

THOUGHTS ON BEING BAD

Daniel Kleppner

In the days of my youth, science, scientists and the quest to understand nature were unquestionably good. Now, however, according to a clutch of science critics—journalists, philosophers, politicians and simple science bashers—science is no longer good, nor are scientists. The issues are matters not of scientific misconduct or mismanagement but of the morality of science itself.

It is upsetting to find oneself suddenly on the wrong side of the moral fence. There are, after all, certain compensations for being bad. Bad people can wallow in money, wield power recklessly, exploit their friends and drive red sports cars. I seem to have missed most of these pleasures. My choice now is to get serious about being bad or to refute the critics. I opt for the latter.

Science criticism today comes in every style from comic to tragic. At one end of the spectrum is a piece by John Lukacs that appeared on 17 June 1993 on the op-ed page of *The New York Times*. Among his arguments are that physics is a fraud because Plato did not believe Democritus, Goethe hated mathematics, and the uncertainty principle essentially prevents anyone from measuring anything. The confusion is comical, but notwithstanding its exalted position in *The New York Times*, the piece is nonsense.

A more ambitious critique of contemporary science is Bryan Appleyard's book *Understanding the Present* (Pan Books, London, 1992), which constitutes a useful manual for anyone on the antiscience warpath.

Appleyard, a writer for the *London Sunday Times*, is versed in history and philosophy and obsessed by the belief that science is responsible for most of the evils of the last 400 years: the decay of religious authority, the death of romantic poetry, the coming nightmare of artificial intelligence, and superstring theory. Quantitative reasoning terrifies him. He recalls being left dumbstruck and uneasy as a young boy when his father estimated for him the capacity of a nearby water tower. The incident is reminiscent of Richard Feynman's walks with his father, except the young Feynman's response was precisely the opposite—elation.

Appleyard's view is so bleak that every success is a defeat. He asserts: "Science and wonder have always had an uneasy relationship. Clearly the apparent success of the classical scientific view by the end of the nineteenth century had tended to reduce the poetic dimension of the quest. The scalpel had been taken to the stars and our souls were next on the operating table." Such a view is woefully ignorant. Appleyard longs for a romantic world where poets write odes to nightingales and urns. Although such odes are not the stuff of the 20th century, it is worth noting that we might have had much more of Keats's poetry to enjoy if he had not died of a now curable disease at the age of 36. Appleyard chooses to overlook nearly every benefit of science, including medical science.

Appleyard's bitterest complaint is that scientific knowledge destroys spiritual values, that science, and by inference the scientist, is immoral. He has not noticed that it is often scientists who are at the vanguard of humanitarian movements such as arms control, human rights and population control. He cannot forgive science for the Copernican revo-

lution and the destruction of medieval moral authority. He is most comfortable sitting on a throne of scientific ignorance. In reality, of course, he occupies no throne, but a modern chair at a comfortable desk. There he has the leisure to pursue his ideas—a far cry from the brutish peasant life that would likely have been his lot before the creation of the modern world.

A more serious attack on science has come from an unexpected source—Vaclav Havel, poet, playwright, philosopher, political dissident and now the President of the Czech Republic. By some bizarre twist of thought Havel connects Communism with science and equates the collapse of Communism with the failure of science. It is as if he took literally those grotesque accolades to the thought of Comrade Lenin that were at one time mandatory in scientific monographs from the Soviet Union. Nevertheless, his arguments carry weight by virtue of his moral stature and his power as a writer. The essence of his ideas appeared in an op-ed piece, "The End of the Modern Era," in *The New York Times* on 1 March 1992, from which the following excerpts are taken:

The fall of Communism can be regarded as a sign that modern thought—based on the premise that the world is objectively knowable, and that the knowledge so obtained can be absolutely generalized—has come to a final crisis. This era has created the first global, or planetary, technical civilization, but it has reached the limit of its potential, the point beyond which the abyss begins. The end of Communism is a serious warning to all mankind. It is a signal that the era of arrogant, absolutist reason is draw-

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ing to a close and that it is high time to draw conclusions from that fact.

Traditional science, with its usual coolness, can describe the different ways we might destroy ourselves, but it cannot offer us truly effective and practicable instructions on how to avert them. There is too much to know; the information is muddled or poorly organized; these processes can no longer be fully grasped and understood, let alone contained or halted.

We all know that civilization is in danger. The population explosion and the greenhouse effect, holes in the ozone . . . the threat of nuclear terrorism . . . the danger of famine, the depletion of the biosphere . . . —all these, combined with a thousand other factors, represent a general threat to mankind.

We are looking for new scientific recipes, new ideologies, new control systems, new institutions, new instruments to eliminate the dreadful consequences of our previous recipes, ideologies, control systems, institutions and instruments. We treat the fatal consequences of technology as though there were a technical defect, that could be remedied by technology alone. We are looking for an objective way out of the crisis of objectivism.

What are we to make of such accusations? It is absurd to argue that the fall of Communism is a sign that modern science ("the premise that the world is objectively knowable") has brought us to a final crisis. The fall of Communism is a sign that a self-perpetuating tyrannical regime dedicated to the suppression of freedom can sustain neither a viable economy nor a decent society.

Nevertheless it cannot be denied that science and technology have generated staggering dangers to civilization. The population explosion, to take the most ominous problem, is due to advances in health care that slashed the rates of infant mortality. Environmental degradation is the price we pay for indulging our cravings for energy and material goods. Prominent on Havel's list of threats to civilization is mass television culture: This is our legacy from a communications technology that might have made us the best informed and most politically astute citizenry ever.

Havel is obviously correct in as-

serting that science cannot solve such problems. Science cannot alter deep-rooted cultural patterns, renovate obsolete political structures or provide broad prescriptions for progress. Nevertheless science is essential. By deprecating "objectivity" and turning his back on science, Havel is rejecting a principal source of our hope for the future.

Havel has had a surprising impact, for his ideas have been taken up by Congressman George E. Brown Jr, chairman of the Committee on Space, Science and Technology of the US House of Representatives. In an essay in the *American Journal of Physics* (September 1992, page 779), whose title, "The Objectivity Crisis," pays homage to Havel, Brown employs Havel's critique as the starting point for a reconsideration of the role of science in society. He writes from the perspective not of a philosopher but of a policymaker who must reconcile the needs of the nation, the aspirations of the scientific community, and the political realities of budget-setting—not an enviable task these days. He echoes Havel's opinion that science shares much of the blame for the dangers that threaten civilization. He is critical of the scientific community for exaggerating the benefits of science and being insensitive to the needs of society. The goals of science, he argues, are not set by intellectual imperatives as much as by historical accident. He asks scientists to put the concerns of society ahead of their individual ambitions. To summarize his message, Brown wants scientists to stop being bad.

For my own part, I do not believe that the traditional goal of science—to understand nature—is socially irresponsible. The contributions of science to this nation and to the world need no apology. On the contrary, they are among the great achievements of our civilization. Society is changing rapidly, and the rules of research in the United States are being reconsidered by government, industry and academia. According to one school of thought, science should be directed primarily to meeting particular needs of society. Such a strategy is unlikely to succeed for long, and it carries the risk of ruining a priceless institution. Any scenario for a decent future for our nation and the world must include a reasonable component of science that is devoted to the search for new knowledge. We cannot afford to abandon this vision under a barrage of criticism, no matter how eloquent or powerful the critics. ■

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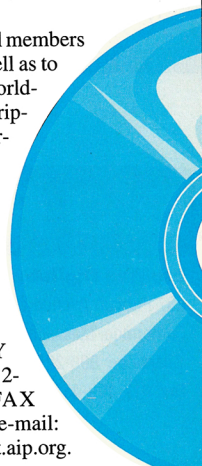
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