

## ‘Operator, please’ — Connecting truth and power at the science-policy interface

---

Birte Fährnich and Alexander Ruser

### Abstract

Today, science and politics are in a complex status of reciprocal dependency. Politics is dependent on scientific expertise in order to adequately address highly complex social problems, and science is fundamentally dependent on public funding and on political regulation. Taken together, the diverse interactions, interrelations and interdependencies of science and politics create a heterogenous and complex patchwork — namely, the science-policy interface. The societal relevance for phenomena such as scientific policy advice, science governance or (politically fostered) science communication have been amplified by the developments of digitalisation and now call for new approaches to clarify the ambiguous relationships within the science-policy interface. This special issue aims to provide a platform for researchers to address communication at the intersection of science and politics from different angles. The research presented in the special issue, thus, aims to reduce the contingency of science-policy communication in its various dimensions and looks to spur further investigations into the science-policy interface.

### Keywords

Participation and science governance; Science and media; Science and policy-making

### DOI

<https://doi.org/10.22323/2.18030501>

*Submitted:* 13th May 2019

*Accepted:* 16th May 2019

*Published:* 14th June 2019

---

### Introduction<sup>1</sup>

‘All psychologists who have studied the intelligence of women recognize today that they represent the most inferior forms of human evolution and that they are closer to children and savages than to an adult, civilized man’ [LeBon, 1879; cited after Gould, 1980, p. 104]. Speaking with the authority of a widely acclaimed polymath, Gustave LeBon summarised the state of gender research of his time. LeBon and his contemporaries had falsely ‘found out’ that women’s brains were smaller, thus proving that women lacked the mental capabilities of men. It goes

---

<sup>1</sup>We would like to thank Sarah R. Davies and Brian Trench for their helpful comments on earlier versions of this text.

without saying that these scientific facts had serious social and political implications, as LeBon continues to stress:

a desire to give them the same education, and to propose the same goals for them, is a dangerous chimera. The day when, misunderstanding the inferior occupations which nature has given her, women leave the home and take part in our battles; on this day, a social revolution will begin, and everything that maintains the sacred ties of the family will disappear [LeBon, 1879; cited after Gould, 1980, p. 104].

This historical example is remarkable, not because it evidences that science can be flawed [for a detailed analysis of LeBon's wrongs, see Gould, 1980], but because scientific research is easily conflated with political agendas. From a present-day perspective, much of LeBon's work is blatantly misogynist and racist. However, during his lifetime, it fitted nicely with widespread beliefs of male dominance and white supremacy. The example thus shows that science can have numerous far-reaching political implications, including keeping women away from public life for decades. However, political directions and social norms also have an impact on science. For instance, the current emergence and prominence of 'gender studies' can equally be seen as a consequence of a zeitgeist and thus determined by socio-political and cultural developments.

This short example provides merely a glimpse into the complex interplay of science and politics, but it demonstrates the complexities of the reciprocal dependency of these two fields [Weingart, 2005]. Politics is dependent on scientific expertise in order to adequately address highly complex social problems, such as climate change, terrorism or health issues, and legitimise political action. In current knowledge societies [Stehr, 1994] science is regarded as a key source of political and public consultation, and scientific policy advice has increasingly institutionalised itself over the past decades [Lentsch and Weingart, 2009]. But science is also fundamentally dependent on public funding and on political regulation. Science and politics thus also interact within the framework of science and university policy and in various governance constellations [Macnaghten and Chilvers, 2014; Skolnikoff, 2001], where science — in a dual role — contributes expertise to advocate for its own interests. The interaction of science and politics is thus mirrored in political decisions and policies and influences the academic system, for instance in the context of funding schemes and their impact on the research agenda [e.g. Vilnius declaration, 2013].

Furthermore, increased public and political engagement of academia has been demanded in recent times [Wynne, 2016; Bauer and Jensen, 2011]. These developments have also been furthered in the context of science policy and have led to a growing field of (politically fostered) science communication, which, nowadays, is directed at the public at large but also — again — at political stakeholders [Marcinkowski and Kohring, 2014]. Taken together, these diverse interactions, interrelations and interdependencies create a heterogenous and complex patchwork. This special issue assembles ten research papers and essays from various disciplines and countries which deal with very different phenomena of communication at the intersection of science and politics. Despite their common theme, however, the heterogeneity of cases requires a substantial framework. Therefore, our editorial first develops a general conception of the science-policy

interface. This framework will then serve as a basis to locate the diverse communication phenomena in the science-policy interface and, eventually, to order the contributions of this special issue.

### Communication as a lens to explore the science-policy interface

According to the Oxford Dictionary [2019], an interface is ‘A point where two systems, subjects, organizations, etc. meet and interact’. A discussion of the science-policy interface thus requires a description of the ‘point’ where science and politics ‘meet’ and ‘interact.’ This interface can be conceptualised on the level of individual scientists and political actors who engage in contexts of diverse occasions, negotiations or consultations [e.g. Horst, 2013]. Moreover, we find a variety of organisations, with universities, research institutes, think tanks, etc. on the side of science and parties, ministries and governments on the political side, that interact in distinct institutional constellations [Rödder, 2017]. Finally, ‘science’ and ‘politics’ can be regarded as two distinct ‘subsystems’ of society [Luhmann, 2002; Weingart, 2005], with different ‘inner logics,’ ‘goals’ and ‘rules.’ In this sense, ‘politics’ aims at allocating, distributing and keeping power, while ‘science’ is directed at the determination of the truth and the maintenance of academic reputation [Luhmann, 1992]. Since neither the inner logics nor the respective goals of the two subsystems are identical or even compatible, the science-policy interface can be conceived of as the sphere in which these different ‘system outputs’ (i.e. ‘truth’ and ‘power’) are negotiated, linked and potentially harmonised [Maasen and Weingart, 2005].

Fields such as scientific policy advice, science governance and science communication have been the subject of widespread research in recent years. However, these fields of interaction have often been analysed and presented as separate phenomena. Thus, studies have focused on scientific policy advice and related power structures, *or* science governance *or* science communication and public engagement as methods of science policy or in the context of scientists’ political activism and other related phenomena. These separate approaches can be explained with the scope of certain disciplines, research traditions, funding schemes, etc. in the context of empirical enquiry. However, we argue that whereas the distinction of these different forms of science-policy interaction might be useful in terms of structuration and clarification, they do share a common denominator, as they all aim to connect truth and power. Thus, they all refer to communication at the intersection of science and politics.

Accordingly, the concept of communication may be key to the disclosure of the complexities and controversies of the science-policy interface. Communication is a core concept in the social sciences. It derives from the Latin term *communicare*, which means ‘to share, to divide out, to impart.’ In a fundamental definition, communication is referred to as the process of symbolic interaction between social agents [Blumer, 1973]. The prerequisite of understanding and agreement — and thus successful communication — comprises a common interpretation of the world and its representations. These interpretations, however, cannot be taken for granted: they are developed in the context of socialisation and (professional) development of social agents, and they are influenced by different modes of orientation and by social interaction. These modes again are determined by certain norms and institutional orders in different societal contexts [Berger and Luckmann, 1967]. Against this background, a message can be interpreted in a completely different

way, depending on the respective social constellation in which communication takes place, the actors involved and their specific institutional frameworks.

Why is this important in the context of the science-policy interface?

Communication between science and politics is by no means based on common interpretations and perceptions of the actors involved. Moreover, it is assumed that the science-policy interface imparts a certain share of strategic communication, meaning that actors from both sides pursue certain interests and thus apply communication to pursue their individual, organisational or institutional missions [Holtzhausen and Zerfaß, 2013; Borchelt and Nielsen, 2014; Dudo and Besley, 2016].

However, this has not always been reflected in the theoretical considerations of interactions at the science-policy interface. Classical conceptions, such as Jürgen Habermas's [1968] distinction between 'technocratic' and 'decisionist' models of science-policy interaction, emphasised the impact of interpretative power: in the technocratic model, power is shifted towards scientists whose communication sets the political agenda and dictates policy solutions, while the decisionist model envisions a relation in which communicated scientific knowledge is considered only as long and in so far as it serves (previously held) political or normative convictions [Habermas, 1968, p. 127; Ruser, 2018, p. 772; Stehr and Ruser, 2017]. Despite these differences, these models thus implicitly or explicitly assume that policymakers can understand the content and rationale of science and can apply it to their decision making, and vice versa. Concepts such as Roger Pielkes's 'honest broker' [2007] acknowledge that scientific advisors might themselves be politically motivated but still assume that scientific information and political motivation can be separated. This results in concepts such as these bypassing the complexities of science-policy communication. Approaches of (politically motivated) science communication in the context of the deficit model that assumes that science related information can simply be transmitted to the lay public have also been criticised for these shortcomings [Bauer, 2017].

More recently, however, different approaches have assumed that communication at the intersection of science and politics is characterised less by agreement and unity and more (necessarily) by misconceptions and reciprocal irritations [Luhmann, 2002]. It is assumed that science and politics follow different logics and targets, have different workings and speak different languages, which, when taken together, lead to remarkably different epistemologies [Jasanoff, 2012; Wagner, 2002]. Turner [2007, p. 39] argues that 'Experts typically make their reputations as real scientists [...] they typically are careful to say nothing that conflicts with the rules of the game in their fields.' On the contrary, 'administrators, or commissions, must rely on or judge claims which they cannot epistemically fully own, that is to say, other people's knowledge which they can only get second hand and can't judge as a peer' [Turner, 2007, p. 41]. Against this backdrop, Wagner [2002] states that actors from the fields of science and politics are necessarily 'uneasy partners' in an 'elusive partnership.' Accordingly, in relation to the content of the communication at the intersection of science and politics, the 'message' might be problematic. Scientific findings might not be immediately performative; policies cannot be 'read off' certain data. In order to become politically effective, science communication needs to translate science into thresholds (e.g. 'dangerous' levels of radiation), targets (e.g. the 2°C /1.5°C warming targets that distinguish 'catastrophic' from 'manageable' climate change) and assigned levels of certainty that are 'boiled down' to accessible, understandable information [Machin and Ruser, 2019].

Communication at the intersection of science and politics, therefore, is much more complex than previous conceptions of ‘speaking truth to power’ [Wildavski, 1979] suggest. Scientific findings, regardless of whether we think of climate science, medical research, economic modelling or even the ‘science of science communication,’ cannot simply ‘feed into’ public debates and political decision-making. As a matter of fact, the process of finding out which science should be considered often resembles a mere ‘muddling through’ [Parsons, 2002]. Furthermore, science and politics form a communicative relationship in which representatives of both spheres can adopt diverse roles in the interplay of power and truth. Science is not only speaking (truth or whatever else) to power; it is also observing developments and analysing needs, demands and expectations that it then defines and puts forward to the public realm.

This implies that the connection between science and scientific knowledge production as well as its communication, perception and application in the political realm is far from straightforward. The impact of science on the political ecosystem and, even more importantly, on the interpretation, framing and use of science-related information, can hardly be influenced and by no means controlled by scientists [Gluckman, 2016].

**From elite communication to science-policy communication in a networked public sphere**

To understand the implications *of* and *for* the various configurations, one has to focus on communication against the backdrop of the changing media environment and the fundamental changes to the public sphere.

To a large extent, previous theories have conceptualised science-policy communication as an elitist or ‘behind-closed-doors’ form of communication [Chambers, 2004] between small groups of respected scientists and political insiders that takes place in the context of non-public constellations with rather rigid rules of access [Wyborn, 2015]. A prominent — and disturbing — exception to this practice was the case of the so called megadeath intellectuals [Menard, 2005] or Wizards of Armageddon [Kaplan, 1983] of the Cold War. Trained in such diverse disciplines as ‘physics, engineering, political science, mathematics and logic’ and equipped with the latest assessment technologies and models (e.g. operational research, computer science, system analysis, game theory), these intellectuals produced and issued reports, opinion pieces and popular books that promoted provocative and often outrageous advice (e.g. playing with the idea of a nuclear-first strike) that could have lasting and catastrophic consequences for human lives. However, these megadeath intellectuals should be seen as products of the ideology of their time, thus highlighting the importance of conceptualising science-policy communication as a form of mediated communication. Today, for instance, research takes into account the diverse forms of non-formalised, indirect and thus mediated interactions between science and politics that is used for political decision-making but also influences the development of science and its social repercussions [Neidhardt, 2006].

Recent developments in digitalisation have led to fundamental changes in the media environment and in individual and collective communication practices of media use and orientation [Hepp and Hasebrink, 2018]. As a result, the public sphere has undergone fundamental change, too. Today, public communication takes place online in a networked public sphere [Friedland, Hove and Rojas, 2006;

Benkler, 2006] and is characterised by increasing opportunities for participation, interaction, interconnection and transparency [Neuberger, 2014]. Consequently, previously separated publics merge [Chadwick, 2007] as, for instance, in the context of scholarly and science communication. Content that in pre-digital times was aimed mainly at a scientific audience is now generally accessible to non-scientific actors via numerous online channels [Schäfer, 2014]. With this trend for public engagement, scholars and science organisations are increasingly using these channels to communicate with and address (political) stakeholders and reach lay audiences [Ke, Ahn and Sugimoto, 2017]. For instance, scientists in Virginia, U.S.A. utilized Twitter to mobilize the public in response to the contamination of water with lead in Flint, Michigan and thus forced the authorities to act on the issue [Jahng and Lee, 2018]

While science is supposed to become more 'open' and 'inclusive' as developments such as open science, citizen science, etc. show, science communication becomes more strategic [Fähnrich, 2018a; Fähnrich, 2018b]. Science communication is increasingly confronted with new audiences and emerging players: scrutinising scientific research and quality control, for long a monopoly of the scientific community, is increasingly becoming a public undertaking. For instance, Rick Bonney et al. [2014] argue that recent technological developments (particularly the widespread access to data and ready-to-use analytical tools) will spur further public and political involvement in all stages of the research process. Accordingly, actors from the world of politics have gained extended possibilities of accessing science through multiple channels including online and social media. Overall, the entire political sphere is viewed as being strongly mediatised [Esser and Matthes, 2013]. The 'importance of the media and their spill-over effects on political processes, institutions, organizations and actors have increased' [Strömbäck and Esser, 2014, p. 6]. Empirical research shows that both individual political actors [Strömbäck, 2011] and organisations [Donges and Jarren, 2014], are strongly oriented towards the established journalistic mass media and to numerous social media platforms, such as Facebook and Twitter [Yang, Quan-Haase and Rannenberg, 2016]. Against this backdrop, the science-policy interface has expanded tremendously in the networked public sphere and has changed its nature from an elite discourse conducted behind closed doors to a public conversation [Neidhardt, 2006; Fähnrich and Lüthje, 2017]. With these developments, however, online communication and social media platforms have also changed the quality of science-policy communication and fundamentally affected how scientific credibility and the 'quality' of scientific evidence are debated. 'Public participation' and 'trust' have become more important [Nisbet and Scheufele, 2009, p. 1767] as scientific knowledge comes under attack by (big) data 'mined', interpreted and used by corporate actors [Edwards et al., 2013, p. 246]. There is also a stronger political push for more inclusive 'open science' [Dai, Shin and Smith, 2018, p. 20].

### **Analysing the science-policy interface as a process of contingencies**

The societal relevance of communication at the intersection of science and politics and its increasing diversity and complexity, which has been amplified by the developments of digitalisation [Davies and Hara, 2017], call for new approaches to clarify the ambiguous relationships within the science-policy interface.

In an editorial for *Science* titled 'The science-policy interface,' Sir Peter Gluckman [2016] points towards the persistence of serious communication problems between

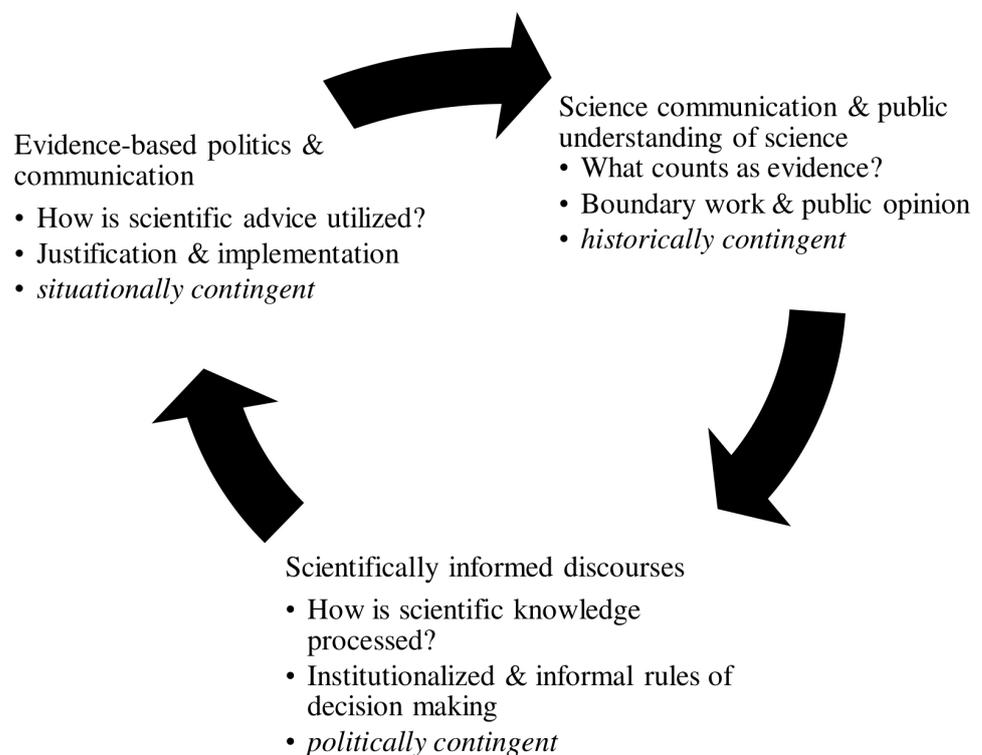
science and politics. Despite the complexity of policy-making processes, and notwithstanding the many ways that scientific evidence can be utilised in the political realm, Glucksman's depiction provides some guidelines for the difficult task of exploring and mapping the point where scientists and decision makers can meet in the context of scientific policy advice, science governance, etc. The approach, however, uncovers certain contingencies for communication at said intersection and in relation to its research — namely, historical, political and situational contingencies. Based on Gluckman's heuristic any depiction of a science-policy interface and its contingencies is linked to the following questions:

1. What counts as science?
2. How is scientific evidence and expertise processed and communicated?
3. How is science utilised?

The first question refers the public and political understanding of science and the problem of how to draw the boundary between legitimate scientific evidence and political advocacy. As Robert K. Merton wrote eight decades ago, 'the belief in the value of scientific truth is not derived from nature but is a product of definite cultures' [1938, p. 321], adding that 'the hampering of science [can be] an unintended by-product of changes in political structure and nationalistic credo' [1938, p. 322]. Even if one agrees with this depiction of the social relevance of science and its communication, the problem persists in relation to identifying scientific knowledge that could actually inform various fields of policy to 'improve' democratic practices. Subsequently, exploring specific constellations of the science-policy interface requires a consideration of the specific, historically contingent environments of science. Accordingly, as, for example, the recent anti-vaccination movements demonstrate [Kata, 2012], the question of what counts as scientific evidence — and furthermore, how important science knowledge is compared to other forms of knowledge and expertise — has to be answered against the background of specific socio-historic conditions. Whether, for instance, creationism, homeopathy, astrology, phrenology and racial studies are considered pseudo-scientific nonsense or alternative approaches worth considering depend on the respective 'mix' of normative convictions as well as the 'public understanding' and 'political imaginaries' of science [Nowotny, 2014, p. 17; Jasanoff, 2014].

The second question of understanding how science and politics 'meet and interact' (i.e. how science 'informs' or influences discourses) requires a consideration of another aspect of the science-policy interface — namely, how scientific evidence is processed and communicated. At this point, a political contingency can be observed. John Campbell and Ove Pedersen [2014] argue that different political systems correspond with distinct 'knowledge regimes' that determine whether scientific evidence is used as 'ammunition' in partisan turf wars or fed into a semi-autonomous system of advisory bodies, commissions and committees. This implies that any investigation of the science-policy interface has to understand that concrete political systems differ not only with regard to their institutional settings (e.g. party system, size of the public [research] sector, degree of political polarisation) but also to their implicit rules and conventions. The increase in science communication, the impact of digitalisation [Davies and Hara, 2017], the diversification of actors involved and the impact of strategic communicators have

led to critical developments that may pose risks for the quality of science communication [Marcinkowski and Kohring, 2014]. Moreover, the public communication of science has evolved in complex socio-political contexts that have profoundly changed the relationship of science and society as well as the culture of science itself [Chilvers and Kearnes, 2016]. This implies that (empirical) studies of the science-policy interface need to focus on specific actors (e.g. established bodies within science, such as academies of science, professional associations, science journalists, think-tank staffers, committees, standing advisory boards), contexts (e.g. special commissions, advisory duties of parliamentary academic services, public hearings, risk assessments), objectives and strategies (e.g. to legitimise certain policies, to receive additional public funding) as well as modes and measures in relation to different modes of science communication, such as informational, dialogical or engaging modes.



**Figure 1.** Procedural depiction of the science-policy interface (Source: authors' own).

The third question, finally, refers to the use or even misuse of science and its communication which need to be taken into account due to a situational contingency. Unlike the notion of 'speaking truth to power,' scientific knowledge is not immediately performative. The utilisation of scientific evidence and advice can be utilised to 'sound the alarm,' thus raising awareness of political issues that need to be addressed by policymakers and the wider public. Scientists can also be consulted (e.g. by established commissions or boards) to provide information about alternative evidence and evidence based solutions, conduct risk assessments and estimate (unintended) consequences. Especially within polarised and competitive political environments, scientific evidence can be weaponised (e.g. by accusing political adversaries of ignorance, inertia or ineptness) in order to influence political debates or shift public sentiments, thus affecting the way science is communicated and how publics approach and understand it. In this realm, actors

from science and politics as well as various third parties, such as corporations, non-governmental organisations, social movements and think tanks, apply and instrumentalise science in public and political discourse and may thus appear as alternative and strategic science communicators [Fährnich, 2018a].

Overall, the various elements of the science-policy interface are intertwined and interrelated. However, for analytical purposes, we make a distinction on the basis of the three questions/contingencies mentioned above. Figure 1 depicts the science-policy interface and its related contingencies in a process model consisting of three aspects.

### **Aim and structure of the special issue**

Given these developments, investigating the science-policy interface is necessarily an interdisciplinary undertaking. The recent changes in methods of communication, the new challenges to scientific authority, the complexity of political systems and the developments of new public arenas demand comprehensive analyses that combine research into communication science and insights from various fields, including science and technology studies (STS), sociology, political science and cultural studies. This special issue aims to provide a platform for researchers to address communication at the intersection of science and politics — and thus the science-policy interface — from different angles. The ten articles by international scholars from diverse disciplines explore and map concrete examples of the ‘meeting point’ between scientists, political decision-makers and the wider public. The special issue thus provides an important overview of the field. As such, the research presented in the special issue aims to reduce the contingency of science-policy communication in its various dimensions and looks to spur further investigations into the science-policy interface.

### *Orders of knowledge and societal perceptions of science as prerequisites and consequences of the science-policy interface*

A range of papers submitted to the special issue deals with the historical and cultural contingency of societal and political perceptions of science and the overall relevance of science for society.

In their paper, titled ‘The conflation of motives of science communication — causes, consequences, remedies,’ Peter Weingart and Marina Joubert deal with the political motives they consider to be the major driving forces behind most science communication programmes. The authors assume a conflation of motives for science communication and address the gap between political rhetoric and science communication practice. This constellation, from their point of view, could impede public perceptions of science and threaten its credibility.

Problems of credibility and trustworthiness are also closely linked to current discourses surrounding pseudo-science. Lorena Cano-Orón, Isabel Mendoza-Poudereux and Carolina Moreno-Castro deal with ‘The rise of scepticism in Spanish political and digital media contexts’ by using the example of the homeopathy legislation process of the Spanish government. In their study of eight Spanish dailies from 2015 to 2017, the authors analyse the role that

homeopathy-related reporting plays in the political debate. The results indicate that the stance on homeopathic therapy's lack of scientific evidence gained traction during the period studied.

In their paper, Kei Kano, Mitsuru Kudo, Go Yoshizawa, Eri Mizumachi, Makiko Suga, Naonori Akiya, Kuniyoshi Ebina, Takayuki Goto, Masayuki Itoh, Ayami Joh, Haruhiko Maenami, Toshifumi Minamoto, Mikihiro Mori, Yoshitaka Morimura, Tamaki Motoki, Akie Nakayama and Katsuya Takanashi deal with the question of 'How science, technology and innovation can be placed in broader visions' and present 'Public opinions from inclusive public engagement activities' for the Japanese context. The study investigates which opinions different segments of the public have regarding the relevance of science, technology and innovation for the Japanese society. Moreover, it is asked how lay people and political officials think that the public should be engaged in innovation policy. Regarding these questions, the results of the analysis of nine national public engagement activities indicate a gap between the opinions of the general public and those of officials.

#### *Modes of processing and communicating science at the science-policy interface*

Against the backdrop of societal and public perceptions of knowledge and expertise, science is processed and communicated in the political realm.

In this context, Cynthia Taylor and Bryan Dewsbury deal with the 'Barriers to inclusive deliberation and democratic governance of genetic technologies at the science-policy interface.' Their paper points to social and ethical questions of new genetic technologies and demonstrates that although the 'need for inclusive deliberation is widely recognized, institutionalized risk definitions, regulation standards and imaginations of publics pose obstacles to democratic participation and engagement.'

The paper of Arko Olesk, Esta Kaal and Kristel Toom deals with 'The possibilities of Open Science for knowledge transfer in the science-policy interface' and explores 'the possible role of Open Science in the knowledge transfer between research and policy, focusing on its potential use by scientific councillors at Estonian ministries.' The authors show that effective applications of Open Science are possible but require 'knowledge brokers' in public sector organisations.

The research of Imke Hoppe and Simone Roedder is titled 'Speaking with one voice for climate science' and is dedicated to 'Climate researchers' opinions on the consensus policy of the Intergovernmental Panel of Climate Change (IPCC). The consensus policy has been regarded as a critical factor in the panel's success in relation to moving climate change to the forefront of the public and political agenda. The survey of climate scientists, however, shows that the consensus policy is also contested.

Anwasha Chakraborty and Rita Giuffredi question the notion of 'Science and technology for the people' and investigate 'The framing of innovation in policy discourses in India and in the EU.' In 2010, both of these political entities launched new strategies focused on innovation — namely, the Decade of Innovation from the Indian government and the Innovation Union, as part of the Europe 2020 growth

strategy, from the European Commission. The authors investigate how the concept of innovation is envisioned, and they study and compare how citizens' involvement is adequately realised in both political entities.

*Objectives, strategies and effects of the (mis-)use of science and its justification in the science-policy interface*

How science is applied to political and politicised discourses and how this use is justified by politics and third-party actors in the science-policy interface is a question that deserves closer attention.

In their paper, 'Foundations as organisational science-policy interfaces? An analysis of the references to foundations made during parliamentary debates in the German federal parliament,' Franziska Oehmer and Otfried Jarren refer to the (strategic) use of science by third-party actors. They discuss the impact of foundations as 'mediators of scientific knowledge in the political process' and show their impact on parliamentary debates in Germany.

Thomas Laux deals with another type of intermediary — namely, think tanks and their use of science in France. In his paper, titled 'How do think tanks qualify their expertise? Exploring the field of scientific policy advice in France,' he explores the field of scientific policy advice in relation to environmental and energy policies. He explores the growth of think tanks that provide expertise in the form of several non-standardised qualities. The author's results illustrate how think tanks combine different cultural logics to qualify their expertise.

Finally, Andreas Scheu refers to the effects of science-policy interaction, which can be found in the increasing mediatization of science actors. His paper, 'Between offensive and defensive mediatization. An exploration of mediatization strategies of German science-policy stakeholders,' analyses the mediatization strategies of actors from politics, science and science funding.

## Perspectives

Today, 140 years after LeBon [1879], 'all psychologists who have studied the intelligence of women' no longer recognise that they represent the most inferior form of human evolution. Due to neuroscientific research and gender studies, the majority of people have also come to accept that there is no systematic correlation between intelligence and gender and thus no 'scientific basis' for excluding women from higher education or from the labour market. However, this change should neither be misread as a consequence of the receding tide of ignorance nor treated as a settled issue: science represented merely one factor in the more fundamental political and social transformations that promoted gender equality, at least in the West. Moreover, science is not a sufficient safeguard against political and social backlash. For example, in a recent development, Hungary ended all gender studies programmes at public universities, stating that

[t]he Hungarian government is of the clear view that people are born either as man or women. They lead their lives the way they think best, but beyond this, the Hungarian state does not wish to spend public funds on education in this area [Redden, 2018].

Apparently, both then and today, the willingness to listen to science depends to a large degree on whether it fits within political agendas and public sentiment.

Despite these problematic exceptions, in most parts of the world, science has a strong voice in public and political discourse. The more that public debates and political decision-making are informed and influenced by scientific research, the more urgent the task to improve our understanding of the science-policy interface. Major political players, such as the United Nations and the European Union, policymakers at the national level, and scholarly associations and individual researchers have been addressing the issue, thus contributing to a growing literature and an emerging landscape of topical conferences, committees and workshops. And yet, the dynamics of scientific research, the delicate balance of public understanding of science and science communication, the particularities of political processes, not to forget the limits of scientific inquiry itself, demand that the complex interactions between science and politics need further probing. The absence of an 'operator' and a missing authority or authoritative set of rules that could establish a 'proper' relationship between science and politics tasks us with exploring many different connections while always being aware of connectivity issues, background noise and miscommunication.

The contributions presented in this special issue highlight the importance of this in-depth research, which accounts for contextual variation and the variety of science-policy interfaces. Moreover, seeking to describe and analyse the communication at the intersection of science and politics requires us to aim at a moving target. With political landscapes and narratives changing, and new technologies fundamentally transforming the means, speed and content of communication, understanding the science-policy interface must be recognised as a process rather than a finite project. We hope that this special issue provides inspiration and guidance for the steps that lie ahead.

Finally, we would like to take the opportunity to thank the contributors, reviewers and the editorial team at the *Journal of Science Communication*. We owe the quality of this Special Issue to your expertise, dedication and support.

## References

- Bauer, M. W. (2017). 'Kritische Beobachtungen zur Geschichte der Wissenschaftskommunikation'. [Critical observations on the history of science communication]. In: *Forschungsfeld Wissenschaftskommunikation*. [The field of science communication]. Ed. by H. Bonfadelli, B. Fähnrich, C. Lüthje, J. Milde, M. Rhomberg and M. S. Schäfer. Wiesbaden, Germany: Springer VS, pp. 17–40. [https://doi.org/10.1007/978-3-658-12898-2\\_2](https://doi.org/10.1007/978-3-658-12898-2_2).
- Bauer, M. W. and Jensen, P. (2011). 'The mobilization of scientists for public engagement'. *Public Understanding of Science* 20 (1), pp. 3–11. <https://doi.org/10.1177/0963662510394457>.
- Benkler, Y. (2006). *The wealth of networks. How social production transforms markets and freedom*. New Haven, CT, U.S.A.: Yale University Press.
- Berger, S. L. and Luckmann, T. (1967). *The social construction of reality. A treatise on the sociology of knowledge*. London, U.K.: Penguin Books.

- Blumer, H. (1973). 'Der methodologische Standort des symbolischen Interaktionismus'. [The methodological stance of symbolic interactionism]. In: *Alltagswissen, Interaktion und gesellschaftliche Wirklichkeit*. Volume 1: *Symbolischer Interaktionismus und Ethnomethodologie*. [Every day knowledge, interaction and social reality. Volume 1: Symbolic interactionism and ethnomethodology]. Ed. by Arbeitsgruppe Bielefelder Soziologen. Germany: Opladen: Westdeutscher Verlag, pp. 80–146.
- Bonney, R., Shirk, J. L., Phillips, T. B., Wiggins, A., Ballard, H. L., Miller-Rushing, A. J. and Parrish, J. K. (2014). 'Citizen science. Next steps for citizen science'. *Science* 343 (6178), pp. 1436–1437. <https://doi.org/10.1126/science.1251554>. PMID: 24675940.
- Borchelt, R. E. and Nielsen, K. H. (2014). 'Public relations in science: managing the trust portfolio'. In: *Routledge Handbook of Public Communication of Science and Technology*. Ed. by M. Bucchi and B. Trench. 2nd ed. London, U.K. and New York, U.S.A.: Routledge, pp. 58–69. <https://doi.org/10.4324/9780203483794>.
- Campbell, J. L. and Pedersen, O. K. (2014). *The national origins of policy ideas*. Princeton, NJ, U.S.A. and Oxford, U.K.: Princeton University Press.
- Chadwick, A. (2007). 'Digital network repertoires and organizational hybridity'. *Political Communication* 24 (3), pp. 283–301. <https://doi.org/10.1080/10584600701471666>.
- Chambers, S. (2004). 'Behind closed doors: publicity, secrecy and the quality of deliberation'. *Journal of Political Philosophy* 12 (4), pp. 389–410. <https://doi.org/10.1111/j.1467-9760.2004.00206.x>.
- Chilvers, J. and Kearnes, M. (2016). 'Science, democracy and emergent publics'. In: *Remaking participation: science, environment and emergent publics*. Ed. by J. Chilvers and M. Kearnes. Abingdon, U.K. and New York, U.S.A.: Routledge, pp. 1–27. <https://doi.org/10.4324/9780203797693>.
- Dai, Q., Shin, E. and Smith, C. (2018). *Open and inclusive collaboration in science: a framework*. OECD Science, Technology and Industry Working Papers, 2018/07. Paris, France. <https://doi.org/10.1787/2dbff737-en>.
- Davies, S. R. and Hara, N. (2017). 'Public science in a wired world: how online media are shaping science communication'. *Science Communication* 39 (5), pp. 563–568. <https://doi.org/10.1177/1075547017736892>.
- Donges, P. and Jarren, O. (2014). 'Mediatization of political organizations: changing parties and interest groups?' In: *Mediatization of politics: understanding the transformation of Western democracies*. Ed. by F. Esser and J. Strömbäck. Basingstoke, U.K.: Palgrave Macmillan, pp. 181–199. [https://doi.org/10.1057/9781137275844\\_10](https://doi.org/10.1057/9781137275844_10).
- Dudo, A. and Besley, J. C. (2016). 'Scientists' Prioritization of Communication Objectives for Public Engagement'. *PLOS ONE* 11 (2), e0148867, pp. 1–18. <https://doi.org/10.1371/journal.pone.0148867>.
- Edwards, A., Housley, W., Williams, M., Sloan, L. and Williams, M. (2013). 'Digital social research, social media and the sociological imagination: surrogacy, augmentation and re-orientation'. *International Journal of Social Research Methodology* 16 (3), pp. 245–260. <https://doi.org/10.1080/13645579.2013.774185>.

- Esser, F. and Matthes, J. (2013). 'Mediatization effects on political news, political actors, political decisions and political audiences'. In: *Democracy in the age of globalization and mediatization*. Ed. by H. Kriesi, S. Lavenex, F. Esser, J. Matthes, M. Bühlmann and D. Bochslers. London, U.K.: Palgrave Macmillan, pp. 177–201. [https://doi.org/10.1057/9781137299871\\_8](https://doi.org/10.1057/9781137299871_8).
- Fährnich, B. (2018a). 'Digging deeper? Muddling through? How environmental activists make sense and use of science — an exploratory study'. *JCOM* 17 (03), A08. <https://doi.org/10.22323/2.17030208>.
- (2018b). 'Einflussreich, aber wenig beachtet? Eine Meta-Studie zum Stand der deutschsprachigen Forschung über strategische Kommunikation von Wissenschaftsorganisationen'. [Influential but hardly seen? Results of a meta-study on German research dealing with strategic communication by science organisations]. *Publizistik* 63 (3), pp. 407–426. <https://doi.org/10.1007/s11616-018-0435-z>.
- Fährnich, B. and Lüthje, C. (2017). 'Roles of social scientists in crisis media reporting: the case of the German populist radical right movement PEGIDA'. *Science Communication* 39 (4), pp. 415–442. <https://doi.org/10.1177/1075547017715472>.
- Friedland, L. A., Hove, T. and Rojas, H. (2006). 'The networked public sphere'. *Javnost — The Public* 13 (4), pp. 5–26. <https://doi.org/10.1080/13183222.2006.11008922>.
- Gluckman, P. (2016). 'The science-policy interface'. *Science* 353 (6303), pp. 969–969. <https://doi.org/10.1126/science.aai8837>.
- Gould, S. J. (1980). *The mismeasure of man*. New York, NY, U.S.A.: W.W. Norton & Company.
- Habermas, J. (1968). 'Verwissenschaftlichte Politik und öffentliche Meinung'. [Science-based politics and public opinion]. In: *Technik und Wissenschaft als Ideologie*. Ed. by J. Habermas. Frankfurt am Main, Germany: Suhrkamp Verlag, pp. 120–145.
- Hepp, A. and Hasebrink, U. (2018). 'Researching transforming communications in times of deep mediatization: a figurational approach'. In: *Communicative figurations: transforming communications in times of deep mediatization*. Ed. by A. Hepp, A. Breitner and U. Hasebrink. London, U.K., New York, U.S.A. and Shanghai, China: Palgrave Macmillan, pp. 15–48. [https://doi.org/10.1007/978-3-319-65584-0\\_2](https://doi.org/10.1007/978-3-319-65584-0_2).
- Holtzhausen, D. R. and Zerfaß, A. (2013). 'Strategic communication — pillars and perspectives of an alternative paradigm'. In: *Organisationskommunikation und Public Relations*. Ed. by A. Zerfaß, L. Rademacher and S. Wehmeier. Wiesbaden, Germany: Verlag für Sozialwissenschaften, pp. 73–94. [https://doi.org/10.1007/978-3-531-18961-1\\_4](https://doi.org/10.1007/978-3-531-18961-1_4).
- Horst, M. (2013). 'A Field of Expertise, the Organization, or Science Itself? Scientists' Perception of Representing Research in Public Communication'. *Science Communication* 35 (6), pp. 758–779. <https://doi.org/10.1177/1075547013487513>.
- Jahng, M. R. and Lee, N. (2018). 'When scientists tweet for social changes: dialogic communication and collective mobilization strategies by Flint Water Study scientists on Twitter'. *Science Communication* 40 (1), pp. 89–108. <https://doi.org/10.1177/1075547017751948>.
- Jasanoff, S. (2012). 'Contested boundaries in policy-relevant science'. In: *Science and public reason*. Ed. by S. Jasanoff. Abingdon, U.K. and New York, U.S.A.: Routledge, pp. 103–132.

- Jasanoff, S. (2014). 'A mirror for science'. *Public Understanding of Science* 23 (1), pp. 21–26. <https://doi.org/10.1177/0963662513505509>.
- Kaplan, F. M. (1983). *The wizards of Armageddon*. Stanford, CA, U.S.A.: Stanford University Press.
- Kata, A. (2012). 'Anti-vaccine activists, Web 2.0 and the postmodern paradigm — An overview of tactics and tropes used online by the anti-vaccination movement'. *Vaccine* 30 (25), pp. 3778–3789. <https://doi.org/10.1016/j.vaccine.2011.11.112>.
- Ke, Q., Ahn, Y.-Y. and Sugimoto, C. R. (2017). 'A systematic identification and analysis of scientists on Twitter'. *PLOS ONE* 12 (4), e0175368. <https://doi.org/10.1371/journal.pone.0175368>.
- LeBon, G. (1879). 'Recherches anatomiques et mathématiques sur les lois des variations du volume du cerveau et sur leurs relations avec l'intelligence2'. *Revue d'Anthropologie* 2, pp. 27–104.
- Lentsch, J. and Weingart, P. (2009). 'Scientific advice to policy making in comparative perspective: technocracy revisited'. In: *Scientific advice to policy making. International comparison*. Opladen, Germany: Barbara Budrich Publishers, pp. 7–16. <https://doi.org/10.2307/j.ctvdf00cm.3>.
- Luhmann, N. (1992). *Die Wissenschaft der Gesellschaft*. Frankfurt am Main, Germany: Campus Verlag.
- (2002). *Die Politik der Gesellschaft*. Frankfurt am Main, Germany: Suhrkamp Insel.
- Maasen, S. and Weingart, P. (2005). 'What's new in scientific advice to politics?' In: *Sociology of the sciences yearbook: democratization of expertise? Exploring novel forms of scientific advice in political decision-making*. Ed. by S. Maasen and P. Weingart. Dordrecht, The Netherlands: Springer-Verlag, pp. 1–19. [https://doi.org/10.1007/1-4020-3754-6\\_1](https://doi.org/10.1007/1-4020-3754-6_1).
- Machin, A. and Ruser, A. (2019). 'What counts in the politics of climate change? Science, scepticism and emblematic numbers'. In: *Science, numbers, politics*. Ed. by M. J. Prutsch. Basingstoke, U.K.: Palgrave Macmillan, pp. 176–198.
- Macnaghten, P. and Chilvers, J. (2014). 'The Future of Science Governance: Publics, Policies, Practices'. *Environment and Planning C: Government and Policy* 32 (3), pp. 530–548. <https://doi.org/10.1068/c1245j>.
- Marcinkowski, F. and Kohring, M. (2014). 'The changing rationale of science communication: a challenge to scientific autonomy'. *JCOM* 13 (3), 1–8. URL: [http://jcom.sissa.it/archive/13/03/JCOM\\_1303\\_2014\\_C01](http://jcom.sissa.it/archive/13/03/JCOM_1303_2014_C01).
- Menard, L. (19th June 2005). 'Fat man'. *The New Yorker*. URL: <https://www.newyorker.com/magazine/2005/06/27/fat-man>.
- Merton, R. K. (1938). 'Science and the Social Order'. *Philosophy of Science* 5 (3), pp. 321–337. URL: <http://www.jstor.org/stable/184838>.
- Neidhardt, F. (2006). 'Wissenschaftliche Politikberatung via Medien?' [Scientific policy advice in the media?] In: *Politikberatung in Deutschland*. [Scientific policy advice in Germany]. Ed. by Heidelberger Akademie der Wissenschaften. Wiesbaden, Germany: VS Verlag für Sozialwissenschaften, pp. 146–154. [https://doi.org/10.1007/978-3-531-90165-7\\_10](https://doi.org/10.1007/978-3-531-90165-7_10).
- Neuberger, C. (2014). 'Konflikt, Konkurrenz und Kooperation: Interaktionsmodi in einer Theorie der dynamischen Netzwerköffentlichkeit'. [Conflict, competition and cooperation. Modes of interaction in a networked public sphere]. *Medien & Kommunikationswissenschaft* 62 (4), pp. 567–587. <https://doi.org/10.5771/1615-634x-2014-4-567>.

- Nisbet, M. C. and Scheufele, D. A. (2009). 'What's next for science communication? Promising directions and lingering distractions'. *American Journal of Botany* 96 (10), pp. 1767–1778. <https://doi.org/10.3732/ajb.0900041>.
- Nowotny, H. (2014). 'Engaging with the political imaginaries of science: near misses and future targets'. *Public Understanding of Science* 23 (1), pp. 16–20. <https://doi.org/10.1177/0963662513476220>.
- Oxford Dictionary (2019). *Interface*. URL: <https://en.oxforddictionaries.com/definition/interface>.
- Parsons, W. (2002). 'From muddling through to muddling up — evidence based policy making and the modernisation of British government'. *Public Policy and Administration* 17 (3), pp. 43–60. <https://doi.org/10.1177/095207670201700304>.
- Pielke, R. A. J. (2007). *The Honest Broker*. Cambridge, U.S.A.: Cambridge University Press.
- Redden, E. (17th October 2018). 'Hungary officially ends gender studies programs'. *Inside Higher ED*. URL: <https://www.insidehighered.com/quicktakes/2018/10/17/hungary-officially-ends-gender-studies-programs>.
- Rödder, S. (2017). 'Organisationstheoretische Perspektiven auf die Wissenschaftskommunikation'. [Perspectives from organisational theory on science communication]. In: *Forschungsfeld Wissenschaftskommunikation*. [The field of science communication]. Ed. by H. Bonfadelli, B. Fähnrich, C. Lüthje, J. Milde, M. Rhomberg and M. S. Schäfer. Wiesbaden, Germany: Springer Fachmedien, pp. 63–81. [https://doi.org/10.1007/978-3-658-12898-2\\_4](https://doi.org/10.1007/978-3-658-12898-2_4).
- Ruser, A. (2018). 'Experts and science and politics'. In: *The Sage handbook of political sociology*. Ed. by W. Outhwaite and S. Turner. London, U.K. and Thousand Oaks, CA, U.S.A.: Sage Publications, pp. 767–780.
- Schäfer, M. S. (2014). 'The media in the labs, and the labs in the media: what we know about the mediatization of science'. In: *Mediatization of communication*. Ed. by K. Lundby. Berlin, Germany: De Gruyter Mouton, pp. 570–593.
- Skolnikoff, E. B. (2001). 'The political role of scientific cooperation'. *Technology in Society* 23 (3), pp. 461–471. [https://doi.org/10.1016/s0160-791x\(01\)00026-4](https://doi.org/10.1016/s0160-791x(01)00026-4).
- Stehr, N. (1994). *Knowledge societies*. London, U.K.: Sage.
- Stehr, N. and Ruser, A. (2017). 'Social scientists as technicians, advisors and meaning producers'. *Innovation: The European Journal of Social Science Research* 30 (1), pp. 24–35. <https://doi.org/10.1080/13511610.2016.1207505>.
- Strömbäck, J. (2011). 'Mediatization and perceptions of the media's political influence'. *Journalism Studies* 12 (4), pp. 423–439. <https://doi.org/10.1080/1461670x.2010.523583>.
- Strömbäck, J. and Esser, F. (2014). 'Mediatization of politics: transforming democracies and reshaping politics'. In: *Mediatization of communication*. Ed. by K. Lundby. Berlin, Germany: De Gruyter, pp. 375–403. <https://doi.org/10.1515/9783110272215.375>.
- Turner, S. (2007). 'Political epistemology, experts and the aggregation of knowledge'. *Spontaneous Generations: A Journal for the History and Philosophy of Science* 1 (1), pp. 36–47. <https://doi.org/10.4245/sponge.v1i1.2970>.
- Vilnius declaration (2013). *Vilnius declaration — Horizons for social sciences and humanities*. URL: <http://horizons.mruni.eu/vilnius-declaration-horizons-for-social-sciences-and-humanities/>.

- Wagner, C. S. (2002). 'The elusive partnership: science and foreign policy'. *Science and Public Policy* 29 (6), pp. 409–417.  
<https://doi.org/10.3152/147154302781780741>.
- Weingart, P. (2005). Die Stunde der Wahrheit? Zum Verhältnis von Wissenschaft zu Politik, Wirtschaft und Medien in der Wissensgesellschaft. [Time for truth? On the relatedness of science to politics, economy and media in the knowledge society]. Weilerswist, Germany: Velbrück.
- Wildavski, A. (1979). Speaking truth to power: the art and craft of policy analysis. New Brunswick, NJ, U.S.A. and London, U.K.: Transaction Publishers.
- Wyborn, C. (2015). 'Co-productive governance: a relational framework for adaptive governance'. *Global Environmental Change* 30, pp. 56–67.  
<https://doi.org/10.1016/j.gloenvcha.2014.10.009>.
- Wynne, B. (2016). 'Ghosts of the machine: publics, meanings and social science in a time of expert dogma and denial'. In: Remaking participation: science, environment and emergent publics. Ed. by J. Chilvers and M. Kearnes. Abingdon, U.K. and New York, U.S.A.: Routledge, pp. 81–97.  
<https://doi.org/10.4324/9780203797693>.
- Yang, S., Quan-Haase, A. and Rannenber, K. (2016). 'The changing public sphere on Twitter: network structure, elites and topics of the #righttobeforgotten'. *New Media & Society* 19 (12), pp. 1983–2002.  
<https://doi.org/10.1177/1461444816651409>.

## Authors

Birte Fährnich is Senior Researcher at the Berlin-Brandenburg Academy of Sciences and Humanities in Berlin, and Principle Investigator for the Horizon 2020 project RETHINK for Zeppelin University (Friedrichshafen, Germany). She holds a PhD from Leipzig University (Germany) and has been temporary professor for Organisational Communication at the University of Greifswald (Germany) as well as visiting scholar at Lund University (Sweden) and the Royal Roads University (Victoria, Canada). She is speaker of the Science Communication Section of the German Communication Association and member of the Scientific Committee of PCST. E-mail: [birte.faechnrich@bbaw.de](mailto:birte.faechnrich@bbaw.de).

Alexander Ruser is Professor of Sociology at the University of Agder in Kristiansand, Norway. After earning a Ph.D. from Heidelberg University he was as a Dahrendorf Fellow at the Hertie School of Governance & the London School of Economics and Political Science and temporary professor at Zeppelin University. Alex was a visiting fellow at Punjab University and is a member of the Center for Global Knowledge Studies at Cambridge University and the Open Innovation in Science Center in Vienna. E-mail: [alexander.ruser@uia.no](mailto:alexander.ruser@uia.no).

## How to cite

Fährnich, B. and Ruser, A. (2019). 'Operator, please' — Connecting truth and power at the science-policy interface'. *JCOM* 18 (03), E.  
<https://doi.org/10.22323/2.18030501>.



© The Author(s). This article is licensed under the terms of the Creative Commons Attribution — NonCommercial — NoDerivatives 4.0 License.  
 ISSN 1824-2049. Published by SISSA Medialab. [jcom.sissa.it](http://jcom.sissa.it)