

THE USE AND ABUSE OF EXPERT TESTIMONY IN PRODUCT LIABILITY ACTIONS

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I. INTRODUCTION

Hardly a day passes without some news of yet another ominous development in the current tort law and insurance crises.¹ An increasing body of reliable data suggests that these crises may derive, in part, from the abuse of expert scientific and medical testimony in product liability actions. This article will address this phenomenon, its ramifications, and the weapons available under New Jersey law to combat it.

A. The "Junk Science" Phenomenon

Most recently, the United States Attorney General's Tort Policy Working Group² expressed its concern about the "increasingly serious problem" involving

reliance by judges and juries on noncredible scientific or medical testimony, studies or opinions. It has become all too common for "experts" or "studies" on the fringes of or even well beyond the outer parameters of mainstream scientific or medical views to be presented to juries as valid evidence from which conclusions can be drawn. The use of such invalid scientific evidence (commonly referred to as "junk science") has resulted in findings of causation which simply cannot be justified or understood from the standpoint of the current state of credible scientific and medical knowledge. Most importantly,

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¹ We learned most recently that the State of New Jersey cannot insure itself against tort liability. See *State Government Left Without Liability Insurer*, The Newark Star Ledger, Dec. 14, 1986, at 1, col.4. Throughout New Jersey, "[t]he crisis has struck school boards, municipal and county governments, taverns, restaurants and professional groups. . ." as well. *Id.*

² See REPORT OF THE TORT POLICY WORKING GROUP ON THE CAUSES, EXTENT AND POLICY IMPLICATIONS OF THE CURRENT CRISIS IN INSURANCE AVAILABILITY AND AFFORDABILITY (February 1986) [hereinafter TORT POLICY REPORT]. The Attorney General established the Tort Policy Working Group in October 1985 "to examine the rapidly expanding crisis in liability insurance availability and affordability." *Id.* at 1. The committee was composed of representatives of the White House and of ten federal agencies. *Id.* The Tort Policy Working Group found that one cause of the current crisis is the courts' increasing reliance on unreliable expert testimony. See *id.* at 35.

this development has led to a deep and growing cynicism about the ability of tort law to deal with difficult scientific and medical concepts in a principled and rational way.³

Federal courts have become keenly aware of these concerns. The Seventh Circuit recently advised trial judges to bear in mind that "there is not much difficulty in finding a medical expert witness to testify to virtually any theory of medical causation short of the fantastic."⁴ Similarly, a district court wrote:

This Court is disappointed with the apparent fact that these so-called experts can take such license from the witness stand; these witnesses say and conclude things which, in the Court's view, they would not dare report in a peer-reviewed format. It has been as if no one else is listening.⁵

These and similar observations recently led Congress to explore the extent to which "bad science" has undermined the ability of tort law to deal with difficult scientific and medical concepts. A provision of the once proposed Federal Product Liability Act required "that a claimant's expert testimony be corroborated by sound objective evidence."⁶ Several witnesses presented the Congress with compelling evidence of the abuse of expert testimony in product liability actions.⁷ Proponents argued that the measure would enable courts to better exercise their traditional responsibil-

³ *Id.* at 35 (footnote omitted). The final report also observes that:

One of the most pernicious developments in tort law has been the extent to which causation findings are based on fringe scientific or medical opinions well outside the mainstream of accepted scientific or medical beliefs. Increasingly, juries are asked to make difficult decisions about highly complicated issues of science and medicine. Unfortunately, the personality and demeanor of expert witnesses often may be more critical in making such determinations than decades of evolving scientific and medical investigation and thought. This problem has resulted in the growing perception that the tort system often is wholly arbitrary in allocating liability in cases involving difficult issues of science and medicine. This is a particularly problematic situation in toxic tort and drug liability cases. . . . The inability of the tort system to deal credibly with complicated scientific and medical issues strikes at the very heart of the ability of tort law to deal with the growing number of cases involving highly complicated scientific and medical issues.

Id. at 62-63 (footnote omitted).

⁴ *Stoleson v. United States*, 708 F.2d 1217, 1222 (7th Cir. 1983).

⁵ *Johnston v. United States*, 597 F. Supp. 374, 415 (D. Kan.1984).

⁶ See REPORT OF THE SENATE COMMITTEE ON COMMERCE, SCIENCE, AND TRANSPORTATION ON S. 2631, 97th Cong., 2d Sess. 14 (Comm. Print 1982) [hereinafter COMMITTEE REPORT].

⁷ One representative of a trade association, for example, testified that:

Our members report that the use of so-called "expert opinion" is frequently abused in product liability litigation. "Expert" witnesses are

ity to screen unreliable expert testimony.⁸ Opponents, however, felt that the legislation was unnecessary and might unfairly compromise the rights of the injured.⁹ Congress ultimately decided that the

paid to expound their own "pet" theories regarding the safety and practical technological feasibility of various product designs.

Further, these "experts" have been known to tailor the content of their testimony concerning the design of a particular product to fit the needs of a given case. For example, an "expert" may, in one product liability action, testify that the design of "Product A" is inherently unsafe and should never have been used; while in a separate action involving different circumstances, he or she may claim that "Product A" would have provided a safer alternative. In the absence of additional "sound objective evidence" to consider, the jury in such cases cannot be expected to make a reasonable determination of what is, in fact, either safe or feasible.

*Hearings on S. 2631 Before the Subcommittee for Consumers of the Committee on Commerce, Science, and Transportation, 97th Cong., 2d Sess. 342-43 (Comm. Print 1982) [hereinafter *Hearings on S. 2631*] (statement of William W. Scott, representing the National Machine Tool Builders' Association).*

⁸ Professor Henderson, for example, observed that:

Under existing law, plaintiffs frequently succeed in design cases by arguing that the manufacturer should have designed the product differently, supporting their argument with testimony from an expert (typically) [sic] an engineering professor from a local college) with no practical experience who applies basic theory to highly complex factual circumstances. Judges are supposed to screen this sort of testimony and exclude spurious and unfounded statements from the record. It is difficult, however, for nontechnically trained judges to perform this task under vague evidentiary standards of materiality and relevance. Section 4(b) of the bill represents a rational approach to supply judges with a more objective standard to use in performing their legitimate, traditional function of screening out abusive examples of expert testimony. Whether it will succeed will depend on the meaning courts give to the phrase "supported or corroborated by objective evidence."

Id. at 225 (statement of Professor James A. Henderson, Jr., School of Law, Boston University) (citation omitted).

Some proponents suggested that the legislation could be improved by, in essence, codifying the rule of *Frye v. United States*, 293 F. 1013 (D.C. Cir. 1923). *See, e.g., Hearings on S. 2621, supra*, note 7, at 252 (statement of William D. Ford, Chairman, Executive Committee, Coalition for Uniform Product Liability Law) ("[W]e believe that this provision could be improved by requiring the 'sound objective evidence' to be 'generally accepted knowledge' within the particular field of expertise involved."). *See also infra* note 80 (discussing *Frye* and its role under New Jersey law).

⁹ Most opponents maintained that the provision would be unnecessary because: sufficient safeguards presently exist to ensure that plaintiffs' expert opinion is not over-valued by juries. After all, judges assess experts' qualifications prior to their testimony and instruct juries on the ultimate issues of liability and how they relate to proof offered at trial. In addition, defendants may always seek to overturn a verdict based on insufficient expert evidence through a motion for new trial or judgment N.O.V., or by taking an appeal.

Hearings on S. 2631, supra note 7, at 270 (statement of David I. Greenberg, Legisla-

question deserved further study.¹⁰

The question has been revisited since Congress tabled the proposed legislation. Virtually without exception, scholars have found "convincing" evidence that many factual findings in product liability actions "are based on shockingly bad science."¹¹ There is certainly no reason to believe that the results in New Jersey are any better.¹²

tive Director, Consumer Federation of America). Opponents also argued, in essence, that it would be unfair to deny a tort recovery to those injured simply because they lack access to "sound objective evidence." See, e.g., *id.* at 131-32 (statement of David I. Greenberg, Legislative Director, Consumer Federation of America) ("Because injured workers and consumers—unlike many defending manufacturers—often have little or no access to back-up design, engineering and technical data in complex cases, expert opinion is crucial."). In large measure, the argument presupposes both the existence of a product defect and that it can be established by an expert opinion formulated without "sound objective evidence."

Ultimately, even proponents were not sanguine. See, e.g., *id.* at 221 ("Although I sympathize with the draftsman's desire to eliminate abuse of expert testimony, I am doubtful that the courts will succeed in giving sensible, consistent meaning to the phrase "sound objective evidence.") (statement of Professor James A. Henderson, Jr., School of Law, Boston University); *id.* at 359 ("What is 'substantial' objective evidence in any case—the required corroboration for expert testimony—perhaps necessarily is somewhat uncertain.") (Statement of the Machinery and Allied Products Institute).

¹⁰ As the Committee noted:

In testimony and comments to the Committee, many expressed their view that expert testimony which is uncorroborated by sound objective evidence should not, by itself, be sufficient to establish a product liability claim. Proponents of this view believe that these claims should be disposed of as early as possible in a legal proceeding. The Committee heard other testimony, however, that sufficient safeguards already exist with respect to expert testimony: judges must assess experts' qualifications prior to their testimony and instruct juries on how the ultimate issues of liability relate to the expert opinion evidence offered during trials.

After consideration of the expert opinion proposal the Committee believes that it demands additional study before any legislative remedy may be fashioned.

COMMITTEE REPORT, *supra* note 6, at 14.

¹¹ Mashaw, *A Comment on Causation, Law Reform, and Guerrilla Warfare*, 73 GEO. L.J. 1393, 1395-96 (1985). Accord Imwinkelried, *Science Takes the Stand: The Growing Misuse of Expert Testimony*, 26 Science 20, 25 (1986) ("Today, science is being distorted, and the legal system is suffering for it. Judges, juries, and lawyers too often accept improved theories as gospel.") (emphasis in original).

¹² The only discussion of the phenomenon in New Jersey itself appears to be Shanahan, *Expert Witness Boom*, NEW JERSEY LAWYER 34 (Winter 1986). The author noted a trend in New Jersey toward increasing reliance on "the expert of dubious, questionable or minimal qualifications." *Id.* The author also reported that "[m]any practicing attorneys feel that we are rapidly reaching the stage where virtually anyone may testify as an expert about something." *Id.*

B. An Old Phenomenon With New Ramifications

The "junk science" phenomenon is by no means a new one. Courts in the United States have long railed at its use since they first took pen to hand.¹³ Commentators have likewise complained bitterly about it throughout the twentieth century.¹⁴ Consequently, the problem in the product liability context today is clearly rooted in the unresolved problem of yesterday. It was a crisis waiting to happen.¹⁵

¹³ See, e.g., *Winans v. New York & Erie R.R. Co.*, 62 U.S. 88, 101 (1858) ("Experience has shown that opposite opinions of persons professing to be experts may be obtained to any amount. . ."); *Wilkinson v. Greely*, 29 F. Cas. 1259, 1262-63 (C.C.D. Mass. 1853) (No. 17,672) ("[T]he experience of all concerned in the administration of justice tends to the conclusion that this species of evidence is less satisfactory than any other. . . where there is any room for a difference of opinion, experts, in about equal numbers, will generally be found testifying on each side."); *American Middlings Purifier Co. v. Christian*, 1 F. Cas. 683, 687 (C.C.D. Minn. 1877) (No. 307) ("whenever the matter in contest involves an immense sum in value, and where the question turns mainly upon opinions of experts, there is no difficulty in introducing any amount of them on either side. . .").

¹⁴ See, e.g., *Friedman, Expert Testimony, Its Abuse and Reformation*, 19 YALE L.J. 247, 248 (1910) [hereinafter *Friedman, Expert Testimony*] (abuse of expert testimony "is so universally recognized the profession is beginning to bestir itself on the subject and to suggest and to plan reforms"); *Myers, "The Battle of the Experts: A New Approach to an Old Problem in Medical Testimony"*, 44 NEB. L. REV. 539, 543 (1965) [hereinafter *Myers, The Battle of the Experts*] (citation omitted) (abuse of expert testimony constitutes "a painful canker in the body of the law of evidence which has been festering for many decades"); *Van Dusen, The Impartial Medical Expert System: The Judicial Point of View*, 34 TEMP. L.Q. 386, 386 (1961) [hereinafter *Van Dusen, The Impartial Medical Expert System*] (noting "long-standing professional dissatisfaction, both medical and legal, with sole reliance on partisan expert testimony") (footnote omitted).

This has been particularly true of expert medical testimony in the personal injury context. As one author noted:

Under present procedure, where the medical testimony comes from no objective or necessarily qualified source, and only through the hirings of the parties, partisan experts, medical mouthpieces, the jury is more apt to be confused than enlightened by what it hears. It hears black from one expert, white from the other, a maximizing or minimizing of injuries in accordance with the interest of the source of payment for the testimony.

Peck, Impartial Medical Testimony: A Way to Better and Quicker Justice, 22 F.R.D. 21, 22 (1959) [hereinafter *Peck, Impartial Medical Testimony*].

Similar complaints began to surface in the product liability context, apart from the personal injury context, well over a decade ago. See, e.g., *Donaher, The Technological Expert*, *supra* note 17, at 1311-12 (noting "the too-frequent surfacing of the ubiquitous journeyman expert who will fashion his credentials as well as his conclusion 'to fit the crime'"); *Mitchell, The Proposed Rules of Federal Evidence*, *supra* note 17, at 576 (abuse of expert testimony in product liability actions is "altogether too obvious").

¹⁵ Cf. *Myers, The Battle of the Experts*, *supra* note 14, at 554-55 (predicting greater problems in light of "trends toward popularity of pressing personal injury claims,

Society can no longer afford factual findings based on shockingly bad science. The legal system today relies on scientists to provide facts about important and diverse matters of concern including the safety and efficacy of drugs,¹⁶ the dangers presented by chemicals in the work place,¹⁷ and the safety requirements of nuclear power plants.¹⁸ Both in the context of private litigation and in the judicial review of administrative action, courts now deal with scientific issues of profound significance.¹⁹ This is particularly true of product liability actions, in which expert testimony is frequently necessary and decisive.²⁰

The stakes in a modern product liability action far transcend those involved in the typical personal injury action of the past. A product liability action can drive a vital product or class of products from the marketplace.²¹ Furthermore, product liability judgments, premised in part on the cost-shifting (risk-spreading) rationale, can add significantly to the cost of a product and, hence, limit its availability.²² The financial stakes to manufacturers can be enormous and at times even fatal to multimillion dol-

expansion of tort liability, and a broadening concept of social responsibility tempered by a consideration of capacity to bear the loss").

¹⁶ See *United States v. Rutherford*, 442 U.S. 544, 555 (1979).

¹⁷ See *American Petroleum Inst. v. OSHA*, 581 F.2d 493, 506-08 (5th Cir. 1978), *aff'd sub nom. Industrial Union Dep't v. American Petroleum Inst.*, 448 U.S. 607 (1980).

¹⁸ See *Silkwood v. Kerr-McGee Corp.*, 464 U.S. 238, 243-46 (1984).

¹⁹ See generally Katz, *The Function of Tort Liability in Technology Assessment*, 38 CİN. L. REV. 587, 606 (1969); Taylor, *Science in the Court*, U.S. NEWS & WORLD REPORT, Nov. 10, 1986, at 91 ("[H]igh-stakes scientific controversies represent a growing percentage of the more than 600,000 tort, or wrongful-act lawsuits filed each year in federal and state courts.").

²⁰ See, e.g., Donaher, Piehler, Twerski & Weinstein, *The Technological Expert in Products Liability Litigation*, 52 TEX. L. REV. 1303, 1303 (1974) [hereinafter Donaher, *The Technological Expert*] (role of the expert in product liability litigation is "pivotal"); Mitchell, *The Proposed Federal Rules of Evidence: How They Affect Product Liability Practice*, 12 DUQ. L. REV. 551, 562-70 (1974) [hereinafter Mitchell, *The Proposed Rules of Federal Evidence*] (experts used frequently in product liability actions).

²¹ Quite clearly, product liability law carries the regulatory power to alter both the price and availability of most consumer products. See generally G. EADS & P. REUTER, *DESIGNING SAFER PRODUCTS: CORPORATE RESPONSES TO PRODUCT LIABILITY LAW AND REGULATION passim* (Rand Inst. for Civil Justice 1983). This power can serve society well when focused on defective products. Significantly, however, it can also deprive society of necessary products if product liability judgments are based on erroneous scientific or medical evidence. Commentators have noted, for example, that product liability judgments have had the effect of "forcing the withdrawal of drug products from the market and inhibiting their introduction in the first instance." Walsh & Klein, *The Conflicting Objectives of Federal and State Tort Law Drug Regulation*, 41 FOOD DRUG COSM. L.J. 171, 177 (1986) (footnotes omitted).

²² Indeed, one scholar has argued that product liability law operates as a regressive "tax" on the poor in effectuating its cost-shifting (social welfare) objectives.

lar enterprises.²³ Indeed, even one erroneous decision predicated on unreliable testimony could be catastrophic in light of modern developments in the law of nonmutual issue preclusion.²⁴ Finally, erroneous product liability decisions can serve as sources of consumer misinformation.²⁵ Thus, courts must recognize that the expert in a product liability action "bears an expanded responsibility arising from the necessity of addressing questions of major societal significance."²⁶

Aside from the harm that unreliable expert testimony can do to matters of major societal significance, it can also arrest the law's historical march toward more rational adjudication. Expert witnesses became a necessity when the law substituted trial by jury in place of primitive, less rational methods of resolving disputes; for example, proof by witnesses, compurgation, battle, and ordeal. Rather than resolve disputes by these essentially irrational means, adjudication became the product of "the reasoning process of a group of rational men upon the information which that group had before it. . . ."²⁷ Quite obviously, even the reasoning process of rational fact finders will produce irrational results if based on unreliable information.

Junk science also compromises the integrity of the judicial process in several respects. First, it can result in injustice to the litigants through confusion of the factfinder.²⁸ Second, it jeopard-

See Priest, *The Best Evidence of the Effect of Products Liability Law on the Accident Rate: Reply*, 91 YALE L.J. 1386 (1982).

²³ See Note, *The Manville Bankruptcy: Treating Mass Tort Claims in Chapter 11 Proceedings*, 96 HARV. L. REV. 1121 (1983).

²⁴ See generally, e.g., Davis, *Collateral Estoppel—An Awesome Specter*, 34 FED. OF INS. COUNS. QUARTERLY 73 (1983); Gunn, *The Offensive Use of Collateral Estoppel in Mass Tort Cases*, 52 MISS. L.J. 765 (1982); Maines, *Offensive Collateral Estoppel in Mass Tort or Products Liability Cases: The Potential for Corporate Catastrophe from Prior Administrative Proceedings*, 35 ADMIN. L. REV. 327 (1983).

²⁵ See Report to the American Bar Association, *Towards a Jurisprudence of Injury: The Continuing Creation of a System of Substantive Justice in American Tort Law 11-3* (ABA 1984) (tort law serves "as a supplier of useful information about injuring occurrences"). Consequently, a judgment based on erroneous information, like junk science, necessarily serves as a supplier of misinformation.

²⁶ Donaher, *The Technological Expert*, *supra* note 20, at 1303.

²⁷ Rosenthal, *The Development of the Use of Expert Testimony*, 2 LAW & CONTEMP. PROBS. 403, 406 (1935).

²⁸ See, e.g., Peck, *Impartial Medical Testimony*, *supra* note 14, at 22 ("An enormous amount of time is spent on the battle of partisan experts, and in the end the jury is unable to detect the medical truth or to pass upon underlying questions of competency and honesty between the medical contenders."); Van Dusen, *The Impartial Medical Expert System*, *supra* note 14, at 388 (battle of experts is an "unproductive waste of time and resources. . . [unable] to aid the jury to reach an intelligent determination of the issues").

dizes the integrity of those involved—the litigants, the lawyers, the experts, and the courts—as well the public's perception of the courts.²⁹ Third, the utilization of junk science produces the effects predicted by Gresham's rule—the more it is tolerated, the less likely honest experts will testify.³⁰

Because erroneous decisions can have these profound consequences, judges and independent scholars have continually sought to structure the courts' fact-finding methodology.³¹ Clearly, the fact-finding process must be structured if it is to cope with "the anomaly of asking a lay judge or jury to resolve a dispute between experts on a subject about which they know nothing other than what the experts have told them."³² To confront

²⁹ If the crisis continues, the public will lose respect for the judicial system and its participants because they will see that "a trial is not a sober, logical search for the truth, but something that has deteriorated into an expensive, and sometimes cruel, game of chance." Myers, *The Battle of the Expert*, *supra* note 14, at 559 (citation omitted).

Indeed, a lawyer's participation in the game jeopardizes his own integrity. As one scholar noted:

If one expert does not give the lawyer what he demands, he does not hesitate to discard him and search the market until he finds what he wants. If he cannot get the real article, he furbishes up the counterfeit and passes it off on the jury. If he finds that the genuine expert opinion is against him, he may at least deliberately play the game with the counterfeit. . . .

Friedman, *Expert Testimony*, *supra* note 14, at 254. This game playing obviously entails the use of double standards. Thus, "[a] lawyer who would absolutely refuse to pass a counterfeit bill will unhesitatingly palm off counterfeit expert testimony on a jury." *Id.* at 255.

³⁰ The increasing reliance on "intellectual prostitutes" discourages serious scientists from participating in the process. Wick & Kightlinger, *Impartial Medical Testimony Under the Federal Civil Rules: A Tale of Three Doctors*, 34 *INS. COUNS. J.* 115, 122 (1967) [hereinafter Wick & Kightlinger, *Impartial Medical Testimony Under the Federal Civil Rules*] ("Many of the best qualified doctors abhor the courtroom as if it were an alien place which is to be avoided at all costs."). See also Myers, *The Battle of the Experts*, *supra* note 14, at 557 (citation omitted) ("This spectacle has so distressed many good doctors that they have refused to have anything to do with litigation. . . . Their withdrawal, unfortunately, has only smoothed the way for less able and upright members of the profession and thus compounded the evil.")

³¹ See, e.g., *Symposium on Science and the Rules of Legal Procedure*, 101 *F.R.D.* 599 (1983); *Symposium on Science and the Rules of Evidence*, 99 *F.R.D.* 187 (1983).

³² Bereano, *Courts as Institutions for Assessing Technology*, in *SCIENTISTS IN THE LEGAL SYSTEM* 88 (W. Thomas ed. 1974). Learned Hand noted at the turn of the century that "logically the expert is an anomaly; . . . [and] from the legal anomaly serious practical difficulties arise." Hand, *Historical and Practical Considerations Regarding Expert Testimony*, 15 *HARV. L. REV.* 40, 50 (1902). Hand's own description of the anomaly best captures its essence:

The whole object of the expert is to tell the jury. . . general truths derived from his specialized experience. But how can the jury judge between two statements each founded upon an experience confessedly

this anomaly, New Jersey courts have traditionally utilized "screening devices" to "insure. . . that the flow to the jury of 'expert' information is not wholly bogus in nature. . . ." ³³ The discussion that follows identifies these screening devices and suggests how courts and advocates alike can utilize them to keep junk science out of the New Jersey court system.

II. THE RULE-BASED SCREENING DEVICES

A. *The General Rules of Evidence*

Although expert testimony under New Jersey law is governed by specific evidence rules, ³⁴ it nonetheless remains subject to the rules generally governing all forms of evidence. Indeed, the policy considerations underlying the rules generally governing the admissibility of evidence coincide with those underlying the rules pertaining specifically to expert testimony. Consequently, the specific rules cannot be understood apart from the broader structure within which they operate.

foreign in kind to their own? It is just because they are incompetent for such a task that the expert is necessary at all.

. . . [W]hen any conflict between really contradictory propositions arises, or any reconciliation between seemingly contradictory propositions is necessary, the jury is not a competent tribunal.

. . . Theirs is not, and in the nature of things cannot be, the function to decide between two sets of such truths. . . .

One thing is certain, they will do no better with the so-called testimony of experts than without, except where it is unanimous. If the jury must decide between such they are as badly off as if they had none to help. The present system in the vast majority of cases—there being some dispute upon almost all subjects of human inquiry—is a practical closing of the doors of justice upon the use of specialized and scientific knowledge.

Id. at 54-56. Consequently, Hand concluded that when the conflict between the experts is direct and open, "the absurdity of our present system is apparent." *Id.* at 54.

Hand's anomaly also pertains to the evaluation of the expert's qualifications. How does the trial judge resolve a dispute between experts about what it takes to qualify as an expert in the particular subject matter at hand? *Cf.* Korn, *Law, Fact, and Science in the Courts*, 66 COLUM. L. REV. 1080, 1085 (1966) [hereinafter Korn, *Law, Fact, and Science in the Courts*] ("The task of passing on qualifications of party-proposed experts has itself assumed technical dimensions. . . .").

Commentators remain to this day perplexed by Hand's anomaly. *See, e.g.*, Wick & Kightlinger, *Impartial Medical Testimony Under the Federal Civil Rules*, *supra* note 30, at 115-16 ("Can a jury, unschooled in medical science, receive sufficient enlightenment from the often conflicting testimony of the parties' doctors to make an intelligent choice between medical opinions diametrically opposed to each other?").

³³ *Angel v. Rand Express Lines, Inc.*, 66 N.J. Super. 77, 85, 168 A.2d 423, 427 (App. Div. 1961).

³⁴ *See infra* notes 35-40 and accompanying text.

Like any other evidence, an expert's testimony is admissible only if it is "relevant" to the case at hand.³⁵ Evidence is relevant if it supports a material inference that a party seeks to establish.³⁶ Applied to expert testimony, the threshold test of relevance itself necessarily connotes a modicum of reliability.³⁷

A showing of relevance, however, does not end the inquiry. While the New Jersey Rules of Evidence provide, in sweeping terms, that "all relevant evidence is admissible,"³⁸ the Rules also grant trial courts broad discretionary power to exclude relevant evidence.³⁹ In determining the admissibility of evidence, consequently, the inquiry may not be whether the evidence is relevant, but rather whether its probative value is substantially outweighed by other important policy considerations essential to a fair trial.⁴⁰

B. The Role of Expert Testimony and the Discretion to Reject It

The modern standards that dictate when expert testimony is necessary, when it is permissible but not essential, and when it is impermissible, underscore the objective of rational fact-finding. Expert testimony is essential whenever the scientific or technical aspects of the case would otherwise result in the trier of fact's

³⁵ N.J. EVID. R. 1(2) defines "relevant evidence" as "evidence having any tendency in reason to prove any material fact." *Id.*

³⁶ The New Jersey Supreme Court has observed that "New Jersey case law both before and after the promulgation of the rule defines the test to be whether the evidence 'renders the desired inference more probable than it would be without the evidence.'" *State v. Cavallo*, 88 N.J. 508, 515, 443 A.2d 1020, 1023 (1982) (citation omitted).

³⁷ As the supreme court observed in *Cavallo*, "[o]bviously, inaccurate testimony, lay or expert, has no tendency to prove any material fact." *Id.* Accord FED. R. EVID. 702 Advisory Committee's Note ("When opinions are excluded, it is because they are unhelpful and a waste of time.")

³⁸ N.J. EVID. R. 7(f). This Rule has been understood to mandate a general presumption in favor of the admission of all relevant evidence. *See, e.g., State v. Moore*, 147 N.J. Super. 47, 51, 370 A.2d 531, 534 (App. Div. 1977).

³⁹ N.J. EVID. R. 4 provides:

The judge may in his discretion exclude evidence if he finds that its probative value is substantially outweighed by the risk that its admission will either (a) necessitate undue consumption of time or (b) create substantial danger of undue prejudice or of confusing the issues or of misleading the jury.

Id.

In discussing the utilization of Rule 4 to exclude expert testimony, the New Jersey Supreme Court recently observed that "[w]hether the probative value of a particular piece of evidence is outweighed by its potential prejudice is a decision normally left to the discretion of the trial court; and this 'discretion is a broad one.'" *State v. Kelly*, 97 N.J. 178, 215, 478 A.2d 364, 383 (1984) (citation omitted).

⁴⁰ *See, e.g., State v. Carter*, 91 N.J. 86, 106, 449 A.2d 1280, 1291 (1982).

inability to comprehend the issues.⁴¹ The test of admissibility, however, is simply whether or not the expert can assist the trier of fact in deciding the matter rationally.⁴² Finally, expert testimony is not permitted if it is offered simply to address a matter of common knowledge.⁴³

New Jersey law entrusts to the trial judge the responsibility to promote rational results. Under New Jersey law, a proffered expert may testify only if he "has sufficient expertise to offer the intended testimony and the testimony itself is sufficiently reliable."⁴⁴ If a witness' expertise or the reliability of his opinion is placed in issue, the trial court is obliged to preliminarily determine those questions.⁴⁵

Both the qualification of an expert to testify and the admissibility of his opinion are discretionary determinations for the trial court. It is therefore well settled that:

[T]he admission or exclusion of proffered evidence is a matter which resides within the sound exercise of discretion by the trial judge, and the exercise of that discretion will not ordinarily be disturbed unless there is a marked abuse of discretion. Reversal will follow only in cases of a clear abuse.⁴⁶

There is now available a substantial body of authority addressing the parameters of a trial court's discretion in determining whether a witness is qualified to testify as an expert and the admissibility of his proposed testimony.

⁴¹ See *Butler v. Acme Markets Inc.*, 89 N.J. 270, 283, 445 A.2d 1141, 1147 (1982) ("The test of need of expert testimony is whether the matter to be dealt with is so esoteric that jurors of common judgment and experience cannot form a valid judgment. . . .")

⁴² See *id.* (in those instances, expert testimony "would be an aid to a jury. . . ." But its absence is not fatal.") (citation omitted); see also *Rempfer v. Deerfield Packing Corp.*, 4 N.J. 135, 142, 72 A.2d 204, 207 (1950) (test is "whether the witnesses offered as experts have peculiar knowledge or experience not common to the world. . . .").

⁴³ See, e.g., *Dodge v. Johns-Manville Sales Corp.*, 129 N.J.L. 65, 69, 28 A.2d 104, 107 (N.J. 1942) (fact that a ladder can be jarred from its position is a matter of common knowledge for which expert testimony would be "inappropriate and inadmissible"); cf. *Body-Rite Repair Co. v. Director, Division of Taxation*, 89 N.J. 540, 542-43, 446 A.2d 515, 516 (1982) (linguistics expert could not assist court in statutory interpretation).

⁴⁴ *State v. Cavallo*, 88 N.J. 508, 516, 443 A.2d 1020, 1024 (1982); accord *State v. Kelly*, 97 N.J. 178, 209-10, 478 A.2d 364, 380 (1984).

⁴⁵ N.J. EVID. R. (8)(1) provides, in pertinent part, that:

When the qualifications of a person to be a witness, or the admissibility of evidence. . . is in issue, that issue is to be determined by the judge.

Id.

⁴⁶ *Purdy v. Nationwide Mut. Ins. Co.*, 184 N.J. Super. 123, 130, 445 A.2d 424, 427 (App. Div. 1982) (citations omitted).

C. Qualification

The standards governing the qualification of an expert witness are embodied in New Jersey Evidence Rule 19, which provides that:

As a prerequisite for the testimony of a witness there must be evidence that he has personal knowledge of the matter, or experience, training, or education, if such be required. Such evidence may be provided by the testimony of the witness himself. . . . In exceptional circumstances the judge may receive the testimony of the witness conditionally, subject to the evidence of knowledge, experience, training or education being later supplied in the course of the trial.⁴⁷

Some commentators have argued that a trial court's power to exclude expert testimony should be exercised "with great caution."⁴⁸ They also have noted that: "New Jersey appellate courts have not been inclined to affirm decisions to exclude medical experts in medical and dental malpractice cases. Deficiencies in the qualifications and opinions of such experts have been deemed matters for the jury's consideration in assessing the value to be given the expert testimony."⁴⁹

New Jersey courts must re-examine the wisdom of this philosophy, particularly in the context of product liability actions involving "complex and refractory causal issues. . . which stand at the frontier" of science.⁵⁰ The mere fact that someone has a medical degree should not mean that he is necessarily qualified to express a reasoned scientific opinion on all medical issues.⁵¹

⁴⁷ N.J. EVID. R. 19.

⁴⁸ N.J. EVID. R. 19 comment 3. Cf. Mitchell, *The Proposed Rules of Federal Evidence*, *supra* note 20, at 563 (Federal Rule of Evidence 702, governing the qualification of experts, "combines the classical standards into one liberalized one") and at 564 (standards for appropriate use of expert testimony have been "relaxed").

⁴⁹ N.J. EVID. R. 19 comment 3 (citations omitted).

⁵⁰ *Ferebee v. Chevron Chem. Co.*, 736 F.2d 1529, 1534 (D.C. Cir.), *cert. denied*, 469 U.S. 1062 (1984).

⁵¹ As the Third Circuit observed, the law has not "opened the door to such an extent that any doctor can testify about any medical subject without limitation." *Arnold v. Loose*, 352 F.2d 959, 962 (3d Cir. 1965). Consequently, courts have not hesitated to slam the door on witnesses whose claim to expertise is based solely on a medical degree in cases requiring a greater degree of specialization. *See, e.g., id.* at 962 (orthopedic surgeon unqualified to testify concerning diabetic coma); *Hunt v. Bradshaw*, 251 F.2d 103 (4th Cir. 1958) (radiologist unqualified to testify concerning appropriate surgical procedures); *Hartke v. McKelway*, 526 F. Supp. 97 (D.D.C. 1981) (gynecologist unqualified to testify concerning laproscopic cauterization procedure); *Wesley v. State*, 32 Ala. App. 383, 26 So.2d 413 (1946) (toxicologist unqualified to testify concerning nature of stab wound); *Harris v. Campbell*, 2 Ariz. App. 351, 409 P.2d 67 (1965) (general practitioner unqualified to testify concern-

On the other hand, there may be instances in which expertise in one area can be brought to bear in another. For example, in *Rosenberg v. Cahill*,⁵² the New Jersey Supreme Court recently addressed the question whether a physician was qualified to express an opinion concerning the standard of care governing chiropractors in reading and interpreting x-rays.⁵³ The court carefully reviewed the nature of chiropractic service⁵⁴ and found "that there is an overlap between the medical and chiropractic professions with respect to both the use of x-rays and the diagnosis of conditions that may require medical attention."⁵⁵ Consequently, the court held that the physician was qualified to express an opinion in that area of overlap.⁵⁶

In short, no hard and fast rules can determine whether or not an expert is qualified.⁵⁷ At the least, courts "must examine the reality behind the title" to determine whether the expert has "demon-

ing vaginal hysterectomy); *Huffman v. Linquist*, 37 Cal.2d 465, 234 P.2d 34 (1951) (pathologist unqualified to testify concerning treatment of brain injury); *Moore v. Belt*, 34 Cal. 2d 525, 212 P.2d 509 (1949) (pathologist unqualified to testify concerning practice of urology); *Dolan v. Galluzzo*, 77 Ill. 2d 279, 396 N.E.2d 13 (1979) (physician unqualified to testify concerning podiatry); *Swanson v. Chatterton*, 281 Minn. 129, 160 N.W.2d 662 (1968) (internist unqualified to testify concerning orthopedic surgery); *State v. Askin*, 90 Mont. 394, 3 P.2d 654 (1931) (general practitioner unqualified to testify concerning brain injury); *Whitehurst v. Boehm*, 41 N.C. App. 670, 255 S.E.2d 761 (1979) (orthopedic surgeon unqualified to testify concerning podiatry); *Capan v. Divine Providence Hospital*, 270 Pa. Super. 127, 410 A.2d 1282 (1980) (anesthesiologist unqualified to interpret autopsy report).

⁵² 99 N.J. 318, 492 A.2d 371 (1985). See generally Note, *Physician May Qualify as an Expert in Malpractice Action Against Chiropractor*, 16 SETON HALL L. REV. 745 (1986) (detailed review of *Rosenberg*).

⁵³ *Rosenberg*, 99 N.J. at 322, 492 A.2d at 373.

⁵⁴ See *id.* at 328-34, 492 A.2d at 376-79.

⁵⁵ *Id.* at 331, 492 A.2d at 378.

⁵⁶ *Id.* at 334, 492 A.2d at 379. Justice Handler, writing for the unanimous court, noted:

[A] person who is duly licensed as a medical doctor may be competent to express an opinion concerning the standard of care applicable to a chiropractor as to matters that each of these licensed disciplines of medicine and chiropractic share in common in terms of education, training and licensure. In a case such as this, a medical doctor would be competent as an expert concerning the chiropractic use of x-rays and the diagnosis of physical conditions.

Id.

⁵⁷ As the Fifth Circuit recently observed, "[b]ecause the universe of experts is defined only by the virtually infinite variety of fact questions in the trial courts, the signals of competence cannot be catalogued." *In re Air Crash Disaster at New Orleans, Louisiana* on July 9, 1982, 795 F.2d 1230, 1234 (5th Cir. 1986). Consequently, the law of qualification can only embody an ideal and, as such, provide guidelines for judgment, not mechanical rules of decision. See Donaher, *The Technological Expert*, *supra* note 20, at 1325 (Federal Rule 702 "provides minimal assistance to the court in the exercise of its discretionary power to pass on a witness's qualifi-

strable knowledge of the subject" involved in the specific case.⁵⁸ As the Appellate Division of the New Jersey Superior Court aptly observed: "The mere fact that a witness is an expert in a wide general field, like engineering, does not make everything he says admissible. It must appear that he knows what he is talking about with reference to the facts of the particular case."⁵⁹

D. Admissibility

The admissibility of expert testimony is governed by New Jersey Evidence Rule 56(2), which provides that:

A witness qualified pursuant to Rule 19 as an expert by knowledge, skill, experience, training or education may testify in the form of opinion or otherwise as to matters requiring scientific, technical or other specialized knowledge if such testimony will assist the trier of fact to understand the evidence or determine a fact in issue. 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 him 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

ation."); Mitchell, *The Proposed Rules of Federal Evidence*, *supra* note 20, at 563 (judgment that a particular expert is competent is "generally an ad hoc one").

⁵⁸ *Jenkins v. United States*, 307 F.2d 637, 643, 644 (D.C. Cir. 1962). The implicit presumption in earlier decisions that a member of a profession is probably qualified to testify about any issue within the broad rubric of that profession fails to account for the increasing specialization required by our society's rapid intellectual advancements. As one scholar observed:

One route [toward eliminating the abuse of expert testimony] would be a tightening of the standards for "qualification." . . . The standards applied are often quite loose. Thus, any member of a profession may be permitted to testify as to any matter within the broad scope of the profession, though the subject more appropriately calls for a specialist within a particular branch; for example, the general medical practitioner qualifies in situations where the orthopedist or neurosurgeon would provide more reliable information. This approach seems a relic of simpler times, ill-suited to an age in which the rapidly increasing fund of human knowledge demands greater and greater particularization.

Korn, *Law, Fact, and Science in the Courts*, *supra* note 32, at 1084-85. See generally 3 D. LOUISELL & C. MULLER, *FEDERAL EVIDENCE* § 381, at 637 (1979) (expert's "area of expertise should match fairly closely the subject matter of his proposed testimony. If it does not, or if for any other reason such background simply fails to equip the witness to testify as proposed, then he should not be qualified as an expert. . ."); Donaher, *The Technological Expert*, *supra* note 20, at 1325 ("[T]he precise delineation of the technical issues must provide the focus for the evaluation of the expert's credentials.").

⁵⁹ *Newman v. Great American Ins. Co.*, 86 N.J. Super. 391, 399, 207 A.2d 167, 172 (App. Div. 1965).

subject, the facts or data need not be admissible in evidence.⁶⁰

The New Jersey Supreme Court first addressed the prerequisites of admissibility under Rule 56(2) in *State v. Cavallo*.⁶¹ Derived from case law preceding adoption of the Rule,⁶² *Cavallo* recognizes several prerequisites to the admissibility of scientific evidence. They have been employed to determine the admissibility of information from scientific devices, including breathalyzers,⁶³ fiber analysis,⁶⁴ thermograms,⁶⁵ chemical blood tests,⁶⁶ and spectrographs.⁶⁷ In addition, these prerequisites have been used to assess the admissibility of modes of analysis not dependent on devices, including discourse analysis,⁶⁸ battered woman's syndrome,⁶⁹ canine tracking,⁷⁰ art therapy,⁷¹ accounting,⁷² and morphological footprint comparison.⁷³

⁶⁰ N.J. EVID. R. 56(2). Rule 56(2) was amended on September 15, 1981 to be effective on July 1, 1982. *Id.* Publisher's Note. In 1967, Rule 56(2) read:

If the witness is testifying as an expert, testimony of the witness in the form of opinions or inferences is limited to such opinions as the judge finds are (a) based primarily on facts, data or other expert opinion established by evidence at the trial and (b) within the scope of the special knowledge, skill, experience or training possessed by the witness.

N.J. EVID. R. 56(2) (1967). By expressly referring to Rule 19, the current version of Rule 56(2) re-emphasizes the importance of qualifications. It also expressly permits an expert to rely on facts or data not admissible in evidence provided they are "of a type reasonably relied upon by experts in the particular field in forming opinions or inferences upon the subject. . . ." N.J. EVID. R. 56(2).

⁶¹ 88 N.J. 508, 443 A.2d 1020 (1982).

⁶² *See, e.g., State v. Hurd*, 86 N.J. 525, 432 A.2d 86 (1981) (testimony based on perceptions enhanced by hypnosis not admissible because proponent failed to demonstrate technique's reliability); *State v. Cary*, 49 N.J. 343, 230 A.2d 384 (1967) (spectrographic evidence admissible only if reliability can be established); *D'Arc v. D'Arc*, 157 N.J. Super. 553, 385 A.2d 278 (Ch. Div. 1978) (spectrographic evidence found unreliable).

⁶³ *See, e.g., Romano v. Kimmelman*, 96 N.J. 66, 474 A.2d 1 (1986) (admissible).

⁶⁴ *See, e.g., State v. Hollander*, 201 N.J. Super. 453, 493 A.2d 563 (App. Div. 1985) (admissible).

⁶⁵ *Compare Ferlise v. Eiler*, 202 N.J. Super. 330, 495 A.2d 129 (App. Div. 1985) (thermographic evidence not established as reliable) with *Procida v. McLaughlin*, 195 N.J. Super. 396, 479 A.2d 447 (Law Div. 1984) (thermographic evidence found to be reliable).

⁶⁶ *See, e.g., State v. Kelly*, 207 N.J. Super. 114, 504 A.2d 37 (App. Div. 1986) (admissible).

⁶⁷ *See, e.g., Windmere, Inc. v. International Ins. Co.*, 208 N.J. Super. 697, 506 A.2d 834 (App. Div. 1986) (although reliability not established, trial court did not abuse discretion in admitting spectrographic evidence).

⁶⁸ *See, e.g., State v. Conway*, 193 N.J. Super. 133, 472 A.2d 588 (App. Div. 1984) (inadmissible).

⁶⁹ *State v. Kelly*, 97 N.J. 178, 478 A.2d 364 (1984) (admissible).

⁷⁰ *State v. Wanczyk*, 196 N.J. Super. 397, 482 A.2d 964 (Law Div. 1984) (admissible).

⁷¹ *See, e.g., Wilkerson v. Pearson*, 210 N.J. Super. 333, 509 A.2d 818 (Ch. Div. 1985) (admissible).

As the seminal decision under Rule 56(2), *Cavallo* deserves careful analysis.

In *Cavallo*, the defendant was being prosecuted for rape and sought to call a psychiatrist "as an expert character witness who would testify that [the defendant] does not have the psychological traits of a rapist."⁷⁴ The court found that the proposed testimony was "clearly relevant" and that no question had "been raised as to the general qualification" of the psychiatrist.⁷⁵ Based on these findings, the defendant argued that the expert's testimony was admissible and "that considerations of reliability should determine the weight accorded to scientific testimony, not its admissibility. Such evidence should be placed before the jury, which can evaluate the evidence as it deems proper, as it traditionally evaluates all evidence before it."⁷⁶

The *Cavallo* court rejected the proposition that "considerations of reliability should determine the weight accorded to scientific testimony, not its admissibility."⁷⁷ Instead, the court held that Rule 56(2), like the common law of evidence, requires "some assurance" that scientific evidence is reliable before it is admitted.⁷⁸ The court reasoned that "[t]he danger of prejudice through introduction of unreliable expert evidence is clear. While juries would not always accord excessive weight to unreliable expert testimony, there is substantial danger that they would do so, precisely because the evidence is labeled 'scientific' and 'expert.'"⁷⁹ Accordingly, the court

⁷² See, e.g., *Bowen v. Bowen*, 96 N.J. 36, 473 A.2d 73 (1984) (same standard governing admissibility of scientific testimony applies to opinion testimony based on accounting principles).

⁷³ See, e.g., *State v. Prudden*, 212 N.J. Super. 608, 515 A.2d 1260 (App. Div. 1986).

⁷⁴ *Cavallo*, 88 N.J. at 512, 443 A.2d at 1021.

⁷⁵ *Id.* at 515, 516, 443 A.2d at 1023, 1024.

⁷⁶ *Id.* at 518, 443 A.2d at 1025.

⁷⁷ *Id.*

⁷⁸ See *id.*

⁷⁹ *Id.* Federal courts have similarly recognized this danger inherent in expert testimony. See, e.g., *United States v. Baller*, 519 F.2d 463, 466 (4th Cir.), *cert. denied*, 423 U.S. 1019 (1975) ("Because of its apparent objectivity, an opinion that claims a scientific basis is apt to carry undue weight with the trier of fact.").

Commentators also have observed that:

Scientific and technical evidence has great potential for misleading the jury. The low probative worth can often be concealed in the jargon of some expert or masked by the use of technical paraphernalia. Often the proponent intends no more than to leave the jury with the vague impression that science, in the form of some personable professional witness, is somehow on the proponent's side of the case.

C. WRIGHT & K. GRAHAM, *FEDERAL PRACTICE & PROCEDURE* § 5217, at 295 (1978). Indeed, those who utilize junk science necessarily intend to mislead the jury. See,

held that, before expert scientific testimony is admitted, the trial judge must make a preliminary finding that it is "based on reasonably reliable scientific premises."⁸⁰

In the final analysis, New Jersey's standard of acceptability for scientific testimony seeks to insure that an expert's conclusion is the product of a sound scientific methodology.⁸¹ Courts elsewhere, regardless of the precise test recognized in their jurisdictions, have held that an expert's conclusion is not admissible unless "the basic methodology employed to reach such a conclusion is sound. . . ."⁸²

e.g., Myers, *The Battle of the Experts*, *supra* note 14, at 556 ("Knowing little or nothing about medicine themselves, they are ill-equipped to measure medical skill and knowledge. . . . Hence, the decision to believe one doctor over another is likely to be predicated upon nothing more substantial than courtroom manner, personality, or forensic ability.'") (citation omitted); Peck, *Impartial Medical Testimony: A Way to Better and Quicker Justice*, 22 F.R.D. 21, 22 (1959) ("[T]he witness with the cultivated [sic] courtroom manner, rather than with the superior knowledge and greater integrity, may make the best appearance and carry the jury. [Thus] lawyers become more interested in retaining a good testifier than in retaining a good doctor."); Wick & Kightlinger, *Impartial Medical Testimony Under the Federal Civil Rules*, *supra* note 30, at 117 n.13 ("The testifying doctor who has the greater experience in the courtroom and who is the more eloquent may win the minds of the jurors over the doctor who may give more appropriately qualified but less eloquent testimony on the matter in question.'") (quoting Myers, *The Battle of the Experts*, *supra* note 14, at 556).

⁸⁰ *Cavallo*, 88 N.J. at 526, 443 A.2d at 1029. As the court recognized, this standard differed from the traditional standard enunciated in *Frye v. United States*, 293 F. 1013, 1014 (D.C. Cir. 1923), which required that scientific evidence be generally accepted by the relevant scientific community. See *Cavallo*, 88 N.J. at 520-21, 443 A.2d at 1026. *Cavallo* differs from *Frye* because *Cavallo* also permits qualification without proof of general acceptance. If general acceptance cannot be established, however, the expert must demonstrate that his technique or mode of analysis meets certain "special prerequisites." *Cavallo*, 88 N.J. at 517 n.2, 443 A.2d at 1024 n.2. He must show that it has "sufficient scientific basis to produce uniform and reasonably reliable results and will contribute materially to the ascertainment of truth." *Id.* at 517, 443 A.2d at 1024 (emphasis added) (quoting *State v. Cary*, 49 N.J. 343, 352, 230 A.2d 384, 389 (1967)).

In *Cavallo*, the court held that evidence of general acceptance in the scientific community itself establishes reasonable reliability. *Id.* at 521, 443 A.2d at 1026. The views of the scientific community are thus used as the standard or point of reference. Consequently, "[t]he proponent of expert evidence can therefore meet his burden by demonstrating that the testimony has achieved enough acceptance in the scientific community to convince the court that it is reasonably reliable." *Id.* The court then referred to three sources of information available to prove the "general acceptance" of evidence by the scientific community: "(1) expert testimony, (2) scientific and legal writings, and (3) judicial opinions." *Id.* (quoting Giannelli, *The Admissibility of Novel Scientific Evidence: Frye v. United States, a Half-Century Later*, 80 COLUM. L. REV. 1197, 1215 (1980)).

⁸¹ See generally *State v. Kelly*, 97 N.J. 178, 211, 478 A.2d 364, 380 (1984).

⁸² *Ferebee v. Chevron Chem. Co.*, 736 F.2d 1529, 1535-36 (D.C. Cir.), *cert. denied*, 369 U.S. 1062 (1984). *Accord* *Hull v. Merck & Co., Inc.*, 758 F.2d 1474, 1477 (11th Cir. 1985); *Soden v. Freightliner Corp.*, 714 F.2d 498, 503 (5th Cir. 1983);

This requirement is certainly implicit in the language of New Jersey Evidence Rule 56(2).⁸³

The fact that an expert relies on a particular type of data, and all experts might agree that this type of data is appropriate, does not suffice to establish that his methodology is sound. Rather, the proponent of the testimony should be required to show that experts or scientists in the pertinent discipline could reasonably rely on the expert's method of integrating the data to draw principled conclusions.⁸⁴ One treatise has explained:

Hambasch v. New York City Transit Auth., 63 N.Y.2d 723, 725-26, 469 N.E.2d 516, 518, 480 N.Y.S.2d 195, 197 (1984).

⁸³ The court in *Cavallo* reasoned that "testimony cannot be within an expert's 'special knowledge' if such knowledge has not been accepted as reliable by the courts." *Cavallo*, 88 N.J. at 517 n.2, 443 A.2d at 1024 n.2.

It may be argued that an opinion is not "scientific" within the meaning of Rule 56(2) unless it is derived from a sound scientific methodology, one generally accepted by the relevant scientific community. By definition, "science" entails the objective evaluation of phenomena (data) in the light of established premises. See Webster's Third New International Dictionary 2032 (1981) ("Science" is the "accumulated and accepted knowledge that has been systematized and formulated with reference to the discovery of general truths or the operation of general laws. . ."). One scholar therefore has noted that

it is not left to individual scientists to pick their premises as they wish.

Thus it appears that the "objectivity" of justification in science is grounded in the "rules" followed by the scientific community. . . . [I]t at least takes justification out of the hands of individuals who are subject to individual biases.

R. GIERE, UNDERSTANDING SCIENTIFIC REASONING 39 (1979).

⁸⁴ Here too there can be no hard and fast rules. Certainly, in some cases trial judges must themselves review the scientific literature brought to bear on the question, and cannot simply rely on the experts' interpretations of that literature. If an "expert's" testimony is squarely at odds with the leading learned treatises, for example, his testimony should be considered highly suspect. The fact that learned treatises undergo peer review has been cited as special evidence of their trustworthiness:

The writer of a learned treatise publishes primarily for his profession. He knows that every conclusion will be subjected to careful professional criticism, and is open ultimately to certain refutation if not well founded; that his reputation depends on the correctness of his data and the validity of his conclusions; and that he might better not have written than put forth statements in which may be detected a lack of sincerity of method and of accuracy of results. The motive, in other words, is precisely the same in character and is more certain in its influence than that which is accepted as sufficient in some of the other hearsay exceptions, namely, the unwelcome probability of a detection and exposure of errors.

6 WIGMORE, EVIDENCE IN TRIALS AT COMMON LAW § 1692, at 7 (Chadbourn rev. ed. 1976). *Accord* Ordover, *Expert Testimony: A Proposed Code for New York*, 19 N.Y.L.FORUM 809, 819 (1974) (noting also that if a learned treatise were erroneous, the parties should have "little difficulty in discovering, and employing views contrary to those found in the published work").

Courts must focus not only on the kinds of information that experts in a particular field generally rely upon, but also on whether in the particular case before the Court and on the particular subject to which the expert testimony is addressed, [the] facts or data. . . [on which the expert relies] can reasonably be relied upon by an expert witness. There may be cases involving information which, generally speaking, is relied upon by people with expertise, but which, in a particular setting, is too unreliable to support an expert opinion.⁸⁵

Stated another way, an expert's opinion may be unreliable even though he is qualified, bandies about the appropriate scientific jargon, and points to studies of a type ordinarily brought to bear on the question before the court. New Jersey courts have historically recognized this proposition under the guise of the "net opinion" rule.⁸⁶

III. CONCLUSION

There appear to be ample means under New Jersey law to "insure. . . that the flow to the jury of 'expert' information is not wholly bogus in nature. . . ." ⁸⁷ On some occasions when these screening devices fail, the untoward results may simply reflect bad advocacy.⁸⁸ Yet, it is also clear that both trial and appellate

⁸⁵ S. SALTZBURG & K. REDDEN, FEDERAL RULES OF EVIDENCE MANUAL 467 (3d ed. 1982). See also 3 J. WEINSTEIN & M. BERGER, WEINSTEIN'S EVIDENCE § 703[03] (1985) (courts must determine whether "particular underlying data is of a kind that is reasonably relied upon by experts in the particular field").

⁸⁶ The New Jersey Supreme Court recently explained that:

The "net opinion" rule appears to be a mere restatement of the established rule that an expert's bare conclusions, unsupported by factual evidence, is inadmissible. It frequently focuses. . . on the failure of the expert to explain a causal connection between the act or incident complained of and the injury or damage allegedly resulting therefrom.

Buckelew v. Grossbard, 87 N.J. 512, 524, 435 A.2d 1150, 1156 (1981). Thus, the "net opinion" rule ultimately stands for the common sense proposition that an expert opinion completely lacking a factual foundation is worthless. *Polyard v. Terry*, 160 N.J. Super. 497, 511, 390 A.2d 653, 660 (App. Div. 1978), *aff'd*, 79 N.J. 547, 401 A.2d 532 (1979) (per curiam).

⁸⁷ *Angel v. Rand Express Lines, Inc.*, 66 N.J. Super. 77, 85, 168 A.2d 423, 427 (App. Div. 1961).

⁸⁸ For example, in *Hockett v. United States*, 730 F.2d 709 (11th Cir. 1984), Judge Tjoflat in his concurrence noted:

By failing to make timely objection to Dr. Eylar's qualifications and testimony, and the experiments on which his opinions were founded, the government's counsel deprived the plaintiff, and the court, from further inquiry which, for all we know, may have cast Eylar in a more credible light. Certainly, justice does not require that we now give the government, having failed in its trial strategy, a second chance to prevail.

Id. at 715 (Tjoflat, J., concurring).

courts cannot simply delegate to the jury their judicial responsibility to determine qualifications and reliability.⁸⁹ As Judge Higginbotham of the United States Court of Appeals for the Fifth Circuit recently informed trial courts:

[W]e recognize the temptation to answer objections to receipt of expert testimony with the shorthand remark that the jury will give it "the weight it deserves." This nigh reflexive explanation may be sound in some case[s], but in others it can mask a failure by the trial judge to come to grips with an important trial decision. Trial judges must be sensitive to the qualifications of persons claiming to be expert. Because the universe of experts is defined only by the virtually infinite variety of fact questions in the trial courts, the signals of competence cannot be catalogued. Nevertheless, there are almost always signs both of competence and of the contribution such experts can make to a clear presentation of the dispute. While we leave their detection to the good sense and instincts of the trial judges, we point by way of example to two. First, many experts are members of the academic community who supplement their teaching salaries with consulting work. We know from our judicial experience that many such able persons present studies and express opinions that they might not be willing to express in an article submitted to a refereed journal of their discipline or in other contexts subject to peer review. We think that is one important signal, along with many others, that ought to be considered in deciding whether to accept expert testimony. Second, the professional expert is now commonplace. That a person spends substantially all of his time consulting with attorneys and testifying is not a disqualification. But experts whose opinions are available to the highest bidder have no place testifying in a court of law, before a jury, and with the imprimatur of the trial judge's decision that he is an "expert."⁹⁰

⁸⁹ Nor should appellate courts unduly defer to the admissibility determinations made in trial courts or the factual findings predicated on an expert's testimony. Expert witnesses should, in theory, evaluate empirical data in light of scientific premises. Accordingly, their "credibility" is not a function of their "demeanor", but rather "is a function of logical analysis, credentials, data base, and other factors readily discernible to one who reads the record." *New England Coalition on Nuclear Pollution v. United States Nuclear Regulatory Commission*, 582 F.2d 87, 100 (1st Cir. 1978). See also *Julie Research Laboratories, Inc. v. Guideline Instruments, Inc.*, 501 F.2d 1131, 1133 (2d Cir. 1974) (credibility determination "should not turn simply on the external indicia of 'credibility'"); W. GELLHORN & C. BYSE, *ADMINISTRATIVE LAW CASES AND COMMENTS* 1056 (4th ed. 1960) ("Scientific questions. . . will not be decided upon the basis of the witnesses' behavior while testifying.").

⁹⁰ *In re Air Crash Disaster at New Orleans, Louisiana* on July 9, 1982, 795 F.2d

In the final analysis, a correct determination of scientific issues is essential to fairness between the parties, the integrity of the judicial system, and the public welfare. Courts can staunch the abuse of expert testimony in product liability actions, despite the apparent complexity of the issues before them, if they bear in mind these two straightforward propositions: First, a witness simply cannot be "permitted to testify as an expert because he said he was an expert."⁹¹ Second, even if the witness is in fact an expert, "not everything uttered by a scientist is necessarily science—any more than everything uttered by a lawyer is necessarily the law."⁹² In view of the profound regulatory role the judicial system today plays in society's utilization of technology, we cannot afford to permit something less than science to pass as science in the courtroom.

1230, 1233-34 (5th Cir. 1986). The court explicitly urged trial courts to "take hold of expert testimony" in product liability cases and indicated there would be increased scrutiny at the appellate level "where the record makes it evident that the decision to receive expert testimony was simply tossed off to the jury under a 'let it all in' philosophy." *Id.* at 1234.

The Attorney General's Tort Policy Working Group likewise recommended that both trial and appellate courts become "more aggressive in determining the credibility of scientific and medical evidence and opinions before trial, and not simply allow parties to present any theory to the jury." TORT POLICY REPORT, *supra* note 2, at 63.

⁹¹ *Dambacher v. Mallis*, Prod. Liab. Rep. (CCH) ¶ 10,370 at 27,328-27,329 (Pa. Super. 1984).

⁹² L. Loevinger, *Jurimetrics: Science in Law*, in SCIENTISTS IN THE LEGAL SYSTEM 19 (W. Thomas ed. 1974).