relations in academia and how this is connected to dominant discourses about science, universalism, equality and gender relations at different levels in academia and at a general level of society. There are many more discourses at an academic department and in society at large than these, but discourses about gender, science, equality and meritocracy are essential for the focus of this study. The reason for studying these discourses is that they provide information about the non-universalistic, non-meritocratic functioning of universities.

In addition this also involves studying interactions and social relations since these are governed by the way we understand our surrounding and our position in it. Discourses can often be conflicting and therefore the researchers movements between and within discourses are also interesting to study. However, it is important to keep in mind that subjects reproduce discourses, but also transform and produce them. Such a notion instills hope and optimism in that it includes the possibility for change.

Here it is appropriate to add a few comments about how I have interpreted the term *socially constructed facts*. In this dissertation it is assumed that the gender distribution at higher levels of academia is a constructed social fact. That is, it is understood as a result of social practices such as discourses. In other words, it is assumed that socially constructed facts are facts that are



constructed but real nonetheless (the term constructed is further elaborated on p 24-25).

Let us now have a look at some general traits of Swedish higher education during the late 1990s and that form the contextual framework from which this dissertation takes its departure.

### **The Swedish context**

Following the international pattern among the OECD countries the revenues for Swedish higher education has continued to expand during 2000. The total turnover of expenditure for higher education was 36.5 billion SEK in the year 2000 and represents 1,8 percent of Sweden's gross domestic product. The direct state funding of research and postgraduate programmes has remained unchanged (measured in fix prices) during the last five years and the increase in revenues has mainly been due to external funding. Relatively speaking this increase has been greatest at new universities and colleges. However, the financing of research still comes mainly from public funds. If funding and revenues from the research foundations are included, this proportion is 80 percent. Another distinguishing feature of Swedish higher education is that the majority of research programmes and research is done within the universities and colleges as compared to many other countries (Högskoleverketsårsrapport 2001).

Following the UN Beijing conference on women in 1995 the importance of gender equality has been highlighted in the EU. During the late 1990s the General Directorate of Research commissioned a report on gender aspects of research policy in the EU. It was initiated by concerns expressed by the Commission, The European Parliament, the Council and the Member states. The main focus was on how a mainstreaming policy could be implemented in science. The report has been prepared by the European Technology Assessment Network (ETAN). The work resulted in the *ETAN report* that focused on various aspects of gender inequality in science. A statistical review of women in higher education, research institutes and industry reveals that the proportion of women in top positions is extremely small. Women occupy seven percent or less of the full professorships in 6 member states. In many of the member states less than five percent of academics are women. Despite country variations in systems and structures among the member states there is a continuous dropout of women at each level of the academic ladder. Old-fashioned practices regarding employment and promotion procedures as well

as nepotism and sexism within the peer reviewing system were identified as major obstacles for promoting gender equality (ETAN Report on Women and Science: Science Policies in the European Union: Promoting excellence through mainstreaming gender equality 2000,vii-ix).

As a small Nordic welfare state Sweden offers a quite privileged setting when it comes to gender distribution in higher education. The total gender distribution of women and men employed within higher education is 48 percent women and 52 percent men in 2000. However the gender distribution differs between different staff categories. Women represent a majority of the administration and teaching staff. For positions that are more extensively designed for research such as research assistants and full professors women are still in the minority. However, during the last five years the number of women within these categories has risen from 28 to 38 percent at the research assistant level and from 8 to 13 percent at the full professor level (Höskoleverkets årsrapport 2001)

During the late 1990s the system of higher education has gone through considerable restructuring. The promotion system was reformed to allow for staff with the appropriate qualifications to get promoted more easily. More specifically, this involved teaching staff (a position that normally does not require a PhD) to become lecturers (a position that normally requires a PhD) and lecturers to become full professors. The largest change was within the number of professors which increased by 50 percent between 1998 and 2000. Women represented 18 percent of the lecturers awarded professorships through the new promotion system (Höskoleverketsårsrapport 2001). However, the reform offered little changes in the possibilities for doing research, which means that the professor rank still offers a more favorable position when it comes to allocated time for research. This reform was initiated primarily to increase the number of staff at the higher levels in academia rather than being specifically aimed at enhancing gender equality.

Another reform within higher education was the implementation of more stringent requirement for guaranteed funding for postgraduate education in 1998. This reform required postgraduate students to be guaranteed funding for the entirety of their PhD education. This led to a decrease in the number of enrolled PhD students, particularly within the humanities and social sciences. However, a notable trend is that the number of newly enrolled students is starting to rise lthough they have not yet reached pre-reform levels. Gender differences at the doctoral student level decreased during the 1990s and in 1999/2000 45 percent of the newly enrolled PhD students were wo-

women. The highest female representation is within the medical sciences, where 58 percent of the PhD students are women. The lowest, 26 percent, is within the field of engineering. The social sciences and the humanities are within this span, with 40-50 percent female representation (Ibid 2001).

About 20 percent of the active doctoral students are born abroad and the majority of them have come to Sweden after the age of 18 with the specific purpose of obtaining a PhD degree. This group is mainly enrolled in the medical or natural sciences and Asian students constitute the largest group (25 %) (Ibid 2001).

Let us now take a look at those who have obtained PhDs. Has the increase in the number of enrolled female PhD students resulted in an increase in the proportion having obtained PhD degrees? Female representation in this group rose from 26 percent in 1990 to 38 percent in 2000. The highest numbers are within the medical sciences with 48 percent female representation. However, within the social sciences, humanities and the natural sciences the proportion of women obtaining a PhD degree has decreased since 1999 (Ibid 2001).

As we can see, the most equal distribution between women and men is among PhD students; thereafter the differences increase. Medicine appears to be particularly attractive for women; women represent 58 percent of the medical doctoral students and obtain 48 percent of the PhD degrees. Other areas with a high level of female PhD students are the Humanities and the Social Sciences. As expected the technical and natural sciences have a lower level of female PhD students and PhD degrees completed by women.

In spite of the rather positive picture presented above Sweden follows the international pattern. The higher up in the academic hierarchy, the fewer women there are. The period after acquiring a PhD degree appears to be crucial for subsequent career development. This is when the new researcher has to become independent from his or her supervisor and establish his/her own research group and reputation. In many areas a post-doctoral period abroad is a required qualification for competing for a tenured position in academia. One of the most favorable positions after completing the PhD-exam is a research assistant position since it allows for full time research during a two to four years (often 2+2 years). During that time the new researcher has time to publish and qualify him/herself for competing for tenured positions. Let us therefore consider how gender is distributed regarding these positions. Table 2 reveals that in 1998, women held more than 40 percent of these positions in several academic disciplines. In the natural sciences, tech-

nical sciences and forestry/agriculture less than 40 percent of the positions were held by women. The National Agency for Higher Education proposed that resources for increasing the number of female research assistants within these areas should be made available (Regeringsuppdrag: vissa jämställdhetssatsningar inom högskolan 2000,24).

**Table<sup>5</sup> 1:** Research assistants, full time, 1998.

Scientific discipline	Females	Males	Total	F %
All	444	765	1209	37
Humanities and the Social Sciences	121	144	265	46
Medicine	132	158	290	46
Natural sciences <sup>6</sup>	90	188	278	32
Technical Sciences	74	223	297	25
Forestry/Agriculture	20	46	66	30
Veterinary Sciences	7	6	13	54

<sup>5</sup> Source: *Regeringsuppdrag: vissa jämställdhetssatsningar inom högskolan*. 2000,24, National agency for Higher Education.

<sup>6</sup> The technical and natural sciences at Uppsala University is included in this group.

Professors are not only important as representatives for a research area but are also often supervisors and role models for students and staff members. The low number and proportion of female professors is well documented. The Table below illustrates this.

**Table 2<sup>7</sup>:** Professors, full time, 1998.

Scientific discipline	Females	Males	Total	F%
All	224	1954	2178	10
Humanities and the Social Sciences	100	507	607	17
Medicine	52	541	592	9
Natural sciences <sup>8</sup>	21	267	288	7
Technical Sciences	27	507	534	5
Forestry/ Agriculture	21	107	128	16
Veterinary Sciences	3	25	28	11

Table 2 reveals that the number of females is considerably lower at the professor level than at the other levels. In 1998 women obtained only 10 percent of the full professorships. Two areas appear to be more "successful" in attracting, promoting and holding on to women researchers. These are the Humanities and Social Sciences (17%) and Forestry and Agriculture (16%). It is surprising that the medical sciences do not belong to this category considering the gender distribution at lower levels. However, an academic career is a process that takes many years and therefore we need to consider the time dimension before we draw any conclusions. We also have to consider the number of alternative career paths that are open after obtaining a PhD degree. This may of course differ between different scientific disciplines. However, this has little to do with the question if whether researchers choose different career paths after acquiring their PhD degrees. A turning point appears to be completing a PhD. This observation prompts a set of questions: What career possibilities and obstacles do researchers encounter at this tur-

<sup>7</sup> Source: *Regeringsuppdrag: vissa jämställdhetssatsningar inom högskolan*. 2000,25, National agency for Higher Education.

<sup>8</sup> The technical and natural sciences at Uppsala University is included in this group.

ning point in their career? How do they perceive their everyday academic working lives? How does gender operate in these settings?

As we can see from the picture presented above Sweden follows the international pattern. Women are fairly well represented at the bottom of the academic hierarchy, but the higher up, the fewer the percentage of women one finds. One important aspect that should be considered when discussing Swedish higher education is the gender equality intervention that has taken place since the middle of the 1990s'.

In 1995 the Swedish government and parliament decided to create a number of graduate, research fellowships and full professorships for the under-represented sex. The Bill (1995,110) was based on a number of reports and overviews of the skewed gender distribution within academia (at the time for the bill women constituted seven percent of full professors). The result of the bill was the creation of 31 professorships, 73 research fellowships and a number of graduate positions. In fact - 30 of the 37 million SEK - a majority of the funds allocated to this reform were earmarked for increasing the number of women at graduate level. The bill was controversial in that it recommended affirmative action as a means to enhance the number of women in academia. This intention was defined as following:

With affirmative action is meant that a position shall be filled with a competent applicant of the underrepresented sex even if he or she is less qualified than other applicants of the other sex. In the second part of §16:2 of the Equality Bill (1991,433) it is stated that affirmative action is permitted if it is part of the effort to further gender equality in the workplace. As state positions, §9 in Chapter 11 of the government protocols also has to be taken into account that only objective grounds are to be considered when such positions are filled. Despite the effort to further gender equality, objective grounds in the sense of the governmental protocols presumably means that there is a limit to how great the differences in terms of competence can be in the cases of affirmative action. (Bill 1994/1995,164,36 in Jordansson 1/99,14-15).

Utilizing affirmative action as a means of fulfilling the goals in the bill was seen by many as provocative though it was clearly outlined in the bill that academic fields with a high degree of presumptive applicants were to be prioritized. The use of affirmative action meant a radical change the procedures used to fill academic positions; the passing of this bill could have long-term impact on future academic employment. The debate in the media was very intense and concerned primarily the new professorships. The suggestion to create new research fellowships was not seen as provocative even though

there were more than twice as many of these being discussed - 73 as compared to 31 professorships. This suggests that gender equality interventions directed towards positions with power were seen as considerably more provocative (Jordansson 99/1, 15).

The debate in the media was rich and Birgitta Jordansson has summarized it and divided it into two main lines of discussion. One had to do with the meritocratic view of science and argued that the reform would make gender more important than merits. A fear of "being left behind" and promoting second class professors was expressed. The more positive side took its standpoint in the quantitative imbalance between women and men and affirmative action was seen as a necessary method. However, though the male dominance in academia was seen as problematic it was not considered to be a structural problem, but rather an individual one. This view regarded individual woman, or possible women as a group, as the ones being disadvantaged. If the "problem" was defined as individual structural solutions were rejected and seen as a threat to the autonomy of researchers. If the "problem" was defined as women as a group structural solutions were still rejected since women as a group became the problem. This diverted attention from defining the problem as a matter of not having the right characteristics, not being qualified etc rather than on structural constraints. It must be pointed out here that the debate in the media was heated and received a great deal of attention despite the fact that affirmative action was only actually used once in the promotion procedure, and this was within the research fellow category (99/1,15).

The experiences of newly appointed professors' to the so-called Tham positions were scrutinized in a follow-up study (Jordansson 99/1). The results indicated that the majority of them had not felt any hesitation towards applying for a position in which affirmative action could be used in the selection procedure. Very few had encountered openly negative reactions from those in their close milieu. However, when negative comments were made they came from both women and men. Several of the new professors pointed out that the promotion procedure was based on merits and that they had been recognized as having the qualifications of a full professor before the creation of the new posts. A self-awareness of their qualifications as well as an emphasis on the fact that affirmative action had not been decisive when being awarded their position seemed to be crucial for this standpoint.

A problem that was discussed by many of the recipients of the new professorships was that it was difficult to follow up on how the money provided by

the legislation had been used. According to the directives of the legislation the local institution, the state department for education and the relevant research council were each to be responsible for one-third of the costs of the professorships. Later (from 1999 and on) the costs are to be transferred to the universities alone. In practice it is a matter of redistribution of allocated funds since the funding from the councils and state department became included in the faculty's budget. Thereafter funding is to be allocated to the individual academic department. However, some of the respondents reported that the money stipulated for their position was merged into the general budget of the academic department and used for general purposes. In addition not all of the respondents saw this as problematic.

Although some of the professors have had very positive experiences, several reported difficulties. This regarded the possibilities to build up and strengthen their position and research areas at their department. At the outset discussions were begun, and even promises made that more funds would be available to create possibilities for graduate student or research fellow positions at the departments, but little has become of them.

The political decision to stimulate gender equality in academia by creating new academic posts initiated a debate that mainly concerned the possibility to use affirmative action to fulfill the goals of the bill. The debate has made obvious the fact that the issue of gender equality only to some extent refers to gender distribution at the statistical level. In addition gender equality becomes problematic when it addresses processes that precede gender distribution in academic positions. Such processes involve issues of power - power to influence the research agenda, to define what questions are to be asked and to define the conditions under which men and women work in academia (Ibid).

With this general presentation in mind let us now consider previous research and the theoretical framework that constitutes this research field.





## General background and theoretical Point of departure

Previous research about gender differences in scientific careers has produced numerous explanations. These can, very briefly be categorized into three main groups: "*gender differences in publication productivity*", "*Impact of family situation on scientific careers*" and "*the social organization of science- The Old Boys Network*". In practice these explanations are of course interrelated and the distinction made here is mainly done for practical reasons. The following offers an introduction to the explanations that are considered relevant for this study rather than a complete overview of the field.

### Productivity and career

Gender differences in publication productivity has been *one* explanation for gender differences in scientific careers. Cole and Zuckerman have found more than fifty studies covering various periods and research fields reporting gender differences in publication productivity when age and other social attributes are taken into account (1984). This is particularly important to consider since the reward system of science heavily depends on scientific publications.

Unexplained gender differences in research output have been labeled as "The Productivity Puzzle" (Cole and Zuckerman 1984). One possible explanation for the productivity puzzle is that particularistic processes may be at work. Studies in the USA, Europe and Scandinavia have elaborated this inquiry. One study over publication productivity and career outcome in the USA conclude:

[...] Even after taking into account various types of faculty publications, academic experience, educational attainment, field and other commonly- used factors, women are less likely than men to be found among tenured faculty, and especially in the full professors rank. Likewise, on the whole women still earn about seven percent less than men with comparable measurable characteristics. Although neither observation is proof of discriminatory behavior, they certainly suggest that for whatever reason women have not yet achieved parity with men in terms of their representation at the upper end of the profession and in compensation for their efforts." (R. Toutkoushian 1999:695)

In Sweden women had to publish and get cited considerably more than men in order to be considered equal and in Britain women's chances of getting published increased with 100% when sex was unknown for referees (Herbert 1980, Wold and Wennerås 1997). However, other studies have revealed that even if women publish less their articles were cited more often than their male counterparts' articles. This stresses the importance of studying scientific productivity of both numbers of articles and citations (Long 1993).

The publication productivity explanation for gender differences in scientific careers has not escaped criticism. One main argument against this explanation is that it assumes that once the "productivity puzzle" is solved gender differences in scientific careers will disappear. Focusing on gender differences in publication productivity means studying events that have already happened and leaves the social dimensions that have preceded the scientific publication intact and unproblematic. This leads us to the second type of explanation that concerns social relations and culture in academia. This will be elaborated in the following.

### **Social organization of research and career**

Anthropologically oriented studies have focused on the scientific culture and symbolism in academia and academic departments (Latour and Woolgar 1979, Gerholm and Gerholm 1994). Recently, a growing research interest has been the construction of gender and academic cultures and its implications for gender inequality/equality in higher education. Culture as well as gender are concepts that are hard to grasp and they operate at different analytical levels. Therefore studying academic cultures and gender relations has been done using a wide range of research designs covering different aspects. This diversity will be evident in the following overview where studies concerning culture and gender relating to academic subject, success, sacrifices, number of research collaborators, masculinities and subtle discrimination will be presented.

Kim Thomas (1990) has studied the continuing social construction of gender and academic subject. She has focused on female marginalization in English and physics departments. Her results indicate that women's minority positions in physics made them feel like the token woman and they felt that they had to adapt to men's norms. Men's minority position in English departments on the contrary, made them feel special and more valuable than women. Sharon Traweek (1988) has studied physics departments in Japan

and USA. Her main focus has been on the culture of the departments and the socialization of new researchers. In both subjects the image of a women was seen as contradictory to the image of a researcher; however, the reasons for differed. In the USA a researcher was seen as someone who is competitive and individualistic, traits that were associated to masculinity rather than to femininity. In Japan the image of a researcher was of a collaborative and supportive co-worker. However, here women researchers were seen as too competitive and individualistic to fit the image of a researcher!

The way that scientific research is organized differs between academic disciplines. The natural sciences are characterized by a higher degree of teamwork whereas the social sciences and the humanities are more individual oriented. When it comes to gender in higher education few systematic comparisons of different academic disciplines have been done. A Finnish study about academic women's professional identity revealed that women in the natural sciences have more difficulty combining motherhood with their professional identity compared to women in the humanities with children (Wager 1994;248-249). American studies have shown that women working at biology departments appear to have reached a threshold that attenuates gender stratification in science at all levels. However, further research is needed to establish these results; further, studies are needed of the mechanisms and processes behind these results (Long 1993, Sonnert and Holton 1995). Considering the body of research on research organization in science and how this differs between academic disciplines, we can allow ourselves to speculate on how this may affect gender. At first glance it is reasonable to assume that women researchers would experience less obstacles in their academic career within the humanities and social sciences since there is often a larger percentage of women, at least at the lower levels. These fields are also often described as "softer" and are more closely connected to traditionally "feminine" areas. Therefore entering a career path in these areas would clash less with the existing gender order. Despite this, gender stratification in the social sciences and humanities exists. One explanation could be that these fields offer more individually oriented research styles and less formally organized research collaboration. One might assume that women are more easily excluded in settings where collaboration is less formalized. It is in informal networks that women feel most excluded (Cole 1981). This hypothesis is further strengthened by the finding that discriminating processes are more likely when resources are scarce (Fox & Long 1995).

In the Nordic context Dorte–Marie Söndergaard has studied university cultures in Denmark as part of a larger research program on “Gender barriers in Higher Education and Research”<sup>9</sup>. Söndergaard suggests that different university cultures vary with respect to cultural disensus and consensus and that patterns of meaning-making and levels of conflicts vary accordingly. Söndergaard also examines how these variations make up different premises for understanding gender segregation and for introducing gender equality discourses (Söndergaard 2001, 3, 9, 143-152). The agents from the disensual cultures seemed to be more vulnerable to the critics of gender segregation than members of consensual cultures. They also seemed to experience a larger degree of shame vis-à-vis overall gender segregation patterns.

Academic workplace culture has also been studied in terms of the construction of gender/success and gender/sacrifices (Harris et al 1998, Currie et al 2000). In an Australian study at two Australian universities Harris et al (1998) interviewed academics and senior managers about their perceptions of the attributes of success. The results indicate that success was related to productivity and particularly “paper” productivity. However, relating to organizational theory and workplace culture the authors analyzed the gendered dimension of productivity and output and how they are privileged over reproduction and process. The authors concluded that universities are organized according to traditional masculine standards and that this is visible in the construction of success, which constructs women as unsuccessful (Harris et al 1998).

Using the concept of “greedy institutions” Currie et al show that university staff, both academics and general staff at two Australian universities had similar experiences of the demanding character of their work. The term “greedy institutions” originates from Cosers study from 1974 and refers to the finding that some institutions tend to rely on voluntary compliance to activating loyalty and commitment. Greedy institutions aim at maximizing approval of their styles of life by attempting to be highly desirable to their participants. Greedy institutions are also characterized by the fact that they exert pressure on individuals to weaken or refrain from forming ties with other institutions or persons that might make claims that conflict with their own demands (1974, 6). Examples of social categories that fit the definition

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<sup>9</sup> Denmark earmarked over 1 million USD across three research councils for the project “Gender barriers in Higher education and Research, 1996-2001. The project is transdisciplinary and the problem is elucidated from various perspectives. (Reisby and Knudsen 2001, 3, 9)

of greedy institutions are sects, monks, and "greedy families". In explaining their results, Currie et al draw on the recent reforms of higher education aiming to make universities more businesslike. These reforms, the authors argue, rest on neo-liberalist ideas and a discourse of peak masculinity. This discourse operates from the top of the organization to normalize high workloads and commitment to the institution. The authors state that this is how a "good" university staff, desirous for promotion is constructed. The authors conclude that neoliberal economic reforms and the embedded discourse of peak masculinity within these reforms shapes workplace culture and produces patterns of inclusion and exclusion that are gendered. This discourse also renders the processes of work organization invisible and makes other alternatives seem almost impossible (Currie et al 2000,289).

In a more direct study of masculinities in academia Collier (1998) found no less than seven different types of academic men who all adapted to and advanced in the academic system in different ways. Although their advancements were not totally free from obstacles, men appeared to have an easier time fitting into academic working life, in part because they were able to recognize and interpret the masculine workplace cultures at the universities more easily than women could.

The collective dimensions of science are well-established by now, particularly within the natural sciences, which for practical and economic reasons are mostly organized in research teams. Yet, research has shown that women appear to have fewer research contacts than men; they have fewer research contacts within their department the higher up in the academic hierarchy they advance (Kyvik 1991, Sonnert and Holton 1995). Women have reported negative experiences of close collaboration with a male research partner. Their experience was that the scientific community failed to acknowledge their contribution to the research. Male research partners were given more credit for scientific contributions, and when women's efforts were recognized, it was often for routine work rather than for having contributed to the creation of new knowledge (Luukonen-Gronow 1987, Sonnert and Holton 1995). This leads us into a discussion of an area in which subtle sexism constructs academic workplace cultures.

This area has often been labeled the field of subtle discrimination of gender in academia and has often been accompanied by the "Chilly Climate" debate. The Chilly Climate refers to systemic discrimination or micro inequities, which disadvantaged women (Pyke 1996 38:3). This has often been used as an explanatory model for gender differences in student graduation

rates and time to completion of graduation degrees. However, these studies have often focused on the lower levels of the academic hierarchies. Research has shown that gender inequality exists at different levels of the academic hierarchy and that it sometimes becomes more dominant higher up in the academic hierarchy. Some women researchers have claimed that when they advanced in the academic hierarchy and acquired more power they were perceived as a threat and as a consequence encountered a more hostile working environment (Benckert and Staberg 1998).

Another concept that concerns the same type of processes but on a different analytical level is "Glass Ceiling". This concept operates at the structural levels of academia and has been studied through gendered dimensions of for example policy documents. The thesis of the "Glass Ceiling" approach can be described as the study of obstacles or constraints that prevent women or marginalized groups from reaching top positions in academia. These obstacles are invisible when looking at them individually, but together form a "Glass Ceiling" that becomes visible when studying the multiple effects of the obstacles. The Glass Ceiling concept approach lies very close to the concept of "Subtle Discrimination". Subtle Discrimination refers to the individual level and differs from open discrimination. Subtle Discrimination is imbedded in the culture of university settings and informal interaction that constructs everyday academic working life. Therefore it is also extremely difficult to prove in a legal sense.

Paula Caplan (1994) characterizes Subtle Discrimination as Subtle Sexism and found no less than 27(!) myths about women academics in North America. She has identified belief systems composed of myths that make women feel more unwelcome than their male counterparts; she characterized these myths into three main groups: myths about academia ("the myth of meritocracy"), myths about women ("a good woman doesn't get angry or put herself forward") and finally, myths about women in academia (affirmative action gives women and "minorities" unfair advantages which men and members of dominant cultures have *not* had") (1994: 49-64) Taken together these myths form a system of beliefs that obstruct the career paths of women academics in North America. In the Nordic context, Finnish studies suggest that women encounter subtle discrimination in various forms and at various stages of their career (Luukkonen-Gronow 1987, Husu 2000). A study of sexual har-

assment<sup>10</sup> at one Swedish university revealed that postgraduate students reported the highest level of harassment and women more often than men reported that they had experienced negative feelings in relation to this. In the medical and natural sciences women felt particularly exposed in settings that were informal or workplace related. These results indicate that subtle sexism is reproduced within everyday academic working life (Eliasson 1998)

The overview above is far from uniform. It shows that the questions of organization culture and gender equality in academia are approached from different angles with different perspectives. Different concepts are developed but they point in the same direction, that is, that everyday cultures in universities are one major factor in hindering women's upward mobility in academia. However, considering the "slippery" characteristics of the concepts of both gender and culture the diversity appears reasonable since studying gender and culture involves deconstructing "taken for granted" phenomena that often are invisible for the subjects involved. Moreover, for many individuals belonging to the bigger bodies of both gender categories and workplace cultures, a sense of pleasure that makes it difficult to be critical against it is also often involved.

### **Family situation and career**

The last type of explanation concerns research about the family situation and how it impacts on scientific careers. The results have often been contradictory. Several studies have shown the positive effect of marriage for scientific productivity (Fox 1985, Cole and Zuckermann 1991). Some studies show that having children has a positive effect on scientific productivity while others show the opposite (Fox et al 1985, Kyvik 1991, Cole and Zuckermann 1991). Another interesting finding is that single women have lower publication rates and report having more difficulties finding collaboration partners than married women and women with children. Family situation does not appear to effect men's publication rates to the same extent (Kyvik 1991, Davis and Astin 1990).

A growing interest has been shown in dual career academic couples. This research area has been most actively studied in the USA. In a qualitative

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<sup>10</sup> The report compares students and postgraduate students at one Swedish university. In order to better match changes in the Equality Law of 1998 (Jämställdhetslagen) the report has adopted a broader approach towards the definition of sexual harassment that resembles subtle discrimination referred to above.



study of highly productive North American academics, particularly women mentioned the contribution of their partner for their productivity. The academic couple was defined as both members having a comparable level of educational attainment and both seek or have gained professional employment in a college or university. They may or may not have comparable positions. The main conclusion is that for women having a partner in the same occupation contributes rather than inhibits productivity (Creamer 1999). In Sweden this has been studied by Benckert and Staberg (1998) who have interviewed women academics in chemistry and physics. Their results indicate that dual career couples was not entirely positive for women, though several of the women indicated that the intellectual sharing was rewarding. Among the negative things were the problem of "competing careers" and the unequal sharing of domestic responsibilities. Studying dual career couples' affect on gender differences in scientific careers and gender equality in higher education involves scanning complex networks of gender relations both within families and in society in a wider perspective.

Inga Elgqvist-Saltzman has studied women's career paths in higher education in Sweden and compared different generations and societal contexts using lifeline systems. Her results indicate that women's career paths in higher education are deeply intertwined with their position and duties within families and society. The results are surprisingly persistent over generations and political interventions (Elgqvist-Saltzman 1998). Alison Mackinnon has studied women in higher education in Australia in an historical perspective. By bringing together three different but interrelated fields, feminism, education and birth control Mackinnon shows that women that entered higher education in the beginning of the last century had to live their lives in the tension between the personal and the professional, often having to choose between having a family or a career. Combining a career with a family is a struggle that still shapes the lives of academic women to day (1997).

We can see that earlier studies, here organized into three main groups, have pointed at several different factors influencing scientific careers and that the results are often contradictory. Thus, previous research has not gone without criticism; three main lines have emerged over the years. Firstly, the need for studying gender differences in scientific careers in a longer time perspective has been expressed, since women appear to have different career trajectories with more "winding tracks" than men (Elgqvist-Saltzman 1994). Secondly, there is a risk that focusing on gender *differences* when studying scientific careers leads to an essentialist trap where differences are emphasi-

zed and reproduced. Thus, it is important to focus on the construction of femininity and masculinity and to ask by which means differences are constructed, legitimized and reproduced. Thirdly, since a scientific career most probably depends on a cumulative effect of a multitude of factors interacting over time further studies of the complex interactions between and within individuals and between individuals and their daily research milieu are needed. Using the metaphor of the “leaking pipeline” Henningsen and Højgaard (2001) have studied gender stratification processes at different points in the Danish academic career system. The authors conclude that exclusionary processes are at work at different career stages affecting women’s career opportunities but also some men’s. In addition, the authors stress that the “leak” in the pipeline is the result of a multitude of factors operating at the systemic level of research policy as well as within department cultures and the daily interaction between individuals. Therefore, the authors argue, occasional initiatives for diminishing gender stratification in academia aren’t enough. The complexity of the problem of “the leaking pipeline” suggest that a broad range of changes using a variety of methods for change should be adopted.

### **Theorizing gender and gender symbolism**

Gender is often described as the social dimension of biological sex, this is particularly visible in the famous statement “*you are not born a woman, rather you become one*” (De Beauvoir 1993). Since then the social construction school has developed different theoretical lines and gained acceptance both within and outside feminist readings. However, before elaborating on the theoretical approach to gender in this study a few words should be said about the different analytical levels on which gender operates. Sandra Harding suggests the following different analytical dimensions where gender is produced and reproduced. *The structural dimension* can be elucidated for example by the way labor is ordered by gender. *The individual dimension* refers to how gender and gender identity is produced and reproduced between and within individuals. *The symbolic dimension* refers to culturally defined expressions of femininity and masculinity and can be studied through artifacts and metaphors. The dimensions are analytically distinguished but are interrelated in practice (1996, 18). This model is open for a broad spectra of fields and methods through which gender can be studied.

The concept of gender has been vividly debated in research with a feminist perspective<sup>11</sup>. The social construction approach stresses the following:

"Gender, refers to patterned, socially produced, distinctions between female and male, feminine and masculine. Gender is not something people are, in some inherent sense, although we may consciously think of ourselves in this way. Rather, for the individual and the collective it is a daily accomplishment (West & Zimmerman 1987) that occurs in the course of participation in work organizations as well as in many other locations and relations" (Acker 1992, 250).

In this study the definition of gender also includes the body and physical appearance as well as sexuality as part of the ongoing production of gender. The notion of power is central when conceptualizing gender since patterned differences between women and men, femininity and masculinity usually involve various expressions and means of the subordination of women. (Acker 1992).

One major way of sustaining and legitimizing gender order is stressing *differences* between women and men, femininity and masculinity, in other words, to construct masculinity and femininity into *difference*. Feminine and masculine are often understood as binary oppositions in which what is affirmed by the One is denied by the Other. This thinking originates from Saussure's theory of representation<sup>12</sup>. Within this theory it is the *difference* between different signifiers or signs that produces meaning. Thus, the "relationship" or "meaning" is not essential but is constructed in relation to or by marking difference between signs towards other members (signs) of that signifying system. Stuart Hall describes it nicely:

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<sup>11</sup> There is an ongoing debate about the usefulness and implications of the distinction between (social) gender and (biological) sex. This will not be further elaborated here, however, for an introduction to the debate, please consider "Gender Trouble" Judith Butler 1992, 3-44.

<sup>12</sup> Central for Saussure's theory of representation is that the production of meaning depends on language. Language is a system of signs and signs can be both material objects and written words. A sign is comprised of two elements; the signifier and the signified. The signifier represents the form, or the actual word or photo and the signified represents the image/idea/concept in your head with which the form was associated. Both are required to sustain representation. At a basic level we must be able to distinguish between signifiers before we can link them to concepts (signified). The simplest way of marking differences is by means of binary oppositions. Binary oppositions are of course only one way of making difference since there are often many grades of subtler differences than can be used. For example black and white are binary oppositions but off-white and cream are also different from white. Saussure has been criticized for focusing on binary oppositions and neglecting subtler differences in the production of meaning (Hall 1997, 31-35).

"Signs do not possess a fixed or essential meaning. What signifies, according to Saussure, is not RED or the essence of red-ness, but the difference between RED and GREEN. Signs, Saussure argued are members of a system and are defined in relation to the other members of that system." (S. Hall 1997,31)

This allows us to make sense of the world through the marking of difference "we know that this is a chair because of what it is not". One of the easiest ways of marking difference is by means of binary oppositions. Translated into gender theory, difference separates but also gives meaning to femininity and masculinity. Because of their interdependence, the One can not be understood without the Other. Both women and men are "trapped" in gender relations, however, in different power positions. For example stressing biological differences between women and men is a way of constructing women and men into difference. As the *meaning* attached to biological differences between women and men is often already given, for instance women being weaker and men being stronger, gender differences imply a hierarchy. This is not to argue that biological differences do not exist. What is stressed here is that differences are used to create meaning which goes beyond these differences and that this meaning is *constructed*.

The term *constructed* means that something is the result of social practices as opposed to natural facts, outside human practices, like the mountains or the hair on our head (if we have any!). That the meaning of biological differences is constructed does not mean that it is not real or that one can *easily* construct other meanings. That the meaning of biological differences are constructed means that one can aim at deconstructing, reversing those meanings again through social practices such as writing or doing research. In addition, it is important to remember that gender relations are further complicated when factors such as race, class, sexuality or other social categories are intertwined with gender.

Postcolonial feminists have made important contributions to the theories of the Other showing how the construction of the Other have generated scientific discourses that have reproduced and legitimized white supremacy. A key aspect has been the notion of how dominant groups have used the notion of the Other to construct themselves. One consequence of this notion, the Other as a construction through which the dominant groups defines itself, is control of the Others' representations of themselves and more importantly of "us". Others' representations of themselves and "us" have often been delegitimized or dismissed as lacking in coherency and credibility. This theoretical

development has led to Western academic feminists, who previously mainly have been concerned with white patriarchy, now having to confront the challenge from the other Others for whom they themselves constitute a dominant group. (S. Wilkinson and Celia Kitzinger 1996, 1-33).

Gender order can be challenged if the rigidity of the male/female dualism is challenged and the notion of difference is nuanced and contextualised (Gherardi 1995, 101-103). Yet symbolization of difference into gender difference has been one of the most powerful symbols for sustaining gender order and although the view of gender as culturally and historically constructed is gaining acceptance, the symbolic binary opposition (*difference*) of gender often remains largely intact.

Within the social construction school some have focused on the relational aspect of gender. This interpretation emphasizes the mutual inter- relational construction of femininity and masculinity as well as the importance of contextual and processual aspects of the construction of gender (Gherardi 1995, Davies 1996). The relational aspect of gender focuses on the "doing of gender" and consequently on the meaning that derives from the "doing of gender" and under which conditions and contexts this is done. This raises the question of how gender is *represented* in our daily lives or, more precisely, how we give meaning to gender through language, action and symbols. This has been elaborated in theories of representation which, very briefly, can be said to deal with the processes by which subjects of a specific culture and historical context use language, or any signifying system, to produce meaning (Hall 1997,61). This will be further developed in the following.

## **Representing gender**

Theories of representation include a wide range of approaches from semiotics to discourse<sup>13</sup>. In this study the broader concept of discourse is *not* limited to linguistics although the study of texts and language always form one of the bases of the studies of discourses. In this study discourse can also be studied as a social practice. In this sense discourses not only "defines" how we can talk about certain topics, but also how discourses produce/shape social practice such as how ideas are put into practice and its consequences (Hall 1997; 44). From this perspective discourses operate on different levels and therefore can also be studied on different levels. The following offers an

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<sup>13</sup> For an overview please, consider "*Representations and signifying practices*" S. Hall 1997:15-74.

introduction to different ways of conducting discourse analysis rather than a complete overview of the field. I have selected the examples below because my understanding of discourse share traits from them.

On the individual level discourse analysis focuses on how subjects are constructed and construct other subjects by internalizing (or rejecting) dominant discourses. This tradition is often named *discourse psychology*. The focus is often on how subjects *use* discourses in their everyday lives and the consequences of them, rather than on the interplay between discourses on a more abstract level (Jørgensen and Phillips 2000).

Discourses can also be studied on the institutional level; here the target could be to study the discursive formations of institutions such as academia or hospitals. This would mean studying how a set of discourses constructs discursive formations. However, discursive formations are often conflicting, both between and within, and therefore the focus would be on consensus and conflicts respectively. Possible questions to ask would be "what are the rules defining what can be spoken about within these institutions? What are the boundaries of that formation?" One could for instance study what cannot be said without the speaker being marginalised? How does this discursive formation relate to dominant discourses in society at large? Which elements are brought up and how are they transformed according to the needs of the specific institution/individual? Here the concept of change becomes essential. Change within a discursive formation can be analyzed by studying how discourses within a discursive formation relate to one another. This can also bring information about wider changes between different discursive formations. This perspective has often been labeled *critical discourse analysis* (Ibid)

Discourse analysis can also be used on a meta- level such as deconstructing theories and revealing the discourses behind certain arguments. Here the key word is struggle. The focus is often on processes of how the meaning of certain phenomena will be established and how one definition is established and perceived as "true"(Ibid).

Foucault was one of the firsts to introduce discourse instead of language in the production of meaning. Let us therefore take a glance at Foucault's texts that have been useful for this study.

Stuart Hall describes Foucault's definition of discourse as

"[...] a group of statements which provide a language for talking about – a way of representing knowledge about – a particular topic at a particular historical moment" (Hall 1992,291 in Hall 1997, 44).

According to Foucault our perception of what is the "truth" in certain historical moments and contexts is one way of sustaining and internalizing dominant discourses in our everyday lives. This is what Foucault calls *regime of truth*. The regime of truth constitutes a discursive formation<sup>14</sup> that legitimizes what is perceived as true or false, the means for doing so and the status of persons being in charge of this activity. Or with Foucault's own words:

"Each Society has it's regime of truth, it's 'general politics' of truth, that is, the types of discourses which it accepts and makes function as true, the mechanisms and instances which enable one to distinguish true and false statements, the means by which each is sanctioned the status of those who are in charge with saying what counts as true" (Foucault 1980,131).

Applied to gender studies this theoretical approach implies that a regime of truth makes it possible to internalize dominant discourses about gender. This influences how agents act and give meaning to gender in their everyday lives. In other words, how they discursively produce and reproduce gender in their everyday lives.

In his work "*The order of discourse*" Foucault deals with the processes of limiting of discourses (1970). Discourses are limited by rules of regulations that are limitations, prohibitions and exclusions. Rules of regulations can be intertwined, discontinuous and opposed practices, but can also be practices that are unaware of each other. Foucault gives the following example of the rules of regulations:

"The most obvious and familiar is the prohibition. We know quite well that we do not have the right to say everything, that we cannot speak of just anything in any circumstances whatever, and not everyone has the right to speak about everything whatever. In the taboo on the object of speech, and the ritual of the circumstances of speech, and the privileged or exclusive right of the speaking subject, we have the play of three types of prohibition which intersect, reinforce or compensate for each other, forming a complex grid which changes constantly."(1970: 52).

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<sup>14</sup> When a number of discursive events, texts or practices, share the same style or refer to the same strategy they belong to the same *discursive formation* (Hall 1997,44).

One underlying theme in this text, although not as clearly outspoken as the above, is how the rules of regulations also contribute to the production of discourse. Or as Foucault puts it;

”[...] In every society the production of discourse is at once controlled, selected, organized and redistributed by a certain number of procedures whose role is to ward off its powers and dangers, to gain mastery over its chance events, to evade its ponderous, formidable materiality.” (1970,52).

The relevance of this argument for this thesis is to study how discourses in the everyday working lives of academics are constructed and maintained through such rules of regulations. Characteristic for such rules of regulations is that their affect makes it difficult to think outside them and consequently to make them visible and study them. This thesis does not deal explicitly with studying systems that forge discourses. Yet, discourse exists through both its function and its form. On an analytical level it is possible to make a distinction between form and function and this thesis will in part deal with studying such processes.

Foucault is also interested in the limitations of discourses that are produced within discourses; he calls them ”internal procedures” as opposed to the procedures of exclusion described above. Foucault suggests that within societies there are different types of narratives that are told. Some are told in the ordinary course of a day and will vanish as soon as they have been pronounced. However, there are also those that are repeated and preserved. These narratives may give rise to new ways of talking. With Foucaults own words

”[...] there is scarcely a society without its major narratives, which are recounted, repeated and varied; formulae, texts and ritualized sets of discourses which are recited in well defined circumstances; things said once and preserved because it is suspected that behind them there is a secret or a treasure. In short we may suspect that there is in all societies, with great consistency a kind of gradation of discourses: those which are said in the ordinary course of days and exchanges, and which vanish as soon as they have been pronounced: and those which give rise to a certain number of speech-acts which take them up, transform them, in short, those discourses which over and above their formulation, are said indefinitely, remain said, and are to be said again.” (1970, 56-57).

Therefore one may suggest that rules of regulations are produced and maintained within discourse, but also that they contribute to the production of



new discourses. Applied to this thesis the argument would be as following: In the everyday lives of academics there are narratives of different categories, there are those that are spoken and that will fade away without arousing much attention. Other narratives are spoken and reaffirmed over and over again. Sometimes they will give rise to new ways of talking and new discourses. One such discourse that has been repeated over and over again and given rise to new speech-acts is the discourse of gender equality. The following is an example of an often repeated narrative: *Sweden is one of the best countries in the world for women to live in*. This narrative has created a number of ways of addressing, producing and reproducing gender inequality. Partly, this thesis deals with studying how researchers in their academic everyday lives are part of these processes by means of their spoken accounts.

The discursive location of the individual and the available discourses frame his/her perception of self and experience and consequently the production of new discourses. Thus, we can say that from a discursive analytical perspective, the language that is used to describe the social world is also in a sense constructing it (Wilkinson and Kitzinger 1995, 3).

In this dissertation discourse analysis is used to study how researchers make sense of gender inequality in their everyday academic working lives, but also to study how they are part of the production and reproduction of these discourses. Discourse analysis is used to study what can be said/what can not be said and what discourses these limitations produce. In other words, this means studying what can be said about gender relations in academia and what discourses it produces, maintains or excludes within the everyday lives of academic researchers<sup>15</sup>. This involves studying available subject positions and researchers' moves between them by means of limitations, discontinuities and contractions. Thus, the analysis operates at different levels such as individual level, the institutional level or on the level of society at large. Within this argument there rests no assumptions of an inner core of "truth" or "reality" that will be deliberated (the notions of truth and reality are further elaborated in Article 3). Rather, the discursive approach enables us to study how gender inequality in academia is socially constructed and discursively defined, maintained, ignored or minimized.

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<sup>15</sup> This involves studying what researchers say about gender relations and how they say it. Some may argue that it is then impossible to speak about gender relations without reproducing them. The result from such a study would automatically be that gender relations are reproduced. However, there are different ways of talking about gender relations. One critical way of talking about gender inequality would be to stress structural explanations instead of those that locate the problem in ascribed characteristics of women and men.

## Gender and organization culture

Theorizing gender in an organizational context has been an area of growing interest in recent decades. Previous research suggests that gender can be studied at different levels of organizations focusing on different organizational aspects. The work of Joan Acker has been particularly important here. Acker has developed four sets of processes at different levels, by which organizations are gendered. These are the symbolic level, the level of organizational rules and practices, the level of everyday interaction and the mental work within individuals (Acker 1992). In the Swedish context, gender in organizations has been studied by means of how the individuals think about gender and through the agencies, structures and processes through which gender is put into practice. The power relationship is important to study at both levels (Wahl et al 1998). Others have focused more specifically on what is often called the cultural aspect of organizations. However, a few words need to be said about the concept of culture before elaborating on this issue.

Culture is an ambiguous concept, hard to grasp and describe. Differences and similarities between cultures are often one of the first things that strikes us when we arrive at new places while we often are "blind" towards our own culture. Gherardi has exemplified this by using metaphors of a fish living in the water; the fish not only finds this natural, while to us water is an "foreign" element, but they are also the last to notice the water through which they are swimming. As Gherardi has pointed out, this example not only elucidates the cultural construction of what is "natural" but also how difficult it is to analyze and describe such phenomenon (Gherardi 1995, 13). Several definitions of culture have been elaborated over the last few decades<sup>16</sup>. Immanuel Wallerstein offers two broad approaches to this issue. Firstly; culture signifies the way in which one group distinguishes itself from other groups, but also what is shared within the group. Secondly, culture can also be said to deal with specific characteristics *within* a group that opposes other characteristics within the same group. However, the main point that he stresses is the importance of considering the historical and ideological framework in which the elaboration of the concept of culture has occurred. Culture is not something that exists inherently, rather culture is constructed and relative to historical and ideological contexts (Wallerstein 1991).

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<sup>16</sup> For an introduction please consider "Resistance Through Ideals; Youth subcultures in Post-War Britain" p10-17 (eds) S. Hall and T. Jefferson 1976.

In organization studies the cultural approach has been used in a number of ways, depending primarily on how culture is defined in the actual study. Strati proposes the following definition for organizational culture;

"An Organizational culture consists of the symbols, belief and patterns of behavior learned and, produced and created by the people who devote their energies and labor to the life of an organization. It is expressed in the design of the organization and the work of artifacts and services that the organization produces, in the architecture of its premises, in the technologies that it employs, in its ceremonials of encounter and meeting, in the temporal structuring of organizational courses of action in the quality of and conditions of its working life, in the ideologies of work, in the corporate philosophy, the jargon, lifestyle and physical appearance of the organization's members." (Strati 1992, 1-2 in Gherardi 1994;595).

There are other definitions of organizational culture that focus on other aspects, however this definition is appealing for studying gender in organizations because it also refers to the sex of an individual and the social construction of gender. Hence, it does not merely take into account the non-material things, such as how people think about certain things and what people say. It also considers the appearance of people as well as the symbolic message they transmit (Gherardi 1994, 595). What could be made more explicit in Strati's definition of organization culture is how culture is involved in processes in which individuals "*make meaning*" or "*make sense*" of their everyday lives (Hall and Jefferson 1976, 10).

### **The dual presence**

In general, the history of science has been male dominated in numbers as well as in the dominant discourses (Keller 1985). This is also reflected within the symbolic order of gender. One set of qualities such as reason and public presentation, qualities associated with science as well as with activities in the public sphere in general, have been associated with masculinity. Qualities associated with emotions and private activities have been associated with femininity, reproduction and the private sphere. In this perspective women will always be "lacking" important qualities when entering the professional scene (Katila and Meriläinen 1999). When studying law students' perceptions of their future professional identity of Marshall and Wetherell found that they tended to explain structural inequalities in terms of essential sex-linked characteristics where masculine characteristics were positively

valued in relation to feminine characteristics. The only area in which femininity was seen as unproblematic was the private sphere which was devalued in relation to the professional (Marshall and Wetherell 1989). Thus, women entering the professional arena are still symbolically connected to qualities associated with the domestic sphere; the gender order from the private sphere has been transferred to the public sphere (Katila and Meriläinen 1999). This phenomenon is often described as the "dual presence" of women which indicates a cross gender experience, more specifically the simultaneous presence of the private and the public, home and work, personal and political (Balbo 1979 in Gherardi 1994, 598). Managing the dual presence requires different discursive strategies.

Gherardi has identified two different types of strategies that are used for handling the "dual presence"; she calls them *ceremonial* and *remedial* work. In ceremonial work the differences between the sexes are recognized and celebrated. This can be done in a number of ways, for example with gestures, tones or language. It is very difficult to avoid ceremonial work since gender is one of the major social categorizations that we use in our everyday lives. It is also deeply imbedded in what we call "good manners"; to avoid celebrating gender is often seen as odd and sometimes rude behavior. Celebrating gender can also involve a sense of pleasure. When interacting with other people celebrating and responding to gender can create a sense of belonging to the "bigger" bodies, or with Foucault's words "discursive formations of the feminine and the masculine. When the dual presence occurs there is a break in the gender order and this requires other rituals. This is where remedial work enters the scene. Remedial work is "simultaneously supportive of the symbolic order of gender and remedial of the offence" (Gherardi 1994, 602). When women enter the public organizational life they break the symbolic order of gender. Through remedial work, women can enter the public life and *still* celebrate conventional femininity. This can be done by working in female dominated areas or by adjusting gestures and language. Gherardi gives the following example of remedial work; "When women take the conversational initiative and apologize for doing so, when she expresses her doubts as to the importance of what she is about to say, when she minimizes her competence to speak on the subject – that is, when she requests for authorization, protection and benevolence" (605,1994). Experiencing the "dual presence" and having to maneuver within that discourse is of course closely related to different power relations. Power as well as gender and culture have been widely theorized. Power is often described as

*power relations* implying that power is everywhere there are human relations. These relations exist at all levels of society, from amorous to institutional and economical relations. Power relations are not fixed once and for all but can be modified. For power relations to come into play there must be some degree of freedom on both sides in the relation. More specifically, if one part were completely dominated there would be no power relations<sup>17</sup>. This means that where power relation exists there is also resistance (Foucault 1980). Mona Eliasson (1997) has made an important contribution relating power relations to the specific contexts of university settings in terms of organization, culture and history. Drawing on the work of Jean Baker Miller she identifies two different power relations. *Temporary power relations* are supposed to cease when the "disadvantaged" part in the relationship has acquired enough skills to manage on their own. Example of such relations are child-parental relations or patient- therapist relations. *Permanent power relations* on the other hand are constructed upon positions and are supposed to exist as long as the relation continues to exist. An example of this is the relation between the manager and the employed. There is also a distinction between formal power and informal power. Formal power can provide informal power and influence over relations that are outside the formal power relations. Consequently power relations are also relative to what we perceive as and are prepared to accept as power. It is easy to construct "victims" when theorizing power relations. Power relations are by definition asymmetrical; however, this does not mean that power is exercised and that the "disadvantaged" part is passive and overwhelmed by it each time. Rather, we learn how to discipline ourselves and act according to our previous experiences and to what the dominant parts of the power relation expect. In academic settings this could mean not promoting ourselves, not being ambitious or not being *too* visible, but rather acting according to dominant discourses of gender. Formal power is extremely important in university organizations. It defines how formal resources are to be distributed, not only in terms of the distribution of offices or necessary equipment, though, these are not unimportant for an academic career. More important is that formal power also gives the right to distribute faculty positions and grants, decisions that are based upon what is called "competence", "quality" and "relevance". Thus, formal power positions provide the right to define what is meant by these

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<sup>17</sup>This way of perceiving power has been theorised in the later works of Foucault, see for example *Power/Knowledge. Selected Interviews and other writings 1972-1977*. (1980).

concepts and processes that have shown to be highly gendered. Considering the formal structures of universities we can also see that men occupy these positions to a large extent.

## Synthesis

This theoretical introduction leaves us in the intersection between social scientific studies of science, gender studies and organization studies, a position from which this dissertation takes off. In sum, the framework of offered by social scientific studies of science enables us to study the social relations that construct science production. This theoretical standpoint questions the role of universalism in science as well as of how the system of meritocracy functions in evaluation procedures. This may seem to be self-evident, however, the role of universalism and meritocracy within the system of higher education in Sweden is continuously being debated. An illustration of this is a debate article that was recently published in one of Sweden's leading daily newspapers where the author claimed that the university system in Sweden was not meritocratic *enough* and that the system of meritocracy in science had been violated in the name of gender equality (DN, 13 April 2002).

Scientific production as it is interpreted in this dissertation is intertwined with social relations. This involves processes of doing science as well as defining what research topics are of scientific interest. Social relations operate at different levels of science production and can therefore be combined with theoretical perspectives targeting different analytical levels.

Since the individual researcher is included in a larger organizational setting, particular focus is placed on the academic department (the academic department is further elaborated under the section "Data gathering") a conceptual framework for this is required. Theories of organization studies provide such a framework and are used to theorize different organization cultures of the academic departments included in this study.

Gender studies form a platform for understanding how positive and negative discriminating processes<sup>18</sup> based on gender operate on different levels in academia. Of particular interest is how these processes are produced within the production and reproduction of discourses on gender equality in the everyday lives of researchers, as well as at the more general level of society.

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<sup>18</sup> "Positive discriminating processes" refers to processes of how men are favored in academia because of their gender.

The time has therefore come to have a closer look at the aim and research questions that forms the base of this project.

### **Aim and research questions**

The aim of this dissertation is to explore the ways in which the social relations in the everyday working lives of researchers are gendered.

The specific research questions addressed are:

- 1) How can everyday research interactions within academic departments be studied?
- 2) How are gender relations represented on the level of the academic department?
- 3) How is gender inequality on the level of academic departments reproduced within the discourse of equality operating on a general level of society?
- 4) How are gender relations represented in PhD student-supervisor relations on the level of the academic department?

Note to my choice of words: Firstly, researchers, academics and scientists are used synonymously. Included in these definitions are groups that conduct research such as; PhD-students<sup>19</sup>, PhDs<sup>20 21</sup> and professors<sup>22</sup>. Other personnel such as technicians or secretaries are excluded from the sample. Academic career, research career and science career are used synonymously. An academic/research/science career implies that an individual aims towards a position in academia. The position that a researcher strives for when pursuing a career, does not necessarily involve research related work tasks. This definition does not involve any judgment of success or failure. Academic depart-

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<sup>19</sup> PhD-student and doctoral student are used synonymously.

<sup>20</sup> PhDs also includes research assistants (a direct translation of the Swedish position "forskarsassistent") and other groups that has a doctoral degree and performs research. Post doctors and guest researchers that have been a longer time, at least 6 months, at the departments studied are also included.

<sup>21</sup> PhD and doctoral degree are used synonymously.

<sup>22</sup> No distinction between different types of professorship is made.

ment and academic workplace are used synonymously. To study the everyday academic working lives of researchers means that I have aimed to grasp often repeated events that are workplace related. I have also studied events that have been important for an individual's possibilities or feelings about a future career within academia; however, I have not focused explicitly on extreme situations or events.





## Methodology and method

### Methodological thoughts

In this section a synthesis of my two methodological approaches will be presented. In addition, the methodological approaches will be related to each other and discussed. As compared to the method, this does not involve descriptions of the practical handling of data.

When I first became interested in this field I found myself overwhelmed by the amount of studies produced during the last 30 years, and particularly by the rich variety of different research designs presented. As has become clear from the overview above the theoretical and methodological approaches span over anthropological, organizational and science studies using both quantitative and qualitative methods. The methodology chosen for this thesis has very much its roots in the previously presented theoretical platform. The approach has evolved hand in hand with on the one hand, the technological development of a bibliometric toolbox, "BIBEXCEL" (<http://www.umu.se/inforsk/index.htm>), and on the other hand my growing insight into the complexities inherent in my research topic. Research and particularly a PhD thesis is very much a process of learning. Each article builds upon the previous ones in terms of *what* is chosen to be studied and *how* it has been done. Therefore, the methodological approach is not one but a synthesis of methodological thoughts that goes hand in hand with the practical development of A) research method and B) formulation and reformulation of research questions. This is also visible in the design of the articles and when in the PhD research process they have been written. In addition, the Summary of articles also includes methodological considerations since they are part of the results.

Bibliometrics can very briefly be described as a way of studying scientific communities through the scientific literature. Thus, bibliometrics offers a way of studying certain forms of research interactions<sup>23</sup> by means of publication and citation patterns. More specifically, this means that on a micro level, bibliometrics can be used to study intra-departmental research interactions

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<sup>23</sup> Since data only includes research interactions that are visible through the scientific literature other forms of research interaction are not covered in the bibliometric analysis.

between researchers. Co-authorship and citation patterns reveal something about the research structures of the departments. Examples of such structures are for instance: Who collaborates and writes with whom, Whose work is cited? Which researchers cite the same work? The first to use bibliometric data to study scientific collaboration were Price and Beaver (1966). They used *co-authorships* to study scientific collaboration and since then bibliometrics has become a recognized method for studying research activities within different research fields relating to science studies and research policy. However, scientific collaboration has also been studied using other methods such as sociometrics and ethnography.

*"Human affairs" are not different from what the authors calls "scientific production" (Salk 13,1979).* These words can be read in the introduction to the famous study "Laboratory Life" (1979) by Bruno Latour and Steve Woolgar. Since then a number of studies focusing on the social dimensions of scientific activity has been done. As early as in 1970s Diana Crane began to analyze the construction and importance of scientific networks. She refers both to cognitive networks, how knowledge development is tested against professional norms, and to social networks. Nowadays these two networks are considered intertwined and are often addressed as sociocognitive (Stern 1996). One area of growing interest is the interaction among researchers within university departments. The internal interaction networks of research departments have been analyzed by Thomas J. Allen using sociometric methods (1979). The internal sociometric status of researchers was shown to be related to both external information sources, productivity and influence, and structured by organizational parameters such as positions and relations. That a researchers' position in networks has a great impact on the possibilities of performing research is well documented (Crane 1970). However studies exploring the meritocratic functioning of scientific evaluation systems suggest that a well performed academic record may not be enough for guaranteeing a favorable position in scientific networks (Harding 1986). This is particularly visible when studying how gender relations are produced and reproduced (Caplan 1994). Ethnography and sociometrics demand considerable time. By using bibliometrics we are in a somewhat better position. Although it is important to combine bibliometrics with other forms of data and methods to get a thicker picture of research collaboration.

Discourse analysis is used to study power relations on a daily level and the way they are connected to power relations in society at a general level. Discourse analysis adds to the bibliometric analysis in so far as it focuses on

the processes that have preceded and that follow the bibliometric interactions. It adds information on how the researchers maneuver within the dominant discourse and struggle to position themselves in their workplace. Since the social dimension of research practice is part of the research process and its results, discourse analysis is crucial for understanding bibliometric analysis. In other words, bibliometric analysis is built on data (scientific publications) that are themselves the result of research processes and research practices. To know something about these processes and practices we need to study the discursive formations within which they are produced. Dominant discourses that mutually co-exist within society as a whole but are of specific interest in the academic workplaces explored in this study are discourses about science, gender and equality. These discourses are not separated from each other. Rather they form discursive formations about science and work linked to conceptions of gender and equality. These discursive formations regulate what we perceive as true and enable us to make sense of our work experiences. Discourses provide us with the tools for maneuvering and understanding our everyday world as academics, and as an effect discourses can also discipline others and ourselves. That is, they regulate the way in which subjects act. Discourses are often conflicting and this can produce different discursive strategies. These strategies are important to study if we are to understand how researchers position themselves and others in their everyday academic working milieu.

While discourse analysis can help us to understand the bibliometric results, the bibliometric analyses provide a framework for formulating questions about the dominant discourses at the departments I have studied.

### **The empirical design of the project**

Pursuing an academic career is a process that takes many years. We know that the career paths of researchers depend on a multitude of positive and negative events interacting over time. The most obvious place to study these events would be the academic department. Each department has its own organization and culture. The organization and culture of the academic department affect research practices and processes as well as the researchers' possibilities of doing research and their future career ambitions. Therefore the more specific focus of this dissertation is to study the everyday working experiences of researchers. This involves studying the complex interactions between on the one hand, the organizational settings and on the other hand,

individual researchers' practices and how gender is constructed and operates within these. This section will describe the different data sets of the study, more precisely, *how* it was collected and *why*.

### **Data gathering**

The empirical data used in this dissertation consists of publications from four academic departments and in depth - interviews with researchers working at the departments. The publications are studied in order to get information about the professional outcome of the researchers' work. The publications are also used as a means to map the network of interactions within the departments. The interviews are used to on the one hand to validate the analysis made on the basis of the publications and on the one hand to understand the more informal processes that preceded the publications.

The departments studied include the natural sciences, medicine and social sciences. The publications are collected from the ISI (*Institute for Scientific Information*) database SCI (*Science Citation Index*) and SSCI (*Social Science Citation Index*) CD-ROM versions. The publications cover a 10-year period. The search was based on the address field in order to cover the publication productivity from each department. Only journal articles are included in the data set. Other document forms that are listed in the ISI databases are excluded. Documents from two biology departments were collected. Biology was chosen because several studies indicate that gender differences in career achievement have diminished within this field. However, more research is needed before we can conclude why and how this is the case (Long 1993, Sonnert and Holton 1995). Documents from the biology departments' are from 1986-1996. In order to study how often these documents had been cited by other documents listed in the SCI database information from the Web of Science was retrieved. The external citation window retrieved from Web of science was 1986-1999.

Research has shown that different academic disciplines have different academic cultures. In the long run this may also affect the researchers' career paths and how gender is produced and reproduced within these settings. To enable a comparison between scientific fields data from medicine and social sciences was collected. The documents from the medical department and social science department span over the years 1987-1998. The science departments are, thus, studied one year less. However, considering the overall

publication pattern in sciences - that few publish a lot and that the majority publishes less - the effect of this can be expected to be low.

**Table 3:** Description of the bibliometric data.

Academic Department	ISI Source	Time Period	Number of documents
Biology Department A	SCI / Web of Science	1986-96/ 1986-99	156
Biology Department B	SCI / Web of Science	1986-96/ 1986-99	246
Medical Department	SCI	1987-98	165
Social Science Department	SSCI	1987-98	145

From the table above we can see that "the department" in this dissertation is defined by bibliometric means. In addition, personnel that are not included in publication activity are not included in the sample. Another limitation concerns researchers who have not published articles within the studied time period or published in documents/fields/journals that are not listed in the databases I have used. These researchers are also excluded from the sample<sup>24</sup>.

The reason for defining the department by bibliometric means, focusing on researchers appearing on publications rather than researchers working at or attached to the departments per se, is that publications are crucial for a scientific career. They not only communicate research but are also important in defining the status of researchers. Publications are often used to rank researchers although there is an ongoing debate about the importance of including other indicators in this procedure. In addition, the bibliometrically constructed department (see Table 4) focuses more extensively on the research collaboration that has led to publications and the workgroups and work forms that have preceded the publications.

This definition offers several limitations, one being that other forms of collaboration are not taken into account. Nor are the physical locations of researchers, office space, economic situation or tenure tracks at the departments taken into account. My aim has been to obtain some of this information by

<sup>24</sup> SCI and SSCI covers the most influential journals in the discipline. The number of articles published by the department-based authors in journals not covered by them is quite low.

means of the interviews, however it does not form the base upon which the definition of the department is based.

There are several limitations with this approach. As mentioned above, some personnel groups are excluded and their perception of the department are consequently not included. This may have affected the overall picture of the department. Another limitation is that no first hand data on the organization of the departments (such as policy documents, yearbooks, participant observations etc) have been analyzed and I have relied on the information generated through the interviews. This may have deformed the picture of the department and it has also impaired the possibility of triangulation.

As a research strategy data was gathered in research areas with a rather high representation of women although not the highest. The highest concentration of women for all positions is within the humanities and social sciences. The reasons for this strategy was to be able to study how gender relations worked where women were relatively strong and the conditions were relatively favorable, in order to grasp the more subtle mechanisms of inclusion/exclusion. Women at the departments included in this thesis are still in minority as compared to the number of men but in an overall perspective they must be perceived to be almost equally represented. There has been some research about the implications of the size of the minority/ majority groups for gender relations. The observations indicate that members of smaller minority groups more often experience tokenism. On the contrary, as opposed to these observations members of larger minority groups have sometimes reported more open gender discrimination since the members of the majority group perceive them as a threat to a higher degree. This type of research has often been criticized for being too concerned with group size and for neglecting the processual aspects of gender relations.

**Table 4.** Number of department authors constituting the departments

Academic Department	No of Men	No of Women	Total
Biology Department A	31	15	46
Biology Department B	39	14	53
Medical Department	23	21	44
Social Science Department	30 <sup>25</sup>	8	37

<sup>25</sup> One male student that does not appear on the bibliometric map is included in the sample.

The other type of data are in depth – interviews. The interviewed persons were chosen from the publication data. More precisely, the interviewed persons are authors who had been working a longer time at the departments during the studied time periods (see Table 5.).

Interviews with two different groups consisting of both women and men were conducted. The first group interviewed were senior staff members who had worked a longer time at the departments. The aim was to get an overview of each department's research organization and culture. Secondly, interviews were conducted with researchers who had stayed in academia and researchers who have left academia. The sample includes researchers at different stages of their careers. The original idea was to interview researchers that were within a five-year period of having completed their PhD degree since researchers are more prone to dropping out during this period is. However, the limited data set did not offer this possibility and therefore the sample had to be expanded. Thus, the sample also includes researchers that, at the time of the interview, were at the end of their PhD studies as well as some who had acquired their degree more than 5 years earlier. These data are used in Article 1,2 & 3.

The interview material gathered from the medical and social science departments was slightly different. Since the main focus was to compare researchers' everyday working experiences in different academic cultures no dropouts were included. Instead researchers in different career stages were interviewed. The researchers differed in terms of age and family situation. However, they were all fairly new as researchers and some had not yet accomplished their PhD degree. This made it possible to combine the data set with the one gathered for the biology departments. Thus, the comparative analysis is based on data from one department from the natural sciences, one from the medical sciences and one from the social sciences. The results of this study are further elaborated in Article 4.



**Table 5:** Number of authors retrieved from the publication data, number of interviewed researchers and PhD students for each department respectively. Time period indicates when the interviews were conducted.

Academic department	No. Authors	No. Interviewes		Time period
		Senior Resear- chers	Researchers/Students	
Biology Department A	47	1 FPhD, 1 MPhD	2 Fstud, 2 Mstud	1998-99
Biology Department B	53	1 FPhD, 1 MPhD	2 Fstud, 2 Mstud	1998-99
Medical Department	44		1Fstud, 1 FPhD, 2 Mstud	2000
Social Science Department	38		1FPhD, 1Fstud, 2 Mstud	2000

**Note:** In the Biology Department A & B, two senior researchers (one man and one woman) at each department were interviewed. F= Female, M= Male, PhD= Doctors degree at the time of the interview. Stud= PhD student at the time of the interview.

### Bibliometric indicators

As mentioned in the previous section Bibliometrics offer a way of studying certain forms of research interaction through the scientific literature. There are different types of bibliometric analyses. These are based on different bibliometric indicators. A bibliometric analysis is often based on a citation graph. One citation graph consists of three basic citation links and these are: direct citations, co- citations and bibliographic coupling. Bibliographic coupling means that if two documents cite a third document there is a relationship between the two documents; a bibliographic coupling. If the relationship is strong it has been shown that the texts are similar in content. The number of shared documents indicates the strength of the relationship between the *citing* documents. (Valdutz & Cook 1984). Co-citation means that two documents are cited by a third document. If the documents are cited together several times they are said to belong to the same "intellectual base" of a scientific field. A direct citation indicates that a document cites another document. The reasons for citing a document have been widely theorized and will be further elaborated on below. The following will present the basic

bibliometric indicators used in this thesis and how I have used and interpreted them.

In order to study authorship citations a citation graph based on documents is converted to a graph based on authors. This reduces the number of nodes but increases the strength of links since there are generally fewer authors than documents. This can be illustrated by the following example. Ten authors can write thirty documents. In a citation graph based on authorships the number of nodes will be ten but the links will be thicker. In a citation graph built upon documents the number of nodes will be thirty and the strength of the links will be weaker. The most obvious use of a co-authorship analysis is that it reflects the research group structure (For a closer elaboration of a citation graph please consider Article 1, Figure 1).

In order to visualize this structure, co-authorship pairs among the members of the departments were constructed. Then a matrix containing the co-authorship frequencies was taken as input to a multidimensional-scaling program (MDS). The MDS routine produced a two-dimensional graph representing the co-authorship pattern. A bibliometric toolbox named BIBEXCEL was used for the purposes. The maps should be interpreted in the following way. Each circle represents an author. The distance between the circles indicates the degree of the interaction. On the maps the degree of the interaction is visualized by the thickness of the links connecting the authors. The thicker the line the more the authors have co-authored. The size of the circles are proportional to the author's publication frequency. In other words, the bigger the circle the more documents the author has produced (for a closer description of the maps and how they should be interpreted consider Article 1).

### **Co-authorships**

Particularly two types of bibliometric indicators have been used - co-authorships and direct citations. This section explains some limitations involved with these analyses and how I have dealt with them. In this thesis co-authorships are used to study *written* collaboration. This means that we do not know anything about the character of the collaboration that has preceded the document or about more informal collaboration. Nor can we know anything about the extent to which the authors have contributed to the publication, respectively. The third reservation concerns the selection of document types within different scientific fields. How is the research published within the scientific field?

In order to deal with the limitations mentioned before, I have used the following methods.: The more informal collaboration is elaborated on in in-depth interviews that were initiated by discussing the validity of the socio-bibliometric maps with the informants. The main purpose of the bibliometric maps was therefore to create a conversational platform for the interviews rather than to study intra-departmental research collaboration in detail. Next, research has shown that a number of variables such as age, scientific authority, and scientific discipline influence how often authors write together in relation to writing alone (Merton & Zuckerman 1973, 499-549). However, since the focus has been on the intra-departmental networks of the departments the exact contribution of each author is of less relevance. Finally; three of the four departments studied in this thesis are within the field of natural sciences and medicine. Research has shown that within these fields the journal article is the most current way of publishing scientific results (Hickz & Kats 1996, Melin 1997). The fourth department belongs to the "harder" end of the spectra of social sciences. A problem with studying the social sciences using journal publications is that social scientists often publish in book form. The importance of this is further illustrated by the fact that books are more often cited than journal articles. Recent research suggest that studying the social sciences by means of journal articles listed in the ISI database will give an increasingly better description due to the expansion of the database as well as the internationalization of social science research (Ingwersen 2000, Danell 2001). In this thesis particular attention has been given to the problems involved with social scientists publishing more in books in so far as the validity of the bibliometric results have been carefully elaborated in interviews (see Article 4). However, in the case of the social science department studied, publication in journals that are well covered by the SSCI database was the most common form of publication.

### **Direct citations**

Citations in this thesis are used as an indicator of visibility and interaction in the academic intra-departmental network. In addition they show that the cited work is used within the network. A citation indicates some sort of relationship between the citing and the cited work, however, we know very little about the substance of the relationship. We do not know if the work is cited because it is good, bad or because it supports our knowledge claims or provides additional information. What we do know is that a scientific work

needs to be communicated in order to be visible and used (Stern 1996). Research into the substance of citation analysis has showed contradictory results. In the late 1960s Robert K Merton's interpretation of citations as mean for providing recognition or reward for the prior work of researchers began to be criticized. Instead the rhetorical model gained acceptance. The rhetorical model is particularly visible in Bruno Latours work. According to him, researchers cite other documents when they want to strengthen their argument, when they want to make a knowledge claim (Latour 1987,36-7). There have also been attempts to combine the reward and the rhetorical model (Callon, Law & Rip 1986, Cozzens 1989).

### **Analyzing and interpreting qualitative data**

The interviews were semi-structured and lasted between one and a half and two hours. All interviews have been transcribed. The questions asked were based on themes that were considered relevant for studying the everyday working lives of researchers such as: the background of the department, dissemination of information, research organization and workplace culture. In addition there were questions regarding family situation, supervisor - supervised relationship, intellectual role models, scientific and personal networks and future career ambitions (the interview guides are included in the Appendix).

The analytical work started with me reading through the interviews in order to get a first impression of their content. If there were any uncertainties in interpreting what the interviewed person had said or meant, the interviewed person was contacted and the questions discussed. If needed, a second interview was arranged.

All interviews were initiated by a discussion of the bibliometric maps. This discussion involved the interviewee's perception of the map and a description of the department based research activities. The descriptions were also used to validate the bibliometric results. Thereafter the themes mentioned above were worked through. The senior members of the biology departments (See Data gathering section) were interviewed mainly about the organization of research and academic culture of their departments. Less attention was given to their individual careers. For the rest of the researchers (all departments) equal attention was given to their perception of the research organization and the workplace culture, and to their individual situation, that is their family situations as well as more workplace related issues.

The following section will describe the analytical model I have used when working with my interview material. When dealing with large and complex interview material it is vital to explain how the results have been arrived at. There are several ways of doing this. I have chosen to make the analytical process as visible as possible in order to enable readers to evaluate the analyses I have done in the articles. However, this does not mean that a researcher with a different view on the same data might not give a different description of the material. The interpretation of data is not freestanding from the researchers context or perspectives. When the context and aim of the study is visible, differences in interpretations will be understandable. It is important to stress, not so much that one can take different positions in relation to the data, because this is self evident, but rather the importance of the researcher's position. A critical researcher with the same position as the researcher that has produced the results should be able to see what the researcher saw, whether he/she agrees with it or not (Giorgi 1996,1975).

The analytical work is done in six steps and is influenced by the "Meaning concentration" model, though it has been modified to suit this study's demands (Kvale 1997,172-180). This model is pretty much what it says it is; it is based upon concentrating meaning from a longer text into keywords. The keywords are thereafter used to organize complex interview excerpts into themes.

After reading through the material a few of the interviews were selected as particularly interesting in terms of being contradictory or containing rich information on gender relations. To get an overview of the material in the selected interviews each quote was summarized into short keywords. My aim was to avoid loading interviewees' words with any values or changing the language. Second, the keywords were categorized into subgroups that reflected different themes. Third, by reading through the sub-themes I tried to find an overall theme for the quote. Fourth, if a theme that was new or puzzling was found I read through the whole interview again to see if the theme was dominant or conflicted with other themes found in the interview. The process between step three and step four, to find new themes that may not have been described explicitly by the interviewees is referred to as "evaluator-generated typology" by Patton (1987,152).

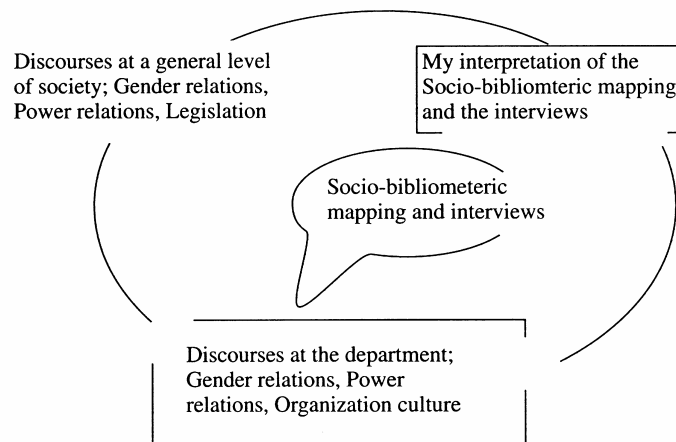
Fifth, the new themes found in the interview were related to all interviews. Reading through the material again is a way of verifying the theme and looking for alternative or conflicting themes. How one perceives alternative and conflicting themes in research is linked to how one perceives social reality.

Frigga Haug has criticized the aspiration towards consensus and harmony in qualitative research. If the social reality is seen as conflicting, research methods that exclude such differences are less suitable for studying social reality (Haug 1978 in Kvale 1997,58). Exploring rival explanations that do not quite fit the dominant themes can be of great interest. Exploring themes that go in a different direction would hopefully give more credibility to the themes I finally settled for (Patton 1987,160).

Finally, I looked for the quotes that best answered my research questions and then performed discourse analysis on them. This means that the analyzed quotes are seen as particularly interesting for what I am studying. The representations found in the quotes may be found in other parts of an interview or in the material as a whole, though they may not be as visible. This is not seen as a problem since the interviews have been analyzed in terms of what they reveal about these researchers' representations to create a more general understanding of how researchers make sense of gender inequality in academia. With this perspective the researchers are seen as representatives. If I had been concerned about each researcher's opinion about certain phenomena my aim had been different as well as my perception of the interviewees. My aim would then have been to be able to say something about each researcher's perception about a certain phenomenon and the researchers would have been seen as witnesses rather than representatives (Kvale 1997,190). The discourse analysis was done sentence by sentence in the chosen quotes. When the analysis was finished the quotes were translated into English.

This analytical model allows for understanding the individual's perception of what has happened. My first responsibility as a researcher is, thus, to understand their interpretations. This constructs the interviewees not as objects of inquiry but as acting subjects. The focus is on how researchers as acting subjects create meaning and how this can be understood in relation to situational and societal contexts. This means that rather than studying the causal order between the actor and society I concentrate on the relationship between dominant discourses in society and the way the researchers speak about their everyday academic working lives and how they speak about the socio-bibliometric mappings I have to my account. Of particular interest is the discursive forms of these interviews and what they represent. When analyzing the discursive forms I have tried to understand how the researchers make sense of their everyday lives by studying the way they talk about their everyday academic lives.

The figure below illustrates the analytical model of this thesis.



The model should be understood as following:

- Discourses at a general level of society and the social relations and practices that are produced within these discourses govern the way society is organized, for example in terms of legislation and gender relations.
- Studying discourses in academic departments is a way of studying the everyday lives of researchers since this involves studying how researchers understand/make meaning, but it also involves the study of practices and social relations. Everyday life in the academic department, that is discourses, social relations, practices, ways of understanding, are not arbitrary and limited to a specific department but are connected to dominant discourses in society at large. Therefore, one may say, that what is produced within a specific academic department is both part and product of dominant discourses in society.

- The analytical model is a twofold process since it also includes my understanding of the interviewees' construction of reality. In addition, the analysis is not a mere reflection of their account. The aim has been to gain new knowledge that is produced within a framework that takes into consideration both the experiences of the interviewees as they have understood them, as well as my interpretation of their experiences in relation to my theoretical and methodological framework. This phenomenon is labeled the *double hermeneutic* (Giddens 1984, 284). The results from this study are in turn part of the discourses I am a part of.

There are several difficulties involved with the approach I have selected for this thesis. Let me therefore introduce "The Critical Reader". With the help of the critical reader I will deal with the most obvious challenges involved with my approach.

The first challenge involves the notion of truth; *How do you know that it is the true story that you are told by the researchers you have interviewed?*. This notion is only problematic if you believe that there is one true story and that it is the researcher's task to reveal the true from the false. Rather than dwelling on such an issue this thesis focuses on the discursive form of these stories and what they represent. In a postmodern perspective the search for the one true story is replaced by an analysis of how meaning is constructed. This is a constantly ongoing process that does not stop during the interview. The researcher is, thus, also part of this process. Subjectivity is not seen as problematic if it is clearly outlined how subjectivity is performed. From this perspective qualitative research is seen as being particularly suitable for understanding the production of meaning by analyzing what people say and how they say it. Similarly, different interpretations can be analyzed by looking at what they are based on. For readers with a particular interest in issues concerning truth and reality in relation to qualitative research, article 3 deals more extensively with these issues.

The second challenge involves the notion of generalization; *How do you know that the specific quotes you have chosen to analyze are representative for the department or for Swedish higher education?* This notion originates from the interpretation of generalization, as it is usually understood; as being able to state that the results emerging from this study are representative for all women and men involved in Swedish higher education all the time. However, within this thesis I have tackled the issue of representativity from a



different angle. Firstly, the quotes visible in the thesis are the result of thorough readings of the material and in some cases follow up interviews. Thus, the whole material is analyzed and not simply the quotes appearing in the articles. The quotes appearing in the articles have been selected from the sample because they best answer my research questions (this is more thoroughly developed in the Method and Methodology sections). Secondly, the results emerging from this study may not be replicable for all women and men all the time at the departments studied or in society at large. However, they may be applicable when producing new theory. Hopefully the results can contribute to a deeper understanding of the reproduction of gender relations to the extent that they may occur in other institutional settings, but under conditions similar to those analyzed in this study. (this is further elaborated in the Conclusions ).

Another challenge involves how the quotes are interpreted; "*Could there be alternative interpretations of the quotes?*". The quotes are analyzed specifically in relation to contradictions and alternative interpretations since these are seen not as failures as they would have if the approach had been to test hypotheses. Rather, studying contradictions is seen as a means of obtaining a deeper understanding of the complexities of gender relations and gendered processes. As for alternative interpretations, such are also presented when discussing my results particularly in Articles 3 and 4. However, we must not forget that in the end the author's control of the text is limited when it comes to how it is interpreted. Here the reader is free to make her/his own interpretations and judge for her/himself whether the argument seems reasonable. What the author can do is thus to present the argument as clear and transparently as possible. Hopefully this task has been accomplished when we now turn to the summaries of the articles.

## Summary of articles and "the order of things"

In this dissertation I have sought to understand gender inequality as it is produced and legitimized in relation to societal processes and in the academic departments. Studying the research culture and organization of academic departments offers insight into the everyday working lives of researches and the career possibilities and obstacles they encounter. This section offers a summary of the results of the articles starting with Article 1 following with Articles 2, 3 & 4. As mentioned in the Methodology and Method section, method is very much part of the results in this dissertation. Therefore methodological considerations as well as methods that are new will be presented in relation to the results.

### **Article 1. Socio-bibliometric mapping of intra-departmental networks**

What had to be done in the first case was to construct a research model and proper tools that would help me to get at answers to my research questions (see Introduction and Aim). Thereafter the validity of the research model and tools had to be tested. This constitutes the main focus and results of the first article that deals with constructing what we call "socio-bibliometric" mapping techniques. Data consist of bibliometric data combined with sociological data for two academic departments in the same field of biology at two different Swedish universities. The sociological data consist of sex, rank and PhD exam year for all researchers and PhD students working at the department during the studied time period. Different *socio*-bibliometric links were created to study the socio-bibliometric interactions at the departments and whether there were any gender differences. The main results indicate that there was a high degree of overlapping between the different links. The socio-bibliometric mapping reflected different research groups and different cognitive orientations. The maps also demonstrated the high degree of turnover of academic staff that often is the case in academic research departments. Seniority as well as having a well-integrated position within the network appeared to increase the possibility of staying. However, it turned out to be difficult to predict gender distribution on socio-bibliometric data only. For this, other types of data and methods were necessary.

## **Article 2. Mapping gender differences in scientific careers in social and bibliometric space**

The analytical model and tools for studying bibliometric interactions were conceptualized in the first article. However, what was still rather undeveloped was tools for studying gender interactions at the departments. In the second article socio-bibliometric mapping is therefore used as a platform to study gender in academic workplace. The field of study is two academic departments within the same field of biology at two different Swedish universities. Science studies, work and organization studies and gender studies are brought together to study gender differences in scientific careers in social and bibliometric space. This approach allows for taking both the everyday research organization as well as the individual researcher into account. The main results indicate that gender operates in seemingly gender neutral everyday working situations. The feminine other is produced and required to construct masculinity as well as to make sense of these situations. Masculinity is constructed in relation to femininity and in relation to different forms of masculinities. These relations are further complicated when variables such as class and race are intertwined with gender. This study also offers one example of how the concept of *culture* is used in a racist discourse that co-exists with other dominant discourses at the departments. The bibliometric analysis shows that women researchers are more often externally cited than are their male counterparts. This suggests that their work is less visible and used internally. However it appeared to be hard to understand gender processes and how gender operates in everyday academic working life with socio-bibliometric data only. Therefore the third article focuses more explicitly on the construction of gender relations as they are revealed in the interviews.

## **Article 3. The symbolic order of gender in academic workplaces: ways of reproducing gender inequality within the discourse of equality.**

The discursive production and reproduction of the symbolic order of gender is the main focus in the third article. This article is based on interviews with researchers from two departments at two different Swedish universities within the same field of biology. The article offers examples of the ways in which women and men struggle to position themselves in a competitive at-

mosphere and how they make use of the gender order to position themselves within the academic normality. One example of this is how women researchers are constructed as lacking in a positive sense, being too "good" and "mentally sane" for making an academic career. This excludes women from the normality of academic life without leaving the discourse of gender equality since women are not seen as lacking any qualities, rather the contrary, as lacking deficiencies that men have. Nevertheless it is made clear that it is precisely these deficiencies that enable men to function better in academia since no negative judgments about women are articulated. Nor are there any formal obstacles. Consequently any career obstacles women may encounter are individualized and gender inequality is reproduced within the discourse of equality. The article also demonstrates the lack of subject positions for women academics. In this case it leads to one female researcher falling into the subject position of a patriarchal male subject position when constructing her younger female colleague. The lack of subject positions available for women academics is an obstacle and hinders women from supporting each other. It also makes visible the additional workload that women academics are faced with when constructing alternative subject positions. Considering the impact of work culture and work organization for the construction of gender and gender relations in academic working life it is enlightening to study departments with different types of research organization. The fourth article has a comparative approach and deals with this issue.

#### **Article 4. Subject positions: From maps to discourses in academic workplaces**

The fourth and last article draws upon the results of the three previous articles in so far as the same research model as well as some of the same data is used. However, what is new is that it has a comparative approach. Three academic departments from different scientific fields are compared in terms of social and bibliometric organization. The more peripheral position on the map in relation to dominant figures at the department the researcher has the more likely it is for him or her to be described as peripheral in terms of research contacts, influence on research orientation at the department etc by his or her colleagues. This has previously been studied by Peters and Van Raan on a university faculty level (1991) and by Mählck and Persson at intra-departmental level (2001) however, now we can conclude that this phenomenon is also visible between departments in different scientific disci-

plines. Drawing on the third article discourse analysis is introduced giving special attention to researchers' subject positions in the social and bibliometric landscapes of the departments. The results demonstrate the utility of combining discourse analysis with bibliometric and sociological data and method. The main result of the interview analysis was that researchers showed a reluctance to talk about problems as problems in a way that would criticise the structures of academia and consequently require collective actions for change. This was further complicated when these problems were gendered. This was particularly visible when it came to understanding how researchers make sense of gender inequality in their workplace.

This is understood here as a consequence of two particular dominant discourses operating at the departments studied, in Swedish society at large and in Swedish higher education in particular. These two dominant discourses are the discourse of 'science' where meritocracy is significant and the discourse of existing 'gender equality'. The proposed argument is that these two discourses share common traits. The 'scientific discourse' suggests that science is neutral and objective and that evaluation systems within higher education are free from discriminating processes. The existing 'gender equality' discourse is similarly constructed since it implies that political interventions and an overall favorable picture of gender equality make gender inequality rare and therefore difficult to address. We suggest that the 'discourse of meritocracy' infiltrates both the 'discourse of science' and the 'discourse of gender equality'. And, according to the 'discourse of meritocracy', any problem must by definition be caused by the individual, i.e. 'personal trouble', and the subject position available is, thus, 'the subject as a problem'.

## Conclusions

We have now reached the last section of the introductory part of this dissertation. The aim of this section is to relate my results to the broader context presented in the Introduction and the main focus of the discussion will be on how the results of this dissertation could contribute to the critical debate about gender inequality in Swedish higher education. Finally, advantages as well as disadvantages and alternative interpretations of my results will be discussed.

Gender in equality in academic careers has been an area of growing interest during the last couple of years. This has led to a number of efforts for diminishing gender stratification in academia. As mentioned in the Introduction examples of these are the creation of special positions and grants for women initiated by the previous Minister of Education Carl Tham. Other examples of the equality work at Swedish universities are the obligatory presence of gender equality plans as well as gender equality officers. We also know that despite these gender equality efforts gender discriminating practices persists in academia. This means that although there are no longer formal obstacles for gender equality subtler forms of gender discrimination still exist. This is the general picture to which the results should be related.

### Discussion of main results

The first contribution of this thesis is the methodological innovations it contributes to the research field. One major area of inquiry within the field of higher education has been the academic workplace and how scientific careers are shaped by workplace culture and dominant discourses. This thesis introduces a new technique for studying research interactions within academic departments – it is called socio-bibliometric mapping technique (see Article 1). Firstly, socio- bibliometric maps are used as a means to map researchers' publication pattern and intra-departmental research group formations.

The bibliometric maps are used to create a conversational platform for formulating questions about gendered structures at the workplace. This brings together three perspectives that are frequent within the field of gender in higher education; these are social studies of science, gender studies and organization studies. Considering the complex character of a scientific career

there is a lot to gain from an inter-disciplinary perspective; however it also offers several challenges. In this thesis I have tried to synthesize these three perspectives. I will not argue that I have been entirely successful and the shortcomings of my attempt will be discussed later in the section.

The socio-bibliometric maps are combined with discourse analysis (see Article 4). This adds an additional dimension to the use and understanding of socio-bibliometric maps. By introducing the theoretical conceptualization of discourse analysis, as it is understood in this thesis, the maps offer additional information to the representations of research collaboration. The maps allow us to visualize the subject-positions occupied at the departments. These are constructed in relation to dominant discourses as they operate in society and at the departments. This may seem as quite a drastic methodological turn. Let me therefore explain how I have come to this conclusion. The maps are the result of written collaboration and therefore reveal the results of research practices and processes. These research processes and practices do not exist outside discourses/social practices that construct everyday research work. Rather, these are intertwined and inseparable. Therefore the positions revealed on the bibliometric maps are not only positions that researchers occupy in intra-departmental collaboration networks, but also the results of the researchers' struggle to position themselves within the dominant discourses at the department. The results of a subject formation process are constantly changing and therefore the information obtained through the maps is always a snapshot of a moment that has already passed. However, subject formation processes are not one-sided and therefore the subject positions on the maps offer a limited picture of the (often) conflicting character of these processes. The methodological innovations from this thesis open up for alternative ways of studying gendered structures in academic departments. Hopefully the knowledge from this type of research can be used to generate new theory about how gender operates in academia.

Secondly, this thesis demonstrates how gender order is reproduced within seemingly gender-neutral everyday working situations in Swedish academic workplaces. As mentioned earlier we know that discriminating practices based on gender are produced within academia despite equality interventions. However, we have little information on how these practices are produced and maintained. By studying ordinary situations in academic work we can gain information on this issue. Extreme situations have been avoided, and two academic departments were selected because their organization, gender distribution and scientific discipline suggested that there were good

possibilities for gender equality (see Article 2). The results indicate that the construction of femininity, as the inferior "other", is required when constructing masculinity and for making sense of situations. This shows that despite the positive circumstances, everyday academic work is organized along gendered structures. This suggests that singular political interventions may not be enough, nor is it enough to speak about gender equality once a year when the equality plans are to be revised. Rather gender equality work should be seen as a constantly ongoing process, which has to be initiated at all levels of the academic organization, including scrutinizing everyday working situations.

A common belief is that gender inequality is due to old values and old prejudices. However, these results are based on statements made by doctoral students or new researchers indicating that the gender order is firmly anchored and reproduced in all generations. Knowledge about how gender operates in everyday academic working life is interesting for two reasons; it can be used descriptively, as an illustration of a phenomenon, and it can be used to de-sensationalize gender inequality in academia. That is, it can be used to affirm other researchers' experiences and combat the "blaming the victim" syndrome.

The third result from this study demonstrates how gender inequality is made possible and is reproduced through the discourse of existing gender equality. One example of this is how women are constructed as lacking. To construct women as lacking in a negative sense would not be acceptable. However, to construct women as lacking in a positive sense, in other words to overrate women, is possible because it is in line with the gender equality discourse. To "overrate" women becomes a way of excluding them from an academic career (See Article 3). Thus, we can see how exclusionary practices work through the discourse of equality. The discourse of existing equality is not something that operates at academic workplaces only. Rather it is present in society as a whole. It is used to make sense and create meaning of gender and gendered processes. It contains positive ingredients, such as its aim to regulate in order to facilitate for gender equality. However, these results illustrate how it is used the other way around, more precisely, to legitimize and reproduce gender inequality. This highlights two things, firstly, the strength of gender order. The power and regulating force of the gender order is so strong that it has managed to work itself into the discourse of equality. Secondly, it highlights the need for studying taken-for-granted phenomena.



At first glance it seems almost absurd to state that the discourse of equality reproduces gender inequality. However, these results clearly indicate that the discourse of gender equality is connected to dominant power structures in society that serve to reproduce the gender order. Therefore, it is important to proceed with gender equality work beyond the point of initiating it. Hopefully critical evaluation and ongoing reformulation of gender equality work can be used to diminish gender stratification in academia.

### **Advantages and disadvantages**

This thesis has applied an inter-disciplinary approach both when it comes to theory and method. The advantages of this have been discussed above. However, there are also limitations involved with this form. Bibliometrics and discourse analysis are very different methods. Not only is one built upon quantitative measures and the other upon qualitative measures, but they also refer to different scientific discourses. Bibliometrics would position itself closer to a more positivistic tradition than discourse analysis, which follows the tradition of social constructivism. In this study they are used to study research practices at different points of the research process. Discourse analysis provides information about processes that have preceded the research collaboration networks visible on the bibliometric maps. Bibliometrics is used to get an overall picture of the research collaboration network and research organization of the department. It is difficult to know whether this information could have been better covered using more traditional methods such as observations or surveys. In order to assure the compatibility of the two methods, the bibliometric results have been validated during the interview situation as they have provided the basis for the interviews.

Another issue that could be criticized by some is the limited possibilities for generalizations that a small study offers. I prefer to see it from a different angle. "Extrapolation" is an alternative way of understanding results that have emerged from qualitative studies. Patton puts it this way:

"Unlike the usual meaning of 'generalization', an extrapolation clearly connotes that one has gone beyond the narrow confines of the data to think about other applications of the findings. Extrapolations are modest speculations on the likely applicability of findings to other situations under similar, but not identical conditions. [...] Extrapolations can be particularly useful to when based on information-rich samples and designs."(1987,168).

Thus, what has emerged from this study is a deeper understanding of the specific ways in which gender is constructed and operates in academic departments under specific circumstances. The results can be seen as contributing to the more general theory about the existing relationship between dominant discourses in society at large and particular discourses in the everyday academic working life. They show some specific mechanisms, that is, individual interests, particular hierarchies and gendered relationships through which dominant discourses are produced and reproduced in everyday life. This knowledge can be used to improve the understanding of gender and gendered processes in higher education and in society at large. It may hopefully be valuable for future efforts to realize gender equality in higher education.

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