As proponents of a more balanced proportion of men and women in the natural sciences in Denmark, it is easy to be seen as overreacting crybabies who have nothing to complain about, and who really just want favoritism in the name of equal rights. Because, as we all know, Denmark is at the forefront of equal opportunities. Wrong. Quite wrong, and probably more than most people are aware of. The purpose of this short piece is to put the gender statistics in the natural sciences in Denmark into a global/European perspective. The data presented will illustrate that Denmark lags behind the European average in essentially all the ways one can categorize the representation of women in the natural sciences. In addition, we will highlight some of the current numbers specifically from Denmark, on, e.g.,
gender balance in scientific recognition. We will end with a brief section substantiating our view that a more balanced gender representation in the natural sciences is worth fighting for, outline some of the major challenges, and point to some overall categories of actions we think would be valuable steps toward a solution.

GENDER EQUITY IN THE NATURAL SCIENCES: DENMARK IN A EUROPEAN PERSPECTIVE

Globally, Denmark is often viewed as a Mecca for equal opportunities between men and women and our country was recently placed 10th best on the United Nation Gender Inequality Index (http://hdr.undp.org/en/content/gender-inequality-index-gii). However, in science, the numbers tell a rather different story. In the following, we have taken advantage of the most updated version of the most authoritative European source on gender statistics in the sciences, the so-called “She-Figures 2012” (Gender in Research and Innovation – Statistics and indices, 2012) from the European Commission [1].

WHERE IS THE PROBLEM? CLIMBING THE CAREER LADDER

The widely known “scissors” diagrams illustrate how male and female scientists proceed through the academic system. Figure 1a shows such a figure based on European numbers, and Figure 1b shows the corresponding numbers from a recent report from the Danish Research Council on gender in academia [2]. These numbers clearly illustrate at least two points of importance. Firstly, on average across Europe, there is a massive loss of females compared to males as one proceeds through the academic ranks, and only ~20% of full professors are women (in Denmark only ~15%). Secondly, while the difference is not substantial, Denmark is nonetheless below the European average in terms of gender equality at the higher career stages. This fact will also be apparent in later figures. Not surprisingly, if one focuses on the natural sciences, the fraction of females is consistently lower throughout the career path, but the pattern is much the same — the blades of the scissors are just more widely opened [1].

If we compare the numbers for the fraction of women at various career stages across countries, this pattern — and, importantly, Denmark’s position in the European/global landscape — becomes more evident. Figure 2 (left panel) shows the proportion of women in Grade A academic positions (corresponding to full professors) across Europe, the US, and Japan. As seen, first of all, the fraction of such positions occupied by women is low throughout Europe, with an average of 18-20%. Second, the corresponding number in Denmark is 15%, well below the European average (but unfortunately substantially up from 2002). Figure 2 (right panel) shows the fraction of institution leadership positions held by women in the Higher Education Sector. Here, the European average is 15.5%, and the corresponding number in Denmark is 14.4%. That sounds quite decent (at least on a relative scale!) — but only until one looks at the top of the graph and sees our sister countries, Norway, Sweden, Finland and Iceland at 32, 27, 25, and 20%. Why is the fraction of female institution leaders more than twice as large in Norway as in Denmark? Why is Denmark lagging so much behind the rest of Scandinavia?

Other thought-provoking information comes from considering some of the major recognitions and awards granted by large Danish funding bodies in recent years. From two of the largest private funding bodies in Denmark we extract the following self-explanatory numbers: Zero out of 24 Lundbeck Nordic Research prize winners in the period 1987-2010 were female (http://www.lundbeckfoundation.com/Nordic-Research-Prize.140.aspx) and only two out of 67 Novo Nordic prize winners in the period 1963-2013 were female (3%) (http://www.novonordiskfonden.dk/en/content/novo-nordisk-prize). Does this reflect differences in innate ability? We do not think so.

DISCRIMINATION OR FREE CHOICE?

Overt discrimination against women still exists in academia, at least globally. Examples are the now-famous statements made by ex-Harvard President Larry Summers on the innate differences in aptitude between men and women (http://www.harvard.edu/president/speeches/summers_2005/nber.php), and arguments such as those put forward by Peter Lawrence, Medical Research Council Laboratory of Molecular Biology, Cambridge, suggesting that the different numbers of men and women in science can be ascribed to innate differences in competencies and choices between the genders [3].

In our view, there is generally little overt discrimination against women left in academia in Denmark today, and what’s left is rapidly dying out as the younger generations of males replace those that grew up when the image of women as less qualified was more prevalent. However, robust evidence, also from our part of the world, testifies to the existence of subtle, perhaps even unconscious, discrimination. This includes the classical study by Wenneräs and Wold [4] documenting that postdoc grant applications by female scientists were scored substantially lower than those submitted by male scientists with the same scientific qualifications. Astonishingly, a female applicant had to be 2.5 times more productive than the average male applicant to achieve the same score on her application. While this study dates several years back, and things have hopefully improved, other studies show a similar pattern.

On a more global scale, disturbingly, a recent study published in Proc. Natl. Acad. Sci USA provided solid evidence that science faculty rated an application from a female student much lower than that from a male student, on multiple parameters — despite the fact that the application was identical, the only difference was the gender, of the student [5]. Another recent study demonstrated that elite male faculty in the life sciences were substantially less likely to hire and train women than men [6].

Finally, in Denmark, a consistent underrepresentation of women among applicants for tenure-track positions, compared to the representation among PhD-holders (e.g. Table 17 in [7]), suggests that another reason for the gender bias among tenured university staff is that many women simply do not apply for the positions. Do experiences of subtle discrimination, as exemplified above, deter female scientists from pursuing an academic career? Or is an academic career not considered an attractive option by a large fraction of the female Doctorates for other reasons? If so, we need to ask why.
While the evidence presented above should make it abundantly clear that there is a big gender gap at the faculty level throughout academia in Denmark, and that it is especially evident in the natural sciences, the next obvious question is of course, does it matter? In our view, there are several important reasons that the answer to this is a resounding yes.

Firstly, we find it substantiated by solid evidence that while conditions have improved, a bias against women still exists in academia. Based on a simple principle of justice this demands a change. Secondly, under the assumption that men and women are equally competent, the loss of women from the university sector after their PhD- or postdoctoral training means a brain drain that the universities, and society, cannot afford. Thirdly, it has
long been clear that diversity is a major factor in increasing team success and innovation (e.g., https://www.gsb.stanford.edu/insights/diversity-work-group-performance). Also relevant for this discussion, recent cutting-edge research on Gendered Innovation (http://gendered-innovations.stanford.edu/; http://ec.europa.eu/research/science-society/gendered-innovations/index_en.cfm) builds on increased understanding of the essential impact of sex (biological) and gender (societal) as a factor in creativity and innovation.

WHAT WILL HELP?

This is not an easy question to answer, but of course it helps to first identify the roots of the problem. As we have outlined above, our view is that there is not one problem, but a complex array of problems, ranging from obvious and easily quantifiable injustices to more subtle, or even unconscious, biases and beliefs in both men and women. Indeed, that many women decide to leave an academic career contributes even further to the complexity of the problem portfolio and distinctly highlights the low attractiveness of academia as a workplace for women (and men?). Societal factors, placing most of the family responsibility with women, and direct discrimination against women certainly do not promote gender equity. Actions within all of these categories can and should be considered.

Firstly, there is the option of initiatives such as gender-specific research grant programs, and quotas for hiring female researchers. Since these are dealt with by other articles in this special issue, we will not discuss in detail the pros and cons of such programs. However, our view is that while they should be used carefully, such programs have their role, not to favor women, but to give them chances corresponding to those of their equally – but not more – qualified male colleagues. An often-used argument against programs aimed at increasing the fraction of female researchers is that such programs will increase mediocrity in academia. An interesting assumption, since, given that women and men are equally intelligent, the logical conclusion is that while they should be used scientifically, and best practices recommended. Such evidence-based insight into the impact of various gender balance initiatives in academic institutions can be found e.g. at http://gendered-innovations.stanford.edu/institutions/solutions.html.

CONCLUSIONS AND OUTLOOK

Gender imbalance remains obvious in the Danish higher education system, lagging substantially behind the rest of the Nordic countries. Have things improved? Certainly. If we look 10 years back in the statistics, the imbalance was even larger, and discrimination was overt. Have we achieved gender equality? Not at all. Is the development going sufficiently fast? In our view – no.

Citing the recently published “Global Gender Gap report” from the prestigious World Economic Forum (http://www.weforum.org/issues/global-gender-gap), and the latest European Commission report on progress on gender equality [9], we are miles years away from an equal (50:50) gender distribution in the top boards of large, publicly listed companies in the EU, and there is no evidence that this should be any different in academia. This means that another several generations of Danish girls will not have equal opportunities, that our innovative capacity will not be fully exploited, and that the Danish universities will continue to experience a brain drain we cannot afford.

REFERENCES


