Excellence without Gender Studies in STEM?

Missed chances for institutionalization

Gender research is an established field but still subject to attacks. In the STEM subjects, Gender Studies is only weakly institutionalized. This hinders research on a variety of topics. A call for action.

When it comes to integration of gender research in STEM subjects (science, technology, engineering and medicine) at the level of professorships, Germany is lagging behind internationally. In Switzerland a chair has been just recently filled and assigned Digitalization as its focus area. In the USA and Canada, numerous gender professorships in STEM are an established part of the academic landscape, for example the chairs of Women's, Gender, and Sexuality Studies and Neuroscience and Behavioral Biology at Emory University, of Psychology, Gender Studies, & Neuroscience at Queen's University, and Gender Studies & Psychology at the University of British Columbia. At MIT, the master's in Women's & Gender Studies is treated as an indispensable part of the programme. In northern European countries, chairs in chemistry and physics such as those at the universities of Lund and York demonstrate that gender research in STEM is very much in the interests of the STEM subjects themselves. At an institute of the Ministry of Science and Innovation in Spain there is a professorship on *Investigación en Ciencia Tecnología y Género* and at the *Universidad Autónoma de Santiago de Chile* another professor leads the *Centro para la Transversalización de la Perspectiva de Género* for the science and technology subjects.

Why do we need Gender Studies in STEM?

This institutionalization of Gender & Diversity Studies in STEM is justified because Gender & Diversity Studies work on many topics that urgently need more scientific investigation in the context of global challenges such as digitalization, climate change and social inequality:

For example, when standards for crash tests in the automotive industry ignore pregnant people, people who are very tall, very short or very thin; when autonomous vehicles fail to recognize people in wheelchairs as humans that they should stop for, when apps for buying tickets (contrary to statutory regulations) use a classification as male or female, the question is present: what kinds of bodies count in mobility and mobility-related safety concepts?

When heart attacks and other medical emergencies are less often recognized in women, because they have different symptoms than men; when medicines are still tested and dosed based on 'normal' bodies that are male-like, or when "masculine" aggression or "feminine" weakness in spatial orientation are still understood stereotypically, without evidence, as hard-wired traits in the brain, we have to face the question: Who would not survive because of ignored knowledge, and why are findings of feminist research into the natural world and technology, such as androcentrism and essentialism, some of which have been available for more than 30 years, still not being applied – despite the demonstrable costs of not doing so?

When recruiting software recommends men for interviews and filters out applications from women, when machine-learning detection of skin cancer performs worse in people of colour than in white people, when large language models perpetuate traditional stereotypes and exacerbate structural discrimination, we have to ask: How can we ensure that AI systems and their learning datasets are fair?

Status of Gender Studies in STEM in Germany

On these questions and many others, Gender & Diversity Studies in STEM has already done essential foundational work. It has formulated the research questions that must be addressed if topics such as 'gender medicine' or 'gender bias in AI' are to be dealt with at all. And it could contribute more, and could be more visible, if the field was more strongly institutionalized in Germany, as it is elsewhere. At the moment there are only two permanent professorships in Gender Studies in STEM in Germany: one for Mathematics and Gender Studies at the University of Hamburg, and one for Gender and Diversity in Engineering at RWTH Aachen.

It's not as though Germany has had no professors of international stature in the field of Gender & Diversity Studies in STEM – for example there were professorships of Gender in Engineering and Physics Didactics at the Hochschule Hannover and of Gender Research in Mechanical Engineering and Computer Science at TU Braunschweig. But these were fixed-term appointments and were not made permanent. And now the University of Freiburg has allowed its second professorship in this field to expire. Following the retirement of Britta Schinzel, professor of Mathematics and Computer Science with Gender Focus, the Freiburg 'Forum for Competence in Gender Research in Computer Science and Science'* was dissolved in 2008. A little later, a fixed-term professorship of Gender Studies in STEM was created, which Anelis Kaiser Trujillo used to investigate and critically reflect upon gender aspects in brain research – until recently. But this position, too, was allowed to expire.

The colleagues affected by the expiry of these positions stand for many others whose teaching opportunities have been limited to even shorter visiting professorships, but still demonstrated in innovative research projects, publications and teaching projects that gender studies in science and technology is an internationally established subject that provides urgently needed advanced knowledge.

Funding bodies demand gender consideration in all subjects

Why does the field of Gender Studies in STEM have to be discovered and established over and over again? In Germany, over a space of more than ten years, not one professorship of gender in STEM has been made permanent, and neither has a permanent professorship in this field been created, although the relevant expertise is increasingly needed across the whole research spectrum of STEM. By now, gender research has to be considered in research grant applications in mathematics, IT, engineering and science as well as in other disciplines. For the new Horizon research period (2021–2027), the EU explicitly requires the inclusion of gender dimensions in research. Starting in 2022, Gender Equality Plans (GEP) have become a required component of EU grant applications (e.g. in the *ERC Starting Grant*, ERC *Consolidator Grant*, and *ERC Advanced Grant*), and require the integration of gender and equality aspects (Horizon Europe Guidance on Gender Equality Plans). The DFG, too, has explicitly called for gender perspectives to be included in the next round of the 'Initiative in Excellence'. The topics of "equality, inclusion and

diversity" (including trainees) will be an important selection criterion in the next round of excellence grants.

But in reality, many of the people who have been working in this apparently urgently wanted field of research, and who have, as professors, done path-breaking work, have not been able to get permanent chairs. And of all people, it seems to be exactly the colleagues who have, throughout their career – from their first degrees through their doctoral work to their *Habilitation* – achieved dual qualifications in scientific and engineering subjects on the one hand and gender studies on the other, and who are therefore especially well-qualified to translate between the perspectives of different disciplines, who have no chance or are let go by the universities.

The future of Gender Studies?

Only having temporary positions in this field means that the science and engineering subjects are cutting themselves off from a long-term thematic and methodological examination of their own mission. Taking Gender Studies in STEM seriously would mean reflecting on what counts as a scientific question, as a legitimate method and as appropriate content. It could mean that specific practices in laboratories or time-honoured scientific routines have to be reviewed and amended. Then again, Gender Studies in STEM is not the only emerging topic that has been greeted with a defensive reaction; for example, peace research or environmental research also had long struggles for acceptance. But the pressure on STEM research to recognize Gender Studies in STEM and to develop it productively is growing internationally. Particularly in cases where gender is treated only as a form of add-on affirmative action for women, the style of grant applications from Germany is notoriously antiquated and is increasingly attracting negative evaluations.

If science in Germany wants to remain competitive, the research field of Gender Studies in STEM needs to be established as a nationwide interdisciplinary subject, for example by means of a federal-level call for a number of full professorships in the field, across a variety of universities. A suitable beginning would be, for example, one chair in each *Bundesland*. Similar to a targeted version of the *Professorinnenprogramm*. We must succeed in maintaining, passing on and expanding the knowledge in this field, if we are to avoid letting its considerable potential go to waste again and again.

The need of the STEM subjects for a measure of this type is evident, and the relevant experts are available – but the structures of universities are failing to adapt. Many years ago, Londa Schiebinger already formulated the demand: "Fix the numbers, fix the knowledge, fix the institutions". What are the STEM subjects waiting for?

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Helene Götschel (expired professorship of Gender in Engineering and Computer Science at the Faculty of Electrical Engineering and Information Technology and the Faculty for Mechanical and Biprocess Engineering at Hochschule Hannover)

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