UNC SCHOOL OF LAW

NORTH CAROLINA LAW REVIEW

Volume 72 | Number 4 Article 6

4-1-1994

The New Gatekeepers: Judging Scientific Evidence in a Post-Frye World

Amy T. Schutz

The New Gatekeepers: Judging Scientific Evidence in a Post-*Frye* World

In 1923, the Court of Appeals for the District of Columbia handed down its decision in *Frye v. United States*,[1] a two-page opinion that subsequently emerged as the determinative test for the admissibility of novel scientific evidence for decades to come.[2] In 1975, however, promulgation of the Federal Rules of Evidence ("the Rules") threw the *Frye* test into question, and courts and commentators subsequently struggled over the applicable standard. In *Daubert v. Merrell Dow Pharmaceuticals, Inc.*,[3] the United States Supreme Court settled the fierce debate by holding that the Rules superseded the restrictive *Frye* "general acceptance" standard. The Court's conclusion in *Daubert* appears to resolve any questions about the factors that courts should consider in determining the admissibility of scientific evidence. In striving to uphold the "'liberal thrust'"[4] of the Rules, however, the Court announced new standards that may place an excessive burden on trial court judges,[5] rendering the courts more vulnerable to the admission of "junk science"[6] into evidence. This Note explores the cases and commentary that created the climate from which *Daubert* emerged,[7] and it addresses criticism that the Court did not successfully introduce effective new standards for the admissibility of scientific evidence.[8]

---

1. 293 F. 1013 (D.C. Cir. 1923).

2. *Frye* introduced a strict "general acceptance" test for determining the admissibility of novel scientific evidence:

> Just when a scientific principle or discovery crosses the line between the experimental and demonstrable stages is difficult to define. Somewhere in this twilight zone the evidential force of the principle must be recognized, and while courts will go a long way in admitting expert testimony deduced from a well-recognized scientific principle or discovery, 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.

Id. at 1014.

3. 113 S. Ct. 2786, 2793 (1993).

4. *Id.* at 2794 (quoting Beech Aircraft Corp. v. Rainey, 488 U.S. 153, 169 (1988) (citing FED. R. EVID. 701, 702, 703, 704 & 705)).

5. *See, e.g.*, *Deferring to the Experts*, N.J. L.J., Sept. 6, 1993, at 16, 16 (submitting that *Daubert* "ascrib[es] too much scientific acumen to judges, whose last contact with a laboratory was probably as college freshmen").

6. For an entertaining and informative look at junk science in American jurisprudence, see generally PETER HUBER, GALILEO'S REVENGE: JUNK SCIENCE IN THE COURTROOM *passim* (1991); Michael Rustad & Thomas Koenig, *The Supreme Court and Junk Social Science: Selective Distortion in Amicus Briefs*, 72 N.C. L. REV. 91, 93-162 (1993).

7. *See infra* notes 74-153 and accompanying text.

8. *See infra* notes 182-98 and accompanying text.

Before *Daubert*, a number of courts and commentators questioned whether the *Frye* test survived the enactment of the Rules.[9] Many courts, convinced that the Rules superseded *Frye*, proceeded to interpret the Rules and offer guidelines by which trial judges should apply them.[10] Other courts, however, did not relinquish the *Frye* test so easily. Because the Rules did not explicitly refer to *Frye*, these courts inferred from the silence that the test had survived the Rules.[11] Some courts retaining the *Frye* test indicated that the Rules have no eroding effect on *Frye*,[12] while others acknowledged that the Rules co-exist with *Frye* and crafted guidelines that met both sets of criteria.[13]

---

9. *See, e.g.*, United States v. Jakobetz, 955 F.2d 786, 793-96 (2d Cir.), *cert. denied*, 113 S. Ct. 104 (1992); DeLuca v. Merrell Dow Pharmaceuticals, Inc., 911 F.2d 941, 955 (3d Cir. 1990); United States v. Downing, 753 F.2d 1224, 1233-41 (3d Cir. 1985); United States v. Ferri, 778 F.2d 985, 988-89 (3d Cir. 1985), *cert. denied*, 476 U.S. 1172 (1986); United States v. Williams, 583 F.2d 1194, 1197-98 (2d Cir. 1978), *cert. denied*, 439 U.S. 1117 (1979); State v. Bullard, 322 S.E.2d 370, 379-84 (N.C. 1984); Paul C. Giannelli, *The Admissibility of Novel Scientific Evidence:* Frye v. United States, *a Half-Century Later*, 80 COLUM. L. REV. 1197, 1250 (1980) ("The *Frye* test, which has cast its shadow over the admissibility of scientific evidence for more than a half-century, has proved unworkable."); Mark McCormick, *Scientific Evidence: Defining a New Approach to Admissibility*, 67 IOWA L. REV. 879, 886 (1982); *Proposals for a Model Rule on the Admissibility of Scientific Evidence*, 26 JURIMETRICS J. 235, 240, 245-46, 255-58 (1986). For a list of other cases questioning or abandoning the *Frye* test, see PAUL C. GIANNELLI & EDWARD J. IMWINKELRIED, SCIENTIFIC EVIDENCE § 1-5 nn.56-60 (1986 & Supp. 1991), and 3 JACK B. WEINSTEIN & MARGARET A. BERGER, WEINSTEIN'S EVIDENCE ¶ 702[03], at 702-36 to 702-37 & n.6 (1988 & Supp. 1993).

10. For instance, in *Downing*, 753 F.2d at 1237, the court interpreted the Federal Rules of Evidence to supply admissibility standards focusing on the relevance, reliability, and helpfulness of proffered evidence.

11. *See, e.g.*, Christophersen v. Allied-Signal Corp., 939 F.2d 1106, 1110 (5th Cir. 1991), *cert. denied*, 112 S. Ct. 1280 (1992) (applying the *Frye* test in conjunction with the Rules); United States v. Two Bulls, 918 F.2d 56, 60 (8th Cir. 1990) (holding that "Rule 702 and *Frye* both require the same general approach to the admissibility of new scientific evidence"); United States v. Gillespie, 852 F.2d 475, 480 (9th Cir. 1988) (concluding that "[e]vidence that does not qualify under *Frye* must be excluded"); United States v. Shorter, 809 F.2d 54, 60 (D.C. Cir.), *cert. denied*, 484 U.S. 817 (1987) (stating that "*Frye* is still the law in this Circuit"); United States v. Solomon, 753 F.2d 1522, 1526 (9th Cir. 1985) (citing the *Frye* test as the proper standard for admissibility of evidence based on a novel scientific technique); *see also* GIANNELLI & IMWINKELRIED, *supra* note 9, at 10-13 nn.42-55 (listing cases upholding the *Frye* test); 3 WEINSTEIN & BERGER, *supra* note 9, ¶ 702[03], at 702-39 n.12 (listing federal circuits that "still predicate the admission of scientific evidence on general acceptance in the community").

12. *See, e.g.*, *Gillespie*, 852 F.2d at 480 (omitting any reference to Rule 702); *Shorter*, 809 F.2d at 59-62 (citing Rules 702 and 403, but excluding them from its admissibility analysis); *Solomon*, 753 F.2d at 1525-26 (distinguishing between application of Rule 702 to determine the admissibility of expert testimony and the *Frye* test to determine the admissibility of evidence based on a novel scientific technique).

13. *See, e.g.*, *Christophersen*, 939 F.2d at 1110 (combining the Rules and the *Frye* test in "a framework for trial judges struggling with proffered expert testimony"); *Two Bulls*, 918 F.2d at 60 n.7 (noting that although "[m]any speculate that Rule 702 does supersede *Frye*[,]. . . . we view the two rules as generally compatible and not as mutually exclusive").

The Supreme Court in *Daubert* responded to the growing dissatisfaction with the strict *Frye* test as it seemed to conflict with the standards set by the Rules.[14] Considering both case law and widespread scholarly criticism of *Frye*, the *Daubert* Court settled the issue by explicitly rejecting the *Frye* test and suggesting new standards for the admissibility of scientific evidence.[15]

In *Daubert*, two children, Jason Daubert and Eric Schuller, with their parents, brought suit against Merrell Dow. They claimed that their mothers' ingestion of Bendectin during pregnancy caused their serious birth defects.[16] Merrell Dow moved for summary judgment after discovery, arguing that "Bendectin does not cause birth defects in humans and that petitioners would be unable to come forward with any admissible evidence that it does."[17] The district court agreed and granted summary judgment.[18] The court concluded that, while the epidemiological (human statistical) evidence presented by Merrell Dow's expert witness was admissible, the contradictory and non-epidemiological evidence submitted by the expert witnesses for Daubert and Schuller was inadmissible.[19] Noting that the bases of the evidence proposed by the plaintiffs were animal-cell and live-animal studies, pharmacological studies, and re-analysis of previously published epidemiological studies, the court concluded that the evidence failed to meet the standard of general acceptance in the specific scientific arena necessary for admissibility.[20]

Relying on the *Frye* test, the United States Court of Appeals for the Ninth Circuit affirmed the district court's grant of summary judgment for Merrell Dow, recalling other recent Bendectin litigation and emphasizing that reanalysis of earlier epidemiological studies "is generally accepted by the scientific community only when it is subjected to verification and scrutiny by others in the field."[21] The United States Supreme Court granted certiorari "in light of sharp divisions among the courts regarding the proper standard for the admission of expert testimony."[22]

---

14. See *supra* note 9 for a list of cases and commentators questioning the *Frye* test.

15. *See infra* text accompanying notes 156-75.

16. Bendectin was a prescription antinausea drug marketed by Merrell Dow to relieve morning sickness in pregnant women. *See Daubert*, 113 S. Ct. at 2791. The plaintiffs brought suit in California state court; the case was later removed on diversity grounds to the United States District Court for the Southern District of California.

17. *Id.*

18. *Id.*

19. Daubert v. Merrell Dow Pharmaceuticals, Inc., 727 F. Supp. 570, 571 (S.D. Cal. 1989), *aff'd*, 951 F.2d 1128 (9th Cir. 1991), *rev'd*, 113 S. Ct. 2786 (1993).

20. *See Daubert*, 113 S. Ct. at 2791-92.

21. *Id.* at 2792 (citing Merrell Dow Pharmaceuticals, Inc. v. Daubert, 951 F.2d 1128, 1131 (9th Cir. 1991), *rev'd*, 113 S. Ct. 2786 (1993)).

22. *Id.* at 2792.

The confusion about the status of *Frye* under the Rules stems from the absence of its consideration in the drafting history or advisory committee's notes to the applicable Rules.[23] As a result, some courts and commentators have interpreted the silence to indicate that the Rules coexist with—or are insignificant to—the *Frye* test.[24] Others have urged that the intent to supersede *Frye* is obvious and understood because of the clearly contrary nature of the applicable Rules.[25] To settle this dispute, Justice Blackmun, writing for the majority,[26] began with a procedural explanation of why "the *Frye* test was displaced by the Rules of Evidence," then proceeded to examine the Rules in a statutory context and to analyze the language and the intent of the legislature in enacting them.[27] Rule 402 provides that "[a]ll *relevant* evidence is admissible, except as otherwise provided by the Constitution of the United States, by Act of Congress, by these rules, or by other rules prescribed by the Supreme Court pursuant to statutory authority. Evidence which is not relevant is not admissible."[28] Indicating that Rule 402 and its relevance requirement "provides the baseline"[29] for interpreting the Rules, the Court noted that the Rules' standard of relevance is liberal because "'[r]elevant evidence' is defined as that which has 'any tendency to make the existence of any fact that is of consequence to the determination of the

23. *Id.* at 2794; *see also* United States v. Downing, 753 F.2d 1224, 1234 (3d Cir. 1985) ("Neither the text of the Federal Rules of Evidence nor the accompanying notes of the advisory committee . . . explicitly set forth the appropriate standard by which the admissibility of novel scientific evidence is to be established."); 2 STEPHEN A. SALTZBURG & MICHAEL M. MARTIN, FEDERAL RULES OF EVIDENCE MANUAL 15 (5th ed. 1990) (interpreting silence as retention of *Frye* and noting that "it was highly unlikely the Advisory Committee and the Congress intended to overrule the vast majority of cases excluding such evidence as lie detectors without explicitly stating so"); 3 WEINSTEIN & BERGER, *supra* note 9, ¶ 702[03], at 702-16 (interpreting silence as abandonment of *Frye* and arguing that "the silence of the rule [702] and its drafters may arguably be regarded as tantamount to an abandonment of the general acceptance standard"); Giannelli, *supra* note 9, at 1228-29 ("The adoption of the Federal Rules of Evidence has not resolved the uncertain status of the *Frye* test. . . . The issue is simply ignored in the Advisory Committee's Notes, congressional committee reports, floor debates, and hearings.").

24. *See* GIANNELLI & IMWINKELRIED, *supra* note 9, at 29 ("[P]roponents of *Frye* can argue that since *Frye* was the established rule prior to the adoption of the Federal Rules and since there is no indication in the legislative history suggesting that *Frye* has been superseded, the general acceptance test remains intact.").

25. *See* 3 WEINSTEIN & BERGER, *supra* note 9, ¶ 702[03], at 702-36 (submitting that "[t]he silence of [Rule 702] and its drafters may arguably be regarded as tantamount to an abandonment of the general acceptance standard" and arguing that "[e]limination of the *Frye* test is consistent with the underlying policies of Article VII [of the Rules]"). For cases on both sides of the debate, see GIANNELLI & IMWINKELRIED, *supra* note 9, at 10-14 nn.42-60.

26. Justices White, O'Connor, Scalia, Kennedy, Souter, and Thomas joined Justice Blackmun. *Daubert*, 113 S. Ct. at 2791. Chief Justice Rehnquist and Justice Stevens joined the opinion only as to the rejection of the *Frye* test and dissented from the rest of the opinion. *Id.* at 2799 (Rehnquist, C.J., concurring in part and dissenting in part).

27. *Id.* at 2794.

28. FED. R. EVID. 402 (emphasis added).

29. *Daubert*, 113 S. Ct. at 2793.

action more probable or less probable than it would be without the evidence.'"[30]

Having established the liberal backdrop of the Rules, the Court then compared specific provisions with the restrictive common law *Frye* test. Quoting *United States v. Abel*,[31] the Court determined that

> the Rules occupy the field . . . but . . . the common law nevertheless could serve as an aid to their application: "In principle, under the Federal Rules no common law of evidence remains. . . . In reality, of course, the body of common law knowledge continues to exist, though in the somewhat altered form of a source of guidance in the exercise of delegated powers."[32]

The specific provision at issue in *Daubert* was Rule 702,[33] and applying the *Abel* rationale, the Court held that

> [g]iven the Rules' permissive backdrop and their inclusion of a specific rule on expert testimony that does not mention "general acceptance," the assertion that the Rules somehow assimilated *Frye* is unconvincing. . . . That austere standard, absent from and incompatible with the Federal Rules of Evidence, should not be applied in federal trials.[34]

Thus, the Court explicitly established that the Federal Rules of Evidence superseded the *Frye* test and suggested that lower courts may apply the common-law standard as simply one factor among several to assist with admissibility decisions.[35]

The Court's solution to determining the admissibility of scientific evidence without *Frye* as a threshold test was to assign a "screening"[36] or "gatekeeping"[37] role to the trial judge. Contending that the Rules *do* place sufficient limits on admissibility of scientific evidence, the Court held that "under the Rules the trial judge must ensure that any and all scientific testimony or evidence admitted is not only relevant, but reliable."[38] The Court

---

30. *Id.* at 2794 (quoting FED. R. EVID. 401).

31. 469 U.S. 45 (1984).

32. *Daubert*, 113 S. Ct. at 2794 (quoting *Abel*, 469 U.S. at 51-52 (quoting Edward W. Cleary, *Preliminary Notes on the Rules of Evidence*, 57 NEB. L. REV. 908, 915 (1978) (footnote omitted))).

33. Rule 702 provides:

> If 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.

FED. R. EVID. 702.

34. *Daubert*, 113 S. Ct. at 2794.

35. *Id.*

36. *Id.* at 2798.

37. Justice Blackmun introduced the notion of "gatekeeping" in his opinion. *Id.*

38. *Id.* at 2795.

then carefully interpreted the Rules, suggesting helpful factors for trial judges to consider. The Court made this suggestive intent clear in its explicit statement of purpose: "We are confident that federal judges possess the capacity to undertake this review. Many factors will bear on the inquiry, and we do not presume to set out a definitive checklist or test."[39]

The Court analyzed the language of Rule 702[40] to denote two fundamental standards for the admissibility of expert scientific testimony: *reliability* of the evidence and *helpfulness* of the evidence to the jury.[41] First, the Court defined evidentiary reliability by interpreting "scientific knowledge"[42] to refer not to scientific certainty, but to knowledge that has a basis in the methods of science and is "supported by appropriate validation . . . based on what is known. In short, the requirement that an expert's testimony pertain to 'scientific knowledge' establishes a standard of evidentiary reliability."[43] Second, the Court defined the helpfulness of evidence by again relying on the plain language of Rule 702, which requires that the evidence must "assist the trier of fact to understand the evidence or to determine a fact in issue."[44] This "helpfulness" standard[45] gives guidance because it "requires a valid scientific connection to the pertinent inquiry as a precondition to admissibility."[46]

As described by the Court, the trial judge's role is to investigate the proffered expert testimony and rule on its admissibility by applying the *Daubert* Court's suggested guidelines for determining reliability and helpfulness. Emphasizing its confidence in trial judges to review scientific evidence properly under the Rules,[47] the Court offered judges five factors to consider in making admissibility decisions under the Rules' standards: (1) methodology, (2) peer review, (3) a new consideration of general accept-

---

39. *Id.* at 2796.

40. See *supra* note 33 for the text of Rule 702.

41. Before applying Rule 702, a court must first determine that the evidence is relevant under Rule 402. *See supra* text accompanying notes 28-30.

42. FED. R. EVID. 702.

43. *Daubert*, 113 S. Ct. at 2795; *see also id.* n.9 (distinguishing evidentiary reliability, based on a principle supporting what it purports to show (scientific validity), from scientific reliability, based on consistent results from application of a certain principle).

44. FED. R. EVID. 702.

45. 3 WEINSTEIN & BERGER, *supra* note 9, ¶ 702[02], at 702-18 ("Expert testimony which does not relate to any issue in the case is not relevant and, ergo, non-helpful."); *see also* United States v. Downing, 753 F.2d 1224, 1242 (3d Cir. 1985) (holding that "another aspect of relevancy . . . is whether the expert testimony proffered in the case is sufficiently tied to the facts of the case that it will aid the jury in resolving a factual dispute").

46. *Daubert*, 113 S. Ct. at 2796.

47. *Id.* ("We are confident that federal judges possess the capacity to undertake this review."); *see also infra* note 198 and accompanying text.

ance, (4) the rate of error of a particular technique, and (5) a Rule 403 balancing test.[48]

The first factor recognizes that testing is central to scientific methodology.[49] If a theory or technique has been or can be tested, a trial judge will better be able to determine "whether a theory or technique is scientific knowledge that will assist the trier of fact."[50] The second factor the *Daubert* Court offered was whether the scientific theory or technique has been the subject of peer review or publication.[51] These tests of review are indicators of evidentiary reliability that may assist a trial judge in determining admissibility under the Rules.[52] The Court emphasized that "publication (or lack thereof) in a peer-reviewed journal thus will be a relevant, though not dispositive, consideration in assessing the scientific validity of a particular technique or methodology on which an opinion is premised."[53]

Third, the Court introduced a new application of the general acceptance test, reevaluating the standard to fit within the liberal goals of the Rules.[54] Though the term "general acceptance" by the relevant scientific community has in the past referred to the strict dispositive requirement of the *Frye* rule, the Court instead reintroduced it as a persuasive factor in determining evidentiary admissibility.[55] As such, the Court noted its continuing significance as "an important factor in ruling particular evidence admissible."[56]

Fourth, the *Daubert* Court held that judges should consider the rate of error and experimental control standards of the specific technique in question when examining the relevant evidence.[57] Finally, the Court noted that after considering the proffered evidence in light of the other four standards

48. The *Daubert* Court noted that "[m]any factors will bear on the inquiry, and we do not presume to set out a definitive checklist or test." *Daubert*, 113 S. Ct. at 2796.

49. 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, 645 (1992) ("Scientific methodology today is based on generating hypotheses and testing them to see if they can be falsified . . . .").

50. *Daubert*, 113 S. Ct. at 2796.

51. *Id.* at 2797.

52. *See* Green, *supra* note 49, at 694-95 (expressing doubts about the effectiveness of peer review and publication requirements, but conceding that "[a]lthough less than ideal, they may be better than the alternative of ad hoc judicial review of every controversial study that forms the basis of an expert's opinion").

53. *Daubert*, 113 S. Ct. at 2797.

54. *Id.*

55. With regard to general acceptance, the *Daubert* Court applied the reasoning of United States v. Downing, 753 F.2d 1224, 1238 (3d Cir. 1985) ("Unlike the *Frye* standard, the reliability assessment does not require, although it does permit, explicit identification of a relevant scientific community and an express determination of a particular degree of acceptance within that community.").

56. *Daubert*, 113 S. Ct. at 2797.

57. *Id.*

set forth in *Daubert*, trial judges ultimately should be guided by Rule 403's balancing test.[58] The Court emphasized the importance of this catch-all rule, along with other specific applicable rules,[59] and its application with regard to the reliability and helpfulness standards of Rule 702.

Justice Blackmun addressed both parties' concerns about the gatekeeping role of the trial judge and the capacity of the jury to distinguish "good" evidence from "bad" evidence.[60] First, the Court discarded concerns that abandoning the *Frye* test "will result in a 'free-for-all' in which befuddled juries are confounded by absurd and irrational pseudoscientific assertions."[61] Instead, the Court emphasized a jury's capability to weigh evidence[62] and the thoroughness of the American adversary system[63] as effective safeguards against improper jury verdicts.[64]

Second, in response to the argument that assigning the role of gatekeeper to a trial judge will "sanction a stifling and repressive scientific orthodoxy and will be inimical to the search for truth,"[65] the Court emphasized the distinction between scientific and legal conclusions: Scientific conclusions are subject to constant updates and changes, and legal conclusions must "resolve disputes finally and quickly."[66] Making an allowance for the inevitability of the imprecise science of law and the possibilities that the gatekeeper, fulfilling his duties, may "on occasion . . . prevent the jury

---

58. *Id.* at 2798. Rule 403 provides: "Although relevant, evidence may be excluded if its probative value is substantially outweighed by the danger of unfair prejudice, confusion of the issues, or misleading the jury, or by considerations of undue delay, waste of time, or needless presentation of cumulative evidence." FED. R. EVID. 403.

59. The Court urged that Rules 703 and 706 be considered in concert with Rules 702 and 403. Rule 703 addresses the bases of opinion testimony by experts:

> The facts or data in the particular case upon which an expert bases an opinion or inference may be those perceived by or made known to the expert at or before the hearing. If of a type reasonably relied upon by experts in the particular field in forming opinions or inferences upon the subject, the facts or data need not be admissible in evidence.

FED. R. EVID. 703. "Rule 706 allows the court at its discretion to procure the assistance of an expert of its own choosing." *Daubert*, 113 S. Ct. at 2798; *see also supra* notes 33 (text of Rule 702), 58 (text of Rule 403).

60. *Daubert*, 113 S. Ct. at 2798.

61. *Id.*

62. *See* 3 WEINSTEIN & BERGER, *supra* note 9, ¶ 702[02], at 702-30 (emphasizing that "[t]he jury is intelligent enough, aided by counsel, to ignore what is unhelpful in its deliberations").

63. The Court pointed to several aspects of the adversary system of justice that protect the integrity of evidentiary standards: for example, cross-examination, presentation of contradictory evidence, proper instruction on the burden of proof, and the possibility of a directed verdict or summary judgment where appropriate. *Daubert*, 113 S. Ct. at 2798.

64. *Id.* In addition, exclusion of expert testimony within the comprehension of the jury is "incompatible with the standard of helpfulness expressed in Rule 702." 3 WEINSTEIN & BERGER, *supra* note 9, ¶ 702[02], at 702-15.

65. *Daubert*, 113 S. Ct. at 2798.

66. *Id.*

from learning of authentic insights and innovations,"[67] the Court acknowledged the inherent weaknesses in a democratic system of justice. However, the Court resolved that "the balance that is struck by Rules of Evidence [is] designed not for the exhaustive search for cosmic understanding but for the particularized resolution of legal disputes."[68]

Although concurring that the Rules superseded the *Frye* test and that the Rules delegate "gatekeeping" duties to trial judges, Chief Justice Rehnquist, joined by Justice Stevens, dissented as to the proposed factors judges should consider when confronted with difficult admissibility questions. He suggested that the guidelines should be developed by future case law rather than by the *Daubert* Court.[69] He criticized the Court for using dicta to decipher the language of Rule 702 when, he argued, such "general observations"[70] were not necessary to decide the admissibility of the particular testimony in question.[71] Chief Justice Rehnquist further urged that the Court's explanation of the language of Rule 702 was ambiguous and unconvincing and that the limited scope of the analysis would serve only to confuse judges attempting to decide the admissibility of different types of scientific expert testimony.[72] Rather than make the observations and suggest the standards that it did, Chief Justice Rehnquist suggested that "the Court would be far better advised . . . to decide only the questions presented, and to leave the further development of this important area of the law to future cases."[73]

The Court did not address the issue of whether the Federal Rules of Evidence superseded the *Frye* test until *Daubert*.[74] Since the Rules were

67. *Id.* at 2798-99.

68. *Id.* at 2799; *see also* Green, *supra* note 49, at 697 ("Courts must resolve disputes . . . based on their best estimate of the truth, regardless of how much uncertainty infects that assessment.").

69. Acknowledging the conclusion that Rule 702 does, in effect, establish the role of gatekeeper for federal judges, Chief Justice Rehnquist urged that judges should not be required to act as "amateur scientists in order to perform that role." *Daubert*, 113 S. Ct. at 2800 (Rehnquist, C.J., concurring in part and dissenting in part).

70. *Id.* at 2799 (Rehnquist, C.J., concurring in part and dissenting in part); *see also id.* at 2796 (submitting that "some general observations are appropriate" to assist judges in determining admissibility of scientific evidence).

71. The Rehnquist opinion argued there were two issues in *Daubert*: (1) whether the Rules superseded the *Frye* test, and if not, (2) whether the admissibility of scientific testimony under *Frye* required subjection to peer review. *Id.* at 2799 (Rehnquist, C.J., concurring in part and dissenting in part). His opinion agreed with the majority that the Rules superseded the *Frye* test, and, consequently, Chief Justice Rehnquist asserted that the finding that the *Frye* test was no longer good law rendered the second issue moot. *Id.* (Rehnquist, C.J., concurring in part and dissenting in part).

72. *Id.* at 2800 (Rehnquist, C.J., concurring in part and dissenting in part).

73. *Id.* (Rehnquist, C.J., concurring in part and dissenting in part).

74. *See* United States v. Mustafa, 22 M.J. 165 (C.M.A.) (holding that the Rules supersede the *Frye* test), *cert. denied*, 479 U.S. 953 (1986) (White, J., & Brennan, J., dissenting) (indicating the

enacted in 1975, courts had attempted to reconcile the two tests of admissibility. While some courts, convinced that the Rules neither expressly nor implicitly overruled the test, staunchly defended the *Frye* test and continued to impose it,[75] other courts either rejected the *Frye* test altogether or constructed standards that combined elements of both a general acceptance test and the Rules.[76] The *Daubert* decision aimed to provide a solution to the dilemma of necessarily inconsistent decisions that had resulted from the numerous and often ambiguous admissibility standards adopted in different courts.

Although not always consistent in their reasoning, a common thread ran through these anti-*Frye* decisions—the emphasis on relevance, reliability, and helpfulness as touchstones for admissibility. While some courts relied on the plain language of the Rules to support their reasoning,[77] others simply declared dissatisfaction with the *Frye* test and proposed alternative standards to replace the strict test without explicit statutory interpretation.[78] The unifying basis for all of the decisions rejecting *Frye*, however, was the common goal of liberalizing the standards for the admissibility of scientific evidence.

An early and frequently cited case rejecting a strict application of the *Frye* test is *United States v. Williams*.[79] In *Williams*, the court addressed whether spectrographic voice analysis that might identify the defendant as a heroin dealer was admissible evidence.[80] The *Williams* court observed that "[d]ifficulty in applying the 'Frye' test has led a number of courts to its

need to resolve the dilemma of whether Rule 702 superseded or incorporated *Frye*); *see also* Edward R. Becker & Aviva Orenstein, *The Federal Rules of Evidence After Sixteen Years—The Effect of "Plain Meaning" Jurisprudence, the Need for an Advisory Committee on the Rules of Evidence, and Suggestions for Selective Revision of the Rules*, 60 GEO. WASH. L. REV. 857, 885 (1992) (urging that "the status of *Frye* needs to be resolved").

75. For a list of cases upholding the *Frye* general acceptance standard, see GIANNELLI & IMWINKELRIED, *supra* note 9, at 11-13 nn.42-55, and 3 WEINSTEIN & BERGER, *supra* note 9, ¶ 702[03], at 702-39 n.12.

76. *See supra* notes 9-13 and accompanying text.

77. *See, e.g.*, DeLuca v. Merrell Dow Pharmaceuticals, Inc., 911 F.2d 941, 952-57 (3d Cir. 1990) (interpreting Rules 702 and 703 and indicating that the court should "scrutinize the admissibility of the plaintiff's expert testimony under the Federal Rules of Evidence"); United States v. Downing, 753 F.2d 1224, 1237 (3d Cir. 1985) (concluding that "[t]he language of [Rule] 702, the spirit of the Federal Rules of Evidence in general, and the experience with the *Frye* test suggest the appropriateness of a more flexible approach to the admissibility of novel scientific evidence").

78. *See, e.g.*, United States v. Jakobetz, 955 F.2d 786, 796-97 (2d Cir. 1992) (adopting the *Williams* approach for admitting scientific evidence, which "embodies the standards implicit in the Federal Rules of Evidence"), *cert. denied*, 113 S. Ct. 104 (1992); United States v. Williams, 583 F.2d 1194, 1198-99 (2d Cir. 1978) (employing the standards implicit in Rule 702 without specifically analyzing the Rule), *cert. denied*, 439 U.S. 1117 (1979).

79. 583 F.2d 1194 (2d Cir. 1978), *cert. denied*, 439 U.S. 1117 (1979).

80. *Id.* at 1196.

implicit modification."[81] Therefore, the court did not refer to the Rules as the culprits in the demise of the *Frye* test, but rather *Frye*'s inability to achieve consistent results.[82] Holding that the evidence was admissible, the court first distinguished the evidentiary issues in *Williams* from those addressed by the *Frye* test, noting that the issue in *Williams* dealt with "a particular type of scientific evidence, not with the truth or falsity of an alleged scientific 'fact' or 'truth.'"[83]

As an alternative, the court suggested that "the probativeness, materiality, and reliability of the evidence, on the one side, and any tendency to mislead, prejudice, or confuse the jury on the other, must be the focal points of inquiry."[84] Concentrating on two standards—reliability and tendency to mislead—the court introduced a five-part test to determine reliability. According to the *Williams* court, reliability is identified by exploring the particular scientific technique in question and (1) "the potential rate of error"; (2) "the existence and maintenance of standards"; (3) "the care and concern with which a scientific technique has been employed, and whether it appears to lend itself to abuse"; (4) an "analogous relationship with other scientific techniques and their results, routinely admitted into evidence"; and (5) "the presence of 'failsafe' characteristics."[85] The court did not attempt to analyze Rule 702 to define its proposed tests for reliability; instead, it referred in passing to the existence of Rule 702, but did not explicitly rely on the Rules.[86] The *Williams* court also addressed fears that evidence such as spectrographic voice analysis might mislead or confuse jurors because of its awesome or "mystic" technique.[87] The court quickly dismissed this argument, as did the *Daubert* Court, by expressing its faith in the adversary system.[88]

In another case that questioned the *Frye* test, *State v. Bullard*,[89] the North Carolina Supreme Court, applying the state's equivalent of Federal Rule 702,[90] considered whether the trial court erred in admitting expert tes-

81. *Id.* at 1198.

82. Rejecting the *Frye* test, the court reasoned that "[i]n testing for admissibility of a particular type of scientific evidence . . . the courts cannot in any event surrender to scientists the responsibility for determining the reliability of that evidence." *Id.*

83. *Id.*

84. *Id.* Although the court did not explicitly refer to the Rules, these factors are implicit in the requirements in Rules 702 and 403; *see supra* notes 33, 58.

85. *Williams*, 583 F.2d at 1198-99. In United States v. Jakobetz, 955 F.2d 786, 796-97 (2d Cir. 1992), *cert. denied*, 113 S. Ct. 104 (1992), the same court explicitly followed its earlier reasoning in *Williams* and adopted this five-part test, emphasizing the capability of a jury to understand and distinguish contradictory scientific evidence and to make valid determinations.

86. *Williams*, 583 F.2d at 1198-1200; *see also supra* note 84.

87. *Williams*, 583 F.2d at 1199.

88. *Id.* at 1199-1200; *see also supra* notes 62-64 and accompanying text.

89. 322 S.E.2d 370 (N.C. 1984).

90. The analogous North Carolina rule provides:

timony from a witness who used new techniques of footprint analysis.[91] Rejecting a strict application of the *Frye* test,[92] the *Bullard* court applied a flexible set of standards to determine the admissibility of novel scientific evidence.[93] The court first looked to North Carolina Rule 702's broad parameters that admit evidence if it "will assist the trier of fact to understand the evidence or to determine a fact in issue."[94] In addition, the court emphasized the trial judge's discretionary role in determining admissibility of scientific evidence.[95] The court then addressed the two standards by which it measured admissibility of expert testimony: the reliability of the scientific method employed and the relevance of the evidence to the fact in issue.[96]

The *Bullard* defendant, charged with murder, argued that because the testimony at issue[97] had never before been allowed in a North Carolina case, it could not be considered reliable or generally accepted.[98] The court responded that "the passage of time can serve . . . to demonstrate the reliability and acceptance of a once speculative and unproved premise. Thus, the novelty of a chosen technique does not justify rejecting its admissibility

---

> If 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.

N.C. R. EVID. 702.

91. The expert testimony in question was from Dr. Louise Robbins, a physical anthropologist who identified footprints without relying on ridge detail, by comparing their size and shape. *Bullard*, 322 S.E.2d at 373. Interestingly, Dr. Robbins's testimony was also at issue in United States v. Ferri, 778 F.2d 985, 989 (3d Cir. 1985), *cert. denied*, 476 U.S. 1172, *and cert. denied*, 479 U.S. 831 (1986), and that court also found her testimony admissible. However, "her claims have now been thoroughly debunked by the rest of the scientific community." Mark Hansen, *Believe It or Not*, A.B.A. J., June 1993, at 64. This curious irony may fuel arguments that the abandonment of *Frye* necessarily leads to erroneous admission of evidence. However, proponents of more flexible admissibility standards "point out that much of what is universally accepted as science today was once considered to be outside of the scientific mainstream . . . [and] judges and juries are fully capable of making the distinction between a legitimate scientific claim and an unfounded one." *Id.* at 67.

92. *Bullard*, 322 S.E.2d at 380 ("[O]ur Court does not adhere exclusively to the *Frye* formula.").

93. *Id.* at 379-85; *see also infra* text accompanying note 96.

94. *Bullard*, 322 S.E.2d at 384 (citing N.C. R. EVID. 702). Basing the heart of its opinion on the reliability standard, the court only perfunctorily referred to relevance as a test of admissibility. Addressing the issue of relevancy, the court applied an earlier opinion and held that "[r]elevant evidence is admissible if it 'has any logical tendency however slight to prove the fact at issue in the case.'" *Id.* at 384 (quoting State v. Pratt, 295 S.E.2d 462, 466 (N.C. 1982)).

95. The court noted that "the trial judge is afforded wide latitude of discretion when making a determination about the admissibility of expert testimony." *Id.* at 376.

96. *Id.* at 379-85.

97. *See supra* note 91.

98. *Bullard*, 322 S.E.2d at 379. Such insistence on a "general acceptance" test implies that the defendant wanted the court to impose the *Frye* standard.

into evidence."[99] After noting several other instances in which the North Carolina Supreme Court had accepted evidence as reliable on bases other than established recognition in the field, the *Bullard* court concluded that the expert's new scientific method was reliable based on "her explanatory testimony, professional background, independent research, and use of established procedures."[100]

The United States Court of Appeals for the Third Circuit considered in *United States v. Downing*[101] whether Rule 702 permits the admission of expert testimony by a specialist in human perception and memory regarding the reliability of eyewitness identifications.[102] The *Downing* court provided an exhaustive criticism of the *Frye* test, cataloguing opinions of both courts and commentators. It then held that "a particular degree of acceptance of a scientific technique within the scientific community is neither a necessary nor a sufficient condition for admissibility; it is, however, one factor that a district court normally should consider in deciding whether to admit evidence based upon the technique."[103] Expressly rejecting the *Frye* test,[104] the court held that the Rules require a more flexible approach to the admissibility of scientific evidence.[105] It proposed standards focusing on (1) the reliability of technique used to obtain evidence,[106] (2) the chance that a jury might be misled, and (3) the relevance or connection between the evidence and factual issues of the case.[107]

In applying these standards, courts may "consider the 'novelty' of the new technique, that is, its relationship to more established modes of scientific analysis."[108] Other factors relevant to reliability include the existence of specialized literature regarding the scientific technique in question, the qualifications and professional stature of the expert witness, the rate of error

99. *Id.* at 380.

100. *Id.* at 383.

101. 753 F.2d 1224 (3d Cir. 1985).

102. *Id.* at 1226.

103. *Id.* at 1237.

104. *Id.* ("[W]e conclude that 'general acceptance in the particular field to which [a scientific technique] belongs' should be rejected as an independent controlling standard of admissibility.") (alteration in original) (citation omitted) (quoting Frye v. United States, 293 F. 1013, 1014 (D.C. Cir. 1923)).

105. *See* 3 DAVID W. LOUISELL & CHRISTOPHER B. MUELLER, FEDERAL EVIDENCE § 382, at 472 (1979 & Supp. 1993) (calling *Downing* a "groundbreaking decision . . . which modifies and expands the old *Frye* standard in favor of a more flexible approach designed to accommodate new scientific advances").

106. Acknowledging the common trend towards application of Rule 702, the court stated that "we join a growing number of courts that have focused on reliability as a critical element of admissibility." *Downing*, 753 F.2d at 1238.

107. *Id.* at 1237. The court noted that its proposed standards are generally the same as those suggested in 3 WEINSTEIN & BERGER, *supra* note 9, ¶ 702[02], at 702-18 to 702-20. *Downing*, 753 F.2d at 1237 n.15.

108. *Downing*, 753 F.2d at 1238.

of a particular technique, and the successful presentation of such expert testimony in other cases.[109]

The *Downing* court emphasized the necessity of establishing whether the evidence might confuse or mislead a jury.[110] Under *Downing*, courts are required to balance the possibility of such confusion with the reliability of a particular scientific technique. Because courts must balance "important policy elements" in determining whether evidence may mislead a jury, the *Downing* court proposed that reviewing courts should invoke an abuse of discretion standard, and that district courts should therefore make admissibility determinations with such review standards in mind.[111]

To assist trial courts in balancing reliability with the risk of misleading a jury, the *Downing* court emphasized application of the "helpfulness" standard required by Rule 702.[112] When considering relevance, the court noted, it is important to determine that the proffered evidence is "sufficiently tied to the facts of the case that it will aid the jury in resolving a factual dispute."[113] The *Downing* court proposed a final balancing test by urging judges to follow Rule 403 to reject evidence otherwise admissible under the reliability and relevance standards. Thus, even if the evidence is sufficiently reliable and helpful under Rule 702, "the district court may decide nonetheless to invoke Rule 403 to exclude the evidence if the court finds its probative value to be substantially outweighed by other dangers, e.g., confusion of the issue or waste of time."[114]

Although many courts displayed dissatisfaction with the *Frye* test and consequently abandoned or altered it by offering new standards of admissibility,[115] others steadfastly held to the strict general acceptance requirement

109. *Id.* at 1238-39. The court identified State v. Bullard, 322 S.E.2d 370 (1984), as an example of a case that "cit[ed] use of established procedures and independent research in admitting, under a reliability standard, footprint comparisons." *Downing*, 753 F.2d at 1239; *see also supra* notes 88-89 and accompanying text.

110. *Downing*, 753 F.2d at 1239.

111. *Id.* at 1240.

112. *Id.* at 1241. The court again referred to the commentary of Jack B. Weinstein and Margaret A. Berger, adopting their opinion that "the relevancy approach favors admissibility whenever the general conditions for admissibility of evidence have been met." *Id.* (citing 3 WEINSTEIN & BERGER, *supra* note 9, ¶ 702[02], at 702-21). The court prescribed the relevancy standard with caution, however, to courts trying criminal cases. To avoid an erroneous verdict, special care should be taken in this context to ensure that "any weaknesses in the proffered evidence will be fully explored before or during the trial." *Id.*

113. *Id.* at 1242.

114. *Id.* at 1242-43 (citing FED. R. EVID. 403).

115. *See supra* note 9.

of *Frye*.[116] In *United States v. Solomon*,[117] the United States Court of Appeals for the Ninth Circuit addressed the admissibility of evidence based on narcoanalysis, a novel scientific technique involving the use of drugs that, when administered intravenously, purportedly can induce truthful statements from a witness.[118] The defendant wanted to introduce expert testimony regarding the effects of narcoanalysis and his statements made while under the influence of the drugs.[119] He sought to use the statements to "rehabilitate [his] credibility after the government impeached it with an earlier confession."[120]

The district court held that although the doctor who administered narcoanalysis could testify about the defendant's statements to him, he could not present evidence that the statements were made under narcoanalysis, nor could he testify about the purported truth-finding qualities of narcoanalysis.[121] Utilizing the *Frye* test, the appellate court affirmed. Because the scientific community did not "generally accept" the technique as producing reliable results, the court held that the exclusion of evidence based on results of narcoanalysis was not an abuse of discretion.[122]

The court reasoned that the *Frye* test precluded admission because, although the expert witness who administered the test claimed that narcoanalysis had become an accepted technique, he also admitted that it "does not reliably induce truthful statements."[123] Since all of the other available evidence pointed toward the defendant's guilt, the *Solomon* court concluded that the trial court did not abuse its discretion in excluding the evidence because "[t]he prejudicial effect of an aura of scientific respectability outweighed the slight probative value of the evidence."[124]

---

116. *See supra* note 11.

117. 753 F.2d 1522 (9th Cir. 1985). Ironically, the United States Court of Appeals for the Third Circuit had emphatically rejected the *Frye* test just one month earlier in *Downing*, 753 F.2d at 1232.

118. *Solomon*, 753 F.2d at 1525.

119. *Id.*

120. *Id.*

121. *Id.* at 1525-26.

122. Although the court did not emphasize the Rules in making its decision with regard to the admissibility of novel scientific evidence, it did refer to Rule 702 when describing the trial court's role in admissibility questions. The court noted that the "necessary balancing of the probative value of the evidence against its prejudicial effect is committed to the discretion of the trial court." *Id.* at 1525 (citing FED. R. EVID. 702).

123. *Id.* at 1526.

124. *Id.*; *see also* United States v. Gillespie, 852 F.2d 475, 480 (9th Cir. 1988). In *Gillespie*, the court examined the reliability and general acceptance of determinations of child abuse grounded in analysis of a child's behavior with anatomically correct dolls. The court concluded that such evidence was not admissible under the *Frye* test because of the " 'prejudicial effect of an aura of scientific respectability.' " *Id.* (quoting *Solomon*, 753 F.2d at 1526).

In *United States v. Shorter*,[125] the United States Court of Appeals for the District of Columbia applied the Rules and the *Frye* test in tandem, emphasizing the restrictive *Frye* test. Charged with tax evasion, the defendant argued that he suffered from a pathological gambling disorder, which caused him to lead "a cash lifestyle."[126] His failure to pay taxes was "therefore not an affirmative act of tax evasion or indicative of a knowing and voluntary violation of the tax laws."[127] The district court refused to admit expert testimony regarding the effect of the defendant's gambling habits, reasoning that a lay witness would be no less convincing to a jury.[128] The court of appeals agreed, holding that "[w]hen the specialized knowledge of an expert is unnecessary to a jury's assessment of the salient factual issues, expert testimony will normally be excluded."[129]

Identifying the relevancy requirement of Rule 702[130] and the balancing test of Rule 403[131] as foundations for admissibility, the *Shorter* court considered the issue under a three-pronged *Frye* test: (1) whether a particular disorder is recognized by the relevant group of experts, (2) whether those experts generally accept a causal link between the disorder and the offense charged, and (3) whether there were facts sufficient to create a jury question as to whether the defendant suffered from a particular disorder.[132] Thus, the *Frye* requirement of general acceptance was applied not only to determine acceptance of a particular medical disorder by the scientific community, but also to determine acceptance of that disorder's causal link with the offense at issue.[133] Because general acceptance was established with regard to the disorder itself, but not to the causal link between the disorder and the alleged tax evasion, the court, strictly adhering to the requirements of the *Frye* test, refused to admit the expert testimony.[134]

Just as the *Shorter* court inferred that the Rules and *Frye* coexist—with *Frye* as the definitive factor—the United States Court of Appeals for the Fifth Circuit, in *Christophersen v. Allied-Signal Corp.*,[135] applied the

125. 809 F.2d 54 (D.C. Cir.), *cert. denied*, 484 U.S. 817 (1987).

126. *Id.* at 59.

127. *Id.*

128. United States v. Shorter, 618 F. Supp. 255, 261 n.14 (D.D.C. 1985), *aff'd*, 809 F.2d 54 (D.C. Cir. 1987), *cert. denied*, 484 U.S. 817 (1987).

129. *Shorter*, 809 F.2d at 59.

130. *Id.* ("Expert testimony is admissible when relevant under Fed. R. Evid. 702. The issue of relevance is the preliminary question of law to be decided by the court.").

131. Citing Rule 403, the court recognized that "[e]ven though relevant, evidence may be excluded by the trial court." *Id.* For full text of Rule 403, see *supra* note 58.

132. *Shorter*, 809 F.2d at 60.

133. *Id.*

134. *Id.* at 61.

135. 939 F.2d 1106 (5th Cir. 1991), *cert. denied*, 112 S. Ct. 1280 (1992); *see also* United States v. Two Bulls, 918 F.2d 56 (8th Cir. 1990) (recognizing the applicability of the Rules but interpreting Rule 702 to *require* general acceptance, just as the *Frye* test does).

Rules as a foundation for admissibility and used *Frye* as a limiting standard. Some commentators view *Christophersen* as "tightening up" the standards recently loosened by courts rejecting the *Frye* test: "The loudest and clearest signal comes from . . . *Christophersen* [relying] on the *Frye* standard, which it incorporates in its new formulation of a four-part standard for expert testimony."[136] *Christophersen* was a wrongful death suit in which the decedent died of a rare cancer, allegedly caused by exposure at the workplace to chemicals used to produce batteries.[137] The testimony in question was from a doctor who concluded from extrinsic evidence that the decedent's exposure caused the cancer that led to his death.[138]

The *Christophersen* court went to great lengths to decipher the applicable Rules, concluding that Rules 702 and 703 and the *Frye* test should be applied together as a threshold, and Rule 403, assuring a balance, should be the final screen to determine admissibility of expert scientific testimony.[139] Introducing a four-part test, the court explicitly acknowledged the necessity of incorporating the Rules into any determination of admissibility.[140] The court detailed the test, noting that the elements should be used as "guideposts"[141] and should not be applied "mechanically."[142] The four inquiries follow:

> (1) Whether the witness is qualified to express an expert opinion, [Rule] 702;
>
> (2) whether the facts upon which the expert relies are the same type as are relied upon by other experts in the field, [Rule] 703;
>
> (3) whether in reaching his conclusion the expert used a well-founded methodology, *Frye*; and
>
> (4) assuming the expert's testimony has passed Rules 702 and 703, and the *Frye* test, whether under [Rule] 403 the testimony's potential for unfair prejudice substantially outweighs its probative value.[143]

The emphasis of the first inquiry, "whether the expert is *generally qualified* to render an opinion on the question in issue,"[144] differed from other opin-

136. 3 LOUISELL & MUELLER, *supra* note 105, § 382, at 474.

137. *Christophersen*, 939 F.2d at 1108.

138. *Id.* at 1108-09.

139. *Id.* at 1110 ("The Federal Rules of Evidence, combined with *Frye* . . . provide a framework for trial judges struggling with proffered expert testimony.").

140. *Id.*

141. *Id.*

142. *Id.*

143. *Id.*

144. *Id.* (emphasis added).

ions that had concentrated on Rule 702's reliability, relevance and helpfulness standards with regard to the proffered evidence.[145]

In addition, the court proposed a traditional use of the *Frye* test as another threshold requirement, considering "whether the methodology or reasoning that the expert uses to connect the facts to his conclusion is *generally accepted* within the relevant scientific community."[146] Because the court found that under its interpretation of Rule 703[147] and application of the *Frye* test, the proffered testimony was not admissible and thus the threshold was not met, it did not address the final prong, the effect of Rule 403.[148]

The concurring and dissenting opinions in *Christophersen* strongly criticized the majority's interpretation of the Rules and its heavy reliance on the *Frye* test.[149] Chief Judge Clark, concurring in the result, rejected the *Frye* test, claiming that "if *Frye* is a rule of evidence, it has not survived the enactment of the Federal Rules of Evidence. . . . Rule 403 is the better test."[150] In addition, he urged a "plain language"[151] reading of the Rules and finally concluded that Rule 403, not Rule 702 or 703, should properly exclude the expert testimony in *Christophersen*.[152] The two dissenting opinions also agreed that the majority took unnecessary liberties in inter-

145. *See, e.g.*, United States v. Jakobetz, 955 F.2d 786, 796 (2d Cir.), *cert. denied*, 113 S. Ct. 104 (1992) (emphasizing that Rule 702's test "boils down to whether the testimony will assist the trier of fact"); DeLuca v. Merrell Dow Pharmaceuticals, Inc., 911 F.2d 941, 954-55 (3d Cir. 1990) (applying *Downing*'s three-part analysis, which emphasized the helpfulness standard of Rule 702); United States v. Shorter, 809 F.2d 54, 59 (D.C. Cir.) (indicating that under Rule 702, "[t]he issue of relevance is the preliminary question of law"), *cert denied*, 484 U.S. 817 (1987); United States v. Ferri, 778 F.2d 985, 988 (3d Cir. 1985) (adopting the *Downing* approach), *cert. denied*, 476 U.S. 1172 (1986); United States v. Downing, 753 F.2d 1224, 1237 (3d Cir. 1985) (delineating Rule 702's requirements of reliability, relevance, and helpfulness); United States v. Solomon, 753 F.2d 1522, 1525 (9th Cir. 1985) (applying the helpfulness standard of Rule 702); State v. Bullard, 322 S.E.2d 370, 376 (N.C. 1984) (interpreting the state rule analogous to Federal Rule 702 to supply a helpfulness standard).

146. *Christophersen*, 939 F.2d at 1115 (emphasis added).

147. The court held that under Rule 703, the district court "validly called into question the facts and data relied upon by Dr. Miller in forming his opinion," because he relied on an inaccurate affidavit. *Id.* at 1113.

148. *Id.* at 1116.

149. *See id.* at 1120 (Clark, C.J., concurring); *id.* at 1122 (Reavley, J., dissenting); *id.* at 1136-37 (King, J., dissenting).

150. *Id.* at 1120 (Clark, C.J., concurring).

151. *Id.* at 1117-18 (Clark, C.J., concurring). Chief Judge Clark maintained that the majority failed to look to the Rules' plain language, and "[t]he result is a confusing and internally inconsistent revision which gives almost no guidance to the district courts except to restrict the admissibility of expert opinion testimony in ways never intended by the Federal Rules of Evidence." *Id.* at 1117 (Clark, C.J., concurring).

152. *Id.* at 1120 (Clark, C.J., concurring).

preting and applying the Rules by disregarding the plain language and thus the intent of Congress in enacting the Rules.[153]

Although the reasoning and standards announced by lower courts have varied, a long line of cases has indicated a trend towards the ultimate erosion of the *Frye* test or at least an acknowledgment that the Rules are significant factors in determining the admissibility of scientific evidence.[154] Before *Daubert*, courts had long been working to invent "correct" interpretations of the Rules, and although the underlying theories were often similar,[155] a consistent and unanimous reading had never emerged. Thus, the *Daubert* Court, in making the decision finally to discard *Frye*, replaced the test by offering guidance that it hoped would be flexible, yet effective.

The *Daubert* Court investigated both cases and commentary to formulate its opinion. For instance, the Court acknowledged its reliance with regard to the reliability standards on *United States v. Downing*,[156] as well as the commentary of Weinstein and Berger[157] and of McCormick,[158] to conclude that "[t]he inquiry envisioned by Rule 702 is, we emphasize, a flexible one. Its overarching subject is the scientific validity—and thus the evidentiary relevance and reliability—of the principles that underlie a proposed submission."[159]

Although their emphases vary, the lower courts and commentators have unanimously read Rule 702 to require relevance, reliability, and helpfulness.[160] The *Daubert* Court's decision incorporates many of the lower courts' proposed factors for determining these elements. More specifically, the Court-endorsed factors of methodology, peer review, a new consideration of general acceptance, the rate of error of a particular technique, and a Rule 403 balancing test[161] reflect lower court decisions and scholarly commentary.[162]

---

153. Judge Reavley's dissent contended that the majority " '[t]akes hold' of expert testimony by taking over. . . . [The court] confuses the admissibility of evidence with the sufficiency of evidence, [and] changes the rules of evidence without benefit of amendment." *Id.* at 1122 (Reavley, J., dissenting). Judge King asserted in his dissent that "the majority judicially amends the Federal Rules of Evidence in order to deprive the plaintiff of his or her day in court. . . . If the [Rules] are inadequate in this [toxic tort] context, however, then Congress, who enacted them, is the proper branch to amend or repeal them." *Id.* at 1137 (King, J., dissenting).

154. *See supra* text accompanying notes 77-153.

155. The relevance, reliability and helpfulness requirements of Rule 702 have been recognized by many courts. *See supra* note 145 and accompanying text.

156. 753 F.2d 1224, 1238-39 (3d Cir. 1985).

157. 3 WEINSTEIN & BERGER, *supra* note 9, ¶ 702[03], at 702-41 to 702-42.

158. McCormick, *supra* note 9, at 911-12.

159. *Daubert*, 113 S. Ct. at 2797.

160. *See supra* note 145.

161. *Daubert*, 113 S. Ct. at 2796-98; *see also supra* text accompanying notes 47-59.

162. *See, e.g.*, United States v. Williams, 583 F.2d 1194, 1198-1200 (2d Cir. 1978) (offering guidelines based on reliability and tendency to mislead), *cert. denied*, 439 U.S. 1117 (1979);

The influence of *United States v. Williams*[163] is apparent. The *Williams* court refused to apply *Frye*, and although it did not explicitly analyze the Rules, their impact was implicit in the court's reasoning.[164] The *Williams* court identified reliability by examining the rate of error of a particular scientific technique—a factor that the *Daubert* Court adopted as one of its admissibility considerations under Rule 702.[165] The *Williams* court also emphasized that the methodology behind scientific evidence may be indicative of its reliability and thus admissibility.[166] Clearly, the *Daubert* Court incorporated an adaptation of the *Williams* methodology standards in its opinion.

The *Daubert* Court also drew its guiding factors from *United States v. Downing*,[167] which focused on a flexible approach to reliability.[168] To maintain this flexibility in its standards, the *Daubert* Court adopted the permissive consideration of peer review and publication from *Downing*[169] and held that such recognition by peers is significant, but not mandatory, in discovering evidentiary reliability.[170] This view is consistent with an amicus brief submitted to the *Daubert* Court arguing that "the appearance of a study in a peer-reviewed journal does not necessarily mean that the study is generally accepted or even sound. . . . [but] [w]hether a particular scientist's research has been published in a peer-reviewed journal may be relevant . . . ."[171]

The Court also adopted its general acceptance consideration for determining reliability directly from *Downing*. Although the term "general acceptance" has historically been identified with *Frye*[172] as a mandatory and dispositive test, the *Daubert* Court reintroduced it simply as *one* persuasive factor to discern the admissibility of scientific evidence. The Court asserted that "[a] 'reliability assessment does not require, although it does permit, explicit identification of a relevant scientific community and an express determination of a particular degree of acceptance within that commu-

---

United States v. Downing, 753 F.2d 1224, 1237-43 (3d Cir. 1985) (analyzing the reliability, relevance and helpfulness standards of Rule 702 and the balancing test of Rule 403).

163. 583 F.2d 1194 (2d Cir. 1978), *cert. denied*, 439 U.S. 1117 (1979).

164. *See supra* note 84 and text accompanying note 86.

165. *Daubert*, 113 S. Ct. at 2797.

166. *See supra* text accompanying note 85.

167. 753 F.2d 1224 (3d Cir. 1985).

168. *See supra* text accompanying notes 101-14.

169. The *Downing* court emphasized that in considering a novel scientific technique, the "existence of a specialized literature dealing with the technique is another factor [bearing on reliability]." *Downing*, 753 F.2d at 1238.

170. *See supra* text accompanying notes 51-53

171. Brief Amici Curiae of Physicians, Scientists, and Historians of Science in Support of Petitioners at 17, *Daubert* (No. 92-102).

172. *See supra* note 2.

nity.'"[173] Finally, the Rule 403 balancing test, as applied in *Daubert*, has been consistently acknowledged as a necessary, final catch-all standard for trial judges not only in cases such as *Downing* that reject *Frye*,[174] but also in cases that uphold the *Frye* test.[175]

The *Daubert* Court, although holding that the Rules superseded *Frye*, did not necessarily end the debate over the admissibility of scientific evidence. Just as the Chief Justice criticized *Daubert* in his dissent, commentators, too, responded negatively to the decision.[176] Although Chief Justice Rehnquist agreed with the majority that the Court's objective in granting certiorari was to resolve the *Frye* debate, he criticized the Court for offering new standards and insisted that the case did not lend itself to a sweeping reassessment of the effect and purpose of the Rules.[177] He contended that the Court's detailed analysis of the applicable Rules was unnecessary and confusing primarily because of the "unusual subject matter"[178] involved. Instead, he argued, the Court should have simply answered the specific evidentiary issue at hand.[179]

However, because lower courts discarding *Frye* had long been struggling to interpret admissibility under the Rules, different standards had developed, increasing the likelihood of inconsistent results involving the same types of evidence. Therefore, in remanding the case and holding that the Rules did indeed supersede *Frye*, the Court offered suggestions for how to apply the Rules, not only to assist the trial court on remand, but also to

---

173. *Daubert*, 113 S. Ct. at 2797 (quoting *Downing*, 753 F.2d at 1238); *see also* 3 WEINSTEIN & BERGER, *supra* note 9, ¶ 702[03], at 702-41 (observing that "[w]hether or not the scientific principles involved have been generally accepted by experts in the field may still have a bearing on reliability and consequent probative value of the evidence").

174. *See supra* text accompanying note 114.

175. *See, e.g.*, Christophersen v. Allied-Signal Corp., 939 F.2d 1106, 1110 (5th Cir. 1991), *cert. denied*, 112 S. Ct. 1280 (1992) (*see also supra* text accompanying note 143); United States v. Shorter, 809 F.2d 54, 60 (D.C. Cir.), *cert. denied*, 484 U.S. 817 (1987) (*see also supra* note 131).

176. *See infra* notes 182-84, 190 and accompanying text.

177. *Daubert*, 113 S. Ct. at 2799-2800 (Rehnquist, C.J., concurring in part and dissenting in part).

178. *Id.* at 2799 (Rehnquist, C.J., concurring in part and dissenting in part) (referring to the difficulty in defining terms such as scientific knowledge, scientific method, scientific validity, and peer review). Chief Justice Rehnquist added that such difficulties "should cause us to proceed with great caution in deciding more than we have to, because our reach can so easily exceed our grasp." *Id.* (Rehnquist, C.J., concurring in part and dissenting in part).

179. *Id.* at 2799-2800 (Rehnquist, C.J., concurring in part and dissenting in part). Indeed, in holding that the Rules superseded the *Frye* test, the Court did not explain why it chose to analyze the Rules. One commentator conceded, though, that *Frye* should not be abandoned without an offer of alternate guidance: "Rejecting this [*Frye*] test, however, would require the adoption of a different approach to the admissibility of novel scientific techniques." Giannelli, *supra* note 9, at 1231.

ensure some degree of consistency for future courts considering the issue.[180]

The Court's zealous attempt to comply with the liberal thrust of the Rules may have left unanswered questions regarding the role of the trial judge as gatekeeper and the challenge of keeping "junk science"[181] out of the courtroom and away from the jury. Indeed, initial reaction to *Daubert* has been mixed. While some critics observe that *Daubert* will not change current standards in those jurisdictions where courts had already discarded *Frye*,[182] others indicate a concern that the flexible standards offered in *Daubert* will lead to inconsistent application of the Rules.[183]

One critic, maintaining that *Frye* should still be the rule, has asserted that "Rule 702 does not compel the result in *Daubert*. . . . The decision in *Daubert* increases the risk that juries will render decisions in important cases based on science that will later be discredited."[184] However, evidence that might not be generally accepted at one time may later prove to be valid, reliable, and probative.[185] Such evidence is not automatically "junk science" simply because it may not *yet* be generally accepted. Without requiring strict general acceptance, the *Daubert* factors that identify relevance, reliability, and helpfulness should prove to be efficient tools for determining inclusion or exclusion of scientific evidence. In fact, the results on remand in both *DeLuca v. Merrell Dow Pharmaceuticals, Inc.*[186] and *United States v. Downing*[187] "may be some consolation for those fearing that *Daubert* will open the floodgates to . . . 'junk science' . . . . In both cases the district court adhered to its exclusion of the testimony . . . based not on categorical rules but on a thorough consideration of the helpfulness of the evidence."[188]

---

180. One commentator has posited that the Court offered guidance because the "justices were persuaded that simply reversing *Frye* would open the floodgates to bad science." Thomas W. Kirby, *Putting Experts Under Scrutiny*, LEGAL TIMES, July 26, 1993, at S38.

181. *See generally* HUBER, *supra* note 6.

182. *See, e.g.*, Richard J. Heleniak, *Expert Testimony After Daubert: So What's New?*, LEGAL INTELLIGENCER, Sept. 28, 1993, at 7 (noting that the Court "basically adopted the standards as applied in the United States Court of Appeals for the 3d Circuit for some time now").

183. *See, e.g.*, Donald R. Frederico, *Admissibility of Scientific Evidence Stirs Debate: "Daubert" Decision Fails to Provide Clear Guidelines*, MASS. LAW. WKLY., Aug. 16, 1993 (Supp.), at S2, S11 (arguing that *Daubert* "fails to provide lawyers or judges with a clear set of guidelines concerning how the court's new 'scientific validity' test is to be applied . . . [and] is likely to lead to a variety of interpretations by the courts, and frustrate any hope of developing a uniform rule of decision"); Kirby, *supra* note 180, at S39 ("[T]he flexible and discretionary standards that *Daubert* mandates unavoidably threaten inconsistency and invite arbitrariness and sloppiness.").

184. *Deferring to the Experts*, *supra* note 5, at 16.

185. *See* HUBER, *supra* note 6, at 16 ("Today's junk science may be tomorrow's orthodoxy.").

186. 911 F.2d 941 (3d Cir. 1990).

187. 753 F.2d 1224 (3d Cir. 1985).

188. Michael Martin, *Admissibility After "Daubert"*, N.Y. L.J., Aug. 14, 1993, at 3, 4.

The Court put itself in a vulnerable position by granting certiorari to review *Daubert*. Although many commentators applaud the Court for finally undoing *Frye*,[189] some also criticize the Court for its vague language and its decision to leave trial court judges with generous discretion and little guidance.[190] In enacting the Federal Rules of Evidence, however, did Congress not envision permissive and flexible standards?[191] Strict guidelines would necessarily be more restrictive and inflexible, a result contrary to the goal of the Rules. Those who argue against *Frye* but who might also criticize *Daubert* for vagueness simply beg the question. *Daubert*'s critics seek simple answers to complex questions. Although *Daubert* addressed a toxic tort issue (the effects of Bendectin on an unborn child) the Court sought to offer factors that could be applied to *any* scientific evidence admissibility question—whether civil or criminal—from footprint or voice identification techniques[192] to non-epidemiological methods of testing drugs.[193] In turn, the dissent criticized the majority for making "general observations" that were unnecessary to the decision and "not applied to deciding whether or not particular testimony was or was not admissible, and therefore they tend to be not only general, but vague and abstract."[194]

However, the purpose of such "general observations" was to offer suggestions for judges to use when faced with the proffer of difficult scientific evidence, not to force dispositive new tests upon trial courts.[195] Critics who complain that these flexible guidelines will lead to the proliferation of "junk science" in the courtroom may be correct in arguing that such a risk may

189. For instance, Michael H. Gottesman, a professor at the Georgetown University Law Center and one of the contributors to the Brief for Petitioners, *Daubert* (No. 92-102), "predicts that [*Daubert*] 'will inevitably make admission of scientific evidence easier in those circuits that have adopted the *Frye* rule.'" David O. Stewart, *A New Test: Decision Creates Uncertain Future for Admissibility of Expert Testimony*, A.B.A. J., Nov. 1993, at 48, 51. In addition, Edward J. Imwinkelried, a professor at the University of California at Davis School of Law, "hails *Daubert*, noting that 'the only way to get control of scientific evidence is to do what the Court is requiring.'" *Id.*

190. *See, e.g.*, *Deferring to the Experts*, *supra* note 5, at 16 (claiming that *Daubert* will "complicate the procedure of introducing expert testimony instead of simplifying it"); Frederico, *supra* note 183, at S11 (contending that *Daubert* raises questions about how to apply its new standards).

191. *See supra* text accompanying notes 29-30. Professors Jack Weinstein and Margaret Berger have maintained that "the relevancy approach favors admissibility whenever the general conditions for the admissibility of evidence have been met. This approach is in accord with the general tenor of the Federal Rules—which favor the admissibility of relevant evidence." 3 WEINSTEIN & BERGER, *supra* note 9, ¶ 702[03], at 702-44.

192. *See* United States v. Williams, 583 F.2d 1194, 1196 (2d Cir. 1978) (addressing voice identification techniques), *cert. denied*, 439 U.S. 1117 (1979); State v. Bullard, 322 S.E.2d 370, 373 (1984) (addressing footprint analysis).

193. *See Daubert*, 113 S. Ct. at 2791 (addressing expert testimony based on non-epidemiological methods of testing Bendectin).

194. *Id.* at 2799 (Rehnquist, C.J., concurring in part and dissenting in part).

195. *See supra* text accompanying note 39.

exist more now than it did under the reign of *Frye*,[196] but these critics fail to give trial judges due credit in their capabilities as gatekeepers. The Rules provide that the admissibility of all evidence is in the trial judge's discretion.[197] With the demise of *Frye* and the alternative analysis set forth in *Daubert*, the Court has properly entrusted judges with determining the admissibility of scientific evidence.[198]

Admittedly, the role of the trial judge as gatekeeper may become more difficult after *Daubert*,[199] but that consequence was likely with any rejection of the *Frye* test.[200] The Court certainly did not *have* to provide trial judges with any assistance, a view the dissent would have preferred.[201]

---

196. However, the Court noted that a risk involved with application of its suggested factors may lead not to admission of "junk science" but conversely to possible *exclusion* of probative evidence: "We recognize that in practice, a gatekeeping role for the judge, no matter how flexible, inevitably on occasion will prevent the jury from learning of authentic insights and innovations. That, nevertheless, is the balance that is struck by [the] Rules . . . ." *Daubert*, 113 S. Ct. at 2798-99; *see also* Heleniak, *supra* note 182, at 30 (contending that "the rejection of the 'general acceptance' standard is a victory for all of us, permitting challenge to principles which might be blindly even though generally accepted").

197. Rule 104(a) states: "Questions of Admissibility Generally.—Preliminary questions concerning the qualification of a person to be a witness, the existence of a privilege, or the *admissibility of evidence shall be determined by the court* . . . ." FED. R. EVID. 104 (emphasis added). The advisory committee note to Rule 104(a) explains that "[a]ccepted practice, incorporated in the rule, places on the judge the responsibility for these determinations." FED. R. EVID. 104 advisory committee's note.

198. One amicus brief submitted to the *Daubert* Court expressed confidence in judges to evaluate scientific evidence:

> [E]ven the most difficult concepts used by scientists in the legal forum are no more abstruse than the more esoteric concepts judges employ regularly. . . . [T]he reality is that *someone* in the process must evaluate the validity of scientific evidence. Part of a juror's duty to *weigh* scientific evidence includes an assessment of its validity. If jurors can evaluate validity there is little reason to believe judges cannot be as capable in this matter.

Brief for a Group of American Law Professors as Amicus Curiae in Support of Neither Party at 23-24, *Daubert* (No. 92-102).

199. Indeed, one critic noted that "*Daubert* enlists the trial judge in a search for solutions to the complex problems caused by the ever-increasing appearance of science and technology issues in the courts." Margaret A. Berger, *Supreme Court Deals Blow to Venerable "Frye" Standard*, N.Y. L.J., July 19, 1993, at S3, S12. Because judges must now evaluate scientific evidence with more scrutiny, "[m]any federal judges believe *Daubert* has made their lives more difficult." Rorie Sherman, *"Junk Science" Rule Used Broadly: Judges Learning* Daubert, NAT'L. L.J., Oct. 4, 1993, at 3, 28 (paraphrasing U.S. District Senior Judge Jack B. Weinstein of the Eastern District of New York). However, to assist judges, "a campaign is under way to educate judges in their new role as active evaluators of expert testimony." *Id.* at 3. More specifically, a training program is being developed by "the Carnegie Commission on Science, Technology and Government, with the Federal Judicial Center and the advisory committee for the federal judges in the Eastern District of New York." *Id.* at 28.

200. One critic eloquently endorsed the Court's decision to impose a gatekeeping role on trial judges: "*Daubert* recognizes that scientific barbarians are at the gates. Rather than sealing the gates to all innovative scientists, however, *Daubert* authorizes and requires the trial judge to act as a careful and discerning gatekeeper." Kirby, *supra* note 180, at S39.

201. *See supra* notes 69-73, 176-79 and accompanying text.

However, in striving to ease trial courts' decisionmaking process while upholding the liberal design of the Rules, the *Daubert* Court appropriately offered judges some post-*Frye* guidance. As a result, consideration of the *Daubert* factors that ensure relevance, reliability, and helpfulness should prove to bar some evidence that *is* generally accepted and admit some evidence that is *not* yet generally accepted. Thus, *Daubert* provides the new gatekeepers with a more accurate, effective and appropriate guide to determining the admissibility of scientific evidence.

AMY T. SCHÜTZ