

4S—EASST Meeting, Paris 2004  
Section S102 (Hermeneutics of Science and Technology)

## The Epistemological Cross-Section of Science Wars, and Some of Its Implications

Gábor KUTROVÁTZ

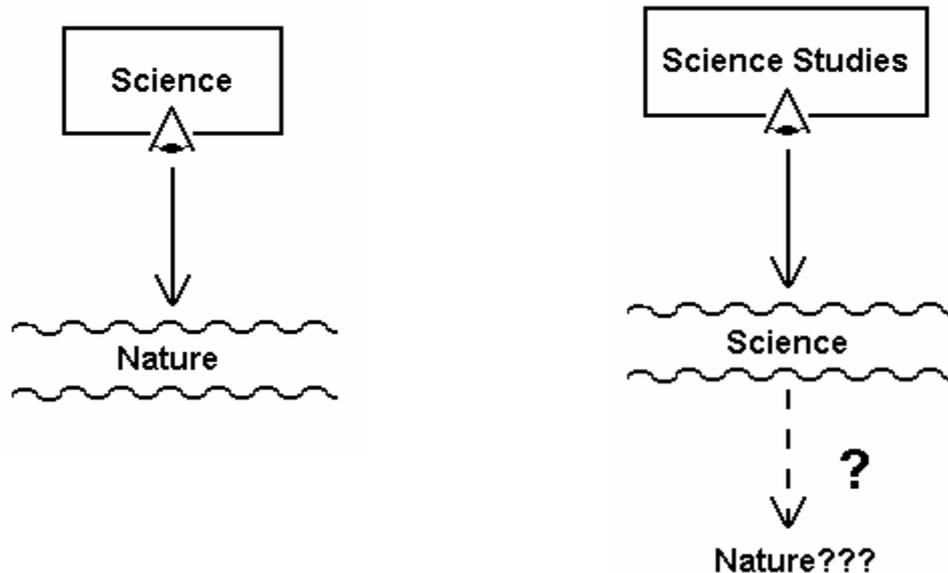
Eötvös University of Budapest, Dept. of History and Philosophy of Science  
E-mail: kutrovatz@hps.elte.hu

I would like to place the so-called science wars in a traditional epistemological context. This has already been done by many authors and in many ways, and it has also grown to be a general opinion shared by many science studies practitioners that such an undertaking has a very limited scope since, obviously, the science wars have numerous different faces. Hoping that a traditional philosophical perspective, however, is still not totally outdated I want to examine an epistemological cross-section of the wars, focusing on the science studies side. I wish to present science studies as characterised by an apriorist attitude, and I would like to examine some features of this apriorism, especially in comparison with Kant's philosophy. I also hope to show that an epistemological perspective can shed light on some important non-epistemological implications as well.

### 1. The Science Wars Epistemologically Understood

I would like to distinguish between two, both temporally and thematically divergent, faces of the wars. Firstly it is a clash between those who, by re-examining the basic theoretical commitments of modern culture, offer criticisms of science as a fundamental constitution of our culture, and those who defend the cultural role and prestige of science. In the second sense it is an opposition between some social scientists who would expand the scope of sociological investigations into science, and those—mostly scientists—who would rather limit the validity of such investigations. Disregarding the first, and perhaps more wide-spread, understanding of the wars, and the ways it is related to the second one, I will concentrate on some elements of the debates between (natural) scientists and sociologists of science (and of scientific knowledge).

Some points of disagreement can be read from Figure 1, which is a very simplistic expression of the disputable assumption that science studies is the 'science of science'. In other words, an analogy is assumed between science as a discourse about nature, and science studies as a similar meta-discourse about science.



What we see here is that, just as science is a descriptive enterprise with regards to nature, the ontological domain of causal explanations being natural objects, science studies is a descriptive enterprise with regards to beliefs about nature, and the ontological domain of its causal explanations is science-as-social-phenomenon. While science studies is incompetent with respect to nature, science is incompetent with respect to itself. Generally, science is understood to be based on an epistemic relation between science and nature. However, neither scientists nor analysts of science are enabled to see both sides in this relationship, and thus their epistemological accounts are expected to be partial. Scientists are committed to an objectivist epistemological stance in that their accounts make the object primarily responsible for scientific knowledge, while science studies practitioners are confined to different forms of subjectivism.

The main problem of objectivism is to explain how passive natural objects can be made responsible for knowledge, and a promising solution to this problem is to give up any claim to an epistemological account which is descriptive in terms of the subject. In other words, instead of offering explanations to knowledge production, the aim is to provide normative bases for science, as in traditional philosophy of science. Here the need for an explanatory epistemological theory remains unsatisfied.

Subjectivism tries to account for cognition in terms of the subject, while bracketing the realm of the object. This epistemological strategy is usually associated with an idealist position. It is not ontological idealism in some solipsist sense denying the existence of material reality but, rather, epistemological idealism in the sense that the objects of knowledge are taken unavailable to epistemological explanations. In the followings I will examine science studies idealism in more details.

## 2. Apriorism in Science Studies

In the history of philosophy the turn that decided to make the subject, instead of the object, decisively responsible for cognition is associated with the name of Kant. His inquiry focused exclusively on the (individualistic) subject's cognitive capacities, and he chose to leave the alleged 'noumenal' object totally unspecifiable: 'things-in-themselves' without any conditions of identity whatsoever. That is, he allowed for, and even found necessary, a mind-independent reality but he denied to attribute any specific responsibility to it for the result of cognition because, according to him, every specificity is determined by the subject's features existing prior to the actual process of cognition. In other words, he was looking for the mind's *a priori* conditions that make the construction of knowledge possible.

People in science studies also concentrate on the epistemic subject's preconditions of knowledge, while ignore the object, and thus the frequently mentioned Kantian connection seems justified. However, some central differences between *a priori* in Kant and in science studies must be underlined.

1. While the traditional epistemic subject is the individual mind, in science studies either its role is taken over by (some parts of) the society, or it is always seen in an inevitable social context. This attitude replaces traditional problems concerning 'ideas' and their relations with questions concerning the acceptability and credibility conditions of beliefs, the role of traditions, testimonies and authorities, the function of social and economic interests, power relations etc. All these factors contribute to the epistemic subject's *a priori* features preconditioning any cognitive act. One question to be examined later is whether there are some individualistic and psychologically specifiable forms of cognition that are not open to sociological inquiry, thus restricting the scope of social epistemology.

2. For Kant the realm of *a priori* is endowed with absolute necessity, providing the solid grounds for any cognitive capacity—from logic and spatio-temporal orientation to possibly ethics and religion—to any epistemic subject ('all possible rational beings'). In contrast, the social *a priori* is relativised both to historical time and to culture. The emblematic source of historical relativism is Kuhn, who expressed his apriorism in this way: "I go around explaining my own position saying that I am a Kantian with movable categories." (Kuhn 2000: 264) His later philosophy introduces lexicons, i.e. taxonomically ordered networks of kind-concepts and kind-terms, which are said to supply "preconditions of possible experience" in a way that they "can and do change" in small scales but producing large-scale effects (Kuhn 1991: 12). These culturally shared lexicons with their social dynamics are paragons of many science studies conceptions of a cultural *a priori*.

3. In Kantian epistemology, the *a priori* features of the individual mind are accessible only by means of some kind of transcendental reflection. It is because his *a priori*, providing universal preconditions for every cognitive act, can never be presented as the content, rather than the form, of empirical knowledge. (Such a restriction is inherited by different figures such as the members of the Vienna Circle for whom philosophy is a non-empirical inquiry into the necessary logical forms of all possible meaningful expressions, or Wittgenstein who, despite all the radical changes in his philosophy, always sticks to the non-discursivity of the overall linguistic forms of communication.) In science studies, however, the relative character of *a priori* makes it possible to subject it to empirical investigations. In this sense, science studies is a naturalistic enterprise where social science explanations take over the role of 'fundamental' philosophical inquiries. Some consequences are:

- the epistemic subject of science studies, unlike the rational mind, is not supposed to be self-transparent, and thus the tacit dimensions of knowledge, hidden from reflection, become open to investigation on the same grounds as explicit theoretical commitments
- science studies can also concentrate on actions and performances, instead of ideas of a reflective mind (thus the original problems of epistemology can be replaced with a new field of questions)
- while Kant's philosophy sought for the possibility of (all) knowledge, an empiricist science studies enterprise has primary access to actual forms of knowledge and only an indirect grasp on the historical dynamics of possibilities

4. For Kant, the realm of *a priori* is constitutive of the object. But in science studies, different trends strongly disagree over the possibility of a constitutive subject.

A modestly idealist position can allow for a realm of mind-independent objects that are given to the subject in some way, and the subject's cognitive role consists in imposing some kind of structure of similarity and generality on this realm. Bloor, for example, acknowledges that the objects of nature "are just 'there', providing a stable backdrop for the more volatile happenings on the human stage, where ideas change and theories come and go" (1999: 86). But this nature is always "more complicated than we can assimilate into our current conceptual schemes and theoretical systems" (90). In other words,

Nature will always have to be filtered, simplified, selectively sampled, and cleverly interpreted to bring it within our grasp. [...] These processes, which are collective achievements, must ultimately be referred to properties of the knowing subject. (90)

Thus the role of the social *a priori* is to provide the necessary restrictive forms within which the infinitely rich plenum of "sensory data" can be made available to human cognition.

A strongly idealist position, on the other hand, leaves no room for any specific 'givenness' by the object and, instead, maintains that the very object—as an entity with identity—is somehow constituted by the subject. See, for instance, Knorr-Cetina's views:

The vision behind the constructivist programme as I conceive of it is that of a potentially increasing stock of problems created by science in the process of secreting an unending stream of entities and relations that make up 'the world'. The 'unknown world' as an intentional object of science is itself a function of a constantly changing scientific practice, of what at every moment of scientific work emerges as the known world. (1983: 135-136)

For (ontological) 'constructivists', then, everything is delimited by the subject's conditions, and the process of construction includes constitution as well. In the next section we turn to the problem of constitutiveness.

### 3. The Kantian Analogy Reconsidered

A second brief look at Kant's philosophy may shed more light on the role of constitution in apriorist studies of science. According to him, the mind needs two *a priori* cognitive capacities for connecting the undifferentiated plenum of sensory 'input' to knowledge: sensibility and understanding (Kant 1933 [1781]: 92-93). The first is through what the object is given, intuited in two forms, time and space, as frames of arrangement; the second is through what the object is thought, structured by the *a priori* principles of the forms and features of concepts and judgements. These two capacities are equally necessary to obtain any kind of empirical knowledge. For us, the point here is to introduce a distinction between two sides of 'construction': one is 'articulation' of the object by making it intelligible, i.e. accessible by conceptual operations, while the other is 'constitution' in the sense of being given, to some degree, by the perceptual machinery. The first provides the frame of identity without which any epistemic means of accessing the object would be impossible, but it is the second that is responsible for anything 'being an object' even in a pre-conceptual sense.

For a collectivist epistemology the question is that, in an apriorist framework, how much role can the social be attributed to in constructing the content of knowledge. What Kant called understanding can be mapped onto something like Kuhn's lexicon, a sort of conceptual frame (or conceptual scheme) that provides an interconnected network of quasi-linguistic forms preconditioning any articulated experience. Unlike the transcendently given structure of Kantian understanding, this lexicon is shaped by empirically discernible factors that can, in theory, be both biological ('innate') and social ('acquired'). The social part is open to inquiries, for example, into the cultural contingency of elementary classificatory forms, as the tradition starting with Durkheim and Mauss illustrates. Given the inevitably linguistic nature of the lexicon as presented by Kuhn, and dwelling on a fundamentally social conception of language such as the ones stemming from Wittgenstein, the science studies tradition has no difficulties in showing that the articulating preconditions of all knowledge are at least socially determined. This much is enough to ground the view that scientific knowledge is not only a collective achievement but also a social construction: any conceptual operation is rooted in—at least partly—social conditions.

The counterpart of Kantian sensibility, on the other hand, seems to be missing from most contemporary idealist epistemologies. This lack of attention is a significant obstacle to a complete epistemology of cognition since, as argued by Kant, something is needed to bridge the gap between the ocean of 'sensory data' and the forms that articulate experience: something that renders the object given to the conceptual strata of cognition—let us call it 'perception'. Of course, one can suppose that whatever the perceptive processes may be, they are 'hard-wired' so that they are entirely free of any social influence at all. For example, it is conceivable that Kant's space and time as forms of intuition may somehow be substituted with the (given) spatio-temporal distribution of neural stimuli, and that the perceptual output of these stimuli is constituted by innate mechanisms. A science studies position adopting such a theory of perception is only modestly constructivist in that the constitution, as opposed to the articulation, of the object is not a social process.

In contrast, one can also find several frameworks in which it is possible to allow for acquired elements in perception such that they give ground for some degree of social contingency. On the naturalist side,

the famous Gestalt-psychology experiments cited by Kuhn and recalled, for example, by Barnes, Bloor and Henry (1996) are often understood to support such a theory of perception. More interesting attempts have been made within philosophy, and especially in the phenomenological-hermeneutic oriented investigations of science, where intentionality and meaning-impregnation are founded in proto-linguistic and proto-conceptual strata of cognition, being relevant to perceptive processes. Let us mention only Patrick Heelan (1983) and his rich analogy between everyday perception and scientific perception, or Don Ihde (1998) with his profound analysis of scientific perception as hermeneutic practice. In these cases, the very way in which objects are perceived as given before/to conceptual articulation is also exposed to social influences, and so constitution becomes a process with an inevitable social dimension. We have to add that this latter tradition offers a context where the subject/object scheme becomes reflected upon, and the original problem situation of this paper, with its levels and clear distinctions, calls for a careful reformulation. Unfortunately, this task exceeds the limits of this paper.

#### 4. Is Knowledge Determined by the Social?

Now that we have seen how it is possible to account for all knowledge in terms of the subject, we turn back to the original question: What it is that we should make 'responsible' for knowledge? We mentioned that in an objectivist framework it is highly counterintuitive to put the responsibility on the objects of discussion, and thus there is no way to describe the locus of responsibility. In a subjectivist framework, on the other hand, the weight is put on the subject and thus we become able to describe cognition as an active process on the human side. One important question, however, remains to be explored: if all aspects of knowledge are pre-determined by the social *a priori*, what role remains for responsibility?

The immediate answer is that while the social *a priori* has a role in shaping all forms of knowledge, it does not pre-determine them. Even if we want to give a sociologically naturalistic causal explanation to scientific knowledge production, our explanation will not have to rely on deterministic causal processes. The key concept here is the open-endedness of all actions connected to institutions and rules. Going back to Wittgensteinian investigations, most science studies practitioners would argue for a 'finitist' (Bloor) or 'decision-laden' (Knorr-Cetina) conception of social mechanisms, which leaves an inevitable role for active participation. And this concept of scientific cognition is much more open to questions about responsibility and policy-making than the traditional image according to which nature has a tendency to be mirrored in our empty heads.

#### References

- Barnes, B., D. Bloor and J. Henry. 1996. *Scientific Knowledge: A Sociological Analysis*. Chicago: University of Chicago Press.
- Bloor, David. 1999a. "Anti-Latour" *Studies in History and Philosophy of Science* **30**/1: 81-112.
- Heelan, Patrick. 1983. *Space-Perception and the Philosophy of Science*. Berkeley: University of California Press.
- Ihde, Don. 1998. *Expanding Hermeneutics*. Evanston: Northwestern University Press.
- Knorr-Cetina, Karin. 1983. "The Ethnographic Study of Scientific Work: Towards a Constructivist Interpretation of Science" In K. Knorr-Cetina and M. Mulkey (eds.): *Science Observed: Perspectives on the Social Study of Science*. London: Sage. Pp. 115-140.
- Kant, Immanuel. 1933 [1781]. *The Critique of Pure Reason*. Trans. by Norman Kemp Smith, London: Palgrave Macmillan.
- Kuhn, Thomas S. 1991. "The Road since *Structure*" In A. Fine, M. Forbes and L. Wessels (eds.): *Philosophy of Science Association 1990* Vol. 2: 3-13.
- Kuhn, Thomas S. 2000. *The Road since Structure*. Chicago: Chicago University Press.