



Science & Technology

April 10, 2006

Volume 84, Number 15

pp. 62, 65-66

Journals Grapple With Ethics Issues

Scientific fraud and other serious ethical violations pose persistent questions, challenges for editors

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There is silence on the telephone when Columbia University professor of chemistry Dalibor Sames is asked about his former doctoral student Bengu Sezen. She is the subject of a scientific fraud investigation under way at Columbia, and Sames explains quietly that the university forbids him to talk about the case publicly.



Photodisc

But the disappointment in Sames's voice is clear as he grimly confirms the retraction of two papers and parts of a third that he coauthored with his former student ([C&EN Online Latest News](#),

[March 23](#)). It will be some months before the university determines whether Sezen committed fraud, but for now, the allegation hangs over Sames and his research group like an oppressive fog.

There is a ripple effect from the perpetrators of scientific fraud and other serious ethical lapses in journal publishing, such as plagiarism, duplicate submission, and certain coauthorship problems. Their deceit is a form of betrayal that affects a wide circle of people and institutions, including the scientific journals that have published fraudulent or ethically tainted work.

"Fraud can unfairly cast a shadow over the reputation of a journal, even though it's extremely difficult to detect during peer review," says American Chemical Society Publications Division President Robert D. Bovenschulte. "The ACS journal editors, supported by our many knowledgeable reviewers, are deeply concerned about fraud and other ethical violations."

In the Sames case, the [Journal of the American Chemical Society \(JACS\)](#) has needed to publish retractions. Other cases—most notably the retraction earlier this year of a series of stem cell papers by disgraced Korean scientist Woo Suk Hwang—have affected *Science*, *Nature*, and scores of other journals that are less well-known or occupy specific disciplinary niches.

With each new case, particularly in recent years, observers of science have returned to a series of questions about ethics and scientific publishing: Could fraud have been detected by peer review or some other mechanism? Are journals harmed when they unwittingly publish fraudulent or ethically tainted work? Can journal editors do a better job of preventing fraud and serious ethical lapses in the first place, perhaps with education for scientists?



Kennedy

Courtesy of

Donald
Kennedy

[*Science*](#) Editor-in-Chief Donald Kennedy says he has been nervous about the impact of the stem cell scandal on his journal. He says he expected a negative impact, but there's been no drop in submission of papers. "We're not getting letters saying 'you screwed up,' " he says.

From the start of the stem cell debacle in January, Kennedy has vowed publicly to look closely at the paper trail as well as broader issues, including whether the journal could have somehow detected the fraud. He has asked *Science* editors to comb through all of their records for the case and to look for red flags. With that information, he says, he has prepared a comprehensive report on the incident, which he will next turn over to an outside panel for further review.

So far, Kennedy says, "there were no red flags that would have caused us to look intensively for fraud." And like most journal editors, he points out that peer review is not designed to detect fraud in the first place. But for papers of extraordinary impact, such as Hwang's stem cell papers, he says he is considering some form of "special handling."

"What would special handling entail?" Kennedy asks. "More peer review? More editors? Even with all of that, would I have been able to detect that something was very wrong? I don't think so."

JACS Editor-in-Chief Peter J. Stang, professor of chemistry at the University of Utah, agrees: "It is tough to discover falsification of data." He says journals are as much victims of fraud as the rest of the scientific community. "We rely on the integrity of individuals."

Stang adds that journal reviewers are seldom prepared to detect fraud. They might review data submitted, but it would be impossible to ferret out data or other elements of a paper that may have been doctored or made up whole-cloth by an investigator.



Stang

Courtesy of
Peter J.
Stang

But the nature of science itself ensures self-correction, Stang says. It usually happens after publication, when other scientists attempt to reproduce the work. He points out that the more important the work is, the more other scientists will want to reproduce it for their own experiments. When it comes to falsifying data, he adds, "the wonder is, how do people think they will get away with it?"

"We are watching out for ethical violations, but to investigate ourselves is impossible," Stang says. When a paper contains fraud or plagiarism, or there are serious problems with coauthorship, he says, the journal turns the matter over to the lead author's institutional Office of Research Integrity for investigation. That works in the U.S., anyway, where law requires such investigations for any institution receiving federal research funds.

"These traditions are not well-established elsewhere in the world," Stang says. "I think it's cultural. The U.S. is a more legally driven society."

Once ethical violations have occurred, journal editors do have options, say Stang and other journal editors. "I have a list of banned authors," Stang says.

Many of the journal editors C&EN spoke with for this article singled out authors from some Asian countries as a source of concern when it comes to serious ethical violations concerning plagiarism, multiple submissions, and coauthorship. All acknowledge that scientific traditions in those places and differing ideas about the seriousness of such offenses as plagiarism play a role.

"There are cultural differences in the international community," says C. Dale Poulter, chemistry professor at the University of Utah and editor of the [Journal of Organic Chemistry \(JOC\)](#).

When it comes to copying boilerplate-type text for an article, "for many Chinese authors, it's nonoffensive," says Richard Eisenberg, editor-in-chief of [Inorganic Chemistry](#) and professor of chemistry at the University of Rochester.

To help Asian authors, Tamara Nameroff, ACS director of international activities, says ACS is working with chemically related organizations in China to hold two half-day workshops this year on the scientific-publishing process. "It's a step in helping Chinese researchers build appreciation of what it takes to publish in a high-quality journal," Nameroff says. "By 2008 or so, China will be the number two producer of chemistry articles in the world. There's a real opportunity here for mentoring, for building a capacity to self-monitor."

Information is available about ethics and scientific publishing for would-be authors. The ACS Paragon website (paragon.acs.org/paragon/index.jsp), for instance, includes a document, "Ethical Guidelines to Publication of Chemical Research," points out Leonard V. Interrante, professor of chemistry at Rensselaer Polytechnic Institute (RPI), Troy, N.Y., and editor of [Chemistry of Materials](#).

Nonetheless, Interrante and *Chemistry of Materials* Associate Editor Elsa Reichmanis, in a letter to C&EN, write that "we, along with many of our peer ACS journals, have encountered a substantial and unfortunately growing number of cases of duplicate submission and self-plagiarism in the past few years" ([C&EN, June 27, 2005, page 4](#)).

Journal editors and reviewers also have "a level of responsibility" to try to prevent fraudulent scientific work from making it into print, says former *JACS* editor Allen J. Bard, a professor of chemistry at the University of Texas, Austin. When fraudulent work is published, he says, "it definitely diminishes the image of the journal."

The more that research results submitted to a journal are

spectacular or unexpected, "the more careful an editor has to be," Bard says. "There are papers we turned down because we couldn't get corroborating data. I think it's the editor's burden to get this material and get it to the reviewers."

But none of that can always prevent people intent on committing fraud or plagiarism from getting through the system, Bard acknowledges. When papers are retracted, he says, "you owe your readers an explanation of what happened."

To try to prevent fraud, "our review process has to be rigorous," Eisenberg comments. "I'm interested in what the reviewers are saying substantively. I want to know that a reviewer has worked through the material in a rigorous fashion. There's no system that's going to be foolproof, but it filters out bad science."

"We have a responsibility in the sense that the review process tries to provide authors and editors with an evaluation," says Royce W. Murray, professor of chemistry at the University of North Carolina, Chapel Hill, and editor of [Analytical Chemistry](#). He says if something is implausible in a research paper, it ought to become apparent.

"The good news is, science will right itself," says Amos B. Smith, professor of chemistry at the University of Pennsylvania and editor of [Organic Letters](#). "If it's important and there's fraud, it will come out."

Journals have a responsibility to take disciplinary action once people are caught, Poulter says. He explains that for less serious ethical offenses—for example, publishing without the permission of the principal investigator or leaving out coauthors—journals can bar authors for periods of years if they feel that is warranted.

Poulter has become especially concerned with ethical issues surrounding coauthorship and submission of manuscripts. In his first *JOC* editorial this year, he wrote that the journal "has experienced an increase in the number of manuscripts where a coherent body of work has been fragmented and submitted to two or more journals at almost the same time without informing the respective editors of the other submissions or providing proper cross-referencing."

"Issues related to coauthorship are also common," Poulter continued in his editorial. "Of special concern is the submission of manuscripts by corresponding authors that do not give proper attribution to coworkers. Editors cannot be expected to act as 'judges' in these disputes without clear evidence that a commitment was abused. The best protection of the parties involved is a signed, dated agreement about expectations for coauthorship at the beginning of the collaboration."

When fraud happens, Poulter says, it "probably does not significantly damage a journal with a reputation for rigorous review. We all recognize the possibility for this to happen." He says the most damage is perhaps to the reputation of science with the general public when big cases of scientific fraud are inevitably aired in the media.

Poulter argues that, more than journal editors, principal investigators have the responsibility to detect fraud. "Principal investigators and other laboratory supervisors are in a much better position, probably uniquely so, to detect fraudulent data. When it gets published, they have the responsibility to make a prompt and full accounting. Detecting fraud becomes much more difficult when the PI or supervisor is the perpetrator. At that point, detection probably comes when others try to reproduce the work."

Chemical & Engineering News
ISSN 0009-2347
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