

Review of "Higher Superstition: The Academic Left and Its Quarrels with Science" by Paul R. Gross and Norman Levitt (Johns Hopkins, 1994)

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Most scientists probably pay little attention to what their colleagues in the humanities and social sciences are up to -- there's never enough time. Biologist Paul Gross and mathematician Norman Levitt, the authors of "Higher Superstition", do worry about it, but not for the obvious reasons. They are concerned about a vast conspiratorial group within that community, which they term "The Academic Left," that is deliberately or inadvertently hostile to science. Included therein are "cultural constructivists" -- sociologists and historians of science who view scientific knowledge as socially constructed rather than reflecting "the real world," postmodern and feminist critics, AIDS activists, environmentalists, animal rights advocates and others. Scientists must be made aware of this movement, argue Gross and Levitt, because it poses a potential threat to the scientific enterprise.

No doubt scientists who have dabbled in any or all of these fields will feel some empathy with that position. Gross and Levitt cite a number of examples of fuzzy reasoning based on outrageous premises, accounts of scientific practice that bear no resemblance whatsoever to the practitioner's views, and suspicion of scientific culture and its power that extends into downright hostility. They could easily have accumulated many more.

Unfortunately, by lumping all their perceived adversaries into a monolithic bloc and assigning them a politically charged label, the authors make it virtually impossible to consider the merits of any individual case. At one point, Gross and Levitt note that "This is a vexatious topic: to do it justice one must be endlessly willing to draw distinctions." Would that they had heeded their own words: under close scrutiny Gross and Levitt fare about as badly with respect to method and motivation as many of their targets.

For example, in a chapter attacking postmodern cultural criticism ("The Realm of Idle Phrases"), Gross and Levitt zero in on three writers. The first of these, Andrew Ross, has written a book ("Strange Weather") that the authors represent as clearly hostile to science -- it advocates giving New Age culture and various pseudosciences equal standing with science, and begins with the quote: "This book

is dedicated to all of the science teachers I never had. It could only have been written without them." We and they have no quarrel here.

The other two, Steven Best and Katherine Hayles, have both written extensively on recent interest in chaos theory and what they perceive as parallel developments in literature and society. Where is the hostility there? At first, Gross and Levitt concede there may not be any -- but in their view the work merits condemnation nonetheless, because the authors don't have sufficient understanding of the mathematics to write anything but nonsense: "One might argue that Hayles's analysis...has at least the virtue of regarding science as, on the whole, liberatory and politically progressive. But this approbation comes at the cost of such a distended misreading of science...that it is hardly distinguishable from hostility."

Whether or not their substantive criticism is valid (a physicist colleague of ours found Hayles' book to contain only a few minor errors that did not compromise its basic soundness), there seems to be more than a little guilt by association here. Best and Hayles are made to share Ross's overt hostility by juxtaposition, but that's just the beginning: Gross and Levitt note that Hayles has received much recognition for her work (including the presidency of the Society for Literature and Science -- an organization to which we both belong, and whose title they get wrong). The implication is that all those people must be antiscience as well! "We conclude that hostility to science is, after all, an inextricable element of these postmodern philosophical excursions." (Gross and Levitt seem unaware that Alex Argyros, whose work they cite approvingly, is also a longstanding SLS member.)

We view most of these trends very differently from Gross and Levitt. Humanists and social scientists find themselves living in a world that is inescapably permeated by science. Is it any surprise that many of them feel impelled to try to incorporate that fact into their professional lives? Gross and Levitt obviously consider such activities a waste of time, and dangerously subversive. Even attempts to make science more accessible to the outsider, such as James Gleick's fine book on chaos, are damned with faint praise. What is left for those, academics and laymen alike, who have interests but no professional training in science? Nothing, it would seem, but to sit at the feet of the real scientists, and await the Word from on High. In a moment of (surely unintended) irony, Gross and Levitt criticize the view of some historians that "modern science has been from the first the province of a tightly organized, well-insulated coterie, jealous of its prerogatives and hostile towards outsiders who intrude

without the proper authority." Lamentably, books like this are only too effective in validating precisely that picture of science.

The important question remains: how should scientists interact with colleagues outside the sciences who study one or another aspect of science? Gross and Levitt do urge greater involvement "outside the official boundaries of science departments." The unfortunate fact is that scientists generally get little approbation from their peers for talking with nonscientists. (Which doesn't stop scientists from grouching when "outsiders" get things "wrong.") Furthermore, many scientists seem unaware that these "outsiders" constitute a broad and heterogenous group with widely varying interests, methodologies and agendas, just as one finds among chemists, biologists, physicists, etc. Their attitudes toward science are similarly diverse. Some are misinformed, pretentious and hostile just as Gross and Levitt claim. In our experience, though, the substantial majority are genuinely interested in and grateful for substantive discussions with scientists (so long as they aren't patronized).

Such dialogs will frequently produce interpretations of science at odds with those prevailing among most scientists. Rather than dismiss them as the products of ignorance and/or malevolence we should be open to new insights into our work, while still prepared to correct error where we see it. Science is after all a human activity carried out by human beings, among whom a desire for the most glowing account of their endeavors is neither unknown nor unexpected. Just because other people produce accounts that don't always meet these expectations doesn't mean that they are science bashers.

For example, while excoriating feminist critiques of science (which, to be sure, cover a wide span with respect to content and credibility), Gross and Levitt note that "At times, baseless paradigms in medicine and the behavioral sciences have been pretexts for subordinating women." They go on to characterize these doctrines as "pseudoscientific," but that label is misleading: many of these theories were part of the mainstream science of their day. Such examples certainly need not imply that science is inherently evil or repressive. However, they do suggest that scientists are not completely different people inside and outside the lab, and that the barriers between social thought and scientific theory are more permeable than some of us would care to believe.

Scientists might also be less possessive about the meaning of technical terms. While strict definitions and tight control of meanings are usually the rule in science,

those terms have a legitimate, semi-independent existence within the wider culture. It is worth remembering that students of scientific language have argued that even within science theoretical terms have an inherently metaphorical character that, by allowing divergent interpretations, plays a very creative role in opening up new avenues of scientific thought. Insistence on an elusive and illusive linguistic "purity" can only discourage nonscientists in their attempts to make sense of science, as well as misrepresenting the nature of science itself.

Lastly, how should scientists respond to the long-range threat to science? If there is a threat, it comes only from a small subset of the group under attack here -- people like Jeremy Rifkin, for example, who have managed to parlay activism and a very shaky grasp of science into a semblance of authority. But the force of Gross and Levitt's response is substantially weakened by (to use their own analogy) crying wolf too often. Criticism, no matter how well-deserved, is effective only when appropriately focused. Gross and Levitt would do well to recall that the traditional metaphoric literary weapon is the rapier. What we find in "Higher Superstition" is more like a neutron bomb.