

ESSAY REVIEW

Scientists' rhetoric in the science wars

Felicity Mellor considers Roger Newton's *The Truth of Science* and Alan Sokal and Jean Bricmont's *Intellectual Impostures*.

Roger Newton, *The Truth of Science: Physical Theories and Reality* (Cambridge, Mass.: Harvard University Press, 1997). ISBN 0674910923. US\$27.00 (hardcover).

Alan Sokal and Jean Bricmont, *Intellectual Impostures* (London: Profile Books, 1998). ISBN 1861970749. £9.00. Published in the U.S. as *Fashionable Nonsense: Postmodern Intellectuals' Abuse of Science* (New York: St. Martins/Picador, 1998). ISBN 0312195451. US\$23.00 (hardcover).

The Truth of Science and *Intellectual Impostures* are both physicists' interventions in the so-called "Science Wars" and, whilst deploying very different strategies, the books have much in common. Newton's *The Truth of Science* (hereafter N) can be located in the long tradition of metaphysical musings by the elder statesmen of theoretical physics. The works within this tradition are largely concerned with the epistemological issues raised by the interpretation of quantum mechanics. Newton is similarly concerned with such issues, but he adds a contemporary twist by directing his conclusions against what he sees as the epistemological, or even ontological, threat posed by the newly emerging discipline of science studies. Sokal and Bricmont (SB) share the perception of the science studies threat. But their work has a quite different heritage. *Intellectual Impostures* arises directly out of the now famous Sokal hoax, in which Alan Sokal wrote a spoof cultural studies article about physics which was published in all seriousness by the journal *Social Text*. The article was essentially a pastiche of quotes from a variety of authors. In their book, SB again deploy extensive quotes from the works of contemporary French intellectuals, but they are now explicit about their positioning within the Science Wars.

In the Science Wars, which are in part a response to analyses from the science studies community, scientists (and often journalists) have engaged over issues such as the epistemological status of science, its value and its authority. As the militaristic tag indicates, these responses tend to be aggressive polemics in which science studies is characterized as either trivial or plain wrong, but always dangerous. What is unique about the present two books is that, whilst sharing the agenda of the Science Warriors, (and in the case of SB representing a key event within the Science Wars) they eschew outright polemic for alternative strategies. In this essay, I wish to examine these strategies to reveal how these authors perpetuate the positions of the Science Wars.

Condemning by quotation

Sokal and Bricmont ostensibly set themselves a very limited task. Their aim is, they say, to show that eight French intellectuals, whom they label as postmodern, have used somewhere in their writings scientific terminology in ways that are both scientifically inaccurate and irrelevant to the subject under discussion. SB are careful to state explicitly that they are not dismissing the whole of these authors' works, nor those of other postmodernists. If taken at face value, this narrow delimitation of their project can only lead to one reaction: so what? Even if these eight authors are talking nonsense in the passages quoted (and see below for the problems with this conclusion), unless we are able to generalize from these specific cases, how can we draw any conclusions? But it is in any case difficult to believe that SB are genuine in their disclaimers. As their opening paragraph illustrates, they surely do intend to rubbish the whole of postmodernist thought:

For some years, we have been surprised and distressed by the intellectual trends in certain parts of American academia. Vast sectors of the humanities and the social sciences seem to have adopted a philosophy that we shall call, for want of a better term, 'postmodernism': an intellectual current characterised by the more-or-less explicit rejection of the rationalist tradition of the Enlightenment, by theoretical discourses disconnected from any empirical test, and by a cognitive and cultural relativism that regards science as nothing more than a 'narration', a 'myth' or a social construction among many others. (SB, p. 1)

By embedding their quotes, albeit complete with disclaimers, within a broader discussion of "postmodernism," SB direct readers to one particular reading of their book without having to explicitly claim it, or defend it, as their own. The essence of this reading is summarized in *The Guardian's* reaction to the original French edition of the book (quoted at the beginning of SB) which they said showed that "modern French philosophy is a load of old tosh." That Sokal and Bricmont deny that this is the case becomes irrelevant; their rhetorical strategy is such that for both science enthusiasts and anti-intellectuals, this will inevitably be the preferred reading. Bruce Robbins has referred to this strategy as "synecdochic rhetoric"—SB are, he points out, trying "to make the part stand for, and condemn, the whole."¹

What the above quote also reveals, with its references to "cognitive and cultural relativism," is the way in which SB conflate postmodernism with science studies and both with certain trends within contemporary French thought. Indeed, in addition to aiming to expose the "misuse" of science by certain scholars, SB state that a "second target of our book is epistemic relativism." But they acknowledge that the link between studies of the epistemological status of science and the work of their French intellectuals is weak. They note that this form of relativism is "more widespread in the English speaking world than in France" and that it "is widespread also in domains of anthropology, education and sociology of science that exhibit little interest in Lacan or Deleuze" (SB, p. x).

Of the authors discussed by SB, only Bruno Latour is a significant figure within science studies. Their critique of his work is focused on his misunderstanding that special relativity is concerned with observers at different *positions* rather than with observers moving at different *speeds*. This is certainly a shameful mistake, but the paper in which it occurs is a minor part of Latour's corpus and it in no way invalidates the conclusions he draws from the rest of his work. Indeed, SB themselves repeatedly claim that the factual mistakes they highlight are not the main point of their argument; it is the irrelevant usage of the science that concerns them. This, however, cannot apply to Latour unless they are claiming that scholars studying the nature of science must never refer to the content of science. It seems that SB are again

deploying synecdochical rhetoric. They are making available discrediting readings of Latour (and hence, rhetorically at least, the whole of the sociology of science) by placing a very limited, and ultimately insignificant, critique of Latour's work in the context of a broader and more damning critique of other, unrelated, authors.

Paraphrasing and the pejorative adverb

Sokal and Bricmont's tactic, then, is to quote at length, appearing to let their "postmodernist" authors speak for themselves. But by presenting several otherwise quite different authors in similar ways, and by packaging them together within a project which is clearly located on one side of the Science Wars, they are in fact mediating their authors just as much as any other commentator.

In paraphrasing, of course, the inevitability of mediation is far more obvious and this is the more typical approach of the Science Wars and is closer to Newton's approach in *The Truth of Science*. Without actually becoming blatantly wrong, the paraphrasing and glossing of arguments can easily alter their extent and validity. A common feature is the insertion of what might be called "the pejorative adverb." Thus when science studies scholars say that science is a social construct, narrative, myth, etc., they are *reported* as saying that science is *just* (or *only*, *simply*, *merely*) a social construct, narrative, myth, etc. Hence Newton reports that: "Influential sociologists announce with great confidence that the results of science... are *simply* narratives" (N, p. 3). And he asks whether it is "fair to say that the laws [of motion] are *only* a convention" (N, p. 15). Similarly, scientist-commentators Paul Gross and Norman Levitt claim that some sociologists view science as "a *mere* set of conventions generated by social practice,"² and Kurt Gottfried and Kenneth Wilson claim that sociologists of the Edinburgh school contend that "scientific knowledge is *only* a communal belief system with a dubious grip on reality"³ (my italics in all these quotations).

The pejorative adverb works in two ways; firstly, it implies that the sociologists referred to are dismissive of science, and secondly, it implies that a narrative or social construct is something insignificant. No doubt there are occasions in which sociologists have themselves used the pejorative adverb, but I suspect that such occasions are rare. Less rare are examples of sociologists taking care to point out that they are *not* dismissive of science. Even Bruno Latour, with co-author Steve Woolgar, says: "Our 'irreverence' or 'lack of respect' for science is not intended as an attack on scientific activity."⁴ Whilst Sandra Harding, the feminist critic of science who like Latour is a frequent target in the Science Wars, warns that "I do not wish to be understood as recommending that we throw out the baby with the bathwater."⁵

But nor is it correct to imply that if science were a narrative, social construct etc., that this would somehow decrease its significance. A concept such as "narrative," in itself, says nothing about the worth of a project; it is an analytical concept which allows one to utilize a whole set of other concepts and tools from literary criticism. Furthermore, the richness of a narrative can indicate its ability to shape the world and the ways it has itself been shaped by the world. Narrative is not necessarily in opposition to "body of knowledge" or even to "objectivity." For instance, we would not be troubled if a news report were analyzed as narrative. We would understand that this need not mean that the report made no reference to real events nor even that it "inaccurately" recorded those events.

The hyperbolizing paraphrase

What the pejorative adverb does is to make the claims of the critics of science appear disparaging. The polemics of the Science Wars might be greatly defused if both sides were to refrain from using such adverbs. A related tactic is to hyperbolize claims. Thus Newton variously reports sociologists of science as asserting that “all scientific theories... are social constructions *quite uncorrelated with anything* in Nature” (N, p. 40) and that science is “but an edifice erected by *no other* means than agreement among an in-group” (N, p. 204). Similarly, Sokal and Bricmont explain epistemic relativism as the idea that “modern science is *nothing more* than a ‘myth,’ a ‘narration’ or a ‘social construction’ among many others” (SB, p. x, my italics).

It is easy to see that hyperbolizing can have the same effect as the pejorative adverb. But such expressions are not purely the product of scientists’ rhetoric; these are things that really are sometimes said by some sociologists. It is here that we begin to approach some of the substance of the Science Wars debate. The concern that scientists are foregrounding with these hyperbolizing statements is that sociologists of science fail to account for scientists’ interactions with the material world.

Let us first note that to say that science is a social construct, or even that science is *no more* than a social construct, need not imply that external reality is irrelevant to science. Scientists do interact with the material world and as a consequence science is both constrained by, and intervenes in, the material world. To say this is to state what is obvious to any practicing scientist. It is also to say very little. It does *not* mean that science is *more* than a social construct. Compare, for instance, the statement that politics is no more than a social construct. Most of the scientists engaged in the Science Wars would probably have no problem with this statement. Yet politics, whilst remaining “no more than a social construct,” is shaped by nature (e.g., famines, floods, geography) as well as other aspects of material reality (e.g., numbers of votes cast). In turn, political events shape material reality (e.g., preventing or causing famines or floods, determining the numbers of votes cast). Why is politics-as-social-construct not seen as denying mutual interactions with material reality, whilst science-as-social-construct is?

Part of the problem we face here is what we mean by words such as “Nature,” “nature” and “reality.” To the scientists who use such terms, they seem to imply the pre-linguistic (and hence pre-conceptual and pre-mediated) world that is “out there” and which informs science. Sociologists, on the other hand, take seriously that these are *words*, that they cannot be otherwise, that we are inevitably and inescapably immersed in discourse, and, most importantly, that not only is it invalid to identify “science” with “nature” or “reality,” but that it is also invalid to identify “science” with the pre-linguistic world. Science *is* discourse.

This is not to deny that some sociologists are guilty of being, at best, ambiguous about that pre-linguistic world. Latour, in particular, seems at times to appeal to a form of ontological relativism that denies the existence of any pre-linguistic reality.⁶ Most sociologists, however, are guilty only of ignoring the influence of that reality on scientific knowledge, although they might argue that this is justified when much of their attention has been directed at unresolved scientific controversies. To some extent, then, what we see here is a difference in focus of interest. Sociologists are not interested in the pre-linguistic world because we can neither talk nor think about that, and because until a controversy is resolved even our mediations of it are contradictory. To scientists, however, the constraints that this external reality imposes on their work is the key feature of all science. One positive outcome of the Science Wars is that science critics are beginning to acknowledge this limited focus. In her more recent work, for instance, Evelyn Fox Keller is explicit about the need to account for scientists’ interaction with material reality,⁷ as are Barry Barnes, David Bloor and John Henry in their recent textbook.⁸

Shifting boundaries

What this different focus of interest might reveal is the disciplinary boundaries that separate sociologists of science from the scientists they study. The change of emphasis that was inaugurated by the Edinburgh School's Strong Programme, in which they set out to look sociologically at the *content* of science, represented a shift of the boundaries of the sociology of science. Ironically, the reaction of scientists to this shift, at least the rational component of that reaction, seems to be that the boundaries did not shift far enough—they should have encompassed the pre-linguistic material world as well. The defensive emotions that accompany this reaction, on the other hand, suggest that even the initial boundary shift was a shift too far. Resonating through the Science Wars is an indignant cry: "who are sociologists to dare to talk about the content of science?" In this, the content of science is seen as the preserve of scientists, and of scientists alone. (Related to this is scientists' frequent recourse to disciplinary hierarchies which place physics at the top of the hierarchy and sociology at the bottom; see, e.g., SB, p. 73 and N, pp. 61–64.)

When we begin to consider the issues of territory that are implied by disciplinary boundaries, we find that this is at the heart of Sokal and Bricmont's complaint. The quotations of which their book is composed, show, in their view, a use of scientific terminology that is meaningless. The charge of meaninglessness they repeat over and over again. For instance, they state: "The most common tactic is to use scientific (or pseudo-scientific) terminology without bothering much about what the words actually *mean*" (SB, p. 4, their italics). Or, about a quote from the psychoanalyst Jacques Lacan: "In his sentence, Lacan has used four technical terms from mathematical analysis. . . but without paying attention to their *meaning*; the sentence is meaningless from a mathematical point of view" (SB, p. 19, their italics). And so on throughout the book.

For Sokal and Bricmont, meaning is unique. Terminology that has specific meaning within science or mathematics can have only that one true meaning. They acknowledge the use of metaphor, but to them, as also for Newton (see N, pp. 69–73), metaphor is an explanatory device, a pedagogic tool, beyond which lies either confused ideas (hence the lapse into metaphor) or a more "pure" form of language use (where the metaphor is needed only for those too ill-equipped to partake of that pure language). SB show that Lacan's use of topology has no meaning for the mathematician and they conclude that it therefore has no meaning whatsoever. They do not allow that thinking about the psyche as closed or bounded, by drawing on topological notions, may call forth a whole host of connotations which may prove fruitful and come to have concrete analytical value within psychoanalysis. They do not allow that all language, including that of science, is in some sense metaphorical; that metaphor creates meaning.⁹

Newton, whilst acknowledging the connotative power of metaphor, sees this as a hindrance:

One danger in using figures of speech too freely is that they almost always carry baggage full of intended or unintended associated meanings with them, associations that may *distort* what was to be communicated. The more serious danger, however, is that their use may be confused with, and take the place of, a *real* explanation, in which case they may form an obstacle to progress. (p. 73)

Like Newton, Sokal and Bricmont rightly claim that scientific concepts are embedded in a complex web of meaning, but they fail to recognize this as an intrinsic characteristic of language itself. I do not wish to claim that all the mathematical terminology used by the likes of Lacan really does have analytical power, and hence a "useful" meaning. I suspect it does not. But Sokal and Bricmont do not let us judge this; they confess that they themselves are not competent to judge his psychoanalytical work and they present only those passages filled with

mathematical terminology. They explicitly look only for the meaning that would be attached to these terms were they present in a maths or physics paper. Thus they reduce the Science Wars to a squabble over the ownership of terminology. The implicit assumption is that language is transparent, and this justifies the perception of an unproblematic relationship between science and nature—if language is transparent the immersion of science within discourse is trivial and irrelevant to scientists pronouncements about nature. As John Sturrock has commented:

Like some other scientists, Sokal and Bricmont appear to regret that science has any need of natural language to make itself known, that scientific facts can't be implanted directly in our brains without resort to verbal mediation. . . . In the old and valuable Structuralist terminology, Sokal and Bricmont want their science to be all *langue* and no *parole*, its theoretical purity guaranteed by never being exposed to the risks of expression.¹⁰

In conclusion, SB and Newton differ in some of their rhetorical strategies and share others. They might all acknowledge their use of rhetoric in the books under discussion, but what they would all deny is that one might talk of the rhetoric of science itself. Complementary to their assumption that language can be transparent and that representation is unproblematic, is their belief that science too is transparent, a transparent window onto a knowable pre-linguistic world.

References

- 1 B. Robbins, 1998, "Science-envy: Sokal, Science and the Police," *Radical Philosophy* 88 (Mar/Apr 1998), available at <http://crane.ukc.ac.uk/secl/philosophy/rp/toc/88comm.html>.
- 2 P. R. Gross and N. Levitt, *Higher Superstition: the Academic Left and its Quarrels with Science* (Baltimore: John Hopkins University Press, 1994), p. 11.
- 3 K. Gottfried and K. G. Wilson, "Science as a Cultural Construct," *Nature* 386 (1996): 545–547
- 4 B. Latour and S. Woolgar, *Laboratory Life: the Construction of Scientific Facts* (Princeton: Princeton University Press, 1986), p.31.
- 5 S. Harding, *The Science Question in Feminism* (Milton Keynes: Open University Press, 1986), p. 10.
- 6 However, he is not consistent here. For instance: "We do not wish to say that facts do not exist nor that there is no such thing as really. In this simple sense our position is not relativist." (Latour and Woolgar, 1986, p. 180.)
- 7 E.g. E. F. Keller, *Secrets of Life, Secrets of Death: Essays on Language, Gender and Science* (New York: Routledge, 1992).
- 8 B. Barnes, D. Bloor, and J. Henry, *Scientific Knowledge: a Sociological Analysis* (London: Athlone Press, 1996).
- 9 See, for instance, M. Hesse, *Models and Analogies in Science* (Notre Dame: Notre Dame University Press, 1966); P. Ricoeur, *The Rule of Metaphor* (London: Routledge, 1994).
- 10 J. Sturrock, "Le Pauvre Sokal," *London Review of Books* 20, no. 14 (1998), available at <http://www.lrb.co.uk/v20n14/stur2014.htm>.

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