

An Epistemological Reconsideration of Present Controversies about Science

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Introduction: Two stages of the Science Wars

Science Wars is a contemporary series of controversies over science. Since I have no space to sketch even the overall course of these controversies, I restrict myself to the introduction of two, thematically and temporally dissociating, aspect of the Science Wars in order to prepare the ground for some philosophical reflections.

When the Science Wars broke out around 1994, it was declared by a group of scientists who wanted to give voice to their dissatisfaction with the prevailing ‘relativistic’ and ‘postmodernist’ atmosphere within the academia with respect to the evaluation of science. The target of their rage was a very diverse group, ranging from feminist epistemologists and cultural leftists to postmodernists and multiculturalists, to name just a few examples. The common point (if any) in these groups was an inclination towards an attitude to analyse science in the framework of the so-called cultural studies, which has the purpose of reconsidering and critically re-examining every theoretical and intellectual commitment of our culture. If this criticism is aimed at science as a fundamental institution of our culture, then we are faced with an attitude that can be called ‘science studies’ in the broad sense. In this paper I am not going to touch on this first aspect of the Science Wars.

After some failures on the scientist side to identify a unified group of enemies, some ‘science warriors’ attempted to find the most important contemporary intellectual sources of ‘anti-science atmosphere’, and this resulted in a renewed attack on a field called ‘sociology of scientific knowledge’ – later also called ‘science studies’ in the narrow sense. Experts on this field work on giving causal explanations for the acceptance of scientific beliefs in the past as well as today. These causal explanations rely on social mechanisms. As we shall see, this attitude, although much more modest and less revolutionary than science studies in the first sense, is still based on a philosophical and methodological position which seems often antagonistic to the agenda of science.

In this paper I attempt to examine some sources of tension between scientists and sociologists of science. I would like to show that the position of science studies is not only legitimate, but often it is a more appropriate position to formulate some problems than the position of those scientists who claim to take overwhelming priority to dealing with the very same problems.

The antagonism of perspectives

Lot of the disagreements between the two sides in the Science Wars stem from the different perspectives, resulting from the different methodological positions they occupy. By drawing very rough pictures for the two different positions, we can identify some fundamental sources of disagreements that shed light on scientists' dissatisfaction with science studies.

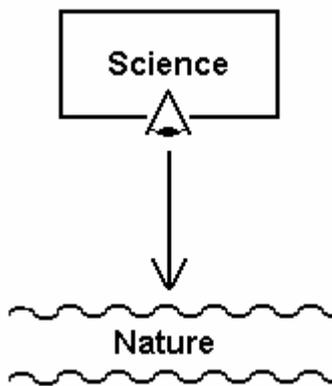


Fig. 1: The perspective of science

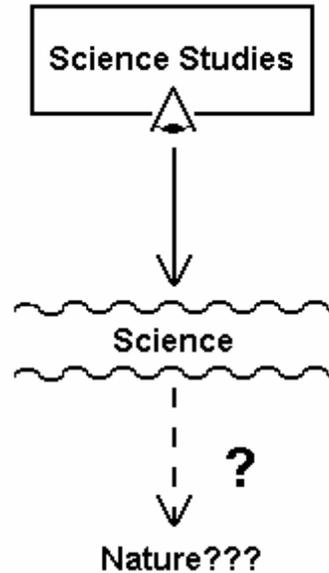


Fig. 2: The perspective of science studies

Science is a purely descriptive enterprise with regards to things (in nature). In other words, the ontological domain of causal explanations is things ‘in themselves’, and the language of description is neither normative nor evaluative. As regarding the relation of science to itself: when it comes to describing beliefs about nature, the language becomes charged with normative and evaluative terms. Scientists hold an initial trust (or even belief) in science as an enterprise with privileged access to its subject, and they employ value-laden terms such as ‘objectivity’, ‘rationality’, or ‘truth’ as tools to account for the (guaranteed) success of science.

Science studies is a descriptive enterprise with regards to beliefs about nature, but it is incompetent with respect to nature ‘in itself’. This leads to (at least) two serious disagreements with the scientific perspective. First, science studies must not use evaluative and normative terms in describing science, and it must not presuppose a privileged status for science among other cognitive enterprises. This is the problem of *naturalism*. Second, in science studies, the ontological domain of causal explanation is science-as-a-social-phenomenon: scientific and extra-scientific beliefs, social institutions, social forces and constraints, etc. The things of nature (as objects of scientific beliefs) are not allowed to appear as causal agents of mechanisms. In other words, nature is bracketed out when explaining beliefs about it. This is the problem of *idealism*.

Naturalism with respect to science is an employment of causal explanations of scientific beliefs. The two traditionally important forms of naturalism are psychologism and sociologism, and science studies is predominantly associated with sociologism, i.e. the employment of causal explanations in terms of social mechanisms. To put it slightly harsh, in

the accounts of science studies, science becomes a natural phenomenon. As an illustration, let us take a look at the concept of 'knowledge'. For scientists, 'knowledge' means a correct mapping of (aspects of) reality. 'Correct' is an evaluative term here, and it presupposes the distinction between 'good' and 'bad' accounts of things – a normative distinction that cannot be accessed independently of the evaluated accounts themselves. For science studies, 'knowledge' means socially accepted belief, one caused by certain social mechanisms. In the purely descriptive language of science studies, normative terms like 'true', 'rational', etc. have no room or role to play.

Here we are faced with the problem of secularisation or profanity. Science studies is irreverent with respect to something which is generally taken as the greatest achievement of human history and, thus, clearly deserves a huge deal of respect. Science studies deals with astronomy, astrology and astral spiritualism on the same grounds. It wants to see the achievements of science as just 'natural' – while they are results of humankind's unnatural and heroic efforts. (Embryologist Lewis Wolpert was one of the first science warriors by publishing his 1992 book: *The Unnatural Nature of Science: Why Science does not Make (Common) Sense.*) Naturalism seems to devalue science in the usual sense of the word.

In this context, however, de-valuation simply means a description avoiding any assignment of values to the object of study. Whether it seems good or bad depends on the general view of what you naturalise. Compare the following two examples. First, when you are to give a sociological causal explanation of the fact that many people in present Bulgaria believe that there was a person 2000 years ago who redeemed all the sins of humankind by sacrificing his life on a cross, then your naturalistic attitude seems to degrade something good and is, by many, deemed ill-mannered. On the other hand, when you are to give a sociological causal explanation of the fact that many people in the 1930s and 40s in Germany believed that Jews are inferior and can be executed without any moral reservation, then your naturalistic attitude seems to make an excuse for something bad and is, by many, deemed ill-mannered again. In both cases, the supposed moral charge of naturalisation is a result of de-valuation, and its direction depends on the direction of the original values being disregarded. (In other words, attribution of neutral causes to a belief does not imply to deny the attribution of non-neutral reasons to the very same belief.)

Speaking about science without being positively evaluative resembles the first example: it is seen by many to be negatively evaluative. But the moral of the example is that no matter how much respect you feel for science, when you are to give a causal explanation for the workings of science then you are not allowed to rely on this respect and positive evaluation.

The second problem to deal with is the problem of *idealism*. In science, we are used to make the things of nature causally responsible. But in science studies, 'things' (as objects of beliefs) are not parts of the domain of explanation. In the sociologist's causal categories 'nature' appears only in beliefs about it. In other words, knowledge about nature is not the source of explanation, but its object. This is codified in an often-discussed dictum called 'methodological relativism'. In the words of Harry Collins, "the sociologist or historian should act as though the beliefs about reality of any competing groups are not caused by the reality itself".¹ From the metaphysical point of view, this position is better called 'methodological idealism': "forget about representation-independent reality!"

So far, this is just an innocent methodological consideration, resulting from the position of science studies. However, one very important question arises here: what is this position good for, if it leads to such a counter-intuitive attitude? More precisely: In such an idealistic framework, how can you account for the evident success of science? The cheap

¹ Collins: „One more round with relativism”. In Labinger; Collins (eds.): *The One Culture?* University of Chicago Press, 2001. p. 184.

answer to this question is that sociologists do not need to account for the ‘success’ of science, since ‘success’ is already an evaluative term and therefore should be avoided. But it can be argued that some aspects of the scientific success can be translated to a purely descriptive language, and then the question remains both legitimate and important. In the followings, I would like to show the direction in which the sociological answer to this question can be worked out. This requires a brief journey to the realm of metaphysics.

An epistemological cross-section of the Science Wars

Many authors think that the Science Wars is essentially a debate over implicit or explicit metaphysics (Hacking, Geare, etc.). This is curious, since metaphysics normally does not reach the front page of leading newspapers (as the Science Wars did). In order to address the metaphysical points here, a very rough and oversimplified picture will be offered.

My claim is that the (or, at least, an) epistemological cross-section of the Science Wars displays the legacy of the empiricist/rationalist opposition of modern philosophy.

In terms of this legacy, the initial question is the following: Given the infinite ontological gap (inherited from Descartes) between the subject and the object of cognition, how is cognition still possible? How are we to build the bridge between the ontologically separated sides? There are two fundamental strategies to answer this question. The *empiricists* want to make the object primarily responsible for the connection. The world of things ‘imprints on our senses’, things ‘cause our beliefs about them’, etc. The *rationalists*, on the other hand, want to make the subject primarily responsible for the connection. The subject ‘projects its cognitive categories on the world’ which is essentially inaccessible without such categories, ‘in itself’.

Just to note, the above picture is clearly oversimplifying a lot. It is worth mentioning, for example, that one of the basic questions of philosophical empiricism from Locke (with his substance) and Hume (with his necessity and causality) to the Vienna Circle (with their logico-linguistic forms) is the subject’s contribution to cognition. In reality, philosophically sophisticated empiricism is much more akin to certain forms of idealism than to ‘metaphysical realism’ which is an apt background for what I call the ‘empiricist’ position. On the other hand, ‘rationalism’ from Kant to phenomenology and further is occupied with far more subtle questions than a simple projection of categories on the world. My above distinction is hardly applicable to the actual history of philosophy.

Notwithstanding, for the purpose of the reconstruction of epistemological attitudes in the Science Wars, this picture can be of some help. If empiricism is an attitude to explain beliefs in terms of what is given from ‘outside’, independently of cognition, then the everyday realism of many of the scientists in the Science Wars is a good illustration of this position: we think that ‘X is the way the world is’ exactly because X is the way the world is. Or, more precisely, sociological explanations can be given for the contingent forms of knowledge, but the content of knowledge is caused by the objects of study, and, finally, the local contingencies of knowledge will (or should) be eliminated from the true description of the world.

The idealist attitude is nicely exemplified by the metaphysical core of *social constructivism* in science studies. Although both the coherence and the necessity of the philosophical agenda in science studies are debated, I will highlight two points that I see as probably the most fundamental philosophical features of the social constructivist programme: apriorism and finitism.

Apriorism is the view that the necessary condition of any cognitive act is the presence of preceding cognitive categories. In other words, experience is given in forms that are prior to it at all times. Three qualifications must be made as regarding the apriorism of science studies: (1) In contrast with Kant's transcendental a priori, in science studies it is subject to empirical investigation, and thus becomes the object of social science. (2) A priori in science studies is not universal, but historically and culturally relative: every cognitive act is necessarily conditioned by some a priori categories, but not by the same categories for all cognition. (3) Very often (but not always), the realm of a priori is regarded as playing a constitutive role in the construction of knowledge, and not just a restrictive role to rule out what cannot be knowledge at a given time.

The apriorist sources of science studies are diverse, from phenomenological sociology to Foucault's 'historical a priori' and further, and often they are not made explicit. As Kuhn put it, "I have always been asked to explain my position, and I come to say that I am a Kantian only with movable categories".²

Finitism emphasises the inevitably contingent and decision-laden nature of any cognitive act. (1) Any cognitive category we employ in cognition is open-ended, i.e. every new application of any category requires decision (in a pretty similar way to how Wittgenstein describes rule-following). (2) All decisions are revisable: there is no 'rational algorithm' in any cognitive situation, and all the knowledge we construct through decisions is essentially fallible. (3) Any scientific situation is contextual and local, and cannot be understood in terms of solely general considerations.

Consistent constructivism is based on an idealist metaphysical view. As Karin Knorr-Cetina nicely formulated it: "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'".³

Metaphysics and the role for evaluation

With these simple epistemological considerations in hand, we can return to the unanswered question regarding the success of science.

In the empiricist framework, it is hard to identify any cause for the success of the cognitive enterprise. Scientific beliefs are true because they describe the world the way it is, and this can be achieved on the basis of 'things in themselves' independent of cognition. Since beliefs are, in a sense, caused by nature, they become naturally true, and then the real question is how some beliefs can be false. And here comes the role for social factors: they divert the process of cognition, and they are the causes of false beliefs. This is the asymmetrical explanatory strategy that, following David Bloor, most of science studies people reject. Still, the scientist's recipe for success is this: try not to err, try to resist the diverting forces of the social realm, and nature itself guarantees success. The scientist is the medium through whom Nature can speak up for herself. The conditions for being a good 'medium' are

² Kuhn: *The Road Since Structure*. Chicago University Press, 2000. p. 264.

³ Knorr-Cetina: „The Ethnographic Study of Scientific Work: Towards a Constructivist Interpretation of Science” In: Knorr-Cetina és Mulkay (eds.): *Science Observed: Perspectives on the Social Study of Science*. London, SAGE. p. 135.

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secrets of the trade, and require no causal explanation – especially not explanations external to science.

It is the idealism of constructivism that, when accounting for the possibility of cognition, starts the explanation from the subject's contribution, and therefore makes the subject primarily responsible. This is how the question of success becomes a real issue, more than a 'trick of scientific spirit'. However, the two mentioned features of constructivism imply two different, even opposing, answers to this question. On the one hand, apriorism seems to emphasise the role of social constraints on the production of knowledge. One is inclined to see the categorical conditions, independently of whether they are restrictive or constitutive, as determining factors of knowledge production. On the other hand, finitism is the key feature to understand why individual scientists, as well as scientific social groups, are essentially responsible for the success of science: it is the decision-laden character of all scientific acts that brings the question of responsibility to the foreground of all these considerations. But it is very important to note that, in this finitist framework, the success of science can never be explained (away) by general considerations claiming universal validity, such as methodological algorithms of rationality. This needs being acknowledged before fruitful research can be launched.

This paper stops here, hopefully having shown one area where the rage of the Science Wars can be intimidated and fuelled into further investigations on science. It seems extremely important to learn more about how we, human actors, construct scientific knowledge on which modern society relies for its very existence.