

# PROFESSIONAL ETHICS REPORT

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## COVER STORY

### **Ethics and Values in the Secondary Science Classroom**

**By Theodore D. Goldfarb, SUNY, Stony Brook**

In recent years, the behavior of scientists and ethical issues related to the social uses of science have come under increasing scrutiny. Several controversies about alleged instances of fraud or misrepresentation by scientists engaged in governmentally funded research has precipitated a series of highly publicized hearings by congressional committees. Concern about these controversies and their implications has stimulated efforts by the National Academy of Sciences, by other professional organizations of scientists, and by major governmental science funding organizations to develop more clear-cut guidelines for the ethical pursuit of science and a more responsive and equitable system for the enforcement of such guidelines [1-4]. This focus on the conduct of science (the subject of a recent special section in *Science* magazine)[5] has been amplified by a growing concern about the many serious ethical issues associated with technological applications made possible by the new powerful tools available for genetics research [6-11].

If scientists and a scientifically literate public are to appreciate better the importance of the ethics and values issues that are inherent in the social production and use of scientific knowledge, it is necessary to integrate the study of such issues into the teaching of science. Prestigious bodies within the scientific and educational establishment have recently taken actions in support of this proposition. Since July of 1990, the National Institutes of Health has required that all recipients of its research training grants offer a program of instruction in the responsible conduct of research [12] and, in 1994, the National Academies of Sciences and Engineering and the National Institute of Medicine issued a joint

statement urging universities to develop educational programs to teach ethics in an effort to inform students about good research practices [4]. Recognizing that ethics education should accompany a student's initial research experiences, the National Science Foundation began, in 1992, to encourage universities receiving funding for its "Research Experiences for Undergraduates" (REU) programs to include an ethics component.

Since 1992 we have been conducting a series of lunchtime ethics education and discussion sessions as part of our annual University at Stony Brook Chemistry REU programs. The undergraduate researchers, representing a broad range of colleges from across the country have, for the most part, responded with interest and enthusiasm to this initiative. From the beginning, this was clearly the first time that most of them had been asked to consider ethics and values issues explicitly as part of their science educations. A frequent comment voiced by these college students was that they would have been better prepared to engage in discussions of the more complex issues we raised had there been a coherent development of ethics in science throughout their previous schooling.

As a direct response to the obvious truth of this observation, we wrote a proposal that resulted in funding in 1994 by the National Science Foundation for a three-year project: "Workshops for High School Science Teachers: Ethics in the Classroom." The purpose of the project is to provide Long Island, New York, secondary science teachers with the knowledge, skills and encouragement to reformulate their courses to include content related to the roles of ethics and values in the practice and societal applications of science. Included is an intensive, two-week Summer Institute with follow-up sessions on Saturdays in the Winter and Spring. The instructional staff consists of two science professors, whose collective experience includes the teaching of ethics in science and science teaching in the secondary schools, and a professor of the philosophy and history of science. In addition, a professor of philosophy, who directs a center for the study of ethics in society and is a specialist in the teaching of ethics to children, serves as a consultant to the project and participates in two days of the Institute teaching program.

During the first year of the program there were 23 participants and an additional 29 (including junior and senior high school science teachers) have completed the second Summer Institute and the Winter follow-up session. Both groups expressed a high level of satisfaction with the program in anonymous, written evaluations.

The educational component of the program includes background readings, a series of case studies, lectures, discussion, and viewing of videos. Also included is a hands-on biotechnology laboratory experience that adds emphasis to discussions of the many ethical issues related to the Human Genome Project and to applications of the new powerful genetic technologies. The following subjects are included in the introductory presentations and discussions during the first two days of the Institute:

1. Fraud and other forms of serious misconduct in science.
2. Inappropriate manipulation ("cooking") of data.
3. Research involving human subjects.
4. Genetic screening and other concerns related to research on and use of human genetics.
5. Assigning credit for scientific discoveries or inventions.
6. Ecological protection, sustainable development, and environmental justice.
7. The peer review process.
8. The use of science in the justification of pernicious ideologies or social policies, such as racism and eugenics.
9. Effects of funding sources on science.
10. Constraints resulting from current scientific paradigms.

We developed case studies materials for the first six topics for presentation and discussion, choosing for each a real-life case on which to base the case study. For each of these cases we wrote a 3-4 page introduction describing the issues and pointing out the ethics and values questions raised by the case. We also assembled a set of readings related to the case in question, and to similar or related cases.

All participants are required to develop classroom lessons, both individually and in 5- or 6-teacher subgroups, for use in their own classes. The first-year participants produced ten group lessons that they modified to suit their own specific needs and used along with individually designed lessons in their classes during the 1994-1995 school year. Examples of the creative ideas used in some of this first set of lessons are: (1) the use of selected science fiction stories that

illustrate real-life ethics and values issues; (2) the mock trial of an alchemist charged with research fraud; (3) a role-playing exercise designed to illustrate a variety of ethical issues related to learning information about one's own genotype; and (4) a series of case studies designed to introduce students to ethical questions related to the use of animals in laboratory research. The second group of participants was equally enthusiastic and even more successful in producing creative group and individual lessons. (This is partly attributable to more care in dividing them into subgroups whose members shared similar teaching assignments as to both subject matter and student level.) Among the more promising of the lessons in the second set are the following: (1) a series of brief case studies involving situations students can clearly identify with, designed to introduce them to basic ethical concepts; (2) a structured classroom discussion based on a role-playing activity in which various ethical questions are raised by disagreements among hospital personnel about treatment of low birth weight infants; (3) a density measurement experiment that dramatically raises the issue of honesty in the reporting of data; (4) examinations of ethical issues in prenatal screening, in which students research one of thirteen listed, genetically determined diseases, modify a generic scenario about prenatal screening to conform to the specifics about that disease, and then role-play one character in that scenario; and (5) a laboratory exercise in which students simulate the search for the structure of the DNA double helix in a cleverly orchestrated scheme designed to illustrate such ethical issues as access to data, competition vs. collaboration, treatment of women and minorities in science, assignment of credit for discoveries, and the pros and cons of the peer review process.

At the follow-up sessions most of the teachers reported having introduced ethics and values lessons early in their science courses before they had reached the place in the curriculum where they could use the group lessons they had helped to develop. Many of the teachers described very enthusiastic responses from students. Furthermore, they could induce active interest in, and discussion of, science topics that had previously met with only a passive response, by beginning the unit with an exploration of the ethical and values implications of the subject. Several teachers described additional, creative ethics lessons, tailored to their own teaching needs, that they developed subsequently to the Summer Institutes. In several instances, teachers had persuaded colleagues who had not attended the Summer Institute to use the lessons they had developed.

Participants in the Summer Institutes receive copies of all of the lesson plans developed to date, and several teachers in the second group are using lessons developed by the first group. Stony Brook's Center for Science, Mathematics and Technology Education reproduces and distributes the lessons to teachers on request and serves as a continuing networking link in communicating about the teaching of ethics in the science classroom. A presentation describing the program at the Science Teachers of New York State's annual conference in November 1995 was attended by more than 40 science teachers from around the state who displayed a high level of interest in integrating ethics and values issues into their own classroom teaching.

We are presently planning follow-up activities to this successful program. We intend to create and publish a book and other resource materials designed to provide practical support for secondary school science teachers who wish systematically to incorporate topics in ethics and values in their curricula. Although appropriate case studies and other written and audiovisual material are available that can be used to teach ethics and values ideas to secondary school students in a way that enriches and enlivens the teaching of science, there is no concise text or resource packet that provides the instruction and direction that the typical secondary school science teacher needs to use these materials in a coherent, pedagogically sound manner. Recent books such as *Research Ethics: Cases & Materials* edited by Robin L. Penslar[13] and *Scientific Integrity: An Introductory Text with Cases* by Francis L. Macrina[14] are written for instructors of courses on responsible scientific conduct for college and graduate students. Although the scope and level of sophistication of these books are different from what is needed for the secondary school, they do provide appropriate organizational models. Both texts begin with educational material on ethical theory and issues related to the teaching of research ethics followed by a series of chapters devoted to specific topics, which include case studies to be used in classroom teaching. The book we plan to develop will follow these models. It will include a set of lessons designed for use in the full range and levels of sciences taught in junior and senior high schools. Included will be edited versions of the more successful lessons created by the teachers during our three-year program of summer institutes. We are also seeking funding for a project designed to develop strategies and create materials for incorporating ethics and values in the earlier grades of K-12 science teaching programs.

Brian Coppola and David Smith conclude their recent article, "A Case for Ethics,"[15] by stating that "...a science

education that explicitly includes the moral dimension will produce scientists who are capable of handling complex ethical questions and nonscientists who can see more of the humanity within the ordinary workings of science." Unfortunately the new National Science Education Standards, released by the National Academy of Sciences/National Research Council in December 1995[16] make no clear reference to teaching ethics as part of the K-12 science curricula. Although interpreting the recommendation for enhancing the study of "personal and societal perspectives on science" as including the moral dimension is possible, this potentially influential document unfortunately does not make a more explicit plea for integrating ethics into science teaching.

*[This research was supported by grant SBR 93-20255 from the National Science Foundation. For further information, contact the author at the Department of Chemistry, State University of New York, Stony Brook, NY 11794; (516) 632-7908; Fax (516) 632-7960; E-mail tgoldfarb@sunysb.edu.]*

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## IN THE NEWS

### FDA Proposes Rules on Human Subjects and Disqualification of Clinical Investigators

The Food and Drug Administration has proposed a new rule (*Federal Register* 60: 66530- 66531, December 22, 1995) amending its existing informed consent regulations to require that the consent form be "signed and dated by the subject or the subject's legally authorized representative at the time of consent." The action was prompted because the agency "has had problems on occasions verifying that consent was obtained prior to participation in the study because a number of the consent documents were not dated." In another proposed rulemaking (*Federal Register*, 61: 6177-6178, February 16, 1996), the FDA seeks to clarify the existing regulation regarding the disqualification of clinical investigators for submitting false information. Currently, the agency can disqualify any investigator who has "deliberately or repeatedly submitted false information to the sponsor [of the research] in any required report." Since the regulation refers explicitly only to information given to the sponsor of the research, there is some ambiguity regarding the applicability of the rules to sponsors which also conduct research, but submit their reports directly to the

FDA rather than to a separate sponsor. While the FDA believes that its disqualification authority extends to such sponsors, it has proposed to clarify the scope of the regulation by stating explicitly that a "sponsor-investigator" that has submitted to FDA or to the sponsor false information" is subject to the agency's rules for the disqualification of clinical investigators.

## India Bans Sex Determination

The use of sex determination to identify female fetuses for abortion has been banned in India, effective January 1, 1996. Even informing pregnant women or relatives of the sex of the fetus is illegal. Any physician who does so may be subject to a fine and up to three years imprisonment. The new law is intended to respond to the increasing gender imbalance in India.

## Consequences of Whistleblowing in Scientific Misconduct Reported

A report commissioned by the federal government's Office of Research Integrity (ORI) has concluded that institutional officials play a significant role in producing the "most serious negative consequences, loss of position, loss of research resources or opportunity, and denial of advancement" for scientists who bring allegations of scientific misconduct. The report, *Consequences of Whistleblowing for the Whistleblower in Misconduct in Science Cases* (October 1995) was prepared by the Research Triangle Institute, and is based on completed responses from 68 whistleblowers (out of 105 surveyed) whose cases were handled by ORI or its predecessor agencies. Among some of the report's findings are the following: "More than two-thirds of all whistleblowers reported experiencing at least one negative outcome" as a result of their whistleblowing, while "nearly one-third did not experience any adverse consequences...." Those most likely to experience adverse consequences were "lower ranking faculty and students/fellows in basic science departments." Negative consequences included pressure to drop their allegations, being ostracized by colleagues, reduced research support, and threatened or actual legal action. Interestingly, the report found that three-fourths of those whistleblowers experiencing "severe negative consequences" said they would definitely or probably blow the whistle again. However, nearly one-in-six said they definitely would not." Readers may access the report on the ORI homepage on the WWW at: [http://phs.os.dhhs.gov/phs/ori/ori\\_home.html](http://phs.os.dhhs.gov/phs/ori/ori_home.html).

## NSF Clarifies Its Misconduct Policy

Noting that "Policy discussions of misconduct have largely neglected the issue of seriousness. Yet ... seriousness is a key consideration in NSF's definition of misconduct," the National Science Foundation has clarified its interpretation of its scientific misconduct regulation. According to a statement in the NSF Inspector General's *Semiannual Report to the Congress* (No. 13, April 1-September 30, 1995), implementation of the NSF regulation requires that "the seriousness of an alleged offense [be considered] at two separate points." First, there is a "threshold judgment" to determine whether the alleged conduct was a "serious deviation from accepted practices." Practices of a less serious deviation are outside the scope of the regulation. To make this threshold judgment requires a determination of "whether the level of intent is sufficiently blameworthy that the act can qualify as a serious deviation and hence misconduct." (In its ninth *Semiannual Report to the Congress* of April 1-September 30, 1993, the Office of Inspector General elaborates on the meaning of intent in the context of the NSF regulation and offers guidance on how institutions can make judgments about intent.) After determining that a "serious deviation has occurred, a "degree judgment" must be made on the seriousness of the misconduct in order to decide on appropriate actions or sanctions. The Report states that "a fuller consideration of intent than was necessary for the threshold judgment" may be involved in this degree judgment. The Report then identifies "two recurrent interrelated problems in how university investigation reports treat seriousness. First, they sometimes confuse threshold judgments of whether conduct seriously deviates from accepted practices with degree judgments of how far beyond the threshold the conduct falls. Second, when investigating committees believe that a finding of misconduct is not warranted, they sometimes explain their conclusion by making strained arguments about intent instead of forthrightly addressing seriousness." The Report then applies these two judgments to two cases reported on in previous *Semiannual Reports*.

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## IN THE SOCIETIES

## **AOTA Video on Ethics**

The American Occupational Therapy Association, Inc. (AOTA) is now making available its new video entitled, "Everyday Ethics: Common Concerns in Occupational Therapy." The video presents eight vignettes of one or more ethical issues faced by an occupational therapist and is designed to be used in an interdisciplinary setting by clinical practitioners, administrators, educators, and students. Following every scene, a panel of experts discuss components of the ethical issue raised, which include academic misconduct, billing practices, supervision of aides, and fraud. Included with the video is a 122-page *Companion Guide* which has a hard copy version of the vignettes, models for dilemma resolution, and a comprehensive annotated bibliography. "Everyday Ethics" is 60 minutes in length, is closed-captioned, and costs \$175 per copy for non-AOTA members. To order the video or find out more, contact AOTA Products, 4720 Montgomery Lane, P.O. Box 31220, Bethesda, MD, 20824; (301) 652-2682; (800) 377-8555; Fax (301) 652-7711.

## **AAAS' New Program on Science and Religion**

In October 1995, the American Association for the Advancement of Science (AAAS) established a Program of Dialogue Between Science and Religion in the Directorate on Science and Policy Programs. The Program has three major objectives. First, it will seek to promote knowledge about developments in science and technology. Its mandate will be to undertake educational programs and to develop resources with and for constituencies within the religious community. Second, the Program will provide opportunities for dialogue between members of the scientific and religious communities on significant, potentially controversial topics on which it is important that the two communities understand each other's points of view. Third, the Program will promote collaboration between members of the scientific and religious communities on projects that explore the ethical and religious implications of scientific developments. The Program will:

1. develop workshops and training seminars to educate the religious community and journalists who report on religious issues about scientific developments;
2. organize fora, conferences, and consultations to enable members of the scientific and religious communities to enter into meaningful dialogue;
3. establish channels of electronic communication to supplement existing fora;
4. undertake liaison with other science and religion centers, programs, and associations in the United States and Europe;
5. sponsor research to assess scientific developments and explore their religious implications; and
6. undertake research projects and studies and convene meetings to explore the ethical implications of science and technological developments within a religious framework.

The Program of Dialogue Between Science and Religion is eager to involve AAAS members, affiliated organizations, and others in the design and implementation of its projects and activities. Contact Audrey R. Chapman, Director of the AAAS Program of Dialogue Between Science & Religion, 1200 New York Avenue, Washington, DC, 20005; (202) 326-6600; Fax (202) 289-4950; E-mail [achapman@aaas.org](mailto:achapman@aaas.org).

## **AAA Statement on Misusing Scientific Findings to Promote Hatred**

In November 1995, the Executive Board of the American Anthropological Association (AAA) approved the *Statement on the Misuse of "Scientific Findings" to Promote Bigotry and Racial and Ethnic Hatred and Discrimination*. The Statement was developed and adopted because of concern that scientific findings were alleged to be used by members of the Russian Academy of Sciences as rationale for discrimination. The Statement is excerpted below:

The AAA is deeply disturbed and saddened by the spread of bigotry and racial and ethnic hatred around the world, including, but not limited to claims of racial supremacy or inferiority, calls for ethnic cleansing and purity, fanning xenophobic fears for political purposes and religious-based discrimination. The AAA also is greatly concerned that promoters of such attitudes and practices often cite alleged scientific findings to support their views. No such findings exist.

As stated in the AAA resolution on "race" and intelligence approved in 1994, "differentiating species into

biologically defined 'races' has proven meaningless and unscientific as a way of explaining variation (whether in intelligence or other traits)."

The AAA Executive Board therefore finds that the worldwide scientific community has a responsibility to speak out against the use of purported scientific findings used to "justify" racial or ethnic superiority, inferiority or stereotyping and used to "justify" racial, ethnic and religious discrimination. To that end, the AAA Board resolves:

**Whereas** all human being are members of one species, *Homo Sapiens*, and

**Whereas** exclusionary practices and racial, ethnic and religious hatred based on differences among groups are spreading around the world, and

**Whereas** promoters of such attitudes and practices often claim their views are supported by scientific findings, and

**Whereas** no such scientific findings exist, and

**Whereas** the worldwide scientific community has a responsibility to promote responsible uses of scientific findings,

**Therefore**, the AAA urges the worldwide scientific community to actively counter such claims whenever and wherever the claims are made....

For more information, contact Mary Margaret Overbey, Director, Government Relations, AAA, 4350 North Fairfax Drive, Suite 640, Arlington, VA, 22203; (703) 528-1902; Fax (703) 528-3546.

### **AAAS Videos on Research Integrity**

To fill a need for up-to-date, stimulating educational tools that will help scientists assess their responsibility for maintaining the quality and integrity of their research, the American Association for the Advancement of Science has produced a series of five short videos (approximately 10 minutes each), titled *Integrity in Scientific Research: Five Video Vignettes*. The videos are designed to help educators provide instruction that will improve the ability of scientists, post-doctoral fellows, under-graduate and graduate students, administrators, and technicians to develop informed and well-reasoned responses to ethical issues that arise in scientific research. The videos dramatize situations that might occur in research that raise ethical issues, but leave them unresolved in order to stimulate discussion. Among the topics addressed by the series are: role and responsibilities of mentors and lab chiefs; determination of authorship; allocation of credit; impact of legal rules on conduct of science; data retention, selection, sharing, and reporting; sloppiness in research; whistleblowing;; peer review; intellectual property; co- mingling of private and public funds for research; privileged information; and responsibilities of collaborators. *A Discussion and Resource Guide* accompanies the series and includes discussion questions and a summary of key issues for each video as well as a compendium of resources. The video series was funded by grants from the NIH, the Office of Research Integrity, and the Agricultural Research Service, and is a collaborative project of the AAAS, Amram Nowak Associates, and the Division of Health Communication of the Medical College of Georgia. The videos, on five VHS cassettes, will be available for a modest price in April 1996. To receive additional information, contact the Directorate for Science and Policy Programs, AAAS, 1200 New York Avenue, NW, Washington, DC, 20005; (202) 326- 6600; Fax (202) 289-4950; E-mail: science-policy@aaas.org.

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## **ETHICS, LAW & PUBLIC POLICY**

### **Professional Liability of Engineers**

With dramatic changes occurring in the field of engineering practice, including corporate re- engineering, downsizing and various other factors, there appears to be growing interest and concern on the part of many engineers relating to

their potential liability exposure for actions performed within the scope of the engineer's duties. Company and firm policies on this issue vary depending upon a variety of factors. In addition, evolving relationships between engineers and their employers as a result of corporate restructuring will increase the complexity of the issues involved.

As a general rule, where an engineer negligently performs services on behalf of his firm or employer, the individual allegedly suffering damage from the engineer's negligent performance may sue the firm and/or the individual engineer. Typically, where the engineering firm or company carries professional liability insurance, the firm's professional liability insurance carrier will respond to claims against any past or present principal, partner, director, officer, or employee acting within the scope of their duties. In some cases, the firm or company may chose to self insure and agree to indemnify its employees for negligent acts, errors, or omissions performed within the scope of their duties. In all cases, the issue of who signs or seals the drawings, plans, or specifications is not necessarily relevant to whether the engineer and/or the firm will be found negligent. Instead, the courts generally look to whether the engineer(s) owed a duty to the individual(s) suffering damages and whether the engineer(s) breached the duty and caused all or a portion of the damages.

Assuming the firm or company maintains a manageable professional liability insurance policy deductible and reasonably high limits of coverage, the firm's professional liability insurance policy should provide adequate professional liability protection for the firm, principals, employees, etc. In the event the firm anticipates a potentially greater professional liability exposure due to the nature of its work and other risk management considerations, the firm may want to consider increasing its maximum limits of coverage. While individual engineers employed by a firm or company are covered under standard professional liability insurance policy language and individual professional liability insurance policies for employees have not been the custom or practice within the engineering profession, individual employees who may believe their unique services (e.g., "cutting edge" environmental remediation services) increase their firm's liability exposure may want to discuss these issues with their employer and, if warranted, the employer may want to explore these issues with its insurance broker and carrier.

It is possible, but extremely improbable, that an individual employee would be "sued outside of the corporate liability insurance umbrella," which would mean that the individual employee would be sued but his employer would not. As a practical matter, a plaintiff's attorney will name (in fact, the attorney has a professional obligation to name) each and every party that is potentially liable to the plaintiff. Under those conditions, it is hard to imagine a plaintiff naming the employee and not naming the employer, who is responsible for managing that employee. Assuming both are named in the suit, the professional liability insurance carrier would provide coverage for both the firm and the individual employed engineer.

Where a firm or company terminates its practice, discontinues liability insurance coverage, and one of its former employee establishes his/her own firm and is later named in a suit relating to professional services rendered through the former firm, many standard professional liability insurance policies would provide what is called "retroactive insurance coverage" that would provide protection for the former employee for those claims. Under the what is generally called a "retired principal's policy" a retiree would be covered for "prior acts." For example, this coverage would provide protection to retired individuals who have concerns regarding professional liability exposure during their retirement for professional services rendered during their professional career. As a general rule, the cost for a retired engineer's policy is vastly reduced (20%) as compared to an active practitioner's policy.

On the issue of a separate professional liability insurance for employed engineers, for many years there has existed various professional liability insurance programs for these engineers. The current annual premium for most of these policies is roughly \$200 per year for \$100,000 in coverage. However, historically the employed engineer insurance policy has not been popular with individual engineers. This may relate to the fact that few employed engineers have perceived a significant risk exposure as employees of medium or large firms or companies. As noted earlier, many firms or companies either have professional or products liability insurance coverage, or as a matter of corporate policy have agreed to indemnify and hold harmless their employees for negligent actions which arise within the scope of their duties.

However, the climate may be changing largely due to recent corporate restructuring, as, for example, is presently occurring within the power generation field. There appears to be growing interest in professional liability insurance

among some electrical engineers who have been terminated from employment and afterwards brought back by their former employers as "independent contractors." It is likely that in the years ahead, there will be a growing market for insurance for employed engineers and small engineering firms. One of the potential stumbling blocks in developing such a new product is the fact that professional liability insurance is generally written on a "claims made" basis + meaning that the policy must be in force when the claim is made. This will require the maintenance of professional liability insurance throughout the engineer's professional's career.

It is clear that with increasing changes occurring in the relationships between engineers and their employers, new and practical methods of addressing long existing issues associated with professional liability will need to be developed in order to assure that engineers can continue to perform effectively their professional services.

By Arthur Schwartz, NSPE General Counsel

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## RESOURCES

### In Print

*Scientific Deception: An Overview and Guide to the Literature of Misconduct and Fraud in Scientific Research* by Lesley Grayson (The British Library, Science Reference and Information Service, 25 Southampton Buildings, London WC2A 1AW, England, 1995). Order from Turpin Distribution Services; fax 01462.480-947; E-mail turpin@rsc.org, £24.50. This publication from the British Library is part of its science policy series and is an overview of the major English-language literature on integrity and misconduct in science, most of it originating in the U.S. The material is presented in three sections: the scientific process, pressures on scientists, and responses and policy implications. Each section begins with a brief analytical review of the issues followed by an annotated bibliography presented in chronological order. It includes three indices: authors, corporate bodies (the subject, as well as authors/publishers, of the bibliographic references), and subjects.

*Dental Ethics at Chairside: Professional Principles and Practical Applications* by David Ozar and David Sokol (St. Louis, MS: Mosby-Year Book, Inc., 1994, \$32). For more information, contact Mosby, 11830 Westline Industrial Dr., P.O. Box 46908, St. Louis, Missouri, 63146; (800) 426- 4545. *Dental Ethics at Chairside* is touted as the first book on dental ethics to provide "both a systematic discussion of the fundamental principles of professional ethics in dentistry, and detailed applications of these principles to issues drawn from daily dental practice." The book includes 14 detailed cases and commentary on ethical issues confronting dentists, and includes topics on professional priorities and ethical decision-making, dentistry as a business, ethical advertising, and new challenges for dentistry.

*Moral Reasoning in Scientific Research: Cases for Teaching and Assessment* developed by Muriel Bebeau, *et al.* (Poynter Center for the Study of Ethics and American Institutions, Indiana University, December, 1995, \$7). For more information, contact the Poynter Center for the Study of Ethics and American Institutions, Indiana University, 410 North Park Avenue, Bloomington, IN, 47408; (812) 855-0261; Fax (812) 855-3315; E-mail pimple@indiana.edu; WWW <http://www.indiana.edu/~poynter/index.html>. *Moral Reasoning in Scientific Research*, intended as a teaching aid for science faculty members, is a 100-page booklet of materials for teaching the responsible conduct of science in college and university courses. The materials focus on teaching and assessing moral reasoning in ethical decision-making. Included are an introduction on how to use the materials; an essay for students on "Developing a Well-Reasoned Response to a Moral Problem in Scientific Research"; and six short case studies. Each case presents a problem in research ethics and includes extensive discussion of the ethical issues and points of conflict, interested parties, consequences, and moral obligations implicit in the case, plus a checklist for evaluating students' responses to the case. Issues covered in the cases include data ownership, plagiarism, whistleblowing, data selection/exclusion, collegial relations, and animal use.

### On-Line Discussion List

*Science-as-Culture E-mail Forum* is co-organized by editors of the print journal, *Science as Culture* (to subscribe send an e-mail message to listserv@sjuv.m.stjohns.edu that reads "sub science- as-culture your firstname and lastname").

Science-as-Culture is an unmoderated forum for critical discussion of the cultural aspects of all forms of expertise, for example: the impact of science on culture, how culture represents it, the culture of various forms of expertise, the theory of knowledge, changing concepts of nature, new technologies, and gender aspects of science. The forum will also make announcements of conferences, publications, and employment opportunities.

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## ANNOUNCEMENTS

A special issue of the *Australian Computer Journal* will be devoted to "**Ethics and the Internet.**" Full length papers and short communications on any ethical aspects will be considered. Relevant topics include but are not limited to: access to the network; intellectual property; censorship; ethical standards in a global community; cultural imperialism; and control of the network. Submissions are due by April 19, 1996. Contact, John Weckert, School of Information Studies, Charles Stuart University, PO Box 588, Wagga Wagga, NSW 2650, Australia; 61 69 332 372; Fax: 61 69 332 733; E- mail: jweckert@csu.edu.au.

The **Fourth National Communication Ethics Conference** is being held on May 9-12, 1996, at Western Michigan University and is being co-sponsored by the Communication Ethics Commission of the Speech Communication Association; the Center for the Study of Ethics in Society, the Department of Communication, and the Office of Academic Affairs at Western Michigan and the Department of Communication at Duquesne University. The purpose of the conference is to promote research and teaching relating to ethical issues and standards in all aspects of human communication and to facilitate exchange among teachers and scholars of communication ethics. Contact James A. Gilchrist, Department of Communication, Western Michigan University, Kalamazoo, MI 49008; (616) 387-3130; Fax (616) 387-3990; E-mail james.gilchrist@wmich.edu; WWW <http://www.wmich.edu/communication/ethics.html>.

**Managing Ethics in the Engineering Workplace** is a short course which will be offered May 20-22, 1996 at Texas A& M University in College Station, Texas. With increased attention being given to cases such as the Challenger disaster and the Kansas City Hyatt-Regency Hotel walkway collapse, this course will provide the individual with the decision making tools necessary to recognize and handle ethical issues in the engineering workplace. The course will convey to students the responsibility of professionals for the consequences of their actions. Major topic areas include: environmental impact; engineer/manager relationships; responsibility for public health and safety; proprietary information and confidentiality; conflicts of interest; and honesty in research and testing. Contact Sheri Pappas at (800) 477-9470 or E-mail adpappas@teexnet.tamu. edu.

On May 29 - June 1, 1996, **Bioethics & Biolaw** will be held in Copenhagen, Denmark and is being sponsored by Copenhagen University's Centre for Ethics and Law, the Danish Council of Ethics, and the Philosophical Forum. The international conference, intended for scholars in the fields of philosophy, law, medicine, genetics, agriculture and veterinary science, will address bioethical issues that have arisen in judicial practice and in legislation, in government directives, and in the ethico-legal debate. Contact the Centre for Ethics and Law, Symbion Science Park, Fruebjergvej 3, DK-2100, Copenhagen, Denmark; 45 391 79858; Fax 45 391 79857.

**Student Pugwash USA's 9th International Conference** is being held June 16-22, 1996 at the University of Wisconsin-Madison, and is titled, "Science, Technology, and Ethical Priorities." Approximately 100 students representing 20 countries will gather to spend a week examining global issues structured around six principal topics: international weapons trade; water quality and availability; public participation in scientific decision making; alternative energy sources; emerging infectious diseases; and access and the Internet. Contact Russell Singleton, Student Pugwash USA, 815 15th Street, NW, Washington, DC, 20005; (202) 393-6555; Fax (202) 393-6550; E-mail intlconf@ spusa.org; WWW <http://www.spusa.org/pugwash>.

The Professional Ethics in Dentistry Network and the Center for Ethics at Loyola University Chicago are sponsoring a four-day workshop on **Teaching Dental Ethics** on June 19-22, 1996. This workshop will provide training in both the content and the methods of teaching dental ethics. Participants will learn how to identify appropriate competencies for dental ethics courses and programs, how to assess achievement of these competencies, and how to use various teaching materials. Contact the Center for Ethics, Loyola University Chicago, 6525 North Sheridan Road, Chicago, IL, 60626; (312) 508-8349; Fax (312) 508-8879.

**On June 28, 1996, Beyond Consent: What Risk? Whose Benefit?** will be sponsored by the Poynter Center for the Study of Ethics and American Institutions at Indiana University, Bloomington. The one-day conference for teachers of science and others concerned with the responsible conduct of human subjects research, will tackle such questions as: how can researchers understand the research from the perspective of the subjects?; what exactly does "privacy" entail from the subjects' point of view?; what benefits do the subjects want to derive from the research?; and what special problems arise in international human subjects research? Contact Kenneth Pimple, Poynter Center for the Study of Ethics and American Institutions, Indiana University, 410 North Park Avenue, Bloomington, IN, 47408; (812) 855-0261; Fax (812) 855-3315; E-mail [pimple@indiana.edu](mailto:pimple@indiana.edu); WWW <http://www.indiana.edu/~poynter/index.html>.

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