To Publish or Not to Publish

Every once in a while, we at *Science* receive a paper that causes us to exercise particular care in handling, because it may be controversial or because it is important—or both. The paper by Taleyarkhan *et al.* on p. 1868 of this issue is a case in point. It qualified for careful, responsible treatment on both counts. And its history with us has exposed some of the more unusual challenges that can arise in the publication process.

The paper reports experiments in which sonoluminescence is induced in solutions of deuterated acetone subjected to sound waves and neutron irradiation. These conditions cause bubbles to grow and then implode, locally generating high pressures and temperatures and the emission of sonoluminescent light. The authors present evidence for the production of tritium in the solution, and for neutron emission coincident with the light emission. They cautiously interpret these observations as evidence that deuterium-deuterium fusion occurred in the imploding bubbles. That prospect naturally encouraged us to treat the paper with care.

After the external review process had been completed, we scheduled the paper for publication. Then we were contacted by senior science managers at Oak Ridge National Laboratory (ORNL), who said that certain reservations had developed about the findings and their interpretation. In a series of telephone and e-mail contacts, they urged that we delay the scheduled publication of the paper. The authors participated in a series of meetings to discuss objections raised by the ORNL managers, including some findings made by a second group of scientists who had been asked to perform additional tests, using the same apparatus but a different detector. After some negotiation, a compromise was reached in which the authors responded to criticisms and subsequently made some modifications in the text to accommodate them. They also agreed to cite a short non–peer-reviewed communication in which the second group present measurements that disagree in some respects with theirs, along with their own response to it.

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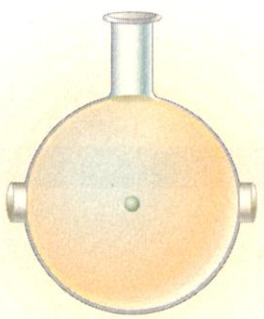
While these agreements were being reached, *Science* received communications from two distinguished scientists in this field, raising objections to the paper and urging that we reconsider our plans to publish it. And the matter became even more public on 1 March when Robert Park issued an airy, premature dismissal from the American Physical Society. By this time, it had become clear that a number of people didn't want us to publish this paper.

I have been asked, "Why are you going forward with a paper attached to so much controversy?" Well, that's what we do; our mission is to put interesting, potentially important science into public view after ensuring its quality as best as we possibly can. After that, efforts at repetition and reinterpretation can take place out in the open. That's where it belongs, not in an alternative universe in which anonymity prevails, rumor leaks out, and facts stay inside. It goes without saying that we cannot publish papers with a guarantee that every result is right. We're not that smart. That is why we are prepared for occasional disappointment when our internal judgments and our processes of external review turn out to be wrong, and a provocative result is not fully confirmed. What we ARE very sure of is that publication is the right option, even—and perhaps especially—when there is some controversy.



A reporter also asked me whether this was the only time pressure has been put on *Science* not to publish a paper. Although this case is exceptional, it is not unique; we have been there before. The motivations for urging us not to publish have varied from one case to another. Often they rest on serious legitimate scientific differences of opinion, although sometimes that is not so clear. In this instance, we see no good reason for abandoning our plans to publish the paper, and we can see no merit whatsoever in the efforts to discredit it in advance. Both the premature critics and those who believe in the result would do well to wait for the scientific process to do its work.

Donald Kennedy