Karlsruhe Institute of Technology

c:o/re Käte Hamburger Kolleg Cultures of Research

RWTH AACHEN UNIVERSITY

eman ta zabal zazu
Universidad del País Vasco
Euskal Herriko Unibertsitatea

“Open Science”: Ambivalences and Tensions – New Borderlands Between Science, Technology and Society

Interdisciplinary International Graduate Summer School
XXXVIII Summer Courses
Miramar Palace, Donostia-San Sebastián

July, 18 – 22, 2022

Directors

Prof. Andoni Ibarra, University of the Basque Country – UPV/EHU, Spain
Prof. Hannot Rodríguez, University of the Basque Country – UPV/EHU, Spain
Dr. Bettina-Johanna Krings, Karlsruhe Institute of Technology – KIT, Germany
Dr. Andreas Lösch, Karlsruhe Institute of Technology – KIT, Germany
Prof. Stefan Böschen, RWTH Aachen, c:o/re and HumTec, Germany

INSTITUTE FOR TECHNOLOGY ASSESSMENT AND SYSTEMS ANALYSIS (ITAS)

Donostia-San Sebastián

Donostia-San Sebastián is a small city of 183,000 inhabitants, with a remarkably high level of cultural activity for its size. The beauty of its Bay, known as the Pearl of the Cantabrian Sea; its situation in a natural amphitheatre facing the sea and protected by mountains; its quality of life, and its famous gastronomy have turned it during the past two centuries into a world-class tourist destination.

Shaped by history, it started out as a fishing village; grew as a market town and military fort, with the invasion by Napoleon's troops; and after being almost completely destroyed in 1813 by the garrison's battle against the Anglo-Portuguese, it was chosen by Queen Isabel II as the royal family's summer residence and began to flourish as a services city.

It was in the late 19th and early 20th century that Donostia-San Sebastián emerged as a city of culture, full of amenities and a main tourist destination. Its majestic buildings and their eclectic style, which reflected the contemporary tastes of the royal family and bourgeoisie, give it a stately character that has adapted well to changing times.

Cultural activity grew at the same pace as tourist activity, so that today the city boasts a top quality performing arts and cultural programme. The International Film Festival, the 'Jazzaldia' Jazz Festival and Music Fortnight are the highlights of its year-round programme. This year the festival is from 20 to 25 July so it overlaps with the Summerschool and attendees will have the possibility to enjoy some concerts, many which are free of charge (https://jazzaldia.eus/en/).

Donostia-San Sebastián is world famous as a food tourism destination, since it's collected more Michelin stars per square metre of its territory than anywhere else in the world; and, as the birthplace of the "new Basque cuisine" movement, it's nurtured the renaissance of Basque gastronomy. The quality of its ingredients and its world famous "pintxos" give much pleasure to both local people and visitors all year round.

Because of its gastronomy, culture, beauty and maturity as a tourist destination, along with accommodation and tourist resources of great variety and exceptional quality, Donostia-San Sebastián is a very important tourist destination, welcoming over 400,000 visitors per year.

Miramar Palace

This palace was created for queen María Cristina and the royal family, after the queen decided to have her official summer residence in Donostia-San Sebastián from 1887. It enjoys impressive views of the two beaches in the bay and the Island of Santa Clara, which is directly opposite.

Miramar Palace was built in the 'queen Anne English cottage' style under the direction of English architect Seldon Wornum, who also designed different palaces in Biarritz and San Juan de Luz. It was built of brick and sandstone blocks with a timber frame. Its gardens are the handiwork of master gardener Pierre Ducasse, who also designed the gardens of Aiete Palace and Gipuzkoa Square.

Source: Official website of the Donostia-San Sebastián Tourism Office (http://www.sansebastianturismo.com)

A. **Palacio de Miramar**
Paseo de Miraconcha, 48, 20007 Donostia-San Sebastián
943 21 90 22
10 opiniones

"Open Science": Ambivalences and Tensions – New Borderlands Between Science, Technology and Society

Interdisciplinary International Graduate Summer School

XXXVIII Summer Courses UPV/EHU

Donostia-San Sebastián, July 18 - 22, 2022

The PhD Program in Philosophy, Science and Values (University of the Basque Country UPV/EHU, National Autonomous University of Mexico UNAM, and University Carlos III Madrid) the Institute for Technology Assessment and Systems Analysis (ITAS, KIT Karlsruhe) and c:o/re and the HumTec Centre (both RWTH Aachen) will be hosting an International Summer School for PhD students, titled "'Open Science': Ambivalences and Tensions – New Borderlands Between Science, Technology and Society". The Summer School is part of the 38th edition of the UPV/EHU Summer Courses.

Presentation

The present time is characterized by a distressing copresence of diverging dynamics such as digital transition, globalization, environmental crises, new forms of terrorism, new populism and many other dynamics pushing societies towards new answers about the old question of which forms of solving collective problems are both legitimate as well as effective. Thereby, we see two different forms of reaction which can be addressed as regressive forms of politics (e.g. protectionism, „post-truth", nationalism) on the one hand versus calls for open societies based on knowledge sharing and coproduction dynamics (e.g. EU's "three Os": Open Innovation, Open Science, Open to the World; European Commission 2016, 2017; Moedas 2015) on the other. Same to science, like the discourse of "sound" or "excellent" science on the one hand versus calls for "upstream engagement", "citizen science" and open science on the other indicate.

In any case, and this is our starting point here, while new borderlands between science, technology and society are emerging, troubling ambivalences might come to light as the opening-up might be aligned by closing down effects and vice versa. The ambivalence of "openness" is evident in the example of the EU strategies: The experimental processes of opening-up offer new chances for the inclusion of lay-people or citizens into the innovation process and thereby an improvement of efficiency and legitimacy. But, at the same time "open science" becomes instrumental to certain economic goals by which civil society risks being represented as "users" with a "central and transversal role to play in bringing innovation to the market" (European Commission, 2016, p. 17). This raises the question: How open is the politics of open science? The guiding principle of "Opening-Up Science, Technology and Society" is presented as the solution – but at the same time raises questions about the cultural-institutional boundary conditions of open science in practice (e.g. Nerlich et al. 2018; National Academies of Sciences, Engineering, and Medicine 2018; Shelley-Egan et al. 2020).

Keynote lecturers

Prof. Dr. Philip Mirowski, University of Notre Dame, USA

Prof. Dr. Steve Fuller, University of Warwick, UK

Prof. Dr. Sharon Rider, Uppsala University, Sweden

References

European Commission (2016). Open Innovation, Open Science, Open to the World – a vision for Europe. Luxembourg: Publications Office of the EU.

European Commission (2017). OSPP-REC: Open Science Policy Platform Recommendations. Luxembourg: Publications Office of the European Union.

Kelty, C. M. (2008). Two Bits. The Cultural Significance of Free Software. Durham: Duke University Press.

Mayer, K. (2015). From Science 2.0 to Open Science: Turning rhetoric into action? STCSN-eLetter, 3(1). http://stcsn.ieee.net/e-letter/stcsn-e-letter-vol-3-no-1/from-science-2-0-to-open-science. Accessed: September 3, 2019.

National Academies of Sciences, Engineering, and Medicine (2018). Open Science by Design: Realizing a Vision for 21st Century Research. Washington.

Moedas, C. (2015). Open Innovation, Open Science, Open to the World (SPEECH/15/5243). "A new start for Europe: Opening up to an ERA of Innovation" Conference. June 22, 2015. Brussels.

Nerlich, B., Hartley, S., Raman, S. & Smith, A. (2018). Science and the politics of Openness. Here be monsters. Manchester: Manchester University Press.

Shelley-Egan, C., Gjefsen, M. D. & Nydal, R. (2020). Consolidating RRI and Open Science: understanding the potential for transformative change. Life Sciences, Society and Policy 16, 7.

Objectives & Guiding Questions

The main objective of this summer school is to ask about the degrees of openness of societal systems and institutions in which scientific practices are developed, in order to calibrate the meaning and scope of institutionalized "open science" practices and to explore the possibilities for developing more alternative forms of distributed and collective "open sciences". In relation to different cultural and institutional constellations we ask of whether "openness" is a goal or a strategy to achieve the goal. "»Openness« is precisely the kind of concept that wavers between end and means." (Kelty 2008, p. 148). The ambiguous and uncertain status of "openness" can degrade but at the same time stimulate inventions of new modes for its operationalizability:

- analyze the ambiguous notions of "open science" concerning its main epistemological and political dimensions while taking into account the contextual dependences of those dimensions. Anticipating and Exploring the potentialities of "open science" to develop alternative, distributed, collective forms of research related to alternative representations and imaginaries of the societal and technical realities (present and future).
- reflecting on the conditions and expectations of the underlying innovation systems and cultural-institutional constellations in order to analyze the (im)possibilities of developing socio-institutional reforms supportive of "open science" dynamics.
- collect actual experiences of "open science" initiatives around the globe (in the Western world and beyond) and to explore the potentialities (and hurdles) regarding the development of "open science" practices in different societal and national contexts.
- enable a critical and reflective examination of current "open science" strategies and modes/practices of operationalization.
- compare several case studies on science, and society constellations in specific national settings, which describe innovation systems, decision-making structures, institutional settings in detail. This could also include specific indicators, e.g. for innovation or studies of policy advice and policy making processes or more on cultural aspects of science and technology in societies.

Concept

The Summer School provides PhD students with the opportunity to develop their projects in a stimulating working atmosphere and in an international context. We aim at an inspirational environment for learning and discussion that ensures excellent feedback on everyone's work. In formats such as "Lecture", "Individual Presentation" and "Workshop", a varied intellectual experience shall be created. At the same time, San Sebastian provides participants with the opportunity for a week of relaxed interchange, discussion and networking with experienced scholars and other PhD students.

- **Lecture**: Well-known scholars from established universities will present their basic positions in lectures.
- **Individual Presentation**: This format consists of a 30 minutes paper, in which PhD students present their project to the plenum. A senior scholar will provide comments on the presentation, based on a previously submitted paper and the presentation will then be discussed in the plenum.
- **Interactive Sessions**: In interactive and overreaching sessions the PhD students will be able to submit and discuss their own concrete problems and overall topics of the Summer School.

The language of the Summer School will be English. On successful completion of the Summer School, the graduate will receive a certificate of attendance.

Further information: https://www.itas.kit.edu/english/events_2022_summerschool.php

Organizers: Andoni Ibarra (UPV/EHU, Spain), Hannot Rodríguez (UPV/EHU, Spain), Bettina-Johanna Krings (ITAS-KIT, Germany), Andreas Lösch (ITAS-KIT, Germany), and Stefan Böschen (RWTH Aachen, c:o/re and HumTec, Germany).

Interdisciplinary International Graduate Summer School

"Open Science": Ambivalences and Tensions –

New Borderlands Between Science, Technology and Society

Venue: Miramar Palace, 20007 Donostia-San Sebastián, Gipuzkoa, Spain

Monday, July 18, 2022	
13:15-14:45	Opening Ceremony
14:45-16:15	Welcome-Session "Expectations & Relations to Open Science"
16:15-16:45	***Coffee Break***
16:45-18:15	*Keynote lecture* (Abstract p. 12) Platform Science swallows Open Science ***Prof. Dr. Philip Mirowski*** – University of Notre Dame, USA
Tuesday, July 19, 2022	
09:00-09:15	Get together
09:15-10:15	*PhD Presentation* (Abstract p. 16) 3 Os between responsibility and innovation as one aspect of the PhD Project: Processes and Procedures in Science – "Procedure" as syntactic term and as transformative practice **Janine Gondolf**, Institute for Technology Assessment and Systems Analysis (ITAS) at Karlsruher Institute of Technology (KIT), Germany
10:15-11:15	***Coffee Break***
11:15-12:15	*PhD Presentation* (Abstract p. 22) Open science and citizen science: Understanding seriously knowledge as a commons **Maite Pelacho**, University of the Basque Country – UPV/EHU, Spain
12:15-13:15	*PhD Presentation* (Abstract p. 23) Proposal for Indicators to Monitor Responsible Research and Innovation in Spain **Jacob Lundgren**, INGENIO: Institute of Innovation and Knowledge Management – CSIC-UPV, Spain
13:15-14:45	***Lunch break***
14:45-15:45	*PhD Presentation* (Abstract p. 24) Title of Presentation tba **Parissa Mokhtabad Amrei**, Chalmers University of Technology, Gothenburg, Sweden
15:45-16:15	***Coffee Break***

16:15-17:15	*PhD Presentation* (Abstract p. 25) Technology Assessment for Sustainability in water use: Operationalization of a responsible governance based in Responsible Research Innovation (RRI) – Anticipation and Inclusiveness **Sofia Romeiro**, NOVA University of Lisbon, Portugal
17:15-18:30	*Session* Open Science and Technology Assessment *Input presentation:* Public Safety Networks from LMR to 5G: Technology Assessment Approach for Smarty City Scenarios **Débora Freire**, Department of Applied Social Sciences (DCSA), NOVA University Lisbon (UNL), Portugal *Input presenation:* Impact assessment of AI in the work environment of automotive sector: the Portuguese case **Marta Candeias,** School of Science and Technology, NOVA University Lisbon (UNL), Portugal

Wednesday, July 20, 2022

09:00-09:15	Get together
09:15-10:45	*Keynote lecture* (Abstract p. 13) The Political Economy of Open Science and the Prospect of Academic Georgism **Prof. Dr. Steve Fuller**, University of Warwick, UK
10:45-11:15	***Coffee Break***
11:15-12:15	*PhD Presentation* (Abstract p. 26) Can blockchain empower the public to steer scientific innovation? Lessons from the tragedy of the commons **Titus Plagge**, RWTH Aachen University, Germany
12:15-13:15	*PhD Presentation* (Abstract p. 27) Science and love in sociotechnical constellations. Anticipating open futures of affection-producer technologies **Oihana Iglesias Carrillo**, University of the Basque Country – UPV/EHU, Spain
13:15-14:45	***Lunch break***
14:45-15:45	*PhD Presentation* (Abstract p. 28) Implementing a market for APCs in chemistry journals (2013-2018). The central place of qualculative agencies **Marianne Noel**, Laboratoire Interdisciplinaire Sciences Innovations Sociétés (CNRS, INRAE, Univ Gustave Eiffel), Marne-la-Vallée, France
15:45-16:15	***Coffee Break***
16:15-17:30	*Session* Open Science – Ambivalences and Tensions. General Discussion
17:30-	***Open Space***
20:00-	***Dinner***

Thursday, July 21, 2022

09:00-09:15	Get together
09:15-10:45	*Keynote lecture* (Abstract p. 15) Open Science as Covenant and Atonement **Prof. Dr. Sharon Rider**, Uppsala University, Sweden
10:45-11:15	***Coffee Break***
11:15-12:15	*PhD Presentation* (Abstract p. 30) Amplifying the "Open" of Open Science: Gradients of politico-ethical radicality in the problematisation of STI **Sergio Urueña**, University of the Basque Country – UPV/EHU, Spain
12:15-13:15	*PhD Presentation* (Abstract p. 31) Sharing and Reuse Decisions in Science **Nathalie Schwichtenberg**, German Centre for Higher Education Research and Science Studies (DZHW), Germany
13:15-14:45	***Lunch break***
14:45-15:45	*PhD Presentation* (Abstract p. 33) Standardization in Science. Effects and Issues of Guidelines for Biomedical Reporting **Alexander Schniedermann**, Centre for Science and Technology Studies (CWTS), Leiden University, The Netherlands
15:45-16:15	***Coffee Break***
16:15-	***Open Space*** Opportunity to visit concerts of the "Jazzaldia" (https://jazzaldia.eus/en/)

Friday, July 22, 2022

09:00-09:15	Get together
09:15-10:15	*PhD Presentation* (Abstract p. 39) What does "Open" stand for in the concept of Open Science? Facets of the vision of Openness and its societal consequences **Paulina Dobroć**, Institute for Technology Assessment and Systems Analysis (ITAS) at Karlsruher Institute of Technology (KIT), Germany
10:15-11:15	***Coffee Break***
11:15-12:15	*PhD Presentation* (Abstract p. 40) The Emerging Role of Data Citation in Science **Ewa Zegler-Poleska**, Science Studies Laboratory, University of Warsaw, Poland
12:15-13:15	Feedback Round Closing Ceremony

Platform Science swallows Open Science

Speaker: Prof. Dr. Philip Mirowski
Institution: University of Notre Dame, USA
Contact: pmirowsk@nd.edu

Historians are not known for their skills at augury; but the parlous state of science in the 2020s demands that we attempt to situate numerous controversies over Big Data, the death of journals, flaws of research integrity, distrust of scientists, open science and the transformation of universities into a larger more encompassing framework. In his talk, I argue that although we have been living through an era of the commercialization of science since the 1980s, something has dramatically intensified over the last decade, resulting in distinctly novel phenomena. Whereas commercialization used to mean the subjection of research outputs to market considerations, a new development seeks to monetize nearly all aspects of the research process. Further, although individual advocates of open science may feel that they are countering trends in the commercialization of science, particularly when it comes to the predations of journal publishers, in fact, the evidence reveals they are being co-opted into a platform reorganization of science under the auspices of those very same publishers.

The Political Economy of Open Science and the Prospect of Academic Georgism

Speaker: Prof. Dr. Steve Fuller

Institution: University of Warwick, UK

Contact: S.W.Fuller@warwick.ac.uk

From a classical Marxist standpoint, the 'open science' movement in academia looks very bourgeois, given the ease with which it can be resolved by monetary payment. The academics who complained the loudest about lack of access to the journals in which they have published or might want to publish tended to come from universities that could afford to strike deals with publishers to enable 'open access'. Moreover, this arrangement has been legitimized – and even standardized – by public funders requiring that knowledge published in academic journals be freely available to anyone. At the same time, many researchers are excluded from such arrangements, perhaps due to their universities' lack of funds or simply by virtue of not being affiliated with a university. They are unable to enter what is de facto a 'protected market of open science', and hence unable to turn the knowledge it contains to their own advantage, let alone alter the market dynamics substantially.

All the above suggests that 'open science' may not be as open as one might wish. I have just alluded to two other senses of 'openness' – already exemplified by the internet -- that have the potential to reorganize the political economy of open science. They pertain to freer entry and freer use. The internet promotes freer entry by not imposing an initial intellectual or financial toll on the user. Closely related to that fact is the relatively free rein that users are given in how they operate in the virtual knowledge environment. In contrast, the protected market of open science is primarily aimed at making conventional academic knowledge transactions (i.e., journal communications) as frictionless and their results as transparent as possible. In this respect, the open science movement may be seen as a reinstatement of the Charter of the Royal Society on a digital platform.

One consequence of such academic protectionism is that knowledge producers are valuable simply by being part of a protected market – that is, those who belong to a university that subscribes to the journals in which the academic publishes. This basic fact is often obscured by the ideology of 'peer review' which legitimizes academic protectionism and creates a halo effect around its public face, 'expertise'. But as a form of political economy, it amounts to rentiership, the bane of both David Ricardo and Karl Marx. They agreed that value is intrinsic neither to nature nor even to property, which was too often inherited as a 'second nature', accruing to its possessors a merit that they do not deserve. For Ricardo and Marx, value must be earned through the application of labour. Of course, whereas capitalists hold that a free market would incentivize property owners to make investments that create opportunities for labour rather than simply collect rents, socialists call for stronger, state-based measures, including taxation and other more proactive forms of wealth redistribution.

In this respect, the US Progressive Era of the early c20 was distinctive in turning the anti-rentier mentality uniting Ricardo and Marx into what's been called 'liberal interventionism'. The state entered the business of converting capital bottlenecks to free markets, with 'antitrust' legislation the preferred legal instrument. The talismanic intellectual figurehead of this movement was Henry George, the economist who argued that the only legitimate tax was on land whose owners generate wealth merely by renting it out to others who then might improve the land (e.g., by either developing or conserving it). But of course, 'land' is a proxy for any protected market that impedes capital circulation. In this respect, George was simply revamping the spirit in which Adam Smith and the Marquis de Condorcet had first

proposed the modern market-based economy. Nevertheless, it can serve as a model for a superior form of 'open science'.

Accordingly, an 'Academic Georgism' would target the various barriers to free entry and free use of academic knowledge. As has already been suggested in the case of 'open access' research, the relevant barriers affect both academics and non-academics. Here the Humboldtian slogan -- 'the unity of teaching and research' – acquires a specific meaning: The classroom is the site for the 'creative destruction' of the initial advantage that new knowledge invariably provides to the original researchers, by making the knowledge it accessible to those not involved in the original knowledge production processits original production and who will probably go on to use the knowledge outside of that original context. From the standpoint of Academic Georgism, the sort of 'Enlightenment' that the Humboldtian educator promises in the classroom is about removing bottlenecks from the free flow of intellectual capital. This policy has interesting and potentially radical implications for the assignment of credit in academia (e.g., plagiarism) and the role of curation in what would become a much more dynamic epistemic environment.

Open Science as Covenant and Atonement

Speaker: Prof. Dr. Sharon Rider
Institution: Uppsala University, Sweden
Contact: sharon.rider@filosofi.uu.se

”Open Science” is a term with different overlapping senses. On the one hand, there is the matter of the new possibilities for archiving, communicating and accessing data and results arising out of technological advances, where there is an emphasis on the means, that is, the “technologies of openness” that allow for more efficient transmission of methods, materials and findings through large databases and cloud computing. But it can also refer to a political ideal for the governance for science, where it is seen primarily as a more just socio-economic system for the production and distribution of scientific resources and knowledge understood as a public good. Then there is a third sense, one which stands as a guiding or regulative principle for the sake of which the first and second aspects are implicitly invoked and implemented: the idea that science, properly understood, is essentially open, i.e., that that science is a quest, not a finality, which means that that its nature is such that it should not aim in the first instance for certainty, but the freedom necessary for continuous critique, the exercise of discerning judgment and perpetual revision, not from everyone everywhere, but (potentially) from anyone anywhere. On this view, the uses of and potential outcomes of scientific inquiry should not burden the scientist, but belong properly to the political sphere. This does not entail the demise of expertise, it is thought, but rather demands self-discipline on the part of those who would promote and defend it.

In this paper, I will not discuss the new technologies or the scientific activities enabled by them, nor new concepts and theories, nor innovative modes of production, nor the governance of science in society. Rather, I will concentrate on the philosophical ideal of science as openness to criticism and self-criticism as well as openness to interpretation and self-interpretation. The first can be understood in terms of a looking back to what has previously been said or done, what I have called “atonement”, while the latter is forward-looking, a question of making sure that science is available for reuse and modification in unknown circumstances, a covenant with future generations. In both cases, science is to be understood first and foremost as activity, rather than as manufacture or accumulation. This is especially important in the social sciences and humanities. There is a risk, however, that the stress on increased efficiency and productivity often found in the literature on open science can lead to limiting rather than enhancing the creative power of the thinking that drives science and scholarship.

3 Os between responsibility and innovation as one aspect of the PhD Project: Processes and Procedures in Science – "Procedure" as syntactic term and as transformative practice

Speaker: Janine Gondolf

Institution: Institute for Technology Assessment and Systems Analysis (ITAS) at Karlsruher Institute of Technology (KIT), Germany

Contact: janine.gondolf@kit.edu

The big picture

The variety of responsibilities science has to stand up for can be witnessed in real-time, especially in the face of global and societal challenges. Not only the ongoing global pandemic but also topics that have been long coming like food security and freshwater supply have reached a practical impact so devastating, that any well-behaved discussion of agricultural practices and human-made climate change seems out of place. The underlying problem is not fixed to a scale or a single domain: all scientists have to face the fact that their mandate is in question - be that because of raising doubts about effectiveness of scientific inquiry, critique of science funding practices or skepticism of scientific evidence altogether, to name just a few lines of current reservations. The most promising way to tackle these concerns in a productive manner, is making science more assessable, or transparent, "opening up", e.g. to publics and to stakeholders. Openness in this regard is taken to be literal and tackled straightforward: opening up laboratories or giving insights in construction count as related events, so is storing data in hubs and repositories, engaging with citizens scientists as lay-experts, communicating project narratives via social media and chatting at conventions and networking events. While these are all activities claiming an aspect of openness, other dimensions of the concept are ignored: what "science" means and what scientific aims and goals are in a democratic context cannot be showcased. So, how does and should science go about explaining itself?

In this context, the way of dealing with knowledge, uncertainties, and open questions is the relevant feature of science – specifically scientific practices. Trying to evaluate practices of scientists has been done by various disciplines for a long time, but just recently some philosophers of science have joined in - and transformed it into a different way of investigation. Traditionally, the philosophy of science has focused on model sciences like physics trying to extract what scientificalness (as being scientific in quality or nature) is, and then deducting knowledge claims, ideals of understanding, and explanation. Taking the standard line of critique that this procedure is to abstract and detached from reality as a call to action, scholars set out to rethink these exercises.[1] What is called a "practical turn", the "practice turn" or "turn to practice" in the philosophy of science is a programmatic idea, that does not neglect that it is standing on the shoulders of giants – even entailing that essentially it cannot provide anything more radically new. Some novelty, though, comes with the perspective it takes: combining forces and findings despite disciplinarity, orientation and origin. In that, they acknowledge any study of any practices, that sets out to explain an aspect of the shared reality, as "scientific studies", including studies of mathematics and engineering. The innovation is tentative but multifold: by opening up legitimated

1 See e.g. Soler, L., Zwart, S., Lynch, M., & Israel-Jost, V. (Eds.). (2014). Science after the practice turn in the philosophy, history, and social studies of science. Routledge.

standpoints it broadens (quantitatively) and deepens (qualitatively) its knowledge base. Experts from any field, with diverse inquiries, heterogeneous aims, ideals and methods are invited to share, discuss and research together. Point of focus is to collaborative access "what scientists actually do" from a reflective perspective - making this turn to practice an open science project. In that way, a host of case studies and well-developed arguments and conclusions have become available to a new interdisciplinarity and cross-cutting community - which of course is accompanied by conflicts along reinterpretation of formerly established findings and other quarrels. That is why, in order to bridge gaps and make things work, the "practical turn" enthusiasts committed to a version of scientific standards for their own research agendas, opening up the big questions about scientificalness. In result, they engage in an open discourse that goes well beyond shared cases.[2]

One open question in these arenas is how to make sense of the idea of "handling" knowledge in science. I take this question to make it the core discussion of my Ph.D. insofar as I investigate into what the quality and indicators of ways of handling knowledge would be. The argument I pursue is, that regardless of the content (as being date, facts, narration or others) the aspect of handling itself would have to be assessable and determinate, e.g. as an action. That is why, I build on the idea of science as a collaborative activity and the associated theories of division of scientific labor, as they have reentered the discussions along said turn to practice from a longstanding history in studying sciences. Following up on that, I reason that at interfaces, e.g. between disciplines, there is a specific imperative of usefulness or usability essential to knowledge claims[3] – what is a great scientific breakthrough for one disciplinary background may yet be without significance for another. Furthermore, the aspect of usefulness is inherent in discussions of good scientific practice and has also long been considered a sufficient criterion for knowledge in the scientific context – responsibility and legitimacy are not yet defined in this way. Questions of responsibility and legitimacy are not new in this context, but are more topical than ever, especially given the contexts sketched above.

A stand-in example

Meanwhile, many of these issues have gained multidisciplinary attention in an area that is closely related but still different: in scientific policy advice, at the intersection between science, society, and politics, the question of responsibility and legitimacy in dealing with knowledge is repellently discussed. Scientific policy advice is in itself "open" because it is externally oriented due to explicitly advising policy makers by laying out scientific evidence, arguments and latest findings. As such, it is also one of many interfaces in which a very specific form of handling knowledge takes place[4]. In addition to facts and figures, contexts, traditions, and methods are actively adopted or assigned in these self-explanatory contexts – also to create points of explanation and connecting a common ground. In more traditional academic publications, these contents are not taken up – in scientific policy advice, however, they could be essential for translating expertise into useful information for those outside the field. But to what extent can then texts as artifacts of this socio-epistemic practice provide evidence of the "good" handling of knowledge?

2 E.g. Chang, H. (2011). The philosophical grammar of scientific practice. International Studies in the Philosophy of Science, 25(3), 205-221.

3 Kaiser, M. I. (2019). Normativity in the philosophy of science. Metaphilosophy, 50(1-2), 36-62.

4 Carrier, M. (2021). What Does Good Science-Based Advice to Politics Look Like?, Journal for General Philosophy of Science, 1-17.

To shed more light on these interrelations with my Ph.D., my work takes its starting point in a DFG project in the context of scientific policy advice.[5] The project foremost aims to fill a gap in current research: scientific policy advice has been, and continues to be, a frequent object of research activities, especially in social sciences. So far there are hardly any linguistic and epistemological analyses of policy advisory texts as socio-epistemic practices. To fill this gap, the cooperation project of TU Darmstadt and KIT investigates how text products as artifacts of scientific policy advice can open up new approaches to this field of research. The hypothesis underlying this project is that scientists, in particular when acting as policy advisors, face the dilemma of maintaining scientific credibility while developing political effectiveness. This dilemma can be intensified or mitigated depending on the mutual expectations of roles and responsibilities – bringing to the fore questions about the usefulness and legitimacy of knowledge claims. Therefore, the project is specifically interested in how practice of scientific policy advice in Germany can be more precisely captured in terms of form, content, and function.[6] Since textual artifacts of scientific policy advice contain scientific assertions about states in a shared reality that can potentially generate momentum in very many non-scientific areas, these specific texts stand in as an example for scientific public self-explanation.

The link between philosophy and practice

The link that I make in my dissertation is that scientific policy advice texts can be analyzed as artifacts of socio-epistemic practices that is hybridlike: it is scientific and "open" by definition. In that perspective, texts are process steps and products at the same time. Consequently, they cannot be detached from their context or history. So, how is the production process inscribed into these artifacts? Can we get a glimpse at the epistemic quality of the process they originate from?

The interconnection of textual artifacts and their authors has been quite a topic throughout disciplines since Barthes declared "The Death of the Author" in 1967. But only recently, this topic has entered the discussions in philosophy of science, particularly regarding the epistemic status of authorship in highly collaborative research. Within this latest discourse, role-taking and rank in research teams are at the fore, thereby questioning how researchers relate to and engage in scientific practices, underlying values, and principles.[7] The key aspects are where and how responsibility, integrity, and legitimacy play out in practice, especially when reviewed in texts produced. In this regard, the questions concerning authorship are reframed, resulting in a host of suggestions on how to proceed, ranging from neatly documenting any cooperation on extended bylines to discarding authorship in science altogether.

It should be all the more surprising that the science papers used as example textual artifacts to confirm these findings repeatedly mirror only a narrow section of collaborative research. Essentially, the most prominent cases are mono-disciplinary, homogenous, and long-term research trajectories,

---

5 DFG Project "Scientific policy advice as a socio-epistemic practice: Textual procedures ascribing significance, executive authority and responsibility" (2021-2024), https://www.itas.kit.edu/english/projects_grun21_wisspb.php

6 Taking stock of the work of Hennig, M., & Czicza, D. (2011). Zur Pragmatik und Grammatik der Wissenschaftskommunikation. Ein Modellierungsvorschlag. Fachsprache, 33(1-2), 36-60. And Janich, N. (2016). Wissenschaft (ssprach) lichkeit–eine Annäherung. Zu Merkmalen und Qualitäten wissenschaftlicher Texte. Schreiberatung und Schreibtraining in Theorie, Empirie und Praxis. Frankfurt aM: Peter Lang, 65-82.

7 See e.g.: Winsberg, E., Huebner, B., & Kukla, R. (2014). Accountability and values in radically collaborative research. Studies in History and Philosophy of Science Part A, 46, 16-23. or Huebner, B., & Bright, L. K. (2020). Collective responsibility and fraud in scientific communities. The Routledge Handbook of Collective Responsibility, 358-372. For a different perspective see: Klausen, Søren Harnow, et al. (2017) No Cause for Epistemic Alarm: Radically Collaborative Science, Knowledge and Authorship. Social Epistemology Review and Reply Collective, 6. Jg., S. 38-61.

where most participants share disciplinary backgrounds, scientific interests, and working environments, like high-energy physics. Contrarily, interdisciplinarity and short project durations quite define a vast majority of modern-day research efforts. Therefore, my contribution explores epistemic authorship in a different kind of case: scientific policy advice is a scientific practice in which usually diverse disciplines engage in short-term interactions. In addition, these experts need to translate expertise into information for those outside the field, despite uncertainty and disciplinary boundaries. Since the texts can potentially turn into massive impact in politics, society, and science alike, scientific responsibility, integrity, and legitimacy are ever more relevant. Hence, scientific policy advice makes a critical case for science in practice and science as a democratic institution.

While staging scientific policy advice as a stand-in example for contemporary collaborative research practice, in which internal and external modes of handling knowledge are already key activities, I aim to shed some light on which aspects are at stake in these cases of scientific collaborations. By mapping them to the scientific ideals they adhere to, I show which values and principles they entail, making scientific policy advice a case for my philosophical inquiry.

One aspect of the discussion

Within these debates, I trace responsibility as one key element (along with legitimacy and usefulness). But assessing responsibility in research and innovation can be a tricky undertaking: while there is a host of literature to draw upon what the concept as a whole essentially is about, at the same time, there is the world of case studies that map and discuss aspects in a piecemeal fashion. Traditionally, in the realm of philosophy of science, science and technology studies, technology assessment and related inquiries, an awareness of varieties of responsibilities in research and innovation is authoritative. In these practices, the different notions underlying the concept of responsibility are relevant for bringing politics, the public, and research closer together and are consequently rendered key to many tools and methods in these fields. When assessing what is at stake, they highlight how and where different paradigms and principles intersect. In that way, otherwise hidden reliances and presumptions become assessable as (research) culture comes to the fore, trajectories evolve, and project design develops. Surprisingly, these interdependencies do not play a prominent role in theoretical approaches to responsible research and innovation (RRI). They emphasize proportion, accordance, and structure over practical situations and tend to demand more data to shed light on said observed opaque and entangled practices.

In my work, I mirror rather practical learnings back into the ongoing theoretical debate of RRI, making one part of the argument how usefulness, legitimacy and responsibility intersect. I claim that, despite the wealth of studies and cases ascertained, the mismatch between theory and practice is artificially kept alive. At least in part, the theoretical presuppositions of RRI as the case in point do rest on a misconception of the thick term responsibility for its facets. Hence, I discuss to what extent responsibility as a paradigm and precaution as a principle of research practices has been taken for granted and thus not addressed in-depth in accompanying debates. To exemplify that, I examine von Schomberg's version of RRI as on theoretical pillar and the stand-in version in the European context, scrutinizing the epistemic conditions of this version of RRI. I then go on enrichening this theoretical approach by inserting the aspects of transparency, intelligibility, practicability and openness under the umbrella term "responsibility" into this concept of RRI.

Sketching the Philosophical Argument

To grasp ways of handling knowledge epistemologically, I motivate a notion of procedure ("Verfahren") that is developed that is oriented toward the technical use of this concept, as the heart of my Ph.D.

"Procedure" as a philosophical concept then allows – unlike, e.g., the philosophical concepts of process – to make visible the intermediate level of planning, acting, and designing as well as processes and entries in these operations. Procedures combine 1. theory and method, 2. method and practice, and 3. theory and practice. Inherent in all three spectra is the transformative movement, a translation from one category to another. As exemplified in discourse with the term scientific "practice", as training, as an unfinished but directed and structured process, a notion of procedure creates the access to discuss sequences, dependencies, and linkages as they happen. This, then, allows a broader view of interplay, (compositional) rules, coherence, and harmonies in practices. Based on this, forms of dealing with knowledge can be re-examined, linking the questions of legitimacy and responsibility with the debate on usefulness. Accordingly, the approach helps reveal existing patterns, connection, and their usability - as an epistemological technique, so to speak, or technical epistemology. Using the example of scientific policy advice, this is intended to make a productive contribution to the ongoing debate about science as a democratic institution. Procedures as transformative practice open up a perspective that makes scientificalness assessable via activities and indicators, over time, and as it happens, without having to ultimately demarcate or define it.

The Practical Aim

The project that my work is part of aims to make a robust contribution to the ongoing debate on the responsibility of science, specifically concerning the deficient communication of scientific knowledge to the wider public. Therefore, the last section of my dissertation is dedicated to make use of my findings for scientific policy advice. With the concept of procedure that is related to the technical use, I intend to provide a framework or work-along structure of sort, that can assist in guiding future activities but also provides a comprehensive recipe-style matrix that can help discuss the quality of process and outcome of said practices. On a meta-level, the critical self-reflection on the specific language and practices of science enabled by this is also intended to indirectly contribute to the public legitimation of science as a democratic institution.

What I want to discuss at the Summer School

Alongside RRI as a research paradigm in the EU, the idea of three Os (3 Os - Open Science, Open Innovation, Open to the world) has developed for quite some while since it was proclaimed in 2015. Just as other shifts in frameworks, the very idea of 3Os aims at answering demands that have been raised in the context of European research funding trajectories beforehand. In that sense, 3 Os is a science-cultural phenomenon, that mirrors a certain state of affairs. What I want to discuss is how these policy frameworks and strategies, e.g. RRI and 3 Os, are spelled out in practices. I assume, that neither of them has come with a work-along description but are still mandatory for acquiring funding: How does that play out?

The mismatch between RRI theory and practice has been widely discussed already[8]. Visions of openness intertwine but are not a key figure or one of the cross-cutting issues of RRI. By exploring facets

8 See for example: Blok, V., & Lemmens, P. (2015). The emerging concept of responsible innovation. Three reasons why it is questionable and calls for a radical transformation of the concept of innovation. In Responsible innovation 2 (pp. 19-35). Springer. Owen, R., von Schomberg, R., & Macnaghten, P. (2021). An unfinished journey? Reflections on a decade of responsible research and innovation. Journal of Responsible Innovation, 8(2), 217-233. Rip, A. (2018). The past and future of RRI. In Futures of science and technology in society (pp. 115-133). Springer VS, Wiesbaden.

and motives, narratives, and visions of openness in scientific research practice, I intend to figure out, whether insight into 3 Os can enrich the debate on responsibility and innovation, especially concerning scientific policy advice on new and emergent technologies in Europe. In that respect, I aim to find out how notions of transparency, intelligibility of facts and relations, scientific literacy and research practices relate in the discourse on openness, to then better define these terms for my own working context.

Understanding open science and citizen science as commons for sustainability and accessibility of knowledge

Speaker: Maite Pelacho

Institution: University of the Basque Country UPV/EHU, Spain

Contact: mpelacho001@ikasle.ehu.eus

The reemergence of citizen science (CS) in recent decades responds to a confluence of different factors, among them: the web development multiplying the communication and agency possibilities, the growth of activism in health and environmental issues, the participatory turn, or the support of policy. Simultaneously, the promotion of open science (OS) has intensified, mainly as an academic response to the enclosure of research, especially in publishing, but also encouraged by policy for diverse reasons, including cost-effectiveness (Macq et al., 2020).

Both interwinned phenomena indeed evolve according to the contexts of their development and the ultimate motivations of their participants and promoters. In terms of promoters, there is a wide spectrum of actors: from the European Commission and governments of various countries to small independent groups, through a multiplicity of entities, many of them from the third sector. Regarding the different drifts, the instrumentalist tendency inherent to neoliberal contexts is clear, denounced both by promoters of CS and OS (e.g. Vohland et al., 2019), and by those who identify only the mercantilist approach (e.g. Mirowski, 2018).

The claim against the commodification of science usually appeals to its public character. However, the widespread confusion over the meanings of public and private can hardly support reasoning and proposals. Let us think of public space: one of its meanings refers to politics, that which concerns all citizens, co-responsible for the res publica. But politics is often identified with the governmental and the politicians' job, reducing the public to the state (Schade et al., 2021). Hence, some public science advocates denounce CS and OS as tools of neoliberalism, transferring responsibilities from the state to citizens for the benefit of private companies (Mirowski, 2018). While I agree with some of these criticisms, my proposal moves away from the public-private discourse, which dichotomously presents a society that is actually much more complex, making it difficult to understand and develop political and epistemic responsibilities shared by all citizens.

Therefore, I propose to understand science as a commons, which implies certain practices to maintain it as such (Hess and Ostrom, 2007). One of these is CS, with openness-accessibility, co-responsibility and cooperation being some of its features, from a political-republican approach. Moreover, due to its vulnerability to privatisation (and stateisation), it is also a commons to be protected. This proposal thus seeks the sustainability of science and the accessibility of knowledge generation. It also aims to surpass a view of human agency that does not seem to understand the fundamentals and scope of cooperation.

Methodologically, I combine my empirical and professional knowledge with research in socio-political epistemology.

References

Hess C and Ostrom E (eds) (2007) Understanding knowledge as a commons: From theory to practice. Cambridge MA/London: The MIT Press.

Macq H, Tancoigne É & Strasser B (2020) From Deliberation to Production: Public Participation in Science and Technology Policies of the European Commission (1998–2019). Minerva 58: 489–512.

Mirowski P (2018) The future(s) of open science. Social Studies of Science 48(2): 171–203.

Schade S, Pelacho, M, van Noordwijk T, Vohland K, Hecker S, Manzoni M (2021) Citizen Science and Policy. In: Vohland K, Land-Zastra A, Ceccaroni L, Perelló J, Ponti M, Samson R, Wagenknecht K, and Lemmens R. The Science of Citizen Science. Cham: Springer.

Vohland K, Weißpflug M, and Pettibone L (2019) Citizen science and the neoliberal transformation of science – An ambivalent relationship. Citizen Science: Theory and Practice 4(1): 25.

Decision-making in open science: Exploring some underlying dynamics to decisions about production and recognition in transdisciplinary collaboration

Speaker: Jacob Lundgren

Institution: INGENIO: Institute of Innovation and Knowledge Management – CSIC-UPV, Spain

Contact: jakob.lundgren@gu.se

At least in the European Union, the one concept that perhaps most symbolizes the push for open science during the last two decades is the notion of "transdisciplinarity" (TD). Going further than interdisciplinarity, TD aims to not only cross disciplinary lines, but also to include perspectives from stakeholders outside academia. TD research should be problem-oriented, and the understanding of problems and solutions should incorporate the perspectives of stakeholders in a serious manner. This sort of integrated problem-solving is hailed as the pathway to tackling the grand challenges of society.

It is traditionally held that only scientists at the very front of research can recognize the scientific quality of such frontier research. The notion has been institutionalized through peer-review, where disciplinary experts evaluate research to create the knowledgebase used to make decisions about which science to produce or recognize. However, TD complicates this traditional decision-making process. Firstly, societal relevance has been implemented as a complementary criterion of quality. This raises questions of whether and how this can be evaluated. Secondly, methodological pluralism invites questions of which methods to include or exclude. Thirdly, the intention to incorporate the perspectives of stakeholders requires an answer to who these stakeholders are and in what way they are competent to evaluate science.

My thesis explores some of the dynamics underlying the decision-making in TD collaborations. I take a descriptive, symmetrical approach to the problem. It is thus not my aim to answer or evaluate how these dynamics should be constructed, but to investigate how they have come to take shape in practice. I proceed primarily through two case studies in the general area of sustainability.

My first case is the field ecological economics. Ecological economics is a heterodox field of economics that investigates the interconnection of natural, social, and economic systems. It is a long-lasting, broad, and loosely organized collaboration, and my focus is on the dynamics of recognizing research as belonging to the field. My second case is the Swedish research council Formas. Formas is a research council focusing on questions of sustainability. In order to assess the societal relevance of proposals, Formas includes practitioners from outside of academia in its review panels. These panels are short-term, small, and highly organized collaborations. My focus is on the evaluation of potential new research as a knowledgebase for decision-making. These complementary characteristics hopefully allow me to observe commonalities that reach beyond these two cases, as well as important particularities in each case.

Title of Presentation tba

Speaker: Parisa Mokhtabad Amrei

Institution: Chalmers University of Technology, Gothenburg, Sweden

Contact: Parisa@chalmers.se

Open science as an umbrella term including open data, open content, open source software, citizen science and e-research practices is widely discussed both within academic disciplines and outside. These practices are materialized by digital infrastructures which have enabled them to collect, store, process, share and distribute data. My PhD project aims to study the politics and materiality of Open science by scrutinizing how open science interacts with science institutions and policy-making bodies, and secondly by investigating the hidden costs of Open science for various actors. I plan to conduct this project by using a mixed methodology employing multi-sited ethnographies. Inspired by actor-network-theory, this step will require me to trace the actors, explore how knowledge turns digital, is stored and maintained, transforms and aggregated. In this context, the laboratory means the physical data centers and the offices where computer scientists collect, clean and store data in them. However, the network of actors exceeds these places to be multi-sited and to include other layers such as policy-making offices, online portals and other possible sites where these data are used. By both using digital and on-site ethnographic methods, I would like to investigate what the actors are, which kind of science is being open, who pays the costs of open science and how various actors, and layers shape the process of open science practice in my case study.

As I follow the actors, I illustrate geographies of materialities of open science digital platform starting from lithium and copper mines to data-storage manufactures, data-center sites, programmers office and possibly other contributors and users. Thus, this case study will also be a multi-sited ethnography. Selection of my case study is partly based on the findings of the future systematic review of the field. However, in this stage of study, I have decided to work on one of the projects funded by European unions which uses open science practices (AI or data analytics) as a way of smart public policy making . The possible actants of this open science practice are policies and regulations, computer scientists, policy makers, data centers, software and programming, AI & machine learning algorithms, and funders of the projects to name some. I am hopeful that by doing this research, I will be able to add to the existing STS literature in the fields of Open science and digital infrastructures. Also, I intend to clarify the possible risks of Open science practices in order to contribute to a more participatory and equal form of science.

Technology Assessment for Sustainability in water use: Operationalization of a responsible governance based in Responsible Research Innovation (RRI) – Anticipation and Inclusiveness

Speaker: Sofia Romeiro

Institution: NOVA University of Lisbon, Portugal

Contact: a.romeiro@campus.fct.unl.pt

Sustainability is a term that has been trivialized in the past years, with application in almost all fields, where although everyone speaks, not all refer to the same principles and goals. This makes it hard to find a concept of sustainability that relates to open and responsible innovation. The actual narrow definitions of sustainability give this study anopportunity to discover more a few more open approaches to the concept itself.

Currently, there is a lack of vision on RRI-based approaches, considering anticipation and inclusiveness. The current concepts of sustainability are not sufficiently embracing RRI, where the focus is on the result and not on the process. The way this ecosystem is created a lack of openness on the innovation process and in the decision making, where diverse actors are missing in the process.

On the other hand, the growing awareness of vulnerability and the importance of water resources has recently generated an increasing attention on the subject. In addition to almost all domains trying to show a commitment to preserve and use water responsibly, they also have been creating legal tools and mechanisms to promote its responsible use, where technology plays a prominent role.

This work begins by seeking to elaborate a new definition of sustainability, embracing the concept of anticipation. Therefore it's necessary to first understand the dimension of responsibility in innovation based on RRI and inclusiveness, as well as its relationship with the concept of anticipation and its dimensions.

The knowledge and understanding of the "political economy" associated with the developments of water technology and its social environment (concerns; demands, values and expectations of actors) is essential, since in the public domain the financing of technology is based on community fund and, in the public sphere, the financing of technology is motivated by tax benefits in the fulfillment of metrics associated with environmental protection.

In turn, technologies are not open to social actors or the end user, there is no involvement of said people in the development and definition of objectives, nor are there specific mechanisms defined for the evaluation of technologies in water use.

Thus, it is proposed to develop a methodology for assessing the responsibility of water technology, based on an anticipatory governance, creating the tools that allow decision-making in an inclusive way of society, in the materialization of an open innovation space, where everyone can not only participate but also find knowledge on the subject in deliberation.

In alignment with the goals of Summer School, the purpose of this work focuses on the objectification of a model concerning the openness of societal systems and how decisions that affect the planet are being made by a closed group of individuals.

The aim of this work is to create a framework for responsible evaluation of water technology, based not only on sustainability, but adding the dimension of anticipatory and inclusive governance. This platform will aim to include not only stakeholders usually directly related to decision-making, but also all actors in an open perspective of innovation which we can call inclusive.

Can blockchain empower the public to steer scientific innovation? Lessons from the tragedy of the commons

Speaker: Titus Julian Plagge

Institution: RWTH Aachen University, Germany

Contact: titus.plagge@rwth-aachen.de

The funding of scientific research happens mostly by the private sector and governmental institutions. Even in a democratic society the public has little direct say in what particular technologies or innovations should be prioritized. This work aims to find a structure in which citizens are part of the progress of innovation and steer the direction in which science will develop. The main questions to answer in this work are on how to gather the will of the public and how to allocate funds, might it be through governmental institutions or non-governmental. Methodological a literature review is necessary, and I will conduct a Vision Assessment to evaluate rather an implementation is feasible. For exploring these ideas, I will rely on approaches from game theory, works on the commons problem and solutions blockchain might offer.

Science and love in sociotechnical constellations
Anticipating open futures of affection-producer technologies

Speaker: Oihana Iglesias Carrillo

Institution: University of the Basque Country UPV/EHU, Spain

Contact: oihana.ic@gmail.com

It is suggested that quantified relationship techonologies, love enhancement biotechnologies and sex humanoid robots will change, from now on, the way in which people understand, practice and value love (Nyholm et al. 2020). Indeed, the common mobile dating apps, and their inherent expectations, are already changing how emotional bonds are produced and distributed. The general objective of my PhD project is to understand the transformation of love throughout these emerging technologies: being love as much a power asymmetries generator as a vital source of empowerment (García-Andrade et al. 2018), the (in)equalities such technologies are supporting within western social order are problematized. Whilst there is a pessimistic view of the present of love by the force of mercantilisation and digitalisation (Han 2016; Illouz 2020), the opening of the debate on the socio-technical accuracy of these affection-producer technologies is an attempt (though narrow) to increase equality, participation, productivity and, ultimately, openness within what it is called the technological future of love. In the European research and innovation policy, there is a call for the update of the current scientific system by the renovation of the practical engagement of involved actors; the co-influence of top-down and bottom-up governing approaches; the co-existence of doable and desirable outcomes; and the understanding of the openness as a research attitude, emphasizing both opportunity and responsibility (Burgelman et al. 2019; Shelley-Egan et al. 2020; Méndez 2021).

In line with the objective of the summer school, we adopt this opening research attitude with regard to that biopsycosociotechnical phenomenon known as love. Far from postulating utopies or distopies, this is a worthwhile opportunity to introduce foresight's model for anticipatory construction (Poli 2021) of the technological (open and plural) futures of love; for the collective and inclusive interpretation and modulation of its present. For the purpose of actually building such a space of reflection and co-evolution, we should begin mapping stakeholders and establishing the scope and the purpose (Zaratin et al. 2022). It is necessary to protect and make visible the lover (user), those actors enabled for affective and empathic relationships within the mission and, hence, within the sociotechnical constellation. Saving love in-the-making, and not taking affective-producer technologies for granted, is an intriguing challenge in which the articulation of desirable intersubjective care and attachment is possible. Openness in scientific research, we conclude, is an essential social operational requirement in order to thoroughly understand what is love in our time and how to confront it.

Implementing a market for APCs in chemistry journals (2013-2018). The central place of qualculative agencies

Speaker: Marianne Noel

Institution: Laboratoire Interdisciplinaire Sciences Innovations Sociétés (CNRS, INRAE, Univ Gustave Eiffel), Marne-la-Vallée, France

Contact: noel@ifris.org

The proposed communication is an outcome of my PhD in sociology (nearing completion) and focuses on chemistry, a discipline that is organized into a large "rhizome" network (Bensaude-Vincent, 2018). Chemistry is an interesting case because this discipline has built its publishing system on professional norms and standards and is known to be "resistant" to Open Access. As they are called today, the chemical sciences are broad and include a wide range of research topics from the basic sciences to highly applied research domains. They are widely represented in American universities as elsewhere and account for just over 4% of federal R&D spending in the United States. Journals are, with patents, the main way in which research is published. These journals are purchased by university libraries and public and private R&D centres. There are therefore several thousand credit-worthy buyers, an important market for these publications. Chemistry is also a field where Open Access is less widespread than in related disciplines such as physics or biology (Björk et al., 2010). While chemists frequently share data, experiments, and so on, they do not do it so "publicly". Openness both underscores and challenges existing property and privacy regimes.

My thesis takes the complex (journal-scholarly society-disciplinary conference) as research object and illustrates the interdependence of these three components through four distinct empirical studies. It considers publication as a central element of the mechanism of affirmation of a discipline and describes the conditions of maintenance, as well as the coordination mechanisms that underlie the development and allow the continuity of a disciplinary program (Lenoir, 1997). It examines "open science" strategies and modes/practices of operationalization in different national contexts.

The first chapter presents an editorial overview of contemporary academic chemistry. Based on a sociological fieldwork carried out at the Department of Chemistry at MIT, it focuses on the research, writing and reading practices of researchers. Starting from Ulrich's database, a corpus has been build up to describe the main characteristics of the editorial landscape of the discipline over the long term.

Chapters 2 and 3 have a strong historical character. Describing the emergence of a research specialty (supramolecular chemistry or SMC) at the University of Strasbourg over some fifty years, the second chapter follows the development of a European "publication program" (1987-2005) and a series of European journals at the initiative of a network of chemists. Considering scientists as the drivers of the process, I describe the Europeanisation of an academic discipline in the light of its publication program, whose genealogy I trace.

Chapter 3 moves across the Atlantic and focuses on the most important learned society in the discipline, the American Chemical Society (ACS). Drawing on the biography of a major scientific journal (the Journal of the American Chemical Society) since its founding in 1879, it provides an analysis of the conditions under which pricing systems of disciplinary journals are produced in a

particular political and institutional context (the USA). This chapter offers a history of the business models adopted by the ACS. Starting from the page-fee mechanism introduced in 1963, it describes how singular entities (the articles) entered progressively into a market of commodities and aims to attest

to the path dependency of the "articlization" phenomenon (the rise of the "article" format) observed in contemporary fields of investigation.

Based on the empirical study of the deployment of Open Access mechanisms in chemistry over five years (2013-2018), chapter 4 borrows concepts from economic sociology. My purpose here is that the academic publishing market is rarely studied from the perspective of the economization

literature (meaning here studies of the construction of markets and the associated anthropology of calculation), with the exception of a few works on scholarly books (Karpik, 2011; Gulledge et al., 2015). Michel Callon has conceptualized economic actors as constituted of socio-technical agencements: collectives of human beings, technical devices, algorithms, and so on (Hardie and MacKenzie, 2007). In this work I use a set of conceptual understandings, such as market-agencement, to avoid addressing journal editors, researchers and librarians as three separate silos.

Grounded on interviews of editors and document analysis of journals published by Nature Research and the ACS, I first illustrate the wide range of realities in a distributed but interconnected market covered by the functions of editors-in-chief of chemistry journals. The empirical evidence reveals a wide palette of practices that refute the metaphor of "editors as mere gatekeepers." Publishing houses, whether non-for-profit or commercial, have embraced a catalog logic, where the journals are not necessarily in competition and have an assumed place and hierarchy.

Based on a qualitative analysis (based on 12 interviews with Open Access professionals in Sweden enriched by sources of all kind), I then detail three market-agencements identified through empirical observation of the deployment of Open Access policies in chemistry in various countries (2013-2018). I will develop this part in my communication. It deals with the central place of "qualculative agencies" (Callon and Muniesa, 2005; Callon, 2017) that enable the creation and operations of a chemistry journals market. I show that specific market mechanisms and modes of coordination have been put in place to support the development and guarantee the continuity of a disciplinary program (that of chemistry) in the frame of what I call a disciplinary publication regime. This leads me to suggest that, far from being the announced transformative force, OA is an episode of a "disciplinary publication regime" that has demonstrated its strength and stability.

Amplifying the "Open" of Open Science: Gradients of politico-ethical radicality in the problematisation of STI

Speaker: Sergio Urueña

Institution: University of the Basque Country UPV/EHU, Spain

Contact: sergio.uruena@ehu.eus

Neurophysiological measurements render evidence for meditation affecting the brain and improving The main objective of my PhD dissertation is to strengthen the understanding of anticipation as an interventive dimension to opening up our science, technology, and innovation (STI) future-making practices. The central hypothesis is that anticipation is a semantically and methodologically heterogeneous instrument, with heuristics of different types and degrees of openness radicality. More specifically, I focus on how inclusive processes of plausibility negotiations becomes a criterion of epistemic and political relevance for opening up/closing down the outcomes, processes, and purposes of STI, and thereby I emphasise the need to monitor its co-productions socio-material (pre)conditions. Such monitoring is important to identify and critically evaluate which futures are being closed-down/opened-up, whose futures these are, and why these and not others.

My presentation will problematise the discourses on "openness" that the umbrella term "Open Science" embraces. Through a preliminary qualitative analysis of the different meanings attributed to "open" by "Open Science" proposals, I will expose their ambivalences and semantic diversities. I will argue that this ambivalence and semantic plurality is just an expression of the more closed/open ways of conceiving the role of STI in our socio-technical systems and the degrees of openness that are considered legitimate to apply to STI. In other words, the different discourses and gradations of ethical/political openness that comprise the "open" of "Open Science" echoes the various positions on what STI dimensions, issues and concerns can(not) be problematised. The definitions of "open" simultaneously reflect and constitute the political life and disruptive nature of the "Open Science" proposal.

In contrast to narrow models of openness, where it is limited to the sharing and transparency of scientific data or results, I will discuss the need to broaden, or "open up", the "open" of "Open Science". The amplification of the "open" of "Open Science" comes in terms of an extensive and intensive account of (i) which aspects are socio-politically problematised, (ii) when they are problematised, and (ii) who (or whose voices and concerns) feed into the problematisation processes. Following the more radical interpretations of frameworks such as Responsible (Research) and Innovation (European Commission, 2013; Owen et al., 2013), I will argue for a normative conception of openness that supports the problematisation of STI processes, outcomes, and purposes through the inclusion of multiple voices of societal actors from early stages of development and throughout the whole research process.

References

European Commission. (2013). Horizon 2020 — Responsible research & innovation. Retrieved from https://ec.europa.eu/programmes/horizon2020/en/h2020-section/responsible-research-innovation

Owen, R., Stilgoe, J., Macnaghten, P., Gorman, M., Fisher, E., & Guston, D. H. (2013). A Framework for Responsible Innovation. In R. Owen, J. R. Bessant, & M. Heintz (Eds.), Responsible Innovation (pp. 27–50). Chichester: John Wiley & Sons.

Sharing and Reuse Decisions in Science

Speaker: Nathalie Schwichtenberg
Institution: German Centre for Higher Education Research and Science Studies (DZHW), Germany
Contact: schwichtenberg@dzhw.eu

Background

The phenomenon of Open Science affects many fields of the societal system (e.g. politics, economy). This paper focusses on Science itself. Embedded in a Junior Research Group project which examines field-specific forms of sharing (of epistemic resources) my doctoral project aims to expand this research perspective by adding an examination of the field-specific forms of reception (of epistemic resources). Both research efforts focus on the reconstruction of decisions processes (of sharing and reception) taking their field-specific conditions into account. The combination of both projects results in an examination of the collective production of scientific knowledge and the degrees of openness of current scientific practices.

The focus of my doctoral project on reception decisions and their possible outcomes addresses rarely considered consequences of policy-driven calls for Open Science, namely the dissonance between reuse expectations and actual reuse potential.

For this examination the project builds on a qualitative explanatory approach that aims to offer a theoretical concept of reception decisions for the sociology of science which can be flexibly adapted and applied to empirical research. In particular, the granular heterogeneity of sciences at discipline, sub-discipline and special field level should be taken into account in order to be able to explain decisions processes in science with regard to their epistemic context of action.Methodological and theoretical approaches

Research Question

The leading research questions are based on the thesis (inspired by my initial empirical data) that trust plays a decisive role here. How are decisions made in science regarding the reception and reuse of epistemic resources (such as data, code or material samples)? What factors work within these processes? And what role does trust play in this?

Methods

This goal is to be achieved with the help of an ethnographic research design. For my dissertation, I conduct a field comparison between two research specialties and visit two research groups for each specialty for several weeks (Σ 4 research groups). Classic ethnographic methods such as participant observation and interviewing of field participants are used to not only obtain narrative descriptions of reception processes, but also to grasp and understand their epistemic framework. The interview guideline construction was based on the discursive-interview-concept (Ullrich 1999) which is designed to collect latent variables, such as trust. The same methodological approach offers an analysis concept

('Deutungsmusteranalyse' ibid.) to identify the latent variable, reconstruct and categorize it. To increase the field variance, I further conduct 10-12 expert interviews per specialty.

Theoretical Approaches

My project builds on literature of science & technology studies and epistemological research. This includes ethnographies examining scientific research practices and the communities in which they take place (Collins 1998, Cetina 2009, Traweek 1988), as well as sociological arguments on the concept of trust (Giddens 1995, Simmel 1989, Stzompka 1999). The theoretical basis for the identification and reconstruction of reception processes in science was formed by considering various qualitative science studies (Bazerman 1988, Abrahams 1995, Collins 2014).

Standardization in Science. Effects and Issues of Guidelines for Biomedical Reporting

Speaker: Alexander Schniedermann

Institution: Centre for Science and Technology Studies (CWTS), Leiden University, The Netherlands

Contact: schniedermann@dzhw.eu

Summary

The research project aims at a deeper understanding of how scientific practices become standardized with regards to the values and goals of Open Science. With a focus on the clinical sciences, the rationales, the development and the dissemination of a so-called "reporting guideline" – a standard that attempts to increase the transparency of scientific publications, particularly systematic reviews – will be analysed. Beside using expert interviews to tackle such rather traditional STS questions, the mixed-method project also features bibliometric analyses that utilize the standard's ~50k citations. Focal to the analysis are the standard's particular emphasis on transparency as a new quality goal for science, as well as its resemblance to guidelines for medical doctors.

Introduction

The concept of open science is notoriously ambiguous and utilized by various and often very different endeavours. Usually, these movements aim at increasing transparency or openness – two no less abstract concepts. Yet at the same time, the actual instruments that are developed and implemented to achieve the goals of open science can become very distinct and concrete. This exposé provides an introduction into a research project that attempts to understand how one of such instruments – a guideline for the reporting of biomedical research – aligns with scientific disciplines and shapes their practices. The remainder of this introduction will provide a first glimpse into the issue of reporting guidelines and briefly highlights their epistemic and political impact with respect to transparency as one of the core concepts of open science.

During the 1990s, the first reporting guidelines were developed to confront what was seen as an emerging crisis in biomedical research. With the birth of evidence-based medicine (EBM), the critical appraisal of research received more and more attention. But experts soon found that published research fell prey to various biases and vested interests and cannot stand up to the requirement of critical appraisal (Clark 2012). By concealing information not only about patients, treatments and measurements, but also about methods such as randomization or data analysis, readers cannot decide whether the study's results are relevant to their purpose or rigorously performed (Schulz et al. 1995). In order to confront this problem, method experts started to develop reporting guidelines for several study types, especially randomized-controlled trials, systematic reviews or observational studies (Simera et al. 2010).

Reporting guidelines promise to be simple and effective tools that raise the minimum standard of biomedical publications. Mostly consisting of small sets of rules and checklists that can be followed by authors in a procedural and step-wise manner, such guidelines are seemingly easy to apply (Timmermans and Berg 1997; Moher et al. 2010). In addition, their developers involved important gatekeepers such as funders, institutes and journals in order to widely disseminate the

guidelines and make them effective (Glasziou 2014). Later, when prolific actors defined the „Hong Kong Principles for assessing researchers", reporting guidelines became a key pillar in incentivizing scientific integrity over mere publication output (Moher et al. 2020).

By stressing the distinction between reporting and conduct, the guidelines employ the rather common narrative of transparency as new value goal while, at the same time, challenging or maybe even contradicting it. Guidelines such as the "preferred reporting items for systematic reviews and meta-analyses", PRISMA (Moher et al. 2009), promise to not interfere with disciplinary cultures and agreed-upon research practices (Schulz et al. 2014). In a similar manner, it has been argued how a shift towards more transparency can overcome the struggles for the proper set of epistemic and social values in science. Instead of defining accepted values, transparency makes decisions and biases visible so that recipients can appraise or even re-evaluate results in the light of other values (Elliott 2020).

But definitions about what researchers have to be transparent implicitly inhibit judgements of certain values. This becomes visible if an abstract value such as transparency is turned into precise rules as in the case of reporting guidelines. For example, PRISMA item No.14 requires authors to "Describe the methods of handling data and combining results of studies, if done, including measures of consistency (such as I^2 statistic) for each meta-analysis" (Moher et al. 2009, 6), and thereby incentivizes a certain way of doing the analyses. Not surprisingly, it has been argued that making such shortcomings and flaws transparent, authors will not only improve their reports but also increase the quality of the overall research project (Vazire 2017). Therefore, although open science strengthens the role of transparency in general, its practical manifestations such as reporting guidelines hint at limiting transparency to a very specific definition.

Even if the distinction between reporting and conduct can be saved, other problems remain. On the one hand, reporting guidelines represent the progress beyond the traditional scientific narrative that focuses on legitimation and authority of scientists and their institutions (Francis 1989). The overall growth of global science made the importance of diversity and pluralism for scientific innovation visible and showed how nuances shape research questions and analytical methods. In addition, this growth also acquainted science to the idea that there is variance in scientific education, skill and expertise. In contrast to other standardizations, reporting guidelines promise to not regulate these two phenomena, but rather transfer the complexity directly to readers who then have to decide whether a study suits their question or methodological expectations. This makes them not only applicable, but also acceptable by the regulated actors (Knaapen 2013). Seen in this way, reporting guidelines seem to allow for science to be open by accepting its complexity and imperfectness.

On the other hand, being standards for writing publications, they close down variability and plurality in this regard. Especially due to attempts to implement them into editorial offices and peer review procedures which are traditionally understood as the "gatekeepers of science" (Crane 1967, 195), reporting guidelines redefine scientific communication and its genres (Altman 2002). Manuscripts that do not comply do not get published, irrespective of the performed study. This "political sensibleness" of standards (Moreira 2005, 1981) became very visible when systematic reviews, itself a highly standardized genre, were introduced into disciplines that rely heavily on qualitative research, e.g. nursing (Porter and O'Halloran 2009) or educational sciences (Andrews 2005). Notably, since its inception in 2009, experts have developed twelve extensions to the PRISMA guideline in order to make it more suitable for specific research cultures and their local practices (Page and Moher 2017). Thus, although reporting standards are open about how to properly conduct a study, they are not open with regards to how it is communicated.

All in all, even if transparency promises to not interfere with the epistemic and social configurations behind knowledge generation, instruments that are developed to improve transparency do so. Similarly, while such instruments open up realms that have traditionally been closed, they close others that were less important before and thereby just re-negotiate or relocate boundaries, rather than removing them.

Although reporting guidelines are only a single brick in making science more transparent and an even smaller one with respect to the greater movement towards open science, they provide an insight into the borderlands between the social and epistemic contexts in science (cf. Rooney 2017).

In addition, they can reveal what gets lost when abstract values and epistemic goals are translated into precise regulatory instruments and standards. Therefore, investigating their case does not only help to understand the contemporary modes and contexts of knowledge creation, but may also provide a more informed and balanced perspective on what the potentials and limits of open science as a dominant research culture can mean.

Research Questions

RQ1: What are the social processes behind these tools of standardization and how are they made pervasive? Reporting guidelines are developed by specialized teams and aim at transforming writing conventions of many biomedical disciplines and sub-specialties. Either the guidelines itself, or its social constituency somehow prevents or resolves conflicts with local, disciplinary authorities.

RQ2: What is the epistemological relevance of promoting transparency, rather than objectivity or quality? The guidelines and their constituency stress the distinction between reporting and conduct of studies and further employed the quest for greater transparency as their main narrative. The aims and goals of reporting guidelines imply an empowerment of the critical reader rather than fostering trust into traditional concepts of scientific expertise. In addition, the retreat from promoting methodological rigor or better conduct may point towards a more honest understanding of the epistemic status of biomedical research, especially given its various constraints.

RQ3: Third, what are the observable effects on the publication genres addressed by reporting guidelines? So-called 'Meta-researchers' extensively monitor the compliance with PRISMA on a per-item basis (see Page and Moher 2017). But how and by whom are guidelines adopted? How do they infuse disciplinary silos and national science systems? Do such standards democratize the pool of review authors, a genre usually served by highly experienced authors? Have guideline-based systematic reviews a higher citation impact?

Methods and Theory

This project aims at an extensive understanding of PRISMA as a tool of standardizing the biomedical review literature. To approach the perspectives and research questions stated above, a mixed-method design that combines qualitative and quantitative methods will be used. Both methods will support a wider triangulation of the phenomena in a complementary fashion (see Kelle and Erzberger 2004).

As a first step, a document analysis provides an overview of PRISMA as a scholarly phenomenon and informs further analysis (Bowen 2009). Since PRISMA, a multipublished and regularly updated journal publication, offers some specific bibliographic characteristics, the document analysis will focus on the meta-data in a first step. This sheds light on the course of the development of PRISMA, e.g. the multi-published versions, its translations and also updates, prolific authors or size of the guideline. Beyond meta-data, the document analysis will also provide a look into the narrative structures to analyse how the guideline becomes performative.

Based on the findings of the document analysis, semi-structured expert interviews with around 20 guideline developers and journal editors will be performed (see Hopf 2004). These interviews will be informed by the current literature about standardization in biomedicine, as well as by specific issues found in the document analysis. Further triangulation by participatory status, e.g. guideline author, workgroup member or journal editor will inform participant selection and interview analysis (Bogner et al. 2009).

Analysing a complex set of relations, theoretical frameworks such as actor-network theory are best suited, since they are capable of describing the negotiations between human and non-human actors, such as review authors and guideline documents (Latour 1999; Law 2017). In addition, some strands in STS extensively investigated the role of scientific knowledge for regulatory practices. Since reporting

guidelines offer some similarities to such public forms of regulation, additional theoretical depth can be gained from these accounts (Jasanoff 2011). Another theoretical strand comes from studies about the standardization of medical practice, since it established standardized conceptions of organisms, illnesses and drugs, as well as medical treatments and treatment decision making (Timmermans and Berg 1997; van Loon 2015). Especially the latter has been subject to substantial scholarly scrutiny due to its strong emphasis on medical treatment guidelines that come with evidence-based medicine (Knaapen 2013; Timmermans and Mauck 2005), so that there are attempts to develop a "sociology of standards and standardization" (Timmermans and Epstein 2010, 70).

To further understand the range and extent of the issues of PRISMA, a bibliometric analysis will be performed. Instead of using bibliometric data for the purpose of evaluation, it can also be used to shed light on some STS-related questions such as standardization, even though this question might not be novel (Wyatt et al. 2017).

Since PRISMA is usually cited by systematic reviews that apply the guideline, its impressive ~50.000 citations bear substantial potential to overview its dissemination and application. To build a robust corpus, those citations can be filtered so that only systematic reviews remain. For this reason, the corpus will be based on a combination of PubMed data with databases such as Web of Science or Scopus. While PubMed offers more informed document type classifications due to its sophisticated indexing, Scopus provides extensive citation data and usable identification and differentiation of authors. Further validation of the classifiers can be made with the help of specific systematic review databases or registers.

Scientometric analysis will utilize common and accepted concepts in bibliometrics, such as percentile ranks (Bornmann and Williams 2020), academic age or author gender (Sugimoto et al. 2016; Milojević 2012). For groupings such as field classifications, inbuilt journal-based

systems such as OECD or Subject Categories can be used. For additional validation of field-based normalizations, different cluster models such as co-citation or bibliographic coupling will be applied. In addition, more complex cluster models that not only employ citation links but also incorporate co-word or MeSH based relations are available for the PubMed database (Boyack et al. 2020).

Literature

Altman, D. G. (2002). Poor-Quality Medical Research: What Can Journals Do? JAMA, 287(21), 2765. https://doi.org/10.1001/jama.287.21.2765

Andrews, R. (2005). The place of systematic reviews in education research. British Journal of Educational Studies, 53(4), 399–416. https://doi.org/10.1111/j.1467-8527.2005.00303.x

Bogner, A., Littig, B., & Menz, W. (Eds.). (2009). Interviewing experts. Palgrave Macmillan.

Bornmann, L., & Williams, R. (2020). An evaluation of percentile measures of citation impact, and a proposal for making them better. Scientometrics. https://doi.org/10.1007/s11192-020-03512-7

Bowen, G. A. (2009). Document Analysis as a Qualitative Research Method. Qualitative Research Journal, 9(2), 27–40. https://doi.org/10.3316/QRJ0902027

Boyack, K. W., Smith, C., & Klavans, R. (2020). A detailed open access model of the PubMed literature. Scientific Data, 7(1), 408. https://doi.org/10.1038/s41597-020-00749-y

Clark, D. A. (2012). The end of evidence-based medicine? Inflammopharmacology, 20(4), 187–193. https://doi.org/10.1007/s10787-012-0119-7

Crane, D. (1967). The Gatekeepers of Science: Some Factors Affecting the Selection of Articles for Scientific Journals. The American Sociologist, 4(2), 195–201.

Elliott, K. C. (2020). A Taxonomy of Transparency in Science. Canadian Journal of Philosophy, 1–14. https://doi.org/10.1017/can.2020.21

Elliott, K. C., & Steel, D. (Eds.). (2017). Current controversies in values and science. Routledge, Taylor & Francis Group.

Francis, J. R. (1989). The credibility and legitimation of science: A loss of faith in the scientific narrative. Accountability in Research, 1(1), 5–22. https://doi.org/10.1080/08989628908573770

Glasziou, P., Altman, D. G., Bossuyt, P., Boutron, I., Clarke, M., Julious, S., Michie, S., Moher, D., & Wager, E. (2014). Reducing waste from incomplete or unusable reports of biomedical research. The Lancet, 383(9913), 267–276. https://doi.org/10.1016/S0140-6736(13)62228-X

Hopf, C. (2004). Qualitative Interviews: An Overview. In U. Flick, E. von Kardoff, & I. Steinke (Eds.), A Companion to Qualitative Research (pp. 203–208). SAGE.

Jasanoff, S. (2011). The Practice of Objectivity in Regulatory Science. In Social Knowledge in the Making. University of Chicago Press.

Kelle, U., & Erzberger, C. (2004). Qualitative and Quantitative Methods: Not in Opposition. In U. Flick, E. von Kardoff, & I. Steinke (Eds.), A Companion to Qualitative Research (pp. 172–177). SAGE.

Knaapen, A. L. (2013). In search of standards that avoid standardization: The production and regulation of evidence based guidelines. [McGill University]. https://central.bac-lac.gc.ca/.item?id=TC-QMM-116841&op=pdf&app=Library&oclc_number=922008202

Kourany, J. A. (2020). The New Worries about Science. Canadian Journal of Philosophy, 1–19. https://doi.org/10.1017/can.2020.34

Latour, B. (1987). Science in action: How to follow scientists and engineers through society. Harvard University Press.

Latour, B. (1999). Latour, B: Pandora's Hope: Essays on the Reality of Science Studies (Illustrated Edition). Harvard University Press.

Law, J. (2017). STS as Method. In U. Felt, R. Fouche, C. A. Miller, & L. Smith-Doerr (Eds.), The handbook of science and technology studies (Fourth edition). The MIT Press.

Marks, H. M. (2000). Trust and Mistrust in the Marketplace: Statistics and Clinical Research, 1945–1960. History of Science, 38(3), 343–355. https://doi.org/10.1177/007327530003800304

Milojević, S. (2012). How are academic age, productivity and collaboration related to citing behavior of researchers? PloS One, 7(11), e49176. https://doi.org/10.1371/journal.pone.0049176

Moher, D., Bouter, L., Kleinert, S., Glasziou, P., Sham, M. H., Barbour, V., Coriat, A.-M., Foeger, N., & Dirnagl, U. (2020). The Hong Kong Principles for assessing researchers: Fostering research integrity. PLOS Biology, 18(7), e3000737. https://doi.org/10.1371/journal.pbio.3000737

Moher, D., Liberati, A., Tetzlaff, J., Altman, D. G., & The PRISMA Group. (2009). Preferred reporting items for systematic reviews and meta-analyses: The PRISMA statement. BMJ, 339(jul21 1), b2535–b2535. https://doi.org/10.1136/bmj.b2535

Moher, D., Schulz, K. F., Simera, I., & Altman, D. G. (2010). Guidance for Developers of Health Research Reporting Guidelines. PLoS Medicine, 7(2), e1000217. https://doi.org/10.1371/journal.pmed.1000217

Moreira, T. (2005). Diversity in clinical guidelines: The role of repertoires of evaluation. Social Science & Medicine, 60(9), 1975–1985. https://doi.org/10.1016/j.socscimed.2004.08.062

Page, M. J., & Moher, D. (2017). Evaluations of the uptake and impact of the Preferred Reporting Items for Systematic reviews and Meta-Analyses (PRISMA) Statement and extensions: A scoping review. Systematic Reviews, 6(1), 263. https://doi.org/10.1186/s13643-017-0663-8

Porter, S., & O'Halloran, P. (2009). The postmodernist war on evidence-based practice. International Journal of Nursing Studies, 46(5), 740–748. https://doi.org/10.1016/j.ijnurstu.2008.11.002

Rooney, P. (2017). The Borderlands Between Epistemic and Non-Epistemic Values. In K. C. Elliott & D. Steel (Eds.), Current controversies in values and science (pp. 31–45). Routledge, Taylor & Francis Group.

Schulz, K. F., Chalmers, I., Hayes, R. J., & Altman, D. G. (1995). Empirical Evidence of Bias. JAMA, 273(5), 408–412. https://doi.org/10.1001/jama.1995.03520290060030

Schulz, K. F., Moher, D., & Altman, D. G. (2014). Ambiguities and Confusions Between Reporting and Conduct. In D. Moher, D. G. Altman, K. F. Schulz, I. Simera, & E. Wager (Eds.), Guidelines for Reporting Health Research: A User's Manual (pp. 41–47). John Wiley & Sons, Ltd. https://doi.org/10.1002/9781118715598.ch5

Simera, I., Moher, D., Hoey, J., Schulz, K. F., & Altman, D. G. (2010). A catalogue of reporting guidelines for health research. European Journal of Clinical Investigation, 40(1), 35–53. https://doi.org/10.1111/j.1365-2362.2009.02234.x

Sugimoto, C. R., Sugimoto, T. J., Tsou, A., Milojević, S., & Larivière, V. (2016). Age stratification and cohort effects in scholarly communication: A study of social sciences. Scientometrics, 109(2), 997–1016. https://doi.org/10.1007/s11192-016-2087-y

Timmermans, S., & Berg, M. (2003). The gold standard: The challenge of evidence-based medicine and standardization in health care. Temple University Press.

Timmermans, S., & Epstein, S. (2010). A World of Standards but not a Standard World: Toward a Sociology of Standards and Standardization. Annual Review of Sociology, 36(1), 69–89. https://doi.org/10.1146/annurev.soc.012809.102629

Timmermans, S., & Mauck, A. (2005). The promises and pitfalls of evidence-based medicine. Health Affairs (Project Hope), 24(1), 18–28. https://doi.org/10.1377/hlthaff.24.1.18

Van Loon, E. (2015). Reflexive Standardization and Standardized Reflexivity: Development and use of innovations in healthcare practices. Uitgeverij Van Pommeren.

Vazire, S. (2017). Quality Uncertainty Erodes Trust in Science. Collabra: Psychology, 3(1), 1–5. https://doi.org/10.1525/collabra.74

Wyatt, S., Milojević, S., Park, H. W., & Leydesdorff, L. (2017). Intellectual and Practical Contribution of Scientometrics to STS. In U. Felt, R. Fouche, C. A. Miller, & L. Smith-Doerr (Eds.), The Handbook of Science and Technology Studies (fourth edition, pp. 87–112). MIT Press.

What does "Open" stand for in the concept of Open Science? Facets of the vision of Openness and its societal consequences

Speaker: Paulina Dobroć

Institution: Institute for Technology Assessment and Systems Analysis (ITAS) at Karlsruher Institute of Technology (KIT), Germany

Contact: paulina.dobroc@kit.edu

Technology writer Glyn Moody commented in an article for the Open Source Yearbook:

> *"Due to the well-known successes of free software, related forms of Open Access, Open Data, Open Content etc. now also gradually affect public awareness. […] However, in this process we lose track of the main issue, because the joint efforts of all these movements lead to an enormous, completely new Digital Commons of Knowledge" (Moody 2008, own translation).*

In the quotation Moody addresses the penetration of various spheres of society by the ideas of collaborative working practices of the Free and Open Source Software (F/OSS) movement and the reciprocal influence of F/OSS and other Openness-concepts such as Open Government, Open Innovation or Open Science. Originally, "openness" is a vision of the hacker (IT) community and refers to a working practice based on transparency, participation and collaboration. At the beginning of 21th century the ideas of Free and Open Source Software unfolds its effects also in the fields of politics, economy, education, and last but not least in the field of science. Open Science is one of the very first Openness-Concepts which were inspired by the ideas of the hacker community. Connexions is an open science project to create online scholarly textbook commons (Kelty 2008). Undoubtedly, the project had its influence on the spread of the Openness vision and on the emergence of the concepts of Open Science and Open Access. But not only science was inspired by the vision of Openness. Countless stakeholders and programs, building on the Openness vision, seek in the beginning of 21th century to increase the success of Open Source Software in other societal areas.

In view of the diversity of programs, ideas and stakeholders addressing the vision of Openness between the different social spheres that tie in with Openness the research question arises in to what extent stakeholders refer to the same idea when they refer to Openness. In my dissertation project I deal with Openness as future vision (Grunwald 2019; Lösch et al. 2019) (the future society as participatory, collaborative, and transparent). To this purpose I described the future vision Openness as cultural technique and undertake a semiotic discourse analysis (Peirce 2000) of the Openness discourse. The definition of visions as cultural techniques makes it possible to describe the vision in its becoming and to see the negotiation processes about the meaning of the vision also as origins in changes in the vision itself. The review of the documents in context of Open Government and Open Execution (Blockchain) has shown that stakeholders in different fields referring to the vision of Openness address various parts of the entire hacker culture, from which the open source movement emerged. This insight led me to investigate what Openness is, what different assumptions are at its root, which can then be invoked by different stakeholders with distinct ideas simultaneously within one Openness concept like Open Government, Open Execution or Open Science. This finally leads to semantic competition in the discourse and thus to a negotiation in each openness concept of what openness actually means. The same applies to Open Science

The semiotic oriented analysis, that allows to describe the becoming of a concept like openness to a symbol, provides an insight into how the meaning of openness is negotiated within every openness

concept, what enables and supports this negotiation and finally how this meaning becomes a fixed concept, i.e., a symbol. As a consequence, the vision of openness is subject of interpretation and changes, it leads to risks which result from the fact that undetected changes of the original ideas which were modified by communication find their way into legislation or from exaggerated expectations regarding Openness concepts. These consequences are "discourse risks" (cf. Lösch & Müller 2014) and the results of discourse dynamics. My project relates to the summer schools' topics of analyzing the ambiguous notions of Open Science and enables a reflexive examination of Open Science strategies.

References

Grunwald A (2019): Technology Assessment in Practice and Theory. Routledge, Abingdon.

Kelty C (2008): Two Bits. The cultural significance of free software. Durham-London.

Lösch A, Müller M (2014): Risikodiskurse/Diskursrisiken. Sprachliche Formierungen von Technologierisiken und ihre Folgen – Einführung in den Schwerpunkt. Technikfolgenabschätzung – Theorie und Praxis 23: S. 4–9.

Lösch A, Böhle K, Coenen C, Dobroć P, Heil R, Grunwald A, Scheer D, Schneider C, Ferrari A, Hommrich, D, Sand M, Aykut SC, Dickel S, Fuchs D, Kastenhofer K, Torgersen H, Gransche B, Hausstein A, Konrad, K, Nordmann A, Schaper-Rinkel P, Schulz-Schaeffer I, Wentland A (2019) Technology Assessment of Socio-Technical Futures – A Discussion Paper. In: Lösch A, Grunwald A, Meister M, Schulz-Schaeffer I (eds) Socio-Technical Futures Shaping the Present: Empirical Examples and Analytical Challenges. Wiesbaden, pp. 285–308.

Moody G (2008): Richard Stallmans Goldene Regel und das „Digital Commons". Lutterbeck B, Bärwolff M, Gehring RA: Open Source Jahrbuch 2008. Zwischen freier Software und Gesellschaftsmodell. Berlin.

Peirce C (2000): Semiotische Schriften 3 Vol., edited by Christian J. Kloesel and Helmut Pape, Frankfurt am Main.

The Emerging Role of Data Citation in Science

Speaker: Ewa Zegler Poleska

Institution: Science Studies Laboratory, University of Warsaw, Poland

Contact: e.zegler-poleska@uw.edu.pl

With the use of informational technologies, the scholarly communication ecosystem has moved online and developed beyond the traditional written forms such as the journal article and monograph. However, still little is known what role more novel forms such as data and code play in this ecosystem and how they are taken into account in research assessment.

The established forms still tend to dominate in the reward system of science, since researchers get credit for citations to publications and not data (Mayernik, 2012). While citations have been used for decades to measure impact of publications and increasingly served as a proxy for quality, limitations of these uses have been widely criticized (e.g., MacRoberts & MacRoberts, 2018).

Despite the calls for more inclusive and responsible metrics, such as those expressed in the Leiden manifesto (Hicks, Wouters, Waltman, de Rijcke, & Rafols, 2015) and DORA declaration ("DORA – San Francisco Declaration on Research Assessment (DORA)," n.d.), citations and derived measures such as Journal Impact Factor and h-index remain influential in evaluating research.

Consequently, the established practice of using citations to measure impact of scholarly outputs has been applied to the novel forms, i.e. data and code. There have been initiatives focused on developing and promoting standards for data citation (e.g. CODATA-ICSTI Task Group on Data Citation Standards and Practices, 2013). With the advent of Data Citation Index, bibliometricians have started studying data citation and alternative metrics (Robinson-García, Jiménez-Contreras, & Torres-Salinas, 2016; Peters, Kraker, Lex, Gumpenberger, & Gorraiz, 2016).

However, applying the concept of citation to the realm of research data is problematic. The prevalent view in the literature is that citing data presents different challenges than citing literature (Borgman, 2016), so data citation should be treated with caution. Lacking a theory of data citing, it is challenging to develop reliable data citation metrics and indexes (Silvello, 2018). Finally, some authors warn against the premature evaluative applications of data bibliometrics (Stuart, 2017).

There is a need to analyze how the notions such as publication and citation are applied to scholarly data and what consequences it has for data-related practices. For example, what are the consequences of the publication metaphor (Borgman, 2016; Parsons & Fox, 2013) and how it contributes to the norms of data sharing (Klump, 2017).

Prof. Dr. Philip Mirowski
University of Notre Dame, USA

Philip Mirowski is Carl Koch Chair of Economics and the History and Philosophy of Science, and Fellow of the Reilly Center, University of Notre Dame. He is a specialist in the areas of social studies of science, science policy, the politics of modern science, and the history and philosophy of economics. Furthermore he is affiliated to he following topics: Health, Humanities, Society, History and Philosophy of Science, Science, Technology, and Values.

Prof. Steve Fuller
University of Warwick, UK

Steve Fuller holds the Auguste Comte Chair in Social Epistemology in the Department of Sociology at the University of Warwick, England, where he is the founder of the research program of social epistemology. In his most recent work, he has been concerned with the future of humanity, or 'Humanity 2.0'. He was awarded a D. Litt. by Warwick in 2007, for significant career-long contributions to scholarship. He is a Fellow of the UK Academy of Social Sciences and the European Academy of Sciences and Arts. He is also a Senior Research Fellow at the Breakthrough Institute, the leading 'ecomodernist' think-tank, and Affiliate Scholar at the Institute for Ethics and Emerging Technologies. Major areas of research are the future of the university and critical intellectuals, the emergence of intellectual property in the information society, interdisciplinary challenges in the natural and social sciences, and the political and epistemological consequences of the new biology.

Prof. Dr. Sharon Rider
Uppsala University, Sweden

I am Professor of Logic and Metaphysics at Uppsala University and deputy research director of the Engaging Vulnerability research program. My main research interests are in 19thand 20th century European thought falling within the domain of philosophical anthropology, broadly understood. My current focus on vulnerability has to do with how the conditions of possibility for thinking, understanding and learning such as real needs, practical utility, custom, and chance, are often misconceived as limitations and barriers, i.e. as obstructions to thinking. I want to show, on the contrary, how such conditions are often productive of what can count as "knowing" something, proving it, or understanding it. I am working on a range of material that addresses this topic, including the tension between rural and urban conceptions of what people need to know and be able to do in order to achieve their human potential, and, related to this, the normative discourse that attempts to ameliorate the conditions of those on the periphery. My most recent publications reflect this focus on the possibilities and limitations of educational institutions and practices for cognitive agency.

Dr. Bettina-Johanna Krings
Institute for Technology Assessment and Systems Analysis (ITAS) at Karlsruher Institute of Technology (KIT), Germany

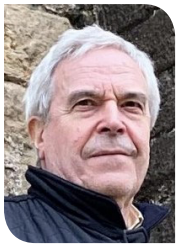
Scientific Degree: Master of Art, M.A. in Political Sciences; PhD (Dr. phil.) in Sociology. Previous Positions: Scientific Referee at the German Foundation of the International Development (1991-1992); Scientific Referee at the Ministry of Cultural Affairs in Buenos Aires, Argentina (1992-1994). Since 1998 Senior Scientist at Institute of Technology Assessment and Systems Analysis (ITAS), Karlsruhe Institute of Technology (KIT); 2009-2019: Co-Head of Research Department: Knowledge Society and Knowledge Politics and ITAS (KIT); Since 2020: Responsible coordinator for teaching "Technology Assessment" at KIT; Speaker of the topic: Work and Technology at ITAS (since 2009). Deputy Speaker of the Topic: Technology and Work in the KIT Program "Humans and Technology" (since 2014).

http://www.itas.kit.edu/mitarbeiter_krings_bettina-johanna.php

Prof. Stefan Böschen
RWTH Aachen, c:o/re and HumTec, Germany

Stefan Böschen is the Chairholder for the research and teaching field "Society and Technology" at the Human Technology Center (HumTec), RWTH Aachen University. He is also Director of the Käte Hamburger International Center „Research Cultures" and Spokesperson of the HumTec, RWTH Aachen University. At the same time he is the Rector's Delegate for the Leonardo Project at the HumTec, RWTH Aachen University.His main research interests focus around: Science and Technology Studies,Technology Assessment, collaborative research and innovation action, and Knowledge and Democracy.

http://www.humtec.rwth-aachen.de/cms/HUMTEC/Das-Projekthaus/Team/~ptvs/Mitarbeiter-CAMPUS-/?gguid=0x80FDFE0318BE424CABEE1A4FA3595E25&allou=1



Prof. Andoni Ibarra
Department of Philosophy, University of the Basque Country, UPV/EHU, Spain

Andoni Ibarra is Professor of Philosophy of Science at the University of the Basque Country (UPV/EHU). He is also the Principal Investigator of PRAXIS Research Group, the founder of the Miguel Sánchez-Mazas Chair, which main goal is to promote Science, Technology and Innovation Studies; He is the Editor-in-Chief of Theoria. An International Journal for Theory, History and Foundations of Science. Andoni's main line of research is on the performative character of scientific representations in the constitution of the world. More particularly, he has focused on offering concepts of representation not reduced to structural preservation, the relational perspectives for assessment of science and technology based on the connectivity of their practices, the articulation between different types of knowledge in the interaction knowledge-communication-interculturality and, in recent years, on the inclusivity of actors in the governance of responsible innovation as well as on the epistemology of anticipation.

https://www.ehu.es/bilatu/buscar/seekuser.php?lang=es&u=eWxwaWJ1bmE=

Prof. Hannot Rodríguez
Department of Philosophy, University of the Basque Country, UPV/EHU, Spain

Hannot Rodríguez. BA in Philosophy, MA in Philosophy and History of Science and Technology, and PhD in Philosophy (2007) from the University of the Basque Country UPV/EHU. Associate Professor at the Department of Philosophy of the UPV/EHU. He is also a member of the Sánchez-Mazas Chair (UPV/EHU), and an affiliate of the Consortium for Science, Policy and Outcomes (CSPO) at Arizona State University. Research interests: risk governance of emerging technologies, public trust, socio-technical integration, responsible innovation, anticipatory governance, and "Open Science".

http://www.ehu.es/es/web/miguelsanchezmazaskatedra/praxis/people/members/rodriguez

Dr. Andreas Lösch
Institute for Technology Assessment and Systems Analysis (ITAS) at Karlsruher Institute of Technology (KIT), Germany

Andreas Lösch (Ph.D. and habilitation) is sociologist, senior researcher and head of the research group "socio-technical futures and policies" and of the focus group on "vision assessment" at the Institute for Technology Assessment and Systems Analysis (ITAS) at the Karlsruhe Institute of Technology (KIT). In addition, he is private lecturer and teaches at the faculty for humanities and social sciences of KIT.

http://www.itas.kit.edu/mitarbeiter_loesch_andreas.php

Prof. Stefan Boeschen, RWTH Aachen, c:o/re and HumTec, Germany, stefan.boeschen@humtec.rwth-aachen.de

Marta Candeias, School of Science and Technology, NOVA University Lisbon (UNL), Portugal, ms.candeias@campus.fct.unl.pt

Oihana Iglesias Carrillo, University of the Basque Country – UPV/EHU, Spain, oihana.ic@gmail.com

Paulina Dobroć, KIT-ITAS, Karlsruhe, Germany, paulina.dobroc@kit.edu

Débora Freire, Department of Applied Social Sciences (DCSA), NOVA University Lisbon (UNL), Portugal, dv.freire@campus.fct.unl.pt

Prof. Dr. Steve Fuller, University of Warwick, UK, S.W.Fuller@warwick.ac.uk

Janine Gondolf, KIT-ITAS, Karlsruhe, Germany, janine.gondolf@kit.edu

Prof. Andoni Ibarra, Universidad del País Vasco/Euskal Herriko Unibertsitatea, Spain, andoni.ibarra@ehu.es

Dr. Bettina-Johanna Krings, KIT-ITAS, Karlsruhe, Germany, bettina-johanna.krings@kit.edu

Dr. Andreas Lösch, KIT-ITAS, Karlsruhe, andreas.loesch@kit.edu

Jacob Lundgren, INGENIO: Institute of Innovation and Knowledge Management – CSIC-UPV, Spain, jakob.lundgren@gu.se

Prof. Dr. Philip Mirowski, University of Notre Dame, USA, pmirowsk@nd.edu

Parissa Mokhtabad Amrei, Chalmers University of Technology, Gothenburg, Sweden, Parisa@chalmers.se

Marianne Noel, Laboratoire Interdisciplinaire Sciences Innovations Sociétés (CNRS, INRAE, Univ Gustave Eiffel), Marne-la-Vallée, France, noel@ifris.org

Maite Pelacho, University of the Basque Country – UPV/EHU, Spain, mpelacho001@ikasle.ehu.eus

Titus Plagge, RWTH Aachen University, Germany, titus.plagge@rwth-aachen.de

Prof. Dr. Sharon Rider, Uppsala University, Sweden, sharon.rider@filosofi.uu.se

Prof. Hannot Rodríguez, Universidad del País Vasco/Euskal Herriko Unibertsitatea, hannot.rodriguez@ehu.es

Sofia Romeiro, NOVA University of Lisbon, Portugal, a.romeiro@campus.fct.unl.pt

Alexander Schniedermann, Centre for Science and Technology Studies (CWTS), Leiden University, The Netherlands, schniedermann@dzhw.eu

Nathalie Schwichtenberg, German Centre for Higher Education Research and Science Studies (DZHW), Germany, schwichtenberg@dzhw.eu

Sergio Urueña, University of the Basque Country – UPV/EHU, Spain, sergio.uruena@ehu.eus

Ewa Zegler-Poleska, Science Studies Laboratory, University of Warsaw, Poland, e.zegler-poleska@uw.edu.pl

Contact

Dr. Bettina-Johanna Krings

Institute for Technology Assessment and
Systems Analysis (ITAS)

Karlstraße 11
76133 Karlsruhe

E-mail: bettina-johanna.krings@kit.edu
www.itas.kit.edu

Edited by

Karlsruhe Institute of Technology (KIT)

Karlsruhe, Germany

www.kit.edu