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EDITORIAL

Scientific Conduct: Contrasts on a Gray Scale

These days, menaces to the scientific enterprise stem not just from those who have been providing the funds, but from some of those who are doing the work. Much has been written about the more flagrant lapses in responsible science that active scientists abhor but consider rarities, such as inaccurate representation of data or questionable behavior in the acquisition of data. Such misdeeds, most would hold, will be found out by the scientific method of validation and replication. Perhaps so, but there are other misdeeds, more subtle and more common, that can do far greater damage to the fabric of scientific inquiry.

This special issue, coordinated by Features Editor John Benditt, is about such problematic conduct, counterproductive actions that fall far short of any definition of academic misconduct. As the cases reported in this issue show, the real everyday conduct issues in the pursuit of science are much more intricate and complex than those of the famous misconduct cases. These tough questions are hammered out in a gray area. Every time authorship is assigned for a research paper, every time one researcher asks another for a DNA clone or a knockout mouse, every time a decision is made about who presents exciting findings from a large lab at a public meeting, collegiality may collide with an individual's need for credit. These decisions are made every day, in every lab. There is even anecdotal evidence that such tensions are more frequent and more stressful than ever before.

Why? As the research enterprise has grown and subfields have proliferated, personal relations have suffered. The chief culprit has probably been the ever more intense competition for funds that now threatens investigator survival. The proliferation of commercial influences has exacerbated these trends. Decisions that once might have been carefully considered now seem urgent. How does one compare the obligation to share unique scarce resources with the community, many of whom are relative strangers, with the responsibility of a mentor to facilitate the independence or even the survival of young co-workers? Scientists are human beings, and living up to ethical ideals may suffer when competitive forces seem uncontrollable.

If these issues are so pressing, how does the research community come to grips with them? Until now, they have been consigned largely to informal methods of teaching. Senior investigators taught their junior associates what the ethical standards of scientific behavior were. Or young scientists learned by example from their mentors. In today's potentially stressful situations, however, those older informal methods clearly fail to meet the requirements of publicly sponsored training grants. In proceeding to illuminate these needs and dilemmas now, *Science* encourages the scientific community to take a far more explicitly active role in devising ways to teach students about the gray areas where the really tough, subtle choices are.

More and more institutions have already realized this need, and in this issue we discuss some innovative programs for teaching scientific conduct and misconduct. These faculty do not just talk about misconduct but emphasize the importance of seemingly innocuous decisions—how to portray data and how to omit it, how to decide whose name goes first or last, how to collaborate without losing independence of thought and interpretation. Some programs also succeed by including a few prominent scientists in the discussion, which helps to emphasize the importance of this topic throughout the entire community. Most of these programs try to weave ethical discussions into daily life on the research campus.

Because of the lasting importance of these lessons in scientific life, which obey no national boundaries, *Science* has decided to foster an ongoing discussion of scientific conduct within our global community. The first step in that process is a project called "Science Conduct On-Line," which will begin on 23 June 1995. This project will serve to introduce the AAAS and *Science* presence on the World Wide Web. It can be found by locating the new AAAS home page (http://www.aaas.org), calling up the *Science* home page, and looking in the "Beyond the Printed Page" section. "Science Conduct On-Line" will present ethical scenarios devised by a panel of five respected figures in the field of science ethics. Readers can send their responses to the scenarios, and the panel will respond online. This electronic discussion is the first of many digital projects planned by *Science* and AAAS to facilitate scientific communication. We welcome participation by the international scientific community.

Floyd E. Bloom