The XX Factor

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The XX Factor - preface

> "I would venture to guess that Anon, who wrote so many poems without signing them, was often a woman."
>
> Virginia Woolf

When Women IN Great Sciences (WINGS) considered what to contribute to the Lund University 350-year jubilee, a book was the top suggestion. In fact, a WINGS book has been several years in the making, with a wide range of themes and topics surfacing for discussion in the WINGS steering committee at regular intervals. From a historical overview of women at Lund University, to portraits of successful female scientists, to political essays on gender equality - numerous ideas have come and gone, none making the journey all the way into print. Finally, we chose to combine all the book ideas floated in the WINGS steering committee over the years. Thus, in 2015, we invited all female professors at the Medical Faculty, Science Faculty and LTH to write a chapter on their life and career. The contributions we received make up the majority of this book. Alice Marshall, Gender Equality expert at the Stockholm-based company Add Gender, contributed a chapter on gender equality in academia. Fredrik Tersmeden, Archivist, wrote a historical overview of women at Lund University. Anna Maria Drake, chairwoman of the Medical Faculty equality board, added a chapter on the faculty's gender equality aims. Key WINGS members Anna Broström, Johanna Stadmark and Maren Wellenreuther contributed a history of WINGS.

We hope to contribute to the 350-year jubilee an extended Who's Who? of Lund University - a Who is who?, a Who' was who?, a Who and why?, and a Why and how?. The end result is an opus by many pens and of many perspectives.

With this book, we can celebrate the achievements of women past and present at Lund University, as well as inspire the women of its future.

> "A woman should be two things: Who and What she wants."
>
> *- Coco Chanel*

Linnéa Taylor, Patricia Veiga Crespo, Marina Castro Zalis
Editorial team
Women IN Great Sciences

Chapter 1
Women's accession to Lund University – with special focus on medicine, science, technology and mathematics

By Fredrik Tersmeden

Fredrik Tersmeden. Photo credit to Mikael Risedal.

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Biosketch

Fredrik Tersmeden (born 1968 in Tynnered) holds a bachelor's degree in history and works as an archivist at the central archives of Lund University. He was the head of the student archives and museum at Akademiska Föreningen 2001-2007. Tersmeden has published numerous books and articles, mainly on university and student history, and is one of the main authors of an upcoming book on the history of Lund University, which will be issued in connection with the University's 350 years anniversary.

From the time Lund University was founded on January 28th 1668, more than 200 years would pass before Swedish women – in 1870 – would formally gain access to academic studies. And a decade more would pass before any women chose to exercise that right at this institution of learning. In other words, the phenomenon of the female Lund academic is only 136 years old.

It would be a mistake, however, to draw the conclusion that women were entirely absent from the early history of the academic world in Lund. Even without formal access to the university, many women were able to exercise varying degrees of influence or to serve important practical roles even in early academic life.

One such opportunity – for natural reasons, reserved only for the highest echelons of society – was to become a donor. The fact is that the university's very first single benefactor was a woman. It was the country's then Queen Dowager Hedvig Eleanora, who was also the person whose signature crowned all the official documents through which the minor Charles XI's regency founded the university in 1666. At the inauguration eighteen months later, Hedvig Eleonora gave the university and its professors a set of professor robes in black silk (or possibly velvet; the sources disagree), i.e. the predecessors to the robes that are still used today at ceremonies such as promotions and professor installations. The donation also included the university's first rector's uniform with "hat and cap of violet-brown velvet, with a large pearl hatband".

In the 1700s, too, we find a couple of prominent female donors, as well as givers of scientifically more useful gifts, which furthermore are connected to both the world of natural science and medicine. The first was yet another queen, Hedvig Eleonora's granddaughter Ulrika Eleonora. In 1733, she donated 6,000 Swedish "riksdaler" for the establishment of an "anatomical theatre" on the second story of "Kunghuset", the university's main building at the time. This amphitheater was primarily intended for anatomical dissection for teaching purposes, but also for physical experiments and demonstrations with the large collection of apparatus and instruments – the Triewald Collection – that the university acquired at the same time.

Figure 1
Ritning till den anatomiska teater som drottning Ulrika Eleonora donerade pengar till på 1730-talet (Source: Lund University's Archives)

The other major female donor of this century was the utterly wealthy widower countess Christina Piper of Christinehof. In 1751, she allowed transportation of about sixty carriages with plant life – cypresses, cedars, laurels and myrtles, trees with lemons, oranges, Seville oranges, figs and olives, as well as box, agave, aloe, carnations and much more – from one of her many castle gardens to the university's newly established botanical gardens (located at the current University Square). Unfortunately, many of the exotic plants suffered, as the orangery building they were to be placed in was not yet ready. However, at least one plant – a bay bush – is said to have survived into the 1920's, and today, the museum Kulturen still has some of the cast iron pots in which some of the trees were delivered.

There are also early examples of women employed at the university, albeit not in academic positions. The first was probably Anna Flink, who in the late 1600s was hired as "head housekeeper" for "Communiteten", the

University's own student dining-hall, where a large number of the poorer students received free meals as a kind of grant. Both Anna Flink and one of her successors, widower Risbeck, fought hard battles with the men on the board of the university to get the means needed to maintain the prescribed standard of meals, and in the end, both gave up and left.

Communiteten was soon closed, but a new opening for female services arose with the establishment of a university hospital in 1768. Among the very first staff at the hospital - comprising just three individuals - was Elna Carls as "female orderly". She was reputed to be very good with the sick, but seems to have been a woman capable of holding her own, as well. For her 40 silver riksdaler in wages, she was also expected to pay a number of expenses that are considered to be the employer's responsibility today – such as soap with which to wash patients' clothes. Mrs. Carl, however, found these wages to be inadequate and negotiated a pay increase of 12 riksdaler.

Figure 2
Porträtt av obstetrikprofessorn Kilian Stobaeus d y (Source: Lund University Art collection)

Indeed, nursing was also the first area where the women of Skåne would receive an education from an academic, even though it was not formally under the auspices of the university. It was local doctor Kilian Stobaeus Jr. who took the initiative in the 1770s to begin educating women in "midwifery". His activities initially met protest from Collegium Medicum in

Stockholm, which claimed to have sole rights to certify midwives, but Stobaeus stood his ground. In time, he obtained both state assent and a pay raise for his activities, and in 1783, he was appointed Lund University's first ever professor in obstetrics.

In this connection, we should not forget the hundreds of unknown and forgotten women of Lund's working and middle classes who well into the 1900s comprised an essentially service-based infrastructure for the male students of the time: landladies and cooks, laundresses and cleaners – all necessary at a time when young men neither had the practical skills to look after their own household nor a home with the tools for doing so. Nor should we forget the role that wives and daughters of academics played in the parlor room culture that characterized, in particular, the social lives of the middle-class/academics of the 1800s.

The debate concerning women's access to university

In 1865, the last Swedish diet assembled in Stockholm. The politically dominant issue was, naturally, changing the representation of the Riksdag itself. In the shadow of this, however, a single parliamentarian put forward a motion that would have tremendous consequences for the Swedish educational system. It concerned the issue of women's access to higher education.

The position and rights of Swedish women had grown successively stronger in the 1800s. In 1845 equal inheritance rights for men and women were introduced; in 1858 the unwed women were granted legal majority; and between 1846 and 1864 various changes in commercial legislation gave women the right to own their own business. If you look at education, this was made equal at a basic level: the Swedish elementary school system established in 1842 was opened for both boys and girls. The institutions of higher learning, secondary grammar school and university, however, were in 1865 still closed to women. This was something that someone was set on changing.

It is interesting to note that this someone, Carl Johan Svensén, represented the least academic layer of society – farming society – and that he, himself, a freeholder from the area of Hultsfred had likely never been anywhere near

university studies. He was apparently educated, however, and in support of his arguments on the matter, he cited three scientific, literary and moral authorities: Thomas Thorild, Carl Adolph Agardh and Carl Jonas Love Almquist. From a Lund perspective, it is interesting to note that the first two have clear links to Lund University (as student and professor, respectively).

Svensén's motion incited debate as well as discord within all the estates of the diet, but in the end led only to very weak formulations about allowing women to obtain certificates of higher education (studentexamen) and to take part in certain academic programs of study. Initially, this concerned medicine. The Riksdag put the matter to the government for analysis. As a result, in 1867 proposals for consideration were submitted to the Universities in Lund and Uppsala, among others. In the responses, Lund was generally more favorable than Uppsala, although there were strong sceptics in both camps, in particular from the faculties of theology and law. The most positive among those from Lund were those from the faculty of medicine. This was not by chance. In the debates in the Riksdag, many of those who were otherwise skeptical about admitting women to the academic sciences - "such activities that essentially require and entail the use of pure, isolated reason" - envisaged making an exception for studies in medicine. Here, it was believed that women's more practical and instinctive caring disposition might prove useful. In addition, practical medicine was a field where experience had already been gained with working women in the form of nurses and midwives. Medical doctor was also one of the few academic professions that women potentially could exercise in practice, namely as a private practitioner. Those professions in public administration and the church that most other university educations were aimed at were, on the other hand, still mostly formally inaccessible to women (the number of academics in the private sector were insignificant at the time compared to the present day). This was also one of the arguments that opponents made: what use was it allowing women to obtain academic degrees if they subsequently could not get the kind of work that these diplomas were intended for? If self-improvement was what they were after, they could attend the university's lectures as private individuals, it was said; such lectures were quite literally open to the public. Something which, examples show, women indeed took advantage of.

Some representatives of Lund's faculty of medicine were not satisfied with simply welcoming women to their own faculty. For instance, the professor in charge of medical chemistry, Johan Lang, made the, for the time, unbiased statement that "women's ability to rise to the level of man in the world of science has been proven beyond a doubt throughout the course of history". His colleague, anatomist Carl Fredrik Naumann, found "women as human beings, by nature, to be equal to men and capable of the same development in both spiritual and physical respects".

However, the government did not dare go quite as far as Lang and Naumann – at least not initially. On the basis of the collection of responses to their proposal for consideration, they decided in 1870 that women could obtain a higher certificate and, as a private practitioner, exercise the profession of doctor and, to this end, could take the university medical exams. The decision did not, however, lead to any rush of budding women doctors. When, two years later, a woman by the name of Betty Petersson asked to register at Uppsala University, it was to study at the faculty of philosophy. This was granted through special dispensation but it re-ignited the general debate. A new proposal was submitted for consideration in late 1872, and this time the response was generally more positive. From there things took off. As early as November 1873, the Swedish university opened up all programs to all women, with the exception of theology and those leading to a licentiate degree in law.

The first students - what did they study? What happened to them?

As early as the 1870s, Uppsala University received a handful of female students. In Lund, change was somewhat slower, and the first female students came to Lund in 1880. In many contexts over the years – even those emanating from the university itself – it is said that this pioneer was Hedda Andersson (1861-1850), a student of medicine from Malmö, who later became Sweden's second female doctor, practicing primarily in Stockholm, but later returning to Lund. Hedda Andersson – who later lent her name to both a women's network and a guest professorship at Lund University – did indeed register at our institute of learning in 1880, but not

until the autumn and, as such, she missed being the very first female student by just a few months.

Figure 3
Hedda Andersson Source: Lund University Library

That honor instead goes to a much forgotten Hildegard Björck (1847-1920), who registered as a student in Lund in the spring of 1880. She had already studied several years at Uppsala (where she was the second female student) and taken a bachelor's degree in medicine (as the first women in Sweden). In Lund, she intended to pursue the licensiate's degree, which was a prerequisite for becoming a certified doctor. Medical problems – impaired hearing as a result of adult-contracted measles – forced Björck, however, to discontinue her studies after just a short period. Through one of her teachers (and landlords), Carl Fredrik Naumann, she was still given the opportunity for a while to work under him informally as an assistant doctor. It was the same professor Naumann who, in 1867, spoke out positively about women's intellectual equality. After his death, Björck's opportunity to "exercise the

profession of doctor in this half private half public manner" disappeared, and instead she began to work as a private nurse for a number of rich private patients. Despite her time in Lund being short, she made a lasting mark. She namely bequeathed her private library of primarily philosophical literature to the women's residence hall (Kvinnliga studenthemmet) in Lund. After that residence closed, Björck's book collection was moved to Lund's women students' residence (Studentskegården), where it still exists.

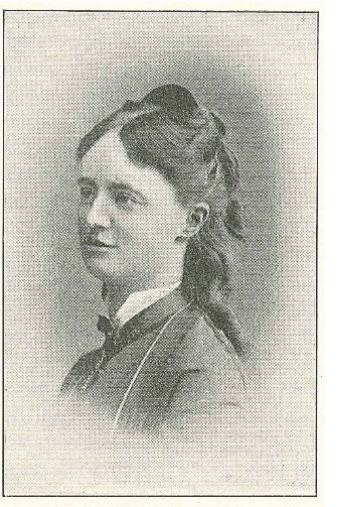

Figure 4
Hildegard Björck

Lund's two first female students were thus both medical students. Considering both the general attitude at the time towards female academics and the practical means of making a living – as described above – this is hardly surprising. Not all early female students at Lund were students of medicine, however. So what did they study? Even more importantly, to what extent were the other subjects in the STEM faculties (science, technology, maths) prioritised? In an attempt to answer this, I did a systematic review of all 20 women that can be found in the printed issues of Lunds Kungl. Universitets katalog for the period 1880-1889. The possibility of extracting exact answers from this, however, is limited by a number of factors in how studies were organized at the time and in the university's organization.

One such factor is the division of faculties at the time. The students' affiliation with a faculty is indeed stated in the catalogues, but the faculties – four then compared to nine today – were somewhat different. The faculties of theology, law and medicine already existed back then as they do today, but other subjects – from humanities to what we consider today as social or natural sciences – were all gathered in the faculty of philosophy (purely technical subjects did not exist as sub-disciplines, however, this was not the case for the natural sciences physics and chemistry, which today make up part of the studies of the faculty of engineering and the faculty of science). Ever since 1876, however, the faculty of philosophy has been divided into two sections (humanistic and mathematics/natural sciences), and starting in the autumn of 1888, the catalogue states from the start what section each student belonged to. Before that, section affiliation was only stated on taking the bachelor exam. It is impossible, therefore, to tell which students of the faculty of philosophy were students of the natural sciences if they terminated their studies before the exam. Another problem lies in the fact that all students at the time started their university studies in the faculty of philosophy, even if they intended to specialize later on in one of the "higher" faculties (theology, law or medicine), because students were forced to take mandatory preliminary exams in philosophy. In other words, a prospective student of medicine can hide behind the symbol "F" (“filosofisk”=philosophical) in the catalogue if the individual never took their preliminary exams.

With these reservations, it is still possible to extract relatively certain data from the catalogues (and a number of complementary sources). From these, we find that among the decade's total of 20 female students, at least 6 of them studied natural sciences for at least a time. Of these, 3 later chose to switch to medical studies, making medical students the largest group, with 8 female students. In total, this means that more than half - 11 out of 20 - of the first female students at Lund studied subjects in the STEM area.

What profession did these first female students of Lund ending up pursuing? This, too, can be answered for the most part with the help of different biographical reference works and records. Of the eight medical students, two were forced to end their studies prematurely (Hildegard Björck and Botilda Andersson), and one seems to have been content with the role of housewife, having married a professor. The remaining five all became practicing doctors. Of the three that chose to complete their studies in the field of

natural sciences, all became teachers, and this is also the most common profession among their sisters within the humanities. In subsequent groups, however, we also find some practitioners of free cultural professions, such as authors and translators.

And how were they received?

How were the first female students received by their male counterparts and teachers? Officially very well - as required by the conventions of the time. In the student nations, each one of the odd creatures was welcomed on her arrival with special parties, balls and welcoming speeches - which they were expected to listen to quietly and not answer. Their presence at such tributes also required that they had a chaperon - normally an older woman - with them, and it was understood that they would leave the party relatively early so the real "tippling" of their fellow male students could begin.

The latter indicates a cleavage among the male students, and that cleavage is also the image left by some of the first female students. Anna Herrlin (registered in 1887) called the position of the first female students "absolutely fine" and believed that "we were met in a friendly and amicable manner by both teachers and students" (with the added mention, however, "in the instances we had anything to do with them"). Hilma Borelius (registered in 1891) was of another opinion. In a letter dated 1893, she wrote that "Lund is as utterly conservative as most small towns, and the necessary condition for their tolerating female students is that they do not afford themselves any liberties". Pioneer Hedda Andersson painted two contradicting pictures. In a speech given in 1925, she claimed "in Lund, we were received with goodwill and kindness by both teachers and fellow students", but fifteen years later, in another speech, she revised that picture: "On registering for academic citizenship, it was clear how unwelcome we were".

It was not until the 1900s that female students began to find their place and voice in the student world in a more obvious way. An important symbolic act was daring to don a student cap in public. The may seem insignificant in our day, but around the turn of the previous century, it was a big step for a young woman to be seen with an article of clothing as masculine as a cap.

Among the early cap wearers was Elsa Collin (1887-1941), who was also the first female student to stand on a student amateur theatre stage and to smoke cigars in public in Lund. That took courage! Likely even more provocative for the time was the liberated medical student Hildur Sandberg (1881-1904), who did not only take part in radical groups such as Malmö's social democratic youth club and hold speeches on information about sexual matters, but lived in an open relationship with a fellow male student until her premature death in circumstances that are still unclear.

First female university teacher delayed by 20 years

As mentioned above, all of Lund's female students from the 1880s chose a career outside the university. This was not at all a voluntary choice; the opportunity for women to serve in academics was indeed very limited. Defending a doctorate thesis was possible (the first female Swede to do this was Ellen Fries in Uppsala in 1883) as was being named to the lowest teaching position, senior lecturer (here, too, Uppsala was first, 1892). The higher teaching positions in the university – as in the state sector in general – were closed to women. This was because article 28 of the constitution of the time established that only "native Swedish men" could be called to services requiring royal appointment; something that applied to professorships, among other things. A certain opening for female professors came through a decision of the Riksdag in 1911, but with a very large number of restrictions (among others that they were expected to leave their posts upon marrying) and generally it was with the 1925 "qualification act" that Swedish women obtained full equal access to services in Swedish public administration (but still with exceptions for priest and officer professions).

In Lund, a much longer time would pass than in Uppsala before any female academic would obtain a doctorate and thus become a candidate for those teaching positions that required this. It was a relatively short time after this, however, that in 1890 the university almost got a female teacher, albeit not a doctor. What opened up for this possibility was the establishment of a new teacher category, foreign lecturers. These lecturers were to provide more practically oriented teaching in the modern languages (German, French and English) and it was a requirement that they were native in the respective languages. When these jobs were announced, a private British teacher

residing in Lund, Fanny Hodges, sought the lectureship in English, which resulted in an interesting discussion in the humanities section of the faculty of philosophy. Hodge's competence was apparently known and recognized by all, but the regulations for the post stated specifically that the holder should be a "foreign man". Several professors spoke in favor of nominating Hodges despite this, including linguistic expert Edvard Lidforss, who argued that they risked, “for the sake of principle, denying a skilled and perhaps eminent woman in favor of a mediocre male”. Even some of the professors who were otherwise, in principle, against women's "in-march into men's sphere of activity" were prepared to make an exception for Hodges. Not all, however, and it all ended in a compromise. The section chose not to request actively an exception to the rules, but encouraged Hodges herself, instead, to seek "dispensation from her gender" from the government.

Hodges dispensation was not granted; however, and thus another 20 years would pass before Lund University got its first female professor. Her name was Hilma Borelius, and in 1909 she defended her doctorate thesis on Erik Gustaf Geijer.

Figure 5
Hilma Borelius, Source: Lund University Library

The following year, she was promoted to doctor and appointed senior lecturer in literary history. Borelius became thus not only the first female teacher at the university, but also the first to defend a doctorate thesis. Not after the first accomplishment, but after the second, there were a few others

in other faculties who were quick to follow. Two years after Borelius, Petrén (doctoral thesis 1911) was promoted to doctor of mathematics. She became Lund's first female doctor in the mathematic/natural science section, as well as the first ever Swedish female to defend a doctorate thesis in mathematics. However, Petrén never became a university teacher, but was hired as a statistician for an insurance company. The same year that Petrén was promoted, 1912, Gertrud Gussander defended her doctoral thesis in medicine. The thesis (on a now obsolete diagnosis, gastroptosis) was flawed and thus only received a plain "passing" as a mark, which entailed an end to any possible future career in research for her. Instead, she continued down the path of practitioner as Sweden's first female surgeon and established in time her own hospital in the Dalarna region.

Figure 6
Porträtt av Louise Petrén (senare gift Overton) (Source: Academic Society's Archives)

It is worth noting that both Borelius and Petrén came from academic homes (Gussander, on the other hand, was daughter of a lower ranking military man). Generally speaking, a larger percentage of the early female students probably had this background compared the overall student population. Borelius's father was a professor of theoretical philosophy, while Petrén's father was a "simple" vicar, but of her eight brothers, seven received their doctorate and four became professors (one of them was opponent for

Gussander's thesis)! Louise, who also married a professor, is said to have stated "I am not a woman, I am a Petrén".

Lund's first female professors

Hilma Borelius temporarily stumbled in the 1920s into substitute teaching, or – as she called it – "play professor" when the ordinary holder of the professorship in literary history, Fredrik Böök, took leave. She never choose her own ordinary professorship, however, despite this possibility having opened up in her lifetime. In fact, one has to look so far ahead in time – more than a half century after Borelius's senior lectureship – to find Lund's first female professor that it all falls outside of what was originally intended as the chronological framework for this chapter. However, the subject deserves to be examined, although it will have to be somewhat brief.

The question of exactly who was Lund University's first female professor is something of a trick question. Indisputably, the first woman to obtain a professorship at an academic institution in Lund was Carin Boalt, professor of building function analysis, in 1964. However, her professorship was at LTH, which, at the time, was an independent institution and not part of Lund University. Not until the institutions merged in 1969 could Boalt also boast the title of professor at Lund University, and by then, historian Birgitta Odén since her appointment in 1965 was already able to claim the title of the university's first female professor. To further complicate matters, there were two other female Lund academics at the time who assumed the title of professor, both of medicine. The first was endocrinologist Dora Jacobsohn. I her case, however, it was not a matter of an actual ordinary professorship, but rather a conferral by the government of the personal honorary title of "professor's name" in 1964. The second was Inga Marie Nilsson, a prominent scientist working with blood research at the then university hospital in Malmö. She was appointed as professor in 1965, but only to extraordinary professor and not formally at Lund University, but at the Swedish Medical Research Council. In modern times, however, one of the streets on the SUS hospital compound in Malmö was named after her.

Figure 7
Carin Boalt (left) and Birgitta Odén (right)

The first woman to obtain a professorship within the university's own medical faculty was the kidney doctor Ulla Bengtsson, appointed in 1976. The first female natural scientist to hold the position did not come about until 1982, when Ikuku Hamamoto-Kuroda became professor in mathematical physics. However, this with in the technology faculty (where yet another female professor, Birgit Krantz, had already been appointed after Carin Boalt). In the faculty of natural sciences, the first female professor was not appointed until in 1993 when Honor C Prentice became professor in systematic botany (ecologist Birgit Nordbring-Hertz has, however, received the title of "professor's name" in 1987). By then, the medical faculty had already come up in eight appointed female professors (of which one never assumed the post), and the engineering faculty in six.

From this small handful of women professors just 20 to 30 years ago, today Lund University is in a situation where 202 women figure among the total number of 848 professors (including all sorts from regular professors to guest professors), i.e. 24% of the entire corps. Within the faculties of particular interest to us in this chapter, the breakdown is as follows:

* Medical faculty: 54 women of 214 professors
* Natural Sciences faculty: 23 women of 136 professors
* Faculty of Engineering (LTH): 31 women of 207 professors

While there may be quite a long way towards full statistical balance in the above figures, it is safe to say that they describe a reality that neither Queen Ulrika Eleonora, female orderly Elna Carls, Kilian Stobaeus' midwife students, pioneer students Hildegard Björck and Hedda Andersson, or even doctors Borelius, Petrén and Gussander in their age could have imagined.

Figure 8
Fotocollage från 1890-talet med de flesta (dock inte alla) av Lunds tidigaste studentskor, därtill gjort av en kvinnlig yrkesfotograf: Lina Jonn (Source: Lund University Library)

This chapter builds, in part, on a yet unpublished manuscript that is part of a larger summerical popular historical work on Lund University scheduled for release in December 2016.

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Chapter 2
The WINGS Network - Women IN Great Sciences: how a grassroots movement became a cross-faculty network

By Maren Wellenreuther[1,2], Johanna Stadmark[3] & Anna Broström[4,5]*

Maren Wellenreuther with her copy of Charles Darwin's 'the origin of species'. Maren was the coordinator of the network Women IN Great Sciences (WINGS) at Lund University from 2011-2014.

Johanna Stadmark, member of WINGS since 2007,
member of the steering group since 2008.

Anna Broström, co-founder and coordinator of
WINGS from 2006-2008.

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Biosketch

Maren Wellenreuther is an Associate Professor in the Department of Biology at Lund University in Sweden, and a Senior Scientist at the Institute of Plant and Food Research in New Zealand. Her research is rooted in evolutionary biology and is unified by the goal of understanding how adaptive and non-adaptive evolutionary processes interact in nature. Research areas range from evolutionary ecology to genomics and focus on topics such as sexual selection, sexual conflict, local adaptation, polymorphism maintenance and population demography. Whenever possible, she employs complementary approaches at the genomic, phenotypic, ecological and environmental level. Her research has societal relevance in relation to the diversity crisis, nature conservation, sustainable development, water and wildlife management and global change. Maren was the coordinator of the Women IN Great Sciences (WINGS) network at Lund University from 2011-2014.

Johanna Stadmark is a researcher in the Department of Geology, Lund University. Her main research interests are within the areas of environmental problems that pose threats to our ecosystems; her research has included studies on eutrophication and other environmental stressors in the Baltic Sea, acidification of lakes and streams, greenhouse gas production in nutrient removal ponds and nitrogen leaching from forested areas. Johanna has been part of the steering group of WINGS since 2008.

Anna Broström is a researcher at 'The Archaeologists at Swedish National History Museums' and a fellow at the Centre of Environmental and Climate Research at Lund University. Anna is a paleoecologist and quaternary geologist, always curious to know more about the terrestrial environment of the past, what it looked like, and how it functioned and changed over time scales covering the last 135 000 years. Anna is especially interested in studying how humans have interacted with and affected the terrestrial environment and how this in turn has impacted on surface waters and the coastal marine environment. For this purpose, Anna uses fossil pollen records, landscape reconstruction models and charred plant remains from archaeological sites. Anna challenges herself and collaborators to contribute to the knowledge about the past in a usable way for future sustainable environmental management. Anna was a co-founder and the coordinator of WINGS from 2006-2008.

Introduction

This chapter summarizes and synthesizes the history of the Women IN Great Sciences (WINGS) network at Lund University. WINGS was initiated in 2003 by colleagues at the Department of Geology at the Faculty of Science to create a support and career network for women, and has gradually expanded to include members from several faculties. Today the network receives annual financial support from the Faculties of Science, Medicine and Engineering. The network is open to anyone who wants to join, irrespective of gender or position. Since 2010, WINGS has been a member of the European Platform for Women Scientists (EPWS), an international non-profit organisation that represents the needs, concerns, interests, and aspirations of more than 12 000 women scientists in Europe and beyond. Over the years, WINGS has provided a cross-faculty network for many women at Lund University and will continue to do so in the future.

The founding and growth of WINGS

The beginning of a grassroots movement (2003-06)

In 2003, the first informal lunch meetings were held in secret at the Geology Department. The initial desire for a female network came from the hope to obtain advice on how to succeed as a senior academic or as a senior scientist outside of academia. Several faculty staff and seniors within related industries also participated in these first meetings. In 2003, the abbreviation WINGS stood for 'Women IN Geosciences' but this name was later changed to 'Women IN Great Sciences' to reflect the expansion of the network to include the whole Faculty of Science in 2007. The lunch meetings soon became a place where personal experiences of gender bias were openly shared and discussed. Another important topic that was discussed at the network meetings was how one can proactively plan to influence decision making in the upper levels of the department.

In 1992, national regulations came into power that emphasised the need for employers to have gender equality plans if they have more than ten employees. As a consequence of this, Lund University started to work on the development of gender equality plans at both the central level as well as at the faculty level. In the mid 2000's individual departments also became actively involved in this process. As a result of this process, several gender equality groups were formed across Lund University at the departmental levels and WINGS members were actively involved in the formation of equality groups at the Department of Geology.

The expansion to a faculty-wide network (2007)

A mentor program in 2006-2007 for female PhD students, postdocs and early career scientists at the Faculty of Science led to the formation of a faculty-wide group of employees that acknowledged the ongoing private struggles that arose from the unequal gender distribution at the senior levels in academia. This in turn gave rise to the idea to widen the WINGS network to include all departments within the Faculty of Science, and with this create a wider support network to enable career growth and diverse mutual exchange that is available to all, regardless of gender.

Within the mentor program it was realised that participants from fields with a high female ratio at undergraduate and graduate levels felt more negative towards a future in academia. Could it be possible that the lack of identification with people further ahead in the career was creating this feeling of negativity? It seemed that many women came to an abrupt career end before achieving a permanent position, despite funding grants and interesting research, and therefore that the future outlook of many younger employees was correspondingly negative. In contrast, while women in the more male-dominated disciplines were generally rare, junior women could more clearly envision the career paths that the more senior scientists had taken, and try to follow those steps.

With this in mind, the newly expanded WINGS network started to focus on showcasing female role models from various disciplines. Accordingly, successful female professors and other academics were invited to Lund to give seminars about their professional work and how they achieved a successful career. The first lunch speaker invited was Katherine Richardson,

Professor in Oceanography and Vice Dean of the Faculty of Science at the University of Copenhagen in Denmark. Her presentation included a research summary, her most important contributions to science, and her personal research path reflections. She finished her talk by giving advice about what it takes to succeed in academia. Listening to her created a great feeling of confidence among all attendees. Lunch seminars like these still form a regular part of the WINGS network and are held several times a year. Not only do they serve as an inspiration, but they also allow for mingling before and after the talk among attendees and thus provide time for active networking.

One of the mentors from the mentor program suggested that it might be possible to apply for funding at the faculty level to arrange a large workshop, as well as other related activities, to promote women in science. Funding was applied for in 2007, and subsequently granted. Participants of the mentor program formed the first WINGS working group in 2007. This working group established the first communication plan, developed a webpage and became active in the use of social media. By joining forces and by highlighting the presence of similar problems in the different departments, general awareness about gender issues started to grow.

More activities and expansion to a cross-faculty network (2008-15)

From 2008-11, an annual WINGS lunch-to-lunch retreat at a place near Lund was organized. The focus of these retreats was to widen the networking activities by encouraging active research exchange among all retreat participants, as well as by organizing inspirational talks by invited speakers. For example in 2010, Dr. Malin Norin gave insights into how academic expertise can be useful in work outside of academia. Similarly, Ass. Prof. Evanthia K. Schmidt, a project manager for a large European grant, and Prof. Claudine Herrmann, vice chair of EPWS, gave talks about gender related work in Europe, and delivered the message ”change will come, slowly but surely, and you should look ahead, support each other and never give up”. Representatives of the main funding sources in Sweden were also present at the meetings and explained how research applications are evaluated. Lastly, Prof. Linda Thöny-Meyer, a representative of the external

advisory board at Lund University, inspirationally showed how she had been dividing her time between academic positions and work in a patent office: She highlighted that not all careers go directly from A-B, but that these are nevertheless paths worth taking.

From 2012-15, the lunch-to-lunch retreats were replaced by an annual conference. The format was changed in order to better accommodate women who could not easily stay somewhere overnight or spend time away from their departments. The conferences included a greater focus on skill training and, among other things, embraced 'science communication' and 'leadership training'. Other focus themes included 'bias awareness' as well as 'how to make successful changes to an entire curriculum for an educational program'.

Over the years, responses from meeting participants have been overwhelmingly positive. "A friendly atmosphere in which to present my newest research" (postdoc), "I thought it was only me that thought I was not good enough for a career in science, now I have realized that there are many more like me, thank you so much WINGS" (PhD student about to finish the degree), "If I can show one younger scientist that not all paths to professorships are straight, I am happy to spend two days away from Lund" (Professor).

In 2012, WINGS started to officially invite and reach out to participants from the Faculties of Medicine and Engineering, and with this WINGS truly became a cross-faculty network.

Figure 1
Wordle of the annual meeting and workshop topics from 2008-2015 organized by WINGS at Lund University.

Early in 2013, three employees from the Faculty of Medicine arranged a ”meet and greet” event called StepUp. The initial idea behind this event was to demystify the career path of academics and to learn about the skills that one needs in order to succeed. The meeting was aimed towards PhD students and several of the objectives were in line with the core idea of the WINGS network. Later in 2013, the two groups joined forces to combine their work on gender equality and to increase transparency in the STEM faculties at Lund University. This marked an additional step in the growth of the network. During 2013-15, WINGS actively organized, and co-organized, workshops on stress management, time planning, laboratory skills, grant writing, film making – how to present yourself, to provide training to employees at the STEM faculties.

Outreach

Several WINGS members have been active in gender outreach and have published on gender-equality. In 2011, Helena Filipsson published a correspondence in Nature Geosciences with the title “Not just family matters” (Filipsson 2011). The correspondence was a response to a study by Thompson et al. (2011), which argued that the lack of women in tenure track positions in oceanography in the USA was caused by marriage and children. Helena Filipsson made the argument that northern Europe had excellent child support and had had paid parental leave for 30 years, yet northern Europe showed the same absence of women in higher positions as countries in southern Europe. Filipsson therefore argued that limited access to high profile science networks is one of the core reasons for the gender gap (Filipsson 2011).

Johanna Stadmark and Daniel Conley reviewed the proportionally low number of women writers in the invited-only sections of the journals Nature and Science (Conley and Stadmark 2012 and chapter 14 in this book). Nature took this correspondence seriously and replied with an editorial in the same year, stating that the editors of Nature need to improve their invitation procedures and consequently how they wish to showcase and reflect on women’s contributions to science (Nature 2012).

Most recently, Maren Wellenreuther was the guest editor of a Special Issue in Evolutionary Applications entitled ‘Women’s contribution to basic and

applied evolutionary biology'. The Special Issue contains 17 review papers by women invited to celebrate showcase their work, and the outstanding achievements and contributions of women in evolutionary biology. In addition to original research contributions, the collection of articles also includes personal reflections from the lead authors to provide perspective and advice on succeeding as a woman in science. Wellenreuther also contributed to the Special Issue with a research review (Wellenreuther and Sánchez-Guillén 2016) and co-authored the introductory essay entitled Women in evolution - Highlighting the changing face of evolutionary biology (Wellenreuther and Otto 2016).

WINGS as a mature cross-faculty network

Since 2009, the vision of WINGS has been to provide a place where science happens, where you meet and network with researchers from many disciplines and learn about the latest research, as well as innovation and science funding. The example of WINGS, and the path that needed to be taken to allow this network to become a mature cross-faculty organization, shows that change needs time, and that awareness about what needs to change must be reached. In parallel with the growth of WINGS, the general awareness of the underlying reasons leading to gender imbalance and bias at Lund University has grown. This positive development will hopefully continue in the future, and networks like WINGS act as positive reinforcement organizations in this process.

Nowadays the WINGS network consists of researchers ranging from students to professors. Communication, exchange and collaborations are encouraged during meetings and training sessions, to facilitate the growth of the support network. The specific aims are to:

- Make it easier for researchers to meet, cooperate and initiate new projects.
- Make female researchers and their competence visible.
- Support young (female and male) researchers in their careers.
- Make the situation for female researchers visible and work for an equal representation of women across all university levels.

- Raise awareness about the importance of transparency in all processes and the importance of us all being aware that we all suffer from unconscious biases.

The key idea of WINGS is that by creating strong scientific networks for women, their competence can be highlighted both within the network and beyond. By actively organizing and encouraging networks across academia, industry, research institutes and funding agencies, diverse topics can be discussed (see Figure 1) and in this way support structures that can smooth the path for women during their careers can be developed. Regular lunch meetings continue to play a core role in the network, and feature invited speakers from within Lund University, as well as from other universities and the industry sector. Meetings are organized to inspire discussions and the development of research paths, career opportunities, innovation and the ongoing process of change towards gender equality in academia.

The example of WINGS illustrates how a grassroots movement within one department can grow organically into a large support network that spans three faculties. What was needed in the beginning were motivated people interested in high quality research, and the realization that gender awareness and balance can strengthen the possibility of achieving scientific excellence. Change came about by WINGS members being willing to ask questions, discuss policy plans and to organize themselves into a formal group in a joint effort to improve the opportunities for female researchers. As a result, WINGS is now more active than ever before.

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Chapter 3
Researcher from Lund with research for the whole world

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Biosketch

Charlotta Turner is a Professor in Analytical Chemistry at Lund University in Sweden. She obtained a Master's degree in Chemistry from Lund University in 1996, and a Ph.D. in Analytical Chemistry from the same university in 2001. Charlotta did her postdoc at the U.S. Department of Agriculture laboratory in Albany, California (2001-2004), after which she returned to Uppsala University where she started her research group, the Green Technology Group. In 2007, she obtained a junior researcher position from the Swedish Research Council for her research on particle formation by supercritical fluid technology, and two years later in 2009, she obtained a senior researcher position in "Analytical chemistry for a sustainable development" from the same council. Since December 2009, she has been a lecturer at Lund University, and in 2012 she became a professor.

Charlotta Turner´s research group consists of M.Sc. students, Ph.D. students, postdocs and senior scientists conducting research in green analytical chemistry, sustainable development and supercritical fluid processing. A common goal of all of her projects is to enable more sustainable development. She has received several awards for her research, including the Swedish King Carl XVI Gustaf's award for environmental science, the Swedish Foundation for Strategic Research (SSF) Ingvar Carlsson Award for returning postdocs and the Herbert J. Dutton Award for analytical chemistry.

Growing up in Lund in the 70's

I am a product of Lund University. This really is the truth. My parents met in Lund in 1967 at a party for newcomers, and three years later I was born, followed by my sister in 1974. My father was a son of a wealthy conservative family from the small town of Borås on the west of Sweden, while my mother grew up in a working class family just outside Kalmar, an even smaller town on the Swedish east coast. They were students in Lund in the 70s and they did all the things students did in Lund during that time. They smoked pipes, ate dinner sitting on the floor – Chinese food eaten with chopsticks was especially fashionable then – and they talked politics and human rights. Both my parents voted for a Swedish Communist Party, the KFMLR, which is a Marxist-Leninist political party. We even had a Karl Marx bust in our library. Every year on the first of May we joined demonstrations about democracy, jobs for all, women's rights and other equal opportunity causes behind the red flags. Although my parents did not have much money, we lived in a large villa in the "Professor Town" area in Lund (Figure 1). We rented out rooms to students, including several foreign students. My grandparents occasionally provided financial support, despite their strong dislike of my parents' lifestyle in Lund. I will never forget one day when my grandparents made an unannounced visit, and saw one of the female student tenants sitting in the garden playing a guitar – naked. My grandparents left immediately. Other exotic things in our house included exotic plants on some of the students´ windowsills, lots of pets such as aquarium fish, dogs, birds and desert jerboas – the latter were mine. I "rescued" a few desert jerboas from the Department of Biology at Lund University together with my classmate whose mother was a lecturer at the Biology Department. We also had a big woodworking machine in our basement, which my father used to make furniture and other woodcraft.

1979 was an eventful year in the Turner family; my father took his Ph.D. in economics, housing research, my mother became a schoolteacher, and my parents divorced. Soon after, we fried and ate the aquarium fish, and then my father and I moved north to the town of Gävle, while my sister, who was four years younger, stayed in Lund with our mother. A few years later I had a stepmother and a brother in Gävle and a stepfather and brother in Lund. By then, my parents were no longer communists, but rather socialists, and life was slightly calmer. Both my father and stepmother became professors at

Uppsala University; hence, I was raised in an academic family. The most significant pieces of furniture in the house were bookshelves along the walls, and if you could not answer questions in trivial pursuit, you felt like a loser. Growing up in the Turner family in Gävle certainly developed personal competitiveness.

Figure 1
This is the Villa at Linnégatan in Lund where I lived in the 70´s.

Why am I telling this rather personal story about my growing up in Lund? Because it helps to explain how my upbringing has shaped who I am today. Equality and fairness were and have always been important values in all my family discussions. When I grew up, it never crossed my mind that I could not do what my father and stepmother did – become a researcher and a professor. However, I never planned for it, it just naturally matured. Perhaps I got the "teacher" genes from my mother and the "researcher" genes from my father. More importantly, I was brought up in a house where people were welcome no matter where they came from. Hence, I was raised in a very "socialist" way, and I do not think that I would have been raised a whole lot differently if I were a boy. I did all kinds of adventurous things with my family; we climbed on top of the house to watch the stars, ran along cliffs on the Swedish west coast and skied downhill a bit too fast.

Becoming a scientist

At some point in my life I decided to become a scientist, after discovering that chemistry was fun. However I never intended to become a chemist. My dream was to become a physiotherapist based on my interest in sport, mainly gymnastics. For many years I coached team gymnastics. My high school grades were however not good enough to get into the physiotherapist program, and instead I enrolled on the chemistry program at Lund University, back in the town where my mother, stepfather, sister and brother lived.

My first experience with research was about collecting worms from the wastewater treatment plant, and then trying to keep them alive in the lab by feeding them on wet brown institutional tissue paper. I managed to keep the worms alive on that diet for several weeks. The idea of the research was to study the uptake of persistent organic pollutants. We were then supposed to develop a sophisticated method that could mimic the uptake of the pollutants by worms, using compressed (supercritical) carbon dioxide as a solvent for the pollutants. The project however never got that far, partly because the whole apparatus exploded due to over-pressurization of the system. I still remember that day in the lab when I had to take care of my then supervisor, Lars Karlsson, whose face was bleeding from the exploded glass. We could not hear each other for a while afterwards due to the vibrating sound after the loud explosion. Twenty years later, I am still doing research on supercritical carbon dioxide, but with higher safety standards.

I do not think I would be a professor today if it were not for my supervisors' (including Lars Karlsson) encouragement to pursue a Ph.D. in analytical chemistry. Hence, the first person who supported me in my career was a man, not a woman. I will mention several people who have supported me in different ways during my career – both men and women. For sure, it is important for young female scientists to interact with great female role models, but it is not all that counts. It is more important to get the actual support that makes a difference. Feminism to me means supporting both young women *and* men in their careers. I believe such support will inevitably lead to gender equality, at least statistically speaking.

I received the greatest support during my Ph.D. training from Jerry W. King, a scientist who worked at the U.S. Department of Agriculture

laboratory in Peoria, Illinois. Jerry King was, and still is, one of the leading scientists in supercritical fluid technology. I visited Jerry's lab in Peoria for six months during my Ph.D. studies. I believe I learned more about supercritical fluids in the six months I spent in Jerry's lab than I did for the rest of my Ph.D. education at Lund University. Not only is Jerry a living library of supercritical fluid technology, he also has an enormous professional network that he was willing to share with me. Jerry is one of the key people supporting me in my professional development. I still meet with him frequently, at international meetings.

I really appreciate the way my supervisor at Lund University, Lennart Mathiasson, supervised me "from the sidelines". All the freedom I was given made me strong and independent. Lennart Mathiasson put most of his efforts in teaching me how to write an excellent research article, which is certainly an important skill for a researcher.

Beyond Ph.D. – the start of an academic career

As a Ph.D. student in Lund, I had no idea what postdoctoral research or a "postdoc" was. To me, life after a Ph.D. was a black box. I learned about the possibility of doing a postdoc abroad from my boyfriend at the time, Kuria Ndung'u, who is now my husband. We both received our Ph.D. degrees in analytical chemistry from Lund University, and then moved to California for our postdocs. Kuria went to UC Santa Cruz, while I did my postdoc at the U.S. Department of Agriculture in Albany. Since Albany is just next to Berkeley, I usually write Berkeley in my CV because it sounds more impressive! I did however choose the U.S. Department of Agriculture as the place to do a postdoc for several reasons:

1. I was given a fully equipped lab to use just for myself
2. I was given complete freedom to do whatever research I suggested
3. My supervisor Thomas McKeon and the other colleagues were friendly, competent and had a great sense of humour

Spending three years as a postdoc in a well-equipped lab with lots of freedom allowed me to develop creativity, which is a highly valuable ability later on when starting your own research group. I authored about ten

papers, and then I was ready to move back to Sweden together with my husband and our firstborn son, Elias. The goal was to build a research group and to start an academic career.

Once I knew what I wanted, I did everything I could to be successful. As a postdoc, I attended a seminar about how to be successful in an academic career. Up to this day, I still carry a small note in my wallet, the "equation of success" that the speaker gave on the seminar:

$$C = (A + P)\ V \times L$$

where C is career, A is achievement, P is potential, V is visibility and L is luck [1].

To achieve the goal of a successful career, I would like to add *passion* and *long-term visions* to the equation above. Doing research has to be fun, so much fun that you would rather write a grant proposal on a Saturday night, when the rest of the family is watching a movie. If you think about research ideas while you are out for a run, then you know that both the passion and the visions are there!

As a gymnastic coach, I learnt the importance of setting goals and visualizing them. For a gymnast, it could be about doing a difficult somersault and landing on your feet. The gymnast would then visualize a perfect landing. Similarly, a football player would visualize scoring a goal and the goalkeeper of the opposing team to failing to catch the ball. This is what I do – I visualize the success. I imagine myself opening a letter, or an email, from the Swedish Research Council, and reading that my three million Swedish kronor research project has been funded. Success! I can also visualize carrying out promising experiments with exciting results. All this positive thinking is what keeps me going even at times when it gets difficult.

At the beginning of my career, I naively thought that I could just write a grant proposal to get funding and then start my research career in academia. Doing a Ph.D. and a postdoc are relatively easy achievements. Starting a career in academia can feel like running into a wall. It can be very, very frustrating, and I hope that I will never forget about how difficult it was, now when I mentor younger scientists. In fact, moving back to Sweden after my postdoc in California turned out to be so difficult that I needed all the positive thoughts imaginable to keep my head up and feet down. The transition from postdoc to independent junior researcher involved writing

numerous research proposals, most of which did not get funded. Every year, I wrote between ten and twenty proposals – I have kept them all in a file to remind me about those difficult years.

Support from more senior scientists is crucial in making the difficult transition from postdoc to successful young independent scientist at a university. I received tremendous support from two amazing women at Uppsala University: the then head of the analytical chemistry department, Karin Markides, and Monica Waldebäck, who was then lecturer at the same department. These two amazing ladies believed in my ideas, my capacity and me. They trusted that together, we could do interesting research. Karin and Monica helped me a lot – mentally with long discussions about research ideas, on strategies to find funding, and also practically by talking to different people who could sponsor my research. They also supported all my efforts in writing research proposals and gave me a lot of useful feedback. After two years of writing numerous unsuccessful grant proposals or proposals that brought only small amounts of money and short-term employment, I finally received my first large research grant. Receiving a large individual grant is the entrance ticket to an academic career.

As a friend, I would tell a young promising scientist to work less to avoid the risk of becoming exhausted and burnt-out. As a mentor, however, I would say keep up the good work, since it actually takes a lot of hard work to become a successful researcher. It is unfair to treat women and men differently in this regard. I encourage all young scientists not to give up! As long as you know what you want and you have the dreams, visions and the passion, one day you will get the funding that will enable you to start your research career. A mentor can give support when it comes to writing research proposals, sharing valuable networks and giving good advice. However, the dreams and the visions need to come from you.

Building a research group

I slowly built up my research group at Uppsala University. I named it the Green Technology Group. I believe that profiling is important for visibility. It is also equally as important to clearly state the visions and goals of the research group. My research group has two main visions:

1. To conduct top-class research and research education in green analytical chemistry and chemistry for a sustainable development.
2. To contribute to a more sustainable future through our research, teaching and interaction with the community.

How did I decide on my first main research project in my recently started research group? I think that it is imperative to start with a project that will allow you to harvest lots of interesting results and valuable visibility using minimal resources and staff. At the beginning of your career, you do not have enough funding to employ a whole team. I started off with just myself. The following two years I was able to employ one Ph.D. student and a postdoc. A starting project should be like a flower, where the petals are what you harvest and consist of fundamental research, applied research, research of importance to society and to the environment, research of industrial interest, research resulting in innovations as well as new collaborations and research with an appealing "twist", see Figure 2. If one project can give all this, it shows a good harvest capacity with minimal resources and staff.

My starting project at Uppsala University was about extraction of valuable compounds from agricultural byproducts. In this case, we used hot water to extract the antioxidant quercetin, from onion waste. [2]. Using only hot water as a solvent makes the method environmentally sustainable, as calculated by life cycle assessment [3]. It also means that even after extracting the antioxidant, the onion waste can still be used as animal feed or as soil fertilizer. The fundamental aspect of the research was about studying the antioxidant extraction rate as well as assessing any eventual degradation of the antioxidants [4]. The applied aspect of the research was about coupling the extraction process with utilisation of an enzyme that converted many of the antioxidants into more active ones [5]. The onion project also resulted in valuable collaboration with the Biotechnology Department in Lund, where my sister Pernilla Turner was doing her Ph.D. at that time [2]. Furthermore, the onion project was of interest to society in general, since there is an urgent need to increase the value of byproducts and waste – and any commercialisation efforts could also create jobs. In addition, we started collaboration with a small onion producing company in Southern Sweden regarding business opportunities from the project. Hence, the onion project was a successful project that started as a M.Sc. student project at Uppsala University, and later on resulted in a much larger research project

supporting six research groups in Sweden. The project also resulted in a similar project concerning the extraction of quercetin from a plant, *Moringa oleifera*, in collaboration with a research group in South Africa [6]. This latter project has already resulted in several new job opportunities in South Africa.

Figure 2
A successful research project has many aspects and multiple beneficial outputs, shown here as harvestable flower petals.

Another fruitful project I have led was about the production of water-repellent superhydrophobic surfaces, using compressed (supercritical) carbon dioxide as a solvent. The project started from a question I received from a Ph.D. student in the audience when I gave a lecture about supercritical carbon dioxide technology at the Royal Institute of Technology (KTH) in Stockholm. The student wanted to know if wax could be dissolved in supercritical carbon dioxide and then sprayed on a surface to make a coating. I told him he was welcome to test the idea in my lab in Uppsala. It worked on the first trial, and the coatings the student made together with my postdoc were amazingly good in terms of water repellency [7]. The coatings were made to mimic the leaf of the sacred Lotus, *i.e.* to make water droplet roll off rather than slide off. Such coatings could potentially be used to make self-cleaning outdoor materials, low-friction boat hulls and ice-free

metallic parts for trucks, antennas, etc. The research project was a collaboration with research groups at KTH, and was financed by the Swedish Foundation for Strategic Research (SSF).

In 2010 I moved back to my birth town following a special recruitment drive that was aimed at bringing successful women in science to Lund University. I do not regret making the decision to leave Uppsala University and take up the opportunity at Lund University. It is always better to move when there is a chance to build a stronger research group. In fact, a recent study by SSF that I was involved in showed that mobility was especially crucial for the success of young female scientists. The study evaluated a total of 33 SSF-funded returning postdoc awardees between 2006 and 2008 [8]. The study found that women moving back to Sweden after postdoctoral research stays abroad felt less welcome and experienced less support at their host university compared to their male counterparts [8]. Most of the returning young scientists in the study moved back to the same university where they did their doctorate studies. In the above study, it sadly appeared that young female scientists who returned to their alma mater university were less successful than their male counterparts. The study also showed that female scientists who moved to a different university after their postdocs were more successful. In my case, moving to Lund was not only good for my professional career; it was also great for my family since my parents (mother and stepfather, the Eklund family) still live in Lund, they are retired and they do not mind helping out with the children, pets and house.

Work as an established researcher

Why do I look forward every Sunday to the next week, to Monday? I love going to work, because at work I get to interact with enthusiastic young scientists from all around the world. We work as a team on important research projects that create more sustainable development. I work with M.Sc. students, Ph.D. students and postdocs from all over the world. At the time of writing this chapter, I have people in my group from China, USA, Brazil, Pakistan, Oman, Iraq, Spain, Germany and Sweden. Some of them are religious, some of them are not. What binds us together is our common interest in research. I co-lead the group together with my colleague Margareta Sandahl, who is a lecturer at the department. Shared leadership of

a research group is probably unusual at the university. However, Margareta and I have complementary skills and knowledge, which results in lots of interesting discussions between us and with the group. To share the leadership is also a form of mentorship and support.

In my group, we do research and research education, with an emphasis on the latter. Anyone can easily find out about our research from our homepage or on the Web of Science. What is more interesting, however, is the research education, because it teaches graduate students and postdocs how to become excellent researchers and teachers. I therefore regard people, not publications, as the most important output from my research group. Research education is about learning what research is and how it is carried out, *i.e.* research methodology. In my group, people also learn how to become good leaders. Each month we have an activity called "group dynamics" where we learn about group development theory, affect theory, group norms, communication, conflict handling, problem solving and different leadership styles [9]. I strongly believe that group dynamics activities help build both stronger research leaders and better functioning research groups.

The beauty of research is that it is global. Research brings people together regardless of their origin or religious beliefs. Research questions are often of a global character. I read interesting research articles written by scientists from all over the world. In conferences, I meet men and women from all over the world. However, once in a conference one of my female postdocs was verbally attacked by two male scientists from her country of origin. The male scientists thought that her hair was not properly covered; a small part was visible. I was very upset about this attack because research meetings are supposed to be free zones, a state or place where it does not matter what your personal values are. Of course I told the organisers of the meeting what happened, and the men did not approach my postdoc again during the meeting.

Another incident that happened was when one of my Ph.D. students recently went back home to Iraq for a wedding. Internal conflicts led by "Islamic State" escalated while he was there, and he had to flee with his family to an empty industrial building in a town in northern Iraq. He narrowly escaped the terrorist attack of his hometown with a margin of minutes. With the help of Lund University security department, we

managed to rescue the Ph.D. student, his wife, and their two young children. Two vans driven by armed men went into the village, gave the family bulletproof vests and transported them to a still functioning airport. The family was escorted all the way to their apartment door in Lund. I do not think I will ever be as proud of my university again! This was of course a matter of life or death for the family, but to me it was also about allowing my Ph.D. student to finish his education in analytical chemistry. He is one out of many who will eventually, if politically possible, go back to his country and build it up again after the war.

In my work I support research in developing countries. I am part of the International Program in the Chemical Sciences (IPICS), which supports promising and independent research teams demonstrating an international standard. I am part of the reference group that evaluates research proposals applying for funding from IPICS. The main reason for me putting two weeks of work into this per year is to watch these teams develop from environments where there is no electricity or ventilation, and no equipment for doing research in chemistry, to become competitive groups at an international level. In my evaluation, I try to support young female scientists because being a research leader in their country is very difficult. For instance, in one of the proposals I evaluated this year, one of the male research leaders wrote the following on the mandatory "gender perspective" section "…*one way to attract more female scientists would be to allow them to do easier research. The women could study simpler processes and practical topics such as traditional dyeing, treatment of wastewater and agrochemicals in urban areas"*. Clearly, there is much more work to be done in terms of gender issues in many countries, and not only gender issues, but equality issues as a whole.

Conclusions

My final words will be to say that I love my work and I love doing research. My research group, the Green Technology Group, makes my job the best in the world. When I became a professor in 2012, we celebrated this together because becoming a professor is a team rather than an individual effort. Many other people also supported me in the process and I have only mentioned a few; certainly there are many more I should thank. To become

a successful researcher is to a large extent about finding your own visions and passions. Why research? What research? Who am I? What do I want to accomplish? Which questions in this world are interesting to me? If you are enthusiastic, the enthusiasm will be reflected and transmitted to others. This will lead to success in all aspects.

In this conclusion I also send my thoughts to my father, Bengt Turner, who passed away in 2007. Hopefully, he knows by now that chemistry research is not that bad – it could even have an impact on society and promote sustainable development in the world. Although, for this to happen, we certainly need to combine our research efforts across the different disciplines.

I also thank my dear husband, Kuria Ndung'u, who actually has a more exciting and impressive story to tell – going from living in a small village in Kenya to being a senior scientist at NIVA (Norwegian Institute for Water Research) in Oslo. Finally, thank you my dearest sons, Elias and Gabriel, for giving my life some other perspectives.

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Chapter 4
How I became interested in and stayed in science

By Charlotte Erlanson-Albertsson

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Biosketch

Charlotte Erlanson-Albertsson is a Professor at the Department of Experimental Medical Science at Lund University in Sweden. Her research is dealing with energy metabolism in particular in understanding how appetite regulation governs the brain to start eating and which signals are induced to stop eating. A special focus is the gastrointestinal tract, which possesses both hunger- and satiety signals that are strongly dependent on the type of food eaten. Palatable food, i.e. food rich in fat and sugar and the influence on the reward system is her main focus in the field of appetite regulation. She works both with experimental animal models and human clinical trials with the goal to improve appetite control and body weight homeostasis. Her studies involve genetic characterization, analysis of thermogenesis, inflammation and microbiota. Her research has societal relevance in relation to various conditions of overeating and self-starvation such as obesity and anorexia as well as the medical consequences of these states, such as diabetes and addiction.

1965 was a year when many things happened. The first students graduated who had begun their schooling at Grundskolan, or "Ground school", with nine years of compulsory primary education. Following that, many pupils continued in gymnasium (upper secondary school), took their student examinations and came to University. In 1965 I started my studies in medicine at Lund University. Instead of 60 students, we were the first medicine course with 90 students. We had to sit very tightly together to have space in the lecture halls. During the course we sat in alphabetic order, and during the first year three couples met and are still married after 50 years. The atmosphere was one of enthusiasm. For a whole year we studied anatomy and were introduced into this subject by professor Carl–Herman Hjortsjö. Over the course of a few hours we learnt the Latin we needed for the rest of our lives. He also said to us, "Congratulations for getting on the medicine course. From now on you have no problems deciding what to do with your time. Whenever you are free, take the opportunity to study. And don't forget to listen to music, especially classical music. Beethoven's violin concerto is my favourite!" What a beginning.

Studies in medicine

The studies in anatomy were hard and we indeed had to work a lot. The teachers at the institute of Anatomy were serious and if we did not know our homework, they would tell us off and make a fuss about it. During the first year we also studied histology, which was at another Institute. There the teachers were more friendly and helped us to look into the microscope. I particularly remember teachers like Bengt Falk, Lennart Cegrell and Frank Sundler. They were happy teachers. Professor Gösta Glimstedt was the head of the institute and when he talked to us, he called the male students "Candidate" and the female students "Miss". So I was "Miss Erlanson" and my fellow colleague "Candidate Sjölund". I do not know what professor Glimstedt meant, but it was something that we talked about and noted.

The 60s were a golden decade. All prognoses and darts in diagrams pointed upwards. There was money in the system. New buildings sprang up, including at the University. New people were employed, and the University was no exception. When we recommenced our studies one year later, now in medical chemistry, we entered a completely new environment – the newly

shaped Chemical Centre on top of the Sölvegatan with huge audience lecture halls, well-spaced laboratory facilities and broad corridors. There were a lot of teachers, older professors but also younger scientists who had recently presented their thesis. And they were nice and enthusiastic – but on those courses the teachers were all men. Where were the women scientists and the women teachers?

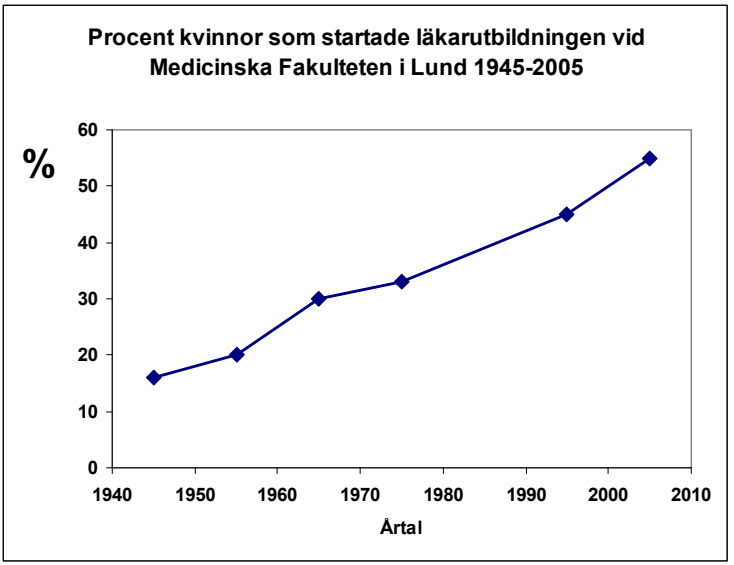

Figure 1
Percentage of women who started medical studies at Lund University between 1945 and 2005.

Women in medicine

The number of women on our course was 32. It was 1/3 women and 2/3 men. The proportion of women had increased compared to earlier courses, a trend that has continued (Fig. 1). The women who started reading medicine were clever students, just like today, but there was a difference. Some were elegant, some more casual and a few just wore trousers, a jacket and short hair (Fig. 2). We looked different from the students of today with their jeans, tight pullovers and sport shoes. This year we met again after 50 years and all, both the men and women, were surprisingly fresh. Many of the

students became district doctors, two went to the US, a few built an academic career, becoming professors in Lund, Gothenburg, Stockholm, Uppsala and Umeå. In the married couples, the husband had pursued a career and the wife taken care of the children.

We met the first woman lecturer after the fourth term. This occurred in 1966 in spring time. Her name was Professor Dora Jacobsohn. Dora Jacobsohn became the first woman professor at the Medical Faculty of Lund University in 1964. Dora Jacobsohn emigrated from Berlin, since she was refused a job working as a doctor in Germany due to the Aryan paragraph. She worked at the Department of Physiology and made famous discoveries within endocrinology. We also met docent Elsa Rosengren, who worked together with the legendary professor Georg Karlson, GK. Together they made important discoveries on histamine and polyamines. Both Dora Jacobson and Elsa Rosengren worked the whole time on their academic career and they succeeded. There was only one thing. Neither of these women had a family or any children. I asked myself whether I should to refrain from thinking about a family and pursue a career in science. No, I thought, I cannot choose science. I came from a large family, I had a fantastic childhood. We did many things together, such as playing musical instruments together, among other things. My father was a doctor, and worked all the time. During his time as a student he was a legendary singer in Spex (amateur theatre). He had the famous role as Princess Uarda in the Lund Spex Uarda, and he also played the piano. My grandparents were both musicians. So, I thought, science is not for me. I would like to have a family!

Figure 2
Women medical students, autumn 1965. Carl-Herman Hjortsjö, professor in anatomy, was enthusiastic and inspiring. My twin sister Ingela Fehrman-Ekholm is on the right, front row and I am in second row on the left.

Clinical work

In 1967 I sat my first exam in medicine, called Candidate of Medicine. This meant I was able to work at the hospital. So I did, and I worked as a laboratory technician at the Department of Clinical Physiology in Linköping, where my father now worked as chief doctor in nephrology. How I liked this world. We examined heart function, and I admired my chief physicians when they discussed the results from the examinations and told the patients about the results. There were also dramatic moments with patients who were severely ill, and the physicians and nurses worked intensely to save lives. My father, whom I sometimes saw at work, was an optimistic person. But he used to say things like, "this man will not survive," or, "this we can manage". I admired him. I thought about how important experience was, but also knowledge. I decided I would like to become a person with the knowledge and self-confidence to take the correct decisions: give 500 ml 0,15 M sodium chloride with dextrane, add 5 ml of potassium, for 12 hours, then ... I dreamt of saving the lives of sick patients.

Studies in philosophy

During the summer I went on a chamber music course at a Summer Music School in Dartington, England. I play the violin and it was a fantastic experience. We played in small groups, we listened to world artists giving music lectures, we played in larger orchestras, we had tea in the afternoon, the lawns were green. We played classical music, but also joined in experimental ultramodern music, tapping on closed pianos, making various noises, playing the violin with the bow on the wrong side, there was a great sense of togetherness. It was another world. I decided to take a break in my medical studies when I returned to Lund, to play more violin and study something completely different – theoretical philosophy. We had lectures every day in Kungshuset, which is the oldest University building. The students around me were intellectuals, and the teachers were fantastic - Jan Evers, Dag Prawitz, Sören Halldén, Bengt Hansson and Lars Hermerén. We learnt the history of philosophy, logic, thinking, ideas.

In December 1967 I got a telephone call from Bengt Borgström, professor and head of the Institute of Medical and Physiological Chemistry, where we

had studied the year before. "You can come and do some research here. I have a foreign researcher who you can work with". This was the most important telephone call of my life. It completely changed my life.

Captured by research

1968 was a remarkable year. I started at the Department of Medical and Physiological Chemistry at Chemical Centre. When I came to the Institute to start research with Bengt Borgström, laboratory engineer Lennart Krabisch and instrument maker Runo Svensson met me in the corridor: "Welcome, so you are the new PRAO student, who's meant to be coming here for a week, from school. "I was surprised. "No, not really", I said hesitating, but then continued with a more brave voice, "I am a Candidate of Medicine and I have an appointment with Bengt Borgström. I am going to do research". There was a lot of laughter and this story became a very amusing anecdote. At his death Runo Svensson donated a huge grant to my research, which was great, but at 90 years of age he still remembered this anecdote. And it was in this department that I made my career and was eventually appointed professor.

I started working that same day. A guest scientist from London, Jim Barrowman, introduced me to experiments. He showed me all types of experiments- enzyme assays, protein purification, animal surgery. The area that the group was interested in was characterising the enzymes of the pancreas that hydrolyse fat in the digestive tract. Techniques to purify proteins with gel filtration and ion exchange chromatography were new techniques, so it was a golden time to isolate unknown proteins. I lived science. The columns and chromotographies ran overnight and when I came in in the mornings it was an exciting moment to see if the proteins had separated. It was constant excitement. During the day various analyses were done and in the evening I took the figures home with me and calculated with a counting stick and came back the next day to draw the results on a millimetre diagram. It was all solid. I got results from the start and had my first publication in 1968 [1]. My tutor, professor Bengt Borgström, was content and when the summer came he gave me a thick textbook on chromatography and asked if I would like to stay, become a PhD student and do my thesis under his tutorship. "I will think about it", I said. But I

loved the atmosphere. I loved to sit in the library and read books about the evolution of life, the biochemistry with all these life-less molecules, which came together and created life. It was spectacular. And the atmosphere in the lab was very friendly. People worked very hard and stayed in the lab the whole day. We had regular seminars, sometimes in the evenings as well. People were devoted. Sometimes guest scientists came to give seminars. They came with novel and landmark discoveries about the digestive tract. These events finished with dinners at Bengt Borgström's house with scientific discussions mixed with comments and laughter.

The Lord is trying to tell us something

I stayed at the Department of Medical and Physiological Chemistry for four and half years, completely captivated by the research. I got positions as an amanuensis, and then as an assistant, which meant research and teaching. The research was exciting and we made a discovery during my time as a PhD student. We discovered a new protein named colipase, which is a physiological activator of the enzyme lipase. It was a fundamental discovery [2]. The question is how I was able to make a discovery as a beginner in science. One answer is that my tutor, Bengt Borgström, was a very open and believing person. He believed in my experiments. He taught me that you should always have a theory about the experiment and then perform the experiment. But when things did not turn out as expected he did not say, "You must have mixed the wrong things". No. He said, looking at the result, "The Lord is trying to tell us something". "This is interesting, we must rethink". "Every experiment tells us something. And if something new comes up the proof is that it can now explain previous observations". The finding of the novel protein cofactor explained observations made ten years ago by my tutor on the intestinal digestion of fat, that he could not understand at the time, but was left simply as an observation. Now he understood

The atmosphere and camaraderie in the Department was intense and fun. There were other PhD students, all of them qualified doctors or students of medicine, who were very inspiring. Surgeon Bo Arnesjö worked all the time, even on Christmas Eve, which became a famous story. Åke Nilsson, Christer Sylvén, Peter Nilsson-Ehle and Thomas Wiebe were fellow PhD students,

working all the time, creating a positive atmosphere. Women PhD students had not arrived yet.

The challenge of teaching

While science was unproblematic, teaching was a challenge and sometimes difficult. The most difficult part was giving cathedral lectures. The students could be very critical. I remember male students sitting in the back of the lecture hall saying, "how should it be, how do you want it to be? You just said it should be like this, and now you're saying the opposite!" They were probably correct, but I did not have the power at the time to answer and say "Let's start from the beginning. Where was the contradiction?" I had to work hard for the lectures, and today I have indeed learnt. Experience is important and you can learn. Following the student revolt years after 1968, there was also a critique about studying medical chemistry among the students. The male students came into the lecture hall, sat down on the first row in the lecture hall, and said, "Why should we learn this? This is a complete waste of time. We want to learn about society. We want to listen to psychiatrists at St Lars Hospital, to learn about mental health". A few rows behind were the female students, knitting during the lesson. They had more silent protests. Ten years later the women students appreciated my teaching. At this time there were more elderly students, who had previously had professions, as well as foreign students from other countries. I remember a Polish female student, looking very elegant, who said, "I admire you, you're like Marie Curie".

Thesis and post-doc in Marseille

1972 in May I defended my thesis with professor Thomas Olivecrona, Umeå university as faculty first opponent and doctor Jim Barrowman, Newfoundland, Canada, as second opponent. I got the highest rating on my thesis. It was a happy moment. The party was organised by my fellow PhD Students and we went to Helsingcrona nation, had roast beef, potato salad, cheese, wine, and pain-riche from the delicatessen shop Ljunggrens at Klostergatan, and Japanese nut cake from Lundagården, all very professorial

and in the Lund spirit. My father sang Uarda; my sisters played Mozart's flute quartet and my brother-in-law, Hans Carling, played dance music. It was a milestone event.

Then followed my postdoc in Marseille at the Centre Nationale de la Recherché Scientific from 1972 to 1973. The laboratory in France was a completely different place. The hierarchy was pyramidal instead of the flat structure in Lund. The head was professor Pierre Desnuelle, a well-known biochemist in France, with great power. Below him were a couple of chiefs and below them researchers. Students were at the bottom. I, as a foreign researcher, was outside this pyramid. I could only observe it. We worked intensely at the lab and I had two supervisors, Mireille Rovery and Maurice Charles [3, 4]. There were many women in the lab, including in higher positions. They had devoted their life to science, following the inspiration of Marie Curie, perhaps. Life on the South coast of France was completely different from home. But scientists also had a different life. There was more interaction from the state, with evaluation committees coming from Paris, frightening and disturbing the scientists. Scientific freedom was greater in Sweden at the time. Besides, the CNRS was a scientific institute with no teaching at all. There were therefore no students at ground level. The teaching in biochemistry occurred at the university, which was a very crowded institute, however, it also had important researchers and collaborators.

The shaky way to permanent position

Now followed the most difficult part of my scientific career. When I returned from my post-doc, there was no position available so I continued to study medicine for three years. At the end of this period, a research position was announced, for a research assistant. I applied and got it in competition with a couple of other scientists. This meant 6 years of opportunities to do science and start a career. I was happy to apply some of the techniques that I learnt in France, and I got started. It was an intense start, and during this period I met my husband, Per-Åke Albertsson, professor in Biochemistry, another institute at the Chemical Centre. Our first child, Alexandra was born in 1979. I took parental leave, but was told that this would not be regained at the end of my research assistant position.

It would be lost. So I wrote to the Secretary of the Medical Faculty, at the time Jill Falk, also responsible for equality at the university. But I did not get any reaction. I then wrote a respectful letter to the Minister of Education, Jan Erik Wikström, in Stockholm, who sent my request back to the Medical Faculty in Lund for referral. There, the faculty unanimously agreed to prolong my research position for a period of time corresponding to the length of my maternal leave. The matter went to the University board of Directors who were positive. The education minister approved and the case set a precedent. It was great news at the University, and it was published in Sydsvenskan (Fig. 3). This is now a paragraph in law. And female research assistants get double the legal amount of maternity leave, after the proposal of dean Jan Nilsson. This is fantastic, things have been made easier for women in science.

Regeringen sa ja i "fallet Charlotte"

Kvinnlig forskare får barnledighet

Nu är prejudikatet klart. I fortsättningen bör forskande mammor kunna få rättvisare villkor.

Regeringen har nämligen sagt ja till en framställning från Charlotte Erlanson-Albertsson i Lund. Hon ville ha sitt förordnande som forskarassistent i medicinsk kemi förlängt med sju månader, lika lång tid som hennes graviditetsledighet.

SDS berättade om "fallet" i slutet av maj. Då gick Lunds Universitets styrelse enhälligt på hennes linje.

- Att föda barn är också angeläget i dag, sa Charlotte Erlanson-Albertsson till Sydsvenskan. Det bör inte gå ut över kvinnors möjlighet att satsa på en forskarkarriär.

Assistenttjänsterna är - eller har åtminstone varit - benhårt tidsbegränsade. Sex år får man sitta, inte en dag längre. I Charlotte Erlanson-Albertssons fall löper tjänsten ut den sista juli 1981.

Viktiga år

Regeringens beslut innebär att det nu skapats ett prejudikat. Veterligen är detta första gången man gått med på att rucka på sexårsregeln. Andra forskare kan åberopa det beslutet i fortsättningen.

Det är viktiga år man sitter som forskarassistent. Den som förlorar tid, kan komma ohjälpligt efter i konkurrensen.

JAN MÅRTENSSON

Charlotte Erlanson-Albertsson får chansen att tävla med manliga forskarkolleger på mera jämbördiga villkor

Figure 3
The government decided to support a prolongation of research assistant position due to maternal leave. The case set a precedent. The article was published in Sydsvenska Dagbladet the 15th of August 1979.

The research assistant period finished, and then I got a temporary position as a teacher for six years. It was a great time, but a lot of teaching, all the time. Once the course was finished, you had to start a new one, with no time to breathe. This was the dilemma with the lecturer positions, 400 hours of teaching. The science part of my day was reduced. I did however have the advantage of accepting PhD students, and this was a very positive thing. They worked hard, had a defined goal, and scientific results were produced. My first PhD students were Anita Larsson, followed by Rui-Dong Duan and Jie Mei, both from China. Now was the time for my second discovery. I discovered that a peptide molecule released from pancreatic procolipase had appetite-regulating properties. The peptide was named enterostatin, and through this discovery, I entered the field of Appetite Regulation, where I am still. I joined new collaboration teams, particularly in Baton Rouge at Pennington Biomedical Centre with researchers George Bray and David York [5]. It was a great time. We discovered that this peptide specifically regulated the intake of dietary fat, decreasing the appetite for fat. In the light of the growing obesity problem, there was a great scientific interest. In 1991 I got a permanent position as a lecturer and that was a great moment. The event was celebrated with a dinner with my family at Grand Hotel, Lund.

However, prior to this event there were difficulties. I was not supported by the Department to get space, to get positions, to get grants from local funding. “You’ve had your time, you’ve always been favoured, you’ve had your chance, it’s finished”, were comments given to me. This happened after my tutor in science Bengt Borgström retired and after my tutor in teaching Sven Gardell had retired. These people had once built up the institute to one of the strongest in the faculty, but now there were other leaders. I was however supported by the dean, Sven-Eric Bergentz, professor in Surgery, whom I let know what was going on. Carl-Magnus Eneroth, professor in Otorhinolaryngology, was also helpful and understanding.

Paris and then professor

In 1998 I left Lund as a visiting scientist and went to Paris. There I worked with professor Daniel Ricquier at CNRS, Meudon. His research interest was energy expenditure and uncoupling proteins. Eating high-fat diets

stimulated the expressions of these proteins. It was speculated that these uncoupling proteins were there to spend energy if we consumed too monotonous a diet [6]. Paris was completely different from Marseille. France is a highly non-democratic country and France is "la gloire", as president Charles de Gaulle once said. The atmosphere in the lab was now more like in Sweden, with a flat structure, and there were many women at all levels. My husband and two younger daughters, Elin and Ingrid, followed me to Paris, which was fantastic. We stayed for a year and felt that we could have stayed much longer. In 1999 I was appointed professor in Medical and Physiological Chemistry at Lund University. Boel Flodgren was Vice Chancellor and had a special relationship with women professors, who she joined in a group called Firework. This was extremely stimulating and useful. Women in Academia need to meet each other, just to recognise and talk about the every day life, about ways of handling any injustice experienced. In the Medical faculty we had several groups that met informally in people's homes, and those were good moments. Anna Bexell, Ingrid Sjöberg, Inga Hägerstrand, Cecilia Benoni, Maria Albertsson, Eivor Svenonius, Catharina Svanborg and Margareta Troeng were some of the women in these networks.

Appetite regulation group

I was lucky enough to get a six-year employment contract from the Swedish Medical Research Council as a researcher in appetite regulation from 1999 to 2005. That was the start of a new period within research [7].

The focus was to understand the overeating of palatable food that started in 1980 in the US and now is the key to the global obesity and subsequent disease problems [8] [9]. Palatable food is rich in sugar, fat and salt, and they are the ingredients of a typical Western diet with soft drinks, chips, pizzas and hamburgers [10]. I had a new group of PhD students who presented their thesis during this period, Maria Sörhede Winzell, Catarina Rippe, Karin Berger, and Andreas Lindqvist. The focus was on the mechanisms, on the role of endogenous control systems and satiety hormones Adding more endogenous hormones we found was not the way to control the intake of palatable food; instead we have to make the body secrete more of the endogenous hormones by itself. This was my third

discovery during my scientific career. We found that by adding green leaf components named thylakoids that delayed fat digestion, satiety was achieved, along with body weight loss, and reduced craving of palatable food [11]. This was great science and now it was time to enter the innovative organisation set up at Lund University. With this help we could patent our discoveries, and today this is a food additive that is sold in Scandinavia and in the US. The discovery was a result of a kitchen chat at Christmas time in 2004. I told my husband, Per-Åke Albertsson, professor in biochemistry who was doing research in photosynthesis, that I needed something rich in galactolipids. "According to my research, that will promote satiety", I said. Per-Åke answered: "Thylakoids, the chlorophyll-bearing parts of green plants, are extremely rich in galactolipids." "OK, I didn't know that, but let's try it!", I said. These were tried and were extremely efficient, not only in animal studies but also in human. New PhD students were recruited, who worked with great success - Caroline Montelius, Karolina Östbring and Eva-Lena Stenblom. There were also students from basic education levels (Figure 4). The astonishing result of the research was that the galactolipids present in the thylakoids were not important for the effect of appetite regulation and fat burning. Instead the proteins, the antioxidants and the green pigments appear to play a crucial role. That is typical of science!

Giving lectures

From being a shy student and beginner as teacher I gradually developed an enthusiasm for teaching [12]. I learnt a lot, and got the message about what makes a good lecture. It is a balance. The lectures should be inspiring and have enough details to be informative, but be broad enough to make sense. Oh, is it like that? Teaching medicine is easy in that it can always be motivated by diseases if this and that is wrong. I still say things that could be questioned, but I now know how to handle it. I'll say, for example, "you and I can discuss it in the interval," or, "I'll explain it to you the next time we meet". Students often tell me that they want to hear stories, and I do tell stories during lectures, often real stories about what happened regarding a certain issue in the end. It is a good way of relaxing. Students today work hard and they need to be supported and feel relaxed.

Giving popular science lectures and being involved in society at large has been another important task during the later part of my career [13]. Society and the public want to know about science and the University ranks highly in terms of credibility. An important goal for me when outside of the University is indeed to represent the University well and also to give positive feedback and engage the audience's interest. My career could be summarised in two words: diligence and luck.

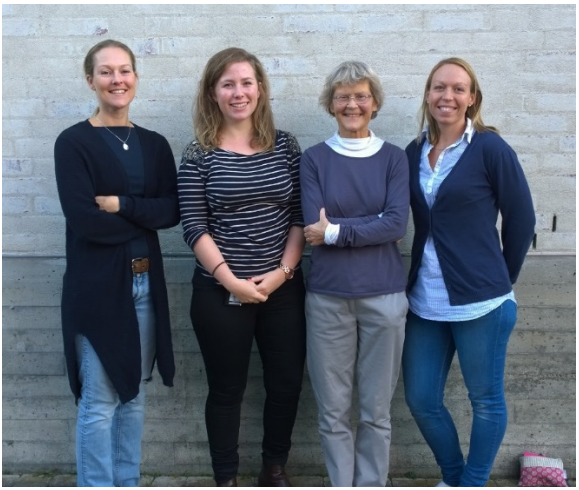

Figure 4
Research group autumn 2015, Eva-Lena Stenblom, Marry Farrell, me and Caroline Montelius at BMC.

Women's opportunities and women's rights

I joined the fight for women's rights in an organised form in 1978, when a group at the University was formed called the Forum for Women Scientists and Women's Science. The title meant that we should care both for the positions for women scientists but also care for research focused on women's interests. In medical science this means more research about women's diseases that are not taken seriously, such as various pain conditions like fibromyalgia. It was an interdisciplinary working group from all faculties. Leading women were professors Anna Christensen and Boel Flodgren, both law, Inger Lövkrona, humanistic science, myself, medicine, Karin Davies

and Karin Widerberg, both sociology. The Forum came to emphasise women's science, which then turned into gender science. Instead, the University and the faculties started with women's equality groups. We worked with formal rules for women. It became clear that at the PhD level there was an increasing share of women, but at the top positions as professors, the proportion was around 10%. An important step from the government was the introduction of the Tham professoriates only for women. An important group was the 8th March Group with Gunilla Jarlbro, Inger Lövkrona, Annika Rejmer, Kajsa Widén, Bodil Ryderhejm and Tomas Brage. This was started in the 90s, and every year on 8th of March we have a conference to discuss various themes. The most popular theme was Women and Health, held in 2009 [14]. We also initiated the Gunilla Jarlbro prize for persons who have made important steps towards promoting equality. In 2015 dean Gunilla Westergren-Thorsson and vice dean Anna Maria Drake received the prize, and in 2016, WINGS received the prize. It felt like a meaningful moment when this prize was handled to WINGS in front of a large audience.

When looking back at my career I would say that there has been a great change, from no women to many women, in the Medical faculty. Even the dean is a woman, Gunilla Westergren-Thorsson. But it is still the case that women have to work harder for the same position, for the same level of grants and for the same salary as men. They need to be successful, even. I am convinced that also this will change, when women come into decision-making and grant-awarding positions. But we still need to carry on the struggle. The importance of women in science must be visualised better, in terms of their role as experts, debate leaders and knowledge carriers.

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Chapter 5
Donating or receiving an organ

By Anna Forsberg

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Biosketch

I was born in Gothenburg in 1969. I became a registered nurse in 1991 at the School of Nursing in Halland. After a short period at the county hospital in Varberg I returned to Gothenburg and started my clinical career at the Sahlgrenska University Hospital. I have mainly performed my organ donation and organ transplantation research at the Transplant unit of this hospital. In 2001 I defended my thesis entitled "Health related quality of life and coping after liver transplantation" at the Department of Surgery, University of Gothenburg. I became an assistant professor in 2009 and in 2011 I was promoted to professor in nursing at the Sahlgrenska Academy, University of Gothenburg. In 2011 I moved with my family to Skåne and the beautiful Österlen. After working as a senior lecturer at the Institute of Health Sciences at Lund University for a couple of years, I became a clinical professor in caring sciences specialising in organ transplantation in 2013.

My career path

How it all started

During the first five years of my clinical career I continued my academic education at advanced level in order to obtain a Master's degree in Nursing. While preparing my Master thesis I realised that conducting research was exciting and not as difficult as I had expected. Although I did all this work in my free time, I was able to combine some of the data collection with my assignment as a clinical nurse specialist in liver transplantation. I had never considered becoming a PhD-student, mainly due to the absence of academic tradition in my family and the lack of a role model within my profession, as at that point in time I was a 26-year-old female nurse in a context with no tradition of young nurses becoming researchers. Then one day in 1996, I was approached by an extraordinary woman, Barbro Berglund, who was a registered nurse with a PhD-degree in surgery and a senior lecturer at the Institute of Health and Caring Sciences. She was conducting research at the Department of Surgery at Sahlgrenska University Hospital where I worked and was actually the only nurse with a PhD-degree who I had met in the clinical environment. Doctor Berglund had impressive authority when she looked me firmly in the eye and said: *How about becoming a PhD-student? I believe you've got potential, young lady.*

I can still remember that moment as if it was yesterday. We were standing in the hospital's main entrance and in my head I was thinking, she must be joking. But my mouth opened and I heard myself say: Yes, why not? And the rest is history. Why was that moment so important? Firstly, someone with great authority saw me, believed in me and had the knowledge and experience to guide me into the research education at the Medical Faculty. At that time there was no research education available in nursing and I was referred to the Surgical Department. Secondly, she offered to become my mentor and became a role model. Thirdly, I could lean my head on her shoulder at difficult times in the clinic. She simply provided the support a young, female nursing research student needs. This very important encounter made a huge different and was decisive for my career. As a result I have made great efforts to act in the same way towards other nurses with potential. I have approached many students using the identical phrase

Doctor Berglund employed when she approached me, knowing it is vital to be identified by someone with authority.

My main supervisor was a liver surgeon. He had no experience of supervising nurses or of the nursing perspective. It was a challenge to convince him about the importance of viewing the patient as a subject, of health-related quality of life and of various coping strategies. Doctor Berglund, who was my co-supervisor, always argued that starting a family was not an obstacle to becoming a researcher. Therefore it was a great joy when I became pregnant with our first child. I was the first PhD-student to complete a half-time seminar in the Department of Surgery since the regulations had been changed. I stood there, eight months pregnant, and proudly presented two of my papers. Afterwards my main supervisor took me aside and told me that although the members of the examination committee had approved my performance, they also considered that I could be a bit more modest. Despite feeling quite insulted, it challenged me to continue my task of conducting research within the context of male surgeons. During my whole research education my motto was; *what doesn't kill you makes you stronger.*

Besides my research I was working as a clinical nurse specialist in liver transplantation at least 75% of the time. It has always been of huge importance to maintain my clinical skills as a nurse and meet the patients. The important research questions have always emerged at the bedside, in encounters with solid organ transplant recipients.

I continued my research during my maternity leave, with the support of my parents who were able to babysit a lot. Such support is essential for a young woman at the beginning of her career. Many of my female colleagues questioned my efforts to become a researcher and doubted my commitment as a parent. It always hurts to be questioned as a mother, which I believe is a fairly common theme among female nurses, who envy colleagues who dream of prospects other than being a nurse for their whole professional career. Nevertheless, a few were really supportive and I still remember them, while others became lifelong friends.

I defended my thesis in October, 2001. At that time I was the second youngest nurse in Sweden who had ever defended a thesis and the first nurse in Scandinavia within the field of organ transplantation. My opponent was a transplant surgeon from Helsinki. He was impressed by my work and

challenged me to give an excellent defence. Some years before the dissertation the professor in surgery invited me to his office, where he told me that I had to be twice as good as the rest of the PhD-students. The reasons he gave were that I was a nurse, a woman, under the age of 30 years and that I had red hair. What can you say? I felt the pressure. Of course this message has affected my whole career as I have always felt under pressure to be twice as good in order to be accepted.

There has always been a tradition within the Medical faculty to perform the post doc period abroad. However, as my mother was dying of cancer I decided to stay at home. In 2002 I left the Department of surgery to attend my own nursing institution to deepen my theoretical nursing knowledge and develop new methodological skills. I became co-supervisor for several PhD-students and learned a great deal about supervision. In 2005 we were blessed with twins and everything changed. Going from one child to three is demanding and challenging. My PhD-students had to accept being supervised at my kitchen table and assisting me while changing nappies. I was impressed by the fact that they never complained. My whole post doc period was characterised by many logistical challenges. While bringing up my children I had the experience of seeing several of the PhD-students finished their thesis and became independent. In 2009 I became assistant professor and then, 20 years after my nursing degree, I finally became a full professor in nursing at the University of Gothenburg.

My research

A prerequisite for transplantation is organ donation. My research interest is how the patient comprehends, experiences, perceives and copes with the situation and phenomenon of organ donation. Organs can be donated from either a live or a deceased donor. The intensive care unit is a highly technological environment and in some cases organ donation is enabled when a patient dies there. After the death of the potential donor the situation has to be considered in relation to the legislation about presumed consent, the situation of the next of kin, as well as the attitudes and organisational conditions within the unit. Living donation involves several complicated psychological, social, ethical and pedagogical issues.

My focus is also on the experiences and beliefs of the transplant recipients in relation to illness, disease and suffering, as well as their recovery and maintenance of health. The research questions are mainly based on a nursing perspective, investigating the patient's interpretation of and reaction to her/his entire life situation rather than the disease itself. A variety of methods are used, including Content analysis, Hermeneutics, Grounded theory, Phenomenography, Phenomenology, the psychometrical development of instruments and various statistical methods.

When I began my PhD studies, transplantation was still a fairly new clinical area and research on health-related quality of life (HRQoL), lived experience and various nursing aspects were scarce. The first liver transplantation in Sweden was performed in 1982.

The primary goal was survival, at first from the operating room/theatre to the intensive care unit (ICU) and later from the ICU to the transplantation ward. It was hoped that the transplant recipient would be discharged from the hospital to continue her/his recovery at home. Along with improved results and a 5-year survival rate of > 70% questions were raised about whether or not these patients experienced HRQoL. New aspects were considered, such as consequences in daily life, coping strategies, as well as the prevalence and management of various symptoms.

My thesis involved four studies aimed at exploring HRQoL and coping in liver transplant recipients. The first two studies indicated that chronic pain was a major problem after organ transplantation, affecting daily life in patients with good graft function by limiting physical functioning, vitality and general health. A relationship was found between the number of rejections and pain intensity. The most common pain locations were the hands, feet and back and usually there were several pain locations. This was completely new knowledge about pain prevalence, magnitude and the consequences of pain in daily life. However, my studies were not designed to explore the causes behind the pain. A research group from Switzerland later described the Calcineurin Inhibitor Pain Syndrome (CIPS), where immunosuppressive medication most likely plays an important role in the pain problems of organ transplant recipients. My results together with the knowledge about CIPS have affected clinical decision-making regarding immunosuppressive therapy for organ transplant recipients with chronic pain.

The third qualitative study described the recovery process during the first year after liver transplantation and contributed new knowledge about how the recipients approached their donated organ, involving an altered perception of their bodies and the constant fear of graft rejection. The fourth prospective study reported on which coping strategies are the most common after liver transplantation and how these strategies change over time both individually and at group level. Besides my thesis, I published a study about liver transplant recipients' experienced meaning of health and quality of life one year after transplantation.

After the public defence of my thesis in October 2001 my research widened to include organ donation, both from deceased and living donors. Organ donation (OD) is a prerequisite for transplantation and although some organs can be supplied by living donors (e.g. kidney and liver), the vast majority stem from deceased donors. The OD process starts in the ICU with the identification of a potential donor, followed by a discussion of the issue of OD with the family/next of kin. It concludes when the OD takes place or when the mechanical ventilation is withdrawn due to the absence of consent to OD. Thus, organ donation from a deceased person can only take place when the potential donor has received end-of-life care in the ICU and dies there. In order to better understand what kind of care is needed in the organ donation situation, several studies have been performed to investigate end-of-life care in the ICU.

The ICU-environment is demanding for the patients involved. There is an increasing trend in European/Scandinavian countries to use light sedation regimens or no sedation at all for patients on mechanical ventilation (MVT) as soon as their condition allows. This trend also concerns organ transplant recipients with a prolonged ICU stay after transplantation. In several studies we have explored what it means to be awake during MVT.

Nurses strive to provide holistic care for potential organ donors (PODs) and their grieving families. They may be the first professionals to establish a relationship with family members and to initiate the discussion about donation. According to the previous studies mentioned above, there is great suffering involved in this situation from the relatives' perspective, which needs to be addressed and considered. However, nurses are well placed to identify a potential donor and to support the family regarding the question of OD. Nurses' attitudes towards and beliefs about OD as a phenomenon

may influence whether or not a potential OD actually takes place. In a literature review comprising 343 abstracts as well as 23 articles and theses, several factors were identified that explain why OD does not take place despite the (presumed) positive attitude of the deceased towards it. The single most important factor was the ICU staff members' attitudes to OD, as the more positive their attitude, the greater were their efforts to ascertain whether there was consent for OD. These studies mainly focused on physicians and provided no information on how ICU nurses' attitudes influenced the donation process. It is important to approach attitudes to brain death (BD) and OD from a national perspective due to the differing legislation in each country. However, as there were no existing instruments available, the aim was therefore to present data on Swedish ICU nurses' attitudes to BD and OD and to develop and test a questionnaire designed to explore attitudes towards organ donor advocacy in terms of validity and reliability. Data from these studies were reported in every newspaper in Sweden in May 2011, as well as on various distinguished international websites.

The recruitment of living donors represents a medical and moral responsibility. Their motives are often complex and their need for support and individualised treatment inspired several studies about living kidney donation. One study about living parental liver donation suggested several clinical implications of vital importance for the care of the parental donor.

The perceived threat of the risk of graft rejection is prominent in the lives of organ transplant recipients (OTRs). Besides infection, graft rejection is viewed as the most common threat to OTRs. Previous studies indicate that fear of graft rejection might have a negative impact on the patients' everyday life. Despite this, research on patients' perceptions of experiences of graft rejection, or the mere threat of it, has been neglected. Although tremendous advances have been made in exploring the physiological mechanisms behind graft rejection and the biomedical treatment of the immunological processes that cause graft rejection, the perceptions and experiences of OTRs, as well as consequences such as HRQoL are still poorly understood. For example, how OTRs of various ages perceive the risk of graft rejection remains unclear. There was no validated domain specific instrument used to measure the perceived threat of the risk of graft rejection among OTRs receiving various types of solid organ. The different characteristics of the threat of graft rejection were also rarely described. The absence of systematic and

structured measurements hampered the possibility of making any comparisons between groups of OTRs to evaluate the effects of various interventions. We therefore explored the characteristics of the experienced threat of the risk of graft rejection, psychological reactions and their consequences in daily life among OTRs.

Over the course of the last two years, one of my research groups has extensively explored the core of social adaptation after solid organ transplantation, resulting in three publications during 2015. A great and inspiring challenge is an ongoing, longitudinal and multicentre study covering Self-management after thoracic transplantation (The SMATT-study), which will continue until 2018 and provide a great deal of new knowledge regarding the need for self-management support among heart and lung recipients.

Conclusion

The main characteristics of my career until I became a professor were:

- Being in the minority as a female nurse dedicated to research
- Being the youngest or one of the youngest in my scientific field
- Being a pioneer within transplantation research from a caring perspective
- Fighting resistance and antagonism both in the clinic and within the University
- Breaking the mould regarding nurses as researchers in the clinical setting
- Changing tradition regarding clinically dedicated researchers within the faculty
- Seldom being a "prophet in my own country"
- Serving as a role model for many nursing researchers, especially young female ones
- Always accepting the patients' gratitude as a constant inspiration and

- Always believing in my ability to make a difference.

My research career has been part of my private life and vice versa. My whole family has assisted me with endless hours of babysitting and my husband has been a tremendous support. When experiencing professional loneliness, my friends have always been there for me with their marvellous ability to widen my perspective. It has been a matter of staying strong, and holding on to my dreams and to the vision of contributing to the knowledge about how best to care for organ recipients and potential organ donors in order to fulfil their last wish. By staying focused on this mission and remaining close to the patients I never lose track of reality. Despite occasional doubts, I still believe that it has been worth every hour.

Chapter 6
The Evolution of a New Scientific Discipline – Occupational Therapy

By Mona Eklund

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Biosketch

Mona Eklund, born in 1950, has been a professor of occupational therapy at Lund University since 2004. She became an occupational therapist in 1978, began teaching occupational therapy in 1981 and completed a PhD in psychology in 1996. Her research concerns people's everyday occupations and how the things people do may influence their health and well-being. Most of her research focuses on persons with mental health problems, mainly people with severe mental illness such as psychosis and neuropsychiatric disorders, but also common mental disorders such as stress and burnout. Her research includes the development of rehabilitation methods, outcome studies, descriptive studies and the development of instruments for assessing various aspects of everyday occupations. The research methods encompass both quantitative and qualitative methodology. She is the head of a network consisting of previous and current doctoral students, named HOW (Health, Occupation and Well-being), consisting of about 20 active researchers. She is also a member and one of the founders of the national platform CEPI (Center for Evidence-based Interventions for People with Psychiatric Disabilities), which currently involves about 40 researchers.

A Winding Journey towards Academia

When I studied to become an occupational therapist (1976 – 1978) the course was not an academic one, but a governmental reform targeting higher education would come to influence the occupational therapy programme, as well as many other courses that led into health professions. It was decided that these courses should be given at the university level and that the curriculum would be substantially revised, turning it into a three-year higher education course. Practical elements were cut down and many new theoretical subjects were added, not least theory of science and research methods.

Feeling awkward in a committee

I had studied behavioural sciences at undergraduate level before entering the occupational therapy program and I had a B.Sc. in psychology. So I had some experience from my university studies, which is probably why I was picked out to be part of a committee tasked with coming up with suggestions for how to fill the new occupational therapy curriculum with appropriate research content. We started with a brainstorming-style meeting where the idea was to propose occupational therapy-based research questions. I felt like my brain was paralysed. How could all the practical and medical knowledge I had acquired as an occupational therapy student be something you could conduct research on? My contribution to this committee was very modest, but I ended up with a new insight into the essence of occupational therapy – to assist people with various disabilities to manage everyday life and lead as meaningful and satisfying a life as possible. But that was still a practical activity in my view, a clinical task with no obvious connection to research.

New opportunities, challenges and developments

The university level occupational therapy program started in 1977 and was followed by further reforms in the 1980s and 1990s. These latter reforms made it possible to take a B.Sc. and a M.Sc. in occupational therapy. Occupational therapy was still far from being an academic discipline, but

individual initiatives were taken to further this process and the first occupational therapist in Sweden completed a Ph.D. in 1982 – within the discipline of medical rehabilitation [1]. The first Ph.D. exams at Lund University took place in late 1996 (in psychology) [2] and early 1997 (in social medicine) [3], for the 16th and 17th occupational therapists in Sweden. The progress seemed slow for approximately 15 years, when doctorate degrees were very much down to personal initiatives and there was still no possibility of doing a doctorate in occupational therapy. Prospective doctoral students sought connections with various existing disciplines, mostly within the faculty of medicine, but also others, such as the social science and technical faculties.

The first Ph.D. in the discipline of occupational therapy in Sweden was completed in 2000 [4] and the first in Lund in 2001 [5]. As soon as occupational therapy became an academic discipline in its own right, the number of people with Ph.D.s increased dramatically, and in 2008 the number reached 100. At that time there were also close to 10 full professors in occupational therapy and several occupational therapists who held associate professor positions ("docenter") who could act as supervisors and advisers. The first full professor in occupational therapy in Sweden was appointed in 1998 (Lena Borell, Karolinska Institute) and the first at Lund University in 2003 (Susanne Iwarsson). Some of the milestones are listed in Figure 1.

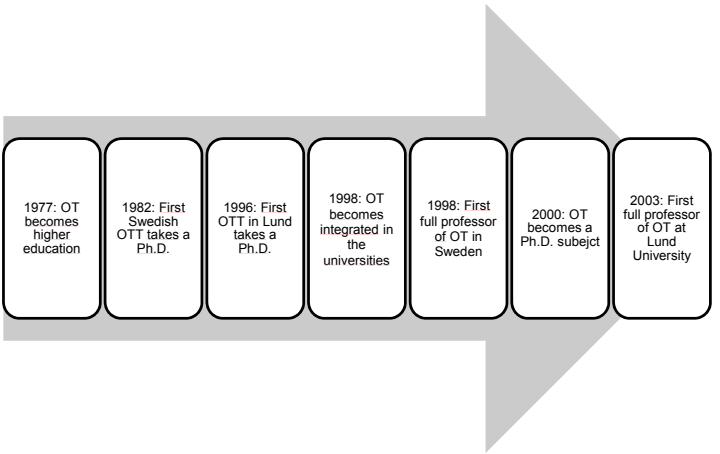

Figure 1
Some milestones in the process of developing occupational therapy into a scientific discipline (OT = occupational therapy; OTT = occupational therapist).

The number of Ph.D. holders, professors, et cetera, was for some years seen as an indicator of occupational therapy's development as an academic discipline, but as researchers within the field have become more established in science, they have dealt with new challenges. Despite the fact that they are small in number compared with other health scientists, for example those with a nursing background, they have attracted substantial funding nationally and internationally and have built leading national research networks. Healthy ageing, consequences of neurological disorders, living with a mental illness and lifestyle interventions are some of the strong areas of occupational therapy research at Lund University.

Mainstream indices of publication rate, such as the H-index, remain relatively low as a consequence of occupational therapy still being a small, and also young, research area. Given that the total number of publications is modest compared with more established research fields, and that they have only really been around the last two decades, citations are also relatively low. As of March 2016, the Swedish researchers with the highest impact according to the Scopus database had an H-index of 26–28. An international comparison indicates that this is high. The highest H-factor for an occupational therapy researcher found was 29, generated by an American researcher who completed her Ph.D. in the early 1980s.

Success Factors

It has been a privilege to follow the process of moving from a non-academic, clinical enterprise in the late 1970s to an academic discipline in its own right 30 years later, and towards further achievements during the past decade. This did not happen in a vacuum, and it could perhaps serve as encouragement for generations of researchers to pick out some of the influences that pushed this development in the right direction.

Auspicious state policies and welcoming universities

Governmental decisions definitely kick-started the development briefly described above. These policies targeted a wide array of educational programs, such as training for various health professions and teachers.

Occupational therapy was a slow starter compared to other health professions, such as nursing, physiotherapy and laboratory assistants, but had caught up in the early 2000s. This was partly due to the fact that the universities, as part of the prevailing governmental regulations, fulfilled their important task of absorbing nearby schools for health professions into the university organisation. This was in 1998. Six of the eight existing occupational therapy schools in Sweden were located in a university city and were thus integrated into the medical faculties in the respective universities. The remaining two were linked to universities by collaboration treaties.

The first ”docent” in occupational therapy at Lund University was appointed in 1999, and soon after, in 2000, occupational therapy was included among the Ph.D. subjects that existed at that time. Thanks to auspicious governmental regulations that were implemented with a great level of earnestness and determination on all levels – coupled with substantial commitment and hard work among the pioneering researchers – it was possible to develop a new research subject within a time frame of less than five years, from the first Ph.D. exam taken by ground-breakers to an academic discipline in its own right.

Although this presentation naturally focuses on developments taking place at Lund University, the growth of a new discipline was similar all over Sweden, due to the governmental regulations that had a significant influence on it. The fact that occupational therapy research developed more or less in parallel at all universities in Sweden was another factor that propelled the progresses made. Still today, all Swedish occupational therapists with a Ph.D. are invited (by their professional organisation) to a meeting every other year to discuss common concerns and possibilities for further developments.

International influences and collaboration

In other parts of the world, mainly the USA and Canada, the academic history of occupational therapy is longer, although the process of developing the academic discipline was similar. Occupational therapists started taking Ph.D. exams in various subjects other than occupational therapy and subsequently developed their own research discipline. There were thus international models that were able to inspire the development in Sweden,

and these had also developed theoretical models for the discipline of occupational therapy and its clinical practice [6-8]. Exchange with world leading occupational therapy researchers became an important source of developments in Sweden, not least at Linköping University and the Karolinska Institute. Swedish occupational therapists seemed to hunger for theory, and during the congress of the World Federation of Occupational Therapists in London in 1994, at a workshop addressing a theoretical model developed in the USA, Swedes made up the majority both of presenters and the audience (personal observation by the author).

Collaboration with other disciplines has also been immensely important. To mention a few examples, one branch of occupational therapy research at Lund University has a long-term collaboration with world leading researchers in environmental gerontology. Another branch has developed research in close proximity to multidisciplinary mental health research. At the Karolinska Institute, collaboration with dementia researchers was essential for the early developments in occupational therapy research. Many occupational therapists had close collaboration with neuroscientists, for example at Göteborg University and Umeå University. Support and inspiration from accomplished research methodologists have also been vital for progress, and this applies to occupational therapy developments in general both nationally and internationally. Qualitative methods from fields such as philosophy education, ethnology, sociology and psychology have undoubtedly propelled the development of occupational therapy and have helped delineate its areas of focus. Quantitative methods have been imperative in producing important findings, for example when conducting intervention studies aimed at contributing to evidence-based interventions.

Two is more than one plus one

What is a critical mass? It could be two. There were two occupational therapists at Lund University who started our postdoc careers in the mid-1990s. Although we did not collaborate on any research projects, there were two of us in all strategic discussions with various counterparts on how to strengthen occupational therapy research, at that time and in the future. This would not have happened if there had been only one pioneer; that

person would probably have continued doing research, but within the discipline of the Ph.D.

Another factor, potentially important for success, is mentorship. There were obviously no occupational therapy researchers around who could serve as mentors, but former supervisors were there to encourage a research career. Although they did not address the issue of developing a new scientific discipline, their support was important in two ways. One was discussing new avenues for research, and in some cases continued research collaboration. The other was looking into strategies for how to create time and space for being a researcher. Both of us in the "pioneering team" were employed as teachers in the occupational therapy program and the space for research was very limited. The main message from one of the former supervisors was: "Don't stop researching and don't get stuck in the trap of examining too many bachelor theses". This may be a good piece of advice still today, for example for those who after their Ph.D. start working as teachers in health education programs and the like. Particularly in schools that are part of polytechnic universities, such as the majority of nursing schools, research may not have first priority at the management level. Then it is up to the individual; or preferably a "pioneering team".

The fact that there were few or no mentors, and none with a background as an occupational therapist, was probably for good and for bad. It fostered drive and determination in the "pioneering team", still fuelling our commitment.

Funding resources targeted towards health sciences

Last, but not least; opportunities for funding were essential for successful development of the new discipline. Along with new regulations for the health professions, stating among other things that all courses would be run by the state and many of them by full universities, the government also allocated funding to the universities for the new type of research. This meant that it was possible to obtain smaller amounts for funding part-time research over a few months. That (together with a great deal of unpaid work) led to more publications and later on "docentur" (docentship). Then it was time for applications to the major research councils. These councils, especially the Research Council/ Medicine (Vetenskapsrådet/Medicin),

received money targeted particularly at health and caring sciences research. Competition was – and is – very tight in these rounds of application and only top-quality research gets funding. The combination of funding opportunities and stiff competition has most certainly propelled the growth of health sciences such as occupational therapy.

Women in the Lead

The birth of occupational therapy as a scientific discipline in Sweden was a predominantly female enterprise. This was of course logical, since women make up the vast majority of occupational therapists. But sex and gender still deserve some attention.

The men in occupational therapy

The proportion of men among occupational therapists has been around 10% for many years. The number of men has increased as the profession has grown, but the proportion remains the same, mainly because of the low salary as a clinical occupational therapist [9]. The proportion of men typically gets higher in the upper segments of the academic hierarchy, but this does not currently seem to apply to occupational therapy. For example, there is still only one man among the full professors in occupational therapy in Sweden, in September 2015, amounting to 15 (including an emerita), and men are also rarely represented among department chairs. One of the reasons why women continue to dominate in all academic layers of occupational therapy could be that the proportion of men is so low, perhaps under a critical limit for attracting men in general. This was indicated in research by Karlsson [9], who found that male occupational therapists did not choose the profession for developing a career. Those men who do decide to become occupational therapists may do so because they are genuinely interested in the profession and therefore do not seek higher positions more than women do.

Gender is an issue

Male occupational therapists and occupational therapy students get much attention and female occupational therapists tend to welcome them warmly [10]. Such an attitude may affect the possibilities for gender equality, but may also impact on future turns in the development of occupational therapy in at least three respects. One concerns the occupational therapy services provided. Women have dominated the profession for so many years that it seems inevitable that this has influenced occupational therapy practice. Liedberg and colleagues [11] found, however, that occupational therapists were not concerned with gender and even found gender to be of less relevance in their clinical work. Still, the findings indicated that occupational therapists were taking gender into account when identifying activity problems among clients and suggesting interventions.

The professionals themselves, and the impact of gender on future roles as clinicians and researchers, form a second issue with respect to gender. Sooner or later the current female hegemony in occupational therapy may be upset, which would probably lead to changes both in the professional role and in relation to other professions.

Gender may also influence choice of research topics and how research problems are framed, and how gender has influenced the occupational therapy research paradigm is an open question. Although a few attempts have been made to outline an occupational therapy paradigm [12, 13], gender has not been problematised in that context. Increased gender awareness in occupational therapy practice and research obviously seems highly warranted.

Conclusion

The birth of occupational therapy as an academic profession was dependent on several changes in the academic context and on personal initiatives and commitment among pioneering researchers.

Clearly, occupational therapy would not have developed into a scientific discipline if governmental reforms had not taken place and funding had not been allocated to the evolving health sciences. The main incitement for these

changes was of course not to develop new disciplines, but to improve health care and support. That demanded high-quality health courses, which in turn required a scientific knowledge base for these courses. It would probably be fruitless to try and shape a new discipline if there is no demand in society and no propelling forces in terms of possibilities for funding. Similarly, governmental incitements would fall on infertile ground if not in line with the needs and interests of the clinical and academic parties concerned. Finally, without individual enthusiasts and pioneers, no real progress can ever be possible.

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Chapter 7
Look for the possibilities and do not be afraid

By Bodil Ohlsson

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Biosketch

I was born 1961 and have two children, aged 22 and 19 years old. I became a Registered Nurse in 1982 and worked as a Nurse from 1982 to 1985 before taking my MD in Lund 1991, followed by a PhD at the Department of Surgery in Lund 1996. In 2000, I became a specialist in Internal Medicine, and the following year I became an associate professor and specialist of Gastroenterology and Hepatology. Since 2009, I have been a professor in Medicine at Lund University in combination with a senior consultant at Skåne University Hospital, Malmö, where I have supervised 7 students who have completed their PhD, and 3 current PhD students. During the last few years I have had 2 post-doc researchers. I have been an opponent 3 times and member of a deputy committee 30 times. I am the associate editor for several journals and am often hired as an external reviewer for manuscripts. Between 2009 and 2013 I was Deputy Chairman and later Chairman of the Swedish Society of Gastroenterology, which has led to the representation of Swedish gastroenterology at a European level. I have written around 10 textbooks and 150 published scientific articles. I am a member of various advisory boards and research foundations, and perform several administrative roles at the University. I am responsible for the 10th semester of the medical school at Lund University.

My main scientific interest is focused on abdominal pain and gastrointestinal dysmotility. Two important fields of research have been the description of the presence of the hormones oxytocin [1] and gonadotropin-releasing hormone (GnRH) in the gastrointestinal tract [2], and evaluation of their effects on the gastrointestinal tract and its functions. I have also discovered that a subpopulation of patients with gastrointestinal complaints express antibodies against GnRH in serum [3]. I have described how treatment with GnRH analogues in a clinical setting may lead to severe dysmotility [2, 4], and developed an animal model of enteric neurodegeneration after GnRH administration [5]. A simple VAS scale has been developed and validated in my group for evaluation of abdominal complaints. This scale is now widely distributed and used in the daily clinic by nurses, dieticians, and physicians [6].

Beginning, Inspiration and Motivation

I was born the 7th child on a small farm in the north of Skåne. My mother was the eldest of 8 children, and my grandmother died when the children were small. So, my mother first raised 7 younger sisters and brothers before having 7 children of her own. I was thus the youngest of 14 children raised by enormously strong women with an extremely high working capacity. My father was the only child in a family with a farm that had been inherited for generations. It was his duty to continue with this task and be the next generation of farmer. He was a very intelligent man, and every spare minute was spent with books. From both of these parents we children learned two things: you have to work and you have to provide for yourself! Indeed, I was working on the fields before I could write my own name. When I finally started school in 1968, the first thing that happened was my mother asking the teacher if she could keep me at home, for the potatoes had to be harvested before the winter.

There is one strong impression from my childhood has been very important to me; there was an embroidered picture hanging on the wall in an old woman´s house that said: "Well begun is half done". This idea has followed me throughout my whole life, and I have never left any work to the next day if it has been possible to do it today.

Before medical studies

I was born with an enormous sense of curiosity; I wanted to know everything and I always hungered for more knowledge, not only about the way things were, but most of all, how they worked, and why things worked in that way. It was a difficult task for parents and teachers to answer my questions and give satisfying answers.

Although I had a talent for studying, My self-confidence was too low, and after primary school I first worked for one year before I started a practical course at upper secondary school and trained as assistant nurse. After 6 months as an assistant nurse, I started studying to become a registered nurse. After graduating, it was difficult to get a job as a newly qualified nurse, and I moved to the north of Sweden to work. From the end of August, I was

placed in a little village in deepest Lappland, named Arjeplog, almost 30 miles from a town. It was already snowing in September and the snow persisted until May. The winter could be as cold as -40◦C, and in December and January, the sunlight only appeared for a few hours a day. When I came to this place I decided one thing: in order to bear being here, I must find something meaningful to do during my spare time. I had always wanted to study medicine, but I was missing mathematics, physics, and chemistry from upper secondary school. The course I had followed at upper secondary school had only lasted for 2 years instead of the 3 years that were mandatory as a preparation for medical studies. Thus, I started studying a mathematics course on my own and sat an examination after a few months. I then went on with the other two courses, physics and chemistry, and I was eventually able to start studying medicine.

Those years in Arjeplog taught me a lot. The natural beauty was phenomenal, and skiing, walking and canoeing filled a great deal of my spare time.

One incident during this time left a deep imprint in me. A man seriously hurt his leg in an accident involving a power shovel. The doctor at the small cottage hospital decided that an ambulance could drive the man the 27 miles to the closest hospital for surgery. I was ordered, together with an ambulance driver, to follow the patient to the hospital. The ambulance was equipped with morphine and intravenous fluids. It was January, the road surface was slippery, lots of reindeer were walking on the roads, and the ambulance could not drive as fast as we wanted. After some miles, the leg started to bleed, and it was critical for the patient. We finally reached the hospital and the emergency staff were able to take over responsibility for the man who survived the incident. Luckily, the leg was saved as well. The following morning I called my mother and told her: “After this, I will never ever be afraid of anything”. And that was true; I have never been afraid of any challenge since then. I think it is fundamental for all young people to face different challenges and to learn to know how immensely strong you can be, and how much we can manage when it is necessary. To never let younger people try and test the limits is harmful and restricts their options.

Medical studies

In January 1986, I finally sat in the auditorium of Lund University Hospital to start my medical studies and thought: "This is the right place for me". I was the first generation of women in my family who had had the opportunity to study, and I felt a great responsibility not to let any opportunities slip away. I wanted to seize all chances and walk on all roads. I felt that it was my duty to translate previous generations´ energy and creativity into the scientific world.

The medical studies were very interesting, and for the first time in life, I got answers to most of my questions. One of the first teachers I met was Charlotte Erlanson-Albertsson. It was obvious at every lecture that she liked her job and was full of energy when faced with her tasks. She was extremely inspiring and made me feel like I never wanted to stop learning new things. This is an important lesson for all of us: we cannot walk around complaining in front of the students about all of the things we are unsatisfied with. My teachers were optimistic and saw possibilities everywhere. We must try to transmit a belief in a hopeful future for science. Even if the job is tough and demands a lot from us, we must be inspiring to younger students and let them keep their dreams alive.

Research studies

After the years in Lund, I was employed at the hospital in Hässleholm, where I lived with my family. It was extremely valuable to work for a few years at a small hospital in the beginning of my clinical career, since you have to take on a great deal of responsibility on your own. These years, which were filled with practical work night and day in the Emergency Department and on the wards, gave me a broad clinical experience that I still can lean on, both when I am doing clinical work and when I educate younger colleagues. The importance of practical experience with "hands on" work can never be stressed enough. However, as I was a curious person I wanted to proceed with research. Hässleholm was situated several miles from Lund University, and scientific work was more difficult to practice in the country-side. Luckily, one of my friends who also lived in Hässleholm, married a surgeon and associate professor who worked in Lund, named Jan

Axelson. He studied growth effects on the pancreas in rat models. In fact, I was not the least bit interested in what he did, but I knew that this was the only path available to me towards scientific work in Lund. So, I accepted his offer to be his PhD student. Later on, Ingemar Ihse joined as co-supervisor.

These two men were very good supervisors for me, they believed in me and encouraged me in all ways. They were able to accept and handle my low self-confidence; their skillful and gentle handling of me was crucial for my progress. After studying for a while, my interest in the research field grew stronger, and I was struck. The more you know about something, the more interesting it becomes. One piece of advice to younger people is: go ahead when there is an opportunity, do not hesitate. It is better to get on the wrong train than to never dare to get on board. You can always change trains at a later station if it turns out to be the wrong direction, but the worst thing to do is to not grab opportunities and not move ahead.

After a couple of years, the hospital in Hässleholm wanted to exchange me with a colleague in Lund for one year. It was tough for me as my son was only one year old, but I didn´t dare to say no. Although it involved long commutes twice a day, these journeys gave me one hour on the train on my own in each direction every day, and I thus had time to finalise my thesis on the train before my second boy arrived. This was invaluable. At that point in time, it was not possible for me to work on my thesis at ordinary times during the day.

After my PhD, I was really disappointed as it did not give me a higher status or any new roles at the clinic where I worked full time. I felt invisible and unconfirmed. I was the only woman with children who was employed at the clinic. Apart from me, there were two women without children. Several working teams were initiated, but only men were selected for those tasks. After the initial disappointment, I decided to make the best of the situation. As no extra tasks were given to me, I was able to use all my spare time after finishing my routine tasks to contact important people via phone calls, fax and so on. I was also able to spend some time in the library going through the literature. Thus, at the same time as my male colleagues were working with various development teams for the clinic, I was merited as an associate professor. I used every minute, every quarter, to make small steps ahead; a job well begun is half done... With two small children at home, I was busy also during my spare time. For example, I decided to look at two glasses in

the microscope every evening. After two months, 120 glasses had been counted. Small steps are better than no steps at all.

One crucial point after my PhD examination was that a letter from Tegger´s foundation unexpectedly arrived in my mail box. I was invited to apply for a newly instituted foundation for young, female researchers who had recently obtained their PhD. In Hässleholm, I would never have found this foundation if it had not been actively sent to me. I applied for a grant and received 200 000 kr. This gave me the opportunity to pay for costs at the laboratory, and I could stay in the research group. This grant was an absolute necessity for continued research, and thereby for my further career. My scientific journey would probably have ended there without this grant, which legitimated my place in the group. A couple of students started to perform experiments, but they gave up and moved to other places in the country. I was like a cleaning lady who compiled all the results and wrote manuscripts. Thus, all results were published and I was able to live away from Lund and still be an active researcher.

Working at the University Hospital

When I came to the university hospital for specialist training in Gastroenterology, I was already an associate professor in medicine. Two things happened to me in Malmö that were invaluable for my continued career.

Firstly, my boss Marek Wroblewski noticed me, and for the first time in my life, I had a boss who gave me time and stimulation for my research. He tried to make things easier for me in different, small areas. I was allowed to spend one of my 8 working-hours on my commute, which took 3 hours a day. Furthermore, he bought me a laptop so I could work on my train journeys. This was considered extremely generous, which is why I was not allowed to tell anyone about it. As that waas 15 years ago now, it is fine. When my family and I discussed moving closer to Malmö, he really encouraged the move. Sometimes he paid for my clinical research studies, as he considered them a part of ordinary health care. There were many small things he did for me, which together made me to be able to work hard and focus year after year.

Secondly, Göran Sundkvist, professor of Endocrinology, called me and invited me to his research group. He taught me a lot of things. He did not only teach me strictly scientific things. He also taught me which of my personal characteristics which were good, and which of my personal characteristics I had to develop further, or train to reduce, in order to obtain the best results. When he learned that I had received grants for research time, he gave me results from several studies performed, which no one had had time to compile into a manuscript. I wrote the manuscripts and improved some of the studies by adding further examinations. His face and eyes shone like a child on Christmas Morning when new ideas were presented to him.

Both Marek and Göran died the same autumn, and I felt like it was impossible to go on without my defence lawyers. But Åke Nilsson, professor of Gastroenterology said to me half a year later when we met at a dinner: "A person like you Bodil, always gets themselves up again and carries on". So I had to get up once again and carry on.

Conclusion

One intelligent person told me some years ago that it is most often the small details, rather than the great lines and directions, that determine your life and point in a specific direction. What I have found to be enormously important are role models; positive people giving energy, inspiration, and pleasure. Furthermore, it is important to seize the opportunities, and not hesitate to walk in when the door is open.

When I re-read what I first wrote, I was able to recognise that my story consisted of a long road of important meetings with individuals who had made strong impressions on me, and putted me forward from one step to another step. One key issue is to have some people who believe in you and facilitate the everyday work.

Another key issue is that practical realities have to be considered. A promising young person must be committed and must be able to quit some of their routine tasks that prevent them from developing their chosen paths. It is damaging for society and for the individual if all people have to do all things. All people have the same value, but this means that all people should

do what they are most suited to, not that all people should do exactly the same things all the time. Good secretaries and administrators must support and facilitate routine chores.

Furthermore, life must be separated into different periods. During some periods, you have to prioritise clinical work, during some periods you have to prioritise education, and in some periods you have to prioritise scientific work. Some periods should be more intense and some periods should be less intense.

And remember, it is not enough to have intelligence; you must have many other traits as well. Courage, curiosity, and hunger are extremely important. You must have the ability to plan long-term. You must be able to realise that some hard things just have to be done before you can achieve success. It is not always fun; some periods are really tough. And remember, every person has a limit they cannot pass.

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Chapter 8
How to become a professor? What others don´t tell you

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Biosketch

Inger Kristensson Hallström, is a paediatric nurse with a Doctorate Degree in Medical Science, (Paediatric Nursing) from Lund University (LU); her thesis is entitled: Parental participation in paediatric surgical care – clinical, ethical and economic considerations. She conducted her post-doc between 1999 and 2000 at the Department of Medical Ethics, Faculty of Medicine, LU. In 2008, she became the first professor in Paediatric nursing in Sweden and she is currently appointed as professor at the Faculty of Medicine, LU and since 2014, professor II at Bergen University College. She has been the main supervisor for 19 PhD and licentiate degrees. She is currently the main supervisor for 8 PhD students.

Since 2003, Inger has been the research leader for the Child, Family & Reproductive Health research group. She was appointed vice Head of Department of Health Sciences, Faculty of Medicine, LU 2005- 2007 and Head of Department 2007-2013. In 2002 she planned and founded the first ever one-year specialisation course in paediatric care for nurses at LU. She is currently the coordinator of the research programme Family support and Child Centered Care for vulnerable children – knowledge development and translation to care service, a six-year 18 million SEK project, funded by FORTE, the Swedish Research Council for Health, Working life and Welfare. She is also the coordinator of Lund University Child Centred Care – LUC3. She has written 165 peer-reviewed national and international publications. Her main research areas are (I) Promoting early childhood health, supporting parents and vulnerable and challenged children; (II) Hospital-based Home Care for children with long-term illness, and (III) Knowledge development and its translation into implementation of Child Centred Care.

Where it all began

I was born in Vittsjö, a small village in the north of Skåne. When I was growing up in the 1960s, the village was vibrant and had 900 inhabitants, 27 shops and ten hotels. The train stopped frequently and many tourists from Lund and Malmö visited the hotels during summer and at Easter and Christmas. I was raised in a family with my mother, father and two older brothers. My grandmother and grandfather lived in the house next-door and my grandfather owned the neighbouring sawmill. Since childhood, two strong women have inspired me: my mother and my grandmother. My mother Ebba was born in a rural area, which she did not like. In 1939 when she was 19 years old, she went to live with her aunt in Stockholm to study and work. Her father refused to take her by horse and carriage to the bus stop that was 5 km away and so she walked the long way alone, with her heavy suitcase. My mother and father were always working, except on Sundays. Still I remember that one of them was always at home. This was one of my father's strongest beliefs – whilst the children are small, one of the parents should be at home. From early on my mother taught me two things that have been of great importance to me: working is fun, and you can do more than one thing at the same time.

As a child I was constantly reading, just like my grandmother. This reminded my father of her - his mother whom he loved deeply. In 1904 at the age of 19, my grandmother Karin and one of her sisters went to the US to work. After one year they sailed back to Sweden and my grandmother became engaged to my grandfather. She had promised the family in the US where she had worked that she would come back, and so she returned to the States and worked for another year. She then returned to Vittsjö, was married and had eight children, of which six survived – my father was the eldest. My grandparents thought education was important, especially for girls – something quite unusual in non-academic homes in the 1940s.

When I was 14, my father became very ill and spent long periods in hospital – I suppose this influenced me to become a nurse. When I received my nursing licence from the South Swedish School of Nursing in Lund in 1977, I had plans to start working in primary care – I could see myself cycling peacefully to the homes of those in need of care – but I ended up on the busy acute-care neurosurgical ward at the University Hospital in Lund.

After completing the paediatric care specialization in 1984, I started at the paediatric surgical ward where I stayed until 1998. Meanwhile, I had three children over six years. After our daughter was born in 1986, I stayed at home for three years – I often say this was one of my best decisions ever. After this period I started research preparation education while working nightshift. This was not an easy task at that time. Whenever I asked for advice, I was told that it was of no use – as a nurse with an education from the 1970s, it was not possible for me to study for a doctorate. However, after finishing the paediatric course on the medical programme in Lund, in 1994 I was able to start my doctorate in the Faculty of Medicine. After four years, while working part-time as head nurse, I defended my thesis as the first paediatric nurse at the Faculty of Medicine at Lund University.

Ten tips for the journey

Whilst they have received criticism in the past, nursing and health sciences are now credible academic disciplines. The steps towards becoming a professor are clear and there is no difference between nursing and any other discipline: you need a list of publications of international standing; grant awards that are credible to the discipline; a recognised programme of research; excellent teaching experience, such as from teaching a course of your own; clear leadership; to have supervised PhD students to completion; and recognition across the discipline (1).

After a number of discussions with colleagues across Europe, we reached the conclusion that there were a number of common factors we found crucial to our careers. These did not appear on our CVs, nevertheless we found them to be important parts of our journey to becoming professors (1). While I still agree with the factors we came up with in our discussions, I will present them below. However, based on my personal experience I have modified them and prioritised them slightly differently to how my colleagues and I prioritised them six years ago.

Don't put life on hold – people are more important than things

There is no doubt that the path to becoming a professor requires hard work. Even if you have your heart set on becoming a professor, do not sideline the rest of your life for this. Never forget that family, children and friends are more important than the job. If you put the rest of your life on hold, you will have too many regrets later on. For me it was an advantage that I didn't start the doctoral education until my youngest child was eight. My first research grant paid for her afterschool childcare, which meant I could have one day/week off work to write.

Don't let the job take over your life. Academic life is flexible and it is important to take advantage of this – it is easy to get trapped in rigid work schedules at your office. Perhaps this should not be recommended, but I have spent afternoons and evenings with my family and then nights working whilst the rest of the family were sleeping. My experiences of working nightshifts for nine years have taught me that I need less sleep than expected.

Enjoy the journey

Crucial components of your career include enjoying the journey and loving the job (although not more than anything else). There will of course be moments when you feel snowed under, hate the high-pressure of research deadlines, deal with frustrating students and feel generally overwhelmed. These moments should however be momentary and not be the normality of your work life. You will feel much more comfortable if you take pleasure in the writing, the opportunity to network with like-minded people, the travelling, the many opportunities and the academic freedom and ideas. If you are not comfortable and think that your workload is too great, or not as fun as you expected it to be, stop and re-think. If you don´t find the work you are doing to be mostly fun, then maybe this career is not for you.

When I received my PhD, I applied for – and received – a four-year fully-funded research assistant position in elderly care. At first I was very happy but gradually I realised that this wasn't for me. It was a really good position with an established professor and research team focusing elderly care.

Despite the fact that the position would probably have boosted my career, I declined. I do not think I realised what I was doing when I turned down a four-year fully-financed research post – I was too inexperienced. However, I felt very strongly that it was not right for me. Instead I continued researching the needs of children and parents during the child's hospitalisation and their involvement in decisions on care and treatment. This was an area that I was truly interested in, had the knowledge about and clinical experience in, and an area where I could engage with other colleagues. I wrote 17 articles in four years and became an associate professor in Paediatric Nursing less than four years after my PhD. I loved every minute of the combination of clinical work, care development, data collection, article writing and supervision of students. I have never regretted my decision.

Write, write, write!

Writing is probably the most important aspect of academic career advancement. Publications in the high-impact journals of your specialist field are equally important, but papers, editorials, letters, books and book chapters are also valuable.

It is not easy to find time for writing. How often do we tell each other that we have no time to write? However, there is no excuse for not writing, and there are no shortcuts. Hopefully, most often you will find it easy, your co-authors will do what they are supposed to do and on time. But there will be just as many times when you find it very difficult and discover that the writing takes much more time than you ever expected and your co-authors respond too late. One of my former doctoral students used a strategy to successfully deal with co-authors who didn't reply. When she wanted comments from the co-authors, she provided them with a fixed deadline. If the co-authors had not sent their comments by this date, she would assume that they had no comments to make. She always got her comments before the deadline.

You will never, ever find enough time for writing. So what can you do? Well, it is imperative to try to accept things as they are and to find strategies to deal with them. Don't wait for the inspiration – it might never come.

Plan to write for one hour per day. Instead of watching television or going on social media, use the time for writing. Ten years ago when our old television broke, we never replaced it. I don't miss it. If you write 100 words a day you will have 3000 words in a month, and perhaps an article written.

Clinical credibility

For me, clinical credibility within the field is not just helpful, but crucial. My PhD was deeply grounded in my clinical work – *Parental participation in paediatric surgical care – clinical, ethical and economic considerations.* The idea came to me from numerous night shifts, where parents left the care and responsibility for their beloved children up to the professionals, without question. The encouragement, constructive criticism and never-failing support from my two supervisors, associate professors Gerhard Malmfors (in paediatric surgery) and Gunnel Elander (in paediatric nursing) during and after my PhD studies was based on their great clinical and scientific competence.

All my research questions after the PhD have been grounded in clinical relevance. It has meant that I always have found willing research partners in clinical areas – several are the paediatricians that have been co-supervisors for my PhD students. It has been easy to find participants, and they have been happy to be asked and involved. Not only does being a nurse include a responsibility to the profession, more importantly – perhaps – there is a responsibility to the general public who may receive better health care thanks to the efforts we make. We need to continue to strive to make academic clinical careers meaningful, as our colleagues in medicine have done so successfully.

Say yes more often than no

Generally, it is easier to say "yes" than "no" and most often, saying "yes" pays off. But saying yes has its price; the workload increases and you don't have time for much of the task or see its benefits. There are boring meetings, which should really be for someone else, preparing reports that few people

will read and so on. However, by saying yes, you show others that you are willing to try new things and your responsiveness will be noted.

Saying "yes" and trying new things will guide you towards new areas; you gain knowledge, information and experience that would otherwise have been unfamiliar. You show that you are reliable and you will obtain knowledge and experience that will be useful for future leadership roles. Be polite and answer when asked – and answer quickly, or at least give a quick holding reply. You know how important it is – receiving quick answers to your questions will ease your workload and make your day easier. Most of us find people who never answer emails or telephone calls most frustrating and eventually, those people stop being asked. When the asking stops, the opportunities and benefits will stop. Additionally – and this may sound old fashioned – do not expect or ask for someone else to do the job for you. It takes just as long to ask someone to write letters, make appointments and travel arrangements and even photocopy, as it does for you to do it yourself. So even if you are extremely busy, it might be faster and more efficient to do it yourself. I hesitated writing that. After working part-time as Head of Department for eight years… I guess if I had been offered help at that time I would have said, "yes please!"

Work and prioritise

Sometimes working from eight until five will fit in with your schedule, but during times when deadlines need to be met, a grant application has to be completed, an article re-submitted, doctoral students and co-authors are waiting for your immediate comments, it might not. Do not spend time talking about how busy you are – it only takes time from other more important things. Too much huffing and puffing about your workload tells others that it is no use asking you to participate in different projects or to involve you in different kinds of committees or networks that might have benefitted your career. Not delivering on tasks, however minor they might seem, will have the same effect and you will only become frustrated and stressed.

Professor emerita Bodil Jönsson once wrote about four kinds of tasks, not only in academic work but applicable in academic work as well: the easy and

fun, the easy and boring, the difficult and fun and the difficult and boring (2), see figure 1. She believes that we often tend to get stuck in the two upper squares, finding ourselves occupied with easy tasks and having difficulty finding time to start the difficult and demanding parts of our work. She suggests that we don't need to prepare before we start with the easy parts, we can jump right in, as we are familiar with them. There is also a certain pressure from ourselves and from others to start with the easy and boring parts and then concentrate on more difficult parts. Nevertheless, we need time for concentration, preparation and drafting our thoughts to be able to start with the difficult parts – and this takes time. Time that we sometimes cannot find or do not concentrate on. If we only do the easy things it is difficult to think in new ways, learn, feel, illuminate, be ahead of others, and show and develop the potential we have. Remember that the task often seems more difficult before you have started and that there may be a long period of time before you are able to start a difficult task, while you are thinking. But don't take too long – otherwise you'll miss the deadline.

Tabel 1
Main areas of tasks according to Bodil Jönsson (1) p. 38

Easy and fun	Easy and boring
Difficult and fun	Difficult and boring

You are always on show

You will be remembered for what you do and have done from the very start – as the PhD student, as the new lecturer or research fellow you were – and most people have a good memory. There's an old saying: "be careful who you hurt on your way up, as you will meet them again on the way down" (1, p. 692). It might be true, but just as important is that you are willing to contribute not only to your personal career but also show that you are willing to contribute to the corporate agenda. This means to say yes more often than no. It will be noticed as indicative of leadership.

If your door is always closed this sends a strong message to others – do not contact me, I am too busy or important to be contacted directly. By letting a secretary take care of your appointments and contacts, you distance yourself

from your colleagues and make it clear that you don't want to get in touch with them. This is not a sympathetic way of treating colleagues. When working as Head of Department my door was always open unless I was in a meeting. I wanted my co-workers to know that I was there and that I could be reached. By doing so, I believe that many matters were raised and solved even before a problem arose. However, democratic leadership also involves the risk of more open criticism – that is one part of democracy. During my time as Head of Department of Health Sciences I had the honour and pleasure of working with Professor Bo Ahrén, the former Dean at the Faculty of Medicine. He was always available to answer questions and discuss challenges when problems appeared suddenly – this is good leadership.

Look to yourself

Few workplaces are as built upon competition as academia is. We continuously compete for grants, employment and to have our manuscripts published. It is easy to become jealous when looking at others, or those in other departments that always receive the grants – big or small – who you might think have done less than you. Try not to be jealous, you'll only be disappointed and keep yourself awake at night. Simply try to focus on yourself and remember that integrity is important.

Be humble, but realistic

When they graduate, some PhD students say that they are glad that it is over. However I believe that the PhD is the starting point where you begin developing a research programme, continuing with data collection and analyses and starting the research career. In your post-doctoral period, join an established professor and research team when possible. There is no time to lose and it is a good way to find opportunities for collaboration and further research. Nurses are often older than most other professionals when they receive their PhDs. This means that we have fewer years for a career and fewer years to make a difference, as research takes time. Be realistic about what you will, can, and have achieved. Nevertheless, do not underplay

your achievements – when you have done well, say so, let people know about your latest publications and grant achievements.

Don't become isolated – and don't give up

A research career can be lonely and it is easy to become isolated. When possible keep connected with colleagues and peers in your workplace, even if they do not work in the same research area as you. If possible, make an effort and see if you can connect with them and thereby increase your research capacity. We can help each other and assist our own research careers and the careers of our colleagues by inviting colleagues to be part of research projects and articles. This is not necessarily something we should always do, but we should definitely do it more often. This is much more common in some fields other than health. Attend conferences and present your work, use the possibilities provided by the internet and connect with colleagues and networks from outside your area.

Rejection and criticism are common, which makes the journey daunting. We all receive rejection for papers and grants. Use the feedback, comments and suggestions, then rewrite, and resubmit – over and over again if needed. Let a more senior colleague read your manuscripts and applications before submission. Find someone to talk to about your failures and – of course – your good news. Remember, during the years 2009-2013, 71 per cent of research grants from the Swedish Research Council were paid to men and 28 percent to women (3).

Conclusion

These ten tips have been compiled by four female professors with different research backgrounds and methods in the fields of nursing and midwifery. The tips offer different cultural perspectives from four EU countries and have no intention of replacing the standard CV content needed throughout academia (1). Even so, I hope that these ideas can help others.

The front page of the Swedish Research Council's newsletter Curie stated, "Portugal needs no gender quotas" (4). Two articles described how well

prepared research careers for women were in Portugal are. The fact sheet stated that 24% of the professors in Portugal were women. This is the same per cent as it is for female professors at Lund University. In recent years, ten professors at Lund University, all of whom male, were called to specific personal professor chairs. The female professors were commissioned with writing a book. We need to work harder to change the belief that men support men and women support men.

I will end with the words by the former US Secretary of State, Madeleine Albright, who once said, “I think it is important for women to help one another. I have a saying: There is a special place in hell for women who don't” (5). I believe this is valid for men as well. She also said “When people have the capacity to choose, they have the ability to change.”

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Chapter 9
Surviving in the jungle

By Cintia Bertacchi Uvo

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Biosketch

Cintia Bertacchi Uvo is a full professor at the Department of Water Resources Engineering. She has a Ph.D. in Water Resources Engineering from LTH (1998), a M.Sc. in Climatology from the National Space Research Institute, Brazil (1989) and a B.Sc. in meteorology from the University of São Paulo, Brazil (1983). Considering her broad background in meteorology, climatology and water resources engineering, her research focuses on the interactions of climate and surface hydrology in diverse time and space scales. Her expertise includes the development of data driven models for analysis and forecast of hydrological variables, based on climate conditions. Prof. Uvo has almost 30 years teaching experience in many countries. In the Nordic Countries, she has created, organized, coordinated and lectured in nine courses in graduation and under-graduation level; supervised three doctoral theses and 22 master theses.

She has a large international experience that comprises long term stay and collaboration with scientific institutions in thirteen countries worldwide."

It was not the easiest part of my life travelling half way around the world and starting a PhD student life in a country I had never been to before, where I did not know anyone and had never heard the language before. What makes a person successful in such situation? I believe it is the desire to win and the lack of expectations. Take your experiences as they come and use them to grow up and mature.

In 1995, when I arrived in Sweden as a PhD student, with a nine months scholarship from the Swedish Institute, I had 15 years' experience working as a teacher for the Brazilian Air Force and in R&D at a research institute in Brazil. I had already faced all kinds of difficulties related to being a woman in a male working environment and being a career woman following a working path designed for men to succeed. In this sense, it was a relief to come to Sweden where the structures are designed to support your work and make your life flow smoothly. It was so simple just working, with no other worries other than completing the PhD program.

The 15-year work experience I had provided me with very strong foundations to stand on as a PhD student. It had made me an independent working person with a large enough contact network that included very experienced researchers that my supervisor was one of them. My independence and previous experience was much appreciated by my supervisor, which meant I could develop my PhD following my way of thinking, benefiting of my connections, and complemented by his support and guidance.

This working freedom stimulated me and created the perfect situation for my development. A further 13 months of scholarship from SI were enough for me to finish my research and defend my thesis on the "Influence of Sea Surface Temperature on Rainfall and Runoff in North-Eastern South America: Analysis and Modeling".

And life as a researcher begins

By the time I defended my PhD, a temporary position had opened up at the Department of Water Resources Engineering – LTH, the same department I had been in as PhD student. I applied to it and continued working on my now former supervisor's projects for two years, until I got a postdoc position

at the International Research Institute for Climate and Society, Earth Institute, Columbia University, New York. This position was a result of my contact network and helped me to improve this network further while working at a cutting edge institute.

It wasn't until my return to Lund after the postdoc that the reality of working at a Swedish university, in general, and at LTH in particular, struck me. I had a temporary position, was expected to support my own salary with project money, and I had no contact network in Sweden. The Swedish lifestyle, the non-hierarchic nature of my department and the research freedom I had experienced had won me over and here was where I wanted to be. There was nothing else to do other than accept the reality and face the challenge.

At this point, I had defined the research I would like to develop. I wanted to better understand the interactions between climate and hydrology to be able to develop seasonal hydrological forecasts. The problem was finding support for it. No research money was available for such a research field so there was no point in pursuing it at that time. I had to compromise between what the research financers were interested in and my own research interest.

Several dozens of applications were sent without any success in Sweden. I tried all kinds of support institutions but my lack of a local network was a serious drawback. My decision was then to work on developing a Swedish contact network while taking the international opportunities I had.

Those were years of much teaching and travelling: meetings, conferences, visits, seminars, courses and at the same time, several months spent working abroad. My family was with me when possible, but on many occasions they were left at home in Sweden while I spent several months somewhere else in the world. There was no other option. I had to be able to pass this first glass ceiling if I wanted to pursue a scientific career in Sweden.

My strategy in Sweden was to meet researchers and to teach mostly PhD students. Meeting researchers to get to know them and let them get to know my work and me. Teaching PhD students is very rewarding in the sense that it is almost like exchanging research experiences. The courses are taught to small groups and the contact with the students is much closer. Moreover, they also become part of your contact network.

Despite all the travelling and teaching, or maybe because of it, I was able to continue my career at LTH. Interestingly, my research became much more diversified. Looking back at my publications from those 10 years or so, I see that the thing they have in common is mostly the methodology used: statistics. The subject to which statistical methods were applied varies a great deal, just as much as my co-authors. I can also see that to some extent I kept working on my main research interest, the interaction between climate and hydrology.

My associate professorship was achieved in 2003 and in 2007, full professorship and with it, I finally got a permanent position at LTH! I still do not think I was able to break this first glass ceiling. I prefer to say that I went around it by going all around the world.

I really became established within Swedish academia when I participated in the gender integrated leadership program AKKA at LU. During the course of this program, I met people (both men and women) who I could use as role models and I learned much about how Lund University and LTH work. The knowledge of the structure of LTH allowed me to see opportunities to influence by participating in committees and boards. I became a member of the LTH Academic Appointments Board 1 and later I was elected representative of lecturers on the LTH board of directors.

Starting a contact network for Swedish female professors in the field of water was a great step. We met few times in person but it was enough to get us connected. It became much simpler to just contact them when I needed a partner for a project.

Participating in review panels for research councils provided me with a better understanding about how the process of selection of applications works in Sweden. The better I understood the process, the better I was able to write research applications. It is simply a case of changing roles. When writing an application I think about what kind of information I would like to have if I were to review this application and how I would like to have this information given to me. Rare are the cases where being a woman as the main applicant is an advantage. Either it does not matter or it is a disadvantage. In my most recent cases, I did not hesitate to use a man as the first name on my application, sometimes my own PhD student. If that was the price to pay to get that support/money, or to participate in a network, I was prepared to pay it.

It took me about 15 years until I was able to completely finance my research and finally develop the seasonal hydrological forecast I had dreamed of when I finished my postdoc. It was a long and tortuous road, but it brought me extensive knowledge.

I see my research field today as a broad one that includes many aspects of the relationship between climate and hydrology, including different time scales and the social and economic consequences of it. The PhD students I supervise research very different core fields that might vary from dynamic modelling of the connections between hydrology and atmosphere to the behaviour of daphnia in the Bolivian lakes due to explosion to UV radiation, but they all have some component of climate and hydrology on their research. This variety of subjects among my PhD students comes also from my interest in working with researchers from different areas, as they are a fantastic source of new knowledge. The co-supervisors of my PhD students very often come from other areas of research that connect to climate and hydrology. The more diverse the area, the more interesting the project becomes. If I have developed expertise in anything over all these years, I believe it is in connecting people from different areas on a common research project.

I believe my career experience is not unique, but I feel I have experience to share and I do so with my PhD students. I am very open to discussing with them career possibilities and choices in life. Mentorship is also a very efficient way of sharing experiences. I have been a mentor to young female researchers with a foreign background at LTH and I do hope I can help them to survive within the big jungle that the academic world has become. Maybe my background from the country of the Amazon forest can help me with that.

Chapter 10
On a logistical mission

By Marianne Jahre

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Biosketch

Marianne Jahre is professor of logistics at Lund University and BI Norwegian Business School. From 2014 to 2015 she was a visiting researcher at the MIT Humanitarian Response Lab.

Professor Jahre received her PhD in logistics in 1995 at Chalmers University of Technology, where she is now a docent, and was a visiting professor at the Université de la Méditerranée in France for many years. She has co-edited and co-authored several books and published articles in the Journal of Operations Management, International Journal of Physical Distribubtion & Logistics Management, International Journal of Logistics: Research and Applications, and International Journal of Logistics Management, among others. She won the Outstanding Paper Award at the Emerald Literati Network Awards for Excellence 2009.

She has been working on disaster relief logistics research and teaching since 2007, heading projects and supervising students in cooperation with the International Federation of Red Cross and Red Crescent Societies, the United Nations High Commissioner for Refugees, UNFPA, UNICEF, the Norwegian Red Cross, and the Norwegian Refugee Council. She is an international delegate for the Norwegian Red Cross. In 2009, she carried out a project on health supply chains in Uganda for UNICEF, and in 2014 she was in the Philippines studying the response after Typhoon Yolanda.

Introduction – the start of an academic career

This is something of a personal story about being on a logistics mission. Logistics, also called operations and supply chain management, is a relatively small and young academic discipline among other, more 'high-status' subjects such as strategy and finance (in my business school position) and physics and other 'real sciences' in the Faculty of Engineering in Lund. I am rather broad in my approach, do not follow the mainstream, and cooperate with many different people from both engineering and business. Thus, I inhabit the interesting, but also challenging space between disciplines. Three keywords for this chapter, and for my academic vision overall, could be 'interaction', 'international', and 'impact'.

I have been studying and working with logistics research and teaching for 30 years. My interest has never been of a typical business school/management type, such as improving profits for individual companies. The subjects that were highly popular among many of my fellow students in the mid-1980s, such as finance, economics and marketing, never really spoke to me. But when BI's professor of logistics at the time, Gøran Persson, spoke in one of the first lectures about how logistics thinking could improve distribution of food to starving Russians where they had warehouses full of corn, but no means of getting it out to those who needed it, logistics became my subject and has remained so ever since. More on this later, I would first like to define two important concepts in the title of this paper.

Logistics? Mission?

Logistics is '….the art of managing the flow of material from source to user' [1, p.2]. The term was originally coined in the military as 'The practical art of moving armies…' [2]. It originates from the French word 'loger', meaning to lodge or quarter. Hence, rather than bore you with the hundreds of definitions provided in the literature and highly academic debates about what logistics is and is not, we can plainly say that logistics is about moving stuff, it developed as a concept in the early 1800 in the military, and it has French (or even Latin) origins.

A mission is 'an organisation of missionaries ... sent to carry out religious work'; 'a special assignment that is given to a person or group'; and/or a

'deputation: a group of representatives or delegates' [3]. Accordingly, a mission is connected with beliefs, assignment in terms of 'telling the world', and working in a group. I do think I recognise these three points regarding my own work; research/teaching is about 'telling the world' about specific beliefs/assumptions. To me, it is also very much about working with others, nowadays typically called interaction. Logistics is not normally carried out by individuals, either in practice or in research.

Logistics is an interesting field in that it connects engineering and management and requires both quantitative and qualitative abilities and tools, as illustrated in this anecdote told in Cambridge, Massachusetts. 'A young man, obviously a college student, is unloading his purchases at a supermarket checkout counter. A large sign above the counter indicates that it is for customers with 20 items or less, but the young man has at least 20. The clerk tells him, "You either go to MIT and you can't read, or you go to Harvard and you can't count".' [4, p.XVII]. The point is that logistics is about strategy, management, and organisation, as well as optimisation and 'number–crunching'. It refers to Harvard (business) and MIT (engineering), which is also typical for logistics as a field being taught at both types of universities.

Doing a PhD

I did not plan to pursue an academic career. Indeed, I did not even know what a PhD was when, as a young research assistant, I was asked whether I would like to continue to study after graduation. Students seem much more conscious of this choice today. Nonetheless, I started and I do not think it was coincidental that my field of interest became recycling and environmental logistics. This subject was rather new in the early 1990s, and highly political, so there was not much research to start from and it took quite a while to identify what was to be the theme of my thesis. Doing a Phd was by no means an easy job – not for me, at least – and I was close to giving up quite a few times.

Eventually I managed to formulate my research question, which was about whether we should sort our waste or whether centralised facilities should do the sorting. I answered it by flying (!) around the globe collecting data from landfills and waste collection systems. I also ended up going on a mission …

telling people about how these big sorting systems resulted in much transport (and pollution) without making sure that the things collected were in fact used to produce new things and thereby reduce environmental damage. Publications resulting from this work were a combination of newspaper and scientific articles and I gladly admit I ended up with a larger focus on the first … which of course was not good for my academic merit.

Naturally, part of the missioning involved developing courses in environmental logistics and supervising students. One of the crazier things I did was to stand in front of the University at Carl Johans gate in Oslo city centre one Saturday morning shouting out rhetorical questions on recycling. People passed by to do their shopping, children rode bicycles, and a few disciples (my family) listened to what I wanted to 'tell the world'.

Becoming an academic

After I defended my thesis [5], I continued to work on reverse logistics for a while, followed by a period with much more focus on publications and building up a research team and a larger group of staff working on logistics at BI. The time for working alone was over for good. I promised myself when I finished my PhD that I would never work alone on a project again.

A few examples can illustrate this part of the mission. One study I did was to look at the work and publications of Nordic researchers in logistics; I concluded that there was lack of quality and international orientation among Nordic logistics researchers [6]. I presented the results at the Annual Conference for Nordic Logistics Researchers, telling all my senior colleagues that they did not engage in the scientific community outside the small Nordic pond and did not report their case studies in adequate scientific ways. They were not happy about this and probably saw me as very naïve and arrogant, but I survived! On a side note, the Nordic logistics research network is now among the most influential in Europe in terms of publications and has also been acknowledged as an important research group in the United States. Another thing I did was talk to PhD students about my own failures in getting papers published [7].

Building relationships

Most of the second phase in my research career related to another mission: introducing the industrial network approach (IMP) in logistics research and starting to ask the logistics research community questions about the core of our discipline.

Based on studies of how research and teaching developed in the Nordic countries in relation to the rest of the world, I have taught 'Northern Lights of Logistics' in France for the past seven years, with a basis in a couple of publications [8]. The background for this was the funding and establishment of the NETLOG project in 2001, together with Professor Håkan Håkansson and others from IMP [9]. Working with what was, to some extent, a very different approach from logistics made it necessary to become more conscious about assumptions and basic concepts in our own field; that is, requiring us to go to the core. Our starting point was that logistics has a theoretical core but it is not explicit in most textbooks and articles and is therefore 'forgotten' by researchers, practitioners, and students. Our claim was that this poses a problem because it leads to:

- Logistics as a discipline being criticised (within the discipline as well as from the 'outside') for not having any theoretical core, for not being a theory.
- Researchers as well as practitioners not being aware of the 'lenses' they are wearing.
- Uncritical use and mix of different theoretical approaches in order to 'theorise' logistics without an awareness of different theoretical models and assumptions.
- A lack of consciousness among students and teachers about the fundamentals of logistics.

The mission involved telling logisticians about the importance of business relationships and the industrial network community about the importance of logistics.

Iconoclasting

With the NETLOG project came a range of studies that dug further into previous logistics research, posing fundamental questions about whether supply chain integration produces better performance. A colleague calls this 'iconoclasting', which sounds a lot more academic than the approach my colleague and I took, which was a reference to the Hans Christian Andersen story about the emperor's new clothes.

Basically, what we did here was a tedious task – analysing more than 2000 articles published between 2000–2006 – and we found that there was not much research into how supply chain integration impacts on performance. Real supply chain integration had not been studied much, and little real performance had been measured [10]. Essentially, all of the studies cited each other and the 'substantial empirical evidence' to argue that supply chain integration produces better results for company profits, customer service. Although this was something that 'everyone' knew – we had different findings! The cord around the emperor's vital parts was not my idea, but my French Colleague insisted upon it when we used it in a presentation at a conference.

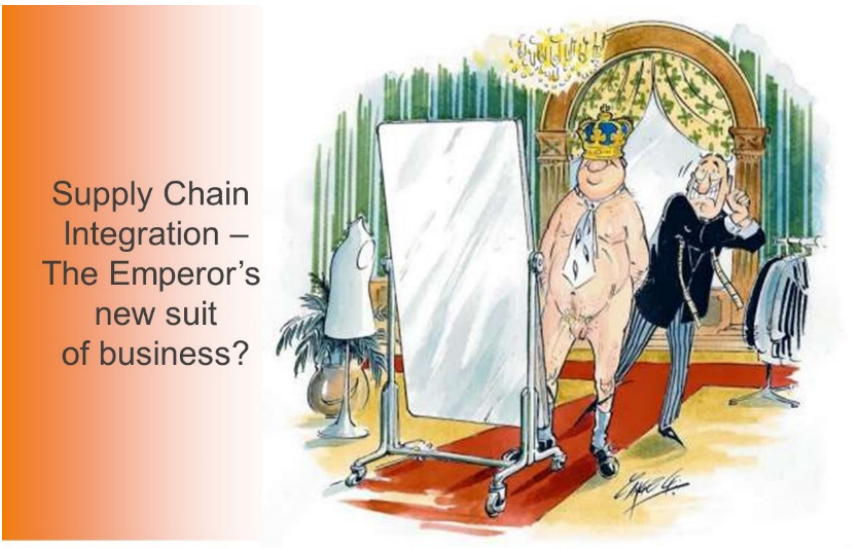

Figure 1

I am slowly approaching the end of my mission so far, and the third phase of my research, which feels to me more like the start. I am actually coming back to my original interest in using logistics in settings for less fortunate people, with the purpose of providing support to what to me are 'the most important logistics'.

The most important logistics

Here I will focus on giving a brief glimpse into what we, together with our partners in academia and practice, can contribute [11].

Humanitarian logistics is about preparedness (preparing for disaster including developing competence and pre-positioning of stocks), response (during a disaster), and recovery (getting back to normal state). In the aftermath of a disaster, the typical assistance required to stabilise a community after search and rescue is temporary shelter, health support, water and sanitation, food, and cooking equipment.

Figure 2.

The potential for improving humanitarian logistics is immense. Logistics account for up to 60–80 percent of the total cost and there is much room for improvement [12]. A lack of funding, particularly for preparedness, makes it difficult for agencies to plan and run good operations. A commonly quoted statistic is that each dollar spent on preparedness activities is worth 7 dollars in response. We as individuals, and governments, all want to give when disasters like the Asian Tsunami and Haiti occur. However, the humanitarian community needs more money for preparedness in order to be more efficient in their response, and they need more money for recovery in order to help people get back to normal.

Research through Engaged Scholarship

We work closely with organisations such as the International Federation of Red Cross and Red Crescent Societies and the United Nations High Commissioner for Refugees. Working with practice is demanding (one project was postponed for six months because half the project team was responding to the Haiti Earthquake, while data collection in another case was greatly delayed because of Haiti and then because of the Nepal Earthquake). The context is different, as is the terminology, and there are ways of workings that are quite different from academia. It takes a lot of time and investments and funding to get and to use the opportunities to conduct studies. Engaged Scholarship is an approach based on the challenge of how/whether research is used in practice, that problems and solutions should be developed in cooperation between research and practice, and that more trust needs to develop between the two [18].

Before I finish with some reflections, I wish to make some comments about the practical experiences I have had so far. In 2009, when I was on sabbatical from my teaching (and had planned to write papers and start a book project), I had the opportunity to participate in a project for UNICEF Uganda to study the distribution of drugs to health centres in the poorest part of Uganda, the Karamoja region bordering Sudan and Kenya [19]. The project resulted in a number of solutions being suggested to help more people in Karamoja get the drugs they needed to treat killer diseases such as malaria and cholera. For me, academically, this project resulted in a very interesting teaching case and in an academic paper [20]. During the data

collection, we travelled more than 5,000 kilometres in a 4x4 land cruiser in 30-degree heat at 30 km/h, visiting 27 health centres spread across the region. The area in which we collected data was not secure, so all UN personnel had to wear bulletproof vest and helmets.

Engaged Scholarship is not about researchers becoming practitioners and practitioners becoming researchers; it is more about finding ways of working together to use the core competencies of each, complementing each other to produce good applied research. It's about taking the best from both worlds. Engaged scholarship is not easy and it requires investments from both sides. We speak different languages, use different terms for the same things, and the same terms for different things. Even just agreeing on what is included in disaster relief logistics is not obvious. Engaged scholarship is not an obvious and accepted research approach in management research. Plenty of my own colleagues believe that the only impact that matters is how many other researchers cite their scientific articles. It is simply not relevant for them whether their research comes into practical use. On the contrary – sometimes you understand from discussions that research that can be applied is not really scientific; they are only interested in theory and do not really care about the 'context'. For me, the context has always been important, and now more than ever.

Teaching through 'learning by doing'

Together with colleagues, I have developed a course in humanitarian logistics at Lund University [13]. Research and teaching in disaster relief logistics is a new and rapidly developing area, but there is a lack of cooperation between researchers and practice: '… there doesn't seem to be a strong dialogue between the sector and academia about things that could make a real difference' [14, p. 40]. There is little material available that demonstrates practical applications of theory. Theoretical modelling, pure narratives, and reviews characterise much of the literature [15]. The gap is a common challenge in (logistics) management [16], and also in the teaching of the subject.

Many traditional engineering courses make use of laboratories, while logistics education tries to solve it by taking students on factory and company visits. In disaster relief, some humanitarian organisations prepare

selected staff members for deployment by organising training courses that create a 'real' context by simulating real situations. Considering different learning styles [17] and the value of learning by doing, an ideal solution would be to deploy the students to an operation so they can experience the aftermaths of a real disaster. Obviously, this is not realistic, and some kind of laboratory is necessary. The ideal laboratory would be for students to participate in the training courses organised by humanitarian organisations. Unfortunately, cost and resource restrictions do not allow for this. Hence, to get as close as possible to 'reality' in this course, we developed a range of teaching tools and methodologies. The course is designed and facilitated by academics and practitioners and makes intensive use of group exercises, video, current developments and cases, discussions and desk-top simulations, supported by guest lecturers presenting field cases to teach students how theory is applied in practice.

Concluding remarks

The *mission* discussed in this paper describes what I have been spending my working time on over the past 30 years and how I plan to continue to work. It can be summarised as:

- Telling logisticians about logistics and posing critical questions
- Telling logisticians about the humanitarian world (students and colleagues)
- Telling humanitarians (donors, non-logisticians) about logistics

By working so closely with practice, logistics researchers conduct research that is not always valued as such. By shifting from context to context and between different theoretical concepts and approaches, I have not been streamlining my academic career and I will continue to not do it the 'mainstream' way.

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Chapter 11
The Challenges for Gender Equality in Academia

By Alice Marshall

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Biosketch

Alice Marshall is a gender equality and diversity expert who specializes in gender equality in the IT industry. She has given lectures and workshops at many international companies, such as HP, Oracle and Tieto, as well as at universities such as KTH, Chalmers and Linné University. She has also been involved in many high-level, strategic gender equality projects for municipalities and cities in Sweden, such as Strängnäs municipality and Malmö city, as well as given trainings for the Swedish military. Alice has a Master's degree in Political Science from Stockholm University. Her Master's thesis topic focused on best practices for gender equality at IT companies in Sweden. Her strong background in political economy, statistics and economics is also highly useful for situation analysis and in-depth organizational mapping, as well as for trainings on the science of unconscious bias. Alice is from the US, and has also lived and worked in Sweden, China, France and Canada.

Abstract/Short Intro

This chapter reviews the current challenges for gender equality in academia by examining gender representation in Professor positions at three levels of academia: at universities in Sweden; at Lund University as a whole; and at two faculties at Lund University. Furthermore, it reviews current actions taken to improve gender equality at Lund University and in Sweden as a whole, and suggests further actions to improve gender equality at both of those levels.

The Challenges for Gender Equality in Academia

In the past 150 years, Sweden has greatly increased gender equality in academia. However, distinct challenges remain, the most obvious of which is the gender imbalance among Professors at Swedish universities. The Swedish government has expressed frustration at the lack of progress toward gender balance at Swedish universities, where the percentage of women Professors has only risen from 17% in 2004 to 25% in 2015. (Universitetskanslersämbetet 2015) This is also a problem in the EU, where the representation among Professors is 20% women and 80% men. (Curie 2013).

Lund University (also referred to here as LU), is the largest employer amongst the universities in Sweden and has faced similar challenges. According to LU's 2014 Annual Report, gender representation at the Professor levels has been stagnant since 2012, when out of 708 Professors, 23% were women and 77% were men. In 2014, that percentage was the exact same, although the total number of Professors dropped to 700. Men continue to be promoted to Professor posts at a higher rate than women, and at a pace that does not match the gender representation of the position directly below Professor, which in most cases is a Lecturer post.

The statistics for two specific faculties at Lund University, the Faculty of Engineering, and the Faculty of Medicine, confirm that there is a disparity between the gender representation at the Professor and Lecturer levels. At the Faculty of Engineering, shown below in Diagram 1, the gender representation in Professor positions does not match that of Lecturer

positions. The same phenomenon can be observed at Lund's Faculty of Medicine in Diagram 2. While the Faculty of Medicine has made great progress in its gender representation over the past ten years, it has continued promoting more men than women to Professor positions every year since 2006, with the exception of 2008 (Jämställdhetsstatistik, Medicinska fakulteten, 2015).

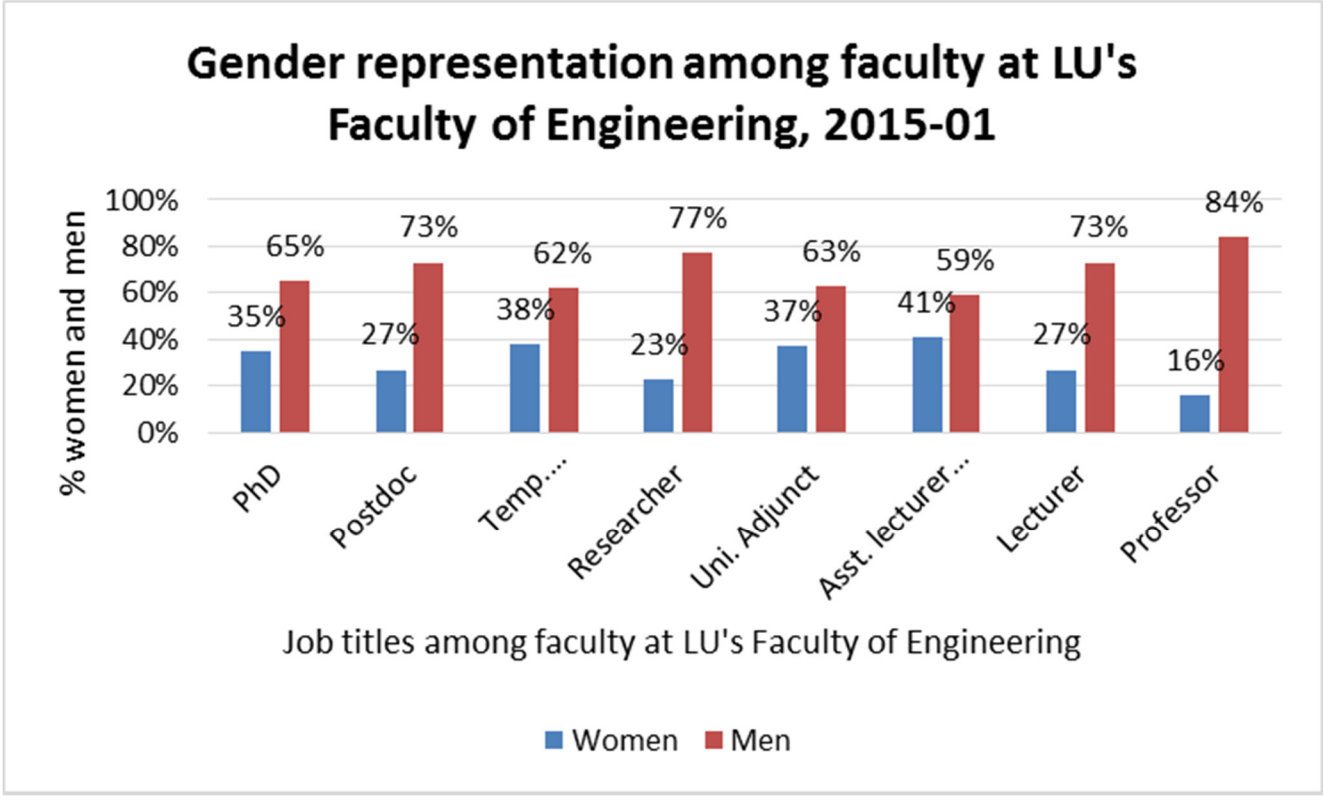
Gender representation among faculty at LU's Faculty of Engineering, 2015-01
% women and men
100%
80%
60%
40%
20%
0%
35%
65%
27%
73%
38%
62%
23%
77%
37%
63%
41%
59%
27%
73%
16%
84%
PhD
Postdoc
Temp....
Researcher
Uni. Adjunct
Asst. lecturer...
Lecturer
Professor
Job titles among faculty at LU's Faculty of Engineering
Women
Men

Figure 1

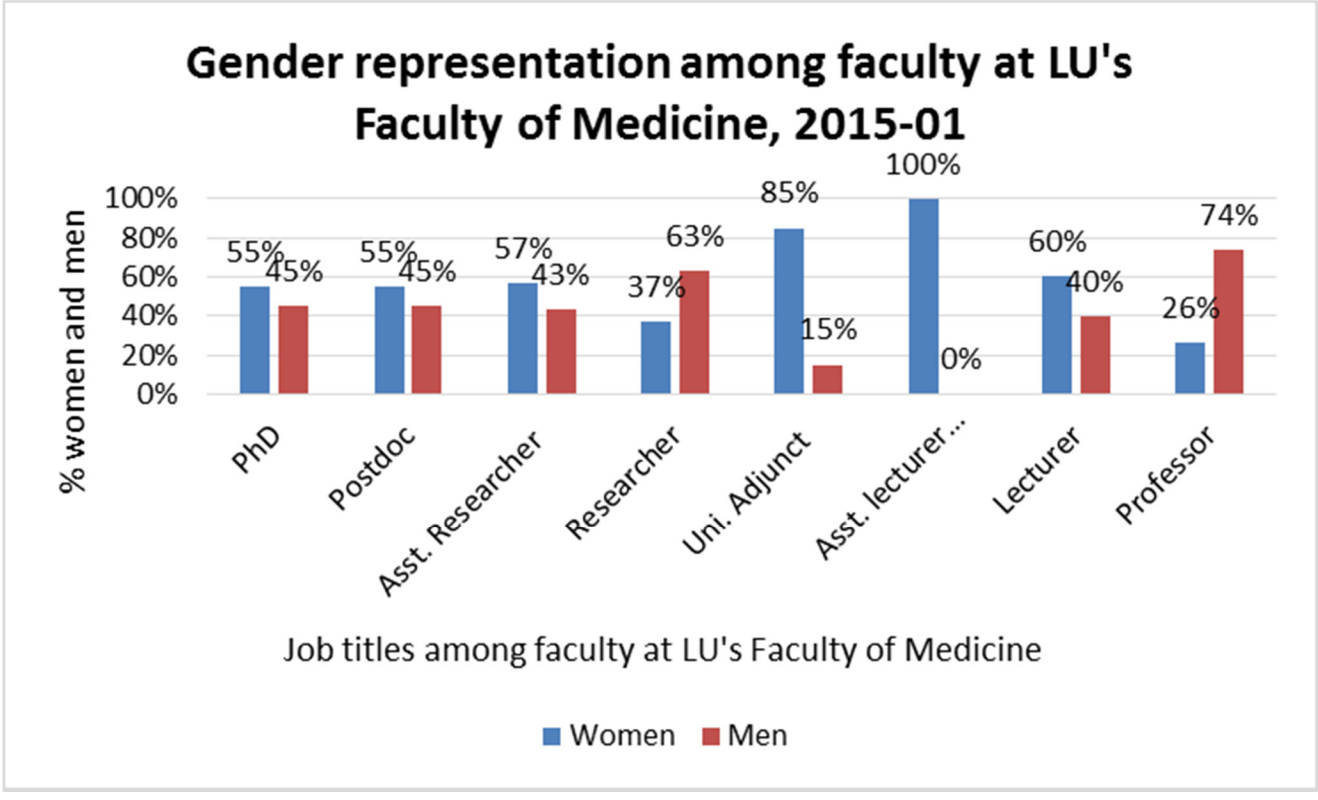
Gender representation among faculty at LU's Faculty of Medicine, 2015-01
% women and men
100%
80%
60%
40%
20%
0%
55%
45%
55%
45%
57%
43%
37%
63%
85%
15%
100%
0%
60%
40%
26%
74%
PhD
Postdoc
Asst. Researcher
Researcher
Uni. Adjunct
Asst. lecturer ...
Lecturer
Professor
Job titles among faculty at LU's Faculty of Medicine
Women
Men

Figure 2

This problematic disparity between the gender representation at the Lecturer and Professor levels at these two faculties is an indication that the promotions processes for Professor positions may not be solely merit-based; unconscious gender bias has likely been a factor. Research has found that unconscious gender bias can directly affect the recruitment process. For example, it can impact wording for letters of recommendation, the language used to describe a candidate, salaries, the likelihood of hiring a certain candidate, and evaluation of a candidate's competence, based solely on gender. (Moss-Racusin 2012; Trix and Psenka 2003; Schmander 2007).

There are other structural matters in the various faculties' promotions processes that might also be causing the skewed representation among Professors. Examples of these could be a lack of transparency in the promotion process; pre-selecting candidates and then tailoring the recruitment ad to the candidate's profile; networks-based promotions, if the networks are male-dominated; lack of gender balance among final candidates; lack of gender balance on selection panels, and a lack of training on bias awareness for the individuals on selection committees.

Current Activities to Improve Gender Equality in Academia

In order to improve the gender representation at the Professor levels at universities in Sweden, the Swedish government has set specific goals for each university regarding the representation of women and men in Professor promotions or recruitments. For example, the government set a goal that from 2012-2015, 34% of all newly hired Professors at Lund University should be women, a goal that LU has met overall. (Lund University annual report 2014).

However, by aggregating the data for all faculties at the university, LU, and indeed all universities in Sweden, can easily create the appearance of progress when in fact progress may be quite good at certain faculties and quite poor at others. Macro-level goals and statistics can therefore disguise an absence of progress at specific faculties.

In addition to setting gender equality goals for each university, the Swedish government has annually budgeted five million SEK per year from 2016 to 2019 into its 2016 budget proposition to support gender equality at universities (The Swedish government, 2015).

Lund University has also been proactive in trying to improve gender equality, and has for example created a leadership group for gender equality and equal opportunity work, as well as a Guest Professor post in order to improve gender representation. Moreover, LU has budgeted 4 million SEK for its faculties to take action in order to improve gender representation among Professors.

Moving Forward and Improving Gender Representation in Professor Positions

For the reasons described above, the Swedish government should require reporting from each faculty, perhaps even from each department, regarding how many women and men have been promoted or recruited to Professor positions on an annual basis. The government's goals for each university should also be broken down per faculty, and be accompanied by a list of consequences for failure to comply, at a faculty level. Access to specific funding, for instance, could be tied to could be tied to mandatory improvements or actions to improve gender representation, for example.

One of the main challenges for Lund University in this area is that the university is decentralized.

Lund University as a central organization seems to lack enforcement mechanisms to require compliance from its different faculties. This means that the leadership of each faculty can independently decide how to prioritize the university's gender equality work. At the moment, it appears as though the leadership of the different faculties have varying levels of engagement with gender equality. This requires action from the Swedish government to both motivate each faculty's leadership and hold them accountable to the government's equality goals. Students and faculty members also have an active role in holding faculty leadership accountable to equality goals.

Lund University's leadership can contribute to improved gender representation at the Professor levels by keeping this issue on the faculty leaderships' agenda. Suggestions include listing faculty statistics regarding promotions and recruiting for Professors in its annual report and bringing this issue up at key meetings and events with faculty leadership.

Creating real change in the gender representation among university Professors requires that the Swedish government holds the leadership of every faculty accountable to the government's gender equality goals, and that these goals are accompanied with a list of consequences for failure to comply. Otherwise, we will continue to have more of the same – painfully slow progress.

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Chapter 12
Faculty of Medicine

By Faculty of Medicine Equality Board

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Abstract/Short intro

The Faculty of Medicine offers a wealth of research, postgraduate and undergraduate education programmes in medicine, nursing and health. The Faculty encompasses 2 800 full-time students enrolled in eight degree programmes (65% women), as well as 1 200 graduate students (57% women) and 1 800 employees. In order to answer questions related to clinical practice, health sciences and society, the Faculty conducts a wide range of experimental and applied research. The current percentage of female professors is 27%.

Faculty of Medicine

Women's rights were one of the major social issues in Sweden during the 1800s. The archaic rules that applied for female inheritance rights and possibilities to participate in working life were being increasingly questioned. Lund University and the Faculty of Medicine was at that time a distinctly male-dominated world. It was in 1870 that women first had the opportunity to take a university entrance examination and thereby the right to pursue medical studies to gain a medical license. The first female medical student in Lund was Hedda Andersson. When Hedda Andersson was admitted to the University at the age of 19, she became the first female student at Lund University. The number of women studying medicine increased slowly during the first decade of the 1900s from 6 to 10%. After World War II, the percentage of women in the medical degree programme rose considerably

and nowadays 50% of medical students are women. New student groups entered the Faculty in the late 1970s when nursing and rehabilitation programmes were brought into the higher education system. This influx doubled the number of students at the Faculty. In later years, programmes in biomedicine and public health have been added. The percentage of women pursuing undergraduate and postgraduate studies at the Faculty is currently 65 % and 57% respectively (January 2015).

More than 80 years were to pass after Hedda Andersson's admission as a medical student before the Faculty had a female professor. This professor was Dora Jacobsohn, who was born in Berlin and emigrated to Sweden in 1934. Her groundbreaking research in endocrinology led to her receiving the title of professor from the King of Sweden in 1964. The second woman to become a professor at the Faculty was Inga Marie Nilsson, who received her title from the Medical Research Council in 1965. The increasing number of women studying undergraduate and postgraduate programmes since the 1960s has been a strong factor in more women pursuing academic careers and reaching the highest positions. However, there has only been a modest increase in the percentage of female professors, which currently stands at 27%. Unclear recruitment processes, different career conditions and the lack of role models are some of the suggested reasons to explain why so few women become professors. To increase the proportion of women in higher positions, the Faculty has for many years worked towards changing the imbalance between the genders. An action plan drawn up annually by the Faculty Board presents specific measures, such as mentor programmes, guest professors of the under-represented gender, clarification of career paths within higher education and the foundation of a career centre with an employed career coach. A good balance between men and women on all boards and committees is strived for, and a woman became Dean of the Faculty for the first time in 2012. However, considerably more pervasive efforts and measures are needed before the Faculty of Medicine can present itself as a "gender equal faculty".

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Chapter 13
Equal opportunities

By LTH Equality Board

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The work on gender equality, equal opportunities and diversity at LTH is part of efforts to ensure that our faculty is a well-functioning workplace and study environment. Gender equality is a prerequisite for providing equal opportunities for all staff and students in their studies, career opportunities and personal development.

Within the faculty there is a "Gender Equality, Equal Opportunities and Diversity" board that is responsible for development and implementation of measures to be taken with regard to equal opportunities, equal treatment and diversity issues.

In accordance with Lund University's core values, LTH defends human dignity and freedom, the equal value of all human beings, and human rights. Diversity, gender equality and equal opportunities among staff and students help to ensure job satisfaction and high quality in the faculty's activities (Faculty of Engineering Strategic Plan 2012–2016).

The vision for LTH with regard to gender equality, equal opportunities and diversity can be explained in short as follows. LTH is envisioned as a faculty where:

- the most even gender balance possible among students and different categories of staff has been achieved;
- no discrimination/harassment on the grounds outlined in the Discrimination Act occurs; and

- a gender perspective and gender-aware teaching is integrated into all courses at LTH.

Presently our efforts are focused on defining goals for the work on these issues. It is important that goals are not set too high and that the objectives can be achieved within a reasonable timeframe. In order to define the objectives a number of workshops will take place during 2016. These workshops will include people in leading positions, for instance the dean, the heads of departments, as well as students.

A follow-up scheme for all efforts has been adopted in order to clarify whether the efforts have had any impact or not.

Chapter 14
There are women in science and nature, but are they in Science and Nature?

By Johanna Stadmark & Daniel J. Conley

Johanna Stadmark (on the left) and Daniel Conley (on the right)

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Biosketch

Johanna Stadmark is a researcher at the Department of Geology, Lund University. Her main research interests are within the areas of environmental problems that pose threats on our ecosystems; research has included studies on eutrophication and other environmental stressors in the Baltic Sea, acidification of lakes and streams, greenhouse gas production in nutrient removal ponds and nitrogen leaching from forested areas. Johanna is in the steering group of WINGS since 2008. The study presented in this chapter is something that we felt important to show the editors of leading science journals as well as our colleagues and students – it is a piece in the puzzle to reach gender parity within academia.

Daniel Conley is a Professor of Biogeochemistry at the Department of Geology, Lund University. His main research interests are how nutrients such as nitrogen, phosphorus and silica are released from terrestrial environments, cycled and eventually transported to aquatic environments. He studies how nutrients affect eutrophication in the receiving water body, especially the lack of oxygen in the Baltic Sea from the degradation of organic material produced by overenrichment from nutrients. Daniel was in the steering group of WINGS (2008-2012) and remains both an active participant and supporter of WINGS activities.

Background

Great strides have been made in gender equality over the last decades. Today women have access to the same facilities and learned societies as men. In many countries the proportion of women to men earning undergraduate degrees in science and technology are approximately equal (National Science Foundation Scientists and Engineers Statistical Data System (SESTAT); http://www.nsf.gov/statistics/wmpd/tables.cfm). Programs are in place to address the disparity in the proportion of women in science and to ensure equality at all levels. However, there are still areas where gender bias occurs.

It is well known that the proportion of women decreases drastically between the Ph.D. and the professor level in most fields. Most men perceive that the "leaky pipeline" is the current cause for gender equality and it will solve itself

with time as the proportion of women grows at the lower levels1, although experience during the last decades does not support this view [2]. Women faculty earn less, are promoted less frequently to senior academic ranks, and publish less frequently than their male counterparts [3].

The occurrence of gender bias has not been considered previously in a systematic fashion in some areas. One of these is inclusion of women scientists at the highest levels, for example, as plenary speakers or in high-profile invitation-only workshops. We have examined two prominent, high-impact journals (Nature and Science) that have sections that are entirely, or to a large degree, contributions by invited authors only. The articles are published with the aim of placing recently published findings into a wider perspective.

The consequences

The consequences are that women are not as visible as men and are not provided the same opportunities for career advancement, which contribute to the loss of many women in traditional academic tracks or from science all together. This loss of women in sciences constitutes a brain drain for society and a lack of role models for younger women in science1. An invitation as a keynote speaker at a large conference or a publication in a high-impact journal, makes an excellent contribution to your CV. Therefore, the opportunity to write invitation-only articles is of great importance to one's science career.

While gender parity in keynote speakers is achieved at most large science conferences, the gender ratio of the invited speakers at smaller conferences can be highly skewed, with few women appearing as an invited speaker. Gender parity can be achieved if a policy is implemented that strives for gender parity.

Fixing the problem

In 2011 Ceci and Williams[4] proposed there is no sex discrimination in hiring practices, reviewing of journal articles, or in decisions regarding funding. They argue that additional root causes contribute to the low

proportion of women in science due to differences in resources, abilities, and lifestyle choices [4]. Culture-based norms and prejudices regarding the role of women in society can create pervasive intangible barriers that hinder the inclusion of women [5]. Others have recognized there are structural barriers within academia slowing the advancement of women into higher levels, including the lack of mentors and role models and the lack of leadership training [6]. Strategies and guidelines have been developed to reduce this loss of women from science [7]. The paper by Ceci and Williams motivated us to conduct a study on who is invited to write in the high-impact journals.

Our study

The data

We examined the gender distribution of authors of Perspectives in Science and News & Views in *Nature* during 2010 and 2011. Contributions written by the editors were disregarded. The gender of the authors of 605 articles in Perspectives and 635 articles in News & Views was determined.

The gender of the authors was determined through internet searches on the affiliation addresses and research subjects. If no photos were found, or if the gender was not obvious to us, we contacted the authors and asked. The gender of two of the authors in Perspectives, and two of the authors in News & Views are still unidentified. About one-half of the articles were written by full professors, but the first author could also be from a lower rank in the academic hierarchy (Ph.D. Student, Post-doc, Assistant Professor, or Associate Professor) or from outside of academia.

We divided the articles into three broad areas, according to Nature's division: 1) Biological and Chemical Sciences (including Medicine); 2) Physical Sciences; and 3) Earth and Environmental Sciences. The majority of articles within the Perspectives and News & Views sections were in the fields of Biological and Chemical Sciences.

We found the lowest percentage of women authors in Earth and Environmental Sciences 3.8% in News & Views in *Nature* and 5.4% in

Perspectives in *Science*, with the highest up to 19% in Biological and Chemical Sciences from Perspectives in *Science* (Figure 1).

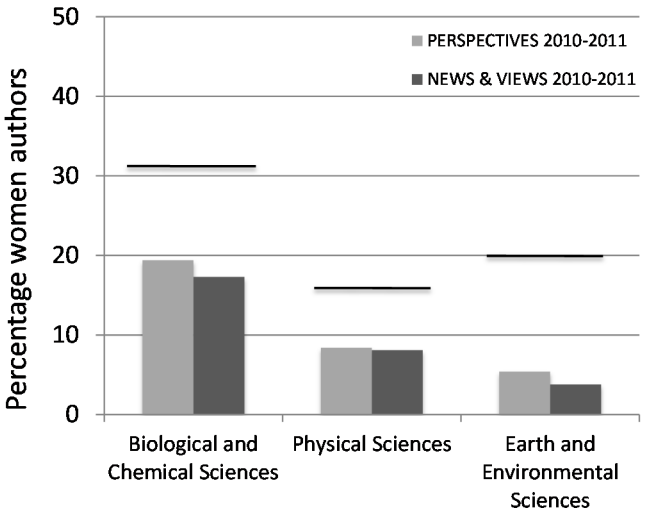

Figure 1
The percentages of all authors that are women (2010-2011). The black lines indicate the proportions of women scientists within the respective fields. (U.S. in Science & Engineering (S&E) occupations, TABLE 9-5. Employed scientists and engineers, by occupation, highest degree level, and sex: 2006.) The total number of articles for Biological and Chemical Sciences, Physical Sciences and Earth and Environmental Sciences were 371/350, 138/180, 66/93 for Perspectives and News & Views, respectively. Other areas of research (social sciences, psychology etc., data not shown) had 30 and 12 articles in the respective journals.

Not all fields of science are equivalent in current gender representation. Therefore, we compared the proportion of women authors with the proportion of women scientists employed in the U.S. in Science & Engineering (S&E) occupations [8] (see Figure 1). The U.S. figures were used as an approximation. When corrected for the proportion of women in different fields the highest proportion of women as authors occurred in Biological and Chemical Sciences, where a woman was chosen on average half (54% resp 61%) as often as a man (Figure 1).

We submitted our findings to *Nature* and after some discussions back and forth we got the overall findings published in a Correspondence [9].

What followed?

Shortly after our publication Moss-Racusin et al. (2012) [10] published a paper where Faculty employed professors were asked to evaluate a resumé of a student for a laboratory technician job (pre enrolment in a PhD-program). The students had identical letters and CVs but each professor had to evaluate either a "John" or a "Jennifer" and suggest the possibilities that they would hire the person, at what salary, and how much mentoring they would give the person. The results turned out to be that both female and male professors would spend more time mentoring John, as well as give him a higher salary and more likely employ him.

Later that autumn Nature had an editorial called Nature's sexism [11], referring to our study as well as to the one by Moss-Racusin et al. Nature took a stand to improve and started a process to reflect on who they asked to write invitation-only pieces and who they chose to make portraits of in their issues. The editors at Nature took positive steps to improve how they reflect women's contributions to science.

A year after their editorial statement, we assembled the data from the last year and checked the gender ratios of the invited authors to News & Views and also to the Perspectives. To our delight there was a small improvement. We sent a thank you note? to Nature and they published an editoral on "Gender progress (?)" [12] and stated that in some areas they had succeeded to improve, in others, they still needed to do some more work.

Adding one more year of data (2013-2014) we found that the improvement we saw in the end of 2013 is still valid and that gender parity is now achieved in two of the areas (Physical Sciences and the Earth and Environmental Sciences). Although the statistics for Biological and Chemical Sciences, where there are significant numbers of women in these positions, they are still disappointingly low (Figure 2). It is significant to note that the pool of the number of women within Biological and Chemical Sciences increased from 32% to 37%, while the pools in the other two categories remained the same over these years (2006 data compared to 2013 data [8], the underlying data to the black lines in Figures 1 and 2).

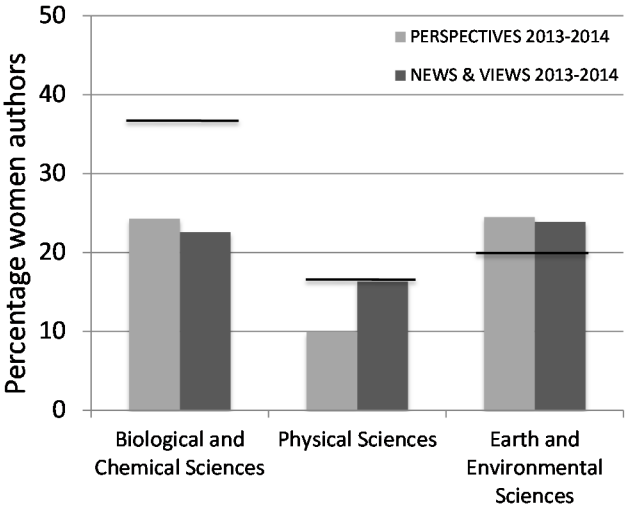

Figure 2
The percentages of all authors that are women (2013-2014). The black lines indicate the proportion of women scientists within the field. (U.S. in Science & Engineering (S&E) occupations, TABLE 9-5. Employed scientists and engineers, by occupation, highest degree level, and sex: 2013.) The total number of articles for Biological and Chemical Sciences, Physical Sciences and Earth and Environmental Sciences were 387/350, 142/170, 94/92 for Perspectives and News & Views, respectively.

Summary

Why did gender bias occur in invitation-only activities, such as we observed in these special sections of Nature and Science? The possibility for women to publish in general is as high as the possibility for male scientists, and discrimination has not been observed in the peer review process [4]. In addition, many of the section editors for Nature and Science are women, so we can exclude the possibility that it is only men making the decisions. Moss-Racusin et al. [10] also found that men and women are more or less equally biased. For the most part women are no longer actively excluded in science only because of their gender; therefore we posit that it is unintentional bias. Bias can be remedied by looking beyond the boundaries of our in the present networks, regardless if we are editors, conference organizers, or researchers in general.

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