



Gender Balance

A EuroScientist Special Issue – January 2016

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Introduction



Welcome to this Special Issue of EuroScientist on: Gender Balance!

Welcome to this special issue of EuroScientist focusing on Gender issues in research and academia.

We have asked the views of Nobel Laureates, who have an interesting perspective on women in science. You will also discover a wealth of opinions describing what remains to be done to resolve gender issues. Not only do we discuss ways of resolving conscious and unconscious gender bias, but we also look at issues related to how gender perspective affects the nature of research itself.

As for solutions, it appears that mentoring is one of the most helpful solution, beyond more interventionist approaches such as quota, which are controversial.

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May 2016 bring you exciting prospects!

The EuroScientist team.

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Editorial



Quota or no quota

By Sabine Louët

Gender imbalance is not a fatality, but could require a temporary balancing measure

What do politics and science have in common? They are no alien to controversy. Take for example, the use of quota for gender balancing. Politics has previously relied such quotas to improve the way political representation mirrors that of society it governs. Yet, suggestions that gender quota should be introduced in science to redress the imbalances between the number of women and men at the highest levels of academia, have led to controversy. Some believe the move lessens the merit of women who cross the highest echelons of the career ladder. Their only [selection criterion is excellence](#).

Experience in other sectors proves otherwise. Looking into the field of politics or corporate boards helps. In both cases, gender quota have been introduced in the past. Results have received mixed reviews. But overall, once the habit of bringing more women onboard has been established, the need for quota is less pressing. And women find their place more naturally in these sectors.

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In academia, quota are not common practice. In 2015, EMBO published the results of a [year-long study on quota](#). It gives a synthesis of literature related to binding and voluntary quotas as well as the outcome of consultation with people who have experienced them. The report's verdict is not clear cut. Instead of making recommendation on the use quota, it merely outlines the positive and negative aspects of the implementation of different types of quotas. But it does not reach a definite conclusion on their usefulness.

Although quota are designed to bypass career constraints faced by women, they can help bring women further along the career ladder; even though that [ladder is typically designed for men](#). There is always the risk that when measures of that nature are in place, women could be undermined. But this temporary discomfort, may be the necessary price to pay to kick-start future good habits. Now, it would be great to know what [EuroScientist](#) readers think of it. Let us know.

Sabine Louët

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Perspectives



Four Nobel laureates speak on women in science

By Luca Tancredi Barone

More women are expected to reach a higher level of the scientific career ladder than before

Sometimes inappropriate remarks about women in science provide a good opportunity to reflect on such issues. This was the case with the now [infamous words](#) uttered by Nobel Laureate [Tim Hunt](#) during the World Conference on Science Journalists in Seoul on 8 June 2015. His words offended much of his audience and [stirred a twitter storm](#) in the following weeks and months. There were even humorous initiatives such as the [#distractinglysexy](#) Twitter campaign."

Euroscientist followed up on this controversy at the [65th Lindau Nobel Laureate Meeting](#) in 2015. Even though Tim Hunt decided not to attend, the issue he raised was being discussed in the corridors.

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Women in science is still a topical issue. And the fact that only three out of 65 Laureates were females speaks for itself. We collected some of the opinions by distinguished participants. Biochemist [Elizabeth Blackburn](#) believes that “when people as a group are object of prejudice, such things are damaging.”

Physicist [Steven Chu](#), being “selfish”, as he says, thinks that “if a profession is not attractive to half of the population, this is not good for my field.”

Virologist [Françoise Barré-Sinoussi](#) is convinced that things are getting better and that the number of female Nobel Laureates is growing.

Finally, crystallographer [Ada Yonath](#) denounces the stigmatisation of the profession: “Society is still not encouraging females to go to science,” she argues.

To listen to the full podcast, please click [here](#).

Luca Tancredi Barone

Luca is an Italian science journalist based in Barcelona, Spain. He has extensive experience working for magazines, newspapers and radio. He also currently works in the communication team of the [Institute for Research in Blomedicine](#). He writes for different media in English, Spanish and Italian.

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Gender Bias



A ladder made for men

By Vanessa Schipani

How does explicit and implicit bias affect gender balance in academia?

Addressing gender inequality in academia is a complex issue. As the saying goes, numbers don't lie. And the numbers point to a thick glass ceiling for women striving to reach academia's upper echelons. According to the European Commission's (EC) 2012 [She Figures](#), 46% of PhD graduates, 33% of researchers, 20% of top-level academics and 10% of university rectors in Europe are women. Women are also paid 30% less than men in similar academic positions in the European Union. That's according to [Marcella Corsi](#), a professor of economics at the Sapienza University of Rome in Italy, who is also gender consultant for the European Parliament.

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But 'fixing the numbers' is only one approach to fostering gender equality in academia, adds [Maren Jochimsen](#), managing director of the Essen College of Gender Research at the University of Duisburg-Essen in Germany. She believes, we also have to 'fix the knowledge'. This means integrating sex and gender analysis in research itself. Lastly, policy makers in Europe must take into account the continent's different cultures and societies.

To tackle these issues, policymakers and their advisors must understand how different types of bias sway academia towards men, experts agree. Explicit bias, for example, entails gender viewpoints that individuals consciously report. By contrast, implicit bias involves unconscious gender stereotyping. In this article, *EuroScientist* explores the triggers in academic environments that lead to both forms of prejudice.

Fixing Numbers: an Irish case study

In the experience of [Micheline Sheehy Skeffington](#), implicit bias against women is still alive and well in academia. As a lecturer in botany at the National University of Ireland, Galway (NUIG), she has fought her own battles with gender bias. By 2009 she had applied for promotion to senior lecturer three times without success. After taking a look at the numbers, she was astonished—only one woman out of 17 had been promoted to senior lecturer at NUIG in 2009.

That same year she took NUIG to the Equality Tribunal for gender discrimination. Sheehy Skeffington argued that, among other things, inconsistent scoring favoured men during the 2008-09 round. Some men had received more points for less substantial contributions to society than women, she says. The [Tribunal ruled in her favour](#). And in 2014, Sheehy Skeffington was finally promoted. [Five other women](#) have also brought court cases against NUIG, and she believes they have a good chance of winning.

Sheehy Skeffington's case "has really shaken up the university sector here in Ireland," says Aoife Cooke, the equality manager at NUIG. Before then, "people didn't seem to be overly bothered about the fact that so few women were in senior academic positions." Cooke points to NUIG's "absence of a detailed marking scheme" as one "weakness in the selection process in the 2008-09 promotion round."

To improve this selection process, NUIG developed a detailed scoring method, which Cooke claims helps reduce reviewers' implicit bias by forcing them to score all "candidates in a consistent manner." As a result of this and other changes, 39% of successful candidates for promotion to senior lecturer in 2013-14 were women, compared to 6% in 2008-2009, says Cooke. Still, the process was far from transparent or fair in 2013-14, says Sheehy Skeffington. There is much work to be done at NUIG, in Ireland and abroad, she says.

Fixing Institutional Structure: gender in societies and cultures

Prominent gender biases appear in the upper echelons of many professions, says [Nicola Lacey](#), a professor of law, gender and social policy at the London School of Economics in the UK. Women perform in terms of participation and earnings on a broadly comparable level up until about 30 and then things start to come apart, she adds.

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One sociocultural cause for this glass ceiling is the unequal distribution of domestic labour, she argues. Other experts agree. "I often tell young women that one of the most important career decisions they're going to make is whom they choose as a partner," adds [Curt Rice](#), head of Norway's Committee on Gender Balance and Diversity in Research, who is also rector of the Oslo and Akershus University College of Applied Sciences.

In Norway, for example, "there's tremendous gender balance in terms of household work and childrearing," he says. And the Norwegian government has facilitated this balance. The country has State-subsidised daycare and flexible working hours. Consequently, Norway has a "good rate of participation of women in the workforce," says Rice.

A country's political structure can also affect gender balance, says [Éva Fodor](#), an associate professor of gender studies at Central European University in Hungary. For example, socialist countries like Hungary tended to have more women in managerial positions than capitalist countries, she says. Why? The inclusion of women "in all aspects of social life, including education and the labour force" was part of the state socialist agenda after World War II, she explains.

Still, explicit gender bias runs rampant in Hungary. Based on polls conducted by the [International Social Survey Programme](#) (ISSP), "Hungarians are convinced that women cannot be happy without children" and are better off staying at home to raise children, says Fodor. But ironically, "almost half of the labour force are women," she adds.

Associating women with child rearing, or lack thereof, has even embedded itself in the Italian academic jargon, says Corsi. The phrase *Vestale della Scienza* can often be heard in the halls of Italian universities and translates to *vestal virgins of science*. The term implies that women scientists must often give up having children due to the profession's demands, she adds.

Addressing cultural and societal norms may not be enough to facilitate gender balance in science in particular, a 2014 [study](#) in the *Journal of Educational Psychology* reported. The researchers found that, "even nations with high overall gender equity...had strong gender-science stereotypes if men dominated science fields."

The Netherlands, for example, ranked high in overall gender equality. Yet the country ranked low in women's participation in science and had some of the strongest explicit and implicit gender-science stereotyping. This suggests the gender issues in science may be harder to surmount than those in society as a whole. So what is the solution? Attack the problem from inside as well.

Fixing Knowledge: men have gender, too

Society and culture affect the balance between men and women scientists. But scientific findings also affect members of each sex and gender differently, points out Jochimsen. And biases in scientific research translate to imbalances in society in an endless cycle. To stop this spiral, one approach is to make it "the core business of science to look at the world in a gender sensitive way," she says.

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What is more, “everyone looks to women” to address gender equality and the [gender dimension in research](#), Jochimsen adds. “Why? Men have gender, too.” To solve the gender problem in academia, the solutions have to come from members of both genders, she notes. This includes changing our way of thinking about gender issues to begin with. Addressing gender in research should not be for the sake of women, she says—it should be for the sake of scientific quality.

So is the solution to gender inequality in academia and science as simple as enforcing quotas? Decidedly no. And will the same solution work across Europe’s diverse societies and cultures? Probably not. Policy makers must undoubtedly do their part. But researchers themselves can level the gender landscape of their profession—much like Sheehy Skeffington’s case did in Ireland. In the end, the problem of gender inequality will remain complex, and the solution must be correspondingly holistic, says Jochimsen.

Vanessa Schipani

With degrees in zoology, philosophy and the history and philosophy of science and clips from outlets in the United States, Iceland, Germany and Japan, Vanessa walks the line between science writer and philosopher. A polymath at heart, she publishes articles about a spectrum of disciplines, from quantum physics to cognitive science, but has a penchant for writing about what philosophy and biology can tell us about life. She’s also worked as a photographer and written poetry and fiction.

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Gender Bias



Time to recognise the influence of gender on research outcomes

By Londa Schiebinger

A new report explains how to harness the power of gender analysis for discovery and innovation

The League of European Research Universities, LERU, publishes, today 14th September 2015, a new [report](#) showing how Gendered Research and Innovation (GRI) can foster new knowledge and solutions to global challenges. And such challenges are not minor. Indeed, research failing to account for sex and gender specificities can put lives at risk and be costly. For example, between 1997 and 2000, ten drugs were

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[withdrawn](#) from the US market because of life-threatening health effects. Eight of these posed greater health risks for women than for men. Not only does developing a drug in the current market cost billions—but when drugs fail, they cause human suffering and death.

Doing research right has the potential to [save lives](#) and money. This is the goal of [Gendered Innovations](#) in Science, Health & Medicine, Engineering, and Environment. This Stanford University initiative brought together seventy scientists, engineers, and gender experts from across the US, Europe, Canada, and Asia. Its goal is to explore how gender analysis can open doors to discovery. International, collaborations supported by the European Commission and the US National Science Foundation developed state-of-the art methods for sex and gender research.

Why gender matters

Once you start looking, you find that understanding gender can improve almost everything. Ever use Systan or [Google Translate](#)? What if you are a woman and the article is about you? The machine defaults to “he”: for instance, Londa Schiebinger, “he” wrote, “he” thought, occasionally, “it” said. With one algorithm, these translation programs wiped out 40 years of revolution in language and progress toward gender equality. And they did not mean to do that. This is an unconscious gender bias.

The fix? A couple of years ago the Gendered Innovations project held a workshop where we worked with natural language processing experts. They listened for about 20 minutes, they got it, and they said, “we can fix that!”

In medicine, [osteoporosis](#) has been conceptualised primarily as a woman's disease. Yet, after a certain age men account for nearly a third of osteoporosis-related hip fractures. And when men break their hips, they tend to die. We don't know why. Gendered Innovations in osteoporosis research has developed new diagnostics for men, and the search for better treatment is underway.

In civil engineering, understanding physiological differences between men and women can help reset outdated standards. A recent [article](#) published in *Nature Climate Change* revealed that the thermal comfort standards for residential buildings and offices set in the 1960s were based on the resting metabolic rate of an average male. Or more precisely on a European male, 70kg, aged 40. These standards, used world-wide, may overestimate female metabolic rates by up to 35%.

Researchers in the Netherlands have now developed new metabolic metrics for composite thermal insulation. They hypothesize that an accurate representation of thermal demand for all occupants--men, women, seniors, etc.--may lead to energy savings of 30% of total carbon dioxide emissions from residential buildings and offices.

Gendered Innovations add value to research and engineering by ensuring excellence and sustainability in outcomes. Gendered Innovations stimulate gender-responsible science and technology, thereby enhancing the quality of life for both women and men worldwide.

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Funding incentive

Funding agencies are tackling the issue by tying funding to results. In December 2013, the European Commission (EC) designated [137 subfields](#) where data showed that gender analysis could benefit research—these range from computer hardware and architecture to nanotechnology, oceanography, geosciences, organic chemistry, aeronautics, space medicine, biodiversity, ecology, biophysics, among other. The EC Gender Advisory Group has published an [advisory paper](#), in March 2015, on how to prepare grants that integrate the gender dimension into research. The EC has taken the global lead in policy in this area; expert execution will be key to holding onto that lead.

In June 2015, the US National Institutes of Health rolled out new [guidelines](#) for sex inclusion in research. In August 2015, the Canadian Institutes for Health Research rolled out the [first](#) of three trainings for Sex and Gender in Biomedical Research. These granting agencies are well on the road to transforming medicine by increasing the pace of new discoveries, diminishing errors of extrapolation between sexes, and mitigating adverse events in the drug development pipeline.

Now, there is much work to be done!

Researchers need to learn sophisticated methods of sex and gender analysis. Universities need to incorporate these methods into their curricula. [Granting agencies](#) need to ask applicants to explain how sex and gender analysis is relevant their proposed research. [Editorial boards](#) of peer-reviewed journals need to require sophisticated sex and gender analysis when selecting papers for publication. Industry needs to incorporate the smartest aspects of gender in innovative products, processes, services, and infrastructures.

Eyes have now been opened—and we cannot return to a world that ignores gender.

Innovation is what makes the world tick. Gendered innovations spark creativity by offering new perspectives, posing new questions, and opening new areas to research. Can we afford to ignore such opportunities?

Londa Schiebinger

Londa is Hinds Professor of History of Science at Stanford University. Director of the European Union/United States Gendered Innovations in Science, Health & Medicine, Engineering, and Environment project.

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Constructive Solutions



Progressive policies to improve the gender balance in scientific research

By Fiona Blighe

SFI's policies facilitate womens' participation in research during child bearing age

Science Foundation Ireland (SFI) is the largest source of funding for Science, Technology, Engineering and Math (STEM) research in Ireland's Higher Education system. Of the 451 active award holders in SFI's portfolio [21% are women](#). While this percentage is comparable to that seen by other funders [across Europe](#) and worldwide, SFI has made the strategic decision to improve it.

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Our motivation for doing this is supported by a considerable body of research which [shows](#) that organisations with diverse teams and diverse leadership are more successful. Almost half of new STEM PhD graduates in Ireland are women. There is therefore an opportunity to drive diversification in teams--and ultimately in leadership--by enabling these women to remain in scientific careers. Furthermore, this approach will ensure that there is an optimal return on the considerable investment already made by the Irish State in training them.

Leaky pipeline

Analysis of the typical STEM academic career pipeline reveals that the proportion of women drops at each career stage: from PhD student to postdoc, to lecturer right up to chaired professor. This is known as the '[leaky pipeline](#)' phenomenon and is seen in almost every field, university and country.

In 2014, SFI introduced a [maternity allowance](#) providing our award holders with funding when either they themselves or a team member takes a period of maternity or adoptive leave. These funds can be used by the research body to hire additional staff to support the administration of the project, to hire a replacement team member or to extend the project so that the team member can complete their work after returning from leave.

It is hoped that by making this allowance available, awards made under SFI funding schemes do not preclude or unintentionally discourage the hiring of female researchers. The intention is to make researchers feel supported during care giving times; in particular, after the birth of a child, which can be a critical time in a woman's career.

The [She Figures 2012](#) report by the EC shows that the steepest loss of women in the career pipeline occurs at the critical point between PhD graduation and first lecturer position. To address and possibly reverse this leak, SFI launched the [Advance Award Programme](#) in 2014, as part of a number of initiatives. Targeted exclusively towards women, applications were accepted from those individuals who had taken career breaks for care giving reasons and wished to return to research.

The scheme is also aimed at those who were seeking to up-skill through increased mentorship. Successful applicants were funded to undertake industry-facing research projects and were paired with both an academic and an industrial mentor. These awards are due to finish towards the end of 2016.

Diversifying support schemes

As part of our grant allocation, we strive to ensure that our processes do not disadvantage anyone because of their gender--excellence being our main criterion. For example, in 2015, women interested in the academia industry interface were directed to the [Industry Fellowship](#) call. Due to the high application rate from women, 50% of awards were given to women.

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As a further approach to address the leaky pipeline, SFI has provided incentives to increase the number of female applicants to our flagship early career programme, the Starting Investigator Grant (SIRG [*To be inserted at production stage* : [http://www.sfi.ie/sfi-starting-investigator-research-grant-\(sirg\)-programme-2015.html](http://www.sfi.ie/sfi-starting-investigator-research-grant-(sirg)-programme-2015.html)]). SIRG provides the best and brightest early-stage researchers with four years funding for themselves and one PhD student under the mentorship of a senior academic.

Previously, applications to the SIRG programme were capped at five applications per research body, with no reference to gender balance. In 2015, the cap was raised to 12 provided no more than six of the applications made per research body were from male applicants. The rationale behind this action was that female application to the programme have been steady at around 25% for a number of years, and this is not representative of the 50% of STEM PhD graduates in Ireland who we know are women. In 2015, 44% of applications to the programme were women, a significant improvement.

Tackling balance at all levels

As an additional support mechanism for researchers, in particular women, further along the career pipeline, review criteria for our [Investigators Programme](#), endowed with €2.5 million over 5 years, stipulates that reviewers consider career breaks and periods of part-time work undertaken by the applicant when assessing their productivity over a time frame. The Investigator Career Advancement (ICA) category aims to support researchers returning to active academic research after a prolonged absence. Successful ICA applicants are also permitted to request funding for teaching buyout so as to further support them in their return to research.

Finally, a large part of what we do as an agency involves using international expert reviewers. Thus, we have also examined the composition of our review panels and have an organisation-wide target of securing a minimum 30% female reviewers as part of any panel. We view this as a means of involving more women in the decision-making process. We also hope that their participation empowers them to progress on the academic ladder in their home institutions. In addition, we are investigating the provision of mandatory online unconscious bias training to all our international reviewers before they provide reviews of any such proposals.

Through our seat on the Science Europe [Gender and Diversity Working Group](#) and the [Athena SWAN Ireland](#) Committee we are constantly benchmarking ourselves against international best practice. And we are always searching for new and innovative ways to further retain and support women in research. If anyone has any more ideas on how to do that, we welcome further suggestions.

Fiona Blighe

Fiona is scientific programme manager at Science Foundation Ireland, Dublin, Ireland.

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Constructive Solutions



Why do self-made women rely on mentoring?

By Jana Degener

Mentoring is key to the career path of women scientists

The title of this article may sound like a self-help book. Yet, mentoring takes place spontaneously as part of the scientific process. Indeed, the concept of mentoring is as old as science itself as mentoring plays a very important role in the hierarchic scientific system. There, scientists are recommended by reputation. Yet evaluation procedures designed to be neutral are sometimes still overshadowed by the influence of the so-called "old boys' networks". So what needs to happen?

It is sometimes necessary to introduce mentoring in an institutionalised way to break old habits. "When decision makers look for people they might promote, they look for those who are similar to themselves. And as many of them are men for example, they tend to have a look at men rather than women", says Dagmar

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Höppel, vice-president of the [European Network of Mentoring Programmes](#) and leader of the Baden-Württemberg conference of Equality Commissioner at universities in Stuttgart, Germany.

The European Parliament holds, this week, a [debate](#) and a vote, in relation to the glass ceiling encountered by women working in science and universities. This means that the issue of mentoring for women scientists is again very topical. Indeed, many universities now offer mentoring programs for female academics to help them progress their career, especially in natural science and technical fields. Here, *EuroScientist* looks at why women tend to rely on such schemes and what remains to be done.

Instilling confidence

So why do women rely on mentoring? Mentoring is largely about instilling confidence in less experienced scientists. “The mentees benefit in terms of improved confidence and ability to negotiate their way through the system,” explains Julia Smith, professor of Medieval History at University of Glasgow in Glasgow, UK, who designed and implemented the women-only scheme at her university. She has also mentored female early career researchers to teach them line management requirements.

Mentoring programmes reserved to women have clear advantages, concurs Heike Ettischer, who leads the Ada-Lovelace mentoring project for female scientists at the Johannes Gutenberg University in Mainz, Germany. “In scientific life, women are often in a minority position. Many of them feel more confident and they dare to be more open-minded when there are only women present. By offering a pure female mentoring programme we want to encourage these women, to show them their potency so that in the future they will be more confident in the normal scientific contexts.”

However, mentoring across gender can be difficult: “For a male professor, it is normal to spend an evening in a bar with your male mentee. But if he is seen in a bar with a female colleague, rumours might start circulating,” Höppel says.

Career boost

Mentoring does not happen in a vacuum. Formal mentoring programmes are often accompanied by a seminar or an exchange programme that focuses on qualification and networking. “The seminars should help the mentees to reflect their talents and competences to find out how they want to develop and shape their personality”, says Ettischer. This way, they learn how to present their competences in a better way and meet role models.

Mentoring can therefore play the role of teaching women to position themselves for career advancement. Hence, organisations of female scientists, institutions of the public sector and big companies offer mentoring programs in order to be more attractive for new female employees. The idea is to better integrate them into the team, make them more visible and thereby help them get executive positions.

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However, their aim should not be to prepare women to progress in a male-dominated domain and adjust their behaviour to this environment, believes Judit Tanczos, a policy adviser at the Foundation for [European Progressive Studies](#) in Brussels, Belgium. "There are many reasons for the limited success of these schemes, but one of them is definitely the fact that mentoring schemes start from the foregone conclusion that simply having more women will induce structural change as well."

She suggests that the solution lies in a change of attitude. "These programs should be part of a larger reflection on the changing gender roles within society and its consequences for people's work and careers as well as fighting structural discrimination," Tanczos notes.

Defying the status quo

There is no directory of mentoring programs in Europe. Such programs are typically offered by universities and research institutes, partly in faculties and individual study fields. Experience shows, however, that a growing number of initiatives target specifically women. For instance, the European mentoring programme [WoMentor](#) addresses Girls and Women, not focusing specifically on science. According to Tanczos, the European Commission's Horizon 2020 program also gave a boost to mentorship programs in science.

At national level, some institutions in different European countries have introduced formal mentoring programs, which aim on empowering women. Some also target immigrants or members of ethnic minorities. "Institutionalised mentoring is taking place when an institution recognises that a top down intervention is needed in order to implement change in [this kind of] segregation," explains Andrea Pető, Professor at the Department of Gender Studies at the Central European University in Budapest, Hungary.

These programs address students, doctoral candidates and graduates who plan a scientific career, some of them also try to build bridges into economy, public sector or self-employment. "In science it is difficult to convince decision makers that the absence of women from science for example is not 'natural' and they are expected to change that because of fairness and democracy," explains Pető.

To solve the issue, it is extremely important to engage with the men in institutions, according to [Jennifer de Vries](#), an Australian mentoring consultant who has worked with European mentoring programmes. "They are often the ones who uphold current gendered norms and values. Engaging men as senior mentors to women provides the opportunity for them to learn more about the experiences of junior women in science and has the potential to engage them in the need for organisational, cultural and structural change," de Vries says. Providing formal sessions for mentors where gender research can be presented and where mentors are encouraged to listen and learn from their mentees is critical, she believes.

Cultural influence

There has been a European effort to define [quality standards](#) for mentoring programmes through the [eument.net](#) project. Since 2007, the project promoters have been trying to build a European network of mentoring programmes for women in academia and research. But that's not always enough.

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Due to cultural differences, mentoring programmes for women do not seem to be successful in all European countries. "Mentoring programmes in Eastern and Western Europe have similar goals, because they want to increase the percentage of women in executive positions in science and economy, where they are still under-represented," says Christina Haubrich, associate professor of Neurology at RWTH Aachen University, Germany.

But according to Höppel, in Eastern European countries it is very difficult to evolve an understanding of the concept of mentoring that is used in Western European countries: "The scientific system in the Eastern European countries works differently. Protection is much more important there and it is difficult to explain that mentoring aims on reflecting talents and competences rather than only pushing someone or giving financial grants."

There is not much of a tradition of institutionalised mentoring programs in Southern European countries either. However, it seems to be much more self-evident for women in Italy or France to study natural or technical sciences, for example, and to work as an executive.

Still, cultural differences seem to be only one reason for international variations. Others range from differences in personal leadership styles to financial reasons, says Tanczos. Yet, if mentoring programs for women do not exist in a certain countries, this does not necessarily equate to an equal treatment of men and women in science.

Janna Degener

Janna Degener is a linguist and anthropologist. As a freelance journalist she is specialised in educational issues and she mainly writes for online publications including [ABI](#), [Goethe](#), [Go-out](#) and for German magazines such as [Arbeitsmarkt](#) or [UNICUM](#). She also gives scientific and journalistic courses at universities including [Universität zu Köln](#), [Freie Universität Berlin](#) and [Leuphana Universität Lüneburg](#). She also produce radio and video content related to social projects and consumer interest topics.

Mentoring experiences in European scientists' own words

"I was lucky enough to meet wonderful mentors (men only) during my professional life who supported me and showed me the way. In 2013, I decided to join [the mentoring programme](#) of the Foundation for Polish Science (FNP) as I was about to start my own lab. It was helpful but not groundbreaking. It has not changed my way of thinking about my next professional moves."

Dominika Nowis, researcher in Genomic Medicine at the Medical University of Warsaw, Poland.

"Mentoring programmes show to people in the whole university context that female academics are a precious resource for teaching and research. If the mentees are chosen by academic criteria this award helps

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them also to get the necessary support by superiors and colleagues on their way to postdoctoral qualification.”

Christina Haubrich, Associate professor of Neurology at RWTH Aachen University, Germany, and mentor in the [TandemMed programme](#).

“Mentoring is among the most significant forces that shape a budding scientist's experience and future career trajectory. Both men and women can benefit greatly from good mentorship from both male as well as female mentors. However, there are many topics for which a female scientist may benefit more from a female as opposed to male mentor.”

Jean Fan, doctoral student in Bioinformatics and Integrative Genomics at Harvard University in Cambridge, Massachusetts, USA, and co-chair of the mentoring programme [Harvard Graduate Women in Science and Engineering](#).

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Women Innovators



Entrepreneurship: the 'she' factor

By Agnieszka Klucznik-Törö

How to give wings to female entrepreneurs

In the past two decades, female entrepreneurs have accounted for around a third of all businesses in the UK, 26% in France and 37% all businesses in the USA. Yet, women constitute of 52% of the total population in Europe. Recognising the typical challenges faced by women entrepreneurs inspired founders of the international EU-funded [WINGS project](#) to take action and offer some support. This article outlines current trends in female entrepreneurship providing food for thought to inform the design of future support mechanisms.

Specificities of women-owned start-ups

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Women face many challenges in relation to entrepreneurship. The main problem is a lack of business ideas and knowledge, psychological constraints such as fear of failure and low entrepreneurial self-efficacy. That's according to [my own research](#) published in 2013. It reveals a common belief considering money as the most important factor to launch a company. However, actual studies show that women don't just simply become entrepreneurs automatically, even if they have a relatively easy access to financing. What matters most is whether they have a business idea and are not hampered by psychological constraints.

Further [research shows](#) that when women start their businesses, it is usually a solo initiative. And their growth aspirations are usually low. Besides, more than half of female-led enterprises operate in the consumer service sector. This means that education, distribution, personal services, health and social entrepreneurship are the most obvious choices for female entrepreneurs. These sectors are usually associated with [lower profitability](#) than sectors currently dominated by men, such as IT, high-tech manufacturing etc.

In parallel, in recent years, we have observed a new and growing phenomenon in respect to female entrepreneurship, related to the growing role of migrants. According to an [OECD study](#), this is a case for example in Italy where there were 109,000 firms launched by foreign women. The most active are Chinese migrants--with more than 20,000 entrepreneurs--and Romanians--with about 9,000 women.

Economic context

What is more, in some areas of Europe the financial crisis has had an impact on the overall level of entrepreneurship. For example in Spain, Greece or Portugal, incentives for entrepreneurs have decreased significantly during the recession. According to a 2014 [EC study](#) documenting women entrepreneurship, the number of people who considered entrepreneurship as a good professional option declined from 70% down to 55% between 2005 and 2013. Currently, no more than 12% of the total female workforce are entrepreneurs in Spain. And those who start their business do it out of economic necessity.

By contrast, young female entrepreneurs already constitute of around 40% of all start-ups in Austria. There and in a growing number of countries like Poland, women launch companies to grasp opportunities, rather than out of necessity, according to a 2014 Global Entrepreneurship and Development Institute [study](#).

In Poland, this trend is explained by women's emancipation combined with the availability of policy and programmes designed to support entrepreneurs. By contrast, countries like Italy, Greece and Hungary, have much lower indicators of female entrepreneurship, according to the [2014 Global Entrepreneurship Monitor study](#). It could arguably be partly linked to cultural reasons.

Multiple support programmes

In some countries, programmes supporting women-owned start-ups are booming. For example, in Poland between 2007 and 2013, nearly half were designed for women who wanted to launch their own firms. Zooming down to one Polish region of Lower Silesia, 27 projects offered financial support for female start-

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ups. In addition, there were almost 100 workshops on entrepreneurial skills development addressing exclusively women. As a result, over 600 small and medium enterprises were launched by women during that period, according to my own unpublished research.

By comparison, during the same period, 17 projects exclusively supporting female entrepreneurship took place across all Scandinavian countries. No programme of this type was recorded in Hungary. And only very few were available in Slovakia and in the Czech Republic. It is worth adding that the disparities between countries in Europe are not merely related to geography but to variations in culture and entrepreneurial support policies.

Entrepreneurial wings

Recognising the challenges faced by female entrepreneurs led the founders of the EU-funded research project WINGS to develop an [online resource](#) for them.

WINGS also organises free round tables and conferences across Europe to help raise awareness of available support mechanisms it offers. These include access to a mentors network, good practice information, and links to European institutions operating in the field of female entrepreneurship. It also offers some advice and support for users to implement e-business solutions.

So far, the platform, which is available in nine European languages, reaches out to users in 24 countries, with nearly 22 000 visitors. And this is only the beginning.

[Agnieszka Klucznik-Törő](#)

Agnieszka is founder and general manager of a consultancy called the [International Center for Entrepreneurship](#) (ICE). She is also involved in a activity of [Climate-KIC](#), [Tatai Innovation](#), [Henley Business School](#), teaching and start-ups coaching in Hungary, Sweden, Slovenia, Turkey, the UK, Germany, Denmark and her native Poland.

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