Professional Ethics Report
Current Issue — PER Main Page — SFRCL Main Page

Volume XII, Number 1, Winter1999

Publication of the AAAS Scientific Freedom, Responsibility and Law Program, in collaboration with the Committee on Scientific Freedom and Responsibility
Professional Society Ethics Group
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ISSN: 1045-8808
URL: http://www.aaas.org/spp/sfrl/sfrl.htm

Secrecy in Science

By Amy Crumpton

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A new form of secrecy is taking hold within science, raising concerns that openness and sharing of information is becoming the exception rather than the norm among academic scientists. Increasingly, proprietary interests in scientific processes and products impose restrictions on the practices of science. Restrictions such as the non-disclosure of research findings, delay of publication, or licensing of research tools or processes are becoming more common. Such strictures may place many academic scientists in professional dilemmas, caught between contractual duties to funders and ethical obligations to other scientists or the public at large.

The new secrecy and its implications for science was the subject of a colloquium, "Secrecy in Science: Exploring University, Industry, and Government Relationships," sponsored by AAAS and the Massachusetts Institute of Technology. The colloquium, convened on March 29 at MIT, provided a forum to expand public discussion and assembled sixteen speakers from a wide range of perspectives.[1]

On the Frontlines

In a number of recent highly publicized incidents, restrictive practices and concerns for scientific freedom and openness have clashed and enjoined a renewed debate about the politics of science. These cases put a human face on the dilemmas that some scientists may be facing. Nancy Olivieri, at Toronto's Hospital for Sick Children, became convinced that use of the drug deferiprone on children with thalassemia had dangerous side effects. The manufacturer of the drug, Apotex, that funded Olivieri's study, cancelled her research and threatened her with a breach of contract suit should she inform her patients or publish her negative findings. When Betty J. Dong, a researcher at University of California, San Francisco, and her colleagues found the effectiveness of a new synthetic thyroid drug, Sythroid, to be equivalent to three other thyroid drugs, the drug's manufacturer Boots/Knoll Pharmaceutical, refused to allow publication based on a contractual agreement that Dong had signed prohibiting disclosure of proprietary information. Instead, the company reanalyzed the data and published an opposite conclusion, without acknowledging the experiments carried out by Dong. Having signed non-disclosure agreements with the companies, both Olivieri and Dong found that their universities, daunted by monetary and legal stakes, would not support them. However, they did find support from colleagues who argued that the professional responsibility to inform the public of their research findings outweighed the contractual obligations.

In another much watched case, research by David Kern, an occupational health physician at Memorial Hospital of Rhode Island and an associate professor at Brown University's School of Medicine, revealed an outbreak of lung disease at the Microfibres, Inc. textile plant in Pawtucket, Rhode Island. Kern's initial attempts to publicize findings of this new occupational disease were viewed by the company, hospital and university admininstrators as breaching a confidentiality agreement with Microfibres over nondisclosure of its trade secrets. Kern argues that he never signed

such a non-disclosure agreement. Despite the finding by Brown that Kern's academic freedom had been violated, the university failed to support him and his contract has not been renewed. Speaking at the colloquium, Kern warned that "to balance health and contractual agreements in the same moral plane is pernicious." He believes that there is "a failure of administrators to appreciate that people's lives hang in the balance and that there is loss of knowledge about a disease" when these conflicts occur.

The Role of Universities

The failure of administrators to recognize threats to academic freedom, as well as to the public interest, is a common criticism within cases where researchers find themselves up against large companies that may be funding other projects at the same university. In scrutinzing the role of universities, speakers at the colloquium stressed the responsibility of these institutions to "hold the line" in setting standards. John Deutch, MIT professor and former director of the Central Intelligence Agency, asserts that universities must protect the integrity of the research process—the first principle being open inquiry and free exchange of ideas—especially with regards to students. Unfortunately, he notes that universities undermine their position by not providing information to the public on the costs and performance of education and research on institutional issues, such as sexual harassment, drugs, or minority recruitment, in an accessible way.

Lita Nelsen, director of MIT's technology transfer office, views part of her job as informing researchers not to sign prohibitive agreements with industry. Nelsen, and her counterparts at other universites, work to ensure that researchers patent their inventions. Citing the 1980 Bayh-Dole Act that has enabled universities and non-profit research institutions to own and patent inventions developed with federal funds [2],universities have created an array of policies for the retention and release of scientific information and materials. Many academic institutions require employees to sign a patent agreement that assigns rights of any inventions to the institution. In addition, researchers may be required to sign material transfer agreements (MTA's) to borrow materials from other academic scientists or from companies. It is not uncommon for MTA's to require that the lender be given prepublic-ation review of all manuscripts and pass through proprietary rights to any patents that might arise from research using the material.[3]

Nelsen insists that universities must ex-plain to industry that their institutional norms are different and remind them that they want to partner with universities because of that difference, which allows for creative and productive ideas to emerge. Currently 20% of MIT's funding, or $80 million per year, comes from industry and this proportion is growing. Such growth is part of an overall trend according to Robert Cook-Deegan, director of the National Cancer Policy Board at the Institute of Medicine, but is most prominent in health research. He finds that one fourth of all pharmaceutical and biotechnology products depend on academic research and another fourth would be delayed in their development without the contribution of such research.

Behaviors of Scientists

How do these changes in universities' relations with industry affect the daily practices of science? Peter Gosselin, economics correspondent for the *Los Angeles Times*, argues that the structure of incentives amid larger market forces needs further study in order to understand the extent to which secrecy affects the behavior of scientists and skews the control of knowledge. It is not uncommon, of course, for scientists to keep results close to their vests in order to be first in claiming a new discovery and reap institutional and professional accolades. Beyond a few highly publicized cases, however, little is known about the number of academic scientists who may be experiencing professional dilemmas because of restrictive controls on communication and sharing of research results.

In trying to determine what scientists actually do in response to restrictive practices, Blumenthal, *et.al.* reported that 20% of 2,052 life science faculty they surveyed indicated that publication of their research results had been delayed by more than 6 months at least once mostly for protection of proprietary value. While 9% reported refusing to share research materials with other university scientists, 34% responded that they were denied access to research results of products from other university scientists. 28% of the respondents received industrial support for their research. Those with industrial suppport were more likely (11%) than those without such support (6%) to refuse requests from other academic scientists to share research results or materials.[4]

Alan Hartford, a researcher at Massachusetts General Hospital and a colloquium panelist, notes that life scientists working with industry who delay more than 6 months to publish their research may have salary issues, tenure

decisions, or other institutional career incentives tied to their decision. In other words, these scientists may perceive that the wait is vital in some way to advance their careers. Drummond Rennie, west coast editor of the *Journal of the American Medical Association*, is more pointed. Rennie argues that researchers have a duty to publish and universities have a duty to support their right to publish. While the National Institutes of Health suggests that 90 days is the most that publication should be delayed due to patent or sponsor review of results, Rennie strongly believes that a wait of longer than 60 days is "unethical and nonsensical." He maintains that researchers are seduced by funders and are in fear that if they don't go along, the money will go to another institution with lower standards. This situation, Rennie claims, is "a race for the ethical bottom."

Government Control

While industry practices contributes heavily to the new secrecy in science, government secrecy continues to pose tensions for science as well. The bulwark of bureaucratic designations to classify particular kinds of research as secret for national security reasons dates back at least to the second world war. Senator Daniel Patrick Moynihan, who headed the government Commission on Protecting and Reducing Government Secrecy [5], observed at the colloquium that secrecy "remains a hidden, humongous, metastasing mass within government" that has been routinized and scientized bureaucratically so as to endanger open communications necessary to a democratic society. Moynihan credits members of the scientific community with special diligence in deterring the threats of secrecy. "From the beginning of the atomic age," he contends, "physicists have insisted that there were no secrets in nature—or technology."

Physicists' efforts in the 1940s and 1950s to ensure greater openness in atomic energy and weapons research has become a benchmark, but other areas of science also illustrate where intrusions by the government pose problems for open scientific practices. Some researchers view government export restrictions on cryptography for national security reasons as control over free speech and argue that such restrictions are impossible to maintain in this fast changing international field. In other lessons from the history of science, historian Susan Lederer contends that government secrecy was used to shield public awareness of human radiation experimentation on vulnerable populations. In cultural anthropology, a causuality of cold war politics according to anthropologist Laura Nader, anthropological fieldwork of other cultures has been coopted by military and political officials for strategic purposes, leading to the control and killing of peoples.

The recent FBI library survellience program, that attempted to gather reading lists for all foreign national patrons or those with foreign sounding names from university and other librarians, presented a real threat to the academic community. Herbert Foerstel, a board member of the National Security Archives and former librarian at the University of Maryland, argues that professional librarians resisted such instrusion by refusing to turn over reading records that they saw as confidential information. Foerstel believes that such incidents as these may be repeated whenever the government feels a perceived need to secure information.

Government controls over science have been in the news lately due to a recent federal law calling for all scientific data to be open to the public and obtainable through Freedom of Information Act requests.[6] This law places another twist on the secrecy in science issue for the scientific community. While many in this community may not object to the principle of openness to the public, they do worry that the new law could undermine the ability of academic researchers to judge the value of their colleagues' work by allowing industry to target findings and data that it finds objectionable, potentially even before the research is published. In the colloquium's closing comments, Mary Good, head of Venture Capital Investors and president-elect of AAAS, admonished the scientific community for being blindsided by the law and being slow to respond effectively. Legislation has been introduced that would repeal this law.

From Secrecy to Privacy

While academic freedom and the integrity and accountability of the research process are fundamental issues in the debate over secrecy in science, the issue of scientific responsibility to the public is critical. The sensitive nature of human subjects research, whether individuals or entire communities, makes it desireable that some scientific data be handled as confidential in order to protect privacy. Thus, there was a call by some at the colloquium to replace secrecy with privacy as the threshold for restraining information. The task of safeguarding privacy rights of vulnerable individuals and populations in genetics and other research, while working to preserve academic freedom, is of

paramount importance if the research community is to avoid violating public trust in science.

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IN THE NEWS

NEW FDA RULE REQUIRES PEDIATRIC STUDIES

On December 2, 1998 the U.S. Food and Drug Administration (FDA) issued a new rule that will dramatically impact the treatment of pediatric patients. The rule, in effect for regulations covering drugs and biologics, will require pediatric studies if the product will be used in a "substantial" number of pediatric patients (50,000 affected patients) or if the product provides significant improvement over existing therapies (or if there is a need for additional therapies), and if in either case the absence of pediatric labeling would constitute risks to those patients. The rule becomes effective April 1, 1999.

FDA first issued a regulation concerning pediatric labeling in 1994, which encouraged manufacturers to voluntarily include pediatric data. But FDA determined that the voluntary efforts were not satisfactory and decided to issue the new regulations to ensure the safety and effectiveness of all drugs and biologics for use in pediatric patients. This new rule follows a Congressional bill that impacts pediatric studies. Under the Food and Drug Administration Modernization Act of 1997, the bill provides patent protection or exclusivity for six months beyond the time these protections would otherwise expire if the FDA has requested pediatric studies and the manufacturer has complied with such a request. FDA, though, believed that even this bill would provide insufficient protections and that there would be too many exceptions (for example, most biologics, antibiotics, and off-patent products would be excluded). Thus, it wrote the new rule so that it can require studies of drugs already on the market, regardless of their nature or market status. The intention of the FDA is to use its power for the most compelling cases (e.g., for products impacting substantial numbers of patients, or providing significant improvements on or benefits over existing therapies).

INVESTIGATOR CONVICTED FOR FALSIFYING GRANTS INFORMATION

Leon Shohet, an engineering professor at the University of Wisconsin (UW), was scheduled to serve 3 months in jail beginning February 19, 1999 for a federal misdemeanor charge of falsifying documents. Although federal prosecutors originally requested that the punishment be in the form of a $100,000 fine, the U.S. Magistrate Judge presiding over the case changed the punishment to a $10,000 fine and 100 hours of community service, plus jail time and one year of supervision following his release. The sentence was not appealed.

Federal investigations concerning Shohet and UW-Madison's Engineering Research Center for Plasma-Aided Manufacturing, which he directed, began in May 1996 based on reports from University employees. The investigators concluded that while applying for National Science Foundation (NSF) grants, Shohet had lied about the number of corporate partners in the Research Center, overstating the actual number. He maintained that the list was misinterpreted and was in fact a set of potential partners. Other discrepancies uncovered in the investigation were never proven to be the result of Shohet's actions, and there were never any allegations of personal gain as a result of the NSF grant. During the investigation, Shohet resigned as director of the Center, but had rejoined the faculty in the College of Engineering by Fall 1997. Following the sentencing on January 22, 1999, the UW-Madison chancellor began the process of removing Shohet from the payroll and considering his future status with the University.

REDUCING THE REGULATORY BURDEN ON RESEARCHERS

A report commissioned by the National Institutes of Health has recommended several changes in rules affecting scientists that are intended to reduce the burden of regulation in five areas: animal care and use, conflict of interest, human subjects protection, research integrity, and hazardous waste disposal. “Regulatory burden” was defined as “any aspect of Federal legislation, regulation, or policy, or Federal/research institution practices that could be made more efficient without diminishing the intended level of protections.” In addition to studying the legal requirements that imposed these burdens, NIH officials actively sought the views of the scientific community by interviewing representatives of professional scientific organizations as well as university scientists and administrators.

The report identified several factors associated with burden that cut across all five regulatory areas that they examined, noting that “in many instances these factors are interrelated and may be synergistic in a negative sense.” Those factors are: (1) regulations that limit flexibility without enhancing results; (2) regulations administered by multiple agencies impose inconsistent requirements; (3) the regulation of science by non-science agencies often results in additional regulatory burden; and (4) better communication between agencies and research institutions could reduce the regulatory burden. An analysis of these factors led the authors to conclude that the report “confirms that the current system of regulation for each of the five areas is in need of change, and in some cases, dramatic change.”

In the area of research integrity, for example, the report found that the applicable regulations “effectively require a duplication of effort on the part of the research institution and ORI; in doing so, they compromise the legitimate role of the institution to have primary responsibility” for responding to allegations of scientific misconduct. They also found legal mechanisms that “serve as a disincentive to the institutional investigation of allegations of scientific misconduct” and “insufficient effort…being devoted …to conduct formal education programs in research integrity.” To respond to those concerns, the report recommends that “The role of ORI should be fundamentally restructured and primary responsibility for responding to allegations of misconduct should reside unambiguously with the research institutions.” This restructuring, according to the report, would eliminate an “additional layer of Federal review [that] will result in a more timely resolution of the allegation without compromising the fairness of the outcome.” With this lesser regulatory role, “Promoting and conducting education and training in the responsible conduct of research and in practices supporting research integrity should be the primary role of the restructured ORI.” To deal with the legal disincentives for institutions to conduct investigation of scientific misconduct, the report recommends that the False Claims Act be amended “to eliminate the potential…for the institution to have its investigation files used against it by those seeking to recover research funds misused through scientific misconduct” and “provide qualified immunity from tort claims for those who participate in good faith in responding to, or adjudicating, allegations of scientific misconduct.”

The impetus for the report was a 1998 congressional request by the House Committee on Appropriations “to streamline and rationalize duplicative and unnecessary Federal regulations which govern the conduct of extramural scientific research.” The report is posted on the WWW at http://www.nih.gov/grants/policy/regulatoryburden.htm

APPEALS COURT UPHOLDS RESTRICTIONS ON INTERNET USE

Six professors employed by various public colleges and universities in Virginia challenged the constitutionality of a Virginia law restricting state employees from accessing sexually explicit material on computers that are owned or leased by the state. The 1996 law prohibits Virginia employees – including professors and librarians—from using state computers to “access, download, print, or store any information infrastructure files or services having sexually explicit content.” The law does exempt material used for a “bona fide agency related research project,” but requires researchers and others who want to view sexually explicit material for work-related purposes to obtain permission from their supervisors first. It also requires the state to make the requests public.

In February 1999, the U.S Court of Appeals for the Fourth Circuit unanimously reversed a lower-court ruling that said the law effectively discouraged discussion of sexual topics and therefore violated free speech. The three-judge panel found that the state has the right “to control the manner in which its employees discharge their duties,” and found that the law is not overly restrictive because it allows the above-mentioned exemption for an agency research project. Supporters of the law believe that Virginia has no obligation to subsidize pornography, while professors saw the ruling as a threat to academic freedom and the unrestrained exchange of ideas. Virginia’s House of Delegates voted to repeal the law and replace it with an as-yet-unspecified “acceptable-use policy” for Internet use by state employees. This measure is now pending in the Senate. The professors have not yet decided whether they will appeal the decision.

COUNCIL OF EUROPE RECOMMENDS HALT ON XENOTRANSPLANTATION

On January 29, 1999, the parliamentary assembly of the Council of Europe voted in favor of a moratorium on clinical trials of xenotransplantation, a process by which animal cells, tissues, and organs are introduced into humans. The assembly, comprised of members from 40 countries, recommended that animal tissues and cells should not be transplanted into humans until the risk of creating new man-made pandemics has been better assessed. It also called on the Council to work towards an international moratorium.

Recently, both the U.S. and U.K. have allowed limited xenotransplantation experiments to proceed under strict guidelines. Advocates of xenotransplantation argue that the promise of the technique far outweighs the risks posed by the experiments. The need for organs is great - two out of three persons needing new organs will not find a donor this year. Critics charge that the greatest risk posed by the technique is the possibility of introducing new diseases into humans, a scenario that gained further likelihood recently when studies showed that pigs, the current donor of choice, harbor endogenous retroviruses that can infect human cells in culture.

Research and evaluation of the risks posed can be addressed only by performing limited human clinical trials, which would not be possible if the recommendations of the Council of Europe are adopted in their current form. The European moratorium has little legal weight unless it is adopted widely by member states, an unlikely possibility at this point due to opposition from clinical researchers in many of those countries. However, Swiss researchers may face tighter regulations or even an outright ban, as its Parliament is poised to enact laws regulating xenotransplantation.

BAYLOR COLLEGE OF MEDICINE VINDICATED IN SCIENTIFIC MISCONDUCT CASE

On February 10, 1998, molecular physiologist Kimon Angelides settled a civil suit against the Baylor College of Medicine putting an end to a seven-year scientific misconduct saga that has plagued the institution. The settlement occurred hours after the Research and Integrity Adjudications Panel at the Department of Health and Human Services upheld a finding by the Office of Research Integrity (ORI) that Angelides had committed misconduct while at Baylor.

It began in 1992, when a department chief questioned data in Angelides' grant application. A subsequent two-year investigation by the Committee on Scientific Integrity at Baylor found Angelides guilty of falsifying and fabricating data in five journal articles and five grant applications. Following this finding, Baylor terminated his position at the University in March 1995. In 1997, the Office of Research Integrity agreed with Baylor's findings and barred Angelides from receiving federal grants for five years.

Angelides appealed the ORI ruling, and filed a civil suit against several parties for slander and denial of due process. These parties included Baylor College of Medicine, its president William Bulter, seven faculty members who were on the panel that investigated him; and, two junior members of his own laboratory who gave evidence against him. While the civil trial was ongoing, the federal panel released its findings, concluding that, among other things, the evidence showed a case of "intentional and conscious fraud." Upon hearing the panel's decision, Angelides' attorneys reached a $500,000 settlement with Baylor, all of which will go towards the expenses incurred by Angelie's law firm. As part of the settlement, Angelides has accepted the findings of the federal panel, and has been barred from challenging or publicly criticizing its decision. He has also withdrawn all claims against Baylor. As a result of the Angelides affair, the ORI is considering additional legal protections for universities as well its faculty members who conduct proper scientific misconduct cases.

PROTECTION FOR WHISTLE BLOWERS IN UK

In July 1998, the Public Interest Disclosure Act was passed in the United Kingdom. The Act, scheduled to take effect in 1999, is one that protects an employee who discloses that their employer is party to a criminal offence, is failing to fulfill a legal obligation, is endangering health and safety, or is damaging the environment, as long as the disclosure is made in good faith and not for personal gain. An employee who encounters any of these situations must first disclose it to the employer. If unresolved, then the issue may be revealed more widely. Government employees in the U.K. can inform the relevant minister directly. In addition to protecting such an employee against dismissal or any other detrimental act by the employer, the Act provides for monetary compensation up to $19,000, a limit that may be removed altogether. Although the Act will affect all fields of employment, it is expected to create a certain 'openness' in scientific work. For example, certain disease risks and potential for epidemics may be made public earlier and such information could affect public health at large.

IN THE SOCIETIES

AMERICAN SOCIETY FOR BIOETHICS AND HUMANITIES

A report of the Task Force on Standards for Bioethics Consultation has been adopted and published by the American Society for Bioethics and Humanities (ASBH). The report, "Core Competencies for Health Care Ethics Consultations," identifies qualifications and skills the Task Force deems necessary for improving the quality of health care ethics consultations. Core Competencies for Health Care Ethics Consultations focuses on issues that arise in specific clinical cases and policy consultation regarding patient care issues.

The report is divided into five main sections addressing: (1) the nature and goals of ethics consultations; (2) the types of skills, knowledge, and character traits (core competencies) that are important for conducting ethics consultations; (3) the emerging area of organizational ethics consultations; (4) the importance of evaluating ethics consultations; and (5) some of the special obligations of consultants and institutions.

The report's intended audience include ethics consultants, educational programs that help prepare individuals, teams or committees to do ethics consultations, and all health care organizations that offer ethics consultation services.

The Task Force unanimously recommends that the content of this report be used as voluntary guidelines. To order a copy of the report, contact ASBH at 847/375-4745, fax 847/375-6345, email info@asbh.org, or visit the ASBH Web site at http://www.asbh.org

ASEE STATEMENT ON ENGINEERING ETHICS EDUCATION

As the result of the accelerating pace of scientific and technological change which is rapidly transforming society and the economy, issues of ethical choice have taken on an increasing importance for all professions, and especially for engineering. In recognition of this challenge, ABET's Engineering Criteria 2000 include "an understanding of professional and ethical responsibility" among the general criteria for basic level programs in engineering. The American Society for Engineering Education (ASEE) agrees that ethics education must be an essential element in the education of all engineers.

ASEE believes that, because engineering has a large and growing impact on society, engineers must be equipped by their education to fulfill their ethical obligations to the public at large, to their profession, and to their clients and employers. The ethical problems that may be confronted by engineers include such issues as conflicts of interest, threats to public health and safety or to the environment, trade secrets and proprietary information, gifts from contractors and others, honesty in research and testing, and yet other problems which will inevitably result from the application of new and revolutionary technologies.

To educate students to cope with ethical problems, the first task of the teacher is to make students aware of ethical problems and help them learn to recognize them. A second task is to help students understand that their projects affect people for good or ill, and that, as "moral agents" they need to understand and anticipate these effects. A third task is to help students see that, as moral agents, they are responsible for helping to develop solutions to the ethical problems they encounter.

ASEE believes that ethics education in engineering should endeavor to equip students with the skills to confront ethical problems and exercise their ethical responsibilities as engineers. While ethical issues can be raised in a lecture format, students also need practice solving ethical problems first-hand. Educators can employ a variety of problem-solving activities to give students experience using decision-making tools to handle ethical problems. These activities can involve role-playing, computer simulations, group projects, and engineering cases which involve both unusual and everyday situations. To provide this experience, engineering schools have found two basic ways to fit ethics instruction into their curriculum by establishing freestanding courses in ethics, and by integrating ethics across the curriculum.

Whichever means is chosen to impart the ethics experience in the engineering curriculum, ASEE strongly shares the view that, to survive in the work world of the 21st century and to carry out responsibly their roles as agents of technological change, new engineering graduates need substantial training in recognizing and solving ethical problems.

ASEE is a nonprofit association of more than 11,000 members representing colleges, corporation, and other organizations dedicated to promoting excellence in engineering education and engineering technology education. ASEE, which celebrated its centennial in 1993, plays a key role in developing and promoting policies that will enable engineering education and its allied branches of science and technology to meet the new challenges of global competition and technological change.

ETHICS, LAW AND PUBLIC POLICY

BIOMETRICS: BLESSING OR END OF ANONYMITY?
By Amitai Etzioni

Amitai Etzioni is the author of the just released The Limits of Privacy (Basic Books 1999), on which this article draws, and is a University Professor at the George Washington University. Contact WWW http://www.gwu.edu/~ccps

Biometrics is a technology that recognizes a person by one of their unique biological features such as the pattern of their hands, eyes, or voice. Wells Fargo recently introduced ATMs that recognize its customers' faces. Similarly, Mr. Payroll Corp of Texas check cashing services welcomes its customers personally because the computer is familiar with their mug. Entry to Disney's Magic Kingdom can be secured by the magic of laying your hand at the appropriate place at the gate. Purdue Employees Federal Credit Card Union clients need not even say "Open Sesame" to get to their cash; touching a plate with their finger suffices. Numerous other usages are coming online or are in advance stages of development.

A Personal and Communal Boon

Once biometric devices are more fully developed, and as unit costs decline (they have already fallen as low as $99 per scanner), individuals may forget their passwords, pin numbers and access codes as well as leave behind their ID cards and keys. Moreover, people may cease to worry about identity theft, in which criminals acquire the identity of others to empty their bank accounts, abuse their credit cards, and leave their victims to prove their innocence. Given proper use of biometrics, at least 1,200 Americans will be spared this rather unsettling experience every day. For business, biometrics promises to sharply curtail billions lost each year due to credit card fraud and the passing of bad checks. Maybe even more beneficial will be the reduction in security costs, as more and more locked doors (and computers) will respond only to those authorized to enter. Not all guards will get pink slips, but fewer will be needed.

Communities, too, stand to reap considerable benefits. Once biometric devices are widely deployed, they will make it much more difficult for the estimated 330,000 criminals to remain on the lam. These fugitives not only avoid trial and incarceration but also often commit additional crimes while roaming the country with little concern. And biometrics will help child care centers and kindergartens to screen out individuals convicted of child abuse and violent crime. (In a study conducted by six states, they found 6,200 such employees, using false identification documents, working with children). Biometrics will also cut the $16 billion lost to the US Treasury each year to people who collect multiple tax refunds and social security payments, and help curb welfare fraud and illegal immigration. In short, while biometric devices do not make coffee or do the dishes, their potential benefits are numerous and diverse.

Unreliable?

Critics argue that biometrics are over hyped; that they are not 100% reliable. In a test conducted at the University of Georgia, in which 18,000 students were screened to ensure that they did not pass their unlimited meals tickets to friends, some 10 students were not recognized by the scanners. Jim Wayman, who studies these systems at San Jose State University, reports a failure rate as high as 2%. But even according to the most pessimistic assessments, biometrics defies comparison because it is much more reliable than existing modes of identification. While fooling biometrics is extremely difficult, people can buy false drivers licenses and green cards for fifty bucks in many American towns bordering on Mexico. Most college campuses are awash in false, paper-based, ID cards used to purchase drinks. Still critics are not satisfied. Systems that rely on finger recognition, one points out, can be fooled—by a "freshly severed real one." It is not a pleasant prospect, but hardly leads one to prefer prevailing modes of identifications over biometrics.

Civil Libertarians

One of these days, as biometrics are employed by millions of people, civil libertarians will find some people, some place, who have been mistreated as a result, which no one should take lightly. But instead of asking how to minimize such problems, and ponder whether such rare failures could justify doing without biometrics, civil libertarians condemn them wholesale. A bill introduced into the California Assembly by Kevin Murray (D-LA) treats biometrics like narcotics; it calls for criminalizing "trafficking" in biometric information. "It's part of a growing trend to treat people guilty before proven innocent," said David Banisar, staff counsel for EPIC, a privacy advocacy group. Solange Bitol, of the American Civil Liberties Union, contends, "You don't need a person's fingerprint. You don't need a person's eyes . . . The amount of information we are giving up in the name of efficiency is frightening. Finger-scanning welfare recipients is "like tattooing numbers on Holocaust victims," claims Howard Moscoe at a Metro Council meeting in Canada. Robert Ellis Smith, publisher of Privacy Journal fears that biometrics will be used by the government "to intimidate people."

Genuine Issues

There are some specific privacy concerns that need addressing, which are lost in the civil libertarian indiscriminating broadsides. The main one arises out of the fact that biometric scanners can recognize people from several feet away. Hence, scanners can identify people who do not voluntarily present their mug to cash a check, or display their hand to gain access to a guarded computer. Thus, soon an enterprising retailer may scan people on a beach and send advertising to all those who wear no sunglasses (or—unfashionable ones). Solveig Singleton of the CATO Institute argues that little harm is involved; just a bit more junk mail. And such "targeted" advertising may beat being flooded with unwanted catalogues.

Still, many Americans who find out that they have been involuntarily targeted, for instance when they get solicitations from those who sell diapers on return from maternity wards, feel that their privacy has been violated. When credit card companies recently sought to use pictures they garnered from driver licenses to better identify their customers, public protest squashed the project. The same happened when Intel introduced a its new Pentium III computer chip to combat online fraud with its ability to transmit a unique serial number to Websites that request it. While none of these initiatives directly involved biometrics, they provided a measure of Americans' reactions to being involuntarily identified.

One cannot tell at this point if these protests are limited squalls that swirl as the public becomes accustomed to these new technologies, or set precedents that will limit use of biometrics to consensual applications. It is clear though that the industry, the Federal Trade Commission, and privacy advocates agree that children are out of bounds for any such data mining systems (unless the parents consent).

The most serious concerns are raised by the government's use of biometrics, or its gaining information from private data banks. There is no law that would prevent the FBI or local police forces from using data available to every one who sells used tires or costume jewelry. About the only consolation one might have is, that contrary to popular beliefs, new identification technologies do not usher in totalitarian governments, but once totalitarian governments take over they use whatever means of control they can usurp. Strengthening the foundations of civil society is the best defense against totalitarianism, not trying vainly to return the genie of biometrics into the bottle from which it has already escaped.

RESOURCES

In Print

Codes of Professional Responsibility: Ethics Standards in Business, Health, and Law, 4th Ed. edited by Rena A. Gorlin (Edison, NJ: BNA Books, 1999 $95.00) To order, call (800)960-1220; Fax (732) 346-1624; WWW http://www.bna.com/bnabooks. Ethics issues take center stage in an environment of changing political climates, rapid scientific advances, new ways of providing professional services, and easier access to information through electronic sources. The new edition of *Codes of Professional Responsibility* explores how professions are dealing with ethical challenges. It is a single-volume collection of professional ethics codes covering 59 codes of ethics - most in full text.

It reveals how 52 major professional associations across 25 professions are addressing questions about confidentiality, conflicts of interests, accountability, competition, lobbying, fees, research, plagiarism, competence, advertising, self-regulation, telecommunications, referrals, peer review, misconduct, independence, discrimination, and sensitive issues specific to particular professions, among many other vital topics.

The reference also has brief introductions to organizations, containing contact information; membership information; code authority; online availability; organizational resources including division's programs, and services; informational resources including publications, videos, and seminars; descriptions of activities and goals; and discussions of code history, development, implementation, and enforcement. In addition, there is an expanded resources section listing ethics organizations and programs in the United States and worldwide as well as print and electronic media, including periodicals, reference works, online bibliographies, selected websites, and online discussion lists, all with complete contact information. The volume is indexed by organization, profession, and ethics topic to make research faster and easier.

ANNOUNCEMENTS

The **Center for the Teaching and Study of Applied Ethics**, University of Nebraska-Lincoln, will conduct an interdisciplinary seminar on Moral Theory and Its Practical Application, June 14-19, 1999. The seminar will examine fields of moral theory, professional roles, applied ethics and public policy with a purpose of enhancing the teaching of applied ethics, of stimulating research on issues relating to applied ethics, professionalism, public policy, and facilitating intellectual exchange on these topics. The twelve seminar participants should be college or university teachers or other professionals from a variety of disciplines. Focus will be on those who want an introduction to, or a review of, ethical theory, and who have an interest in applying this theory to their teaching, research or practice. Although applications will be accepted after March 31, 1999, priority will be given to those who apply early. Contact Stephen E. Kalish, College of Law, University of Nebraska-Lincoln, Lincoln, Nebraska 68583-0902; (402) 472-1248; Fax (402)472-5185; Email skalish@unlinfo.unl.edu

The **University of Montana** is offering courses in ethics in summer 1999. Ethics Across the Curriculum is designed to help instructors integrate the teaching of ethics into their regular curriculum. Ethics Officer Training meets the needs of corporations, medical centers, news organizations and government agencies that are planning or implementing ethics programming. Foundations of Moral Philosophy is a two-week workshop that provides an intensive introduction to three major Western approaches to ethics: virtue theory, deontology and utilitarianism. All three seminars will be taught by Deni Elliott, Director of the Practical Ethics Center. Contact Patrick J. McCormick, Practical Ethics Center; (406)243-5744; Email ethics@selway.umt.edu

The **MIT Press** is soliciting proposals for a new book series, titled Basic Bioethics. The series will offer an interdisciplinary range of titles in bioethics, reproduction, and genetics whose aim is to reach a broad audience, in research science and the health professions as well as the general public, with provocative, well-researched scholarship form the biotechnology, genetics, and bioethics. Editors will be Glenn McGee, Associate Director and Assistant Professor at the University of Pennsylvania Center for Bioethics and Arthur Caplan, Director and Trustee Professor of Bioethics at the same center. Contact Betty Stanton, The MIT Press, 5 Cambridge Center, Cambridge, MA 02142; (617) 253-5646; Fax (617) 258-6779; Email estanton@mit.edu

The **Center for Ethics at Loyola University Chicago** and the **Professional Ethics in Dentistry Network** will be co-hosting Ethics in Dentistry: Foundations, Current Issues, and Educational Strategies on June 9-12, 1999 in Chicago, Illinois. Through large group presentations, small group discussions, and collaboration with colleagues and experts, the workshop intends to heighten the moral awareness of dental professionals in dealing with issues such as the ethical challenge of managed care, ethics of risk and infection, and examine the role of organized dentistry in relations to dental ethics. Contact the Center for Ethics, (773) 508-8349; Email bjanis@luc.edu

Public Responsibility in Medicine and Research (PRIM&R) is convening its fourth conference for helping institutions receiving NIH training money to organize programs educating trainees about the responsible conduct of research. The conference will take place May 13-14, 1999 at the Marriott in Bethesda, MD. It is supported by the

Office of Research Integrity with the co-sponsorship of the AAMC, NIH, and Tufts University School of Medicine. Contact PRIM&R, Fourth Floor, 132 Boylston Street, Boston, Massachusetts 02116; (617) 423-4112; Fax: (617) 423-1185; Email PRMR@aol.com; WWW http://www.aamc.org/research/primr/rcrweb.htm

Raritan Valley Community College will host Integrating Ethics into Technical Education in Somerville, NJ on June 3-4, 1999. The goal of the conference is to provide a forum in which educators and business people may consider the integration of ethics into technical education. Forums for discussion will provide an opportunity to explore and develop new approaches to the integration of ethics into the technical curriculum as well as to share best practices and experiences in integration. Attendees will include educators, business leaders, and industry trainers interested in integrating ethics into technical education programs. Contact Joyce Tigner, Raritan Valley Community College, PO Box 3300 Somerville, NJ 08876-1265; (908)526-1200, ext. 8305; Fax (908)526-0253; Email: jtigner@rvcc.raritanval.edu

The **First Australian Institute of Computer Ethics Conference** will be held on July 14-16, 1999 at the Swinburne University of Technology, Lilydale Campus Melbourne, Australia. Topics will focus on ethical issues associated with the development and application of information technology and will include privacy and security as well as standards of conduct. Contact Chris R. Simpson, [61] 03 9214 8315; Fax [61] 03 9819 0823; Email aice@swin.edu.au; WWW http://www.aice.swin.edu.au/events/AICEC99/

Indiana University's Sixth Annual Teaching Research Ethics Workshop will convene at the Fourwinds Resort and Marina in Bloomington, Indiana on May 26-29, 1999. Session topics will include an overview of ethical theory, using animal subjects in research, using human subjects in clinical and non-clinical research, and responsible data management. Several sessions will feature techniques for teaching and assessing the responsible conduct of research and a panel will describe model curricula in research ethics. Contact Kenneth D. Pimple, Poynter Center, Indiana Unviersity, 618 East Third St., Bloomington, IN 47405; (812) 855-0261; Fax (812) 855-3315; Email pimple@indiana.edu; WWW http://www.indiana.edu/~poynter/index.html

The **Fourth Annual Ethics and Technology Conference** will take place on June 4-5, 1999 at Boston College in Boston, MA. The primary goal of the conference is to help continue the interdisciplinary dialogue about ethical and social challenges triggered by the rapid diffusion of information technology. The special focus of the 1999 conference is the Internet. Registration deadline for the conference is May 7. Contact Richard Spinello, Conference Chair, Carroll School of Management; (617) 662-3263; Email richard.spinello@bc.edu; WWW http://www.bc.edu/avp/ethics_tech.html

The **Office of Research Integrity, HHS** is co-sponsoring a one-day retreat on authorship with the Council of Biology Editors on May 24, 1999 in Montreal, Canada. The retreat is planned in conjunction with the CBE annual meeting. CBE plans to use the results of the retreat to catalyze the establishment of standards for authorship within disciplines in medicine and science. In addition to its interest in authorship issues generally, ORI plans to discuss the opportunities for ORI and scientific journals to collaborate in responding to allegations of misconduct. Contact Frank Davidoff, Annals of Internal Medicine, CBE Task Force on Authorship, American College of Physicians, 190 North Independence Mall West, Philadelphia, PA 19106-1572; (215) 351-2620; Fax (215) 351-2644; Email fdavidoff@mail.acpoline.org

The **Office of Research Integrity, HHS** invites applications of graduate students, post doctoral candidates or faculty to serve as unpaid fellows. Fellowships will be awarded to those interested in devoting 6 months to a year to research and write on topics related to research integrity or misconduct issues in science. Applicants are expected to have a doctorate or a professional post-graduate degree. Faculty interested in spending a sabbatical conducting research are also invited to apply. Contact Mary Scheetz, (301) 443-5300; email mscheetz@osophs.dhhs.gov