

ADMISSIBILITY OF EXPERT EVIDENCE TO PROVE
CAUSATION IN TOXIC TORTS

Alexandra Kennedy-Breit

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I. INTRODUCTION

In any toxic tort case, the plaintiff relies on expert testimony in his or her effort to prove causation.¹ In the face of serious concerns about the admission of “junk science,” the United States (both Congress and the Supreme

1. Note, *Causation in Environmental Law: Lessons from Toxic Torts*, 128 HARV. L. REV. 2256, 2259 (2015).

Alexandra Kennedy-Breit (akennedy-breit@kslaw.com) received her LL.M. degree from Columbia Law School in May 2017. She previously was a senior associate with Clayton Utz in Sydney, Australia, and currently is an associate at King & Spalding LLP in San Francisco. This paper placed first in the 2017 Law Student Writing Competition sponsored by the Tort Trial & Insurance Practice Law Section.

Court) has taken steps to require judges to act as gatekeepers in order to prevent plaintiffs and defendants alike from presenting biased and unhelpful expert testimony.² However, even following the Supreme Court's and Congress's guidance, the court, in its role as gatekeeper, draws significant complaints from plaintiffs and defendants, which suggests the process is broken.³

This paper will examine the approach used in Australia, which represents a different and novel way of preventing the admission of “junk science” and biased expert evidence, and discuss whether the Australian method should be used in the United States. First, it will briefly examine the importance of proving causation in toxic torts (and how it should be done) and the courts' current and historical role in governing the admission of expert testimony.

II. CAUSATION AND TOXIC TORTS

Torts are an area of law that addresses liability arising from a breach of duty that the law imposes on a party due to its relationship to another.⁴ If liability is proven as a result of tortious conduct, relief is provided in the form of damages.⁵ A toxic tort is a specific subcategory of tort law, and is a civil wrong arising from exposure to a toxic substance (for example, asbestos, talc, or pharmaceuticals).⁶

Like all torts, in order to prevail a plaintiff must prove causation—that is, the plaintiff must prove that “but for” the defendant's actions, he or she would not have suffered the alleged harm.⁷ In the case of toxic torts, this requires that a plaintiff prove both general causation (that the relevant substance is capable of causing the type of injury alleged) and specific causation (that the relevant substance actually caused the specific injury alleged).⁸ Each of these elements must be proven by a preponderance of

2. *Daubert v. Merrell Dow Pharms.*, 509 U.S. 579 (1993); FED. R. EVID. 702.

3. See generally Barbara Pfeffer Billauer, *Daubert Debunked: A History of Legal Retrogression and the Need to Reassess “Scientific Admissibility,”* 21 SUFFOLK J. TRIAL & APP. ADVOC. 1 (2015–2016).

4. *Tort*, BLACK'S LAW DICTIONARY (10th ed. 2014).

5. *Id.*

6. *Toxic tort*, BLACK'S LAW DICTIONARY (10th ed. 2014).

7. Megan A. Ceder, Comment, *A Dose of Reality: The Struggle with Causation in Toxic Tort Litigation*, 51 HOUS. L. REV. 1147, 1163 (2014). Note that there is an alternative “substantial factor” test to prove factual causation, which establishes liability where a defendant's conduct would have been sufficient to prove “but for” causation, but where another act also occurred that also would have been a “but for” cause if it had occurred separately. Note, *Causation in Environmental Law*, *supra* note 1, at 2260. This test is used in situations, such as asbestos litigation, where a plaintiff was exposed to asbestos due to the acts of multiple defendants.

8. STUART M. SPEISER ET AL., AMERICAN LAW OF TORTS § 18:426 (Monique C. M. Leahy ed., Nov. 2016 update). Note that some states allow a plaintiff to prove causation by proving general causation only. See Keriann Laubach, Note, *Epigenetics and Toxic Torts: How Epidemiological Evidence Informs Causation*, 73 WASH & LEE L. REV. 1019, 1032 (2016).

the evidence, which is generally interpreted as meaning that the plaintiff must show a degree of certainty greater than 50 percent.⁹

Causation is frequently the most difficult element for a plaintiff to prove in a toxic tort.¹⁰ The most significant reason for this is that it is difficult to establish that a specific substance is capable of causing a specific effect if there is no consensus on this issue in the scientific community.¹¹ This occurs frequently in relation to pharmaceutical drugs, where the effects experienced by the plaintiff may outpace the scientific understanding of if, and how, the pharmaceutical causes the relevant harm.¹²

In order to be proven in toxic torts, causation invariably requires testimony from an expert witness. Experts will be required to opine on his or her view of the state of scientific evidence on the issue, including the consideration and analysis of epidemiological evidence¹³ and relative risk.¹⁴

There is a great deal of information asymmetry between a plaintiff and a defendant in these cases. Plaintiffs often lack the time and resources to have such studies performed and the Food and Drug Administration may withdraw the drug, preventing the plaintiff from conducting further studies (and yielding little incentive for defendants to pay for such studies to be conducted, only to be used against them). It is therefore critical that, once an expert witness has been identified and retained, his or her testimony is admissible.

III. ADMISSIBILITY OF EXPERT EVIDENCE

Because of the centrality of scientific issues in toxic torts, cases are won or lost based on expert testimony.¹⁵ A good expert is able to “persuade juries,

9. Laubach, *supra* note 8, at 1032.

10. Note, *Causation in Environmental Law*, *supra* note 1, at 2259.

11. *Id.* at 2261.

12. *Id.*

13. Epidemiology is “a branch of science and medicine” that “uses studies to ‘observe the effect of exposure to a single factor’” on the occurrence of a particular outcome in populations that are otherwise identical. These studies, of necessity, look to the experience of sample groups as representative of the experience of a larger population. *DeLuca v. Merrell Dow Pharms., Inc.*, 911 F.2d 941, 945–46 (1990) (internal citation omitted). While other types of evidence such as structural similarity, in vitro testing, and case reports may also be used, epidemiology is considered the “gold standard” for establishing causation. *See Ceder*, *supra* note 7, at 1163.

14. Note, *Causation in Environmental Law*, *supra* note 1, at 2271. Relative risk is the difference in the risk of developing a disease in people exposed to a risk factor when compared to those who were not exposed. It is calculated by dividing the risk of developing a disease after exposure to a substance by the risk of developing that same disease without being exposed to that substance. A relative risk of 2.0 means that the risk of suffering the disease doubles when exposed to the relevant risk factor; many courts require a plaintiff to prove a relative risk factor of 2.0 or more in order to succeed. *Id.* at 2271–72.

15. Erica W. Rutner & Lara Bueso Bach, “*Indispensable*” *Methods for Admitting General Causation Experts in the Eleventh Circuit*, 69 U. MIAMI L. REV. 999, 1000 (2015).

strengthen weak cases, and in some instances, tip the balance of a case in one direction or another.”¹⁶ Put another way, a charismatic (and well-credentialed) expert is capable of using potentially unreliable evidence to persuade a jury to believe “almost anything.”¹⁷ The need to prevent “junk science” from being admitted as evidence is what led the Supreme Court in *Daubert v Merrell Dow Pharmaceuticals*¹⁸ to require the courts to act as the gatekeepers to the admission of expert evidence to the trier of fact.

A. Admissibility Before Daubert

Before discussing the courts’ gatekeeping role following *Daubert*, it is useful to briefly examine the history of the admissibility of expert evidence before the Supreme Court’s preeminent decision on the topic.

In 1923, the Court of Appeals for the District of Columbia issued its decision in *Frye v United States*.¹⁹ That case concerned the admissibility of a systolic blood pressure deception test (an early precursor to today’s polygraph machines²⁰), and the court was required to determine when a scientific principle or discovery crosses the line from experimental to admissible evidence.²¹ In affirming the court decision not to admit the evidence, the appellate court utilized what is commonly called the “general acceptance” test: in order to be admissible, “the thing from which the deduction is made must be sufficiently established to have gained general acceptance in the particular field in which it belongs.”²²

The *Frye* “general acceptance” test was subject to heavy criticism. On the one hand, it prevented testimony based on cutting-edge scientific advances and innovative technology from being admitted if it was not “generally accepted” in the relevant community (which was frequently the case).²³ On the other hand, it allowed evidence that was the result of “data dredging”²⁴ to be admitted to juries, who were easily swayed by charismatic experts.²⁵

16. Anthony U. Battista, Douglas A. Latto & Erika Maurice, *Reliability at the Gate to Allow Expert Testimony or Not: A Comprehensive Overview*, 43 BRIEF 28, 28 (2014).

17. Rutner & Bach, *supra* note 15, at 28.

18. 509 U.S. 579 (1993).

19. 293 F. 1013 (D.C. Cir. 1923).

20. *Id.*

21. *Id.* at 1014.

22. *Id.*

23. Battista, Latto & Maurice, *supra* note 16, at 30.

24. “Data dredging” or “data mining” is a process of mining data to uncover statistically significant patterns without first designing the hypothesis to be tested. It is generally considered to be misleading. For example, in a truly random data set, all hypotheses would be false. However, if a large number of hypotheses are imposed on that data set, highly correlated data may be found that is statistically significant in relation to one or more of the hypotheses imposed, even though no causal relationship exists. See, e.g., Jonah B. Gelbach, *Revelation Mechanisms and the Law: Expert Mining and Required Disclosure*, 81 U. CHI. L. REV. 131 (2014); Matthew T. Wansley, *Regulation of Emerging Risks*, 69 VAND. L. REV. 401, n.138 (2016).

25. Battista, Latto & Maurice, *supra* note 16, at 30.

In 1975, Congress enacted Rule 702 of the Federal Rules of Evidence.²⁶ The rule provided an exception to the general rule that witnesses may only give evidence about facts of which they have firsthand knowledge,²⁷ providing that “[i]f scientific, technical, or other specialized knowledge will assist the trier of fact to understand the evidence or to determine a fact in issue, a witness qualified as an expert by knowledge, skill, experience, training, or education, may testify thereto in the form of an opinion or otherwise.”²⁸

From a bare reading of Rule 702, there was some tension with the rule in *Frye*. However, it would take nearly twenty years for that tension to be conclusively addressed.

B. *The Daubert Standard*

In 1993, the Supreme Court took up the opportunity to rule on the issue.

Daubert was one of the many proceedings commenced in the United States concerning birth defects that were allegedly caused by mothers ingesting Bendectin, a prescription anti-nausea drug marketed by Merrell Dow Pharmaceuticals.²⁹ The case at hand concerned the admissibility of the evidence of the plaintiff’s experts, which the Court of Appeals for the Ninth Circuit had declined to admit on the basis that principles upon which that evidence was based were not “generally accepted.”³⁰

In its decision, the Supreme Court held that Rule 702 of the Federal Rules of Evidence had superseded the common law test in *Frye*,³¹ finding that “[n]othing in the text of th[e] Rule establishe[d] ‘general acceptance’ as an absolute prerequisite to admissibility.”³² However, the Supreme Court then went on to find that the Federal Rules of Evidence “themselves place[d] limits on the admissibility of [expert] testimony.”³³ The Supreme Court found that Rule 104(a) of the Federal Rules of Evidence required the judge, when faced with scientific expert testimony, to “determine at the outset . . . whether the expert is proposing to testify to . . . scientific knowledge that . . . will assist the trier of fact to understand

26. See FED. R. EVID. 702 advisory committee’s note (1975), https://www.law.cornell.edu/rules/fre/rule_702.

27. Rutner & Bach, *supra* note 15, at 1002; see also FED. R. EVID. 602, 701, 702.

28. FED. R. EVID. 702 (amended Dec. 1, 2000).

29. *Daubert v. Merrell Dow Pharms.*, 509 U.S. 579, 582 (1993).

30. *Id.* at 584.

31. It should be noted that state courts in Arizona, California, the District of Columbia, Florida, Illinois, Kansas, Maryland, Minnesota, Missouri (criminal cases only), New York, North Dakota, Pennsylvania, and Washington apply the *Frye* test (or a variation of it) for admissibility. See AM. BAR ASS’N, <https://apps.americanbar.org/litigation/mo/premium-lt/other/trialevidence/daubert-frye-survey/50-State-Summary-Table.pdf>.

32. *Daubert*, 509 U.S. at 588.

33. *Id.* at 589.

or determine a fact in issue.”³⁴ When determining the scientific validity of the evidence, the Supreme Court went on to describe the factors that a judge should consider when making a preliminary assessment about the admissibility of expert testimony.³⁵ Commonly referred to as the *Daubert* standard, these factors are:³⁶

- (1) whether the expert’s technique or theory can be or has been tested—that is, whether the expert’s theory can be challenged in some objective sense, or whether it is instead simply a subjective, conclusory approach that cannot reasonably be assessed for reliability;
- (2) whether the technique or theory has been subject to peer review and publication;
- (3) the known or potential rate of error of the technique or theory when applied;
- (4) the existence and maintenance of standards and controls; and
- (5) whether the technique or theory has been generally accepted in the scientific community.

This was the beginning of the court’s role as the gatekeeper to the admissibility of expert evidence. Only four years later, this role was expanded further in *General Electric Co. v. Joiner*,³⁷ where the Supreme Court held that a court’s exercise of its discretion to admit evidence was reviewable for abuse of discretion only and also granted courts a greater flexibility in considering experts’ conclusions and methodologies in determining reliability.³⁸

Shortly after its decision in *Joiner*, the Supreme Court issued the last case in the “*Daubert* trilogy”—*Kumho Tire Co. v. Carmichael*.³⁹ In *Kumho Tire*, the Court considered whether the testimony of a tire expert (which was excluded based on the failure to meet the *Daubert* reliability requirements in the district court, and then reversed in the Court of Appeals for the Eleventh Circuit) should be admitted.

The Supreme Court reversed the Court of Appeals and found the district court had correctly exercised its discretion in excluding the expert testimony. In doing so, the Court confirmed that the *Daubert* test for reliability will apply to expert testimony beyond scientific expertise.⁴⁰ It also stated that the flexible nature of the inquiry set out in *Daubert* means that the factors are not a “definitive checklist,” that appropriate questions to be asked in executing the court’s gatekeeping function must be tied to the

34. *Id.* at 592.

35. *Id.* at 592–93.

36. See FED. R. EVID. 702 advisory committee’s note (Dec. 1, 2000), https://www.law.cornell.edu/rules/fre/rule_702.

37. 522 U.S. 136 (1997).

38. *Id.* at 146–47.

39. 526 U.S. 137 (1999).

40. *Id.* at 147.

facts of the case at hand, and that consideration of the *Daubert* factors may not be appropriate in all cases.⁴¹

In 2000, the Judicial Conference of the United States (with the support of the Supreme Court and Congress) amended Rule 702 of the Federal Rules of Evidence to reflect the requirements of *Daubert* and address conflicts in the courts about its application.⁴² Rule 702 now provides that:

A witness who is qualified as an expert by knowledge, skill, experience, training, or education may testify in the form of an opinion or otherwise if:

- (a) the expert's scientific, technical, or other specialized knowledge will help the trier of fact to understand the evidence or to determine a fact in issue;
- (b) the testimony is based on sufficient facts or data;
- (c) the testimony is the product of reliable principles and methods; and
- (d) the expert has reliably applied the principles and methods to the facts of the case.

In amending the rule, the Judicial Conference explicitly elected not to codify the *Daubert* factors in recognition of the Supreme Court's statement that the factors were neither exclusive nor dispositive.⁴³

41. *Id.* at 150–51.

42. David E. Bernstein & Eric G. Lasker, *Defending Daubert: It's Time to Amend Federal Rule of Evidence 702*, 57 WM. & MARY. L. REV. 1, 6–7 (2015). The Federal Rules of Evidence were also amended in 2011, but these changes were “intended to be stylistic only” and were expressly not intended to change any ruling on evidence admissibility. See FED. R. EVID. 702 advisory committee's note (Dec. 1, 2000), https://www.law.cornell.edu/rules/fre/rule_702.

43. FED. R. EVID. 702 advisory committee's note (Dec. 1, 2000). Other factors that the Advisory Committee noted that the courts (before and after *Daubert*) have considered when determining the admissibility of evidence include

- (1) Whether experts are “proposing to testify about matters growing naturally and directly out of research they have conducted independent of the litigation, or whether they have developed their opinions expressly for purposes of testifying.” *Daubert v. Merrell Dow Pharmaceuticals, Inc.*, 43 F.3d 1311, 1317 (9th Cir. 1995).
- (2) Whether the expert has unjustifiably extrapolated from an accepted premise to an unfounded conclusion. See *General Elec. Co. v. Joiner*, 522 U.S. 136, 146 (1997) (noting that in some cases a trial court “may conclude that there is simply too great an analytical gap between the data and the opinion proffered”).
- (3) Whether the expert has adequately accounted for obvious alternative explanations. See *Claar v. Burlington N.R.R.*, 29 F.3d 499 (9th Cir. 1994) (testimony excluded where the expert failed to consider other obvious causes for the plaintiff's condition). Compare *Ambrosini v. Labaraque*, 101 F.3d 129 (D.C.Cir. 1996) (the possibility of some uneliminated causes presents a question of weight, as long as the most obvious causes have been considered and reasonably ruled out by the expert).
- (4) Whether the expert “is being as careful as he would be in his regular professional work outside his paid litigation consulting.” *Sheehan v. Daily Racing Form, Inc.*, 104 F.3d 940, 942 (7th Cir. 1997). See *Kumbo Tire Co. v. Carmichael*, 119 S. Ct. 1167, 1176 (1999) (*Daubert* requires the trial court to assure itself that the expert “employs in the courtroom the same level of intellectual rigor that characterizes the practice of an expert in the relevant field”).

C. *Impact of the Daubert Standard*

On first blush, it would appear the introduction of the *Daubert* standard increased the threshold for the admissibility of expert evidence. Indeed, many commentators suggest that, particularly in the area of toxic torts, *Daubert* has resulted in a significant increase in the exclusion of expert testimony, and has attracted criticism that the standard has set the bar too high.⁴⁴

However, other interpretations of the data suggest that the exclusion of expert testimony did not increase significantly after *Daubert*.⁴⁵ For example, from 1989 to 1993, 52 percent of scientific evidence was excluded in toxic tort cases, but after *Daubert* the percentage of evidence excluded was only 25 percent.⁴⁶

A slightly different outcome is seen when one considers a shorter time frame. In the three years prior to *Daubert*, there was a sharp increase in the admissibility of scientific evidence, followed by a sharp decrease in the three years following the decision.⁴⁷ This suggests that the decision in *Daubert* was a response to concerns about the increase in “junk science” being used as evidence in court proceedings, and that the decrease following *Daubert* was simply righting the ship.

There is much discussion in the legal community about whether *Daubert* (and, subsequently, Rule 702) or *Frye* is the more appropriate standard for admissibility. However, in circumstances where, more than twenty years after the Supreme Court’s decision in *Daubert*, both are still being applied inconsistently (and, some would argue, inappropriately) by the courts,⁴⁸ the better question to ask is: is either standard working? The answer to that question is that neither is working as well as it could, or should, be.

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- (5) Whether the field of expertise claimed by the expert is known to reach reliable results for the type of opinion the expert would give. See *Kumho Tire Co. v. Carmichael*, 119 S. Ct. 1167, 1175 (1999) (*Daubert*’s general acceptance factor does not “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.”); *Moore v. Ashland Chemical, Inc.*, 151 F.3d 269 (5th Cir. 1998) (en banc) (clinical doctor was properly precluded from testifying to the toxicological cause of the plaintiff’s respiratory problem, where the opinion was not sufficiently grounded in scientific methodology); *Sterling v. Velsicol Chem. Corp.*, 855 F.2d 1188 (6th Cir. 1988) (rejecting testimony based on “clinical ecology” as unfounded and unreliable).

Further discussion about Rule 702’s requirement for admissibility can be found at FED. R. EVID. 702 advisory committee’s note (Dec. 1, 2000).

44. Joseph Sanders, *Applying Daubert Inconsistently? Proof of Individual Causation in Toxic Tort and Forensic Cases*, 75 BROOK. L. REV. 1367, 1374 (2010).

45. Billauer, *supra* note 3, at 9.

46. *Id.* at 18.

47. *Id.* at 22.

48. See *id.* for a detailed discussion of this issue.

The key issue that makes the admissibility of scientific evidence in legal proceedings so problematic is that the legal understanding of “science” and the meaning within the scientific community of “science” are different.⁴⁹ This is, perhaps, best described by comparing a thermometer that determines the freezing point in Celsius to the freezing point determined in Fahrenheit—both accurately measure the freezing point, but one scale cannot be transposed to the other as there is no common denominator.⁵⁰

In circumstances where very few judges have any scientific background, one must consider whether there are other ways that the courts can protect themselves from the admission of “junk science.”

IV. COURT-APPOINTED EXPERTS IN THE UNITED STATES

One of the major criticisms leveled at party-appointed experts is that they are “guns for hire,” and the majority of judges believe they cannot be relied upon to give an objective opinion of the evidence.⁵¹ This is one of the reasons that judges are so vigilant in their role as gatekeepers.

One way of surmounting the hurdle of this bias (whether real or perceived) is for judges to utilize the power granted to them pursuant to Rule 706 of the Federal Rules of Evidence to appoint an independent expert.⁵² While this power has been available to the courts for some time, it is rarely used.⁵³

While having a single expert appointed by the court may resolve issues concerning bias, it presents its own difficulties. The antipathy of the bar to such experts⁵⁴ and the perception to a jury that such an expert is infallible are significant hurdles.⁵⁵ There are also significant practical difficulties with the process—the court must be aware of the need for such an expert early if

49. *Id.* at 4.

50. *Id.* at 4–5.

51. Jean Macchiaroli Eggen, *Toxic Torts and Causation: The Challenge of Daubert After the First Decade*, 17 NAT. RESOURCES & ENV'T 213, 260 (2003).

52. The power of the court to appoint its own expert predates the introduction of Rule 706. For example, Judge Learned Hand proposed the system of neutral, court-appointed experts in 1901, and the National Conference of Commissioners on Uniform State Law adopted a Model Expert Testimony Act in 1937 that provided for court-appointed experts. See David Sonenshein & Charles Fitzpatrick, *The Problem of Partisan Experts and the Potential for Reform Through Concurrent Evidence*, 32 REV. LITIG. 1, 26–27 (2013).

The court also has the power to appoint special masters pursuant to Federal Rule of Civil Procedure 53 to assist the court in matters requiring specialized expertise. While special masters can make valuable contributions to the litigation process (see, e.g., Eggen, *supra* note 51, at 260), the court's power to appoint them is limited because they may only be appointed to “perform duties consented to by the parties.” See FED. R. CIV. P. 53(a)(1)(A).

53. Eggen, *supra* note 51, at 260.

54. *Id.*

55. See FED. R. EVID. 706 advisory committee's note (Dec. 1, 2000), https://www.law.cornell.edu/rules/fre/rule_706; Sonenshein & Fitzpatrick, *supra* note 52, at 31.

litigation is to continue without causing significant delays.⁵⁶ In civil cases, the costs of a court-appointed expert must be borne by the parties, which can be difficult to justify to a client, particularly when they are also likely to be paying for their own party-appointed expert.⁵⁷ There are also arguments that the appointment of such an expert is inappropriate within the bounds of an adversarial (as distinct from inquisitorial) legal system.⁵⁸

The drafters of Rule 706 acknowledged that the court appointment of experts was infrequent but hoped that the ability of the court to make such an appointment would reduce the need for resorting to it, as “the ever-present possibility that the judge may appoint an expert in a given case must inevitably exert a sobering effect on the expert witness of a party and upon the person utilizing his services.”⁵⁹ However, given the continued expression of concerns about the bias of partisan experts,⁶⁰ this hope has arguably not come to pass. It is therefore necessary to consider other ways to manage the admission of expert evidence while still preventing the admission of “junk science.”

V. ALTERNATIVE APPROACHES — LESSONS FROM AUSTRALIA

Australia has a legal system that is similar to the legal system in the United States. Both have their roots in the English common law system (although Australia has arguably remained closer to its English heritage), and both are federal systems. Because of the similarities between the two systems, Australia is a helpful jurisdiction to look to for alternative approaches to the use of expert evidence in litigation.

A. *Expert Evidence in Australia*

Before looking closely at novel approaches to the admission of expert testimony in Australia, it is necessary to provide a brief overview of the regulation of such evidence. In doing so, it is necessary to note that this paper will consider the federal rules of evidence in Australia only.⁶¹

The use of evidence in Australian federal proceedings is governed by the *Evidence Act* 1995 (Cth).⁶² Like the United States, witnesses are gen-

56. Sonenshein & Fitzpatrick, *supra* note 52, at 32.

57. *Id.* at 33.

58. *Id.* at 30.

59. See FED. R. EVID. 706 advisory committee’s note (1975), https://www.law.cornell.edu/rules/fre/rule_706.

60. For a discussion of the causes of bias in expert witnesses, see Paul Michell & Renu Mandhane, *The Uncertain Duty of the Expert Witness*, 42 ALTA. L. REV. 635 (2005).

61. Like the United States, Australian States and Territories regulate the admission of evidence in the courts of that State or Territory.

62. This Act also has been adopted in New South Wales, Tasmania, Victoria, and the Australian Capital Territory, while the common law continues to apply in Queensland, South Australia, Western Australia, and the Northern Territory. See Gary Edmond, Simon

erally only permitted to testify to facts about which they have firsthand knowledge.⁶³ However, there is an exception to this rule where a person has specialized “knowledge based on the person’s training, study or experience” and that person’s evidence is based wholly or substantially on that knowledge.⁶⁴

Part 23 of the Federal Court Rules 2011 (Cth)⁶⁵ regulates the use of expert evidence in proceedings commenced in the Federal Court of Australia. The Rules provide for both the appointment of an expert by the court⁶⁶ and the use of expert witnesses by the parties.⁶⁷

The chief justice of the Federal Court of Australia also issues practice notes (on the advice of the other judges of the Court and in consultation with practitioners in the field and “pursuant to the Court’s inherent power to control its own processes”) with which parties in proceedings before the Court are required to adhere.⁶⁸ On October 25, 2016, Chief Justice James Allsop issued a new suite of practice notes that were designed to ensure a nationally consistent approach and to simplify practice.⁶⁹ This included a General Practice Note on the use of expert evidence.⁷⁰

B. Expert Witness Code of Conduct

The first major distinction between experts in Australian and U.S. litigation is that all experts in Australian litigation (whether appointed by the court or retained by a party) are required to comply with the Harmonised Expert Witness Code of Conduct.⁷¹ That Code requires, among other things, that the witness acknowledge that he or she is “not an advocate for a party and has a paramount duty, overriding any duty to the party to the pro-

Cole, Emma Cunliffe & Andrew Roberts, *Admissibility Compared: The Reception of Incriminating Expert Evidence (i.e., Forensic Science) in Four Adversarial Jurisdictions*, 3 U. DENV. CRIM. L. REV. 31, 78 (2013).

63. See *Evidence Act 1995* (Cth) s 76, commonly referred to as the “opinion rule,” which provides that “[e]vidence of an opinion is not admissible to prove the existence of a fact about the existence of which the opinion was expressed.”

64. See *Evidence Act* s 79(1).

65. These Rules are made by judges of the Federal Court of Australia pursuant to *Federal Court of Australia Act 1976* (Cth) s 59.

66. Federal Court Rules 2011 (Cth) (FCR) div 23.1.

67. FCR div 23.2.

68. See FED. COURT OF AUSTL., <http://www.fedcourt.gov.au/law-and-practice/practice-documents/new-practice-notes> (last visited Dec. 24, 2016).

69. *Id.*

70. Expert Evidence Practice Note (GPN-EXPT) (Oct. 25, 2016). Prior to the issuance of this practice note, Practice Note CM-7 (issued by Chief Justice Allsop on June 4, 2013) governed the use of expert evidence in Federal Court proceedings. Previous iterations of Practice Note CM-7 were in force before June 4, 2013.

71. See GPN-EXPT at Annexure A. A similar Code of Conduct was contained in Practice Note CM-7. In their report provided to the court, expert witnesses are required to provide a written acknowledgment that they have “read, understood and complied with the Practice Note.” See FCR div 23.13(1)(b).

ceedings or other person retaining the expert witness, to assist the Court impartially on matters relevant to the area of expertise of the witness.”⁷²

It may seem that such a declaration could be easily brushed aside, but there is evidence that confirms that the witnesses and the parties and lawyers who retain them take this obligation seriously.⁷³ However, even if taken seriously, the declaration does not resolve the problem of bias completely.

Legal representatives will “shop” for experts until they find one whose opinion supports their case (and there is no requirement to disclose that other experts were approached if their testimony is not relied upon).⁷⁴ Experts, once appointed, also may be persuaded by counsel through the course of their relationship.⁷⁵ There is also an element of becoming “one of the team,” where experts get caught up in the adversarial nature of the proceedings and want to help his or her “side” win, and lose sight of their duty to be impartial.⁷⁶

Although the requirement for party-appointed experts to be (or at least declare themselves to be) independent does not resolve the problem of bias completely, it is a step in the right direction. If coupled with other reforms discussed below, it certainly has the potential to alleviate issues with the admissibility of expert evidence, by relieving the court’s concern about the admissibility of overly biased evidence.

C. Expert Conferral and Joint Reports

The Federal Court Rules also give the court the power to require that the experts confer and produce a report identifying where the expert opinions agree or differ.⁷⁷ Expert conferrals (also referred to as “conclaves”) and joint reports are also addressed in the General Practice Note, which states:

The purpose of the conference of experts is for the experts to have a comprehensive discussion of issues relating to their field of expertise, with a view to identifying matters and issues in a proceeding about which the experts agree,

72. See GPN-EXPT at Annexure A, par. 2.

73. Justice Steven Rares, Judge, Federal Court of Australia, Judicial Conference of Australia Colloquium: Using the Hot Tub—How Concurrent Expert Evidence Aids Understanding Issues (Oct. 12, 2013) at [42]. In this context, it is also necessary to note that Australian legal representatives owe a paramount duty to the court (even before their client) and as such may not knowingly influence an expert witness’s testimony. See *Giannarelli v Wraith* (1988) 165 CLR 543 (legal practitioner’s primary ethical duty is to the court); Justice John Griffiths, Judge, Federal Court of Australia, College of Law Professional Skills Lecture: Some Ethical Issues for Legal Practitioners (Mar. 5, 2014).

74. Michell & Mandhane, *supra* note 60, at 646.

75. *Id.* at 647, where the authors eloquently describe the relationship between counsel and experts as akin to playing the saxophone, where the lawyers manipulate the keys and the expert produces the desired sounds.

76. *Id.*

77. FCR r 23.15(a) & (b).

partly agree or disagree and why. For this reason the conference is attended only by the experts and any Conference Facilitator. Unless the Court orders otherwise, the parties' lawyers will not attend the conference but will be provided with a copy of any conference report.⁷⁸

Where the parties will rely on expert evidence in a proceeding, they must inform the court whether or not expert conferral and the production of a joint report will assist with or simplify the evidence at the earliest opportunity.⁷⁹ The court also can order that the experts confer and produce a report at a variety of stages in the proceedings, including while a case is in mediation, before the experts have reached a final opinion on a relevant question or the facts involved in a particular case or after the experts' reports have been provided to the court, but before the hearing of that evidence.⁸⁰

Importantly, unless the court otherwise orders, the parties and their legal representatives are not permitted to be present at the expert conferral, and are specifically prohibited from encouraging an expert to agree with another expert or to otherwise seek to influence the outcome of the expert conference.⁸¹

There are several benefits, and few drawbacks, to this approach. Placing two opposing expert reports side-by-side often will result in the perception that the differences between the experts are vast, but on most occasions following an expert conference, the experts produce reports that identify only narrow points or principles on which their opinions differ, and can even reveal the critical point on which the case will succeed or fail.⁸² This is of clear benefit to the court, as it significantly limits the areas of dispute in relation to expert testimony, thereby reducing the time taken for the witnesses' evidence to be heard at trial, as it identifies for counsel areas of dispute between the experts and allows cross-examination to be more targeted.⁸³

There are some minor disadvantages to this process. There is some risk that the experts will not agree, and that the time taken to confer will not be useful. There is also some risk that one of the expert witnesses will "dominate" the conference, and will "bully" the other experts into agreeing with his or her opinion.⁸⁴ Similarly, where there is disparity between the qualifications of experts (either in credentials or experience), experts

78. GPN-EXPT at 7.4. A "Conference Facilitator" may be a registrar of the court or some other suitably qualified person.

79. *Id.* at 7.3.

80. *Id.* at 7.5.

81. *Id.* at 7.6.

82. Rares J, *supra* note at 73, at [23], [42].

83. *Id.* at [24].

84. Edie Greene & Natalie Gordon, *Can the "Hot Tub" Enhance Jurors' Understanding and Use of Expert Testimony?*, 16 WYO. L. REV. 359, 381 (2016).

with more qualifications may prevail, regardless of the soundness of their opinion.⁸⁵

Overall, the potential disadvantages do not outweigh the clear and significant advantages of requiring experts to confer and produce an expert report. The process assists the finder of fact (whether a judge or a jury) by narrowing the issues in dispute, and is also likely to benefit the parties by shortening (in some cases substantially) the time taken for a case to be heard.⁸⁶ As such, it is an approach to which courts in the United States should give careful consideration.

D. “Hot Tubbing”

Concurrent evidence, more “colloquially known as ‘hot tubbing,’” is a practice that has its roots in Australia.⁸⁷

The court has the power to make orders requiring that expert evidence be given concurrently pursuant to Rule 23.15(g), which states that the court may order “that each expert be sworn at the same time and that the cross-examination and re-examination be conducted by putting to each expert in turn each question relevant to one subject or issue at a time, until the cross-examination or re-examination is completed.”⁸⁸ The process of “hot-tubbing” experts has been more practically described by Justice Rares of the Federal Court of Australia as follows:

Generally, at the conclusion of both parties’ lay evidence or at a convenient time in the proceedings, the experts are called to give evidence together in their respective fields of expertise. It is important to set up the court room so that the experts (there can be many on occasion) can all sit together with convenient access to their materials for their ease of reference. . . . One microphone is then made available for all of the experts so that only one can speak at a time.

The judge explains to the experts the procedure that will be followed and that the nature of the process is different to their traditional perception or experience of giving expert evidence. First, each expert will be asked to identify and explain the principal issues, as they see them, in their own words. After that, each can comment on the other’s exposition. Each may ask then, or afterwards, questions of the other about what has been said or left

85. *Id.*

86. Lord Justice Jackson, Judge, Court of Appeal of England & Wales, Lecture at the London Conference of the Commercial Bar Association of Victoria: Concurrent Expert Evidence—A Gift from Australia (June 29, 2016).

87. “The practice began in the Competition Tribunal and was subsequently adopted in the Supreme Court of New South Wales.” *See id.* at sec. 2. For a more detailed discussion of the history of concurrent expert evidence in Australia, see Rares J, *supra* note at 73, at [6]–[21].

88. GPN-EXPT also has specific provisions relating to concurrent expert evidence. *See* GPN-EXPT s 8 & Annexure B.

unsaid. Next, counsel is invited to identify the topics upon which they will cross-examine. Each of the topics is then addressed in turn. Again, if need be, the experts comment on the issue and then counsel, in the order they choose, begin questioning the experts. If counsel's question receives an unfavourable answer, or one counsel does not fully understand it, he or she can turn to their expert and ask what that expert says about the other's answer.

...

The experts are free to ask each other questions or to supplement the other's answers after they are given. The only rule is that the expert who has the microphone has the floor.⁸⁹

Importantly, judges are also able to ask questions (and frequently ask a lot of them).⁹⁰ Experts also are asked (generally at the end of the hot tub) "if there is anything that they would like to add, qualify, or clarify."⁹¹

Hot tubs are currently used in a wide variety of proceedings in Australia—from accounting to determining the appropriate flooring for elephant enclosures in zoos. It is commonly used in trials involving toxic torts,⁹² and has been recognized as particularly useful when there are complex scientific issues in a case.⁹³

There are many benefits to the use of concurrent expert evidence. It significantly reduces the time taken for expert testimony to be adduced and the time taken for counsel to prepare for that process, thereby resulting in significant cost savings for the parties.⁹⁴ Having all the witnesses together discussing the same topic at the same time is advantageous, as it means that all of the witnesses are questioned on the same basis and opinions on the same issue are heard at the same time, making it easier for the finder of fact to understand the issues in dispute and make a finding on those issues.⁹⁵

The most significant benefit, for the purposes of this paper, is the ability of concurrent evidence to reduce the use of "junk science" in litigation.

89. Rares J, *supra* note at 73, at [25]–[26]. A detailed description of how the hearing of concurrent expert evidence should be conducted during a trial is set out in GPN-EXPT at Annexure B, particularly paras. 12 to 18. It should be noted that the witnesses are each sworn or affirmed and identified in the traditional way at the commencement of this process.

90. Gary Edmond, *Conventions in Science and Law: Merton and the Hot Tub: Scientific Conventions and Expert Evidence in Australian Civil Procedure*, 72 LAW & CONTEMP. PROB. 159, 164 (2009).

91. *Id.*

92. See, e.g., Australian Vioxx class action (Peterson & Ors v Merck, Sharpe & Dohme (Austl.) Pty Ltd & Anor (VID 451 of 2006)).

93. Jackson LJ, *supra* note 86, at 3.

94. Justice Peter Garling, Judge, Supreme Court of New South Wales, Address at the University of Oxford: Concurrent Expert Evidence—The New South Wales Experience (Dec. 1, 2015), at [75] & [81].

95. *Id.* at [78]; Rares J, *supra* note at 73, at [29]; Greene & Gordon, *supra* note 84, at 380.

Justice Garling of the Supreme Court of New South Wales has discussed this benefit of concurrent expert evidence in relation to *Daubert*:

The first [benefit of concurrent evidence] is the matter of the advantageous effect of the concurrent expert process in reducing, if not eliminating, the presence of the “pseudo-expert”. I use that term to describe an individual who is formally qualified to express the particular opinion but has no real expertise in the relevant field, and whose opinions can conveniently be called “junk science”. The Supreme Court of the United States dealt with this issue in *Daubert v. Merrell Dow Pharmaceuticals* (92-102), 509 U.S. 579 (1993). The effect of this decision has been effectively to prescribe a standard for a trial judge to deal with the acceptability . . . of expert evidence. This is not an easy process in practice, sometimes takes considerable time and can incur significant expense. That expense can be increased if an erroneous ruling is made, and a retrial follows a successful appeal. The process of concurrent evidence has in practice meant that extreme opinions, and opinions which would fail the *Daubert* standard, are rarely presented to the court. If they are admitted and form a part of the discourse, the other experts can be relied upon to expose their lack of scientific rigour and authenticity.⁹⁶

Put another way, the use of concurrent evidence, particularly in relation to statistical and scientific information, “enables fact-finders to observe a public peer review [of a particular opinion] by [the] other experts in the ‘tub.’”⁹⁷ In addition, having the experts grouped together and able to question one another can make it easier to form a view about the credibility of a particular witness.⁹⁸

There are also potential downsides to the use of hot-tubbing. First, and perhaps the most important, advocates for the parties lose a degree of control over the presentation of their case and the ability to control an expert during examination in chief or cross-examination.⁹⁹ Similar to expert conferrals and joint expert reports, there is also a risk that an expert who is more confident or better qualified is able to win over the judge, regardless of the objective soundness of his or her opinion.¹⁰⁰ Where opposing experts hold opposing views but are equally qualified and convincing, there is also a risk that pitting them against each other in a hot tub would protract, rather than shorten, the proceedings.¹⁰¹

Although these potential disadvantages are significant, they have not been substantially borne out in practice—experience shows that experts take the Code of Conduct seriously, and value their reputations and integ-

96. Garling J, *supra* note 94, at [79].

97. Greene & Gordon, *supra* note 84, at 381.

98. *Id.*

99. Garling J, *supra* note 94, at [76] & [77]; Rares J, *supra* note at 73, at [39].

100. Greene & Gordon, *supra* note 84, at 381.

101. Rares J, *supra* note at 73, at [39].

rity such that the process works efficiently and effectively.¹⁰² Indeed, in recognition of the success of this technique, England and Wales conducted a pilot of the system from 2010 to 2013, and in 2013 introduced provisions into their Civil Procedure Rules to allow for taking expert evidence concurrently.¹⁰³ While there are some opponents to the use of the technique in those jurisdictions, the majority of those are judges or practitioners who have never used the procedure, and those that have are generally supportive of using the technique more widely.¹⁰⁴

As noted by Justice Garling,¹⁰⁵ the use of concurrent evidence significantly reduces the likelihood of allowing “junk science” into the courtroom, thereby considerably alleviating (if not removing) the judge’s role as gatekeeper to such evidence in toxic torts. However, one must consider whether hot-tubbing is able to be used in cases where the finder of fact is a jury, and not a judge.

Having jurors as the ultimate finders of fact in toxic tort cases in the United States is a significant barrier to the use of concurrent expert evidence. One of the principal benefits of the hot-tub process is that the finder of fact is able to directly question the experts. Where a jury has the role of fact finder, the strict guidelines that govern the ability of juries to ask questions of witnesses—which vary among jurisdictions from prohibiting the jury from asking any questions to requiring a tedious process of questions being submitted by the jury and subject to objections from counsel—will, at best, inhibit what is meant to be a free-flowing process and at worst prevent it from functioning entirely.¹⁰⁶

Despite these significant challenges, it is possible to use the technique in the context of a jury trial, but it would be difficult. It would require judges and the parties to reach agreement about a variety of case management and procedural issues to allow the process to occur.¹⁰⁷ Experts also would need to be cognizant of their audience, and not speak “above” the jurors by using unnecessary jargon and discussing concepts that are understood only by professionals.¹⁰⁸ It also would require jurors to be instructed early in the proceedings about how the process will occur.¹⁰⁹

102. *Id.* at [42]. See also Greene & Gordon, *supra* note 84, at 382–83, for data on the effectiveness of the hot tub procedure.

103. The pilot and the introduction of Practice Note 35 to the Civil Procedure Rules are discussed in Jackson LJ, *supra* note 86.

104. Jackson LJ, *supra* note 86.

105. Garling J, *supra* note 94, at [20].

106. Greene & Gordon, *supra* note 84, at 336.

107. *Id.* at 383.

108. *Id.*

109. *Id.*

While there is some evidence of the use of concurrent evidence in proceedings in the United States,¹¹⁰ it may be that the process is simply not amenable to use in the context of a jury trial. However, this does not mean that it cannot be used at all in the life cycle of cases heard by a jury.

Although hot-tubbing was originally confined to civil proceedings with judges as the ultimate finder of fact, Australia has recently introduced the practice in criminal cases (which are generally heard by a jury) with the consent of the parties.¹¹¹ While not used in the hearing before a jury directly, they have successfully been used in voir dire examinations (hearings during a trial where the jury is removed and issues such as the admissibility of evidence are determined).¹¹² Therefore, by analogy, there is no reason why courts in the United States could not avail themselves of the benefit of hot-tubbing experts during the course of *Daubert* hearings to determine the admissibility of expert testimony.

VI. CONCLUSION

The role of the judge as gatekeeper to the admissibility of expert testimony is critical in toxic torts, where such evidence is crucial to proving causation. While the Supreme Court in the *Daubert* trilogy made some headway in providing guidance to the courts in fulfilling that responsibility, the disparity in the exercise of the role and wide-ranging concerns about whether it is effective in eliminating biased testimony and “junk science” from cases¹¹³ suggests that a new, or at least updated, approach is required.

Australia, with a legal system similar to that in the United States, is a helpful jurisdiction to which to look for guidance. Its requirements that experts declare their independence is a useful starting point, but it is Australia’s use of expert conferrals and joint reports (particularly before trials) and hot-tubbing experts during trials that may be the most beneficial if adopted in the United States. While there may be some difficulties in taking experts concurrently, in cases where a jury is the ultimate finder of fact, hot-tubbing would still be of significant benefit to the American legal system if used by judges during the course of *Daubert* hearings.

110. *Id.* at 378.

111. Rares J, *supra* note at 73, at [21].

112. Voir dire examinations are governed by *Evidence Act 1995* (Cth) s 189. Of relevance, voir dire is used to determine whether evidence should be admitted.

113. See generally Billauer, *supra* note 3.