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DAUBERT v. MERRELL DOW: A FLEXIBLE APPROACH TO THE ADMISSIBILITY OF NOVEL SCIENTIFIC EVIDENCE

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INTRODUCTION

Admissibility of scientific evidence is an issue that has plagued the courts and attracted the attention of countless commentators. In the last six years, more than 50 articles have explored the subject and offered arguments supporting greater or lesser barriers to the admissibility of scientific, especially novel scientific, evidence.[1] As early as 1923, the Court of Appeals of the District of Columbia recognized in *Frye v. United States* that:

> 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.[2]

For the next 70 years, this "general acceptance" test was utilized by many courts to justify the exclusion of novel scientific evidence, especially in criminal cases.[3] Although *Frye* excluded the use of the predecessor to the polygraph test in a brief two-page opinion that cited no

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1. *See, e.g.*, Recent Case, *Evidence—Admissibility of Scientific Evidence—Fifth Circuit Limits Permissible Scientific Evidence to Generally Accepted Theories* (Christophersen v. Allied Signal Corp. *5th Cir. 1991)*, 105 HARV. L. REV. 791 (1992); Renee A. Forinash, *Analyzing Scientific Evidence: From Validity to Reliability with a Two-Step Approach*, 24 ST. MARY'S L.J. 223 (1992); Anne S. Toker, *Admitting Scientific Evidence in Toxic Tort Litigation*, 15 HARV. ENVTL. L. REV. 165 (1991); John D. Borders, *Fit to be Fryed:* Frye v. United States *and the Admissibility of Novel Scientific Evidence*, 77 KY. L.J. 849 (1989).

2. Frye v. United States, 293 F. 1013, 1014 (D.C. Cir. 1923) (emphasis added).

3. *See, e.g.*, Paul C. Giannelli, *The Admissibility of Novel Scientific Evidence:* Frye v. United States, *a Half-Century Later*, 80 COLUM. L. REV. 1197, 1205-06 (1980).

other authority, its impact has reached cases involving voiceprints, polygraphs, and toxic tort causation related evidence.[4] This widespread application of *Frye* engendered considerable criticism.[5] Even after the Federal Rules of Evidence ("Rules") were enacted in 1975, courts and commentators continued to debate the continued applicability of the *Frye* test and its proper role in the statutory scheme.[6] Without any Supreme Court pronouncements on the admissibility of scientific evidence, federal and state courts developed numerous approaches to the admission of novel scientific evidence.[7]

On June 28, 1993, the Supreme Court offered its first significant pronouncement on the issue in *Daubert v. Merrell Dow Pharmaceuticals, Inc.*[8] The Court held that general acceptance was not a precondition to admissibility of scientific evidence under the Federal Rules of Evidence.[9] The Court also affirmed that the trial judge had authority to insure that a given expert's testimony will be reliable and relevant.[10] This Note will argue that while *Daubert* is not a revolutionary decision, it marks a shift towards more flexible standards regarding the admissibility of scientific evidence.

I. *DAUBERT v. MERRELL DOW PHARMACEUTICALS, INC.*

A. Facts and Background

The petitioners in *Daubert* sued Merrell Dow alleging that their birth defects had been caused by maternal ingestion of Bendectin, a prescription anti-nausea drug marketed by Merrell Dow. Merrell Dow argued that petitioners' evidence that Bendectin had "more probably than not"

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4. *See id.* at 1205.

5. *See, e.g.*, RICHARD L. CARLSON ET AL., EVIDENCE IN THE NINETIES 288-290 (3d ed. 1991); John W. Strong, *Questions Affecting the Admissibility of Scientific Evidence*, 1970 U. ILL. L.F. 1, 14 (1970).

6. *See, e.g.*, Paul C. Giannelli, Frye v. United States—*Background Paper Prepared for the National Conference of Lawyers and Scientists*, 99 F.R.D. 188, 191 (1983).

7. *See, e.g.*, United States v. Williams, 583 F.2d 1194, 1197-98 (2d Cir. 1978), *cert. denied*, 439 U.S. 1117 (1979); United States v. Alexander, 526 F.2d 161, 163 (8th Cir. 1975); United States v. Addison, 498 F.2d 741 (D.C. Cir. 1974); Coppolino v. State, 223 So.2d 68 (Fla. Dist. Ct. App. 1968), *cert. denied*, 399 U.S. 927 (1970).

8. 113 S.Ct. 2786 (1993).

9. *See id.* at 2790.

10. *See id.*

caused their birth defects was inadmissible.[11] The district court granted summary judgement for Merrell Dow because scientific evidence "must be sufficiently established to have general acceptance in the field to which it belongs."[12] Although the plaintiffs offered the opinion testimony of eight experts to establish that Bendectin is a teratogen, the district court found the testimony unpersuasive because the plaintiffs did not offer statistically significant epidemiological evidence and because what epidemiological evidence they had came from reanalysis of existing data that was neither published nor subjected to peer review.[13]

On appeal the Ninth Circuit, in a brief opinion by Judge Kozinski, upheld the application of the general acceptance test.[14] The Court of Appeals justified a higher *Frye*-like standard for the admissibility of expert testimony because "such evidence create[s] a substantial danger [of undue prejudice or of confusing the issues or]. . . of misleading the jury."[15] Judge Kozinski also stated that any decision to include or exclude such evidence must be reviewed de novo on appeal because "the reliability of a scientific technique or process does not vary according to the circumstances of each case [and thus is not] . . . within each judge's individual discretion."[16] After granting certiorari because of "sharp divisions among the courts regarding the proper standard for the admission of expert testimony," the Supreme Court in an opinion by Justice Blackmun vacated the Ninth Circuit's opinion and remanded the case.[17]

B. Majority Opinion

After a brief discussion of the facts, Justice Blackmun quickly established that the *Frye* test had been superseded by the enactment of the Federal Rules of Evidence.[18] While the Federal Rules of Evidence do not explicitly mention the general acceptance test, Blackmun nevertheless

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11. 727 F.Supp. 570, 575 (S.D. Cal. 1989).
12. *Id.* at 572 (quoting United States v. Kilgus, 571 F.2d 508, 510 (9th Cir. 1978)).
13. *See Daubert*, 727 F.Supp. at 575.
14. Daubert v. Merrell Dow Pharmaceuticals, Inc., 951 F.2d 1128 (9th Cir. 1991).
15. *Id.* at 1130 (citation omitted).
16. *Id.* (citation omitted).
17. Delivered for a unanimous court. Chief Justice Rehnquist filed an opinion, which was joined by Justice Stevens, to disagree with the majority construction of the Federal Rules of Evidence. Daubert v. Merrell Dow Pharmaceuticals, Inc., 113 S.Ct. 2786, 2792 (1993)
18. *Id.* at 2793.

concluded that the *Frye* standard was inconsistent with the "liberal thrust" of the Rules.[19] The Court stated that Rule 401 demonstrates the liberal standard of relevance intended by the Federal Rules of Evidence because it states that "[r]elevant evidence . . . [is that which has] any tendency to make the existence of any fact that is of consequence to the determination of the action more probable or less probable than it would without the evidence."[20]

In establishing that the Federal Rules of Evidence supersede *Frye*, the Court distinguished its opinion in *United States v. Abel*.[21] In *Abel* the Court had already stated that while the Federal Rules of Evidence occupy the field, the common law could still serve as an aid to their application.[22] However, Rule 702 clearly addressed the issue of the admissibility of scientific evidence that was presented in *Daubert* by providing:

> 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.[23]

Since the Rules directly addressed the admissibility issue posed in *Daubert*, the Court found no need to look back to the common law as it had in *Abel*.[24]

Despite this liberal language in Rule 702, the Court also found authority for gatekeeping by a judge in the language of the Rule: "under the Rules the trial judge must ensure that any and all scientific testimony or evidence admitted is not only relevant, but reliable."[25] The majority found a standard of evidentiary reliability in the requirement that an expert's testimony pertain to scientific knowledge.[26] In establishing the reliability (i.e. the ability to produce consistent results) of a novel scientific technique, the majority recognized that the validity (i.e. a sound

19. *Id.* at 2794.
20. *Id.* (quoting FED. R. EVID. 401).
21. 469 U.S. 45 (1984).
22. *Id.* at 51-52.
23. *Daubert*, 113 S.Ct. at 2793 (quoting FED. R. EVID. 702).
24. *Daubert*, 113 S.Ct. at 2794.
25. *Id.* at 2795.
26. *Id.* at n.9 and accompanying text.

basis in scientific principles) of the technique must be established.[27] Using the definitions of validity and reliability, the Court stated that true "scientific knowledge" is an inference or assertion derived by the scientific method, and that "[p]roposed testimony must be supported by appropriate validation—i.e., 'good grounds,' based on what is known."[28]

The Court also read Rule 702 to impose a higher requirement of relevance for scientific evidence.[29] Rule 702 states that evidence may be admitted if it "will assist the trier of fact to understand the evidence or to determine a fact in issue."[30] The Court found that this "helpfulness" standard requires that the evidence have a valid scientific connection to the pertinent inquiry.[31] The "fit" (whether the tie between the expert testimony and facts is sufficient to assist in resolving a dispute) of the evidence was noted by the majority as another aspect of relevance.[32] The Court further explained that the requirements of reliability and relevance in Rule 702 were necessary because experts often enjoy a sweeping ability to offer opinions with many of the attributes of hearsay.[33] Unlike traditional witnesses, experts are valued because they offer opinions that are not based on first-hand observation.[34] The Court argued that this greater latitude mandated the imposition of a higher scrutiny of the expert's knowledge and experience as a precondition to admission of the testimony.[35] This standard, the Court reasoned, must be policed by the judge.[36]

The Court then offered four non-definitive factors to help determine the relevance and reliability of scientific evidence. The first was whether the theory or technique had been tested in order to check for falsifiability, refutability, and repeatability. The second was if the evidence had been subjected to peer review and publication. The third was the rate of error of a scientific technique and the standards that existed to control its use. The final factor was the level of acceptance of the technique in the relevant scientific community.[37] The Court stressed that these criteria

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27. *See id.*
28. *Id.*
29. *See id.* at 2795-96.
30. *Id.* at 2795 (quoting FED. R. EVID. 702).
31. *See id.* at 2796.
32. *See id.*
33. *See id.*
34. *See id.*
35. *See id.*
36. *See id.*
37. *Id.* at 2796-97.

were flexible and should focus on the principle or methodology of the techniques rather than on the conclusions that they generate.[38]

In the remainder of its opinion, the majority answered two criticisms of its approach in *Daubert*. The first criticism is that abandonment of the *Frye* standard could lead to "a 'free for all' in which befuddled juries are confounded by absurd and irrational pseudoscientific assertions."[39] The second is that allowing the judge to act as a gatekeeper "will prevent the jury from learning of authentic insights and innovations."[40]

To answer the first criticism, the Court began by noting that cross-examination, contrary evidence, and careful jury instructions regarding the burden of proof already safeguard against the admission of speculative science and provide the judge with some gatekeeping responsibilities.[41] In addition, the Court recognized that the Rules explicitly allow the judge to exclude even relevant evidence when its "value is substantially outweighed by the danger of unfair prejudice, confusion of the issues, or misleading the jury . . . ."[42] The availability of directed verdicts, summary judgement, and court-appointed expert witnesses were cited as other conventional devices that might provide appropriate safeguards for guaranteeing that scientific testimony meets the standards articulated by Rule 702.[43]

Regarding the second criticism, the Court simply stated that the post-*Daubert* process must be designed to strike a proper balance between the utility of novel evidence and the danger of misleading the jury.[44] It distinguished the complete intellectual openness of the scientific process from judicial systems of dispute resolution which are "designed not for cosmic understanding but for the particularized resolution of legal disputes."[45]

C. Chief Justice Rehnquist's Opinion

Chief Justice Rehnquist concurred that *Frye* did not survive the Federal Rules of Evidence, but dissented in part because he would not

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38. *Id.* at 2797.
39. *Id.* at 2798.
40. *Id.* at 2799.
41. *Id.*
42. *Id.* at 2798 (quoting FED. R. EVID. 403).
43. *Id.*
44. *See id.* at 2798-99.
45. *Id.*

have offered the vague "general observations" derived by the majority through "abstract" construction the Rules.[46] The Chief Justice criticized several of the majority's observations regarding the factors that ought to bear on admissibility. For example, although Chief Justice Rehnquist found evidence for a relevancy requirement in Rule 402, he was unable to discover any direct authority for the reliability requirement imposed in the majority opinion.[47] Chief Justice Rehnquist expressed deep concern with the statutory parsing used by the majority to create a reliability requirement and pointed out that "countless more questions will surely arise when hundreds of district judges try to apply [the Court's] teaching to particular offers of expert testimony."[48] He pointed to twenty-two *amicus* briefs filed to illustrate that the question of admissibility of scientific evidence does not involve customary interpretation of cases or statutory material, but rather "definitions of scientific knowledge, scientific method, scientific validity, and peer review—in short, matters far afield from the expertise of judges."[49] His dissent ends with the following admonition:

> I do not doubt that Rule 702 confides to the judge some gatekeeping responsibility in deciding questions of admissibility of proffered expert testimony. But I do not think it imposes on them either the obligation or the authority to become amateur scientists in order to perform that role. I think the Court would be far better advised in this case to decide only the questions presented, and to leave the further development of this important area of the law to future cases.[50]

II. ANALYSIS OF THE DECISION

This Note will first explore the policy issues underlying the admissibility of novel scientific evidence. Next, it will explain the role of *Frye* and the effect of the Federal Rules of Evidence. Additionally, it will examine

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46. *Id.* at 2799 (Rehnquist, C.J., concurring in part and dissenting in part). The Chief Justice was joined by Justice Stevens.
47. *Id.* at 2800 (Rehnquist, C.J., concurring in part and dissenting in part).
48. *Id.*
49. *Id.*
50. *Id.*

judicial development of the admissibility issue after the enactment of the Rules but prior to *Daubert*. Finally, this Note will argue that *Daubert* is a significant, but not revolutionary, step in the evolution of the law relating to novel scientific evidence because it represents the official death of the *Frye* standard. However, while *Daubert* offers some guidance to trial judges, the need for consistency suggests that further refinements of the doctrine based on a more radical approach must be seriously considered.

A. Factors Motivating Interest in the Admissibility Issue

The admissibility of novel scientific evidence is an important issue because it often determines the outcome of litigation, affects the volume of litigation, and relates to strong jurisprudential beliefs about the role of juries. In many cases, the question of admissibility directly changes the chances of winning or losing a particular dispute by a large margin (i.e. it is an outcome-determinative or "ultimate" issue).[51] In toxic tort cases, like disputes involving Bendectin, plaintiffs could be unable to show causation without novel scientific evidence, while in the criminal context, exclusion of certain evidence could make the prosecution unable to establish a critical element of its case and lead to dismissal.[52]

Admissibility issues that are outcome determinative can affect plaintiffs' decisions to bring lawsuits and therefore impact the volume of litigation. Many commentators who advocate a strict barrier to questionable evidence are motivated by fears that scientific testimony is contributing to "junk science" and litigation.[53] Consequently, authors like Peter Huber and Bert Black, who advocate greater scrutiny of all evidence, believe that stricter standards of admissibility can be developed to prevent the waste of judicial resources and overall inefficiency caused by excessive levels of litigation.[54] This debate attracted mainstream attention

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51. *See, e.g.*, Strong, *supra* note 5, at 13; Peter Huber, *Junk Science in the Courtroom*, 26 VAL. U. L. REV. 723, 732-36 (1992) (discussing several cases in which scientific testimony played a critical role).

52. *See, e.g.*, *Daubert*, 727 F.Supp. at 570 (granting summary judgement against plaintiffs because their evidence was inadmissible); Reed v. Maryland, 391 A.2d 364 (Md. 1978) (reversing a criminal conviction because testimony based on voiceprint analysis was inadmissible).

53. *See, e.g.*, Peter A. Bell, *Strict Scrutiny of Scientific Evidence—A Bad Idea Whose Time Has Come* (pt. 1), 6 TOXICS L. REP. (BNA) 1014, 1017 (1992) (discussing views of commentators who favor strict scrutiny).

54. *See generally* Huber, *supra* note 51; Bert Black, *A Unified Theory of Scientific*

in the context of Vice President Quayle's Council on Competitiveness which proposed various measures to control "runaway" litigation.[55] These critics have argued for more restrictive standards to control litigation.[56] However, the focus on scientific evidence as the cause of litigation may be irrational in light of *Frye*'s historical failure to curtail junk science and litigation.[57]

In contrast, pro-litigation supporters of increased access to judicial redress felt that the *Frye* standard was too restrictive.[58] This group argued for greater admission of scientific testimony in the tort context because a liberal standard on admission of scientific evidence could counteract the perceived comparative advantages monied industrial defendants would have over plaintiffs who might be unable to pass the high hurdle of "general acceptance."[59] Moreover, acceptance requires time, and plaintiffs whose lives are at stake could be disadvantaged by rules like *Frye* which adopted a wait-and-see attitude toward admissibility. These access issues partially motivated the increased criticism of *Frye* during the sixties and seventies.[60]

Strong views about juries also influence debates about the role of novel scientific evidence.[61] Advocates assert that juries are able to distinguish between valid and suspect testimony, including expert testimony, in an adversarial system that allows both sides to present their best information.[62] Supporters maintain that more information increases the chances of a more accurate outcome and that the evaluation of scientific evidence is not substantially different from the other challenging issues that are routinely handed to juries.[63] Moreover, the wisdom of substituting one judge's view for the consensus that could be developed by a twelve-member panel regarding the utility of certain types of

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Evidence, 56 FORDHAM L. REVIEW 595 (1988).

55. *See* Bell, *supra* note 53, at 1014.

56. *See id.*

57. *See, e.g.*, Kenneth J. Chesebro, *Galileo's Retort: Peter Huber's Junk Scholarship*, 42 AM. U. L. REV. 1637, 1687-92 (1993).

58. *See, e.g.*, Nancy Hollander, *Proposed Amendments to the Federal Rules on Admissibility of Scientific Evidence: A Defense Counsel's Perspective*, 115 F.R.D. 79, 121 (1987).

59. *See, e.g.*, Peter A. Bell, *Strict Scrutiny of Scientific Evidence—A Bad Idea Whose Time Has Come* (pt. 2), 6 TOXICS L. REP. (BNA) 1047, 1048 (1992).

60. *See, e.g.*, Huber, *supra* note 51, at 732.

61. *See, e.g.*, Stephen A. Saltzburg, *The Unnecessarily Expanding Role of the American Trial Judge*, 64 VA. L. REV. 1, 11 (1978); Chesebro, *supra* note 57, at 1700-04.

62. *See, e.g.*, Chesebro, *supra* note 57, at 1696-1704.

63. *See id.* at 1701.

evidence is also questioned by jury advocates.[64]

Others, however, question the ability of juries to resist being overwhelmed by the credentials of expert witnesses and therefore envision a role for the judge in preventing the jury from being exposed to individuals with questionable credentials and unreliable theories.[65] For example, in *United States v. Addison* the court acknowledged that "scientific proof may . . . assume a posture of mystic infallibility in the eyes of a jury of laymen."[66] In such cases, an average jury may be unable to perform its fact finding function because of the complexity and "star power" of scientific evidence. Since a judge with experience may be better able to distinguish an expert's credentials from his or her theories and exclude evidence that might mislead unsuspecting juries composed of average citizens, judges should perform a gatekeeping role against suspect science.

B. The Frye *General Acceptance Standard*

Frye v. United States[67] was a federal criminal case in which the D.C. Circuit Court of Appeals discussed the admissibility of expert testimony involving the results of a "systolic blood pressure deception test."[68] Subsequent invocations of the decision did not always restrict the *Frye* general acceptance doctrine to the specific context of that case.[69] This failure to limit the application of the general acceptance test to the facts of *Frye* was especially significant because that court had not articulated its reasoning in any depth. For example, since *Frye* involved a criminal prosecution, the court might have applied a higher standard for the admissibility of evidence because admission of the novel technique would be used to establish the guilt or innocence of a criminal defendant.[70]

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64. *See id.* at 1700.

65. *See, e.g.*, Giannelli, *supra* note 3, at 1237-38.

66. 498 F.2d 741, 744 (D.C. Cir. 1974).

67. 293 F. 1013 (D.C. Cir. 1923).

68. *Id.*

69. For a discussion of various cases applying *Frye*, see Giannelli, *supra* note 3, at 1198-1200. Many of these courts applied the general acceptance test without any significant attempt to justify its use. *See* Paul C. Giannelli, Frye v. United States—*Background Paper Prepared for the National Conference of Lawyers and Scientists*, 99 F.R.D. 188, 191 (1983).

70. The idea that questions of liberty require special vigilance by courts is well established as indicated by the higher "beyond reasonable doubt" standard of proof required for criminal prosecutions. *See* JOHN W. STRONG ET AL., MCCORMICK ON EVIDENCE § 577 (4th ed. 1992).

Moreover, the testimony excluded in *Frye* (i.e. polygraph-type analysis) sought to address the credibility of the witness rather than reveal information regarding a question of fact, and credibility issues, unlike facts, should be decided by juries and not by experts.[71]

While seemingly a simple standard, the *Frye* general acceptance test can be difficult to apply. Specifically, the process of choosing an appropriate "community" and determining the necessary degree of support within that community allows a judge's subjective beliefs as to the "true value" of the evidence to influence the admissibility decision.

In choosing a relevant community, the *Frye* standard seems to suggest searching for validation in the same professions that create or practice the relevant technique.[72] Due to biases, such individuals might be unable to offer truly thoughtful "expert" opinions based on a survey of all of the positive and negative aspects of a given technique.[73] Finally, the choice of community is important and difficult because in many cases, the "wrong" community will directly produce the wrong result.[74] For example, in an assessment of the validity and reliability of palmistry, choosing the relevant community as palm readers could result in palmistry being regarded as acceptable evidence through application of *Frye*.

Even if an appropriate community can be selected, determining the level of consensus in that community necessary to constitute "general acceptance" still remains troublesome.[75] For example, does the standard require a simple majority? Alternatively, does the standard require a greater than majority consensus, and if so, what percentage is acceptable? Should the opinions of some experts be allowed more weight because of their credentials? Unfortunately, allowing judges to decide which experts are more expert than others would replace an objective numerical conception of general acceptance with a more subjective process.

The vagueness in the *Frye* standard was reflected in the varying applications of the technique in lower courts.[76] Many critics were

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71. 9 CHARLES A. WRIGHT & ARTHUR R. MILLER, FEDERAL PRACTICE AND PROCEDURE § 2527 (1971).

72. *See, e.g.*, Gianelli, *supra* note 3, at 1208-10.

73. *See id. See also* Tahirih V. Lee, *Court-Appointed Experts and Judicial Reluctance: A Proposal to Amend Rule 706 of the Federal Rules of Evidence*, 6 YALE L. & POL'Y REV. 480, 482-84 (1988).

74. *See, e.g.*, Giannelli, *supra* note 3, at 1208.

75. *Id.*

76. Inconsistency of application "became the crucible in which *Frye* was reexamined, sometimes questioned, often implicitly modified, and occasionally rejected." Mark McCormick, *Scientific Evidence: Defining a New Approach to Admissibility*, 67 IOWA L.

dissatisfied because they felt that the standard was too vague and unworkable.[77] As the perceived utility of *Frye* diminished, courts and commentators attempted to suggest alternative flexible approaches to the admissibility question.[78] As early as 1954, Dean McCormick argued that general acceptance "is a proper condition upon the court's taking judicial notice of scientific facts, but not a criterion for the admissibility of scientific evidence. Any relevant conclusions which are supported by qualified expert witnesses should be received unless there are other reasons for exclusion."[79] However, courts had already applied *Frye* in such contexts as the "admissibility of sodium pentothal, . . . spectroscopic analysis, . . . sound spectrometry (voiceprints), neutron activation analysis [and] other techniques."[80] Thus, in spite of growing criticism, courts continued to apply the doctrine, especially in criminal cases.[81]

C. The Federal Rules of Evidence

In 1975, the codification of the Federal Rules of Evidence offered an opportunity to clarify at least some aspects of the debate about admissibility of scientific evidence. Although *Frye* still enjoyed wide-spread acceptance in federal and state courts, the Rules did not directly address *Frye*. Consequently, commentators and judges found authority for both the continuing relevance and the demise of the general acceptance standard in the language of the new Rules.[82] This debate became a complicated fight over statutory interpretation.

Most attention focused on Rules 402, 702, and 703. Rule 402 provides that "[a]ll relevant evidence is admissible except as provided by the Constitution of the United States[, Congress, the Rules, or the

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REV. 879, 884 (1982).

77. *See, e.g.*, Strong, *supra* note 5, at 14 ("The *Frye* standard . . . obscure[s] proper considerations [and] . . . [i]t is questionable . . . whether [*Frye*] with its introduction of a basic inconsistency . . . is essential . . . ."); United States v. Downing, 753 F.2d 1224, 1237 (3d Cir. 1985) (discussing serious flaws of the *Frye* approach in the context of a criminal case where the defendant sought to admit expert testimony regarding the reliability of eyewitness identifications).

78. *See, e.g.*, Giannelli, *supra* note 3, at 1228.

79. CHARLES T. MCCORMICK, HANDBOOK OF THE LAW OF EVIDENCE § 170 (1954).

80. Giannelli, *supra* note 69, at 189-190 (citing various cases).

81. *See, e.g.*, United States v. Todd, 964 F.2d 925, 930-31 (9th Cir. 1992); United States v. Alexander, 526 F.2d 161, 163-64 (8th Cir. 1975). *See generally* Chesebro, *supra* note 57, at 1693-95 (citing over sixty criminal cases applying *Frye*).

82. *See, e.g.*, Giannelli, *supra* note 69, at 195 (citing various cases).

Supreme Court] . . . . Evidence which is not relevant is not admissible."[83] Rule 702 allows the admission of any expert testimony that will assist the trier of fact.[84] Since Rule 402 already allows admission of all relevant evidence, the existence of Rule 702 suggests another standard for the admissibility of scientific evidence above the Rule 402-based relevancy required of all evidence. Rule 703 "allows an expert to base an opinion on data that could not have been admitted in evidence, provided it is of the type reasonably relied upon by experts in forming opinions in that field."[85]

The intent of the drafters of the Federal Rules of Evidence, as evidenced by the Rules' fairly broad language, is that most relevant scientific evidence should be admitted.[86] Even though the drafters were aware of the *Frye* standard and expressed concern regarding both the "practice of shopping for experts" and the "venality of some experts,"[87] the rules do not seem to explicitly address the general acceptance standard. Seemingly undeterred by the deliberate failure of the drafters of the Rules to codify or reject the *Frye* general acceptance standard, the majority in *Daubert* implied that Rule 702 requires the judge to act as the guardian.[88] The argument that the Rules would not allow admission of evidence that is utterly devoid of scientific basis or merit has support.[89] At the other extreme, however, valid scientific testimony that builds upon a foundation of tested scientific methods should certainly be admitted if it is relevant. The difficulties lie in choosing an appropriate cut-off point along this continuum and defining the meaning of "validity" and

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83. FED. R. EVID. 402.

84. *See supra* text accompanying note 23.

85. Mark McCormick, *supra* note 76, at 888. Rule 703, Bases of Opinion Testimony by Experts, states that "[t]he 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.

86. *See* FED. R. EVID. 402.

87. FED. R. EVID. 706 advisory committee's note. Rule 706 allows judges to use court-appointed expert witnesses. FED. R. EVID. 706.

88. *See supra* note 36 and accompanying text.

89. *See, e.g.*, Troyen A. Brennan, *Helping Courts With Toxic Torts: Some Proposals Regarding Alternative Methods for Presenting and Assessing Scientific Evidence in Common Law Courts*, 51 U. PITT. L. REV. 1, 9 (1989) (arguing that judges could interpret FED. R. EVID. 702 to exclude expert testimony); Edward R. Becker and 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, 880 (1992) (discussing creating a reliability requirement in the Federal Rules of Evidence).

"relevance."

The silence of the Rules in articulating specific standards and guidelines, however, means that trial judges have great leeway in admitting scientific evidence. Thus, Chief Justice Rehnquist's desire to overturn *Frye* without creating a reliability standard or offering criteria to apply Rule 702 seems somewhat misguided. Silence on this issue by the *Daubert* majority would simply mean that judges would continue to develop their own interpretations of the Rules and thereby increase both inconsistency and confusion. Without additional guidelines, the *Daubert* decision would have made an almost insignificant contribution to the evolving judicial approaches to the admission of novel scientific evidence.

D. Precedent After the Federal Rules of Evidence

Even after the enactment of the Federal Rules of Evidence in 1975, many courts and commentators disagreed about the status of the *Frye* general acceptance test. Three circuits said that *Frye* had not survived the enactment of the Federal Rules of Evidence, but six circuits continued to apply the doctrine.[90] The most notable recent case supporting *Frye* was the Fifth Circuit decision in *Christophersen v. Allied Signal Corp.*[91] Alternatively, *United States v. Williams* was one of the leading decisions after 1975 to question *Frye*.[92] Finally, *United States v. Downing*, a 1985 criminal case, rejected *Frye* in favor of flexible criteria that are similar to, but more extensive than, the criteria developed in *Daubert*.[93]

In *Christophersen*, the Fifth Circuit sitting *en banc* applied the *Frye* test to analyze "the validity of an expert's methodology [and] determine whether it connects the facts to the conclusion in a scientifically valid way."[94] That court found that the plaintiff's expert testimony, which attempted to prove causation between nickel/cadmium exposure and cancer, "failed to clear . . . the *Frye* hurdle . . . ."[95] The majority neither addressed the controversy regarding *Frye* nor attempted to justify the application of the *Frye* standard in the tort context of the case.[96]

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90. *See* Brief for Petitioner at 17, Daubert v. Merrell Dow Pharmaceuticals, Inc., 113 S.Ct. 2786 (1993) (No. 92-102).

91. 939 F.2d 1106 (5th Cir.) (per curiam) (en banc), *cert. denied*, 112 S.Ct. 1280 (1991).

92. 583 F.2d 1194 (2d Cir. 1978), *cert. denied*, 439 U.S. 1117 (1979).

93. 753 F.2d 1224 (3d Cir. 1985).

94. 939 F.2d at 1115.

95. *Id.* at 1116.

96. The dissent by Judge Reavley was critical, however, of the majority's application of

Williams, in contrast, considered the applicability of *Frye* in the criminal context and admitted spectrographic analysis even though it did not meet a strictly construed standard of general acceptance.[97] The court noted the difficulty in applying *Frye*, especially regarding the selection of a "relevant scientific community."[98] Consequently, it opted for an analysis directed towards the reliability of the technique and its tendency to mislead.[99] While this case did not explicitly reject *Frye*, its flexible inquiry encouraged alternative approaches to the admissibility of novel scientific evidence.

The majority approach in *Daubert* resembles *United States v. Downing*, in which the court concluded that general acceptance "should be rejected as an independent controlling standard of admissibility," and 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 . . . ."[100] The *Downing* court noted the problems of applying the *Frye* standard and adopted a plain language reading of Federal Rule of Evidence 402.[101]

After rejecting *Frye*, the *Downing* court adopted a more flexible approach to admissibility of novel scientific evidence.[102] The court depended on judges to assess the reliability of novel scientific evidence based on the facts of each case and balance that assessment against the danger that the evidence would confuse or mislead the jury.[103] In assessing reliability, the court discussed many factors that should be considered "in contrast to the process of scientific 'nose-counting' [in] . . . *Frye*."[104] It recognized that:

> In many cases, however, the acceptance factor may well be

Frye. He noted that the majority applied *Frye* beyond previous applications in the Fifth Circuit. *Id.* at 1134 (Reavley, J., dissenting). Judge Clark in his concurring opinion agreed with the dissent's view of *Frye* and added that the general acceptance standard had "not survived the enactment of the Federal Rules of Evidence . . . and [was] neither a good rule nor one the Court must adopt to decide this case." *Id.* at 1120 (Clark, J., concurring in the result). The *Daubert* decision appears to vindicate the dissenting view.

97. 583 F.2d at 1197-1201.
98. *Id.* at 1198.
99. *See id.*
100. United States v. Downing, 753 F.2d 1224, 1237 (3d Cir. 1985).
101. *See id.* at 1235.
102. *See id.* at 1238-39.
103. *See id.* at 1237-41.
104. *Id.* at 1238.

> decisive, or nearly so. Thus, we expect that a technique that satisfies the *Frye* test usually will be found to be reliable as well. On the other hand, a known technique which has been able to attract only minimal support within the community is likely to be found unreliable . . . [but w]here a form of scientific expertise has no established "track record" in litigation, the court may look to other factors that may bear on the reliability of the evidence.[105]

Some of these "other factors" include: (1) the novelty of the technique and its relationship to established modes of scientific analysis; (2) the existence of specialized literature dealing with the technique; (3) the likelihood that the scientific basis of the new technique has been exposed to critical scientific scrutiny; (4) the qualifications and professional stature of the expert witnesses; (5) the non-judicial uses to which the scientific technique may be and is put; (6) the frequency with which the method leads to erroneous results; (7) the type of error generated by the technique; and (8) whether the expert testimony has been offered in earlier cases to support or dispute the merits of a particular procedure.[106] The court noted that "other factors could be added to the list."[107]

E. The Daubert *Approach*

While the fact that *Daubert* has been extensively cited in the last eight months indicates that *Daubert* is a significant development in the admissibility of novel scientific evidence,[108] the real-world impact of the case will not be extensive. This section will focus on several themes. First, *Daubert* only superficially changes the character of current approaches to admission of scientific evidence by increasing flexibility. Second, *Daubert* does not pay enough attention to the need for judicial consistancy.

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105. *Id.*

106. *Id.* at 1239.

107. *Id.*

108. *See, e.g.*, United States v. Evanoff, No. 92-3435, 1993 U.S. App. LEXIS 31033 (8th Cir. November 30, 1993); Hodges v. Secretary of the Dep't of Health and Human Servs., No. 92-5089, 1993 U.S. App. LEXIS 29590 (Fed. Cir. November 15, 1993); Porter v. Whitehall Labs., No. 92-1962, 1993 U.S. App. LEXIS 28390 (7th Cir. November 1, 1993); United States v. Martinez, 3 F.3d 1191 (8th Cir. 1993). The decision is also significant in that the Supreme Court noted the importance of the admissibility of novel scientific evidence for the first time.

Commentators will probably differ regarding *Daubert*'s impact. The argument that *Daubert* will not significantly affect the outcome of most admissibility disputes has elements of truth, since some courts had previously moved away from the *Frye* standard and applied the sort of criteria that are discussed as relevant by the majority in the *Daubert* opinion, especially outside the criminal context.[109] In addition state courts may decline to follow *Daubert* irrespective of the origins of their current system of evidence. Those states that follow *Frye* as a common-law rule are potentially unaffected by *Daubert* which relies on statutory interpretation of the Rules to overturn *Frye* for federal courts.[110] Even the "35 states [that] have evidence codes patterned after the [Rules] . . . are free to construe their rules differently."[111]

However, *Daubert* represents a major paradigm shift for many courts because it requires that flexibility replace the 70 year old prism of *Frye*. Because *Frye* dominated thinking about the admissibility of scientific evidence in many district courts for criminal cases, and because the test had been expanded into the civil arena in cases like *Christophersen*, *Daubert* is useful in explicitly moving certain courts away from a narrow "general acceptance" analysis. Although *Daubert* does not prevent judges from looking to the level of acceptance of a novel scientific technique by the scientific community, its broad framework could allow some types of testimony that might have been excluded under *Frye* to be admitted in future disputes. This process will lead to a broader examination of the various issues relevant in gauging the reliability and relevance of proffered evidence.

Attention to the factors motivating the decision to overturn *Frye* also indicates that *Daubert* represents more of a paradigm shift than a fundamental change. To a great extent, the Justices are formalizing and nationalizing decades of commentary and case law in the lower courts regarding the admission of scientific evidence.[112] The Justices shared a keen sense of the need to balance greater judicial access against the potential for abuse via manipulation of juries and the judicial system. In the liberalizing context of the Federal Rules of Evidence, the Court allowed other judges the ability to legitimately accept relevant and reliable novel scientific techniques without turning litigation into a scientific free-

109. See the discussion of *Downing*, *supra* text accompanying notes 96-103.
110. *See* RONALD L. CARLSON ET AL., EVIDENCE IN THE NINETIES 38 (Supp. 1993).
111. *Id.*
112. *See, e.g.*, *Downing*, 753 F.2d at 1224.

for-all.

The quest for consistency regarding admissibility will not be settled by moving to a different set of standards because different courts might still interpret the criteria to support inconsistent positions on admissibility. In fact, without additional guidance regarding application of the flexible criteria, *Daubert* may actually lead to greater inconsistency. Different federal courts may apply the more manipulable *Daubert* criteria to produce more inconsistent outcomes than the *Frye* approach, which relied on a numerically-based concept of general acceptance. In addition, if state courts continue to apply *Frye*, inconsistency between federal and state courts will have increased after *Daubert*, and the danger of forum shopping may also increase. Ironically, the main reason offered by the Court for its grant of *certiorari* was that the lower courts had been inconsistent in their methods and results.[113]

One important issue affecting consistency that was unanswered by the Supreme Court in *Daubert* was whether applications of the flexible criteria would be considered issues of law that would be reviewed de novo on appeal. This proposition was adopted by the circuit court in *Daubert* but was not addressed by the Supreme Court.[114] Since the criteria for admissibility do not depend on findings only accessible at the trial level, judges may independently review on appeal the application of the criteria as matters of law.[115] De novo review by circuit courts would support efforts to build consistency in application of the flexible criteria with respect to particular technologies. Even allowing for the effects of de novo appellate review, consistent application of the *Daubert* criteria will continue as a pressing issue.

Instead, consistency will require more serious consideration of novel or more "radical" techniques. For example, true nationwide consistency might require either Supreme Court rulings on each important novel technique or the establishment of a commission whose role is to offer binding guidelines regarding each potential type of novel scientific evidence.[116] Unfortunately, these solutions may have their own problems, and the overall challenge of consistency is not further addressed in

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113. *Daubert*, 113 S.Ct. at 2792.

114. *Compare* 113 S.Ct. at 2786 *with* 951 F.2d at 1130.

115. *See* 951 F.2d at 1130.

116. *Cf.* James A. Martin, *The Proposed "Science Court"*, 75 MICH. L. REV. 1058 (1977) (discussing the creation of a national body to review issues relating to scientific evidence).

Daubert. Ultimately, the solution may arise through revision of the Federal Rules of Evidence to more adequately address these concerns.

While the dissent advocates an approach that would simply declare *Frye* invalid and leave further development to future cases, the criteria offered by the majority are on balance more helpful than problematic. Although, as discussed in Chief Justice Rehnquist's opinion, all criteria for the consideration of complex issues raise many other questions,[117] silence would be inefficient as well as unacceptable. Guidelines of the sort offered by the majority are the minimum necessary to effectively begin to counteract decades of neglect by the Supreme Court. Wisely, the majority mirrored the reasonable approach outlined in *Downing* rather than charting an entirely novel or more radical approach to admissibility.

SUMMARY

The framework established by *Daubert*, because of its flexibility, does not offer much binding guidance regarding the parameters of the admissibility inquiry other than establishing that admissibility is broader than mere general acceptance. Examination of a process or technique independent of external considerations is difficult, if not impossible. In making their decisions, judges will almost inevitably be influenced by their notions of the underlying validity of the scientific techniques and these notions will continue to play a crucial role in the admissibility of testimony even after *Daubert*. Although Chief Justice Rehnquist criticized the factors offered by the majority, his solution to leave it to trial judges in future cases is unsatisfactory, because in the absence of even artificial criteria, the subjective opinions and feelings of individual judges take on greater importance. Realizing this tendency, the majority made a valiant effort to offer some guideposts, even though they may be confusing and somewhat vague. This advice will have to suffice until revision of the Rules makes a more successful and consistent approach possible.

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