

A Report from the Front of the “Science Wars”

The controversy over the book Higher Superstition, by Gross and Levitt and the recent articles by Sokal

Evans M. Harrell II

The OAMSRPDAAAS (Official AMS Representative to the Physics Division of the American Association for the Advancement of Science) was trying to look wise at a meeting in Baltimore last February, while silently wondering whether his was the absolutely most obscure bureaucratic position in North America academia. He was diverted from this relatively engrossing problem of optimization by the appearance of one Bernard Ortiz de Montellano, bearing tidings of the sorry state of precollege science education, with particulars about how and why the school boards of Portland, Oregon, and some other localities have adopted curricula full of nonsense. Ordinarily, your representative discounts tales of “political correctness”, because he has always found it difficult to believe in the existence of things for which he has little direct evidence and Georgia Tech is no hotbed of PC. On the other hand, he has had some not altogether positive experiences with school boards, so his interest was aroused.

Among other things he learned that this and other attacks on science have been thoroughly discussed in *Higher Superstition: The Academic Left and its Quarrels with Science*, by Virginia bi-

Evans M. Harrell II is professor of mathematics at Georgia Institute of Technology. His e-mail address is harrell@math.gatech.edu.

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ologist Paul R. Gross and Rutgers mathematician Norman Levitt [5]. The assembled scientists in Baltimore were avidly reading the book and reporting that it was “a real eye-opener” and “not just the usual anti-PC screed”. Best of all, it was on sale! At that time before a recent prank by Alan Sokal, a mathematical physicist at NYU, focussed the mass media on tensions between scientists and the “academic left”, most scientists were astonished to be told that there are social scientists and humanities scholars who believe not only that they have produced incisive and significant criticism of the role of science in society but that they have also revolutionized its methods, its content, and its claim to truthfulness. Can a revolution have occurred in science without scientists being aware of it? Just what are these critics saying, and are the attacks on science something scientists need to worry about?

Gross and Levitt have dealt with these questions and written a call to arms for the community. The “left”, as seen by Gross and Levitt, is quite diverse, including those labeling themselves feminists, ecological activists, afrocetrists, and others, but the greatest concern is with a movement in the tradition of postmodern literary theory, called “cultural studies”. (The somewhat fluid terminology also includes “science studies” and some other variants.) Attacks from the other side— creation science and so on— are not discussed, mostly because they are virtually unrepresented on our own soil, the universities.

At the beginning this book feels academic and formal, because the authors show off their vocabulary and because they protest painstakingly

ingly that their targets are limited to specific fools and foolishness and not to sociologists of science or the politically engaged at large, with whom they express sympathy. (Later events confirm their decision to be careful in this regard.) It soon gets lively, however, as the case relentlessly builds against the postmodern critics and others, damning them with their own words. These critics are depicted as ideologues with an intense envy of science, born of adolescent fixations on power and authority. Their analysis consists of “turgid and opaque” jargon and servile quotations from their intellectual idols, in defense of politically foreordained conclusions. With these shabby intellectual weapons they are furiously tilting at the windmills of science. An example is Stanley Aronowitz, whose *Science as Power*, is described as follows [5, pp. 50–51]:

Its chief method seems to be to invoke from the philosophy of science as many names as possible ... names and phrases are simply run in and out of the text as props for Aronowitz’s views.

The view promoted in this influential book is described, by an admirer [9], as

Critics like Stanley Aronowitz see science not as the realization of universal reason but simply as an ideology with a power that extends well beyond its own institutions...

Most ridiculous are many critics who sling scientific terminology about with an air of authority, while revealing to anyone with technical training that they have not the slightest idea what it means. In examples drawn from mathematics, they have picked up some vogue words like *chaos* and *nonlinearity* and have eagerly misunderstood them as showing that mathematics has been fundamentally rethought and has retreated from its claim to objective truth. (The cultural critics have little to say about logic or the foundations of mathematics, where there are some longstanding and quite vexatious issues. They are instead drawing words and phrases selectively from the popular press.) Similar silliness is babbled about quantum and relativistic physics and about other branches of science. Indeed, scientific objectivity is flatly rejected as a bogus and dangerous notion associated with the evils of capitalism, colonialism, militarism, patriarchy, etc. Some advocate repression [6]:

The “innocence” of science communities ... is extremely dangerous to us all. Perhaps people who have exhib-

ited tendencies toward such innocence should not be permitted to practice science or construct metatheories of science; they are a danger to the already disadvantaged and perhaps even to the species!

Innocence in this context refers to doing pure research, carried on without political oversight.

Finally, cultural critics declare victory over science: “We are witnessing the slow, discontinuous breakup of the old world-view according to which physical science offers context-free knowledge of the external world....” [1] “Science is no longer accepted as a given without the mediation of cultural codes, social and economic forces, and professional interests....” [7] “It is safe to say that many of the founding certitudes of modern science have been demolished” [9]. The opinions of scientists on this point are not actively sought.

The indictment made in *Higher Superstition*, buttressed as it is with so many direct quotes and meticulous documentation, is forceful and persuasive. This reviewer took the next step and examined the works of many of Gross and Levitt’s targets for himself and found it rather easy to locate additional dismaying examples. Not all of the crimes occur simultaneously, of course. Sometimes turgid and opaque prose shrouds a true statement, and sometimes ignorance is quite nicely expressed. And there is even some good sense here and there — when they are not shouting slogans or pretending to know things they don’t.

Oh, for a Tom Wolfe to write a satirical novel about these folk! Or for an Alan Sokal to write a parody article and actually get it published in *Social Text*, a prominent journal of the cultural studies movement [14]! If cultural critics are free to use their (dim) lights to examine science, then it is fair to use the scientific method to verify whether Gross and Levitt’s description of them is accurate. In a companion article to his parody, published simultaneously in another journal [15], Sokal explains:

...to test the prevailing intellectual standards, I decided to try a modest (though admittedly uncontrolled) experiment: Would a leading North American journal of cultural studies—whose editorial collective includes such luminaries as Fredric Jameson and Andrew Ross—publish an article liberally salted with nonsense if (a) it sounded good and (b) it flattered the editors’ ideological preconceptions?

The parody was a pastiche of left-wing cant, fawning references, grandiose quotations, and

outright nonsense, centered on the claim that physical reality is merely a social construct. In defense of their decision to accept Sokal's article, the "editorial collective" has revealed that it makes decisions according to postmodern standards unhampered by such quaint traditions as peer review [13].

But wait... aren't the portraits painted by Gross and Levitt and illuminated by Sokal a bit too familiar? Could we have glimpsed something not so different when we last peered into our collective mirror? Mathematics and science certainly have idols and personality cults. How often does a seminar speaker explain that a problem is important because such and such a famous mathematician said it was? Believe it or not, we have jargon. As for puffery and pretension, have you never read an article in "applied" mathematics which starts by grandly stating that the equation about to be given a wonderful analysis is of utmost importance for a long list of branches of physics? Details about these applications may be in shorter supply than future citations in *The Physical Review*.

Most but not all readers of stories about the Sokal affair in the mass media are on the side of scientific rationality in the dispute. Others view it as a turf war between two similar communities of self-important pedants, one of which happens to have scored off the other. Objectively, the enemies of science cannot simply be dismissed as fools (not all of them all of the time), and indeed they are disturbingly like ourselves in many ways.

This suggests another modest experiment: Could a parody be published in a serious mathematical physics journal, for example, if it used authentic-sounding jargon and made references to fashionable trends in the field? Spoof posters are not uncommon at meetings, but they are recognized for what they are (by most onlookers most of the time). This experiment too has been carried out at least twice to my knowledge, in July 1988 and in October 1993, by investigators who prefer to remain anonymous. The result? Alas, the counterrevolutionary cads who edit our publications, with their retrograde allegiance to objectivity and peer review, would not even let such an article into a conference proceeding or mp-arc, the electronic archive. Strangely, there seems to be a correlation between belief in objectivity and quality control.

The correlation is not perfect; scientific error and even fraud get published from time to time, and clever parodies might have a decent chance of appearing in some journals devoted to the softer sciences. Systematic experiments quantifying the susceptibility to parody of various academic disciplines—in units called the sokal, the millisokal, etc.—could be quite revealing. Even

more revealing would be the response to the parody, judging from the recent affair. In the case of *Social Text*, Sokal's experiment not only brought out its lack of scholarly review but also found the editors so far out to sea that they had trouble understanding the point of the parody. Perhaps, one said, Sokal just had a "change of heart" when he revealed the hoax [13].

The sanctimonious tone of the critics upon being criticized can be pretty funny when set beside their other writings. For instance, Andrew Ross, the editor of *Social Text*, usually writes aggressively (he's not one of the turgid and opaque ones): "Be prepared for another season of asinine anecdotes about feminist algebra, [etc.]" [10], and "This book is dedicated to all of the science teachers I never had. It could only have been written without them" [11] are typical. After his own nose was tweaked, the aging *enfant terrible* and his coeditor wrote [13]:

This breach of ethics is a serious matter in any scholarly community, and has damaging consequences... [Sokal's] adventures in Postmodern-Land were not really our cup of tea... Why does science matter so much to us? Because its power, as a civil religion, as a social and political authority, affects our daily lives and the parlous condition of the natural world more than does any other domain of knowledge.

Notice that the power of science has apparently nothing to do with its content. The passage ends with:

Should non-experts have anything to say about scientific methodology and epistemology? After centuries of scientific racism, scientific sexism, and scientific domination of nature one might have thought this was a pertinent question to ask.

Here and elsewhere [10, 4], Gross, Levitt, Sokal and other scientists are charged with arrogantly opposing any examination of science by outsiders, but this is squarely contradicted by the evidence of their words. Of course, science is an appropriate object of study by anthropologists, sociologists, historians, and philosophers, and of course it exists in a political context. But the examination should be intelligent and honest. Humbug, on the other hand, cries out to be exposed, and it has been. Obviously, defensiveness is a motivation, but Sokal was feeling more defensive about left-wing politics, of which he is an adherent, than about science. He feels that left-wing politics has been damaged by its association with nonsense, whereas science has

been unscathed [15]. Sokal is far from alone on the left in his dismay at sharing the company of the cultural critics [8]. Or perhaps this is a naive view: Despite contrary evidence, Ross has cleverly deconstructed Gross, Levitt, and even Sokal into the far right wing:

The erosion of the Cold War funding contract with the state, combined with the decrease in public respect for scientific authority, has created a demand for scapegoats in the demonic form of politically motivated scholars in science studies. Accordingly, Gross, Levitt, Sokal, and others are simply recycling all of the usual suspect ideas from the Culture Wars in order to persuade scientists ... to get involved in the academic P.C. wars.

[12] (see also [10, 8]). How could anyone imagine that the motivation for cultural studies is political? Since it is inconceivable that anyone would allow his honest judgment to override political partisanship, Gross, Levitt, and Sokal must have sinister designs!

Thoughtful scientists do pay attention to philosophical issues about science, though usually without getting distracted from their work. Few see the science studies movement as serious in this regard, revealing as it so often does a dearth of scientific knowledge or even communication with scientists. (In contrast, Feyerabend [2, 3], whom some cultural critics revere, was both scholarly and eager to discuss science with scientists.) Moreover, if the prevailing intellectual standards in cultural studies are as low as Gross and Levitt make them out, most of the damage will be localized at the source, as was the case in the Soviet Union, where the more politicized academic disciplines settled into mediocrity. This was ultimately to the benefit of Soviet mathematics, in which the talented often sought refuge.

The threat is not to the epistemology of science but to its social context, and this is the true battleground. Science is terribly important, but not as an accidentally powerful example among many equally valid forms of discourse or as a state religion. It is paramount because it constantly transforms the human condition, and its power to do so arises from a unique relation to objectivity, which some cultural critics fail or refuse to grasp. Any political system or ideology has to deal with the phenomenon of science, but only damage can result from ignorance and dishonest motives. This can be seen every day in education, the workplace, and the courts—the legal avatar of the movement, known as critical legal studies, is much more influential than cul-

tural studies, and the other groups described by Gross and Levitt are all at work in the legal system as well. We suffer much more as citizens than as professionals, but as professionals we are both able and responsible to improve the uses of science in society. In this it would be foolish arrogance not to work together with outside critics, who not only potentially have much to offer but have a substantial track record of doing so. For example, the Tuskegee experiment, in which uninformed people were intentionally not treated for syphilis as part of a controlled experiment, is only one of the most notorious of many ethical abuses which have occurred in medical science in this country and not so long ago. The scientific community was not alone or even in a unique position of leadership in establishing better principles of beneficence and disclosure in human experimentation. None of the sciences, including mathematics, has a monopoly on wisdom as to its uses.

Gross, Levitt, and Sokal have done us all a great favor. Thanks to them the scientific community is now aware of this breed of critics and is ready to respond with its own indispensable perspectives. Even those who have been embarrassed may now curb their excesses and ultimately benefit. Let us now be equally vigilant about our own shortcomings, and, most importantly, let us not neglect the serious issues surrounding science in our amusement over the latest skirmish.

References

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- [2] PAUL FEYERABEND, *Against method: Outline of an anarchistic theory of knowledge*, London and New York: Verso, 1978.
- [3] ———, *Science in a free society*, Manchester: NLB, 1978. Feyerabend pioneered the modern philosophical critique of the objectivity of science. His comparisons of science to pseudoscience and even his language—abusing his own critics as illiterate, putting the word “fact” in quotes (p. 158), etc.—are echoed by the cultural critics.
- [4] STANLEY FISH, “Professor Sokal’s bad joke”, *The New York Times* OP-ED page, 21 May 1996; electronically available at <http://weber.u.washington.edu/~jwalsh/sokal/fish.oped.txt> (URL verified 29 June 1996). Not coincidentally, Fish is the publisher of *Social Text*.
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Readers of the *Notices* may recall an earlier article on feminist aspects of the science wars: Allyn Jackson, "Feminist Critiques of Sciences", *Notices of the Amer. Math. Soc.* **36** (July/Aug 1989), 669–672.

Many materials related to the Sokal affair are obtainable at <http://weber.u.washington.edu/%7Ejwalsh/sokal/> <http://www.nyu.edu/gsas/dept/physics/faculty/sokal/index.html> and <http://www.feedmag.com/96.06chapman/96.06chapman.html> (URLs verified 28 June 1996).