

Do the Right Thing: Ethics in Research Takes Center Stage

Responsible Conduct of Research

Adil E. Shamoo
and David B. Resnik

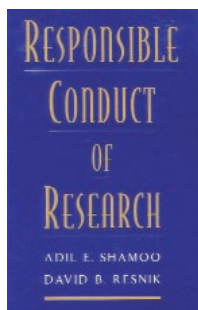
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Reviewed by Myriam P. Sarachik



Several recent, widely publicized instances of scientific misconduct have prompted renewed interest in ethics in science. The American Physical Society spent considerable time in 2002 discussing the matter and has strengthened its existing state-

ments on ethical conduct and coauthorship; at the 2003 APS March meeting, members held a well-attended special session on the subject; an APS task force continues to examine a broad range of ethical questions; and the society has emphasized that heightened awareness, discussion, and education are key ingredients to promoting ethical conduct.

The publication of *Responsible Conduct of Research* by Adil Shamoo and David Resnik is thus particularly timely. The authors' backgrounds are in biomedicine and bioethics. Shamoo is a professor in the department of biochemistry and molecular biology at the University of Maryland, Baltimore. He is also affiliated with the graduate faculty of applied professional ethics and with the center for biomedical ethics at the university. Resnik is a professor of medical humanities at the Brody School of Medicine at East Carolina University and director of new programs for the bioethics center at the

University Health Systems of Eastern North Carolina.

Ethical questions are ubiquitous in the conduct of science, as they are in all areas of human endeavor. *Responsible Conduct of Research* lists 16 examples of serious breaches of ethical behavior that have occurred in the past 30 years, most often involving fabrication and falsification of data. In one well-known case, an investigator studying host-graft disease painted the coats of mice black in order to indicate successfully grafted skin transplants. In another case, a scientist created nonexistent twin subjects and phony coauthors and fabricated data to support his theory that IQ is inherited. Most of the recent transgressions have been in the life sciences, an area where economic interests have played an increasingly important role. However, the authors make clear that there have been instances of misconduct throughout scientific history and in all fields of science.

The book covers a very broad range of topics. Each chapter begins with a brief history that is informative and often engrossing. All chapters end with lists of questions and hypothetical cases posing ethical dilemmas for further discussion. Most of these cases are drawn from the life sciences, but many can be extended to the physical sciences with appropriate modifications.

I recommend a quick scan of the introductory material, which contains a thorough mix of the obvious and the interesting. An example of the obvious is a flow chart describing how research is conducted (identify problem, develop hypothesis, obtain funds, and so on); another is the definition of an abstract as a short summary of the paper. On the other hand, there are sections that should not be missed, such as a quick primer on ethical theories and concepts (Kantianism, utilitarianism, natural law, for example); the relation between ethics and the law, politics, and religion; the proper handling and storage of data; and the importance of role modeling and ethical leadership at the highest levels.

Useful advice and recommendations are provided on how to deal with collaborative work, authorship, and misconduct, as well as ethics in mentoring, publication, and peer review.

The importance of good mentoring is stressed, and methods and procedures are suggested to prevent the exploitation of graduate students and postdocs.

Of particular relevance in light of the recent APS statement is the material regarding who should be a co-author and how coauthors should be listed. Shamoo and Resnik's recommendations are that, although they need not be responsible for every aspect in detail, contributors be listed as coauthors only if they can defend the entire paper; that authors be listed in decreasing order of accountability; and that the authors' contributions be specified. These recommendations are not common practice in physics and would be difficult to implement in our field.

The chapter on publication and peer review includes discussions of the ethical responsibility of reviewers, electronic publication, and relations between the media and researchers, such as the announcement of results through the press before publication in scientific journals and embargoes imposed by some journals. Those of us who have struggled with referee reports (and who hasn't?) will surely be interested in the extensive discussion and listing of the many problems associated with peer review. Despite the serious flaws of peer review and the need for improvement, Shamoo and Resnik nevertheless conclude that it is the only acceptable system.

Chapters on intellectual property, conflicts of interest, and collaborations between academia and industry contain valuable and informative material. Perhaps the most thought-provoking topics are those covered in the last few chapters, which deal with ethical dilemmas in the life sciences, dilemmas that are currently subjects of heated public debate. In addition to the use of human and animal subjects, Shamoo and Resnik consider ethics relating to fetal research; human reproduction; genetic testing, screening, and engineering; and cloning.

This is an interesting, informative, and timely book covering a lot of terrain in an area of great importance. As Shamoo and Resnik make abundantly clear, there is a surprisingly broad range of issues that must be considered in the ethical conduct of research.

Myriam P. Sarachik is immediate past president of the American Physical Society and a Distinguished Professor at the City College of the City University of New York. She is an experimental condensed matter physicist interested primarily in metal-insulator transitions in two and three dimensions, hopping conductivity, and molecular nanomagnets.