

'manager' or the would-be objective scientist, belongs inherently to the complexity and the mystery that is to be husbanded, and so the husbanding mind is both careful and humble. Husbandry originates precautionary sayings like 'Don't put all your eggs into one basket' . . . It does not boast of technological feats that will 'feed the world.'

Agricultural science ignores farming's larger context. The sympathy for "creatures, animate and inanimate," has been lost. Other casualties are local adaptation to the particular farm and field and coherence of form. "The farm is limited by its topography, its climate, its ecosystem, its human neighborhood and local economy, and of course by the larger economies, and by the preferences and abilities of the farmer. The true husbandman shapes the farm within an assured sense of what it cannot be and what it should not be."

The sense of limitlessness—of fuel, water, and soil—that gave rise to the recent focus on productivity, genetic and technological uniformity, and global trade has proven illusory, according to Berry. Massive single-crop fields and factory farms are unsustainable, and the necessity of local adaptation "will be forced upon us again by terrorism and other kinds of

political violence, by chemical pollution, by increasing energy costs, by depleted soils, aquifers, and streams, and by the spread of exotic weeds, pests, and diseases. We are going to have to return to the old questions about local nature, local carrying capacities, and local needs."

Husbandry can be learned anew in colleges of agriculture, Berry concludes, but only if many agricultural scientists become farmers themselves and learn to accept the practical limitations and the element of mystery that inhere in husbandry.

SCIENCE & TECHNOLOGY

The War Against Error

THE SOURCE: "Scientific Error and the Ethos of Belief" by Lorraine Daston, in *Social Research*, Spring 2005.

FEW BOUNDARIES ARE AS FLUID AS the one between established knowledge and conjectural belief in the modern sciences, where new research can fundamentally revise, or even sweep away, the received wisdom of a particular discipline. "The price of scientific progress is the obsolescence of scientific knowledge," writes Lorraine Daston, executive director of the Max Planck Institute for the History of Science and an honorary professor at Humboldt University in Berlin.

The modern sciences were born in the 16th and 17th centuries, and the problem of reaching an accommodation between knowledge and belief was born right along with them. During those centuries, Copernican astronomy and other discoveries overturned "a whole range of explanatory systems and empirical claims that had been accepted as eternal truths." Thinkers responded to the stunning exposure of error by devising philosophical systems that insisted that beliefs have explicit, reasoned justification.

The branch of philosophy that concerns itself

EXCERPT

Satanic Design?

Many who accept the fact of evolution cannot, however, on religious grounds, accept the operation of blind chance and the absence of divine purpose implicit in natural selection. They support the alternative explanation of intelligent design. The reasoning they offer is not based on evidence but on the lack of it. The formulation of intelligent design is a default argument advanced in support of a non sequitur. It is in essence the following: There are some phenomena that have not yet been explained and that (and most importantly) the critics personally cannot imagine being explained; therefore there must be a supernatural designer at work. The designer is seldom specified, but in the canon of intelligent design it is most certainly not Satan and his angels, nor any god or gods conspicuously different from those accepted in the believer's faith.

—EDWARD O. WILSON, emeritus professor at Harvard University, in *Harvard Magazine* (Nov.–Dec. 2005)

with the justification of belief—with how we know what we know, and how well belief matches up with the evidence for it—is epistemology. After the shocks of the 16th and 17th centuries, “worries about the possibility and reliability of scientific knowledge” inspired philosophers “from Descartes to Kant to Husserl and beyond” to plunge into epistemology. And being on guard against errors took on a moral as well as an intellectual dimension, in that the will was to have no less a role than reason in granting “assent only to those claims that, after thorough epistemological vetting, deserve to be credited.”

Daston posits three models of scientific error that arose within the distinctive historical circumstances of the 17th, 18th, and 19th centuries, but that persist to this day as “a repertoire of epistemological diagnoses”: “idolatry,” “seduction,” and “projection.” All three are, in effect, errors of substitution, which

allow false beliefs to take the place of true knowledge. Idolaters, for example, so worship fallacious theories that they abandon the search for genuine enlightenment. Seduction, the second model of error, is a disease of the imagination, “the good-time girl of the mind.” The imagination can cause the mind to seal itself off from the real world and indulge in fantasy, “replacing real impressions derived from memory and sensation with fanciful but alluring systems.” These imaginary systems become “a refuge from the hard work of empiricism.”

Projection, the third category of error, is, in fact, an ancient human foible, but it became especially troublesome for scientists in the middle of the 19th century with the formulation of new philosophical conceptions of the objective and the subjective. The fear was that researchers might project too much of themselves and their preconceived ideas onto the evidence of nature rather

than simply absorb the evidence passively, objectively. “Only a heroic act of self-discipline and self-denial can rein in these projections,” Daston says.

Criticism of these three models of error came to take on an insistent moral tone, making it “a matter of rectitude as well as prudence to withhold credence from suspect propositions.” We withhold belief, then, not just because we’re fearful of making a mistake but because we’ve been told it’s our duty to do so. And we take refuge in the safe haven of skepticism, trusting nothing “until shown the evidence, bushels of it.”

Still, notes Daston, “minatory epistemology” has not gained the upper hand over science, which “has historically been risk-seeking with respect to belief”: “Successful science has historically erred on the side of maximizing knowledge, rather than on that of minimizing error—even at the cost of believing too much.”

ARTS & LETTERS

Chelsea Mourning

THE SOURCE: “Formalism and Its Discontents” by Jed Perl, in *The New Republic*, Sept. 12, 2005.

EVERYONE WHO THINKS THAT the art world has been, for decades, about as toxic and debased a locale as the fashion world can take a certain measure of satisfaction in recent developments: “Knocking the art world has become the latest art world

fashion,” says *New Republic* art critic Jed Perl. In other words, the very folks who’ve corrupted the scene have now come to recognize the corruption, and that has put a pall on their celebratory parties and dinners and receptions.

What especially troubles Perl is how little the general distress has to do with the quality of the art. The concern is mostly with “the social mechanisms of art: fairs, auctions, prices,

publicity. Art itself hardly enters into the discussion; and when it does, the works of art are interchangeable, impersonal, of as little value in and of themselves as a pile of plastic poker chips. Everything is merely product; the art is in the deal.”

Perl contends that what has occurred is a failure of aesthetic judgment so profound that people are afraid to confront it. “How does taste go so bad? *That* is the real question.” For him, the problem begins with the collapse of formalism, “a belief in the primacy of line and color and shape” that was “one of the greatest of all artistic faiths.” Formalism, which