

Jan-Peter Voß

# Realizing instruments: performativity in emissions trading and citizen panels

## Book Part, Preprint Version

This version is available at <http://dx.doi.org/10.14279/depositonce-6042>.



## Suggested Citation

Voß JP. (2016) Realizing Instruments: Performativity in Emissions Trading and Citizen Panels. (DOI: 10.1057/9781137514509\_6) In: Voß JP., Freeman R. (eds) Knowing Governance. Palgrave Studies in Science, Knowledge and Policy. Palgrave Macmillan, London. Reproduced with permission of Palgrave Macmillan. *This extract is taken from the author's original manuscript and has not been edited. The definitive, published, version of record is available here: <http://www.palgrave.com/de/book/978113751>*

## Terms of Use

Copyright © by Palgrave Macmillan. This document is intended solely for personal, non-commercial use.

# **6. Realizing instruments of governance: performativity in emissions trading and citizen panels**

*Jan-Peter Voß*

## **Introduction**

Instruments of governance are widely discussed in the policy and governance literature (see reviews in Lascoumes and Le Galès, 2007; Howlett, 2011). This research distinguishes between the various types of instruments, seeks to explain their effects, and is concerned with processes of choosing and implementing them. Articulating governance in terms of instruments has been a major concern of political science since World War II, following Harold Lasswell's call for a "policy science" (Lasswell, 1951) and leading to the establishment of "policy analysis" as a research orientation and professional practice.<sup>1</sup>

Yet, there is surprisingly little concern for how governance instruments actually come into being, and close to no research into processes of their making. Both in policy and governance studies and in public discourse, these instruments tend to be treated as given options for policy making and institutional design. They are considered elements of a "toolbox" provided by experts and are understood as being based on scientific investigations of empirical patterns and cause-effect relations in governing. As such, instruments are viewed as lying "out there", in the nature of governance itself. They appear as amenably packaged representations of the factual possibilities of governing.

But how do certain options for governing become known in the first place? How are their functional profiles and design specifications established? How do instruments get into the toolbox?

From a perspective of knowing governance these seem to be crucial questions. They direct our attention to the practices of establishing functional models as representations of what governance really is. Here, I argue that this is not a process of knowledge making involving the neutral observation of a given reality of governing, but a process where specific versions of political reality are actively being created. This is what I refer to as the “realizing” of instruments of governance; it is comprised of both the recognition and accomplishment of particular orders in governance.

Two aspects are relevant here. The more fundamental one is that the making of knowledge about instruments is associated with the realization of a particular model of political agency: It establishes an instrumental problem-solving rationality as the basic operating principle of politics. This is linked to a separation of processes into those that define the goals and values and those that ascertain the means to fulfil them. Long-time practitioners of policy analysis and policy making van Nispen and Ringeling testify that “(t)he instrumental view of the government has left its mark (...) the indirect impact on public policy is hard to neglect. It has forced policy makers to think in terms of goals and means, in terms of effectiveness, which they did not do before. It has improved the communication between policy makers as well as between these policy makers and policy analysts” (1998, p. 215). Realizing instruments thus constitutes a division of labour and competences between political actors, on the one hand, and scientists, on the other hand (Ezrahi, 1990, 2012). As a silently enacted ontology of politics such fundamental ordering can be termed a “collateral reality” (Law, 2012) that comes with the knowing of instruments.

A more specific second aspect in which the making of knowledge is tied up with the creation of political realities is the establishment of scripts for collective action. Anything that is known as a “toolbox” of instruments in any area of governance, say in climate protection or public participation, constitutes a set of distinct alternatives for rational agency. The instruments define options that are publicly accepted as reasonable, feasible and justifiable. Performing politics outside the box is regarded as ignorant and unprofessional, or at least implies extra effort and risk. Knowledge about instruments thus has a regulating effect on the conduct of politics that is comparable to that of (legal) norms and institutions (for the general point see Foucault, 1972, pp. 21-78; and governmentality studies Burchell, Gordon, and Miller, 1991).

But for political science, the making of knowledge is often just taken for granted, while all research effort is concentrated on the making of norms and institutions. The knowledge that makes instruments has been an issue for political science only to the extent that it is used (or not) and for what purposes (symbolic legitimation or instrumental learning, see e.g. Knorr, 1976; Weiss, 1979; Boswell, 2009).

In this chapter, I offer an extended repertoire for studying collective ordering by looking at practices of knowledge-making about governance. For this purpose, I mobilize the concept of “performativity”.

The concept holds that representing, describing and depicting are acts that do something: they make reality. Studies of performativity seek to trace how naming, signifying and describing are constitutively entangled with doing, being and existing (Hacking, 2002). These studies explicitly appreciate the ways in which representations are constitutive of what they represent and understand the role of representations in their active, mediating and transformative work in constituting realities.<sup>2</sup>

By examining the act of knowing governance as a performative process, I propose to look at recursive dynamics of describing realities and effectuating them. For any description of governance, this comes down to scrutinizing it in relation to what it does, and how it contributes to constituting and changing realities of governing rather than passively mirroring them. Specifically for instrumental models, it suggests that their power does not derive from their accurate correspondence with a given reality of governance, but from their ability to mobilize and align agencies to “do” a reality that generates the promised functional effect. Instruments do not *mirror* aspects of a naturally given reality; they *programme* the doing of a particular reality. Making knowledge about them is a process of constructing political order in correspondence with a model that describes it.<sup>3</sup> It can thus be said that the articulation of instrumental models is itself a form of governing, a fundamental, ontological mode of governing that works by suggesting realities of governance for collective enactment.

The remainder of the chapter is comprised of two conceptual steps and two case studies. I introduce the concept of performativity as it has developed in science and technology studies (STS) as part of an attempt to understand the work of science. This is what I refer to as “epistemic performativity”. Then I add a symmetrical concept of “political performativity”, which centres on practices of political representation. Both modes of performativity are juxtaposed to generate an approach that studies the “realizing” of instruments. This brings us to a brief discussion of two cases where epistemic and

political performativity are intertwined in different ways. “Emissions trading” as a model of market-based environmental governance is presented as a case where epistemic and political performativity work in parallel and mutually support each other in realizing a new instrument. The “citizen panel” – as a model of deliberative participatory governance – is portrayed as a case in which epistemic and political performativity counter each other and dynamically balance each other’s reality effect. In conclusion, I discuss the implications of understanding instruments of governance in terms of their performativity.

## **Epistemic performativity**

Performativity in STS is primarily related to practices of scientific representation. The concept emerged from studies of laboratory practices in the natural sciences. While these studies sought insights into the making of authoritative claims of fact, they found that a lot of hard work and tinkering went into creating artificial realities that produced phenomena that could be described and theorized in an orderly manner. They found that scientists configure their own realities, which are simple and small enough to be manipulated by experiment, and which are intelligible, or even predictable, by theories. Rather than making the world as such known by testing and observing reality “in the wild”, knowable worlds are fabricated by rebuilding, ordering, purifying and reducing realities “in seclusion” (Latour and Woolgar, 1979; Knorr-Cetina, 1981; Hacking, 1983; Latour, 1987; Callon, Lascoumes, and Barthe, 2009). The realities of science are “mounted realities” (Rip, 1997), “isolated microcosms” (Rouse, 1987) or “experimental systems” (Hagner and Rheinberger, 1998). Therefore, if hypotheses are tested, they are not tested against nature, but against realities that are artificially created in experimental assemblies, selective field contacts, and methodically generated data sets (Hacking, 1992). This includes the training of a “thought collective” (Fleck, 1994 [1935]) to reliably operate experiments and interpret the phenomena that they show in a convergent manner.

What is then referred to as evidence for scientific claims and publicly presented (and accepted) as laws of nature and universal conditions of being are actually representations of artfully constructed orders, phenomena that are materially and socially performed by a specific epistemic culture (Knorr-Cetina, 1999). Early in the 20<sup>th</sup> century, Gaston Bachelard coined the terms “technoscience” and

“phenomenotechnique” for this mode of knowledge production (Bachelard, 1984 [1934]; Rheinberger, 2005). In this sense, science is performative “writ small”. It composes the realities in its laboratories that it describes in its theories.

But performativity goes further when such practices generate epistemic authority. Then they become performative writ large. Modern science seeks to demonstrate the truth of statements through long chains of reference which translate experimentally configured realities into journal articles, schoolbooks and policy programmes (Latour, 1986, 1999). Specific material, literal and social techniques are here involved, from building the experimental apparatus, to the invention of a language of impersonal reporting, to an ethics of unemotional, fact based critique (Shapin, 1984). What happens locally in laboratories, field sites or computer simulations can thus be mobilized to circulate as evidence for a larger audience. When people accept science as speaking for nature and providing a truth that holds for everybody and everywhere, then science can provide an infrastructure of factual conditions that define, in a collectively binding way, a commonly inhabited reality and possibility space of actions.

More than this, the cause-effect relations as demonstrated in the laboratory may suggest themselves for “application”. Since scientific “discoveries” are tied up with the specific configurations of reality that have been achieved locally in the laboratory, however, their replication and use requires expanding the ordered worlds of the laboratory (Latour, 1983). This takes place within dedicated strategies of innovation, by setting up platforms, building prototypes, conducting field trials, recruiting pilot users, soliciting public acceptance, lobbying for adapted regulations and so on. Here, the explicit goal is to install a functional order on a larger scale. But there are also more subtle ways in which scientific realities proliferate. Laboratory orders are inscribed in practical tools, measurement devices, data and skilled people: any tool implies a model of its users, data imply a categorization of what they measure and skills imply purposes. This may be exemplified here by accounting tools like cost-benefit analysis and their inscribed assumptions about worth, by questionnaires and how they force upon respondents a certain way of reporting on and perceiving themselves, or by target-group-specific advertisements and product designs and how invoke some distinctly modelled lifestyles. Engaging with the mundane products of scientific work can thus contribute to the enactment of scientifically

devised orders as a result of the possibilities implicit in their materiality, without the need to communicate or convince anybody of underlying models or theories. This may be referred to as a “co-performance” of a scientifically devised order by different agencies and across sites. For the case of economics Michel Callon refers here to accountants, engineers, policy-makers, households etc. who, often unwittingly, collaborate in the realization of calculative models of human behavior and social relations (Callon, 2007, p. 335).

STS research provides detailed accounts of the practices and material devices involved in such processes. Work on knowledge production in the social and political sciences is particularly relevant here (Callon and Latour, 1981; Law and Urry, 2004; Camic, Gross, and Lamont, 2011), for example, when it comes to statistics (Desrosières, 1998), public opinion research (Osborne and Rose, 1999), social surveying (Law, 2009), focus groups (Lezaun, 2007), or the experimental testing of political leadership models (Lezaun and Calvillo, 2013). Many of the concepts that developed here can offer a closer look at the material-practical dimension of constructing facts and functionalities, and of epistemic authority, also in relation to politics and governing itself. A concern for epistemic authority and a conceptual repertoire for studying its generation in practice could add to the understanding of power in interpretive political science (Bevir and Rhodes, 2006; Bevir, 2010) and political discourse studies (Burchell et al., 1991; Hajer, 2010; Wodak, 2011). Knowledges, rationalities, cultures or traditions of politics are here often taken to be historically emerging or primarily being shaped in communication (through discourse, rhetoric and media performance).

The concept of performativity from STS shall be used here to capture that dimension in the making of instruments of governance. It suggests that, prior to their scientific modelling and experimental articulation, the described functions are not given anywhere. But neither are they a mere illusion or a discursive construct that gains robustness solely through language and belief (see discussion of such positions in Linder and Peters, 1998). In the process of making them scientifically constructed models of governance become enacted, with the result that the instruments create their own reality.

## **Political performativity**

In addition to garnering a better understanding of authoritative knowledge making, there is more to be gained from STS's elaboration of the performativity of epistemic representation. One concept that is particularly relevant for concerns with governance and politics is a generic conception of power as an effect of representation: The entity (or person) who "does" a representation assumes the power to enact the represented in a particular way; it is actualized and brought into being in a particular situation as the thing that it is represented to be. Yet, there is no representation that does not entail a transformation but any representation involves the selection and subsuming of some aspects of what the entity is or maybe of how it is said to be. The power to perform this transformation is at the heart of a concern with "mediators" in actor-network theory (ANT) and it is central to the analytical project to make the mediation, the transformation and thus the power that is connected with the practicing of representations visible. The basic concept is contained in various ANT terms like blackboxing, spokespersonship, point representations (Callon and Latour, 1981), obligatory passage point (Callon, 1986), centre of calculation (Latour, 1987, p. 215-48), or oligopticon (Latour, 2005, p. 174). Such a generic understanding of representational power can be specified for areas of social life other than science and its claim to represent nature.

For a conception of political performativity along these lines we may draw on Bruno Latour's elaboration of the various "modes of existence" by which modern realities are enunciated and enacted (Latour, 2013). He suggests that political speech is performative in a specific way: it articulates collective subjects and their common will and thus makes groups with a shared identity.

Hence, practices of representing collective subjects and their common will are at the centre of doing politics. They may generate legitimate speaker positions on behalf of a particular "we" (e.g. the working class, a nation state, the peace movement, or women). But the challenge is to first establish a collective subject with a common will and agency. That is the work of politics. It comes in statements like "we want a future that...", "for our survival we have to...", "we owe it to our children", "it is in our collective interest to...". But it also emerges in symbols like flags, uniforms and party badges, the architecture of parliaments and government buildings, procedures of election and appointment, rituals



like the bestowal of honours on behalf of a collective, marches, battle songs and anthems, which contribute to representing and performing collective subjectivity (cf. Manow, 2004, 2006). If “felicitous”, such acts of representation actually work to align the willing, wanting and doing of human bodies and bring about a collective being with identity, interest and capacity to act.

The specific power of politics can, like science, be conceptualized as a reality-effect of such representations. Politics is to work up “representative claims” (Saward, 2006) that constitute authority to oblige members of a collective to contribute to a common will. That grants a power that is voluntarily obeyed, as it is performed and imagined not to oppress, but to increase the autonomy of any member of the collective. If political representations have sufficient traction to perform the collective subjectivities that they represent, politics can transform a multitude of diverse wills into collective agency (Latour, 2003).

This concept of politics is related to studies of scientific representation in STS, and the generic concept of power developed in ANT, but it also connects with more established lines of thought in political research. A conception which takes the performative representation of collective identity, will and interest as the unique productive force of politics can, for example, be found (in otherwise very diversely orientated) writings by Hobbes (1651), Durkheim (Giesen, 2006), Schmitt (1927), Simmel (Mongardini, 1996), Dewey (2012 [1954]) and Arendt (1979 [1969]). Relevant linkages also exist with approaches to politics in constructivism and ethnomethodology (Soeffner and Tänzler, 2002; Patzelt, 2013a). Most explicitly described is the performativity of politics in Bourdieu’s work on symbolic power and social group making (1991, 2009 [1984]) and in Pierre Rosanvallon’s discussion of the figurative dimensions of political representation and democracy (Rosanvallon, 2000, 2002; Disch, 2008; Diehl, Sintomer, and Hayat, 2014).

Examining politics as the representation of collective subjects, identities and interests provides us with a sensitizing concept allowing us to appreciate the making of political authority as another mode of reality-making. Political authority is at work when it comes to determine, not the objective functionality of any proposed order, but its value, the desirability of its effects, and its normative appropriateness.

## Realizing governance

With respect to their effectiveness, both epistemic and political practices rely on being accepted for the purposes of representing a transcendental whole: either objective reality or collective subjectivity (cf. Shapin, 1984; Patzelt, 2013b). In both cases, however, it is the practices themselves that bring the transcendental whole into existence. In Table 1, epistemic and political performativity are juxtaposed. The first column highlights their symmetrical conception as performative representational practices. Columns two and three indicate specific ways in which such practices work. Both modes of performativity build on the construction of simple orders (reduced model-worlds, unitary model-actors), which are claimed to represent a pre-existing reality (nature, common will). They have different ways of justifying their claims (demonstration by evidence, legitimation by participation) and in doing so they refer to a transcendental entity (objective reality, collective subjectivity). This allows them to generate power (epistemic authority, political authority) that is not overtly oppressive. It is made effective by invoking obligations to a transcendental whole (necessity/functionality, we/solidarity). This can be effective for establishing collective order (collective truth/reality, collective norms/agency). Both dynamics of power generation and collective ordering pertain to a specific social locus (scientific field/epistemic culture, political coalition/constituency).

	<b>epistemic performativity</b>	<b>political performativity</b>
<b>Constructing</b>	reduced model-worlds, cause-effect	unitary model-actors, identity
<b>claiming representation of</b>	Nature	common will
<b>justification by</b>	demonstration by evidence	legimation by participation
<b>referring to</b>	objective reality	collective subjectivity
<b>form of power</b>	epistemic authority	political authority
<b>effectuated by</b>	invoking necessity/ functionality	invoking a “we”/ solidarity
<b>resulting in</b>	collective truth, reality	collective norms, agency
<b>social locus</b>	scientific field (epistemic culture)	political coalition (constituency)

Table 6.1: epistemic and political performativity juxtaposed

To study the realization of governance instruments, I propose to combine both concepts of performativity. By tracing epistemic and political practices of representation, we may study how their performativity intertwines. In the following section, I present two case studies that illustrate different patterns.<sup>4</sup>

## **Emissions trading: Economists make markets – but not alone**

Emissions trading is a model of governance that describes how environmentally harmful behaviour is regulated by issuing tradable rights to produce portions of a limited amount of emissions, and by installing and overseeing a market to trade those rights.

A standard account of the innovation of emissions trading is that a scientific model was taken from the laboratory of economic theory to the field of real world politics, governing and trading (e.g. Voß, 2007). The European Union Emissions Trading System (EU ETS) appears as the shining pinnacle of this process. It came into operation in 2005 and is proudly described on the Commission of the European Union's website as its "key tool for reducing industrial greenhouse gas emissions cost-effectively" and "by far the biggest" emissions trading system in the world (Commission, 2015). EU ETS involves more than 11,000 industrial plants in 31 countries being required to account for their greenhouse gas emissions and engaging in the trading of allowances for more than 2 billion tons of CO<sub>2</sub> equivalent (Commission, 2013).

The model has obviously become a reality in the material practices of European governments and companies. For that, emissions trading is considered an exemplary case of epistemic performativity and is studied by STS-inspired economic sociology with regard to the process through which this new market has been experimentally constructed (Callon, 1998; MacKenzie, Muniesa, and Siu, 2007). Empirical studies have focused on the practical work and the devices that translate heterogeneous elements into a calculative machinery that works according to an economic model (Callon, Millo, and Muniesa, 2007; MacKenzie, 2009; Lovell and MacKenzie, 2011). The work that makes markets is studied within different sites of experimentation, "in vitro" and "in vivo" (Muniesa and Callon, 2007; Callon, 2009). Here, emissions trading is presented as a "socio-technical innovation" that makes economic theories true in ever wider areas of interaction (Callon, 2005, 2007).

In the following, I turn to two episodes where the performativity of epistemic representations of emissions trading is visible, but where it also becomes clear that it is not economists alone who have made emissions trading (or scientific authority and distributed epistemic practices, for that matter), but also politicians (or political authority and distributed political practices).

***The proof of principle for emissions trading: the political dismantling of clean air regulation epistemically exploited***

The case that came to be established as the first “proof of principle” of emissions trading was actually not especially influenced by economic theory at all. The emissions trading policy of the US Environmental Protection Agency (ET EPA) was the result of a direct struggle over the implementation of technological standards required by the Clean Air Act legislation (Voß, 2007; Lane, 2012; Simons and Voß, 2014).

During the 1970s, industry actors and their counterparts in government pressed the newly established EPA to accept a controlled breaching of standards, in exchange for certified overcompensation in other installations. Regulatory mechanisms using terms such as “bubble”, “offset”, and “banking” were introduced ad-hoc as concessions to political pressure by regulated industries. They were grafted onto a policy framework that followed quite a different model, one of standards-based environmental governance (Meidinger, 1985; Cook, 1988). In 1982, they were brought together under a unified framework, of an “Emissions Trading Policy” which set out “General Principles for the Creation, Banking and Use of Emission Reduction Units”.

The move was pushed by an increasingly strong constituency of economists at the EPA. But their power at the EPA came about due to interventions that mobilized political authority, not only epistemic authority. In 1978, the newly incoming Carter Administration appointed a market friendly director of the agency and a deputy with responsibility for the Office of Planning and Management (Cook, 1988, 50). With support from the new government, they successively built it up “as an organizational home for reformers in the agency” (Cook, 1988, 10). The influence of economists and their work to modify regulatory practices was made possible by political work and by the seizing of governmental positions. But how did ET EPA become established as a model case of emissions trading in practice, if it was actually the perforated leftover of a system of regulatory standards?

The science to support that epistemic claim was still weak in the 1970s. Up to the end of the 1970s, emission trading had only been articulated in the abstract. It had first been articulated as a theoretical mechanism that allowed for the substitution of state regulation by a market mechanism to allocate

“bads” (Coase, 1960). Then, it was articulated at the end of the 1960s as an alternative instrument of environmental governance to replace technically defined and legally enforced standards (Crocker, 1966; Dales, 1968). In the beginning, it was only relevant and intelligible to economists who shared its basic paradigmatic assumptions. But the model simulations pointed to possible cost savings in comparison with other forms of environmental governance and served to convince further actors of the superior functionality of the instrument (Montgomery, 1972; Atkinson and Tietenberg, 1982).

The ongoing ET EPA process became an empirical case illustrating the more abstract model (Liroff, 1980; Tietenberg, 1985; Liroff, 1986; Dudek and Palmisano, 1987). The actual complexity of the regulatory assemblage was reduced so that it could be calculated as a variant of the model – and evaluated against optimal market designs derived from the theory. The politically negotiated order of ET EPA could thus, in all its incoherence, be captured and drawn into the lab as a real world case of emissions trading. Efficiency, as the main functionality of economic market models became established as the purpose of environmental regulation and a measure for further improvements. At the same time it was suggested that emissions trading had been implemented in practice for the first time, which demonstrated that it did not only work in theory.

A study that evaluated ET EPA in relation to simulated effects of ideal market designs became a widely referenced source for claims that emissions trading could work in practice and that it could outperform alternative governance approaches like direct standards or taxes (Tietenberg, 1985; Simons, forthcoming). While the successes of the ET EPA were identified as features of the generic model, the programme’s more apparent failures were attributed to improper implementation.

Evaluation studies emphasized the experimental nature of the ET EPA (Lane, 2012: 598; Simons, forthcoming). While ET EPA was, in fact, full of idiosyncrasies that threatened its recognition as a case of emissions trading, economic evaluation studies served to maintain equivalence between politically reconfigured practices of regulation and the model of emissions trading. They did so by establishing a difference between the particular case and the optimum of market design as determined in simulations. It was claimed “widespread adoption of emissions trading has been handicapped by bureaucratic inertia and infighting, dogmatic opposition by environmentalists, hostility in Congress, as well as indifference by polluters. Yet emissions trading is sufficiently well-developed to justify an

endorsement of its performance and its continued role in solving air quality problems” (Dudek and Palmisano, 1987: 218). This set a trajectory for further reforms of environmental governance, which sought to fully realize the calculated benefits that would emerge from the proper implementation of the emissions trading model.

With regard to the intertwining of epistemic and political performativity, we find that regulatory practices, which provided a case in which economics could corroborate its model, were in fact reconfigured by the mobilization of political authority. We further see how reducing the wider worlds of environmental governance into simple models allowed economists to calculate effects and determine standards of rationality for further reform.

### ***The emissions trading breakthrough: a new political collective sets up a real world experiment***

Another episode to consider is the process leading up to a first prototype of emissions trading as a governance instrument. The US Acid Rain Program (US ARP) is regarded as the first proper implementation of emissions trading theory. Importantly, it helped emissions trading to win a place in the environmental governance toolbox beyond the USA. Here too, we find a constitutive intertwining of epistemic and political authority.

Tietenberg’s evaluation of ET EPA fed into a process to negotiate the setting up of a proper emissions trading system on the federal level in the US; it actually led to a major real world experiment with the model. At first sight, the episode may be regarded as a clear case of epistemic performativity: economics provided a model of governance, and functionality claims were corroborated with evidence from ET EPA as a practice case. But here again, there were performative political practices at work. Dedicated political work was needed to establish a public interest in the experiment and to mobilize agency for setting it up. We turn to “Project 88” as a process in which a new political collective was assembled around the claim that there was a broader collective interest in the USA in a turn to market-based environmental policy.

Project 88 was initiated by economists at the Environmental Defense Fund (EDF) together with senators Timothy Wirth (Colorado, Democrat) and Senator John Heinz (Pennsylvania, Republican)

(Pooley, 2010). The plan was to assemble a broad coalition of actors from both political parties and various social groups (representatives of industry and environmental NGOs, different regions etc.) for a collective initiative to push a new market-based approach to environmental governance. The coalition was brought together to articulate a policy proposal for the new administration that would come in after the 1988 US presidential elections (McCauley, Narron, and Coleman, 2008; Pooley, 2010). Economics professor and former EDF staff member Robert Stavins was convinced to lead the project and other key individuals were also successively enrolled as spokespersons for various fields of academia, private industry, environmental organizations and government.

Project 88 paved the way for a broad political coalition by framing environmental policy as a question of technical design, independent of competing values and political positions. Its final report titled “Project 88, Harnessing Market Forces to Protect Our Environment: Initiatives for the New President” included a proposal to introduce “a market based approach to acid rain reduction,” and connected this proposal to the promise that such an approach “could save \$3 billion per year, compared with the costs of a dictated technological solution” (Project 88, 1988, p. 5). It said that “Project 88 steps away from ongoing debates over specific environmental goals, to focus instead on finding better mechanisms for achieving whatever standards are set” (Project 88, 1988, p. ix). This promise was backed up by multiple references to the existing emissions trading literature.

In his campaign, presidential candidate Bush positioned himself as a supporter of new acid rain regulations. After his victory and inauguration, he set up a team with close ties to the Project 88 coalition to craft a reform of the Clean Air Act (McCauley et al., 2008). The group worked closely with EDF staffers to overcome opposition from groups that had thus far not been included in the negotiations (Pooley, 2010). One of the members of the team recalls: “We would pull out Project 88 and say this is what the best and brightest say they should do.” (McCauley et al., 2008, p. 25).

Looking back in 1991, when he introduced proposals to include emissions trading into the Clean Air Act, President Bush said: “Let me commend Project 88 and groups like the Environmental Defense Fund for bringing creative solutions to long-standing problems, for not only breaking the mold, but helping to build a new one.” (Project 88 - Round II, 1991:2).

A comprehensive evaluation of the US ARP in 2000 (Ellerman, Joskow, Schmalensee, Montero, and Bailey, 2000) found that experience with the US ARP “clearly establishes that large-scale tradable-permit programs can work more or less as textbooks describe” (p. 315). This concluding statement neglected their earlier acknowledgement that non-modeled and unintended interactions with the parallel liberalization of railroads and price-drops for transporting low-sulphur coal over long-distances produced the effect of reduced emissions at low costs (Ellermann et al., 2000, 104-105). It was claimed that with the US Acid Rain Program “market-based instruments have moved centre stage, and policy debates look very different from the time when these ideas were characterized as ‘licenses to pollute’ or dismissed as completely impractical” (Stavins 2002, 14).

This episode around Project 88 shows that reality-making in relation to emissions trading was an effect of cobbling together new collective actors who had an interest in the instrument, as well as an effect of building up epistemic authority for the model. Indeed, both go hand in hand. In order to set up an experiment that can generate evidence and epistemic authority, collective agency must be mobilized by negotiating the accepted representation of a collective interest.

### ***Emissions trading co-performed as objective function and collective interest***

Both episodes portray a process in which epistemic authority in support of its functionality was gradually built up as emissions trading went back and forth between the lab and the wider world. Each time, epistemic authority got stronger due to the increasing correspondence of US environmental policy with the market model and the gathering of more and better data to enhance the model. Upon closer inspection, we find that science did not perform reality on its own. Knowledge work required political authority to configure the experimental setups that it could draw on for evidence (and to testify for a public interest and the relevance in related research). The development of emissions trading thus required the building of political coalitions and the construction and representation of collective interests as much as the construction of model worlds and forceful claims to represent reality.



## **Citizen panels: A technoscience of democracy – and its politics**

The citizen panel model refers to a procedure for convening small groups of “ordinary citizens” and for facilitating the deliberation of a predefined issue to produce a “public view” with recommendations for policy. The case is special in that the modelled governance function here refers to the production of legitimate goals via specific forms of political representation. Citizen panels constitute a model for the basic political task of translating a heterogeneous multitude into a collective subject. Epistemic authority in support of the model comes to bear on the process by which collective values and norms are to be articulated.

In contrast with the lab-driven development of emissions trading, the innovation of citizen panels can be described as a gradual technoscientification of public participation practices. They first took shape “in the wild” and only later became “laboratorized” (Voß and Amelung, submitted).

We examine in more detail an episode in which the establishment of authoritative design standards through scientific testing and evidence generation occurred. Such attempts to epistemically define public participation procedures were not only supported by political authority, but are also contested on political grounds. They gave rise to attempts to claim a collective interest in the articulation of publics and democracy that was not disciplined by experts and technologies of democracy.

### ***Political practices brought into the lab***

Early citizen panel practices developed from immediate concerns with existing governance patterns in particular contexts. The planning cell developed in the context of infrastructure planning in Northrhine-Westphalia in Germany (Dienel, 1970), the citizens’ jury in the context of civic education in Minnesota in the USA (Crosby, 1974) and the consensus conference in the context of parliamentary technology assessment in Denmark (Joss and Durant, 1995). The doing of these early versions of citizen panels was embedded in local networks, inspired by general philosophical ideas, intuitions about what was needed and experience of what may work in practice (Vergne, 2010). Even if articulated as general methods, the procedures of participation that were practised were not theorized and did not correspond with a particular theory. While methodical approaches were supported by credentials like academic titles and by some philosophical reasoning, they tended to be appealing more

for normative reasons and because they signalled organizational capacities to do citizen participation as a service.

For the first wave of proliferation, this epistemic and technical openness was helpful. When participation became subject to hype in the 1990s, this allowed procedures to be mobilized and flexibly adopted for application in other political contexts, to other issue areas and by other actors. The field of participatory governance practitioners rapidly expanded. During the 1990s, citizen panels spread along with the rise of a transnationally operating industry of professional organizers that included established public relations and market research institutes. They picked up on citizen panel methods to serve a growing demand for organized public participation. Citizen panels were particularly sought after for technological projects that risked being blocked by public protest (for example, in relation to nuclear power and biotechnology) and by decision bodies without representative legitimation like the EU and international regimes, but also by governments in China, or private governance initiatives.

But the proliferation of citizen panels brought up serious concerns about the methodical reliability of exercises. It gave rise to a critique related to manipulation and raised public distrust of results. This worked to undermine their performance and threatened the emerging market for participation instruments and services. As a result, the making of knowledge about governance shifted gear. In order to consolidate the field by incorporating some guiding principles and to make the functions of particular procedures explicit, projects were started to empirically demonstrate their effectiveness. The design of participatory procedure was turned into a technological challenge concerning how to guarantee the general functions of citizen participation irrespective of the issues, political cultures, persons or other situational circumstances involved.

This new development included burgeoning research to classify and evaluate situated practices. As “democratic innovations” (Smith, 2009; Geissel and Newton, 2011), they were abstracted and aggregated for systematic surveys, comparisons and databases, as well as for explanations and evaluations of their effects (Rowe and Frewer, 2000; OECD, 2001; Elliott, Heesterbeek, Lukensmeyer, and Slocum, 2005; Fung, 2006). This brought the methods together under umbrella

terms like “citizen panels”, ‘deliberative forums’ or ‘mini-publics’ (Hörning, 1999; Brown, 2006; Goodin and Dryzek, 2006; Hendriks, 2006). Linked to such labels were comparative schemes and case depositories.

Around 2000, citizen panel practices started to become embedded in a transnational design discourse and in the infrastructure of research institutes and service providers, conference series, websites, journals, and professional organizations that connected citizen panel practices across the world. The development of abstract design knowledge started to take shape as a separate task, distinct from the doing of participation in particular situations.

In addition to orchestrated efforts at consolidation and standard setting in several projects funded by the European Union (e.g. IFOK, 2003; PATH 2004-6; CIPAST 2005-8), the practice of doing citizen panels became linked up with the theory of deliberative democracy (Dryzek, 2000; Smith and Wales, 2002). While there were sporadic linkages before, they were now developed for a sociotechnical innovation agenda, which sought to experimentally test and develop theoretical claims. Deliberative democracy provided a model of deliberation to enhance public reasoning and elicit what must be regarded as the true public opinion (Grönlund, Bächtiger, and Setälä, 2014). The link provided advocates of citizen panels with a theory. And it gave advocates of deliberative democracy a practice field to demonstrate its relevance as a “working theory” (Chambers, 2003), as well as ample case material for an “empirical turn” in deliberation research (Carpini, Cook, and Jacobs, 2004). The approach was to put “Habermas in the lab” (Sulkin and Simon, 2001) and take experimental evidence as a basis for establishing design standards and regaining public trust.

In effect, the combination of citizen panels with deliberative democracy constituted a new technoscientific approach to the design and implementation of participation methods (Laurent, 2009; Bogner, 2012). A division of labour emerged. Some locales, like transnational expert bodies, EU projects, research institutes and consultancies took on the task of developing citizen panels as a generic method of participation. Experts in participation came to occupy a central position from which they circulated concepts and tools for configuring participatory practices to other locales (Chilvers, 2008; Laurent, 2009).

### ***Reflexive engagement with technologies of participation***

Those efforts coevolved with political coalitions and were supported by the political authority they could generate (e.g. EU-funded research and networking projects). But the epistemic construction of political order did not remain unopposed. It also gave rise to a political countermovement.

Contestation was not only in the form of competing epistemic claims that attacked the functionality of specific designs, but it addressed the basic approach of scientizing and standardizing political agency and the formation of public opinion. It challenged the attempt to epistemically define what legitimate political agency was to be.

Towards the end of the 1990s a discourse took shape that problematized the “technologizing of democracy” (Levidow, 1998) and the establishment of a new class of “experts of community who invent, operate and market” devices for eliciting communal values (Rose, 1999, p. 189). One of the main concerns was that these methods construct particular types of citizens and publics (Irwin, 2001; Wynne, 2006; Lezaun and Soneryd, 2007; Wynne, 2007; Braun and Schultz, 2010) – and that they conceal their political performativity by objectifying methods of participation as a matter of technical functionality and expertise. This discourse problematized an emerging technocracy of democratic procedure, which turned democratic representation from a matter of concern into a matter of fact (Braun and Schultz, 2010; Bogner, 2012). This was linked to more fundamental reflections on the artificial creation of publics and citizens in any particular procedure for public participation, and on the impossibility of engaging citizens in a neutral way (Gomart and Hajer, 2003).

In addition to a critical academic discourse, the attempt to establish a dominant design based on deliberative democratic theory prompted the development of more empowering variants of citizen panel procedures, like a do-it-yourself citizens jury for citizens to articulate concerns and organize activities of engagement on their own initiative (PEALS, 2003; Wakeford, Murtuja, and Bryant, 2004). It also prompted direct protest against the deployment of allegedly neutral technologies of participation. A pronounced example was a strategic campaign by the radical protest movement ‘Pieces et maine d’Oeuvre’ (PMO) to disrupt public participation on nanotechnology in France (Laurent, 2011). PMO problematized organized events like citizen panels and other procedures as a project to create a “machine man in a machine world” (Laurent, 2011, p. 426) and made several

attempts to sabotage participatory procedures and undermine their working of as “both a (social) scientific model, and a political one” (Laurent, 2011, p.431). More formal approaches to technology assessment were also undertaken, such as a constructive assessment exercise on the innovation dynamics of citizen panels and possible future repercussions (Mann, Voß, Amelung, Simons, Runge, and Grabner, 2014; Voß, forthcoming).

Academic discourse, protest action, alternative designs, and dedicated assessment exercises all problematized the epistemic construction of political order. They questioned the neutrality of the scientific representation of publics, how they are formed and what their collective interest is. They thus exposed the subtle power of any attempt at functionally optimizing the political process and social-technologically controlling political agency. They partly positioned methods of public participation as a strategy of domination and, in line with that, created a collective interest in resisting them and mobilized collective agency to prevent the model of governance being realized.

Alternatively, they sought to articulate a reflexive approach to deal with the power of methods by explicating their epistemic performativity and making their design itself a public issue (Chilvers, 2013; Pallett and Chilvers, 2013; Mann et al., 2014).

### ***Epistemic constitution building is politically contested***

In the case of citizen panels and the modelling of processes to produce “public views”, the epistemic construction of political order concerns factual conditions of effective political representation.

Participation methods describe particular ways in which citizens participate in the articulation of publics, the production of legitimate representations of a common will, and thus the generation of political authority. Epistemic performativity thus comes to work on the felicity conditions of political performativity.

Our quick rush through relevant episodes of the innovation journey indicates, however, that the encroachment of technoscientific reality-making on the fundamental premises of politics and political agency did not remain uncontested. We can instead see how the epistemic performativity of functionally modelling the articulation of public will was counteracted with the articulation of collective interests in relation to those models themselves. Along with increasing efforts to

epistemically standardize public participation, practices took shape to represent the making of methods itself as a matter of collective interest and a public concern. Here then, political performativity not only worked in convergence with epistemic authority (which is also apparent as political practices supported the epistemic construction of citizen panels, for example, in commissioning experimental applications, research and professional networking), but we see here how the representation of collective interests can also counter the generation of epistemic authority and undermine the dynamics of scientific reality-making. This case indicates that an increasing role of science in governance will not necessarily be the end of politics, but that it may bring about new forms of collective interest articulation with regard to the “infragovernance” of establishing authoritative knowledge about governance. The “infrapolitics” of modelling governance may be made public – and turned into explicit politics (Latour, 2007).

## **Conclusions**

The realizing of instruments is comprised of both making them known and bringing them into existence. The cases here portray different patterns in which epistemic and political performativity intertwine. Instruments of governance are made both in the experimental reconfiguration of objective reality, as part of their representation in science, and in the mobilization of collective interests, as part of political representation. Dynamics of governance research (and success in establishing facts about governance) and political coalition building (and success in mobilizing collective agency) feed into each other. But epistemic and political performativity do not necessarily work in concert.

Representations of objective reality and collective interests may undermine each other in their reality effects. Certain forms of political science co-evolve with certain forms of politics as they co-perform *and* counter-perform certain realities of governance.

This is relevant, because it means that instruments of governance cannot be attributed a cause either in science or politics. Neither do they exist either as knowledge or as power. They incrementally grow as joint processes of epistemic and political authority building. Evidence based on data from experimental implementations is tied up with capacities to mobilize agency for the purpose of reconfiguring governmental practices. If understood in this way, instruments are not just discursive or

cognitive constructs; they have a material existence. Instrumental knowledge of governance is embedded in and constitutive of a set of aligned practices, skilled bodies, specifically configured tools, supportive data and organizational infrastructures (Voß and Simons, 2014).

By using the concept of performativity, we conceive of instruments as politico-epistemic cultures that do a specific reality of governance. Innovating instruments, then, is a process of articulating and expanding the space in which this particular reality is cultivated. It not only proceeds in staged moments of choice and utilization, but also includes the entangled practices of performing epistemic and political representations that pave the way for the establishment of instruments as functional options and the development of collectives that want them and have agency to do them.

We thus come to see knowledge of governance and political power as two facets of a single historical process of collective ordering. There is some resonance here with the notion of power/knowledge from Foucault and its development in governmentality studies. But a performativity approach as developed in STS, and in the further elaboration of actor-network theory, focuses on the distributed, interactive, contested and contingent processes of building material-semiotic orders. Rather than revealing epochal orders of discourse, our studies describe the epistemic construction of political order as an ongoing process of making, remaking and contesting representative claims in relation to objective realities and collective subjects. The focus is not on governmentalities that are already made and how they are at work, but on governmentalities being assembled and in-the-making.

Finally, the performativity approach highlights a paradox related to the view of instruments in political science. The performativity approach shows that functionalities are artificial orders that are invented, negotiated and experimentally configured in the process of becoming known. As part of this process, the actual complexity of enmeshed, entangled, blended and mutually including practices of governing is selectively reduced. In order to describe governance scientifically, the majority of the interactions, dimensions, and entanglements that constitute governance “in the wild” need to be excluded or analytically purified. Moreover, in order to render human agency knowable, it has to be modelled in a way that makes it calculable. Functional models are artificial orders that are made in a process of social interaction that is hugely underdetermined by the world as it is, but full of agency, decision and

contingency. Such knowledge is never neutral or value free. It is the result of negotiations among experts about how they want the world to be ordered, and the product of these experts trying out in protected spaces how it can be made to work. This has two important implications.

First, the production of knowledge goes along with the production of ignorance: Anything that does not add to the functional model is excluded from consideration. Making governance known in any particular way paradoxically goes along with reduced capacities to perceive complexity, broader interactions, recursivity and creative agency. Realizing instruments may thus be understood as a mode of world ordering that is productively blindfolded. But it is only productive with regard to the accomplishment of a narrowly defined function, and only in the short term. As actors seek to expand scientifically reduced and purified orders, the process generates “side-effects”, “externalities” and “collateral realities”. When non-modelled repercussions accumulate, they may in the long-term even undermine the narrowly defined function of the instrument. Promising solutions may thus become a source of new problems.

A second implication is that the making of instruments must be understood as a site of politics. It is a transformative process. The making of instruments entails decisions on collective life; it sets out trajectories of world ordering. Unlike programmes of collective order that are presented as political proposals, however, the articulation of instruments evades public contestation and democratic decision by claiming to neutrally represent given functionalities. Designing and experimentally testing instruments so appears as humble learning from nature rather than a laborious remaking of political orders.

Instrumental knowledge about governance is thus inherently problematic. It is connected with fundamental problems of science and technology that accrue from producing reduced and simplified world orders in “secluded research”, which are then re-inserted into the thick of ecological interactions. It may be said that, just like other socio-technical innovations (Callon et al., 2009), governance instruments require specific forms of reflexive engagement to constructively assess the wider consequences and political implications of instrumental knowledge agendas.



## Notes

---

<sup>1</sup> The instrumental orientation is most obvious when it is highlighted in terms like “policy instruments” (Woodside, 1986; Linder and Peters, 1989; Bemelmans-Videc, Rist and Vedung, 1998; Peters and van Nispen, 1998), “tools of government” (Hood, 1983; Salamon, 2002), or “technologies of governance” (Swyngedouw, 2005; Shor and Wright, 2011). But it may also be found in the articulation of functional models of governance which are presented as “mechanisms of governance” (Williamson, 1999) or “modes of governance” (Treib, Bähr and Falkner, 2007). Also functional models of whole political systems (Easton, 1979 [1967]) and types of democratic constitutions (Lijphart, 1991) exhibit characteristics of instruments as discussed here.

<sup>2</sup> Performativity concerns all kinds of cultural products such as words, gestures, icons, designed artefacts. The concept highlights that they do not refer to a pre-existing reality, but it draws attention to how making and using them brings particular realities into existence. There are obvious examples, like a priest at the wedding altar uttering “you are married”. But there are also more subtle, complex and materially diverse ways of talking and signaling realities into existence. Performativity is studied to be at work in the appellative dimension of speech acts, the bodily performance of gender, the raising of micro-organisms and elementary particles in the laboratory, the actualization of visions of technology, the enactment of certain types of people and social orders, and even the reflexive constitution of self (Austin, 1975 [1962]; Foucault, 1974 [1966]; Butler, 1988; Hacking, 2002; Latour, 2013).

<sup>3</sup> There are links with a wider a tradition of constructivist social science, where reality is studied as being made in and through interpretation and symbolic interaction (Goffman, 1959; Berger and Luckmann, 1966; Edelman, 1988). But performativity emphasizes two aspects that are not always central to constructivist research (Hacking, 1999). This is, first, the material and practical dimension of reality construction: Knowledges may be performative without being communicated, understood and consciously believed (for example, when they are habitually enacted by trained bodies or when they are inscribed in artefacts and infrastructures that afford specific forms of engagement with them). The second point is an explicit concern with the ontological status of performed realities. Performativity

---

studies are concerned with the enactment and material actualization of knowledges. The “reification” of social practices is not only a matter of “false consciousness” where the social construction of reality is simply “forgotten” and can be opened up again with a gentle reminder by sociology (Berger and Pullberg, 1965). Reality-making is rather understood as the incremental growing and stabilizing of specific ways of knowing and materially doing the world. Realities start somewhere locally and may then gradually expand (e.g. from a laboratory, a pilot project or a subculture). A crucial point is that different realities are not only a matter of ‘standpoints’ and partial ‘perspectives’. As the world is engaged with in different ways, in practice there are indeed multiple realities (Mol, 2002). Knowing the world, this way or that way, is thus always a decision for making the world, this way or that way. There is “no innocence” in knowing (Law and Urry, 2004).

<sup>4</sup> Case studies are based on research in the Innovation in Governance Research Group. I acknowledge cooperation with all my colleagues involved in this endeavour and generous funding by the German Federal Ministry of Research and Education (grant number 01UU0906). Empirical work on emissions trading was carried out in cooperation with Arno Simons (Simons and Voß, 2014; Voß and Simons, 2014; Simons, forthcoming), on citizen panels with Nina Amelung (Amelung, 2012; Voß and Amelung, submitted). It comprised a review of academic literature and process documents as well as 45 interviews with people who were involved in the making of those instruments in different roles.

## References

- Amelung, N. (2012) The emergence of citizen panels as a de facto standard. *Quaderni*, 79: 13-28.
- Arendt, H. (1979 [1969]) *On violence*: (Orlando: Harvest Book).
- Atkinson, S.E. & Tietenberg, T.H. (1982) The empirical properties of two classes of designs for transferable discharge permit markets. *Journal of Environmental Economics and Management*, 9(2): 101-121.
- Austin, J.L. (1975 [1962]) *How to do things with words*. (Cambridge, MA: Harvard Univ Pr).
- Bachelard, G. (1984 [1934]) *The new scientific spirit*. (Boston: Beacon Press).

- 
- Bemelmans-Videc, M.-L., Rist, R.C., & Vedung, E.O. (1998) *Carrots, sticks, and sermons: Policy instruments and their evaluation*. (New Brunswick, NJ: Transaction).
- Berger, P.L. & Luckmann, T. (1966) *The social construction of reality: A treatise in the sociology of knowledge*. (New York: Doubleday).
- Berger, P.L. & Pullberg, S. (1965) Reification and the sociological critique of consciousness. *History and Theory*, 4(2): 196-211.
- Bevir, M. (2010) *Democratic governance*. (Princeton: Princeton University Press).
- Bevir, M. & Rhodes, R.A.W. (2006) *Governance stories* ( London: Taylor & Francis).
- Bogner, A. (2012) The paradox of participation experiments. *Science, Technology & Human Values*, 37(5): 506-527.
- Boswell, C. (2009) *The political uses of expert knowledge: immigration policy and social research*. (Cambridge: Cambridge University Press).
- Bourdieu, P. (1991) *Language and symbolic power*. (Cambridge, MA: Harvard University Press).
- Bourdieu, P. (2009 [1984]) Delegation und politischer Fetischismus. In: H. Beister, E. Kessler, J. Ohnacker, R. Schmid, and B. Schwibs (eds.) *Politik: Schriften zur Politischen Ökonomie 2* (Konstanz: UVK Verlag).
- Braun, K. & Schultz, S. (2010) "... a certain amount of engineering involved": Constructing the public in participatory governance arrangements. *Public Understanding of Science*, 19(4): 403.
- Brown, M.B. (2006) Survey Article: Citizen Panels and the Concept of Representation. *The Journal of Political Philosophy*, 14(2): 203-225.
- Burchell, G., Gordon, C., & Miller, P. (eds.) (1991) *The Foucault Effect. Studies in Governmentality*. (Chicago: Chicago University Press).
- Butler, J. (1988) Performative acts and gender constitution: An essay in phenomenology and feminist theory. *Theatre journal*: 519-531.

---

Callon, M. (1986) Some elements of a sociology of translation: domestication of the scallops and the fishermen of St Brieuc Bay. In: J. Law (ed.) *Power, action and belief: a new sociology of knowledge?*: (London: Routledge), pp. 196-223.

Callon, M. (1998) *The Laws of the Markets*. (Oxford: Blackwell).

Callon, M. (2005) Why virtualism paves the way to political impotence. A reply to Daniel Miller's critique of the laws of the markets. *Economic Sociology, European Electronic Newsletter*, 6(2): 3-20.

Callon, M. (2007) What Does It Mean to Say That Economics Is Performative? In: D. MacKenzie, F. Muniesa, and L. Siu (eds.) *Do Economists Make Markets? On the Performativity of Economics*: (Princeton: Princeton University Press), pp. 311-357.

Callon, M. (2009) Civilizing markets: Carbon trading between in vitro and in vivo experiments. *Accounting, Organizations and Society*, 34(3-4): 535-548.

Callon, M., Lascoumes, P., & Barthe, Y. (2009) *Acting in an uncertain world: an essay on technical democracy*. (Cambridge, MA: MIT Press).

Callon, M. & Latour, B. (1981) Unscrewing the big Leviathan: how actors macro-structure reality and how sociologists help them to do so. In: K. Knorr-Cetina and A.V. Cicourel (eds.) *Advances in social theory and methodology*. (London: Routledge and Kegan Paul), pp. 277-303.

Callon, M., Millo, Y., & Muniesa, F. (2007) *Market devices*. (Oxford: Blackwell).

Camic, C., Gross, N., & Lamont, M. (eds.) (2011) *Social knowledge in the making*. (Chicago University Press: Chicago).

Carpini, M.X.D., Cook, F.L., & Jacobs, L.R. (2004) Public deliberation, discursive participation, and citizen engagement: A review of the empirical literature. *Annu. Rev. Polit. Sci.*, 7: 315-344.

Chambers, S. (2003) Deliberative democratic theory. *Annual Review of Political Science*, 6(1): 307-326.

Chilvers, J. (2008) Environmental risk, uncertainty, and participation: mapping an emergent epistemic community. *Environment and Planning A*, 40(12): 2990 – 3008.

- 
- Chilvers, J. (2013) Reflexive engagement? Actors, learning, and reflexivity in public dialogue on science and technology. *Science Communication*, 35(3): 283-310.
- Coase, R.H. (1960) The Problem of Social Cost. *Journal of Law and Economics*, 3 (October): 1-44
- Commission, E. (2013) *The EU Emissions Trading System (EU ETS)*. Climate Action Publications Office. October 2013. (Online available, accessed 17 April 2015: [http://ec.europa.eu/clima/publications/docs/factsheet\\_ets\\_en.pdf](http://ec.europa.eu/clima/publications/docs/factsheet_ets_en.pdf)).
- Commission, E. (2015) *The EU Emissions Trading System (EU ETS)*. Website of the European Commission Climate Action Programme. (Accessed 17 April 2015: [http://ec.europa.eu/clima/policies/ets/index\\_en.htm](http://ec.europa.eu/clima/policies/ets/index_en.htm)).
- Cook, B.J. (1988) *Bureaucratic Politics and regulatory reform. The EPA and Emission Trading*. (Westport: Greenwood Press).
- Crocker, T.D. (1966) The Structuring of Atmospheric Pollution Control Systems. In: H. Woloizin (ed.) *The Economics of Air Pollution*. (New York: Norton), pp. 61-86.
- Crosby, N. (1974) *The educated random sample. A pilot study on a new way to get citizen input into the policy-making process*. (Minnesota: The Center for New Democratic Processes).
- Dales, J.H. (1968) *Pollution, Property, and Prices*. (Toronto: Toronto University Press).
- Desrosières, A. (1998) *The politics of large numbers: a history of statistical reasoning*. (Cambridge, MA: Harvard University Press).
- Dewey, J. (2012 [1954]) *The public and its problems: An essay in political inquiry*. (University Park, PA: Penn State Press).
- Diehl, P., Sintomer, Y., & Hayat, S. (2014) Einleitung. La représentation politique/Die politische Repräsentation. *Trivium (online)*, 2014(16): <http://trivium.revues.org/4884>.
- Dienel, P. (1970) Partizipation an Planungsprozessen. *Raumforschung und Raumordnung*, 5: 70.

- 
- Disch, L. (2008) The People as “Presupposition” of Representative Democracy-An Essay on the Political Theory of Pierre Rosanvallon. *Redescriptions: Political Thought, Conceptual History and Feminist Theory*, 12(1): 47-71.
- Dryzek, J.S. (2000) *Deliberative democracy and beyond: liberals, critics, contestations*. (Oxford: Oxford University Press).
- Dudek, D.J. & Palmisano, J. (1987) Emissions trading: why is this thoroughbred hobbled. *Columbia Journal of Environmental Law*, 13: 217-258.
- Easton, D. (1979 [1967]) *A systems analysis of political life*. (Chicago: University of Chicago Press).
- Edelman, M. (1988) *Constructing the political spectacle*. (University of Chicago Press Chicago).
- Ellerman, A.D., Joskow, P.L., Schmalensee, R., Montero, J.-P., & Bailey, E.M. (2000) *Markets for Clean Air. The U.S. Acid Rain Program*. (Cambridge, MA: Cambridge University Press).
- Elliott, J., Heesterbeek, S., Lukensmeyer, C.J., & Slocum, N. (2005) *Participatory methods toolkit. A practitioner's manual*. (Brussels: King Baudoin Foundation Flemish Institute for Science and Technology Assessment).
- Ezrahi, Y. (1990) *The Descent of Icarus: Science and the Transformation of Contemporary Democracy*. (Cambridge, MA: Harvard University Press).
- Ezrahi, Y. (2012) *Imagined Democracies. Necessary Political Fictions*. (Cambridge: Cambridge University Press).
- Fleck, L. (1994 [1935]) *Entstehung und Entwicklung einer wissenschaftlichen Tatsache. Einführung in die Lehre vom Denkstil und Denkkollektiv*. (Frankfurt am Main: Suhrkamp).
- Foucault, M. (1972) *The archaeology of knowledge*. (New York: Pantheon).
- Foucault, M. (1974 [1966]) *Die Ordnung der Dinge. Eine Archäologie der Humanwissenschaften*. (Frankfurt am Main: Suhrkamp).
- Fung, A. (2006) Varieties of participation in complex governance. *Public Administration Review*, 66(s1): 66-75.

---

Geissel, B. & Newton, K. (2011) *Evaluating Democratic Innovations: Curing the Democratic Malaise?* (London: Routledge).

Giesen, B. (2006) Performing the sacred: a Durkheimian perspective on the performative turn in the social sciences. In: J.C. Alexander, B. Giesen, and J.L. Mast (eds.) *Social Performance. Symbolic Action, Cultural Pragmatics, and Ritual* (Cambridge: Cambridge University Press), pp. 325-367.

Goffman, E. (1959) *The presentation of self in everyday life*. (New York: Doubleday).

Gomart, E. & Hajer, M.A. (2003) Is that politics? For an inquiry into forms in contemporary politics. In: B. Joerges and H. Nowotny (eds.) *Social Studies of Science and Technology: Looking Back, Ahead*. (Dordrecht: Kluwer), pp. 33-61.

Goodin, R.E. & Dryzek, J.S. (2006) Deliberative impacts: the macro-political uptake of mini-publics. *Politics & society*, 34(2): 219.

Grönlund, K., Bächtiger, A., & Setälä, M. (eds.) (2014) *Deliberative Mini-Publics: Involving Citizens in the Democratic Process*. (Colchester: ECPR Press).

Hacking, I. (1983) *Representing and intervening: Introductory topics in the philosophy of natural science*. (Cambridge: Cambridge Univ Press).

Hacking, I. (1992) The self-vindication of the laboratory sciences. In: A. Pickering (ed.) *Science as practice and culture*. (Chicago: University of Chicago Press), pp. 29-64.

Hacking, I. (1999) *The social construction of what?* (Cambridge, MA: Harvard University Press).

Hacking, I. (2002) *Historical ontology*. (Cambridge, MA: Harvard University Press).

Hagner, M. & Rheinberger, H.-J. (1998) Experimental systems, objects of investigation, and spaces of representation. In: Heidelberger, M. and Steinle, F. (eds.) *Experimental Essays—Versuche zum Experiment* (Baden-Baden: Nomos), pp. 355-373.

Hajer, M.A. (2010) *Authoritative governance: Policy making in the age of mediatization*. (Oxford: Oxford University Press).

- 
- Hendriks, C.M. (2006) When the forum meets interest politics: Strategic uses of public deliberation. *Politics & society*, 34(4): 571.
- Hobbes, T. (1651) *Leviathan or the Matter, Forme and Power of a Commonwealth Ecclesiastical and Civil*.
- Hood, C. (1983) *The Tools of Government*. (Hampshire: Palgrave Macmillan).
- Hörning, G. (1999) Citizens' panels as a form of deliberative technology assessment. *Science and Public Policy*, 26(5): 351-359.
- Howlett, M. (2011) *Designing public policies: principles and instruments*. (London: Routledge).
- IFOK (2003) *Governance of the European Research Area: The Role of Civil Society*. (Bensheim: Institut für Organisationskommunikation).
- Irwin, A. (2001) Constructing the scientific citizen: science and democracy in the biosciences. *Public Understanding of Science*, 10(1): 1-18.
- Joss, S. & Durant, J. (1995) *Public participation in science: the role of consensus conferences in Europe* (London: Science Museum).
- Knorr-Cetina, K. (1999) *Epistemic cultures: How the sciences make knowledge* (Cambridge, MA: Harvard University Press).
- Knorr-Cetina, K.D. (1981) *The manufacture of knowledge: An essay on the constructivist and contextual nature of science*. (Oxford: Pergamon Press).
- Knorr, K.D. (1976) *Policy-makers Use of Social Science Knowledge: Symbolic Or Instrumental?* *Research Memorandum No. 103*. (Vienna: Institut für Höhere Studien).
- Lane, R. (2012) The promiscuous history of market efficiency: the development of early emissions trading systems. *Environmental Politics*, 21(4): 583-603.
- Lascoumes, P. & Le Galès, P. (2007) Introduction: Understanding Public Policy through Its Instruments - From the Nature of Instruments to the Sociology of Public Policy Instrumentation. *Governance*, 20(1): 1-21



- 
- Lasswell, H.D. (1951) The Policy Orientation. In: D. Lerner and H.D. Lasswell (eds.) *The Policy Sciences*: (Stanford: Stanford University Press).
- Latour, B. (1983) Give me a laboratory and I will raise the world. In: K. Knorr-Cetina and M. Mulkay (eds.) *Science observed. Perspectives on the social studies of science*: (London: Sage), pp. 142-169.
- Latour, B. (1986) Visualisation and Cognition: Drawing Things Together. *Knowledge and Society*, 6: 1-40.
- Latour, B. (1987) *Science in Action. How to Follow Scientists and Engineers through Society*. (Cambridge, MA: Harvard University Press).
- Latour, B. (1999) *Pandora's hope. Essays on the Reality of Science Studies*. (Cambridge, MA: Harvard University Press).
- Latour, B. (2003) What if we talked politics a little? *Contemporary Political Theory*, 2(2): 143-164.
- Latour, B. (2005) *Reassembling the Social. An Introduction to Actor-Network-Theory*. (Oxford: Oxford University Press).
- Latour, B. (2007) Turning Around Politics: A Note on Gerard de Vries' Paper. *Social Studies of Science*, 37(5): 811-820.
- Latour, B. (2013) *An inquiry into modes of existence. An anthropology of the moderns*. (Cambridge, MA: Harvard University Press).
- Latour, B. & Woolgar, S. (1979) *Laboratory Life. The Social Construction of Scientific Facts*. (London: Sage).
- Laurent, B. (2009) Replicating participatory devices: the consensus conference confronts nanotechnology. *CSI Working Paper Series*, 2009(018).
- Laurent, B. (2011) *Democracies on trial. Assembling nanotechnology and its problems. PhD Thesis*. (Paris: Mines Paris Tech, Centre de Sociologie de l'Innovation).
- Law, J. (2009) Seeing like a survey. *Cultural Sociology*, 3(2): 239-256.

- 
- Law, J. (2012) Collateral realities. In: F.D. Rubio and P. Baert (eds.) *The Politics of Knowledge*: (London: Routledge), pp. 156-178.
- Law, J. & Urry, J. (2004) Enacting the social. *Economy and society*, 33(3): 390-410.
- Levidow, L. (1998) Democratizing technology--or technologizing democracy? Regulating agricultural biotechnology in Europe. *Technology in Society*, 20(2): 211-226.
- Lezaun, J. (2007) A market of opinions: the political epistemology of focus groups. *The Sociological Review*, 55: 130-151.
- Lezaun, J. & Calvillo, N. (2013) In the Political Laboratory: Kurt Lewin's Atmospheres. *Journal of Cultural Economy*, 10.1080/17530350.2013.860045(online first): 1-24.
- Lezaun, J. & Soneryd, L. (2007) Consulting citizens: technologies of elicitation and the mobility of publics. *Public Understanding of Science*, 16(3): 279-297.
- Lijphart, A. (1991) Constitutional choices for new democracies. *Journal of Democracy*, 2(1): 72-84.
- Linder, S.H. & Peters, B.G. (1989) Instruments of Government: Perceptions and Contexts. *Journal of Public Policy*, 9(1): 35-58
- Linder, S.H. & Peters, B.G. (1998) The study of policy instruments: four schools of thought. In: B.G. Peters and F.K.M. van Nispen (eds.) *Public Policy Instruments. Evaluating the Tools of Public Administration* (Cheltenham: Edward Elgar), pp. 33-45.
- Liroff, R.A. (1980) *Air pollution offsets: trading, selling, and banking*. Conservation Foundation.
- Liroff, R.A. (1986) *Reforming air pollution regulation; the toil and trouble of EPA's bubble*. Conservation Foundation.
- Lovell, H. & MacKenzie, D. (2011) Accounting for carbon: the role of accounting professional organisations in governing climate change. *Antipode*, 43(3): 704-730.
- MacKenzie, D. (2009) Making things the same: Gases, emission rights and the politics of carbon markets. *Accounting, Organizations and Society*, 34(3-4): 440-455.

---

MacKenzie, D.A., Muniesa, F., & Siu, L. (2007) *Do economists make markets?: on the performativity of economics*. (Princeton: Princeton University Press).

Mann, C., Voß, J.-P., Amelung, N., Simons, A., Runge, T., & Grabner, L. (2014) *Challenging futures of citizen panels. Critical issues for robust forms of public participation. A report based on interactive, anticipatory assessment of the dynamics of governance instruments, 26 April 2013*. (online available, accessed 19 May 2015: [http://www.innovation-in-governance.org/fileadmin/user\\_upload/Publications/Citizen\\_panels\\_challenging\\_futures\\_report\\_final.pdf](http://www.innovation-in-governance.org/fileadmin/user_upload/Publications/Citizen_panels_challenging_futures_report_final.pdf)).

Manow, P. (2004) Der demokratische Leviathan—eine kurze Geschichte parlamentarischer Sitzanordnungen seit der französischen Revolution. *Leviathan*, 32(3): 319-347.

Manow, P. (2006) Die politische Anatomie demokratischer Repräsentation. *Leviathan*, 34(2): 149-181.

McCauley, K., Narron, b., & Coleman, M. (2008) *Crossing the aisle to cleaner air. How the bipartisan 'Project 88' transformed environmental policy. University of Pittsburgh, Institute of Politics Case Studies*. (online available, accesses 17 April 2015: <http://www.iop.pitt.edu/documents/casestudies/Crossing%20the%20Aisle%20to%20Cleaner%20Air.pdf>).

Meidinger, E. (1985) On Explaining the Development of 'Emissions Trading' in U.S. Air Pollution Regulation, *Law and Policy* 7(4): 447-479

Mol, A. (2002) *The body multiple: Ontology in medical practice* (Chapel Hill: Duke University Press).

Mongardini, C. (1996) Simmel und die Soziologie der Politik. In: C. Klingemann, M. Neumann, K.-S. Rehberg, I. Srubar, and E. Stölting (eds.) *Jahrbuch für Soziologiegeschichte 1994* (Heidelberg: Springer).

Montgomery, W.D. (1972) Markets in Licenses and Efficient Pollution Control Programs, *Journal of Economic Theory* 5(3): 395-418

- 
- Muniesa, F. & Callon, M. (2007) Economic Experiments and the Construction of Markets. In: D. MacKenzie, F. Muniesa, and L. Siu (eds.) *Do Economists Make Markets? On the Performativity of Economics* (Princeton: Princeton University Press), pp. 163-189.
- OECD (2001) *Citizens as partners. OECD handbook on information, consultation and public participation in policy-making*. (Paris: OECD).
- Osborne, T. & Rose, N. (1999) Do the social sciences create phenomena?: The example of public opinion research. *The British journal of sociology*, 50(3): 367-396.
- Pallett, H. & Chilvers, J. (2013) A decade of learning about publics, participation, and climate change: institutionalising reflexivity? *Environment and Planning A*, 45(5): 1162-1183.
- Patzelt, W.J. (ed.) (2013a) *Die Machbarkeit politischer Ordnung. Transzendenz und Konstruktion*. (transcript: Bielefeld).
- Patzelt, W.J. (2013b) Transzendenz, politische Ordnung und beider Konstruktion. In: W.J. Patzelt (ed.) *Die Machbarkeit politischer Ordnung. Transzendenz und Konstruktion*. (Bielefeld: transcript), pp. 9-42.
- PEALS (2003) *Do-It-Yourself Citizens Jury. Newcastle upon Tyne Jury Verdict*. (University of Newcastle: Policy Ethics and Life Sciences Research Institute)
- Peters, B.G. & van Nispen, F.K.M. (1998) Public Policy Instruments. Evaluating the Tools of Public Administration. (Cheltenham: Edward Elgar).
- Pooley, E. (2010) *The climate war: true believers, power brokers, and the fight to save the earth*. (e-book: Hachette UK).
- Project 88 (1988) *Harnessing Market Forces to Protect the Environment*. Cambridge, MA
- Rheinberger, H.-J. (2005) Gaston Bachelard and the notion of “phenomenotechnique”. *Perspectives on Science*, 13(3): 313-328.
- Rip, A. (1997) *From Blue-Collar Realism to ‘Mounted Reality’*. Paper presented at Conference ‘Actor-Network Theory and After’. (Keele: UK)

- 
- Rosanvallon, P. (2000) *La démocratie inachevée. Histoire de la souveraineté du peuple en France*: (Paris, Gallimard).
- Rosanvallon, P. (2002) *Le peuple introuvable: histoire de la représentation démocratique en France*. (Paris: Gallimard).
- Rose, N.S. (1999) *Powers of freedom: reframing political thought*. (Cambridge: Cambridge University Press).
- Rouse, J. (1987) *Knowledge and power: Toward a political philosophy of science*. (Ithaca: Cornell University Press).
- Rowe, G. & Frewer, L.J. (2000) Public participation methods: A framework for evaluation. *Science, Technology & Human Values*, 25(1): 3-29.
- Salamon, L.M. (2002) *The Tools of Government: A Guide to the New Governance*. (New York: Oxford University Press).
- Saward, M. (2006) The representative claim. *Contemporary political theory*, 5(3): 297-318.
- Schmitt, C. (1927) Der Begriff des Politischen. *Archiv für Sozialwissenschaften und Sozialpolitik*, 58: 1-33.
- Shapin, S. (1984) Pump and circumstance: Robert Boyle's literary technology. *Social studies of science*, 14(4): 481-520.
- Shore, C. & Wright, S. (2011) Conceptualising Policy: Technologies of Governance and the Politics of Visibility. In: C. Shore, S. Wright, and D. Però (eds.) *Policy Worlds. Anthropology and the Analysis of Contemporary Power*. (New York: Berghahn Books), pp. 1-25.
- Simons, A. (forthcoming) *Documented Authority. The discursive construction of emissions trading in the expert literature. Doctoral Dissertation*. (Berlin: Technische Universität Berlin).
- Simons, A. & Voß, J.-P. (2014) Politics by other means. The making of the emissions trading instrument as a 'pre-history' of carbon trading In: B. Stephan and R. Lane (eds.) *The Politics of Carbon Markets*. (London: Earthscan/Routledge), pp. 51-68.

- 
- Smith, G. (2009) *Democratic innovations. Designing institutions for citizen participation*. (Cambridge: Cambridge University Press).
- Smith, G. & Wales, C. (2002) Citizens' Juries and Deliberative Democracy, *Political Studies* 48(1): 51-65
- Soeffner, H.-G. & Tänzler, D. (eds.) (2002) *Figurative Politik. Zur Performanz der Macht in der modernen Gesellschaft*. (Verlag für Sozialwissenschaften: Wiesbaden).
- Sulkin, T. & Simon, A.F. (2001) Habermas in the lab: A study of deliberation in an experimental setting. *Political Psychology*, 22(4): 809-826.
- Swyngedouw, E. (2005) Governance innovation and the citizen: the Janus face of governance-beyond-the-state. *Urban studies*, 42(11): 1991.
- Tietenberg, T.H. (1985) *Emissions Trading. An exercise in reforming pollution policy*. (Washington, DC: Resources for the Future).
- Treib, O., Bähr, H., & Falkner, G. (2007) Modes of governance: towards a conceptual clarification. *Journal of European public policy*, 14(1): 1-20.
- van Nispen, F.K.M. & Ringeling, A.B. (1998) On instruments and instrumentality: a critical assessment. In: B.G. Peters and F.K.M. van Nispen (eds.) *Public Policy Instruments. Evaluating the Tools of Public Administration* (Cheltenham: Edward Elgar), pp. 204-217.
- Vergne, A. (2010) *Das Modell Planungszelle – Citizens Juries: Diffusion einer politischen Innovation*. unpublished Manuscript.
- Voß, J.-P. (2007) Innovation processes in governance: the development of 'emissions trading' as a new policy instrument. *Science and Public Policy*, 34(5): 329-343.
- Voß, J.-P. (forthcoming) Reflexively engaging with technologies of participation. Constructive assessment for public participation methods. In: J. Chilvers and M.B. Kearnes (eds.) *Remaking participation: science, environment and emergent publics* (London: Routledge-Earthscan).

---

Voß, J.-P. & Amelung, N. (submitted) The innovation journey of ‘citizen panels’: technoscientization and reflexive engagement in developing methods of public participation.

Voß, J.-P. & Simons, A. (2014) Instrument constituencies and the supply-side of policy innovation: the social life of emissions trading. *Environmental Politics*, 23(5): 735-754.

Wakeford, T., Murtuja, B., & Bryant, P. (2004) *Using Democratic spaces to promote social justice in Northern towns*. (University of Newcastle: Institute of Policy and Practice).

Weiss, C.H. (1979) The many meanings of research utilization. *Public administration review*, 39(5): 426-431.

Williamson, O.E. (1999) *The mechanisms of governance*. (New York: Oxford University Press).

Wodak, R. (2011) *The discourse of politics in action: Politics as usual* (Basingstoke: Palgrave Macmillan).

Woodside, K. (1986) Policy Instruments and the Study of Public Policy, *Canadian Journal of Political Science* 19(4): 775-793

Wynne, B. (2006) Public engagement as a means of restoring public trust in science—hitting the notes, but missing the music? *Public Health Genomics*, 9(3): 211-220.

Wynne, B. (2007) Public participation in science and technology: Performing and obscuring a political–conceptual category mistake. *East Asian Science, Technology and Society*, 1(1): 99-110.