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Cover Page Footnote

A.A. White Professor of Law, University of Houston Law Center. I would like to thank Mike Green, Manuel Utset, and the members of the philosophy reading group at Florida State University College of Law for helpful comments.

EXPERT WITNESS ETHICS

*Joseph Sanders**

The worst that can be said about an expert opinion is not that it is a lie—that criticism is often beside the point—but that it is unreasonable, that no competent expert in the field would hold it.¹

INTRODUCTION

Expert witness ethics is one of those topics about which there appears to be a fair degree of resigned acceptance of the status quo. In large measure this is because of a lack of agreed upon ethical standards and, therefore, a lack of consensus concerning what steps we should take to encourage more ethical behavior. Both of these are difficult issues, and I do not propose to offer noncontroversial solutions to either. Nevertheless, the topic is worthy of our attention. The costs of unethical expert witnessing are substantial. They include the costs associated with weeding out the most unethical witnesses and, equally important, the costs reflected in any reduced ability of fact-finders to come to correct conclusions.

This essay is organized into three sections. In the first part, I discuss the nature of the expert's ethical obligation and impediments to fulfilling that obligation. This part is informed by the central proposition that the primary purpose of a trial is to ascertain the truth.² This purpose informs the central ethical obligation of experts, which is to provide adequate, unbiased justifications for their position. I argue that the "same intellectual rigor" test advanced by the U.S. Supreme Court in *Kumho Tire Co. v. Carmichael*,³ although much criticized, is with some modification the most appropriate measure of this ethical standard.

Is the legal system meeting its ethical obligations? With respect to expert witnesses, there is room for doubt. The nature of the difficulty is twofold. First, experts may be asked to adopt a different standard of justification for

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1. Samuel R. Gross, *Expert Evidence*, 1991 Wis. L. Rev. 1113, 1178.

2. Seeking the truth is certainly not the only goal of the justice system. Other things matter as well, including a sense of procedural justice on the part of the parties and perhaps the civics education received by those who serve on juries. But ascertaining the truth is the first virtue of a justice system. See Susan Haack, *Inquiry and Advocacy, Fallibilism and Finality: Culture and Inference in Science and the Law*, 2 Law Probability & Risk 205, 212 (2003).

3. 526 U.S. 137, 152 (1999).

their conclusions than they would employ when working in their chosen field. Second, many experts face pressures to adopt a role that is contrary to the role that the ethics of their profession mandates.

If there is a problem with expert witness ethics, what might we do to improve things? The second part discusses ways we might enforce expert ethical standards through the use of sanctions. Sanctions might come from several sources, including professional organizations, judges, lawyers, and even jurors. I conclude that the effectiveness of sanctions is quite limited.

If sanctions by actors in the system are unlikely to do much to control unethical expert witnessing, what else might we do to raise ethical standards among experts? I address this question in the third part of this essay. I begin by arguing that the legal system itself may be thought to have ethical obligations. These obligations point in two directions: toward the witness and toward the fact-finder who must assess the expert testimony. Obligations toward the witnesses involve creating structures that facilitate ethical behavior on their parts. With respect to the fact-finder,⁴ the basic obligation is to arrange trials so as to maximize the ability of the fact-finder to ascertain the truth. The task is part of what Professor Alvin Goldman calls social epistemology: the evaluation of social practices of inquiry in terms of whether they are likely to promote the acquisition of true beliefs.⁵ Here, and throughout the essay, it is important to keep in mind that I believe our ultimate goal should be to maximize the likelihood of achieving correct outcomes.

I. THE ETHICAL OBLIGATIONS OF EXPERT WITNESSES

A. *Justification*

At a general level, it is hardly controversial to assert that the primary objective of trials is to arrive at the correct outcome. Federal Rule of Evidence 102 sets forth the basic commandment that the rules of evidence should be construed “to the end that the truth may be ascertained.”⁶ What is problematic is how to translate this objective into expert witness ethical standards. One way to approach this issue is to begin with the epistemological question of when it is proper to say that one knows something. The dominant epistemological approach to this question

4. As the remarks that follow indicate, this essay assumes that the case is being tried to a lay jury. Some of what I have to say would also apply to cases tried to a judge.

5. Alvin I. Goldman, *Knowledge in a Social World* 4–9 (1999); Mike Redmayne, *Rationality, Naturalism, and Evidence Law*, 2003 Mich. St. L. Rev. 849, 854.

6. Fed. R. Evid. 102 (“These rules shall be construed to secure fairness in administration, elimination of unjustifiable expense and delay, and promotion of growth and development of the law of evidence to the end that the truth may be ascertained and proceedings justly determined.”).

involves the interplay of three factors: belief, truth, and justification.⁷ Belief is a person's subjective position concerning the truth of a proposition.⁸ Truth is the reality of the proposition independent of belief.⁹ Justification involves the quality of the reasons for a belief.¹⁰ To count as knowledge, something must be believed as true, it must be true, and a person's belief that it is true must be justified. In the absence of a belief, what we have is ignorance. In the absence of truth, what we have is error. In the absence of appropriate justification, what we have is mere opinion.¹¹

What is most noteworthy about the standard approach is that a theory of knowledge's main concern is not knowledge per se but justification; indeed, much current epistemological writing is devoted to the question of justification.¹² Even correct beliefs without appropriate justification are not knowledge. The gambler's fallacy provides an example. When playing roulette, the gambler observes that his favorite number has not come up for a very long time. He believes it is "due" and bets on it. He wins. He was right in his belief about the number coming up, but for the wrong reasons. Professor Michael Williams notes, "To be sure, I may say: 'I just knew it would win.' But I didn't really know. I was convinced and I turned out to be right. That is all."¹³

What is wrong with beliefs without good justification? First, of course, there is the instrumental objection. Such beliefs are more likely to be wrong, causing us to make mistakes as our intrepid gambler will discover in due course. Moreover, and more important for this essay, these three conditions give knowledge a normative dimension. When we say we

7. D. Michael Risinger & Michael J. Saks, *Rationality, Research and Leviathan: Law Enforcement-Sponsored Research and the Criminal Process*, 2003 Mich. St. L. Rev. 1023, 1024.

8. *Id.*

9. *Id.*

10. *Id.*

11. Michael Williams, *Problems of Knowledge: A Critical Introduction to Epistemology* 16–19 (2001). In a famous paper, Edmund Gettier raises the question of whether these three conditions are sufficient for knowledge. Here is an example of the type of problem Gettier poses: I have been looking at the same clock in my office for several years and it has always been reliable. I glance up and see that it is 9 a.m. and believe this to be true. In fact it is 9 a.m. but unknown to me the clock stopped exactly twelve hours ago at 9 p.m. I believe it is 9 a.m.; it is 9 a.m.; and I am justified in my belief and yet most would feel that somehow I do not know it is 9 a.m. One solution to the Gettier problem is to toss out the justification requirement altogether.

This leads to so-called externalist approaches that attempt to sidestep the problematic relationship between beliefs and justification. "Reliabilism" is one such approach which defines knowledge as something derived from a reliable process. My belief counts as knowledge if it is arrived at through a reliable process even if I, myself, do not and perhaps could not justify my belief, i.e., I do not have good grounds for my belief. There is no reason, of course, why we must adopt a purely externalist or a purely internalist perspective on knowledge. We can accept that justification plays an important role in our definition of knowledge and also attempt to employ the most reliable procedures when searching for knowledge. In some ways, this essay treads this middle path.

12. See, e.g., Richard Swinburne, *Epistemic Justification* (2001).

13. Williams, *supra* note 11, at 20 (emphasis omitted).

believe something to be true, we are warranting our commitment to the truth of a proposition (the belief condition) and that we are entitled to this belief (the justification condition). When we attribute knowledge to another, it is because we concede that he believes the proposition and that he has a right to his belief.¹⁴ It is irresponsible to assert knowledge without adequate justification.

As with most forms of irresponsibility, irresponsibility of this sort, what Williams calls epistemic irresponsibility, is relatively harmless when it is not inflicted on others. When such beliefs are shared, however, one is more or less vouching for the truth of the belief and inviting others to rely on this knowledge as well. Behavior that is irresponsible in this way is unethical when it occurs within settings where individuals hold themselves (and their representatives) out as having knowledge upon which others rely. It is unethical for expert witnesses to hold or express unjustified beliefs.

This raises the difficult question of what constitutes sufficient justification? Here we confront the skeptic's challenge that we can never convincingly argue that our beliefs are justified.¹⁵ A discussion of radical skepticism and the responses to it is best left to the epistemologists. Here I follow the advice of Frederick Pollock and recognize that, in the practical affairs of the law, "[t]he lawyer cannot afford to adventure himself with philosophers in . . . logical and metaphysical controversies."¹⁶ Whatever the epistemological merits of radical skepticism, no one operating within the legal realm is prepared to argue that no beliefs are justified, no claims about the world are objective, and no texts have a determinant meaning. All legal actors are in this sense minimal realists.

14. *Id.* at 25; see also John Pollock, *Epistemic Norms*, in *Epistemology: An Anthology* 192 (Ernest Sosa & Jaegwon Kim eds., 2000).

15. One version of the skeptic's challenge is this: When we consider a belief and ask how it is justified we are typically led to another belief that supports the first belief. When we ask about the justification for this belief we may be led to still another belief and so forth. How long can this go on? There seem to be three possibilities: the chain of beliefs goes on forever, the chain circles back on itself, or the chain of beliefs stops. See Williams, *supra* note 11, at 62.

Foundationalism answers the question posed above by saying justification stops with a set of "basic beliefs" that themselves do not rely on their logical or evidential relations to other beliefs for their justification. The primary candidates for such beliefs are direct sensory perceptions. See Michael R. DePaul, *Preface* to *Resurrecting Old-Fashioned Foundationalism*, at vii (Michael R. DePaul ed., 2001).

Coherence perspectives come closer to adopting the second answer to the question. Beliefs are justified by the network of other beliefs in which they are embedded. Williams argues that these views are holistic in the sense that justification of individual beliefs depends on the properties of the total belief system. Williams, *supra* note 11, at 117. Coherency is generally thought to be an indicia of knowledge, but this perspective must deal with the fact that pseudosciences such as astrology often present a complex set of coherent beliefs.

Susan Haack has proposed a combination of foundational and coherence perspectives she calls "foundherentism." See Susan Haack, *Evidence and Inquiry* 73-94 (1993). Disputes about the relative merits of these and other approaches consume a good deal of epistemological writing.

16. Frederick Pollock, *The Law of Torts* 25 (New York, Banks & Brothers 1895).

Less radical forms of skepticism are frequent visitors to the legal arena. These run the gamut from the everyday concern that witnesses are biased by their own self-interest to more serious doubts as to whether factors such as race, class, gender, age, and culture make it impossible for people to come to a single objective knowledge of the world. A similar range of skeptical views exists with respect to expert witnesses.¹⁷ Such arguments are often advanced to counter proposals to change legal procedure. For example, proposals to make greater use of court-appointed experts may be met with the argument that all experts are “biased” in some important ways and therefore no one can be trusted with the task of presenting the “correct” answer to some question. People who hold strongly to this view may conclude that since “truth” is so elusive, the primary purpose of trials is not seeking the truth, but rather some other objective such as the peaceful resolution of conflict or achieving procedural justice.¹⁸ Whatever the merits of this point of view, clearly it is not the position adopted by the Federal Rules of Evidence, by most states’ rules of evidence, or by this essay. But what do we believe about adequate justification for expert testimony?

The epistemological approaches most congenial to what I perceive to be the standard legal position on what constitutes adequate justification are those that adopt a contextual approach to knowledge.¹⁹ The central idea behind contextualism is that the standard for making knowledge attributions vary depending on the context within which they are made.²⁰ The rules of

17. See generally David S. Caudill, *Ethnography and the Idealized Accounts of Science in Law*, 39 San Diego L. Rev. 269 (2002).

18. Professor Brian Leiter calls this form of skepticism the “flesh and blood argument.” As to this argument, Leiter notes,

Even if we are situated—as no one denies—it may still be possible to have objective knowledge of a strongly objective world. This is precisely what post-Kuhnian and post-Quinean philosophers like Richard Boyd, Philip Kitcher, and Peter Railton have been arguing for the last twenty years. Perhaps they are wrong. But if they are, it is not because they do not recognize the banal fact that we are “situated”; rather, it is because their arguments for how we overcome the limits of our situation are wrong.

Brian Leiter, *Rethinking Legal Realism: Toward a Naturalized Jurisprudence*, 76 Tex. L. Rev. 267, 286 n.93 (1997). For a flavor of the arguments of these philosophers, see Richard Boyd, *Uncivil Society: The Perils of Pluralism and the Making of Modern Liberalism* (2004); Philip Kitchner, *The Advancement of Science: Science Without Legend, Objectivity Without Illusions* (1993).

19. Keith DeRose, *Solving the Skeptical Problem*, in *Epistemology: An Anthology*, *supra* note 14, at 482; David Lewis, *Elusive Knowledge*, in *Epistemology: An Anthology*, *supra* note 14, at 503; Michael Williams, *Epistemological Realism*, in *Epistemology: An Anthology* *supra* note 14, at 536. Cranor advocates a similar position in the area of regulation. See Carl F. Cranor, *Regulating Toxic Substances: A Philosophy of Science and the Law* ch. 5 (1993).

20. I do not wish to engage in a discussion of the different forms of contextualism, whether this approach resolves the problem of skepticism, or whether there is some superior response to the skeptic. I only wish to argue that the normal legal approach to knowledge is contextual. On the different forms of contextualism, compare Stewart Cohen, *Contextualist Solutions to Epistemological Problems: Scepticism, Gettier, and the Lottery*, in *Epistemology: An Anthology*, *supra* note 14, at 517, with Lewis, *supra* note 19, at 503.

evidence are applied in a way that is consistent with the contextualist's fundamental observation that the level of justification we require for something to count as knowledge, and coincidentally for someone to be epistemically responsible in holding a belief, varies according to the context within which the belief is held and expressed.²¹

But if we accept that different areas of inquiry, indeed different questions within a given area of inquiry vary in the justification required to believe a proposition or, if you will, vary in their conditions of warranted "assertability,"²² then establishing the ethical boundaries of expert testimony becomes a daunting task indeed.

1. A Same Intellectual Rigor Test

An obvious place to look for standards of adequate justification is within an expert's area of study itself. Expert ethical behavior should be judged by the standards of the discipline of the expert. In fact, a number of professional associations have promulgated codes of conduct for their members that are consistent with this view. These codes focus on an expert's justification for courtroom statements and require that the basis of belief be equal to that required when performing outside the courtroom.²³

21. The question of how much justification is required of one is a separate question of when it is required. In many contexts, there are things individuals believe without justification or without very good justification. We set a very high, indeed an unachievable, standard if we demand that individuals have good justification for their every single belief in every situation. In many contexts, individuals may responsibly hold beliefs without substantial justification. However, when others raise a reasoned objection to the truth of a belief, individuals should be prepared to provide a justification. Once an objection is raised, individuals who hold beliefs without adequate personal justification behave irresponsibly if they are unprepared either to abandon the belief or to provide justification. Williams calls this a "default and challenge model" of knowledge and contrasts it with the alternative "prior grounding requirement" in which all our beliefs must be adequately grounded to be justified. Williams, *supra* note 11, at 24–25. See generally Nicholas Rescher, *Cognitive Pragmatism: The Theory of Knowledge in Pragmatic Perspective* (2001).

The "benefit of the doubt" approach is not appropriate in every context, however. Courtroom witnessing is one context where it is appropriate to require that beliefs have some prior grounding. This is especially the case with expert witnesses. The expert who asserts the truth of a belief without evidence is properly dismissed out of hand. Recall the often cited passage in *General Electric Co. v. Joiner*, 522 U.S. 136, 146 (1997): "[N]othing in either *Daubert* or the Federal Rules of Evidence requires a district court to admit opinion evidence that is connected to existing data only by the *ipse dixit* of the expert." Expert witnesses must have prior grounding for their beliefs. This, however, buys us very little, for very few experts even attempt to play the "because I say so" card that is ever popular in parent-child controversies. Most experts purport to provide some justification for their beliefs.

22. DeRose, *supra* note 19, at 496.

23. See, e.g., Melvin A. Shiffman, *Code of Professional and Ethical Conduct, in Ethics in Forensic Science and Medicine: Guidelines for the Forensic Expert and the Attorney* 280, 280–89 (Melvin Shiffman ed., 1999) (providing a "proposed ethical code of conduct for the forensic expert" formulated by the National Forensic Center); Ethical Principles of Psychologists and Code of Conduct § 7 (Am. Psychological Ass'n 1992), <http://www.apa.org/ethics/code1992.html#Forensic>; Ethical Guidelines for the Practice of Forensic Psychiatry (Am. Acad. of Psychiatry & the Law 1995),

For example, a code of professional conduct for forensic experts calls upon witnesses to “consider all relevant data . . . and analyze it objectively in formulating conclusions” and to perform only as she “would routinely perform in the course of normal professional duties.”²⁴

If followed, the aspirations in the Forensic Code of Ethics and similar codes would bar some expert testimony. Examples of experts who have failed to follow these precepts are not difficult to find. They range from outright lies,²⁵ to nonreplicable results,²⁶ to clearly inadequate methods.²⁷

<http://www.aapl.org/ethics.htm>. See generally Expert Witnesses in Child Abuse Cases: What Can and Should Be Said in Court (Stephen J. Ceci & Helene Hembrooke eds., 1998).

Not every code sets such a high standard. The American Medical Association (AMA) guidelines on expert testimony explicitly only oppose “false testimony.” See Health and Ethics Policies of the AMA House of Delegates § 265.994 (n.d.), available at <http://www.ama-assn.org/ad-com/polfind/Hlth-Ethics.pdf> (last visited Nov. 17, 2007).

24. Shiffman, *supra* note 23, at 285. The relevant sections are,

[] Professional Competence

A member shall only accept those engagements that he or she can perform with technical competence, and which are of a type that the member would routinely perform in the course of normal professional duties. A member will not purport to be an expert in matters in which he has limited knowledge or experience, or in any matter in which peers in the same profession, with the same level of knowledge and experience, would not hold themselves out as experts.

[] Adequate Data

A member shall consider all relevant data, weigh that data, and analyze it objectively in formulating conclusions and opinions. Conclusions of fact will not be drawn from data or materials which appear unrepresentative, atypical, or unreliable.

[] Methodology

All tests, analysis, and other operations leading to conclusions and opinions shall be based on adequate and accepted procedures in that profession, verifiable by retesting or analysis by other professionals. No discredited or unreliable procedure will be used and procedures that are in any way experimental, controversial, or not embraced by that professional community, will be clearly defined as such in the work product and conclusions. The methodology used, and all steps taken in reaching a conclusion, will be clearly set forth and made available upon request.

Id.

25. See Paul C. Giannelli, *The Abuse of Scientific Evidence in Criminal Cases: The Need for Independent Crime Laboratories*, 4 Va. J. Soc. Pol’y & L. 439, 442 (1997) (“In West Virginia, the former head serologist of the State Police crime laboratory, Trooper Fred Zain, falsified test results in as many as 134 cases from 1979 to 1989.”).

26. See Joseph Sanders, *Bendectin on Trial: A Study of Mass Tort Litigation* 172 (1998). Dr. Alan Done’s results from a recalculation of epidemiology studies could not be replicated by either defense or other plaintiff experts. *Id.*

27. See Judge Janis Graham Jack’s scathing opinion in *In re Silica Products Liability Litigation*, 398 F. Supp. 2d 563 (S.D. Tex. 2005) discussed at greater length *infra* notes 119–21 and accompanying text. With respect to one of the physicians in that case, the court noted,

Indeed, the gulf between the methodology Dr. Levy employed for this litigation and the methodology Dr. Levy advocates in his academic work starkly contravenes the Supreme Court’s requirement that “an expert . . . employ[] in the courtroom the same level of intellectual rigor that characterizes the practice of an expert in the relevant field.”

Id. at 639 (quoting *Kumho Tire Co. v. Carmichael*, 526 U.S. 137, 152 (1999)).

Not only is this the test advanced by most if not all statements of professional organizations, it is also one interpretation of evidentiary admissibility rules. The general acceptance test articulated in *Frye v. United States*²⁸ can be understood this way.²⁹ A slightly different version of this approach appears in *Kumho Tire*'s requirement that in order to be admissible the expert must employ the "same intellectual rigor" with respect to his courtroom testimony that he would with respect to his everyday work.³⁰ Viewed in this light, U.S. admissibility rules are compatible with ethical standards of professions.³¹

This does not mean that the standards of each discipline are unique in every particular.³² Nor does it mean there is a single threshold in each profession or area of knowledge. Depending on the question, experts may ethically hold a position with more or less justification. What the standard does acknowledge is that disciplines generally contain a body of norms defining acceptable instruments, methods, analyses, and interpretations of evidence. These norms define the intellectual rigor of a field.

28. 293 F. 1013, 1014 (D.C. Cir. 1923).

29. Samuel R. Gross & Jennifer L. Mnookin, *Expert Information and Expert Evidence: A Preliminary Taxonomy*, 34 Seton Hall L. Rev. 141, 148 (2003) (noting that the *Frye* standard "pass[es] the buck back to the expert field itself, and accept[s] the standards it imposes on itself").

30. *Kumho Tire*, 526 U.S. at 152 ("The objective of [the *Daubert*] requirement is to ensure the reliability and relevancy of expert testimony. It is to make certain that an expert, whether basing testimony upon professional studies or personal experience, employs in the courtroom the same level of intellectual rigor that characterizes the practice of an expert in the relevant field.").

In *Kumho Tire*, the Court criticized the plaintiff's expert on precisely this ground. "Indeed, no one has argued that Carlson himself, were he still working for Michelin, would have concluded in a report to his employer that a similar tire was similarly defective on grounds identical to those upon which he rested his conclusion here." *Id.* at 157.

Apparently, the "same intellectual rigor" test was first advanced by Judge Richard Posner in a set of opinions for the U.S. Court of Appeals for the Seventh Circuit. See *Braun v. Lorillard Inc.*, 84 F.3d 230, 234 (7th Cir. 1996); *Rosen v. Ciba-Geigy Corp.*, 78 F.3d 316, 318 (7th Cir. 1996); see also J. Brook Latham, *The "Same Intellectual Rigor" Test Provides an Effective Method for Determining the Reliability of All Expert Testimony, Without Regard to Whether the Testimony Comprises "Scientific Knowledge" or "Technical or Other Specialized Knowledge,"* 28 U. Mem. L. Rev. 1053 (1998).

31. See Latham, *supra* note 30, at 1057.

32. As Haack notes,

[A]ll empirical investigation demands the same epistemic virtues: respect for evidence, care and persistence in seeking it out, good judgment in assessing its worth; and that, in a sense, all empirical investigation uses the same method—the method of experience and reasoning: making an informed conjecture, seeing how it stands up to the available evidence and any further evidence you can lay hands on, and then using your judgment whether to drop it, modify it, stick with it, or what. What is distinctive about natural-scientific inquiry isn't that it uses a particular mode or modes of inference, but the vast range of helps to inquiry scientists have developed, many of them—specific instruments, specific kinds of precaution against experimental error, specific models and metaphors—local to this or that field or sub-discipline.

Susan Haack, *Defending Science—Within Reason: Between Scientism and Cynicism* 167 (2003).

2. Objections to the Same Intellectual Rigor Standard

Not everyone agrees that the same intellectual rigor test is the correct ethical standard for expert witnesses. Two situations cause people to question this position. First, there may be areas for which the profession's acceptable levels of justification are so low that one might argue their standards are always insufficient for legal purposes. As Professor David Faigman notes,

[I]f [a] field is bankrupt of data or not especially rigorous in its testing of hypotheses, courts will not get very reliable opinion testimony. The *Daubert* query is not simply whether the expert is using the same intellectual rigor in court that he or she would use in the field. *Daubert* asks whether the expert testimony itself is based on a sufficiently rigorous research foundation. Surely, if an expert fails to use the same intellectual rigor used in the field, he or she should be excluded. But an expert's use of the same intellectual rigor in the courtroom as in the field does not ensure reliable testimony if the field itself is not rigorous. The same intellectual rigor test is a necessary, but not a sufficient, criterion for admission. From astrology to certain forensic and psychological opinion, courts will not be receiving good evidence if they merely rely on the intellectual rigor accepted in the field. . . . The whole point of *Daubert* was to require courts to assess the fields themselves and not defer to the guilds that bring their so-called expertise to the courtroom.³³

The legal context imposes a baseline of acceptable justification and if a witness cannot rise to that level, the testimony is inadmissible. Faigman's astrology example is a case in point.³⁴

Standards that are too lax are not the only concern. Professor Neil Cohen complains that professional standards may be too stringent. "Science, particularly empirical science that relies on statistical or other probabilistic methods, routinely uses filters that prevent its experts from reaching exactly the sort of opinions as to the truth of ultimate facts that should be utilized in a civil trial governed by the preponderance of the evidence rule."³⁵

From the contextual perspective adopted earlier, one interpretation of these positions is that the only context relevant to the adequacy of expert witness justification is the legal context itself.³⁶ This suggests there should be one level of justification required of all experts and the only variation

33. David L. Faigman, *The Law's Scientific Revolution: Reflections and Ruminations on the Law's Use of Experts in Year Seven of the Revolution*, 57 Wash. & Lee L. Rev. 661, 667 (2000) (referencing *Daubert v. Merrell Dow Pharms., Inc.*, 509 U.S. 579 (1993)) (footnotes omitted).

34. Of course astrology experts are never admitted in courts. However, many critics claim that overly lax standards are frequently used in the criminal context to admit questionable forensic evidence such as handwriting analysis or tool mark evidence.

35. Neil B. Cohen, *The Gatekeeping Role in Civil Litigation and the Abdication of Legal Values in Favor of Scientific Values*, 33 Seton Hall L. Rev. 943, 949 (2003).

36. For an article that comes close to this point of view, see Margaret G. Farrell, *Daubert v. Merrell Dow Pharmaceuticals, Inc.: Epistemology and Legal Process*, 15 Cardozo L. Rev. 2183, 2204-05 (1994).

permitted would be based on the nature of the question posed to the expert. This approach completely disregards the professional context from which the expert's everyday ethical norms arise. Were we to disregard these community norms we would be left with the circular argument that whatever conclusion a court allows an expert to express is per se ethical.³⁷

A slightly different interpretation would lead one to conclude that what Professors Faigman and Cohen are espousing is not a single legal standard but rather upper and lower boundaries for professional ethical standards. Even if we adopt this approach, there is work to do in defining the floor and ceiling. This is exactly what Faigman and Cohen attempt to do in their articles. For Faigman, the floor is to be found in the reliability requirements of *Daubert*.³⁸ For Cohen, the ceiling is to be found in the law's need for closure and in the preponderance of the evidence burden of persuasion in civil cases.³⁹

What is the consequence of accepting either of these two objections to the same intellectual rigor test? If we adopt Faigman's position, the same intellectual rigor standard can retain much of its force, albeit with the rider that occasionally a whole field cannot live up to a minimal level of justification in the legal context. Members of such a community of "expertise" are simply not experts in the eyes of the law. Everyone else is to be judged by the standard of their relevant professional community.

There is a good deal one could say about Faigman's analysis and whether *Daubert* does provide a reasonable ethical floor for expert testimony.⁴⁰ For

37. It is unlikely that a professional organization would accept either Professor Faigman's or Professor Cohen's caveat. It is hard to imagine an organization of handwriting experts agreeing that within its own ranks a certain level of justification is sufficient to ethically assert a belief but that this standard is too low for the courtroom. It is nearly as difficult to believe that there are organizations prepared to promulgate ethical standards for their members that suggest some lower level of justification is appropriate for the courtroom. The standards cited above explicitly state the opposite; that individuals should apply the standards of their discipline to their witnessing tasks. From the organization's point of view, Professor Cohen's position undermines the organization's efforts to establish ethical standards for its members when the members testify in court and, as a consequence, Cohen's position creates an ethical problem for experts in these areas who, under Cohen's proposal, would be asked to testify to propositions that they could not appropriately assert within their discipline.

38. Faigman, *supra* note 33, at 665–66.

39. Cohen, *supra* note 35, at 949–51.

40. For example, *Daubert's* falsifiability test and the underlying Popperian view of science that it allegedly reflects, has been a topic of frequent criticism, especially among philosophers of science. See generally Haack, *supra* note 32, at 251; Erica Beecher-Monas, *The Heuristics of Intellectual Due Process: A Primer for Triers of Science*, 75 N.Y.U. L. Rev. 1563 (2000); David S. Caudill & Richard E. Redding, *Junk Philosophy of Science?: The Paradox of Expertise and Interdisciplinarity in Federal Courts*, 57 Wash. & Lee L. Rev. 685 (2000); Gary Edmond & David Mercer, *Conjectures and Exhumations: Citations of History, Philosophy and Sociology of Science in US Federal Courts*, 14 L. & Literature 309 (2002); Haack, *supra* note 2; Dale A. Nance, *Reliability and the Admissibility of Experts*, 34 Seton Hall L. Rev. 191 (2003).

On this issue, I find myself aligned with David Kaye, who makes the following observation:

good or ill, however, the existence of some threshold is well-settled ground, now embodied in the text of Federal Rule of Evidence 702, and the courts already apply a floor for admissibility.⁴¹ Not everyone can qualify as an expert, and the ethical rules that are the topic of this essay concern individuals who are permitted to testify.

The more pressing issues are those raised by Cohen: Should the courtroom context cause us to lower the threshold of adequate justification below that which would be required by an expert's profession? If so, how should we define the nature of this adjustment? If an expert would be behaving inappropriately in claiming a causal relationship between, say, a drug and heart problem in a peer-reviewed, published work in her discipline, when if ever would she be ethically justified in reaching exactly this conclusion on the stand? Cohen never directly addresses these questions. Rather, he lists a set of ways in which law and science differ.⁴² His and similar lists of differences typically include the following: (1) an investigative and critical, versus adversarial and partisan, approach to knowledge; (2) open-ended inquiry versus prompt resolution; (3) a focus on

As to the crucial issue of actually testing a scientific theory, the *Daubert* Court did not adopt the details of either Hempel's or Popper's approach to defining the extent to which an empirical theory is corroborated or verified. Neither did it adopt some strange amalgam of the two. It merely made the point that hypotheses that have not been validated by experiments or other tests capable of refuting them are less secure than those that have been tested. Surviving serious empirical testing is not all there is to a credible scientific theory, but it is a good start. For this reason, *Daubert's* concern with "testing" is a sensible and important part of the judicial inquiry into scientific validity.

Of course, this does not mean that "testing" or the other factors enumerated in *Daubert* are easily applied. Courts continue to struggle with the task of excluding purportedly scientific testimony that is not sufficiently helpful to the trier of fact. The law of evidence requires judges to ascertain whether a particular scientific theory or method is worth betting on, and they would do well to place their bets on theories that are not only testable but that also are tested. This, and only this, is the meaning of *Daubert's* first indicator of scientific validity.

One can complain that it leaves a great deal unsaid, but so does any opinion that points to a general standard rather than a mechanical rule.

D.H. Kaye, *On "Falsification" and "Falsifiability": The First Daubert Factor and the Philosophy of Science*, 45 *Jurimetrics* 473, 479–80 (2005) (footnotes omitted).

For a general discussion of the *Daubert* trilogy's approach to science, see Joseph Sanders, Shari S. Diamond & Neil Vidmar, *Legal Perceptions of Science and Expert Knowledge*, 8 *Psychol. Pub. Pol'y & L.* 139 (2002).

41. In support of this proposition, one need look no further than *Kumho Tire Co. v. Carmichael*, 526 U.S. 137, 151 (1999) ("Nor, on the other hand, does the presence of *Daubert's* general acceptance factor help show that an expert's testimony is reliable where the discipline itself lacks reliability, as, for example, do theories grounded in any so-called generally accepted principles of astrology or necromancy.").

42. See Susan Haack, *Irreconcilable Differences?: The Uneasy Marriage of Science and the Law*, 72 *Law & Contemp. Probs.* (forthcoming Winter 2009) (manuscript on file with author); Herbert M. Kritzer, *The Arts of Persuasion in Science and Law: Conflicting Norms in the Courtroom*, 72 *Law & Contemp. Probs.* (forthcoming Winter 2009) (manuscript on file with author).

general principles versus a focus on particular cases; and (4) a bias against Type I errors versus indifference between Type I and Type II errors.⁴³

How might these differences affect expert ethics? Perhaps it would be best to begin with the difference that should not alter expert ethical obligations. In my opinion, the most obvious candidate for this status is the law's adversarial/partisan approach to knowledge. Although, as I discuss below, experts are influenced by the adversarial nature of the proceedings, no thoughtful commentator thinks of this as an acceptable reason for an expert to alter her ethical standards.⁴⁴

The next difference is the open-ended inquiry of science versus the prompt resolution of cases in the law. It is important not to exaggerate this difference. The open-ended nature of scientific investigation does not mean that there is no desire on the part of scientists to reach closure on important questions. But in science, closure ideally is achieved through a process of consensus building based on the merits. This type of closure, what one might call resolution, means that timeliness is relatively unimportant. If it requires years or even decades to reach resolution on some issue, so be it. Moreover, nothing is ever finally and irrevocably settled. If new evidence arises, we may revise our views.

Closure is a more immediate legal objective. The formal law found in the United States is specifically designed to create closure. Statutes of limitations and speedy trial acts are designed to limit the length of time the threat of litigation may hang over someone. Most importantly, once a case has been adjudicated, the doctrines of *res judicata* and collateral estoppel prevent the relitigation of an issue. Judicial commitment to closure is most pronounced at the level of the case. At this level, closure is a matter of termination, that is, an authoritative ruling that brings an end to a controversy. Once a judgment is entered and appeals are exhausted, the loser no longer has any legal recourse to undo the outcome, and extralegal means to reverse the outcome will run afoul of other legal rules.⁴⁵

43. Type I errors occur when we conclude that there is a causal relationship between two variables when in fact there is not. Tests of statistical significance are one device used to guard against this type of error. Type II errors occur when we conclude that there is not a causal relationship between two variables when in fact there is.

44. Susan Haack quotes C.S. Peirce on this point:

Moreover, Peirce was right to warn that when "it is no longer the reasoning which determines what the conclusion shall be, but the conclusion which determines what the reasoning shall be," the inevitable result will be "a rapid deterioration of intellectual vigor": "man loses his conception of truth and of reason," and comes to think of reasoning as "merely decorative," until "the truth for him is that for which he fights."

Susan Haack, *Epistemology Legalized: Or, Truth, Justice, and the American Way*, 49 Am. J. Juris. 43, 49 (2004).

45. Occasionally, in a few areas, the law's commitment to termination weakens. In a substantial number of criminal and family law disputes involving DNA, courts have reopened cases that had been litigated to a final conclusion. See Haack, *supra* note 2; see also Robert Aronson & Jacqueline McMurtrie, *The Use and Misuse of High-Tech Evidence by Prosecutors: Ethical and Evidentiary Issues*, 76 Fordham L. Rev. 1453, 1480-83 (2007) (discussing prosecutors' responses to cases being reopened on the basis of DNA evidence).

Note, however, that the legal commitment to closure is primarily at the case level. Simply because a plaintiff loses a case concerning the adverse effects of an exposure to some substance does not mean that subsequent plaintiffs cannot prevail if they have better evidence. Such scenarios are not uncommon in the toxic tort arena.⁴⁶ This fact underlines the point that the trial itself is not organized simply to impose closure. Were that our goal, a coin flip would suffice. The outcome of the trial is termination, but the trial itself seeks resolution in the same sense that science does. It is organized to persuade all or most all of the fact-finders about the merits of the issue at hand. And just as in science, a consensus at one point of time does not preclude a different consensus later.

How then should this difference alter expert witness ethical standards? Cohen argues that the need for prompt resolution should cause experts in a particular case to be more willing to say either yes or no to some question. He argues that in everyday practice “scientific factfinders have available three possible answers to the question of whether A is associated with B: (i) no, (ii) yes, and (iii) ‘the evidence suggests yes, but we are not yet ready to proclaim that the answer is yes because the evidence could be an artifact of chance.’”⁴⁷ He might have added a fourth answer: “the evidence suggests no, but we are not ready to close the door on all inquiry because the existing evidence is limited in its power to detect an effect.” The point is that, in everyday practice, the norms of many disciplines discourage causal talk, and Cohen believes that in the context of a lawsuit experts should shrink the “suggested but not proven” categories.⁴⁸

This position seems eminently reasonable to me. It does no more than point out that sometimes our best guess is exactly what is needed. The ideal of pure science where nothing of immediate importance is at stake should not blind us to the fact that in many areas where expertise is relevant, timely decisions are important and must be made on the available evidence, albeit with the caveat that in this circumstance we must say we are less certain of our judgment and the further caveat that sometimes we must say we just do not know.⁴⁹ This conclusion is consistent with the willingness of courts to

See generally Seth F. Kreimer, *Truth Machines and Consequences: The Light and Dark Sides of ‘Accuracy’ in Criminal Justice*, 60 N.Y.U. Ann. Surv. Am. L. 655 (2005); Seth F. Kreimer & David Rudovsky, *Double Helix, Double Bind: Factual Innocence and Postconviction DNA Testing*, 151 U. Pa. L. Rev. 547 (2002); D. Michael Risinger, *Unsafe Verdicts: The Need for Reformed Standards for the Trial and Review of Factual Innocence Claims*, 41 Hous. L. Rev. 1281 (2004); Paula Roberts, *Truth and Consequences: Part I. Disestablishing the Paternity of Non-marital Children*, 37 Fam. L.Q. 35 (2003). For a general discussion of closure in science and law and an observation that recently courts have more frequently sided with science in the way disputes are ultimately resolved, see Sanders, *supra* note 26, ch. 7.

46. See Joseph Sanders, *The Bendectin Litigation: A Case Study in the Life Cycle of Mass Torts*, 43 Hastings L.J. 301, 349–54 (1992) (describing this “first plaintiff problem”).

47. Cohen, *supra* note 35, at 950–51.

48. *Id.* at 950.

49. The evidence may be so limited that an expert must conclude that he has no reliable opinion to give, i.e., on the question at hand he is not an expert. Were an epidemiologist

permit expert conclusions based on more or less evidence given the amount of evidence available on a specific issue.⁵⁰ Lawsuits are far from the only place where this occurs; it occurs within the everyday practices of professionals within their professions. Importantly, this is not a general abdication of the level of justification an expert community considers sufficient to make a causal assertion to agree that the need for an answer now may shrink the domain of situations where experts appropriately respond, "Let's wait and see." The danger, of course, is that the "need for an answer" rationale is used to justify the complete abandonment of the "wait and see" and "don't know" categories. The justificatory standards of a field do impose minimum levels of evidence necessary to make causal assertions.

A third alleged difference is science's focus on general principles versus law's focus on particular cases. I am not certain whether this is in fact a defining difference with respect to many types of expert testimony. To be sure, some areas of science focus on general principles or at least on aggregate findings while courts are always concerned, *inter alia*, with the individual case. The role of epidemiology in the courts is an instructive example.⁵¹ By its very nature, epidemiology is about groups. With proper data, it can provide valuable evidence as to whether a substance increases the risk of injury in a population (general causation). It cannot address the question of whether a particular individual injury was caused by the exposure (specific causation). Except in rare cases where the relationship between exposure and disease is very high, e.g., asbestos exposure and mesothelioma, epidemiologists would be reluctant to express a specific causation opinion.

In other areas of expertise, however, opinions about specific incidents are the order of the day. In the *Kumho Tire* case for example, the court agreed that tire experts could make causal assertions about the reason a particular tire failed.⁵² Allergists are routinely asked about the business of deducing what particular exposure produced a reaction in a specific patient.

The fourth difference between science and law is a scientific bias against Type I errors versus legal indifference between Type I and Type II errors.

asked his opinion about a suggested relationship between a substance and an illness where there is no relevant epidemiological research, no matter how urgently we need an answer, the ethical response would be, "As an epidemiologist, I do not know."

50. David L. Faigman et al., *How Good Is Good Enough?: Expert Evidence Under Daubert and Kumho*, 50 Case W. Res. L. Rev. 645, 654 (2000).

51. See 3 David L. Faigman et al., *Modern Scientific Evidence: The Law and Science of Expert Testimony* ch. 25 (2006).

52. *Kumho Tire Co. v. Carmichael*, 526 U.S. 137, 156 (1999) ("Respondents now argue to us, as they did to the District Court, that a method of tire failure analysis that employs a visual/tactile inspection is a reliable method, and they point both to its use by other experts and to Carlson's long experience working for Michelin as sufficient indication that that is so. But no one denies that an expert might draw a conclusion from a set of observations based on extensive and specialized experience. Nor does anyone deny that, as a general matter, tire abuse may often be identified by qualified experts through visual or tactile inspection of the tire.").

This is an admittedly difficult issue and in some ways poses the most serious argument against a same intellectual rigor test. Ultimately, however, I believe that this observation should not cause us to abandon this test.

The observation that science has a bias against Type I errors arises from the fact that scientists typically employ a .05 probability threshold when conducting tests of significance. Tests of significance are generally designed to test the “null hypothesis.” The null hypothesis might be that a coin is “fair” or that substance A causes illness B. The question addressed by tests of significance is, What must the results of a study look like before we are willing to reject the null hypothesis? A p-value represents the probability that a positive association would result from random error if no association is in fact present, that is if the null hypothesis is true. A p-value of .05 may be interpreted as a 5% probability of observing an association at least as large as that found in the study, when in truth the null hypothesis of no association is correct.⁵³ Obviously by adopting a .05 test of significance scientists are biasing themselves against making a Type I error—that is, against concluding there is a causal relationship when in fact this is not true.

Given the correctness of this observation, what does it say about expert testimony in court? A naive view would be that we should simply lower the significance level until it equals the burden of persuasion, i.e., reduce the significance standard to something slightly greater than .50.⁵⁴ This position confuses what tests of significance are designed to achieve. A test employing a .05 significance level does not mean that when we observe a significant result the null hypothesis has a 95% chance of being false. Rather, it means that if the null hypothesis is correct there was less than a 5% chance of generating this data. As Professor David Adelman notes,

Interpreting frequentist significance levels as quantifying the degree of support for a hypothesis is equivalent to concluding that where *A* implies *B* it necessarily follows that *B* implies *A*. Significance tests quantify how likely a test hypothesis is to predict the observed data; they do not quantify how well the observed data support a test hypothesis.⁵⁵

53. Technically, a p-value of .05 means that if in fact there is no association, and if we were to repeatedly draw samples from the relevant population (or repeatedly flip our test coin in one hundred flip samples) 5% of all similar studies would yield an association the same as, or greater than, the one found in the study due to random error.

54. All reasonable scientists recognize that the .05 standard for statistical significance is a convention, not a hard and fast rule of interpretation. The fact that a study fails to reach statistical significance does not prohibit a conclusion that a causal relationship exists and the fact that the results of a study are statistically significant does not require a conclusion that there is a causal relationship. However, one would be very hard-pressed to find any scientist prepared to adopt a .50 p-value in any circumstance. Normally, scientists opt for p-values in the range of .01 to .10. See, e.g., Michael D. Green, *Expert Witnesses and Sufficiency of Evidence in Toxic Substances Litigation: The Legacy of Agent Orange and Bendectin Litigation*, 86 Nw. U. L. Rev. 643, 683 (1992).

55. David E. Adelman, *Scientific Activism and Restraint: The Interplay of Statistics, Judgment, and Procedure in Environmental Law*, 79 Notre Dame L. Rev. 497, 552 (2004).

A better test of the correctness of the null hypothesis or the rival hypothesis or any rival hypothesis is the strength of the relationship between a purported cause and effect.⁵⁶

A more plausible proposal to deal with the scientific bias against Type I errors is to equalize the probability of Type I and Type II errors. Professor Cohen appears to adopt this position when he states that a preponderance of evidence burden “suggests that the civil litigation system ascribes essentially equal costs to inaccurately proclaiming a proposition to be demonstrated and to inaccurately declining to proclaim that the proposition has been demonstrated.”⁵⁷ One way to understand this point of view would be to assess the probability of a Type I and a Type II error and adjust the appropriate p-value so as to equalize these two risks. In toxic tort cases this would generally require us to lower p-values but in other circumstances it might have the opposite effect.⁵⁸

Unfortunately, the relationship between Type I and Type II errors is not a simple one. The likelihood of a Type II error (called the “power” of a test) is a function of the likelihood of a Type I error (which is set by choosing a p-value), the size of the effect one wishes to detect (e.g., a doubling of risk due to exposure), a study’s sample size, and, in contingency table analyses typical of epidemiological research, the frequency of exposure in the population (e.g., percentage of people exposed to asbestos) and the incidence of the effect (e.g., frequency of lung cancer).⁵⁹ Because the power of a study is a function of, among other things, the p-value chosen to guard against Type I errors, it is true that all things being equal, minimizing the probability of one type of error can be done only by increasing the probability of making the other. However, there is no simple one-to-one relationship between the error rates and raising the significance level of an experiment that may lead to an increase in total error (i.e., combined Type I and II errors) with only a marginal decrease in Type II errors. In part because of this possibility, Professor David Kaye argues that the proper understanding of the preponderance burden of persuasion is as a command to reduce the total error rate, not to equalize error rates.⁶⁰

Setting aside this telling point, it is important to note that questions of statistical significance are but part of a larger process of expert assessment. As Professor Carl Cranor notes, “[A]ny assessments of plausibility or reliability (or whether the expert’s argument has the same intellectual rigor

56. See Michael D. Green, *Science Is to Law as the Burden of Proof Is to Significance Testing*, 37 *Jurimetrics* 205, 222 (1997) (reviewing Cranor, *supra* note 19).

57. Cohen, *supra* note 35, at 950.

58. See David Kaye, *Naked Statistical Evidence*, 89 *Yale L.J.* 601, 606–07 (1980) (reviewing Michael Finkelstein, *Quantitative Methods in Law: Studies in the Application of Mathematical Probability and Statistics to Legal Problems* (1978)).

59. James J. Schlesselman, *Case-Control Studies: Design, Conduct, Analysis* 144–58 (1982).

60. D.H. Kaye, *Apples and Oranges: Confidence Coefficients and the Burden of Persuasion*, 73 *Cornell L. Rev.* 54, 72 (1987); see also Kaye, *supra* note 58, at 607–08 (critiquing the equivalence of error interpretation of burden of persuasion).

that characterizes the practice of other experts in the relevant field or is within a zone of reasonable disagreement) should be applied to overall scientific arguments, not typically to individual pieces of evidence.”⁶¹ Or, it might be added to any particular piece of the causal puzzle.

Statistical significance tests are designed to control for threats to the validity of a conclusion based on random error and numerical instability. But statistical conclusion validity is only a subpart of the more general question of internal validity, which Professors Thomas Cook and Donald Campbell define as “the approximate validity with which we infer that a relationship between two variables is causal or that the absence of a relationship implies the absence of cause.”⁶² Most threats to internal validity are not due to random error but to specification errors.⁶³

Internal validity concerns must be balanced against external validity concerns. External validity involves the ability to generalize conclusions to *particular* persons, settings, and times and to *types* of persons, settings, and times.⁶⁴ For example, if all testing for the safety of a new drug is done on males with no heart problems, we are left with the questions of how safe the drug is for males with heart problems and for women and children. And to make matters even more complex, sometimes internal and external validity are themselves in competition. We cannot do certain true experiments on humans (decreasing internal validity), and the true experiments we can do on animals pose questions of external validity when we attempt to apply them to humans.

Formally and informally, the standards of a profession incorporate all of these concerns modified to fit the particular circumstances of the discipline. For example, Professor Gerald Boston notes that the interpretation of epidemiological evidence involves a multitude of considerations.

At least the following criteria are relevant in [assessing the value of a study]:

- (1) Was the study based on a well stipulated research hypothesis?
- (2) How do the results of the study perform according to the criteria of causality, including strength of association, dose-response, coherence, specificity, temporality, plausibility, and other factors necessary for an inference of causation?

61. Carl F. Cranor, *A Framework for Assessing Scientific Arguments: Gaps, Relevance and Integrated Evidence*, 15 J.L. & Pol’y 7, 58 (2007) (emphasis omitted).

62. Thomas D. Cook & Donald T. Campbell, *Quasi-Experimentation: Design & Analysis Issues for Field Settings* 37 (1979).

63. Specification errors occur when the researcher fails to consider a factor that mediates the observed effect between two variables, either because it explains changes in both the “cause” and the “effect” or intervenes between the “cause” and the “effect” and acts independently on the “effect.” *Id.* at 50–51. For a discussion of specification errors in the context of toxic torts, see Sanders, *supra* note 26, at 53–54.

64. Cook & Campbell, *supra* note 62, at 71.

- (3) Are the results of this study consistent with those of other studies, and are the results of the study internally consistent? How does the study square with toxicological evidence from animal bioassays and mechanistic studies?
- (4) How well does the study account for bias, non-differential misclassifications, or for confounding variables?
- (5) What is the power of the study to find a true relative risk in a range pertinent to the litigation?
- (6) Were the study groups properly selected, with well specified cohorts, cases, and controls?
- (7) Does the epidemiological study demonstrate statistical significance for effect or trend, together with appropriate data and explanation of the statistical measures?
- (8) Was the epidemiological study published in a peer-reviewed journal? What are the standards for peer review for that journal? If the study has not been subjected to peer review, what evidence exists to confirm the validity of these methodologies employed by the investigators?
- (9) Are the relative risks set forth as point estimates, along with confidence intervals, to provide more information as to the overall utility of the study?
- (10) Is the relative risk sufficiently large to permit an inference that exposure to the chemical could more likely than not have been the cause of the illness in question?⁶⁵

Note what a small role statistical significance plays in this analysis.

In sum, the premise that many scientific disciplines employ a test of significance that favors guarding against Type I errors while the civil justice system generally applies a burden of persuasion that treats both Type I and Type II errors as equally serious should not cause us to reach the conclusion that a same intellectual rigor test is inappropriate in the courtroom context. The causal question is so complex that to focus on one aspect of investigation—the conventional standard for tests of significance—and alter expert justification standards on that basis alone is an unwarranted course of action.⁶⁶ Were we serious about making adjustments to the level of intellectual rigor required of experts in the courtroom setting, presumably we should examine the entire range of factors that go into an expert's causal assessment, not solely the conventional standard for tests of significance.

65. Gerald W. Boston, *A Mass-Exposure Model of Toxic Causation: The Content of Scientific Proof and the Regulatory Experience*, 18 Colum. J. Envtl. L. 181, 273–74 (1993).

66. Indeed, tests of significance play no role in many areas of expertise in the courtroom. Physicians making a differential diagnosis rarely invoke the concept. 3 Faigman et al., *supra* note 51, ch. 23.

This task seems so daunting and its results so uncertain that even to embark on it seems a fool's errand.

Moreover, were we to generalize this perspective, we would create novel issues across all areas of law and all types of witnesses. If civil litigation, with its preponderance burden, argues for a lessening of expert standards of justification, does that mean that the same expert testifying about the same issue should employ a different justificatory standard in criminal cases, with a beyond a reasonable doubt standard, and would this depend on whether one was testifying for the state or the defendant? And how would such a perspective affect nonexpert witnesses? For example, one suspects that there are generalized, if vague, social norms about when we believe we are justified in concluding that the defendant is the person we saw committing a crime. These norms are formed separately from the legal system. It is not clear that we would want individuals to adjust their willingness to make an identification based on whether the legal issue is a criminal matter about which the burden of persuasion is beyond a reasonable doubt or a subsequent civil matter employing a preponderance burden. Even though there may be variation from witness to witness in terms of how much evidence each feels he needs to make a positive identification, we are better served accepting that level of justification rather than inviting the witness to raise or lower their justificatory standard based on the legal burden of proof. Likewise with experts. The burden of persuasion is best thought of as a standard for the fact-finder, not an ethical standard for witnesses.

On balance then, I think more is lost than gained by rejecting an ethical standard grounded in the norms of a discipline and imposing a separate ethical ceiling for expert courtroom testimony. Once we abandon the justificatory standards of a field, there is no obvious alternative with which to replace it. I must repeat that this does not mean there is one single level of justification for every statement by an expert in a particular field. This is not true in either science or law. It is the nature of some questions that there is less available evidence upon which one can base a belief. Both courts and disciplines frequently recognize this fact. Moreover, because courts usually must answer questions based on the evidence available rather than wait for more evidence to emerge, experts who in a different context might wish to wait before coming to any conclusion, may offer their best estimate based on the evidence available, recognizing that the evidence may be so skimpy that they must say they do not know.

B. *Role*

Thus far I have focused on what beliefs an expert may ethically present. Although it has limitations, the ethical standard of the relevant community, sometimes expressed in law as the "same intellectual rigor" test, is the best ethical limitation on what an expert may opine. A second dimension of expert ethics is best understood as a question of roles. Ethical standards

must look not only to the expert's profession but also to the expert witness's task.⁶⁷

From one perspective, the expert witness is not simply representing herself but the knowledge her field has about some topic. Her role is to provide specialized knowledge that "will assist the trier of fact to understand the evidence."⁶⁸ It is in this role that Steven Lubet argues that "[t]he single most important obligation of an expert witness is to approach every question with independence and objectivity."⁶⁹ In this capacity, Lubet sets the ethical bar quite high:

An objective expert views the facts and data dispassionately, without regard to the consequences for the client. An independent expert is not affected by the goals of the party for which she was retained, and is not reticent to arrive at an opinion that fails to support the client's legal position.⁷⁰

This brings us back to a key concern about experts in our system: when they do fail to present adequate justification for a belief, often it is not because they fail to present the best case for a position but that they fail to tell the "whole truth" about their belief and present with equal force the evidence for and against it.

The ethical guidelines of some professional groups acknowledge the conflict testifying experts face. For example, the ethical guidelines of the American Academy of Psychiatry and Law notes,

The forensic psychiatrist practices this subspecialty at the interface of two professions, each of which . . . has developed its own particular institutions, procedures, values, and vocabulary. As a consequence, the practice of forensic psychiatry entails inherent potentials for complications, conflicts, misunderstandings and abuses.

....

The adversarial nature of our Anglo-American legal process presents special hazards for the practicing forensic psychiatrist. Being retained by one side in a civil or criminal matter exposes the forensic psychiatrist to the potential for unintended bias and the danger of distortion of their opinion. It is the responsibility of forensic psychiatrists to minimize such

67. Although it is useful to discuss the expert's ethical position in terms of both role and knowledge, ultimately the two are intertwined, and the central ethical issue is adequate justification. Experts who are committed to a side are likely to advance a belief with less justification than those who are not committed. Such experts are more likely to advance an argument with less justification than they would need were they working in their own field and, lured by financial remuneration, they will be more willing to opine on questions that are not within their core area of expertise.

68. Fed. R. Evid. 702.

69. Steven Lubet, *Expert Witnesses: Ethics and Professionalism*, 12 *Geo. J. Legal Ethics* 465, 467 (1999).

70. *Id.* at 467-68.

hazards by carrying out his responsibilities in an honest manner striving to reach an objective opinion.⁷¹

One way to describe this conflict is to offer alternative visions of the role of an expert witness. One vision is that of an educator.⁷² The expert is someone who conveys the knowledge of her field in a way that permits the fact-finder to understand the strengths and weaknesses of the parties' arguments. A different vision is the expert as part of the "team" that hired her, a party advocate.⁷³ The tension between the two is something felt by many experts. The following comment is typical:

I always experience a certain amount of tension in the process of testifying. The conflict is between whether I am testifying for the people who hired me or whether I am a servant of the court, and am simply supposed to answer questions and however the questions come up, the answers fall where they will.⁷⁴

There is relatively little empirical research on the actual position adopted by witnesses in court. One study by Mark A. Chesler et al., which, unfortunately, is not representative of most expert witnessing, reports on interviews with the majority of experts who testified in school desegregation cases in the 1960s and 1970s. Based on these interviews, each expert was coded as adopting a "social science," "mixed," or "legal adversarial" stance.⁷⁵ Witnesses adopting the social science stance made statements such as this: "Well, I'm inclined to follow the scientific norm. And that's what I did."⁷⁶ "Adherence to professional standards is the only thing that justifies you being in court . . . I stayed within the boundaries of a social scientific presentation in the sense that I didn't say what I said for my client's sake."⁷⁷ On the other hand, witnesses adopting a legal adversarial stance made the following comments:

I would say things on the witness stand that in my real life I was not quite sure of. But I was not engaged in a professorial dialogue. I was in the role of an expert and an expert is just not unsure. . . . You omit all the

71. Ethical Guidelines for the Practice of Forensic Psychiatry (Am. Acad. of Psychiatry & the Law 1995), <http://www.aapl.org/ethics.htm>.

72. See Shiffman, *supra* note 23, at 283 ("A forensic expert assumes the added role of a teacher. Members are required to maintain competence in both their expertise and in an ability to clearly and accurately disseminate that expertise to others.").

73. See Joanna A. Albers et al., *Toward a Model Expert Witness Act: An Examination of the Use of Expert Witnesses and a Proposal for Reform*, 80 Iowa L. Rev. 1269 (1995). The preamble to the model statute drafted by a group of University of Iowa law students begins with the following sentence: "This [Act] is designed to fundamentally change the role of an expert witness from advocate to educator." *Id.* at 1276 (modification in original).

74. Mark A. Chesler et al., *Social Science in Court: Mobilizing Experts in the School Desegregation Cases* 112 (1988).

75. *Id.* at 114–15.

76. *Id.* at 115.

77. *Id.* at 114.

qualifications one would give in the classroom or with colleagues. This is a different arena, you don't do that here.⁷⁸

I think that a lot of the conflict said to be associated with social scientists participating in the courtroom neglects the fact that the courtroom is structured quite differently. And that it is not the role of the witness to define the case, to call attention to everything that could possibly be said about a subject. . . . I guess I accepted the idea that I am serving one side and that resolved potential conflicts.⁷⁹

I understood the partisan nature of the courtroom and I realized that I would be on the stand arguing for a position without also presenting evidence that might be contrary to my [side of the case]. But you see, that didn't bother me, because I knew that the other side was also doing that.⁸⁰

The school desegregation cases are atypical because, at the time they were decided, the parties were perceived to be in a morally asymmetrical relationship. Experts who testified for school boards may have adopted a "social science" stance in part as a mechanism to justify what they were doing; they were simply educating the fact-finder (the judge, as there were no juries in these cases) about the psychological and sociological causes and effects of school desegregation and its possible solutions. On the other hand, some experts testifying for the plaintiffs⁸¹ believed they were on the "right" side and were more willing to adopt a legal-adversary role. They played the role of "assistant advocate."⁸² In their study, Chesler et al. found that experts testifying for the plaintiffs were significantly more likely to adopt this role than experts testifying for school boards.⁸³ The quote above by the expert, who justified his position by arguing that the other side has its own experts who will do the same thing, is an example of a person who is committed to, and an assistant in, the prosecution of his party's case.⁸⁴

Professor Michael Saks notes that in situations that are less emotionally and morally laden, an expert who joins a side might better be viewed as a "hired gun," someone who is not personally invested in the outcome of the

78. *Id.* at 115 (omission in original).

79. *Id.* at 127–28 (omission in original).

80. *Id.* at 127.

81. Most school desegregation cases were brought by either the National Association for the Advancement of Colored People (NAACP) or a separate organization, the NAACP Legal Defense Fund. *Id.* at 14–15.

82. 1 Faigman et al., *supra* note 51, § 3.6.

83. Chesler, *supra* note 74, at 121 tbl.6.6.

84. It is not clear how many areas are similar to the school desegregation cases in this regard. Possible candidates are experts testifying in death penalty cases and various forms of discrimination or affirmative action cases. It may be, of course, that particular experts feel very strongly with respect to more mundane topics such as medical malpractice or products liability cases. Michael J. Saks and Richard Van Duizend quote a statistician who made a similar comment. Michael J. Saks & Richard Van Duizend, *The Use of Scientific Evidence in Litigation* (1983). He envisioned the fact-finding task as a matrix and each side was to fill in only those cells favorable to it. The fact-finder's ability to see the whole picture turned on the skill of each side in filling its cells. *See* 1 Faigman et al., *supra* note 51, § 3.7 n.2.

litigation but who, nevertheless, is committed to the party that hired him.⁸⁵ The behavioral differences between a “hired gun” and an “assistant advocate” may be minimal and thus it is easier to speak of those experts who lean toward a scientific-educator role and those who lean toward a legal-adversary role.⁸⁶ Except in those rare situations where the educator and the advocator roles coincide (i.e., where to educate is to argue for one side of the case), the testimony of these types of experts is likely to differ. Few would disagree that insofar as the experts take their ethical guidance from their profession, the proper role is that of the scientist-educator.⁸⁷

Even when experts initially approach their task intending to adopt an educator role, the pressures to alter their perspective are substantial.⁸⁸ Measured by the opinion of judges and jurors, many experts do not live up to the ideal of a scientific educator whose justification for his position is as strong as would be required in his professional work.⁸⁹ What can be done to encourage ethical testimony in the face of these pressures? One alternative is to impose sanctions on experts who deviate from ethical norms. The next section explores this option.

85. 1 Faigman et al., *supra* note 51, § 3.7.

86. One difference between “assistant advocates” and “hired guns” may be in compensation. Some experts occasionally offer their services for free.

87. As some of the quotes in the text suggest, occasionally experts may attempt to ethically justify a legal-adversary role because the other side’s expert may be expected to do the same. In favor of this position is the reality that many lawyers seek experts who will behave in this way. See Daniel W. Shuman et al., *An Empirical Examination of the Use of Expert Witnesses in the Courts—Part II: A Three City Study*, 34 *Jurimetrics J.* 193, 201 (1994). Note how this justification recognizes that in a party witness system the parties are caught up in a type of prisoner’s dilemma in which each side must seek out an expert who will be biased on the stand to counteract the opposing expert biases.

88. See *infra* note 152 and accompanying text regarding the comments of a neophyte expert on the pressures he faced.

89. When federal judges are asked about problems they encounter with expert testimony, the most frequently mentioned problem is that “experts abandon objectivity and become advocates for the side that hired them.” Carol Krafka et al., *Judge and Attorney Experiences, Practices, and Concerns Regarding Expert Testimony in Federal Civil Trials*, 8 *Psychol. Pub. Pol’y & L.* 309, 314 n.4 (2002).

Jurors, too, may perceive bias. A *National Law Journal* poll in 1992 found that over thirty percent of jurors in civil cases reported the experts were biased. *Expert Witnesses Found Credible by Most Jurors*, *Nat’l L.J.*, Feb. 22, 1993, at S4. Not surprisingly, some feel that this is a low number. One experienced litigator who thought the percentage would be higher observed, “It means we have a lot of good actors as experts.” *Id.*

Separate from the question of any bias and failure to have good justification is the question of how badly experts fall short of some ideal. Even if every expert failed to assess evidence as rigorously as they do in their professional work, if the shortfall were de minimis we would have a de minimis problem. On the magnitude of the shortfall, people disagree. Compare Richard A. Posner, *An Economic Approach to the Law of Evidence*, 51 *Stan. L. Rev.* 1477, 1536 (1999) (arguing that the problem of partisanship is not particularly grave), with Jeffrey L. Harrison, *Reconceptualizing the Expert Witness: Social Costs, Current Controls and Proposed Responses*, 18 *Yale J. on Reg.* 253, 255–56 (2001) (stating that there is a substantial problem of dishonesty). Of course both of these positions are arguing about the mean, but of greater concern might be the variance and the percentage of experts that fall substantially below some measure of ethical justification.

II. SANCTIONING UNETHICAL EXPERT WITNESSES

A number of articles explore the possibility of sanctioning unethical behavior by experts.⁹⁰ Sanctions might come from the parties, from attorneys, from professional boards and professional organizations, from judges, and even from fact-finders. I discuss each in turn.

A. *Sanctions by the Parties to the Litigation*

Sanctions by parties against experts are very limited. Absolute witness immunity and similar prohibitions in many states protect the expert against sanctions for anything short of perjury.⁹¹ The limited exceptions to immunity typically provide a cause of action on behalf of the expert's own party for the expert's negligent performance. However, there appear to be no reported cases permitting the opposing party to bring suit for serious ethical breaches by an expert.⁹²

B. *Sanctions by (and of) Lawyers*

By declining to hire certain experts, lawyers are in a strong position to apply sanctions against unethical witnesses. Lawyers already play this role when they refuse to hire experts who they feel will not help their case. Sometimes this decision may be because the expert is perceived to be carrying too much ethical baggage from earlier testimony.⁹³ Absent an independent obligation of lawyers to vet experts, however, there are limited incentives for lawyers to screen experts in this way, and there are countervailing incentives not to do so. The strongest countervailing incentive is an obligation to provide the client with the best possible representation which affects a lawyer's choice in two ways. First, client interests always push lawyers toward experts who will be biased, if only in the limited sense that the expert will present the evidence in a light most favorable to the party that hired him. Second, depending on the strength of the client's case, the lawyer may have an incentive to present testimony of a marginal nature. When the client's factual case is strong, the lawyer has a strong incentive to seek out the most qualified expert who will present no

90. See Harrison, *supra* note 89, at 290–93; Gary N. McAbee, *Improper Expert Medical Testimony: Existing and Proposed Mechanisms of Oversight*, 19 J. Legal Med. 257, 262–64 (1998); Jennifer A. Turner, *Going After the 'Hired Guns': Is Improper Expert Witness Testimony Unprofessional Conduct or the Negligent Practice of Medicine?*, 33 Pepp. L. Rev. 275, 282–83 (2006).

91. See *Briscoe v. LaHue*, 460 U.S. 325, 345 (1983).

92. See Laurie Strauch Weiss, *Expert Witness Malpractice Actions: Emerging Trend or Aberration?*, *Prac. Litigator*, Mar. 2004, at 27, 31–37 (discussing a collection of cases). See generally Randall K. Hanson, *Witness Immunity Under Attack: Disarming "Hired Guns,"* 31 Wake Forest L. Rev. 497 (1996); Leslie R. Masterson, *Witness Immunity or Malpractice Liability for Professionals Hired as Experts?*, 17 Rev. Litig. 393 (1998); W. Raley Alford III, Comment, *The Biased Expert Witness in Louisiana Tort Law: Existing Mechanisms of Control and Proposals for Change*, 61 La. L. Rev. 181 (2000).

93. See *infra* notes 119–21 and accompanying text (discussing the silicosis litigation).

less than a fully justified opinion on relevant questions. When the case is weak, the lawyer's obligation to provide the best possible representation may conflict with a desire to use only experts who will apply the same intellectual rigor in their testimony as they would in their professional life.

Given this situation, what should be a lawyer's obligation to vet expert witnesses? There are few discussions of lawyer obligations. Clearly, a lawyer cannot knowingly permit perjury. This rule may be as much as can reasonably be asked of a lawyer with respect to fact witnesses where there is no reasonable way to sort out which witnesses are truthful and which are not. Should attorneys be asked to meet a higher standard with respect to their expert witnesses?

Saks distinguishes between experts who actively attempt to deceive the attorney as well as the court and those who simply have poor justification for their position. In the former case, it would be unwise to require the attorney to engage in a separate investigation of the expert's evidence, e.g., whether the data upon which the expert purportedly relies was fabricated.⁹⁴ In the latter case, however, an attorney is often in a position to assess the merits of expert testimony. Saks notes,

Any attorney, like any intelligent citizen, who takes the time and effort to research a purported scientific subject has the potential to reach her own conclusions about whether or not the field's beliefs rest on a foundation of data and logic that is solid, soft, mushy, or non-existent. It is hard to think of principled reasons why an attorney should not be obligated to acquire a good faith basis for believing either that the proffered expertise is valid or that the specific facts or skills brought to bear on the task-at-hand in the trial are valid as a precondition for ethically offering such expert evidence to a court.⁹⁵

If attorneys are asked to do more than refrain from offering expertise when they know it to be false, what should be required of them? Saks argues for a good faith belief in the adequacy of the evidence supporting the expert's conclusion. What would such a test encompass? From the position adopted in this essay, it would require a judgment that the expert's justification for his opinion met minimal professional standards. For example, a plaintiff's treating physician may firmly believe that his patient's cancer was caused by the defendant's chemical even in the face of a body of epidemiological and animal study evidence indicating no relationship between exposure and this disease. Regardless of the sincerity of the expert's belief, on these facts an attorney would be acting in bad faith if he put the witness on the stand.

Even if a jurisdiction were to adopt such a view, it is difficult to imagine how bad faith would be determined or what sanctions would be appropriate.

94. Michael J. Saks, *Scientific Evidence and the Ethical Obligations of Attorneys*, 49 *Clev. St. L. Rev.* 421, 426 (2001). See generally David S. Caudill, *Advocacy, Witnesses, and the Limits of Scientific Knowledge: Is There an Ethical Duty to Evaluate Your Expert's Testimony?*, 39 *Idaho L. Rev.* 341 (2003).

95. Saks, *supra* note 94, at 426.

Mere failure to qualify an expert under a relevant admissibility standard could hardly count as evidence of bad faith. Any other procedure would expend substantial resources with limited returns beyond what can already be achieved through admissibility rulings.⁹⁶ Under current structures, where experts are chosen by the parties, efforts to impose an obligation on lawyers to do more to vet their experts seems both unwise and unrealistic.

C. Sanctions by Professional Organizations

Efforts to control expert opinion through professional codes of ethics are long-standing. Edward Cheng notes that such codes were suggested as early as 1910.⁹⁷ Apparently, these efforts have waxed and waned over time. A handful of recently reported cases permit an expert's professional organization to take action against the expert who provides unethical testimony.⁹⁸ These cases generally proceed on the basis of inadequate

96. Searching for an agreeable expert is especially troublesome when done by prosecutors in criminal cases. Even here, however, sanctions are very unlikely, limited to situations where there is evidence the prosecutor framed the defendant. See Paul C. Giannelli & Kevin C. McMunigal, *Prosecutors, Ethics, and Expert Witnesses*, 76 *Fordham L. Rev.* 1493 (2007).

97. Edward K. Cheng, *Same Old, Same Old: Scientific Evidence Past and Present*, 104 *Mich. L. Rev.* 1387, 1399 (2006).

98. In *Deatherage v. Examining Board of Psychology*, 948 P.2d 828 (Wash. 1997), the court held that the absolute witness immunity rule in Washington did not extend to professional disciplinary proceedings. The Washington State Examining Board of Psychology brought disciplinary proceedings against the plaintiff for failure to meet professional ethical standards in work that formed the basis of his expert testimony in child custody suits. "The Board found Deatherage's failure to qualify statements, his mischaracterization of statements, his failure to verify information, and his interpretation of test data were adequate grounds for initiating disciplinary proceedings . . ." *Id.* at 829. Ultimately, the board suspended his license for a decade. *Id.*

In *Huhta v. State Board of Medicine*, 706 A.2d 1275 (Pa. Commw. Ct. 1998), the court similarly held that judicial immunity did not shield a physician from disciplinary proceeding before the Pennsylvania State Board of Medicine. *Id.* at 1275. In this case, the witness's transgression was the disclosure of confidential patient records. *Id.*

In *Budwin v. American Psychological Ass'n*, 29 Cal. Rptr. 2d 453 (Ct. App. 1994), the American Psychological Association censured the plaintiff after finding that he violated principles embodied in its Ethical Principles of Psychologists when he testified falsely that he conducted a one-hour interactive "play" interview with a mother and her two daughters in a proceeding in which he recommended that the mother lose custody of the younger child. *Id.* at 455. The plaintiff then sued the organization, claiming that his testimony was protected under various immunity provisions. *Id.* The trial court granted him a summary judgment but the appellate court reversed, finding that associations such as the American Psychological Association may regulate the conduct of their members. *Id.* at 455, 459-60.

As the *Budwin* opinion indicates, experts may not accept sanctions graciously. The Florida Medical Association has an Expert Witness Committee as part of its Council on Ethical and Judicial Affairs. In *Fullerton v. Florida Medical Ass'n, Inc.*, 938 So. 2d 587 (Fla. Dist. Ct. App. 2006), an expert sued the state medical association (of which he was not a member) and a number of physicians who had filed a complaint with the association alleging his testimony fell below reasonable professional standards and that he specifically "presented false testimony and false theories about stroke in the hope to prove negligent medical care in an 80-year-old diabetic with previous strokes who suffered a stroke despite appropriate care." *Id.* at 589. Dr. John Fullerton sued for defamation, tortious interference

justification for the expert's opinion. The most noteworthy of these cases is *Austin v. American Ass'n of Neurological Surgeons*.⁹⁹ Plaintiff Dr. Donald Austin alleged that he was suspended from the association (a voluntary association of neurosurgeons) for six months based on his testimony in a medical malpractice case.¹⁰⁰ He brought an action against the association, claiming that his suspension was in revenge for having testified against a fellow member.¹⁰¹ He sought money damages equal to the diminution in his expert witness income following his suspension¹⁰² and an injunction to have his suspension expunged from the records of the association.¹⁰³ Writing for the court, Judge Richard Posner affirmed summary judgment for the defendant.¹⁰⁴ Austin could point to no procedural irregularities with his suspension, but argued that it is against public policy for an association to discipline a member for any reason other than intentionally false statements.¹⁰⁵ The court disagreed. Contrary to the plaintiff's argument, "this kind of professional self-regulation [furthers rather] than impedes the cause of justice."¹⁰⁶ Suits such as Austin's and others¹⁰⁷ might have a

with an advantageous business relationship, conspiracy, witness intimidation, and violation of Florida's Racketeer Influenced and Corrupt Organizations Act. *Id.* He stated in his complaint that the Expert Witness Committee "was organized for the purpose of intimidating, hindering, and deterring persons . . . from appearing as expert witnesses on behalf of plaintiffs in cases involving medical malpractice." *Id.* The appellate court reversed a trial court dismissal of this action and held that the Florida peer-review immunity statute did not govern this situation. *Id.* at 593-95. However, the court expressed no opinion on the sufficiency of the counts in the plaintiff's amended complaints to state a cause of action. *Id.* at 595.

99. 253 F.3d 967 (7th Cir. 2001).

100. *Id.* at 968.

101. *Id.*

102. As to Dr. Donald Austin's claim of an injury to an important economic interest, the court noted that membership in the association is voluntary. *Id.* at 971. But undoubtedly the sanction badly damaged Austin's livelihood. According to the court, his annual expert witness income fell from more than \$220,000 prior to the sanction to around \$77,000 after the sanction. *Id.* The court held that this "moonlighting" income did not constitute an "important economic interest." *Id.* at 971-72 (internal quotation marks omitted). In order for the plaintiff to be entitled to money damages, "[a]t the very least, the association's action must jeopardize the principal source of the professional's livelihood, and not a mere sideline." *Id.* at 972.

103. *Id.* at 968.

104. *Id.* at 974.

105. *Id.* at 969. Austin also argued that "the Association acted in bad faith because it never disciplines members who testify on behalf of malpractice defendants." *Id.* This raises an important question of bias. Organizations such as the American Psychological Association do not have an obvious partisan position in the sense that they are equally likely to sanction a plaintiff or a defense expert. The same may not be true of organizations such as the American Association of Neurological Surgeons or other medical organizations. As the *Austin* complaint indicates, plaintiff groups are likely to believe that such organizations are more likely to sanction plaintiff experts than defense experts. See Terry Carter, *M.D. with a Mission: A Physician Battles Against Colleagues He Considers Rogue Expert Witnesses*, 90 A.B.A. J., Aug. 2004, at 41, 44.

106. *Austin*, 253 F.3d at 972.

107. See, e.g., *Budwin v. Am. Psychological Ass'n*, 29 Cal. Rptr. 2d 453 (Ct. App. 1994); *Fullerton v. Fla. Med. Ass'n, Inc.*, 938 So. 2d 587 (Fla. Dist. Ct. App. 2006).

chilling effect on organizations seeking to sanction unethical expert testimony. As far as I am aware, however, as yet no such suit has met with success.

The paucity of legal opinions in this area understates the total volume of such proceedings. Jennifer A. Turner reports that the American Association of Neurological Surgeons has, over the last fifteen years, “reviewed expert testimony given by approximately fifty members and has disciplined about ten members.”¹⁰⁸ She cites similar efforts by other groups. Dr. Terry Carter notes that as of 2004 the Florida Medical Association had eight cases under review.¹⁰⁹ Professors Paul Giannelli and Kevin McMunigal discuss two cases in which professional association ethics committees have initiated proceedings against unethical prosecution experts in criminal cases who have seriously overreached.¹¹⁰ Absent a study directed specifically at the enforcement activities of professional organizations, it is impossible to know how frequently sanctions are sought. However, even a liberal estimate of sanctioning frequency suggests that it is a relatively rare phenomenon.

The infrequent enforcement of ethical norms against testifying experts by professional associations reflects the fact that what is said on the stand often is invisible to the expert’s professional community. Testifying experts often are able to escape the scrutiny of the strong networks in mature disciplines that define core knowledge and establish the boundaries of legitimate controversies.

Even infrequent professional sanctions may have some effect on expert behavior. Potential loss of income and social standing among one’s peers may keep some experts from straying too far from the standards of their profession. Moreover, occasional sanctions reinforce the internalized norms of experts who do attempt to adhere to professional codes of conduct, just as the occasional prosecution of criminal acts reinforces the rest of us in our normative commitment to law-abiding behavior. But party sanctions are so rare that it is difficult to imagine that they have a substantial deterrent effect against those who are not inclined to follow professional codes of conduct. And many professional groups do not have codes of conduct, leaving their members uncertain about appropriate witness conduct.

Professional codes calling for the expert to play the educator role are often counteracted by pressures from attorneys to abandon a pure educator role. In the face of these pressures, experts would benefit from legal reinforcement of professional codes of ethics. To be sure, all witnesses take an oath to “tell the truth, the whole truth, and nothing but the truth,” but more often than not this seems to be no more than a formality and a caution

108. Turner, *supra* note 90, at 282.

109. Carter, *supra* note 105, at 44.

110. Giannelli & McMunigal, *supra* note 96, at 1498–1506.

against perjury. An expert would be better armed to resist lawyer pressure if the legal system had its own code of conduct for experts.

Examples of such codes already exist. The New South Wales, Australia, Civil Procedure Rules contain an expert witness code of conduct.¹¹¹ Among its provisions is a basic statement of the expert's "general duty to the court":

- (1) An expert witness has an overriding duty to assist the court impartially on matters relevant to the expert witness's area of expertise.
- (2) An expert witness's paramount duty is to the court and not to any party to the proceedings (including the person retaining the expert witness).
- (3) An expert witness is not an advocate for a party.

The code of conduct also includes a section on "[e]xperts' reports" that, *inter alia*, contains the following provisions:

- (2) If an expert witness who prepares an expert's report believes that it may be incomplete or inaccurate without some qualification, the qualification must be stated in the report.
- (3) If an expert witness considers that his or her opinion is not a concluded opinion because of insufficient research or insufficient data or for any other reason, this must be stated when the opinion is expressed.¹¹²

111. N.S.W. Unif. Civ. P. R. 31.23, available at [http://www.legislation.nsw.gov.au/sessionalview/sessional/SRTITLE/Civil%20Procedure%20Act%202005%20-%20Uniform%20Civil%20Procedure%20Rules%20\(Amendment%20No%2012\)%202006%20\(2006-717\)%20%5BGG%20No%20175%20of%208.12.2006,%20p%2010468%5D.pdf](http://www.legislation.nsw.gov.au/sessionalview/sessional/SRTITLE/Civil%20Procedure%20Act%202005%20-%20Uniform%20Civil%20Procedure%20Rules%20(Amendment%20No%2012)%202006%20(2006-717)%20%5BGG%20No%20175%20of%208.12.2006,%20p%2010468%5D.pdf). I am indebted to Gary Edmond for bringing this code to my attention.

112. *Id.* The full text of this section is as follows:

5 Experts' reports

- (1) An expert's report must (in the body of the report or in an annexure to it) include the following:
 - (a) the expert's qualifications as an expert on the issue the subject of the report,
 - (b) the facts, and assumptions of fact, on which the opinions in the report are based (a letter of instructions may be annexed),
 - (c) the expert's reasons for each opinion expressed,
 - (d) if applicable, that a particular issue falls outside the expert's field of expertise,
 - (e) any literature or other materials utilised in support of the opinions,
 - (f) any examinations, tests or other investigations on which the expert has relied, including details of the qualifications of the person who carried them out,
 - (g) in the case of a report that is lengthy or complex, a brief summary of the report (to be located at the beginning of the report).

The code of conduct must be provided to each expert and the expert's testimony or the written report cannot be entered into the case unless the expert acknowledges the receipt of the code of conduct and agrees to be bound by it.¹¹³

Setting aside quibbles over any specific language in this code, the underlying purpose is to inform experts that their duty is to the court and to reinforce the ideal of a disinterested educator role for experts. Even if the code of conduct is entirely hortatory without any sanctions for its violation, it underlines the fact that the court and the professional organization expect similar conduct and that the legal arena is not per se a place where one should be forced into ethical conundrums.¹¹⁴

D. Sanctions by Judges

Explicit judicial sanctions of experts are very rare, limited to potential contempt holdings and sanctions against the party.¹¹⁵ Indirect sanctions are more frequent. Because exclusion of experts on *Daubert* grounds is better thought of as a structural change, I reserve most of the discussion of admissibility to the next part. Some experts may perceive exclusion as a personal sanction because of its adverse effect on their livelihood as an expert witness. Professor George Lakoff argues that, "[w]hen a scientist is 'Dauberted out' of a trial, the repercussions for the scientist are serious."¹¹⁶ However, in many cases exclusion per se is unlikely to injure one's scientific reputation unless there are substantial deficiencies in the merits of the expert's position.

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- (2) If an expert witness who prepares an expert's report believes that it may be incomplete or inaccurate without some qualification, the qualification must be stated in the report.
 - (3) If an expert witness considers that his or her opinion is not a concluded opinion because of insufficient research or insufficient data or for any other reason, this must be stated when the opinion is expressed.
 - (4) If an expert witness changes his or her opinion on a material matter after providing an expert's report to the party engaging him or her (or that party's legal representative), the expert witness must forthwith provide the engaging party (or that party's legal representative) with a supplementary report to that effect containing such of the information referred to in subclause (1) as is appropriate.

Id.

113. *Id.*

114. The code, like the same intellectual rigor test and the ideal of the disinterested educator role, serves two purposes. It is a device to help experts reach correct decisions and also a device to constrain the influence of undesired or irrelevant factors such as personal preferences or a desire to please those who are paying the experts. See Robert Nozick, *The Nature of Rationality* 7 (1993).

115. See, e.g., *In re Vioxx Prods.*, 489 F. Supp. 2d 587, 588 (E.D. La. 2007) (overturning a defense verdict and ordering a new trial because of the manufacturer's cardiology expert's misrepresentation that he was board certified).

116. George P. Lakoff, *A Cognitive Scientist Looks at Daubert*, 95 Am. J. of Pub. Health S114, S117 (Supp. 1 2005).

A second indirect sanction available to judges is what Jeffrey Harrison calls “outing” the expert.¹¹⁷ All experts whose testimony is excluded on admissibility grounds in a written opinion are “outed” in the sense that their testimony is publicly rejected. Harrison uses the term to describe harsher judicial treatment. The comment in *Kumho Tire* that Dennis Carlson, Jr., would never have given the opinion he did in his professional life is a statement that goes beyond mere exclusion based on a judgment about reliability.¹¹⁸ This passage can be read as an attack not merely on Carlson’s opinion in this case but about his character. The comments concerning Carlson are mild compared to some other opinions. One of the most dramatic recent judicial outings is to be found in *In re Silica Products Liability Litigation*.¹¹⁹ In a lengthy attack on experts in the multidistrict litigation silica proceedings, the court spent several pages discussing their work as “B-readers” for the plaintiffs.¹²⁰ Judge Janis Graham Jack said the following about one of the physicians working for N & M Inc., Dr. Ray Harron:

Dr. Harron was involved in the diagnosis of approximately 6,350 Plaintiffs in this MDL (by performing B-reads and/or producing diagnosing reports), and he is listed as the diagnosing physician for approximately 2,600 Plaintiffs. Of all the MDL Plaintiffs who submitted diagnoses, Dr. Harron performed approximately 78 percent of the B-reads.

When the Defendants cross-referenced the documents produced in this MDL with the documents in the Manville Trust (a trust established for asbestos claims), they discovered instances where Dr. Harron performed a B-read for someone in connection with an asbestosis claim, and then later read the same person in connection with a silicosis claim in this MDL. For example, in 1994, Dr. Harron completed an ILO form for Clarence Kimble in connection with asbestos litigation. On that ILO form, attached as Exhibit 23, Dr. Harron found “S” and “T” opacities or scars on all zones of Mr. Kimble’s lungs, consistent with asbestosis. These scars are permanent; according to Dr. Harron, people “with those fibers and scars in their lungs were going to their grave with them.”

In 2002, Mr. Kimble was x-rayed again, this time in connection with the current silicosis litigation. Dr. Harron again read Mr. Kimble’s x-ray and completed an ILO form, attached as Exhibit 23. This time, Dr. Harron determined that Mr. Kimble’s lungs had uniform “P” opacities or scars, consistent with silicosis. As discussed above, such opacities are

117. Harrison, *supra* note 89, at 275.

118. *Kumho Tire Co. v. Carmichael*, 526 U.S. 137, 157 (1999).

119. 398 F. Supp. 2d 563 (S.D. Tex. 2005).

120. According to the court, “A ‘B-reading’ is a physician’s report of findings from a patient’s chest radiograph (i.e., an ‘x-ray’). This report is entered on a standardized form using a classification system devised by the International Labour Office (ILO). The National Institute for Occupational Safety and Health (NIOSH) issues ‘B-reader’ certifications for physicians in the United States. There are approximately 500–700 certified B-readers currently practicing in the United States.” *Id.* at 581 n.28.

rounded, and are unlikely to be confused with the “S” and “T” opacities that Dr. Harron previously reported in Mr. Kimble. When asked about Mr. Kimble’s case, Dr. Harron ascribed it to “intra-reader variability.”

When confronted with another example of a complete reversal on his part, this time in the case of Plaintiff Cora Lee Rodgers . . . Dr. Harron again invoked intra-reader variability, and also speculated that the x-ray film could have been shot lighter in the case of the silicosis screens (which apparently might have brought out the opacities in the upper lungs . . .).

When presented with his own prior testimony that inter-reader variability (i.e., the variability between two different readers, rather than between the same reader) should be approaching zero, Dr. Harron agreed that his switch in the cases of Ms. Rodgers and Mr. Kimble is “about as wide[] [a] variance as you can get.” He then stated that the reversals are: “a real problem and I’d like to see the film. Whether I could explain it or not, I don’t know.”

Just as the Defendants prepared to introduce a packet of eight more identical asbestosis/silicosis reversals by Dr. Harron, Dr. Harron stated to the Defendants’ attorney, “if you’re accusing me of fabricating these things, I think that’s a serious charge.” When the Court responded that the Defendants seemed to be making that accusation—and defense counsel agreed—Dr. Harron asked for representation. The Court ended his testimony at that point in order to allow Dr. Harron to hire an attorney.¹²¹

Passages such as this are what Harrison calls “attack[s] on an expert’s character.”¹²² Rarely are they as extreme but, as he notes, whenever they occur they seem to be designed to act as a disincentive to unethical behavior caused by witness bias.¹²³ Harrison reviews a number of other judicial outings. These decisions appear to be aimed in part at destroying the marketability of the expert.

121. *Id.* at 606–07 (footnotes and citations omitted). Dr. Ray Harron worked for N & M in the 1990s when the firm’s focus was on asbestos claims and again in 2000 when the focus had shifted to silicosis claims. *Id.* at 607. Harron read the x-rays of 1807 plaintiffs who made asbestos claims against the Manville Trust and reread the same x-rays for indications of silica exposure. *Id.* at 608. When he read the x-rays for the asbestos litigation he found them all to be consistent only with asbestosis and not with silicosis. When he reexamined the x-rays for the silica litigation he found evidence of silicosis in every case. *Id.* Subsequently, Harron and two other physicians pled the Fifth rather than testify before Congress. *Silica Doctors Take the Fifth at Capitol Hill Hearings*, Andrews Toxic Torts Litig. Rep., Dec. 22, 2006, at 21.

For an instance where the screening process conducted by plaintiffs was much more rigorous, see *In re Welding Fume Products Liability Litigation*, No. 1:03 CV 17000, 2006 WL 1173960 (N.D. Ohio Apr. 5, 2006). For a general discussion of mass medical diagnosing, see Matthew Mall, Note, *Derailing the Gravy Train: A Three-Pronged Approach to End Fraud in Mass Medical Diagnosing*, 48 Wm. & Mary L. Rev. 2043 (2007).

122. Harrison, *supra* note 89, at 276.

123. *Id.*

Do they have that effect? The Harron case is so extreme that it is difficult to imagine that he will ever again be used in litigation. In other less extreme cases, the impact of an “outing” is less certain.¹²⁴ An “outing” might cause the expert to be more careful in the future and to have a better justification for opinions. It may adversely affect an expert’s academic reputation.¹²⁵ A serious “outing” may cause other lawyers to be less willing to hire the expert in the future.¹²⁶ Each of these effects may be more or less consequential depending on the situation of the individual expert. Unfortunately, we have very little information about the impact of judicial rulings on expert behavior or marketability in the future.

Then there is the question of general deterrence. Will other experts be deterred from overreaching as a result of hearing about judicial outings? My intuition is likely not. If expert witnessing itself is fairly well hidden from one’s professional colleagues, even more so are judicial opinions criticizing particular experts. In certain tight-knit expert communities there may be a general deterrence effect. In the small community of B-readers, the Harron episode presumably has acted as a cautionary tale. In response to the silicosis debacle, the National Institute of Occupation Science and Health produced a B-reader code of ethics,¹²⁷ although at least one web

124. For a less extreme statement that is devastating because of the source of the criticism, see *Redfoot v. B.F. Ascher & Co.*, No. C 05-2045, 2007 WL 1593239 (N.D. Cal. June 1, 2007).

As for Dr. Geier’s own studies, defendants argue that Dr. Geier employed a flawed methodology. They note that the IOM [Institute of Medicine], in its 2004 Report, discussed five of Dr. Geier’s studies . . . and two reports presented by Dr. Geier to the IOM in 2004. Among other things, the Committee found that Dr. Geier’s studies lacked a complete and transparent description of their methods and underlying data—noting in particular that Dr. Geier had provided no information on specification of regression models, had not provided the frequency distribution of variables, and had not clearly reported calculations of statistics. As a result of these deficiencies, the Committee found the results of the studies to be “improbable,” “uninterpretable,” and “noncontributory with respect to causality.”

Id. at *7.

125. This fate befell an early expert in the Bendectin litigation. Dr. Alan Done had been a professor at Wayne State University. However, he was asked to resign in large part due to his extensive expert witnessing activities. These activities took him away from his academic obligations and, equally important according to his dean, called into question his scientific judgment. See Michael D. Green, *Bendectin and Birth Defects: The Challenges of Mass Toxic Substances Litigation* 280 (1996). Done was one of only two witnesses in the lengthy Bendectin litigation prepared to testify that more likely than not the plaintiff’s birth defect was caused by the drug, a position almost no other scholars shared, including other experts who testified for the plaintiffs.

126. Outings may be less effective in the criminal context. For example, see Giannelli & McMunigal, *supra* note 96, at 1498–1501, for the cautionary tale of Joyce “Black Magic” Gilchrist, who was repeatedly rebuked by the Oklahoma Court of Criminal Appeals and, nevertheless, continued to testify for the State. The Giannelli and McMunigal essay is itself a type of outing of unethical experts.

127. See Ctrs. for Disease Control and Prevention, NIOSH Safety and Health Topic: Chest Radiography, <http://www.cdc.gov/niosh/topics/chestradiography/breader-ethics.html> (last visited Oct. 18, 2007). One provision is as follows:

B Readers shall recognize and disclose any conflicts of interest in the outcome of a chest radiograph classification. B Readers shall not accept compensation that

page is still actively soliciting individuals who fear they may have asbestosis or silicosis.¹²⁸ In areas where there is a larger pool of experts, any general deterrence effect may be much weaker.

E. *Sanctions by Juries*

The final set of actors that is in a position to sanction unethical experts is juries. Just as judicial outings undermine the market value of unethical experts, so too do adverse trial outcomes. Unfortunately, the jury signal is a very mixed message. Absent posttrial interviews with jurors, the parties are unlikely to determine the role any given expert played in the case outcome. Moreover, the jury signal is only as good as the jury's ability to reach correct verdicts. Thus, the effectiveness of the jury sanction is determined in part by the ability of the system to maximize the accuracy of jury decision making and this, in turn, is affected by its ability to ensure that expert witnesses behave ethically.

F. *Summary*

In sum, although formal sanctions may play a role in controlling unethical expert behavior, enforcement problems and countervailing pressures work to minimize their effectiveness. The greatest sanctioning influence is likely to come from admissibility decisions written by judges in *Daubert* and *Frye* hearings that "out" certain experts, and to a lesser extent from sanctions by professional organizations. Both of these devices provide some enforcement of ethical standards, but both are reserved for the most egregious cases of testimony that fall substantially below acceptable practice. Both might be bolstered, however, if the legal system itself were to adopt a code of conduct for expert testimony along the lines of the code that exists in New South Wales.

III. SYSTEMIC CHANGES DESIGNED TO IMPROVE EXPERT ETHICS

If sanctions alone are limited in their ability to control expert behavior, where else might we look for help with this problem? The most appropriate place is the structure of adjudication itself. Keep in mind why we care about expert witness ethics. We care because unethical testimony, i.e., testimony that lacks adequate justification and/or is biased, may mislead those who rely upon it and thus lead to less accurate outcomes. We should

is contingent upon the findings of their chest radiograph classifications or the outcome of compensation proceedings or litigation for which they undertake readings.

Id. In the silicosis litigation, N & M was paid \$335 per positive reading. *In re Silica Prods. Liability Litig.*, 398 F. Supp. 2d at 601.

128. Discovery Diagnostics, <http://www.breder.com> (last visited Oct. 18, 2007).

approach the organization of inquiry by asking what processes are most likely to maximize the ability of the fact-finder to ascertain the truth.¹²⁹

A. Admissibility Standards

An important barrier to fact-finder understanding is captured in the concept of dilution. Dilution may occur at two levels. First, it may cause fact-finders to consider both more and less probative expert testimony to be of equal value, and second, it may cause all expert testimony to be devalued relative to other trial evidence.

The first type of dilution occurs when people are presented with complex information, some of which is of marginal probative value. Laboratory research indicates that this effect occurs when irrelevant information dilutes relevant information leading to less accurate judgments than would occur absent the irrelevant information.¹³⁰ Professor Erica Beecher-Monas notes that one of the explanations for this effect is what she calls a “social norms heuristic.”¹³¹ The idea is that people focus on social cues and assume that evidence would not be presented to them if they were not expected to consider it. Groups who believe that evidence has been screened in this way may be especially prone to the dilution effect.

Admissibility rules may be thought of as a structural device designed to reduce the dilution effect by eliminating the least reliable evidence from the fact-finder’s consideration.¹³² Prior to the Supreme Court’s *Daubert* decision, most states followed the *Frye* general acceptance test.¹³³ The *Daubert* opinion concluded that the *Frye* test did not survive the adoption of the Federal Rules of Evidence.

129. Judge Jack Weinstein reflected this position in a 1986 article noting that a rule should focus “not only on the reliability of proposed evidence but also on the jury’s probable response to it.” Jack B. Weinstein, *Improving Expert Testimony*, 20 U. Rich. L. Rev. 473, 478 (1986).

130. Erica Beecher-Monas, *Heuristics, Biases, and the Importance of Gatekeeping*, 2003 Mich. St. L. Rev. 987, 1003–04. Beecher-Monas cites a variety of research pointing toward this conclusion, *id.* at 1003–04, including Robyn M. Dawes, *Behavioral Decision Making and Judgment*, in *The Handbook of Social Psychology* 497 (Daniel T. Gilbert et al. eds., 4th ed. 1998); Dennis J. Devine et al., *Jury Decision Making: 45 Years of Empirical Research on Deliberating Groups*, 7 Psychol. Pub. Pol’y & L. 622 (2001); and Philip E. Tetlock et al., *The Dilution Effect: Judgmental Bias, Conversational Convention, or a Bit of Both?*, 26 Eur. J. Soc. Psychol. 915, 916–18 (1996) (citing studies demonstrating that “linking diagnostic with nondiagnostic evidence produced more regressive predictions than people would otherwise have made”).

131. See Beecher-Monas, *supra* note 130, at 1005–06.

132. See Joseph Sanders, *The Merits of the Paternalistic Justification for Restrictions on the Admissibility of Expert Evidence*, 33 Seton Hall L. Rev. 881, 937 (2003).

133. See *Frye v. United States*, 293 F. 1013 (D.C. Cir. 1923). According to the *Frye* test, scientific evidence should be admitted only when the scientific principle upon which the expert’s testimony is based is “sufficiently established to have gained general acceptance in the particular field in which it belongs.” *Id.* at 1014. The *Frye* test was rarely invoked in civil cases until the Agent Orange and Bendectin litigation. See Paul C. Giannelli, *The Admissibility of Novel Scientific Evidence: Frye v. United States, a Half-Century Later*, 80 Colum. L. Rev. 1197, 1219 (1980).

Daubert lists four nonexclusive criteria to consider in assessing expert testimony: (1) whether the expert's theory has been tested; (2) the error rate associated with a test or procedure; (3) a number of surrogate indicia of reliability, including whether the theory or technique has been subject to peer review and publication; and (4), in a partial resurrection of the *Frye* test, whether the expert's methods and reasoning enjoy general acceptance in a relevant scientific community.¹³⁴ The latter two criteria are indirect methods of ascertaining whether the expert is providing justifications that are as strong as those she would provide in her professional work. From this perspective, admissibility rules are an attempt to impose ethical standards on experts by excluding those experts who do not meet minimal ethical justifications and, in the process, sending a general deterrence message to the legal community that experts who do not meet this standard may be excluded.¹³⁵

Understood in this way, the admissibility standards of *Daubert* and *Frye* are compatible with the ethical standards of adequate justification found in the codes of conduct of many professional organizations.¹³⁶

One must note that some state courts continue to apply admissibility criteria that do not reflect the ethical standard advanced here. Professor John Conley and Scott Gaylord classify all but six states as having adopted some version of *Daubert*, *Frye*, or some combination of the two.¹³⁷ States that Conley and Gaylord list as "other" include Georgia, Nevada, North Carolina, North Dakota, Virginia, and Wisconsin.¹³⁸ A number of the "other" states have admissibility tests that are more liberal than either *Frye* or *Daubert*.¹³⁹ These jurisdictions clearly have admissibility rules that

134. *Daubert v. Merrell Dow Pharms., Inc.*, 509 U.S. 579, 593–94 (1993).

135. See Lloyd Dixon & Brian Gill, *Changes in the Standards for Admitting Expert Evidence in Federal Civil Cases Since the Daubert Decision*, 8 Psychol. Pub. Pol'y & L. 251, 275–76 (2002) (suggesting that in federal courts, at least, *Daubert* may have had a deterrence effect).

136. Judge Posner, the author of the "same intellectual rigor" standard, generally agrees. In *Austin v. American Ass'n of Neurological Surgeons*, 253 F.3d 967 (7th Cir. 2001), he discusses the relationship between admissibility under *Daubert* and irresponsible testimony. He recognizes that judicial admissibility rulings may be in error and notes that judges benefit from the help of professional organizations in screening experts. Posner's opinion focuses on those occasions where an admissibility ruling sets the bar too low. A "judge's ruling that expert testimony is admissible should not be taken as conclusive evidence that it is responsible testimony." *Id.* at 973. Of course the opposite may happen and a judge may set too high a threshold. The implication of Posner's comment is that setting aside judicial errors and those situations where a field's professional standard fails to reach a minimum legal threshold, in federal courts and many state courts admissibility standards coincide with professional ethics codes.

137. John M. Conley & Scott W. Gaylord, *Scientific Evidence in the State Courts: Daubert and the Problem of Outcomes*, 44 Judges' J., Fall 2005, at 6, 10 tbl.1.

138. *Id.*

139. For example, in Virginia, evidence of questionable reliability is presented to the jury with instructions to take into account the disputed reliability when determining the weight to be given to the evidence, provided there is "a sufficient foundation to warrant admission." *Spencer v. Commonwealth*, 393 S.E.2d 609, 621 (Va. 1990). Similarly, in Wisconsin, evidence is admissible if the evidence is relevant, the expert is qualified, and the evidence

permit unethical testimony as judged by a same intellectual rigor or similar test.

Unfortunately, most state courts are far too lenient in their admissibility rulings in criminal cases. Too often they permit prosecution experts to make assertions that clearly violate a same intellectual rigor or general acceptance test. And too often the result is a wrongful conviction that could have been avoided by a more stringent application of admissibility rules.¹⁴⁰

B. *Limits of Admissibility Standards*

Admissibility standards are one structural component that assists fact-finders in reaching the correct conclusion in trials by keeping from them those conclusions that are advanced without at least the level of justification expected of professionals in a field.¹⁴¹ Admissibility rules are far less likely to assist with the problems of witness bias.

Bias, or at least the perception of bias, seems to be an inevitable part of a system where experts are chosen by the parties. An admittedly limited body of psychological literature suggests that adopting a role affects attention to details, memory retrieval, and decision thresholds.¹⁴² Some research specifically on witnesses confirms this effect. In a study by Blair Sheppard and Neil Vidmar, undergraduates viewed a slide show and heard an audio tape depicting a fight. The “witnesses” then were interviewed by an adversary or nonadversary lawyer and a week later testified about what they saw. Witnesses interviewed by the adversary lawyer slanted their testimony in favor of the lawyer’s client and this in turn affected the impressions of the factual evidence and the responsibility judgments of “naive” adjudicators who did not know who had interviewed the witness.¹⁴³

assists the trier of fact. *See* State v. Walstad, 351 N.W.2d 469, 485–86 (Wis. 1984). Georgia requires little more than relevance, except when an expert’s opinion is based on a novel scientific procedure or technique. In that situation, the court may inquire into whether the procedure or technique has reached “a scientific stage of verifiable certainty.” Home Depot U.S.A., Inc. v. Tvrdeich, 602 S.E.2d 297, 301 (Ga. Ct. App. 2004). Relevance alone also seems to be the standard for some types of cases in Arizona, such as *Logerquist v. McVey*, 1 P.3d 113, 132–33 (Ariz. 2000), and Kansas, such as *Kuhn v. Sandoz Pharmaceuticals Corp.*, 14 P.3d 1170, 1185 (Kan. 2000).

140. *See* Giannelli & McMunigal, *supra* note 96; Michael J. Saks, *Merlin and Solomon: Lessons From the Law’s Formative Encounters With Forensic Identification Science*, 49 Hastings L.J. 1069 (1998).

141. *See* Cranor, *supra* note 61, at 58.

142. *See* D. Michael Risinger et al., *The Daubert/Kumho Implications of Observer Effects in Forensic Science: Hidden Problems of Expectation and Suggestion*, 90 Cal. L. Rev. 1, 18–19 (2002).

143. *See* Blair H. Sheppard & Neil Vidmar, *Adversary Pretrial Procedures and Testimonial Evidence: Effects of Lawyer’s Role and Machiavellianism*, 39 J. Pers. & Soc. Psychol. 320, 329 (1980).

In a follow-up study, Vidmar and Laird had students witness the same fight stimulus.¹⁴⁴ This time, the experimenters manipulated the students' role simply by telling the students they would appear as a witness of the court or as a witness for either the plaintiff or the defendant. Student "judges" who were blind to this manipulation were asked to rate whether the evidence provided by the witness favored the plaintiff or the defendant. Separately, a set of raters heard the testimony of the witnesses and rated it as more or less proplaintiff. For both "judges" and raters, when compared to witnesses who testified from a neutral role, witnesses who testified for an adversary party produced testimony favorable to that party.¹⁴⁵ Interestingly, when the witnesses themselves were asked to rate the underlying evidence as proplaintiff or prodefendant, their assigned role did not influence their judgment, i.e., the ratings of "plaintiff," "defendant," and neutral witnesses did not significantly differ from one another.¹⁴⁶

One must be careful in drawing conclusions from studies that are so weak on ecological validity. However, the results do suggest that very weak "role" manipulations can produce "hot bias" effects even among "witnesses" who themselves have no psychological or economic interest in a given outcome.¹⁴⁷

These experimental findings echo the results of surveys in which judges routinely complain about expert witness bias. In a survey of judges in three jurisdictions, Daniel Shuman et al. report that

[s]eventy-nine percent of the judges did not think expert witnesses could be depended upon to be impartial. . . . Sixty-three percent thought that expert witnesses were usually noticeably biased in favor of the side paying them, and 68% thought that the most distressing characteristic of expert witnesses was that they could not be depended upon to be impartial. Fifty-seven percent reported that they thought of expert witnesses as "hired guns" who gave biased testimony. Sixty-eight percent of the judges feared that some of the fees experts charged were large enough to provide a financial interest in the outcome of the case.¹⁴⁸

Party witnessing produces the perception that many things are contentious in three separate ways. First, it does so through the process of

144. See Neil Vidmar & Nancy MacDonald Laird, *Adversary Social Roles: Their Effects on Witnesses' Communications of Evidence and the Assessments of Adjudicators*, 44 *J. Pers. & Soc. Psychol.* 888 (1983).

145. *Id.* at 893.

146. *Id.*

147. Some biases are intentional, i.e., they are the result of fraud or deliberate advocacy. Other biases may be thought of as "hot." They are often unintentional and even unconscious, but they are directionally motivated because the individual expects or wants an outcome to prevail. Still other biases are "cold." They occur even in the absence of a desire for a certain outcome and in spite of a desire to achieve accuracy. Robert J. MacCoun, *Biases in the Interpretation and Use of Research Results*, 49 *Ann. Rev. of Psychol.* 259, 268 (1998); Risinger et al., *supra* note 142, at 17. For an example of a cold bias, see William Meadow & Cass R. Sunstein, *Statistics, Not Experts*, 51 *Duke L.J.* 629, 636-39 (2001).

148. Shuman et al., *supra* note 87, at 202-03.

witness selection. Witnesses are chosen because they prefer a point of view and the very choice of experts clouds the degree of consensus that may surround a topic. Samuel R. Gross provides an example of this phenomenon from psychiatry:

[P]sychiatrists today have overwhelmingly rejected the notion that they can predict future violence—let alone do so on the basis of hypothetical questions—but psychiatric testimony to the contrary is regularly heard in court, and is a basis of many death sentences. It is common to point out how the structure of legal proceedings can distort the jury's view of a field of knowledge. The universe of psychiatrists may consist of a hundred experts, of whom one believes in predictions of dangerousness and ninety-nine do not, but the list of witnesses in a particular case will probably include one expert on each side of this fictitious divide. It is less commonly noted that the one expert who will testify to the discredited point of view is probably in greater demand as a witness, more experienced in court, and more effective.¹⁴⁹

Second, cross-examination of opposing experts often undermines the commonly held assumptions upon which consensus is built and thus further promotes the impression that there is little about which the experts agree. As Professor Sheila Jasanoff notes,

Adversarial process is indeed a wonderful instrument for deconstructing “facts,” for exposing contingencies and hidden assumptions that underlie scientific claims, and thereby preventing an uncritical acceptance of alleged truths. The adversary process is much less effective, however, in reconstructing the communally held beliefs that reasonably pass for truth in science. Cross-examination, in particular, unduly privileges skepticism over consensus. It skews the picture of science that is presented to the legal factfinder and creates an impression of conflict even where little or no disagreement exists in practice.¹⁵⁰

Third, as the Shuman data suggest, party witnessing very frequently pushes experts toward asserting positions with greater certainty than they would in other contexts. Experts themselves agree that there is significant pressure to skew statements. In one survey of experts, seventy-seven percent agreed with the statement that “[l]awyers manipulate their experts to weaken unfavorable testimony and strengthen favorable testimony,” and fifty-seven percent agreed that “[l]awyers urge their experts to be less tentative.”¹⁵¹ Witnesses who are too much in the middle on a key issue may present serious problems to the party that hires them. Consider this comment by one expert concerning one of his first preparation sessions with a trial attorney named Bill:

149. Gross, *supra* note 1, at 1184–85 (footnotes omitted). See generally Michael J. Saks & Roselle L. Wissler, *Legal and Psychological Bases of Expert Testimony: Surveys of the Law and of Jurors*, 2 *Behav. Sci. & L.* 435 (1984).

150. Sheila Jasanoff, *What Judges Should Know About the Sociology of Science*, 32 *Jurimetrics J.* 345, 353–54 (1992).

151. Shuman et al., *supra* note 87, at 201.

Bill asked me a question about whether the belt was on or not, the lap belt. And I said, "Well, could have been. But then, it may not have been." Woo, rockets went off. "What do you mean? You're my expert in this case, and you say it 'could be' or 'couldn't be?' Look, I'm going to tell you. The other side doesn't waffle. They pick one view. And they will push that view. And they will make their case in front of a jury. And there will be no misunderstanding. There will be no gray area. They will take a position one way or the other and make it stick. Now, they don't have any other course of action. That's their life. They make their living going in front of juries and making statements, whether they have facts to back them up or not. Now you, you can go back to designing cars. You have another career. They don't. You better start thinking like they do."¹⁵²

The result of this process is that when jurors do attend to experts, they may be led to believe that experts share little common ground. It is also likely that biased testimony contributes to the dilution effects by causing jurors to undervalue all expert opinions. A recurring theme in judicial statements about experts is that unreliable testimony should be excluded because jurors are very likely to be swayed by credentials alone and to overvalue expert testimony. If anything, the opposite appears to be the case. As Harrison notes, there is a canceling effect, by which the opposing positions of the experts cause them to neutralize each other.¹⁵³ Perhaps the clearest statement of this view is to be found in the following comment made by a juror in an asbestos case studied by Jane Goodman, Edith Green, and Elizabeth Loftus: "The expert testimony was not a real factor in our decision, except in the very backhanded sense that it lent medical credence to any result."¹⁵⁴

Few deny the biasing effect of present arrangements. Rather, they are justified as a cost to be paid to assure party control of the lawsuit, and indeed objections to changes in party witnessing are sometimes expressed

152. Fred Prichard, *Experts in Civil Cases: An Inside View* 30–31 (2005).

153. Harrison, *supra* note 89, at 263.

154. Jane Goodman et al., *What Confuses Jurors in Complex Cases*, *Trial*, Nov. 1985, at 65, 68. For other discussions of juror skepticism and cynicism, see generally Special Comm. on Jury Comprehension of the ABA Litig. Section, *Jury Comprehension in Complex Cases* (1989); Anthony Champagne et al., *An Empirical Examination of the Use of Expert Witnesses in American Courts*, 31 *Jurimetrics J.* 375 (1991); Sanja Kutnjak Ivković & Valerie P. Hans, *Jurors' Evaluations of Expert Testimony: Judging the Messenger and the Message*, 28 *Law & Soc. Inquiry* 441 (2003); Shari Seidman Diamond & Jonathan D. Casper, *Blindfolding the Jury to Verdict Consequences: Damages, Experts, and the Civil Jury*, 26 *Law & Soc'y Rev.* 513, 543 (1992); Daniel W. Shuman & Anthony Champagne, *Removing the People from the Legal Process: The Rhetoric and Research on Judicial Selection and Juries*, 3 *Psychol. Pub. Pol'y & L.* 242, 258 (1997); Scott E. Sundby, *The Jury as Critic: An Empirical Look at How Capital Juries Perceive Expert and Lay Testimony*, 83 *Va. L. Rev.* 1109 (1997); and Neil Vidmar, *Assessing the Impact of Statistical Evidence, A Social Science Perspective*, in *The Evolving Role of Statistical Assessments as Evidence in the Courts* 279 (Stephen Fienberg ed., 1989).

in these terms.¹⁵⁵ Because admissibility rules are rarely, if ever, applied to dampen bias, efforts to do so must come from other structural changes.

Among the many proposals designed to reduce the biasing effect of party witnessing are court-appointed experts, special courts, blue ribbon juries, more active juries, and even the abolition of juries in complex cases.¹⁵⁶ These proposals are designed to improve fact-finder comprehension either by improving fact-finder skills or by reducing the adversarial nature of U.S. litigation.¹⁵⁷

Improving the ability of fact-finders to understand expert evidence is often part of a more general effort to assist jurors in assessing all evidence. Many states have moved away from the model of a passive jury, which asks jurors to sit quietly throughout the trial and only at its conclusion discuss the case. More and more frequently, jurors are permitted to ask questions (submitted to the judge), take notes, and even discuss the case prior to the conclusion of all testimony.¹⁵⁸ Whatever the general merits of these reforms, they are at best an indirect way of dealing with expert witness bias.¹⁵⁹

Most of these proposals are procedural. They assist the juries in collecting information, but do not attempt to provide substantive

155. See Joe S. Cecil & Thomas E. Willging, *Accepting Daubert's Invitation: Defining a Role for Court-Appointed Experts in Assessing Scientific Validity*, 43 Emory L.J. 995, 1019 (1994).

156. For discussions of these and other alternatives, see Devine et al., *supra* note 130; Stephen D. Easton, *That Is Not All There Is: Enhancing Daubert Exclusion by Applying "Ordinary" Witness Principles to Experts*, 84 Neb. L. Rev. 675 (2006); Phoebe C. Ellsworth & Alan Reifman, *Juror Comprehension and Public Policy: Perceived Problems and Proposed Solutions*, 6 Psychol. Pub. Pol'y & L. 788 (2000); Nancy S. Marder, *Bringing Jury Instructions into the Twenty-First Century*, 81 Notre Dame L. Rev. 449 (2006); Joseph Sanders, *From Science to Evidence: The Testimony on Causation in the Bendectin Cases*, 46 Stan. L. Rev. 1 (1993); Shari Seidman Diamond et al., *Juror Discussions During Civil Trials: Studying an Arizona Innovation*, 45 Ariz. L. Rev. 1 (2003) [hereinafter Seidman Diamond et al., *Juror Discussions*]; Shari Seidman Diamond et al., *Juror Questions During Trial: A Window into Juror Thinking*, 59 Vand. L. Rev. 1927 (2006); Franklin Strier, *Making Jury Trials More Truthful*, 30 U.C. Davis L. Rev. 95 (1996); Catherine T. Struve, *Doctors, The Adversary System, and Procedural Reform in Medical Liability Litigation*, 72 Fordham L. Rev. 943 (2004).

157. See Howard M. Erichson, *Mass Tort Litigation and Inquisitorial Justice*, 87 Geo. L.J. 1983, 1989 (1999); Joseph Sanders, *Scientifically Complex Cases, Trial by Jury, and the Erosion of Adversarial Processes*, 48 DePaul L. Rev. 355, 376-77 (1998).

158. Some proposals are designed to hold the jury more accountable for its verdicts. One suggestion would require juries to render special verdicts. There is some evidence that special verdicts do improve a jury's own belief that its verdict was correct. See John D. Jackson, *Making Juries Accountable*, 50 Am. J. Comp. L. 477, 519-20 (2002); see also Larry Heuer & Steven Penrod, *Trial Complexity: A Field Investigation of Its Meaning and Effects*, 18 Law & Hum. Behav. 29, 50 (1994); Elizabeth C. Wiggins & Steven J. Breckler, *Special Verdicts as Guides to Jury Decision Making*, 14 Law & Psychol. Rev. 1, 19 (1990).

159. Available research indicates that these efforts have modest effects on improving jury performance but they do have the clear merit of making the jury experience more enjoyable. See Steven D. Penrod & Larry Heuer, *Tweaking Commonsense: Assessing Aids to Jury Decision Making*, 3 Psychol. Pub. Pol'y & L. 259, 280-81 (1997); Seidman Diamond et al., *Juror Discussions*, *supra* note 156, at 74-75.

information beyond what they learn in the trial itself. Professor Jonathan Koehler proposes that we consider substantive training as well.¹⁶⁰ He cites several studies that indicate that relatively brief training can improve reasoning ability, especially with respect to quantitative evidence.¹⁶¹ If such training were successful, it might help jurors to detect expert overreaching.

Professor Stephen Easton offers a more direct approach to bias. He believes we are stuck with a system of party witnesses testifying in an adversary setting. The central idea informing Easton's proposal is that the jury will find it easier to make an informed evaluation of the experts' testimony if each side is required to report all communications between hiring attorneys and expert witnesses as well as all of the items considered by the experts.¹⁶² If bias cannot be controlled, at least it can be revealed. Moreover, a full disclosure system might encourage attorneys to do less to influence expert testimony.¹⁶³

The most radical solutions involve either the abolition of trial by jury in complex cases or the use of blue ribbon juries composed of better educated jurors.¹⁶⁴ Neither of these proposals has ever gained much traction and this is very unlikely to change in the future.¹⁶⁵

The remaining proposals are designed to reduce the adversarial nature of trials. They include expert panels, neutral experts, court-appointed experts, and science courts. This is well-trodden ground, and I have little to add with respect to specific proposals. The idea of science courts has never gotten off the ground. Panels have proven useful in a few areas such as silicone implants but are too cumbersome and expensive to be used in ordinary litigation.¹⁶⁶ Proposals to provide courts with neutral experts

160. Jonathan J. Koehler, *Train Our Jurors*, in *Heuristics and the Law* 303 (G. Gigerenzer & C. Engel eds., 2006).

161. See generally Geoffrey T. Fong & Richard E. Nisbett, *Immediate and Delayed Transfer of Training Effects in Statistical Reasoning*, 120 *J. Experimental Psychol.: Gen.* 34 (1991); Richard E. Nisbett et al., *Teaching Reasoning*, 238 *Sci.* 625 (1987); Peter Sedlmeier & Gerd Gigerenzer, *Teaching Bayesian Reasoning in Less Than Two Hours*, 130 *J. Experimental Psychol.: Gen.* 380 (2001).

162. Stephen D. Easton, *Ammunition for the Shoot-Out with the Hired Gun's Hired Gun: A Proposal for Full Expert Witness Disclosure*, 32 *Ariz. St. L.J.* 465, 474 (2000).

163. *Id.* at 608.

164. Sanders, *supra* note 156, at 78–84.

165. It is an interesting question why the U.S. legal system, unlike the legal systems in almost all other developed nations, is so committed to juries composed of a cross section of the community. One answer is that the United States is more strongly committed to what Damaška calls the “coordinate ideal” than are other societies. According to this ideal, “structures of authority are defined by a body of non-professional decision makers, organized into a single level of authority which makes decisions by applying undifferentiated community standards.” Jackson, *supra* note 158, at 478. Whether this is the whole answer, it does help explain why most discussions of the role of juries in civil litigation have such a strong normative component.

166. See 3 Faigman et al., *supra* note 51, ch. 30; Laural L. Hooper et al., *Assessing Causation in Breast Implant Litigation: The Role of Science Panels*, 64 *Law & Contemp. Probs.* 139 (2001).

vetted by someone other than the parties have either withered or are rarely used.¹⁶⁷ Proposals for court-appointed experts have been around for more than a century.¹⁶⁸ Currently, they are authorized under Federal Rule of Evidence 706 and similar provisions in most state evidence rules, but they are rarely used, and when they are, it is generally for mass torts or other significant cases.¹⁶⁹

Many of these proposals are resisted precisely because they interfere with attorney control¹⁷⁰ and, more fundamentally, they seem to challenge adversarial procedures that are, as Professor Amalia Kessler notes, far more than a legal technique and instead encompass an entire political image of justice.¹⁷¹ In light of this ideology, substantial movement away from party witness experts seems unlikely. More modest proposals are in order, and here we may benefit from the experience of other legal systems.¹⁷²

In this vein, it is worth mentioning a recent reform in New South Wales.¹⁷³ In the past decade, Australian judges have focused their attention on the issue of adversarial bias. One response is a new Civil Procedure Act, adopted in 2005. One provision calls for what is referred to as “concurrent evidence.” The concurrent evidence procedure is employed in circumstances where the party experts disagree about some relevant fact. During concurrent evidence sessions, the experts, their attorneys, and the

167. The most well-known of these is the Court Appointed Scientific Expert (CASE) program organized by the American Association for the Advancement of Science (AAAS) and operated under the direction of the National Conference of Lawyers and Scientists, a joint committee of the AAAS and the American Bar Association Science and Technology Section. See AAAS, CASE Mainpage, <http://www.aaas.org/spp/case/case.htm> (last visited Oct. 19, 2007). Although CASE’s experts are rarely used, apparently they are effective in the sense that whenever a judge indicates an intention to appoint such an expert the parties quickly settle the case. Haack, *supra* note 42, at 33.

168. See Tal Golan, *Laws of Men and Laws of Nature: The History of Scientific Expert Testimony in England and America* 21 (2004); Cheng, *supra* note 97, at 395; Stephan Landsman, *Of Witches, Madmen, and Products Liability: An Historical Survey of the Use of Expert Testimony*, 13 *Behav. Sci. & L.* 131, 156 (1995) (remarking that court-appointed expert proposals are “as old as the American republic”); Sophia Cope, Comment, *Ripe for Revision: A Critique of Federal Rule of Evidence 706 and the Use of Court-Appointed Experts*, 39 *Gonz. L. Rev.* 163, 164 (2004).

169. Cecil & Willging, *supra* note 155, at 1003.

170. *Id.* at 1018–19; Gross, *supra* note 1, at 1197–98; Landsman, *supra* note 168, at 156.

171. Amalia D. Kessler, *Our Inquisitorial Tradition: Equity Procedure, Due Process, and the Search for an Alternative to the Adversarial*, 90 *Cornell L. Rev.* 1181, 1273 (2005). See generally Robert A. Kagan, *Adversarial Legalism: The American Way of Law* (2001); Oscar G. Chase, *American “Exceptionalism,” and Comparative Procedure*, 50 *Amer. J. Comp. L.* 277 (2002); Sven Timmerbeil, *The Role of Expert Witnesses in German and U.S. Civil Litigation*, 9 *Ann. Surv. Int’l & Comp. L.* 163 (2003).

172. See, e.g., Marijke Malsch & Ian Freckelton, *Expert Bias and Partisanship: A Comparison Between Australia and the Netherlands*, 11 *Psychol. Pub. Pol’y & L.* 42 (2005) (reporting the perception of bias is greater in adversarial Australia than it is in the Netherlands).

173. My discussion of the New South Wales reforms comes largely from Dr. Gary Edmond, *Secrets of the ‘Hot Tub’: Expert Witnesses, Concurrent Evidence and Judge-Led Law Reform in Australia*, 27 *Civ. Just. Q.* (forthcoming 2008). Edmond has been observing concurrent evidence hearings as part of an ongoing research project.

judge meet, freed from the constraint of having to formally respond to lawyer questions. Each expert is given an opportunity to make a statement, to comment on the evidence of other experts, and to ask questions of other experts. At the conclusion of this process, the judge may ask questions and then lawyers are permitted to pose questions that more nearly resemble those that would be asked in traditional adversarial proceedings.¹⁷⁴ Judges report that the experts and their professional organizations approve of this procedure.¹⁷⁵ According to Dr. Gary Edmond, judges attribute the following benefits to the concurrent evidence procedure: (1) it reduces partisanship (adversarial bias) and distortion; (2) it embodies scientific values and facilitates peer review; (3) it enhances communication, comprehension, and analysis; (4) it decreases lawyer control; and (5) it reduces time and costs and narrows the real issues.¹⁷⁶

There are many ways in which the Australian legal system is different from that in the United States. Most important, New South Wales, like most Australian jurisdictions, does not have a civil jury. The direct implementation of a concurrent evidence procedure before a jury would require wholesale changes in evidence law. However, pieces of this procedure could be implemented. Pretrial conferences with the judge, the experts, and the lawyers may at least partially achieve many of the benefits mentioned by the Australian judiciary, especially a lessening of biased presentation in the courtroom that frequently leaves the jury with the impression that there is very little about which the party experts agree. Moreover, it does so without limiting the ability of the parties to choose their own experts, a stumbling block for many other proposals.

CONCLUSION

It is a bold person who is willing to argue that the adversarial processes present in U.S. litigation pose no problems for expert witnessing or jury decision making. To steadfastly hold a different view requires a fair degree of credulity. It is nearly impossible to believe there is no bias in presentation, no shading of belief or relaxation of the justification for a belief among a group of people who are vetted, hired, groomed, and rehearsed to present testimony often based primarily on materials provided by the party that employs them, a party who can choose at any time to keep them from the stand and whose opinion concerning their performance may influence their prospects for future similar employment. Some argue that this is simply a price we should be willing to pay for an adversarial system. I find myself in agreement with a passage by Susan Haack that I quoted earlier in this essay: "But I will venture to say that . . . a willingness to adapt the adversarial culture a little doesn't seem unreasonable if it would

174. *Id.* at 8–9.

175. *See id.* at 14–18.

176. *Id.* at 19.

better serve the fundamental purpose of protecting citizens from arbitrary and irrational determinations of fact.”¹⁷⁷

The citizens—that is, the parties to a case—are not the only constituency that deserves our consideration. The legal system owes something to witnesses and to juries as well. It owes witnesses a set of principles and a structure that assists and supports rather than corrupts ethical behavior, and it owes juries a system that as much as possible assists them in reaching correct outcomes. A relaxation of adversarial processes with respect to expert witnesses is a step in achieving both of these objectives as well.

Admissibility tests are a part of that equation. They send a signal to experts and their lawyers about the level of justification required to support a conclusion. I believe that despite its potential shortcomings, the underlying premise of the *Frye* general acceptance test as incorporated in the *Kumho Tire* same intellectual rigor test is an appropriate way to approach admissibility questions. If the proper ethical standard is for experts to employ the same standard they would employ in their professional activities, these admissibility standards reinforce ethical behavior on the part of experts.

However, we could do more. Following the lead of New South Wales, we could create an expert witness code of ethics and provide it to each expert who may testify. It would reinforce experts’ understanding that the ethical epistemological standards of their disciplines are appropriate standards for the courtroom. Proactive efforts to encourage expert behavior are much less expensive than extended *Daubert* hearings.

These steps assist experts by clarifying the level of justification required of them when they testify. They are far less successful in suppressing biased presentation. Biased presentation is a problem because there is evidence it makes the jury’s task more difficult. I believe juries would benefit from structural changes that move us away from total party control of expert testimony. One cannot ignore, however, the entrenched nature of current arrangements. Whatever the merits of substantial reforms such as the greater use of court-appointed experts, they seem unlikely to occur in the short run. However, more modest changes such as a version of the “concurrent evidence” procedure in Australia might be possible.

Caution and humility are in order here. Mike Redmayne makes the important point that even if we do wish to follow the empirical evidence establishing the veritistic nature of methods of inquiry, all too frequently there is no direct evidence available and we are forced to rely on conceptual arguments and indirect evidence.¹⁷⁸ Although we have substantial evidence concerning the difficulties posed by biased party witnessing, we do not have strong empirical evidence that alternative arrangements will dramatically improve jury comprehension. If we did, it would be easier to sell more substantial changes. More research, especially along the lines of

177. Haack, *supra* note 2, at 212.

178. Redmayne, *supra* note 5, at 860.

the comparative work of Edmond, that examines the effectiveness of practices in other legal systems is very much in order. In the absence of strong evidence, however, what we should not do is to substitute platitudes for data. Undying faith in the ability of experts to resist the pressures of present arrangements and of the jury to resolve complex questions no matter how the evidence is presented to them is, in the end, just that: Faith.