ACADEMIC TEAMWORK AFFECTED BY GENDER DISCRIMINATION

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Abstract. *Gender neutrality must be the epitome of academic settings where self-identification focuses on being independent and free from the pressures of societal opinions, generating a culture of high performance totally detached from any mundane cultural bias. University formal settings promote gender neutral attitudes, balancing both students and teachers work teams. In recent years, women have made remarkable progress in the academia but barriers to their participation in higher levels persist. Their under-representation in senior positions in universities is evident. Even with decades of legislation to redress the gender imbalance, female under-representation seems to be a constant phenomenon. To deal with such persistent bias, political leaders often resort to the image of the road towards gender equity meaning fair access to power and resources, to participation and influence. This development is seen as gradual and harmonious evolvement, motivated by women's utility and represented by a series of measurable progress steps to gender equal democracy.*

Keywords: *teamwork, academic environment, communication, gender discrimination*

Change in the legal framework and its outcomes

Policies and legal initiatives may not be sufficient for triggering changes in work cultures and environments mainly developed for male workforce. The legal framework deals with inequality and discrimination related to age, ethnicity, gender and disability; the law is the external guarantor of economic and labour equality. The starting point is that employers and employees shall cooperate actively to achieve equality in the workplace.

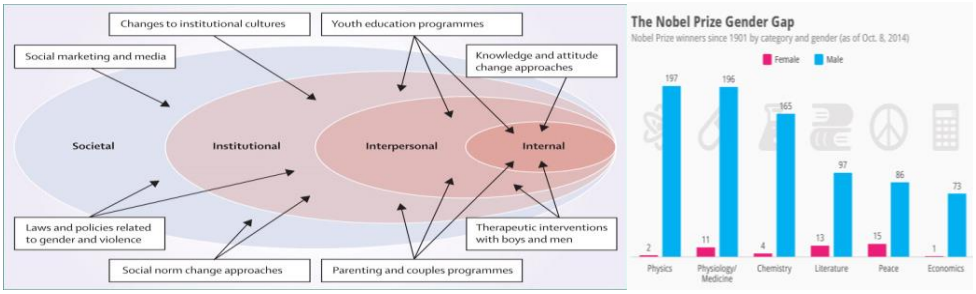


Fig. 1. Transformation process for academic gender equity and the Nobel Prize gender gap

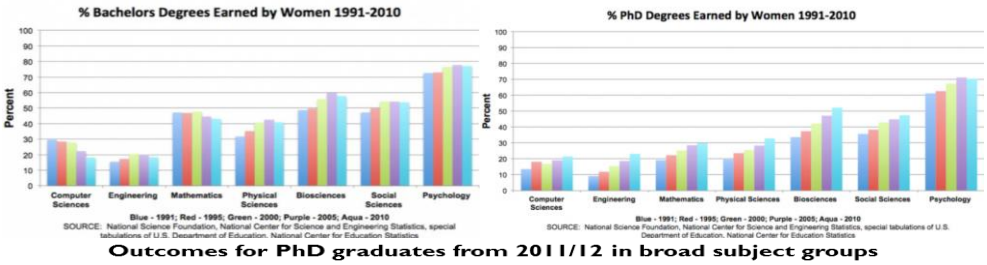
Gender equity has disparities between official statements and reality, leading to a revival of traditional gender roles; the normative vision may hide patterns of strong

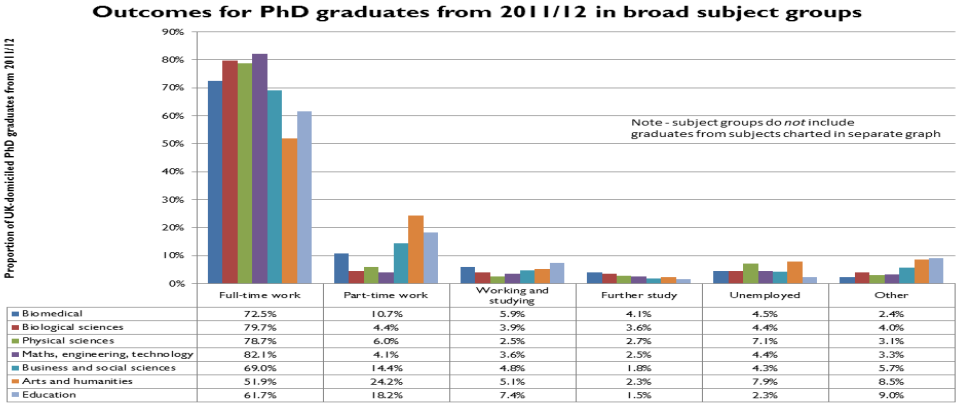
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institutional male dominance. From historical perspective, education at university was a male attribute.

Today more than 50% of the students at the basic level in higher education are females; also the number of women PhD students has increased up to roughly the same numbers, as demonstrated by the data below.





	Full-time work	Part-time work	Working and studying	Further study	Unemployed	Other
Biomedical	72.5%	10.7%	5.9%	4.1%	4.5%	2.4%
Biological sciences	79.7%	4.4%	3.9%	3.6%	4.4%	4.0%
Physical sciences	78.7%	6.0%	2.5%	2.7%	7.1%	3.1%
Maths, engineering, technology	82.1%	4.1%	3.6%	2.5%	4.4%	3.3%
Business and social sciences	69.0%	14.4%	4.8%	1.8%	4.3%	5.7%
Arts and humanities	51.9%	24.2%	5.1%	2.3%	7.9%	8.5%
Education	61.7%	18.2%	7.4%	1.5%	2.3%	9.0%

Fig. 2. Data on Bachelor and PhD by women in 1991-2010 and impacts on the outcomes for PhD graduates in 2011-2012, cf. the US Centre for Education Statistics

Many jobs are feminized, i.e. physician, teacher. However, the gender order among the university staff does not reflect the representation of women in higher education.

Only one third of women have positions above that of senior lecturer and men become full professors sooner. Academic gender structures seem rather resistant to change, revealing that the factors behind gender inequality are complex.

Culture of academic organisations

Culture is defined as a collection of practice by which meaning develops within a group and provides social interpretation frameworks for its members; male & female are cultural units, generating standards and positions associated with gender, later expressed in different legal, scientific and educational doctrines.

At institutional level, in education and in work the woman and the man are expected to carry different traits showing how various professions and roles are assigned to different sexes.

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In the culture of organisation, gendered practices have impact; they concern daily life in the organisation and impediments to women's advancement in academia. Previous research has also made clear that changing numerical representation does not automatically mean that power relations are challenged.

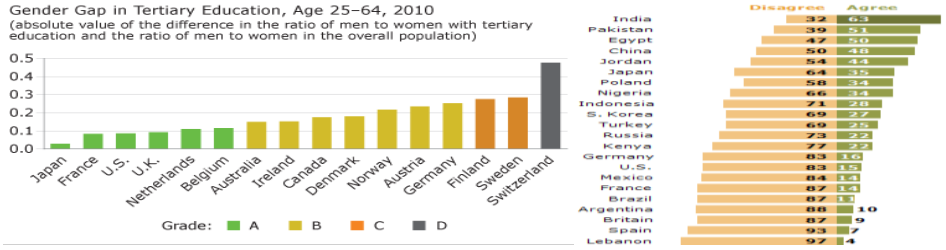
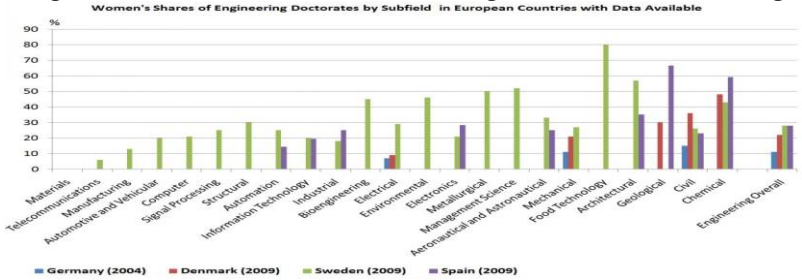


Fig. . Is academic education more important for men or women? Gender gaps in tertiary Education, age 24-64, cf. PEW Research Centre

The academic culture has been affected by the advent of new managerialism, defined as an ideological configuration of ideas and practice coming from private business sphere to be also applied within public service organization. It is associated with economizing education, pursuing efficiency and transforming universities from scholars' communities into work-places: funding environment, academic workloads, and increased pressure to perform both teaching and research to high standards.

The EU-wide Bologna process, in line with managerialism, has served to justify academia restructuring and modernizing. It affected academic career paths, especially in the context of peer review becoming widespread and encompassing all areas. A new assessment criterion emerges: the gendered performance in management. Gender order among professors reflects the gender imbalance among the students in different courses.

The gender structure in academia has a long history but is slowly changing for the better, even though it takes very long time to do so. When the older generation of the faculty staff retires, the gender imbalance would be mitigated. On the other hand, if there are good working conditions in higher education and no discrimination in the employment procedure, there will be gender balance; hence imbalances in the gender order can be self-regulating.



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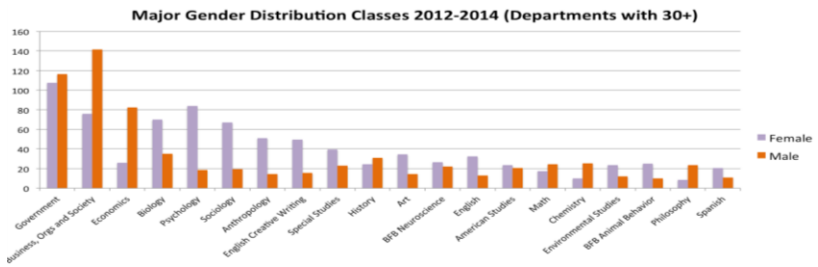


Fig. .EU Women PhD in science and the gender distribution in academic departments

A gender blended environment is positive, and gender-mixed working groups are considered best; however, certain means to achieve them are deemed to be inappropriate. Positive discrimination has some undesirable outcomes: for example, the gender quota can have undesirable side effects for men.

However distorted the gender balance at university levels may be, the whole academic staff refers to the importance of a gender balance in different student groups; hence practice has been internalised and made normal. Such mechanisms tend to replace the unconscious motives to discriminate and reflect traditional ways of acting, historical legacies, attitudes and stereotyping about men and women.

Gender impacts on scientific work and on research styles

Gender affecting work and the researcher can become apparent in the choice of investigative methods people implement. Some opinions say that qualitative research methods and typical questions can be widely preferred by women. Others claim that research and science might be regarded as a male prerogative connected to male identity, with challenges and incentives to turn it into a career.

Women may be asked why they want a new career, and why they are not satisfied with the results they have already obtained, but men never are subjected to such pressure. Managers take advantage of their interlocutors' emotions and threat with rejection and embarrassment or great disappointment so applicants prefer to avoid the risk.

The experience of being a researcher involves a total commitment to funding applications, which, according to many people is equivalent to fund rising. Research topic originality and importance for knowledge development is, compared to striving for money, of secondary importance; hence teaching is seen as more valuable and few women apply for funds.

The main characteristic of the feminine working atmosphere is collective, which illustrates a preference for working in groups and a high degree of helpfulness towards colleagues, but reports exist of members' tension and competitive behaviours; male teams have practical approaches and individual high performance; in a male-dominated environment, women's less favourable characteristics remain latent. Women collective atmosphere relates to their ability to collaborate and establish strong connections, being better at socializing, building friendships and relationships, as well as assuming responsibility for social tasks. Caring practice and dedication are central to their approach.

Men socialize the opposite way: they receive care, have intellectual fellow-ship and

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interpersonal neutrality. Interestingly, senior women researchers subordinate the younger ones in the same way senior male researchers do. In Bachelor programs, there seem to be female dominance, but this is not the prevailing condition at the doctoral student level.

There is gendered experience of career possibilities, reflected for example in the acceptance among women to waive an academic career while males hardly ever consider it. Women's lacking ambition can be part of working at a university college where teaching, as compared to full university positions, may take precedence over research. However, limited ambitions show that female lecturers tend to give up the prospect of reaching professorship because they prioritize teaching over research; men are more likely to devote themselves to science.

There is a process of segregation, whereby women and men at the same workplace, with the same levels of education, end up doing different work tasks, with different opportunities for development and promotion. Several explanations have been proposed for this phenomenon, like the gendered assumptions about men and women. A small number of female scientist role models and cultural pressures on girls that exclude a scientific career constitute another explanation. Gendered experiences of career chances are also related to managerialism, a trend which increases pressure to do both teaching and research at high standards.

More apparent gendered practices are eliminated in the academia and constrains on women careers have become more subtle. There still is indirect and direct discrimination, as gender discrimination also takes place by means of subtle gender mechanisms and more seldom take place in a direct manner. Detrimental effects of organizational culture sometimes might reverse the formal policies, an example of difficulties in constructing a culture without inner tensions. Implementing gender equality policies is often the easy part while the hard part is to confront embedded inequality and create awareness of gender playing a role, even within an academic environment.

Managerialism and income

Managerialism is contradictory, pointing to both positive and negative effects for women academics. Diversity management has become part of daily activities in many firms and organizations.



Fig. . Gender pay gap by education and inequalities at the workplace, cf. AFP the World Economic Forum, Global Gender Gap Report 2017

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When setting up team work, the question arises of how to group the employees into teams with respect to their gender.

In an experiment with wages based either on the team's performance, or on the outcome of a competition between teams, one finds that performance does not simply depend on the incentive scheme, but rather on gender in conjunction with the incentive scheme.

There is a clear gap between the performance of men & women, with men performing better than women when men and women are part of the same team and are paid according to joint output and when the competition is between teams of the same gender. It suggests that in team work such combinations of incentive scheme and gender composition should be avoided, if the aim is to minimize the variability of performance. Moreover, the results show that there can be a tension between the objective to maximize overall performance and the potential goal of minimizing gender inequality.

The difference in earnings between men and women is a well-known phenomenon that has been studied from many different perspectives. A number of factors cause the gap:

- differences in performance
- differences in working hours and career paths
- differences in pay for the same performance
- lower average earnings for professions mainly exercised by women.

However, differences in performance have various reasons, such as education and ability, as well as the gender composition of the work place. Gender may be one of the determining factors for working conditions experienced as hostile or as encouraging, as stimulating or stalling. From the perspective of the economic theory, the gender of the decision maker should not affect performance, and neither should the gender of the other team members, or the gender of the competitors. In addition, team work suffers from free-riding incentives which can be mitigated by competition, peer pressure and social norms, altruism, or loyalty among group members.

There is a difference in performance between men and women when men and women form mixed teams and when they are paid according to their joint output. Similarly, there is a gender difference in performance when comparing all-male teams competing with each other to all-female teams competing with each other. In both cases, men apparently perform better than women. There is no significant gender difference in performance for all other combinations of incentive scheme and team composition. There is no meaningful impact of team composition on the performance of each gender for a given incentive scheme.

Women in STEM academic areas

Women continue to be underrepresented in STEM areas (Science, Technology, Engineering and Maths) and scientific innovations are increasingly produced by team collaborations. Recent evidence strongly suggests that team collaboration is greatly improved by the presence of women in the group, and this effect is primarily explained by benefits to group processes. The evidence concerning the effect of gender diversity on team performance is more equivocal and contingent upon a variety of contextual factors.

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Considering the importance of collaboration in science, promoting the role of women in the field can have positive practical consequences for science and technology.

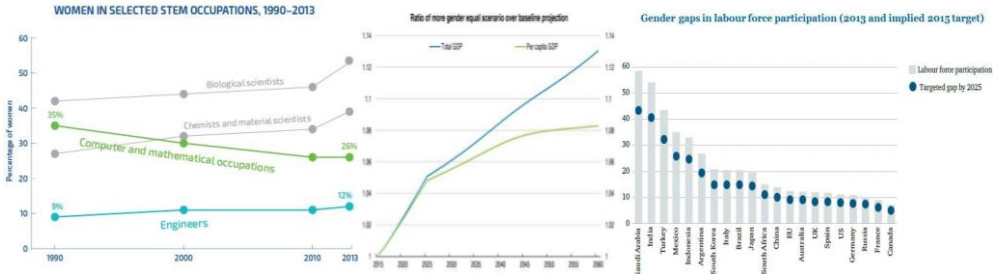


Fig. 1. Women in STEM areas and growth enhanced by gender equity cf. OECD 2015

Fewer women activate in STEM areas (Science, Technology, Engineering and Math) on multiple levels, ranging from undergraduate and graduate enrolment to positions in industry and at universities (National Science Foundation 2009). Though some progress has been made to close this gender gap in the past few decades with women's enrolment increasing in Bachelor and Master degree programs, the gap persists, especially in managerial and other top-level positions in both corporations and academia.

A variety of reasons have been given for this gender gap, including bias and discrimination, a lack of role models, differential access to social networks, and issues related to the work-life balance and family responsibilities.

In light of these potential causes, governments & universities conduct mentoring and career development programs for women specifically aimed at closing this gap. Thus, the causes and proposed solutions are framed at the individual level. However, scientific work is not conducted in isolation, and scholars also point out the necessity of institutional solutions for closing the gender gap. The most important scientific innovations are increasingly produced by collaborating teams with women greatly improving group dynamics; hence promoting the role of women in STEM can have positive consequences for scientific productivity by enhancing the quality of collaboration occurring in teams.

In terms of group process, recent evidence suggests that group collaboration, as indexed by collective intelligence, is greatly improved by the presence of women in the group, as the collective intelligence of a system resides in the connections among the units and their patterns of behaviour. Collectively intelligent patterns of behaviour are responsive to the accomplishment of desired outcomes, rather than the prescribed processes or routines.

Thus, collective intelligence is evident in the consistency of the outcome quality a collective produces across domains, as a result of the responsiveness of members to one another and to the shifting performance contingencies in dynamic situations. It is also linked to the higher levels of social sensitivity exhibited by women, based on their greater ability to read non-verbal cues and make accurate inferences about what others are feeling or thinking.

Groups with more women also exhibited greater equality in conversational turn-taking, further enabling the group members to be responsive to one another and to make the best use of the knowledge and skills of members. Gender diversity increases constructive

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group processes. In some cases, however, the effects of gender diversity on group process also depend on context to some extent.

These findings concerning the effect of gender diversity on group process are also consistent with work examining the effect of gender on interpersonal communication in groups. For example, in a meta-analysis comparing men and women in terms of task and interpersonal styles, women are significantly more interpersonally oriented than men. Men's style is more autocratic than women's, involved giving orders, whereas women's style is more democratic than men's, focusing on participation. In conversation, men display more social dominance-related behaviour while speaking than women, such as chin thrusts, gesturing, and direct eye contact, while women engage in more smiling whether they are speaking or listening.

Such different interpersonal styles may help explain the positive effect of gender diversity on team processes and collaboration as greater gender heterogeneity increases the likelihood of participation among team members. Gender diversity additionally seems to have positive effects on group members' psychological experiences, with individuals of heterogeneous groups reporting greater efficacy in their tasks and better morale than in homogeneous groups. In sum, gender diversity benefits group processes in a variety of ways; the benefits appear to stem from gender differences in attitudes and behaviours during group interactions. Gender diversity impact on team performance suggests benefits for team process but mixed results for team outcomes. Team leaders should pay special attention to the importance of context in moderating the effects of gender diversity on performance and to the generally positive effects of gender diversity on group processes.

There is a persistent gender gap in STEM. Given that gender diversity is more likely to have a negative effect on performance in male-dominated versus gender-balanced industries, the lack of gender balance in scientific teams may be detrimental to scientific innovation. What is more, research implies that gender-balanced teams lead to the best outcomes for group process in terms of men and women having equal influence, participating at an equivalent rate and being satisfied with their group collaboration experiences overall.

Scientific research is conducted within teams of individuals with varying levels of expertise, in varying career phases, and with a variety of demographic differences such as gender, age, ethnicity and national origin. In this context, the effect of gender on performance interacts with other dimensions of diversity such as expertise and status within the team, leading the expertise of women to be under-used, to the team's detriment.

In sum, the under-representation of women in STEM not only means that scientific teams may be missing out on female talent, but it also means that the women who are members of STEM teams may not be participating to their fullest if they are a significant numerical minority or solo members of teams. Furthermore, the positive effects of gender diversity on group processes are extremely relevant to scientific teams, since scientific discoveries are increasingly the products of team collaboration. Enhanced interaction and communication in teams with greater numbers of women, as well as egalitarian rather than autocratic norms, improve group processes, which, in turn, facilitate increased collective intelligence.

Collective intelligence is not correlated with the intelligence of individual group members but rather with the quality of the social interaction processes within the group,

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which are correlated with the proportion of females in the group. Given the degree to which collective intelligence predicts performance on innovative tasks, it is critical to higher levels of performance in the scientific domain.

Gender diversity in STEM is often advocated for social and political reasons. To be sure, enabling equal access to and participation in STEM fields is a worthy social goal in and of itself. However, based on the evidence regarding the effects of gender balance in teams, gender diversity can also enhance group processes, which are increasingly important as collaboration becomes a centre-piece in the production of science. The enhancement of group processes and higher levels of collective intelligence can, in turn, lead to greater innovation and scientific discovery.

Thus, when evaluating the gender gap in STEM, it is not enough to simply examine the number of women in a particular institution or role. It would be most beneficial to ensure that women are represented in collaborative scientific teams at parity to men. Thus, the current focus by universities and industry on individual women's career paths as a way to increase the number of professional women in STEM is praiseworthy. However, in order to be truly effective, the role that women play in scientific teams should also be taken into consideration and promoted in order to yield the substantial benefits of increased gender diversity.

Conclusions

Exceptions from the gender-neutral academia are historical remains that in the future will be abolished. The key message is that gender should be irrelevant, unproblematic, with no need to be scrutinized in assessments and opportunities given on intellectual merit exclusively.

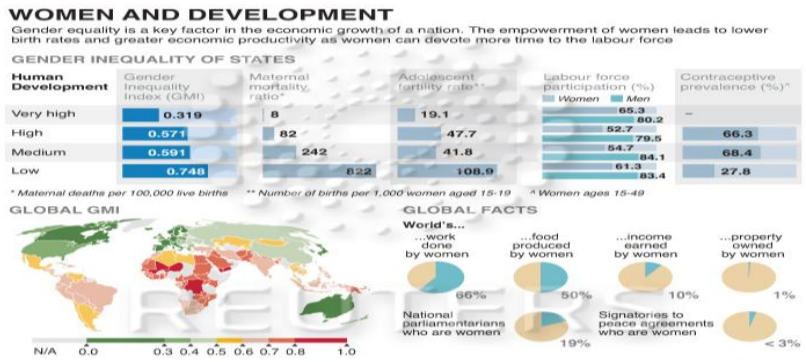


Fig. The world at 7 billion inhabitants; women and development, cf. UNDP Reuters

However, the public reflects on the academia as organized according to assumed male norms and standards. Traits like being competitive, self-assertive and pushy are considered as more appropriate to men regardless of occupation and work tasks. The academic institutions were and still are organized on masculine assumptions: power, competition and participation are embedded in expectations that the participants are men who are able to devote themselves more than full time to scholarly or scientific work.

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Interestingly, even the methods used in research can be considered to be permeated by gender. Research questions that require qualitative methods were experienced of less scientific worth, as, for example, qualitative inquiries, perceived as outside the mainstream. Quantitative methodologies are described to be more in line with male characteristics and qualitative with females. The assumed affinity between qualitative research and femininity and opposite the quantitative research and masculinity can reproduce old-fashioned thinking and dichotomies. Assumed differences in implementing research methods can also be seen in light of stereotyping, triggered by gender construction in organizations. As stereotyping often is done unconscious, even men and women who consider that they practice gender equality sometimes engage in gender stereotyping. The processes that result in stereotyping leading to discrimination in work life can thus be difficult to unveil.

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