

Crude weapons of science's 'friends'

A House Built on Sand: Exposing Postmodernist Myths about Science

edited by Noretta Koertge

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A generation ago, scientists who got depressed by the pettiness of everyday professional life could seek comfort in the flattering images of science that circulated outside their laboratories. In the science fiction of H. G. Wells or Arthur C. Clarke science was the road to technotopia; in the historical sociology of Robert K. Merton and J. D. Bernal it was the engine of social progress; and in the intellectual history of Oliver Lodge or J. G. Crowther it was one of the glories of human intellect and imagination.

But not any more. Science fiction has gone out of fashion, at least in its optimistic forms, and historians and sociologists have created a new academic field — science studies — in which science is more likely to get buried than praised. Scientists and their supporters are understandably upset, and some of them have started to retaliate in the name of an “objective truth” that they take to be under attack from “postmodern relativism”.

In 1994 the molecular biologist Paul Gross and mathematician Norman Levitt sounded the alarm in *Higher Superstition: The Academic Left and Its Quarrels with Science*, followed a year later by a collection called *The Flight from Science and Reason*. Panic increased in 1996 when the physicist Alan Sokal hoaxed the journal *Social Text* into printing a satirical spoof called “Transgressing the boundaries: toward a transformative hermeneutics of quantum gravity” as if it were a serious piece of research. Sokal then prolonged his joke into a book called *Intellectual Impostures*, and now, in *A House Built on Sand*, Noretta Koertge has brought together 16 worried authors, including Gross, Levitt and Sokal, for a concerted counterattack on those they regard as dangerous enemies of modern science.

It is unlucky for Koertge's troops that their indictment comes out at the same time as Kenneth Starr's report on the misdemeanours of the US President. No one can deny that they have discovered a few pieces of shoddy scholarship masquerading as radical or feminist science studies: an unfortunate paper on “Gender encoding in fluid mechanics”, for instance, and an ill-considered journalistic tirade about “bashful eggs and macho sperm”, and perhaps a slippery slide between Einsteinian relativity and Pro-



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tagorean relativism. But officious indictments make dull and unedifying reading, and many readers will find it easier to identify with the accused than with the prosecutors. After all, no field of research is completely free of coat-trailing, sycophancy, dullness, inaccuracy, stupidity, distortion and misreporting. Is it not nobler to ignore such lapses rather than seek them out and gloat?

Moreover there is a joker in Koertge's pack. The jacket blurb promises that Philip Kitcher will “expose the relativist epistemology that underlies postmodernist accounts of science”, but his essay is way off message. His “plea for science studies” reminds us how difficult it is for anyone to keep their balance in a discipline that is constituted by two conflicting truisms: first, that science progressively enhances our powers of prediction and control, and second, that science is part of the natural history of fallible humanity. It is not surprising if the attempt sometimes fails,

and fails badly; but Kitcher is able to describe numerous successes as well, citing Nancy Cartwright, Lorraine Daston, Peter Galison, Ian Hacking, Martin Rudwick and many others. He then notes that these fine authors are systematically ignored by the self-appointed friends of science, who prefer to recycle a small number of egregious examples of postmodern vice — cases which, Kitcher says, “practitioners of science studies would not view as central to the field”, and which he himself had “never heard of” before the scientists started using them as evidence for the prosecution.

There is a fearful symmetry between the two sides in this debate. Proponents of the cheaper kind of science studies like to collect embarrassing stories about scientists who have been arbitrary, dishonest, biased or hasty, and they love to expose venal motives at work in the heartlands of science. Meantime the alarmist friends of science enjoy collecting embarrassing stories about

postmodernists who have been arbitrary, dishonest, biased or hasty, and they are never happier than when they can discover venal motives in the heartlands of science studies.

And the difficulties facing the two sides mirror each other too. The postmodernists find it hard to see why science still makes progress, despite all its follies and vicissitudes, or why individuals, firms and governments find it profitable to invest their time and money in it. On the other hand the friends of science have difficulty accounting for the fact that science requires perspiration and inspiration as well as passive observation; indeed they seem incapable of explaining why science should have a long and laborious history at all, least of all a history of detours, disagreements and dead ends — a history which might well, for all we know, have ended up somewhere completely different.

But the issues that divide science from science studies are never going to be resolved by counting up malpractices or unsolved problems on each side. The fact that researchers make pratfalls in the course of their enquiries does not discredit their intellectual ambitions. And if one discipline is more chaotic or accident-prone than another, that may only indicate that its requirements are particularly rigorous. The adjudication of such disputes calls for direct theoretical arguments rather than accumulations of insults and anecdotes.

The authors of *A House Built on Sand* think they have such an argument, for they picture themselves as defenders of “objective truth” against “relativism”. But it is possible that they are deceived. They spend a lot of time chastising amateurish commentators who sound off about scientific issues without mastering the relevant literature, but they court exactly the same criticism when they pontificate about epistemology and conceptual schemes without showing the slightest acquaintance with Carnap, Goodman, Davidson, Putnam, MacIntyre or McDowell, and without even tipping their cap towards Frege and Wittgenstein or Bachelard or Canguilhem, or Kant, Hegel, Husserl, Heidegger and Habermas. Someone should have told them that philosophy, like quantum mechanics, contains tricky terrains where angels fear to tread.

Koertge informs us that the language used by scientists is “characterised by clarity, precision, and economy”, whereas relativists, she thinks, cannot even show elementary respect for “literal meaning”. But pride comes before a fall, and the phrase “objective truth” may be more of a banana skin than she and her colleagues realize. Sometimes they seem to think it describes the distinguishing feature of science as such, and that truth becomes objective by being grounded in experiments that map out physical mechanisms behind the surface facts of nature. But

such a definition would leave half of science out in the cold, since the truths of theoretical linguistics or artificial intelligence or number theory are certainly not maps of physical reality.

On other occasions Koertge’s authors use “objective truth” to hint at an implicit category of “subjective truth”, to which they would consign everything that is not science. But this will not serve their purposes either. If “subjective truth” is more than just a figurative description of falsehood, it must refer either to statements that are purely formal, like those of logic, or to statements describing emotions or personal attitudes of mind. But when such statements are true, their truth is as objective as anyone could desire. And when they are false, their failing is not that they are subjective, but that they are not true.

Paul Gross gets very irritated by feminists who, as he puts it, try to “redefine all meaning out of ‘objectivity’”. But it may be that they have put their finger on a sensitive point, for what exactly can he mean by the “objectivity” on which he stakes his professional honour? We can hardly add anything to the stature of truth by awarding it the epithet “objective”: what other kind of truth is there supposed to be? The term may have had precise meanings in medieval treatises on logic and metaphysics, but in the dialect of today’s friends of science “objective truth” functions rather like “God’s truth” or “the honest truth” — an emotive intensifier, without any clear or literal meaning.

The word “relativism” may prove an equally slippery accomplice. There would be no point in writing long and bad-tempered protests against relativism if it were merely the doctrine that there is no such thing as knowledge: we could dismiss it instantly by asking the question, How do you know? But we can also make relativism into something passably intelligent, namely an attempt to explain how we can have reliable knowledge, given that our thinking is shaped, willy nilly, by the particular languages we happen to speak, or the taxonomies and measuring systems we have inherited along with them. The goal of intelligent relativism would be to stop us daydreaming about a utopia of immaculate knowledge, and persuade us to settle for such partial certainties as the human condition allows. Clearly relativism in this sense is a gentle encouragement to scientific endeavor.

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our, not a counsel of epistemological despair.

The most substantial section of *A House Built on Sand* is Meera Nanda’s account of the “People’s Science Movements” which were launched in India in the 1960s. They aimed to diffuse a basic understanding of science (the germ theory of disease for instance, or the laws of Newtonian physics) so as to disseminate a “critical scientific temper that would subject traditional knowledge claims to the test of empirical evidence”. By the 1980s the People’s Science Movements involved some 20,000 activists, including Nanda herself. But, she tells us, they are now reeling under the combined assault of right-wing Hindu fundamentalists and left-wing secular anthropologists, who have formed a strange alliance in defence of the “epistemological rights” of traditional knowers — that is to say sorcerers, goddess-worshippers and widow-burners, whose beliefs are liable to be annihilated by an unrestricted spread of “Western” science. Nanda graciously declines “the privilege of having our traditional knowledge considered at par with science”, noting that such “epistemic charity” is really the cruellest form of condescension. “The project of different and equal sciences for different people”, as she puts it, “completely negates our project of science for all people.”

But the vividness of Nanda’s description of “epistemic charity” is not matched by a clear philosophical analysis. Like the other contributors to *A House Built on Sand*, she lays the blame for “antiscience” on a conspiracy of “postmodern relativists” who insist on regarding our beliefs as “socially constructed” and refuse to make any exception for science or “objective truth”. A different diagnosis is possible, however. In the first place, the Indian traditionalists who are hostile to science are not themselves relativists: given the choice, they would regard their own beliefs as “objectively true”, just like the modern friends of science. If we want to convert them to a different way of thinking, then relativism may be precisely what we need: for if both science and superstition are regarded as social constructions, we can simply invite the traditionalists to give science a try, in the firm expectation that they will find it suits them better.

On the other hand, the flaw in the sinister doctrine of “epistemic charity” is not so much its relativist theory of knowledge as its absolutist conception of “cultures”. In fact, the advocates of epistemic charity are not really relativists at all: if they were, they would not be trying to jump out of their own cultural skins and treat different human “cultures” with high-altitude impartial objectivity. Consistent relativists would realize that our cultures — whether scientific or antiscientific or somewhere in between —

are not impregnable island fortresses entire unto themselves, but networks of communication: they reach out to the world and ask to be transformed by it.

Scientists have no reason to panic at the thought that science is an element in human culture alongside many others. Science is not about to be marginalized or engulfed, as European magic and witchcraft were 300 years ago. Scientists may exasperate their cultural neighbours by constantly shouting abuse at “relativists” and beating on the drum of “objective truth”, but on the whole they still have the public’s approval. What should really worry us is that science is still being used — perhaps now more than ever — as a means of cultural exclusion, dividing the world into scientific haves and have-nots. It urgently needs to make itself more welcoming to strangers, so as to become a part not only of our own culture, but of culture “for all people”. Sanctimonious, defensive sarcasm can only make matters worse. □

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Wondrous correctness

Unweaving the Rainbow

by Richard Dawkins

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Gillian Beer

This volume falls, somewhat prematurely we may hope, into the Grand Old Man genre. Richard Dawkins lards his enthusiastic tribute to the wonders of science with quirky asides and personal anecdotes. These anecdotes assume the reader’s affection for him, always a risky assumption before reaching admired and advanced old age. His conversational style allows him to be brusque and testy about others’ achievements and expect to carry the reader with him.

The argument of the book is unobjectionable: that understanding the processes revealed by scientific analysis makes things more wonderful, not less. Emphasizing the Wonders of Science has been a staple of scientific popularization for the past 200 years. Science makes strange the familiar and thus opens our eyes to the intricacy and the extent of the world within which we bumble along from day to day. Dawkins makes a further turn on this argument to distinguish between ‘good’ and ‘bad’ wonder. He attacks credulity and its manifestations “in superstition, the paranormal, and astrology”.

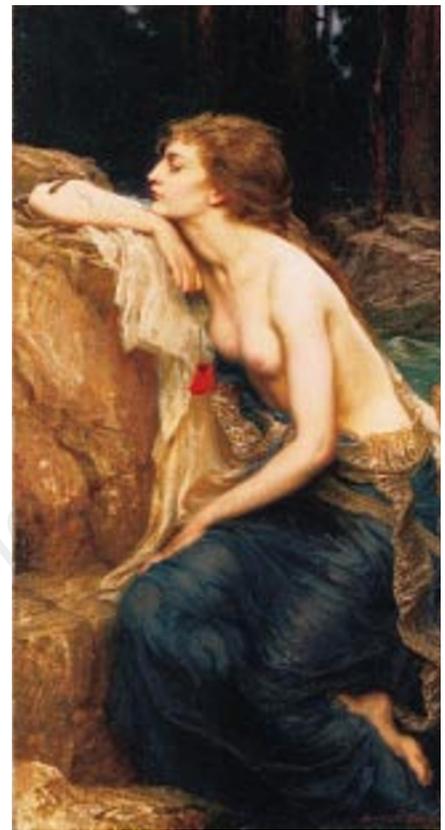
John Tyndall undertook a similar epistemological joust, more amusingly described; invited to attend a seance 100 years ago, and fresh from his Royal Institution demonstrations, he competed with his spiritualist

hosts: “The wonderful narratives resumed; but I had narratives of my own quite as wonderful. These spirits, indeed, seemed clumsy creations, compared with those with which my own work had made me familiar. I therefore began to match the wonders related to me with other wonders. A lady present discoursed on spiritual atmospheres, which she could see as beautiful colours when she closed her eyes. I professed myself able to see similar colours, and, more than that, to be able to see the interior of my own eyes. The medium spoke of the performances of the spirits on musical instruments. I said that such a performance was gross, in comparison with a kind of music that had been discovered some time previously by a scientific man. Standing at a distance of twenty feet from a jet of gas, he could command the flame to emit a melodious note.... These were acknowledged to be as great marvels as any of those of spiritdom. The spirits were then consulted, and I was pronounced to be a first-class medium.”

Tyndall recognizes with wry humour how readily scientific assertion can be absorbed back into contrary beliefs. Dawkins takes that argument in a different direction. He enlarges his attack on credulity to include what he sees as falsely ethical readings of evolution in the work of Stephen Jay Gould and in followers of James Lovelock. He offers, as an alternative, clear and approving accounts of the work of scientists such as Horace Barlow and Richard Gregory, who have paid special attention to vision and its determinants.

The book is at its best in those chapters and passages where Dawkins can delight in exposition; he writes effectively on genes and their histories, and on the brain and its modelling powers. Sometimes, however, the chapters seem to be patched together from paragraphs and *aperçus* laid end to end without a defining thread of argument. Dawkins seems at times uncertain of the audience he is addressing (we are assumed to be knowing enough to share his prejudices against quite sophisticated critical theorists and yet to need educating about coincidences). Sometimes he denounces metaphor, and sometimes breezily adopts it. He has clearly been stung by the critiques of his own metaphoric habits in *The Selfish Gene* with its shift of levels from activity to ethics, for he alludes more than once to the need to read the whole book and not be misled by its title.

Unweaving the Rainbow is at its worst in the often impatient and cavalier treatment of evidence from intellectual fields outside science. This ranges from a demeaning reference to John Ruskin, and a simplistic aside concerning the cultural anthropologists Margaret Mead and Derek Freeman, to a condescending habit of wresting a line from a poem to serve his purpose, as if it had no further complexity or context. So, a fine quo-



Lamia: woman or serpent? The fruits of scientific enquiry may not always be pleasing to the eye.

tation from the astrophysicist Subrahmanyan Chandrasekhar is pitted against “Beauty is Truth, Truth Beauty” as sounding “much more sincere”.

Dawkins accuses his avowedly favourite poets, Keats and Yeats, of typifying an ignorant repudiation of science. If only Keats had turned to Sir Isaac Newton for inspiration, if only Yeats had accorded more value to reason, how much better their poetry would be! The title of his study draws on Keats’s poem “Lamia”, which is concerned with the peculiarly equivocal appearances of things. Lamia is a woman but she is also a destructive serpent; in both incarnations, however, she is very beautiful. As a serpent she is:

*A gordian shape of dazzling hue,
Vermilion-spotted, golden, green and blue,
Striped like a zebra, freckled like a pard,
Eyed like a peacock, and all crimson barr’d*

Which is her true nature? Is she, as she claims, an innocent woman bewitched, or is she a guileful serpent disguised? The old sophist Apollonius blasts her with his philosophical gaze and she resolves into a serpent, but she is no longer the beauty of before, now she withers away.

The vigour of Keats’s language thrives on precise detail. The poem struggles, with poignant sophistication, to interpret the cost of pursuing knowledge. It works to disabuse the reader from any idealized fancy that beauty will always be rediscovered at the end of enquiry. Keats had begun training as a