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Conflicts of Interest and the False Comfort of "Full Disclosure"

By Robert W. Hahn

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The Enron "scandal" has raised several issues about disclosure of information and potential conflicts of interest. For example, an accounting firm that receives consulting fees from a company it audits may be less likely to report financial problems with that company. Similarly, academics and other commentators receiving monetary compensation from a company may be more likely to give that company's policy positions a favorable review. An oft-proposed solution is "full disclosure" of all conflicts of interest. Unfortunately, this is easier said than done and may have unintended consequences.

Consider the problem of conflicts of interest in the context of funded research and opinions that are disseminated to the public by journalists, academics, and think tanks. "Full disclosure" may be a laudable goal, but is difficult to define and, therefore, not very useful. The problem is not that disclosure is bad—though it may occasionally lead to bad outcomes—but that the media and the public often use partial disclosure as a substitute for critical thinking.

The nature of the problem

There is no obvious place to draw the line on what needs to be disclosed. In some cases in public life, full disclosure has been interpreted to go beyond an individual to an individual's acquaintances or family. What constitutes all relevant information for purposes of disclosure? Firms, non-profits, and individuals have dealt with the problem of establishing credibility in a number of ways. For example, *Consumer Reports*, which evaluates consumer products, does not take money from business for advertising. Many other media outlets place restrictions on what journalists can do in order to maintain their independence. Universities place restrictions on how professors identify themselves when doing outside consulting and testimony. And when pursuing stories, the press often asks for similar kinds of disclosure. When I receive a call from the press about one of my studies, one of the first questions asked is who funded it. It is problematic that many journalists either don't have the time to, or cannot, evaluate the validity of studies. Instead, they simply take their cue from less important aspects, such as the funding source or the institutional affiliation.

The problem of assessing quality is not restricted to the press. Even academic peer review has serious problems, albeit for different reasons. In several instances, peer review has been shown to be an unreliable indicator of a paper's quality, accuracy, or integrity.[1] Additionally, peer review cannot necessarily prevent or reveal dishonesty in academic work.

The costs and benefits of disclosure

The benefit of more disclosure is that the media and public are given additional information about possible conflicts of interest. When disclosure raises a red flag that makes an editor or journalist examine arguments more closely, this is a benefit. However, disclosure has real costs as well, including: difficulties in monitoring and enforcement, difficulties in defining an appropriate level of disclosure, and the impact on who provides information and how.

Monitoring and enforcement. Providing incomplete information to the public tilts the playing field toward the side that is viewed as "clean." I think this bias is a very serious problem. The problem arises in part because the disclosure rules are difficult to monitor and in part because they are not always enforced with the same vigor. Moreover, the penalties for not disclosing are not that high in most situations.

For example, many people write opinion pieces on a particular subject for direct compensation. Some disclose that information while many others do not. Editors at major newspapers

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are less likely to publish op-eds that come with a disclosure statement because they do not want to be perceived as supporting free advertisements for a particular point of view. This perversely creates an incentive not to disclose.

Difficulties in defining an appropriate level of disclosure. We all have potential conflicts of interest because most of us work for a living. For academics and other professionals, it is not unusual to work for several companies, either giving speeches or on other short-term contracts. Over time, it can be easy to develop connections with businesses in the routine process of making a living. Not all of these connections pose a conflict of interest. When considering what to disclose, it is sensible to focus on activities that could pose a substantial conflict.

While some disclosure is justified, it is difficult to know where to draw the line. How should we deal, for example, with people whose firms link pay to visibility in the media? Why, in principle, should they be treated any differently from a business consultant taking money in exchange for writing an op-ed? Yet they are treated differently by the media — with the opinion of the business consultant being given less credence.

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Impact on who responds and how they respond. Journalist Andrew Sullivan has suggested that an individual who consults for a company should not write about issues related to that company. He believes that individual's journalistic independence has been compromised — no matter how innocent or transparent the consulting arrangement. Sullivan's position, while extreme, has some empirical support. When an individual consults for a company, she is more likely to take on the perspective of that company as a result of continued interactions with a group of like-minded individuals.

Even stopping short of Sullivan's suggestion, calls for greater disclosure could be counterproductive. The pool of potential experts on the subject may be reduced because some individuals will prefer not to disclose and not participate in the public discussion. Moreover, some may simply evade the requirements and hope they don't get caught. Still others — the entrepreneurial types — will create "fronts" that make the probability of detection less likely.

What kind of fronts might be created? A look around at how the various think tanks operate can offer some food for thought. Even the top think tanks, like AEI and Brookings, get much of their money from — dare I say it? — business, or foundations whose wealth typically comes from business. A typical foundation will only provide support if it has a reasonable expectation of the kind of results that will be produced.

The way think tanks deal with potential conflicts is to introduce mechanisms that help preserve their reputation for doing quality work, including: hiring scholars who are interested in preserving their academic reputations, peer-reviewing their major published works, such as books, encouraging their scholars to publish in peer-reviewed journals, and diversification of funding sources. Admittedly, the competition for funds is fierce, which may lead to greater emphasis on producing work that increases funding rather than on first-rate scholarship. Still, at the leading think thanks and universities, I think these mechanisms work reasonably well for scholarship published in a scholar's area of expertise.

Letters to the Editor: The editors welcome comments from our readers. We reserve the right to edit and abridge letter as space permits. Please address all correspondence to the deputy editor.

What to do?

Calls for greater disclosure will lead to more innovative ways to circumvent disclosure, which we should keep in mind when crafting solutions. The current system of disclosure, for all its warts, is not a bad starting point. That system generally requires a scholar to identify conflicts that would not pass a political "smell test." That is, if there is a reason to think that an average reader would be suspicious if a scholar did not disclose something, then she should disclose it.

The basic problem with the current system of disclosure is that it is incomplete. The media need to recognize this and do a better job. Here are five concrete suggestions.

Suggestion 1: Place less reliance on disclosure as a signal. Disclosure can provide a useful hint about a conflict of interest, but several other factors should be taken into account, including non-tangibles like "reputation."

Suggestion 2: Apply rules for evaluating experts across the board. That means doing due diligence on all participants in a debate, not just those where the conflicts are most obvious.

Suggestion 3: Find out whether the person is really an expert. The press should not give some people a pass, just because they sound good.

Suggestion 4: The media should think harder. The press needs to be more critical in an academic sense. There is no substitute for actually reading some reports to determine their quality. Leading media outlets should hire people to support reporters who can think critically about technical issues.

Suggestion 5: We all should think harder. If more people learn to think critically, this would help.

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What's wrong with these recommendations? The media seem to be happy with the status quo, and for the most part, so is the public. The real story is that disclosure has serious limitations, there are lots of major conflicts of interest out there that don't get reported, and the press tends to tilt the playing field in ways that have not been adequately considered.

Full disclosure, far from being a panacea, could make things worse. My immediate suggestions for fixing the problem are a press that thinks more critically and a public that does the same.

[1] For a discussion of some problems with peer review, see Linda R. Cohen and Robert W. Hahn, "A Solution to Concerns over Public Access to Scientific Data." *Science*, July 23, 1999. Also, William Dewald, J. Thursby, and R. Anderson, *American Economic Review* 76, 587 (1986), for a study that found errors in a prominent economics journal that were not caught by peer review.

IN THE NEWS

AAMC RELEASES SECOND REPORT ON FINANCIAL CONLICTS OF INTEREST IN HUMAN SUBJECTS RESEARCH

Universities should institute internal procedures to review financial conflicts of interest in sponsored research utilizing human subjects, according to a recent report by the Association of American Medical Colleges (AAMC). The report, entitled "Protecting Subjects, Preserving Trust, Promoting Progress II: Principles and Recommendations for Oversight of an Institution's Financial Interests in Human Subjects Research," was released September 23, 2002.

The crux of the report is its contention that institutions involved in research eitherfinanced by industry or with potential for profitable gain maintain absolute separation between those responsible for oversight of financial interests and those in charge of volunteer subjects' welfare. Additionally, the authors of the report suggest that universities nearly always avoid performing research when the institution owns stock or stock option in a corporation funding the study or could receive royalties from the results of the research. In the rare occasion when such research is undertaken, universities are expected to fully inform all human subject volunteers of the nature of any financial relationships.

Furthermore, the AAMC statement advocates that university officials disclose all institutional financial interests and take notice of occasions where a funding corporation donates significant non-financial resources to the institution performing research.

In order to fulfill these duties, the report recommends universities establish individual conflict-of-interest review committees responsible for informing the organization's institutional review board (IRB). These committees should be made up of both members of the university community and unaffiliated public.

The full report is available online at http://www.aamc.org/members/coitf/2002coireport.pdf. **AL*

CALIFORNIA TO PERMIT EMBRYONIC STEM CELL RESEARCH

A California law permitting embryonic stem cell research will go into effect January 1, 2003. The law, authored by Democratic state senator Deborah Ortiz, encourages the development of new embryonic stem cell lines from embryos denoted by persons seeking treatment for infertility. California's law flouts the federal regulations set forth by President Bush nearly a year prior, leading Sen. Ortiz to state boldlyduring a September hearing of the Senate Appropriations Committee, "my law makes the Bush policy on stem-cell research irrelevant in California."

Current federal policy restricts the allocation of federal funds to research using a select set of embryonic stem cell lines, created by August 9, 2001. However, many scientists contend that only a few of the 78 federally-approved lines are actually available and fit for study. California hopes to bypass this problem by allowing state or private funds to support studies using any embryonic stem cells, provided the lines meet certain restrictions.

To qualify for California funds, stem cell lines originating from surplus embryos used in in-vitro fertilization procedures must be accompanied by written consent from the donor couple. Additionally, a state ethics committee established by the new law must review and approve any proposed research using embryonic stem cells before funding can be approved.

Furthermore, the law prohibits the for-profit sale of embryonic cells and is accompanied by a separate law, signed by Gov. Davis, which forbids reproductive cloning, the process of cloning with the intention to create a human being.

The California law may be the first in a series of similar laws challenging the federal government's policy on stem cell research. A similar bill has already been introduced in the New Jersey Legislature, and states such as New Mexico and Oregon are reported to be considering comparable measures. **AL*

HHS CHARTERS NEW ADVISORY COMMITTEE ON GENETICS

On September 23, 2002, the Department of Health and Human Services (DHHS) approved the charter of a new advisory group designed to monitor emerging medical, ethical, legal, and social issues intertwined with revolutionary advances in human genetics. The group, called the Secretary's Advisory Committee on Genetics, Health, and Society, was established to counsel the Secretary of the HHS on how such issues should be handled by the Department.

In particular, the Committee will focus on the assessment of the integration of genetic technologies and health care; the study of clinical, ethical, legal, and societal implications of novel medical applications; the identification of research and data collection opportunities; the exploration of the utility of genetics in bioterrorism; the examination of the current patent policy's impact on technology accessibility; and the analysis of the accessibility of personal genetic information.

The Committee consists of a 13-member core of authorities in the areas of molecu-

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lar biology, human genetics, health care, public health, bioterrorism, ethics, forensics, law, psychology, social sciences, education, occupational health, insurance, and similar fields. At least two of the members will be qualified based on their specialized knowledge of consumer issues and public perspectives. All members shall be appointed by the Secretary or his designee. The group will meet twice yearly at The Committee charter will be subject to renewal every two years from the date of its approval. **AL*

IOM HOLDS TOWN MEETING TO DISCUSS "INTEGRITY IN SCIENTIFIC RESEARCH" REPORT

On October 10, 2002, the Institute of Medicine (IOM) held a town meeting to discuss the implications of its recent report, "Integrity in Scientific Research: Creating an Environment that Promotes Responsible Conduct." Several authors of the report were present to answer questions from a group of scientists, physicians, research administrators, academics, government officials, scientific society representatives, and the public. The discussion centered on the report's recommendations and potential strategies for their implementation.

The report garnered particular commendation for the its fresh approach. Instead of focusing on the negative aspect of misconduct in research, the report stresses various ways that might be used to promote research integrity. The main concerns raised at the meeting related to the recommendations to promote integrity in research through the establishment of a system of institutional accreditation and a program of classroom education. The report advocates a system of accreditation through institutional self-assessment and external peer review. While those in the audience appreciated the self-reliance and freedom from government regulation on the issue, many questioned the likelihood that organizations would have ample motivation to police themselves without the threat of enforced consequences.

The report also recommends that institutions set up educational programs to teach responsible conduct. Many of those in attendance stressed the need for hands-on education outside of the classroom, in the research environment itself. However, others worried about the feasibility of educating the large number of researchers working in the U.S. today.

The full text of the report is available online at http://www.nap.edu/books/0309084792.html/. **AL*

IOM REPORT CALLS FOR MORE HUMAN RESEARCH PROTECTIONS

The Institute of Medicine (IOM) recently released a report commissioned by the Department of Health and Human Services assessing the current status of human research participant protections in the nation. The report calls for broader federal oversight to ensure the well-being of participants in research projects, regardless of funding. The IOM committee found major problems regarding conflicts of interest, inadequate monitoring and oversight, and insufficient communication with participants. The committee called for universal standards for both privately and federally funded research programs as well as the establishment of Human Research Participant Protection Programs (HRPPPs). The HRPPPs would ensure the protection of individual research participants through changes in current policy and procedures.

The report recommends that the mission of Institutional Review Boards (IRBs) be refocused to concentrate on the ethical review and oversight of research protocols. As such, accountability for the protection of research participants would be established at the highest levels of the research organization. The report further advocated that patient contributions and concerns be adequately addressed by maintaining an ongoing dialogue throughout the duration of the research project. All research findings should be made accessible to participants in addition to giving participants the opportunity to comment on the design and operation of the research. Also, adequate methods of compensation must be established for those participants harmed by the research. Last, criteria should be developed to evaluate program performance and ensure quality improvement.

The core message of the report is that every research participant deserves to be treated with honesty and dignity.

The full report is available at http://www.nap.edu/books/0309084881/html/. **MC*

RESEARCH MISCONDUCT AT BELL LABS

On May 10, 2002, Lucent Technologies' Bell Laboratories commissioned an independent panel to look into allegations of scientific misconduct by researcher Jan Hendrik Schön. The panelinvestigated 24 allegations of misconduct and found clear evidence of it in 16 of these claims. The panel categorized the allegations into 3 groups: "data substitution," "unrealistic precision," and "contradictory physics."

Schön had been credited with groundbreaking research in several fields including creating molecular-level transistors and discovering superconductivity in organic molecules and was regarded to be at the forefront of his field. But several researchers raised questions regarding the validity of his research. For example, similar graphs appeared in separate papers published in the journals *Science* and *Nature.* In addition, other research teams were having great difficulties replicating Schön's research findings.

The panel's report raised pointed questions for the scientific community in terms of responsibility of co-authors in publications as well as research integrity. Meanwhile, Bell Laboratories has since terminated Schön's employment and issued retractions for the papers containing evidence of misconduct as determined by the panel.

The full report of the inquiry at Bell Labs is available at http://www.lucent.com/news_events/pdf/researchreview.pdf. **MC*

SMALLPOX VACCINATION: AT WHAT RISK?

The Bush Administration has responded to concerns about future bioterrorist attacks with plans to vaccinate people against smallpox, but when and how

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these vaccinations will be carried out remains a topic of contention. Smallpox is a highly contagious virus that was declared eradicated by the World Health Organization in 1980. The only known samples are closely guarded by the US and Russia. However, there are growing concerns that Iraq and North Korea, as well as various terrorist groups, may possess samples of the virus and may try to modify it for use as a bioweapon.

Early plans by the current Administration included "pre-attack" vaccinations for all military personnel as well as for certain medical staff who would be likely to come in contact with the virus. However, as stockpiles of the vaccine were discovered, the Bush Administration began planning to make the vaccine available to all Americans.

Many experts urge caution in offering the vaccine because it is manufactured from a live virus, vaccinia, which carries serious risks. It has been shown that in persons being vaccinated for the first time, 15 out of every million will face life-threatening complications and one or two will die. In addition, much of the vaccine stock that exists has yet to be licensed and there is concern that, with the increase in people with compromised immune systems, including those with cancer and AIDS, the percentage of people experiencing complications may be higher. This being the case, methods for compensating those individuals experiencing complications will need to be developed.

Other issues requiring further deliberation include whether to make vaccination of the general public mandatory or voluntary as the risks associated with the vaccine are very high. In addition, the timing of the vaccinations must be decided upon, as there is a four-day window after first infection during which the vaccination would be effective. **MC*

IN THE SOCIETIES

AAAS BOARD OF DIRECTORS ISSUES RESOLUTION ON INTELLIGENT DESIGN THEORY

On October 18, 2002, the AAAS Board of Directors issued a resolution encouraging policy makers to keep Intelligent Design theory separate from science education. Intelligent Design, or ID, is the notion that the complexity and diversity of life forms can only be explained by the existence of an extra-natural intelligence, rather than by evolutionary theories of random mutation and natural selection. ID is presented by proponents as an alternative theory to evolution that should be taught in the science classroom.

However, recognizing ID as a belief system rather than a scientific theory and that its presence in the science curriculum would create a confusing dichotomy, potentially detrimental to children's education in science in general, the Board resolved:

- That the lack of scientific basis for ID makes it inappropriate for the science classroom;
- That AAAS urges people across the nation to oppose the inclusion of ID in the science curricula;
- That AAAS asks its membership to assist those involved in science education policy to understand the nature of science, the current content of evolutionary theory, and why ID is inappropriate subject matter for the curricula; and
- That AAAS asks its member societies to endorse the resolution and communicate their support to federal, state, and local governments.

The initial press release on the Resolution and links to related information can be found at http://www.aaas.org/news/releases/2002/1106idIntro.shtml. **KS*

AMERICAN PHYSICAL SOCIETY REVISES ETHICAL GUIDELINES

The American Physical Society, largely in response to recent scandals at Bell Labs and the Lawrence Berkeley National Laboratory, has re-issued its Guidelines for Professional Conduct, revised and expanded to include two new sections. Both scandals involved publications and research of which a portion had been falsified by one researcher, unbeknownst to his coauthors. The new sections are Supplementary Guidelines on Responsibilities of Coauthors and Collaborators and Supplementary Guideline on Research Results.

The crux of the guidelines is that "all collaborators share some degree of responsibility for any paper they coauthor." Depending on their level of involvement in the research, the coauthor's responsibilities can range from being responsible for the entire paper, as an accurate representation of the research, to being responsible for only the very specific portion they contributed. However, regardless of each author's specific responsibilities, all collaborators must ensure that a there is an appropriate review process in place to ensure the reported results are accurate and valid. In addition, the guidelines call for all collaborations to have a system for archiving and verifying data and for enabling communication among participating scientists, so that all involved are familiar with the work as a whole.

The guidelines were adopted on November 10, 2002 and are available at http://www.aps.org/statements/02.2.html. **KS*

AOIR UNANIMOUSLY APPROVES INTERNET RESEARCH ETHICS STATEMENT

Voting members of the Association of Internet Research (AoIR) recently adopted a statement on Internet research ethics that took the AoIR ethics committee nearly two years to draft. The statement is intended to address the interests and needs of a wide audience, including researchers, students, ethicists, institutions, and educational organizations that actively participate in or are concerned about Internet research. Further, the ethics committee, which is composed of ethicists and researchers from 11 countries, sought to ground the statement in philosophical ethics while making it accessible to individuals with varying backgrounds in ethics as a discipline.

"For the first time, there now exists a relatively complete ethics statement tailored to the distinctive venues and methodologies of Internet research, one which – like the professional ethics codes of other disciplinary organizations – reflects the considered ethical judgments, insights, and practices of those active in the multiple fields of Internet research," AoIR members were told in an announcement on the Association's listserv.

Reflecting the diversity of disciplinary and ethical approaches to Internet

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research, the statement is viewed as a starting point, rather than the final word, on the ethical concerns raised by Internet research. The announcement of the statement's adoption by AoIR members explained that "the ethics working committee will continue to explore and debate how new experiences, issues and insights affiliated with Internet research evoke ethical challenges and demand ethically justifiable resolutions." Modifications made by the ethics committee to elaborate and refine the document will be reviewed by AoIR members.

The statement was approved on November 27, 2002 and is available at http://www.aoir.org/reports/ethics.pdf

RESOURCES

GENETICS AND HUMAN BEHAVIOR

Know Thyself. This ancient injunction inscribed on the Temple at Delphi is a paragon by which humanity has strived for self-knowledge, an endeavor bridging many cultures to reflect on human nature and identity in order to obtain self-mastery. For over three millennia, humanity has attempted to rationalize the nature of human nature in order to elucidate, among other things, our extensive patterns of behavior.

Research in behavioral genetics explores the genetic and environmental contributions to individual variations in human behavior. Spurred in part by the progress in, and promises of, the Human Genome Project, behavioral genetics has advanced to the forefront of public conscience with renewed vigor. On October 2, the Nuffield Council on Bioethics in the United Kingdom released a report, *Genetics and Human Behaviour: the Ethical Context*, assessing the correlation between genotype and behavior, as well as the ethical, social, and legal implications of such researchBehavioral genetics has been historically contentious, not least because of past misuses of the scientific validity to justify social eugenic practices. One of the authors went so far as to preface the report with a cautionary note acknowledging that, although research exploring links between genes and behavior are in the beginning stages, the potential to advance our understanding is the *raison d'être* for the pressing need to examine the ethical, legal, and social issues in order to develop effective safeguards for when the research matures and produces verifiable results.

The council's report explores the scientific evidence for associations between genetic variants and behavior, focusing on behavioral traits thought to be common across all human populations, such as intelligence, personality, antisocial behavior, and sexual orientation. These traits were specifically chosen because they are considered to be within the "normal

range" of shared human behavior—that is, focusing on a range of behavior variation that includes the majority (95 percent) of the population by excluding those with clinical disorders or abnormal behavior. Considering the tendency for media to hype certain scientific findings, the authors found insufficient data to make any conclusive determination at this point that would associate a genetic variant as influencing intelligence, personality, antisocial behavior, and sexual orientation within the normal range.

Additionally, the report takes into consideration the future possibilities and effects that advancements in behavioral genetics might raise, such as selecting embryos and developing genetic tests for selected behavioral traits and the way in which such information could be used to predict or select these desired traits. The report concludes that extending preimplantation genetic diagnosis to the selection of embryos based on information about behavioral traits in the normal range—i.e., selecting embryos that will have an above average intelligence, or are heterosexual, or will have desired personality traits—is morally unacceptable. The report further calls for guidelines to be instituted before any genetic interventions proceed to enhance the normal range of traits, in addition to the stringent monitoring and regulation of genetic tests for behavioral traits that might be made available as over-the-counter tests to the public.

Concerned that research in behavioral genetics might intensify the "medicalisation" of normal populations by encouraging people to selectively alter normal behavior through medication, the report recommends that the UK Department of Health create a new agency to monitor and possibly regulate the use of future behavior modification drugs. Additionally the report addresses issues raised by the use of genetic information about behavior in the contexts of employment, education, and insurance.

Another area of concern addressed is the possible implications research in behavioral genetics might pose for the criminal justice system. One such area is individual free will and whether such information could be used as a "genetic defense," to help to explain crime and also to absolve an individual of responsibility of wrongdoing. In short, the report concludes that genetic variants in the normal range do not absolve an individual from responsibility for a transgression. However, the courts can take into consideration valid behavioral evidence during sentencing proceedings, but the genetic factors and evidence must be convincing and the tests accurate and reliable. The determination of the validity of the evidence is left to the discretion of the judge.

The media hype surrounding behavioral genetics, typically claiming that researchers discovered "a gene for X," is largely exacerbated by the mistaken view that a single gene will be responsible for a pattern of behavior. The authors note that behavior patterns are much more complex than single gene explanations purport. To help dispel this misconception, the report recommends to those who report on, comment on, and evaluate such scientific research to communicate scientific findings in a responsible manner by eradicating inaccurate impressions that help drive the hype.

The report of the Nuffield Council on Bioethics is accessible online at: http://www.nuffieldbioethics.org/home/. * KA

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THE CONTINUING SAGA OF SCIENCE IN THE COURTS

Trying Times: Science and Responsibilities After Daubert

In 1993, the U.S. Supreme Court, decided the case of *Daubert v. Merrill Dow Pharmaceuticals*. This opinion set aside the 70-year old *Frye* opinion that made general acceptance by the scientific community the standard for evaluating scientific evidence for admissibility in the courts.[1] As one might guess, no one was really sure what "general acceptance" actually meant and the court was often left looking to the scientific community for an indication of what was generally accepted and, therefore, should be admitted. Sometimes general acceptance meant that new, or innovative, though not necessarily unsound, scientific evidence (the type often proffered by plaintiffs) was rejected because it lacked general acceptance. As a result, with the 1975 revision of the Federal Rules of Evidence (FRE), including a more liberal guideline for admissibility of scientific evidence than *Frye*, federal courts often chose to apply that guideline rather than the *Frye* standard, resulting in judges admitting almost anything and leaving the jurors to figure it out, creating a venue for so-called "junk science."

Daubert was intended to address these problems by placing control and accountability over the admissibility of scientific evidence squarely on the judge's shoulders, making him or her the "gatekeeper." However, in spite of the fact that the Supreme Court has twice elaborated on its *Daubert* opinion,[2] as we approach the tenth anniversary of the decision, it is clear that neither judges, nor attorneys, nor scientists have come to a consensus about the opinion and its impact — whether that consensus be good, bad or indifferent. Its impact in some sense should be immeasurable, but, in fact, it is more likely simply *not* measurable as no one seems to be able to say what the impact has been. An examination of this state of uncertainty and inconclusiveness regarding scientific evidence is the work of four experts in science and the law in the volume *Trying Times*: *Science and Responsibilities After Daubert*.

The volume, edited by Vivian Weil of the Center for the Study of Ethics at Illinois Institute of Technology (IIT), had its origins in a 1997 AAAS Annual Meeting symposium, entitled "The Expert Witness: Professional Responsibility at the Intersection of Law and Science." Although each of the four contributions overlaps the others to some extent, they also each take a piece of the post-Daubert puzzle for examination:

- Judge Barbara Jacobs Rothstein (District Judge, Western District of Washington*) provides an overview of the use of scientific experts as witnesses before *Daubert* and after *Daubert*, and the potential for a judge to use a court-appointed scientific evidence to assist in evaluating the expert testimony presented by the parties prior to applying the *Daubert* standard. She finds *Daubert* to be a beginning, rather than an end, leaving room for much evaluation and revision.

- Dr. Richard A. Meserve (Nuclear Regulatory Commission) gives a brief history of science in the courtroom, stating that science is more prevalent than ever and is extremely influential in a court of law where it is presented to juries whose members most often have limited scientific knowledge; he ultimately concludes that *Daubert* is an improvement over *Frye* and the FRE and is a form of "healthy experimentation."

- Professor Sheila Jasanoff (Harvard University) examines *Daubert* as more of a general standard to be applied at the discretion of the judge, rather than a bright-line rule. She highlights and questions several "myths" about science on which she believes the decision was founded and which, depending on the judge, leave the door more or less open for discretion and judicial prejudice to exacerbate the pre-*Daubert* problems of science in the courts that the *Daubert* court was attempting to alleviate.

- Dr. Ullica Segerstrale (IIT) concludes the volume with an in-depth look at the difference between science and law, between scientists and lawyers, and evenbetween some judges and other judges, saying that "sometimes the very presence of lawyers may make normal scientific behavior and assessment more difficult." However, she also discusses roles for scientists in the courts, and decides that the legal system is "learning by doing" and we need to "give it time."

The volume, then, is not just for the expert witness, but for anyone who wants a primer on *Daubert* and its implications. Even those who have knowledge in this area may find something of interest, like Jasanoff's discussion of the "myth of epistemological innocence." The lengthy bibliographies, one annotated and the other not, are wide-ranging resources for those who wish to conduct further research on their own.

The tenor of the volume is informative without the view of one author dominating the others. The authors clearly viewed each others contributions during the preparation of the volume, and often explicitly address the problems raised by their co-contributors and offer potential solutions. Few, if any new issues are raised, and there are no startling revelations. However, as 70 years passed between *Frye* and *Daubert*, it should come as no surprise that ten is not enough for any conclusions to be made about *Daubert*, good or bad. That being the case, volumes such as this one can perhaps be excused from criticism for concluding, ultimately, that we just need to "wait and see."
**KS*

[1] *Frye v, United States*, 293 F.1013 (D.C. Cir. 1923).
[2] *General Electric v. Joiner*, 522 U.S. 136 (1997); *Kumho Tire v. Carmichael*, 526 U.S. 137 (1999).

**Correction, Jan. 3, 2003:* Judge Rothstein was previously incorrectly listed as serving on the Ninth Circuit Court of Appeals. We apologize for any confusion or inconvenience this error may have caused. -- Eds.

ANNOUNCEMENTS

Call for papers — **Boston College** is inviting papers for its Computer Ethics — Philosophical Enquiry (CEPE 2003) conference to be held from June 25-27, 2003. The theme of the conference is Computer Ethics in the Post-September 11

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Professional Ethics Report

Scientific Freedom, Responsibility and Law Program
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World. Deadline for submission of papers is January 8, 2003. More information is available at WWW http://csethics.uis.edu/inseit/CEPE2003.htm.

Fellowship — **Princeton University's Center for Human Values** is accepting applications for the Harold T. Shapiro Postdoctoral Fellowship in Bioethics. The goal of the fellowship is to support research in the ethical issues arising from developments in medicine and biological sciences. Applicants should have completed all requirements for the Ph.D., M.D. or other appropriate professional degree by June 1, 2003. The initial term of the fellowship is one year starting September 1, 2003, with possibility of extension for two more years. The application deadline is January 8, 2003. For more information visit WWW http://www.princeton.edu/values/.

Conference — **PRIM&R and ARENA** announce their annual IACUC conference, "IACUC Actions: Making Ethically and Scientifically Informed Decisions," to be held from March 29-April 1, 2003 in San Diego, CA. The conference will examine how animal welfare science and laboratory animal science can begin to work together to promote the well-being of research animals. Online registration and more information are available at www.primr.org.

Call for Proposals — The **National Science Foundation** is now accepting proposals under the Societal Dimensions of Engineering, Science, and Technology (SDEST) program. SDEST accepts proposals for research and education about the interactions of engineering, science, technology and society. The next deadline for submission is February 1, 2003. The program's home page is WWW www.nsf.gov/sbe/ses/sdest/ and more information about submitting proposals is available at WWW www.nsf.gov/cgi-bin/getpub?nsf01152.

Workshop — The **Center for the Study of Ethics Across the Curriculum** workshop from June 24-July 1, 2003 in Chicago on how to integrate professional ethics into technical courses and emphasizing practice, rather than theory. Participants will be expected to integrate what they've learned into their own technical courses. Funding from the National Science Foundation will cover most expenses for participants, with some assistance from the participant's home institution. Applications are due February 28, 2003. More information is available at WWW www.iit.edu/departments/csep.

Case Studies — Dr. Todd Freeberg (University of Tennessee) and Dr. Bill Rowland (Indiana University) are inviting input and assistance in developing case studies of ethical dilemmas that arise from using animals as subjects in behavioral research as part of the **Research Experience for Undergraduates program** at Indiana University. Please contact Todd Freeberg at Department of Psychology, Austin Peay Building 303A, University of Tennessee, Knoxville, TN 37996, 865-974-3975, tfreeber@utk.edu.

Research opportunities — The **Online Ethics Center for Engineering and Science** at Case Western Reserve University has funding available for junior scholars working with international collaborators. OEC can also assist those who have a project idea, but no partner. The projects should result in Web materials that will be available online at OEC and provide scientists and engineers with an international perspective on science and engineering ethics. The deadline for project completion is the end of 2003. For more information, contact Dr. Caroline Whitbeck, Director, OEC, cwhitbeck@onlineethics.org.

Email list — Large and small educational and research institutes, professional societies, private research-related companies, and federal agencies are invited to participate in an email list for the planning and creation of the **Responsible Conduct of Research Education Consortium (RCREC)**. Interested parties can add themselves to the email list, as well as review a draft charter and business plan, at http://rcr.ucsd.edu/rcrec/.

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