

Truth, Beauty, and Peer Review

READERS not infrequently write to upbraid me for some outrageous statement perpetrated by a publication that they had always considered authoritative. They may readily agree that newspapers, as H.L. Mencken once put it, never report anything accurately and fairly except perhaps professional baseball. But to ensure that *Technology Review* doesn't again deviate from the path of truth, these readers often propose peer review of our articles: submitting them for approval to panels of experts. We decline.

Peer review is widely seen as the modern touchstone of truth. Scientists are roundly drubbed if they bypass it and "go public" with their research. Science writers count on it as the test for what to report on. Artists hold it up as the rebuttal to Sen. Jesse Helms, who would distribute arts funding according to his own morality. Ming Cho Lee, a professor at the Yale School of Drama, huffed in a letter to the *New York Times*: "The only criterion artists or arts organizations must meet to be entitled to my money is that they pass the vigorous scrutiny and evaluation of a panel of their peers, based on a standard of artistic excellence."

Peer review is doubtless useful to help evaluate articles for journals focused on a particular discipline and as one mechanism, albeit fallible, to allocate grants. But our society often wants to see peer review as a mechanical certification of truth for which no one has to take responsibility. No such mechanism is conceivable.

The first limitation of peer review is that nobody can say quite what it is. Journal editors give manuscripts to a panel of scholars who remain anonymous. Some journals publish only articles that receive a majority of votes, but articles rejected by one peer-reviewed journal are often published by another: this touchstone is wobbly. Reporting on

an American Medical Association conference on peer review in June 1989, Lawrence K. Altman of the *New York Times* noted that journal editors may reject articles that the panel praises or accept articles it criticizes. No one knows how often this happens because journals do not report their policies.

Rep. John Dingell (D-Mich.), who chairs the House Oversight and Investigations Subcommittee, treated the nation to a detective drama on this theme, sending Secret Service agents to sleuth through the raw data for an article that had received the peer-review seal of ap-

*There is no
mechanical way to
certify truth.*

proval through publication in *Cell*. (Full disclosure: one of the article's principal authors, David Baltimore, now president of Rockefeller University, is a columnist for this magazine.) The specific case aside, Dingell's fundamental question is: can we unequivocally trust results of peer review?

Of course not. At a conference held last April by MIT's Science, Technology, and Society Program, Marcia Angell, executive editor of *The New England Journal of Medicine*, stated flatly that despite the scrutiny of peer panels and editors, "fraud can't be discovered if it is plausible." This problem is less dreadful than it might seem. In practice, scientists regard journal articles skeptically, as statements in an ongoing debate. Time and replication of experiments are the real mechanisms science relies on to weed out error.

A more pernicious danger is that peer review may reject important work, particularly for research funds. As Charles W. McCutchen, a physicist at the National Institutes of Health, has put it, peers on the panel reviewing a grant applicant "profit by his success in drawing money into their collective field, and by his failure to do revolutionary research

that would lower their own ranking in the profession. It is in their interest to approve expensive, pedestrian proposals." He cites the case of Donald Glaser's research on the bubble chamber, an apparatus to display nuclear reactions for which he ultimately won the Nobel Prize in physics. The National Science Foundation and other agencies considered it "too speculative" to fund, but fortunately the University of Michigan scrounged up \$750 to support his work.

In our offices in what is known around MIT as W59, a two-story brick building from which Heinz ketchup was once distributed, we hope to emulate the University of Michigan. We look for the important idea that has not yet received official certification, the thinker the media do not yet consider a valid source.

We don't eschew expert advice: we may well ask informal opinions on unusual articles from knowledgeable people, often at MIT. But there can be no peer review of articles that inextricably blend fact and opinion. We have even had informal readers refuse to comment on manuscripts on the grounds that they don't want to become "silent co-authors." So we scratch our heads, discuss manuscripts, and make the best decision we can.

Then begins the editing process, an intellectual exploration involving countless further decisions to help authors clarify their thinking as well as their writing. Even if the original had been peer reviewed, the final result would not be. Editing ends at 6:00 in the evening of the day the final page proofs go to the printer with titles, blurbs, and captions. That's a frightening moment.

If the article is truly foolish, I can expect a barrage of letters, and time will likely set the matter straight. If we made the opposite mistake, failing to publish important new thinking, I can rest assured that I will never be blamed, except perhaps by one author. But that is the worst mistake possible. ■

JONATHAN SCHLEFER