

## The Science Wars Redux

*Fifteen years after the Sokal Hoax, attacks on “objective knowledge” that were once the province of the left have been taken up by the right.*

**I**n 1995, I was invited to speak to the Materials Research Laboratory at the University of Illinois at Urbana-Champaign, where I was teaching at the time. The occasion was something they called their “Postmodern Science Forum.” I took it as a good sign that they were not allergic to the word “postmodern,” and I launched into a brief history of the term as it migrated from architecture to literature to philosophy to popular culture—before getting down to the real business at hand, a discussion of the influence of T. S. Kuhn’s 1962 book *The Structure of Scientific Revolutions* in the humanities. Kuhn, I said, had shown us that scientific knowledge was not cumulative, however much it appeared so in retrospect; rather, it proceeded by way of upheavals in which a new worldview displaces the old. But had Kuhn thereby licensed a kind of shallow relativism in the humanities, where we can talk about “paradigm shifts” and “incommensurabilities” without any reference to the natural world of oxygen,

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Neptune, and X-rays (to take some of Kuhn's most illustrative examples from the history of science)? Had we read Kuhn backwards from Paul Feyerabend's *Against Method*, a far more anarchic account of scientific research, concluding that scientists were just as irrational as everyone else, and that therefore both God and Science are dead, and everything is permitted? And when we claimed to be doing "science studies," did we know what the hell we were talking about?

For some of my interlocutors—and they were a very lively bunch, full of great questions, random expostulations, and a few moderately hostile interruptions—the short answers to these questions were yes, yes, and no. They were willing to cut me some slack, not only because I was nice enough to visit them but because I took my own examples from the history of astrophysics, about which I know an elementary thing or two; but they were not so kind about some of my colleagues in the humanities, who, they believed, were overstepping their disciplinary bounds and doing "science studies" without any substantial knowledge of science. A couple of physicists had clearly read Paul Gross and Norman Levitt's then-recent book, *Higher Superstition: The Academic Left and Its Quarrels with Science*, a free-swinging polemic against science studies, feminism, Jeremy Rifkin, jargon, and much more, and they were mightily pissed off about this Andrew Ross fellow, who had written a science-studies book, *Strange Weather*, which he dedicated to "all the science teachers I never had. It could only have been written without them."

Well, yes, I had to admit, Ross's dedication was rather cheeky. But it was not in itself evidence that Ross did not know his subject matter. Besides, I added, when in *Strange Weather* Ross called for science "that will be publicly answerable and of some service to progressive interests," and Gross and Levitt responded by writing, " 'Of some service to progressive interests' seems reasonably clear, if frighteningly Stalinist in tone and root," weren't Gross and Levitt being kind of... nutty? Hysterical, perhaps? What was wrong with wanting medicine or engineering or environmental science to be publicly answerable and of some service to progressive interests? Why *shouldn't* we try to build a world that affords greater public access to people with disabilities, for instance? And since conservatives had even then largely abandoned their early-twentieth-century commitment to conserve the Earth's natural resources, wasn't "environmental science" now a "progressive interest" in and of itself? It's not as if Ross was calling for a Liberation Astronomy. Would Ross's sentence sound out of place in a bulletin issued by the Union of Concerned Scientists?

Back then, of course, the humanities and the interpretive social sciences—the few remaining interpretive social sciences, that is, the fields that hadn't gone totally over into the parallel Quantification Universe—were still reeling from

the so-called “political correctness” battles of the early 1990s, and some of us humanists were kind of defensive about it. Though I wasn’t. I was perfectly willing to say publicly that Dinesh D’Souza was a liar and a scoundrel, and that most of the other right-wing critics of the humanities had no idea what they were talking about. And I was fond of saying to my friends in the sciences that *mi problema es su problema*: the culture warriors of the right are after English and women’s studies today, but they’ll be coming for you soon enough, just you wait. To a man (and they were all men), my scientist friends refused to believe this. Some merely said, plausibly enough, that debates over PC were irrelevant to their work on dark matter or the properties of metals; others insisted that the conservative attack on the universities was entirely the fault of radical artists and humanists with their queering this and their Piss Christ that and their deconstructing the Other. You’re the ones making it hard for all of us in the academy, they said, and things would be fine if you would just tone it down and knock off the *épater-le-bourgeois* bit.

And then, the next year, the Sokal Hoax happened.

### **Social Text Gets Punk’d**

What, you ask, was the Sokal Hoax? While I was chatting with my colleagues at the Postmodern Science Forum, New York University physicist Alan Sokal, having read *Higher Superstition*, decided to try an experiment. He painstakingly composed an essay full of (a) flattering references to science-studies scholars such as Ross and Stanley Aronowitz, (b) howler-quality demonstrations of scientific illiteracy, (c) flattering citations of other science-studies scholars who *themselves* had demonstrated howler-quality scientific illiteracy, (d) questionable-to-insane propositions about the nature of the physical world, (e) snippets of fashionable theoretical jargon from various humanities disciplines, and (f) a bunch of stuff from Bohr and Heisenberg, drawing object lessons from the uncertainty at the heart of quantum mechanics. He then placed a big red bow on the package, titling the essay “Transgressing the Boundaries: Toward a Transformative Hermeneutics of Quantum Gravity.” The result was a very weird essay, a heady mix—and a shot heard ’round the world. For Sokal decided to submit it to the journal *Social Text*, where it wound up in a special issue edited by Ross and Aronowitz on... the “Science Wars.” Yes, that’s right: *Social Text* accepted an essay chock-full of nonsense and proceeded to publish it in a special issue that was designed to answer the critics of science studies—especially, but not exclusively, Gross and Levitt. It was more than a great hoax on Sokal’s part; it was also, on the part of *Social Text*, one of the great own-foot-shootings in the history of self-inflicted injury.

Cannily, Sokal chose *Lingua Franca*, a then-influential (since folded) magazine that covered the academy and the humanities, as the venue in which to publish his “gotcha” essay, in which he revealed that the whole thing was a great big joke. And as if on cue, Ross and Aronowitz fired back almost precisely as Sokal believed they would: Aronowitz called Sokal “ill-read and half-educated,” while Ross called the essay “a little hokey,” “not really our cup of tea,” and a “boy stunt . . . typical of the professional culture of science education.” Aronowitz and Ross had every reason to feel badly stung, no question; but the terms of their response, unfortunately, spectacularly bore out Sokal’s claim that “the targets of my critique have by now become a self-perpetuating academic subculture that typically ignores (or disdains) reasoned criticism from the outside.” It was not hard to wonder, after all: If indeed Sokal’s hokey boy-stunt essay was not really your cup of tea, why did you publish it in the first place?

For many people, the answer to that question was simple: because the theory-addled, jargon-spouting academic left, of which *Social Text* now stood as the symbol, really *didn’t* know squat about science and really *was* devoted to the project of making shit up and festooning it with flattering citations to one another’s work. It was what critics believed all along, and now they had the proof. The disparity of audience response was—and remains—stark: In my academic-left circles, Sokal’s name was mud, his hoax an example of extraordinary bad faith; everywhere else, especially on the rest of the campus and in the world of journalism, Sokal was a hero, the guy who finally exposed the naked emperor (and there was much talk of naked emperors) and burst the cultural-studies bubble that had so drastically overinflated certain academic reputations—and academic egos.

The damage to the academic left—and the sense of betrayal *on* the academic left—was especially severe because the Sokal Hoax followed in the wake of the early-’90s culture wars. Left-leaning humanists were used to taking brickbats from movement conservatives like D’Souza, Lynne Cheney, and Bill Bennett; we had watched Pat Buchanan and Jesse Helms attack the National Endowment for the Arts, and we had seen Cheney appeal to Congress to eliminate the National Endowment for the Humanities—when she was no longer directing it. Even a few intellectually respectable people came unhinged by mid-decade, as when biologist E.O. Wilson declared, in a 1994 talk, “multiculturalism equals relativism equals no supercollider equals communism.” The fact that Sokal launched

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his critique in the name of the left was a real shock—indeed, it was simply unintelligible to some academic leftists, who insisted that all their critics were *de facto* conservatives (and even tried to label Sokal a “left conservative” as a result). But the hoax also played an important role in the intraparty squabbles on the left, insofar as it seemed to give ammunition to leftists who believed that class oppression was the most important game in town, and that all this faddish talk of gender and race and sexuality was a distraction from the *real* struggle, which had to do with capital and labor. Finally, in academic-hothouse politics, the hoax had any number of unintended side-effects, bolstering traditionalists’ beliefs that disciplines like women’s studies and science studies were just so much balderdash.

So what did the essay itself actually say? As a parody of certain academic styles and tics, it really was a tour de force—though most of the people celebrating it and denouncing it, I found, weren’t reading the thing all the way through. For most journalists, for example, the first paragraph was quite damning enough:

There are many natural scientists, and especially physicists, who continue to reject the notion that the disciplines concerned with social and cultural criticism can have anything to contribute, except perhaps peripherally, to their research. Still less are they receptive to the idea that the very foundations of their worldview must be revised or rebuilt in the light of such criticism. Rather, they cling to the dogma imposed by the long post-Enlightenment hegemony over the Western intellectual outlook, which can be summarized briefly as follows: *that there exists an external world, whose properties are independent of any individual human being and indeed of humanity as a whole; that these properties are encoded in “eternal” physical laws; and that human beings can obtain reliable, albeit imperfect and tentative, knowledge of these laws by hewing to the “objective” procedures and epistemological strictures prescribed by the (so-called) scientific method.*

The passage I’ve italicized makes it look as if *Social Text* itself, by publishing the essay, is proclaiming its belief in the nonexistence of the external world. That’s basically how most people construed the hoax: as Sokal’s proof that theory-besotted humanists on the academic left deny the existence of the external world. It was Dr. Johnson’s stone all over again, except that this time the stone came flying through the window of a hip academic journal.

But imagine, dear reader, that this essay has been submitted to you, and that you have no reason to think that it is anything but an ordinary journal submission. How would you have read that first paragraph? The first two sentences are unobjectionable; one might even want to call them “true.” The third sentence carries the payload. And yet even that one is trickier than it looks—if you stop and ask yourself what it means that an actual, real-live, university-faculty

physicist is saying such things. On one hand, I have to admire Sokal's powers of mimicry: the fact that he speaks sweepingly and dismissively of "the dogma imposed by the long post-Enlightenment hegemony over the Western intellectual outlook" suggests that he was a quick study of the academic-theory left, and had learned that people who speak of the long post-Enlightenment hegemony over the Western intellectual outlook can usually expect to find a sympathetic readership at places like *Social Text*. On the other hand, why should anyone consider it strange that a physicist would be saying strange things about the physical world? Okay, so some physicist from NYU is challenging the idea that physics offers reliable knowledge of the external world that can be encoded in eternal laws. But don't physicists say bizarre, counterintuitive things about the external world all the time? Isn't it part of their job description, like talking about dark matter and dark energy and branes and eleven-dimensional strings and multiple universes and stuff that no reasonable person could possibly imagine on the basis of their daily lives?

As I argued in my 2006 book, *Rhetorical Occasions*, ever since the days of Bohr and Heisenberg, general readers have come to expect that physicists will not tell them that force equals mass times acceleration and that what goes up must come down; they expect that physicists will tell them that space-time is curved in the shape of a quantum donut whose jelly filling is composed of black holes that bend through Calabi-Yau space to produce "munchkins-branes." So it's curious—and telling—that Sokal's essay goes on to cite Bohr and Heisenberg. But Sokal's treatment of them is uneasy—and at one point, I think, Sokal gives away more of the game than he realizes. In "Transgressing the Boundaries," Sokal notes that Bohr himself drew social implications from the principle of complementarity. The principle holds that two mutually exclusive definitions are in fact necessary for an adequate explanation of a phenomenon: light, for instance, is both a particle and a wave. "Bohr's analysis of the complementarity principle also led him to a social outlook that was, for its time and place, notably progressive," Sokal writes in an endnote, quoting from a 1938 lecture by Bohr:

I may perhaps here remind you of the extent to which in certain societies the roles of men and women are reversed, not only regarding domestic and social duties but also regarding behavior and mentality. Even if many of us, in such a situation, might perhaps at first shrink from admitting the possibility that it is entirely a caprice of fate that the people concerned here have their specific culture and not ours, and we not theirs instead of our own, it is clear that even the slightest suspicion in this respect implies a betrayal of the national complacency inherent in any human culture resting in itself.

So why does Sokal single out this passage for mockery? Is it as patently ridiculous as the idea that there is no external world? In the follow-up book *Fashionable Nonsense*, co-written with Jean Bricmont and published in 1998, Sokal argued that his target was humanists' "fondness for the most subjectivist writings of Heisenberg and Bohr, interpreted in a radical way that goes far beyond their own views (which are in turn vigorously disputed by many physicists and philosophers of science)." Sokal ascribed that fondness to "postmodern philosophy," which "loves the multiplicity of viewpoints, the importance of the observer, holism, and indeterminism." Yes, very well. But in dismissing Bohr's attempt to apply the principle of complementarity to social life, Sokal ducks the question of whether a multiplicity of viewpoints might in fact be more adequate to the phenomenon at hand. What if postmodern philosophy turns out to have good reasons for its love of the multiplicity of viewpoints? Why wouldn't it be useful to understand cultural conflicts in terms of "complementarity"? What counts as a legitimate inference from the world of the physical sciences, and what is just a sloppy analogy or a metaphor?

### The Left and Science

Those were not, of course, the questions Sokal wanted to raise. He wasn't concerned with this relatively obscure academic circle; he was trying to call attention to what he saw as its pernicious effects on the larger world of progressive politics. In his *Lingua Franca* essay, "A Physicist Experiments with Cultural Studies," he wrote, "the results of my little experiment demonstrate, at the very least, that some fashionable sectors of the American academic Left have been getting intellectually lazy." At the very least, indeed: for Sokal claimed that his hoax proved much more. He had proven, he wrote, that in the realm of theory, "Incomprehensibility becomes a virtue; allusions, metaphors, and puns substitute for evidence and logic. My own article is, if anything, an extremely modest example of this well-established genre." And then he threw down the gauntlet. Sokal was not, as he explained, trying to embarrass *Social Text*; his broader aim was political, for he believed—and he was not alone—that postmodernism and theory were bad for the left, and that the academic wing of the left was aggressively undermining the foundations of progressive politics:

For most of the past two centuries, the Left has been identified with science and against obscurantism; we have believed that rational thought and the fearless analysis of objective reality (both natural and social) are incisive tools for combating the mystifications promoted by the powerful—not to mention being desirable human ends in their own right. The recent turn of many "progressive" or "leftist" academic humanists and social scientists toward one or another form

of epistemic relativism betrays this worthy heritage and undermines the already fragile prospects for progressive social critique.

Sokal's own left credentials were quite strong; as he noted, he spent part of the 1980s teaching math in Sandinist Nicaragua. But here was an argument worth having, particularly with regard to the phrase "objective reality (both natural and social)," which makes the terrible mistake of conflating two different things, and of suggesting that the analysis of social reality should proceed like the analysis of physical reality—as if the pursuit of social justice is a matter of discovering the physical properties of the universe. Of all the contemporaneous responses—and there were hundreds—only *Village Voice* writer and cultural critic Ellen Willis honed in on this notion, arguing that the idea that "the left" should see politics in Sokal's terms was thoroughly self-defeating, inasmuch as the belief that morality and justice are a matter of immutable natural law is far more congenial to conservatism than to a movement trying to imagine that another world is possible. More, Sokal's essay spoke to a strain of leftist thought, Willis wrote, in which "cultural analysis is a waste of time."

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But Willis was also right to argue that the essay saw the light of day because the editors of *Social Text* "belong to an intellectual community in which certain linguistic ties and brands of glib relativism are such a taken-for-granted part of the conversation that they are barely noticed, let alone criticized" (a remarkable admission, not least because Willis's longtime partner was Stanley Aronowitz). Like Willis, I didn't think Sokal's hoax showed that we should think in terms of "objective reality (both natural and social)." But I did think that it exposed something important about the hermetic intellectual milieu of that wing of academe, and its imperviousness to critique from without. As physicist David Albert put it one year later, "the article pointed to something alarming about standards of scholarship in certain quarters, and standards of argument, and highlighted how much could be gained by simply declaring allegiance to certain kinds of agendas. There was an enormous gap between what [Sokal] presented himself as doing and what was actually interesting about what he was doing."

In that gap, Sokal's admirers have projected almost anything they desire—and they have desired many things. In early 1997, Sokal came to the University

of Illinois, and quite graciously offered to share the stage with me so that we could have a debate about the relation of postmodern philosophy to politics. It was there that I first unveiled my counterargument, namely, that the world really is divvied up into “brute fact” and “social fact,” just as philosopher John Searle says it is, but the distinction *between* brute fact and social fact is itself a social fact, not a brute fact, which is why the history of science is so interesting. Moreover, there are many things—like Down syndrome, as my second son has taught me—that reside squarely at the intersection between brute fact and social fact, such that new social facts (like policies of inclusion and early intervention) can help determine the brute facts of people’s lives (like their health and well-being). The debate drew a crowd of 1,000; the only other time in my life I have appeared in front of so many people, my college-era band was opening for the Ramones. But the feedback afterwards was not nearly so gratifying. “We didn’t want to see a debate about brute fact and social fact,” said one of my colleagues. “We just wanted to see blood on the floor.” I did not ask whose.

### **Enter the Right**

But what of Sokal’s chief post-hoax claim that the academic left’s critiques of science were potentially damaging to the left? That one, alas, has held up very well, for it turns out that the critique of scientific “objectivity” and the insistence on the inevitable “partiality” of knowledge can serve the purposes of climate-change deniers and young-Earth creationists quite nicely. That’s not because there was something fundamentally rotten at the core of philosophical anti-foundationalism (whose leading American exponent, Richard Rorty, remained a progressive Democrat all his life), but it might very well have had something to do with the cloistered nature of the academic left. It was as if we had tacitly assumed, all along, that we were speaking only to one another, so that whenever we championed Jean-François Lyotard’s defense of the “heterogeneity of language games” and spat on Jürgen Habermas’s ideal of a conversation oriented toward “consensus,” we assumed a strong consensus among us that anyone on the side of heterogeneity was on the side of the angels.

But now the climate-change deniers and the young-Earth creationists are coming after the natural scientists, just as I predicted—and they’re using some of the very arguments developed by an academic left that thought it was speaking only to people of like mind. Some standard left arguments, combined with the left-populist distrust of “experts” and “professionals” and assorted high-and-mighty muckety-mucks who think they’re the boss of us, were fashioned by the right into a powerful device for delegitimizing scientific research. For example, when Andrew Ross asked in *Strange Weather*, “How can metaphysical life theories and

explanations taken seriously by millions be ignored or excluded by a small group of powerful people called ‘scientists’?,” everyone was supposed to understand that he was referring to alternative medicine, and that his critique of “scientists” was meant to bring power to the people. The countercultural account of “metaphysical life theories” that gives people a sense of dignity in the face of scientific authority sounds good—until one substitutes “astrology” or “homeopathy” or “creationism” (all of which are certainly taken seriously by millions) in its place.

The right’s attacks on climate science, mobilizing a public distrust of scientific expertise, eventually led science-studies theorist Bruno Latour to write in *Critical Inquiry*:

[E]ntire Ph.D. programs are still running to make sure that good American kids are learning the hard way that facts are made up, that there is no such thing as natural, unmediated, unbiased access to truth...while dangerous extremists are using the very same argument of social construction to destroy hard-won evidence that could save our lives. Was I wrong to participate in the invention of this field known as science studies? Is it enough to say that we did not really mean what we meant? Why does it burn my tongue to say that global warming is a fact whether you like it or not? Why can’t I simply say that the argument is closed for good?

Why, indeed? Why not say, definitively, that anthropogenic climate change is real, that vaccines do not cause autism, that the Earth revolves around the Sun, and that Adam and Eve did not ride dinosaurs to church?

At the close of his “Afterword” to “Transgressing the Boundaries,” Sokal wrote:

No wonder most Americans can’t distinguish between science and pseudoscience: their science teachers have never given them any rational grounds for doing so. (Ask an average undergraduate: Is matter composed of atoms? Yes. Why do you think so? The reader can fill in the response.) Is it then any surprise that 36 percent of Americans believe in telepathy, and that 47 percent believe in the creation account of Genesis?

It can’t be denied that some science-studies scholars have deliberately tried to blur the distinction between science and pseudoscience. As I noted in *Rhetorical Occasions* and on my personal blog, British philosopher of science Steve Fuller traveled to Dover, Pennsylvania, in 2005 to testify on behalf of the local school board’s fundamentalist conviction that Intelligent Design is a legitimate science. “The main problem intelligent design theory suffers from at the moment,” Fuller argued, “is a paucity of developers.” Somehow, Fuller managed to miss the point—that there is no way to develop a research program in ID. What is one to do, examine fossils for evidence of God’s fingerprints?

So these days, when I talk to my scientist friends, I offer them a deal. I say: I'll admit that you were right about the potential for science studies to go horribly wrong and give fuel to deeply ignorant and/or reactionary people. And in return, you'll admit that I was right about the culture wars, and right that the natural sciences would not be held harmless from the right-wing noise machine. And if you'll go further, and acknowledge that some circumspect, well-informed critiques of actually existing science have merit (such as the criticism that the postwar medicalization of pregnancy and childbirth had some ill effects), I'll go further too, and acknowledge that many humanists' critiques of science and reason are neither circumspect nor well-informed. Then perhaps we can get down to the business of how to develop safe, sustainable energy and other social practices that will keep the planet habitable.

Fifteen years ago, it seemed to me that the Sokal Hoax was making that kind of deal impossible, deepening the "two cultures" divide and further estranging humanists from scientists. Now, I think it may have helped set the terms for an eventual rapprochement, leading both humanists and scientists to realize that the shared enemies of their enterprises are the religious fundamentalists who reject all knowledge that challenges their faith and the free-market fundamentalists whose policies will surely scorch the earth. On my side, perhaps humanists are beginning to realize that there is a project even more vital than that of the relentless critique of everything existing, a project to which they can contribute as much as any scientist—the project of making the world a more humane and livable place. Is it still possible? I don't know, and I'm not sanguine. Some scientific questions now seem to be a matter of tribal identity: A vast majority of elected Republicans have expressed doubts about the science behind anthropogenic climate change, and as someone once remarked, it is very difficult to get a man to understand something when his tribal identity depends on his not understanding it. But there are few tasks so urgent. About that, even Heisenberg himself would be certain. ▀