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A Media Uncertainty Principle

Barbara Jasny, R. Brooks Hanson, Floyd E. Bloom

The Heisenberg Uncertainty Principle, stated simply, holds that the act of observing an electron perturbs it so that its position and momentum cannot be measured simultaneously. A modest logical extrapolation might engender a Media Uncertainty Principle: when the mass media cover science, any given result is inevitably highlighted simply by reporting it, in a way that affects, positively and negatively, the public perception of science and the evolution of science itself.

Although some observers might doubt whether press attention is a good thing, *Science* believes that such coverage serves an invaluable function. It serves to focus people's attention on important problems and controversies, as well as to prompt self-correction. For example, the early reporting of AIDS cases was instrumental in breaking through public indifference and forcing recognition of the mounting epidemic. A spotlight on a scientific finding means that repetition and confirmation of exciting results will happen quickly and that irreproducibility or shortcomings in the research will quickly be revealed. On the other hand, recent examples of the deflating of a "breakthrough" following close on the heels of media attention (such as the reports of an icy asteroid striking Earth, and the Jefferson paternity story) weaken the credibility of the scientific endeavor. The negative consequences of this can also be seen in the unrealistic public expectations and disappointment that have followed the overselling of cancer therapies, cures for obesity, and the allure of gene therapy.

The relationship between science and the press is uneasy.

The relationship between science and the press is of necessity uneasy. Scientists complain that a newsbite approach to science reporting focuses on (and frequently hypes) immediate impact, rather than giving a sense of prior work forming the foundation of a result. This is compounded by the fact that only a selected sampling of results or topics is routinely deemed newsworthy.

Science reporters, on the other hand, complain that some scientists become dismissive and arrogant when dealing with the press. Too many scientists are unwilling (or unable) to communicate their findings in a way that will be intelligible to anyone except their close colleagues. Some, faced with cameras and microphones, are overwhelmed by the temptation to make their results live up to the excitement of the moment.

Funders, scientific societies, and journals themselves contribute to the focus on "breakthroughs." Given the funding environment, public relations firms have hungry customers clamoring for more attention to their interests and opportunities, and distribute a flood of press releases on new results. Scientists and administrators can be under pressure from them to represent results beyond what has been allowed in a published peer-reviewed paper—or to misrepresent contrasting or earlier results. The public presentation and thus understanding of basic research and scientific progress can suffer, even in a world where more science is being covered.

Such tensions are, of course, not limited to science. However, the increasing speed of information flow and the increasing pressures on scientists and journalists mean that all players must be mindful of the Uncertainty Principle and its effects.

The reporting of science is immensely better and more extensive than it was even a few years ago, but it can only be improved through better understanding by each side of how the other operates. Several programs launched over the past several years are playing a valuable role in fostering such understanding. They include the AAAS's mass media program, which gives young scientists a taste of working in media outlets; the summer programs run by the Woods Hole Marine Biological Laboratory, which give science journalists a taste of doing bench science; graduate journalism programs, such as the science writing program at the University of California at Santa Cruz, which train science graduates in the art of science writing; and the background seminars conducted by the Council for the Advancement of Science Writing, which bring scientists and journalists together to review the latest developments in selected fields. Such efforts should be encouraged and expanded. We also agree with Michael Crichton's recommendation at the recent AAAS meeting (see *Science*, p. 1461) that the scientific community should identify and reward members who, as part of their professional responsibilities, can act as effective spokespersons and will be "on call" to interpret discoveries and explain the scientific process to the public. Scientists and the press have common goals in this endeavor.