Development of a network for women in academic leadership positions: What lessons can be learned from the ETH Women Professors Forum?

Interview with Ursula Keller by Andrea Eichholzer

Abstract

In this interview, Ursula Keller, Professor of Physics at ETH Zurich and Director of the Swiss National Center of Competence in Research in Molecular Ultrafast Science and Technology (NCCR MUST), tells Andrea Eichholzer what motivated her to establish the ETH Women Professors Forum (WPF) and describes her experience of developing this network. In the natural sciences, the proportion of women in leadership roles remains very low, and in some disciplines – for example, in physics at ETH – it has actually decreased over the past twenty years. This trend, and her conviction that women should play a stronger part in shaping a discipline as significant for the future as physics, were the key factors behind Keller's initiative. As Director of NCCR MUST, she received an explicit mandate, and resources, to address gender equality issues. The establishment of the ETH WPF marked the first step in efforts to counter structural barriers and improve corporate governance here. The Forum's Scientific Lunch events, for example, provide opportunities for networking and sharing of good practice, which can particularly benefit young, early-career professors for example. The WPF also serves as a sounding board for the Executive Board of ETH. Professor Keller also suggests that approaches need to be tailored to specific disciplines and departments, as many have different challenges and frameworks.

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Andrea Eichholzer: *Professor Keller, you're a successful scientist with a remarkable track record as a researcher – starting as the youngest and first female Professor of Physics at ETH Zurich, now as Director of NCCR MUST*[1] *and as Head of an Institute in this male domain. The ETH Women Professors Forum (WPF) was founded, on your initiative, in 2011. What prompted you to set up this network?*

Ursula Keller: I was appointed as one of the first female professors at ETH Zurich under ETH President Jakob Nüesch in the 1990s. When I was recruited, I was working at AT&T's Bell Labs in the US.

Initially, the proportion of women professors in the Physics Department was more than ten percent – for example in 2006 it was 3 out of 21 professorships. Unfortunately, this percentage did not improve any further. In fact, it wasn't so bad by international standards at that time, especially considering that the proportion of female students was about ten percent. Currently, there are 2 women professors, both over fifty years old, out of of 28 full or associated tenured professorships in total – so that amounts to a substantial step backwards, even though the number of female graduate students in physics at ETH has continued to increase. This is a key motivation for me to bring change. Over the past twenty years, it's become quite clear that specific initiatives are needed to make lasting changes in this area. My personal experiences and observations are also confirmed by many social science studies. In my opinion, progress will only occur if we deliberately institute changes, establish a more favorable framework, and create win-win situations for all parties.

What role did personal milestones or key experiences play in your own development?

In my career, I've had to overcome a lot of unnecessary barriers encountered as a woman in a male-dominated discipline. Many women with a leadership role in a comparable environment will understand what I'm talking about. Because of these barriers, we're constantly losing skilled, motivated and excellent women – the "leaky pipe" issue. But in every system, there are survivors – I'm one of the rare ones in my discipline. My view is that, as a principle, we cannot just leave research in physics up to men. Science and technology shape our daily lives, and physics is a discipline that opens new possibilities and opportunities for the future. Both women and men should play a part in shaping this future – and women and men are capable of doing so. If we expand the talent pool with women, then the average performance and innovation potential are also substantially increased.

[1] Swiss National Center of Competence in Research in Molecular Ultrafast Science and Technology. Further information: http://www.snf.ch/en/researchinFocus/nccr/Pages/default.aspx (September 5, 2016).

For this initiative, my own experience was certainly formative, but I don't wish to focus on that. Apart from two periods of maternity leave, I have always worked a hundred percent. Parenting responsibilities were shared equally with my husband. Researchers have to reach certain milestones by a certain age, to stay competitive in academia. That means a successful career as a woman professor is not really compatible with part-time work, particularly if the majority of your male colleagues work full-time.

Many of my male colleagues could do more to better understand what we as women are confronted with. I wanted to give one of them *Lean In* – the book by Sheryl Sandberg[2] – as a present. His reaction was – "I don't want to be brainwashed"! . But for me it's important that we learn from the experience of successful women and create the conditions that empower more women to contribute their talents. I'm also convinced that a workplace culture which allows women to work successfully is better for all of us.

You started your career as a researcher in industry in the US. To what extent was that experience formative?

In my experience, awareness of these issues is still stronger in the US.

ETH is in many ways comparable to the Massachusetts Institute of Technology. MIT had to contend with the same stereotypes and structural problems as ETH. But MIT took a different approach and much earlier (1999). To increase the proportion of women professors, three affirmative action initiatives were implemented. Each of these led to an increase in the share of women; in 2010, the proportion of women professors in physics was over twenty percent. For me, this positive trend demonstrates the effectiveness of these measures.

The question of quotas is a topic that often comes up in discussions on the proportion of women leaders – and is still a contentious issue here in Switzerland. Perhaps I was a "quota woman", but I'm still successful in my work. So why shouldn't gender be included as a selection criterion, as long as the excellence criteria are met? I've now come to the conclusion that quotas help to combat the underrepresentation of women. Similar views have been expressed by Beatrice Tschanz, ex-Head of Corporate Communications at Swissair: "I'd never would have wanted to be a 'quota woman'. Even so, I'm gradually coming around to the idea that a stimulus is required to get more women into leadership positions."[3]

MIT hasn't suffered because of the increased proportion of women. For me, how leadership positions are achieved is of secondary importance. Quotas are justified insofar as they compensate – at least partly – for women's lower level of informal networking compared with men. But performance is

[2] Sheryl Sandberg (2013), *Lean In: Women, Work, and the Will to Lead.* London, WH Allen.

[3] *Tages-Anzeiger*, March 6, 2016.

crucial. A higher proportion of women is needed to serve as role models, key for motivating younger women.

You've mentioned female role models. What mechanisms should be triggered by the increase in the proportion of women professors that the ETH WPF is aiming for?

Role models are highly important. It is essential for us in academia to be proactive and attract excellent female researchers for professorships via international recruitment. As a woman, in the minority, we have to adapt to the existing framework established by men. Extremely successful (male) professors can choose their co-workers from a large number of applicants. It is not surprising if they focus on young scientists with characteristics similar to themselves. That means they remain in their comfort zone and don't have to deal with potential issues they're not accustomed to. From a human perspective, that's all perfectly understandable, but I consider a good mixture of different personalities to be essential in a research team. Creativity and innovation within the team are better promoted by exposure to different attitudes and ways of thinking.

In addition, professors with a more "classical" traditional concept of women roles, often do not easily imagine women acting in non-service, leadership roles. Here, too, female role models can have positive effects.

Building a functioning network like the ETH WPF is resource-intensive – how did you manage to successfully develop it?

Being in a position like this – a woman professor in higher education – is an important prerequisite. Also crucial is a successful career, with excellent research – which I've always concentrated on. I recommend to first prove yourself as a scientist before engaging in gender equality issues as a woman in a male domain.

The Swiss National Science Foundation's National Centers of Competence in Research (NCCR) has provided an ideal framework for this. Over a period of twelve years, both scientific and outreach goals are targeted. As Director of one of these centers – NCCR MUST – I received resources specifically for outreach projects on gender equality. My dream would be to raise the proportion of women professors at ETH Zurich to at least thirty percent. I'm convinced that the existing ten percent of women professors can help to achieve this goal. With personnel support from an expert coordinator (full-time position), we brought together a group of successful and established women professors and agreed to found the ETH WPF. A key success factor here was the participation of dedicated women professors in the founding committee. However these efforts are not going to benefit us personally as senior women professors – on the contrary, they could actually be detrimental. Sheryl Sandberg was once asked whether she really wanted to jeopardize her career by publishing her book. When you've spent years building your career, successfully ignoring women's issues, and proved that you can also make it as a woman, then it's a reasonable question to ask. In the private sector, I would think twice about pursuing an initiative like this. But women professors with a secure, tenured position are well positioned to address these issues. And as professors with educational and career development

responsibilities, we even have a duty to do so. Since my career is well-established – and my children are adults now - it is a good time for me to address these issues. Some would postpone projects like this until they're no longer working. However, I'm convinced that when you've retired – given the duration of this kind of project – you're left with too little time and potentially too little influence.

Why is it that so few women aspire to a professorship in your own discipline, physics, or in another scientific discipline?

Leaky pipelines – the trend of women's participation dropping off from increasing career and leadership positions – can be found not only in physics, but to some degree in the most disciplines. In chemistry, for example, there are more female than male undergraduates. But at the professor level, you won't find significantly more women than in physics. From that one can conclude that the low proportion of women professors is not solely a question of student percantages. By making comparisons, we can identify the causes for these losses of skilled women over time. They include both structural barriers and inadequate corporate governance; male-oriented career patterns should to be modified to allow for women's needs. The issue is intensified by pervasive, largely subconscious stereotypes; terms like "leader" or "physics professorship" are still all too frequently spontaneously associated with men; the influence of these preconceptions can be reduced by awareness-raising. It is certainly not correct to conclude that women don't have the will. There are many motivated, excellent women who have given up their career. As I mentioned earlier, only a small percentage of women survive the system. The statistics from the various Departments of ETH Zurich provide rather striking examples of this phenomenon.

But the origins of this issue lie elsewhere: the more mathematical/abstract the discipline, the more women are deterred. The image and the culture are not exactly inviting for women. Physics is subconsciously associated with genius and brilliance – which tend to be spontaneously ascribed to men, even though they are essentially gender-neutral. I am still rather convinced that even if more women studied physics, the effect would be the same as in chemistry, a career as a woman professor would still be a rarity. Female physics undergraduates are generally so skilled and gifted that, in principle, a larger proportion could make it to the top.

Another obstacle is the notion that a career and a family are incompatible. In Swiss society, most women work part-time during the family years, or not at all. As mentioned, reduced working hours are difficult to combine with the demands which are now placed on an excellent female researcher with career aspirations.

You've mentioned structural barriers several times. Why, in your view, is the structural framework currently unfavorable?

The present structures have their origins in social conditions of the past; in other words, they've existed for quite some time. They were created by men; women played only a marginal role. This has given rise to an organizational climate shaped by men. Changing these structures requires a change in awareness; you have to first recognize the problem and then also have the will to tackle it. One of the recommendations given by the American Physical Society (APS) in its Best Practices for Female Faculty is: "Hire a critical mass of female faculty sufficient to impact the climate."[4] These guidelines can also be applied to Swiss higher education institutions. Currently with women holding less ten percent of physics professorships as mentioned before, we're a long way from "critical mass". According to a Catalyst Information Center study,[5] when the proportion of women reaches thirty percent, women are no longer "rare" and can behave naturally and help to shape the climate.

If an organization is open to change, it will welcome, support, and encourage a network initiated by women within the organization. It will also be interested in women's views on what is not working well and how things could be improved. Based on this feedback, the organization can specifically address any weaknesses.

Evidence shows a correlation between a higher proportion of women in leadership positions and the success of an organization, although a causal relationship can scarcely be demonstrated. My personal impression is that a higher proportion of women leads to changes in corporate governance. This in turn leads to a healthier, more productive, and more successful organization. The modified structures also make it possible for minorities to access leadership positions. In this connection, I'd already mentioned that minorities are often poorly networked, which makes it more difficult for them to access information – especially of an informal kind.

Good corporate governance addresses questions such as: What criteria are used to award funds? How are they allocated? Are the recipients disclosed? The emphasis is on accountability and transparency, rather than on personal relationships. Very often, unfortunately, there's an inner circle which is a bit "more equal than the others".

[4] https://www.aps.org/programs/women/reports/bestpractices/female-faculty.cfm (September 3, 2016).

[5] www.catalyst.org/knowledge/why-diversity-matters (September 3, 2016).

In the UK, some funding agencies assess individual universities' structures to see whether they meet certain conditions. If they are not compliant, no funding is awarded. Changes can be brought about very rapidly in that way.

In this country, it would also be desirable for criteria to incorporate structural elements. But they need to be effective and must not represent administrative barriers. For this reason, I think it would be advisable to define different approaches for different disciplines, as they each face challenges of different kinds.

Apart from your personal motivation, and choosing the right moment, to what extent is the success of the ETH WPF influenced by other factors, such as senior management?

An organization's senior management – its personality, motivation and goals – are crucial to our cause. If women's issues are not a priority, if the leadership lacks experience of or cannot relate personally to these issues, then there may well be a lack of understanding and awareness of our concerns. That's why I think it's important that an expert team such as the ETH WPF should provide advice and support on these questions.

The mandate defined for ETH Zurich by policymakers is also very relevant. At an earlier date, ETH Zurich was requested to increase the proportion of women professors to twelve percent, and then thirteen percent. Although this was a modest proportion (why not 30%?), the mandate at least indicates that the problem was recognized. But the question arises – what are the consequences of failing to meet these targets? If there are no consequences, mandates of this kind will not be taken seriously in the future.

You pointed out that individual disciplines are confronted with challenges of different kinds, calling for specifically tailored approaches. Could you give an example to illustrate that?

I personally contributed one idea to the Physics Department. With the current structures, the Department loses women, for example, after a pregnancy. The reason is that an ambitious, dedicated, successful professorship depends on the full commitment of the whole team to reach its challenging goals. If one member of the team becomes pregnant, that has a major influence on whether the defined goals can be achieved, as fewer resources are available overall. The group should consist of the best (female and male) researchers, who are in turn ambitious and enjoy their work. Implicitly, a postdoc is expected to work more than a hundred percent. A good postdoc pursuing his or her career goals will be totally committed. With the best will in the world and the greatest motivation, a postdoc who is pregnant cannot physically handle that kind of workload – as I can confirm from my own experience. If this change in the postdoc's circumstances is not recognized and addressed, she will find the work situation immensely stressful, and even more so because of the demands she places on herself because of the pressure to succeed. When she makes it through the first pregnancy, it does not get easier, and we also see further attrition with additional pregnancies. For a research group led by a professor, it could just be easier not to employ women at all and avoid these challenges.

The solution I proposed for this issue was first to discuss with the postdoc whether she wants to carry on. If so, then she can continue to work on full pay, and with more flexible working hours. For the project, she then recruits together with her professor an additional doctoral student, who is given some of her postdoc's work co-supervised by her. As a working mother, it's essential to delegate. Whatever is not part of the core responsibilities of her job is delegated. At the same time, for a successful future research career, the focus is clearly placed on measurable criteria such as research and publication activity. In addition, by jointly supervising the doctoral student, the postdoc gains valuable managerial experience. For the research group, this solution is positive because a skilled, motivated postdoc and an additional doctoral student are contributing to the project. Financially, this measure is feasible, since only minimal additional costs are required to generate the same output. The Physics Department can thus continue to employ suitably qualified women in accordance with their skills and expertise and prevent them from exchanging their career plans for the role of an overqualified assistant. By relieving the pressure specifically associated with maternity, both parties – and ultimately also society – are winners.

Could you explain in more detail what the ETH WPF does and how it sees its role? What benefits does the network provide?

We founded the ETH WPF as an independent association. We took the idea for the forum from Yale University, whose women faculty supported us in the early stages. We asked ETH Zurich for permission to use the ETH label for our association, and that was approved. We then formulated our vision, guidelines, etc. in writing.

The advantage of being organized as a network is that one professor does not dominate all the others. The network is based on the views of the majority, even if our views sometimes differ. The concerns of one person are seen as individual, which is not the case with a group. It's much more difficult to dismiss the concerns of an entire group, or to claim that all options have been exhausted. We believe our inputs are constructive suggestions for improvements, and hope it is not perceived as complaints!

We define the ETH WPF as an active network, which can also serve as a sounding board for the ETH Executive Board. Because the challenges are not the same in every ETH Department, we believe it makes sense to adopt a tailored approach to increasing the proportion of women. A rigid standard procedure is not helpful if it leads to administrative barriers and unnecessary regulations, is time-consuming, and does not create enough added value. With our groups's depth of experience, we are in a good position to help and advise the Executive Board on our concerns, for example in relation to decision criteria for appointment procedures.

One key concern, for example, is the composition of the committees. Younger women, in particular, should not be overburdened with this kind of committee work, as they need to concentrate on their research. Getting experienced women professors to serve on these committees is certainly preferable, although this option is limited by the low numbers of women available. Secondly, it's impossible to rule out stereotyped perceptions – in men or women – in appointment procedures. This kind of bias needs to be actively addressed, for example through self-testing, followed by training on mechanisms which have been shown scientifically to reinforce or reduce prejudices. Thirdly, in the selection procedure, consideration should be given specifically to female candidates, or the search may even – as in affirmative action – be restricted to female candidates, so as to actively increase the representation of women in the various disciplines. This has worked very well at MIT. Following the example of the University of Zurich, we also formulated recommendations for appointment procedures, which we were invited to present at a meeting of ETH Zurich's Executive Board.

We have also made the Scientific Lunch a key professional platform. In the first part of these one-hour lunchtime events, one member gives a presentation on her research interests and important career decisions. In the second part, people have a chance to talk informally with other women professors over a sandwich. Later, as they've seen or met each other at these lunches, which are held three times a semester, people find it easier to get in touch again. The main advantage of the lunches is the opportunity for networking: women obtain better access to important information. In the ETH WPF, we can offer each other advice and support. Sharing of knowledge and good practices are very important. One can find out, for example, where a certain idea has been implemented or a new process introduced. Ideas are less likely to be dismissed if one can show that they've been successfully implemented in another Department. In addition, senior professors in the ETH WPF can draw on their experience to support assistant professors.

Our network continues to grow: the ETH WPF has been expanded to include the EPF Lausanne. In addition, we've become a model for others: our women physics students recently set up their own association.

I've also benefited in a personal way from founding this network: in the various ETH Departments, women are often relatively isolated. Through the ETH WPF, I've met a lot of new female colleagues. Some of these acquaintanceships have developed into friendships. All these exchanges, personal contacts and relationships have been very rewarding for me personally. It is also just great to see all the exciting work being done by the women professors at ETH!

Why did you seize the initiative to improve the situation of women in the natural sciences? Which of your personal qualifications, characteristics and skills were decisive for this step?

I'm one of those people that are always being cited and mobilized globally as a role model in this area. When I look at other successful women, I see strong personalities with well-above-average abilities and exceptional, frustration-proof tenacity. In many cases, they were also fortunate enough to marry

men who take equally responsibility for parenting. If we were to apply these criteria – strong personality, above-average abilities, etc. – for male professors, then we'd have fewer male professors too. That means we're currently only using a subgroup of the female talent pool, which we could significantly enrich if the framework were made more favorable.

Interestingly, most women in positions similar to mine are well informed about these issues. That's because they've also realized that something's not quite right, and they've developed this awareness. By reading the literature, they can see that it's not just them: that helps you not to take personally remarks like "not nice enough", "too aggressive" or "too assertive", and to distance yourself. The survivors I mentioned earlier either have this ability or are fighters who just "stick to it".

Why did I personally seize the initiative? That's doubtless a result of my personal experience, my determination to improve the situation for the next generation of women, and the fact that in my role as Director of NCCR MUST I also had an explicit mandate and was given the necessary personnel resources to do so.

By developing the ETH WPF, you've already managed to achieve important goals. What additional measures and steps are required to go beyond these goals?

As a network, we're still at the development stage. Continued communication and persuasion efforts are needed so that it can become more established and embedded in ETH's structures. Our goal is that our concerns are heard and that we're seen as a sounding board. We'd like our input to generate real added value for the organization. And finally, our work also needs to be supported and recognized by senior management.

I really think ETH is a great university and is an incredible asset to the Swiss nation and the international community. To maintain and even better improve our international standing, I am quite certain that we would benefit by being viewed as leaders in the areas of promoting women in STEM fields. We are not there yet, but I am confident that ETH has the resources to make it happen. I just wish we could have started 20 years ago!

About the interviewee

Professor Ursula Keller, degree in Physics from ETH Zurich in 1984. Subsequently worked on optical bistability as a visiting researcher at Heriot-Watt University. Continued her education at Stanford University, earning her MSc in 1987 and her PhD in Applied Physics in 1989. Since March 1993, Professor at ETH Zurich, head of a research group, Director of a National Center of Competence in Research, and member of the SNSF Research Council. Ursula Keller's research in ultrafast laser physics has won prestigious awards and found numerous industrial applications.

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About the interviewer

Andrea Eichholzer, lic. phil., EMBA (Public Management), Bern University of Applied Sciences (BFH). Studied Sociology, Economics and Social Psychology at the Universities of Zurich and Lausanne. Since 2010, head of the Higher Education Center at the FHNW School of Social Work. Previously worked at the market and social research institute gfs-zürich (project worker), at the Zurich University Evaluation Office (researcher/project manager) and at the Federal Statistical Office (quality officer/service head).

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