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Cross-Examination of Expert Witnesses: Dispelling the Aura of Reliability

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Cross-Examination of Expert Witnesses: Dispelling the Aura of Reliability

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I. INTRODUCTION

The influence that expert witnesses have on the outcome of a case cannot be overstated. An expert witness brings to the courtroom a long list of credentials that creates an aura of reliability. But an aura is merely an impression, very often deceptive.¹ An expert often may lack expertise in the specific area in which he is testifying,² may base his opinion on unsupported assumptions, or may rely upon unreliable data.³ The opponent may fail to challenge these flaws, however, if he has not diligently examined the expert's testimony. Combined with the liberality of the Federal Rules of Evidence and the practice of some courts to permit juries to consider virtually all such testimony, the expert may appear practically unimpeachable to the jury.⁴

1. See *Eymard v. Pan Am. World Airways (In re Air Crash Disaster)*, 795 F.2d 1230, 1234 (5th Cir. 1986) (expressing cynicism regarding expert witnesses and noting that professional experts are commonplace). For a discussion of the cynicism expressed in *In re Air Crash Disaster*, see *infra* notes 62-63, and accompanying text.

2. See *infra* note 87.

3. See *infra* notes 111-18 and accompanying text.

4. *In re Air Crash Disaster*, 795 F.2d at 1234.

Because a trial is often a battle between experts, a cross-examiner must understand the Rules regarding expert witnesses if he is to minimize successfully the impact of the expert's testimony. This Comment first examines the treatment of experts prior to the 1975 enactment of the Federal Rules of Evidence. Second, it explores the Rules to determine under what circumstances courts should allow expert testimony. This Comment also analyzes the areas in which the Rules allow an expert to testify and the bases upon which an expert may rest his opinion. Finally, it discusses some useful tools with which one may challenge the credibility and authoritative nature of an expert's testimony. This Comment suggests that the liberal application of the Federal Rules of Evidence by trial courts often induces them into making imprudent decisions to let expert testimony go to the jury, and concludes that attorneys need to master the tactical skills of cross-examining an expert if they expect to counteract the impact of the expert's testimony.

II. HISTORICAL PERSPECTIVE

Prior to the enactment of Rules 702 to 705 of the Federal Rules of Evidence, the common law rule permitted courts to admit expert testimony if it was "not within the common knowledge of the layman."⁵ An expert could announce his opinion only after satisfying a three-step procedure: First, setting forth his qualifications; second, setting forth the facts underlying his opinion; and third, explaining the basis of his opinion.⁶ The rationale for establishing and sustaining this three-step procedure focused on assisting the trier of fact. If the trier of fact rejected the facts, data, or opinions underlying the expert's opinion, the trier of fact necessarily had to reject the expert's opinion.⁷

The common law rule permitted an expert to base his opinions on specialized knowledge derived from his own knowledge, skill, experience, training, or education.⁸ He could also base his opinions on firsthand out-of-court observations.⁹ Finally, the expert could formulate opinions based upon facts, data, or opinions already admitted or to be admitted into evidence if the expert had actually heard the

5. *E.g.*, *Bridger v. Union Ry.*, 355 F.2d 382, 387 (6th Cir. 1966); 3 J. WEINSTEIN & M. BERGER, *WEINSTEIN'S EVIDENCE* ¶ 702[02], at 702-8 (1987) [hereinafter J. WEINSTEIN].

6. Rossi, *Modern Evidence and the Expert Witness*, LITIGATION, Fall 1985, at 18.

7. Graham, *Expert Witness Testimony and the Federal Rules of Evidence: Insuring Adequate Assurance of Trustworthiness*, 1986 U. ILL. L. REV. 43, 59 (citing 2 J. WIGMORE, *WIGMORE ON EVIDENCE* § 680 (J. Chadbourn rev. 1979)).

8. *Id.* at 58.

9. *Id.*

information at trial, or if it was presented to the expert in the form of a hypothetical question.¹⁰

Courts closely scrutinized the reports and examinations of others if the expert had relied upon them to form his own opinion.¹¹ Any opinion grounded on hearsay was "fatally tainted," because of the presumption that hearsay is inherently unreliable, absent an exception to the hearsay rule.¹²

If the expert did not have firsthand knowledge of the situation, an attorney would elicit the expert's testimony through hypothetical questions that were based on certain facts admitted into evidence.¹³ Generally, courts required that the hypothetical question encompass facts supported by the evidence material to the proponent's side.¹⁴ Although the question did not have to encompass all of the facts that the evidence revealed, if the question omitted any material facts or contained any facts not supported by the evidence, it was inadmissible.¹⁵

Courts also utilized the test announced in *Frye v. United States*¹⁶ to determine the admissibility of novel scientific evidence.¹⁷ *Frye* involved a systolic blood pressure deception test, introduced through an expert's testimony, which detected deception and falsehood by the

10. *United States v. Miller*, 600 F.2d 498 (5th Cir.), *cert. denied*, 444 U.S. 955 (1979) (charts introduced into evidence formed the basis of the expert's opinion); Arnold, *Federal Rule of Evidence 703: The Backdoor Is Wide Open*, 20 FORUM 1, (1984); Graham, *supra* note 7, at 58.

11. J. McELHANEY, TRIAL NOTEBOOK 342 (1987).

12. *Id.*

13. MCCORMICK ON EVIDENCE 41 (E. Cleary 3d ed. 1984).

14. *Smith v. Ford Motor Co.*, 626 F.2d 784, 791 (10th Cir. 1980), *cert. denied*, 450 U.S. 918 (1981) (Requiring the hypothetical question to encompass all facts led to awkward results.) (citing *United States v. Sessin*, 84 F.2d 667 (10th Cir. 1936)); *Harris v. Smith*, 372 F.2d 806, 810 (8th Cir. 1967) (The hypothetical question must be based upon facts rather than upon other expert opinion.); *Simpson v. Skelly Oil Co.*, 371 F.2d 563, 569 (8th Cir. 1967) (Facts stated in the hypothetical question must be supported in evidence, but need not include all facts shown in evidence.). *But see Ramsey v. Complete Auto Transit, Inc.*, 393 F.2d 41, 44 (7th Cir. 1968) (Only those facts required to form the basis of an opinion, not all facts, need to be included in the hypothetical question.).

15. *Grand Island Grain Co. v. Roush Mobile Home Sales, Inc.*, 391 F.2d 35, 40 (8th Cir. 1968) (If the hypothetical question embraces an important fact not supported by the evidence, it is defective.); *Kale v. Douthitt*, 274 F.2d 476, 482 (4th Cir. 1960) (An expert's testimony is incompetent if based on facts not established by the evidence.).

16. 293 F. 1013 (D.C. Cir. 1923) (The systolic blood pressure deception test had not gained general acceptance in the particular field in which it belonged.); *see infra* notes 105-10 and accompanying text.

17. *E.g.*, *United States v. Tranowski*, 659 F.2d 750, 754-57 (7th Cir. 1981) (applying the *Frye* test to astronomer's testimony purporting to date a photograph by measuring lengths of shadows in the photograph); *United States v. Brown*, 557 F.2d 541, 557 (6th Cir. 1977) (applying *Frye* to an accepted scientific technique utilized in a new area).

rise in one's blood pressure.¹⁸ The court held that the test was inadmissible because it had not "gained general acceptance in the particular field in which it belongs."¹⁹ The *Frye* test provides a method by which courts avoid the possible prejudicial effects of expert testimony that is based upon "an unproved hypothesis in an isolated experiment."²⁰ In accordance with the *Frye* test, a court must analyze three factors, through the introduction of other evidence, before admitting novel scientific evidence: First, the particular scientific community's evaluation of the scientific principle underlying the proffered novel evidence; second, the technique applying the scientific principle; and third, the application of the technique to the case at hand.²¹

Courts also prohibited an expert from expressing an opinion upon an ultimate issue in the case because the expert would be "usurping the province of the jury."²² Generally, at common law a doctor could testify that an accident might or could have caused the injury, but he could not testify that he thought the accident did cause the injury.²³

III. THE STRUCTURE OF THE FEDERAL RULES OF EVIDENCE

The 1975 enactment of Rules 702 to 705 of the Federal Rules of Evidence²⁴ impelled the courts toward a policy of liberal admission of

18. *Frye*, 293 F. at 1013.

19. *Id.* at 1014.

20. *United States v. Downing*, 753 F.2d 1224, 1235 (3d Cir. 1985) (citing *United States v. Brown*, 557 F.2d 541, 556 (6th Cir. 1977)).

21. This elaboration of *Frye* was enunciated in *Downing*, 753 F.2d at 1234 (Once a novel form of expertise is judicially recognized, the foundational requirement of describing the principle of the scientific evidence can be eliminated.).

22. *United States v. Spaulding*, 293 U.S. 498, 506 (1935) (The ultimate issue is to be decided by the jury and not to be resolved by opinion evidence.); *Mazer v. Security Ins. Group*, 368 F. Supp. 418, 422 n.4 (E.D. Pa. 1973) (A witness is not permitted to give an opinion as to an ultimate fact in issue unless the matters involved are beyond the knowledge of the layman.), *aff'd*, 507 F.2d 1338 (3d Cir. 1975).

23. FED. R. EVID. 704 advisory committee's note, 56 F.R.D. 183, 284 (1975).

24. Rule 702 provides: "If scientific, technical, or other specialized knowledge will assist the trier of fact to understand the evidence or to determine a fact in issue, a witness qualified as an expert by knowledge, skill, experience, training, or education, may testify thereto in the form of an opinion or otherwise." FED. R. EVID. 702.

Rule 703 provides: "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 subject, the facts or data need not be admissible in evidence." FED. R. EVID. 703.

Rule 704 provides: "Testimony in the form of an opinion or inference otherwise admissible is not objectionable because it embraces an ultimate issue to be decided by the trier of fact." FED. R. EVID. 704.

Rule 705 provides: "The expert may testify in terms of opinion or inference and give his

expert testimony. Under the Rules, courts no longer prohibit expert testimony based on hearsay if that hearsay is reasonably relied upon by experts in the particular field.²⁵ Furthermore, the Rules no longer require prior disclosure of the facts, data, or opinions underlying an expert's opinion. Although hypothetical questions are allowed, they are no longer required.²⁶ In addition, the Rules abolished the ultimate issue rule, which prohibited experts from giving opinions as to ultimate facts in issue.²⁷ As promulgated, the Rules grant a proponent of expert testimony, and his expert, wide latitude to introduce such testimony.²⁸

A. *What Do the Rules Require an Expert to Establish Before Presenting His Opinion?*

An expert must first establish that his testimony will assist the fact finder's understanding of the evidence.²⁹ Rule 702 does not require that the subject matter be complex; it requires only that the expert's testimony assist the jury.³⁰ Second, the court must make a

reasons therefor without prior disclosure of the underlying facts or data, unless the court requires otherwise. The expert may in any event be required to disclose the underlying facts or data on cross-examination." FED. R. EVID. 705.

25. See *infra* notes 33-45 and accompanying text.

26. In *Smith v. Ford Motor Co.*, the court stated that Rules 703 and 705 were enacted in response to criticism that the hypothetical question was an opportunity for "summing up in the middle of the case," a tactic that was both complex and time consuming. 626 F.2d 784, 793 (10th Cir. 1980), *cert. denied*, 450 U.S. 918 (1981). The hypothetical question is often either too wordy or too one-sided. *Id.*

27. See *supra* note 22 and accompanying text; see also *Slakan v. Porter*, 737 F.2d 368, 378 (4th Cir. 1984), *cert. denied*, 470 U.S. 1035 (1985) (The trial court has wide discretion in admitting expert testimony bearing on the ultimate issues in the case.); *United Telecommunications, Inc. v. American Television and Communications Corp.*, 536 F.2d 1310 (10th Cir. 1976) (Expert testimony was admitted to determine the meaning of "best efforts" in registration covenants even though it went to the ultimate issue in the case.).

28. See *infra* notes 54-61 and accompanying text.

29. See *Graham*, *supra* note 7, at 47.

30. *Scott v. Sears, Roebuck & Co.*, 789 F.2d 1052, 1055 (4th Cir. 1986) (Expert's testimony was wrongly admitted by the trial court because it only repeated what was common knowledge and common sense.); *Otwell v. Motel 6, Inc.*, 755 F.2d 665, 667 (8th Cir. 1985) (Expert testimony excluded because the jury had sufficient evidence from other sources to make a decision.); *Zimmer v. Miller Trucking Co.*, 743 F.2d 601, 604 (8th Cir. 1984) (The jury was competent to make a decision without superfluous expert opinion.); *Garwood v. International Paper Co.*, 666 F.2d 217, 223 (5th Cir. 1982) (Testimony of a human factors engineer offered against a claim of contributory negligence was excluded because it would not aid the jury in determining the facts.); *United States v. R. J. Reynolds Tobacco Co.*, 416 F. Supp. 313, 315 (D.N.J. 1976) (The purpose of expert testimony is to assist the trier of fact to understand, evaluate, and decide the complex evidentiary materials in the case.); see also *Inker, A Practical Guide to Using Expert Testimony Under the Federal Rules of Evidence*, *PRAC. LAW.*, July 15, 1985, at 21, 22 ("The focus under the Rules is on the propensity of an expert's testimony to assist the factfinder, rather than on the complexity of the subject matter being

preliminary determination under Rule 104(a) that the witness is qualified to give an expert opinion.³¹ Pursuant to Rule 702, a witness may qualify as an expert by knowledge, skill, experience, training, or education. The focus is on the witness' actual qualifications, rather than his title.³² Thus, anyone with specialized knowledge may qualify as an expert in that particular area.

B. *Upon What May the Expert Base His Opinion?*

An expert may base his opinion on the following: First, on his scientific, technical, and other specialized knowledge derived from his education and experience; second, on his firsthand out-of-court observation of facts; third, on facts, data, or opinions already admitted, or to be admitted, into evidence and presented to the expert at trial either by hypothetical questions or by the expert actually hearing the testimony; and fourth, on facts, data, or opinions not admitted into evidence but presented to the expert outside the courtroom and reasonably³³ relied on by experts in the particular field.³⁴

The modern view consequently allows experts to rely on data supplied by third parties because experts commonly rely on this type of information when forming an opinion. As opposed to the common law standard, under which the expert's opinion was inadmissible if it went beyond the evidence in the case, Rule 703 allows the opinion to

presented."); Rossi, *supra* note 6, at 19 (Testimony is appropriate if the expert's opinion will assist the trier of fact.).

31. Rule 104(a) provides:

Preliminary questions concerning the qualification of a person to be a witness, the existence of a privilege, or the admissibility of evidence shall be determined by the court, subject to the provisions of subdivision (b). In making its determination it is not bound by the rules of evidence except those with respect to privileges.

FED. R. EVID. 104(a).

Such a determination lies within the sound discretion of the trial court. *Ellis v. K-Lan Co.*, 695 F.2d 157, 162 (5th Cir. 1983); *N.V. Maatschappij Voor Industriële Waarden v. A.O. Smith Corp.*, 590 F.2d 415, 418 (2d Cir. 1978). Although assisting the jury and presenting a qualified witness are preliminary determinations to exclude an expert's testimony, there are also other reasons to exclude the expert's testimony. For example, the basis of his opinion may be inadequate if experts do not reasonably rely upon it in the particular field, or the scientific evidence does not satisfy the *Frye* test. See *infra* notes 105-10 and accompanying text.

32. *Will v. Richardson-Merrell, Inc.*, 647 F. Supp. 544, 548 (S.D. Ga. 1986) (The crucial factors with respect to admissibility of expert testimony are the actual experience of the witness and the probative value of his opinion.); J. WEINSTEIN, *supra* note 5, ¶ 702[04], at 702-25.

33. The word "reasonable" includes two factors: First, whether it is customary in the expert's field to rely on this extraneous information; and, second, if it is customary to rely on this information, the judge must decide whether the custom is a reasonable one. Younger, *Expert Witnesses*, 48 INS. COUNS. J. 267, 279 (1981).

34. Graham, *supra* note 7, at 64.

go beyond the evidence admitted at trial as long as the facts or data are of a type reasonably relied upon by experts in the particular field in forming opinions or inferences.³⁵ The expert must establish that he, as well as others, use the particular information for purposes other than testifying in a lawsuit.³⁶ Evidence will not be admitted if the expert who is testifying is the only one who customarily relies upon the material, or if he has relied upon the material solely to prepare for litigation.³⁷

Courts are split in their treatment of Rule 703's reasonable reliance requirement. The liberal view favors admissibility if the facts are of a type reasonably relied upon by experts in the particular field, thereby allowing the jury to decide whether to accept or reject the basis of the expert's opinion.³⁸ The restrictive view, in contrast,

35. *Mannino v. International Mfg. Co.*, 650 F.2d 846, 851 (6th Cir. 1981) (An expert's opinion can rely on types of data normally relied upon to form similar opinions even if the information is otherwise inadmissible.); *Baumholser v. Amax Coal Co.*, 630 F.2d 550, 553 (7th Cir. 1980) (Evidence need not be independently admissible as long as the evidence is of a type reasonably relied upon by other experts in the field.); *American Bearing Co. v. Litton Indus.*, 540 F. Supp. 1163 (E.D. Pa. 1982) (Expert testimony should be excluded if misleading and speculative and not of a type reasonably relied upon in the particular field.), *aff'd*, 729 F.2d 943 (3d Cir.), *cert. denied*, 469 U.S. 854 (1984).

Trial courts must make a factual inquiry and finding as to what data is found reliable by experts in the field. Insofar as the trial court substitutes its own views of reasonable reliance for those of experts, its determinations are subject to review for legal error. *E.g.*, *Zenith Radio Corp. v. Matsushita Elec. Indus. Co. (In re Japanese Elec. Prod. Antitrust Litig.)*, 723 F.2d 238, 277 (3d Cir. 1983); *see also American Bearing Co.*, 540 F. Supp. at 1169 (The question as to whether the facts or data are of the type reasonably relied upon by experts in the particular field is a matter to be determined by the court.).

A trial court's inquiry into whether this standard is satisfied must be made on a case-by-case basis and should focus on the reliability of the opinion and its foundation rather than merely on the fact that it was based upon hearsay. *E.g.*, *Soden v. Freightliner Corp.*, 714 F.2d 498, 502-03 (5th Cir. 1983).

36. *See J. WEINSTEIN*, *supra* note 5, ¶ 703[03], at 703-17.

37. *FED. R. EVID.* 703.

38. *Baumholser v. Amax Coal Co.*, 630 F.2d 550, 553 (7th Cir. 1980) (Admissibility is irrelevant; the relevant inquiry is whether the evidence is of a type reasonably relied upon by experts in the particular field.); *see also Mannino v. International Mfg. Co.*, 650 F.2d 846, 853 (6th Cir. 1981) (An expert is allowed considerable latitude in determining the basis of his opinions, although it is ultimately up to the jury whether to accept his opinion.). In *Mannino*, the court stated:

The purpose of Rule 703 is to make available to the expert all of the kinds of things that an expert would normally rely upon in forming an opinion, without requiring that these be admissible in evidence. . . . In short, through Rule 703, the law is catching up with the realities of professional life.

Mannino, 650 F.2d at 851. The Fifth Circuit, in *United States v. Williams*, acknowledged that Rule 703, in effect creates another exception to the hearsay rule and explained the reasoning behind such an exception:

The rationale for this exception to the rule against hearsay is that the expert, because of his professional knowledge and ability, is competent to judge for himself the reliability of the records and statements on which he bases his expert

imposes an additional requirement on the reasonable reliance standard: A court must reassess the facts, data, or opinions that form the basis of the expert's opinion to determine if they are sufficiently trustworthy for experts reasonably to rely upon them.³⁹ The majority of courts have adopted the liberal approach in applying this standard and allow experts to rely on media accounts,⁴⁰ library research,⁴¹ and consumer complaints.⁴²

Rule 703 allows disclosure of otherwise hearsay evidence to illus-

opinion. Moreover, the opinion of expert witnesses must invariably rest, at least in part, upon sources that can never be proven in court. An expert's opinion is derived not only from records and data, but from education and from a lifetime of experience. Thus, when the expert witness has consulted numerous sources, and uses that information, together with his own professional knowledge and experience, to arrive at his opinion, that opinion is regarded as evidence in its own right and not as hearsay in disguise.

447 F.2d 1285, 1290 (5th Cir. 1971), *cert. denied*, 405 U.S. 954, *reh'g denied*, 405 U.S. 1048 (1972).

39. In *Zenith Radio Corp. v. Matsushita Elec. Indus. Co.*, the court set forth the following list of factors to be used in determining the reasonableness of reliance under Rule 703:

(1) The extent to which the opinion is pervaded or dominated by reliance on materials judicially determined to be inadmissible, on grounds of either relevance or trustworthiness;

(2) The extent to which the opinion is dominated or pervaded by reliance upon other untrustworthy materials;

(3) The extent to which the expert's assumptions have been shown to be unsupported, speculative, or demonstrably incorrect;

(4) The extent to which the materials on which the expert relied are within his immediate sphere of expertise, are of a kind customarily relied upon by experts in his field in forming opinions or inferences on that subject, and are not used only for litigation purposes;

(5) The extent to which the expert acknowledges the questionable reliability of the underlying information, thus indicating that he has taken that factor into consideration in forming his opinion;

(6) The extent to which reliance on certain materials, even if otherwise reasonable, may be unreasonable in the peculiar circumstances of the case.

Zenith, 505 F. Supp. 1313, 1330 (E.D. Pa. 1980).

The court noted that Rules 403, 702, or 703 will control admissibility: "Despite the variety of procedural contexts and variety of F.R.E. pigeonholes, they indicate that the assumptions which form the basis for the expert's opinion, as well as the conclusions drawn therefrom, are subject to rigorous examination." *Id.* at 1328; *see also* *Shu-Tao Lin v. McDonnell Douglas Corp.*, 574 F. Supp. 1407 (S.D.N.Y. 1983) (Expert testimony was excluded because estimates were based on contradictory factual assumptions or were unsupported by the record.), *aff'd in part, rev'd in part on other grounds*, 742 F.2d 45 (2d Cir. 1984).

40. *Gregory v. South Hills Movers, Inc.*, 477 F. Supp. 484 (W.D. Pa. 1979) (The expert could reasonably rely upon professional discussion based upon published accounts of an athlete's knee injuries.).

41. *Bauman v. Centex Corp.*, 611 F.2d 1115 (5th Cir. 1980) (The expert could rely in part on research done in a university library.).

42. *Norris v. Gatts*, 738 P.2d 344, 351 (Alaska 1987) (Consumer complaint reports concerning automobile runaways made to automobile manufacturer and National Highway Traffic Safety Agency were the type of information reasonably relied upon by experts.).

trate the basis of an expert's opinion,⁴³ but such testimony is not admissible to establish substantive facts in the case.⁴⁴ Counsel therefore may not argue that the fact exists independently. The end result, however, is that if the expert based his opinion on another expert's opinion, the latter's opinion will be admitted through the former's testimony.⁴⁵

As discussed earlier, Rule 704 abrogates the ultimate issue rule,⁴⁶ which prohibited an expert from testifying on ultimate issues because it was believed that the expert would usurp the province of the jury by so testifying. The rationale behind the abrogation of the requirement was that jurors did not have to accept the expert's opinion.⁴⁷ The advisory committee note to Rule 704 states that the Rule prohibiting expert opinions from going to ultimate issues was unduly restrictive, difficult to apply, and served only to deprive the trier of fact of useful information.⁴⁸ Rule 704 is not without its limits, however, and the use of the expert's opinion must be consistent with Rule 702's "assist the trier of fact" standard, as well as Rule 403's concerns regarding the balance between probative value and the risk of unfair prejudice.⁴⁹ Together, these Rules safeguard against the admission of testimony that only tells the jury the result to reach, and also against testimony

43. *Bryan v. John Bean Div. of FMC Corp.*, 566 F.2d 541, 545 (5th Cir. 1978). The Fifth Circuit stated: "Rules 703 and 705 codify the approach of this and other circuits that permits the disclosure of otherwise hearsay evidence for the purpose of illustrating the basis of the expert witness' opinion. Courts have even permitted the admission of hearsay opinion on the ultimate issue if some guarantee of trustworthiness existed." *Id.* (citations omitted).

44. *Inker*, *supra* note 30, at 29; *see also Fox v. Taylor Diving & Salvage Co.*, 694 F.2d 1349, 1356 (5th Cir. 1983) (Under Rule 703, an expert is permitted to disclose hearsay for the limited purpose of explaining the basis of the expert opinion, but not as general proof of the underlying matter.); *Hickok v. G.D. Searle & Co.*, 496 F.2d 444, 447 (10th Cir. 1974) (The expert may testify concerning published materials only to establish the basis of his opinion, but not for the purpose of establishing the truth of the materials.). *But see John Bean*, 566 F.2d at 545 (Hearsay evidence disclosing the basis of an expert witness' opinion should be admissible to impeach if strictly limited to that purpose by instruction and if the judge finds that the evidence possesses a sufficient guarantee of reliability.).

45. *J. McElhanev*, *supra* note 11, at 342-43; *see also Lewis v. Rego Co.*, 757 F.2d 66 (3d Cir. 1985) (An expert can disclose the substance of a conversation that he had with another expert if he relied on that discussion.).

46. *See supra* note 22 and accompanying text.

47. *E.g.*, *United States v. Morgan*, 554 F.2d 31, 33 (2d Cir.) (Usurping the province of the jury is a "mere bit of empty rhetoric."), *cert. denied*, 434 U.S. 965 (1977); *see also Graham*, *supra* note 7, at 49.

48. *FED. R. EVID.* 704 advisory committee's note, 56 F.R.D. 183, 284.

49. *See supra* note 24. Rule 403 provides: "Although relevant, evidence may be excluded if its probative value is substantially outweighed by the danger of unfair prejudice, confusion of the issues, or misleading the jury, or by considerations of undue delay, waste of time, or needless presentation of cumulative evidence." *FED. R. EVID.* 403.

that is phrased in terms of inadequately explored legal criteria.⁵⁰ The Rules, therefore, do not permit an expert to give legal conclusions⁵¹ or to testify as to principles of law to be applied in the case.⁵²

Consistent with the liberal approach that Rules 702 to 704 mandate, Rule 705 abolishes the requirement of prior disclosure of the underlying facts and data that form the basis of the expert opinion.⁵³

IV. THE EFFECT OF THE FEDERAL RULES OF EVIDENCE ON CROSS-EXAMINATION

The Federal Rules of Evidence encourage experts not only to explain evidence but also to be the source of evidence. Because Rule 703 countenances the admission of hearsay evidence through expert testimony, the Rule has been characterized as a "back door exception" to the general rule against the admission of hearsay evidence.⁵⁴ Critics assert that Rule 703 has become, in effect, "a major exception to the hearsay rule," opening the door to the admission of unreliable testimony.⁵⁵ In *O'Gee v. Dobbs Houses*,

50. FED. R. EVID. 704 advisory committee's note, 56 F.R.D. 183, 285; Graham, *supra* note 7, at 50.

51. See *Owen v. Kerr-McGee Corp.*, 698 F.2d 236, 240 (5th Cir. 1983) (Under the Federal Rules of Evidence, witnesses may neither tell the jury what results to reach nor give legal conclusions.).

52. *United States v. Baskes*, 649 F.2d 471, 478 (7th Cir. 1980), *cert. denied*, 450 U.S. 1000 (1981) (An opinion as to the legal implications of the parties' conduct is not admissible.); *Marx & Co. v. Diner's Club, Inc.*, 550 F.2d 505 (2d Cir.), *cert. denied*, 434 U.S. 861 (1977) (A lawyer was qualified as an expert, but should not have been permitted to testify as to the unreasonableness of the delay of registration statement because it amounted to a legal conclusion regarding the facts.); see also Patterson, *Products Liability Litigation: The Rule Making Power of Expert Witnesses—Part One*, FOR THE DEF., Oct. 1981, at 10. Under Rule 704, experts can opine that a product is "defective" or "unreasonably dangerous," thereby giving themselves substantive rulemaking powers. Experts often apply standards of defect and unreasonably dangerous that are substantially different from the legal meanings of these terms, thereby misleading and confusing the jury. Such opinions should be excluded under Rule 704 because they are "phrased in terms of inadequately explored legal criteria." *Id.*, at 10.

53. For the rationale of the common law rule requiring prior disclosure, see *supra* text accompanying note 7.

54. See, e.g., Arnold, *supra* note 10. But see Rossi, *supra* note 6, at 23 (The characterization of Rule 703 as a "back door exception" to the hearsay rule may be an overstatement because the evidence is admitted only to explain the opinion and not as substantive evidence.).

55. J. McELHANEY, *supra* note 11, at 342. Professor Graham has taken the opposite view:

Rule 703 is not a hearsay exception. The court thus may give a limiting instruction to the jury: jurors may consider the facts, data, and opinions reasonably relied upon by the expert under Rule 703 in evaluating the basis of the expert's opinions but not as establishing the truth of the testimony's content. . . . Although for most practical purposes admitting the information as the basis of an expert's opinion is equivalent to admitting the evidence for its truth under a

Inc.,⁵⁶ for example, an expert physician retained solely for litigation purposes was permitted to testify as to the plaintiff's statements concerning her injuries, and on other doctors' statements to the plaintiff about her injuries.⁵⁷ The court allowed this multiple-level hearsay to be admitted through the physician because he also relied on hospital records.⁵⁸ The *O'Gee* court stated that it was not deciding whether such multiple-level hearsay would have been admissible without the hospital records.⁵⁹

Pursuant to Rule 703, much if not all of an expert's testimony may be based on inadmissible evidence. As long as the evidence is "reasonably reliable," that evidence may be disclosed to the jury.⁶⁰ Courts have been so liberal with this standard that an expert may testify to almost anything—as long as it assists the jury.⁶¹ Often, that determination is a difficult one for the judge to make. It requires the judge to make an evaluation of data with which he may be unfamiliar, and to deal with a field in which he is not an expert.

Frequently judges admit such evidence, leaving the jury to decide the weight to be assigned to it. In criticizing this practice, the United States Court of Appeals for the Fifth Circuit has recently pointed out that trial judges should take a more aggressive role in assessing the qualifications of expert witnesses. The court explained: "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."⁶² The court cautioned that trial judges should be wary of certain signals in deciding whether to accept expert testimony:

First, many experts are members of the academic community who supplement their teaching salaries with consulting work. . . . [M]any 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. . . . Second, the professional expert is now common-

hearsay exception, differences remain. . . . [E]vidence admitted solely to form the basis of an expert's opinion under Rule 703 will not support a prima facie case.

Graham, *supra* note 7, at 66.

56. 570 F.2d 1084 (2d Cir. 1978).

57. *Id.* at 1088.

58. *Id.* at 1089.

59. *Id.*

60. See *supra* notes 33-45 and accompanying text.

61. Rossi, *supra* note 6, at 21.

62. *In re Air Crash Disaster*, 795 F.2d at 1234.

place: 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."⁶³

Although the liberal approach of the Federal Rules of Evidence has led the majority of courts to allow an expert to testify to virtually anything,⁶⁴ the Rules nonetheless provide a framework by which the cross-examiner can exclude or weaken the expert's opinion. Because the combined effect of the Rules is to place the full burden on the cross-examiner to uncover the bases of the expert witness' opinion,⁶⁵ the cross-examiner must understand that the Rules allow the cross-examiner wide latitude regarding the subject matter that he can attack.⁶⁶ The cross-examiner can scrutinize anything to which the expert has testified during direct examination, as well as matters regarding his qualifications or the accuracy of his opinion. Exposing such weaknesses will affect the weight and credibility of the expert's testimony.⁶⁷

The opponent must discern which facts and assumptions were key to the expert's opinion, and attack his testimony by showing that his conclusion would be different if certain additional facts were assumed or if certain assumed facts were changed.⁶⁸ A court may exclude testimony, for example, if there is no evidence to support the facts underlying the hypothetical question to which the expert responded.⁶⁹ Furthermore, an appellate court can reverse a verdict if the essential facts upon which the expert based his testimony were

63. *Id.*

64. See *supra* notes 54-59 and accompanying text.

65. *Smith v. Ford Motor Co.*, 626 F.2d 784, 792-94 (10th Cir. 1980), *cert. denied*, 450 U.S. 918 (1981) (Because the cross-examiner bears the burden of exploring the facts underlying the expert testimony, advance knowledge of these facts through pretrial discovery is essential.); *Bryan v. John Bean Div. of FMC Corp.*, 566 F.2d 541, 545 (5th Cir. 1978) ("Since rule 705 shifts to the cross-examiner the burden of eliciting the bases of an expert witness' opinion, otherwise hearsay evidence that reveals the underlying sources of the expert's opinion should be as permissible on cross-examination as on direct.").

66. *N.V. Maatschappij Voor Industriële Waarden v. A.O. Smith Corp.*, 590 F.2d 415, 421 (2d Cir. 1978) (An "unduly harsh limitation on cross-examination of a key expert witness can amount to prejudicial error.").

67. *E.g.*, *Polk v. Ford Motor Co.*, 529 F.2d 259, 271 (8th Cir.), *cert. denied*, 426 U.S. 907 (1976) (Any weakness in the underpinnings of the expert's opinion goes to the weight and credibility of the testimony.).

68. *E.g.*, *Cunningham v. Gans*, 507 F.2d 496, 501 (2d Cir. 1974).

69. *E.g.*, *Larue v. National Union Elec. Corp.*, 571 F.2d 51 (5th Cir. 1978) (striking the expert's opinion because there was no independent basis for the hypothetical fact on which the expert's opinion was based).

contrary to the facts proven in the case.⁷⁰

A. Goal #1: Intercept the Expert Testimony

The first goal of the cross-examiner is to intercept the testimony before the jury receives it. He may achieve this goal by resorting to Rule 104(a),⁷¹ which allows the trial court to make preliminary determinations as to the admissibility of the testimony.⁷² The opponent can also voir dire the expert regarding these preliminary issues.⁷³ A cross-examiner may move to exclude the expert's testimony if the testimony does not assist the trier of fact, or if the witness is not qualified to testify as an expert. These preliminary determinations are within the trial court's discretion, and appellate courts will review them only upon a showing of an abuse of discretion.⁷⁴

Courts will exclude expert testimony if it does not assist the trier of fact.⁷⁵ Testimony is unhelpful to the jury if it is cumulative,⁷⁶ conjectural, speculative,⁷⁷ or within the jury's common knowledge.⁷⁸

70. *Georgia Kaolin Int'l v. M/V Grand Justice*, 644 F.2d 412, 417 (5th Cir. Unit B 1981) (The trial court's judgment was reversed because assumptions upon which expert testimony was based were contrary to proven facts.).

71. For the text of Rule 104(a), see *supra* note 31.

72. Arnold, *supra* note 10, at 9.

73. Graham, *supra* note 7, at 59.

74. *United States v. Haro-Espinosa*, 619 F.2d 789, 795 (9th Cir. 1979) (The question of whether the witness is qualified as an expert is a preliminary fact to be determined by the court.); see also *supra* note 31 and accompanying text.

75. *Mannino v. International Mfg. Co.*, 650 F.2d 846, 849 (6th Cir. 1981) (Rule 703 should be broadly interpreted, and in determining the expert's qualifications the judge should only evaluate whether the expert's knowledge of the subject matter is such that his opinion is likely to assist the jury in arriving at the truth.).

76. *Haynes v. American Motors Corp.*, 691 F.2d 1268, 1271 (8th Cir. 1982) (Expert testimony was excluded because it was cumulative in light of the fact that substantial testimony had already been introduced on the issue.).

77. If the court then finds that the basis of the expert's opinion is inadequate, the court can strike the testimony as based upon conjecture or speculation. Graham, *supra* note 7, at 68; see also *Newman v. Hy-Way Heat Sys., Inc.*, 789 F.2d 269, 270 (4th Cir. 1986) (An expert's testimony regarding causation of plaintiff's injuries was struck because it was based on speculative assumptions rather than evidence in the case.); *Johnson v. Serra*, 521 F.2d 1289, 1292-93 (8th Cir. 1975) (An expert's testimony projecting future inflationary trends to estimate the decedent's lost future earnings was too speculative and conjectural, and thus lacked sufficient probative value to outweigh the danger that it would lead the jury to assess damages on an improper basis.), *aff'd sub nom. Johnson v. United States Fire Ins. Co.*, 586 F.2d 1291 (8th Cir. 1978); *American Bearing Co. v. Litton Indus.*, 540 F. Supp. 1163 (E.D. Pa. 1982) (The method of the expert's calculation was inaccurate and should have been excluded because it was misleading and speculative.), *aff'd*, 729 F.2d 943 (3d Cir.), *cert. denied*, 469 U.S. 854 (1984).

78. In *Scott v. Sears, Roebuck & Co.*, 789 F.2d 1052 (4th Cir. 1986), the plaintiff offered an expert in "human factors" to testify that persons wearing heels tend to avoid walking on gratings. *Id.* at 1055. The court found that the testimony did not assist the jury and simply repeated what is common knowledge and common sense. *Id.* The court stated:

Testimony does not assist the trier of fact if it does not help the jury resolve a controversial issue.⁷⁹ Courts must engage in a Rule 403 analysis in such a situation, thereby excluding the evidence if its probative value is substantially outweighed by the danger of unfair prejudice, confusion of the issues, or misleading the jury.⁸⁰ This analysis requires the court to view the evidence "in the light most favorable to the proponent, maximizing its probative value and minimizing its prejudicial effect."⁸¹ The liberality of the Rules indicates that courts generally will resolve all doubts concerning the utility of an expert's

Though we would normally defer to the exercise by the district court of its judgment, Rule 702 makes inadmissible expert testimony as to a matter which obviously is within the common knowledge of jurors because such testimony, almost by definition, can be of no assistance. At the same time, the admission of such testimony, though technical error, will almost invariably be harmless. . . . Trouble is encountered only when the evaluation of the commonplace by an expert witness might supplant a jury's independent exercise of common sense. This, however, does not seem to be an inquiry under Rule 702, but rather a necessary, independent inquiry under Rule 403 to exclude evidence which is prejudicial.

Id. (citations omitted).

79. *Ellis v. Miller Oil Purchasing Co.*, 738 F.2d 269, 270 (8th Cir. 1984) (Expert testimony regarding proper action for a driver just prior to the accident was excluded because the expert was in no better position than the jury to determine the answer.). In *Strong v. E.I. DuPont de Nemours Co.*, 667 F.2d 682 (8th Cir. 1981); the court excluded expert testimony under Rule 704 because the jury was capable of drawing its own inferences from the available evidence. *Id.* at 686. The court held that the question whether the lack of a warning rendered a product unreasonably dangerous was not the kind of issue on which expert assistance is essential to the trier of fact. *Id.*

80. In *Viterbo v. Dow Chem. Co.*, 646 F. Supp. 1420 (E.D. Tex. 1986), *aff'd*, 826 F.2d 420 (5th Cir. 1987), the court performed a Rule 403 balancing test and excluded the testimony of two experts because the data they relied upon to form their opinions was so unreliable and lacking in probative value that it could not serve as a basis upon which a reasonable expert could base his opinion. One expert diagnosed the plaintiff's condition by relying solely on the plaintiff's oral history, without having examined him. The fact that this expert had a "preconceived theory," coupled with the fact that the only support for his contention was a single published article, was sufficient for the court to exclude his testimony. *Id.* at 1424-25. The other expert had no specialized training in the particular field and relied on research by another person whose qualifications were unclear. It was also uncertain as to what examination he had performed on the plaintiff. *Id.* at 1425.

The court reasoned that both experts had sought employment from the plaintiff's attorneys, and therefore, the experts did not view the plaintiff's condition objectively. *Id.* The court further found that the proffered expert testimony so lacked in probative value that it felt compelled to exclude such testimony under Rule 403. *Id.* at 1426. The court stated: "There is a great possibility of misleading the jury through the creation of a false aura of scientific infallibility through the use of such testimony." *Id.*; *see also* *Shu-Tao Lin v. McDonnell Douglas Corp.*, 574 F. Supp. 1407 (S.D.N.Y. 1983) (excluding expert testimony under Rules 703 and 403 because it was unsupported and internally inconsistent), *aff'd in part, rev'd in part on other grounds*, 742 F.2d 45 (2d Cir. 1984).

81. *E.g.*, *In re Richardson-Merrell, Inc. "Bendectin" Prod. Liab. Litig.*, 624 F. Supp. 1212, 1242 (S.D. Ohio 1985).

testimony in favor of admissibility.⁸² The rationale for this approach is that the jury is capable of ignoring unhelpful evidence.⁸³

An expert's qualifications are also subject to preliminary attack under Rule 104(a). A cross-examiner may, therefore, discredit the witness by showing that the witness is not qualified to testify as an expert;⁸⁴ i.e., that he does not have the requisite knowledge, skill, experience, training, or education. The following is a possible line of cross-examination:

Q: Do you belong to any organization?⁸⁵

Q: Are you a member of the organization simply because you pay dues?

Q: Is your certification limited in time?

Q: Are you currently certified?

Q: Have you practiced in the relevant area of expertise?⁸⁶

A variation of the above approach is to argue that the witness is not qualified to express an opinion on the particular subject at issue.⁸⁷

82. J. WEINSTEIN, *supra* note 5, ¶ 702[02], at 702-14. *But see In re Air Crash Disaster*, 795 F.2d at 1234 (asserting that courts should refrain from exercising extreme liberality in admitting expert testimony).

83. *Singer Co. v. E.I. du Pont de Nemours & Co.*, 579 F.2d 433, 443 (8th Cir. 1978) ("[I]t is now for the jury, with the assistance of vigorous cross examination, to measure the worth of the opinion."); J. WEINSTEIN, *supra* note 5, ¶ 702[02], at 702-14 to -15.

84. This approach can be risky, however, for two reasons. First, because Rule 702 is extremely broad, the witness may qualify as an expert by knowledge, skill, experience, training, or education. Thus, it may be difficult to impugn his expertise. Second, juries often identify with the expert more than with the attorney. Thus, unless one has a reasonable assurance of success, one risks alienating the jury by attacking the expert. J. JEANS, *TRIAL ADVOCACY* 339 (1975).

85. *But see Tank v. C.I.R.*, 270 F.2d 477, 486 (6th Cir. 1959) (The absence of certificates, memberships, and the like, does not in and of itself detract from the competency of an expert.).

86. Adapted from an example in Dombroff, *Prepare and Present Your Expert Witness, FOR THE DEF.*, Aug. 1984, at 15.

87. *Will v. Richardson-Merrell, Inc.*, 647 F. Supp. 544, 548 (S.D. Ga. 1986) (excluding doctor's testimony because he was not an expert on a particular drug and had no knowledge of studies conducted on the drug); *Larsen v. International Bus. Mach. Corp.*, 87 F.R.D. 602, 607 (E.D. Pa. 1980) (excluding witness' testimony because he lacked expertise on the particular subject matter and because the danger of confusing the issue and misleading the jury substantially outweighed the probative value of the testimony); *Poland v. Beaird-Poulan*, 483 F. Supp. 1256, 1259 (W.D. La. 1980) ("One cannot testify as an expert in regard to a mechanism if he has not had ample opportunity to practically apply his field of expertise to the mechanism at issue.").

A proffered expert must have a special fitness to answer questions in the field of expertise about which he proposes to testify. With regard to this point, Professor Wigmore stated:

The capacity is in every case a relative one, i.e. relative to the topic about which the person is asked to make his statement. The object is to be sure that the question to the witness will be answered by a person who is fitted to answer it. His fitness, then, is a fitness to answer on that point. He may be fitted to answer about countless other matters, but that does not justify accepting his views in the matter in hand.

The cross-examiner may discredit the witness, a physician in the following example, by narrowing or pinpointing his expertise in the following manner:⁸⁸

Q: You are an internist, is that correct?

A: Yes.

Q: What type of training do you need to become an internist?

A: Four years of medical school and three years of residency in internal medicine.

Q: What does an internist do?

A: Well, I deal with general internal medicine. That is, treating the pathology of every organ system in the human body on a primary care level.

Q: What does primary care mean?

A: Primary care, as opposed to a speciality level, means that if serious problems occur, I may consult a specialist in that area.

Q: So Doctor, if a patient had serious liver problems, you would refer him to, or you would consult, a hepatologist, is that correct?

A: Yes.

Q: What is a cardiologist?

A: Someone who is a specialist in diseases of the heart.

Q: What type of training do cardiologists need?

A: Four years of medical school, three years of residency in internal medicine and an additional two or three year fellowship of cardiology training.

Q: Have you had those additional years of cardiology training?

A: No.

Q: Are you a cardiologist?

A: No, I am not.

2 J. WIGMORE, WIGMORE ON EVIDENCE, § 555 (3d ed. 1940).

88. The following hypothetical will be used through the remainder of this Comment to illustrate specific cross-examination techniques. Assume that an 18-year-old, Jeff, was in a serious car accident and has sued the manufacturer of the car. Jeff alleges that the car's seat belt system was defective, and that this defect aggravated his injuries. While recovering in hospital, Jeff has an electrocardiogram (EKG). Jeff's medical expert testifies that he spots an arrhythmia in the EKG—that is, deviations from the normal rhythm of the heart. The physician further testifies that the impact of the steering wheel on Jeff's chest caused the arrhythmia. He also testifies that the arrhythmia could get worse and cause serious heart problems for Jeff in the future.

The defense expert will testify that the arrhythmia could have been congenital, and that it has gone undetected due to the fact that the plaintiff is asymptomatic; i.e., without symptoms. In addition, he will opine that the arrhythmia will probably never develop into a serious problem and that Jeff's life span will not be shortened.

By clarifying an expert's true area of expertise, the cross-examiner can show that the particular area is not directly applicable to the issue on which the expert is testifying.⁸⁹ By showing that the witness is not qualified to testify as an expert on the issue at hand, the cross-examiner may have the testimony excluded, or at least reduce the witness' credibility.

B. *Goal #2: Reduce the Weight and Credibility of the Expert Testimony*

The Rules allow an expert to base his opinion on facts, data, or opinions derived from firsthand out-of-court observation, from information admitted into evidence, or from information not admitted into evidence, but presented to the expert out of court.⁹⁰ By attacking the basis underlying the expert's opinion, the cross-examiner can reduce the weight the jury may attach to the expert's opinion. Various screening devices, such as those discussed below, are available to break down the inherent aura of reliability that juries tend to attach to an expert's testimony.

1. FIRSTHAND OUT-OF-COURT OBSERVATION

An expert may base his opinion on personal knowledge or personal observation if it is shown that he has sufficient knowledge of the facts to enable him to form an opinion.⁹¹ The classic example of an expert with firsthand out-of-court observation is a treating physician. Even an examining physician can fit into this category. The cross-examiner should attempt to diminish the credibility of the examining physician by demonstrating the limited scope of the physician's personal knowledge as follows:

Q: Doctor, if a man whom you had never met called you on the telephone and described a series of symptoms, you would not

89. T. MAUET, *FUNDAMENTALS OF TRIAL TECHNIQUES* 289 (1980). In *Hartke v. McKelway*, the court found that the expert was not competent to express an opinion on defendant's due care or lack of due care and that the court should not have allowed her to testify about the standard of care for laproscopic cauterization, a procedure used to prevent pregnancy in the future. 526 F. Supp. 97, 101 (D.D.C. 1981), *aff'd*, 707 F.2d 1544 (D.C. Cir.), *cert. denied*, 464 U.S. 983 (1983). Her knowledge of the standard of care with respect to treatments involving the fallopian tubes did not extend to knowledge of the standard of care for sterilization by the laproscopic cauterization procedure. She had no training or experience with that procedure. *Id.* at 101. *But see* *Payton v. Abbott Labs*, 780 F.2d 147, 155 (1st Cir. 1985) (The fact that a physician is not a specialist in the field in which he is testifying affects the weight that the jury might place on the expert's opinion, but not its admissibility.).

90. *Soden v. Freightliner Corp.*, 714 F.2d 498, 505 (5th Cir. 1983) ("Though courts have afforded experts a wide latitude in picking and choosing the sources on which to base opinions, Rule 703 nonetheless requires courts to examine the reliability of those sources.").

91. *See* FED. R. EVID. 703.

feel very comfortable prescribing a course of treatment for acute gall bladder attack, would you?

A: No.

Q: We can agree that in the field of medicine, there usually is no substitute for actually examining a patient when it comes to making a diagnosis. Is that correct?

A: Yes, most of the time.

Q: And Doctor, you are not telling this judge and this jury that you were actually in the emergency room of General Hospital when Jeff was brought in, are you?⁹²

A: No, I was not.

Q: In fact, you did not examine him that night at all, did you?

A: No.

Q: And you were not with Doctor Brown when he visited Jeff the next morning, were you?

A: No.

Q: And when Jeff left the hospital, you didn't examine him, did you?

A: No.

Q: The fact is, you have never examined Jeff, have you?

A: No.

Q: And everything you have told the judge and jury about your expert opinion is based on reading the EKG or from what the plaintiff has told you himself, is it not?

A: Yes.

Q: And not based on any examination by you?

A: Correct.⁹³

If the expert has employed scientific techniques or is testifying on scientific methods, the proffered scientific evidence must possess an indicia of trustworthiness and reliability.⁹⁴ Such evidence must satisfy the *Frye* test, requiring that the scientific technique have "gained general acceptance in the particular field in which it belongs."⁹⁵

2. FACTS, DATA, AND OPINIONS ADMITTED INTO EVIDENCE

An expert can base his opinion upon facts to which other witnesses have testified at trial.⁹⁶ This category includes documents,

92. See *supra* note 88.

93. Adapted from an example in J. MCELHANEY, *supra* note 11, at 373.

94. See *infra* notes 105-10 and accompanying text.

95. See *infra* notes 105-10 and accompanying text.

96. *Kibert v. Peyton*, 383 F.2d 566, 570 (4th Cir. 1967) (An expert is permitted to take into account the testimony of others as to what they observed.).

exhibits, facts, data, and opinions admitted through other witnesses. The expert may base his opinion on certain assumptions or facts advanced at the trial, commonly elicited by a hypothetical question or heard by the expert in attendance at the trial. Opposing counsel should pinpoint exactly which facts the expert has relied upon and which facts the expert has omitted in arriving at his opinion.⁹⁷ Opposing counsel may also rebut the expert's opinion by revealing incorrect or inadequate factual assumptions, or by showing that the expert used incorrect or inadequate reasoning in reaching his conclusions.⁹⁸ The cross-examiner should modify the facts given to the expert to determine if his opinion changes. He could ask, "What if fact X was not true?" The cross-examiner also may ask his own hypothetical, which, if properly formulated, is likely to elicit a response favorable to the cross-examiner. For example:

Q: In giving your opinion that the impact caused the arrhythmia, you were assuming that no arrhythmias existed prior to that accident.

A: Yes, because the plaintiff testified that he never felt palpitations prior to the accident.

Q: It is possible that the plaintiff has had these palpitations since birth but has not been aware of them before, isn't that correct?

A: It is possible.

Q: Were these EKG readings compared to prior EKG readings?

A: No, because the patient has never had an EKG performed prior to this accident.

Q: Isn't it true, Doctor, that a prior EKG may have shown an arrhythmia?

A: We don't know. It could have.

Q: Isn't it true, Doctor, that had a prior EKG been done, it may have shown arrhythmias without the patient having any symptoms signaling this abnormality?

A: Yes.

97. According to one scholar, "Whenever facts are added or changed, the onus for their omission or inaccuracy should be placed squarely upon opposing counsel, by asking the witness whether he had been advised by [opposing counsel] that the additional fact exists or that the assumed fact was disputed." J. JEANS, *supra* note 84, at 334.

98. *Faries v. Atlas Truck Body Mfg. Co.*, 797 F.2d 619, 623 (8th Cir. 1986) (A police officer's expert testimony as to the cause of an accident was inadmissible because it was not supported by sufficient evidence.); *Shatkin v. McDonnell Douglas Corp.*, 727 F.2d 202, 208 (2d Cir. 1984) (excluding testimony under Rule 703 because the expert's assumptions and assertions were unrealistic, contradictory, and "riddled with errors"); *Mims v. United States*, 375 F.2d 135, 145 (5th Cir. 1967) (Expert testimony was not conclusive because several of the material factual assumptions were incorrect.).

Q: If the plaintiff was incorrect in believing that he had never had palpitations before, your opinion would be incorrect too?

A: That is correct.

3. FACTS, DATA, AND OPINIONS NOT ADMITTED INTO EVIDENCE

An expert may base his opinion on information presented to him outside the courtroom or even outside his own perception. This otherwise inadmissible evidence is admitted if the information is of a type reasonably relied upon by experts in the field.⁹⁹ This category encompasses the kind of information that experts rely upon professionally when forming opinions.¹⁰⁰ An expert may not base his opinion on statistics that were prepared for litigation but did not form part of an independent study;¹⁰¹ on affidavits based upon unsupported assumptions;¹⁰² or on testimony of parties and witnesses at the scene of the accident.¹⁰³

If the court finds that experts in the field reasonably rely on the evidence used by the expert witness, opposing counsel may attempt to establish that the expert's opinion nonetheless is unreliable. Thus, although it may be reasonable for a physician to rely upon statements made to him by his patient, the cross-examiner may choose to portray

99. See sources cited *supra* note 35.

100. *E.g.*, *Bryan v. John Bean Div. of FMC Corp.*, 566 F.2d 541, 545 (5th Cir. 1978) (The modern view of evidence is that experts may rely on data supplied by third parties.); *United States v. Williams*, 447 F.2d 1285, 1290 (5th Cir. 1971) ("[W]hen the expert witness has consulted numerous sources, and uses the information, together with his own professional knowledge and experience, to arrive at his opinion, that opinion is regarded as evidence in its own right and not as hearsay in disguise."), *cert. denied*, 405 U.S. 954, *reh'g denied*, 405 U.S. 1048 (1972); see also *FED. R. EVID. 703* advisory committee's note, 56 F.R.D. 183, 283 (The rule is designed to bring judicial practice into line with the practice of experts themselves when not in court.).

101. *Soden v. Freightliner Corp.*, 714 F.2d 498, 503 (5th Cir. 1983) (An expert's statistics were inadmissible because they were not shown to be of a type reasonably relied upon by experts in the field, were prepared strictly in anticipation of litigation, were based on information received from a sister corporation, and did not form part of a published study.).

102. *Pennsylvania Dental Ass'n v. Medical Serv. Ass'n*, 745 F.2d 248, 261-62 (3d Cir. 1984) (An economist's affidavit relied upon to avoid summary judgement was properly ignored by the trial court because it expressed opinions based on unsupported factual assumptions.), *cert. denied*, 471 U.S. 1016 (1985).

103. *Dallas & Mavis Forwarding Co. v. Stegall*, 659 F.2d 721, 722 (6th Cir. 1981) (A trooper's testimony was not admitted because it was based primarily on the story of a biased eyewitness.). *But see* *American Universal Ins. Co. v. Falzone*, 644 F.2d 65, 66 (1st Cir. 1981) (A fire marshal's testimony based upon information from other fire marshals on the inspection team was admissible because it was reasonable to rely on contemporaneous, on-the-scene opinions of experienced investigators.).

The advisory committee has also specified that under Rule 703, it is not reasonable to rely upon opinions of an "accidentologist" regarding the point of impact in an automobile collision if the opinions are based on the statements of bystanders. *FED. R. EVID. 703* advisory committee's note, 56 F.R.D. 183, 284.

such a statement as being unreliable.¹⁰⁴

V. ATTACKING THE VALIDITY OF THE EXPERT'S BASIS

By exposing the basis underlying the expert's opinion, the cross-examiner can attack the validity of each element of the basis that contributed to the expert's opinion. The cross-examiner can pinpoint the flaws, and thereby cast doubt upon the expert's opinion.

A. *The Frye Test*

Under the *Frye* test, proffered scientific evidence must have been generally accepted in the particular field to which it belongs.¹⁰⁵ The test requires courts to find that the particular scientific method in question is reliable and that authorities in the discipline generally accept its reliability.¹⁰⁶ The *Frye* test favors the opponent of the expert testimony because the proponent has the burden of proving that a clear majority of authorities in the field share the expert's opinion. The test's restrictiveness necessarily results in the rejection of new scientific methods because novel approaches, by definition, could not have gained general acceptance.

Within the last decade, courts in more than fifteen jurisdictions have modified the *Frye* test,¹⁰⁷ inferring from the silence of the Fed-

104. T. MAUET, *supra* note 89, at 289.

105. *Frye v. United States*, 293 F. 1013 (D.C. Cir. 1923). In *United States v. Brown*, 557 F.2d 541 (6th Cir. 1977), the court stated that four factors are necessary in order to admit the expert testimony: a qualified expert; a proper subject; conformity to a generally accepted explanatory theory; and probative value that outweighs possible prejudicial effects. 557 F.2d at 556. These foundational prerequisites are needed to protect against the possible prejudice inherent in any expert scientific testimony at trial. As the Sixth Circuit stated: "Because of its apparent objectivity, an opinion that claims a scientific basis is apt to carry undue weight with the trier of fact. . . . In order to prevent deception or mistake and to allow the possibility of effective response, there must be a demonstrable, objective procedure for reaching the opinion." *Id.* at 556 (citing *United States v. Baller*, 519 F.2d 463, 466 (4th Cir. 1975)); see also *United States v. Tranowski*, 659 F.2d 750, 757 (7th Cir. 1981) ("The trial court should not be used as a testing ground for theories supported neither by prior control experiments nor by calculations with indicia of reliability.").

106. *Graham*, *supra* note 7, at 56. To determine if the scientific technique or process is sufficiently reliable, the court will hear expert testimony regarding the scientific principle and the validity of the scientific technique or process. The court must find that the technique or process is reliable and that authorities in the discipline generally or substantially accept its reliability. *Id.*; *United States v. Amaral*, 488 F.2d 1148, 1153 (9th Cir. 1973) (Courts should consider the expert's qualifications, the subject of the testimony, the expert's conformance to generally accepted theories and the testimony's probative value.); see also *supra* notes 16-21 and accompanying text. *But see* *United States v. Downing*, 753 F.2d 1224, 1237 (3d Cir. 1985) (Acceptance in the scientific community is only one of several factors.).

107. *United States v. Gould*, 741 F.2d 45, 49 (4th Cir. 1984) (The proper test is whether the general scientific hypothesis has substantial acceptance in the relevant discipline.); *United States v. Torniero*, 735 F.2d 725, 731 (2d Cir. 1984) (The court must make a discretionary

eral Rules of Evidence that the requirement of general acceptance is not absolutely essential.¹⁰⁸ Some courts have modified the *Frye* test by substituting it with a Rule 403 relevancy test, which balances the probative value of the proffered evidence against the risk of unfair prejudice.¹⁰⁹ In addition, some courts have modified the *Frye* test by requiring that the proffered scientific evidence or method be "substantially accepted" in the field, and that only a recognized minority accept the specific evidence or method.¹¹⁰

The main objective of all the above approaches is to ensure that the expert testimony possesses an indicia of trustworthiness. Both the scientific test and the methods employing the test, therefore, must be reliable.

B. Statistics

In an effort to assure the receipt of accurate and reliable evidence, courts will examine an expert's reliance on data,¹¹¹ studies,¹¹² polls,¹¹³ and calculations.¹¹⁴ Opposing counsel may attack statistics

determination that the hypotheses relied upon have substantial acceptance in the discipline.), *cert. denied*, 469 U.S. 1110 (1985); *see also* Rossi, *supra* note 6, at 21 (Courts have abandoned the *Frye* test because its restrictiveness is inconsistent with modern evidence concepts favoring admissibility.).

108. *United States v. Downing*, 753 F.2d 1224, 1234-35 (3d Cir. 1985) ("Although the commentators agree that this legislative silence is significant, they disagree about its meaning. . . . [W]e conclude that the Federal Rules of Evidence neither incorporate nor repudiate it.").

109. Weinstein recommends a relevancy test by which the court would conduct an analysis under Rule 403. Through this analysis the court would assess the probative value of the proffered evidence against the risk of unfair prejudice to determine its relevance. Under this proposal, the court would also consider whether the issue for which the scientific evidence is being offered is a significant issue, whether other proof is available, and whether limiting instructions would be useful. J. WEINSTEIN, *supra* note 5, ¶ 702[03], at 702-18.

110. *See* sources cited *supra* note 107.

111. *Viterbo v. Dow Chem. Co.*, 646 F. Supp. 1420 (E.D. Tex. 1986), *aff'd*, 826 F.2d 420 (5th Cir. 1987).

112. *Sheats v. Bowen*, 318 F. Supp. 640, 644 (D. Del. 1970) (If an expert relies on a study, he must establish that he can testify from his own knowledge as to the nature and extent of the source from which the statistics of the study were gathered.).

113. In *Baumholser v. Amax Coal Co.*, 630 F.2d 550 (7th Cir. 1980), the court stated: "To qualify a study or opinion poll for admission into evidence, there must be a substantial showing of reliability. There must be some showing that the poll is conducted in accordance with generally accepted survey principles and that the results are used in a statistically correct manner." *Id.* at 552 (citing *Pittsburgh Press Club v. United States*, 579 F.2d 751 (3d Cir. 1978)). Because there was uncontradicted testimony that the study was similar to a survey conducted by the Atomic Energy Commission, the survey "more than satisfied the threshold inquiry as to whether other experts would rely upon it." *Id.* at 553; *see* *Zippo Mfg. Co. v. Rogers Imports, Inc.*, 216 F. Supp. 670, 681 (S.D.N.Y. 1963) (The weight to be given to a survey depends on the validity of the procedures and techniques by which the survey was created and conducted.).

114. *United States v. Tranowski*, 659 F.2d 750, 756-57 (7th Cir. 1981) (The trial court

and data that an expert relies upon by showing that the data are unreliable and lack probative value.¹¹⁵ In addition, even if experts in the particular field regularly rely upon a particular type of data, the method used to develop that data may be unreliable.¹¹⁶ The cross-examiner may show, for example, that the data do not include all essential factors,¹¹⁷ or that the expert compiled the data solely for litigation purposes.¹¹⁸

C. Learned Treatises

Rule 803(18) of the Federal Rules of Evidence provides a hearsay exception for the substantive admissibility of statements contained in learned treatises.¹¹⁹ Physicians customarily rely on authoritative treatises to form the bases of their opinions. Opponents may inquire as to the sources that were available to the witness, those he used to form his opinion, and those he neglected. If the expert recognizes the treatises as authoritative, the cross-examiner may use them.¹²⁰ Under the Rules, a cross-examiner may utilize authoritative treatises to contra-

should have excluded the scientific evidence because the method of making the calculations was not generally accepted in the relevant scientific community.); *Shu-Tao Lin v. McDonnell Douglas Corp.*, 574 F. Supp. 1407, 1411 (S.D.N.Y. 1983) (The expert's calculations lacked probative value because they were based on unsupported assumptions.), *aff'd in part, rev'd in part on other grounds*, 742 F.2d 45 (2d Cir. 1984).

115. See sources cited *supra* note 80.

116. Arnold, *supra* note 10, at 16.

117. *Soden v. Freightliner Corp.*, 714 F.2d 498, 504 (5th Cir. 1983) (Information relied on in statistics failed to include an essential factor.).

118. *Id.* at 503 (Statistics were ruled to be inadmissible because, in part, they were prepared strictly in anticipation of litigation.).

119. Rule 803(18) provides as follows:

To the extent called to the attention of an expert witness upon cross-examination or relied upon by him in direct examination, statements contained in published treatises, periodicals, or pamphlets on a subject of history, medicine, or other science or art, established as a reliable authority by the testimony or admission of the witness or by other expert testimony or by judicial notice. If admitted, the statements may be read into evidence but may not be received as exhibits.

FED. R. EVID. 803(18).

120. For an analysis of the four basic views as to when authoritative treatises can be used in cross-examination to contradict or impeach an expert's testimony, see 31 AM. JUR. PROOF OF FACTS 2D 451 (1982). The author defined the four views as follows:

Under the first view, only those treatises which a witness has specifically cited during direct examination as supporting his opinion can be used on cross-examination. The second view provides that when an expert has relied generally or specifically on authorities during direct examination, he may be cross-examined on the basis of authorities which are not necessarily the same as those on which he relied in his direct testimony. According to the third view, an expert may be cross-examined on the basis of treatises that he has recognized as authoritative, whether or not he relied on them to form his opinion. Finally, an expert may be cross-examined under the fourth line of authority using any treatise that is established as authoritative in an acceptable manner, regardless of

dict or impeach the witness, regardless of whether the witness relied upon them.¹²¹ Thus, the cross-examination could proceed as follows:

Q: Doctor, you have indicated that arrhythmias may be caused by trauma.

A: That is true.

Q: And that the impact of the steering wheel on Jeff's chest could be the source of such a trauma?

A: That is right.

Q: Are you familiar, Doctor, with the works of Miller and Sheldon on detecting and defining arrhythmias?

A: Yes, I am.

Q: Doctor, you are aware of the fact that these men are considered to be experts in their field and that their writings are authoritative in the area of electrocardiography.

A: Yes, I am.

Q: Doctor, are you not also aware that they state that most arrhythmias are congenital or acquired due to heart disease rather than by trauma?

A: Yes, I am aware of their point of view.¹²²

VI. EXPOSING PERSONAL BIAS OR INTEREST OF THE EXPERT WITNESS

A common way to discredit the witness personally is by establishing that he has a bias in favor of, or a personal interest in, the party for whom he is testifying. Although the attorney knows that the expert is a hired gun, the jury may not. The cross-examiner should therefore inquire into the fees charged, whether the fees have been paid, and the frequency with which the expert testifies for this party or this attorney.¹²³ The line of cross-examination could proceed as follows:

Q: How much did you charge to appear as a witness here today?

A: I charged \$500 for a report.

Q: Is that your regular charge to appear?

A: Yes.

Q: How many times have you testified for the defendant's attorneys in the last six months?

whether the witness relied on the treatise during direct examination, and regardless of whether the witness recognizes the treatise as authoritative.

Id.

121. *Id.*; see also Graham, *supra* note 7, at 72.

122. Adapted from an example in J. JEANS, *supra* note 84, at 344.

123. T. MAUET, *supra* note 89, at 289.

A: Four times, maybe.

Q: And you charged \$500 each time?

A: Yes.

Q: In six months, wouldn't that amount to \$2,000?

A: Yes.

Q: How many cases have you examined for defendant's lawyers in the past six months?

A: Probably three cases per week, for a total of seventy-five cases.

Q: How much do you charge for an examination?

A: One hundred and fifty dollars.¹²⁴

Q: How many times have you spoken to the defendant's attorneys about this case?

A: Maybe half a dozen times.

Q: And as recently as yesterday, correct?

A: Yes.

Q: And they reviewed the questions they would ask you and what I might ask you, correct?

A: Yes.

Q: Where did this meeting take place?

A: In their office.¹²⁵

VII. THE REQUIREMENT OF A REASONABLE DEGREE OF SCIENTIFIC, MEDICAL, OR OTHER TECHNICAL CERTAINTY

The Federal Rules of Evidence do not require absolute certainty of expert scientific, medical, or other technical testimony. The expert's explanatory theory, however, must satisfy the "reasonable degree of certainty" standard.¹²⁶ Thus, the attorney may ask the expert whether his opinion on that particular issue has a reasonable degree of scientific, medical, or other technical certainty. Although this standard is incapable of a precise definition, the standard calls for conformity with a generally accepted explanatory theory used in the field to derive the opinions expressed by the expert.¹²⁷ By requiring that an expert's opinion be derived according to a theory substantially

124. Adapted from an example in J. JEANS, *supra* note 84, at 340.

125. Adapted from an example in J. APPLEMAN, *CROSS-EXAMINATION* 129 (1963).

126. *Fitzgerald v. Manning*, 679 F.2d 341, 350 (4th Cir. 1982) (Opinion testimony of a medical expert in a medical malpractice action may not be stated in general terms but must be stated in terms of a "reasonable degree of medical certainty.").

127. *Boose v. Digate*, 107 Ill. App. 2d 418, 246 N.E.2d 50 (1969). In *Boose*, the court stated that reasonable certainty refers to the general consensus of recognized medical thought and opinion concerning the probability of conditions in the future based on present conditions. The expert in *Boose* was unfamiliar with the legal terms that give a medical opinion its legal

accepted in the particular field, the court ensures a degree of reliability that would not be present if the opinion were to be held solely by that expert.¹²⁸ An expert's inability to state his opinion with a reasonable degree of certainty, however, goes to the weight of his testimony and not to the statement's admissibility.¹²⁹

VIII. CONCLUSION

According to Rule 702, any witness may qualify as an expert by knowledge, skill, experience, training, or education.¹³⁰ Therefore, almost anyone may qualify as an expert. And once qualified, an expert can express opinions going to the ultimate issues in the case.¹³¹ In addition, the expert may express his conclusion without expressing the basis for his opinion,¹³² and may base his testimony on hearsay if the hearsay is reasonably relied upon by experts in the particular field.¹³³

Courts have interpreted the Federal Rules of Evidence in such a manner as to allow experts to testify to virtually anything. Because juries tend to place a lot of weight on such testimony, courts must abandon this extreme approach. The Fifth Circuit, consistent with this view, recently has made its position clear:

[W]e adhere to the deferential standard for review of decisions regarding the admission of testimony by experts. Nevertheless, we . . . caution that the standard leaves appellate judges with a considerable task. We will turn to that task with a sharp eye, particularly in those instances, hopefully few, 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. Our message to our able trial colleagues: it is time to take hold of

perspective. His opinion, however, was not based on guess or surmise. *Id.* at 423, 246 N.E.2d at 53.

128. *Johnston v. United States*, 597 F. Supp. 374, 412 (D. Kan. 1984) (excluding expert's opinion because other experts in the field had not yet accepted the formula upon which he relied). Professor Graham explains that the "reasonable degree of scientific, medical, and other technical certainty" standard "responds to a fear that juries might be improperly influenced by awe of scientific expertise to subordinate their own judgment on a contested issue of ultimate fact to that of the expert." Graham, *supra* note 7, at 62. He adds that, "[t]his consensus requirement reflects values underlying the *Frye* test of general acceptance." *Id.*

129. *Bean v. United States (In re Swine Flu Immunization Prod. Liab. Litig.)*, 533 F. Supp. 567, 578 (D. Colo. 1980) (The fact that the physician could not state with a reasonable degree of medical certainty that the swine flu vaccine caused plaintiff's illness went to the weight to be given his testimony, and not to its admissibility.).

130. See *supra* notes 31-32 and accompanying text.

131. See *supra* notes 46-52 and accompanying text.

132. See *supra* note 53 and accompanying text.

133. See *supra* notes 33-45 and accompanying text.

expert testimony in federal trials.¹³⁴

Because an appellate court will not disturb a trial court's rulings on expert witnesses unless there is an abuse of discretion, attorneys must urge judges to follow the Fifth Circuit's message and scrutinize expert testimony more carefully than they have in the past. In addition, attorneys must also urge judges to exercise their discretion to exclude expert testimony when appropriate. Although this approach may result in minitrials on the admissibility of the expert testimony, it is nonetheless preferable to the possibility of misleading a jury and making each case a battleground for experts and cross-examiners.

If the courts continue to follow the liberal approach, however, it is the duty of the cross-examiner to counteract the effect of the expert's testimony. The Rules provide a framework by which the cross-examiner can exclude or weaken the expert's opinion in the eyes of the jury. The cross-examiner must therefore use the Rules to his advantage.

LEE WALDMAN MILLER

134. *In re Air Crash Disaster*, 795 F.2d at 1234.