

Physics vs. Social Text: Anatomy of a Hoax

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Scientists defend “impersonal, objective truth” against the postmodern claim that there is no truth, only interpretations. The hoax on cultural studies orchestrated by a physicist, Alan Sokal, has highlighted this perspective. Sokal’s disclosure of the hoax and subsequent polemics has ripped through the complacency of academic disciplines, exposing the fragility of academic integrity and raising questions concerning the function of peer review. Sokal submitted a bogus article for the May 1996 issue of *Social Text* devoted to “Science Wars.”¹ On Sokal’s own account, the *Social Text* essay feigned an earnest reflection on the political and philosophical implications of recent physics research for cultural criticism.²

As with all hoaxes, Sokal’s was neither expected nor, like its Piltown precedent, immediately recognized. If Sokal had acted solely out of malice, like the curator of the British Museum who took the details of his secret to his grave leaving a trunk filled with evidence, he would have waited to see if his hoax would shock or surprise. Instead, he assured himself a modicum of attention by immediately orchestrating a confession. A number of attacks

1. Alan Sokal, “Transgressing the Boundaries: Toward a Transformative Hermeneutics of Quantum Gravity,” in *Social Text* 46/47, Vol. 14, Nos. 1 and 2 (Spring/Summer 1996), pp. 217-252. Over half of the essay consists of footnotes and references (pp. 231-52).

2. Alan Sokal, “A Physicist Experiments with Cultural Studies,” in *Lingua Franca*, Vol. 6, No. 4 (May/June 1996), pp. 62-64. The previous issue of this journal featured an extensive article recounting the “experiments” of literary scholars with “the new sciences of chaos and complexity.” Steven Johnson’s title (and accompanying gloss) ran as follows: “Strange Attraction: The new sciences of chaos and complexity are turning up everywhere even in English departments. And some critics are overjoyed. But is literature too complex for the complexity theorists?” in *Lingua Franca*, Vol. 6, No. 3 (March/April 1996), pp. 42-50.

have followed. Most of them, such as Steven Weinberg's, are written from the viewpoint of the natural scientist, i.e., against the duped social scientists and, most of all, against the rhetorical excesses of postmodern theory. Thus Weinberg found the matter largely amusing and, along with other contributors, he ridiculed the "academic babble" typical of the advocates of postmodernism.³ According to Weinberg, as a physicist Sokal is incapable of writing "unclearly" — even when he tries to do so. Weinberg thus focussed his attack on Jacques Derrida. So did Peter Berkowitz, who identified "academic babble" as the key characteristic of postmodern critique and argued that the ideological conceit of postmodern critique is self-defeating.⁴

For Weinberg, physics writing is paradigmatic of clear and distinct academic prose. With his unblinking bad-faith plea for the clarity of physics textbooks, Weinberg addresses the issue of "complex" prose style as inherently confused: "Derrida and other postmodernists *do not seem* to be saying anything that requires a technical language, and they *do not seem* to be trying very hard to be clear."⁵ Weinberg does not actually quote physics prose, as he quotes Derrida. He cannot do so because, as he confesses, physics *requires* technical terminology while philosophy does not "seem" to. The part of the dupe, i.e., the part of the *Social Text* editors, has been less well articulated. Initially, their defenses took an overly legalistic tack against the very idea of Sokal's hoax as an instance of "science fraud." Thus a number of defenses follow Stanley Fish's unreflective and less than tactical argument.⁶ On the other hand, Bruce V. Lewenstein indicated the polemic's possible public policy damage, while attempting to review the debate concerning science in society.⁷ Dorothy Nelkin's subsequent essay⁸ was more

3. Steven Weinberg, "Sokal's Hoax," in *The New York Review of Books* (August 8, 1996), p. 11-15.

4. In a thinly veiled reference to Nietzsche, Berkowitz wrote that "the incredulous postmodernist knows that what was once believed to be true is absurd." See Peter Berkowitz, "Postmodernism Exposed: Science Fiction," in *The New Republic* (July 1, 1996), p. 16.

5. Weinberg, *op. cit.*, p. 11.

6. See *Lingua Franca*, Vol. 6, No. 5 (July/August 1996), pp. 55-64 for a round of letters from assorted academics, including a four-page reply by Bruce Robbins and Andrew Ross, editors of the original *Social Text* issue. See also Liz McMillen's review of the hoax and its aftermath in *The Chronicle of Higher Education* (June 28, 1996), p. A-13.

7. Bruce V. Lewenstein, "Science and Society: The Continuing Value of Reasoned Debate," in *The Chronicle of Higher Education* (June 21, 1996), p. B-1-B-2.

8. Dorothy Nelkin, "What Are the Science Wars Really About?" in *The Chronicle of Higher Education* (July 26, 1996), p. A52. See also Charles E. Rosenberg's "The Silicone Papers," a review of Marcia Angell's *Science on Trial*, in *The New York Times Book Review* (July 14, 1996), p. 9-10). Where Angell blames society's enthusiasm for litigation as the main culprit in the breast implant controversy, Rosenberg points both to the "anti-science" movement and to the "problem of junk science," echoing many of Nelkin's points.

to the point and cut to the core of the debate — to the competitive clash between disciplines for diminishing federal funds, i.e., the desperation of scientists seeking scapegoats for the now chilly economic waters.

Strangely, postmodern defenses have assumed the accuracy of all charges against them, taking credit for the perceived discrediting of science in a way reminiscent of the macabre scrabble for publicity among extremist groups in the wake of a terrorist attack. Most critical reviews, however, concur with Weinberg and Sokal: eliminate obfuscation and all will be clear. Thus even Ellen Willis was able to take a highly moral and didactic tone condemning the fussiness of “pomo lingo” and the “hermetic verbiage . . . covering up muddled thinking.”⁹ If only things were said simply, there would be truth. But is truth simple? The critique of postmodern “academic babble” takes as its point of departure an adage typical of analytic philosophers — the overwhelming majority of English-speaking academic philosophers — that whatever may not be said clearly ought not be said at all. Within such a context, one may refute an opponent by charging that what is being said cannot be understood.¹⁰ Thus Weinberg, who buys into this Cartesian simple-mindedness, claims never to confuse “obscurity with profundity.” But what can be stated clearly is never “profound,” if only as a consequence of depth itself. The rigid belief that only clear prose can be true has more to do with current sound-bite tailored culture than with truth itself.

Here, recalling Adorno’s attack on the verbiage of a past generation in the *Jargon of Authenticity*, when Adorno himself was a paragon of impossibly esoteric style, the question of the virtues of the clear and distinct, and the related issue of the intrinsic muddle-headedness of what appears muddle-headed from the viewpoint of someone outside a given tradition, is at best unclear.¹¹ But if the demand for clarity is the saving virtue of “reasoned debate,” then, as Martin Heidegger put it, reason

9. Ellen Willis, “My Sokaed Life: Or, Revenge of the Nerds,” in *The Village Voice* (June 25, 1996), p. 20-21.

10. George Levine, seemingly unaware of this tradition, mistakes such a standard factional academic strategy for the voice of common sense. See his contribution to “Sokal’s Hoax: An Exchange,” in *The New York Review of Books* (Oct. 3, 1996), p. 54.

11. Neither Weinberg nor Berkowitz name thinkers such as Heidegger or Nietzsche. Instead, Derrida and certain critical readings of literature are categorized as “leftist,” “postmodernist” and ultimately “irrationalist” because perceived as anti-science. In the end, such cavilling attacks do not seem inspired by unusual or perplexing terms such as “hermeneutics” (which physicists pretend not to understand, eschewing dictionaries and other reference books), or “deconstructionism” or the very contradictory idea of postmodernity.

might well be “the most stiff-necked adversary of thought.”¹² Beyond the scurrillity of presuming that perspectives different from one’s own should express anything other than “babble” when read without an appropriate interpretive perspective, the charge of a putatively anti-science, irrationalist movement antedates the Sokal affair.¹³ A recent book bluntly argues that science as the bulwark of human progress must be protected from policy makers worried about the escalating costs of scientific research.¹⁴ Allegedly, a grand and noble enterprises such as science is and has been under attack from feminists, deconstructionists, postmodern critics. etc.¹⁵ The key culprit is the mind-fuzzing influence of “obscurantism.” Thus here too, as in the Sokal debate, responsibility for an increasingly negative public perception of science and the recent decline in federal funding for scientific research (i.e., the “war” against science) is traced to the subversive effects of irrationalism in the academy. Nip the “bad” writing of deconstructionists and postmodernists in the bud and funding levels for supercolliders will be up in no time. No more social constructivist talk: bring reality back. Such is the astonishingly passionate message for logicians, mathematicians, physicists, science writers and especially philosophers of science — people unaccustomed to such desperate pleas.

It is difficult to evaluate the claim that only irrational forces *could* be behind the decline in federal support, where the *arcana* of the national economy have managed to elude solution from conservative, liberal or any other political perspective. As John Ziman notes, with the end of the cold war the institution of science has changed, while the disinterested ethos of the university researcher has not kept pace: science must give up the rhetoric of disinterest as a concession to the increasing limits on science funding and the social forces that value applicability over pure research. Thus Paul K. Feyerabend could enjoin “*citizens’ initiatives*

12. Martin Heidegger, “The Word of Nietzsche’s Word: ‘God is Dead,’” (1943), in *The Question Concerning Technology and Other Essays*, tr. by William Lowitt (New York: Harper & Row, 1977), p. 112.

13. This is well documented in Paul Gross and Norman Levitt, *Higher Superstition: The Academic Left and Its Quarrels with Science* (Baltimore: Johns Hopkins University Press, 1994). The same tradition was exemplified at the 1995 June meeting of the New York Academy of Science devoted to “The Flight From Reason.”

14. Norman Hackerman and Kenneth Ashworth, *Conversations on the Use of Science and Technology* (Denton, TX: North Texas University Press, 1996).

15. The endangered sciences are primarily physics, but also chemistry and, to a lesser degree, biology. In addition to its enemies on the Left, science also has to face the religious fundamentalists’ opposition to evolutionary theory on the Right.

instead of epistemology."¹⁶ While it is unclear whether the new cost-cutting is a result of "citizens initiatives," for Ziman it is now a fact of funding life that such a constraint on scientific research has taken hold wherever "governments are trying to get better value for their money."¹⁷

This is both economics and politics. As Feyerabend observed over a decade ago: "the sciences of today are business enterprises run on business principles. Research in large institutes is not guided by Truth and Reason but by the most rewarding fashion, and the great minds of today increasingly turn to where the money is — which means military matters."¹⁸ After the demise of the cold war, the *Social Text* editors note the remaining "gulf of power between experts and lay voices and the currently shifting relationship between science and the corporate-military state."¹⁹ Thus, the current science wars may represent displacement tactics in the wake of the cold war rather than the ascendancy of the "democratic relativism" Feyerabend describes as the heritage of Periclean Athens.²⁰ Underlining divisive over communitarian impulses, Levine charges Gross and Levitt (and Sokal) with overlooking the obvious: "the real threat to the supercollider or science funding isn't coming from Andrew Ross or Stanley Aronowitz. The threat comes from a culture profoundly anti-intellectual and now overwhelmingly pre-occupied with taxes and money."²¹

What is the difference between such a "profoundly anti-intellectual" culture and an anti-science culture? If no contributor to the recent science wars debate has come forward in defense of "muddled thinking" or "bad" writing, one is even less likely to find a real-life example of the reputed anti-science movement in today's honest-to-god, robust-as-ever cyber-techno cargo culture. As a cultural phenomenon, the so-called anti-science movement may be regarded as an anxious fantasy, conjured from the

16. Paul K. Feyerabend, *Three Dialogues on Knowledge* (Basil Blackwell: Oxford and Cambridge, 1991), p. 120.

17. John Ziman, "Is Science Losing Its Objectivity," in *Nature*, Vol. 382 (August 29, 1996), p. 752.

18. Paul K. Feyerabend, *Farewell to Reason* (Verso: London, 1987), p. 102.

19. Bruce Robbins and Andrew Ross, contribution to "Mystery Science Theater," in *Lingua Franca*, Vol. 6, No. 5 (July/August, 1996), p. 57.

20. Feyerabend, *Farewell to Reason*, *op. cit.*, pp. 59-62.

21. Levine, *op. cit.*, p. 64. If Levine understates his case here, he sharpens it a bit in his reply to Weinberg, "The new counter-aggression of scientists hostile to 'postmodernism' is surely the consequence of an economic pinch hurting them as well as humanists and social scientists." See Levine, "Sokal's Hoax: An Exchange," in *The New York Review of Books* (October 3, 1996), p. 54. It is difficult to analyze the full consequences of recent cuts in military spending for science research

fears of scientists and their social advocates. Science is so unopposed that its public lionization includes even the religious Right, which does not reject the value of science but lobbies for what it calls creation “science.” It simply wishes to appropriate its aura. Nor do public interest groups agitate for *less research* to solve social problems such as HIV or cancer or broken family structure. Social opinion calls for more and better, i.e., *more scientific* and *more sophisticated* research focussed on these and other problems. As indicated by its consumption of books, video or cable television programs, the public goes so far as to turn to scientists for spiritual values, regarding Steven Hawking as a moral as well as an intellectual hero, while Albert Einstein remains the most celebrated *genius* of all time, head and shoulders above any poet, artist, or statesman.

If the perception of an anti-science anxiety is groundless, this is not to suggest that this anxiety is unreal. In inventing the kind of thinking that eventually made science possible, Plato indicted unregulated mythical beliefs, poetry and particular musical modes as the greatest dangers to society. In the same tradition, modern science pronounced the church the embodiment of irrationality and, borrowing the notion of martyrdom from it, wrote its own history as one of persecution. The rhetoric of persecution and the conviction of the threat posed by religious hostility persists even where scientific sensibility is the only one left.

This does not mean there has been *no* change in the public perception of science. The postwar enthusiasm for the latest scientific developments has diminished, yet this should not be interpreted as a sign of an increasing *distrust* of science but merely as *disappointment* and *impatience* with the “slow” pace of scientific progress. From the outset, the public value of science was never the production of pure knowledge. The real cultural value of science is inseparable from its technological embodiment. Because of this practical social promise, science enjoyed generous public and private support. Seemingly unlimited in scope, during this century the culture of scientific research has grown exponentially, attracting a large body of practitioners, institutions and support industries. Nor is it an accident that a key part of the preparation for a career in science is increasingly devoted to acquiring mastery of the skills necessary to secure support for research. The rhetorical ideal of pure science has long been compromised in practice by politically fundable areas of profitable research.

Nurtured in the mythical crucible of unlimited scientific promise, like pasteurization, it was only a matter of time before the benefits of scientific progress could be expected in practical solutions to the “war” on cancer and

poverty, the “battle” against pathogens, perhaps even in potions effective in the “struggle” against old age and death itself. Hearing the optimistic claims of the “atomic age” as the rhetoric of the high modernism of test-tube science, the same public subscribed both to the promise and the ideal. Of course, battles and struggles against time-honored foes were well chosen. Such metaphors are historically recurrent in a variety of intellectual schemes, but — and this is the key to understanding the growing public disappointment with science — the promise of ever accelerating scientific “breakthroughs” could not be kept. This century has not been patient when it came to scientific and technological developments. According to science’s promises, what stood in the way of the development of every conceivable scientific good was only access to “sufficient” time and resources. In the wake of the atomic age, fully ensconced in the web-dreams of the Internet, it is hardly unreasonable to expect, as the public has for decades, that the “scientific future” should have arrived *already*.

The fact that this has not happened paves the way to what, for lack of better word, has been called “postmodernism.” The failure of modernity to develop into a braver new future, free of disease, old age and every conceivable social ill, is the very disappointment modernity is loathe to accept. A denial of its own disappointment yields neither nostalgia nor reverse modernism. *Postponed* under the guise of an ironic displacement, modernism has found a way to continue its original optimistic project. It is because the changed public perception is the result of such a disappointment that the public remains ever eager to see science fulfill its promise.

Chaos Theory and Metaphoricality

The modern *and* postmodern conviction that scientific rationality represents the supreme intellectual perspective is intrinsically pernicious. To return to the Sokal hoax, it was not the *Social Text* editors’ anti-science sentiment but, rather, a pro-science prejudice which led them to invite a physicist to submit an overtly philosophical commentary. It was this same pro-science or, better, pro-physics prejudice which persisted after the fact in the fantasy that all the scandalous repercussions could have been avoided had other scientists only been invited to review Sokal’s essay. Allegedly, the remedy should have been more consultation and peer review: recourse to the ultimate authority of natural or real scientists.

The problem here has to do with translation between different conceptual schemes. In addition to a flat-footed theoretical grasp of linguistic functions, what inspired Sokal to rig his hoax was his inability — a result

of the narrow technical specialization of university-trained scientists — to understand the significance of social science’s investigation of the social context of science. As some humanists are said to be weak in math and science, some physicists are deficient in the complexities of rhetoric. On the postmodern side, and this is more damning, the cultural critics’ enthusiasm for the literary value of information science, chaos theory, indeterminacy, etc. leads them to be seduced by the associative possibilities of metaphors employed by theorists seeking to express scientific and mathematical relations. Against Weinberg’s claim that humanists had better wait until all theories are certified as “final” by science before drawing any cultural consequences, Levine argues that “it is difficult *not* to see Bohr’s argument as loaded with telling cultural implications.”²² But this is exactly the problem for Weinberg, who exposes the solecism of celebrating “non-linearity” as if it were simply non-narrativity. In physics, pluralism, fluidity, unified field theory, chaos and complexity theory — even indeterminacy — are plain theoretical constructs, which does not mean they are not muddled when quoted out of context. Against Weinberg, even within physics such terms are pre-muddled in the way any flattened usage of a word which refuses the wider resonance of a metaphor is inevitably muddled. In physics this works because the metaphor is chosen by simple associative caprice or subjective metonymy. A sense of a word’s history or the finesse of the poet has nothing to do with the selection. Thus, a quark’s charm has nothing to do with Brillat-Savarin, Orpheus or Lucretius. This only means that physics is not literary studies. Blissfully untroubled by literary, cultural and mythical associations, this is the jargon of what one makes one’s own: proprietary stipulation. Seduced nonetheless by the literary resonances of these metaphors, critics of science can easily find meanings irrelevant to the use of the same metaphor within science. Yet, and here one must agree with the physicists, they are not there. In a word: chaos theory as such neither assumes nor entails reference to Hesiod’s marriage of chaos and broad-breasted earth nor does it invite parallels with Joycean chassis.

This is being overly generous to postmodern theorists. Much more plays in this projection of the wild and woolly, playful and free science. Behind modernism’s and postmodernism’s persistent optimism in the possibilities of science “*über Alles*” lies wishful thinking, and behind such magical thought, the lurking seductions of indolence. As postmodernists such as

22. Levine, *op. cit.*

Jean-François Lyotard and others have pointed out, the paradoxical “openness” to radical questions within traditionally staid and closed scientific disciplines, such as physics, depends on an optimism betraying the similarity of the pro-science convictions of post-modernism and modernism.

Both the misunderstanding of scientific terminology and the paradoxical dependency on science’s legitimating value within postmodern culture are a result of the continuing and unchallenged position of science as arbiter of truth and value — a status akin to that of religion in pre-modern societies. The binary thinking that asserts the authority of one world view (science) over another (everything else) is itself quasi-religious — especially in the case of Weinberg, who reduces all science to physics so that, in the words of two Yale scholars, the particle physicist “stands ready in his role as pre-Kantian shaman to declare tabu all that which falls outside his narrow definitions.”²³ Against this “immaculate conception of science” one might propose Nietzschean perspectivism or Feyerabendian relativism. Because postmodern critique has little to do with either perspectivism or democratic relativism, it remains a form of scientism. Thus, the ultimate, legitimating status of high church science goes unchallenged by postmodernist thought — as was handily corroborated by the *Social Text* editors.²⁴

The task of challenging the so-called “new” science (replete with chaos theory, indeterminism and what not) as well as the good “old” science (garden variety explanation, prediction and control) must be left to critical philosophy because these questions are *philosophical*, not scientific. Philosophical questions are not known entities. To understand the essence of reason or truth one has to pit reason against reason and question the ideal of truth. Such reflexivity would characterize a thoughtful philosophy of science. Even if it does not exist yet, such a philosophy of science must be prepared to raise the question of the values of rationality and truth. When it does, not only such philosophers as Wittgenstein, Heidegger and Nietzsche but also Husserl, Adorno, and Feyerabend, which now are not part of traditional philosophy of science, would enter the picture. One will have to ask, with Nietzsche, *why* science and reason are valuable, what exactly is it that requires truth?²⁵ Yet there seems little need to invoke the names of such

23. Michael Holquist and Robert Shulman, letter “Sokal’s Hoax: An Exchange,” in *New York Review of Books* (October 3, 1996), p. 54.

24. For a reading of the subversive power of science as an agency of patriarchy and violence and thus as inimical to leftist ideals, see Geraldine Finn, *Why Althusser Killed his Wife* (Atlantic Highlands, NJ: Humanities Press, 1996).

25. Friedrich Nietzsche, “What Really is it in un that wants ‘the truth?’” tr. by R. J. Hollingdale, *Beyond Good and Evil* (Middlesex: Harkmondsworth, 1972), p. 15.

philosophers in this context. Allegedly, today's epistemologists and philosophers of science, even where they continue to reject the contributions of both Kuhn and Feyerabend and never mention Nietzsche, have "already" come to better and more sober insights in their own waters. The problems of science (as well as of Enlightenment rationality) are patent. From a modern perspective, where there are plain problems there are equally plain solutions, proffered and arbitrated from within the tradition itself.²⁶

This critical claim asserting the givenness of a "new" science, or of a "new philosophy of science," reflects the changes in philosophy as a whole. In these postmodern, post-cold war, post-pluralist times, analytic philosophy is obviously no longer merely analytic philosophy and it cannot be distinguished from continental philosophy. Philosophy is post-philosophy, modified, modest and, above all, *new and improved*. A post-modern vision has taken over. Why bother to call for revolution *after* the revolution has succeeded? Recent accounts of the philosophy of science, both within and without, regard science itself — especially physics — as its own self-determined philosophy, thus raising questions concerning the philosophy of science and science itself, repeating the postmodern adulation of a strange, new science. Reprising Galileo, this is the spirit of the "new" science. This means only that, rather than requiring alternative approaches to science and scientific culture, science has become an alternative to itself. But without anything so awkward as revolution and the necessary transition period that moves from one paradigm to a newer one through the evolutionary dying off of the most creative adherents of the old paradigm, critique is declared unnecessary. Allegedly, current philosophy of science incorporates all this and more. Thus critical review is co-opted in advance, rendered sterile, moot and obscurantist. The solution to science is still more science. All that is needed is internal and expert peer-review. Leave science to the scientists. But never, it goes without saying, threaten funding for science.

This very routine operation of capitalist-cum-marketing ideology is the way co-option works. If such a conversion of opposition is subtle, it remains strikingly effective. Speaking of the dialectical nuances of the biological-historical-social oppression of women, Simone de Beauvoir invoked

26. As the hallmark of progressive, modern scientific thinking, resolutions are always available. In the context of Nietzsche, in the struggle against the reign of morals and the ascetic ideal, after two long essays in search of a critical ally or advocate to make common cause with him, he observes that he ought not have to look far for a champion "they tell me it is not lacking." Characteristically, the purported hero is science itself. See Friedrich Nietzsche, *On the Genealogy of Morals*, tr. by Walter Kaufmann and R.J. Hollingdale (New York: Random House, 1968) III:23, p. 146.

the very *complicity* of the oppressed to describe the co-optive process.²⁷ Thus co-option and complicity as the dialectic engine of *ressentiment* effects the preservation of the same, the old, in the guise of the new: the weak represented as strong, “new” but no longer oppressed femininity. The process of co-option, complicity, *ressentiment* is not fundamentally subversive. Ideals are not converted against themselves, they are simply, in Orwellspeak, declared fulfilled. This is a routine ideological maneuver for preserving the *status quo*. To recognize a challenge, conceding its claim as viable, reasonable, etc., defeats the challenge. This means that nothing needs to be changed and challenges only work in an agonistic culture.

Historically, conflict has had a similar fate in traditional philosophy and in this the tradition has ways of co-opting the eristic not ironically but ingenuously. The present predicament is not a post-revolutionary one, but that of a co-opted revolution. Thus, Anglo-American philosophy remains as dominated by the same analytic perspectives as ever, but now offered (in analytic style) by analytically trained and analytically read philosophers hitting all the analytic high notes in a popular motet riffed with the low bass of continental names (Foucault, Habermas, even Heidegger, et al.). In this context, it is not necessary to go all the way to a continental viewpoint, where, as Richard Rorty tirelessly repeats, John Dewey’s American pragmatism embodies what is best in Derrida, Foucault, Heidegger and Nietzsche — all of French and German thought — all rolled into one really readable philosopher.

In the philosophy of science, this same sophisticated appreciation of the so-called continental turn translates into the contention that there is nothing ultimately “alternative” about continental approaches. Mainline philosophy of science has, in its own way, managed to overcome its own limitations, inventing in an elegant instance of convergent evolution the wheel not again but independently: self-sufficiently. This self-sufficiency means it has no need to engage those who have spent years or even a lifetime in formerly alternative traditions. All say the same thing. To borrow Rorty’s thunder again: Heidegger? Dewey? What is the difference? Thus, as Putnam has suggested, Wittgenstein, Austin and Husserl all ultimately voice the same conclusion.²⁸ Ergo, there is no need for anything like the representation of

27. See Simone de Beauvoir, *The Second Sex*, tr. by H. M. Parshley (New York: Random House, 1985), p. 720.

28. Hilary Putnam, “Is the Causal Structure of the Physical Itself Something Physical,” in Peter French, T. Uehling, Jr., H. Wettstein, eds., *Midwest Studies in Philosophy*, Vol. IX (1984) “Causation and Causal Theories,” p. 10.

an alternative approach to the philosophy of science, especially one which would require a rethinking of its role — a rethinking of philosophy, science, technology, etc. *A new philosophy of science is already underway.*

For Feyerabend, a philosophy of science “that devises standards and structural elements of all scientific activities and authorizes them by reference to some rationality-theory may impress outsiders — but it is much too crude an instrument for the people on the spot, that is for scientists facing some concrete research problem.”²⁹ There is no “new” philosophy of science because the nature of science and the nature of reason (against Weinberg) are not yet recognized. The fantasy of objectivity keeps thinkers from recognizing that “scientific theories are human creations and that science is one tradition among many.”³⁰

The Claims of Scientific Rationality

The banal answer to the question concerning why *Social Text* published Sokal has to do with the prestige assured by the hierarchy which ranks natural scientists above social scientists and other academics.³¹ Thus, if the *Social Text* issue on “Science Wars” can be seen as a response to the challenge of the anti-hermeneuticist convictions of science apologists, Sokal is a kind of academic mole. An academic mole is what is needed in such an imaginary “cold war” between science and “deconstructionists” or “post-modernists” or “the” Left, because there is no direct alternative to the function of a mole. Any kind of “reasoned” debate would have to be conducted on the ground of science itself, presuming the values of science. It is *irrational* to question the value of rationality.

There is no reasoned flight from reason; there is no logical critique of the conditions or coherence of logic. There is and can be no scientific critique of science. It is for this self-referential reason (which corresponds to the force of the claim of Enlightenment reason itself) that the critical undertakings conceived by the various disciplinary ventures that have raised questions about and even against science can only be seen as raising anti-science or irrationalist issues. Because of this reflexive circle, the task of a critical reflection on science, rationality and logic is not the first or proper task of “cultural criticism.” Nor, to the extent that sociology and

29. Feyerabend, *Farewell to Reason*, *op. cit.*, p. 281.

30. *Ibid.*, p. 122.

31. Sokal’s essay was accepted for publication because what he claimed to say, *as a natural scientist*, about the relation between social science research and recent “revelations” of natural science research fit well with *Social Text*’s editorial convictions on the subject.

anthropology are themselves part and parcel of the scientific enterprise, can such a task be undertaken on the basis of sociological or anthropological studies of science. No one can jump over his own shadow. A reflective inquiry into the nature of science requires the resources not of cultural critique nor of social science but of extra-analytic philosophy. It is only with the resources of philosophy that such questions can be posed.

This does not mean that the charge of irrationality will not be made. It is no accident that philosophers who have made it their business to question truth have been refused the title of rational philosophy and, branded as irrationalist, relegated to the romantic spheres of poetry and mysticism. Traditional and analytic philosophy has long defined itself as the discipline of the rational or, more explicitly, the science of science. Yet, prior to this definition, the philosopher, the lover of truth is and remains a seeker — which is also to say a radical questioner, asking after origins.

Feyerabend was just such a radical combination of many things: a physicist by training, he was also a thinker, a skeptic and cultural critic of both philosophy of science and of science itself. More than modestly, although contentiously, Feyerabend called for a return not to the wholeness of some impossibly bygone era or distant cultural world but rather to the very modern guild origins of Western economic culture and withal science. Invoking the model of “fifteenth century Renaissance artists,” Feyerabend could propose that the only thing needed “to restore the efficiency, the modesty and, above all, the humanity of the practitioners of a craft is the admission that scientists are citizens *even inside the domain of their expertise* and should therefore be prepared to accept the guidance and supervision of their fellow citizens.”³² Denying its craft and citizen status, science’s claim to self-legislation is a tacit bid for social dominion. The modesty of craft refused by the self-assertion of science over and against so-called “policy makers” is perplexing because, of all academic endeavors, science remains the one intellectual activity beyond the arts which so manifestly reaps its best advances in the practical, banal and what could be called technical or even engineering tradition. As Feyerabend knew all too well, contemporary science is practiced as a craft, modelled in the traditional sense, including apprenticeship, teamwork, and the recognition of mastery. He reserved a claim for the importance of “*freedom from*” the sciences while remaining throughout his life a great advocate (this was the point of his program against method) of what he called

32. Feyerabend, *Farewell to Reason*, *op. cit.*, pp. 141-42.

“*freedom for*” the sciences. Such a complex view limits the desire of science to regulate its own progress in the wake of the Sokal debacle. Against the current science campaign to win untrammelled access to the bulk of public support for its research programs, Feyerabend never ceased to emphasize that “the conceited view that some human beings, having the divine gift of creativity, can rebuild Creation to fit their fantasies has not only led to tremendous social, ecological, and personal problems, it has very doubtful credentials, scientifically speaking.”³³

This is not the postmodern ideal of pluralism. Instead, highlighting the technical function of the scientific focus, what is key for Feyerabend is that it betrays its very interest, the traditional working of modern science: “if we pay attention to some facts — the general features selected by science — we can disregard others.”³⁴ In another formulation, the world itself, which he describes in concrete terms as the regionalism of apparent reality, remains unmasterable with the resources of science as well as of philosophy. Instead of the success of grand theory, there are “modest successes in narrow domains and grandiloquent promises dressed up as results already achieved.”³⁵ Here Feyerabend describes the exact sphere of modern, technical scientific success. To say that science does not catch the whole of things only leaves room for history, culture, society and especially for science. Anything else is not only hubris, as heclams, but dubious in the most ordinary scientific sense.

Against Postmodern Sophistication in Science and Technology

Why do postmodernists think science is on their side? Because, like everyone else in Western, i.e., global society, they are persuaded that science is liberating. Science is conceived as free play — the sphere where anything goes — no matter the orthodoxies of Church or high born society. This is the ruse of a coopted conventionality. It should not be surprising to find that science has taken the place of its former opponents. This

33. *Ibid.*

34. *Ibid.* p. 122. Thus there is a tendency to continually ignore the complexity of the real world in order to focus on the world constituted from a given scientific perspective. If Nietzsche pointed out that there is no choice in this (this is Nietzsche’s perspectivism), this was not lost on Feyerabend, who is careful to underscore the annihilatingly exclusive nature of a perspective. Correspondences between Feyerabend and Nietzsche should not be overplayed. Feyerabend remained an analytic philosopher all his life. Despite routine references to correspondences between him and Nietzsche, from critics and friends alike, Feyerabend claimed to have been underwhelmed by Nietzsche, acknowledging “much to agree with, but nothing to write home about.” Personal correspondence.

35. *Ibid.*, p. 168.

criticism is proper to the social studies of knowledge, sociologists, political theorists, historians and others. The different question of the value of scientific truth is a disciplinary question for those philosophers who can, at their best, think in and with the contradictions proper to thought itself.

The postmodern confidence in the postmodern “sophistications” of science and technology was the reason for the inclusion of the “mole” essay in an issue of a lit-crit journal devoted to science.³⁶ The idea of postmodern sophistication represents the ultimate conversion of the modern in architecture, music, art, as well as theory and public consciousness, and is perhaps best exemplified in the virtual image of cyberspace. With declared irony, postmodern sophistication promises a solution to the limitations of the modern ideal of progress in the commercial, corporate, quasi-industrial guise of what is soberly or “technically” called “playfulness.” It is not that such a resolution to today’s problems would or could be *wrong*, but only that it is more elusive and much harder than its advocates seem to imagine.³⁷ Play requires what might be called hell in one’s heart, together with every hopes and expectation.³⁸

Whatever the postmodern condition of what can be known about science, requiring a properly philosophical or epistemic viewpoint, there is and can be nothing like a postmodern perspective within science. There is no postmodern science as such, no matter the status of epistemic sophistication after Nietzsche, Husserl, Heidegger, Merleau-Ponty, Foucault or Baudrillard. This is not because all these thinkers held science in high esteem but, rather, because science is not reflection on, the thinking of, the theory of, but only the certification of knowledge. As he sought to clarify the constantly mistaken import of his opposition to method, Feyerabend pointed out how scientific progress is only incidentally rational.

36. For the original rendering of such “sophistication,” see David Kolb, *Postmodern Sophistications* (Chicago: University of Chicago Press, 1990).

37. The postmodern salvific project of playfulness underestimates the serious innocence of invention or creativity and fails to prize the supreme elegance, poise and utter absorption of play for both children and consummate adults. This is not a matter of the challenges of sport or of speculative calculation. In its most serious guise, play is closer to a kitten’s fierce fight with a piece of cotton than to modern competition in any of its masculine varieties. Unfathomably real, everything and nothing is at stake when the child, lost in the toss, spins a top or a rhyming line or a kitten plays with string. As distant from real hell as from real hope, the game is easy to describe and prescribe, be it a language game, a ball game, a chess game, a game of dice, or the unreal game of postmodern playfulness. Whatever play is, it is not a game.

38. This image is inspired by Gillian Rose’s epigraph to her autobiographical record of living and dying in her *Love’s Work: A Reckoning with Life* (New York: Schocken Books, 1995): “Keep your mind in hell, and despair not.”

“Laws, theories, basic patterns of thinking, facts, even the most elementary logical principles are transitory results not defining properties in this process. Scientists . . . forge ahead and constantly define science (and knowledge, and logic) by their work.”³⁹ Science is skilled labor and, in this sense, it is an “art” or Feyerabend’s guilded craft. Science has the practical knowledge of production: it works. This does not mean that science has to do with thinking. For calculation is not about reflection but all about production of effects, within what Feyerabend claimed must always be named “narrow limits,” for the sake of appearances.

Does Feyerabend’s claim that scientists define or make science by their work mean that science, insofar as it works and along with art is a human invention? Like science, art exceeds in both influence and significance the cultural world that gave birth to it. The Vichian axiom that we can know only what we make does not mean that we already know what we have done. “We are,” Nietzsche wrote, “*neither as proud nor as happy as we might be.*”⁴⁰ Like art, religion and the world, we have made the science that concerns us. The science that influences and interests us is the science that works for us. This does not mean, to speak in the deliberately vulgar language of an Alan Sokal, that there is an “objective” world. The question of the objective truth of the world apart from our knowledge of it is an absurdity.

Science does not prove the existence of an objective world, but any number of subjects do so by their common perceptions, assumptions and inborn prejudices.⁴¹ This is the conceptual, technological world required for words such as *channel-surfing* to have meaning. This is the play of a paradigm. For Feyerabend once again, society changes and science follows. “Nineteenth century science denied the advantages of cultural plurality; twentieth century science, chastened by a series of rather upsetting [*NB: extra-scientific or social*] revolutions . . . recognizes them.”⁴² This is the play of the world. In the spirit of the Nietzsche whose influence he would not acknowledge, Feyerabend describes the world as “a dynamic

39. Feyerabend, *Farewell to Reason*, *op. cit.*, p. 188.

40. Nietzsche, *The Gay Science*, tr. by Walter Kaufmann (New York: Random House, 1974), p. 242.

41. For medieval monks there are real angels, knit in a hierarchy of dominations and thrones, rather different from today’s New Age fascination with private angels or spiritual guides. William Blake saw real angels lodged in the tree-branches of his embryonically industrialized England. Like Blake’s angels, utterly modern, there are (or given current theories of stellar evolution, there had better be) neutrinos for modern physicists, and the ether, once consigned to the realms of romantic fancy, seems to be making a comeback as the framework for energy in the universe.

42. Feyerabend, *Farewell to Reason*, *op. cit.*, p. 89. Italics added. See also p. 126.

and multifaceted entity which affects and reflects the activity of its explorers. It was once a world full of gods; it then became a drab material world and it will, hopefully, change further into a more peaceful world where matter and life, thought and feelings, innovation and tradition collaborate for the benefit of all."⁴³

What is the role of philosophy in all this? Beyond art and literature, the special value of philosophical study does not simply advance intellectual acquaintance with the range and tenor of human possibility.⁴⁴ Rather, the study of philosophy is indispensable if one would learn how to think. Heidegger, the discredited master of obscurity, observed that science does not think. Well before Heidegger, it was the mathematician *and* scientist *and* philosopher René Descartes who thought it important to remember the danger of assuming that thinking could ever be a skill one did not need to learn. It is necessary, as Feyerabend put it, "to go beyond empty slogans and to start *thinking*."⁴⁵ What a revolution thinking might be for science cannot be said. But it can be averred that learning to think cannot be done without philosophy.

43. *Ibid.*, p. 89.

44. The importance of philosophy is different from the Shakespeare studies George Steiner advocated on behalf of the humanistic value of the humanities. See *The Chronical of Higher Education* (June 21, 1996), p. B5.

45. Feyerabend, *Farewell to Reason*, *op. cit.*, p. 161.