SCIENCE FOR JUDGES IV INTRODUCTION

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This issue of the *Journal of Law and Policy* contains articles that had their inception as presentations made at a Science for Judges program for federal and state judges. The conference, held in November 2004, was the fourth in a series hosted by Brooklyn Law School and funded by the Common Benefit Trust established in the Silicone Breast Implant Products Liability Litigation.[1] These events are held under the auspices of Brooklyn Law School's Center for Health, Science and Public Policy, in collaboration with the Federal Judicial Center, the National Center for State Courts, and the Science, Technology and Law Panel of the National Academies of Science.

Science for Judges IV examined the interaction of science and law from a somewhat different perspective than previous programs. The first session dealt exclusively with Agent Orange and reviewed the scientific research that bears on whether Agent Orange causes adverse health effects. The second session considered research on human behavior that plays a role in judicial proceedings. Both presentations pointed out the difficulties that

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[1] Papers from previous Science for Judges programs can be found in 12 J.L. & POL'Y 1, 1-53 (2003) (papers discussing the practice of epidemiology and the science produced by administrative agencies); 12 J.L. & POL'Y 485, 485-639 (2004) (papers discussing toxicology and epidemiology); 13 J.L. & POL'Y 1, 1-179 (2005) (papers discussing the integrity of scientific research and forensic evidence in criminal proceedings); and 13 J.L. & POL'Y 499, 499-647 (2005) (papers discussing Agent Orange and human behavior research). All papers are available in electronic form at http://brooklaw.edu/centers/scienceforjudges/papers.php.

arise in resolving controversies that encompass sophisticated scientific questions, raise complex legal issues, and invoke sensitive policy concerns.

The Agent Orange session illuminated how perplexing these interrelated questions of science, law, and policy can be. Agent Orange is the name given to herbicides sprayed as defoliants during the Vietnam War. These herbicides, which were made by a number of different manufacturers, were contaminated with varying amounts of dioxin, a by-product of the manufacturing process.[2] Thirty years after the end of the Vietnam War, and twenty years after the class action on behalf of Vietnam veterans exposed to Agent Orange was settled, it is remarkable to see how many unanswered questions remain.

Of course, considerably more scientific information is available now than before the Vietnam War. The very limited knowledge that was available before 1970 is illustrated by Dr. David Butler's paper, which paints a fascinating picture of the gradually growing awareness of an association between health problems and occupational exposures to dioxin.[3] Drs. Jeanne Mager Stellman and Steven Stellman describe the sophisticated model produced by their research that permits an individual assessment for all Vietnam veterans of their exposure to Agent Orange.[4] These data on exposure obviously provide a strong foundation, often missing in toxic tort cases when exposure data are not available, for epidemiologic studies on adverse health effects observed in Vietnam veterans. Perhaps somewhat surprisingly, however, the Stellmans tell us that meaningful epidemiologic research on these veterans has never been conducted—a conclusion that is verified by Dr. Irva Hertz-Picciotto, the chair of the Institute of Medicine (IOM) Committee charged by Congress to review health

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[2] Irva Hertz-Picciotto, *How Scientists View Causality and Assess Evidence: A Study of the Institute of Medicine's Evaluation of Health Effects in Vietnam Veterans and Agent Orange,* 13 J.L. & POL'Y 553 (2005).

[3] David A. Butler, *Connections: The Early History of Scientific and Medical Research on "Agent Orange,"* 13 J.L. & POL'Y 527 (2005).

[4] Jeanne Mager Stellman & Steven D. Stellman, *Characterization of Exposure to Agent Orange in Vietnam Veterans As a Basis for Epidemiological Studies,* 13 J. L. & POL'Y 505 (2005).

consequences in the Vietnam veterans who had been exposed to herbicides. In her paper Dr. Hertz-Picciotto acknowledges the paucity of studies actually conducted on Vietnam veterans and explains that the bulk of the IOM Committee's work focused on occupational and environmental exposures to dioxin.[5]

The determinations reached by the IOM Committee are of great interest to the legal community in part because the Committee used standards for evaluating evidence that differ in some respects from the legal standard for proving causation in a judicial proceeding. The Committee's standards, and the process by which the Committee determined whether they were satisfied, help to clarify some of the difficult issues courts face when deciding whether to admit proffered expert testimony on causation in a toxic tort case. In addition to explaining the work of the IOM Committee and its conclusions regarding associations between dioxin exposures and a variety of different health effects, Dr. Hertz-Picciotto's paper also furnishes a succinct guide to how epidemiologists proceed in making inferences about causation. This discussion should prove extremely valuable to members of the legal community who desire a basic understanding of epidemiology.

The last article on Agent Orange, by Dr. Mark Brown of the U.S. Department of Veterans Affairs (VA), explains how the VA has translated the available science into a compensation scheme for Vietnam veterans.[6] It spells out the statutory scheme by which Congress created presumptions that authorize the VA to treat certain illnesses as the result of a direct service connection. Vietnam veterans who suffer from one of the presumptively service-connected illnesses are then automatically entitled to benefits. The VA's list of diseases is based on the studies described in Dr. Hertz-Picciotto's article. Dr. Brown's article also discusses issues that have arisen in extending this approach to Gulf War veterans who are claiming that military service affected their health. The intersection of science with pressing national policy

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[5] Hertz-Picciotto, *supra* note 2, at 558-60.

[6] Mark Brown, *The Role of Science in Department of Veterans Affairs Disability Compensation Policies for Environmental and Occupational Illnesses and Injuries*, 13 J.L. POL'Y 593 (2005).

considerations leads to problems that defy easy solutions. We will undoubtedly see a new set of issues arising out of the war in Iraq.

On the program's second day, a panel of scholars addressed a very different topic: research on human behavior that may be relevant in judicial proceedings. Edited and expanded versions of two of the presentations, on gender stereotyping and predictions of dangerousness, are included in this issue of the *Journal.* Any possible argument that the test promulgated by the Supreme Court in *Daubert v. Merrill Dow Pharmaceuticals, Inc.*[7] for admitting expert testimony applies only to the "hard" sciences was obliterated by the Court's subsequent opinion in *Kumho Tire Co. v. Carmichael.*[8] *Kumho* clearly established that *Daubert's* relevancy and reliability requirements apply to all expert testimony. Consequently, in the federal courts and state courts that have adopted *Daubert* and *Kumho*, testimony by psychologists may now be subject to greater scrutiny. The articles by Drs. Eugene Borgida and Edward Mulvey are therefore of interest not only because they discuss cutting-edge research on interesting topics, but also because they provide information that a court may need in deciding whether an expert will be allowed to testify about this research.

The article by Dr. Borgida and his associates on gender stereotyping research provides a helpful overview of the areas in which research is being conducted and then discusses research studies regarding women who self-promote in order to succeed in their careers.[9] The article reviews research on the effect of such behavior on perceptions of the women's likeability and competency and examines the consequences that flow from these perceptions. The article concludes with a discussion of how testimony based on this research can be utilized by courts.

Dr. Mulvey's article surveys research on predicting future dangerousness—a finding that courts are asked to make in a wide variety of legal contexts.[10] His evaluation of the existing research

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[7] 509 U.S. 579 (1993).

[8] 526 U.S. 139 (1999).

[9] Eugene Borgida et al., *On the Use of Gender Stereotyping Research in Sex Discrimination Litigation*, 13 J.L. & POL'Y 613 (2005).

[10] Edward P. Mulvey, *Assessing the Likelihood of Future Violence in Individuals with Mental Illness: Current Knowledge and Future Issues*, 13 J.L.

on a variety of methodologies currently used in assessing the likelihood of future violence provides an excellent starting point for judges and lawyers who must deal with these issues. Although Dr. Mulvey reports progress in understanding some of the associations between mental disorders and violence, he urges caution in assigning too much weight to the actuarial instruments now being developed by researchers to be used in making predictions.

I hope that these highly abbreviated descriptions of the contents of the articles that follow in this issue of the *Journal of Law and Policy* convey some of the challenges and complexities that judges encounter in handling cases that require an understanding of cutting-edge issues of science. Both of the topics discussed at Science for Judges IV also illustrate that scientific and behavioral research takes time, and obtaining needed knowledge often is an extremely slow process.

& POL'Y 629 (2005).