

**Constructivism and post-constructivism:
The methodological implications of employing a post-constructivist
research approach.**

Trial lecture (as part of the fulfilments for the degree of Philosophiae Doctor)

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Introduction

Two weeks ago I was asked to prepare this trial lecture on the relationship between constructivism and post-constructivism, and to elaborate on the methodological implications of employing a post-constructivist research approach. This is a very challenging title, not least because it relates to philosophical issues that have a long history in the social sciences. In this lecture I will try to provide insight into what unites constructivists, and what unites post-constructivists, as both can be seen as umbrella-approaches and not as fully-fledged theories.

I will try to create order into these rather confusing concepts, which can both be considered labels for a variety of theoretical approaches. After a brief history of constructivism, I will put my main focus on how post-constructivism developed partly out of a critique of the social constructivist works in sociology. Post-constructivists have been particularly occupied with the study of science and scientific practices, which is a relatively new object for sociological research. I will present the unifying characteristics of the various post-constructivist approaches. The first can be described as the turn to materiality, which can be illustrated with the metaphor of the construction-site. The second unifying characteristic of post-constructivist works relates to its desire to explain science, nature and politics together.

I will then discuss the methodological implications of a post-constructivist approach in four parts. I will first comment briefly on the practicalities of method, relating to the techniques of empirical inquiry. Then I will argue that it is a post-constructivist challenge to

connect – analytically – micro- and macro-scales. Subsequently, I will argue that a post-constructivist account studies science and practice, rather than as knowledge. Finally, I argue that it is important to consider the performativity of science in shaping the world. This counts for the sciences that are being studied, as well as for the post-constructivist researcher.

Social constructivism (and its critiques)

Constructivism is a meta-theoretical label that has been used in a wide variety of disciplines including philosophy, sociology, art, mathematics, and architecture, having different meanings in each of these disciplines. Since constructivism can be considered as a label that is given to a variety of research approaches and philosophies about reality and truth, it is unhelpful to start out with an all-embracing definition of the concept. What unites “constructivist” scholars, though, is that they have moved away from trying to explain an objective reality. Constructivism can rather be considered as a critique of naïve realism, emphasizing that reality is always constructed and contingent on the observer’s standpoint. With reference to science and scientific knowledge, social constructivists argue that science does not *discover* a given reality, but constructs subjective representations of reality, which are dependent on the observer’s interpretation and standpoint.

With Berger and Luckman’s “the social construction of reality” (1966), constructivism was introduced in sociology. They showed how people – individuals and groups – participate in the construction of a reality about a specific object or fact. They argued that phenomena are created, known and institutionalized through social interaction. Social construction is an on-going process that is maintained and reproduced by people who act on their interpretation and their knowledge. After Berger and Luckman’s work, there was an ascendance of social constructivist literature in the social sciences.

Social constructivist approaches have long had a liberating effect, in particular when studying the “traditional” objects that sociology is occupied with, such as race, gender, and culture. These works reminded us that ideas and meanings were not fixed and inevitable, but were the product of historical events, social forces and ideology.

The social construction literature within sociology knows different variants, where some are more philosophical, while other works have a more political agenda. The 1980s saw a peak in the social construction literature with a more political agenda: to raise consciousness over issues. At the same time, there was an increase in the number of social studies of scientific knowledge: science studies became a new area that social scientists entered into.

With this emergence of science studies, a small group of scholars wanted to move beyond the traditional opposition of the natural sciences and the social sciences. While the natural sciences traditionally believe in the discovery of truth – or an objective reality -, the social scientists were criticized for reducing everything to the social and for completely detaching subjective realities from the world “out-there”. A number of scholars wanted to move beyond these two polarized positions, and to show that the natural sciences and the social sciences do not necessarily have to stand in strong opposition in their claims about reality.

In *The Social Construction Of What* Ian Hacking (1999) depoliticizes constructivism by arguing that *objects* and *ideas of these objects* may interact. Hacking’s title is not only to express his amazement over the answers given to this question (the social construction of what?) and the wide variety of socially constructed objects and things, but also as a clue to understanding the issue and to understanding the messages of the social construction literature. At the same time, he is very critical to the idea that *everything* has become socially constructed in the social sciences, and thus to the trend that everything has become reduced to the social. Andrew Pickering (1989) and Bruno Latour (2004) share this critique of social reductionism. Hacking argues that objects may be real and constructed at the same time. He distinguishes between the object in itself, and the ideas and categories that have been built around this object (1999). Thus, Hacking, but also Latour, is particularly critical of a group of constructionist authors that do not distinguish between objects – say X - , and the idea of X, which they use a weapon to show that X is quite bad as it is, that it needs to be changed.

Post-constructivism

Latour argues that for “the critical mind to become relevant again”, social scientist researchers need a new realist attitude (Latour 2004). This requires a renewed empiricism for our studies. Although I would rather not generalize such a statement for the entire field of sociology as Latour does, I support the call to move beyond the social construction – realism dichotomy when we study, for example, controversies in environmental governance. Outlining a post-constructivist approach gives the social scientist researcher a clue of how to do this, and why it is relevant.

“Post-constructivism” might be a confusing concept, partly because this is yet another “post-something” (post-structuralism, post-modernism, etc), and partly because – in my view – it should not necessarily be seen as a reaction or response to social constructivism. It is

something different, and it is applied to issues that are inherently different from the traditional sociological research objects.

Why then using this label for a number of different approaches, when the word “construction” has become so value-laden in the philosophy of (social) science? I will show that the metaphor of construction applies particularly well to those scholars and approaches that can be argued to reside under the umbrella of post-constructivism. Among these are actor-network theory, Andrew Pickering’s pragmatic realism, and the feminist science studies of Donna Haraway. The co-production idiom developed in STS, in particular in the work of Sheila Jasanoff, can also be said to fall under this heading. ANT and the work of Jasanoff, which I think offers intelligible complements to ANT, have mostly inspired me. What these scholars and approaches have in common is that they are interested in the practices of science and their role in society.

What unites post-constructivists?

Materiality: A return to the construction metaphor

What unites post-constructivists is their desire to include material stuff into explanation of the making of reality. Reality cannot solely exist in social – that is human - interaction. Latour is perhaps strongest in his call for a return to the metaphor of the construction site. He argues that when something is said to be constructed, “it is not a mystery that has popped out of nowhere” (2004). We are actually able to follow processes of construction, and to look into the different elements and materials that are part of these construction works. It would make no sense to explain the construction of a building when only looking into the social interactions. There is a wide range of elements that go into the construction of a building: from drawings and calculations, to materials and human practices. If one of the elements had been different, than the outcome had been different. Following the construction of things, Latour argues, allows the analyst to realize that the construction could turn out totally differently, and could even fail. When following construction practices, the important questions that can be raised refer to the actual design, the solidness of the construction and its durability and reliability.

In their early work “Laboratory Life: the construction of scientific facts” Latour and Woolgar (1986) followed the construction of scientific realities, and accounted for all the elements that were needed to shape these realities: models, formulas, inscriptions devices, etc.

One of the important arguments in their story is that without the devices that scientists use, they would not be able to establish their facts. In itself, it is not interesting to say that water freezes at 0 degrees. In order to establish such facts, measuring devices had to be developed, as well as calibrating devices. This required an enormous amount of work, meetings, congresses, and industries to fabricate instruments. Latour has set it as his task to trace the networks and relations between human and non-human objects through which knowledge is produced.

Thus, in order to explain reality, it is emphasized that there are different human and non-human elements incorporated into the process of making that reality. Reality can therefore not be explained as existing “out-there”, detached from discursive *and material* practices. It is not sufficient to say that this reality is socially constructed either, because that doesn’t allow for an explanation of how that reality could have been different, had different materials and measuring devices been used. Hence, by tracing processes of construction, it is emphasized that with the use of different elements, methods, materials, the outcome of these practices could be totally different.

Explaining nature, politics and science together

Apart from this material turn, what unites post-constructivist scholars is their aim to theorize and explain society, science and nature together, rather than to leave these in their individual domains. In contemporary society, it is difficult, if not impossible and undesirable to think of science and politics as two separate domains, divided by clear boundaries. It is the analyst’s task to trace the associations between “natural objects”, such as the ozone hole or the polar bear, and “social” objects such as experts and governments. We could consider the polar bear as purely “nature”, but once we start thinking of the polar bear as an endangered species that needs to be taken care of, a whole apparatus of political and scientific instruments to prevent its extinction is set in motion.

Similarly, prior to 1985 the particularly rapid “natural” depletion of ozone particles above the Antarctic was for some time dismissed as a measurement error in science. But when in 1985 British scientists suddenly showed that there was a substantial “hole”, this was widely reported in the press and taken seriously. This immediately resulted in the mobilization of large scientific and political programs in order to monitor developments and to minimize further ozone depletion. It was when nature was made visible through scientific instruments and practices that there was a strong mobilization of politics. The establishment of the right methods and measuring devices played an important part in this mobilization.

A post-constructivist approach, taking into account material elements, is particularly fit for following this type of co-production processes in environmental governance, in which I have been particularly interested. It provides room to ask questions about the ways in which environmental knowledge production is incorporated into governance, and in turn, how governance influences knowledge production. Building upon the co-production idiom within science and technology studies, and with a post-constructivist (ANT-inspired) approach, such an analysis attempts to make visible those connections that processes of co-production render invisible.

Notes on the practicalities of method

I have been asked to elaborate on methodological implications of employing a post-constructivist approach. Post-constructivist works are rather silent on the practicalities of method; the techniques of empirical inquiry. However, as scholars in STS study the practices of science and technology, they can surely be asked to make explicit their own methods and assumptions. One of the reasons why there are no systematic accounts on practical methodological implications – those pertaining to the *techniques* of empirical inquiry – is because we are exactly dealing with very different *objects in the making*, that, in order to follow and study them, require a variety of different practical approaches.

Nevertheless, we could generalize somewhat, and argue that most post-constructivist studies, in their aim to follow the co-production of science, nature and society, follow an ethnographic case-study method, that is mobile (it can be transferred to similar studies), multi-sited (it moves in between sites of construction), and materially sensitive (Blok 2010). While ANT might be compatible with certain forms of quantitative methods, its stressing a situational, relational and dynamic view of social life nevertheless favors less-formalized, more adaptable, more flexible research practices. These are often associated with ‘doing fieldwork’ (Blok 2010).

We must follow these objects in the making in real time, while uncertainties proliferate, and values are conflicting. It is in these ‘critical situations’ that actors are forced to render their social worlds and values explicit and observable (Blok 2010). With this in mind, I will move on to some ‘higher-level methodological implications’, which are located on the verge of theory and method.

Connecting scales

The implication of the question posed earlier (How is environmental knowledge-making incorporated in governance, and, in reverse, how do practices of governance influence the making and use of knowledge?) is that a post-constructivist research approach is simultaneously local and global, and aims to build systematic connections between the micro-worlds of scientific practice and the macro-categories of political thought (Jasanoff 2004).

Traditional sociology works with the distinctions of micro and macro scales, and implies that the researcher chooses to carry out her study at either one of these scales; constrained by existing structures in society. Where Jasanoff speaks of building systematic connections, Latour speaks of tracing associations in a landscape that is flattened out, undone from its hierarchical structures (Latour 2005). When we speak of climate science and politics, we can think of a highly connected global entity, which remains local at the same time, and which we can study through looking at individual and local scientific practices.

In a study on the establishment of the Intergovernmental Panel on Climate Change, Miller (2004) shows how global climate politics started out with local weather models, which indicated local changes that were long detached from any global climate knowledge. For most of the 20th century, the development of climatology as a field of scientific inquiry took place as part of the broader field of meteorology, and stemmed from the interests of meteorologists to understand long-term weather patterns. These weather patterns were until the 1980s not seen as posing any risk on a larger than local scale.

It was with the development of more sophisticated computer models in the early 1980s that the various local weather patterns could be aggregated. Based on computer models of the general circulation of the atmosphere, climate scientists increasingly represented the Earth's climate as an integrated global system. Scientists and policymakers increasingly viewed climate change as posing risks to a "global" environment, which led to the establishment of the IPCC in 1988. Climate change became a global risk. The example illustrates how local scientific practices and the development of models and technology developed into an issue of global concern. The study shows how the global – macroscopic – outlook is made possible through local networks. Hence, this global outlook always remains local at the same time.

Study science as on-going practice

When we want to study how environmental knowledge is incorporated into governance, and how the micro and the macro scales are connected, we have to study science *in the making*.

That is, we have to study science as on-going practice, rather than as final product - as knowledge. When considering “science as knowledge” the analyst would look into the final product – the passive mode - , not knowing whether its construction is durable, reliable and solid and not allowing tracing its further development.

When studying science as practice, we enter into the active mode, which enables us to study processes of transformation. This requires the researcher to be near, or rather at, the construction site to study *situated material and discursive practices* (Wehling 2006). *Being at the construction site means* travelling through a heterogeneous landscape that transforms while we are in it, as a result of the enrolment of new actors and practices.

I have been interested in the seemingly abstract concept of “knowledge gaps” in environmental governance (Knol 2010). It appeared to me that environmental governance is as much dependent on environmental knowledge production, as on environmental *non-knowledge* production: that is, on the construction of knowledge gaps. These abstract holes become only interesting when we look at them as a *practice*, rather than as a product. How are they constructed, where are they constructed, and by whom? How do they get translated as knowledge need? This is also a story about prioritization, and who prioritizes: that is, which knowledge gap is transformed and becomes the object of new research?

The study of science as a final product, as passive knowledge, is not necessarily interesting in itself. It becomes interesting when we start looking into what the product means, and how it is developed further outside of the laboratories, in the political space. Thus, in order to understand how knowledge transforms governance, and how governance influences the making of knowledge, it is particularly interesting to study the transformation of apparently abstract notions as knowledge gaps, and their role as active agents in the governance network.

Consider performativity

In the beginning of this lecture I argued that it is the post-constructivists’ desire to explain how nature, science and politics are co-produced. This implied that we have to leave behind our pre-established notions of these three. If nature, science, and politics are co-produced, this means that there is no such thing as “nature” existing out-there – at least not a Nature that is interesting for our sociological framework to understand environmental or ecosystem governance (Latour 2004; Asdal 2008). This implies that we should be aware of the performative agency of science and politics to enact an ecosystem or environmental reality.

This performativity of scientific practices can be summarized briefly – as I have also shown in an example of the making of a political zoning system, and will show in the next presentation – that *before an ecosystem can be made governable, it has to be made readable and measurable through the practices of science.*

The construction of an ecosystem – the search for order in a particular geographic area - does not start before there is some form of human interest in that area. By defining an area as an ecosystem, experts and spokespersons create a space where they can speak on behalf of nature (Asdal 2003; Asdal 2008).

It is through practices of classifying and categorizing that an ecosystem comes into existence. This involves simplifications based on actor's choices about what is relevant, and this shows, again, that the actual construction could have turned out differently at different times, in different places. It always involves a wide variety of possible choices.

Processes of classification and categorizing provide the “boundary infrastructures” (Bowker and Star 1999) upon which ecosystem governance is built. Such boundary infrastructures can be a map showing extra valuable areas within an ecosystem, or a monitoring system that consists of ecosystem indicators, normal levels, and critical limits. The stabilization of boundary infrastructures solidifies the choices made during the process of categorizing and classifying, and reinforces governance practices.

In European marine governance, the delimitation of the Dogger Bank currently provides a good example of the co-production of nature, science and politics. The Dogger Bank is an area in the North Sea, shared by four countries (The UK, the Netherlands, Germany and Denmark). The area is permanently submerged by water, but it is a shallow area, and has been an important fishing ground throughout centuries. With new EU policy on the move, the Dogger Bank – for being a sandbank - potentially qualifies as a Marine Protected Area under the EU Habitats Directive. This could have enormous consequences for commercial activities in this area. Scientists in each of the involved countries have now acquired the task to delimit the boundaries of the Dogger Bank in their specific countries. With their practices of drawing ecological boundaries, they have performative roles in the enactment of what we might call new “eco-political” realities¹.

¹ See forthcoming work by Ditte Degnbol.

Ontological politics

The ways in which science is mobilized in the making and stabilization of eco-political realities is a question of governance. Through the kind of questions that are asked in a post-constructivist study, the social scientist can offer insight into how such processes of governance work, and along which terms of reference science co-produces nature and politics. It is through the particular methods, assumptions and practices, which I have tried to outline in this lecture, that a post-constructivist study can render insight into how science and politics co-produces realities of nature.

In the words of Annemarie Mol and John Law (Mol 1999; Law 2004), science is involved with ontological politics; that is, science is not only in the business of theorizing, modeling, representing nature, it also *enacts* nature. Through a study of scientific practices, materials and processes of categorization, a post-constructivist approach can make visible the connections between local practices and macro-level political thought, which is maintained in locally produced networks. A post-constructivist approach thus provides tools to study and analyze the workings of governance.

Through providing such insights, and by analyzing the potential solidness and durability of the construction of eco-political realities, the social scientist – as much as the natural scientist – is part of this process of co-production. Through the accounts on the ways in which nature, politics and science are interlinked and produced together, the social scientist is similarly involved in ontological politics. Just as the scientific practices he/she studies, the post-constructivist researcher is part of shaping the world that we (wish to) live in.

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