

JUNK SCIENCE AND CLIMATE CHANGE: THOUGHTS FROM THE FEDERALIST SOCIETY'S 1997 COLLOQUIUM ON "JUNK SCIENCE, THE COURTS, AND THE REGULATORY STATE"

Foreword by Mark C. Rutzick*

In recent months global climate change has once again taken center stage in the public policy arena. In December 2009 world leaders gathered in Copenhagen for a long-anticipated summit meeting. The U.S. Environmental Protection Agency (EPA) announced on December 7, 2009 its formal "Endangerment Finding" that greenhouse gases, including carbon dioxide, constitute air pollution that endangers public health and welfare under section 202(a) of the Clean Air Act. In November 2009 the unauthorized disclosure of e-mail communications among leading climate-change scientists at the University of East Anglia's Climate Research Unit in Britain suggested that some scientists may have had an intent to manipulate scientific data. Just days later anti-regulatory activists uncovered the past destruction of some raw data used by the same scientists to provide the statistical underpinning for climate-change models that the U.N.'s Intergovernmental Panel on Climate Change (IPCC) employed in 2007 to anchor its case for anthropogenic climate variability.

The IPCC's 2007 Report has enormously influenced the climate-change debate. EPA relied on that document as one of three sources that provided the "primary scientific and technical basis" for the endangerment finding,¹ along with the June 2009 Report of the U.S. Global Change Research Program² (USGCRP) (a federal advisory group) and various reports of the National Research Council (NRC).³ Both of the other two sources rely heavily on the 2007 IPCC Report's analysis and conclusions.⁴

The public policy resolution to the climate change issue involves a possible commitment of resources unparalleled by any other governmental decision in world history. Policy-makers will allocate trillions of dollars world-wide, and hundreds of billions in the U.S. alone, as they determine whether and to what extent to seek greenhouse-gas reductions. As with all key U.S. policy issues, the courts are certain to have a major, and perhaps decisive, role in determining the ultimate policy direction.

The current confluence of policy, law, and science developments adds several new dimensions to the multifold legal issues already surrounding the climate issue:

1. To what extent should judicial review of EPA's endangerment finding, and future agency science-based decisions, employ the "junk science" tests set out in *Daubert v. Merrell Dow Pharmaceuticals, Inc.*?⁵ Judge Richard Posner of the U.S. Court of Appeals for the Seventh Circuit has observed that even though the *Daubert* standard is based on the Federal Rules of Evidence and therefore does not directly apply to

federal agency decisions, "the spirit of *Daubert* does apply to administrative proceedings," and "[j]unk science' has no more place in administrative proceedings than in judicial ones."⁶

The *Daubert* issue is raised by recent events because one of the tests for junk science is whether a scientific conclusion can be replicated, and the partial loss of the data set underlying the IPCC's climate-change models may mean it is no longer possible to replicate those model results. Were opinions based on those models to be offered in a jury trial in federal court, they would likely be challenged under *Daubert*, and potentially could be excluded from consideration. These circumstances lead to two related questions: Can a federal agency rely on opinions that are insufficiently reliable to be admitted in a trial court? Can a court conducting Administrative Procedure Act (APA) or comparable judicial review uphold a federal agency decision based on opinions that are inadmissible under *Daubert*?

2. The data loss presents an additional legal issue. The U.S. Court of Appeals for the District of Columbia Circuit held that "under APA notice and comment requirements, among the information that must be revealed for public evaluation are the technical studies and data upon which the agency relies in its rulemaking."⁷ Can an agency meet its APA disclosure obligations where (presumably) the agency never had the underlying "technical studies and data," portions of those data may no longer exist, and the public is therefore unable to evaluate and comment upon the missing information? Further, may an agency lawfully rest a decision on data it never possessed and could not verify?

3. Government officials are entitled to a presumption of good faith in their decisions,⁸ and this presumption can be rebutted "only upon a strong showing of bad faith or improper behavior."⁹ "[M]ore exacting review may be required when the presumption of regularity is rebutted."¹⁰

The recently-revealed e-mail evidence that IPCC climate-change scientists discussed manipulation of data and censorship and suppression of opposing views might be sufficient to rebut the presumption of good faith as to those individuals. EPA became aware of that controversial evidence before making its endangerment finding in principal reliance on the IPCC's conclusions.

Some case law suggests agency reliance on third-party scientific opinions known to have been potentially reached in bad faith may constitute bad faith on the part of the agency, sufficient to render an agency decision arbitrary and capricious under the APA. A federal agency has been held to a duty to assure that statistical information upon which it relies is unbiased.¹¹ "[A] decision made in reliance on false information, developed without an effort in objective good faith to obtain accurate information, cannot be accepted as a 'reasoned' decision."¹²

The legal intersection of junk science and federal agency decisionmaking is not a new subject to the Federalist Society.

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In 1997 the Society hosted a colloquium entitled “Junk Science, the Courts, and the Regulatory State,” which addressed the following question: “Should courts exercise the same gatekeeping function over the uses of science by administrative agencies that they now serve over science in the courtroom . . . ?” The proceedings of the colloquium were faithfully reported by long-time Society member Jeffrey Bossert Clark in the December 1, 1997 issue of the *Environmental Law and Property Rights Practice Group Newsletter*, Volume 1, Issue 3.

The insights at the 1997 colloquium remain powerfully relevant today as applied to the global climate-change issue. The colloquium is reprinted below in its entirety.

Endnotes

- 1 ENVIRONMENTAL PROTECTION AGENCY, ENDANGERMENT AND CAUSE OR CONTRIBUTE FINDINGS FOR GREENHOUSE GASES UNDER SECTION 202(A) OF THE CLEAN AIR ACT, Pre-publication Version at 8-9 (December 7, 2009).
- 2 U.S. GLOBAL CHANGE RESEARCH PROGRAM, GLOBAL CLIMATE CHANGE IMPACTS IN THE UNITED STATES (Thomas R. Karl, Jerry M. Melillo & Thomas C. Peterson eds., 2009).
- 3 The most recent NRC report is NATIONAL RESEARCH COUNCIL, COMMITTEE ON CLIMATE CHANGE AND U.S. TRANSPORTATION, POTENTIAL IMPACTS OF CLIMATE CHANGE ON U.S. TRANSPORTATION: SPECIAL REPORT 290 (2008).
- 4 See U.S. GLOBAL CHANGE RESEARCH PROGRAM, *supra* note 2, at 8-9; ENVIRONMENTAL PROTECTION AGENCY, *supra* note 1, at 85 (“[T]he June 2009 assessment of the USGCRP incorporates a number of key findings from the 2007 IPCC Fourth Assessment Report.”); NATIONAL RESEARCH COUNCIL, COMMITTEE ON CLIMATE CHANGE AND U.S. TRANSPORTATION, *supra* note 3, at 21, 28, 49 (expressly relying on IPCC’s 2007 climate models).
- 5 509 U.S. 579 (1993).
- 6 *Niam v. Ashcroft*, 354 F.3d 652, 660 (7th Cir. 2004).
- 7 *Am. Radio Relay League, Inc. v. FCC*, 527 F.3d (D.C. Cir. 2008) (quotations, citations and brackets omitted).
- 8 *Comcast Corp. v. FCC*, 526 F.3d 763, 769 (D.C. Cir. 2008).
- 9 *Hercules, Inc. v. EPA*, 598 F.2d 91, 124 (D.C. Cir. 1978).
- 10 *Chamber of Commerce of U.S. v. SEC*, 443 F.3d 890, 899 (D.C. Cir. 2006).
- 11 *St. James Hosp. v. Heckler*, 760 F.2d 1460 (7th Cir. 1985).
- 12 *Van Abbema v. Fornell*, 807 F.2d 633, 639 (7th Cir. 1986); *Sierra Club v. U.S. Army Corps of Engineers*, 701 F.2d 1011, 1035 (2d Cir. 1978).

COLLOQUIUM: JUNK SCIENCE, THE COURTS, AND THE REGULATORY STATE

By Jeffrey Clark*

The Federalist Society’s three E.L. Wiegand Practice Groups in Administrative Law & Regulation, Environmental Law & Property Rights, and Litigation held a colloquium entitled “Junk Science, the Courts, and the Regulatory State” on July 10, 1997 at the University Club in Washington, D.C. The five participants in the morning session of the colloquium focused on the interplay between risk regulation in administrative agencies and risk regulation through the tort system, while the two participants in the afternoon session examined the question of who should decide scientific questions in the toxic-tort context—judges, juries, or expert panels. Peter Huber, one of the pioneers of the attack on the use of “junk science” in the courtroom and a partner in the law firm of Kellogg, Huber, as well as a Senior Fellow of the Manhattan Institute, delivered a luncheon address exploring the meaning of the evidentiary tests for true “science” announced by the Supreme Court in its landmark case, *Daubert v. Merrell Dow Pharm., Inc.*, 509 U.S. 579 (1993).

Panelists in both sessions, including a representative of the plaintiffs’ bar, seemed to agree that “junk science” was to some degree a problem. In fact, Peter Huber went so far as to claim that the battle to establish the need to eradicate “junk science” from the courts had been won in *Daubert* and that the principal task now remaining undone was to work out how to apply *Daubert* properly. Most panelists, however, coalesced around the idea that much more needed to be done to solve the vexing problems posed by “junk science.” Edward Warren, a partner in the law firm of Kirkland & Ellis and a participant in the morning session, captured this view when he noted that *Daubert* seemed a second-best solution to a recurring legal and policy problem demanding bolder action. Panelists diverged on exactly how the regime of legal rules governing the use of science in the courtroom and in the halls of administrative agencies should be improved, although a number of potentially constructive solutions were advanced. These potential solutions ranged from toughening judicial review of agency decisionmaking by cross-applying *Daubert* in the administrative context, to reforming the rules in other problematic areas of the law such as class actions, punitive damages, and discovery, to taking the scientific fact-finding powers away from juries almost entirely by instructing juries in scientific facts as they are now instructed in the law.

The four-hour colloquium was brisk, intellectually rigorous, and even when there were disagreements, conducted in an atmosphere of collegiality. As a colleague sitting near me throughout the colloquium remarked, the “junk science” program was conducted on too high a plane and was far too much fun to warrant continuing-legal-education (CLE) credit. But it should come as no surprise to Federalist Society members that its programs

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are of a consistently high quality and are much more provocative than standard bar fare.

The morning session began with a panel entitled “Junk Science: The Interplay Between Risk Regulation and the Torts System.” Panelists included: Arthur Bryant, Executive Director, Trial Lawyers for Public Justice; Dr. George Ehrlich, University of Pennsylvania Medical School; Alan Raul, Sidley & Austin, Chairman of the E.L. Wiegand Practice Group in Environmental Law & Property Rights; Edward Warren, Kirkland & Ellis, Chairman of the E.L. Wiegand Practice Group in Administrative Law & Regulation; James Gauch, as moderator, Jones, Day, Reavis & Pogue, Vice Chairman of Programs for the E.L. Wiegand Practice Group in Administrative Law & Regulation.

James Gauch introduced the morning’s panelists and noted that it was his intention to place the spotlight on neglected topics—should courts exercise the same gatekeeping function over the uses of science by administrative agencies that they now serve over science in the courtroom, and is science consumed by agencies in the same way it is consumed by the courts? Gauch began by introducing Edward Warren and commending to the audience Warren’s article bearing on these questions—*Judge Leventhal’s Revenge: The Courts as “Gatekeepers” of “Good Science” After Daubert*, 1994 Pub. Int. L. Rev. 93 (1994) (arguing that Daubert was similar to former D.C. Circuit Judge Harold Leventhal’s “hard-look” brand of judicial review of technical and scientific agency decisionmaking). Gauch then noted that Dr. George Ehrlich has been an advisor to the FDA and consultant to the manufacturers of breast implants. Gauch said Alan Raul planned to focus on relevant lessons from tobacco-related regulation. Lastly, Gauch introduced Arthur Bryant as a champion of the plaintiffs’ bar who would do his best to rebut what other panelists would say.

Alan Raul, partner at Sidley & Austin and Chairman of the practice group in Environmental Law & Property Rights, made the first presentation. Holding up his pocket computer, Raul joked that it was only a matter of time before he became a member of a class action involving radio emissions or carpal-tunnel syndrome. Throughout his presentation, Raul peppered his analysis with examples drawn from his experience with the regulatory treatment of and science surrounding so-called “environmental tobacco smoke” (ETS) or “second-hand smoke.” Raul’s thesis was that *Daubert* should be applied “actively and aggressively” by federal judges reviewing the scientific underpinnings of agency action. Acknowledging the “[anti-]democratic risk” of his approach, Raul cautioned that he was not advocating the substitution by judges of their own preferences for those of Congress or for the preferences of agencies legitimately delegated lawmaking authority. What he *was* advocating and what deeply troubled him was the tendency he perceived for agencies to make rules and other decisions based on various assumptions, default principles, and “fudge factors” that often remain undisclosed to the regulated public. According to Raul, federal judges should follow the example of *Daubert* in the tort context by excising such unexamined and unscientific regulatory assumptions with the scalpel of searching judicial review.

Raul recommended that the audience read Wendy E. Wagner’s article, *The Science Charade in Toxic Risk Regulation*, 95 Colum. L. Rev. 1613 (1995). Though it approached the issues posed by regulatory science from a liberal perspective, Raul argued that the article’s observation that agencies were deliberately obfuscating their *modus operandi* by calling it “science” rather than naked “policymaking” was correct and should be taken to heart. Raul apparently parts company with Wagner’s follow-up argument that agencies shouldn’t have to pretend and thus should be allowed to make policy openly. In Raul’s view, the problem in the regulatory context in most cases isn’t “junk science,” it’s “junk policy.” The science is fine; it’s what the agency does with the science that’s invalid. In the ETS context, for example, perfectly valid epidemiologic studies establish that ETS increases the risk of certain diseases by a factor of 1.19. According to Raul, however, epidemiologists are in general agreement that such a factor would have to exceed at least 2 and possibly 3 before there was any cause for alarm, yet ETS studies far below that threshold are currently being cited by regulators to justify administrative action.

In Raul’s view, agencies regulating on the basis of unarticulated assumptions become essentially a “farm team” for the plaintiffs’ bar. Whenever an agency takes action or does a study suggesting that a product or service causes harm and there is a “deep pocket” anywhere in the vicinity, litigation is inevitable. For support, Raul ticked off the examples of Love Canal, the “junk science” behind banning asbestos in building materials, the baselessness of breast-implant litigation, and the dioxin scare. To his recommended reading list Raul added a publication by the American Council on Science and Health, *Facts vs. Fears*, which reviews the twenty greatest modern health scares perpetrated in our country.

To solve the problems he identified, Raul advocated using the *Daubert*-like approach to judicial review of regulation described above, an approach that Raul believes Judge Leventhal would have applauded. Unfortunately, Raul noted that the only court to address this question explicitly, the Seventh Circuit, has rejected a similar argument. See *Sierra Club v. Marita*, 46 F.3d 606, 621-22 (7th Cir. 1995) (“While such a proposal might assure better documentation of an agency’s scientific decisions, we think that forcing an agency to make such a showing as a general rule is intrusive, undeferential, and not required.”).

The next to speak was Dr. George Ehrlich from the University of Pennsylvania Medical School. Dr. Ehrlich explained that he was a man of “strong opinions,” as reflected in his television appearances concerning breast-implant litigation and science. He noted that it is inevitable that as a new medical product or service becomes more widely used in society, the segment of the population using the new product or service will begin to show some incidence of the rare diseases that manifest themselves in the population at large. Breast implants are only one example of this phenomenon. Dr. Ehrlich suggested that the recent uproar over the weight-loss drug fen-phen was another.

Given this rather obvious statistical fact, Dr. Ehrlich posed the question of how it is that widespread claims of rare diseases being caused by medical products or services are taken seriously in the courts and by doctors, even though the science supporting

such claims is flimsy or nonexistent. He believes the answer lies in “Bergson’s fallacy.” Dr. Ehrlich explained that Bergson was a statistician at the Mayo Clinic who was often being asked by his doctor colleagues how it could be that they were seeing more and more patients with rare diseases unless the incidence of such diseases was truly increasing. The answer, Bergson explained, was that the doctors at the Mayo Clinic were super-specialists. Patients with rare diseases were concentrated at the Mayo Clinic because of its world-renowned reputation. (Psychologists Kahneman and Tversky have labeled the phenomenon also identified by Bergson the “availability heuristic”—people tend to generalize inappropriately from what is common or rare in their own experience (including media reports) to conclusions about what is common or rare in the world as a whole. See Amos Tversky & Daniel Kahneman, *Availability: A Heuristic for Judging Frequency and Probability*, in Daniel Kahneman, et al., eds., *Judgment under Uncertainty: Heuristics and Biases* 166 (Cambridge 1982).) As an example, Dr. Ehrlich pointed out that many doctors practicing on the West Coast of Florida became convinced that breast implants were causing various health problems because they were seeing a lot of women with breast implants who had such problems. Of course, those doctors had fallen into Bergson’s fallacy by failing to consider that breast implants were especially common in that part of the country and that women conscious of their appearances enough to obtain implants were more likely to search out doctors for any health problems they were experiencing.

Further elaborating on the example of breast implants, Dr. Ehrlich explained that the mine run of epidemiologic studies demonstrate consistently that breast implants do not cause diseases such as scleroderma or rheumatoid arthritis. (Dr. Ehrlich is a rheumatologist.) Thus, breast-implant plaintiffs have resorted to arguing that they suffer from what Dr. Ehrlich called “fake” illnesses, such as “atypical connective-tissue disease.” The problem with these diseases is that they are non-falsifiable because they rely on subjective expressions of pain—that is why the list of symptoms for these kinds of “diseases” is at 150 and growing. In the same category Dr. Ehrlich put other so-called diseases such as “fibromyalgia,” “chemical sensitivity syndrome,” and “repetitive-strain syndrome.”

In contrast to Raul’s observation that regulatory action tends to spur litigation, Dr. Ehrlich seemed more concerned that agency mandates have expanded because of action by an aggressive plaintiffs’ bar. He described how the Food and Drug Administration’s (FDA’s) powers to regulate have expanded from the power to ensure safety to include powers to ensure efficacy. In Dr. Ehrlich’s view, these new powers give regulators the ability to impose the impossible burden on manufacturers to prove scientifically that their products are absolutely safe.

Dr. Ehrlich also argued that the proliferation of spurious science is not entirely the fault of plaintiffs themselves. Dr. Ehrlich lays blame at the feet of both plaintiffs’ attorneys and doctors. Many of the plaintiffs in breast-implant cases are proceeding in good faith, according to Dr. Ehrlich—it’s simply that their doctors and lawyers have convinced them that inside their breasts wait ticking time bombs and therefore that they should sue now before the inevitable illnesses arrive.

Moderator James Gauch next introduced Edward Warren, a partner at Kirkland & Ellis and Chairman of the Administrative Law & Regulation practice group. Borrowing the thesis of an obscure article written at the turn of the century in the *Albany Medical Journal*, Warren argued that *Daubert* was a second-best solution to a very old legal problem. Turns out that the article was written by none other than the famed jurist Learned Hand and reprinted shortly thereafter in the *Harvard Law Review*. See *Historical and Practical Considerations Regarding Expert Testimony*, 15 Harv. L. Rev. 40 (1902). In Warren’s view, Judge Hand’s analysis of the problems posed by expert scientific testimony were “prescient” and so fresh they “could have been written yesterday.”

In his article, Judge Hand analyzed a long line of common-law decisions to make the point that it was an anomaly in Anglo-Saxon jurisprudence for witnesses to be allowed to testify to opinions. The liberal treatment of experts in this regard was thus an exception to that general rule. Judge Hand thought that this exception was totally unwarranted. The usual trope advanced to justify this exception even in Judge Hand’s day was that juries were incapable of applying scientific learning to pure facts to draw valid inferences because such learning was outside their experience or maybe beyond their ken. But Judge Hand emphasized that this same problem also clearly counseled against allowing juries to weigh the opinions of conflicting experts at all. The solution to the problem of jury incompetence in this area, according to Judge Hand, was to treat scientific knowledge in the same way courts are accustomed to treating something else universally acknowledged to be beyond the jury’s powers—the law. Thus, juries should be instructed about scientific conclusions as if they were law. In Judge Hand’s schema, either judges or expert panels of neutral scientists would be tasked with crafting the “science instructions” in a particular case. Warren subscribes fully to Judge Hand’s view as the “first-best” approach that is correct as a matter of logic and law.

Turning from the ideal world to the existing one dominated by *Daubert*’s schema, Warren noted that the lower federal courts have by and large applied *Daubert* faithfully. The most glaring exception to that trend has been the Eleventh Circuit’s decision in *Joiner v. General Elec. Co.*, 78 F.3d 524 (11th Cir. 1996) (Barkett, J.), cert. granted, 117 S. Ct. 1243 (1997), a case in which the plaintiff alleged that his lung cancer was caused by PCBs and the court reasoned, despite a careful district court opinion to the contrary below, that two mouse studies and the mere credentials of the plaintiff’s experts were enough to allow the case to go to a jury. The Supreme Court has granted certiorari in *Joiner*, and in Warren’s view, the Court did not take that step with an eye to affirm. Therefore, Warren expects that *Daubert* will be strengthened in some way or confirmed in the Court’s next term. Alternatively, the Court could choose to use the case as a vehicle to explore the powers of the courts of appeals to reverse evidentiary rulings excluding experts, but at the very least that approach would leave *Daubert* intact.

Expanding on the analysis he advanced in his piece in the *Public Interest Law Review*, Warren next explored the differences between how science is used by agencies and how science is used by courts. By contrast to Raul, Warren thinks that agencies should be given a wider latitude in their use of science than

courts. This is because it is the task of agencies to regulate in a forward-looking, prophylactic manner, while courts are tasked with deciding individual cases under the backward-looking standard of whether a plaintiff can show that his particular injury was more likely than not caused by a defendant's actions. Warren then expressed his view that Judge Alex Kozinski properly emphasized the point on remand in *Daubert* that the "more likely than not" standard is a "pretty tough test." See *Daubert v. Merrell Dow Pharm., Inc.*, 43 F.3d 1311 (9th Cir.), cert. denied, 116 S. Ct. 189 (1995). Because agencies use science in a different way than courts, Warren concluded by arguing that courts should not defer to agencies whenever agencies decide that the risks warrant taking administrative action. On the other hand, if an agency, with the broader scope of action entrusted to it, decides *not* to regulate, then courts should in most cases defer to the expert agency's determination and thus block lawsuits running contrary to such an agency's effective determination that a product or service is safe.

The last panelist to make a presentation in the morning was Arthur Bryant, Executive Director of Trial Lawyers for Public Justice. Bryant joked that he felt like the man invited to a barbecue only to find out that he was the main course. Bryant predicted that the audience would be shocked by his exclamation: "Ich bin ein Federalist." Bryant chastised other panel members for advocating an expanded role for federal judges and agencies to control "junk science" as anti-Federalist and argued that because of the more liberal treatment trial lawyers champion for expert testimony in the law they are actually more in line with Federalist principles than the Federalist Society.

The theme of Bryant's presentation was that there were no easy answers—each case had to be decided on its facts and each agency possessed unique problems and capabilities that needed to be considered. Bryant also argued that the problem of "junk science" cuts both ways—that corporate defendants often deploy "junk science" in order to ward off valid claims. He pointed to a Title IX case that he recently litigated against Brown University in which Brown attempted to cut its female gymnastics and volleyball programs costing about \$60,000 annually. Brown paid \$100,000, however, to commission a study designed to show that men are generally more interested in participating in college-sports programs than women. In Bryant's view, that study was a prime example of "junk science." Continuing with his "complexity" theme, Bryant asked whether defendant tobacco manufacturers would agree with him that *Daubert* bars them from presenting an expert to testify before a jury that smoking does *not* cause lung cancer, despite the current scientific consensus to the contrary.

According to Bryant, there are two reasons why plaintiffs are commonly perceived as being more set back by *Daubert* than defendants: (1) plaintiffs have the burden of proof, and if all scientific evidence is excluded when scientific evidence is in fact necessary to establish liability, then plaintiffs obviously lose; and (2) Peter Huber successfully framed the issue this way in his book, *Galileo's Revenge: Junk Science in the Courtroom* (Basic Books 1991). Lkening Huber's method to the Spanish Inquisition (proving only what it set out to prove), Bryant

accused Huber of ironically providing no scientific basis for the claims he made in that book. For Bryant, Huber has claimed the commanding heights on this issue only because of a vigorous public-relations campaign to promote the book conducted by the Manhattan Institute.

Pushing his oversimplification thesis, Bryant argued that "eggshell" plaintiffs deserve protection by our tort system, and that *some* breast implants cause *some* diseases, but not others. He explained his point that not all agencies are created equal by pointing to the example of the FDA, which lacks subpoena powers and thus was apprised of some of the evidence available to buttress claims of breast-implant risk only by plaintiffs' lawyers, sometimes in violation of judicial protective orders. In Bryant's view, truth isn't absolutely knowable and unchangeable and thus, while cases must be decided at a specific point in time, courts should never crystallize the prevailing view of mainstream science in the law. To support this claim he relied on the Supreme Court's rejection of the asbestos class-action settlement in *Amchem Prods., Inc. v. Windsor*, No. 96-270, 1997 WL 345149 (June 25, 1997), where a district court was reversed for binding future asbestos claimants to the settlement, despite the possibility that their claims might be different from those of current plaintiffs and that the ability of future plaintiffs to prove their claims might similarly be different in light of subsequent advances in science. Bryant also noted that many of the proposals for reform advanced by other panelists relied on giving a freer rein to judges, though in some cases the judiciary inspires less confidence than juries. Summing up, Bryant cautioned everyone to "be more skeptical" of attacks on "junk science" because "science is about as an efficient search for truth as the legal system is an efficient search for justice."

When initial morning presentations concluded, Gauch gave each of the panelists a chance to react to their fellow panelists' arguments. Raul began by turning around Bryant's point about public relations. He argued that in reality the so-called public interest groups have been far more effective in playing the public-relations game than those of Peter Huber's persuasion. He pointed out that a single person can place a call to the Larry King Live cable-television program claiming that his wife died of brain cancer because she frequently used a cellular telephone and soon there is a national panic. Raul did give credit to agencies here in rejecting calls to regulate cellular telephones on the ground their use causes physical harm, however. On the whole, though, Raul thought that Bryant had been quite reasonable, noting that both sides in the debate are sometimes prone to oversimplification. In reality, subtle questions, not easy questions, are involved in this issue.

Dr. Ehrlich agreed with Bryant's point that courts should never freeze current scientific views into the law, quoting Captain Cook's quip that "There are no black swans until you encounter your first one." He disagreed with Bryant's point that there are two sides to science, however. He argued that there is always only one side that is currently supportable and, thus, the other side must be presumed to engage in speculation. Case reports and the like can provide useful signals that the current orthodoxy should be changed, but case studies alone cannot be the basis for doing so. He referenced the principles

of bacteriology that maintain that even epidemiologic evidence not be taken as conclusive until medical science has established the causal links in a chain operating at the cellular level.

Returning to the subject of breast implants, Dr. Ehrlich pointed out that the types of silicone used in such implants are safe and inert. In fact, silicone is used to coat needles and to make artificial limbs, in pacemakers, in devices like Norplant, and even in anti-flatulence drugs and in breakfast cereals. The only silicone ever shown to cause health problems according to Dr. Ehrlich is a type of silicone that Japanese prostitutes injected into their breasts in the aftermath of WWII.

Responding to criticisms on federalism grounds of his recommendations for reforming the problems associated with “junk science,” especially to his arguments that courts should defer to agencies that decide not to regulate, Warren indicated that he was not at that point arguing for the preemption of state lawsuits, merely that a flexible principle of deference should be voluntarily recognized and applied. Warren also stated his opinion that “junk science” is the symptom of a much larger problem and not the cause. In this vein he argued that there is too much dual regulation between the federal agencies and the tort system and thus that *Congress* should explicitly preempt more tort law. (The implementation of Judge Hand’s solution would also require legislative action.) He applauded the Supreme Court’s recent ruling in *Metro-North Commuter R.R. Co. v. Buckley*, No. 96-320, 1997 WL 338550, (June 23, 1997) (rejecting a fear-of-cancer tort under the Federal Employers’ Liability Act (FELA)). Like Bryant, Warren also referred to the Supreme Court’s rejection of the asbestos class action in *Windsor*, but as an example of the rampant abuse of the rules of civil procedure by plaintiffs. Finally, Warren decried unbelievable punitive-damage awards and the rise of a “discovery tort” used by the plaintiffs’ bar to shift the focus from the reality of cases of dubious scientific merit to alleged misconduct by products-liability defendants, who are often crushed by oppressive discovery requests in multiple fora.

Bryant responded to his critics by noting that there was little disagreement with his “oversimplification” thesis. He then recounted how the first breast implant case settled for a sizable sum in exchange for a sealing of the record, suggesting that “there must have been something there.” Dr. Ehrlich couldn’t help but exclaim that it’s often cheaper for defendants to settle than to litigate. Bryant then moved to a different subject, agreeing with Warren’s claim that science is and should be used in different ways in the regulatory and judicial contexts. In Bryant’s words, “the agencies work wholesale, while the courts work retail.” He took issue, however, with Dr. Ehrlich’s point that there is only one side to science. Bryant said the scientists he talks to tell him that there is plenty of room for disagreement on many scientific questions. Finally, Bryant attacked Warren’s claim that courts should defer to agencies when they decide not to regulate. He suggested that embedded within any such argument is an ideological assumption that the agencies always do their best to assert that a potentially regulable product or service causes harm. He did not dispute that deference was appropriate in some cases, but argued that plaintiffs should be able to present evidence to a jury that an agency decision not

to regulate was caused by a lack of information or by political concerns.

The first question from the audience was put to Raul and focused on whether institutional pressures creating a “flight from science and reason” turned too many scientists into cowards. Raul acknowledged that it is dangerous for a scientist to be caught outside the mainstream—that even scientists can fall prey to “political correctness” because they fear losing the right to compete on a level playing field for future grants. Raul was considerably more sanguine than the questioner that good science could win out, however, because the light of full disclosure is a powerful medicine. He pointed to the example of the Congressional Research Service’s unmasking of the fact that EPA reduced the standards for statistical significance when reviewing the studies on ETS.

Warren primarily fielded a question arguing that it was ironic for Federalists to be advocating giving judges more power in order to solve the problem of “junk science.” Warren responded that, as Judge Hand had recognized, allowing expert witnesses to testify to opinions is a rule at war with our legal tradition. Therefore, any qualms Federalists have with fixing the problems of “junk science” by strengthening the role of the judiciary operates from an incorrect legal baseline. The best solution to the problem of “junk science” is for courts to impanel expert advisory panels in Warren’s view. (As additional support for Warren’s argument that Judge Hand’s solution is not radical, consider the fact that Lord Mansfield, to cite the practice of only one eminent common-law judge, convened expert juries to address complex questions arising under the commercial law. See 1 James Oldham, *The Mansfield Manuscripts and the Growth of English Law in the Eighteenth Century* 93-99 (1992)). Warren also agreed with Raul that while there is a price to be paid for speaking out against “junk science” we should be optimistic that scientists generally have enough courage to do so. In particular, Warren argued that reputable scientists would participate in the expert panels he recommended be utilized because this move would free them from the taint associated with being labeled “hired guns.”

Luncheon Address by Peter Huber

After the morning session had ended and lunch was nearly complete, Peter Huber rose to give his keynote address. Huber tried to flesh out what he viewed as the two most important words in the Daubert opinion: “falsifiability” and “reliability.” At times, however, Huber could not help but comment on certain portions of the morning session that had aroused his interest.

Huber began by analyzing the word “falsifiability.” He was struck by the fact that Chief Justice Rehnquist, in his dissent in Daubert, claimed not to know what the word meant. Therefore, Huber thought it might be profitable to explore the meaning of this word drawn from the philosophy of science espoused by Sir Karl Popper. See Daubert, 509 U.S. at 600 (Rehnquist, C.J., concurring in part and dissenting in part) (“I defer to no one in my confidence in federal judges; but I am at a loss to know what is meant when it is said that the scientific status of a theory depends on its “falsifiability,” and I suspect some of them will be, too.”); Karl Popper, *Conjectures and Refutations: The Growth of Scientific Knowledge* 37 (5th

ed. 1989). Huber mused that Justice Blackmun, the author of Daubert, may also not have known what the word meant and it was likely that neither Justice Blackmun nor his clerks have ever read Popper's principal works, at least not in their entirety. Huber, an MIT-trained engineer as well as a lawyer, set out to bridge the gap. In the simplest terms possible, Huber said that what Popper meant by "falsifiability" was that in order for a theory to qualify as science it must make predictions that are concrete enough to be proved wrong. Huber also traced Popper's insights to Popper's impatience with the unfalsifiable claims of contemporaries Marx and Freud.

Huber then quoted from the affidavit of one of the plaintiffs' expert in Daubert, Dr. Shanna Swan. Huber mused that Dr. Swan had likely not written that affidavit herself because it was phrased in "lawyer-speak." After reading a 71-word passage containing a lot of double-negatives, Huber said it was time for the lawyer to "invite Popper in." Applying Popper's falsifiability analysis, Huber demonstrated that Dr. Swan's assertions were not science because they could not be proven wrong. Echoing a point made earlier by Dr. Ehrlich, Huber argued that it is impossible for science to prove ultimate negatives. Thus, it should come as little surprise that Jason Daubert and his parents eventually lost their case against Merrell Dow, making the positive spin put on Daubert by the plaintiffs' bar right after the case was decided ring hollow. (On a lighter, but practical note, Huber explained that he had personally spoken to the Dauberts and that their name was pronounced /Daw-bert/ not /Dow-bert/ or /Do-bear/.)

Taking up the challenge laid down by Bryant, Huber asserted that he was perfectly content to have Daubert's test to exclude junk science be applied in a totally neutral fashion, so that defendant experts were just as susceptible of being excluded. He had never maintained anything to the contrary, he retorted. Huber also responded to Bryant's charge that Galileo's Revenge was unscientific. "It's true," said Huber. As if to say that Bryant's point were irrelevant, Huber said that Galileo's Revenge was merely "a polemic sold in bookstores."

Moving on to the second important word from Daubert, "reliability," Huber argued that this term was not equivalent to the term "validity." To understand the true meaning of "reliability," according to Huber, one must consult the eighteenth-century mathematician, Thomas Bayes. Huber explained "Bayes theorem" with a simple example. Suppose your grandma's eyesight is 80 percent accurate (valid) and grandma tells you that she saw a yellow taxicab. Should grandma be allowed to testify to the taxicab's color in court? Most judges (and most people) approach this question in the following way: 80 percent is pretty good accuracy—I would allow grandma to testify; now maybe 60 percent or less would be too low. Such thinking misses half of what is important, as Bayes has demonstrated. Suppose your grandma told you she saw a yellow lion outside, would you still let her testify in court? Suppose your grandma told you she saw a yellow stegosaurus? Under Bayes theorem, what's important to judging overall "reliability" is not just the characteristics of the observer ("validity") but the likelihood that what an observer claims he has seen is true in the world at large.

Huber then posed the question of how we obtain information about the extrinsic likelihood that observed (or predicted) events are true. In the case of grandma and the yellow taxicab, the Division of Motor Vehicles can give us information about what proportion of taxicabs are yellow. But in cases where new scientific issues are under consideration, there is no Division of Motor Vehicles to consult. What to do? According to Huber, at this point we have to make an estimate of extrinsic likelihood. How do we make such an estimate? The best estimate of extrinsic likelihood is derived from a range of observations, or in terms of the grandma analogy, by looking at what the whole gamut of grannies have to say about the color of the taxicab. Turns out that under Bayes theorem that comes down to doing something that looks a whole lot like assessing whether scientific theories have achieved general acceptance. Ironically, the Daubert decision, which held that the Federal Rules of Evidence had abrogated the general-acceptance test of Frye v. United States, 293 F. 1013 (D.C. Cir. 1923), has merely recreated Frye and to that requirement added the further requirement of falsifiability. For Huber, the Court has essentially come full circle and gone the older law one better.

Turning to questions, Huber at first first faced some skepticism about the Bayes theorem. Huber did his best to explain that the Bayes theorem really was true, although he acknowledged that it sometimes produces counter-intuitive results. As an example, he used the fact that although the current HIV test is 99.8% valid, seven out of ten people without the virus currently get false-positive test results because the disease is so rare in the population as a whole. This "cries out against my intuition," admitted Huber, but it is true nonetheless.

The same federalist difficulty put forth in the morning session was also served up to Huber. Huber's response was: "You have to choose your poisons," implying that in this case, it is simply worse from a conservative perspective to allow juries to pass on whether theories qualify as real science than to give judges greater powers as gatekeepers to do the same. Sounding a variation on Judge Hand, Huber asked the rhetoric question of why we don't put legal questions to juries—"Ladies and Gentlemen of the jury, here is the text of Rule 10b-5. Please tell us what it means."

Lastly, I asked Huber the purely legal question of whether his reading of the meaning of "reliability" in Daubert was justified since Daubert specifically makes general acceptance a single factor in the determination of what is truly scientific rather than a determinative one and because the opinion appears to use the words "reliability" and "validity" interchangeably. Huber acknowledged the latter difficulty, but seemed to say that his reading of Daubert was plausible and that it made for better policy. "Who knows what the Court really meant by the term?," asked Huber.

Many of the ideas Huber expressed at lunch are contained in his new book, *Judging Science: Scientific Knowledge and the Federal Courts* (MIT Press 1997), and Huber recommended that Federalist Society members pick up a copy.

Afternoon Session on Science and Toxic Torts: Who Decides and How

Panelists included Professor David Bernstein, George Mason Law School, co-editor of *Phantom Risk: Scientific*

See Joiner, 78 F.3d at 537 (Smith, J., dissenting) (citing Daubert.)

Professor Bernstein also added to his reading list in this area the Ninth Circuit's decision in *Hopkins v. Dow Corning Corp.*, 33 F.3d 1116 (9th Cir. 1994), cert. denied, 513 U.S. 1082 (1995). The district judge in *Hopkins* should have excluded the plaintiffs' experts according to Professor Bernstein. (It will come as little surprise to Federalists that the district judge in *Hopkins* was Thelton Henderson, the same judge who struck down the California Civil Rights Initiative on logic that was tantamount to arguing that affirmative action is not only constitutionally permissible but constitutionally compelled. See *Coalition for Economic Equity v. Wilson*, 946 F.Supp. 1480, rev'd 110 F.3d 1431 (9th Cir. 1997).)

Continuing with his attack on the absent Roisman, Professor Bernstein turned to Roisman's assertion that cases are sometimes ahead of the curve. Professor Bernstein was willing to entertain the possibility that a few true Galileos might somehow find their way to testifying for plaintiffs. The problem, Professor Bernstein argued, is a practical one—most of the new "scientific" theories advanced in the courtroom turn out to be wrong. Perhaps a different set of legal rules should obtain if the opposite were true, but it is not. Thus, keeping a few Galileos out of the courtroom is a small price to pay to obtain the benefits of excluding a host of quacks.

Professor Bernstein associated Roisman's approach with that of fellow Professor E. Donald Elliott. Particularly irksome to Professor Bernstein is Professor Elliott's assertion that "Toxic tort cases are about good and evil, about corporate greed and indifference, and about risk of the unknown. But above all, toxic tort cases are about redefining our public morality for a new era in which we must confront the troubling truth that we do not fully comprehend the relationships between the things that we have made and our health and well-being." *Planning and Managing Mass Toxic Tort Cases*, C534 ALI-ABA 605, 611 (1990). "Redefining our public morality" "is a bit much to ask of our tort system," Professor Bernstein maintained. Professor Bernstein also found Professor Elliott's pioneering sense of justice questionable since Professor Bernstein believes that plaintiffs should have to establish that there has truly been a victim before being allowed to secure a recovery from a potentially blameless party. Mere status as a corporation and the environmental track record of corporations generally should never be enough to change the normal rules of evidence.

Sharman then put his own question to Professor Bernstein before opening up the floor more generally. In Sharman's view, since most juries approach cases in good faith and do their best to muddle through even complicated scientific issues, the problem in this area of the law is judges who allow "junk science" to go to juries and thereby either confuse them or provide them with a handy justification for indulging their prejudices. Implying that the presentations of the day had operated on perhaps too theoretical a plane, Sharman asked Professor Bernstein for practical advice on to deal with judges like Judge Billy Bob, who often say that Daubert-like arguments are really arguments about the sufficiency of the evidence. Given that perspective, such judges are unwilling to "cut the legs out from under" plaintiffs at an early stage of the litigation.

Professor Bernstein could only reiterate his point that the falsifiability prong of Daubert is easily translatable into a plea to a judge to force the side propounding "junk science" to "give us something we can cross examine." Professor Bernstein conceded, however, that the admissibility and sufficiency inquiries in this area of the law were intertwined to such a degree, however, that it is hard to give simple advice about how to sway judges inclined to frame admissibility issues as matters of sufficiency.

The next question to Professor Bernstein came from an audience member who was troubled by the reality that much of the science bearing on commonly litigated issues is performed by the corporate defendants themselves or by other industry-affiliated scientists rather than pure academics. Don't plaintiffs in toxic tort cases superficially appear to have a point when they advance claims of bias? To this Professor Bernstein suggested that expanded use of neutral scientific panels should be investigated, such as Warren had advocated in the morning session. (It appears to the author that a further useful response to overly-simplistic arguments for even-handed application of Daubert is that there are solid reasons for judges (and juries) to give more credence to corporate science over plaintiff-generated science. While completely neutral science is the ideal, corporate science is at least monitored in many areas by federal or state regulators. Much corporate science is in fact performed to satisfy regulatory requirements. The extensive testing required by the Federal Insecticide, Fungicide, and Rodenticide Act comes to mind readily. Plaintiff-driven science is far more questionable because there really are no external checks on its validity other than judges who faithfully apply Daubert (or in the state courts that have not followed Daubert, Frye). Many hired-gun experts can make a good enough living as frequent witnesses that they cease even to guard their professional reputations.) Professor Bernstein also referenced a work in the *Federalist Society's* anchor journal by audience member, Paul Taylor, who explored the common-law self-critical analysis privilege, which prevents voluntarily performed corporate investigations from being used by plaintiffs against the corporations that generated the information. See Note, *Encouraging Product Safety Testing by Applying the Privilege of Self-Critical Analysis When Punitive Damages Are Sought*, 16 *Harv. J. L. & Pub. Pol'y* 769 (1993).

Another of the positions advanced by Professor Elliott that Professor Bernstein criticized was the suggestion that the burden on Daubert-like questions of admissibility should be shifted to defendants when plaintiffs can show that there was some effort by a defendant to conceal material information (usually through the mechanism of the "discovery tort" discussed in the morning) from past or present plaintiffs. One audience member intrigued by this concept asked Professor Bernstein whether he took his distaste for this burden-shifting idea so far as to reject the doctrine of spoliation, which applies a judicial inference that destroyed evidence was damaging to the responsible party's case. Professor Bernstein responded in the negative—there is an important difference between withheld evidence that is eventually turned over and evidence that is destroyed. Sharman agreed with Professor Bernstein and echoed Warren's concerns in the morning session about the rise of the "discovery tort."

The next question put to Professor Bernstein was whether the Seventh Amendment requires plaintiffs to be given the opportunity to present the views of minority scientists to juries. In Professor Bernstein’s view, Seventh Amendment objections to the exclusion of evidence are red herrings and the Supreme Court rightly gave them short shrift in *Daubert*. Codes of evidence have never been thought unconstitutional. By contrast, the trio of summary judgment cases in 1986 seems to have impinged on the right to a jury trial far more than *Daubert* in Professor Bernstein’s view and those cases are good law. Provocative ideas like Judge Hand’s solution to “junk science” do raise novel Seventh Amendment questions for Professor Bernstein, however. Professor Bernstein also endorsed a recommendation by Professor George Priest that juries should be required to at least write down the reasons for their verdicts in complex cases. Professor Bernstein suggested the possibility, however, that once the curtain hiding Oz was torn away such a reform might have the effect of toppling the civil-jury-trial system we use in products-liability cases.

Lastly, Professor Bernstein was asked about how case reports in the medical literature contribute to new litigation crazes. He pointed out that scientists, like members of the media, have an incentive to make news and thus there is a bias in the scientific literature, at least when considering an issue for the first time, to search for a causal link between some product or service and the illnesses of users. In closing, Professor Bernstein recognized that while peer review is an important factor in analyzing whether a theory can truly claim scientific status, it should not be thought dispositive. He pointed to the mild scandal over an article published in the *Journal of the American Medical Association (JAMA)*, purporting to establish that breast-implants caused nursing problems. There were many flaws in this study, however, and Professor Bernstein opined that it never should have been published. See Jay P. Mayesh & June A. O’Hea, *Second-Generation Breast Implant Claims: A Tough Road to Hoe*, 5 *Med./Leg. Aspects of Breast Implants* No. 3 (1997), available in WESTLAW, TP-ALL database.

Speaking for those who attended this Colloquium, I can say that I thoroughly enjoyed it and I encourage attendance at the next such event.

