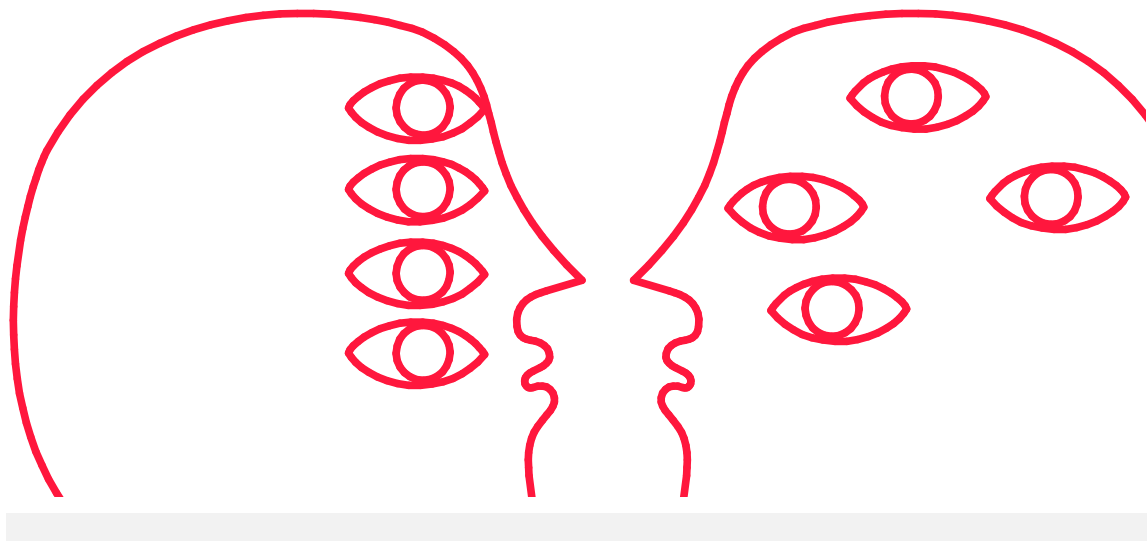# 16th Berlin Debate on Science and Science Policy

"It's the diversity, stupid! A sustainable future requires all of its best research talents."

7 Nov 2021

SUMMARY

Introduction

After an exclusively digital edition of the Berlin Debate in 2020, the 16th Berlin Debate on Science and Science Policy allowed the hosts from Robert Bosch Foundation to once again welcome their guests in the beautiful setting of the Foundation's Berlin headquarters. The gathering itself took place in a hybrid format: around two thirds of participants were able to join in person while one third attended virtually. As Ingrid Wünning Tschol and Henry Alt-Haaker, the Debate's hosts, pointed out, the 2021 gathering was simultaneously the 20th birthday of the Berlin Debate, which had been convened for the very first time in 2001. The key idea behind this format has stayed the same throughout the years: to identify a key topic in global science and science policy, to bring together a select group of international experts to tackle this topic from a range of perspectives and to provide a safe intellectual space for this exchange, where even the most audacious ideas can be proposed and discussed.

In 2008, the Berlin Debate already looked into the topic of diversity in science, zooming in on the role of women. Since then, a number of things have changed for the better, but a lot still remains to be done, as Ingrid Wünning Tschol pointed out. Also, the debate has evolved since then, beyond the sole gender dimension to include a broader understanding of diversity. Expanding on the Foundation's rationale for choosing the topic of diversity for this year's debate, Henry Alt-Haaker encouraged participants to be ambitious in their discussions on the topic. He suggested approaching the topic from a systemic perspective (learning from the past and presenting evidence for the benefits of diversifying science) as well as a multidimensional approach (to include not only categories such as sex, gender or race but to also consider the dimension of regional diversity and other frequently overlooked categories).

Nick Ishmael-Perkins, the Debate's moderator from the International Science Council, set the context by sharing some statistics that revealed glaring gaps in our discussion of inclusion in research, with a number of groups being constantly overlooked. Asking why it is so difficult for us to create a truly global and equitable community for research, he then invited Thomas Jørgensen from the European University Association (EUA) to take the floor and shed some light on what diversity is – and what it is not.

Opening Discussion: Diversity, equity and inclusion in science and research: where do we stand?

Policy expert Thomas Jørgensen provided insights into the institutional dimension of diversity, inclusion and equity and how it is being approached at the university level in Europe. When talking about diversity, he argued, we first need to agree on what is meant. To him, diversity in research is about ensuring the right for everybody to access scientific knowledge, a right that is too often being put in jeopardy by the "classically privileged groups" who have set up norms that can act as barriers to ensuring that right. Building on the results of a study by the EUA, Thomas Jørgensen pointed out that, faced with institutional reality, it is important not to insist on an ideal model of what diversity is. It is important to consider local contexts, given social structures and value systems. Sometimes, it is not (yet) possible to evolve the discussion beyond binary gender and disabilities to also include issues around socio-economic background, sexual identity, education or ethnicity. While some universities state that diversity is part of their social responsibility, it is frequently also linked to a recognised necessity of "having to be diverse". Diversity is perceived as a prerequisite or even an element of excellence, and universities argue that they cannot be excellent if they are not diverse. There is a strong need to attract global talent and to include diverse knowledge perspectives in research teams. However, Thomas Jørgensen also pointed out the fact that the definition of knowledge is owned by a very small number of people and that the global research agenda is being set in the countries that possess both the money and the political power – hence,

predominantly in the Global North. A multipolar knowledge system that seemed a real possibility still a decade ago is today far from reality. To Thomas Jørgensen, this is "catastrophic".

The absolute necessity to include researchers from the Global South in setting the global research agenda was echoed by a number of participants, such as Siti Hamisah Tapsir from the Malaysia Board of Technologists. She shared that the recent difficulty of Malaysia to access vaccines was linked to Malaysian researchers not being part of formulating the research agenda. Shirley M. Malcom from the American Association for the Advancement of Science noted that "unless you are at the table around the articulation of policy issues or how they will be framed, nothing will change". Not being "at the table", she argued, means that you cannot influence the research agenda. Funders have a critical role to play in shaping the criteria of how money is being distributed and in ensuring that diversity issues are being considered.

Tom Welton from Imperial College London introduced the essential notion of belonging. Without the right to feel that I belong, he argued, I cannot make my full contribution to generating knowledge. This implies the need to move away from a passive understanding of accessing knowledge to one of co-creation and co-production by diverse stakeholders, as pointed out by Magdalena Skipper from Nature. It is the responsibility of the scientific community to ensure that the knowledge produced is accessible by a broad range of constituencies. Ultimately, argued Daya Reddy from the University of Cape Town, this comes down to a set of values that should underpin the activities of the scientific community.

The pandemic has the potential to be a game changer in many respects. Digitization has opened a new knowledge space, which has the potential to change the higher education system forever. According to Helga Nowotny, former President of the European Research Council, universities will have different functions in the future, which has implications for research agendas that will have to change. Shirley M. Malcom pointed out that the pandemic is an opportunity for research institutions to be a lot more "porous" than they were in the past. Concretely, this means inviting new communities in to help talk about how science can actually contribute to solving problems – to support changes that are meaningful to the community and that it truly needs. The pandemic can also serve as a trigger for changing the idea of who gets to do science and who feels attracted and entitled to do science, argued Mandë Holford from the American Museum of Natural History. Part of building identity is building pride, and this needs to be part of any inclusion effort.

At the end of this first section of the Debate, it became very clear that the issue of access to the knowledge community needs to be a substantial part of the discussion to come. What does it mean to be an active part of the knowledge community – and not just a visitor? What does it mean to integrate into an already existing "club"? What are the norms that are thought to be "normal", but that actually constitute entry barriers to the community? How can we encourage negotiation of what it means to be part of the community? And how can the privileged groups be inspired to reflect upon themselves and to question their "normalcy"?

Session I: Less is less: the case for change

Introducing Session I, the intervention by Mathias Wullum Nielsen from Copenhagen University focused on the link between gender diversity and research outcomes. To him, it is critical to broaden the thinking about the outcomes of diversity beyond the typical metrics, to start thinking about how diversity can improve the content and scope of knowledge. It is already established that gender diversity can lead to a better performance of scientific teams, for instance in terms of citation and publishing rates as well as patents. Furthermore, improving gender diversity in teams can also improve the attention given to sex and gender analysis and lead to reshaping research agendas and priorities that have historically been neglected. Mathias Wullum Nielsen concluded that diversity matters for scientific knowledge production

because it broadens the conceptions of what is seen as viable and appropriate solutions to the societal challenges of our time. Diversity allows for different conceptions of what a solution might be, which makes science more responsive to societal needs.

Lydie Hakizimana from AIMS Global Network then talked about the essential role of diversity in the promotion of scientific innovation, enhancing global competitiveness, contributing to a robust learning environment and promoting research quality. She pointed out, however, that knowledge, networks and knowledge systems today are largely ethnocentric from a Western perspective. While the stated priority of international development cooperation is to build the research capacity of developing countries, the actual practice is often focused on the promotion of knowledge transfer from the Global North to the Global South. Moreover, Lydie Hakizimana argued that the Western view of scientific excellence favors researchers from top institutions found in the Global North, thus excluding excellent researchers from the Global South. She concluded to say that the existence of knowledge, systems and structures that condone discrimination as well as the power of relationships in Western ethnocentric knowledge protection within academia, need to be discussed and approached seriously. Lydie Hakizimana also called for establishing strong ethical protocols around North-South collaboration, considering three crucial elements: Firstly, who sets the research agenda? Secondly, whom does the research actually benefit? Thirdly, who owns the knowledge produced?

The ensuing debate focused on the creation of collaboration and partnerships. How can equal partnerships be created? Welcoming new perspectives and people who ask new questions requires opening up the established norms, as Londa Schiebinger from Stanford University pointed out. Magdalena Skipper argued that in order to engineer true collaboration, the notion of equity is of the essence. To her, inclusion is "like being invited to a party, but equity is actually being invited to dance." Mandë Holford shared her conviction that science diplomacy is a wonderful way to engage particular junior scientists from the Global South. Science diplomacy can be a very powerful tool for supporting emerging voices from diverse parts of the world.

Daya Reddy expanded the discussion to include the topic of the "how". In order to engage in collaboration in the first place, he argued, it is crucial to build capacity. Funders have a critical role to play in this context. This reasoning was supported by Helga Nowotny, who provided the example of the earlier European Framework Programmes for Research. In these programmes, incentives had been created for researchers to bring in their peers from countries where the scientific base had been eroded, such as Portugal and Spain. While the research relationship was mostly unequal in the beginning, this top-down capacity-building approach worked in the long run, and today, these countries dispose of a strong scientific base. There was broad agreement among participants that top-down rules are required to drive bottom-up change. Kumsal Bayazit from Elsevier cautioned, however, that because top-down rules tend to receive a lot of pushback, in particular from the research community where academic freedom is central, it is essential for funders to explain the rationale and objectives.

What needs to change in today's science system to foster equal collaboration? According to Ottoline Leyser from UK Research and Innovation, it is essential to shift the conceptualization of science and society in the research community and to move away from the idea that it is all about individuals and what individuals have done. She argues that although individuals do research, the outcomes we want to see are created by different people bringing in different things. In turn, this requires systems that reward and inherently support difference. A substantial shift is needed to create much more inclusive definitions of excellence. At the end of the first session, Siti Hamisah Tapsir asked participants to consider that priorities in the Global South differ from the ones in the Global North and that brain drain as well as difficult access to international communities constitute existential challenges for researchers from

these regions. Participants acknowledged that issues around economic inequalities exacerbate and complicate the agenda around diversity and inclusion.

Session II: Failing forward: why has progress been so slow?

Why has the change happening so far not been truly transformative? Introducing the next session, Nick Ishmael-Perkins pointed to a recent study showing that global citation inequality is actually increasing, with 21% of all citations going to a small elite of 1% of researchers who reside mostly in the Global North. All too often, international and global initiatives are spearheaded without adequate representation of Southern scientists or African researchers.

Sabelo J. Ndlovu-Gatsheni from the University of Bayreuth started his intervention by asking participants whether we are certain to have identified the right problem. Is diversity really the issue? Can the issues we are dealing with be reduced to diversity? Sabelo J. Ndlovu-Gatsheni introduced the concept of the "cognitive empire". According to him, the cognitive empire prevents non-established knowledge systems from flourishing. It lets the Global North set the research agenda and perpetuates unequal partnerships. Building on the dance floor analogy, Sabelo J. Ndlovu-Gatsheni urged to think about who is invited to dance and who chooses the music that is being played. How can we democratise knowledge to enable others to participate without being invited? How can we change the rules of the game and take seriously the knowledge(s) that are being produced in the Global South?

Pamela Newkirk from New York University then went on to highlight the reasons why, despite the billions of dollars institutions spend each year on diversity initiatives, they continually fail to achieve diversity. One of the problems she identified is the imprecise nature of the term itself. In fact, every marginalized population is included under the umbrella of diversity, and there is little agreement on what diversity means. As diversity has become unfeathered, its ambitious mission was eclipsed. Among the numerous reasons why diversity efforts have failed, Pamela Newkirk identified the legacy of racial hierarchies, perpetuating social networks which often include the marginalised, failed diversity practices such as mandatory trainings, which tend to have reverse effects, the diversity backlash – much of the progress was followed by demands for reversal – and lack of leadership. Achieving diversity is not rocket science, but it demands leadership and commitment.

Both presentations met a lot of interest and support among participants. Douglas Haynes from the University of California, Irvine expressed his concern about how little we understand of the historical roots and causes of failing diversity, which hampers true change. Building on Pamela Newkirk's remarks, Shirley M. Malcom shared her conviction that the issue of diversity needs to be looked at and tackled as a systemic problem. This was seconded by Londa Schiebinger, who pointed out that three things need to be addressed simultaneously: fixing the numbers, fixing the institutions and fixing the knowledge.

Evelyn Gitau from the African Population and Health Center asked participants to take a step back and reflect once more on the issue of representation and equity. If we have an interest in a diversity of knowledge, we need to acknowledge that diversity itself brings diverse knowledge. Based on her experience as an African, she challenged whether it is her knowledge that is being sought or only her presence. Just acknowledging diverse representation is not the same as appreciating diverse knowledge.

Building on the notion that progress towards diversity has stalled or even regressed, Kumsal Bayazit pointed out the importance to recognise that progress has indeed been made. To her, acknowledging this, despite all difficulty, is essential to keep people motivated to continue to work and put in efforts to improve the situation. While she conceded that the pace of progress is frustrating, achievements still should be celebrated. This brought the focus of the

discussion back to the issue of leadership. Shirley M. Malcom argued in favor of adopting a holistic approach of leadership. Concerted action is required in which all challenges are being looked at together. Diversity and inclusion cannot be left to a diversity officer in isolation but needs leaders who also see this as their task. Fellowships can be a powerful tool, as well as supporting organizations that already do the work well and can share best practices to model and scale. Financial incentives and access to capital have to be created, and funding policy changes need to be advocated for.

Progress is not linear, as several participants noted. In fact, it often is cyclical – and might stay cyclical if we do not make the required interventions and change the structures. Moving from one problem to the next and so on and so forth will not lead to the required substantial changes. We have to be consistent and always keep the big picture in mind. Asked why diversity trainings often fail to produce the expected results, Pamela Newkirk explained that "too much effort has been put on changing people's hearts and minds" and not enough on interventions, notably hiring people who are "different". The focus needs to shift away from check box exercises to actually increasing diversity. This implies changing the rules of the game and taking a fresh look at the roles of our institutions in perpetuating structures. It is the system we need to look into, Shirley M. Malcom argued. The systems have to "basically incentivise doing the right things". In this context, allyship is a key concept: active support from people who make achieving diversity their personal problem, while knowing the system is the real problem.

Session III: Building back more inclusive: strategies for the future

Opening session III, Nick Ishmael-Perkins reminded participants that, while the last year has brought significant suffering, it has also provided opportunity for creating disruption. How can we harness this chance to learn and to rebuild?

In her introductory statement, Londa Schiebinger from Stanford University focused on the issue of knowledge production and how it can be improved. Numerous studies have documented that integrating sex, gender and diversity analysis into the design of research, where relevant, can lead to discovery and improved research methodologies to realize this potential. Funding agencies have begun to implement policies integrating this type of analysis into the grant proposal process. Londa Schiebinger introduced the results of her recent analysis, which looked at the integration of sex, gender and diversity in research policies of major public funding agencies and aimed to identify standard practices across global regions as well as country-specific cultures. The evaluation framework focused on the definition of terminology, proposal guidelines for applicants, instructions to evaluators, training for applicants, evaluators and staff as well as policy implementation. Out of 23 participating agencies, one achieved superior performance, six scored excellent, five scored average and nine had not started at all.

Douglas Haynes' intervention then looked at inclusive excellence at the university level. Referring to the example of the University of California, Irvine, he described how the university's inclusive intervention practice produces positive results. The transformation process was long-term and stretched over the past 25 years. For many years, he explained, meritocracy and objectivity had provided a compelling justification for explaining who is in and who is outside of the university. The idea that talent is broadly distributed would often produce pushback – and still does. Today, he argued, it is more important than ever for every member of the institution, particularly those with authority, to acknowledge the fact that there are historical and persistent barriers to participation which both determine and distort who participates and who succeeds. The challenge for the university is steeper than for most other organizations because power and authority are spread among the faculty. To confront racial justice, the university has adopted an exclusive excellence framework which includes, among

others, accountability, education, strategic partnerships and financial incentives. Douglas Haynes underlined that practices will only change if each faculty member assumes responsibility for transforming the institution.

Ottoline Leyser from UK Research and Innovation introduced her thoughts on what is needed to change research systems. The concept of psychological safety is essential to her as it underpins many of the issues that need to be tackled for change to happen. The incentives we have in the research system have to align with what the community genuinely values. It is critical to build very high-quality environments in the research system, where difference and diversity are truly welcome. In turn, this means that disagreement is positive, and that people can freely voice their ideas and be assured to be listened to. Ottoline Leyser went back to the necessity of shifting the definitions of excellence to be much more appropriately diverse and to value difference. How can we make sure, she asked, that we do not just "shove everybody through the same narrow door, but that we take down the wall together"? To her, this also implies embracing flexible career paths and moving away from publication fixation. A concrete example is the novel "Résumé for Researchers", a narrative CV that focuses on people's net contribution to the system, e.g. how does one contribute to knowledge generation and how does one support the people in the closer and wider community. This new approach meets a lot of resistance because it goes against established incentives and reward structures in academia – but it is ultimately a tool that contributes to changing the systems, which, for Ottoline Leyser, is part of responsible leadership.

Reflecting on the three interventions, participants noted that, indeed, change needs to focus on the system and not just seek to change people's hearts and minds. Changing the very notion of excellence is key to this. Evelyn Gitau made the case for a definition of excellence that includes the actual impact of implementation research. This was supported by Mandë Holford who stressed the need to diversify the definition of excellence, in particular regarding the people who do research. Referring to the example of the 2030 STEM initiative, she explained how the pipeline for STEM talents, starting from primary education, will be systematically and radically ramped up to increase the number of unrepresented people and different sectors in the STEM ecosystem. Helga Nowotny took up the concept of responsibility. To her, responsibility is a double-sided sword because it is so easy to focus on individual responsibility. And indeed, if you do not have individuals who feel responsible, you will not get anywhere. However, at the same time, it is clear that responsibility has to rest with the institution, too. The leader has to embrace responsibility, as an individual as well as an institution. Nicole Brown referred once more to the notion of allyship and underlined that everyone has a role to play in being good role models. While Pamela Newkirk acknowledged the importance of individuals, she made a strong case for leadership. Leadership really matters since leaders determine what is valued, what is devalued and what the reward system is.

Jean-Pierre Bourguignon, former President of the European Research Council, ended the session with a word of caution. The university is not autonomous but acts within a political environment that currently evolves in a very difficult direction when it comes to diversity and inclusion. It is important to bear in mind, he notes, that stakeholders have to confront the environment, and that this is not a straightforward endeavour.

The game changer: inclusivity and AI

In the final part of the 16th Berlin Debate, Helga Nowotny shared her insights and reflections on Artificial Intelligence (AI) as a game changer for diversity, inclusion and scientific practice. She pointed out that we do not look at AI with the same optimism as we did at the internet some time ago. Indeed, there is broad recognition of the threats and risks connected with it. We all know about the biases and discrimination linked to data. AI-based inequalities start to pervade the institutions and are being aggravated by relying on decision-making based on

algorithms. When it comes to facing these risks, Helga Nowotny argued, the ubiquitous answer is ethics. And while ethics is important, it will not save us. It is true that numerous ethics guidelines exist in a broad variety of countries. However, they all talk about different things – there is no consensus on what ethics means and how to implement it. She also pointed out that working on an ethical AI is technically very complex. In terms of AI research and diversity, it is common knowledge that women and people of colour are largely absent. It would be important to include them, however. Training and educating the next generation of data scientists on social science perspectives and ethical principles needs to become a systematic effort. Ultimately, Helga Nowotny stated, machines and human beings are embarking on a long-term evolutionary path, and we will need to answer the question of what it means to be human. She made the case for a global declaration of digital rights, just as there is a declaration of human rights.

Participants shared a number of concerns regarding AI and its implications for diversity. As Shirley M. Malcom noted, the field itself is not diverse. Data used for training is not diverse. Material is biased. The problem, she insisted, is not the technology as such – it is the people building and testing it. A major problem is the fact that while regulation of the field is of utmost importance, it is not yet there. Thomas Jørgensen expressed his concerns about private education providers owning the data and designing learning management systems that will also be used by universities. The digital economy fuels the commercialisation of education, which is a concerning development. Daya Reddy brought up the situation of AI in a global context. How can we strengthen governance and regulation in countries where there is very little infrastructure? He argued in favor of a clearly defined capacity-building mission to ensure that Africa, with the rest of the world, is at the cutting edge with regard to research and development in data driven science, that it has the infrastructure as well as the capacity to train and educate.

Concluding remarks

In lieu of summarising the discussions, Nick Ishmael-Perkins encouraged participants to take a moment to individually reflect on any metaphorical "gifts" they had received throughout the day, new thoughts that occurred or a quote they will take away. Henry Alt-Haaker, the Debate's host, concluded by sharing a number of images that he took away from the exchanges and that inspired him: the notion of gate-keepers as opposed to tearing down walls together, the picture of the dance floor and what it means to invite and be invited, the continuous call for self-reflection and self-criticism as well as the dichotomy between changing a complex system and promoting the leadership of individuals since they are the only ones who can change the system.

Points for further reflection and debate:

- How do we challenge the dominant Western way of knowledge acquisition?
- How can we change our systems to incentivise doing the right thing?
- How do we change our definitions of excellence to be much more appropriately diverse and to focus on serving society?
- How can we embrace not only diverse representation but also diverse knowledge(s)?
- How can we foster allyship and mentoring and serve as role models ourselves?
- How can we rethink leadership and the role of funders to drive change top-down?
- What is the role of education and how can we look at education through multiple lenses?
- How can we make sure everyone sits at the table, dances and feels they belong?