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Gender in science: The impact of equality policies in scientific institutions and practices: The case of Germany*

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Abstract

The Fourth World Conference on Women that took place in Beijing in 1995 became a milestone in the history of gender equality. The Beijing Declaration and Platform for Action, adopted unanimously by 189 countries, became a central document for gender equality policies around the world. Today we can observe how the situation of women has substantially changed in relation to their physical and economic autonomy, their participation in decision-making processes and their integration into different levels of education. It is important to take stock of the changes that occurred in the past two decades to be able to identify the challenges that we are to face in the following years. In this context, I would like to discuss in this article the measures taken to gender mainstream policies to fight gender inequalities in the frame of the actions proposed by the European Union (EU) to establish gender equality mechanisms in science and technology. To this end, I will first provide an introduction to gender equality policies in the European context and briefly comment on their impact. Secondly, I will summarise the equality policies in German academia and science and provide elements to understand why in Germany, in spite of great efforts to institutionalise gender equality policies, women are still greatly underrepresented in science and research in the European context.

Keywords: Gender Mainstreaming, Gender Equality.

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Introduction

Science, with its research and analysis instruments has been through history an important resource for understanding nature, society and culture. It also has had an impact on the possibilities of changing the forms of oppression based on gender differences. The feminist critique of science has significantly contributed to knowledge production by identifying three key aspects as source and site of gender inequality. Firstly, it has established that the institutions that produce scientific knowledge have a long tradition of excluding women. Secondly, it has rendered visible the systematic marginalisation of women and other gender identities as subjects of scientific research. Thirdly, it has shown how scientific authority, derived from scientific theories and methods, has served to naturalise and strengthen gendered power relations that reproduce gender inequalities in science and society. The critical feminist perspective has also highlighted three approaches to science. These range from demanding the eradication of inequality in scientific institutions by drawing attention to the low representation of women and the lack of interest in women related issues; to demanding alternative research programs aimed at transforming the premises, methodologies and contents of science; to finally questioning science itself. Although the debates about the role of science and the ways it produces knowledge have had a great impact on creating awareness, this questioning has not always led to substantial changes and has not been sufficient to overcome the gender biases that still dominate the academic and scientific landscape. To confront these biases, feminist activism and women's movements have been able to identify historical opportunities to advance gender equality[1].

The *Fourth World Conference on Women* that took place in Beijing in 1995 became a milestone in the history of gender

[1] An excellent summary of these processes can be found in: Crasnow et al. 2009/2015. For more information on the subject, see Harding (1986), Longino (2002), Rose (1994), Schiebinger (1999) and Wylie (1992).

equality. The *Beijing Declaration and Platform for Action*, adopted unanimously by 189 countries, became a central document for gender equality policies around the world. Today we can observe how the situation of women has substantially changed in relation to their physical and economic autonomy, their participation in decision-making processes and their integration into different levels of education. It is important to take stock of the changes that occurred in the past two decades to be able to identify the challenges that we are to face in the following years. In this context, I would like to discuss in this article the measures taken to gender mainstream policies to fight gender inequalities in the frame of the actions proposed by the European Union (EU) to establish gender equality mechanisms in science and technology. To this end, I will first provide an introduction to gender equality policies in the European context and briefly comment on their impact. Secondly, I will summarise the equality policies in German academia and science and provide elements to understand why in Germany, in spite of great efforts to institutionalise gender equality policies, women are still greatly underrepresented in science and research in the European context.

1. Gender equality policies in the European context

Since the nineties, the European Union adopted gender mainstreaming as the basic strategy for gender equality policies. This is because it is an approach that seeks to transform all public policies into policies that are sensitive to gender inequalities and the needs of women. This approach implies a significant transformation of gender equality in public policies in Europe by expanding it beyond the traditional domain of policies in the context of the labor market and referring theoretically to the structural and systemic causes of gender inequality.

The introduction of gender mainstreaming to the scientific field, research and innovation in the EU has a long history that at the beginning was discussed in conferences and was the launching platform of several resolutions. The underrepresentation of women

in scientific and technological research in general and in decision-making processes in particular, was the reason behind the European Community's issue of the Resolution on "Women and Research" by the European Parlament (16.9.88) which considers that: "the underrepresentation of women in academic life is a widespread problem that requires practical incentives. For this reason, the member states must promote positive actions to stimulate the presence of women in the highest levels of the universities and research centres" (Comisión Europea, 2001:2, author's translation).

The underrepresentation of women at the beginning of the nineties was considered a threat to equality since gender-based discrimination constitutes a violation of human rights. On the other hand, it was considered that women underrepresentation was detrimental to excellence. Furthermore, the negative demographic development implied the need to consider academics of both sexes. Finally, from an economic perspective, to educate and train women for the scientific world and then renounce their capabilities was a waste. This issues were discussed in the communications from the Commission for "Women and Science": Mobilising women to enrich European research (Comisión Europea, 1999). There, the need to promote research about, by and for women in the context of the Fifth Framework Program of the EU so as to maintain a dynamic debate about women in science, was highlighted.

That same year, following the recommendations of the Commission for "Women and Science", the Council of the European Union issued a resolution calling for the member states to:

> -Revise the established mechanisms for gender-disaggregated data collection,
> -commit to the dialogue proposed by the Commission about policies applied in the member states and
> -pursue the objective of gender equality in science by the appropriate means (Comisión Europea 2001:3).

Also in the nineties, different member states created important documents about the problematic of gender inequality in science that were to serve as sources for decision-making at a governmental level. Some highlights are: *The Rising Tide* (England, 1994), *Excellence in Research* (Denmark, 1995) and *Recommendations for Equal Opportunities for Women in Science* (Germany, 1998) (Comisión Europea, 2001:4).

The European Union has developed strategies for equality between women and men that are renewed every five years. It also has a regulatory framework about gender equality that includes binding directives[2] that are applied across the labour market and, as part of it, the research sector. Today, the European Commission deals with gender equality in two ways: through its main financing instrument, Horizon 2020 (H2020) and in the "Reinforced European Research Area Partnership for Excellence and Growth" (ERA) in collaboration with the member states. Since 2012, gender equality is one of the key priorities of ERA. To achieve it, the member states must eliminate the obstacles related to hiring, retention and development in the professional trajectories of female researchers, promote gender balance in the decision-making processes and strengthen the gender dimension in research programs. The European Commission urges its member states to create a favourable legal and political environment to stimulate institutional changes. The objective is to correct gender imbalances in careers and decision-making processes and to strengthen the gender dimension in research.

Funding agencies, research organisations and universities are the first committed to the implementation of institutional changes, particularly through Gender Equality Plans[3]. The EU also finances networks of gender specialists such as the COST action,

[2] For example: Directive 75/117/ about equal retribution of male and female workers, Directive 76/207/CEE about equal treatment in the workplace, professional training and working conditions and Directive 79/7/CEE related to equality in social security.

[3] Until 2013 inly 28% of the institutions dedicated to research in the EU had implemented equality plans (She Figures 2015).

GenderSTE - which organises gender awareness events all over Europe[4] - and GenPORT, which brings together a community of professionals through a portal formed by organisations and people from all over the world that work for gender equality and excellence in science, technology and innovation[5]. In 2010, the European Institute for Gender Equality (EIGE) was created. Its function is to contribute to gender equality awareness, gender mainstreaming of all the EU policies and the resulting policies at national level included, to fight gender-based discrimination and to provide information about gender equality issues among the citizens of the EU (see Informe EIGE 2012).

The promotion of gender equality in research and innovation is thus a clear and present commitment for the EU, which has been renewed in the basic documents of Horizon 2020 in the statement of its goals: to reach gender balance in decision-making processes, in research teams at all levels and to gender mainstream the contents of research and innovation.

The gender mainstreaming measures that have been favoured so far in the EU comprise diverse approaches. By taking stock of their application in Europe in the areas of academy and science we observe that, until the year 2000, only Austria had introduced all the measures recommended by the EU institutions. Germany and England have applied all the measures except the specific laws that regulate gender equality in research at a public level. Norway has also applied all the measures, except the ones that support reintegration to scientific work after maternity leave. Finland, Holland, Sweden and Spain apply the majority of the measures. The gender equality plans have been applied only in the universities of the nordic countries, Austria, Germany, Ireland, Malta, Holland, England and Spain. We observe that the plans have not been implemented in any of the countries that joined the European Union recently.

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[4] See http://www.genderste.eu/

[5] GenPORT website: http://www.genderportal.eu/

According to the last progress report of the ERA 2014, gender issues in research and innovation have gained recognition in the political agendas at national, european and international level, as well as to the inside of research organisations. The initiatives directed at women scientists have been progressively complemented by the policies directed to an institutional change in the research organisations with long term structural effects. Specific national laws and/or strategies have been adopted in regards to gender equality in public research in over half of the member states (European Commission, 2014).

On the other hand, if we analyse the results of the statistics presented in the report *She Figures 2012* we observe that in spite of the progress made in gender equality, inequalities in science persist. As an example, while 59% of post-graduate students in the EU in 2010 were women, only 20% of high-ranking academics were female. If we observe the status of gender disparity in the exact sciences and engineering - taking the data corresponding to the number of scientists and engineers for the years 2005 and 2012 as a reference point to analyse the development of equal distribution policies in this respect - we can observe that, in spite of having the lowest participation rankings in the beginning, Austria, France, England and Luxembourg have made significant progress in the attraction and retention of women in science and engineering over the years. Even if by 2012 the distribution among men and women is still unequal, with less women in this segment, it has been considered a great achievement considering the starting point.

Following, I present the countries that by 2005 had a low participation of women and by 2012 have shown a great advancement, almost achieving the equal distribution among men and women. Sweden started with a 38% of participation and showed a 105% increase. By 2013, 49% of the scientist and engineers were women. Denmark and the Czech Republic started by 30% and today show 51% and 45% of female participation in the areas of science and engineering. On the other hand, Rumania started with a 40% female representation and has 43%

today. On the opposite side of the spectrum we find Belgium and Hungary. The former had an average percentage of 48% women in science in 2005 and by 2012 it showed a 5% decrease. The latter had 35% women in 2005 and by 2012 showed only a 23% increase.

Although it can not be expected that all graduates from a PhD Program will go on to become scientific researchers, there is a clear gender imbalance with less women than men active in research. By 2012, women represented 47% of PhD graduates in the EU. This percentage has stayed above 40% for a long time. However, women only represent 33% of researchers and the trend towards a balance is still significantly slow. Furthermore, very few women occupy leadership positions or participate in decision-making in research (*She Figures*, leaflet 2015: n.p.). Only 15.5% of the main high ranking academics were female and only 10% of the universities in the EU had a female chancellor in 2010 (*She Figures 2012*, 2013:6).

We also observe that classic gender patterns are still at work inside scientific organisations and institutions. The productive work is still considered more valuable than the work undertaken in the private sphere. Male work is thus always overvalued. Women have often the added burden of unpaid reproductive work, such as taking care of the children, the elderly and the people with illness or disability in their lives. Sexual harassment and sexual violence practices still exist in the scientific field. Symbols, images and forms of consciousness that reproduce the gender order still dominate the work spaces.

Highly relevant questions help us understand why the impact of gender equality policies has not led to radical changes inside the research centres and the spaces in which scientific knowledge is produced. One of the most important questions in the research about gender inequality is related to the mechanisms for the evaluation of academics, since these assessment processes can lead to gender bias. The legal systems in Europe already exclude all kinds of gender discrimination. However, this does not mean that it has ceased to exist in daily practices. Gender bias is

directly manifested in the ways that scientific competence is attributed to men and women. There are different standards to appraise the academic and scientific performance of men and women in universities and research centres, in teaching, in scientific management and in scientific research (see Foschi, 2004). Gender bias is also evident in an indirect manner through the negative effects that the way sciences are organised have over the opportunities and challenges that female scientist face (see Gender and Excellence, 2004:13).

One of the ways to evaluate academic and scientific performance is through bibliometrics, which apply mathematical and statistical methods to scientific production to evaluate its activity and quality. The majority of the members of the scientific community consider that the amount of published articles and books, as well as their dissemination, is a reliable indicator to measure scientific quality in a non-biased manner. However, critics of bibliometrics argue that with this indicator neither the quality of the work nor its impact on the scientific community can be measured. Firstly, the quantity of publications can not measure their quality, only their representation. Secondly, this measurements only reflect their impact in the short term and ignores the long term (Feller, 2004:37-38). Another problematic issue related to this evaluation method is that biometrics privileges already established scientific fields that have a long tradition of publications and are highly visible in the academic field. In this fields, researchers have opportunities to expand their scientific activities within consecrated research lines, to establish connections within academic communities and networks, to obtain financing and to be able to publish in prestigious journals (Gender and Excellence, 2004:16-17).

We find gender bias in the use of bibliometrics when the criteria on which it is based reflect the scientific activities of men and women differently (Izquierdo, 2008:80). A quotation index that is focused on natural sciences and only covers 20% of the social and human sciences journals has limited validity to asses the achievements of women in science. Even if the numerical results

are correct, the conceptual framework that structures them reflects the practices of both sexes in an asymmetrical context (Gender and Excellence, 2004:17-18).

Another privileged mechanism for the evaluation of quality and excellence is the peer-review of scientific productivity. Studies in this arena have shown that even when indicators such as number of publications and amount of quotations are used to evaluate scientific production, evaluators often give a better score to men than to women (Lara, 2007:138-139). Let us also not forget that the professional and personal relationships of scientists with members of the evaluating committees play a significant role. The preferences of the evaluators work as a reference framework to judge quality or excellence that often leads them to qualify new projects negatively and to underestimate the work of scientists that have not yet gained a reputation (Gender and Excellence, 2004:19).

Female researchers have pointed out the importance of the academic career being derived from a traditional masculine model of work. A scientific career presupposes flexible and long working hours, absolute dedication, identification with science, an absence of social commitments and a fast and efficient production of results. This model excludes those who have familiar obligations or are not absolute masters of their own time. So, we see that the gender bias in the evaluation of scientific quality and excellence is strongly related to the cultural interpretation of gender. Jeff Hearn notes that in the scientific field men are still invisible as gender. While women are constantly rendered visible as subject/object of equality policies or in/exclusion processes, men continue to exist without having their gender attributed to them and without being made visible as part of the problem of social inequalities (Hearn, 2004:60). As a result of this, we lose sight of the fact that men are the ones applying for academic and scientific positions, are the evaluators and also function as gatekeepers, using their key positions to influence the definition, evaluation and development of scientific excellence (Husu, 2004:69).

Another problematic manifestation of gender bias is related to the complexity of the scientific field's structure and the practices

that derive from it, such as: recruiting, financing, dissemination, training and coordination. Generally speaking, the criteria for the evaluation of quality and excellence are focused in scientific productivity based on the published results and ignoring the rest of the process. From a gender perspective, this strategy is problematic since we know that certain activities in which women are highly represented are not considered part of the relevant criteria for excellence. Some of this activities are: the training of young scientists in academia, coordination activities, design and appraisal of projects, as well as dissemination and communication tasks that are indispensable for the development of scientific research.

2. Gender equality in the German academy and science

The progress in achieving the institutionalisation of gender equality in the German universities goes back to the struggles for equality of the women movements and feminist activists of the seventies. According to Marianne Kriszio (1993:213-255) five stages can be identified. In the first stage (1979-1984), the problems related to the discrimination of women in universities were identified. In the second stage (1984-1985), guidelines to increase the proportion of women in the academic and scientific personnel were established. These actions and measures established that women should be prioritised during the hiring process for academic positions in which women were underrepresented, as long as they had the same qualifications as male applicants. They also called for the active participation of women in decision-making processes, particularly in the ones related to the hiring of personnel. In this stage, offices for gender equality were created in universities to follow up on the implementation of these guidelines.

During the third stage (1985-1989) the legislation that regulates university activities was amended. Through this action, in 1985, universities were obliged to eliminate the obstacles hindering women from a successful scientific career. During the fourth stage (1989-1993), the first law that promoted the development of

women in the academy and sciences was approved (in 1989). The struggle against the discrimination of women in the academic field during this stage is characterised by discussions about the support plans for female academics and scientists, plans for equality and the creation of an infrastructure to institutionalise gender studies in universities.

The fifth stage starts at the beginning of the nineties (1993-1999) and is characterised by the official political acknowledgement of the discrimination mechanisms that hinder the professional development of women in the scientific field. This turned the demands of feminist activism into an integral part of institutional policies, both academic and scientific. During this stage, equality state laws were enacted in all the German states. This gave legal validity to gender equality measures. Kriszio's model must, however, be expanded with a last stage comprising the years between 1999 and 2015. It is the stage in which gender mainstreaming became an official strategy in the EU and Germany and thus became part of the organisational structures of universities in the region.

To tackle the problem of gender inequality in the scientific field, and particularly in research, the German Research Foundation (DFG) developed structural and personnel standards within the framework of the gender equality policies to promote gender equality in research. These standards were implemented in the year 2009 in all higher education institutions and research centres in Germany.

The structural standards refer to the integration of equality measures at an organisational level with the participation of the direction of the institutions. They establish that gender equality between women and men must be considered in all decision-making processes about resources and staff and it is to become an integral part of all scientific quality processes. To guarantee the transparency of gender equality processes, the scientific institutions are bound to collect and publish sex-disaggregated data on equality status at all levels of the organisation and the scientific trajectories. The institutions are also bound to develop

mechanisms to improve the balance of family life with scientific career for both men and women by fighting stereotypes and respecting the individual trajectories. Finally, the standards require that all aspects of gender equality be included in the relations between the scientific personnel, no only in the evaluation and assessment of people, their scientific performance and their research projects, but also in aspects related to gender and diversity issues in their own research.

The standards that were defined at the personnel level are directed to ensure measures for gender equality in all the staff hiring processes, as well as on issues related to research resources, time, space and equipment. They also establish that achieving gender equality necessarily implies ensuring transparency based on disaggregated data to show whether gender equality goals have been reached or not. The personnel standards stipulate that the number of men and women at different levels of the academic career shall be considered as an indicator of the implementation and meeting of standards for gender equality in research.

Finally, the standards also include a commitment to gender equality in the same direction as the standards suggested by the European Union, which prohibit gender-based exclusion as well as exclusion based on age, disability, illness, place of origin, sexual orientation, religion and ideology/worldview. Regarding the evaluation of personnel, it is insisted that the production of effects that distort the results of the assessment be avoided. In respect to the commitment to include a diversity perspective, the German Research Foundation tries, on the one hand, to emulate the new European Community's norms regarding intersectionality or multiple discriminations[6]. However, it does not offer any support in the form of suggestions about how to implement an intersectional equality policy in the scientific field. In regard to evaluations and

[6] In Article 13 of the Amsterdam Treaty equality: "relates to fighting discrimination based on gender, ethnicity, race, disability, age, religion and sexual orientation" (Lombardo and Verloo, 2010:14).

assessments, the DFG does not suggest concrete actions against the current meritocratic systems either.

3. The impact of gender equality policies in the German scientific field.

To appreciate the impact of gender equality policies in science, the distribution of scientific personnel in German universities must be analysed. The scientific field is characterised by a vertical and an horizontal segregation. The former is related to the categories and levels of employment. The latter, to the areas of knowledge[7]. According to data from 2013, in the first type of segregation women occupy 21,3% of the total of Professor positions in German universities. This participation decreases when the position has a higher hierarchy, such as Professor C4/W3 where women represent only 17,3%. Regarding the case of Professor C3/W2 the participation of women is 21,8%. As the position lowers in recognition, the number of women who achieve the position increases. Such is the case of the appointment as Professor C2 for a limited period, where the participation of women is 22,8% and Professor W1 where the participation increases to 39,9% (see Table 1).

If we analyse the available data, which comprises the years from 1994 to 2013, we observe that, in spite of all the actions taken, we can still not observe a great impact of the gender equality policies on the scientific field. According the the report of the Scientific Conference of the German States for equal opportunities in science and research of 2015, women's participation between 1994 and 2013 has changed as follows:

[7] The academic staff in German universities is composed by people holding the following appointments: a) Professor, b) Assistant Professor, c) Research Associate. The position of Professor has three levels. In the model in force until 2003 the levels were C2, C3 and C4. The new model includes W1, W2 and W3. The different levels in each appointment determine wage differences and entail different degrees of recognition and power inside academia. The highest levels are C4 and W3.

regarding enrolment at university it went from 45,1% to 49,8%. The number of women who graduated from university went from 41,5% to 51,2%. The percentage of women who completed a PhD went from 31,2% to 44,2%. The percentage of women who completed habilitation went from 13,5% to 27,4% and the percentage of women who attained a Professorship went from 7,5% to 21,3% (GWK, 2015:10).

Segregation by discipline also shows an uneven landscape. In the areas of cultural science, philology and linguistics the total amount of Professor positions increased in 2013 to 6,353. Women's participation was 36,4%. In 1994 there were 6,089 Professor positions and women occupied 12,4% of these. While in 1994 the number of female Professors in the category C4/W3 was 7,1%, in 2013 it increased to 36,4% (see Table 2). In the area of medicine and health sciences, the total number of Professor positions in 2013 was 3,742. Women represented 18.3%. In comparison, in 1994 there were 3,063 Professor positions and women held 5,5% of them. The percentage of women Professors in the category C4/W3 was 3,1% in 1994. In 2013, it increased to 11,4% (see Table 3). However, in the areas of mathematics, natural sciences and engineering the landscape is very different. The total number of Professors in these disciplines was 16,318 in 1994. Women represented 3,0% of them. In 2013, the number of positions increased to 18,277 and women participation went up to 12,7%. The amount of female Professors in 1994 in the category C4/W3 was 1,9% and in 2013 it increased to 10,3% (see Table 4).

It is also important to observe the segregation based on educational level. The following graduate degrees exist in Germany: Diplom or Magister, a degree from a University of Applied Sciences (Fachhochschule) and bachelor's degree. At the postgraduate level there is the master's degree, followed by doctorate and habilitation. The latter is at postdoctoral level and allows the access to a position as Professor. In the new system, a W1 Professorship is considered equivalent to habilitation and habilitation is tending to disappear. In this regard, we encounter the same phenomenon as before: the higher the degree is, the less

participation of women can be observed. According to data from 2013, in that year 508,621 people enrolled at a German university. Out of those 253,359 (49,8%) were women. If we analyse the different disciplines, considerable variations can be observed. While 23,9% of women studied engineering and 38,7% mathematics and natural sciences, 74,5% opted for cultural sciences, philology and linguistics. The total number of women who sign up for an engineering degree in Germany has increased 6% in the last twenty years. In the case of medicine and health sciences, it increased 18,9% (GWK, 2015:16). Regarding doctorates, in 2013, 27,707 people finished a doctorate program. Out of these, 12,256 were women. This represents a 44,2%. This shows an increase in women participation since 2004. During this period, the number of women who finished a doctorate program increased from 9,030 (39,0%) in 2004 to 12,256 in 2013. With regard to the different disciplines: the percentage of women who finished a doctorate program in engineering was 19,3%. In mathematics and natural sciences the percentage increased since 1994 to reach a 39,4% in 2013. Over half of the doctorate programs in medicine and health sciences (59%) and cultural sciences, philology and linguistics (54%) were completed by women. However, the landscape changes radically as we observe the levels of habilitation and W1 Professors. In 2013, the percentage of women who were habilitated increased to 27,4%. However, the percentage of W1 Professors was 32,4% when it was introduced in 2002 and only increased to 39,9% in 2013.

Vertical segregation shows the decrease of female participation in direct relation as the level of academic positions in the academic field's hierarchy rises. The power of men in this field not only has succeeded in keeping women away from certain careers, but has also contributed to exclude most of them from the higher positions in the hierarchies. In 2014, for example, only 24,5% of women occupied the highest positions in German universities. Out of this 15% held the chancellor or president positions, 16,7% were vice-chancellor or vice-presidents and 30,1% were directors of administration (GWK, 2015:27).

Regarding the policies adopted by the German Research Foundation, since 2009 we can observe that the policies coincided with the restructuring of the criteria for evaluation and excellence in the academic field and that they had a big impact on the distribution of federal funds for research. Before adopting these criteria, the research funds were distributed among all universities and research centres based on the individual quality of the projects that competed for them. Today, they are distributed according to the criteria for excellence. To this end, a special competition was designed in which universities can take part with disciplinary and interdisciplinary projects that include a group of researchers from one or many institution(s). To this end, new formats for research and for the training of young researchers such as graduate schools and graduate colleges were introduced. Parallel to these actions, the quality criteria for individual projects was raised. During this transition, the highest Professor posts were re-evaluated and criteria to impact generational changes inside the universities was included. The regulations introduced by the German Research Foundation however, did not include measures to question the evaluation criteria for academic and scientific quality from a gender perspective, such as the ones discussed before in the European context.

4. Challenges for gender equality in the German academic and scientific field

The achievements resulting from the last twenty years of struggles to materialise gender equality in German universities are not comparable to the results obtained in the creation of a model for the institutionalisation and professionalisation of gender equality. As we have shown in the previous section, the academic field in Germany continues to be characterised by pronounced vertical and horizontal segregation. Men not only continue to hold the majority of the highest and most powerful academic positions - in the year 2013, 78,7% of the Professor positions, 82,7% of the highest Professor positions (C4/W3), 84,5% of the Chancellor or

President positions and 69,9% of the Directors of Administration positions were in the hands of men- but the women's struggles to obtain more and better posts, since 1994, have not yielded the expected results. The percentage of women in Professor positions increased, after twenty years of struggles, by a mere 13,8% (see Table 1).

Why have these results been so poor in spite of having an institutionalised structure that constantly oversees that women are not discriminated in the academic field?

The result has been less than positive when it comes to the expansion of action possibilities of women in the academy because until now their presence in the Professor positions -the ones with the most power and that allow for transcendent decision-making in the academic field- has not been considerable increased. In 1989, the percentage of female Professors in universities was 5,3%. In 2003 it reached barely 21,3%. The number of women with habilitation went from 9,2% to 27,4% during the same period.

In German universities, the disciplinary chairs are the central axis around which institutes, faculties and study programs are organised. In this model, the Professor position, the one of highest hierarchy in German academy, is not only defined as the exercise of a profession, but also as a position that conjugates status, power and the right to decide over the group of people subordinated to the post. There is a structural domination by Professors over the hierarchies of academia. Professors decide the contents to teach and the way research is developed, they guarantee the reproduction of a dominant system by determining the acculturation process of young male and female scientists and they decide the way processes are organised within academia. In this manner, they determine the work environment and the sociability forms of the different groups of people in the university. Since most of the Professors in Germany are male, the academic and scientific career of women depends on them (Andresen, 2001:114-115).

Admission to, permanence and mobility in the academic and scientific field is determined by the following four factors. The first

factor are the dominant stereotypes female students and scientists that are part of the academic system still face. The second is the association of the university career to the male biography model that is supported by the corresponding work division and ignores the structural problem of the conciliation of family and academic work. Thirdly, the market structure offers less opportunities to women and more insecurities in the exercise of the profession. Finally, there is a high amount of pressure that demands great flexibility from scientists and an absolute commitment to the profession to be able to advance in the hierarchic structures of the academic field.

The attempts to bring gender equality into practice reveal a series of obstacles. The elaboration of a legal framework to regulate gender equality does not guarantee its enforcement. That such a framework is observed depends highly on creating awareness among the participants in the equality processes and following up on their advances. On the other hand, equality faces strong resistance from the members of almost all of the commissions that decide on the hiring processes in academia, who are mostly male. The creation of gender awareness in Professors has mostly failed because it is increasingly difficult to motivate Professors to participate in actions around gender inequality, since it would involve for them to relinquish their privileges.

For many years, policies to stimulate the implementation of gender equality in Germany were not very effective to create advances in equality. These models worked through rewards for promoting equality but did not have sanctioning mechanisms for those who did not comply with the objectives related to equality. The interest in stimuli was neglected for years by men because they did not need them. The verification of inequality is a valuable tool of the political activism that fights through the civil society for gender equality. However, it is not enough to generate the social transformation that will allow to eradicate the discrimination of women.

Until access to the positions to make decisions about educational and scientific policies is democratised with a gender

perspective, it will be considerably difficult to reconfigure the academic and scientific field to implement equality. Democratisation would entail regulating the access to decision-making positions for people of different genders, even though women's participation in these positions will not always guarantee that they will promote gender equality.

There is still a male dominance in the scientific field, where research is done and the funding towards excellence is directed. And women are highly underrepresented in the commissions that work as gatekeepers (Husu, 2004:69-76) by setting the scientific agenda and deciding about: scientific policy, the creation and profiles of the new academic positions, research funding, the allocation of available resources, the granting of awards and other prizes, the evaluation of publishing policies and the evaluation of performance in the academic field.

Finally, we have to underline other obstacles in the access of women to the scientific field. First, we have hegemonic gender knowledge that has been internalised not only by men, but also by women and that contributes to render the exclusion mechanisms at work in science invisible. On the other hand, the definition of criteria for quality, evaluation and excellence, as well as the definition of what constitutes science both in theory and in the production of new knowledge and the development of methodologies, is still dominated by androcentric criteria that are articulated as universal and gender neutral. In this manner, men are invisibilised as gender in the processes of production and reproduction that prevail in the scientific field.

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Table 1: Women in Profesor positions in German Universities in: 1994, 2004, 2013

		1994				2004				2013			
		Total	Men	Women	% of Women	Total	Men	Women	% of Women	Total	Men	Women	% of Women
Doctorates		22.404	15.415	6.989	31,2%	23.138	14.108	9.030	39,0%	27.707	15.451	12.256	44,2%
Research Associates		104.327	77.061	27.266	26,1%	119.809	79.862	39.947	33,3%	178.394	105.062	73.332	41,1%
Habilitations		1.479	1.279	200	13,5%	2.283	1.765	518	22,7%	1.567	1.138	429	27,4%
Professors		36.774	34.012	2.762	7,5%	38.443	33.219	5.224	13,6%	45.013	35.426	9.587	21,3%
Out of which	**C2**	9.846	8.808	1.038	10,5%	8.265	6.765	1.500	18,1%	6.428	4.964	1.464	22,8%
	W1	-	-	-	-	411	284	127	30,9%	1.597	960	637	39,9%
	C3/W2	14.974	13.761	1.213	8,1%	17.151	14.717	2.434	14,2%	21.818	17.064	4.754	21,8%
	C4/W3	11.954	11.443	511	4,3%	12.616	11.453	1.163	9,2%	14.604	12.077	2.527	17,3%
	Total Professors	-	-	-	-	-	-	-	-	566	361	205	36,2%

Source: GWK 2015

Table 2: Number of women in Professor positions in the áreas of cultural sciences, philology and linguistics: 1994, 2004, 2013

		1994				2004				2013			
		Total	**Men**	**Women**	**% of Women**	**Total**	**Men**	**Women**	**% of Women**	**Total**	**Men**	**Women**	**% of Women**
Doctorates		2.075	1.166	909	43,8%	2.518	1.246	1.272	50,5%	2.997	1.380	1.617	54,0%
Research Associates		10.720	6.448	4.272	39,9%	11.897	6.292	5.605	47,1%	17.920	7.609	10.311	57,5%
Habilitations		309	224	85	27,5%	466	302	164	35,2%	269	160	109	40,5%
Professor		6.089	5.331	758	12,4%	5.767	4.473	1.294	22,4%	6.353	4.038	2.315	36,4%
Out of which	**C2**	1.050	886	164	15,6%	655	482	173	26,4%	527	335	192	36,4%
	W1	-	-	-	-	97	51	46	47,4%	382	171	211	55,2%
	C3/W2	2.065	1.684	381	18,5%	2.162	1.540	622	28,8%	2.202	1.297	905	41,1%
	C4/W3	2.938	2.729	209	7,1%	2.853	2.400	453	15,9%	3.137	2.182	955	30,4%
	Total Professors	-	-	-	-	-	-	-	-	105	53	52	49,5%

Source: GWK 2015

Table 3: Number of women in Professor positions in the áreas of medicine nad health sciences: 1994, 2004, 2013

		1994				2004				2013			
		Total	Men	Women	% of Women	Total	Men	Women	% of Women	Total	Men	Women	% of Women
Doctorates		12.910	7.065	5.845	45,3%	7.447	3.743	3.704	49,70%	7.003	2.871	4.132	59,0%
Research Associates		31.634	21.199	10.435	33,0%	38.140	22.736	15.404	40,40%	52.370	25.729	26.641	50,9%
Habilitations		533	485	48	9,0%	910	740	170	18,70%	789	591	198	25,1%
Professors		3.063	2.895	168	5,5%	3.388	3.024	364	10,70%	3.742	3.058	684	18,3%
Out of which	**C2**	475	439	36	7,6%	424	328	96	22,60%	709	548	161	22,7%
	W1	-	-	-	-	26	19	7	26,90%	77	53	24	31,2%
	C3/W2	1.244	1.159	85	6,8%	1.481	1.305	176	11,90%	1.434	1.111	323	22,5%
	C4/W3	1.289	1.249	40	3,1%	1.457	1.372	85	5,80%	1.509	1.337	172	11,4%
	Total Professors	-	-	-	-	-	-	-	-	13	9	4	30,8%

Source: GWK 2015

Table 4: Number of women in Professor positions in the areas of mathematics, natural sciences and engineering: 1994, 2004, 2013

		1994				2004				2013			
		Total	Men	Women	% of Women	Total	Men	Women	% of Women	Total	Men	Women	% of Women
Doctorates		9.007	7.176	1.831	20,3%	8.457	6.273	2.184	25,8%	12.679	8.314	4.365	34,4%
Research Associates		42.568	35.796	6.772	15,9%	45.958	35.987	9.971	21,7%	70.523	51.569	18.954	26,9%
Habilitations		409	371	38	9,3%	562	460	102	18,1%	311	256	55	17,7%
Professors		16.318	15.830	488	3,0%	16.320	15.121	1.199	7,3%	18.277	15.952	2.325	12,7%
Out of which	**C2**	4.749	4.542	207	4,4%	3.578	3.237	341	9,5%	1.868	1.617	251	13,4%
	W1	-	-	-	-	186	148	38		559	387	172	30,8%
	C3/W2	7.165	6.970	195	2,7%	7.955	7.365	590	7,4%	10.197	8.911	1.286	12,6%
	C4/W3	4.216	4.136	80	1,9%	4.601	4.371	230	5,0%	5.484	4.918	566	10,3%
	Total Professors	-	-	-	-	-	-	-	-	169	119	50	29,6%

Source: GWK 2015